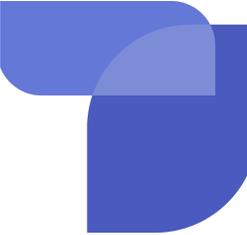


State of Indiana

Indiana Department of Health

*Response to RFP 24-75386: Maternal and Child Health
Data System*



Cambridge, Massachusetts, USA | Cape Town, South Africa | New Delhi, India

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1. Minimum Requirements (RFP, Section 1.4.1)

Dimagi's past performance exceeds the minimum requirements put forth in this RFP. Dimagi's work with the State of Colorado illustrates our current experience maintaining a health/human services data system of comparable size and complexity. Dimagi further cites our work with the States of Vermont, New York, and New Jersey as additional examples of system DDI, maintenance, operations, and enhancement services.

Comparable Systems

In addition to the related technology projects listed below in [Government Services](#), Dimagi brings experience implementing and maintaining a statewide behavioral health information system in Colorado. Dimagi acts as the technical services provider to Colorado's Behavioral Health Administration (BHA) to support Behavioral Health care coordination across the state. This work, kicked off in January 2022, will be rolled out over the course of several years as it expands to meet the needs of an increasingly broad and diverse number of stakeholders. Our team is working closely with government and clinical stakeholders to design, build and deliver solutions for behavioral health care coordination.

a. Entity served and type

The Behavioral Health Administration (BHA) is a cabinet member-led government agency within the State of Colorado, housed within the Department of Human Services, and is designed to be the single entity responsible for driving coordination and collaboration across state agencies to address behavioral health needs. BHA anchors itself in a community-informed, people-first practice, working with providers and local communities throughout the State. BHA seeks to support the behavioral health workforce and individuals seeking care through resource connection, mobilization of support systems, and resolution of critical resource gaps.

b. The scope of your services provided

The programmatic scope of this work includes the following components:

- **Project Management:** Dedicated Project Manager and account support through initial design, development, and implementation phases, and as components enter maintenance and operation activities.
- **Strategic Data Management Support:** Dimagi's team supports a wide range of needs including consulting on data management, data warehousing, and strategy for interoperability at scale, in addition to implementing the Dimagi Data Platform.
- **Comprehensive Testing:** Systematic processes to validate the system's functionality, usability, performance, compatibility, and security with each release.
- **Application monitoring:** Dimagi provided all monitoring instrumentation to ensure the performance of the system was tracked and understood by all stakeholders.
- **Support, training & State enablement:** Tailored training and support to meet the unique needs of project stakeholders from facility to state levels. This included asynchronous demos of tooling, webinars, and in-person training - all with accompanying

documentation. Dimagi also supported Training of Trainer models. Dimagi offers comprehensive Tier 3 Help Desk and trains Tier 1 and Tier 2 Help Desk staff.

The following is a select list of relevant functional scope of this solution:

- **Client-centric Data Model:** Multiple aggregated data sources, joined through cloud-based data warehousing, enables data collection and visualization via individual health profiles.
- **Care Management:** Configurable, user-friendly forms are used to register clients, conduct intakes, upload relevant attachments, and document services delivered.
- **Optimized Workflows:** Decision-support and workflow automation are configured into the system to support the Administration's unique business processes. This streamlining enables system users to be more efficient in client service delivery and reduces administrative burden.
- **Comprehensive Deduplication:** Client identities are compared to avoid the duplicate delivery of MAT. Deduplication functionality includes multiple types of logic including fuzzy, sounds-like, and alias comparisons.
- **Central Client Registry:** A database for providers to track clients undergoing Medication Assisted Treatment (MAT). This registry enables providers to complete intake quickly, as soon as they determine within the registry that a client is not already enrolled at another facility.
- **Provider Directory:** A searchable directory for all behavioral health providers in Colorado. Users can search for available services using multiple filter types such as bed type, gender, age, and location. There are also user-friendly, low-burden options for managing and updating bed availability by the facility staff.
- **Referral System:** A tool for matching and directing clients to services based on their needs and facility availability.
- **Secure User Access:** Visibility to client information is determined based on user roles, association with treatment locations, and client consent.
- **Interoperability at Scale:** Previously disparate datasets have been joined through cloud-based data warehousing enabling collaboration between teams across the State
- **Data Security Compliance:** All information is hosted on AWS and compliant with federal policies for sensitive information, Health Insurance Portability and Accountability Act (HIPAA) and 42 CFR Part 2.

c. Contract start/end date

The contracted engagement began in January 2022 and continues to present day.

d. Number of users

The MAT Central Registry and Bed Tracker tool is scaling to 700 clinics across the State of Colorado. The primary clinical users include **facility seekers**, users searching for facilities to make referrals, and **residential facility clinic users**, users managing referrals and updating bed availability for their facility.

At the State-level, MAT Registry and Bed Tracker users focus on Admissions Oversight, Medication Distribution, Federal Data Reporting, Record Level Data Compliance.

In addition, the Dimagi Data Platform is accessed by 365 state users. This work establishes a standardized set of data models for behavioral health services, broad data access to streamline exchange among health services partners, and configuration of key metric dashboards. The team also publishes a public-facing performance dashboard.

e. Estimated number of staff required to execute Scope of Work

The Dimagi project staff includes an estimated 10.5FTE, across the following roles:

- Project Manager, 1.0FTE
- Project Solution Architect, 1.0FTE
- Implementation & Requirement Lead, 1.0FTE
- 4x App Development Team Member, 1.0FTE
- Solutions Analyst, 0.5FTE
- Director of Data & Analytics, .5 FTE
- Data Engineers, 2 FTE
- Data Specialist, 1 FTE
- Data Project Manager, 1 FTE

f. Was the project completed on time and on budget? If not, please explain

The project is designed as a long-term effort, and we have successfully met the delivery timelines set for each project stage. As follow-on contracts have been reissued, we have adapted our approach in response to the Administration's evolving requirements and priorities. Recognizing the Administration's need for a phased project rollout, we adjusted our timelines accordingly to meet the unique needs of each project phase. For BHA, we established a plan for the design, development and implementation of each solution, followed by a transition to maintenance and operations. We first built out the MAT Central Registry, and after a year of design work, we moved formally into M&O. For the Bed Tracker, we're currently in the midst of the DDI phase, and we're targeting a move to M&O by Q1 2025. We adjust timelines with BHA to ensure we accounted for any compliance or legislative timelines that impacted tool delivery. For all tools, Dimagi has consistently delivered iterative product releases, inclusive of new system features and enhanced native functionality, and has ensured that each phase is completed to meet the Administration's expectations.

Dimagi has effectively managed costs and adhered to the contractual budgets of the project to date. Beyond our initial scope, we assumed responsibility for overseeing subcontractor and subscription management, demonstrating our capability to coordinate budgets and costs at a sophisticated level. Our diligent tracking and reporting systems ensured transparent and efficient cost control, aligning with best practices and meeting the stringent standards set forth in our agreements.

g. Detail any complications with the project

As the responsible party on a large portfolio of work, Dimagi is accountable for consensus building and alignment with diverse stakeholders from the BHA and Colorado Office of Information Technology (OIT). With a portfolio of this size and expansive mandate, project complications are table stakes. Detailed below are a few of the complications faced and how Dimagi sought to address them.

Flexible Staffing

Dimagi received a multi-year engagement from the State based on a multi-year proposal. As work planning got underway, Dimagi and the State realized it was more practical to plan work on a per-fiscal year basis to reflect the BHA annual cycle of setting priorities and fiscal planning. While Dimagi seeks to be a flexible partner to BHA, Dimagi does not hire fixed-term staff. When trying to align on a staffing plan, a balance is struck between Dimagi's needs for long-term predictability, while the Administration desired maximum flexibility to accommodate their context. The approach Dimagi has landed on is that in Q4 of the prior fiscal year, Dimagi requests a commitment to a core staffing team for the subsequent fiscal year. Doing so ensures a minimum staff remains committed to being staffed on the project. However, to address Colorado's need for flexibility, Dimagi leverages optional deliverables that include one-off service FTE accelerators. This strategy allows for a more iterative approach, enabling the team to scale up or down based on evolving needs.

Direct Provider User Engagement

Initially, BHA wanted to maintain a single touchpoint between provider users and BHA. This was in no small part due the Colorado Digital Service's long standing expertise in user-centered design practices and Colorado's desire to safeguard provider's from external vendors. In this dynamic, Dimagi saw an opportunity to build trust and demonstrate our ability to meaningfully engage users for solution design and testing. To move toward that end, we provided methodology for a user testing protocol but encouraged BHA to lead the testing itself. By shadowing user testing on-site and participating in these processes, as is our preference for all projects, Dimagi gradually earned the trust to be invited to in-person workshops. Several months of collaboration on user engagement with BHA allowed Dimagi to establish direct interactions with providers, ensuring clear communication and a deeper understanding of their needs.

Subcontractor Engagement

As the implementation plan and needs evolved, Dimagi proposed leveraging subcontractors to support the growing portfolio. Today, Dimagi oversees a consortium of over 10 subcontractors. While this increases Dimagi's oversight and budgetary responsibilities, it also was an important step to enhance the project delivery and strategy. To facilitate this role, Dimagi implemented a new financial tracking process tailored to the project's needs. Stakeholder monthly meetings are held to review subcontractor priorities and ensure the work order had sufficient budget for those needs. Although this funding approach required more planning and added complications to the project landscape, Dimagi is proud to think creatively as a portfolio lead and partner to the BHA.

Client Staff Continuity

Throughout the engagement, more than State product managers have joined and departed from the BHA. This turnover, combined with shifting priorities for the product rollout, challenged Dimagi's ability to ensure a product vision that consistently and cohesively reflected the State perspective. The frequent onboarding and offboarding of BHA staff further contributed to inefficiencies. To address these challenges, Dimagi implemented several strategic measures which are now consistent cornerstones for the BHA DDI processes. We meticulously documented our software development lifecycle to streamline the onboarding process for new team members. Our hybrid agile, sprint-based approach provided a stable foundation for our collaboration. Additionally, we recorded milestones and key results to ensure continuity and alignment with agreed-upon benchmarks as new team members joined.

While these processes could not entirely eliminate the complications caused by staff attrition, they significantly enhanced consistency and stability, enabling Dimagi to effectively integrate new external counterparts and maintain project momentum. These proactive steps enabled us to mitigate the inevitability of attrition and improve overall DDI processes.

Solution vs. Platform Product Roadmap

With ambitious technical projects, product roadmap conversations are central to stakeholder engagement. CommCare, Dimagi's global care coordination software, follows a platform-based approach, allowing solutions to be configured on top of the core platform. For Colorado, Dimagi used CommCare to build BHA's Central Registry, Bed Tracker, and Referrals systems. Dimagi will leverage CommCare for the case management portion of the proposed MCH Data System. The platform-based approach, which involves merging new features into the global product codebase, fosters collaboration among several technical teams. While this collaborative, team-centric process may feel different than one-off custom development, Dimagi firmly believes it leads to superior product outcomes. To ensure clarity and alignment, we utilized our Chief Technology Officer (CTO) to articulate our product philosophy to BHA. Together, Dimagi and BHA distinguished between primary needs and nice-to-haves and dedicated time at the beginning of each quarter to align on the product roadmap. Stakeholders revisit this roadmap regularly, allowing for adjustments based on input from providers or the State.

h. Explain which of the proposed staff for the MCH scope of work have worked on these projects and in what role

Many of our proposed Vital Staff played key roles in the BHA project, specifically:

- **Executive Lead (Sarah Sagan):** As the Executive Lead of the BHA project, Sarah was accountable for the overall success, confirming risk mitigation strategies, and providing continuous feedback and consultation to the BHA executive teams.
- **Project Manager (Marissa Harrison):** Marissa oversaw the overall implementation of each project phase, managed the Dimagi technical project team, and ensured quality service delivery throughout the project.
- **Lead Architect (Woody Meade):** Woody designed the architecture for the BHA solution, optimizing for performance, scalability, usability, and maintainability. He led the application configuration team, implementing requirements developed during each sprint and ensuring the integrity of end-to-end behavioral health solutions.
- **Account Manager (Lily Olson):** Lily served as the point of contact for account renewals, contracting discussions, and SOW development/expansion, ensuring seamless communication and satisfaction.

Dimagi offers exemplary staff for additional roles we consider important, many of whom worked on the BHA project, including:

- **Director of Data and Analytics (Riya Singh):** Riya developed the data platform strategy for BHA, including the creation of a data lakehouse and public-facing metric dashboards.
- **Application Configuration Analysts (Kate Hildebrand and Kate Pearce):** Both served in the application configuration function for the BHA project, where they participated in the full sprint lifecycles from requirements definition to configuration to testing.

- **Technology Lead (Kim Cho):** Kim worked extensively for BHA in the same role, ensuring technical strategy and oversight for any development activities.
- **Data Engineer (Shu-Chun Lu):** Shu-Chun supported BHA on the Dimagi Data Platform configuration, similar to what is proposed for the MCH Data System.

By leveraging the experience and expertise of these staff members, we ensure a seamless and effective implementation of the MCH Data System project.

Government Services

Dimagi routinely collaborates with government agencies in regional- and state-level health and social service efforts to offer proven, scalable solutions that lead to better health outcomes. These examples demonstrate Dimagi's knowledge and experience that will serve the State of Indiana.

State of Vermont Agency of Human Services

Dimagi worked with the State of Vermont on a technology solution to enable case management and follow up with Vermont families facing housing insecurity to support their connection to services available from the State. Four State agencies including Workforce, Health, Economic Services, and Housing coordinated care and responsive follow up with families using the platform. Dimagi oversaw all project phases and was accountable for the technical success of the engagement.

a. Entity served and type (e.g., government agency, private organization, etc.)

Vermont Agency of Human Services

b. The scope of your services provided

Dimagi provided technical design, development and deployment of the CommCare solution, transformation & migration of existing program data into CommCare solution, user acceptance testing, solution refinements, stakeholder engagement, project management and training support.

The CommCare solution revolutionized Vermont's approach to serving housing-insecure families by streamlining coordination and enhancing services. This was achieved with the the DDI of the following functional components:

- **Client Management:** Users can efficiently add multiple clients to households, including children.
- **Efficient Screening:** User-friendly and automatic navigation functions within forms significantly reduce the burden of conducting thorough screenings.
- **Intelligent Care Plans:** Plans included features such as goal setting to track progress and enable team members to seamlessly coordinate and collaborate in assisting towards care plan goals.
- **Data Security:** The release of information mechanisms allows for secure and consent-based data sharing within the platform. This is coupled with robust controls to ensure visibility of protected client information based on user permissions.

- **Data Reporting:** Data collected in CommCare fed into the State's analytics dashboard, enabling real time programmatic oversight that informed legislative activities critical to the State.

c. Contract start/end date

Our contract ran from October 2022 - March 2024.

d. Number of users

The statewide solution was used by about 120 users across those four agencies: Workforce, Health, Economic Services, and Housing with distributed working locations statewide. Over 3,000 housing-insecure families were tracked using the system. The tool was used by user types at all levels including:

- Decision-makers: Data supported the organization of care teams, resource allocation for families, and legislative recommendations.
- Care Teams: System features allowed these teams to assess families for need and refer them to appropriate services across four state agencies
- Clients: Housing-insecure families received hotel/motel vouchers and referrals to appropriate and available services.

e. Estimated number of staff required to execute Scope of Work

The estimated Full Time Equivalent (FTE) that was required to execute the project's Scope of Work was 2.25 - 2.5 FTE across four contributors as indicated below:

- Technical Project Manager - 50%
- Project Manager - 50%
- App Builder - 100%
- Solutions Analyst - 50%

f. Was the project completed on time and on budget? If not, please explain

Yes, the project was completed on time and on budget.

g. Detail any complications with the project

Overall, the project was successful for both the State and Dimagi, enabling real impact for Vermont. During the project, Dimagi did problem solve for several challenges, including:

Undefined scope & urgent timelines

This project required Dimagi to rapidly develop a solution in collaboration across four different State departments, each with their own unique workflows and forms. The goal was to create a unified registration and assessment form to serve clients across all programs, necessitating unprecedented alignment of processes among the teams. Additionally, the urgency was heightened by the imminent end of federal funding, which threatened to leave hundreds of families without housing, making the rapid deployment of a care coordination solution critical.

To address the needs for alignment and urgency, the Dimagi team adopted a rapid iteration approach, collaborating closely with state department points of contact through app demonstrations and live workshopping of feedback. This highly

participatory methodology allowed for real-time input from stakeholders, continuous refinement of a prototype solution, and ultimately a Minimum Viable Product (MVP) scope that achieved alignment across the four departments and went live in just three weeks. This initial scope focused on developing a data model for the ingestion of current state program data into CommCare, along with functionalities for client search, new client registration, and needs assessment. By securing incremental progress and fostering a high level of trust, Dimagi successfully navigated the project's complexities and delivered a solution that met the immediate needs of the stakeholders.

Legal limitations for cross-department data sharing

Collaborating with multiple state groups, which, while beneficial to ultimate project success, introduced challenges related to data sharing. AHS legal policy demanded that client health information collected by one program could not be shared with another program without proper written authorization by the client. Leveraging expertise in system design, the Dimagi team devised a nuanced solution that included building a client authorization and data release workflow into the solution, in addition to identifying custom user permissions and case list configurations. This tailored approach ensured that users could only access authorized client data relevant to their specific role, region, or organization. Demonstrating their flexibility and commitment to partnership, the Dimagi team adeptly navigated the legal complexities and delivered a solution that upheld both functionality and compliance.

High profile stakeholder demands for tangible data outcomes

The anticipated housing crisis in Vermont due to a cut in federal funding for their motel voucher program made local, regional, and national headlines. There was an increased level of pressure on AHS and Dimagi to rapidly deliver a care coordination solution. There was a high level of interest and demand from stakeholders, including the governor and Vermont's state legislative bodies, to deliver tangible results and clear data outcomes to gain insights into care coordination needs in order for the State to respond effectively. The data collected needed to be available in near real-time and validate the efficacy of the registration, assessment, and referral processes, thereby justifying the continuation of these care coordination efforts.

To address these priorities, Dimagi collaborated directly with the State's IT/Data Science team to establish an automated data feed to seamlessly send key metric data from the CommCare solution into the State's public PowerBI dashboard. This strategic approach not only met the demands for accessible & transparent data, but also enabled the local state leadership to mobilize funding and policy decisions to prioritize the urgent needs of constituents facing housing insecurity.

h. Explain which of the proposed staff for the MCH scope of work have worked on these projects and in what role

Some of our proposed Vital Staff worked on the Vermont project, specifically:

- **Executive Lead (Sarah Sagan):** As the Executive Lead of the Vermont project, Sarah was accountable for the overall success, confirming risk mitigation strategies, and providing continuous feedback and consultation to the BHA executive teams.

- **Account Manager (Lily Olson):** Lily served as the point of contact for account renewals, contracting discussions, and SOW development/expansion, ensuring seamless communication and satisfaction.
- **Lead Architect (Woody Meade):** Woody offered technical direction for architecture of the Vermont project, supporting the Implementation Lead and Application Configuration Analyst in designing an effective solution.
- **Implementation Lead (Lauren Fox):** Lauren managed the implementation strategy for the Vermont project, coordinating across multiple teams to ensure timely delivery and adherence to project goals. She played a pivotal role in aligning project activities with client expectations and outcomes.

Dimagi offers exemplary staff for additional roles we consider important, some of whom worked on the Vermont project, including:

- **Application Configuration Analyst (Kate Pearce):** Kate served in the application configuration function for the Vermont project, participating in the full sprint lifecycles from requirements definition to configuration to testing.

New York State Department of Health

Dimagi collaborated with the New Jersey Department of Health (NJDoH) on the development, design and implementation of an end-to-end COVID-19 case management solution. Dimagi led all project phases, including the transition from active design to stabilization and maintenance support.

a. Entity served and type (e.g., government agency, private organization, etc.)

New York State Department of Health (NYSDOH)

b. The scope of your services provided

The programmatic scope of Dimagi's services included:

- **Project Management:** Dimagi led the technical project management of the end-to-end solution, serving as the strategic group on standing up case management and contact tracing solution architecture. Dimagi followed an Agile scrum methodology. Dimagi was accountable for all aspects of project management, including risk management, requirements development and system design management.
- **Product Management:** Complementing our project management strategy, Dimagi led the product management approach, offering strategic guidance on how to shape the software development lifecycle. This included advising on user acceptance testing and user feedback practices.
- **Integration Advisor:** Dimagi's engineering team advises NYSDOH on optimal integration approaches to achieve the desired architecture. Dimagi served as a technical advisor and partner to the Information Technology Services (ITS) team at NYSDOH.
- **Help desk:** Dimagi trained the tier 1 and 2 help desks, and Dimagi led the tier 3 help desk. Dimagi oversaw all issue escalation, management and resolution, and Dimagi provided incident reports when necessary.
- **Application monitoring:** Dimagi provided all monitoring instrumentation to ensure the performance of the system was tracked and understood by all stakeholders.

- **Data & Reporting:** Dimagi worked with the Data & Reporting teams at NYSDOH and NYSITS to support the development of public-facing dashboards and associated metrics.

Dimagi provided the State of New York with a robust case investigation and contact tracing solution built on the CommCare platform. The solution enabled New York to lead urgent pandemic response activities across 57 counties. This swift deployment saw the solution go live within four weeks of initial contact. The functional scope of the solution included:

- **Data ingestion:** A data pipeline was established between CommCare and the Electronic Clinical Lab Reporting System (ECLRS). All positive case data was ingested into the CommCare platform to facilitate the subsequent reach out.
- **Care coordination:** Once a positive case is received by the system, it : entered a queue for a monitoring phone call. During the conversation, case investigators capture information about potential contacts. Contract tracers then reached out to contacts to support them with testing and getting them enrolled in SMS monitoring.
- **SMS workflows:** Contacts of positive cases received daily SMS monitoring check-ins and supportive messaging.
- **User administration:** As the pandemic response workforce needs evolved, CommCare enabled for the rapid provisioning and de-provisioning of the workforce.
- **Integrations:** CommCare integration with complementary tools to enhance the effectiveness of the pandemic response. Notably the NY Exposure Notification App enabled contacts to receive notifications outside of the formal contact tracing workflows.
- **Reporting:** Dimagi provided support to the New York integrations and reporting teams as they continued to adapt their database and Tableau reporting system to align with the information gathered from the case investigation and contact tracing solution.

c. Contract start/end date

The contract period was from May 2020 - July 2023.

d. Number of users

During the height of the pandemic response, over 9,000 users were provisioned to conduct case investigation and contact tracing through all 57 counties of New York State. The users included:

- **Contact Tracers:** Public health workforce in charge of following up with contacts of COVID-19 positive cases
- **Case Investigators:** Public health workforce accountable for speaking with COVID-19 positive cases, collecting information about their wellbeing and documenting a list of contacts
- **Community Support Specialists:** Public health workforce supporting health-related social needs of individuals in isolation or quarantine. Referred individuals to relevant community services.
- **County officials:** In charge of data review, managing transfers of client files between county offices, providing supervisory support to contact tracing and case investigator teams
- **State administrators:** Public health officials based at the central office supporting the counties with data management and quality review

e. Estimated number of staff required to execute Scope of Work

The estimated Full Time Equivalent (FTE) that was required to execute the project's Scope of Work was 4.5-5 FTE across five contributors as indicated below:

- Project Manager - 100%
- Product Manager - 50%
- Technical Project Manager - 100%
- 2 App Builders - 100%
- Solutions Analyst - 50%

f. Was the project completed on time and on budget? If not, please explain

Yes, the project was completed on time and on budget.

g. Detail any complications with the project

Dimagi partnered with the State of New York for 2.5 years, delivering a robust software solution with end-to-end integration and reporting. Standing up a new software solution during the height of the COVID-19 pandemic was not without challenges.

Data sharing and care coordination across counties

New York residents often crossed state lines in their commute to work or to access testing, vaccines, or other public health services. For this reason, ensuring counties were able to efficiently coordinate follow up with individuals who had tested positive or experienced an exposure was essential. At the same time, maintaining patient privacy and ensuring only those that needed to access individual case or contact records were able to do so remained of the utmost importance. In response to these challenges, the Dimagi team worked closely with stakeholders in New York to design and implement a transfer workflow. This workflow allowed the system to automatically identify and notify users of potential transfer candidates, enabled users in one county to transfer follow up for an individual to another county, and notified authorized users of incoming transfers for review. This approach enabled effective care coordination across counties without sacrificing patient privacy and county autonomy.

Complex data ingestion needs

NYSDOH's CommCare solution ingested positive lab results from ECLRS, the statewide lab reporting system. Requirements for data ingestion were complex and consistently evolving. Robust logic was required to match incoming lab results to existing cases when appropriate, to determine if an incoming lab result for an existing case constituted a reinfection or simply a duplicative test, and to resolve discrepancies between ECLRs and CommCare data. In response to these needs, the Dimagi team collaborated with stakeholders at NYSDOH as well as their integrations partners to establish ingestion logic to ensure that the system could distinguish between a new case, a new test result, and a reinfection appropriately and that all case and lab result records were created, updated, and linked to one another as results were ingested. This integration approach significantly decreased the need for manual data entry and review by NYSDOH staff during an especially busy time for public health officials and ensured case investigators had access to a comprehensive view of test results for each case without the need for manual deduplication or record linking.

Significant training mandates

Due to rapidly evolving COVID-19 response protocols, frequent updates to solution configuration were required to account for changes to guidelines such as adjustments to quarantine and isolation timelines and the rollout of vaccines. New York's more than 9,000 users across the state required consistent, flexible, and virtual training to remain up-to-date on the latest solution features and workflows. In response, Dimagi offered live and on-demand training, tailored by user type, as well as written release notes accompanying each software release (averaging once every 3 to 4 weeks for the duration of the project). Additionally, instructions, help text, and guidance on new public health protocols were built directly into the software solution to guide users in navigating updated workflows and ensure users who had not attended training received in-the-moment information on how to proceed.

h. Explain which of the proposed staff for the MCH scope of work have worked on these projects and in what role

Some of our proposed Vital Staff worked on the New York project, specifically:

- **Executive Lead (Sarah Sagan):** As the Executive Lead of the New York project, Sarah was accountable for the overall success, confirming risk mitigation strategies, and providing continuous feedback and consultation to the New York executive teams.
- **Project Manager (Marissa Harrison):** Marissa oversaw the overall implementation of each project phase, managed the Dimagi technical project team, and ensured quality service delivery throughout the project.
- **Account Manager (Lily Olson):** Lily served as the point of contact for account renewals, contracting discussions, and SOW development/expansion, ensuring seamless communication and satisfaction.

Dimagi offers exemplary staff for additional roles we consider important, some of whom worked on the New York project, including:

- **Data Engineer (Shu-Chun Lu):** Shu-Chun served as an Application Configuration Analyst focused on the CommCare solution during the New York project.
- **Solutions Analyst (Kirti Chandratreya):** Kirti served as a Technical Project Manager for the New York project, similarly supporting design and delivery of the solution and supporting issue resolution with technical consultation.

New Jersey Department of Health

Dimagi collaborated with the New Jersey Department of Health (NJDoH) on the development, design and implementation of an end-to-end COVID-19 case management solution. Dimagi led all project phases, including the transition from active design to stabilization and maintenance support.

a. Entity served and type (e.g., government agency, private organization, etc.)

New Jersey Department of Health (NJDoH)

b. The scope of your services provided

Dimagi provided comprehensive DDI services and flexible support of emerging State needs, including:

- **Project Management:** Dimagi led the technical project management of the end-to-end solution, serving as the strategic group on standing up case management and contact tracing solution architecture. Dimagi followed a hybrid agile scrum methodology. Dimagi

was accountable for all aspects of project management, including risk management, requirements development and system design management.

- **Product Management:** Complementing our project management strategy, Dimagi led the product management approach, offering strategic guidance on how to shape the software development lifecycle. This included advising on user acceptance testing and user feedback practices.
- **Technical Consultation:** Dimagi supported the State team on questions about the solution,
- **Integration Advisor:** Dimagi's engineering team advised NJDoH on optimal integration approaches to achieve the desired architecture, and established an integration with NJDOH's Communicable Disease Reporting and Surveillance System (CDRSS) and the State data lake to enable reporting.
- **Help desk:** Dimagi trained the tier 1 and 2 help desks, and Dimagi led the tier 3 help desk. Dimagi oversaw all issue escalation, management and resolution, and Dimagi provided incident reports when necessary.
- **Application monitoring:** Dimagi provided all monitoring instrumentation to ensure the performance of the system was tracked and understood by all stakeholders.
- **Data & Reporting:** Dimagi worked with the Tableau team at NJDoH to support the development of public-facing dashboards and associated metrics.

Dimagi provided the State of New Jersey with a robust case investigation and contact tracing solution built on the CommCare platform. This swift deployment saw the solution go live within just 44 days of initial contact. Key functionality of the solution included:

- **Data ingestion:** A data pipeline was built between the Communicable Disease Reporting and Surveillance System (CDRSS) and CommCare. All positive case data was ingested into the CommCare platform to facilitate the subsequent reach out.
- **Care coordination:** Once a positive case is received by the system, the case moves into a queue for a monitoring phone call. During the conversation, case investigators capture information about potential contacts. Contract tracers then reached out to contacts to support them with testing and getting them enrolled in SMS monitoring.
- **SMS workflows:** Contacts of positive cases received daily SMS monitoring check-ins and supportive messaging.
- **User administration:** As the pandemic response workforce needs evolved, CommCare enabled for the rapid provisioning and de-provisioning of the workforce.
- **Integrations:** CommCare integration with complementary tools to enhance the effectiveness of the pandemic response. Notably the COVID Alert NJ Exposure Notification App enabled contacts to receive notifications outside of the formal contact tracing workflows.

c. Contract start/end date

The contract period was from July 2020 - June 2023.

d. Number of users

At its peak, the system supported over 4,700 unique users. These users supported case investigation, contact tracing, and data management activities.

- Contact Tracers: Public health workforce in charge of following up with contacts of COVID-19 positive cases
- Case Investigators: Public health workforce accountable for speaking with COVID-19 positive cases, collecting information about their wellbeing and documenting a list of contacts
- Supervisors: In charge of data review, managing transfers of client files between county offices, supporting the work of contact tracing and case investigator teams.
- State administrators: Public health officials based at the central office supporting the counties with data management and quality review

e. Estimated number of staff required to execute Scope of Work

The estimated Full Time Equivalent (FTE) that was required to execute the project's Scope of Work was 4 FTE across four contributors as indicated below:

- Project Manager - 100%
- Technical Project Manager - 100%
- 2 App Builders - 100%

f. Was the project completed on time and on budget? If not, please explain

Yes, the project was completed on time and on budget.

g. Detail any complications with the project

Dimagi partnered with the State of New Jersey for three years, delivering a robust software solution with end-to-end integration and reporting. Standing up a new software solution during the height of the COVID-19 pandemic was not without challenges.

Over the three years Dimagi partnered with NJDoH, stakeholders worked to find the right balance between adhering to our project management methodology and being nimble in the face of an extraordinary public health emergency. Three areas that added complications to the collaboration were right-sizing a project management methodology for the emergency landscape, managing user onboarding, and developing a support team structure.

Balancing Flexibility and Process

Without breaking process safeguards, Dimagi and NJDoH needed to balance flexibility with project management best practices. After a three-month rapid deployment to get the application and data system as soon as possible, Dimagi resumed a standard sprint-based approach to technical project management. However, the Department and CDC were regularly releasing new protocols that needed to be incorporated in the software. To meet this challenge, Dimagi proposed a process of interim sprints. These sprints could be declared ad-hoc if required to address a policy priority. This approach meant that Dimagi deviated from established Agile processes; Dimagi risked introducing bugs or issues due to the speed of implementation. To mitigate this concern, NJDoH and Dimagi openly and candidly evaluated each change to determine if the risk was justified and if minimum safeguards could be maintained. While the interim sprint approach wasn't optimal from an Agile process standpoint, it was necessary for effective emergency response.

Rapid, Scaled User Onboarding

User administration proved a core feature of the collaboration. To meet the case investigation and contact tracing needs prompted by the COVID-19 pandemic, Dimagi and the New Jersey Department of Health (NJDoH) had to rapidly onboard thousands of workers. This emergency required a large-scale, remote training effort. To mitigate the challenges of bringing thousands of users online, Dimagi and NJDoH came up with a plan to support the staff. This included providing online video tutorials, hosting ample office hours, and establishing a robust support team. These measures helped ensure that the onboarding process was smooth and efficient, and that the users were well-supported as they conducted their priority work.

Tiered support during pandemic response

Dimagi and the New Jersey Department of Health (NJDoH) successfully implemented a tiered escalation approach for support, where NJDoH managed levels one and two support teams, while Dimagi handled level three. While this support model is common, it was noteworthy that we were able to stand up a help desk in mere weeks. We honed a strategy that ensured NJDoH maintained strong frontline relationships with city and county workers, while Dimagi focused on complex troubleshooting and escalations. Given the large volume of workers rapidly coming online for the pandemic response, this approach allowed NJDoH to efficiently manage day-to-day support, while preserving Dimagi's expertise for more challenging issues. Dimagi provided extensive remote training for the support desk and supplied comprehensive documentation, empowering NJDoH's team to handle most support requests effectively. This tiered approach proved highly effective in supporting the large workforce, ensuring seamless operations and enabling both NJDoH and Dimagi to operate at their best even during the pressure of the pandemic emergency.

h. Explain which of the proposed staff for the MCH scope of work have worked on these projects and in what role

Some of our proposed Vital Staff played key roles in the New Jersey project, specifically:

- **Executive Lead (Sarah Sagan):** As the Executive Lead of the New Jersey project, Sarah was accountable for the overall success, confirming risk mitigation strategies, and providing continuous feedback and consultation to the New Jersey executive teams.
- **Account Manager (Lily Olson):** Lily served as the point of contact for escalated account issues, account renewals, contracting discussions, and SOW development/expansion, ensuring seamless communication and satisfaction.
- **Implementation Lead (Lauren Fox):** Lauren was the New Jersey project manager, overseeing the overall implementation of each project phase, managed the Dimagi technical project team, and ensured quality service delivery throughout the project.

Dimagi offers exemplary staff for additional roles we consider important, many of whom worked on the New Jersey project, including:

- **Application Configuration Analysts (Kate Hildebrand):** Kate similarly served in an application configuration function for the New Jersey project, where they participated in the full sprint lifecycles from requirements definition to configuration to testing.
- **Data Engineer (Shu-Chun Lu):** Shu-Chun served as a Solutions Architect on the New Jersey project, offering strategic design specifications.

2. Executive Summary

The envisioned future state for Indiana's timely, transparent, and collaborative care for maternal and child health necessitates a robust and integrated data system. Dimagi's proposal offers the Indiana Department of Health (IDOH) a true, mission-driven partnership for this technology project. Our flexible solution and dedicated team enable IDOH to reach its goals of healthy pregnancies and healthy babies across the state.

Dimagi's Partnership Approach and Experience

We are not just a vendor but a true partner, dedicated to delivering user-centered design through our hybrid agile methodology. Our project management controls ensure delivery on time and within budget. Dimagi has a long history of successful program delivery, including maternal health projects worldwide and significant regional and state-level projects, such as the Colorado Behavioral Health Administration (CO BHA), Vermont Social Care, and COVID-19 management in New Jersey and New York.

Our proposal describes in detail our approach to providing design, development, and implementation (DDI) and maintenance and operations (M&O) services (including enhancements) for a Maternal and Child Health (MCH) Data System to support IDOH's MCH Division and its partners.

Proposed Solution

Our proposed solution is a fully-managed SaaS system that leverages a combination of Commercial-Off-the-Shelf (COTS) components for data infrastructure and Dimagi's own Low Code Application Platform (LCAP), CommCare, for web application configuration.

CommCare Platform

The platform allows the project team to build a customized web application for the MCH Data System with features that prioritize a positive user experience for multiple roles. Some key functionalities that meet the MCH requirements include:

- **Configurable Workflows and Business Logic:** CommCare enables a wide variety of diverse users—from case managers to program providers—to track and complete important tasks and receive in-line decision support that guides them step-by-step through their workflows.
- **Role-Based Access and Experience:** Access to all records, data points, workflows, and functionality in CommCare is granularly controlled by role-based permissions that protect client confidentiality and provide users with a streamlined interface designed to fit their unique needs.
- **Automated Communications:** CommCare Messaging allows organizations to build sophisticated conditional alert messaging through SMS or emails. Messages can be customized based on the recipient's data and can be triggered automatically by business logic in the CommCare solution.

Data Platform

Our solution leverages AWS hosting for leading security, scalability, and reliability. Tools allow for bidirectional connection with the state's sources, regardless of hosting. Key components include:

- **Snowflake:** Super-efficient, consumption-based pricing allowing for data to be configured in alignment with CommCare's client-centric data model that can adapt over time.
- **Tableau:** A flexible data visualization and reporting tool that allows Dimagi and State users to create custom reports and dashboards in alignment with IDOH reporting requirements. Reports can be accessed within CommCare for a seamless reporting experience or directly within the Tableau system for authorized users.
- **AWS Entity Resolution:** A machine-learning powered entity resolution service provided by Amazon Web Services will support duplicate resolution and creation of whole-person, client-centered views.

Proposed Project Team

Dimagi's proposed staff resources offer IDOH a team with deep relevant experience, including many who have worked on our comparable system with the State of Colorado. The project team also includes our experienced staff and meaningful data deliverable contributions from two Indiana-based subcontractors, CSpring and Metamor Systems. Both CSpring and Metamor Systems bring years of relevant experience working with Indiana's state agencies on data systems, including substantial cloud DDI. They have worked alongside each other and bring a collaborative approach to Dimagi's joined team.

CSpring

- **In DDI:** Supports requirements gathering relevant to data migration and integration, working with source system owners to gain access to data and data information, evaluate the scope of the data, and assess available transport methods and technical and business readiness for data movement. Executes data migration activities including data assessment and documentation, data extraction, transformation, and loading.
- **In M&O:** Participates in evaluation and execution of change requests for system fixes or system enhancements relevant to data areas in their expertise.

Metamor Systems

- **In DDI:** Executes integrations/data ingestion for initial 7 data sources, sets up MPI & matching settings, enforces data quality and relevant reports, and provides documentation & technical assistance for Dimagi data engineering team.
- **In M&O:** Maintains interfaces including minor adjustments if needed to reflect source system or MCH Data System changes.

Proposed Design, Delivery, and Implementation (DDI) Approach

Dimagi's approach to DDI emphasizes a hybrid agile methodology with overlapping phases of design, configuration, and testing to maximize learnings and outputs in the 18 month period. This allows for efficient delivery and adaptation to evolving requirements, ensuring that the

project remains on track while meeting the dynamic needs of IDOH. The hybrid agile methodology promotes continuous stakeholder engagement and iterative improvements, fostering an environment of collaboration and transparency.

Dimagi is your mission-aligned partner for true public health impact. As a certified B Corp, we maintain increasing maternal and child wellness as the top project priority. Our internal values and operational structures ensure that impact comes first. With our experienced team and skilled subcontractors, we offer a powerful, flexible, and scalable solution tailored to meet the needs of IDOH both now and in the future.

3. Background and Experience

Dimagi acts as the technical services provider to Colorado's Behavioral Health Administration (BHA) to support Behavioral Health care coordination across the State. While Dimagi's engagement with BHA is the flagship project highlighted below, Dimagi's engagements with the States of Vermont, New York, and New Jersey (described in [Section 1. Minimum Requirements](#) above) speak to the sustained commitment and experience partnering with State governments.

1. Dimagi past delivery of system solutions and services similar in size and scope to MCH Data System

a. Client, project description, functionality, hosting, roles, solution status, and project results

Dimagi's work with the State governments of Alaska, Colorado, New Jersey, New York, and Vermont inform this proposal. While our combined experience informs our proposal for IDOH, Dimagi's work as the technical services provider to Colorado's Behavioral Health Administration (BHA) remains the most similar in project needs to the MCH Data System.

Project Description and Goals

Dimagi partners with BHA to design, build and deliver solutions for behavioral health care coordination. The agency's goal was simple: leverage technology to coordinate care and speed up patient access to lifesaving treatments and interventions. Dimagi's work supports this goal by providing key technical solutions that enable this outcome - connecting patients to quality care and service delivery with efficiency and speed.

Solution, Functionality, and Hosting

Dimagi developed the following solutions for the State, hosted in our AWS environment and leveraging both our Dimagi Data Platform and our CommCare platform – *the same solution components proposed for the MCH Data System.*

- **Central Registry:** A database for providers to track clients undergoing Medication Assisted Treatment (MAT). This registry enables providers to complete intake quickly, as soon as they determine within the registry that a client is not already enrolled at another facility.
- **Provider Directory:** A searchable directory for all behavioral health providers in Colorado. Users can search for available services using multiple filter types such as

bed type, gender, age, and location. There are also user-friendly, low-burden options for managing and updating bed availability by the facility staff.

- **Bed Capacity Tracker:** A real-time view of behavioral health bed capacity and service availability.
- **Referrals:** A tool for matching and directing clients to services based on their needs and facility availability.
- **Reporting:** Development of data lakehouse and metrics dashboards for State and provider users.

Additionally, the **Dimagi Data Platform** for BHA includes a managed integration pipeline from CommCare to Snowflake and embedded Tableau dashboards layered on top. This environment also enables integrations with external data sources around the State of Colorado. While Snowflake and Tableau ended up being the preferred tooling for BHA, Dimagi has experience using a wide range of tech stacks. Ultimately we will leverage the tooling best suited for IDOH's needs. The already developed **Performance Hub** is housed on a public website that BHA will publish for Coloradans to have unique visibility into key behavioral health metrics and outcomes being monitored by the State.

Delivering an expansive care coordination system informs Dimagi's proposed approach to the MCH Data System. We recognize that – similar to the resulting tool for MCH – the technical solutions developed for BHA required accounting for several disparate programs and workflows. For example, The Provider Directory and Bed Capacity Tracker are provider management tools, whereas the Central Registry and Referrals are case management tools. This included inpatient and outpatient providers, community clinics, etc, as well as State administrative users. Teams as varied as crisis response to formal behavioral health provider networks needed to find value and meaning in the technical solutions.

Dimagi Project Role and Duration

Dimagi serves as a prime vendor delivering ongoing comprehensive services since its kick off in January 2022. Our role is as lead technology partner, delivering project management, strategic design recommendations, performing DDI for new solutions and M&O for production solutions, Tier 3 Help Desk, and train-the-trainer and capacity building enablement. Our team also manages the Dimagi Data Platform instance for BHA, providing both strategic and daily execution of data management activities.

Current Solution Status, Project Status, and Results

This project leverages phased implementation over the course of several years as it expands to meet the needs of an increasingly broad and diverse number of stakeholders. Dimagi remains an active partner of the State. The project is ongoing, with Dimagi incrementally introducing additional tools and functions according to the project roadmap.

The **Central Registry** solution and **data platform** have been in active use for the past year. As of June 2024, the **Bed Tracker** is launched, with a target user base of 450 by August 2024. The performance hub is set to go-live on July 1, 2024 with 12 key measures. The **referrals system** is currently undergoing user testing.

The results surpassed the initial goal. The platform supported nearly 9,000 admissions in 2023, expediting an intake process that previously took between 1 - 4 days to less than a day, and with much less hands-on involvement from the state. Further, the solution has identified more than 2,250 instances of duplicate identifications since go-live. We achieved the Colorado legislative mandate of a bed tracker and MAT registry rollout. The Dimagi Data Platform components support administrative burden reduction through planned Treatment Episode Data Set (TEDS) and other reporting mandates.

b. Describe any problems and failures that you encountered in delivering your services, how these were resolved, and what the lessons learned were.

Active learning is a Dimagi core tenet. Our experience working with Colorado BHA provided ample opportunities for continuous learning and improvement - ultimately yielding to better programmatic implementation and design.

System performance

Dimagi has a robust protocol when it comes to monitoring and testing the performance of the CommCare platform. Through our work with BHA, we worked to hone the external communication around system performance. We wanted to ensure there was a common foundation by which we could declare performance was in a desired/acceptable state or where there may be indicators for further investigation.

As a first step, we established green-yellow-red (GYR) benchmarks with our partner to measure the speed of specific actions within the system. We developed user-facing monthly reports based on these benchmarks and examined outlier data. This collaboration led to monthly performance meetings between Dimagi and Colorado, fostering a nuanced, mutual understanding of what constitutes "good" performance. This is now a hallmark of our M&O strategy. As usage increased and usage patterns evolved, we scaled accordingly. When data indicated results outside the Green norm, we worked with the partner to determine if these were leading indicators requiring further investigation or just outliers.

Dimagi understands the importance of a user's first impression. If a system is fast and easy to navigate, users are more likely to engage with it. Dimagi embraces strategies that reduce administrative burden for end-users through creating an enhanced user experience. Achieving this through proactive identification and enhancement of interfaces ensure we can best tailor technical solutions to users' needs and workflows. Our goal was not only to address pain points but to enhance the user experience in a way that delights the user, thereby encouraging continued engagement.

Expanding our content expertise

Dimagi is proud of our work with the State of Colorado, and we did an incredible amount of design and development work to build a sustained partnership. Building on the momentum of our work with Colorado during the COVID-19 pandemic, Dimagi was thrilled to be awarded the opportunity to develop a Medication-Assisted Treatment (MAT) registry and bed capacity tracker for a new state agency, the BHA. While we had extensive experience in care coordination, we embraced the opportunity to deepen our understanding of the specific needs of substance use disorder providers.

BHA counterparts encouraged Dimagi to take a more proactive role in shaping the product vision. To complement our own expertise, Dimagi hired a consultant who was himself a provider. Doing so enabled us to provide a more nuanced perspective during requirements discussion and project planning. For example, one key insight from our consultant was that the bed tracker alone would not motivate providers; the primary pain point was navigating referrals. We used this observation to shape our inputs about the product vision and goals. This feedback on provider needs was later confirmed by an external discovery report commissioned by BHA.

Dimagi recognizes the importance of leveraging subject matter experts to bolster our expertise in order to deliver the best solution for our partners. For our work in Indiana, we achieve this same spirit through robust subcontractor partnerships and continuing to lean on a project management methodology that efficiently gathers state perspective. We plan to work with Indiana-owned small businesses for our MBE and WBE vendors, notably those with experience in data platforms for Indiana HHS agencies and State of Indiana Data and Analytics executives.

Multi-source data integration

When Dimagi's work in Colorado began, our focus was exclusively on building a provider-facing tool. However, the needs soon evolved. To support the work of the Behavioral Health Administration (BHA), the Office of Information Technology (OIT) sought a suitable data platform product and management services offering. Dimagi took on a product management role for the data platform, leading the strategy implementation. Our experience highlighted a crucial truth: integrating data from multiple sources is complex but achievable with clear objectives and requirements, data quality and consistency, comprehensive data mapping, and effective ETL tools. Partnering with OIT, we ensured strong data governance, scalability, flexibility, thorough testing, and facilitated communication and collaboration. Comprehensive documentation accompanied all tools. By prioritizing these elements, the BHA data platform project achieved seamless, reliable integration, significantly enhancing data quality and insights. We look forward to bringing this experience to IDOH.

Product roadmap

One hallmark of CommCare is that standing up the platform can be as efficient as COTS solutions, yet offers the ability for tailoring to a partner's need. This tenet of CommCare is something we find excites and compels organization. For a project like BHA, it requires many months of DDI to hit all workflows and requirements. In contrast, for a smaller engagement like the one with Vermont, we were able to set up a basic solution in about a month.

With this high degree of platform flexibility, it can often feel to our partners that solutions configured on the CommCare platform are in fact custom solutions. Many of the customization we achieve is through configuration on the platform, and it doesn't involve the actual code base. Some requests from partners go beyond the current configuration platform and would require changes to the base platform code. What this means is that despite the highly custom look and feel of our solutions, there are some boundaries to the degree of customization that we can achieve. With the platform approach, we anticipate being able to train IDOH team members on making minor changes to the platform (copy edits, language changes, user administration) if that were to be desired. Dimagi has experience training external partners on managing aspects of the platform in both the DDI and M&O phases.

As part of our standard engagement planning, Dimagi and BHA co-worked a requirements backlog. These requirements were categorized as either configuration tasks (meaning they could be handled by the project team directly) or feature development (meaning they would require our engineering team to weigh in). To provide more context about the configuration vs. feature development approach, we set up a recurring monthly meeting with the BHA Product Team and Dimagi's CTO. These meetings provide the space for alignment and sharing of priorities across teams. We want to make our executives available to our partners, and we plan to embark on a similar approach with Indiana. This approach thwarted any risk of misalignment on Dimagi's broader product strategy and created a productive forum for brainstorming and discussion.

2. Dimagi M&O experience for similar systems.

Dimago offers IDOH substantial M&O experience for similar systems, including those with the same solution components as our proposed MCH Data System. As Dimagi's flagship offering, the CommCare platform is part of nearly all our projects. The Dimagi Data Platform is increasingly present in our portfolio for US government clients. The following highlights our experience with various M&O services.

From the moment of kickoff, Dimagi project managers work with State governments and stakeholders to map out a project plan that ensures active development work be gradually replaced by the steady-state maintenance of the tool.

Dimagi believes transition between DDI and M&O work best when it's a slow wind-down of DDI processes and procedures, gradually replaced by stabilization and then eventually a wind-down to steady state. Our technical ecosystem and project management ethos are designed with the understanding that maintenance must be the end state, and we ensure all solutions are purpose-built with this in mind. The details of our M&O proposal can be found In [Section 14, Maintenance and Operations \(M&O\)](#).

Infrastructure Management

Dimagi's technology encompasses three layers - Solution, Platform, and Infrastructure - to provide consistent system availability, performance, and support. This multi-layered strategy guarantees system stability and reliability even as the program evolves to meet changing needs. A team of dedicated cloud engineers manage Dimagi's AWS infrastructure, including its security, availability, processing, and scalability components. Dimagi has honed our infrastructure management approach through over two decades of experience implementing and maintaining solutions.

Application Monitoring

Monitoring and testing are essential components of both the DDI and M&O phases, and monitoring is conducted daily. For our Colorado BHA project, Dimagi configured automatic alerts to monitor application performance and ensure adherence to prescribed thresholds. We operated a similar alert approach during our engagement with the State of New York for COVID-19 response. Using a mix of automated and manual methods, we evaluate the performance of all applications to ensure performance against projected user load and different usage pattern scenarios. The transition to a monitoring-first approach happens only

once we're confident that the testing has given us enough baseline information to understand how the tool performs under different load and stress-test environments.

Dimagi's monitoring tools ensure the performance of the future MCH Data System and are included in our SaaS offering. Our platform team performs regular analysis (through managed alerts as well as Application Level, Hardware level, Service level monitors) of our multi-tenant SaaS cloud of resource utilization across 800+ tenants to identify the need for additional cloud hardware resources based on key growth and proxy metrics (transactional throughput, etc). Our monitoring tools and approach are described further in [Section 6. System Security Requirements](#) and [Section 14, Maintenance and Operations \(M&O\)](#).

Incident Management

Incident identification and triage are critical processes in Dimagi's incident management plan that involve the definition, assessment, and prioritization of problems, incidents, or requests for resolution. Dimagi provides incident management as part of our M&O for all current programs, aligning triage and escalation to similar severity levels provided in Attachment K. The first and most important action is reporting the identified issue through a Jira support ticket. This becomes the first point of contact for all tiered helpdesk and support team models we oversee. Tickets are triaged by severity, then moved to resolution. Dimagi's engineering team has a team on-call, ready to drop work at a given moment to take on high-severity outages or blocking issues. For all incidents, regardless of severity, Dimagi prides itself in remaining in regular communication with help desk teams. The detailed incident management proposed for IDOH is found under [Section 14, Maintenance and Operations \(M&O\)](#) below.

Access management

Access controls to system resources will be provided under the approval of the State. Dimagi supports scaled operations, including overseeing user management and associated access permissions. CommCare enables administrators to craft the set of access permissions that meets their needs, while safeguarding data integrity. Using the Colorado BHA user management approach as an example, an access management plan accounted for differentiations among user groups based on roles and locations. The ability to customize roles based on system design and need is a unique strength of CommCare. For example, BHA needed to set up roles that differentiated the level of access between facility users vs. facility administrators. Administrators had access to a larger set of client data than the standard facility user who only could view information in their queue. Layers on top of the user roles are location-based access restricted. It was critical that only users who had the authorization to view data outside a single facility - for example, statewide administrators - received permission to do so.

Help Desk

The Dimagi Support Team is actively involved in technical support for all projects using a CommCare based solution. The Dimagi Support Team is expertly trained on issue triage, communication, and resolution. The Support Team maintains guiding tenets for their work that include being experts in CommCare and being the voice of the user. As such, the team not only delivers exceptional issue resolution but also identifies any potentially beneficial product updates or additional user training.

Dimagi's tiered support desk model has been implemented in a wide-range of projects: from standing up as a cross-departmental utility during COVID-19 emergency surge response to embedding into tech support processes within a new behavioral health agency. Dimagi's technical support structure enables users to report issues through an online ticketing system. The Support Team follows up via email to the requester, moving to conversations on chat systems or phone calls as necessary. The Dimagi Support Team is available to address high severity issues 24/7, including weekends and holidays.

In the New York COVID-19 engagement, Dimagi developed a resource library to support the Tier 1 help desk triage tickets and resolve any low-hanging fruit. In particular, we ensured that the help desk could resolve the vast majority of any password reset or associated log-in issues - these had the tendency to clog the queue and were relatively simple for the help desk to resolve on their own. Of priority was to validate that issue escalation occurred seamlessly; There was a clear hand-off practice to both escalate and de-escalate issues as appropriate.

Tier 1 and 2 helpdesks received recurring remote training from the Dimagi Tier 3 help desk. Dimagi has worked with both help desk contractors as well as training state employees to serve on a help desk; our training practices are flexible to need and can be right-sized accordingly. In the early maintenance phase of the engagement with the State of New Jersey, Dimagi set-up weekly office hours where help desk staff could ask questions of Tier 3 and report out on any issue trends they were observing. This insight helped to inform subsequent training and often led to new requirements for solution development.

Business Continuity & Disaster Recovery

Dimagi routinely provides business continuity and disaster recovery (BC&DR) as part of our solutions M&O. Offered as a SaaS product, Dimagi maintains BC&DR as a fundamental part of our general platform maintenance. Customer data collected through the CommCare platform is protected by a continuous backup system that is recoverable to any point in time. All primary data is backed up at least once a day and all backups are stored in multiple data centers. Data is securely hosted in AWS East Region (Virginia), and our services are strategically distributed across multiple regions, effectively mitigating single points of failure. Additional information about hosting is in [Section 4, Proposed Solution](#) below.

Dimagi's disaster recovery planning is a routine part of our government project work.

- **Disaster Recovery Testing:** The Dimagi Site Reliability Engineering and the Corporate Operations teams maintain a Business Continuity Plan and Disaster Recovery Plan, which details its approach and procedure to backups and disaster recovery. This is tested annually. Please refer to our Business Continuity policy in the Attachments to this response. These scenarios and strategies are consistent across the technical layers, including DevOps, data, and reporting.
- **Disaster Recovery Execution:** In case of events requiring enactment of disaster recovery, Dimagi will execute according to the established plan. This includes returning the MCH Data System to full availability, and a debrief with stakeholders and refinement of current plan to strengthen approach to future incidents.

Please see additional information in [Section 11, Disaster Recovery and Business Continuity](#).

3. Formal corrective actions under previous contracts

N/A. Dimagi has experienced no formal corrective actions under previous contracts.

4. Best Practices

Lessons learned by Dimagi and our subcontractors, CSpring and Metamor Systems, inform our proposed approach and offer IDOH seasoned partners for the MCH Data System.

Stakeholder discovery should be prioritized and conducted transparently.

Investing in robust stakeholder discovery is crucial. This process uncovers current pain points, both related and unrelated to technology systems, and identifies motivations that drive user engagement and satisfaction with the new system. Stakeholder discovery encompasses various user groups, from state administrators to providers and patients, and may even reveal previously unaccounted-for groups.

Discovery also highlights sensitivities that impact rollout planning. For example, users dismayed by a previous cumbersome technology rollout may need a gentler introduction this time. Even if discovery was conducted prior to the RFP, it should be revisited to confirm assumptions and understand the current user base. This effort informs the Communication Plan and user onboarding strategy. For instance, in the Colorado BHA project, stakeholder feedback revealed that adding referrals functionality to the mandated bed capacity system would incentivize provider use, reshaping the original release roadmap. Sharing these discoveries in a public forum and inviting feedback fosters transparency and inclusivity.

User Acceptance Testing is an important step that should be approached strategically.

User acceptance testing (UAT) offers more than just solution validation. Gaining user buy-in begins with thorough stakeholder discovery and continues with thoughtful UAT. Dimagi includes UAT in the DDI and M&O phases, tailored for the expectations of each part of the project. Early-phase UAT involves identifying super users or early adopters who are willing to share candid feedback and testing the system in real-world settings. Long-term, UAT becomes part of the testing process to ensure the system requirements continue to conform to needs and address identified pain points.

Recruiting and keeping participants engaged is vital to success. Dimagi recommends naming a State staff member who is responsible for user engagement to support UAT, training, and onboarding. Moreover, recognizing and rewarding UAT participants is important. These users often contribute alongside their regular duties. Acknowledging their efforts through public shout-outs, invitations to state conferences, and linking system improvements to their recommendations boosts morale and engagement. These users often become product champions, making UAT part of user adoption and satisfaction strategies.

Establishing decision making processes and roles prevents project roadblocks.

Engaging diverse stakeholders and securing their buy-in is crucial in the early project phases. Equally important is knowing which State staff make which decisions for the project. Knowing who must sign off on final deliverables, trade-offs, priorities, or decisions is key to progressing the project. A simple RACI matrix can delineate accountable parties.

When friction arises, it's vital to have a clear tiebreaker or decision-maker. Consensus decision-making can be inefficient and confusing. For this RFP, we assume the MCH Project Manager will be the principal decision-maker, a path that should be reaffirmed as the project progresses and needs evolve.

The State can set data projects up for success well before kick off.

Effective data migration and interfaces are critical to the success of the MCH Data System project. Projects like the MCH Data System often face delays and challenges due to unprepared source data systems and processes. Based on lessons from both Dimagi and our subcontractors - CSpring and Metamor Systems - we recommend the following best practices to ready for data migration an interface work:

- **Ensure data access:** Develop source controlled, programmatic data pipelines whenever possible to ensure engineering transparency, automated testability, quality, auditability, and rollback capability in case of design pivots.
- **Prepare for Data Analysis:** Review and update documentation for each source system, including record volumes or rates and up-to-date data dictionaries. This preparation ensures a thorough understanding of the data landscape and informs more accurate planning and execution.
- **Identify Key Stakeholders for Active Project Involvement:** Having a primary system owner for source data allows for more effective coordination. Key stakeholders should be actively involved in:
 - Data access provisioning
 - Testing and promotion activities
 - Identification of source system changes that impact the existing interface, such as changes to metadata or structure

4. Proposed Solution

1. Proposed Solution for MCH Requirements

Ensuring access to high-quality, timely maternal and child health services for all Hoosiers requires a meaningful technical solution that is easy to use, highly scalable, and responsive to the needs of IDOH's diverse internal and external stakeholders. Dimagi proposes a cloud-hosted, SaaS solution joining CommCare and the Dimagi Data Platform to meet the IDOH requirements and prepare for years of MCH Data System operations.

a. Solution Details

*Dimagi proposes a cloud-hosted, SaaS solution that joins two primary solutions: **CommCare**, Dimagi's open-source low code application builder (LCAP) platform, which will serve as the end user-facing web application, and the **Dimagi Data Platform**, a suite of industry-leading tools for data exchange, transformation, storage, and reporting, described further in [Section 4, Proposed Solution](#) below.*

About CommCare: The Case Management Web Application for MCH

Dimagi manages and implements [CommCare](#), the world's most widely-used open source data collection and service delivery platform. CommCare is a low-code application builder platform (LCAP) featuring an intuitive, easy-to-use application builder interface leveraged to configure bespoke case management solutions without investing in one-off custom software development. Dimagi works with partners to efficiently co-create tailored solutions that meet their unique needs, including defining optimal workflows and integrating CommCare into existing data ecosystems.

The Feel of a Custom Solution with the Power of a Low Code Platform

CommCare's easy to use form builder, advanced support of multiple user experiences, and robust interoperability enable the construction of truly localized solutions without the burden of custom development. Post launch, CommCare empowers administrative users to quickly update the system using its intuitive, no code configuration capabilities, making it a flexible and sustainable platform for long term use. CommCare's ease of update enables incredible responsiveness to user feedback, ensuring users never feel locked into a solution that's not working for them.

While CommCare's flexibility results in a solution that feels custom, its platform backend provides a number of benefits for IDOH, including:

- Rapid solution development and iteration, enabling responsiveness to project needs
- Extensive configurability to meet unique user needs beyond COTS solution offerings
- A SaaS model offering that is fully supported by Dimagi during ongoing M&O
- Access to robust platform functionality that will benefit from continued investment
- Opportunities to take on ownership with no-code, open-source solution
- Ability to use one subscription to deploy multiple solutions or portals (e.g. to support IDOH's variety of external and internal user types and program teams)

A Tested Solution with Proven Impact

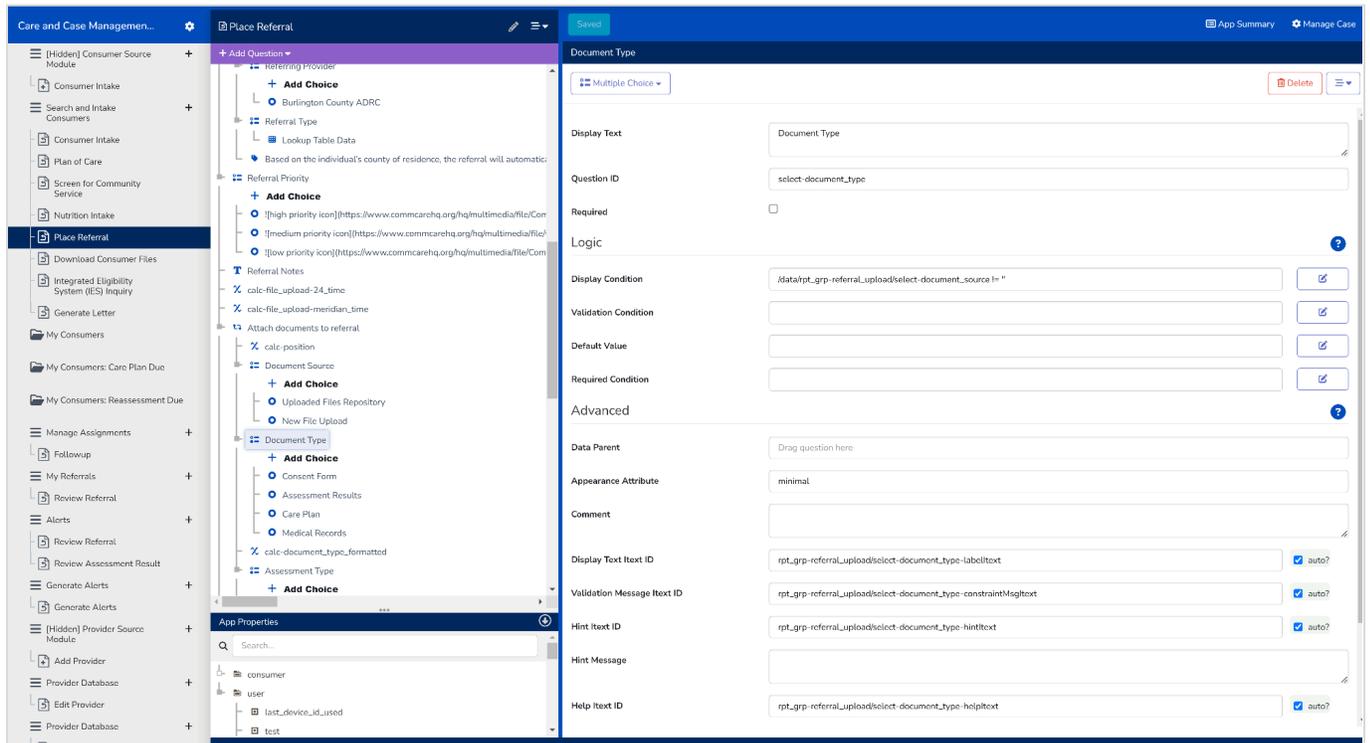
CommCare is backed by an [evidence base](#) of more than 75 peer-reviewed publications, and has supported over one million users to deliver essential health and social services across 130 countries. Named the [53rd most valuable](#) open source GitHub repository out of 96 million, CommCare has become the platform of choice for statewide public and behavioral health deployments in several US states, including New York, New Jersey, Colorado, and Alaska for its high level of configurability and unique capacity to scale.

CommCare Functionality Overview

Many areas of pre-built capabilities make CommCare an effective solution for the MCH Data System end-user case management application.

Customizable User Workflows: CommCare's low-code application builder empowers the design of custom workflows tailored to the needs of IDOH's diverse program areas. Instead of navigating through cumbersome menus, users are guided step-by-step through sequenced tasks determined by configurable business logic. Users can be seamlessly moved from one screen to the next within a workflow or prompted to choose their next action.

Figure 1: CommCare's Low Code Application Builder Interface



Role-based access and experience: Access to all records, data points, workflows, and functionality in CommCare is granularly controlled by role-based permissions that protect client confidentiality and provide a streamlined interface designed to fit their unique needs.

Assignments and Task Tracking: The ability to create tasks, associate tasks with due dates, and assign tasks, cases, or clients to individual users or user roles streamlines operations and enables seamless routing of tasks from one user to the next. CommCare automatically alerts users to overdue or soon-to-be-due tasks, facilitating prioritization and ensuring nothing falls through the cracks.

Highly Configurable Forms for Data Entry and Workflow Support: CommCare's drag and drop form builder interface allows for quick and easy configuration of custom data collection forms. These flexible forms can be leveraged by all authorized users to view data and enter data directly into the system across a wide variety of workflows ranging from documentation of screening results to logging contacts with clients or programs. CommCare forms are explicitly designed to minimize the data entry burden on users, reduce the risk of incomplete or inaccurate data entry, and guide users through their workflows. All data submitted using CommCare forms or received from other systems via integration is displayed in real time to authorized users. CommCare automatically maintains an audit log of all data recorded, updated, or deleted using forms for auditing purposes.

Figure 2: An example of a referral form in CommCare

Place New Referral

Referral Date:

Referring Provider: Burlington County ADRC Clear

Referral Type:

Based on the individual's county of residence, the referral will automatically be sent to the **Office of Community Choice Options (OCCO) Southern Regional Office.**

Office Details

Address	Phone	Fax	Counties served
852 South Whitehorse Pike, Hammonton, NJ 08037	(609) 704-6050	(609) 704-6055	Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Monmouth, Ocean, and Salem

Referral Priority: High Medium Low Clear

Referral Notes:

Submitting this form will send an email to the provider with the referral information.

Robust Search and Deduplication: CommCare's robust search functionality allows users to search across any data elements stored in the system and utilizes fuzzy or Soundex search (*i.e.* misspellings or similar names) to ensure a complete list of potential matching records or duplicates is presented. To minimize the risk of duplicate record creation, users can be prevented from creating a new record if specific criteria are met, such as if a record already exists with a matching SSN or other unique identifier. In the event that duplicate records are identified, CommCare provides robust deduplication functionality, including the ability for authorized users to flag potential duplicates for review, compare demographics and other information across duplicates, and merge duplicate records when appropriate. Systematic deduplication of ingested data occurs before reaching CommCare with the proposed MPI.

Figure 3: Configurable search allow users to search on any data point stored in the system

Clear
Search

First Name:

Last Name:

Date of Birth:

SSN:

Medicaid ID:

Medicare ID:

Client ID:

Sort By ▾

Maxwell Momford

Complex Care

Client Demographics

Gender: Man (he/him)
 DOB: 09/29/1948
 SSN: 900-48-4903
 Client ID: 25OIGE
 Medicare ID: 1EG4-TE5-MK73

Open Tasks

- Assessments: PHQ-9
- Contact Request

Tawnya Strangman

Housing Status Justice Involved

Client Demographics

Gender: Woman (she/they)
 DOB: 12/08/1965
 SSN: 900-29-3029
 Client ID: PQ7ZPX
 Medicaid ID: 1K34-ZZZ-KP39

Overdue Tasks

- Assessments: Social Determinants of Health

Open Tasks

- Create Care Plan

Supporting IDOH MCH Objectives

Commcare and the Dimagi Data Platform offer functionality to effectively enable the four business processes IDOH envisions for the future state of MCH care delivery.

Proposed Solution Capabilities to Support Healthy Pregnancies

Our proposed solution offers capabilities needed to identify pregnancies, create or update associated health profiles, and connect patients to services.

Desired future state business process:

The process identifies a pregnant woman, creates, or updates her health profile, connects her to services, and notifies her of healthy pregnancy programs and resources that are available.

In the future state, internal and external groups with access to the MCH system will create or update the woman's health profile (including pregnancy status). Based on pregnancy status, the woman's ZIP code, and other factors, the system will auto-notify the woman of the healthy pregnancy programs for which she is qualified. Care coordinators will then create program referrals for the woman upon request or enroll the woman directly in programs if the coordinator is authorized to perform enrollments.

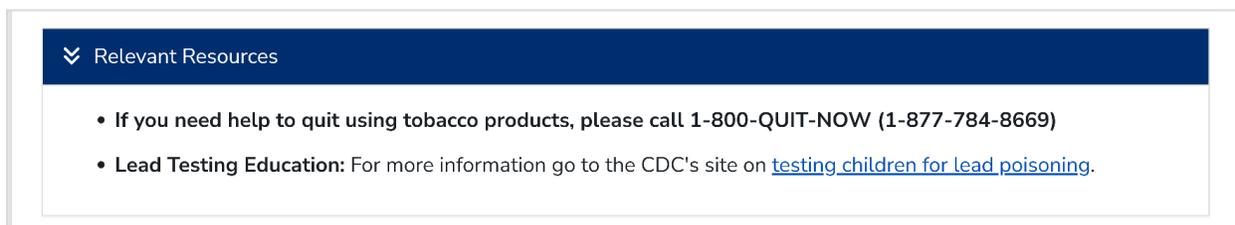
Comprehensive and Customizable Health Profiles

CommCare presents data ingested from IDOH source systems and data collected directly within the MCH Web Application in a unified health profile, presenting a longitudinal whole-person view of a pregnant person, their care needs, and services and programs in which they are enrolled. CommCare health profiles are entirely customizable and can be tailored by user role, ensuring that each user type sees only the information relevant or essential for their work and protecting client confidentiality. Ingested data automatically updates health profiles.

Automated, Tailored Resource Recommendations

CommCare's configurable business logic allows the system to automatically generate lists of tailored resource and program recommendations for clients based on system data, including client zip code, pregnancy status, income, insurance type, and other demographic information. Resource recommendations can be presented to the care coordinator or other users within the system or automatically shared with the client via their preferred communication method, including SMS or email.

Figure 4: Tailored Resource Recommendations Presented in CommCare



Proposed Solution Capabilities to Support Healthy Newborns: Connect to Resources
Our proposed solution offers capabilities needed to identify newborns, create or update associated patient profiles, store key health data, and connect them to services.

Desired future state business process: This process identifies a newborn, creates or updates the newborn's health profile, creates a birth mother's profile (if needed), creates primary parent records, connects the parents of the newborn to services or provides outreach (if possible), and notifies the parents of healthy baby programs and resources that are available. In addition, this process registers birth defects and collects data on maternal, fetal, and infant mortalities.

In the future state, this process begins with the automated creation or update of a newborn's health profile based on incoming records from the hospital or Vital Records. Based on the newborn's ZIP code and other factors, the system will auto-notify the parents of healthy baby programs for which the newborn is qualified. Care coordinators will then create program referrals for the newborn upon request or enroll the newborn directly in programs if the coordinator is authorized to perform enrollments.

Task Automation at the Point of Ingestion

CommCare's configurable business logic allows system administrators to automate tasks in response to ingestion of data into the MCH Data System. For example, upon receiving hospital or Vital Records data that indicates a birth, CommCare can automatically create a newborn health profile and linked parent records in the system and trigger a series of relevant follow up steps, such as sharing resource and program recommendations with the parents or generating relevant referrals. These tasks can be completed automatically by the system or added to work queues for authorized users to complete.

Automated Communications

CommCare Messaging allows organizations to build sophisticated conditional alert messaging through SMS or emails. System administrators can configure SMS text message and email content. Messages can be customized based on the recipient's data (e.g. preferred language) and can be triggered automatically by business logic in the CommCare solution. CommCare Messaging enables the system to automatically generate a list of resources and healthy baby program recommendations and share them with the parents of a newborn via their preferred communication method, including SMS or email. Bidirectional SMS capabilities allow parents to request further assistance or share back relevant information, such as to confirm enrollment in recommended programs. SMS responses are stored in the system and can trigger related workflows or tasks for users, such as notifying a user that a parent would like to be contacted.

Referral and Enrollment Tracking

The CommCare platform allows for seamless, end-to-end electronic referral workflows, including support for closed-loop referrals, straightforward referral tracking, and the ability to send referrals directly to Visionlink via interface. Referral workflows can be initiated directly or as a follow up to completing an assessment or screening. CommCare assessments can be configured based on business logic to recommend or require relevant referrals based on identified needs. CommCare's configurable referral forms automatically pull in relevant client and provider information and allow users to enter

additional information such as referral priority, referral type, and free text notes to the provider, if applicable. Relevant read-only information, such as existing referrals for the individual or assessment results and outstanding referral recommendations are displayed in the referral form.

CommCare maintains a list of active referrals for referring users, allowing them to easily check in on referral status or follow up on referrals at any time. Referrals can be automatically sorted or sorted by the user, such as by priority or referral date and overdue referrals are flagged automatically, facilitating effective prioritization. This streamlined system ensures efficient coordination and management of care for referred individuals, enhancing overall service delivery and outcomes.

Figure 5: Example Filterable Referral List in CommCare

The screenshot displays the 'My Referrals' page in CommCare. The interface includes a navigation bar at the top with the path 'Home > Behavioral Health Connect > My Referrals'. Below the navigation bar is a search area with 'Clear' and 'Search' buttons. The main content is divided into two sections: 'Client Information' and 'Referral Information', both with expandable/collapsible icons. The 'Client Information' section contains input fields for 'Client First Name', 'Client Last Name' (pre-filled with 'Momford'), and 'Client DOB' (pre-filled with 'MM/DD/YYYY'). The 'Referral Information' section contains dropdown menus for 'Receiving Provider', 'Referral Status', and 'Referral Priority', each with the placeholder text 'Please select one or more'. The central part of the page features a table with the following columns: CLIENT LAST NAME, CLIENT FIRST NAME, CLIENT DOB, RECEIVING PROVIDER, REFERRAL TYPE, REFERRAL STATUS, REFERRAL PRIORITY, DAYS SINCE REFERRAL MADE, and OVERDUE. The table contains three rows of data, all for a client named 'Momford' with DOB '09/29/1948'. The first row shows a referral to 'Bluesky Center' for 'Substance use treatment', with a status of 'Pending', a priority of 2, and 2 days since referral. The second row shows a referral to 'Lakeside Recovery Center' for 'Crisis management', with a status of 'Pending', a priority of 10, and 10 days since referral, marked as overdue with a red person icon. The third row shows a referral to 'Light Hope Agency' for 'Home-delivered meal service', with a status of 'Pending', a priority of 10, and 10 days since referral, also marked as overdue with a red person icon. At the bottom of the table area, there is a small text string: 'Formplayer Version: 2.53, App Version: 879'. A 'DATA PREVIEW' tab is visible at the bottom left of the interface.

CLIENT LAST NAME	CLIENT FIRST NAME	CLIENT DOB	RECEIVING PROVIDER	REFERRAL TYPE	REFERRAL STATUS	REFERRAL PRIORITY	DAYS SINCE REFERRAL MADE	OVERDUE
Momford	Maxwell	09/29/1948	Bluesky Center	Substance use treatment	Pending	2	2	
Momford	Maxwell	09/29/1948	Lakeside Recovery Center	Crisis management	Pending	10	10	🚨
Momford	Maxwell	09/29/1948	Light Hope Agency	Home-delivered meal service	Pending	10	10	🚨

Proposed Solution Capabilities to Support Healthy Newborns: Follow Up Care
Our proposed solution offers capabilities needed to accept screening results from clinical settings, follow up when results are missing, and connect families to care based on results.

Desired future state business

process: This process provides same-day screening results directly from the hospital/birthing center or lab, follows up when tests are missing or not received, and connects the infant to additional care in the case of an abnormal screening.

In the future state, this process begins with the automated receipt of newborn screenings from the hospital, birthing center, or NBS Lab. It may also begin with an alert that indicates that a specific test has not been received within an expected timeframe, and now requires an automated reminder for the hospital. The process will remind the MCH Division and the hospital/birthing center when a newborn receives an abnormal test result and needs to receive a follow-up screening. If needed, the process will continue based on an abnormal result and will begin the follow-up care workflow, which will result in an echocardiogram for an abnormal pulse oximetry screening or referrals to care for an abnormal diagnostic audiology evaluation (DAE). Over time, as MCH capacity increases, the scope and nature of follow-up care coordination will change, and the future state system will support the design of a new workflow.

Interfaces and Client-Centric Data Transformation

Using the Dimagi Data Platform, the MCH Data System interfaces with the State of Indiana systems for automated ingestion of lab results and other clinical data, through processes described in [Section 7, Reporting](#). The data undergoes transformation to reach a client-centric model that enables longitudinal follow up, including amending with updated test results.

Alerts and Notifications

CommCare's alerts functionality notifies users of relevant updates and work that needs to be completed. To minimize the risk of alert fatigue, Dimagi does not recommend that alerts be presented to users in the form of pop-ups. Instead, an alerts badge is located directly on the home screen, indicating the number of new alerts that require attention. Selecting the alerts badge will bring users to their Alerts Dashboard, where they will be able to view, take action on, and resolve their alerts. To facilitate effective prioritization, users may filter and/or sort alerts by configurable criteria, including date, source, type, status, and associated individual. Alerts may also be automatically sorted in the dashboard based on configurable criteria, such as from oldest to most recent, or vice versa. Configurable business logic allows alerts to be automatically marked as overdue once a designated amount of time or an explicit due date has passed, making it easy for users to identify and address the most critical alerts first. CommCare alerts may be triggered automatically in response to data updates or manually by authorized users, either individually or in bulk.

Figure 6: Filterable and sortable alerts lists automatically flag overdue items

TYPE	DATE SENT	SOURCE	OVERDUE
Incoming Referral	10/03/2023	System	
Incoming Referral	10/03/2023	System	
Staff Message	10/03/2023	User	
Exception Approval Required	10/02/2023	User	
Incoming Referral	10/02/2023	User	
Staff Message	10/02/2023	User	
Consumer Record Closed	09/30/2023	User	
Exception Approval Required	09/30/2023	User	

Proposed Solution Capabilities to Provide Timely Reporting and Comprehensive Care Maps

Desired future state business process:

This process allows MCH Data System users to build custom reports from both system data and federal or State data uploaded into the system. It focuses on: 1) the State's needs to assess programs provided by grantees and partners, and 2) the needs of epidemiologists to provide predictive, analytical reports with data that is both cumulative and recent.

In the future state, this process starts with a need for reporting, such as mandated reporting or quarterly reporting by grantees. This process may also start with the desire to research specific information, such as the services available in a certain ZIP code, or the need to perform analysis.

Embedded Reports for a Seamless Reporting Experience

CommCare allows for reports created in the Dimagi Data Platform to be embedded directly within the Web Application, providing users with a seamless experience in which they can view reports and data visualizations in the same interface they use to record data and serve clients. This also ensures that all users of the Web Application with permissions to view and run reports are able to access them through Single Sign On via Access Indiana without the need for separate logins or access to additional systems. Data entered directly within the Web Application user interface or uploaded into CommCare is fed into the Snowflake Data Warehouse for inclusion in reports. For a detailed description of Dimagi's proposed reporting solutions and functionality, please see our response in [Section 7, Reporting](#).

b. A Fully Integrated and Managed Offering

Dimagi's proposed MCH Data System builds off of a technology approach proven by our current, statewide data solutions. All components of the proposed solution are securely hosted through AWS and Dimagi will be responsible for integration of all solution components to ensure efficient data exchange and create a seamless user experience.

Leveraging AWS microservices and other tooling, data from various sources, including CommCare and State systems, can land in AWS s3 which serves as the data lake for the Dimagi Data Platform. From there, similar tooling and design patterns are in place to enable automated load to the Snowflake Cloud Data Platform. Specifically, AWS lambda functions can be called via AWS EventBridge to trigger the raw data pull from s3 to the Snowflake data lake. To create compelling reports, visualizations, and dashboards, Tableau supports a native integration with Snowflake.

c. Solution Roadmap

Based on the requirements provided in the request and Dimagi's experience implementing the proposed suite of technology tools for similar projects, we propose the following solution roadmap. During the project initiation, requirements and design phases of DDI, Dimagi will work with IDOH to adjust as necessary and finalize a mutually agreeable solution roadmap, including exploring different frameworks for organizing the roadmap phases.

This Solution Roadmap places releases into broad categories of functionality by purpose and goal, helping to focus our team on specific users and their workflows at different phases of the project. Specifically, it is organized into:

- **Initiation & Architecture (Months 4-5):**
- **Key Workflow Configuration and Integrations (Months 6-12):** Majority of required system integrations and end-to-end workflows for:
 - Pregnancy Identification & Resources (Months 6-7)
 - Newborn Identification & Resources (Months 8-9)
 - Newborn Screening & Follow up (Months 10-11)
 - Document and Letter Administration (Month 12)
- **Pre Go-Live Stabilization (Month 13)**

Table 1: Proposed Solution Roadmap

Project Month	Web Application Configuration and Development	Data Management and Reporting
<p style="text-align: center;">Initiation & Architecture (Months 4-5)</p> <p>During the first two months of the System Configuration and Development project phase, Dimagi will collaborate with IDOH to lay the foundational groundwork for the CommCare web application and the Data Analytics Platform, including developing the underlying data structure. This period will be focused on completing dependencies for additional, workflow-oriented solution work in months 6-12.</p>		
Month 4	<p>CommCare Architecture During the first month of the System Configuration and Development project phase, Dimagi will design and implement the high-level architecture and data model for the web application, creating a future-proofed foundation that will allow the application to scale over time.</p> <p>Initial User Role Creation Dimagi will complete initial user role configuration to enable role-based solution testing throughout the configuration and development and testing phases.</p>	<p>Data Infrastructure Initiation In parallel to initiation of CommCare infrastructure, Dimagi will deploy initial components of the Data Analytics Platform and begin data lake configuration</p>
Month 5	<p>Key Record Configuration: Provider, Program, Cases, Clients Leveraging the requirements outlined in Attachment O, Dimagi will configure the data points to be recorded and stored in the system for each of the core record types, including provider, program, client, and case records and complete the data collection forms used to create or update these records. This will allow for easy population of data within the system for testing purposes throughout the remainder of the DDI process and enable reference to and display of key data points in downstream workflows configured in months 6-11.</p>	
<p style="text-align: center;">Key Workflow Configuration and Integrations (Months 6-12)</p> <p>During months 6-12 of the DDI period, Dimagi will work closely with IDOH to design and develop end-to-end workflows in alignment with program objectives in Attachment K. For each program objective, cross-cutting functionality enables fully functional workflows that meet or exceed requirements listed in Attachment O, including:</p> <ul style="list-style-type: none"> • Alignment to ingested and migrated data • Alerts and notifications • Client and provider communications • Record searches • Record management • Referral management • Updates to user roles, as needed 		
Month 6-7	<p>Pregnancy Identification & Resources: Identify Pregnant Woman and Connect Her with Available Programs and Resources</p> <p>Dimagi will configure end-to-end workflows associated with care and follow up for pregnant persons, including the ingestion of relevant data, identifying and sharing relevant programs and resources with pregnant individuals, and managing program enrollment and referrals.</p>	<p>Integrations Integrations will be established between the Dimagi Data Analytics Platform and the following external systems: Vital Records, Foster Care, Specimen Gate.</p>

<p>Month 8-9</p>	<p>Newborn Identification & Resources: Identify Newborn and Connect the Newborn's Parents with Available Programs and Resources</p> <p>Dimagi will configure end-to-end workflows associated with supporting the parents of newborns, including the ingestion of relevant data, identifying and sharing relevant programs and resources with parents, and managing program enrollment and referrals.</p>	<p>Integrations Integrations will be established between the Dimagi Data Analytics Platform and the following external systems: Medicaid Data, IHIE/EMs.</p>
<p>Month 10-11</p>	<p>Newborn Screening & Follow up: Ensure That Newborn Receives Mandated Screenings and Appropriate Follow-Up Care</p> <p>Dimagi will configure end-to-end workflows associated with newborn screenings and follow up care, including ingestion of relevant data, configuration of newborn screenings forms, and automation of follow up tasks associated with screening activities.</p>	<p>Data Migration and Conversion In partnership with subcontractors, Dimagi will complete data migration and conversion of migrated data into the newly-established data infrastructure for client-centric use.</p> <p>Integrations Integrations will be established between the Dimagi Data Analytics Platform and the following external systems: Visionlink.</p>
<p>Month 12</p>	<p>Document & Letter Administration: Some components of workflows and functionality associated with document and letter administration will require software development, releasing later in System Configuration and Development to ensure ample time for careful development and testing of new platform features. Assessment of needed letters/document storage will be assessed during Requirements Analysis and System Design, and will be released in Month 12.</p>	<p>Report Configuration: Provide Timely Reporting and Comprehensive Care Maps Dimagi will perform additional data normalization and conversion as well as configuration of key reports. Reports will be made available within CommCare for ease of use by web application users.</p>

Pre Go-Live Stabilization

In the final month of the System Configuration and Development period, Dimagi will complete a final release to resolve any necessary changes identified during testing and early training and address any remaining outstanding requirements from previous releases. This ensures a stable system prior to go live and reduces the risk associated with introducing substantial new features or workflows shortly before the go live date.

<p>Month 13</p>	<p>Final Pre-Live Data Adjustments During month 13, Dimagi will complete final data adjustments based on testing with real-world data ingested data from integrations and migration efforts.</p> <p>Final User Role Alignment Dimagi will complete any necessary final adjustments to user roles and permissions that may have surfaced during early training and testing activities.</p> <p>Address Web Application Defects and Feedback Dimagi will address priority defects or change requests identified during early rounds of user acceptance testing and training in advance of the initial go live to promote user buy in.</p>	<p>Integrations Integrations will be established between the Dimagi Data Analytics Platform and the following external systems: Emergency Responder App.</p> <p>Address Reporting Defects and Feedback Dimagi will address priority defects or change requests identified during early rounds of user acceptance testing and training in advance of the initial go live to promote user buy in.</p>
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d. State Purchases for the Solution

Dimagi offers the proposed system as a fully-managed SaaS solution, including multi-tenant SaaS hosting of the CommCare platform. All proposed system components are included in our price proposal and Dimagi will provide necessary software licenses or access on behalf of IDOH. All components of the solution will be made available to the State via SaaS subscription through the duration of the M&O period.

If desired, Dimagi is able to support the State's independent purchase or re-use of select components of the proposed system, including Snowflake and Tableau, provided Dimagi is given full access to enable collaboration and successful completion of all DDI activities.

2. Hosting

a. Hosting Solution: Details and Location

Dimagi's proposed solution is hosted on AWS East in a highly-secured ISO27001 environment that is also HIPAA- and GDPR-compliant. Server data is hosted in a HIPAA-compliant cloud at an enterprise-grade ISO 27001 compliant AWS data center.

b. Hosting Solution: Location

Dimagi's utilizes AWS for cloud hosting. Hosting is on AWS East (Virginia), with all data centers located within the United States. All hosting-related operations are conducted within the United States by domestically-based staff.

c. Remote Operations

AWS provides robust remote operations capabilities, including 24/7 monitoring, automated maintenance, secure remote access, and comprehensive disaster recovery. This ensures high availability, security, and efficient management of the data centers.

d. Approach to Redundancy

CommCare data is securely hosted on AWS, and our services are strategically distributed across multiple regions, effectively mitigating single points of failure. Dimagi's Site Reliability Engineering and Corporate Operations teams uphold a rigorously tested Business Continuity Plan and Disaster Recovery Plan, outlining our comprehensive approach to backups and disaster recovery. The Business Continuity and Disaster Recovery Plans are both comprehensively tested yearly by a third party security firm.

In the event of situations necessitating disaster recovery, Dimagi will implement our established plan, ensuring the complete restoration of system availability. Additionally, we will conduct a comprehensive debriefing with stakeholders and refine the existing plan to enhance our approach to future incidents.

Storage, backup and restore practices align with NIST800-53:CP-6, NIST800-53:CP-9, and NIST800-53:CP-10.

e. Data Ownership and Access

The State will retain full ownership of all data collected and maintained by the Solution. which will never be sold or marketed by Dimagi or Dimagi subcontractors. Data will be readily

accessible in multiple formats for no additional fee, inclusive as part of subscription use of the Solution. If a subscription is terminated, data will be made available for export and storage in the State's preferred format and location.

Dimagi's authorized staff and subcontractors may have access to the data collected and stored in the Solution during the DDI and M&O periods. Dimagi and subcontractor staff access to the data will be limited strictly to the minimum level of access required to appropriately complete DDI and M&O activities and deliver the requirements outlined within the request. Dimagi maintains strict policies for staff to gain access to State data, including mandatory annual training on HIPAA, security, and data protection. All Dimagi staff members are required to work on secured, company owned machines and routinely undergo security scans. All solutions include two-factor authentication, audit logs, and monitoring. Additional security practice is described in [Section 6, System Security Requirements](#).

f. Data Encryption Strategy

For the CommCare platform, all data is encrypted using industry standard encryption (AES-256-bit symmetric encryption in a fully HIPAA compliant manner) both in transit and at rest. All data in transit between the CommCare platform and any other system is encrypted using TLS 1.2 and conducted over HTTPS. We secure information with encryption via managed key operations through the AWS KMS solution. That solution is FIPS 140-3 certified as the AWS Key Management Service HSM.

g. Secure, Multi-Tenant Hosting

Both CommCare and the Dimagi Data Analytics Solution are hosted in a secure, multi-tenant environment through Amazon Web Services, with strong partitioning.

h. Load Balancing

Both CommCare and the Dimagi Data Analytics solution leverage scalable resources. CommCare is designed to automatically scale, ensuring sustained performance even as additional data is entered, and users are onboarded. This scalability is achieved through CommCare's utilization of multi-tenant cloud hosting and elastic resources. The elastic resources dynamically adjust to varying workloads, optimizing performance and resource utilization.

To handle unexpected traffic, our approach leverages the scalability inherent in CommCare's hosting infrastructure on AWS. This ensures that the system can adapt to increased loads without compromising performance. Additionally, the file transfer approach utilizing AWS s3 and the Snowflake Cloud Data Platform allows for dynamic adjustments to varying workloads, optimizing performance even during unexpected traffic spikes.

i. Public and Private Subnets in Infrastructure Design

One component of the Dimagi Data Analytics Solution, Tableau, is hosted in one of the AWS EC2 instances inside an AWS Virtual Private Cloud (VPC) with both public and private internet gateway connection.

j. Access to and Extraction of Raw Data

The Dimagi Data Platform solution leverages the Snowflake Cloud Data Platform and Tableau, both of which have a variety of options to access raw data to connect to or extract data. The State will have access to raw system data and all portions of the system to allow for the efficient creation of ad hoc reports as necessary by State staff. For full details regarding State staff access to and export of raw data in the Dimagi Data Analytics Solution, please refer to [Section 7, Reporting](#) below.

3. Solution Architectural Diagrams

The following provides a high-level architectural diagram of the Dimagi Data Platform joined with CommCare. Below is an architectural diagram for the CommCare platform.

Figure 7: Proposed MCH Data System Solution Architecture Overview

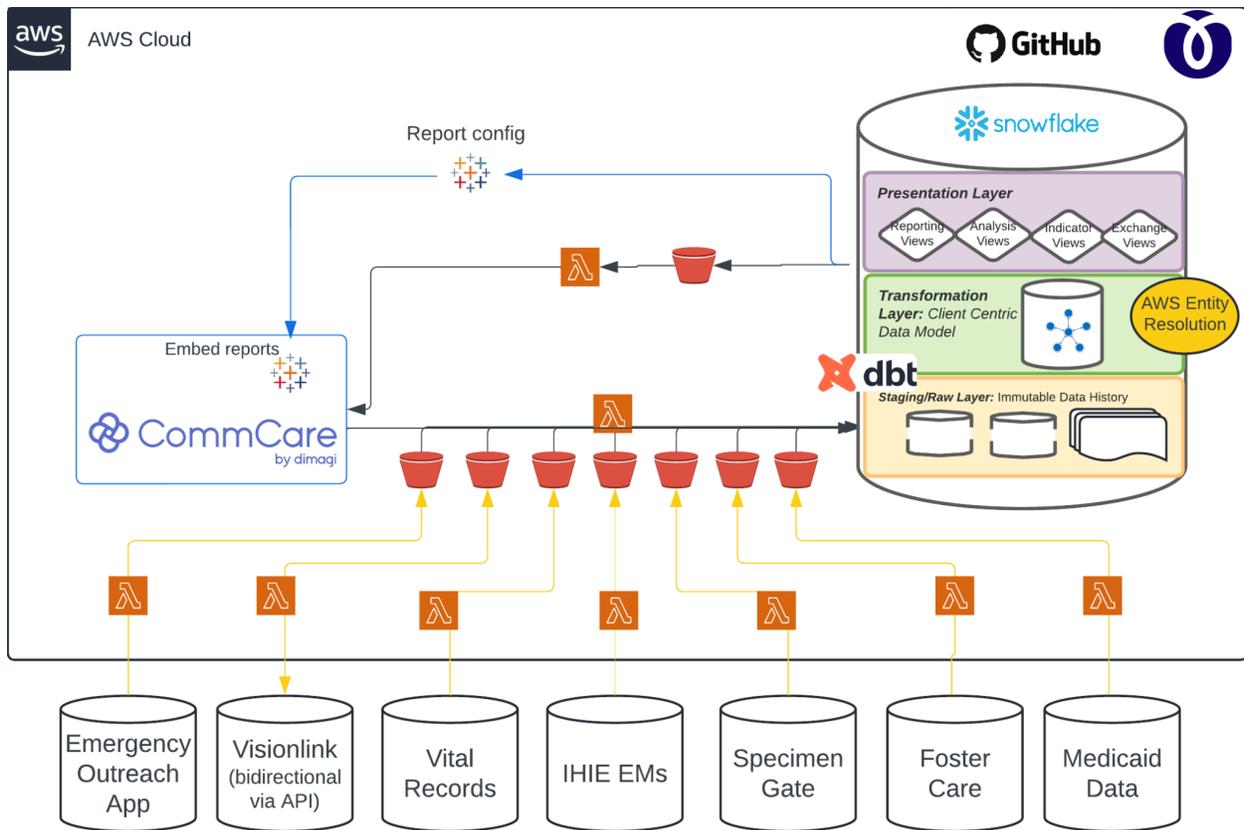
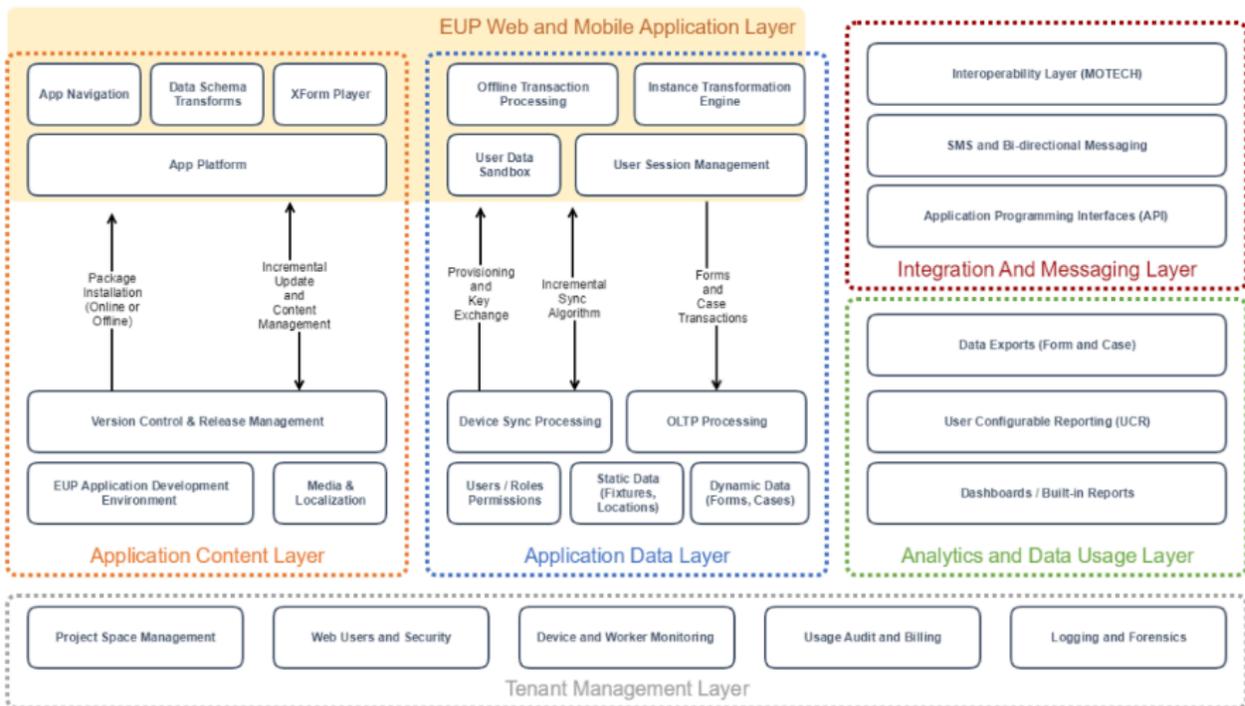


Table 2: Associated Hardware and Infrastructure Descriptions

Solution Component	Description
CommCare	Dimagi’s open source LCAP platform which will serve as the data collection, service delivery documentation, and case management front end for the proposed solution
Snowflake	Cloud data platform used for data warehousing where structured and semistructured data sets are held for processing and analysis.
Tableau	Data visualization and business intelligence tool used for reporting and analyzing large volumes of data
AWS Entity Resolution	A machine-learning powered entity resolution service provided by Amazon Web Services that will serve as the identity resolution tool for the proposed Solution
AWS Cloud	Secure US-based cloud hosting environment provided by Amazon Web Services; all solution data will be stored on AWS East
Data Build Tool (dbt)	Open source command line tools that facilitates the process of data transformation within the data warehouse using SQL and enables version control of Snowflake assets.
GitHub	Website and cloud-based service where CommCare’s code base is stored and managed as part of Dimagi’s commitment to maintaining CommCare as an open source platform
AWS Lambda	Amazon Web Services microservice used to extract, transform, and load data to move data from multiple sources in and out of the Snowflake cloud data warehouse
S3 buckets	Containers or folders used for storing, organizing, and managing data, provided by Amazon Web Services

Figure 8: CommCare Platform Functional Components



CommCare’s architecture includes the following components:

Web application player (Web Apps)

Also referred to as “Web Apps”, the web application layer is the layer in which end users interact with the platform. For example, end users will access Web Apps to view and update client, case, and program records. Web Apps operates on configurable XML artifacts representing business logic custom to the project. The web application player leverages the HTML and Javascript presentation layer (backbone.js and Marionette) and Java application engine (Spring framework).

Cloud web application (ComCare HQ)

Also referred to as CommCare HQ, the cloud web application is utilized to manage and configure the web application and its users as well as to access and analyze data. The cloud web application is comprised of several services, all of which access shared databases (PostgreSQL, CouchDB, Elasticsearch, AWS S3, Redis) leveraging web server (Python/Django), change processors / ETL system (Kafka, Python, Django), and asynchronous task processing (Celery, RabbitMQ, Python, Django).

The web server contains several functional components, including: application building and content management, application data layer, tenant management, analytics and usage, messaging layer, and integration. It uses three tiers, which are as follows:

- 1. Presentation layer:** a) Django/Jinja2 templates and b) HTML and Javascript (knockout.js, jquery, others)
- 2. Application layer:** Python/Django views and utility modules

3. **Data access layers:** a) PostgreSQL - Django models and migration framework, b) CouchDB - Couchdbkit and Jsonobject, c) Elasticsearch - official python client and custom library, d) S3 - official python SDK (boto3) with custom wrapper, and e) Redis - django-redis

For additional information regarding CommCare's application architecture, you may refer to the [CommCare HQ Platform Overview](#) and [CommCare Architecture Overview](#) of our public site.

Backup and Disaster Recovery Activities

Customer data collected through a CommCare web application is protected by a continuous backup system that is recoverable to any point in time. All primary data is backed up at least once a day and all backups are stored in multiple data centers. For more detailed information regarding Dimagi's approach to backup and disaster recovery, please see our response in [Section 11. Disaster Recovery and Business Continuity](#).

4. Capacity Limitations

Dimagi has extensive experience implementing CommCare to support large-scale programs, including statewide data systems and national scale solutions for ministries of health outside of the US. Designed explicitly to maintain optimal performance at scale, there are no capacity limitations or discrete caps on the number of records that can be created or stored in CommCare. During the DDI phase of the project, Dimagi will document requirements and may proactively recommend design that accounts for anticipated scale (including future-proofing for expected record volume) that ensures maximum performance of key features such as Record Search and other user-facing views. For the duration of the M&O period, Dimagi will maintain proactive performance monitoring and testing, as documented in [Section 10. Design, Development, and Implementation](#), to identify and address performance risks before end users are impacted.

All CommCare data is stored on AWS in SQL and AWS EC2 instances are highly scalable. Our CommCare Platform Team performs regular analysis (through managed alerts as well as Application Level, Hardware Level, Service Level monitors) of our multi-tenant SaaS cloud of resource utilization across 800+ tenants to identify the need for additional cloud hardware resources based on key growth and proxy metrics (transactional throughput, etc). Many key infrastructure resources (such as raw storage) are configured through elastic cloud resources (S3, EBS) which provide ~indefinite provisioning.

Included in the Dimagi Data Analytics Solution is Snowflake, a leading cloud-based data warehouse. Snowflake's technology makes it easy to scale storage and compute according to analytic needs, and their consumption based billing keeps costs low. Use of Snowflake therefore represents a massively scalable approach to store all required data to meet the requirements of this request. Costs for all expected data volumes are included in Attachment D, Cost Proposal.

5. Conforming to State's Assistive Technology Standards

Dimagi's commitment to equitable access to resources extends to both the community members our partners serve and to all users of the CommCare platform. The platform is

therefore designed with accessibility in mind. Dimagi obtained independent audits of the CommCare platform in October of 2020 and February of 2022 to identify and address areas of improvement for Americans with Disabilities Act (ADA) compliance in the software. These independent audits enabled Dimagi to resolve non-conformant aspects of CommCare in accordance with Section 508 of the Federal Rehabilitation Act of 1973, in accordance with the State's [Accessibility Policy](#).

As part of this initiative, Dimagi has done extensive work to make web applications accessible for keyboard only interactions and screen readers. The interface is optimized for keyboard only interactions, which have been demonstrated to be a clear and unambiguous way to navigate applications. In addition to periodic external audits, Dimagi also requires rigorous internal accessibility testing of all new product features that introduce or modify existing components of the platform's user interface or user experience. As part of our standard quality assurance practices, we test for compliance with WCAG 2.1 levels A and AA. This testing includes ensuring that all new or modified platform elements are keyboard focusable and readable using a screen reader.

6. Attachment O

Please find Dimagi's completed Attachment O, Functional and Technical Requirements, in our proposal package. Our proposed solution meets the vast majority of functional and technical requirements required by the State. For those requirements that will not be met prior to the scheduled go live, alternatives have been proposed in the Vendor Comment column.

7. Integration with Interface Partners

Our proposed solution will enable seamless Mulesoft-based or AWS Direct Connect-based integration with interface partners (e.g., IDOH Vital Records). Our comprehensive approach ensures seamless integration, robust security, and efficient communication between systems. With either tool (Mulesoft or AWS Direct Connect), we will be able to meet interface partners where they are, in terms of technical capabilities. The following detailed approach can be implemented with a variety of tools, but we'd recommend the use of AWS Direct Connect.

API Integration

RESTful APIs: Our solution will use RESTful APIs to communicate with interface partners. This involves sending HTTP requests to endpoints provided by IDOH and handling the responses appropriately.

SOAP Services: If interface partners use SOAP-based web services, we will integrate using SOAP protocols, ensuring that XML-based messaging is handled efficiently.

Data Mapping and Transformation:

Data Standards: We'll ensure that our solution adheres to the data standards and formats required and defined by IDOH.

Data Transformation: All transformations will be executed within the Snowflake Data Warehouse, following an Extract, Load, then Transform (ELT) approach.

Security and Compliance:

Authentication and Authorization: We will implement OAuth2 or other relevant authentication mechanisms to ensure secure access per the security requirements of IOT and IDOH.

Encryption: Data encryption in transit will use TLS/SSL to protect sensitive information.

Compliance: We will ensure compliance with relevant health data regulations such as HIPAA.

Dimagi's subcontractor, Metamor Systems, brings extensive experience in integrating sensitive data across various systems and agencies under stringent data-sharing agreements. Metamor Systems has a proven track record with MuleSoft for API-based integrations and can utilize a variety of other tools as needed to ensure seamless integration. Our solution is designed to integrate effortlessly with the State network from AWS. For instance, Metamor Systems has previously implemented a "cloud-to-on-premise" integration by configuring network details to establish a private tunnel between the cloud and the State. This was achieved through close collaboration with Indiana Office of Technology (IOT) staff to configure the network specifics and use appropriate services for the integration.

In another project, Metamor Systems collaborated on an Azure Government Cloud initiative to securely transfer data to the State network. This involved using Azure Government Cloud Data Pipeline to an On-Premise Data Gateway, ensuring secure connections and data transfers. Although this project employs AWS, the same principles apply. We recommend using AWS Direct Connect to facilitate this integration.

Options for integration will be discussed at the beginning of the engagement to ensure alignment with the State's requirements. By doing so, we can integrate necessary data with other systems on the State's network while maintaining the highest security standards.

8. Utilizing State's Standardized Technologies

Dimagi and Metamor Systems are committed to utilizing the State's standardized technologies, MuleSoft for APIs and GoAnywhere for managed file transfer, to facilitate secure data transmission. Our proposed solution fully supports these technologies, leveraging our extensive experience and expertise to ensure seamless integration and robust security.

Ensuring Seamless Integration and Security

Our solution is geared towards a technology-neutral environment, supporting systems in AWS, Azure, or on-premise. From configuring networking details to creating a secure pipeline between environments, Dimagi and Metamor Systems bring skilled technicians to collaborate with State staff, ensuring smooth data transfers while maintaining security.

We recommend discussing integration options at the beginning of the engagement to ensure alignment on the details. By adhering to these best practices, we can integrate the necessary data with other systems on the State's network, maintaining high security and ensuring the success of the MCH Data System project.

Utilization of MuleSoft for API Integration

Metamor Systems encourages IDOH and the State to adopt MuleSoft for API integration. Our team is prepared to engage immediately and recommends the following best practices to meet monitoring and SLA agreements:

- **Smaller, Reusable Components:** By adopting a microservices approach, we ensure that parts of the integration are common and reusable components. This strategy allows for consistent monitoring, logging, and control, reducing time and effort on common

functions. We will work with IDOH, IOT, and other stakeholders like IHIE to break down integrations into their components.

- **Applying Standard Best Practices:** We will implement integrations with similar or the same components to enforce best practices, including error handling, logging, parameterization, and monitoring. This standardized approach ensures reliability and efficiency across all integrations.
- **Security Compliance:** Security is a major concern, especially within the API context. Metamor Systems has collaborated with State and agency CISOs and delegates to ensure all necessary protocols are followed. We comply with various security standards, including NIST SP 800-53, HITRUST, and PCI-DSS. Our components are designed and built to adhere to rigorous security standards, with particular attention to healthcare compliance.

Utilization of GoAnywhere for Managed File Transfer

Metamor Systems has extensive experience working with the Indiana Office of Technology (IOT) and the Indiana Family and Social Services Administration (FSSA) to implement data transfers using GoAnywhere. We understand the patterns and practices required to facilitate secure file transfers. Our previous collaborations have equipped us with the knowledge to implement file transfers efficiently and securely.

9. Non-Mandatory Functionality

CommCare is highly flexible and allows for the addition of support for new workflows and user types over time, all leveraging the State's existing platform subscription. Additionally, all new product features released at the platform level will be made available to the State at no added cost as part of the annual CommCare subscription.

Incorporating supplemental features not outlined in the State's requirements listed in Attachments O and K would not incur additional software costs but would need to be accounted for with additions to the DDI scope and associated budgeted staff hours.

Non-mandatory functionality that Dimagi could provide to the State by Dimagi's proposed solution includes:

- **Public-Facing Data Dashboards:** Data dashboards and visualizations created using the Dimagi Data Analytics Solution could be made available to Hoosiers via an existing State of Indiana public site to foster transparency and data availability for all Indiana residents. Dimagi has experience collaborating with State partners on the creation and publication of public-facing dashboards in addition to those created for use by State decision makers.
- **Public-Facing Data Collection Forms:** Via integration with Microsoft Forms, CommCare can send SMS or email prompts directly to clients that link them to an online data collection form, allowing for easy facilitation of self-assessments, self-referrals, or patient-reported outcomes. Data entered in the forms would feed into the MCH Data System built on CommCare and be actionable for MCH users, including the ability to trigger notifications, actions, or tasks for users to complete in the MCH Data System.
- **Searchable Resource Directories:** In addition to sharing tailored resource recommendations with clients as outlined in Attachment O, MCH users could be given

access to a searchable and sortable Resource Directory within the Web Application. This directory feature allows users to easily search for and identify relevant community resources, providers, or programs applicable for their clients. Directories can include a map view and a distance from client address filter to facilitate easy identification of resources that not just meet client needs but are conveniently located as well.

10. Cloud Questionnaire

Please find Dimagi's completed Attachment L, Cloud Questionnaire, in our proposal package. A thorough explanation is provided for our responses, and our team will gladly provide additional documentation as needed.

5. Data Migration and Conversion

1. Data Migration and Conversion Approach

Dimagi and our subcontractor, CSpring, offer IDOH a comprehensive approach to data migration and conversion. Our teams leverage industry-leading tools and methodologies to secure, efficient, and accurate data migration and transformation processes.

Combined team with deep data experience

Dimagi and CSpring have extensive experience designing, developing, deploying, and supporting data migrations and conversions. For more than a decade, CSpring has supported large government programs including many Health & Human Services programs, including several State of Indiana projects listed in [Section 9, Project Staffing](#) below. CSpring consultants use industry-leading tools and platforms like Azure Data Factory for orchestrating workflows, Azure Synapse for analytics and warehousing, Fivetran for seamless data integration, Alteryx & Knime for data preparation and transformation, and Informatica for enterprise-grade data integration. We also often use client-specific services and custom pipelines built in Python and SQL.

Dimagi's Data & Analytics team uses tools and platforms like Snowflake, dbt, Talend, Informatica, Tableau and AWS and GCP microservices for analytics, warehousing and integrations. The team also has experience developing client-centric data warehousing architectures and for State health agencies, such as the Colorado BHA referenced in [Section 1, Minimum Requirements](#) and [Section 3, Background and Experience](#) of this proposal.

Proposed Data Migration and Conversion Methodology

Before beginning execution of data migration and conversion, our teams conduct thorough planning steps to establish goals, minimize risks, and set the stage for migration and conversion including:

- Definition of scope and objectives
- Assessment of legacy data, including data sources, formats, and dependencies
- Identify business requirements, such as downtime tolerance, data consistency, and performance expectations with success criteria and key performance indicators (KPIs)
- Update the DDI Schedule with milestones, timelines, and resource allocation informed by planning

- Design the migration architecture and establish data mapping and transformation rules

A well-structured approach for data migration and conversions is crucial for ensuring the successful transfer of data while maintaining data integrity, minimizing downtime, and ensuring business continuity. We will work closely with IDOH, ensuring that all data, including Protected Health Information (PHI) and Personal Identifiable Information (PII), is securely, efficiently, and accurately transferred.

For data migration, CSpring recommends an incremental approach for this engagement. We recommend this approach for the following reasons:

- **Minimal Downtime:** source system remains operable while data is continuously migrated to the target system, therefore reducing downtime and disruption.
- **Reduced Risk:** migrating large volumes of data in smaller, more manageable pieces reduces the risk of system overloads and failures and provides easier rollback capabilities if issues arise.
- **Incremental Validation:** each batch of data is validated after it is migrated strengthening data quality and overall integrity.
- **Adaptable:** with the ongoing development of a Data Dictionary, this approach allows the migration process to adapt as more information becomes available.
- **Enhanced Security & Compliance:** handling of PHI/PII data is more careful and controlled, reducing the likelihood of errors and continuous monitoring ensures PHI/PII data remains secure.

CSpring has a standard data pipeline pattern and a pre-built accelerator designed to provide a robust, efficient, and flexible data migration solution. For this use case, we recommend leveraging AWS Glue, however, the accelerator supports a variety of platforms, including Snowflake, AWS Glue, Databricks, Azure Data Factory, and Azure Synapse. Our approach leverages the following key technologies and architectural principles:

- **Python-Based Implementation:** ensures a powerful and versatile foundation for data processing and migration tasks.
- **Optimal Data Interchange Format:** utilizes Parquet files whenever possible, ensuring efficient data storage and transfer.
- **Comprehensive Data Lineage:** maintains complete data lineage through a consistent storage pattern, organized in a Source/Dataset/Data Asset hierarchy, enhancing traceability and transparency.
- **Simplicity and Efficiency:** designed to deliver both ease of use and optimized cloud resource utilization, ensuring a streamlined and cost-effective data migration process.

With CSpring's accelerator, clients benefit from a solution that is not only technically advanced, but also tailored to meet the demands of modern cloud environments. Our teams will leverage this accelerator when it serves the project, but our teams can adapt and conform to use existing patterns and practices as applicable.

Once CSpring lands data into Dimagi's Data Platform (AWSs3) and collaborative validation and testing is complete, data will be automatically loaded into the Snowflake Cloud Data Platform where transformation and conversion of data will begin.

For conversion, Dimagi recommends an Extract, Load, Transform (ELT) approach for several reasons:

- **Leverage Cloud Data Warehousing Power:** the processing power enables cost-effective, efficient and scalable transformations of data. This is especially important for use cases that require significant transformations due to conversion and unification of data needs (e.g. developing a client centric data model).
- **Simplified Data Pipelines:** This approach reduces complexity by separating the extraction and loading processes from the transformation process.
- **Accessibility and Flexibility of Transformations:** Transformations can be modified without disrupting the extraction and loading processes. Moreover, users can access raw data quickly, without waiting for significant transformation steps to process.
- **Future Proofing:** This approach enables simplified onboarding of new data sources and handling of unique edge cases per conversion requirements.

All transformation steps will be implemented in the Snowflake Cloud Data Platform. The Dimagi Data Platform includes automated pipelines which will load data from s3 to the Snowflake Cloud Data Platform. From there data will be transformed through several layers (raw, integration, presentation) to enable a client centric view of the data. To develop unified, client centric data model, there are three necessary layers to develop within the cloud data platform, including:

Raw Layer: In this layer, immutable raw data is loaded for elevation to the next layer, where processing and application of business rules to ensure standardization and consistent data structuring. Here, separation between data sources with multiple schemas can provide structural stability and increased reliability in managing data and process assets without minimal to no impact to other sources. Records will be promoted to the next layer based on defined natural business keys, loading priority defined by the State and recency of records.

Integration Layer: In this layer, normalization and cleaning procedures allow for conversion and unification of the data based on transformations. These processes will largely be automated. Within the integration layer, we would recommend the following steps:

(1) Data Standardization and Normalization: We would recommend implementing the following in addition to conversion business rules defined by the state (e.g. preferred datetime formats):

- Standardizing formats (e.g., changing dates from "MM/DD/YYYY" to "YYYY-MM-DD")
- Standardizing value casing (e.g. iPhone vs. IPHONE)
- Normalizing values (e.g. from one unit to another: converting weights from pounds to kilograms)

(2) Data Cleaning and Correction: We recommend implementing rejection rules to surface gaps or inconsistencies in the data, for the State to advise on a course of action. We will work the the state to define a set of business rules that are hard (always applicable under any circumstance) and soft (applicable under specific circumstances), including but not limited to the following:

- Handling missing or inconsistent values
- Correcting inaccurate data
- Removing irrelevant data

- Removing outliers
- Removing inconsistent data

(3) Unification of Data: We would recommend implementing Data Vault 2.0 architectural patterns using Hubs, Satellites and Focus Areas to provide parallel and fast loads from the multiple data source tables in the raw layer. Data Vault 2.0 models are essentially a hybrid of 3NF and star schema leveraging benefits of both. This model is flexible and generally recommended as the best practice for these types of use cases.

Presentation Layer: prepared views are available for analysis or other downstream purposes (e.g. reporting, data exchange, etc). At the presentation layer, either the Data Vault 2.0 Business data layer or star schemas will be implemented to facilitate data models via views that can be extracted from to connect to supported reporting tools (Tableau). All data layers can follow SCD Type 2 (insert only) - allowing maintenance of history, troubleshooting, analyses and reporting in all layers. Role-based access controls and masking strategies will be employed to ensure PII and PHI data is suitably masked or unmasked.

The 3-tier architecture with clear separation of ownership of responsibility per layer creates vertically clean handover of data from one layer to another. This abstraction enables different layers while dependent reduces the impact of change. For example, a change in the raw layer table is separated from the view of the procedure that loads data into the integration layer and does not impact the upper layers until they are ready to receive the same. Data Vault 2.0 especially, lends itself for changes in satellites without impacting the whole focus area.

Snowflake tasks can be chained to automatically trigger one to the other from the moment data is loaded, triggering rejection processing, loading to vault and then from there to star schema in the presentation layer. All design and code assets will follow strong standardized naming, coding, and templated conventions that lend to ease and speed of onboarding new data sources

Testing Plans

CSpring and Dimagi use a variety of testing methods to ensure consistency, reliability, and performance. Our testing plan for this data migration is designed with data integrity, security, and compliance in mind. Testing occurs throughout the migration and conversion with the following key activities:

1. **Pre-Migration Planning:** clearly outline the objectives of testing, specifying what needs to be tested and the expected outcomes.
2. **Establish Test Plans:** develop test cases for areas such as functionality, performance, security, and user experience and define acceptance criteria.
3. **Execute Testing:** set up testing environments that mimic the production environment as closely as possible, execute the test cases systematically, document results, resolve issues, and retest.
4. **Post-Migration and Conversion Review:** conduct a post-migration review to validate performance and gather insights for continuous improvement.

Table 3. Key Testing Methods and Activities

Migration Testing	Both Migration & Conversion Testing	Conversion Testing
<p>Requirements Traceability Testing ensures that all the requirements have been met and implemented correctly. The objective of this testing is to verify that all expected outcomes are achieved and that the migrated data aligns with its intended purpose.</p> <p>Data Validation Testing ensures that the data in the target system is consistent and accurate compared to the source data. This improves the credibility of the migrated data and ensures the overall quality of the system.</p>	<p>Security Testing identifies any potential vulnerabilities in the system and ensures that sensitive data, such as PHI/PII, is properly secured. Additionally, it involves privacy compliance testing, ensuring adherence to HIPAA and other regulatory requirements.</p> <p>Performance Testing identifies any bottlenecks or performance issues and ensures that the target system can handle the expected workload and data volume. This includes testing the speed and efficiency of data migration, the system's ability to handle large amounts of data, and its performance under peak loads.</p> <p>End-to-End Testing involves both user acceptance testing and regression testing to ensure that the entire migration and conversion process is working as expected.</p>	<p>Data Mapping and Quality Testing confirms all data is accurately mapped and converted to the target system while ensuring that no issues arise during the conversion process (e.g. data quality, completeness, integrity issues)</p> <p>Transformation Logic Testing validates that all data transformations and business rules are implemented appropriately per requirements and best practices.</p>

By following this plan, we ensure that the data migration and conversion is thorough, detailed, and effectively executed for a smooth transition.

2. Quality Assurance of Data Migration

To ensure that all data is migrated accurately, completely, and with integrity, we employ a comprehensive set of validation activities and methodologies:

- **Record Count Comparisons:** We validate that the number of records migrated to the new system matches the count in the source system. This process is generally straightforward for 1:1 schema migrations. However, for more complex schema mappings—where multiple source records map to one destination record or vice versa—we develop data aggregation and consolidation validation scripts.
- **Row Checksums:** For rows containing fields that support checksums, we calculate checksums for source and destination data. This provides a strong indication of data integrity. Although no hashing algorithm can absolutely guarantee no collisions, we use the most robust checksum mechanisms available to minimize this unlikely occurrence.
- **Numeric Column Summation:** For datasets containing numeric columns, we perform summation checks. Comparing these summations pre- and post-migration, provides an additional layer of confidence of migration integrity.
- **Automated Data Quality Checks:** we prioritize automated data quality checks against predefined data quality rules, not only during the data migration process but also for ongoing data pipeline executions and application operations.

- **User Acceptance Testing (UAT):** While automated validation is crucial, it is complemented by structured, sample-based user testing. UAT ensures that end-users can validate the success of the migration by comparing the new system against the source systems through real-world scenarios.
- **Validation Documentation:** Execution and outcomes of all tests are meticulously documented. This ensures that every targeted test is executed, confirmed, and noted, providing comprehensive records for compliance and traceability.

Our validation approaches are rooted in thorough data profiling of the source systems, coupled with detailed data definitions, documentation, and mappings. This foundation ensures that all validation activities are based on a deep understanding of the data landscape. By employing these rigorous validation techniques, we guarantee that the data migration process will be conducted with the highest levels of accuracy, completeness, and integrity, providing a seamless transition to the new system. Additionally, we will conduct these validation steps across systems, from source to AWS s3 to the Snowflake Cloud Data Platform. Where there is hand off of data between teams, we will ensure that all the validations steps defined above are executed, as part of the end to end testing plan.

3. Roles and Responsibilities

Collaboration between Dimagi and CSpring ensures effective delivery of services while maintaining clear and discrete areas of responsibility for each team. Details on the staff resources and roles responsible for these activities can be found in [Section 9, Project Staffing](#).

Dimagi sets data solution strategy, oversees execution, and completes data conversion, including responsibilities for:

- Overall project management and solutions architecture
- Provide technical support to CSpring to land the data in AWS S3
- Provide technical specifications for data format and prerequisite normalization and cleaning steps
- Convert data to the target system using ELT processes
- Coordinate end-to-end testing of migration and conversion pipelines
- Update documentation to reflect the ultimate transformation

CSpring conducts data discovery and migration tasks, ensuring accuracy and completeness, including responsibilities for:

- Conduct data discovery and requirements gathering, including conversion requirements (business rules) with the State
- Translate requirements to other teams, including Dimagi
- Produce data documentation and comprehension resources
- Conduct migration of data from source systems to Dimagi's Data Platform (AWS S3)
- Perform testing and validation of migration to confirm accuracy and completeness

4. Data Migration and DDI Timeline

Data migration and conversion activities begin early in DDI, allowing both sufficient time for execution and alignment to activities that influence conversion plans that happen during

Requirements Analysis and System Design. Our team estimates data migration and conversion activities begin with pre-planning in Month 2, followed by iterative migration and conversion during System Configuration and Development through Months 4-11, aligned to our overall DDI timeline provided in [Section 10. Design, Development, and Implementation](#). Our approach for data migration and conversion follows proven data migration and conversion steps previously taken by our teams, described below:

1. **Pre-Migration Planning:** Establish goals, minimize risks, and set the stage for migration and conversion
 - Define the scope and objectives
 - Understand the existing data landscape, including data sources, formats, and dependencies
 - Identify business requirements, such as downtime tolerance, data consistency, and performance expectations
 - Define success criteria and key performance indicators (KPIs)
 - Create a detailed project plan, including milestones, timelines, and resource allocation
 - Design the migration architecture
 - Establish data mapping and transformation rules
2. **Data Extraction:** Retrieve data from the source system
 - Develop and test extraction scripts and ETL processes
 - Extract data from source system
 - Validate the accuracy and completeness of extracted data
 - Prepare data for transformation
3. **Data Transformation:** Convert data from source format to target format
 - Apply data mapping and transformation rules
 - Develop scripts or ETL workflows for transformation
 - Cleanse, standardize, and enrich data
 - Resolve data quality issues
4. **Data Load:** Move data into target system
 - Configure target system to receive the migrated data
 - Load transformed data
 - Implement data validation checks during load
 - Monitor data transfer progress
5. **Data Verification & Testing:** Verify data has been accurately migrated from source to target system
 - Execute reconciliation tests between source and target systems
 - Verify data accuracy against defined criteria
 - Conduct data integrity checks
 - Address any discrepancies or errors
6. **User Acceptance Testing (UAT):** Ensure data in target system meets business requirements and is fully functional for end-users
 - Develop UAT plans and test cases and document expected outcomes
 - Engage end-users in UAT to validate data functionality and usability in target system
 - Collect, document, and resolve issues
 - Obtain UAT sign-off

7. **Deployment & Rollout:** Go-live and support issues that arise
 - Conduct readiness assessment
 - Schedule deployment during a low-impact period
 - Execute final data migration
 - Monitor system performance
 - Support users by addressing questions and issues
 - Implement failover and rollback procedures, if needed
8. **Data Validation & Post-Migration Review:** Ensure process was successful
 - Verify data accuracy, completeness, integrity, and quality in target system by comparing with source system data
 - Verify business processes and workflows and system features function correctly
 - Conduct a comprehensive post-migration review
 - Review lessons learned, best practices, and areas for improvement
9. **Documentation & Knowledge Transfer:** Document all relevant information and transfer to relevant stakeholders.
 - Create comprehensive documentation of the process, technical information, data mapping, error-handling and resolution, system configuration, and testing.
 - Train target system users, administrators, and other stakeholders
 - Ensure knowledge transfer via appropriate avenues to the support team
10. **Monitoring & Maintenance:** Ensure ongoing accuracy, performance, and reliability of target system
 - Establish monitoring processes for data in target system
 - Implement ongoing data quality checks
 - Address any data-related issues as they arise
 - Periodically review and optimize the data conversion process

6. System Security Requirements (Attachment K, Section 7)

Dimagi prioritizes security in all aspects of development and deployment, meeting requirements for several government projects. Dimagi's security policies and practices are aligned to NIST 800-53 and are SOC 2 Type 2 compliant.

1. State's Information Security Framework

Dimagi is committed to adhering to the State's Information Security Framework and statewide IT policies. Dimagi has reviewed the State's 17 IT policies and confirmed conformance to all applicable policies, while noting the two specific items in the controls in the table below.

Table 4: State's Information Security Framework Policy Controls

Policy	Control Name	Control Area	Dimagi Response
Data Classification and Categorization	IOT-CS-SEC-102	RTO/RPO for Critical System DR Process	Dimagi's RTO: 3 hours / RPO: 6 hours
Publicly-Accessible Websites Minimum Security Standards	IOT-CS-SEC-158	Code Review	Dimagi conducts code review every 365 days, not 180 days.

Acknowledging additional policy and security information throughout our proposal and Attachment L, Cloud Questionnaire that support our approach, Dimagi will work with the State's IT department to determine recommended resolution approaches for these controls.

2. Access Indiana

Effective integration of Single-Sign On (SSO) often reduces user burden and streamlines user processes. Dimagi offers CommCare capabilities for integrating with Access Indiana, which we project to be low risk and successful.

a. Integrating the proposed MCH Data System with Access Indiana

Dimagi recommends integration with Access Indiana from the CommCare web application using OpenID authentication protocol. Users of the MCH Data System are likely already users of other systems governed by the state of Indiana, and therefore already have logins to Access Indiana. To ensure ease of access and reduce friction in the end user experience, the proposed MCH solution will integrate the CommCare Web Application with the state's existing SSO service, Access Indiana via the OpenID authentication protocol.

Dimagi has built several integrations to Identity Providers via OpenID in the past. The Dimagi development team will build on the foundation of existing OpenID integrations, and will review Access Indiana's documentation to identify key points of difference, before building out the required functionality. In collaboration with the Indiana DOH, Dimagi will configure connections between Access Indiana and CommCare. This will entail configuring port forwarding and firewall exceptions in both systems, sharing reply URLs with Access Indiana, and Access Indiana granting CommCare valid client parameters to authenticate the integration. Every application environment will require a separate configuration. Example environments may include Production, Quality Assurance (QA), Development, and User Acceptance Testing (UAT).

b. Low probability of issues integrating with Access Indiana

Based on a preliminary review of Access Indiana's existing public documentation, this is likely to be a standard integration. Risks are very minimal, though if the target SSO system behaves in non-standard ways the integration may require additional time to complete. Since Access Indiana is already in widespread use, the system itself is assumed to be stable, and is not a notable risk.

c. Comprehensive user access to solution through integration with Access Indiana

All end users of the CommCare Web Application will be able to access the front end interface via Access Indiana SSO, including the ability to access Tableau reports made available directly within CommCare. State technical staff and assigned Dimagi staff will be provisioned with accounts to directly access administrative components of the MCH Data System, including Snowflake and the CommCare administrator interface, as appropriate.

d. Actions and timelines for Access Indiana integration

Our proposed solution comes ready with the needed capabilities for Access Indiana integration. This will be part of the design and development phases in our DDI plan, with the

intention it will be in place for end users when reaching statewide scale.

3. Web Access

CommCare builds web applications accessible on standard browsers, ensuring broad compatibility and ease of access for users.

a. Accessing the proposed MCH Data System on web browsers

Our proposed MCH Data System utilizes a web application built on the CommCare platform as the front-end access for users. CommCare applications are accessible to authorized, logged in users via web browsers. CommCare is fully compatible with Chrome, Edge, and Firefox browsers. To ensure full compatibility with Safari, Dimagi would undertake an audit of existing product features and functionality on Safari and complete any required development as determined within the audit. The estimated timeframe to complete the required audit and subsequent development is three months, though timelines may vary depending on the audit results. Dimagi confidently commits that Safari will be fully supported prior to the scheduled Implementation date.

b. Actions and timelines for additional web browser utilization

Safari and legacy Internet Explorer browsers are not fully compatible with CommCare and offer a less optimal user experience. Because of the availability of CommCare on widely available web browsers listed above, Dimagi does not propose actions to enable web utilization for the proposed MCH Data System. During DDI, Dimagi will work with IDOH on evaluation of end user browser patterns and change communication on browser recommendations for end users to ready for production use.

4. Role-Based Security

a. Adding, modifying, and removing access to the MCH Data System using role-based security standards

Dimagi's proposed solution employs a robust role-based security model that ensures secure and efficient management of user access to the MCH Data System. This model provides comprehensive functionalities for adding, modifying, and removing access, fully aligning with best practices and guidelines from the National Institute of Standards and Technology (NIST).

User roles and permissions will be carefully considered during requirements definition and JAD sessions and will be updated throughout the lifetimes of the project to reflect system functionality updates or new user onboarding.

Adding Access

- **User Provisioning:** New users can be added to the system through a streamlined provisioning process. System administrators can assign roles to users based on their job functions and responsibilities during the initial setup. This process is facilitated through integration with enterprise identity management systems, ensuring seamless user onboarding.
- **Role Assignment:** Each user is assigned one or more roles that define their access privileges within the system. These roles are pre-configured based on organizational

needs and security policies, ensuring that users have access only to the necessary resources and functionalities.

Modifying Access

- **Role Modification:** As users' roles within the organization evolve, their access permissions can be updated accordingly. System administrators can modify roles by adjusting the permissions associated with each role. This ensures that users always have the appropriate level of access based on their current responsibilities.
- **Dynamic Updates:** The system supports dynamic updates to user roles and permissions, allowing for real-time adjustments. This is particularly useful during regulatory changes or organizational restructuring, ensuring that access controls remain up-to-date and compliant with current policies.

Removing Access

- **De-provisioning:** When a user no longer requires access to the system, their account can be de-provisioned. This process involves removing the user's role assignments and disabling their access. De-provisioning can be initiated manually by system administrators. Though not in initial scope of work, the solution also allows for automated through integration with the identity management system, ensuring timely and secure removal of access.
- **Audit Trails:** The system maintains detailed audit trails of all access control changes, including the addition, modification, and removal of user roles. These logs provide transparency and accountability, enabling security teams to monitor and review access control activities.

By leveraging role-based security standards, the proposed solution ensures that user access to the MCH system is managed effectively, securely, and in compliance with organizational policies.

b. Describe how the proposed solution will:

- i. Allow individual users to have multiple roles assigned to their permissions.
- ii. Will have the flexibility of page and field level permissions/restrictions, the configurations of which should be flexible to allow for regulation changes in a future-state.

The proposed solution is designed with flexibility and granularity in mind, allowing for complex role assignments and detailed access controls at both the page and field levels.

Multiple Role Assignments

- **Multi-role Support:** The system supports the assignment of multiple roles to individual users, enabling them to access a diverse set of functionalities based on their various responsibilities. For example, a user can have roles that allow them to perform both administrative and clinical tasks, depending on their job requirements.

- **Cumulative Permissions:** When a user is assigned multiple roles, their permissions are cumulative, meaning they inherit all access rights associated with each role. This ensures comprehensive access without the need for redundant role definitions.

Page and Field-Level Permissions/Restrictions

- **Granular Access Control:** The solution offers granular control over access to specific pages and fields within the system. Administrators can configure which pages and data fields are accessible to each role, ensuring that users see only the information relevant to their duties. This includes the ability to specify whether individual fields or pages will be read-only or editable for a given user type.
- **Configurable Permissions:** Permissions can be configured to accommodate various scenarios, such as limiting access to sensitive information or enabling view-only access to specific fields. This flexibility is crucial for maintaining data privacy and compliance with regulatory requirements.
- **Future-proof Design:** The configuration options are designed to be easily adjustable, allowing for quick updates in response to regulatory changes or organizational needs. This ensures that the system remains compliant and secure over time.

Implementation of Security Controls

- **Data Encryption and Two-Factor Authentication:** The solution incorporates data encryption at rest and in transit, as well as two-factor authentication (2FA) for CommCare users to enhance security. These measures protect sensitive information and ensure that only authorized users can access the system.
- **Regular Security Audits:** The system undergoes regular vulnerability and penetration testing to identify and mitigate potential security risks. This proactive approach ensures the ongoing integrity and security of the MCH Data System.

User Management and Support

- **Dimagi Help Desk:** The Dimagi Help Desk provides technical support for end-user authentication and authorization issues. This includes troubleshooting access problems and ensuring that users can effectively and securely interact with the system.
- **Supervisory Controls:** Supervisory users have the ability to assign and reassign roles and permissions as needed, facilitating effective team management and ensuring that access controls are aligned with current operational requirements.

The proposed solution provides a comprehensive and flexible approach to role-based security, enabling detailed access control at both the page and field levels and supporting multiple role assignments for individual users. This ensures that the system remains secure, compliant, and adaptable to future regulatory changes.

c. If the proposed solution cannot currently accommodate role-based permissions and the needed functionality, what actions and accompanying timelines would need to be completed for utilization?

Question 6.4.c is not applicable to the proposed solution as the solution can accommodate role-based permissions and the needed functionality.

5. State and Federal Requirements

Dimagi has reviewed Section 7.2 of Attachment K and confirms our solution will comply with the State and Federal Requirements listed in Table 2. Dimagi's subcontractors are also actively engaged in State of Indiana data projects and maintain compliant security practices.

Dimagi has extensive experience in meeting diverse regulatory, compliance, and security requirements including those referenced in Attachment K Section 6.2. Over its 20+ year history, Dimagi has done work in more than 25 different US states and more than 100 countries in addition to working with federal agencies. Dimagi has a dedicated corporate operations team, security operations team, as well as an industry-leading security consulting partner that together ensure that state and federal requirements are consistently met. Dimagi works closely with our state and local partners to ensure state and local requirements pertaining to service delivery are implemented in line with regulations during the project work. Additional details about many items in Table 2 are also listed under Attachment O: Non-Functional requirements.

Dimagi prioritizes security in all aspects of development and deployment. CommCare is a **HIPAA compliant platform**, and Dimagi's security policies and practices are aligned to **NIST 800-53 and are SOC 2 Type 2 compliant**. CommCare is hosted in a highly secured ISO27001 environment in the United States that is compliant with FedRAMP, HIPAA, GDPR, and FERPA. Data is encrypted in transit and at rest. Our proposed solution safeguards protected health information and sensitive data to reflect industry best practices and compliance with state and federal regulations. Dimagi's holistic security approach, coupled with user-centric features and alignment with industry standards like NIST, offers a robust, tailored solution for care and case management, safeguarding data while optimizing user workflows. We have successfully passed numerous state and local security reviews, solidifying our reputation as a trusted custodian of sensitive data for our partners, including executing Business Associate Agreements with various state departments of health. Dimagi treats all communications and materials for this project, even those not PII or PHI, with high sensitivity and in accordance with any agreements established.

In addition to security, Dimagi's commitment to equitable access to resources extends to both the community members our partners serve and to all users of the CommCare platform. The platform is therefore designed with accessibility in mind and **adheres to Section 508 Accessibility WCAG 2.0+, EAA Standards**. To this end, Dimagi obtained independent accessibility audits of the CommCare platform in October of 2020 and February of 2022 to identify and address areas of improvement for Americans with Disabilities Act (ADA) compliance in the software. In addition to periodic external audits, Dimagi also requires rigorous internal accessibility testing of all new product features that introduce or modify existing components of the platform's user interface or user experience. This testing includes ensuring that all new or modified platform elements are keyboard focusable and readable using a screen reader.

As referenced in Attachment E, Business Proposal parts 2.3.6 and 2.3.18, Dimagi has reviewed and confirmed agreement with Cloud Product and Service Agreements for SaaS engagements, as well as the Information Security Framework (ISF).

7. Reporting (Attachment K, Section 8)

1. Meeting Reporting Requirements

Dimagi is pleased to confirm our compliance with the reporting requirements outlined in Attachment K, Section 8, ensuring timely and comprehensive data delivery of standard reports, ad hoc reports and a dedicated reporting environment.

Dimagi Proposed Reporting Capabilities

Reporting capabilities come from three key Dimagi Data Platform solution aspects that make data available and generate reports: 1) Data Storage, Extraction and Load Processes, 2) Data Transformation, and 3) Data Reporting. The solution leverages a suite of AWS tools for data storage and exchange, the Snowflake Cloud Data Platform for data warehousing and transformation, and Tableau for advanced analytics and visualization.

Data Storage, Extraction and Load Processes

In a dedicated environment and utilizing AWS S3 for raw data storage, our solution ensures that original data formats and structures are retained. The AWS environment is hosted in the US East (N. Virginia) region, or us-east-1. Data from various sources, including CommCare and State systems, is landed in AWS S3, serving as the data lake for the Dimagi Data Platform. Automated processes then load this data into the Snowflake Cloud Data Platform for further processing. From there, similar tooling and design patterns are in place to enable automated load to the Snowflake Cloud Data Platform. Specifically, AWS lambda functions can be called via AWS EventBridge to trigger the raw data pull from s3 to Snowflake data lake (hosted in a separate AWS environment, also in the us-east-1 region).

Data Transformation

The Dimagi Data Platform includes automated pipelines which will load data from s3 to the Snowflake Cloud Data Platform. From there data will be transformed through several layers (raw, integration, presentation) to enable a client centric view of the data. All transformation steps will be implemented in the Snowflake Cloud Data Platform. To develop unified, client centric data model, there are three necessary layers to develop within the cloud data platform, including:

Raw Layer: In this layer, immutable raw data is loaded for elevation to the next layer, where processing and application of business rules to ensure standardization and consistent data structuring. Here, separation between data sources with multiple schemas can provide structural stability and increased reliability in managing data and process assets without minimal to no impact to other sources. Raw data will be processed incrementally with scheduled Snowflake tasks to orchestrate data processing. Data will be promoted to the next layer based on defined natural business keys, loading priority defined by the State and recency of records.

Integration Layer: In this layer, normalization and cleaning procedures allow for conversion and unification of the data based on transformations. Within the integration layer, we would recommend the following steps:

- **Data Standardization and Normalization:** We would recommend implementing the following in addition to conversion business rules defined by the state (e.g. preferred datetime formats):
 - Standardizing formats (e.g., changing dates from "MM/DD/YYYY" to "YYYY-MM-DD")
 - Standardizing value casing (e.g. iPhone vs. IPHONE)
 - Normalizing values (e.g. from one unit to another: converting weights from pounds to kilograms)
- **Data Cleaning and Correction:** We recommend implementing rejection rules to surface gaps or inconsistencies in the data, for the State to advise on a course of action. We will work with the state to define a set of business rules that are hard (always applicable under any circumstance) and soft (applicable under specific circumstances), including but not limited to the following:
 - Handling missing or inconsistent values
 - Correcting inaccurate data
 - Removing irrelevant data
 - Removing outliers
 - Removing inconsistent data
- **Unification of Data:** We would recommend implementing Data Vault 2.0 architectural patterns using Hubs, Satellites and Focus Areas to provide parallel and fast loads from the multiple data source tables in the raw layer. Data Vault 2.0 models are essentially a hybrid of 3NF and star schema leveraging benefits of both. This model is flexible and generally recommended as the best practice for these types of use cases.

Presentation Layer: prepared views are available for analysis or other downstream purposes (e.g. reporting, data exchange, etc). At the presentation layer, either the Data Vault 2.0 Business data layer or star schemas will be implemented to facilitate data models via views that can be extracted from to connect to supported reporting tools (Tableau). All data layers can follow SCD Type 2 (insert only) - allowing maintenance of history, troubleshooting, analyses and reporting in all layers. Role-based access controls and masking strategies will be employed to ensure PII and PHI data is suitably masked or unmasked.

The 3-tier architecture with clear separation of ownership of responsibility per layer creates vertically clean handover of data from one layer to another. This abstraction enables different layers while dependent reduces the impact of change. For example, a change in the raw layer table is separated from the view of the procedure that loads data into the integration layer and does not impact the upper layers until they are ready to receive the same. Data Vault 2.0 especially, lends itself for changes in satellites without impacting the whole focus area.

Snowflake tasks can be chained to automatically trigger one to the other from the moment data is loaded, triggering rejection processing, loading to vault and then from there to star schema in the presentation layer. All design and code assets will follow strong standardized naming, coding, and templated conventions that lend to ease and speed of onboarding new data sources.

Data Reporting

CommCare offers embedded reports, created in Tableau, directly into user-facing workflows to optimize the end user experience. This pre-built connection requires no additional setup beyond defining the sources of the data. Embedding Tableau reports directly into CommCare allows for easy, direct access for credentialed users to see visualizations. Combining credentialed access to reports within CommCare with the capabilities of Tableau to publish dashboards publicly, users have a great deal of control over the level of access others have with Tableau data.

Data query export: Our solution allows for custom data queries to export needed data.

- **Exporting data using Tableau:** Exporting raw data from Tableau can be achieved in multiple ways. Users can export specific views to create subsets of data or export larger data sets by accessing a worksheet, choosing 'View Data,' and then 'Full Data.' These exports can be saved in formats such as CSV.
- **Exporting data using Snowflake:** Snowflake supports various methods for exporting raw data. Users can utilize SnowSQL, a command-line interface, to construct queries and export data to CSV. The Snowflake Web Interface also allows users to export data directly from tables or query results in several formats, including CSV. Additionally, the Snowflake Connector for Python can be used to extract data via SQL queries within Python scripts.

Data Analysis and Visualization

Tableau supports a native integration with Snowflake and is an effective means of visualizing Snowflake data in a wide range of reporting options including bar, line, pie and scatter charts, maps and more. Additionally, dashboards can be used to display wider datasets. Dashboards can combine multiple worksheets into a single interactive visualization. The visuals in Tableau can be shared publicly, or with a defined set of users.

Figure 9: Example Image of Embedded Tableau in CommCare

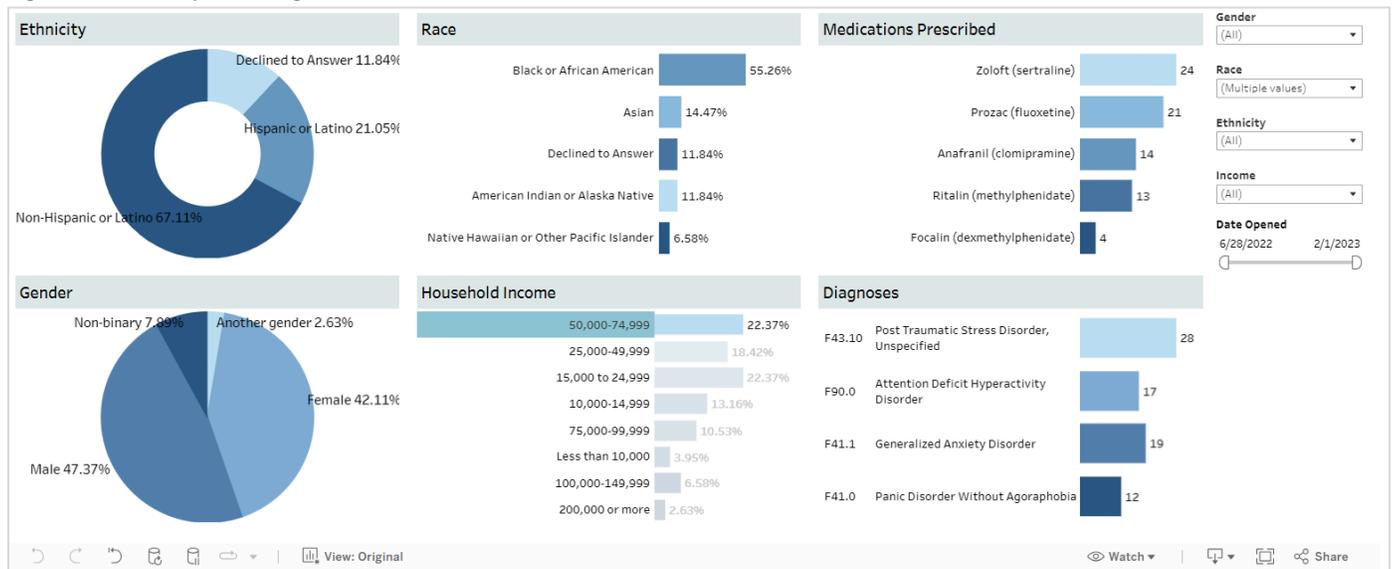


Table 5: Types of reports which could be rendered in a shareable format

Birth defect cases by maternal race/ethnicity for a given time period	Displayed with a bar chart or charts with the Y axis being case counts and the X axis displayed with a combination of maternal race/ethnicity and specific defects. Filters could allow one to alter date ranges or drill into specific ethnicities or defects, for example.
Birth defect cases by maternal age for a given time period	Displayed with a bar chart or charts with the Y axis being case counts and the X axis displayed with maternal age. Filters could allow one to alter date ranges or drill into specific ages.
Birth defect cases by gender for a given time period	Displayed with a bar chart or charts with the Y axis being case counts and the X axis displayed with gender. Filters can allow one to refine date ranges.
Birth defect cases by county	Potentially illustrated by an interactive map with an aggregate case count displayed over a geography.
Number of infants reported to IBDPR	An aggregate count representing the number of cases. Further elements, like time period or other specific attributes of infants could be rendered into a pie chart or similar.
Number of case abstractions completed monthly per system user	An aggregate count representing the number of case abstractions. Further elements, like time period or other certain attributes of these abstractions could be rendered into a pie chart or similar.
Number of case abstractions reviewed monthly	An aggregate count representing the number of case abstractions. Further elements, like time period or other certain attributes of these abstractions could be rendered into a pie chart or similar.

2. Direct Data Access for the State

The Dimagi Data Platform solution leverages the Snowflake Cloud Data Platform and Tableau, both of which have a variety of options to access raw data to connect to or extract data. The State will have access to raw system data and all portions of the system to allow for the efficient creation of ad hoc reports as necessary by State staff. In addition to pre-configured reports or exports, the following options are available for the State to access data:

Accessing data via Snowflake:

- User friendly web GUI for managing and querying data
- Interface for SnowSQL (command-line client for executing SQL queries)
- Connectivity to third party tools through JDBC, ODBC and various BI or ETL tools
- Secure data sharing with other Snowflake accounts without copying or moving data

- A RESTful API is available to access and manage data.

Accessing data via Tableau:

Data sources from Snowflake will be made available in Tableau for State users to leverage explorer-level access to create ad hoc reports, through a live connection. The live connection to Snowflake will enable real-time updates of new data. New data elements will also be available in the data source, but would need to be configured into the reports to be visible to non-explorer (viewer) State users. Moreover, State users can view underlying data of preconfigured and ad hoc reports with the following capabilities:

- **Data Pane:** Explore the data fields and dimensions available in the workbook via the Data Pane, providing a clear view of the data structure.
- **View Data:** Use the "View Data" option to see a detailed tabular view of the data behind a visualization. This feature allows you to view the summarized data as well as the full underlying data, depending on permissions set by the workbook author.
- **Export Data:** Download the underlying data of a visualization or dashboard to Excel or CSV format for further analysis outside of Tableau. This feature is typically enabled by the workbook author and respects the data permissions set.

Extensive security and access controls will be in place, in alignment with best practices and policies for data transfer and purging according to HIPAA policies and terms of contract. Additionally, role-based access and row-level security will be in place across all platforms leveraged in this solution.

In order to equip the State to leverage the relevant capabilities to directly access data, we offer a training series which is typically tailored to the capabilities of the staff who will need to directly access data. This can include foundational Tableau report development through web-editing for individuals with proficiency in statistical analysis and data visualization, foundational Snowflake analysis (SQL-based querying) for individuals with proficiency in leveraging Microsoft Excel for analysis, or technical support to leverage API end-points or integrate third party tools for individuals with proficiency in the described developer tools.

3. Ad hoc Reports

The Dimagi Data Platform is optimized for ad hoc analysis and report development by end users at the State. Both Dimagi staff and State users will be able to create ad hoc reports in both Snowflake and Tableau as needed. With the flexibility and high usability of our proposed solution, Dimagi is confident about our ability to meet the deadlines for ad hoc reports by urgency type, of one to ten days turnaround. By maintaining transformed, up-to-date data in the Dimagi Data Platform and using Tableau's intuitive interface, Dimagi ensures the quick creation of ad-hoc reports.

Snowsight, the Snowflake Web Interface, provides users with the means to create visuals like bar charts, scatterplots and other charts. Additionally, Snowsight supports the ability to create dashboards, illustrating multiple visualizations in one place. Much of Snowsight's visualization capabilities are built on top of SQL queries. When running a query within Snowflake, users are given the option to visualize the results of that query. However, Many Snowflake users opt to use other BI tools, notably Tableau, to visualize data stored in Snowflake.

Tableau supports a native integration with Snowflake and is an effective means of visualizing Snowflake data. After connecting Tableau and Snowflake, which can be done under the 'Connect' option in Tableau by selecting 'Snowflake,' one can create views using Snowflake data. Once in 'views,' this data can be visualized by a wide range of reporting options including bar, line, pie and scatter charts, maps and more. Additionally, dashboards can be used to display wider datasets. Dashboards can combine multiple worksheets into a single interactive visualization. The visuals in Tableau can be shared publicly, or with a defined set of users.

With options for Tableau user permissions, our proposed solution gives State users appropriate levels of access. Typically users will have viewer (read-only) and explorer permissions in Tableau, to be assigned to specific users by the State administrators of this solution. Viewers primarily consume content created by others. Their permissions are typically read-only, while Explorers have more capabilities than Viewers, allowing them to interact with and modify existing content and, in some cases, create new content from existing data sources.

8. Project Management (Attachment K, Section 9)

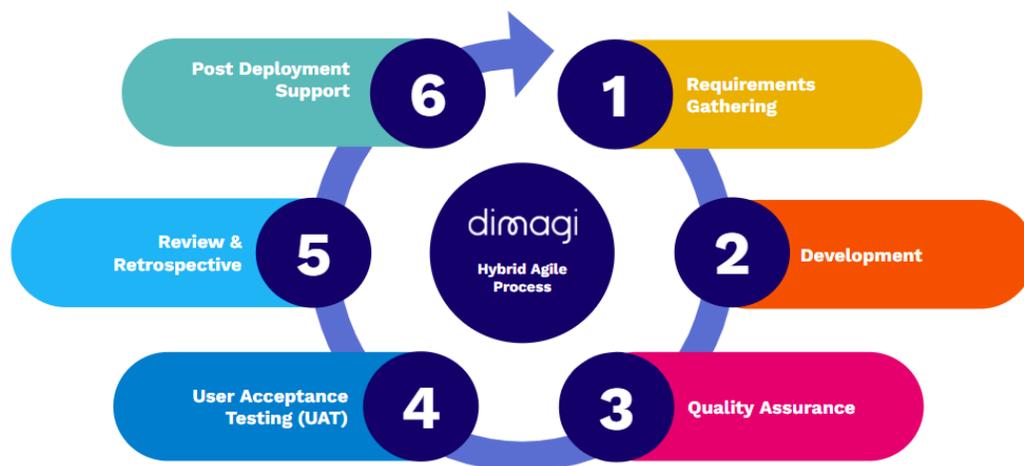
a. Agreement with Project Management Requirements

Dimagi confirms agreement with the requirements from Attachment K Section 9.

b. Approach to Project Management

Dimagi adopts hybrid agile management principles and a human-centered design ethos to deliver responsive and adaptive solutions. This approach is pivotal in ensuring our projects not only meet programmatic requirements but also resonate with end-users, adapting to their evolving needs. Hybrid agile methodology prioritizes flexibility while concurrently upholding stringent documentation and controls. With project requirements that are dynamic, requiring adaptability, collaboration, and clear communication, our hybrid agile approach involves incremental phases of design, development, testing, deployment, monitoring and support.

Figure 10: Dimagi's Hybrid Agile Process



Delivery Approach: Hybrid Agile, User-Centered Process Drives Success

Dimagi's hybrid agile methodology underscores a commitment to delivering solutions that are both tailored and impactful. The focus on iterative and incremental development aligns perfectly with the IDOH's objectives, ensuring that the administrative and technological needs are met with precision and efficiency. We recognize the unique challenges and aspirations of the State, and our approach allows for consistent adaptation, keeping the project aligned with evolving requirements. Emphasizing frequent feedback and collaboration with stakeholders at each stage, we provide a flexible and user-centered strategy that resonates with the IDOH's ambitions.

Iterative and Incremental Approach: Continuous Improvement

By employing an iterative approach, we ensure that each phase of the software development life cycle is open to assessment and fine-tuning. This adaptive model allows for:

- **Early and Regular Delivery:** Our incremental delivery of software provides tangible value at an early stage, enabling stakeholders to visualize progress and contribute to ongoing refinement.
- **Frequent Feedback Loops:** Regular check-ins and sprint reviews invite stakeholders to contribute insights, ensuring that the project evolves in line with State needs.

Stakeholder Collaboration: Adapting to Changing Priorities

In the fluid landscape of technological development, adapting to shifting priorities is paramount. Our hybrid agile methodology ensures:

- **Transparency and Alignment:** Work closely with the IDOH's key representatives to establish a roadmap that promotes trust, shared understanding, and consistent alignment on project priorities.
- **Adaptive Planning:** Accommodate changes in priorities without disrupting the project flow.

User-Centered Design: Value through Early Delivery & Engagement

Our human-centered design (HCD) focuses on reducing the administrative burden and elevating the user experience:

- **Engaging Users in Design:** Involve users in every stage, ensuring a solution that resonates with those it serves.
- **Provider Engagement without Overburden:** We strike a balance, engaging stakeholders without placing heavy demands, ensuring a collaborative yet efficient process.

Dimagi's project approach and hybrid agile methodology embody a philosophy that centers on collaboration, flexibility, and a user-focused orientation. By aligning our strategy with the IDOH's specific objectives and requirements, we deliver an approach that is not only tailored to the State's unique landscape, but also leverages our extensive experience in hybrid agile development. The result is a balanced and localized solution that prioritizes the needs and aspirations of the IDOH, encapsulating the iterative, adaptive, and stakeholder-driven ethos that characterizes Dimagi. Our commitment to excellence carries throughout the overall project management methodology.

c. Approach to Developing Components of the Project Management Plan

Dimagi adopts an Hybrid Agile approach to project management that supports the standards set by the Project Management Institute (PMI) and the Project Management Body of Knowledge (PMBOK) framework. The Project Management Plan (PMP) is a foundational document that encapsulates all critical aspects of project planning, execution, and control, ensuring that the project is managed systematically and successfully according to the PMBOK guidelines. The PMP is an essential tool in our partnership with the IDOH, providing a set of subsidiary work plans to serve as a clear operational guide for the project. These work plans are a practical representation of our strategic approach, emphasizing teamwork and a commitment to quality.

Dimagi agrees to deliver the PMP and accompanying work plans for State review and approval within 30 calendar days of the Contract start date. The State's acceptance of this plan is essential for progressing with the contractual activities. This step ensures that both parties are aligned and ready to move forward with the project's objectives and timelines. In close coordination with the State Project Manager, we will ensure the plan is updated regularly, promoting transparency and alignment with the State's overall goals. This approach facilitates effective management and clear communication throughout the project's progression.

9.1.1.A Internal Communication Management Plan

The Internal Communication Plan is intended to provide the State and Contractor teams with a shared understanding of—and commitment to upholding—communication practices and expectations throughout the project lifecycle. The plan includes an overview of the communications roles and responsibilities of members of both teams, Dimagi's recommended approach to communications, an outline of processes and procedures that facilitate communication, and a description of how various tools will be utilized to communicate effectively. The final Plan will be a product of collaboration between the Dimagi team and the IDOH Communications Director. It will be delivered to the State within 30 calendar days of the Contract start date and updated as needed throughout the project lifecycle to ensure it continues to reflect current best practices and team processes as the project evolves.

Dimagi Approach

Dimagi believes in communication as the foundation of trust and partnership between our organization and our State partners. To this end, Dimagi places transparency, accountability, and collaboration at the center of our communication approach. Agreed-upon roles and responsibilities and reporting structures allow us to foster accountability and keep lines of communication open. A combination of recurring and ad-hoc project management meetings makes space to align on project tasks and due dates as well as communicate about—and collaborate to resolve—project issues and risks as they arise. Dedicated Agile sprint meetings ensure System configuration work is scoped in line with State priorities, achievable with project resources, and remains on schedule.

Recognizing the specific needs and preferences of the State, we will adapt our communication approach to align with your processes and tools. This tailored strategy is focused on establishing a clear, effective, and efficient flow of information, crucial for a successful transition.

Roles & Responsibilities

Effective communication will be critical for the overall success of this project and as we embark on this transformative journey, clarity and transparency are paramount. This table provides a comprehensive overview of the distinct roles and responsibilities assigned to each team member, detailing their contributions to ensuring open channels of communication

Table 6: Dimagi and State Team Roles and Responsibilities

Team	Role	Communication Responsibilities
State	Executive Sponsor	The Executive Sponsor is a member of the State leadership team who serves as a point of escalation for the Project Manager. They are responsible for participating in Quarterly Review meetings to stay informed on project status and collaborate on decisions regarding changes to the contract. They will also participate in check-ins with Dimagi leadership, as needed, to raise any concerns that cannot be addressed within the immediate project team.
State	Project Manager	The Project Manager serves as the primary point of contact for the State project team as well as for the Dimagi Project Manager. The Project Manager is responsible for participating in weekly debriefs and monthly meetings with the Dimagi Project Manager to track progress, make collaborative project decisions, and scope and resource upcoming work.
Dimagi	Executive Lead	The Executive Lead is a member of the Dimagi leadership team who serves as the point of contact for the State regarding issues that cannot be resolved within the project team or needs pertaining to budgetary concerns or changes to the project scope. The Program Director is responsible for meeting on a quarterly and/or ad hoc basis with the State team to address any concerns or high-level administrative changes.
Dimagi	Project Manager	The Project Manager serves as the primary point of contact for the State. The Project Manager is responsible for communicating with the State Project Manager regarding project issues/risks and mitigation plans as well as preparing and sharing key communications materials, such as Status Reports, with the State team. The Project Manager will meet on a weekly basis with the Project Manager to discuss progress and make collaborative decisions and provide a Status Report. They will also be responsible for leading monthly meetings to discuss scope and project resourcing. They also lead the Dimagi project team's internal Agile sprint meetings.

Process & Procedures

Dimagi recommends a combination of standing and ad-hoc meetings to ensure consistent and open communication among team members. We recommend the following meeting structure, cadence, and attendees:

Project Meetings

A key component of Dimagi's process for communications management includes standing and ad hoc project delivery and oversight meetings, including:

- An all-team project kickoff to ensure alignment to State's objectives and review team roles and responsibilities, project scope and timelines, and establish team norms for collaboration and communication
- Weekly debriefs with team leads, the Dimagi Project Manager, and the State Project Manager to report on progress, make collaborative project-level decisions, and track risks mitigation plans. As part of the debrief, the Dimagi Project Manager will deliver a weekly Status Report and review it with the Project Manager.
- Monthly meetings with the Dimagi Project Manager and State Project Manager to scope upcoming work, review resourcing, agree on mitigation plans for emerging risks, review budget resources, and ensure alignment with the State's priorities
- Quarterly reviews with a report out to the State sponsor/committee to assess overall project performance, user adoption, and budget status
- Check-ins with Executive Lead and Dimagi leadership, either quarterly or ad-hoc, to address any concerns experienced by the State in collaborating with the project team or to work on high-level administration

Agile Sprint Meetings

In addition to project delivery and oversight meetings, Dimagi follows a cadence of internal meetings to facilitate our hybrid agile sprint work, including:

- Sprint planning sessions to estimate task completion times, evaluate progress against the roadmap, and sequence work around anticipated risks
- Daily standups to update task boards, share progress, address issues or blockers, and monitor risks
- Sprint reviews to showcase design deliverables and demonstrate working code, providing opportunities for collaborative design and decision-making
- Sprint retrospectives to celebrate progress and identify areas for improvement, supporting continuous refinement of the project's approach

Tools

The Dimagi team is flexible regarding communications tooling and is open to leveraging the preferred tools of the State, where feasible. In our past experience partnering on Statewide public health projects, we have utilized the following tools, and found them to be impactful at facilitating effective communication management:

- **Microsoft SharePoint for document management:** SharePoint can serve as the document management repository for the project. All shared project documentation (such as the Project Management Plan, Status Reports, Meeting Notes, etc.) will be stored and maintained on the project SharePoint site. This allows for transparency, shared access to all relevant documentation for authorized team members, and visibility into version history and eliminates concerns over version control.

- **Microsoft Teams for communications and video conferencing:** At the request of some partners who use Microsoft's software suite, our team is experienced with utilizing Microsoft Teams for project communication, collaboration, and productivity across a distributed team. We also have used similar communication tools such as Zoom, Slack, Google Chat, Google Meet, Webex, and GoToMeeting and are flexible to use the tool preferred by the State.
- **Asana for task management:** Asana is the project management tool used by the Dimagi Delivery team to track project tasks and milestones. The State can be granted access to this tool, if desired, for shared visibility. Our team also has experience using MS Project and is eager to utilize whichever tool is preferred by the State.
- **Jira for support and issue resolution management:** Jira is the tool utilized by the Dimagi support team to track all communications related to the reporting and resolution of enhancement requests and issues with the system. Tier 1 (T1)- Tier 2 (T2) help desk users will be able to enter tickets directly and will receive email notifications of updates to Jira tickets sent from the Dimagi Tier 3 (T3) support team.

9.1.1.B Schedule Management Plan

A Schedule Management Plan (SMP) in a hybrid agile project strikes a balance between flexibility and structure. It helps ensure that the project progresses smoothly, meets stakeholder expectations, and delivers value incrementally while maintaining the ability to adapt to changing requirements and circumstances. The SMP will be a product of collaboration between the Dimagi team and the IDOH team. It will be delivered to the State for review and approval within 30 calendar days of the Contract start date. It will be updated as needed throughout the project lifecycle to ensure it continues to reflect current best practices and team processes as the project evolves.

Dimagi Approach

Dimagi's strategy for schedule management reflects our commitment to the hybrid agile framework — a dynamic and iterative approach that anchors our development process. Recognizing the unique challenges and requirements of statewide implementations, we advocate for an initial prototype design and launch, with subsequent iterations on solution functionality and implementation plans, before tackling a full-scale up. This iterative strategy is not just about creating a foundational system; it's about piloting, learning, refining, and adapting in real-time. By integrating regular feedback loops and iterative enhancements into our schedule, we ensure that when we do proceed to a full statewide roll-out for the IDOH, it's not just a system that works, but one that excels.

Our phased approach to implementing modules and components is underpinned by hybrid agile methodology, ensuring a systematic and flexible development process. By segmenting the project into manageable iterations or "sprints," we focus on delivering the highest value functionalities to the end-users first. This approach not only streamlines development but also allows for continuous learning and adaptation based on user feedback and evolving project requirements.

Each sprint cycle represents a distinct phase of development, typically lasting two to four weeks. During each sprint, the team works on a set number of items from the product backlog, aiming to deliver a potentially shippable product increment by the end of the sprint.

The sprint cycle includes planning, design, development, testing, and review, allowing for regular assessment and adaptation:

- **Sprint Planning:** At the beginning of each sprint, team members select work items from the product backlog based on priority and capacity. This planning phase sets clear objectives and deliverables for the sprint.
- **Development and Testing:** Team members work on the tasks defined in the sprint, focusing on developing and testing each module or component. Continuous integration and testing are key to ensuring quality and functionality.
- **Sprint Review and Retrospective:** At the end of the sprint, the team demonstrates the completed work to stakeholders and gathers feedback. The retrospective meeting then allows the team to reflect on the sprint and identify improvements for future cycles.

By adopting this approach to module and component implementation, we ensure a responsive, user-centric development process that aligns with the dynamic nature of the project and the State's objectives.

Schedule Control & Reporting

Throughout the engagement, weekly status reporting will be a key part of our project management approach. These reports provide a snapshot of the current state of the project and provide transparency to all stakeholders. Each weekly status report will include a summary of the progress and status of all activities, milestones, and achievements, as well as schedule risks and status of all activities related to the enterprise scope of work. If there are any documented problems encountered and the resulting impact, these will be detailed, as well as the corrective measures taken.

We will utilize MS Project to track project activities and generate weekly status reports. The tool will facilitate tracking of project milestones, task dependencies, resource allocation, and time tracking, making it easier to provide an accurate weekly status update. For Sprint planning and execution, our team recommends Asana, which allows for easier connection to requirements backlog and agile configuration. However, we're happy to adapt to any tool preferred by the State. Our objective is to provide concise, informative, and timely reports to facilitate decision-making, ensure transparency, and maintain accountability.

d. Approach to Change Management and Control Process

Dimagi integrates a dynamic change management plan within our hybrid agile project framework, ensuring adaptability while maintaining project integrity and alignment with stakeholder needs. This plan includes a centralized change request log for tracking and a collaborative review process to evaluate each change's impact. Our approach also encompasses transparent documentation and dissemination of changes, complemented by ongoing process improvement and training.

9.1.1.C Change Management Plan

The Change Management Plan will be a product of collaboration between the Dimagi and the IDOH teams. It will be delivered to the State for review and approval within 30 calendar days of the Contract start date. It will be updated as needed throughout the project lifecycle to

ensure it continues to reflect current best practices and team processes as the project evolves.

Dimagi Approach

Change management is an essential part of Dimagi’s broader hybrid agile approach to project and account management. Our change management philosophy combines the flexibility of Agile methodologies with the need to ensure that changes are carefully considered, communicated, and integrated in a way that maintains project quality, stakeholder satisfaction, and the unique overarching goals of the State.

Our change management approach mandates that each identified change request undergo careful consideration and robust impact analysis by the State’s Project Manager and Dimagi project leadership. In the case where a requested change might also mandate an amendment to the contract, an additional step of review by project leadership will occur where a decision on inclusion - and potentially a contract amendment - is made.

Roles & Responsibilities

The table below details the roles responsible for initiating changes through submissions and those that will review the changes as well as provide feedback to the committee.

Table 7: Dimagi and State Team Change Management Responsibilities

Team	Role	Change Management Responsibilities
State	Project Manager	As a key figure in the change management process, the State Project Manager is responsible for submitting change requests when necessary. They actively participate in the impact review, leveraging their expertise to ensure that changes align with contract requirements and project objectives.
State	Executive Sponsor	The Executive Sponsor provides strategic oversight in the change management process. As a member of the Contractor management-level Change Control Board, their role is to ensure that the proposed changes align with the broader goals and priorities of the State, providing high-level guidance and decision-making support.
Dimagi	Project Manager	The Project Manager reviews all change requests and offers pertinent recommendations. The Project Manager will participate in impact reviews and their insights are crucial in determining the practicality and impact of proposed changes on the project's trajectory.
Dimagi	Executive Lead	The Executive Lead works closely with the Project Manager in reviewing change requests. They initially play a consultative role, offering strategic inputs as needed,

ensuring that changes are in line with Dimagi’s overall project delivery standards and client expectations. As a member of Contractor management-level Change Control Board, they will participate in the decision making process as to final approval of the change request.

Change Control Process & Tools

The change management documentation process within Dimagi is meticulously organized and maintained, utilizing SharePoint or an equivalent web-based collaboration and documentation management platform preferred by the State. This centralized system houses all pertinent records related to change management, ensuring seamless access and transparency.

Within this system, comprehensive records are kept for each aspect of the change management process. This includes initial change requests, detailed impact assessments, negotiations undertaken, and any amendments made to the contract. The purpose of this thorough record-keeping is twofold: it serves as an essential resource for audit purposes and also acts as a valuable repository for future reference.

The change request log is a keystone tool of Dimagi’s change management plan. It is actively maintained, updated and referenced throughout the project lifecycle, ensuring it remains a relevant and effective tool for managing and tracking requests.

The centralized change request log includes the following components:

Table 8: Centralized Change Request Log Components

Change Request	Description
Change request code	Unique code assigned to the change request
Date Submitted	The date when the change request is submitted
Name of Requester	The person or group who initiated the change request
Description of the Change	A brief description of the requested change, including the motivation or justification behind the request, the perceived impact, and links to any supporting documentation
Evaluation Date	The date when the assessment team evaluates the logged change request
Impact Review	An assessment of the potential impact of the requested change on the project and/or contract. Takes into consideration feasibility, timelines, costs, resources, and legal implications

Recommendation	A suggested solution or approach for implementing the change. This may include <i>not</i> implementing the proposed change
Decision Date	The date when the Change Review Board reviews the evaluated change request
Decision and Rationale	The decision made by the Committee regarding the change request and the reasoning behind it
Decision Status	The current status of a logged change request as it progresses through the change management process (e.g., Open, Under Evaluation, In Review, Accepted, Rejected)
Implementation Status	The status for accepted changes being communicated to relevant stakeholders and reflected appropriately in project documentation (e.g., Not started, In Progress, Complete)
Implementation Complete Date	The target date that the change will be fully implemented and communicated. Updated to reflect the completion date once change inclusion is finalized.

Figure 11: Example Change Request Form

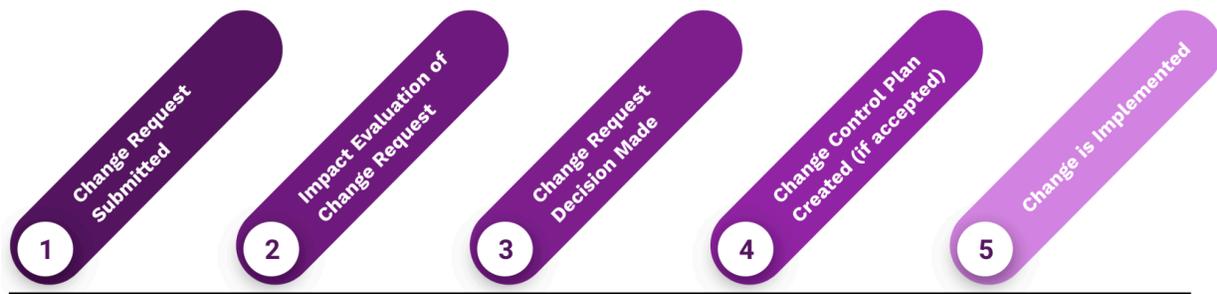
CHANGE REQUEST FORM		
Change Description		
Project Name:	Change Name:	Request Code:
Requested By:	Contact:	Date:
Description of Change:		
Reason for Change:		
Priority (Circle One): 1. High 2. Medium 3. Low		
Explanation of Priority Chosen:		
Anticipated Impact on Cost, Legal, Timelines, Deliverables, etc.:		
Date Needed:	Please attach any supplementary materials	
Impact Evaluation		
Tasks/Scope Affected:		
Cost Evaluation:		
Risk Evaluation:		
Quality Evaluation:		
Additional Resources:		
Duration:		
Additional Effort:		
Impact on Deadline:		
Alternative and Recommendations:		
Comments:		
Project Manager Signature:	Date:	
Contract Manager Signature:	Date:	
Committee Review		
[Circle One]: 1. Accepted 2. Deferred 3. Rejected 4. More Info Requested		
Comments:		
Decision Maker Signature:	Date:	
Decision Maker Signature:	Date:	
Decision Maker Signature:	Date:	

As changes are accepted and implemented, the documentation system reflects these updates. The implementation status of each change request is meticulously tracked. Upon the successful implementation of a change, the status is updated to 'Complete,' and the actual completion date is recorded, ensuring a clear historical record of the project's evolution.

Should there be any updates or enhancements to the change management process or the change request log, these are diligently documented. This information is then disseminated to the wider team as necessary, ensuring everyone involved is aligned and informed about the latest methodologies and practices in managing project changes. This cycle of implementation, review, and improvement underscores Dimagi's commitment to a dynamic and responsive project management approach.

Phases for Change Management Process

Figure 12: Change Management in Five Phases



1. Change Request Submitted through Centralized Change Request Log

Change requests, addressing scope, budget, timelines, or other project aspects, are formally submitted through a centralized log. Dimagi maintains a detailed change request log as a central point for tracking all change requests. This tool, accessible via a web-based platform like SharePoint, includes key information such as the change request code, submission date, requester's name, description, impact review, and decision status. It facilitates systematic evaluation and seamless integration of changes.

2. Impact Review of Change Request

Within two (2) business days after receiving the request, the State's Project Manager and Dimagi project leadership meet to conduct a thorough impact review to determine how the proposed change will affect the existing contract terms, project scope, timeline, budget, and risks. They identify potential conflicts with other project elements and assess any regulatory or compliance issues.

3. Decision Made on Change Request

Within three (3) days of the impact review, a Contractor management-level Change Control Board composed of State and Dimagi leadership meet to decide whether to accept, reject, or negotiate the proposed change, considering the results of the impact review. The decision

status is updated to reflect the decision made by the assessment team (e.g., Accepted, Rejected).

Inclusion of all relevant stakeholders in the change management process, affords executives and project teams alike a shared understanding of the expected impact of changes as part of the decision-making process. This aligns with Dimagi's broader hybrid agile project management approach, where collaboration, feedback, and recurring team engagement play a significant role in shaping the project's direction.

4. If Accepted - Change Control Plan Created

Once project leadership accepts the change request, a change control plan for implementing changes is designed and kicked off:

- A communication strategy is outlined in the change control plan and includes agreed upon approaches for verbal and written dissemination of the change and timelines on which these will be achieved.
- The terms of the change, including any adjustments to the current contractual documentation of scope, budget, timeline, and responsibilities, are discussed and assignments agreed upon. Legal teams may be involved to draft the necessary amendments.
- The plan may include effort by relevant parties to secure additional budget or staff (or reallocation of staff) as needed.

5. Change is Implemented

The change is implemented according to the agreed-upon terms. Project plans, timelines, budgets, and other relevant documents are updated to reflect the change. Teams involved in executing the change are briefed and given the necessary resources.

The progress and effects of the change are continuously monitored and reported to relevant parties. This helps ensure that the change is having the intended impact and allows for timely input and adjustments, if needed.

Configuration Control Plan

A Configuration Control Plan is vital in a hybrid agile software project because it helps manage changes systematically, ensures consistency and integrity of project artifacts, facilitates collaboration, supports continuous integration and delivery, ensures compliance, manages risks, and provides necessary documentation and communication. Dimagi will develop a Configuration Control Plan to enable the flexibility needed for iterative MCH Data System development, while ensuring that the project remains stable, reliable, and well-coordinated. The plan will be included as part of the Change Management Plan, which will be delivered to the State with the overarching Project Management Plan within 30 calendar days of the Contract start date.

Key components of the Configuration Control Plan will include:

- An outline of the technical and security architecture of the CommCare platform and MCH Data System, including server, software, and database specifications

- An outline of the different configuration levels or points in the CommCare platform architecture, MCH Data System, and integration components alongside the parties responsible for configuration changes throughout the project
- Decision and communication processes required before configuration changes can be made to the MCH Data System
- Defined version management approach to specify how and where changes to the MCH Data System will be maintained over the course of the project

Dimagi will adhere to the Configuration Control Plan throughout the project lifecycle, and Dimagi will not deviate from the plan without approval from the State. Dimagi recognizes that these change management artifacts set up for a strong foundation that enables a comprehensive risk mitigation strategy.

9.1.1.D Risk Management Plan

Dimagi's Risk Management approach is built upon a strategic framework that actively identifies, assesses, mitigates, and oversees risks. Utilizing expert judgment, meticulous document analysis, and continuous interaction with vital project participants, our plan anticipates and minimizes potential risks in operational, regulatory, financial, and data security areas. Our experienced team of Project and Risk Management professionals will collaboratively work with IDOH leadership to prioritize these risks, focusing keenly on their probability and potential impact. High-priority risks are analyzed quantitatively in detail, while contingency plans are established for other potential risks.

Our robust risk monitoring and control mechanisms, including regular reviews, risk reassessments, comprehensive reporting, and immediate corrective actions, form the backbone of our plan. Paired with our commitment to transparent and consistent communication with all stakeholders, these mechanisms ensure our strategies continually adapt and remain effective. By fostering a culture of proactive risk anticipation and management, we reinforce our shared objective of providing top-quality care to Indiana's maternal and child health population. Our dedication to safety, security, and sustainability affirms our confidence in the successful implementation of the MCH Data System.

The Risk Management Plan will be delivered to the State for review and approval within 30 calendar days of the Contract start date. It will be updated as needed throughout the project lifecycle to ensure it continues to reflect current best practices and team processes as the project evolves.

Dimagi Approach

Our risk management plan is rooted in a systematic, documented method that aids in assessing active risks and mitigation strategies, monitoring risk responses, identifying and recording actualized risks, reassessing risk reserve contingency budgets, and pinpointing new project risks. We value the importance of efficient communication and collaboration with the IDOH and incorporate clear escalation paths to elevate risks as required.

Centralized Risk Register

A fundamental component of our risk management strategy is the creation and maintenance of a centralized risk register. This register serves as the single source of truth for all

risk-related information and is instrumental in enabling us to systematically track and manage identified risks. Every identified risk undergoes careful analysis and is ranked based on its potential impact on the project. We then assign an owner to each risk and develop appropriate mitigation and contingency plans.

Figure 13: Example of the Centralized Risk Register

The screenshot displays a Jira Risk Tracker interface for a project named 'Behavioral Health'. The interface is divided into two main sections: a list view on the left and a detailed view on the right.

Risk Tracker List View:

Task name	Assignee	Due date	Risk Category
Team Availability for Training	Julia Fuller	Feb 20 – May 16	Operational
Differing Opinions on Workflows	Lauren Fox	Feb 10 – 22	Operational
Reviewing project plan and timelines	Lauren Fox	Feb 12	
Assessing Agile Sprint process	Lauren Fox	Feb 12	
Connecting stake-holders for high level	Lauren Fox	Feb 12	
User Buy-In	Lauren Fox	Feb 10 – 22	Operational
Key Project Personnel Availability	Julia Fuller	Feb 23 – Mar 10	Operational
Data Mapping Needs	Riya Singh	Feb 1 – Jun 4	Technical
Regulatory Approvals	Sarah Sagan	Feb 1 – 15	Regulatory

Detailed View: Differing Opinions on Workflows

- Assignee:** Lauren Fox
- Due date:** Feb 10 – 22
- Projects:** Behavioral Health Risk Tracker
- Dependencies:** Blocked by Regulatory Approvals (Feb 1 – 15)
- Risk Category:** Operational
- Risk Probability:** Medium
- Risk Status:** Pending
- Description:** The Dimagi and Partner teams have differing ideas on how to execute the project workflows. Joint planning sessions have been scheduled to agree on the most efficient process. There is a misalignment regarding sprint cycle length. Dimagi wishes to utilize a 4 week cycle and the Partner wishes to utilize a 3 week cycle.
- Risk Owner:** Lauren Fox
- Risk Mitigation Actions (Target Completion Dates):**
 - Reviewing project plan and timelines (2/12)
 - We will compare the project plan and timelines of both teams and identify any gaps or discrepancies that need to be resolved. The goal is to ensure that both teams have a clear and realistic understanding of the project scope, deliverables, milestones, and deadlines.
 - Assessing Agile Sprint process (2/12)
 - This involves evaluating the pros and cons of using different sprint cycle lengths and finding a common ground that works for both teams. The goal
- Collaborators:** BP, AT, EM

This risk register is actively maintained, updated and shared throughout the project lifecycle, ensuring it remains a relevant and useful tool for risk management. When a new risk or issue emerges, it is promptly highlighted to the State either during meetings or via email communications. Regular reviews of the risk register are scheduled, enabling the team to discuss new risks, assess the status of existing ones, and evaluate the effectiveness of risk responses. Dimagi will work with the State to identify the optimal tool for the risk management plan.

Communication

- Monitoring:** The risk register and log are reviewed at least weekly by our team, typically before a weekly Project Status Meeting, to ensure that the contents are up-to-date and relevant for tracking project progress. This regular review helps in maintaining the pulse of the project and ensures timely detection and resolution of risks and issues.
- Management:** Periodic check-ins on the risk register between the State and Dimagi are a critical part of our routine process. These typically occur at a weekly Project Status meeting and this collaboration fosters an open dialogue on potential risks and issues and helps formulate proactive management strategies.

- **Escalation:** If certain risks and issues persist on the plan for an extended period without resolution, these are escalated to a higher level. Escalation triggers a more in-depth exploration of the problem, allowing for the identification of creative solutions to mitigate or resolve the situation. Our escalation process is designed to ensure that no risk or issue is overlooked, and every potential challenge is addressed in a timely and effective manner.

Risk Mitigation Techniques

Our mitigation strategies encompass a variety of techniques to ensure comprehensive risk management:

- **Requirements Approval:** Project requirements are approved before the project's commencement to mitigate potential scope-related risks.
- **Strong Change Management Process:** We implement a robust change management process for all releases, allowing us to accommodate necessary adjustments effectively and efficiently.
- **Leadership Engagement:** Our leaders maintain active involvement throughout the process, providing guidance and making informed decisions.
- **Close Coordination:** We maintain close coordination with the IDOH and partner teams to ensure seamless integration of efforts.
- **Hybrid Agile Framework:** Our highly collaborative hybrid agile framework includes weekly meetings with the primary point of contact, focusing on scope and schedule.
- **Stakeholder Engagement:** We engage key stakeholders throughout the process, ensuring their insights and concerns are accounted for in our planning and execution.
- **Transparent Communication:** Frequent and transparent communication about the project's status and potential barriers supports proactive issue resolution and keeps all parties informed.

Risk Mitigation Procedures

Table 9: Dimagi Risk Management Procedures

Procedure Steps	Inputs	Process	Outputs
Risk Identification	Project scope, Project Plan, previous project reports, industry trends, stakeholder input, expert judgment.	Conduct brainstorming sessions with project teams and stakeholders, perform SWOT analysis, use risk identification tools and techniques.	An updated Risk Register with identified risks and their characteristics.
Risk Analysis and Evaluation	The Risk Register and risk breakdown structure.	Evaluate each identified risk based on its likelihood and potential impact. Use quantitative and qualitative risk analysis techniques as applicable.	An updated Risk Register with prioritized risks and their potential impact on the project.

Risk Mitigation	The prioritized Risk Management Plan.	Develop risk response strategies (avoid, transfer, mitigate, accept) for each risk based on its priority and potential impact. Risk owners will be assigned for implementing and tracking these strategies	An updated Risk Management Plan with risk responses and assigned risk owners.
Risk Monitoring and Review	The Risk Register with risk responses and assigned risk owners.	Monitor the effectiveness of risk responses, track identified risks, and identify new risks. Review and update the Risk Management Plan and Risk Register regularly.	Periodic risk management reports and an updated Risk Register.
Stakeholder Communication	The Risk Register, risk management reports, and project updates	Communicate risk management updates to relevant stakeholders through meetings, reports, or project updates.	Increased stakeholder awareness and engagement with the risk management process.

Roles & Responsibilities

Effective risk management will be essential to safeguard the success of this project. This table serves as a strategic guide, outlining the distinct roles and responsibilities of team members dedicated to identifying, assessing, and mitigating potential risks.

As we navigate the complexities of integrating innovative solutions, each role contributes to a comprehensive risk management strategy aimed at ensuring the resilience and adaptability of the project.

Table 10: Dimagi and State Team Communication Responsibilities

Team	Role	Communication Responsibilities
State	Executive Sponsor	The Executive Sponsor provides executive oversight and decision-making for high-priority risks and critical project decisions. They are responsible for accepting or escalating risks that may have significant impacts on project objectives. Their role also involves participating in the annual risk assessment to understand the overall risk landscape.

State	Project Manager	The State Project Manager is responsible for approving the risk register, monitoring its implementation, reviewing, and providing guidance on risk-related matters to ensure compliance with contract requirements. They are also the point of contact for communicating any new risks identified or changes in the risk landscape.
Dimagi	Executive Lead	The Executive Lead is responsible for collaborating with the State Executive Sponsor and Project Manager in addressing high-level risk-related concerns or issues that cannot be resolved within the project team. This includes high-priority risks that could impact the project's budget or scope. They also participate in the quarterly and annual risk assessment and review of the risk management plan.
Dimagi	Project Manager	The Project Manager is responsible for overseeing the overall risk management activities, including risk identification, assessment, mitigation, and monitoring. They ensure that risks are properly communicated and addressed, and that the implemented mitigation strategies are effective. The Project Manager also leads the regular risk review during project status meetings and is responsible for preparing and sharing risk-related communication materials, such as the risk register and risk status reports, with the State team.

9.1.1.E Resource Management Plan

A Resource Management Plan defines the roles and responsibilities, resource requirements, resource allocation, and strategies for managing and controlling project resources. Dimagi has a well-established and dedicated team with diverse areas of expertise, supported by internal processes designed to determine and monitor all project resourcing decisions. This ensures that project deliverables are met on-time and with high quality.

A comprehensive Resource Management Plan will be delivered to the State for review and approval within 30 calendar days of the Contract start date. It will be updated as needed throughout the project lifecycle to ensure it continues to reflect current best practices and team processes as the project evolves.

Dimagi Approach

In a hybrid agile technology project, successful resource management requires a dynamic and adaptive approach to accommodate the iterative nature of development. Overall, while the Dimagi Project Manager bears primary responsibility for resource management, effective resource management is a collaborative effort involving input from various stakeholders across the organization. By working together, the project team can ensure that resources are allocated effectively to support the successful delivery of project objectives.

Dimagi's project delivery underscores a strategic approach to deploying and optimizing key personnel, ensuring a streamlined project launch. Our methodology prioritizes the alignment of skilled individuals with appropriate roles, facilitating efficient coordination and supervision immediately post-contracting. The proposed project staffing plan for this work is described in [Section 9, Project Staffing](#) and their Resumes are included as a supplement to this proposal.

In the initial phase of a project, the Dimagi Project Manager conducts a thorough assessment of project requirements and staffing adequacy. Should internal evaluation reveal the necessity for additional personnel, they will first explore reallocating existing staff before considering external hires. This strategic maneuver optimizes project efficiency by leveraging existing expertise and mitigates potential delays associated with new hiring and training processes.

Resource Loading & Leveraging

Dimagi's project resource management objective is to maximize efficiency and efficacy while avoiding resource overload or underutilization during project execution. Task distribution is overseen by the Project Manager to ensure equitable workloads across the team. The Project Manager uses tools such as Microsoft Project and Asana to streamline the planning, monitoring, and analysis of project resourcing decisions.

Agile ceremonies also serve as key input mechanisms that the Dimagi Project Manager uses to be able to regularly review progress with the team:

- **Sprint Planning:** Tasks are meticulously assigned during sprint planning sessions, accounting for team members' skills, availability, and workload.
- **Daily Stand-ups:** Regular team meetings are held to review sprint progress, address any issues, and adjust resource allocations as necessary.
- **Retrospectives:** At the end of a sprint, Project Manager can identify bottlenecks, assess resource utilization through burndown/burnup charts, gather team feedback on allocation, pinpoint improvement areas, and address team dynamics.

Roles & Responsibilities

Please refer to the [Organizational Chart](#) and [Roles and Responsibilities](#) table for more information describing the proposed team's distribution of work.

During project kick off activities, a team RACI matrix will be developed and made accessible to all stakeholders to facilitate transparency on roles and responsibilities during onboarding.

Organizational Structure & Decision-Making Authority

Dimagi will utilize key personnel, including management and leadership included in the Organization Chart, effectively for coordinating and supervising activities across the life cycle of the project. Please refer to the [Organizational Chart](#) and [Roles and Responsibilities](#) table for more information describing the proposed team's distribution of work.

Project Team Orientation & Training

Dimagi considers project team orientation and training as essential components of a project resource management plan. The Dimagi Project Manager will provide an orientation on the project objectives, scope, and key deliverables to members of the Dimagi project team and any contractors. Team members will receive supplementary training on specific tools and

technologies as needed, ensuring they have the necessary skills to complete their tasks. By investing in the development and enhancement of team members' skills and capabilities, the Project Manager can improve alignment with project objectives, increase productivity, foster adaptability to change, boost morale and engagement, retain top talent, and mitigate project risks, ultimately contributing to the overall success of the project.

Knowledge Transfer & Turnover

Defining a successful knowledge transfer strategy in a project resource management plan is crucial for maintaining project continuity and mitigating the risk of knowledge loss should turnover occur. The DImagi Project Manager is responsible for identifying and documenting any potential risks related to this area in the risk register (see [Section 9, Risk Management](#)). Additionally, they will develop and implement mitigation practices to ensure project objectives are not negatively impacted by changes to team staffing. Some effective practices championed by Dimagi project leaders include:

- **Documentation:** Prioritizing the documentation of work processes, methodologies, and insights throughout the project. Establish standardized templates and guidelines for documentation to ensure consistency and completeness. Utilize knowledge sharing platforms such as wikis, intranet portals, or project management software to centralize project documentation and facilitate collaboration among team members.
- **Formal Training Curricula:** Developing formal training materials to onboard new team members and provide them with essential project knowledge and skills. These programs can include orientation sessions, workshops, and hands-on training opportunities specific to the project.
- **Pairing Programs:** Pairing new team members with those more experienced who can guide them through the project's intricacies, share best practices, and provide valuable insights. Mentorship programs help accelerate the learning curve for new team members and facilitate knowledge transfer from seasoned professionals.
- **Cross-Training Initiatives:** Encouraging cross-training among team members to ensure that multiple individuals are familiar with key processes and responsibilities. Cross-training reduces reliance on individual expertise and minimizes the impact of turnover on project continuity.
- **Continuous Improvement:** Fostering a culture of continuous improvement by regularly reviewing and updating knowledge transfer practices based on feedback and lessons learned. Solicit input from team members on ways to enhance knowledge transfer processes and implement changes as needed.

9.1.2. Project Schedule

An integrated project schedule is essential for ensuring a structured approach to managing a hybrid agile technology project. It provides a comprehensive view of the project, improves coordination and collaboration, manages dependencies and resources effectively, and supports risk management and quality assurance. By balancing structure with flexibility, a project schedule helps ensure that the project stays on track, meets deadlines, and delivers value to its users and the IDOH.

Dimagi will create an initial, fully integrated Project Schedule in MS Project detailing scheduled activities, resources, timeframes, and high-level estimates of effort. Dimagi will ensure that this schedule can interface with or utilize the State's online project management system for

comprehensive tracking of all project activities. The Project Schedule will include appropriate version control to establish the initial baseline and manage subsequent versions. Updates to the Project Schedule will reflect the current start and finish dates and the percentage completed for each activity without altering the original baseline. Any changes to the baseline will be accompanied by a detailed rationale and will require approval from the State through the formal change management process outlined in [Section 8, Project Management](#). The Project Schedule will be meticulously maintained throughout the project's life and updated at a frequency agreed upon by IDOH to accurately reflect the project's status.

9.1.3. Project Status Reports

Project Status Meetings

As a fundamental part of our Project Management Plan, Dimagi is committed to providing regular status updates to foster effective project management and enhance collaboration between our team and the State throughout the project's lifecycle. To ensure full compliance with the State's expectations, we will seek approval from the State for both the full project status report template and meeting agenda. This collaborative approach will guarantee that the reports reflect the information crucial to the project's success.

Until all users are online and actively using the new MCH Data System, Dimagi suggests that our Project Manager and the State Project Manager meet weekly (at a minimum) to discuss project status. These meetings will follow a pre-set agenda format, collaboratively developed by the Dimagi and approved by the State. After each meeting, Dimagi will distribute meeting minutes to the State Project Manager and relevant stakeholders and attendees no later than 1 business day after the meeting has taken place.

Project Status Reports

Dimagi's Project Manager will submit Project Status reports to the State two business days prior to the weekly status update meeting. The Project Status reports will include a comprehensive list of completed tasks and associated deliverables, tasks in progress, tasks ahead of schedule, and tasks behind schedule with explanations for any delays. The reports will also highlight and propose solutions for problems encountered, while also addressing questions, issues, and any adjustments in schedule, resources, scope, or costs. The schedule of the next period's activities, an overview of project risks, and the status of implementation activities will be included in each report. The status report can additionally include a mechanism to tracking expenditures and budgetary matters to ensure complete visibility into financial aspects.

9.1.4. Project Library

During the project onboarding period, Dimagi will establish a web-based project library and ensure access to all relevant project members. The Dimagi team is flexible regarding document management tooling and is open to leveraging the preferred tools and formatting of the State. In past experience partnering on public health projects we have utilized Sharepoint and found it to be an impactful tool for facilitating effective information sharing across distributed teams. Dimagi will collaborate with the State to logically organize the library and manage all project-related documents, including budget, schedule, and progress information.

9.1.5. Project Onboarding

Dimagi understands the importance of a clear and well prepared project kick-off. Starting a new project involves a blend of strategic planning and collaborative efforts. By addressing these key components, the team can create a strong foundation for successful hybrid agile project execution, ensuring alignment, clarity, and readiness to adapt to changes and challenges throughout the project lifecycle.

d. Ensuring Project Success with Key Project Onboarding and Kick Off Activities

Project Kick-Off Meeting

Once the contract has started, Dimagi will conduct a kickoff meeting with State project stakeholders either in-person at IDOH offices in Indianapolis, IN, or virtually via a video conferencing tool the State prefers. Dimagi will develop a Project Kickoff Presentation for review and approval by the State prior to the meeting. During the kick off meeting, Dimagi will elaborate on the approach, plan, and methods for providing services outlined in the scope of work and invite discussion to align on high-level project vision, stakeholder roles, and expectations. This aims to ensure a clear understanding of the project's objectives and implementation strategy among stakeholders from the outset.

Artifact & Process Development

In parallel to the materials developed for the kick-off meeting and the occurrence of the meeting itself, there are other key pieces of work that Dimagi will deliver during the first 2 months of the project.

- **Project Charter:** A Project Charter is a formal document that authorizes a project, detailing its objectives, scope, stakeholders, and key elements. Dimagi's experience with establishing a Project Charter during onboarding sets a solid foundation for project success by aligning stakeholders, defining scope, and providing clear authority and direction.
- **Project Management Plan:** A Project Management Plan is a comprehensive document that outlines how a project will be executed, monitored, controlled, and closed. It integrates and consolidates all subsidiary plans and baselines necessary for the management of the project. By co-establishing a Project Management Plan during the onboarding phase, Dimagi and IDOH will set a robust foundation for project success to ensure that all aspects of the project are carefully planned, aligned with objectives, and systematically managed. This comprehensive planning minimizes risks, optimizes resource use, enhances communication, and ensures that the project stays on track, ultimately leading to successful project delivery.

Subsidiary plans that will be outlined during the project onboarding phase are:

- Internal Communication Management Plan
- Schedule Management Plan
- Change Management Plan
- Risk Management Plan
- Resource Management Plan
- Issue Management Plan
- Quality Management Plan

For more information on Dimagi's approach to developing the Project Management Plan, please refer to [Section 8, Project Management](#).

- **Project Schedule:** A Project Schedule is a detailed plan that outlines the timeline for project activities. Dimagi will work with IDOH to define the start and finish dates for project tasks, milestones, dependencies between tasks, and the allocation of resources. Establishing a Project Schedule in the beginning of the project, and committing to refining over the course of the project lifecycle as needed, sets a strong foundation for project success. It ensures that all team members understand their roles and responsibilities, provides a clear path to achieving project objectives, and enables proactive management of time, resources, and risks. This comprehensive planning and organization lead to more efficient project execution and a higher likelihood of meeting project goals on time and within budget. Please see [Section 8, Project Management](#) for further details.
- **Project Status Report:** Dimagi will partner with IDOH to define the format, content expectations, and delivery cadence for the Project Status Report during the kick off phase. A Project Status Report is a document used to communicate the current state of the project to stakeholders. It provides a snapshot of project progress, highlights any issues or risks, and outlines next steps. By establishing a format and content expectations for the Project Status Report during the first months of the project, Dimagi and IDOH can enhance communication, transparency, and control throughout the project's lifecycle. This proactive approach helps to ensure that all stakeholders are consistently informed, issues are promptly addressed, and the project stays aligned with its goals, ultimately contributing to project success. Please see [Section 8, Project Management](#) for more information.
- **Project Library:** A digital Project Library will be set up during the project kick off phase and will act as a centralized repository where all project-related documents, files, and resources are stored, managed, and accessed by relevant stakeholders. Proactively establishing a digital Project Library at the beginning of the project enhances collaboration, communication, and efficiency, contributing significantly to the overall success of the project. For more information, see [Section 8, Project Management](#).

9. Project Staffing (Attachment K, Section 10)

Dimagi offers a staffing plan informed by our experience with similar projects and our current understanding of the MCH Data System scope. Our approach ensures that all roles and responsibilities are clearly defined, with aligned allocations and a reporting hierarchy in place for dedicated personnel and subcontractors. Our team's staffing will enable us to rapidly kick off the project and meet its ongoing demands.

1. Project Staffing Plan

Dimagi suggests 25 staff resources across 19 roles to meet the scope of work for this project. The following table lists each proposed staff role, number of resources in the role, hours assigned for DDI, and average monthly hours allocated during months they are scheduled to the project. Some resources are only present for the first 24 months of the project, while others continue into Steady State M&O.

Table 11. Proposed Staff Roles and Resources

Role	Number of resources per role	Total Hours During DDI (Months 1-18)	Average monthly hours during active months
Executive Lead (Vital Position)	1	80	4
Project Manager (Vital Position)	1	2,760	119
Account Manager (Vital Position)	1	0	7
Lead Architect (Vital Position)	1	300	14
Implementation Lead (Vital Position)	1	1,160	61
Data Migration Lead (Vital Position) - CSpring	1	160	9
Data & Analytics Lead	1	323	15
Data Engineer - Dimagi	2	1,800	44
Technology Lead	1	140	7
Solutions Analyst	2	850	23
Software Engineer	1	1,000	50
Application Configuration Analyst	2	2,900	70
Senior Support Analyst	1	50	8
Support Analyst	1	150	23
Data Engineer - CSpring	1	320	
Business Analyst - CSpring	2	4,900	
Strategic Advisor	2	80	
Data Integration Lead - Metamor Systems	1	2,360	
AWS Data Consultants - Metamor Systems	2	3,700	

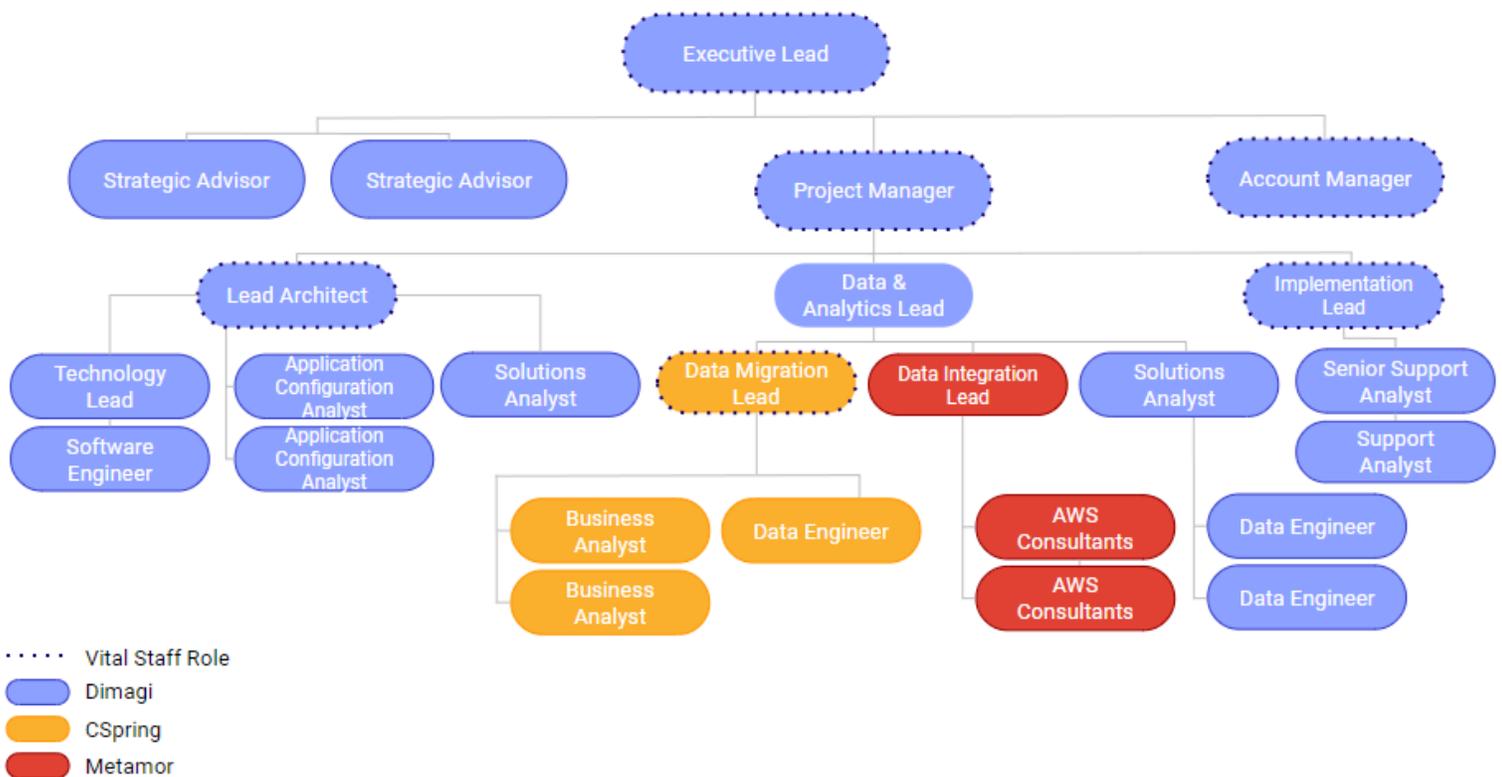
2. Organizational Chart

Dimagi suggests the following organization for our proposed staff. The project team is led by an executive leadership group comprising the Executive Lead, Project Manager, and Account Manager, who oversee the entire project and ensure alignment with strategic objectives.

Strategic Advisors provide additional guidance and expertise to support the project's success across multiple phases.

The reporting lines allow for functional collaboration, with key solution design, data management, and implementation leads organizing the contributing staff in their work areas. In particular, having a Data & Analytics Lead allows for coordination between multiple staff and subcontractors delivering migration, conversion, integration, and reporting. Meanwhile, the hybrid agile approach creates meaningful cross-collaboration in early requirements and design sessions, sprint-based configuration, and project planning. The Project Manager serves as the ultimate coordinator and hub for project activities and all team members, including subcontractors and Dimagi staff.

Figure 14: Dimagi Proposed Staff Organizational Chart



The table below presents not only the staff required for vital roles as identified by the State but also exemplary personnel for other key positions that we believe are critical to the project's success.

Resumes for both the State-identified vital roles and Dimagi's key roles are attached to this proposal package in the file named Att_F_-_Project_Staffing_Resumes.

Table 12. Organizational Chart References: Key Staff and Exemplary Resources

Team	Role	Assigned Staff Member	Vital Staff Role
Dimagi	Executive Lead	Sarah Sagan	Yes
Dimagi	Project Manager	Marissa Harrison	Yes
Dimagi	Account Manager	Lily Olson	Yes
Dimagi	Strategic Advisor	Connor Norwood	Yes
Dimagi	Strategic Advisor	Timothy McFarlane	Yes
Dimagi	Lead Architect	Woody Meade	Yes
Dimagi	Data & Analytics Lead	Riya Singh	
Dimagi	Implementation Lead	Lauren Fox	Yes
Dimagi	Technology Lead	Kim Cho	
Dimagi	Application Configuration Analyst	Kate Pearce	
Dimagi	Application Configuration Analyst	Kate Hildebrand	
CSpring	Data Migration Lead	Umesh Asaigoli	Yes
Metamor Systems	Data Integration Lead	Saikrishna Jayaraman	
Dimagi	Solutions Analyst	Kirti Chandratreya	
Dimagi	Data Engineer	Shu-Chun Lu	

3. Team Based in United States

All of the proposed staff, regardless of position, for this project will be working from within the United States (US). Though Dimagi is a global organization, we maintain a dedicated team for our US projects and have a substantial staff presence in the US. All staff included bring past performance in US government projects.

4. Availability for Required On-Site Work Confirm

Dimagi staff create meaningful collaboration, both virtual and on-site, with our partners. Proposed vital staff position staff will meet the on-site expectations of their positions as described in Attachment K, Section 10, including availability when requested with minimum of five business days notice.

- **Executive Lead:** With five business days notice, for identified critical periods

- **Project Manager:** With five business days notice, as required throughout the project
- **Account Manager:** With five business days notice, as required during Steady-State M&O
- **Lead Architect:** With three business days notice, as required from Contract to go-live
- **Implementation Lead:** With three business days notice, for implementation
- **Migration Lead:** With five business days notice, for identified critical periods

In addition to the vital staff, Dimagi maintains a commitment to facilitating meaningful on-site and virtual collaboration with all staff. The staff from our two Indiana subcontractors completing meaningful work in requirements elaboration, design, and execution of data migration and integration, bring ongoing local presence to collaborate with State system stakeholders and key contacts for source data systems will be very valuable.

5. Vital Position Staffing

The following proposed staff for Vital Positions each meets the specific requirements outlined in [Section 10. Project Staffing](#), ensuring that our team is fully equipped to execute the project successfully. Resumes have been provided for both these State-identified vital roles and Dimagi’s key roles listed above.

Table 13. Assigned staffing for Vital Positions

Team	Role	Assigned Staff Member	Demonstrating Required Skills
Dimagi	Executive Lead	Sarah Sagan	<p>Sarah has over ten (10) years of managing large-scale IT system projects. As the Senior Director of Delivery, Sarah plays a pivotal role in leading and overseeing the project management and implementation arm of the US Health Division. Her accountability extends to ensuring the success and impactful outcomes of all project work, including work in behavioral health, housing insecurity, and broader social determinants of health.</p> <p>She has managed over \$20 million in annual contracts for enterprise-scale IT project work in New York, New Jersey, Colorado, Alaska, Navajo Nation, and the City of Philadelphia, representing Dimagi’s largest year on year growth on record. This is in addition to her experience with working with CommCare evident in her integral role as the executive lead for our project with Colorado’s Behavioral Health Administration.</p>
Dimagi	Project Manager	Marissa Harrison	<p>Marissa has nine (9) years of extensive experience in managing and/or leading large-scale IT system projects.</p>

			<p>Marissa oversees CommCare and Dimagi Data Platform projects. For the last six (6) years Marissa has managed design, development and implementation of special projects for Dimagi. For instance, she led the development of a COVID-19 case investigation and contact tracing template solution in coordination with Santa Clara County and the CDC. She then went on to manage system DDI, maintenance, and operations for use of this template in other geographies.</p> <p>Additionally, Marrison has also led the project management of DDI for Dimagi's behavioral health project in partnership with the State of Colorado Behavioral Health Administration. Her strong written and verbal communication, coupled with incisive and empathetic project management skills make her a powerful leader of technical project teams.</p>
Dimagi	Account Manager	Lily Olson	<p>Lily has four (4) years experience providing account management to US government clients for Dimagi projects using CommCare and data platform solutions. Most recently, Lily served as the Account Manager for our partnership with the Colorado BHA team.</p> <p>Lily is responsible for supporting accounts that Dimagi serves, making sure needs are met across all stages of the contract, including the steady-state M&O phase. In this role, she collaborates with U.S. state agencies to enhance public health IT through Dimagi's CommCare and SureAdhere VDOT solutions.</p> <p>With over nine years of experience with digital health transformation, Lily has built and maintained relationships with partners, including states like Colorado and New Jersey. She leads operations with new accounts, focusing on state and local government agencies. For these engagements, Lily supported the partner through multiple stages of the contract, notably the transition from DDI to M&O and the sustained M&O engagement.</p>
Dimagi	Lead Architect	Woody Meade	<p>Woody has more than nine (9) years experience designing and deploying health and government web application and software solutions. A seasoned Senior</p>

			<p>Technical Project Manager, Woody brings expertise in application architecture, workflow design, application performance management, stress testing, monitoring, and manual/automated application testing. Woody is responsible for development of the solution architecture for some of our most complex, web applications project work.</p> <p>Most recently, Woody has served as the Project Solutions Architect for Dimagi’s work with the Colorado Behavioral Health Administration.</p> <p>Woody leveraged his 4 prior years of experience with CommCare to lead the development of a data model design, scoped and wrote platform enhancement specifications, and developed external system integration business rules and design. His knowledge led to sound solution design that was a key component of the BHA project’s successful deployment.</p>
Dimagi	Implementation Lead	Lauren Fox	<p>Lauren has ten (10) years experience implementing government solutions that use Dimagi’s technology.</p> <p>Lauren led projects for Dimagi’s South Africa team prior to transferring to our US-based team. Since joining the US health team, Lauren most recently worked on the State of New Jersey’s COVID-19 response and State of Vermont’s Transitional Housing Program. Lauren was accountable for the development of web applications on the proposed solution (CommCare) and associated outputs (project risk management, implementation plan oversight, product strategy, and transition to maintenance). With deep experience in stakeholder engagement and hybrid agile practices, Lauren ensures on-time, informed implementations and meaningful collaboration with a network of stakeholders, partners, and vendors toward project success.</p>
CSpring	Data Migration Lead	Umesh Asaigoli	<p>Umesh is a strategic, result-oriented IT professional with more than twenty-five (25) years of experience (leadership, management, strategy, engineering) in large system data conversion and migration, data analytics, enterprise architecture (business, technology, data, application), and technical and business strategy implementation.</p>

			Umesh is a distinguished engineering and process change leader with particular expertise in the development of data conversion and migration planning and reporting. He has led the data conversion, migration, synchronization, and clean-up of multiple large projects, and he holds a Master Certificate in Project Management and is an AWS Certified Architect.
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6. Offering IDOH a Collaborative Team: Dimagi and Subcontractors, CSpring and Metamor Systems

Subcontractors play a vital role in the successful execution and ongoing maintenance of this project. We have selected CSpring and Metamor Systems, both Indiana-based firms with extensive experience with similar data integration and system implementation, to support critical aspects of the project.

a. Role of Subcontractors Over Lifetime of Contract

Both CSpring and Metamor Systems maintain a meaningful presence throughout DDI and into M&O.

CSpring: Throughout the entire project period, CSpring will provide Indiana-based staff to support the detailed requirements elaboration and execution of key data interface and migration activities.

In DDI over Months 2-18, CSpring will:

- **Conduct requirements gathering for data-focused functions:** CSpring will work closely with source system owners to gain comprehensive data information to support both migration and interface development. This includes evaluating the scope of the data, assessing available transport methods, and determining the technical and business readiness for data movement. Requirements will be revisited as needed during product stabilization and implementation.
- **Engage in solution design and planning for data governance and data quality:** CSpring will identify and document the necessary governance frameworks and quality standards to ensure that the data is accurate, consistent, and reliable throughout the project lifecycle.
- **Execute data migration activities:** CSpring will carry out data assessment and documentation, followed by data extraction, transformation, and loading (ETL) processes. This will ensure that all necessary data is successfully transferred and integrated into the new system, enabling effective reporting and analysis. The specific activities approach and steps are described in [Section 5, Data Migration and Conversion](#).

In the M&O phase, CSpring will participate in change request evaluation and execution: CSpring will assist in evaluating and executing change requests for system fixes or

enhancements that pertain to their areas of expertise in data integration, ensuring that the system continues to meet evolving needs and maintains high data quality standards. The level of effort for this is higher in the first six months of Stabilization M&O, followed by reduction but similar activities in Steady State M&O ongoing.

Metamor Systems: Metamor Systems will also provide Indiana-based staff to support the execution and maintenance of interface activities throughout the entire project period.

In DDI over Months 2-18, Metamor Systems will:

- **Execute integrations and data ingestion for initial data sources:** Metamor Systems will handle the integration and ingestion of data from the initial seven data sources, ensuring seamless data flow into the new system.
- **Implement Master Patient Index (MPI) and matching settings:** Metamor Systems will configure MPI and matching algorithms to ensure accurate and efficient client data matching across various data sources.
- **Enforce data quality and generate relevant reports:** Metamor Systems will implement data quality enforcement mechanisms and reporting to monitor and maintain data integrity.
- **Provide documentation and technical assistance:** Metamor Systems will deliver comprehensive documentation and offer technical assistance to Dimagi's data engineering team and IDOH as needed, ensuring clarity and smooth execution of data-related tasks.

In the M&O phase, Metamor Systems will maintain interfaces: Metamor Systems will be responsible for the ongoing maintenance of data interfaces, making necessary adjustments to accommodate changes in source systems or the MCH Data System to ensure continuous data integrity and system performance.

b. Prior experience with subcontractors

The MCH Data System would be the first opportunity for Dimagi to work alongside CSpring and Metamor Systems. However, CSpring and Metamor Systems provided meaningful collaboration in solution design and implementation planning during the evaluation of this proposal. This collaborative process has given our teams confidence in our ability to deliver this project successfully together. Included in our team resources are two Senior Advisors, former State data executives, who have worked with all three parties and offer an additional bridge for certain and rapid connection between our groups.

CSpring and Metamor Systems bring substantial past performance, including working on adjacent projects with State of Indiana data systems. Their existing relationships ensure seamless integration of their respective areas of expertise into our project framework. This pre-established synergy between CSpring and Metamor Systems will significantly contribute to the efficient execution and successful completion of the MCH Data System project.

c. Subcontractor prior experience with proposed solution

The subcontractors on this project focus on the data platform aspect of the proposed solution, for which both bring substantial experience. Metamor Systems's team brings past

performance with MuleSoft and Azure Government Cloud Data Pipeline to an On-Premise Data Gateway, both showing skills relevant to the proposed scope of work. CSpring consultants use industry-leading tools and platforms like Azure Data Factory for orchestrating workflows, Azure Synapse for analytics and warehousing, Fivetran for seamless data integration, Alteryx & Knime for data preparation and transformation, and Informatica for enterprise-grade data integration. We also often use client-specific services and custom pipelines built in Python and SQL. These show CSpring's readiness to support data migration activities. As described in [Section 5. Data Migration and Conversion](#), CSpring will leverage a standard data pipeline pattern and a pre-built accelerator for which they have extensive experience.

d. Subcontractor experience and expertise in the Contract scope

Metamor Systems: Metamor Systems was first formed as IT Transformers, Inc in 2008, dba Metamor Systems since 2021. Even though the country was in the middle of a severe financial crisis, Metamor Systems entered the market as a data consultancy – and has been that ever since. Metamor Systems founders, Bala Krishnamurthy (CEO) and Krishna Padmanabhan (COO), knew that we had exceptional employees and the motivation to continue a high standard of service delivery. Below are some important milestones so far:

- **2008:** Established IT Transformers by experienced technologists, Bala Kirshnamurthy and Krishnakumar Padmandbhan
- **2009:** First contract secured with the Indiana Department of Child Services (DCS) for data and reporting services
- **2011:** Contract for DCS' Special Needs Adoption Program
- **2012:** Selected as an MSP vendor for all state of Indiana agencies
- **2014:** Contract for Indianapolis Airport Authority data services for the Oracle ERP system
- **2018:** Contract for Indiana Family and Social Services Administration (FSSA) for data analytics
- **2019:** Contract for a national accounting firm to create a unified data model for Medicaid pharmacy claims
- **2020-2021:** Additional contracts for DCS' INVest, FSSA's OECOSL, FSSA's DMHA, and the State of Illinois Human Services Department eligibility system
- **2022:** Azure-based, cloud-native data project
- **2023:** Created an Azure based solution for Elkhart clinic

Not seen in the bullet-points above is the depth of Metamor Systems work and knowledge. For example, the contract with FSSA is focused on their social services data warehouse that integrates many programs. Metamor Systems employees have been on the frontlines of delivering dashboards and other aspects of data warehousing, data interfaces, and data management. Metamor Systems's CEO has been the technical architect for the FSSA Data Warehouse for many years. Metamor Systems's COO is leading the Data Management group in the Indiana Department of Child Services (DCS) Child Welfare section and has a long history of providing data matching and interfaces for federal programs. Our VP of Data Solutions implemented business intelligence tools within several organizations, designed data warehouses, and led development teams of large health care databases. Therefore, Metamor Systems has unparalleled experience in applying complex business rules to data and brings a practical approach to helping organizations use their data more efficiently.

CSpring: Public and private sector clients alike benefit from CSpring’s long history of delivering IT services and data solutions that help leaders achieve their goals. CSpring has helped organizations design, build, and maintain end-to-end data platforms.

CSpring’s experience spans data strategy and advisory including workshops, assessments, governance programs, strategy and technology road-mapping, data architecture and platform development, data and application integration, data engineering, data visualization, data science, data project management, health care regulation compliance, health and human services program integrity, risk and issue management, business and systems analysis, training, quality assurance, and staff augmentation.

For more than a decade, CSpring has supported large government programs including many Health & Human Services programs. The following is a list of select programs and initiatives supported by CSpring for the State of Indiana:

- Medicaid Enterprise Data Warehouse (EDW)
- Medicaid Pharmacy Benefit Management (PBM) Program
- Medicaid Management Information System (MMIS)
- Self-Service Business Intelligence (SSBI) Portal
- ICD-10 Planning and Implementation
- Enterprise Architecture Strategy
- Data Governance Strategy
- Managed Long-Term Services and Supports (MLTSS) Rapid Response Team (PathWays for Aging)
- Home and Community-Based Services (HCBS) Data Analytics & Integration Support

CSpring delivery teams bring deep expertise in health and human services, strong values, and a data-centric approach. Our public sector and not-for-profit clients have called upon CSpring to assist with numerous business and technology solutions focused on improving the lives of Hoosiers.

10. Design, Development, and Implementation (Attachment K, Section 11)

Dimagi presents a strategy for the Design, Development, and Implementation (DDI) of the MCH Data System. Our proposed approach aligns with the State's requirements and timelines from Attachment K Section 11, leveraging a hybrid agile Systems Development Life Cycle (SDLC) for flexibility and efficiency. During project initiation, schedule and details of this approach will be refined to reflect emerging IDOH needs and project realities. Our experience and proven methodologies ensure timely delivery of a high-performing MCH Data System aligned with the State's objectives.

1. Proposed Project Schedule

Based on the available requirements and background information, Dimagi and our subcontractors offer the following proposed Project Schedule. During the project initiation phase, Dimagi will work with the State to adjust the project schedule as needed to reflect the

State's goals and the realities of the project at the time of contracting. This collaborative approach will help ensure that the project remains aligned with IDOH's objectives and can adapt to any emerging challenges or requirements, providing a robust and flexible framework for project execution.

Scheduling a Hybrid Agile Project

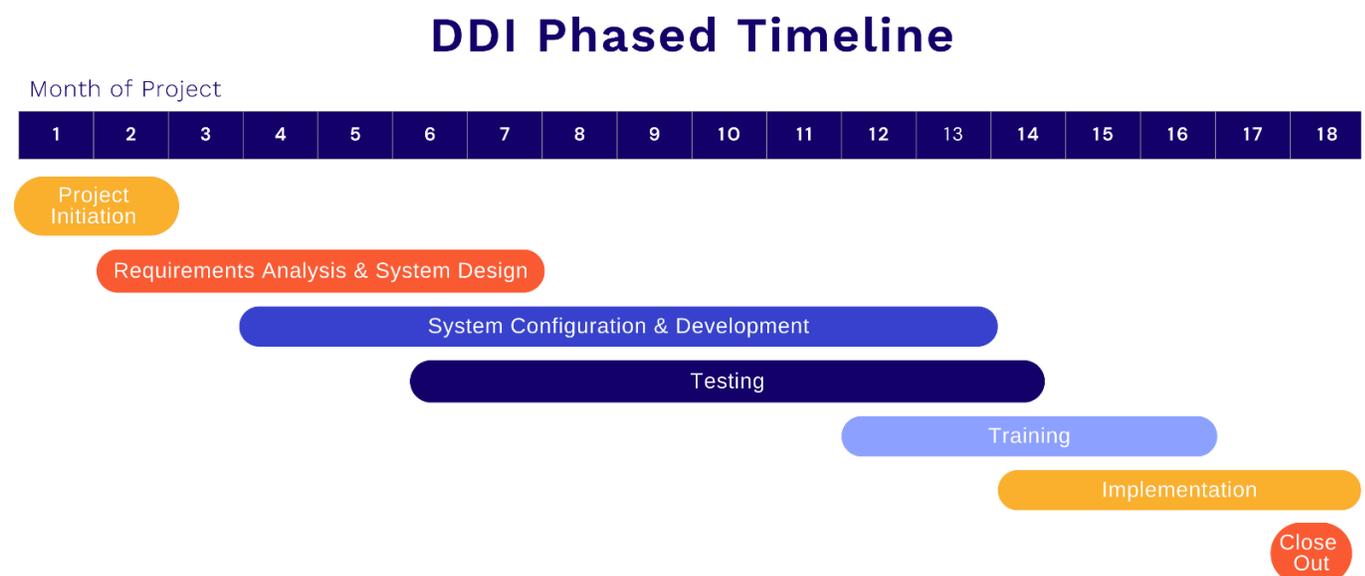
Our proposed project schedule embodies a hybrid agile approach, ensuring a balanced combination of early-stage requirements alignment and overlapping phases of requirements gathering, development pr configuration, and testing. By doing so, we facilitate incremental releases and continuous learning, which are fundamental principles of Agile methodologies. The proposed schedule offers:

- Balancing Requirements Elaboration with Early Learning:** With three months dedicated to project alignment, requirements analysis, and system design before development begins, stakeholders gain a unified understanding of the project scope and direction. Starting development early allows for iterative refinement of requirements, which reveals issues and opportunities in a realistic manner, ensuring the solution meets IDOH's needs faster according to Agile principles.
- Incremental Releases and Continuous Learning:** Overlapping the requirements, development, configuration, and testing phases allows for incremental functionality releases. This hybrid agile approach enables continuous feedback and learning, reducing risks while promoting flexibility and responsiveness to change.

Design, Development, and Implementation (DDI) Phased Timeline

Dimagi's proposed DDI timeline follows key project phases over the 18 month period. The following describes each phase and its key activities, deliverables, and milestones by month.

Figure 15: DDI Phased Timeline



Phase 1: Project Initiation and Planning (Months 1-2)

This initial phase establishes the project foundation, including creation of robust project management controls and documentation. It includes an in-person project kick off and sharing of key artifacts among the project stakeholders.

Table 14: Project Activities, Deliverables, and Milestones - Phase 1

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Project Status Reports & Meetings (D01)	Ongoing through all project phases	Dimagi Project Manager delivers weekly status reports and regular status meetings including a status of all activities and schedule risks, as described in Section 8, Project Management above
Project Kickoff Presentation (D02)	Week 2	Dimagi creates a presentation that is approved by the State to support the kickoff meeting, covering general approach, plan, and methods for providing the project services and other key alignment messages
Set Up Project Library	Month 1	Dimagi initiates a State-owned library on Sharepoint or similar to house all project-related documents, including budget, schedule, and progress information
Project Management Plan (D03)	Month 1	Dimagi delivers a comprehensive that includes approach to schedule management, budget management, quality management, requirements management, process improvement, resource management, risk management and mitigation, issue identification and resolution, tracking of service level-related metrics, and preparation of status reports as described in Section 8, Project Management above
Project Schedule (D04)	Month 2	Dimagi publishes a detailed schedule outlining all project tasks, milestones, deadlines, resources, and estimated levels of effort in MS Project
Communication Plan (D05)	Month 2	Dimagi creates a plan detailing how project communications will be managed, including methods, frequency, and stakeholders involved
Project Initiation and Planning Completed (M01)	Month 2	Dimagi reaches conclusion of project initiation and planning phase

Phase 2: Requirements Analysis and System Design (Months 2-7)

This phase focuses on gathering and analyzing the project requirements and designing the system to meet those requirements. Detailed requirements gathering and system design ensure the project aligns with stakeholders' needs.

Table 15: Project Activities, Deliverables, and Milestones - Phase 2

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Requirements Validation	Months 2-7	Building from the information provided in Attachment O, Dimagi works with State and stakeholders to review and refine requirements to eliminate ambiguities and ensure alignment with project objectives.
Joint Application Development (JAD) Sessions	Months 2-7	Dimagi facilitates JAD sessions with State stakeholders to collaboratively gather requirements and design system functionalities. These sessions focus on interactive discussions and workshops to define detailed requirements and create a shared understanding of the system's design.
Requirements Traceability Plan (D07)	Month 3	Dimagi delivers a Requirements Traceability Plan that outlines the approach for tracing requirements throughout the project lifecycle. This plan includes methods for linking requirements to design, development, and testing artifacts to ensure all requirements are addressed and verified, described further in Section 10, Design, Development, and Implementation .
Requirements Traceability Matrix (D08)	Month 6	Dimagi develops a Requirements Traceability Matrix to map each requirement to its corresponding design, development, and testing artifacts. This matrix ensures comprehensive coverage and verification of all project requirements, described further in Section 10, Design, Development, and Implementation .
Functional Specification and System Design Document (D09)	Month 6	Dimagi produces a Functional Specification and System Design Document detailing the system's functional requirements, architecture, and design. This document serves as a blueprint for system development, and will be revisited through the incremental delivery that follows.
Data Integration and Interface Design Document (D10)	Month 6	Dimagi and subcontractors create a Data Integration and Interface Design Document outlining the approach for integrating data from the several external sources including planned transport method, data elements ingested, and matching criteria.

System Architecture Document (D11)	Month 6	Dimagi develops a System Architecture Document describing the overall system architecture including all solution components and hosting details.
Data Dictionary (D13)	Month 6	Dimagi compiles a Data Dictionary that defines all data elements, their meanings, relationships, and formats within the system - both CommCare and the data lake. The Data Dictionary will be updated regularly to reflect subsequent releases and data source updates.
Disaster Recovery & Business Continuity Plan (D14)	Month 6	Dimagi delivers a Disaster Recovery & Business Continuity Plan including procedures for backup, recovery, and maintaining business continuity.
Functional Design Completed (M02)	Month 6	Dimagi reaches the milestone of completing the functional design, ensuring all functional requirements are fully addressed and documented in the design specifications.
System Design Complete (M03)	Month 7	Dimagi achieves the milestone of completing the system design, finalizing all design documents and ensuring the system architecture and design are ready for development.

Phase 3: System Configuration and Development (Months 4-13)

This phase involves configuring and developing the system based on the approved design documents. It includes coding, configuration, and integrating various system components to ensure they work together seamlessly.

Table 16: Project Activities, Deliverables, and Milestones - Phase 3

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
System Configuration	Months 4-13	Dimagi configures the MCH Data System on CommCare platform and the assembled data tooling according to the functional specifications and design documents. Requirements for configuration are marked accordingly in Attachment O. Releases will be made regularly, each 3.5 weeks, throughout the phase. Timing of key functionality is outlined in the Product Roadmap above.
System Development	Months 4-13	Dimagi adds custom development for both the web application and the data infrastructure. Requirements for coding are marked accordingly in Attachment O. Timing of key functionality is outlined in the Product Roadmap above.
Technical Design Document (D15)	Created Month 4 and updated as	Dimagi develops a comprehensive Technical Design Document that details the technical architecture,

	needed throughout	design, and implementation strategies for the system.
Release Notes (D27)	Produced for every release in DDI & M&O	Dimagi provides detailed Release Notes for each system release or upgrade. These notes include information on new features, enhancements, bug fixes, and any known issues. They will be shared according to the Communication Plan.
Data Migration Complete (M04)	Month 11	Data Migration and Conversion activities begin at the start of this phase and continue until completion at Month 11, ensuring that all necessary data has been successfully transferred and integrated into the new system for reporting or end user access.
Report Configuration	Month 11-13	In the last months of this phase, Dimagi configures Tableau reports and makes any final conversions needed to deliver specified reports and abilities to create ad-hoc reports.

Phase 4: Testing (Months 6-14)

This phase is dedicated to testing the system to ensure it meets all requirements and functions correctly. It involves multiple types of testing including unit testing, integration testing, system testing, interface testing, User Acceptance Testing (UAT), regression testing, and performance testing.

Table 17: Project Activities, Deliverables, and Milestones - Phase 4

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Test Plan (D16)	Month 6	Dimagi delivers a comprehensive Test Plan outlining the testing strategy, scope, objectives, resources, schedule, and deliverables. The plan includes details on test environments, tools, and methodologies to be used. The test plan will outline activities for unit testing, integration testing, system testing, interface testing, User Acceptance Testing (UAT), regression testing, and performance testing.
UAT Error Logging System	Set up Month 6, updated ongoing during testing	Dimagi implements an Error Logging System to capture, track, and manage any issues or defects identified by users according to the rating matrix in Attachment K.
Test Results & Defect Reports (D19)	Ongoing Months 6-14	Dimagi documents all testing activities detailing results and identified defects, their severity, and the steps taken to resolve them.
Test Scripts (D17)	Month 11	Dimagi develops scripts that define the specific steps to be taken during testing, expected results, and criteria for passing or failing each test. Scripts

		are tentatively delivered later in the testing phase as more functionality is available and nearing UAT, but incremental agile delivery requires ongoing testing preparation.
Test Cases (D18)	Month 11	Dimagi creates cases that specify individual tests to be performed during the testing phase. Each test case includes input data, execution conditions, and expected outcomes to validate system functionality. Cases are tentatively delivered later in the testing phase as more functionality is available and nearing UAT, but incremental agile delivery requires ongoing testing preparation.
Test Planning Completed (M05)	Month 11	Dimagi reaches the milestone of completing the test planning phase, ensuring all necessary test plans, scripts, and cases are in place and ready for execution. Though planning is ongoing and part of initial tests according to hybrid agile delivery, final contents of a full plan are assembled later in the testing phase as more functionality is available and nearing UAT.
UAT Completed (M06)	Month 14	At the conclusion of the Testing phase, Dimagi completes the UAT of the configured MCH Data System, including resolution of errors.

Phase 5: Training (Months 12-16)

This phase focuses on training the administrators who will be using and maintaining the system, as well as trainers who will be passing on readiness to end users. It ensures materials and plans are in place for large scale user training and onboarding.

Table 18: Project Activities, Deliverables, and Milestones - Phase 5

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Training Plan (D20)	Month 12	Dimagi delivers a plan that outlines the approach for developing materials and preparing State trainers for end user sessions. The plan includes objectives, methods, schedules, resources required, and evaluation criteria.
Training Materials (D21)	Month 14	Dimagi develops materials as described in Section 12, Training , including user manuals, quick reference guides, video tutorials, and presentation slides. These materials support the training sessions and provide ongoing reference for users to ensure they can effectively use the system.
Knowledge Transfer and Capacity Building	Months 12-16	Capacity building of State administrators readies IDOH and stakeholders for M&O.

Trainings Successfully Completed (M07)	Month 16	Dimagi completes all planned training sessions, including at least 3 in-person training sessions as outlined in Section 12, Training .
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Phase 6: Implementation (Months 14-18)

This phase involves preparing the configured and developed system for production use. As well as business process readiness and onboarding initial internal and administrative users (as described in [Section 10, Design, Development, and Implementation](#) below).

Table 19: Project Activities, Deliverables, and Milestones - Phase 6

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Limited Solution Pilot	Month 14-18	Key IDOH users and identified a limited user group engage in a solution pilot to complement other established testing modalities. The total user count should be small and represent a limited program or geography, or limit to only internal users. This increases the rate of feedback and feeds. For this activity, Dimagi provides user access and facilitates feedback collection via surveys and potential focus groups.
Product Stabilization	Month 14-18	Having delivered all functionality in Phase 4, Dimagi's solution team remains active in the project to resolve emerging issues uncovered during the end of testing and throughout implementation. The team specifically delivers bug fixes, defect resolution, and iteration for critical feedback.
Initial M&O Plan	Month 14	As the team approaches Go Live and subsequent M&O phase, Dimagi provides a draft plan to align on approach, tools, and activities taken during the next years of the project.
Implementation/Cutover Plan (D22)	Month 14	Dimagi delivers a comprehensive Implementation/Cutover Plan outlining the steps and procedures for transitioning the MCH Data System from the development environment to the production environment. This plan includes detailed cutover activities, timing, roles and responsibilities, risk mitigation strategies, and rollback procedures to ensure a smooth transition.
Help Desk Enablement	Month 14-18	Dimagi's Technical Support team prepares the identified T1 and T2 Help Desk resources
Implementation Complete (M08)	Month 18	Dimagi completes the implementation phase, confirming that the MCH Data System is fully deployed in the production environment. This milestone signifies that all implementation activities, including configuration, data migration, system integration, and initial user onboarding, are successfully completed.

Go Live & Production Access	Month 18	The system enters production at the end of Implementation, accessible to all provisioned users. User onboarding coordination follows in M&O Stabilization.
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Phase 7: DDI Close Out (Month 18)

In this final DDI phase, Dimagi facilitates a close out with the State including sign off and out the DDI activities and ensuring all project objectives have been met. It includes final reviews, documentation, and transitioning to maintenance and operations.

Table 20: Project Activities, Deliverables, and Milestones - Phase 7

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Finalized M&O Plan	Month 18	Dimagi and IDOH align on the final plans for M&O, ensuring agreement on the approach, tools, and activities taken during the next years of the project.
DDI Close Out Report (D23)	Month 18	Dimagi delivers a summary of all activities and deliverables completed during DDI. This report includes an overview of the project's accomplishments, any deviations from the original plan, lessons learned, and recommendations for future phases or projects.
DDI Closed Out (M09)	Month 18	All deliverables have been submitted and approved, and the project is ready to transition to the Maintenance and Operations (M&O) phase.

Phase 8: M&O Stabilization (Months 19-24)

This phase focuses on stabilizing the system post-implementation, while the external users ramp up through regional onboarding as described in [Section 10, Design, Development, and Implementation](#) below. Resourcing and schedule in this phase ensure preparedness to respond to emerging issues and feedback. It includes updates, patches, repairs, defect resolution, and technical support.

Table 21: Project Activities, Deliverables, and Milestones - Phase 8

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
Technical Support	Months 19-24	Dimagi provides Tier 3 technical support for issues escalated by IDOH and Tier 1 and Tier 2 Help Desk staff, according to the SLA defined by the State.
Incremental regional user onboarding support	Months 19-24	Dimagi supports IDOH in planning and executing regional user onboarding, expanding upon the initial onboarding completed in DDI. Services include outreach and communications support, user provisioning technical support, and collection of user feedback. User onboarding approach is described further in Section 10, Design, Development, and Implementation below.

Database Performance Reports (D24)	Months 19-24, Delivered quarterly	Dimagis team maintains configured solutions, including monitoring the performance of the data storage solutions for the MCH Data System. Performance-based monitoring of the data lake and CommCare web application. The written reports are delivered at minimum quarterly.
Incident Reports (D25)	Months 19-24	Reports delivered for high and critical issues, per the State-defined SLA, including affected areas of the system, date of report, date of incident, reference number, start and end times of the incident, issue type, issue impact summary,detailed description of the issue, immediate resolution, permanent solution, and who resolved the issue.
Product Stabilization	Months 19-24	As external users begin scaled system use, Dimagi support staff and solutions staff adjust business process and functionality to stabilize the MCH Data System, responding to issues and feedback deemed in scope.

Phase 9: M&O Steady State (Months 25-30, Annual Ongoing)

This phase involves maintaining the system with reduced resources as it reaches a steady state. The focus is on ensuring the system continues to operate effectively with fewer issues and help desk tickets.

Table 22: Project Activities, Deliverables, and Milestones - Phase 9

Activity, Deliverable, or Milestone	Scheduled Delivery	Description
System Monitoring	Ongoing	Dimagi monitoring ensures MCH Data System performance, security, and availability. This involves using tools and techniques to track system health, identify and resolve issues proactively, and ensure the system operates efficiently. Monitoring includes performance metrics, security alerts, and regular status reports to ensure ongoing system stability and reliability.
Technical Support (Help Desk)	Ongoing	Dimagi provides Tier 3 technical support for issues escalated by IDOH and Tier 1 and Tier 2 Help Desk staff, according to the SLA defined by the State.
Interface Maintenance	Ongoing	Dimagi and subcontractors monitor interfaces to ensure connectivity and conformance of inbound data. Maintenance scope and activities will vary based on the integration design and quality of the source data.
System Enhancements	Ongoing	As approved through the change request process, Dimagi and subcontractors will deliver modifications to support the State in accommodating new federal regulations, State policy, or other emerging programmatic needs.

Database Performance Reports (D24)	Quarterly Ongoing	Dimagis team maintains configured solutions, including monitoring the performance of the data storage solutions for the MCH Data System. Performance-based monitoring of the data lake and CommCare web application. The written reports are delivered at minimum quarterly.
Incident Reports (D25)	Ongoing	Reports delivered for high and critical issues, per the State-defined SLA, including affected areas of the system, date of report, date of incident, reference number, start and end times of the incident, issue type, issue impact summary,detailed description of the issue, immediate resolution, permanent solution, and who resolved the issue.
Software Upgrades & Upgrade Management	Annual Ongoing	Dimagi Account Manager conducts monthly Software Upgrades meetings to ensure the MCH Data System remains up-to-date with the latest potential CommCare features, security patches, and performance enhancements. Upgrade Management involves meeting with the State annually to discuss available upgrade options, plan the implementation of new features, and ensure minimal disruption to the system's operations during upgrades.
Turnover Plan (D26)	6 months before contract end	Dimagi delivers a comprehensive Turnover Plan detailing the procedures for transferring system knowledge, documentation, and responsibilities to the State's team. This plan includes training sessions, documentation handovers, and support transition strategies to ensure a smooth and effective handover process.

2. Dimagi’s Hybrid Agile Process

Dimagi proposes a hybrid agile approach for delivery of the MCH Data System. Our approach delivers a mature, robust product while balancing flexibility and responsiveness.

a. Key Elements of Dimagi Hybrid Agile Approach

Dimagi employs a hybrid agile approach, integrating the strengths of both Waterfall and Agile methodologies to meet the specific needs of our State partners. We recognize that pure Agile, with its sprint-based development, isn't always the best fit given the regulatory and complex requirements typical of state data system projects. The balanced approach included in our proposal benefits from methodical design and iterative learning.

Table 23: Dimagi’s Hybrid Agile Approach

Elements taken from Waterfall	Elements taken from Agile
Early Focus on System Design Standards: We prioritize comprehensive system design in the initial stages to ensure alignment with state regulations and requirements.	Iterative Sprints: We use short, iterative sprints to develop and refine features incrementally, allowing for continuous improvement and adaptation.

Stage Gates for Milestones: We implement stage gates to assess progress and ensure deliverables meet predefined standards before moving to the next phase.

Detailed Documentation and Requirements Matrices: We maintain thorough documentation to capture requirements and design specifications, ensuring transparency and traceability throughout the project.

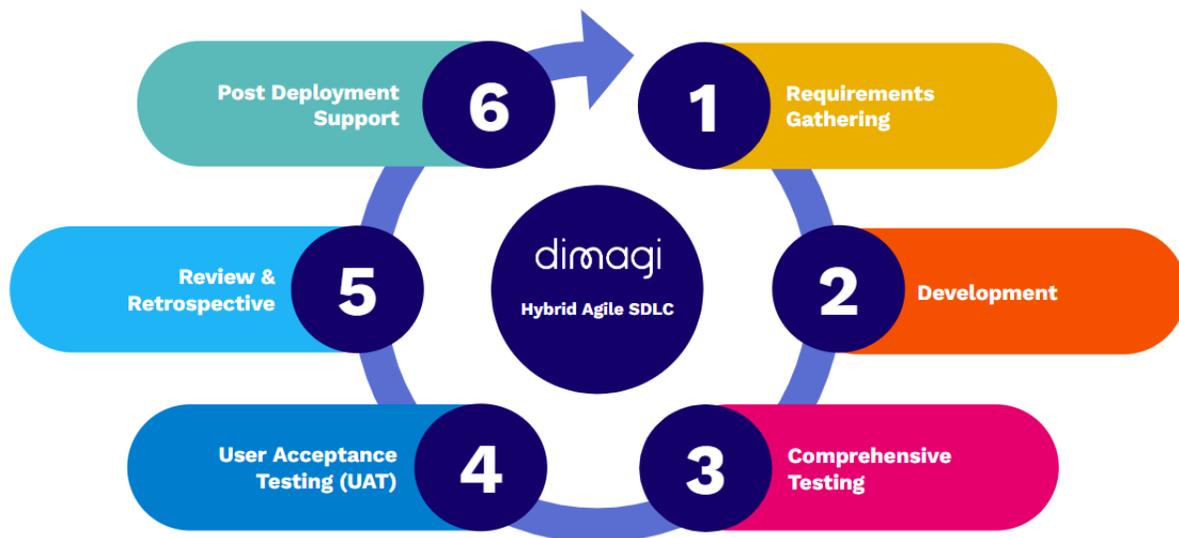
Quick Configuration and Prototyping: Rapid prototyping and configuration help us gather recurring feedback from stakeholders, facilitating timely adjustments and enhancements.

Flexibility to Adapt Requirements: We remain agile and responsive to changing needs, adapting requirements based on ongoing feedback and evolving project contexts.

Phases of Dimagi Hybrid Agile SDLC

During each sprint cycle, Dimagi follows a cycle of activities to deliver an informed release.

Figure 16. Dimagi Hybrid Agile Model



- **Requirements Gathering:** Gathering, prioritizing and clarifying requirements to be implemented in the sprint cycle. Requirements may come from user feedback, workflow updates, or the product roadmap.
- **Development or Configuration:** Dimagi staff leverage CommCare and our system components to rapidly implement updates.
- **Quality Assurance (QA):** Each update or requirement is rigorously tested by Dimagi's team before it is released to our partners. This includes unit, workflow, integration, performance, and regression testing activities.
- **User Acceptance Testing (UAT):** Our partners, including users, review updates in a sandbox environment to ensure they fully align with expectations and needs.
- **Review & Retrospective:** Each sprint, we take some time to review any learnings that may help us to enhance our work going forward.
- **Post Deployment Support:** Documentation is released to users to describe version updates. Documentation, training materials and any other collateral are updated as needed to ensure the successful adoption of all application updates.

Hybrid Agile Management: Meetings and Artifacts

Facilitating regular meetings creates a shared rhythm for the Dimagi and partner project teams. Dimagi employs the following meetings and artifacts for hybrid agile projects:

- **Sprint planning sessions** to estimate task completion times, evaluate progress against roadmap, and sequence work around anticipated risks
- **Daily standups** to update task boards, share progress, address issues or blockers, and monitor risks
- **Sprint reviews** to showcase design deliverables and demonstrate working code, providing opportunities for collaborative design and decision-making
- **Sprint retrospectives** to celebrate progress and identify areas for improvement, supporting continuous refinement of the project’s approach
- **Requirements backlog** is created during the initial design phase and continuously groomed, incorporating preexisting user feedback and ongoing stakeholder inputs
- **Product Roadmap** presents target functionality areas for planned releases over a project, allowing for both risk mitigation through planned oversight and responsive design through iterative releases

b. Example Hybrid Agile Sprint Schedules

Dimagi maintains a sprint cadence and schedules that reflect the unique needs of each project and are agreed to by all parties. This structure enables us to set priorities, maintain focus on critical tasks, and rapidly deliver designs and functional features. In DDI, we are typically operating in 2-4 week sprints with regularly recurring project management facilitated by Dimagi. Please find these example structures and timelines.

Example Sprint Activity Structure

In this first sample activity structure used in a hybrid agile engagement, we employed three-week sprints during an early phase of DDI to ensure regular iteration on the solution.

In this second sample activity structure used in a hybrid agile engagement, we employed 3-week sprints during an early phase of DDI to ensure regular iteration on the solution.

Figure 17. Sample hybrid agile structure for 3 week sprint cycle

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Requirements				
	Fixes		Deployment		
Week 2	LoE Estimates	Final Scope			
				Application Build & QA	
Week 3	Requirements				
	Application Build & QA		UAT & Regression Testing		
Week 4	Requirements				
	Fixes		Deployment		

Our hybrid agile approach ensures a balanced and effective project management strategy that leverages the best practices of Agile and Waterfall methodologies. By maintaining flexibility and adaptability while ensuring structured and documented processes, Dimagi delivers systems that meet all functional and non-functional requirements, align with State expectations, and achieve project success.

3. Coding Standards and Version Control

Dimagi employs robust coding strategies and standards to ensure the development, availability, and maintenance of high-quality solutions. Our approach is guided by industry best practices.

Coding Strategies and Standards

To deploy new features or updates to the CommCare platform, which serves as the foundation for the MCH Data System's configured web application, Dimagi follows the following coding strategies and standards. Configuration and testing of the web application built using CommCare will follow the process described throughout [Section 10. Design, Development, and Implementation](#).

- **Coding Standards:** The development team adheres to established coding standards and specific Dimagi practices to maintain code readability and consistency. Each code base includes a guide for code standards used during review. Dimagi standards prohibit items such as commented-out code or undocumented public methods and members, and highly scrutinize items like static object declarations. We also require code to follow OWASP 10 security principles.
- **Git-based Version Control:** We utilize GitHub for version control, enabling effective management of code changes, collaboration among developers, and maintenance of a comprehensive history of code modifications.
- **Branching Strategies:** All development is completed on a branch. Once ready for merging, a pull request is created and undergoes a comprehensive code review against the documented standards.
- **Code Reviews:** Every configuration change is submitted for code review by a member of the Dimagi technical team to ensure adherence to standards, identify potential issues early, and foster a collaborative development environment. Reviewers ensure the changeset provides sufficient supporting documentation, and the PR is only approved if it meets the appropriate standards.
- **Continuous Integration (CI):** Dimagi expects new production projects to have a build process integrated with the main Source Code Management (SCM) tool from the beginning. This ensures builds are produced safely and reliably against consistent build states. Automated checks, including unit testing, code linting, test coverage, and complexity review, are implemented into the CI process. Pull requests must meet these checks to be merged.
- **Building for Deployment:** The build process starts from a fixed (ideally protected) branch to ensure code has been reviewed and approved before building a formal artifact. Release build processes include running tests and pointing to a specific Tag/Label/unique identifier for traceability.
- **Deployment Process:** Dimagi maintains deployment processes for each production system, outlining paths (testing, staging, production, emergency, etc.) and when to follow each path. This includes executing checks, confirmations, and rollback strategies.

- **Quality Assurance:** Changes may not be merged into the main branch until quality assurance testing is complete and all issues are resolved.

Ensuring State Access to the Most Recent Version of the Code

As part of Dimagi's commitment to open source, Dimagi makes all source code available under permissive Open Source Initiative (OSI) software licenses: BSD and Apache v 2.0, and therefore additional escrow arrangements are not required by its very nature. All software is available upon release on github for access by the State at all times under Dimagi's open source repositories and licenses:

CommCareHQ: github.com/dimagi/commcare-hq/blob/master/LICENSE, licensed under BSD

CommCare Android: github.com/dimagi/commcare-odk, licensed under Apache 2.0

CommCare: github.com/dimagi/commcare, licensed under Apache 2.0

JavaRosa: github.com/dimagi/javarosa, licensed under Apache 2.0

Motech: github.com/motech/motech/blob/master/LICENSE.txt, licensed under BSD

To learn more, please visit the Dimagi's [Open Source home](#)

All content and data used to configure the web application on the CommCare platform are property of the State and will be made available as needed.

By adhering to these coding strategies and version control practices, Dimagi ensures the reliability, security, and continuity of the MCH Data System, meeting both the immediate needs and long-term requirements of the IDOH.

4. Requirements Management

Dimagi's proposed approach for the MCH Data System integrates Agile and Human-Centered Design (HCD) methodologies to ensure comprehensive, user-centric solutions. We will develop a formal Requirements Traceability Plan (RTP) and a Requirements Traceability Matrix (RTM) to track and manage all requirements throughout the project lifecycle. Our process includes validating requirements through stakeholder engagement, creating a detailed product backlog with user stories, epics, and features, and maintaining continuous updates to the RTM. Additionally, Dimagi will deliver critical functional and technical documentation related to requirements during the design phase of the project. This ensures a robust, traceable, and effective system design aligned with the Indiana Department of Health's needs.

Dimagi Approach to Requirements Validation and Updates

Dimagi's structured approach to validating and updating requirements ensures that all functional and non-functional requirements are thoroughly understood, validated, and managed throughout the project lifecycle. Our overall approach is deeply rooted in Agile and Human-Centered Design (HCD) methodologies, which are critical for developing a responsive and user-centric system. Our hybrid agile methodology emphasizes iterative development, continuous feedback, and flexibility to adapt to changing requirements. This ensures that the system evolves in alignment with user needs and project goals. HCD places the end-users at the heart of the development process. By understanding their needs, behaviors, and challenges, we can design a system that is intuitive, efficient, and effective.

Dimagi will develop a formal Requirements Traceability Plan (RTP) (D07) for the State to review and approve before any design or configuration work begins. This plan will provide in greater detail the methodology for tracking functional and non-functional requirements we

recommend employing to ensure comprehensive traceability and alignment with project outcomes.

To ensure a thorough and effective process for validating and updating requirements, Dimagi will undertake the following activities as part of our Requirements Management approach.

Table 24: Requirements Validation and Updates Activities

Activity	Key outputs
Identify and Validate Requirements	<ul style="list-style-type: none"> • Our process begins with an in-depth review of the Functional and Non-Functional requirements documented in Attachment O. This initial understanding is crucial for establishing a solid foundation for the project. • Dimagi will validate these requirements by engaging stakeholders through Joint Application Development (JAD) sessions and SME interviews. This interaction allows us to identify gaps, gather additional requirements and ensure that the documented needs are accurate and comprehensive.
Establish Requirements Traceability Matrix (RTM) (D08)	<ul style="list-style-type: none"> • Dimagi will create the RTM, which is a grid that links each requirement to its origin and traces it throughout the project lifecycle. • The RTM will include columns for requirement ID, description, priority, source, status, and links to related design, development, and testing artifacts. • The RTM will be created in a common format (e.g. Excel file) and housed in a centralized online tool (e.g. Sharepoint) accessible to both Dimagi and IDOH teams
Link Requirements to Project Deliverables	<ul style="list-style-type: none"> • Dimagi will ensure each requirement in the RTM is clearly linked to the corresponding work in the Solution Roadmap. This helps in aligning project deliverables with stakeholder needs. • For each requirement in the RTM, Dimagi will define clear and measurable acceptance criteria that will be used to determine if the requirement has been met based on the defined project objectives.
Incorporate Backlog, User Stories, Epics, and Features	<ul style="list-style-type: none"> • Dimagi will create a product backlog that contains all the high-level requirements and tasks needed for the project. All requirements, both functional and non-functional, will be represented in a requirements backlog. • Dimagi suggests using Asana to house this backlog, providing a centralized and accessible location. If more acceptable to State stakeholders, Azure DevOps or similar can be used. • Further organize and transform the requirements backlog by defining Epics, Features, and User Stories to facilitate the breakdown into actionable, incremental work items or tasks. • Establish clear acceptance criteria/definition of done to facilitate testing and ensure quality during sprint cycles • Link epics, features, and user stories to their corresponding

	entries in the RTM to ensure comprehensive traceability from high-level requirements to detailed implementation.
Maintain and Update the RTM	<ul style="list-style-type: none"> • Dimagi will continuously update the RTM to reflect changes in requirements. This includes adding new requirements, updating existing ones, and recording any changes to the project scope. • Implement version control to maintain a history of changes to the requirements and the RTM.
Review, Validate and Control Requirements	<ul style="list-style-type: none"> • Dimagi Project Manager and Implementation Lead will conduct regular reviews of the RTM with stakeholders to ensure that all requirements are still valid and correctly captured. • Dimagi Project manager will regularly report on the status of requirements, including progress, changes, and issues. This helps in keeping stakeholders informed and engaged. • Conduct impact analysis for any changes in requirements to understand the effect on project scope, schedule, cost, and quality.
Close Requirements:	<ul style="list-style-type: none"> • At the end of the project, the Dimagi will ensure that all requirements have been met and formally close each requirement. This includes getting stakeholder sign-off on completed requirements. • Conduct a post-implementation review to assess how well the project met the requirements and identify any lessons learned for future projects.

By integrating Agile and Human-Centered Design methodologies into these sequential activities, Dimagi ensures a rigorous and transparent process for validating and updating requirements. This approach guarantees that the MCH Data System will effectively meet the needs of the Indiana Department of Health and its stakeholders, resulting in a system that is both responsive and user-centric.

Additional System Documentation

In addition to developing the Requirements Traceability Plan (RTP) and the Requirements Traceability Matrix (RTM) for this project, Dimagi will deliver the following documentation for the MCH Data System as part of the design phase:

- **Functional Specification and System Design Document (D09):** This document will detail all functional requirements, business rules, reporting capabilities, user profiles, and security roles. It will map system functionalities back to the RTM for traceability and include use cases and workflows aligned with business processes and system requirements.
- **Data Integration and Interface Design Document (D10):** This will feature data flow diagrams, a data dictionary for all integration points and interfaces, and specifications for data transformation and loading.

- **System Architecture Document (D11):** This document will describe the conceptual, logical, and physical architectures of the system, detailing the structure, relationships, and services provided by the system.
- **Data Dictionary (D13):** It will provide an inventory of all data elements within the system, including definitions, data types, table locations, and possible data values.
- **Disaster Recovery and Business Continuity Plan (D14):** This plan will include backup, protection, and failover/fallback procedures, recovery time and point objectives, and risk analysis and mitigation strategies for core business processes and workflows.

5. Incorporating UI and UX Considerations into DDI

Dimagi prioritizes creating an optimal user experience in everything we do, from the design of the CommCare product itself to our implementation practices. Our proposed solution and approach, including specific activities by DDI phase, meaningfully incorporate UI and UX considerations.

Leveraging CommCare, a user-centric LCAP for iterative solution delivery: Developed explicitly for use by people with all levels of technical literacy, CommCare is designed to be easy to use, with a workflow-centric interface that guides users step by step through their work. CommCare’s low-code application builder allows for the creation of tailored solutions that are not just heavily localized for each of Dimagi’s partners but customized for each individual user role, ensuring users are not presented with a one-size-fits-all solution that fails to meet their unique needs. Because the application builder allows for quick and easy adjustments without custom development, the platform lends itself to Dimagi’s hybrid agile implementation approach which anchors on an ethos of continuous improvement based on user feedback.

Dimagi’s approach to user-centered co-designing, testing, and continuous improvement: Dimagi anchors design in user needs early in DDI, meeting with stakeholders representing the variety of user roles and program teams to collaboratively design solutions through user research, workflow mapping, and prototype review. Dimagi prioritizes representation of a diverse set of roles for requirements elaboration, co-design sessions, and ultimately User Acceptance Testing (UAT), all steps built into Dimagi’s hybrid agile approach. The approach operationalizes continuous improvement through iterative releases responding to requirements and feedback gathered through user discussion, testing, and help desk support requests. This means users see their feedback addressed in a timely manner during DDI, building buy-in and ownership of the system. Utilizing Agile methods, Dimagi will regularly review and prioritize a backlog with the State team for production readiness.

Activities to incorporate UI and UX into DDI: Dimagi’s proposed approach, DDI schedule, and activities described throughout this section incorporate UI and UX considerations in several ways, including the following activities in key DDI phases.

- **Project Initiation and Planning:** Dimagi works with IDOH to incorporate activities and controls into the Project Schedule and Project Management Plan to identify and engage key user groups throughout DDI.

Specific strategies suggested for this phase include:

- Assembling user affinity or super user groups to represent diverse users, while ensuring meaningful management and participation

- Enabling IDOH leads for success as source of change management and user communications, increasing likelihood of participation and buy in
- **Requirements Analysis and System Design:** Dimagi conducts detailed requirements analysis to understand user needs, preferences, and pain points. Real users are represented in Joint Application Development (JAD) Sessions. Development of Requirements Traceability Matrix (RTM) ensures all known user needs are captured and monitored in subsequent phases, and is reflected in functional and system design.

Specific strategies suggested for this phase include:

- Defining style standards including common terms and language options, color schemes, icon design framework for home screens, etc.
- Creating user personas based on discovery that can be used for writing user stories and anchoring choices during configuration on real user needs
- Early low-fidelity or CommCare configured prototype development for realistic JAD and requirements sessions
- **System Configuration and Development:** Organizing sprints by key functionality informed by the requirements analysis and system design phase, Dimagi rapidly configures user interfaces. Specifications draw on the RTM, design standards, and include iterative improvement that draw on testing activities built into the sprint cycle.

Specific strategies suggested for this phase include:

- Reducing user burden with data ingest and auto-population of field-level data
- Including accessibility requirements for each UI configuration
- Updating in-solution help text or tool tips to localize to Indiana
- **Testing:** Dimagi engages the identified user groups from project planning in usability testing with each sprint release and at milestones determined in collaboration with IDOH to ensure the system is intuitive and meets user expectations. The test plan and test scripts guide through a user-centric testing process, where results are captured and added to the configuration backlog for continuous improvements.

Specific strategies suggested for this phase include:

- UAT scripts including all required browsers and mobile browser access
- Evaluation of search times and other performance metrics for UI configuration
- **Implementation:** During implementation, Dimagi closes out needed functionality through tracing of the requirements matrix as described in [Section 10, Design, Development, and Implementation](#) above. As users onboard to the MCH Data System, Dimagi team reviews trends in support requests to identify potential areas for improvement in product stabilization activities ahead of DDI Close Out. System cutover is contingent on response to UAT results, ensuring a solution validated in real user experience.

Specific strategies suggested for this phase include:

- Updates to documentation including on-demand help articles and training

- Backlog maintenance, groomed by those needed for Go Live and those for M&O enhancements
- **DDI Close Out:** Conduct a review of the system's UI/UX post-implementation to identify any areas for continuous improvement in M&O.

6. Testing

Dimagi is dedicated to ensuring the highest quality for the Maternal and Child Health (MCH) Data System through a comprehensive and systematic testing approach. Our strategy includes both manual and automated testing integrated from the early stages of system configuration and development, ensuring the functionality, performance, and security of the solution. By developing a detailed Test Plan (D16) aligned with IDOH requirements, we embed quality assurance into every phase of our hybrid agile delivery process. This includes unit testing, user acceptance testing (UAT), regression testing, performance testing, integration testing, and interface testing. Our processes are fortified by robust CommCare platform security measures and continuous maintenance practices, leveraging advanced monitoring tools and DevSecOps methodologies to provide a secure, reliable, and high-performing system. Additionally, our defect management activities ensure that all test results and defect reports are meticulously documented and shared with the State, with a clear process for resolving identified issues promptly to maintain system integrity and performance.

a. Dimagi's Comprehensive Testing Approach

Dimagi's approach includes thorough testing from the early stages of system configuration and development. A mix of manual and automated testing is used to ensure the functionality, performance, and security of both CommCare as a platform and of each client's configured applications. By establishing a test plan aligned with IDOH requirements, we integrate quality assurance into every phase of our hybrid agile delivery process, ensuring the highest standards for both the product and our management practices.

Dimagi will create a comprehensive Test Plan (D16) to ensure thorough testing of the MCH Data System. This Test Plan will encompass all necessary activities for the initial system implementation and any subsequent changes. The plan will define and document all required testing activities and tools to be used, ensuring that every aspect of the system is tested methodically and effectively. The Test Plan will include a detailed test schedule and approach, outlining the timeline and methodology for all testing activities. This will provide a clear roadmap for the testing process, ensuring that all stages are completed on time and to the required standard. To ensure alignment with the State's expectations, Dimagi will establish a mutually agreed-upon go/no-go date for the implementation. This date will be a key milestone in the testing process, ensuring that both Dimagi and the State are satisfied with the readiness of the system before it goes live.

Dimagi offers multiple technology environments to facilitate the varied implementation needs of a project. This includes unique CommCare environments for application development, testing, training, and live use. Environments for specialized integration or load testing testing can be established based on the needs of the solution. These environments allow us to conduct accurate and thorough testing without compromising the integrity of the live system.

Each environment serves a specific purpose, ensuring that all aspects of the system are evaluated under conditions that closely mimic real-world usage.

The types of testing included in the comprehensive approach include:

Unit Testing

The Dimagi team will conduct and document thorough unit testing of each configuration change made to the MCH Data System. Unit testing ensures that each single component of the application performs its specific function correctly as a stand-alone. Unit testing occurs prior to user acceptance testing to catch and resolve defects prior to user interaction with the new configuration.

All fixes are retested and each configuration change must pass unit testing prior to being included in the sprint's application release. The Dimagi Project Manager will document unit testing outcomes and design resolution plans during each Agile sprint cycle and share them with the State team to promote transparency and provide visibility into the testing and issue resolution process.

Integration Testing

Dimagi is committed to ensuring that all components of the proposed MCH System work together seamlessly. Our integration testing process is designed to verify the interoperability of all system elements, guaranteeing that they function as a cohesive unit. We adopt an incremental approach to integration testing, where components are tested individually and then integrated step-by-step. This method helps in early detection of issues and ensures that each integration point is thoroughly validated.

Dimagi will develop detailed integration test cases that cover a range of scenarios to validate the interactions between different components. This includes verifying data flow and communication protocols. Every integration point is subjected to rigorous validation to ensure that the system meets the specified requirements and operates smoothly. This includes testing to ensure reliability, performance, and security. Utilizing automated testing tools, we ensure consistent and efficient execution of integration tests. Automation helps in rapidly identifying integration issues and facilitates continuous integration and continuous deployment (CI/CD) practices.

Application System Testing

Dimagi will perform functional testing of the application as part of the deployment of a new release. Functional application testing focuses on ensuring that the end-to-end scenarios and business processes are correctly implemented. It usually occurs after several individual components have passed unit testing and are ready for a more comprehensive, sequenced analysis. An example would be testing the entire new client registration workflow in the application from start to finish to ensure all components - new and existing - work together as intended. As part of this testing, Dimagi defines test cases based on functional requirements and specifications, covering various scenarios, including common workflows and edge cases across different user types.

All fixes are retested and must pass prior to being included in the sprint's application release. The Dimagi Project Manager will document unit testing outcomes and design resolution plans during each Agile sprint cycle and share them with the State team to promote transparency and provide visibility into the testing and issue resolution process.

Interface Testing

Metamor Systems and Dimagi will perform interface testing for all interfaces to ensure that files are properly formatted, transmitted, received, edited, accepted, confirmed, and processed according to design. At a minimum, a QA environment will be available for these test activities. Test cases will include verification of file formats and structure, testing of data acquisition or transmission methods, and error handling. Our combined team of Dimagi, Metamor Systems, and CSpring will incorporate the necessary interface testing into the Test Plan. Additional information about our approaches for interface and data warehouse configuration can be found in [Section 4. Proposed Solution](#) and [Section 7. Reporting](#).

User Acceptance Testing

User Acceptance Testing (UAT) is built into Dimagi's Agile sprint process. Dimagi will work with the State team to identify user acceptance testers that represent a diverse set of user roles and regions within the State. Each sprint, the Dimagi team will prepare UAT test plans and instructions and support users through the testing process. Users will have the opportunity to interact with configuration changes and provide feedback prior to the changes going live, minimizing the risk of releasing changes that disrupt user workflows or are likely to be rejected by users.

Dimagi's UAT approach includes:

- Development of detailed UAT Test Scripts (D17) that will be approved by the State.
- Development of Test Cases (D18) covering all facets of the system's operations and testing all system processing options and environmental conditions. Each test case will include a test case number, date created, author, description of case, type of test, inputs, steps, expected results, actual results, pass/fail, run date, tester, and failure reason.
- Providing a dedicated testing environment for UAT participants to complete their scripted tasks.
- Logging errors and adding error resolution into subsequent sprints

Regression Testing

The Dimagi team will conduct regression testing during each Agile sprint. Regression testing ensures that configuration changes to the system have not unexpectedly impacted other components of the MCH Data System or its functionality. This will involve both automated and manual testing processes. While unit testing ensures the new feature functions properly, regression testing ensures the new feature has not adversely impacted existing full end to end workflows. All defects identified during regression testing will be addressed by the Dimagi team prior to the sprint release. The Dimagi team writes the regression test plan and reviews it after each release, making updates as necessary to ensure it remains up to date as the MCH Data System evolves over time.

Performance Testing

Dimagi will conduct performance testing, including load and stress testing, to ensure the system's responsiveness, speed, and stability under various load conditions. For automated testing, Dimagi utilizes two software tools as part of our process:

- Datadog is a cloud monitoring and analytics platform that offers tools for monitoring and analyzing the performance of cloud-based infrastructure and applications. It provides infrastructure monitoring, application performance monitoring, log management, real-time alerts, data visualization, and security monitoring.
- Sentry is an error tracking and monitoring platform for software applications. It enhances application reliability and user experience by providing insights into and content around application errors and issues that may relate to performance.

Manual approaches to performance testing are also employed where appropriate. Each new application release will be thoroughly performance tested ahead of being deployed to live users. The performance testing results will be communicated to the State and employed to create a system capacity model, which will define the necessary technology requirements and configuration standards.

CommCare platform testing

When designing, coding, and delivering updates to the CommCare platform, Dimagi utilizes a number of automated and manual testing processes that maintain the highest standards of performance, functionality, and security.

Security

As a company, we are both HIPAA compliant and SOC-2 certified, ensuring robust security measures are integrated into all our development processes. Security considerations are embedded into the design and development of our software. Our development process includes automated vulnerability assessments and manual inspections to ensure the security of the CommCare platform. We conduct regular security testing for the CommCare platform, independent of application releases. All code submissions undergo mandatory reviews by technical team members, specifically focusing on security issues and OWASP vulnerability assessments. We use GitHub Alerts to monitor software dependencies for known vulnerabilities. Additionally, our CommCare code repositories are automatically evaluated for such vulnerabilities.

Performance and maintenance

As part of our SaaS offering, the proposed IDOH MCH Data System benefits from the ongoing development and maintenance of the CommCare platform. We use robust monitoring tools to ensure optimal performance. Our platform team regularly analyzes resource utilization across our multi-tenant SaaS cloud, which serves over 800 tenants. This analysis includes managed alerts and monitors at the application, hardware, and service levels to determine the need for additional cloud hardware resources based on key growth metrics such as transactional throughput. Integration teams deploy both automatic and manual monitoring practices to ensure the sustained maintenance of integrations over time.

DevSecOps Practices

When designing, coding, and delivering updates to the CommCare platform, Dimagi utilizes various automated and manual testing processes that align with current DevSecOps methodologies. This includes:

- Automated Vulnerability Assessments: Regularly conducted to identify and mitigate potential security threats.
- Scripted Patching: Ensuring that updates and patches are applied systematically and securely.
- Service Continuity: Maintaining service with no downtime through carefully scripted cutover patterns

b. Working With Client Testing Teams

Dimagi project teams have successfully leveraged the experience of client teams for various testing activities, particularly during User Acceptance Testing (UAT) and end-to-end application workflow testing. By integrating client feedback and insights, we have been able to refine and optimize our solutions to better meet user needs. We are open to and actively encourage the participation of State or third-party testing teams in all testing activities as part of our established Agile sprint cycle.

c. Defect Management Process Flow

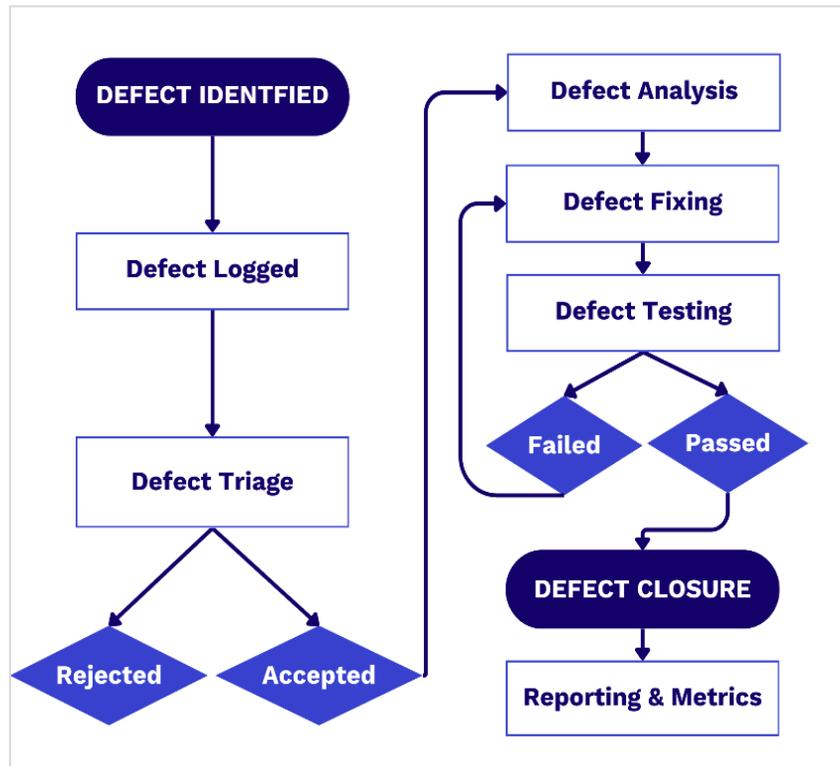
As part of Dimagi's defect management, all test results and defect reports will be shared with the State. The test results and defect reports will describe the results of each test performed and any necessary system modifications. This documentation will feed back into all required system documentation to reflect changes and ensure consistency. We will submit these reports to the State within ten business days following each test, with updates to system documentation completed within ten business days following any modifications, unless an alternate timeline is approved by the State.

Dimagi utilizes a structured defect management process to identify, document, and resolve defects:

- **Defect Identified:** The initial step where a defect is discovered.
- **Defect Logged:** The defect is recorded in a tracking system with all relevant details.
- **Defect Triage:** The defect is reviewed to determine its priority and assignment.
- **Defect Analysis:** The root cause of the defect is analyzed by the assigned team member.
- **Defect Fixing:** The defect is corrected in the system configuration.
- **Defect Testing:** The fixed defect is tested to ensure it is resolved.
- **Defect Closure:** Once verified, the defect is closed.
- **Reporting and Metrics:** Metrics and reports are generated for analysis and improvement.

As part of this process, all test results and defect reports will be shared with the Indiana Department of Health. The test results and defect reports will describe the outcomes of each test performed and any necessary system modifications. This documentation will feed back into all required system documentation to reflect changes and ensure consistency. We will submit these reports to the State within ten business days following each test, with updates to system documentation completed within ten business days following any modifications, unless an alternate timeline is approved by the State.

Figure 18: Dimagi Structured Defect Management Process



d. Roles & Responsibilities

In Dimagi’s commitment to delivering a quality MCH Data System solution, this table outlines the roles and responsibilities for our testing approach.

Table 25: Dimagi and State Team Testing Responsibilities

Team	Role	Testing Responsibilities
State	State Project Manager	The State Project Manager is responsible for signing off on requirements acceptability criteria and User Acceptance Testing (UAT) plans delivered by the Project Manager. The State Project Manager is also responsible for collaborating with the Project Manager to review defects identified during testing and proposed next steps or mitigation plans, as well as sharing consistent feedback regarding the testing processes with the Project Manager.
State	User Engagement Lead	The State User Engagement Lead recruits and coordinates with users to facilitate UAT testing.

State	User Stakeholders	<p>A diverse group of stakeholders representing a variety of user types will be selected to serve as user acceptance testers. User acceptance testers will be responsible for executing user acceptance test plans provided by Dimagi, with guidance from the Dimagi Project Manager, and recording UAT outcomes.</p> <p>Additionally, select user stakeholders may be requested to participate in focus group discussions and/or respond to user surveys to provide feedback on the system.</p>
Dimagi	Project Manager	<p>The Dimagi Project Manager is responsible for assembling the results of all application testing, creating mitigation plans for all defects identified, and communicating testing results with the State Project Manager.</p> <p>Additionally, the Dimagi Project Manager leads recurring sprint retrospective meetings and translates feedback into process improvements as well as creating quality audit reports and reviewing them with the State Project Manager during review meetings.</p>
Dimagi	Software Engineer, Technology Lead, and Data Consultants	<p>The technology team responsible for development, rather than web application configuration, is responsible for end-to-end testing of the changes as described throughout this section. These releases are particularly less user facing, establishing data feeds and platform readiness.</p>
State	IT Leads or Source System Owners	<p>Key representatives from source systems support testing by making available test cases or test files to ensure secure, successful integrations in lower environments.</p>
Dimagi	Application Configuration Analyst	<p>The Dimagi Application Builder is responsible for creating all materials associated with User Acceptance Testing, including testing scenarios, user instructions, testing logs, and testing environment preparation and guiding testers through the UAT process.</p> <p>They are also responsible for addressing any defects identified during unit, regression, integration,</p>

		performance, and user acceptance testing before retesting can occur.
Dimagi	Solutions Analyst	<p>The Dimagi Solutions Analyst is responsible for conducting thorough quality assurance testing of each solution configuration change, and retesting prior to each application release.</p> <p>Unit, regression, performance, and integration testing is conducted before any updates are released to production. Automated regression testing is accompanied by a set of manual tests to ensure that system updates meet the requirement objectives and truly enhance workflows. Testing is documented and the results are communicated with the Dimagi Application Builder and Project Manager.</p>
CSpring	CSpring Data Migration Lead and Business Analysts	During requirements elaboration, CSpring will work with source system IT leads or product owners to identify data quality, transmission method, etc., at which time the test environment, test file specification, and transport methods of testing interfaces with the source system will be recommended.
Metamor Systems	Metamor Systems Integration Lead and AWS Consultants	Metamor Systems leads execution of interface testing, under the guidance of the Dimagi Data and Analytics Lead. Metamor Systems will develop test cases and test files, collaborate with source systems on data exchange, defect logging and resolution, and ultimately promotion to production.

7. Expected State Resources

Active participation from state staff is essential to the success of the project, ensuring efficient decision making, effective communication, and timely resolution of any issues. Dimagi's completed Attachment M outlines the number of hours for both Dimagi's staff, subcontractor staff, and State resources for the 18-month DDI period. Additional time from all those resources is expected for M&O, both Stabilization and Steady State, as included in the Attachment D, Cost Proposal.

Table 26: Expected State Resources for the DDI Period

State Staff Resource	Tasks Supported	Period of DDI
Core State project team		
Project Executive Sponsor	<p>Serve as strategic lead for project and business needs: -</p> <ul style="list-style-type: none"> ● Provide strategic direction and make high-level decisions to ensure alignment with state goals and objectives ● Facilitating business needs, such as contract monitoring ● Offering a point of escalation should Dimagi need to mitigate any project risks ● Attending key project management meetings and offer sign off on needed deliverables ● Setting direction for and facilitating Change Management and Communication, including updating with key internal stakeholders ● Offer business decision making authority at key points of DDI, such as stabilization and implementation 	Entirety of DDI Months 1-18
State Project Manager	<p>Serve as primary project management role:</p> <ul style="list-style-type: none"> ● Responsible for daily direction of project activities and coordinating State resources ● Significant contributions to project planning and initiation, including coordination with Dimagi Project Manager on project schedule and controls ● Attends Project Status Meetings <p>Coordinates State team for DDI activities and deliverables reviews:</p> <ul style="list-style-type: none"> ● Reviews and approves deliverables ● Coordinates cross-team testing initiatives ● Monitors and approves training plan and documentation ● Coordinates review and approval of report access and configuration ● Coordinates resources responsible for source systems at the State during interface execution 	
MCH Data System Product Owner	<p>Participates in hybrid agile team, representing a voice of the MCH users and MCH program:</p> <ul style="list-style-type: none"> ● Supports requirements elaboration and feature specification ● Attends agile sprint planning meetings, contributing to scoping decisions <p>Supports test planning and execution:</p> <ul style="list-style-type: none"> ● Serves as a source of testing strategy and participating in select UAT as a core system stakeholder <p>Provides strategic guidance on system design options:</p> <ul style="list-style-type: none"> ● Reviews and approves report configuration and other key deliverables ● Provides direction for key decisions during critical DDI phases, including stabilization and implementation 	

	<p>Prepare for M&O:</p> <ul style="list-style-type: none"> Receive training on CommCare system to contribute to future specifications for changes administered by IDOH independently 	
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User Engagement & Support Team

<p>User Engagement, Training, & Onboarding Leads</p>	<p>Attend project kick off Organizes users into user groups:</p> <ul style="list-style-type: none"> Creates register of users roles and facilities or programs, allowing for assembly of users into groups for training and onboarding As needed, connects with leadership of various user groups and assesses qualities of user groups to enable subsequent activities <p>Facilitates user recruitment for pilot and UAT activities:</p> <ul style="list-style-type: none"> Draws on register of user groups and established relationships to recommend and recruit select users for pilot and UAT activities <p>Creates targeted user training and onboarding plan:</p> <ul style="list-style-type: none"> Identifies specific geographies and associated for phased onboarding with target dates for trainings and onboarding Develops communication materials to facilitate outreach and onboarding of Tracks training and onboarding of identified user groups 	<p>Entirety of DDI Months 1-18</p>
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<p>Tier 1 and Tier 2 Help Desk Support</p>	<p>Prepare for Help Desk activities to start in M&O:</p> <ul style="list-style-type: none"> Receive CommCare and solution training from Dimagi’s team to be proficient in T1 and T2 help desk issues Create documentation and internal processes to ready T1 and T2 help desk for scale ahead of M&O <p>Provide user support during implementation:</p> <ul style="list-style-type: none"> Serving as T1 & T2 for pilot users 	<p>Phase 5: Training Phase 6: Implementation Months 12-18</p>
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State of Indiana Technical Support

<p>Access Indiana SME</p>	<ul style="list-style-type: none"> Offers technical consultation during configuration of SSO by Dimagi’s team 	<p>Phase 3: System Configuration and Development Months 4-13</p>
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<p>OIT Representative</p>	<p>Attends project kick off Support coordination of State systems and policies:</p> <ul style="list-style-type: none"> Coordinates with relevant State data sources for migration or interface design and execution, including facilitating execution of needed legal agreements Serves as a point of escalation for issues faced during migration or interface design and execution 	<p>Phase 3: System Configuration and Development Months 4-13</p>
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Source Data SMEs and System Owners

<p>My Healthy Baby SME</p>	<p>Attends project kick off For respective system Data Migration: Supports Specifications for of Data Migration:</p> <ul style="list-style-type: none"> Collaborate with the project team to define data migration specifications, ensuring alignment with the system’s data structures 	<p>Months 2 - 14</p>
<p>INSTEP SME</p>		<p>Phase 2:</p>
<p>EARS SME</p>		<p>Requirements Analysis and System Design</p>

	<p>Enables Migration Execution:</p> <ul style="list-style-type: none"> Set up environments and grant necessary access permissions for migration of data, including timely support and troubleshooting during testing phases 	<p>Phase 3: System Configuration and Development</p>
<p>Visionlink System Owner</p>	<p>Attends project kick off For Visionlink System Data Migration: Supports Specifications for of Data Migration:</p> <ul style="list-style-type: none"> Collaborate with the project team to define data migration specifications, ensuring alignment with the system’s data structures <p>Enables Migration Execution:</p> <ul style="list-style-type: none"> Set up environments and grant necessary access permissions for migration of data, including timely support and troubleshooting during testing phases <p>For Visionlink System Interface: Supports Interface Specifications and Execution:</p> <ul style="list-style-type: none"> Collaborate with project team to define interface specifications, ensuring alignment with system capabilities, available transport methods, security measures, and quality of data <p>Provides Sample Data and Documentation:</p> <ul style="list-style-type: none"> Supply necessary sample data sets and comprehensive documentation on data formats, structures, and meanings to facilitate accurate interface development. <p>Enables Testing:</p> <ul style="list-style-type: none"> Set up test environments and grant necessary access permissions for Dimagi’s team to conduct thorough testing of the interface. Ensure timely support and troubleshooting during testing phases. <p>Coordinates with IT and Security Teams:</p> <ul style="list-style-type: none"> Work closely with IT and security teams to ensure data access, network configurations, and security protocols are in place for seamless data integration. <p>Monitors and Validates Data Transfers:</p> <ul style="list-style-type: none"> Participate in the monitoring and validation of initial data transfers to ensure the accuracy and reliability of the data being integrated. 	<p>Phase 4: Testing</p>
<p>System Owners from: IHIE, Specimen Gate, Vital Records System, Foster Care, Medicaid Data, Emergency Responder Mobile App</p>	<p>Attends project kick off For each system owned: Supports Interface Specifications and Execution:</p> <ul style="list-style-type: none"> Collaborate with project team to define interface specifications, ensuring alignment with system capabilities, available transport methods, security measures, and quality of data <p>Provides Sample Data and Documentation:</p> <ul style="list-style-type: none"> Supply necessary sample data sets and comprehensive documentation on data formats, structures, and meanings to facilitate accurate interface development. <p>Enables Testing:</p> <ul style="list-style-type: none"> Set up test environments and grant necessary access permissions for Dimagi’s team to conduct thorough testing of the interface. Ensure timely support and troubleshooting during testing phases. 	<p>Phase 2: Requirements Analysis and System Design</p> <p>Phase 3: System Configuration and Development</p> <p>Phase 4: Testing</p>

Coordinates with IT and Security Teams:

- Work closely with IT and security teams to ensure data access, network configurations, and security protocols are in place for seamless data integration.

Monitors and Validates Data Transfers:

- Participate in the monitoring and validation of initial data transfers to ensure the accuracy and reliability of the data being integrated.

8. Optimal Implementation Approach

Dimagi agrees with the State's suggestion to take a phased approach to implementation. This method allows for a controlled transition, ensuring the system stabilizes and ramps up effectively. Our proposed phased implementation has a limited user onboarding and piloting in DDI and statewide onboarding in M&O Stabilization. This approach helps manage the extensive scope of work within the 18-month timeline, while ensuring timely statewide user onboarding.

Anticipated Advantages

The phased approach offers several significant advantages that enhance the implementation process.

- **Product Stabilization:** Smaller groups of users in the early onboarding stages can identify key issues before the entire state adopts the system, allowing for necessary adjustments.
- **Risk Mitigation:** A staged plan allows for early issues to be experienced on a smaller scale, with other means of completing work typically still in place, ensuring that initial problems can be addressed promptly without affecting the entire user base.
- **Effective Testing:** The State and Dimagi can select the earliest user groups to be those most likely to be effective testers and least likely to create adoption issues.
- **Resource Distribution:** By spreading training, technical support, and communication activities over a longer period, we can reduce the concentration of these efforts, making them more manageable and effective.

Potential Drawbacks

Despite the advantages, there are some potential drawbacks to a phased approach that need to be considered.

- **User Burden and Data Errors:** There is a risk of duplicative entry or missed data due to cutover coordination during a period when legacy workflows are still available and only a portion of users are on the new System, which can frustrate users and lead to errors.
- **Inconsistent User Experience:** If not all user groups are onboarded simultaneously, it can lead to disparities in how users interact with the system and each other. This inconsistency may cause dissatisfaction and hinder collaboration and data exchange among users.
- **Complex Change Communications:** A longer transition period increases the importance of careful communication. User groups exchanging any negative perception of the system when not everyone has access can create problematic dynamics. Clear and simple messages are crucial to avoid confusion and ensure clarity.

Statewide Implementation and User Onboarding

Dimagi agrees with the State's suggestion to take a phased approach to implementation. Based on our extensive experience, we recommend rolling out the system to user groups in phases to allow for stabilization and ramp-up. Given the scope of DDI that must be completed in the 18-month timeline, we propose that statewide user access occurs following this in the Stabilization and M&O phase, with the system being production-ready at the DDI Closeout at month 18. User groups will be onboarded in the six months following, based on geography. This phased approach ensures a controlled and measured transition, allowing for adjustments based on early feedback and system performance.

Limited Pilot during DDI (Months 14-18, as part of Implementation and Product Stabilization)

Key IDOH users and identified a limited user group engage in a solution pilot to complement other established testing modalities. The total user count should be small and represent a limited program or geography, or limit to only internal users. This increases the rate of feedback and feeds. For this activity, Dimagi provides user access and facilitates feedback collection via surveys and potential focus groups. With the State Project Manager, State User Engagement Lead and Training & User Onboarding Specialists, Dimagi will support pilot planning and identification of pilot participants.

Incremental regional user onboarding support (Months 19-24, as part of Stabilization M&O)

Dimagi supports IDOH in planning and executing regional user onboarding, expanding upon the initial onboarding completed in DDI. We recommend at least three waves of user onboarding, though as many as five distinct regions could be supported during this six month ramp up. Services include outreach and communications support, user provisioning technical support, and collection of user feedback. Dimagi captures onboarding statistics by geography, which can feed into the State staff's outreach and onboarding oversight reports. With the State Project Manager, State User Engagement Lead and Training & User Onboarding Specialists, Dimagi will support statewide onboarding and identification of geographic regions to segment into phases.

Ongoing user access (Months 25-End of Contract, as part of Steady State M&O)

IDOH independently manages training and user provisioning for routine new users during Steady State. Dimagi M&O staff remain available for issue resolution or fixes experienced in ongoing user growth and engagement, per [Section 14. Maintenance & Operations \(M&O\)](#).

9. DDI Risk Mitigation for 18 Month Timeline

Successfully completing the DDI (Design, Development, and Implementation) within approximately 18 months poses several significant risks. Dimagi's team and technology enable us to be very nimble, and we proposed the 18-month DDI period to meet the State's needs. Our strategic staging of team and activities in both DDI and Stabilization M&O adds some protection against risks. However, there are inherent risks in any project, especially one as ambitious in scope and timeline as the MCH Data System. Below are the key risks we have identified and our plans to mitigate them.

1. System Scope and Limited DDI Period

Risk: The system scope requires both significant web application configuration and substantial data work, including ~25 years of legacy data and several interfaces, in a limited DDI period.

Mitigation: To address this, we have structured our team to maximize efficiency. We will maintain a dedicated solutions team focused solely on web application configuration. Simultaneously, we will deploy another set of staff from both Dimagi and our two subcontractors to complete data platform work. The data resources span three teams and focus areas, further allowing parallel progress on DDI scope: 1) data migration, 2) data interfaces, and 3) data conversion and reporting. This approach ensures that both streams of work progress concurrently without bottlenecks. The collaborative and well-resourced team setup allows for simultaneous and coordinated efforts in both web application and data work, ensuring we meet the DDI timeline.

2. Complexity of the System and Configured Workflows

Risk: The novel and complex system, with extensive configured workflows and new data sources, could make it challenging to complete the full scope within 18 months.

Mitigation: Dimagi utilizes CommCare's Low-Code Application Platform (LCAP) and industry-leading data platform components to facilitate rapid configuration. This technology enables us to swiftly adapt and configure the system to meet emerging needs. This approach ensures that we can manage the system's complexity and meet the project timeline.

3. Extensive User Onboarding Requirements

Risk: Onboarding 26,000 users into a brand-new system within 18 months is a significant challenge, likely resulting in issues and extensive feedback.

Mitigation: We propose a phased onboarding approach that occurs during the Stabilization and Maintenance & Operations (M&O) phase. This strategy preserves the 18-month DDI period for limited user testing and pilot feedback. By prioritizing user feedback and focusing on user interface/user experience (UI/UX) enhancements, we can maximize the likelihood of system acceptance and reduce the risk of user-related issues.

4. Uncertainty and Limited Response Time

Risk: The project will likely encounter unknowns, and there may be limited time to respond effectively to emerging requirements or risks.

Mitigation: To mitigate this risk, we will adopt a hybrid agile methodology with overlapping requirements gathering, configuration, and testing phases. This approach allows our team to be responsive and adaptive to changes and unforeseen challenges, ensuring that we can address issues promptly as they arise. Additionally, we will have a dedicated system enhancement team focused on using this platform to address any new requirements that arise during the Stabilization phase.

5. Dependency on State Availability and Direct End User Participation

Risk: For optimal collaboration and accurate reflection of programmatic and user realities, we rely on the availability of state personnel and direct end-user participation for both web application requirements and data system design and testing.

Mitigation: We will outline the necessary state staff roles in our proposal and make dependencies visible in the ultimate Project Management Plan. Additionally, our vital staff

resources and local subcontractors will be present on-site to form strong relationships and ensure continuous progress, even when state resources are limited. This proactive approach to communication helps maintain momentum.

By proactively identifying these risks and implementing targeted mitigation strategies, Dimagi is well-equipped to navigate the complexities of the DDI process and deliver a successful implementation within the 18-month timeline.

11. Disaster Recovery and Business Continuity (Attachment K, Section 11.1.5)

Dimagi institutes robust disaster recovery and business continuity plans to ensure all systems and components that need to be highly available have an explicit plan for achieving such availability and disaster recovery requirements. Dimagi implements system availability, business continuity planning, and disaster response approaches across all critical systems and components, and confirms both processes for achieving as well as restoring availability metrics, including explicit RTO and RPO, aligned with Dimagi's Policy to have a contingency plan and process aligned with NIST 800-53:PM-11. Dimagi has also included our full company-wide Disaster Recovery and Business Continuity Plan under Attachment E for further detail.

Backups and redundancy

All data is stored in data sources that are backed up. Backups shall be tested for completeness on a quarterly basis, and a complete restore shall be tested annually. These exercises include both the primary operation region and the standby region. The results of these tests are evaluated against the Business Continuity metrics and reviewed for possible improvements for future backups and test exercises.

Periodic disaster recovery testing, including frequency

- Dimagi's Business Continuity and Disaster Recovery Plan is comprehensively tested yearly by a third party security firm.
- Disaster Recovery Planning - the overall disaster recovery strategy is based on scenarios and strategies are consistent across the technical layers: devops, data, reporting, etc., including data center disruption and degraded service levels.
 - This disaster recovery plan provides:
 - Guidelines for determining plan activation;
 - Technical response flow and recovery strategy;
 - Guidelines for recovery procedures;
 - References to key Business Resumption Plans and technical dependencies;
 - Rollback procedures that will be implemented to return to standard operating state;
 - Checklists outlining considerations for escalation, incident management, and plan activation.
 - The specific objectives of this disaster recovery plan are to:

- Immediately mobilize a core group of leaders to assess the technical ramifications of a situation;
- Set technical priorities for the recovery team during the recovery period; Minimize the impact of the disruption to the impacted features and business groups;
- Stage the restoration of operations to full processing capabilities;
- Enable rollback operations once the disruption has been resolved if determined appropriate by the recovery team;

The high-level disaster recovery activities to be used to restore the application, including timelines and ownership of those activities.

- In the event of situations necessitating disaster recovery, Dimagi will lead the established plan, ensuring the complete restoration of system availability, which is a routine part of our project work with government clients. Additionally, we will conduct a comprehensive debriefing with stakeholders and related downstream communications to refine the existing plan to enhance our approach to future incidents.
- Disaster Recovery Procedures are broken into three phases:
 1. Response Phase: The immediate actions following a significant event.
 - a. On-call personnel paged via Slack or secondary channels
 - b. Decision made around recovery strategies to be taken
 - c. Full recovery team identified
 - d. Gather data and open tickets to fix any outstanding issues
 2. Resumption Phase: Activities necessary to resume services after the team has been notified.
 - a. Recovery procedures implemented
 - b. Coordination with other departments executed as needed
 3. Restoration Phase: Tasks taken to restore service to previous levels.
 - a. Rollback procedures implemented
 - b. Operations restored

The location of the disaster recovery site as compared to the primary site.

- Data is securely hosted in AWS East Region (Virginia), and our services are strategically distributed across multiple regions, effectively mitigating single points of failure.
- Dimagi utilizes a distributed approach between multiple AWS availability zones for its failover back-ups. Failover uses a Dimagi utilizes a distributed approach between multiple AWS availability zones in the same region, and maintains regular backups in a separate AWS region. Note that in AWS, per their published documentation, different Availability Zones (AZ) represent different physical data centers and it is generally believed that it is reasonable to provide redundancy across AZ within a Region as a way to achieve a highly performant and highly available architecture.
- Storage, backup and restore practices align with NIST800-53:CP-6, NIST800-53:CP-9, and NIST800-53:CP-10.

The maximum application downtime the State can expect once disaster recovery is initiated.

- Dimagi provides an RTO and RPO for Critical System DR Process of 3 hours (RTO) and 6 hours (RPO) respectively.

Risk analysis and risk mitigation for each core business process/workflow

- Business Impact Analysis: A business impact analysis (BIA) is used to determine whether a given application, system or component needs to be included in continuity planning. The Dimagi BIA process will be driven off of the following:
 - Business Impact Analysis - Dimagi follows creates a business impact analysis (BIA) that predicts the consequences of a disruption to your business, and gathers information needed to develop recovery strategies (<https://www.ready.gov/sites/default/files/2020-07/business-impact-analysis-worksheet.pdf>)
 - BIA Worksheet - In this exercise, stakeholders assess potential impact across: Timing / Duration, Operation Impacts, Financial Impact (<https://www.ready.gov/business/planning/impact-analysis>)
- Dimagi's systems are inventoried through the cloud resource inventory and the asset management system:
<https://github.com/dimagi/commcare-cloud/blob/master/environments/production/terraformform.yml>
 - Each entry there indicates whether the system is business critical. Applications which have significant financial impact, contractual obligations or regulations associated with them are deemed business critical. Business critical systems shall be independently tracked and a plan for each shall be developed that ensures that they meet the business continuity policy requirements and State SLA.

Under activity D14, Dimagi would present the final Disaster Recovery and Business Continuity plan in month 6 for approval by the State with any agreed upon remediations in place.

12. Training (Attachment K, Section 11.4)

Dimagi's training strategy focuses on two main components: train-the-trainer and capacity building, ensuring all end users are trained on time to meet the State's training requirements.

1. Training Approach and Timeline

Dimagi employs a train-the-trainer approach to ensure a sustainable and effective onboarding of users to the MCH Data System. By training key personnel within IDOH and any partners, we create a network of knowledgeable trainers who ready end-users across the state. This method ensures that the MCH Data System is well-understood and utilized by all users, including hospitals, birthing centers, and program providers.

Dimagi anticipates there will be both an initial training, live training to kick off the train-the-trainer model, as well as ongoing training for users and trainers alike. Our approach intends to cover both needs.

Live Training

- Conducted prior to system implementation
- Focuses on the overall solution, system use, and administrative maintenance
- Geared toward Subject Matter Experts and MCH Division Trainers
- Targeted leave-behind materials

Ongoing Training

- Subsequent sessions cover new features and functionality
- Ensures continuous updates and competency among users
- Accessible to all system users

To ensure a successful training methodology, Dimagi, subcontractors and State staff will each play important roles.

Roles and Responsibilities

- Dimagi and subcontractors
 - Develop comprehensive training materials including interactive user guides, assessments, and video tutorials
 - Conduct initial and ongoing training sessions
 - Provide support for knowledge assessments and effectiveness metrics
- State staff
 - Participate in initial and follow-up training sessions
 - Assist in organizing and coordinating training schedules
 - Act as trainers for end users after completing the train-the-trainer sessions

Metrics for Measuring Training Effectiveness

Dimagi's data-driven approach cross-cuts all work. Dimagi employs several metrics to evaluate the training methodology and provide critical insights to inform ongoing work. These include:

- Pre- and post-training assessments
- Monitoring usage and proficiency levels post-training
- Tracking the number of trainers and end-users successfully trained

Pre- and post-training assessments are integral to ensuring the effectiveness of our training programs. Before the training sessions, we conduct pre-training assessments to gauge participants' baseline knowledge and identify specific areas that require focus. This allows us to tailor the training content to address the learners' needs effectively. After the training, post-training assessments measure the knowledge gained and the effectiveness of the training. The metrics from these assessments provide valuable feedback on the training's impact, highlight any remaining knowledge gaps, and inform future training improvements. Specifically, we analyze the pre- and post-assessment scores to identify areas where participants showed the most improvement and areas that may need additional reinforcement.

Post-training, we monitor usage and proficiency levels to ensure that participants are applying their new skills effectively in their roles. This involves tracking how frequently the training material is accessed and used in real-world scenarios. Additionally, we keep detailed records of the number of trainers and end-users successfully trained. This data helps us assess the reach and impact of our training programs, ensuring that we achieve our goals of widespread, proficient use of the systems we implement.

Moreover, the data from training assessments can be made available to State Trainers and the User Engagement Lead. This allows them to assess adoption and user training readiness, providing a clear view of how well users are adopting the new system and identifies areas where additional support may be needed, facilitating a smooth and effective implementation process. This comprehensive, data-driven approach ensures continuous learning and development, enhancing the overall training experience and outcomes.

Knowledge Transfer Strategy

Dimagi's capacity building strategy is aimed at equipping the IDOH team with system knowledge and CommCare skills for independent system maintenance. This strategy includes:

- In-depth training sessions for IDOH staff
- Hands-on practice sessions
- Continuous support and resources for trainers
- Regular knowledge sharing sessions
- Live webinars or office hours for support and coaching
- Documentation and user guides for troubleshooting and advanced system use, capturing all key processes, tools and systems used in the project
- Documentation of lessons learned, integrated into future training sessions to ensure continuous refinement of the knowledge transfer strategy

In addition, Dimagi recommends the creation of a forum or community of practice for users for ongoing discussion and knowledge exchange. A community of practice provides a collaborative space where participants can share experiences, challenges, and solutions, fostering continuous learning and professional growth. This sense of community among users also helps build a support network, enhancing engagement, and contributing to the overall success and sustainability of the training outcomes. Additionally, the collective knowledge and shared resources within a community of practice can drive improvements and adaptations across the board.

2. Training Delivery and Live Sessions

Dimagi proposes a comprehensive "train-the-trainer" approach for live training, tailored to meet the State's requirements for internal MCH Data System users. This approach includes three in-person training sessions covering progressively more complex system information, estimated for 20 individuals. These sessions are designed to equip Subject Matter Experts (SMEs) and MCH Division trainers with the necessary knowledge and skills to train other users effectively.

Key Components of Live Training

Dimagi's Live Trainings are inclusive of the following elements. Dimagi welcomes feedback from IDOH to refine or further shape the live training sessions as planning gets underway.

1. System Orientation:

- Introduction to key user types and functionality
- Instructions on how users log in and where to find troubleshooting materials
- Overview of system navigation and basic operations

2. Key Workflows by User Type

- Detailed walkthroughs of essential workflows tailored to different user types, such as hospitals and birthing centers, program providers (Local Implementing Agencies/LIAs), Outreach LIAs, and healthcare providers
- Hands-on practice sessions to ensure trainers can demonstrate and guide users through these workflows
- Breakout groups and role-playing, divide participants into smaller groups for focused discussions or role-playing exercises

3. Reporting, Advanced Functionality, and Troubleshooting

- Training on generating and interpreting reports

- Instruction on advanced system functionalities
- Troubleshooting techniques and common issue resolution

Additional Features of Live Training

- **Recorded Sessions:** Each training session will be recorded and made available for future trainers to access, ensuring continuity and consistency in training delivery
- **Interactive Q&A:** Sessions will include a Q&A segment to address specific questions and concerns, with feedback used to update documentation and support materials
- **Feedback and Assessments:** Assessment during and after the training gauge understanding and retention. This feedback will be used to address any gaps in knowledge and adapt future training sessions accordingly.
- **Follow-Up Resources and Support:** Provide participants with access to training materials, manuals, and support resources after the session. Offer follow-up sessions or office hours where they can get additional help if needed.

3. On-Demand Training and Training Materials

To complement the live training sessions, Dimagi will provide on-demand tutorials accessible to users of all skill levels. These tutorials will cover various modules of the solution and will be available for both internal and external system users.

Features of On-Demand Training

- User Manuals and Video Tutorials: Comprehensive guides and videos covering all aspects of the system
- Interactive Guides: Step-by-step interactive tutorials to facilitate hands-on learning
- Knowledge Assessments: Built-in assessments to track and capture user readiness, ensuring that users have mastered the necessary skills. These assessments can be incorporated directly into the CommCare platform, accessible at any point by users, or can be integrated into IDOH's training platform of choice.

Knowledge Transfer and Capacity Building

Dimagi's approach emphasizes the importance of capacity building, ensuring that the IDOH team is well-prepared for system administration and support. This includes:

- Regular capacity-building sessions throughout the training period
- Access to a web destination and repository for all training materials, providing a centralized resource for all users
- Continuous technical consultation during Maintenance and Operations (M&O) to address any emerging needs and support ongoing user proficiency. This is inclusive of all proposed topics by the State: MCH Data System operations, interfaces with external systems, purchase/upgrade/testing/deployment or any peripheral requirement, technical feasibility estimates for enhancements, fixes, configuration, data items, or system upgrades.

Training Timeline and Activities: Months 12-16

We recommend conducting three sessions, each focused on a different topic to ensure a comprehensive understanding for the trainers. These topics will be refined during the training plan development phase to incorporate the team's insights and understanding of IDOH and the final system, but could focus on system orientation, key workflows, and advanced functionality.

Month 12:

- Development of the Training Plan
- Completion of all training materials

Months 12-16:

- Execution of three synchronous train-the-trainer sessions focusing on system orientation, key workflows, and advanced functionality
- Ongoing capacity-building sessions for IDOH system administration, with technical consultation available as needed

Post-Implementation:

- Continuous support and updates to training materials based on user feedback and system enhancements

Dimagi's training delivery approach ensures comprehensive, effective, and timely training for all MCH system users. By combining live, interactive sessions with accessible on-demand resources, we guarantee that all users are well-prepared to utilize the system effectively. Our focus on capacity building and knowledge transfer ensures that the IDOH team is equipped to maintain and support the system long-term.

Training Materials

Dimagi will provide a comprehensive suite of training materials to ensure all users are thoroughly trained and supported. Our training materials encompass multiple formats which are adaptable to different learning preferences and needs. All training materials will be hosted on a centralized website, allowing system users to readily access resources throughout their engagement with the system. This repository ensures that all users have easy and consistent access to the necessary training materials. Dimagi will work with IDOH to identify their preferred method for training knowledge management and storage. Dimagi will work with IDOH to identify their preferred method for training knowledge management and storage.

The types of training materials to be developed include:

Live Training Materials: Our live training sessions, conducted in-person or virtually, provide real-time interaction, hands-on practice, immediate feedback, and in-depth discussions. Virtual sessions are conducted as webinars, recorded for future reference, and securely stored for easy access and review at any time by the participants.

Dimagi will develop all PowerPoint materials to facilitate the live training sessions.

On-Demand Resources

In addition to the live training resources, Dimagi will develop complementary tools to support on-demand and ongoing learning. These on-demand resources include:

- **Video Tutorials:** Curated video tutorials that can support ongoing learning and platform engagement, accessible to users of all skill levels. Dimagi has experience developing video tutorials and learning modules through its Dimagi Academy platform - www.academy.dimagi.com - and this approach is available for IDOH.
- **FAQ Guides:** Exhaustive but succinctly written documents address frequently asked questions, offering insightful explanations to common queries encountered by users of the platform.

- **Training guides:** Detailed guides, including images of the solution screens, system diagrams, and step-by-step instructions to guide users through the training sessions. All guides will be available in PDF format and accessible for internal/external users of all skill levels.
- **Built-in Help Modules:** Easily accessible assistance resources are integrated into the MCH CommCare application, designed to provide instant, contextual support and guidance as users navigate through the system's features and functions

Additional Resources

Dimagi plans to make available additional resources to ensure an optimal training experience. These include:

- **Release Notes:** Documentation of new features and updates to keep users informed of changes and enhancements.
- **Feature or Workflow-Specific User Guides:** Guides focused on specific functionalities or workflows to provide in-depth knowledge and instructions.
- **Quick support Guides:** Practical guides to assist users in troubleshooting and resolving common issues prior to escalating to tier 1 support.
- **Training Effectiveness Evaluation:** Assessments to measure the knowledge and readiness of trainers and end users, ensuring that the training objectives are met and that users are well-prepared to utilize the system effectively

Accessibility

We are committed to creating an accessible, inclusive training experience for all users, accommodating individual needs and removing learning barriers. All video materials will have closed captions, and documents will be compatible with assistive technologies. Recognizing that each individual's accessibility needs may be unique, we will collaborate with IDOH to address specific requirements, including sign language interpretations, wheelchair access at in-person training venues, or other specific accommodations, ensuring an accessible learning environment for everyone

Continued support and engagement

Continuous technical consultation will be available to address any emerging needs and support ongoing user proficiency. Our tier 3 help desk remains a source of technical support for complex issues, ensuring comprehensive support for all user groups.

Dimagi's training materials are designed to provide thorough and flexible learning opportunities for all users. By combining live training, customized documentation, and on-demand resources, we ensure that every user can access the information and support they need to succeed. Our approach not only facilitates effective system use but also empowers users with the knowledge and skills required for long-term success.

13. Software Warranty (Attachment K, Section 11.5)

Dimagi confirms our acceptance of the software warranty as described in Attachment K. We are dedicated to delivering a robust and reliable system for maternal child health case management, backed by a comprehensive warranty approach that guarantees the solution will

be free of defects, properly functioning, and fully compliant with contract terms, at no additional cost to the State of Indiana.

Intellectual Property Warranty - Dimagi warrants that the application software and all materials delivered to the State under this contract will not infringe on any patent, copyright, trade secret, or other proprietary rights of any third party.

Ongoing Warranty for the Software

Software Warranty through Dimagi's SaaS Subscriptions - Dimagi's Software-as-a-Service (SaaS) model ensures that as long as the subscription is active, all post-production defects or bugs for CommCare are addressed at no additional cost. This continuous warranty period includes regular platform updates, enhancements, continuous support and maintenance, security patches, and system reliability. All post-production defects or bugs will be addressed at no additional cost, effectively providing a continuous warranty period.

Defect Correction Commitment - Dimagi agrees to provide timely corrections for any defects discovered or reported by the Contractor, the State, or a State Contractor. A defect is defined as any deviation from these specifications and requirements from the final solution documentation approved by the State, including the failure of system code to perform substantially as described in design documents. Non-defects will follow the support process or change request process outlined under Maintenance and Operations

Open Source Commitment and Community - CommCare is an award-winning open-source platform that enables users to build sophisticated mobile data collection applications. CommCare is an ecosystem of open-source components, fronted by CommCareHQ (Web) and CommCare Mobile. CommCare Web is sourced under the open-source BSD license, while CommCare Mobile is sourced under the Apache License. Learn more about Dimagi's open-source approach: <https://www.dimagi.com/open-source/> Other companies paying to host CommCare on their own avoid vendor lock-in.

Initial Warranty Period for Services (6 Months)

Dimagi warrants that all services and deliverables provided under this contract will be free from defects and comply with the approved system specifications and requirements for a period of 6 months from acceptance of the final solution by State Stakeholders.

Dimagi's warranty approach ensures that the maternal child health case management system will be delivered free of defects, function properly, and remain compliant with all contract terms. Our commitment to continuous support and defect correction will ensure a reliable and secure system for the State of Indiana.

14. Maintenance and Operations (M&O) (Attachment K, Section 12)

1. M&O Overview

Dimagi's Maintenance and Operations (M&O) plan for the IDOH MCH Data System is a comprehensive framework designed to ensure the sustained success of the system. Dimagi

has honed this M&O framework through past engagements, including our engagement with the Colorado Behavioral Health Administration (BHA), and it remains in use today. The plan consists of three core components:

- **Three Technology Layers:** Dimagi's technology encompasses three layers - Solution, Platform, and Infrastructure - to provide consistent system availability, performance, and support. This multi-layered strategy guarantees system stability and reliability even as the program evolves to meet changing needs.
- **Support, Training, and Feedback:** Beyond technical maintenance, Dimagi places a strong emphasis on ongoing support, training, and feedback mechanisms. Users and stakeholders receive training, workshops, and materials to maximize their understanding of the system. A structured feedback process allows for the identification of future system requirements.
- **Monthly Service Level Report:** Dimagi commits to transparent reporting through monthly Service Level Reports. These reports include vital metrics, such as web application health, support team activities, training sessions, and updates to the CommCare Platform. This reporting mechanism ensures accountability and regulatory compliance.

In addition to these core components, the plan details roles and responsibilities for each team involved in the project, delineating their specific tasks and contributions. Furthermore, the plan outlines operations procedures, including: application monitoring, server and database management, network and security measures, incident management, access controls, and disaster recovery strategies.

The M&O plan for IDOH's MCH Data System will be authored during Month 14 at the beginning of the Implementation phase, allowing for iterative refinement to incorporate evolving needs and insights throughout Implementation. A final version of the plan will be shared for State approval in Month 18 prior to DDI closeout. This iterative approach ensures that the plan remains adaptive and aligned with the dynamic nature of the project's operational landscape.

Approach

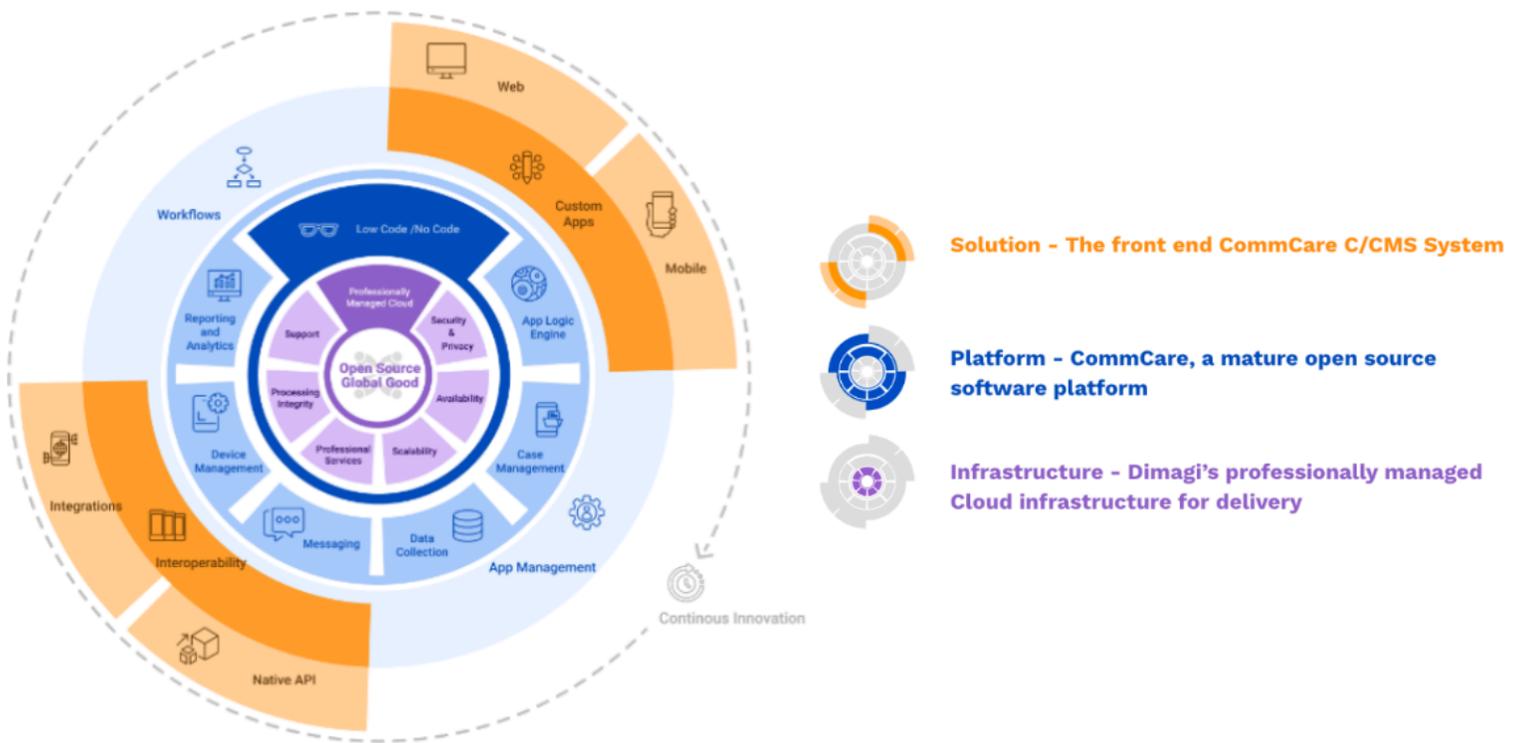
Dimagi's approach to the M&O plan is inclusive of 3 segments:

1. Three Technology Layers
2. Support, Training, and Feedback
3. Robust Monitoring and Ongoing Consultation

Three Technology Layers - Solution, Platform, Infrastructure

The success of the MCH Data System during the M&O phase is dependent on consistent system availability, performance, and support. During the M&O phase, Dimagi will provide regular system maintenance, address and resolve any operational issues or bugs, and ensure stable and reliable system performance by way of a 3-layer approach. These service layers are oriented towards providing a permanent foundation for the sustained, successful operations of the State's MCH Data System, even as the program grows and evolves to meet ongoing functional needs. Our approach is supported by distributed, specialized Dimagi teams and a suite of application monitoring tools to ensure optimal system operations.

Figure 19: Dimagi's 3-Layer Approach



Our 3-layer approach spans front-end Solution, Platform, and Infrastructure components, each of which includes dedicated resources to ensure routine system maintenance & enhancements, system stabilization, and issue resolution.

- **Front-End Solution:** The CommCare MCH Data System is configured, managed, and monitored by the Dimagi Project Team to meet the needs of IDOH.
- **Platform:** The platform level provides the underlying infrastructure on top of which the front end solution and user-facing reports and dashboards will be built.
 - CommCare Platform: CommCare is a mature open source software platform that the MCH Data System will be built on, and is currently utilized by many partner organizations. The CommCare platform is enhanced, maintained, and monitored by Dimagi's team of platform engineers.
 - Data Analytics Platform: Snowflake and Tableau are industry-leading data analytics tools that will serve as the data management and business intelligence components of the proposed solution.
- **Cloud Infrastructure:** A team of dedicated cloud engineers manage CommCare's AWS infrastructure, including its security, availability, processing, and scalability components.

This comprehensive approach to the M&O Plan means that the MCH Data System is maintained in a production environment with high availability meeting 99.99%, in adherence to

our Service Level Agreement (SLA). This commitment to uptime ensures minimal disruption to services and further enables successful, ongoing adoption of the designed solution. Any perceived disruption to the system’s availability should be reported to the Dimagi Support Team (help desk), as outlined in the [Production Issue Management](#) plan in this proposal.

Monthly Service Level Report

Transparent reporting is crucial to assess the effectiveness of the M&O plan. Dimagi will deliver monthly Service Level Reports to project stakeholders as a mechanism for disseminating key metrics and updates over the reporting period. The Project Manager or Account Manager will be responsible for generating regular maintenance activity reports in an agreed-upon format. Monthly reporting will encompass compliance with SLAs and other agreements as outlined in Section 16.3 of Attachment K, thereby enabling oversight by the State. This reporting mechanism ensures accountability and regulatory compliance throughout the M&O period.

The monthly Service Level Report will include:

Update List: The Update List will be a comprehensive list of updates, patches, and repairs that have taken place throughout the report period.

Web Application Health Status: The Web Application Health Status includes key performance metrics of the CommCare web application, including application up-time to allow for review against the committed 99.99% uptime SLA.

Figure 20: Example View Web Application Health Status

Load Case List Results Performance		
MODULE_NAME	AVG	↓ TOTAL REQUESTS
My Clients	1,946 ms/req	2,054
Admit/Discharge History	291 ms/req	1,202
Resolve Duplicate Clients	391 ms/req	342
Pending Requests	481 ms/req	337
Search and Admit	452 ms/req	261
search_beds	756 ms/req	73
Search Central Registry	3,665 ms/req	41
Potential Duplicate Clients	833 ms/req	36
provider_locations	306 ms/req	25
units	198 ms/req	9
Update Admission Information	286 ms/req	2

Support Team Statistics: The Support Team Statistics will include information regarding work completed by the T3 support desk team, unless Dimagi is also responsible for ownership of T1

and T2 support through a subcontractor partner. Information provided to the State will include:

- Open and resolved incident reports, by severity level
- Timeliness of issue notification
- Time from issue identification to resolution, by severity level

Figure 21: Example Monthly Support Desk Activities

This Month's Tickets	
Status	COUNTA of Status
Waiting for support	4
Waiting for customer	16
Resolved	1
Closed	9
Grand Total	30

This Month's Themes	
Components	COUNTA of Status
User Management	50.00%
Form and Case Processing	13.33%
Two-Factor Authentication (2FA)	10.00%
Reminders and SMS	10.00%
Case Management	10.00%
Product Feedback	6.67%

Total Tickets	
Status	COUNTA of Status
Waiting for support	6
Waiting for customer	34
Resolved	13
Pending Development	1
Closed	941
	0
Grand Total	995

Change Request Log: The Change Request Log will include key metrics regarding the management of change requests submitted to Dimagi within the month. The Change Request Log will include:

- Submitted change requests, by category (i.e. billable, non-billable) and required Level of Effort to address (i.e. small, large), including their current status
- Time from Change Request submission to System Modification Request submission
- Time from Change Request submission to Implementation, by request size
- % completion of UAT within agreed upon timeframes

Accompanying Documentation: Dimagi will provide Accompanying Documentation for all features released within the report period, including:

- Completed Regression Testing outputs, such as testing logs
- Final written Release Notes
- Updates to existing training materials
- Recorded training sessions
- An updated Data Dictionary

Available System Upgrades: Dimagi's Account Manager will provide a list of available system upgrades for State consideration monthly

Roles and Responsibilities

The Dimagi team supports each layer of the MCH Data Solution throughout the Project Development Life Cycle, including during the M&O phase. In addition, Dimagi’s Support Team offers dedicated triage & issue management for reported issues in close collaboration with the State’s Contract Manager and Help Desk.

During the six-month stabilization period, Dimagi will maintain staffing of project resources that participated in DDI, with fewer monthly hours allocated to the project. In addition to delivering the M&O activities agreed upon by Dimagi and the State during the planning phase of DDI, they will make any needed fixes and changes to the system, including the web application, interfaces, and reporting tools.

Table 27: Dimagi and State M&O Roles and Responsibilities (Steady State)

Team	Role	M&O Roles & Responsibilities (Steady State)	M&O Level
Dimagi	Account Manager	The Account Manager is the primary point person for coordinating maintenance and operations activities for the MCH Data System. They lead the Project Team, who conducts solution-level monitoring, maintenance & enhancement configurations. They produce the monthly Service Level Report with contributions from the CommCare Platform, Cloud Infrastructure, and Support Teams.	Solution
Dimagi	CommCare Platform Team	The CommCare Platform Team ensures continued functionality, performance, stability, and enhancement of the CommCare platform. The team works closely with the Account Manager to ensure the platform meets the ongoing performance and functional needs of the State. The team contributes to the monthly Service Level Report.	Platform
Dimagi, CSpring, Metamor Systems	Data and Integrations Team	The Data and Integrations Team will support expected steady state maintenance of interfaces and data availability for reporting. This team will include the data integration lead, data engineers, and data solutions business analysts from Dimagi and our subcontractors.	Platform
Dimagi	Cloud Infrastructure Team	The Cloud Infrastructure Team’s responsibilities are focused on proactively maintaining the stability and reliability of CommCare’s cloud infrastructure. The team works closely with the	Infrastructure

		Account Manager during incident management procedures and contributes to the monthly Service Level Report. Support from this team is included in our SaaS subscription model.	
Dimagi	Support Team	The Dimagi Support Team holds a mandate to ensure the technology solution's functionality and user satisfaction. They offer T1/T2 Help Desk capacity building and escalation support. Additionally, they contribute to the monthly report and liaise regularly with the Account Manager, the Platform & Cloud Infrastructure teams, and the State Help Desk as needed during issue management processes.	Cross-cutting
State	Project Manager	The State's Project Manager is responsible for communicating stakeholder concerns and/or priority escalations to the Account Manager. They are the primary recipient of the monthly Service Level Report and are expected to liaise regularly with the State's Help Desk.	n/a
State	Help Desk	The State's Help Desk is the first line of support for many users who submit questions, issues, or feedback about the application during the M&O phase. They are responsible for T1-2 issue resolution, T3+ issue escalation, and participate in continued training sessions facilitated by Dimagi.	n/a

Ongoing Maintenance (Attachment K, Section 12.1)

The Dimagi Project team understands that the Maintenance and Operations Phase offers a critical time for users to gain experience with the system while incremental improvements continue to enhance programmatic and user needs. During this phase, the Project or Account Manager establishes robust and efficient processes and procedures to ensure the system's smooth operation and continuous improvement. This approach includes fostering effective communication among all stakeholders, which is essential for maintaining the system's technical integrity and meeting both programmatic and user needs.

User Problems and Troubleshooting

Dimagi ensures robust support for users experiencing issues with the system by providing comprehensive training, documentation, ticketing and support to the T1 and T2 Help Desks. A detailed description of our approach can be found in [Section 14, Maintenance and Operations \(M&O\)](#). The following high-level summary describes our approach to a streamlined process for users to communicate any issues they experience and receive a timely resolution.

- **Training for the State Help Desk:** For this engagement, Dimagi is considering the State Help Desk to be a blend of IDOH Office of Technology and Cybersecurity and the Indiana Office of Technology. We will hone the appropriate staffing model in collaboration with the IDOH partners. Dimagi provides comprehensive training to Support Staff to ensure the following.
 - T1 Support Staff are able to address common issues, such as issues related to logging in to the system or using 2-factor Authentication. They are able to clearly and appropriately escalate issues to T2 Support.
 - T2 Support Staff are able to address more complex questions or issues users encounter. They are able to clearly and appropriately escalate T3 issues to Dimagi's Support Team.
- **Support Documentation:** Dimagi further supports the State Help Desk by providing the following resources.
 - An T1 Support Playbook: This is a procedural document for T1 Support Staff that provides solutions to common user questions. This includes questions related to forgotten passwords and 2-Factor Authentication tokens.
 - Frequently Asked Questions: This is a user-facing document with questions about how the system works.
- **L3 Support Desk:** In compliance with our SLAs, Dimagi's Support Desk is responsive to all communications coming from the T2 Support Team within one business day. High priority issues are addressed with greater urgency. Our team has the resources to rapidly address concerns related to any of the three layers of the system. As issues are addressed, Dimagi's Support Team provides clear and timely updates and communications.
- **Ticketing system:** Our ticketing system leverages Jira to ensure clear communications and resolutions for support issues.

Indiana Stakeholder Feedback and Inputs

Throughout the M&O Phase, Dimagi will ensure clear, transparent and efficient processes for receiving and implementing stakeholder feedback in the form of submitted CRs, in line with the State's required System Enhancement process as specified in Section 14 of Attachment K. Please see a detailed description of our proposed approach to addressing system enhancements in [Section 15. System Enhancements](#).

Once the subsequent System Modification Request has been approved, the request will be prioritized for the appropriate sprint. It will undergo the same processes as a requirement in the Development & Test and Implementation & Readiness phases, including Quality Assurance, User Acceptance Tests and deployment into production.

Testing

Dimagi maintains a M&O staffing plan and accompanying procedures that ensure all updates or repairs are fully tested prior to merging into production. Each part of our three-tiered solution approach has specific testing practices that accompany the work. The testing procedures for the **platform** and **infrastructure** do not vary from the testing described in the full technical proposal in [Section 10. Design, Development, and Implementation](#).

The **solution** testing varies slightly because we recommend less frequent releases during the M&O period. Thus, we calibrate testing procedures to match the needs of this project phase.

During M&O, Dimagi will maintain solution testing procedures that include:

- **Unit testing:** The Dimagi team will conduct and document thorough unit testing of each configuration change made to the System. Unit testing ensures that the new configuration meets the requirement acceptance criteria and functions as expected. Given that we expect modest updates to the solution will persist during the M&O phase, we want to ensure that our testing practices enable us to catch any potential defects before they merge into production.
- **Regression testing:** In addition to unit testing, the Dimagi team will conduct regular regression tests. Regression testing ensures that configuration changes to the system have not unexpectedly impacted other components of the System or its functionality. Regression testing is done routinely whenever an update is scheduled to merge into the production application - not necessarily against an agile sprint cadence.
- **User Acceptance Testing:** User Acceptance Testing (UAT) is a tenet of hybrid agile processes and is key to success release of new features. During the M&O phase, Dimagi will maintain UAT when there are releases scheduled to ensure that any updates conform to user needs and expectations. Furthermore, this provides an ongoing opportunity to engage the user community in the design of the tool and solicit feedback along the way.

In the event that any defect is released, the Account or Project Manager will communicate updates to IDOH through the incident management process described below.

System Monitoring (Attachment K, Section 12.1.1)

Dimagi maintains robust monitoring tools to ensure the performance of the CommCare platform and the MCH Data System. Our platform team performs regular analysis (through managed alerts as well as Application Level, Hardware level, Service level monitors) of our multi-tenant SaaS cloud of resource utilization across 800+ tenants to identify the need for additional cloud hardware resources based on key growth and proxy metrics (transactional throughput, etc). Two monitoring tools that Dimagi utilizes are Datadog and Sentry:

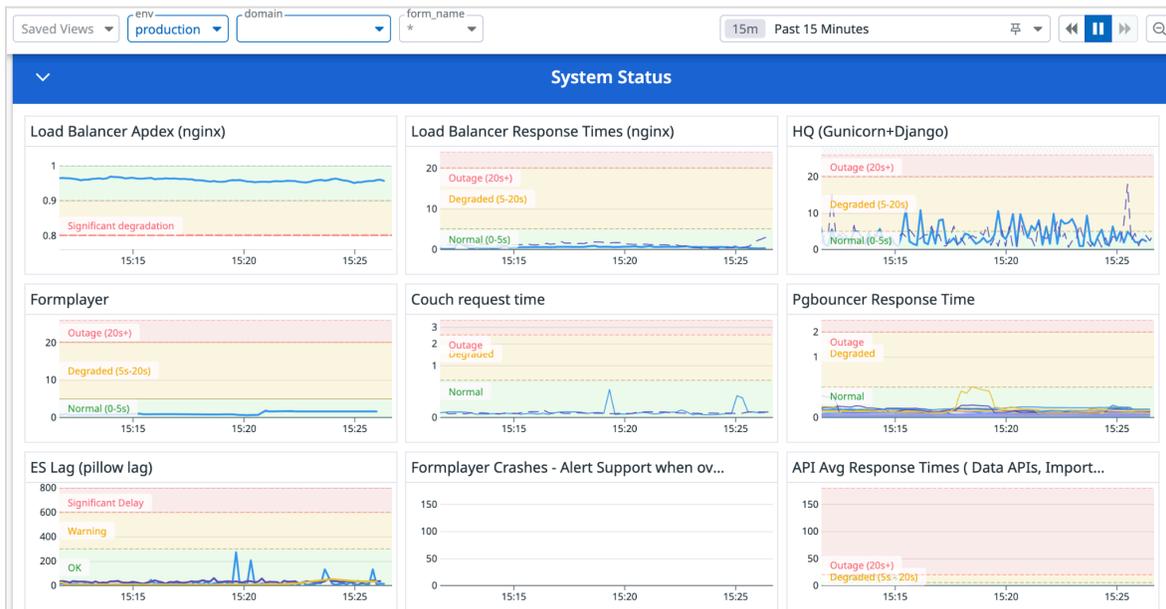
- **Datadog** is a cloud monitoring and analytics platform that offers tools for monitoring and analyzing the performance of cloud-based infrastructure and applications. It provides infrastructure monitoring, application performance monitoring, log management, real-time alerts, data visualization, and security monitoring.
- **Sentry** is an error tracking and monitoring platform for software applications. It enhances application reliability and user experience by providing insights into and context around application errors and issues.

Dimagi proposes a fully managed and hosted solution for IDOH. Dimagi is open to integrating IDOH's application monitoring tools to complement the instrumentation above. Dimagi's priority is to ensure the instrumentation enables the integrity of the infrastructure, solution and its database.

Table 28: Application Monitoring Tools

#	Components	Process/Tool	Frequency of Monitoring	Type	Notification
1	MCH Web Application Health, Sync/Restore Timings, Error & Crash Tracking	<p>Process: The components are monitored and results visible in a graph reporting dashboard. The Project Team conducts daily analysis for anomalies.</p> <p>Datadog and Sentry monitor and send automated alerts if the defined threshold is exceeded.</p> <p>Tool: Datadog, Sentry</p>	Every 15 minutes	Automated	<p>An email is sent to Dimagi Project Manager and Technology Team Leadership in the event of exceeding the threshold.</p> <p>Issue Management procedures (See Issue Management Plan) are enacted.</p>
2	Performance Monitoring of Specific MCH Web Application Modules	<p>Process: Capture of transaction timing of various modules, forms, and system actions. The Project Team conducts daily analysis of dashboard graphs for any anomalies.</p> <p>Datadog monitors and will send an automated alert if the defined threshold is exceeded.</p> <p>Tool: Datadog</p>	Every 15 minutes	Automated	<p>An email is sent to Dimagi Project Manager and Technology Team Leadership in the event of threshold breach.</p> <p>Issue Management procedures (See Issue Management Plan) are enacted.</p>
3	CommCareHQ Platform System Status (request & response times)	<p>Process: Capture of request & response times across load balancer, form player, couch, pgbouncer, elastic search. The Project Team conducts daily analysis of dashboard graphs for any anomalies.</p> <p>Datadog monitors and will send an automated alert if the defined threshold is exceeded.</p> <p>Tool: Datadog</p>	Real time	Automated	<p>An email is sent to Dimagi Project Manager and Technology Team Leadership in the event of threshold breach.</p> <p>Issue Management procedures (See Issue Management Plan) are enacted.</p>

Figure 22: Example Datadog CommCare Platform System Status Monitoring Dashboard



Security

- Security Maintenance:** Github Alerts are used for software dependencies with known vulnerabilities. All code submissions are mandated to be reviewed and approved by team members who are inspecting for Security issues and OWASP vulnerability assessments. CommCare code repositories are also automatically evaluated for the presence of known vulnerabilities. Security testing is regularly conducted for the CommCare platform. Hosting is maintained by AWS in industry-leading, secured facilities. Access controls, Dimagi user provisioning, and all processes associated with professional work have strong security policies and monitoring for compliance. All Dimagi staff members are required to install anti-virus/anti-malware on all company owned machines and routinely undergo security scans.
- Access management:** User provisioning and access controls to system resources will be provided under the approval of the State. Dimagi Help Desk will support technical issues related to end-user authentication and authorization. New user roles and access permissions can be requested by the State.
- Network Security:** Dimagi will provide support for any network access issues, while monitoring described in this section supports detection and correction activities.
- Privacy:** Dimagi's CommCare platform is HIPAA compliant as well as SOC-2 certified and Dimagi incorporates security testing and design into all of our development.

Disaster Recovery

Throughout the M&O period, Dimagi will maintain our disaster recovery plan, which is tested annually by a third-party security firm. The disaster recovery plan includes quarterly backup testing and annual complete restore testing. In the case of events requiring enactment of our disaster recovery processes, Dimagi will execute according to the established plan. This includes returning the System to full availability and a comprehensive debrief with stakeholders and refinement of current plan to strengthen approach to future incidents. For a detailed description of Dimagi's approach to disaster recovery, please see [Section 11, Disaster](#)

[Recovery and Business Continuity.](#)

Database Management (Attachment K, Section 12.1.2)

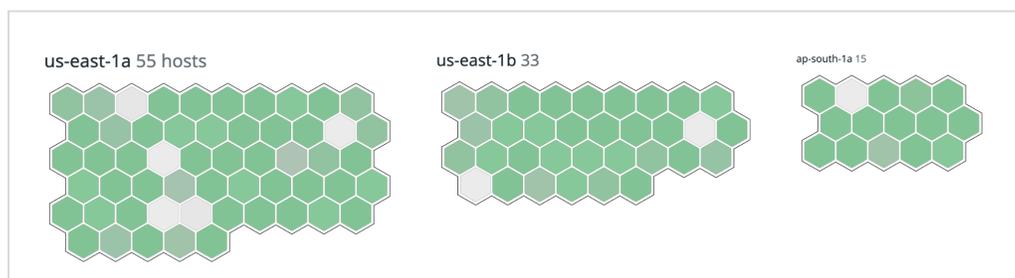
Tools for backup and recovery are included as part of the CommCare subscription. Availability will be maintained according to the service level specified, with regular monitoring and performance tuning as needed. Dimagi's team will support forecasts to assist in resource planning.

Dimagi will report performance findings and results of any tuning activities in written, quarterly Database Performance Reports as part of Deliverable 24 to the State.

Servers

Our CommCare Platform Team performs regular analysis (through managed alerts as well as Application Level, Hardware Level, Service Level monitors) of our multi-tenant SaaS cloud of resource utilization across 800+ tenants to identify the need for additional cloud hardware resources based on key growth and proxy metrics (transactional throughput, etc). Many key infrastructure resources (such as raw storage) are configured through elastic cloud resources (S3, EBS) which provide ~indefinite provisioning.

Figure 23: Example Multi-Region Host Health Monitors



Storage Management

Customer data collected through a CommCare web application is protected by a continuous backup system that is recoverable to any point in time. All primary data is backed up at least once a day and all backups are stored in multiple data centers. Please refer to our Business Continuity Policy, attached to this proposal package and named Att_E_-_Business_Continuity_Plan.

Network

DDOS protection is instrumented through managed DNS and GuardDuty at the request level. Network segmentation is tested and adjusted during annual audits

Technical Support (Attachment K, Section 12.2)

Our M&O plan also focuses on continued support via a help desk, training, and feedback mechanisms for end-users and first line of support teams. We will support continued training sessions, workshops, and virtual and online materials to ensure that all relevant stakeholders are well-versed in system functionalities and best practices. Further information on our overall training methodology and activities can be found in [Section 12. Training.](#)

The establishment of feedback mechanisms facilitates the collection of user experiences and concerns, feeding a healthy feedback channel to aid in identifying future system requirements to meet users’ needs. During the M&O phase, users and stakeholders can share feedback and suggestions on the designed solution via the Dimagi Support Team and with the Dimagi Project Team during routine meetings. Proposed system updates are logged and evaluated using the change management process outlined in [Section 8, Project Management](#) and evaluated on a quarterly basis during this phase. Feedback from end-users and stakeholders largely fit into two categories of enhancement requests relevant to the proposed MCH Data System:

- **Request for Application Configuration Changes to the Front-end Solution:** This type of update can be implemented by the Dimagi Project Team using current CommCare platform feature technology. Front-end Solution updates are implemented using hybrid agile development practices. Once prioritized by the State and Dimagi, the defined changes are assigned to an upcoming release based on the sprint cycle schedule defined by the Project or Account Manager.
- **Request for Enhancements not currently supported by the CommCare platform:** This type of update requires the CommCare Platform team plan, design, implement, and monitor a change to the CommCare platform. A platform enhancement request is implemented using a hybrid agile development approach, and is prioritized by the Platform team based on the platform’s existing technical roadmap.

The State can decide to opt into additional application configuration services as the program evolves. Dimagi recommends two front-end solution release cycles per quarter during the M&O stabilization period, and one during the steady-state period. The inclusion of these components into our M&O plan also aligns with our overarching goal of delivering user-centered solutions that achieve system adoption, stakeholder satisfaction, and measured project success.

Table 29 Proposed Release Schedule

M&O Phase	Release Cadence
Stabilization (Months 14-24)	Twice quarterly releases (roughly a release every month and a half) for a total of 4 releases during the stabilization period
Steady State (Months 25-30)	Once quarterly releases, anticipated in Months 27 and 30, for a total of 2 releases during the steady-state period

Production Issue Management (Attachment K, Section 12.2.1)

At Dimagi, we adopt an agile, multi-tiered approach to managing issues, empowering the T1/T2 Desk as the primary contact for system users. Complex or escalated issues are addressed through Jira, our issue management software. This strategy emphasizes early detection, prevention, and integration with our Risk and Change Management processes. Our five-step issue management cycle includes proactive system monitoring, issue identification and triaging, investigation and resolution, testing updates, and final issue closure, ensuring adaptability and effective collaboration for prompt issue resolution.

Roles and Responsibilities

Effective issue management involves a collaborative effort from various stakeholders in a project or organization. Roles and responsibilities in issue management can vary depending on the organization's structure and the nature of the issues being managed. The following roles are essential in order to ensure a comprehensive and streamlined issue management process:

Table 30: Dimagi and State Issues Management Roles and Responsibilities

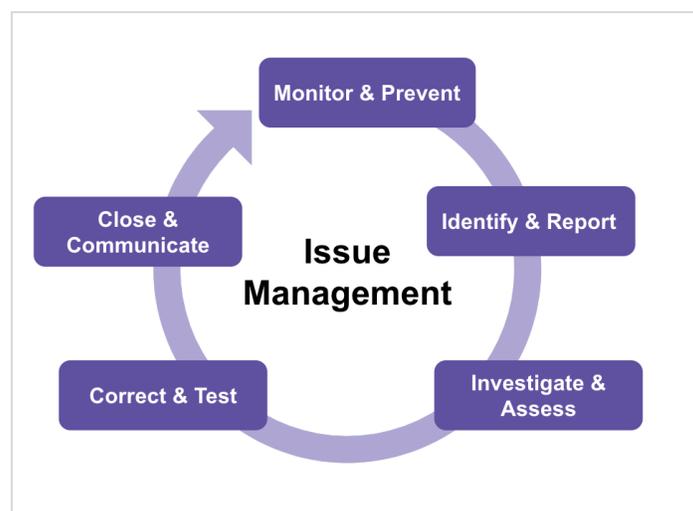
Team	Role	Issues Management Responsibilities
Dimagi	Dimagi Account Manager (Lily Olson)	The Account Manager acts as the central point of coordination and accountability for issue resolution. This role is crucial in addressing emergent issues and ensuring that the project progresses toward its objectives smoothly and efficiently. They decide which issues need immediate attention and which can be addressed later, considering their impact on broader project objectives and timelines. Regular check-ins and status updates are conducted to ensure team alignment in communication and documentation. They keep stakeholders informed about issue status towards resolution.
Dimagi	Solutions Analyst (Kirti Chandratreya)	The Solutions Analyst serves as an intermediary between the project and support teams during the issue management process. As a member of the project team, they have an in-depth knowledge of the developed solution and are able to facilitate collaboration and issue investigation between teams. The Solutions Analyst is called upon to implement and test resolution updates, in addition to being consulted on documentation
Dimagi	Dimagi Support Team	The Dimagi Support Team is actively involved in technical support for projects using the CommCare platform. The Dimagi Support Team consists of a Support Team Lead and Support Analysts who are all trained in technology issue monitoring, assessment, investigation, and communication. They track all communications related to the reporting and resolution of reported issues using Jira software. For large scale projects, the Support Team coordinates closely with other support resources (<i>i.e.</i> State technical staff), as well as the Dimagi project team, to resolve T3 issues escalated by the Help Desk. The Support Team maintains guiding tenets for their work that include being experts in CommCare and being the voice of the user.
State	Project Manager	The Project Manager serves as the primary point of contact for the State project team and collaborates closely with the Dimagi Project Manager. They communicate insights,

		concerns, and priority on identified issues from the State's perspective. They receive regular status updates on the issue from the Dimagi Account Manager.
State	T1/T2 Help Desk	The State's Help Desk is a centralized point of contact that provides assistance and support to system users regarding technical-related issues, inquiries, and requests. They are responsible for handling T1 and T2 issues, and escalate more complex or blocking issues to the Dimagi Support Team using Jira.
State	System Users	Users of the designed solution will be able to submit technical issues, inquiries, and requests to the State's Help Desk. Users may be asked to provide additional information about an issue (e.g. reproduction steps) so that the Help Desk and/or Dimagi Support Team can work towards swift resolution.

Issue Management Approach

Process and Procedures

Figure 24: Issues Management Five Step Approach



Dimagi's Issue Management approach consists of five high-level steps, which are supported by several underlying activities:

- **Step 1:** Proactive System Monitoring
- **Step 2:** Issue Identification and Triage
- **Step 3:** Resolution Investigation
- **Step 4:** Resolution Updates and Testing
- **Step 5:** Issue Closure and Communication

Step 1: Proactive System Monitoring

System monitoring plays a crucial role in issue management by providing real-time visibility into the health and performance of software systems. Routine system monitoring is

instrumental in identifying, diagnosing, and resolving issues quickly and effectively. In addition to monitoring Jira queues, Dimagi utilizes DataDog and Sentry software tools that monitor and collect data on CommCare system performance, resource utilization, and error logs. This real-time monitoring allows for the detection of issues as soon as they arise, often before users even notice a problem. Early detection is key to preventing issues from escalating and causing wider disruptions.

Step 2: Issue Identification and Triage

Issue identification and triage are critical processes in Dimagi’s issue management plan that involve the definition, assessment, and prioritization of problems, incidents, or requests for resolution. The first and most important action is reporting the identified issue through a Jira support ticket.

A support ticket can reach Dimagi’s Support Team in several ways:

1. As a ticket escalated by the State’s Help Desk
2. As a ticket created directly by the State’s Project Manager or other Stakeholder(s)
3. As a ticket raised by the Dimagi Project Team

The Dimagi Support Team member monitoring the Jira queue acknowledges receipt of the identified issue and reviews its information. No matter the origin of the ticket, the issue must include the following information in order to be triaged effectively:

Table 31: Reported Information about an Identified Issue

Information	Description
Description of the Issue:	A clear and concise explanation or narrative that outlines the details, characteristics, and context of an issue
Reproduction Steps:	Detailed sequence of actions that the Support Team can follow to reproduce a specific issue
Impact:	High / Medium / Low. (Describe the impact of the issue on users, processes, or systems. Include details about the severity and consequences of the problem, such as data loss, system errors, or performance degradation.)
Reporter:	Name of the person or group that reported the issue

Once a ticket is received, the Dimagi Support Team begins triage. Triage is a systematic way of assessing, prioritizing, and assigning an issue for resolution. This assessment is done by the Support Team in close consultation with the Dimagi Solutions Analyst and Project or Account Manager. The issues are prioritized based on their impact on the project. Critical and high priority issues are given priority assignments over medium and low priority issues.

Table 32: Issue Priority Descriptions and Examples

Severity	Description	Example	Target Resolution Time
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P1 (critical)	A problem has made a critical function unusable or unavailable and no workaround exists. System failure.	<ul style="list-style-type: none"> • System critical bug affecting nearly all users • Site-wide outage • Data loss, security or integrity concern 	Within four (4) hours of identification
P2 (high)	A problem which has made a critical function unusable or unavailable but a workaround exists. OR A problem which has made an important function unusable or unavailable and no workaround exists	<ul style="list-style-type: none"> • Bug that may only affect one user or project space, but is completely blocking their operations • Must be fixed, otherwise there will be a risk of failure or outage 	Within one (1) business day of identification
P3 (medium)	A problem has diminished critical or important functionality or performance but the functionality still performs as specified in the user documentation	<ul style="list-style-type: none"> • Bug exists but has a workaround • This issue cannot wait until the development sprint begins 	Within five (5) business days of identification
P4-7 (normal to low)	A problem has diminished supportive functionality or performance (i.e. usability error) OR A problem that has minor to no effect on critical functionality, is self-contained	<ul style="list-style-type: none"> • Not a bug or a small bug that only affects one/a few users • Easy workarounds exist that do not disrupt workflows • User can wait more than two weeks for resolution in development sprint • Should be fixed, time and resources permitting 	Within two (2) weeks of identification or resolution time approved by State

Once a ticket has been assessed, the issue reproduced, and a priority level established, the ticket is assigned to the appropriate individual(s) for investigation.

Step 3: Resolution Investigation

The Support Desk is responsible for coordinating the overall investigation effort, ensuring that appropriate team members are consulted and informed. The Solutions Analyst plays a key role in providing specific project context and solution configuration investigation. Resolving Priority

1 and 2 issues often requires dedicated and focused resources. Teams may be mobilized, and experts may be called in to address the problem urgently. The Project or Account Manager is routinely provided status updates through check-ins with the Support Team and through updates to the Jira ticket. They are responsible for communicating these updates externally to the State’s Project Manager or Stakeholders.

Step 4: Resolution Updates and Testing

Once a resolution pathway has been investigated and validated by the Support Team, an appropriate team member is assigned to implement the update. Platform infrastructure or data related issues often require specialized resources to work on the update. For solution-level updates, the Solutions Analyst is responsible for implementing the necessary changes and relays testing instructions to the Support and Project Teams to confirm the change was successful in resolving the issue. When appropriate, a staging environment is utilized to test changes before implementing in a production environment. Resolution steps and testing outcomes are documented in the Jira ticket.

Upon successful testing of the changes and subsequent push to production environments, the Project Manager communicates the resolution approach and testing outcomes to the State’s Project Manager and/or stakeholders. The original issue reporter is informed of the resolution outcome and confirms that the issue has been resolved on their end.

Step 5: Issue Closure and Communication

The Issue closure step involves the verification, documentation, and communication of the resolution pathway and outcomes. Once unanimous agreement on closure is reached among all relevant issue stakeholders (e.g. original issue reporter, State Project Manager, Dimagi Project or Account Manager, Support Team), the Support Team updates the Jira ticket with a ‘closed’ status. The Project or Account Manager informs the State’s Project Manager and relevant stakeholders of the issue status and resolution outcomes.

Under the direction of the Project Manager and supported by the Solutions Analyst, the Support Team prepares documentation on the implemented changes and, if necessary, schedules a team retrospective meeting to debrief on the issue. All accompanying resolution documentation is made available in the shared online repository. The Project or Account Manager also schedules the issue for inclusion in an upcoming project status review meeting with the State. This step is taken to secure executive awareness of the issue resolution and to discuss any retrospective analysis items.

For all critical and high severity incidents, Dimagi will deliver an initial incident report within twenty-four (from the start of the system incident). Following that report, Dimagi will continue to make updates every twenty-four hours to reflect the most current status of the incident until it is resolved. For medium and low severity levels, Dimagi will deliver an incident report within 5 business days or on a timeline agreed upon by the State.

Table 33: Dimagi Team Responsibility Breakdown for Issue Management

	Account Manager (Project Team)	Solutions Analyst (Project Team)	Support Lead (Support Team)	Lead Architect (Product Team)
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Proactive Systems monitoring	Informed	Informed	Responsible	Not involved
Triaging of Issue Queue	Informed	Consulted	Responsible	Not involved
Resolution Investigation	Informed	Consulted	Responsible	Backstop
Resolution Updates	Informed	Responsible	Consulted	Backstop
Testing of issue resolution	Informed	Responsible	Consulted	Backstop
Documentation of Issue Resolution	Informed	Consulted	Responsible	Backstop
Communication to stakeholders for progress updates to resolution	Responsible	Informed	Consulted	Informed
Internal team coordination and communication	Responsible	Consulted	Consulted	Informed

Issue Management Tools

Dimagi uses a software suite for efficient issue management. These tools collectively enhance transparency and accountability in issue management across projects.

Jira

Jira is Dimagi’s central tool for logging, tracking, and resolving issues to promote streamlined communication throughout the project. Additionally, this tool facilitates communication of status updates through customizable dashboard metrics and email notifications. Jira significantly enhances our ability to address issues in a timely and organized manner, enhancing transparency and accountability across all stages of the project.

Asana

Asana manages issue-related tasks, ensuring comprehensive handling. Asana is a project management software utilized by Dimagi’s project teams to manage tasks, including the creation of tasks related to issue investigation and resolution. Asana tasks are linked to relevant Jira tickets to ensure that all escalated issues are fully addressed and resolved.

Slack

Slack facilitates real-time team communication and swift issue escalation. Slack serves as Dimagi’s preferred platform for collaborative communication among team members allowing for real-time discussions, feedback sharing, and issue updates. Upon project initiation, the IDOH MCH Data System Support Slack channel will be used for prompt triage and escalation of urgent issues.

Help Desk (Attachment K, Section 12.2.2)

Help Desk Tiers (Attachment K, Section 12.2.2.1)

Dimagi's issue management model is tiered: the State's Help Desk handles first and second-line support, while advanced issues are escalated to Dimagi's Support Team via Jira. Dimagi's Help Desk will meet with the State on a monthly basis to review common Help Desk concerns and provide continuous training and support. See more below under Help Desk Training.

Table 34: Issue Management: Tiered Support Model

Issue Level	Issue Definition	Resolution Triaged By
Tier 1	User errors, resolved through user education or basic administrative functions. Resolved in one business day by the Dimagi team.	State Help Desk
Tier 2	Resolved via user profile management or data cleaning in CommCare using the Case List Explorer on the CommCare backend. Tier 2 tickets or calls must be resolved within three (3) business days by the Dimagi team.	State Help Desk
Tier 3	Advanced issues like data, application, and server problems, addressed by Dimagi Support Team. Before a Tier 2 ticket may be escalated to Tier 3, the State must be notified and grant escalation approval. Tier 3 tickets will be resolved in a timeframe that is approved by the State.	Dimagi Support Team

Agile Alignment

Dimagi's issue management approach operates as a key component of our broader hybrid agile project and account management methodology. By leveraging Agile principles of continuous iteration in issue management, our team has an enhanced ability to respond to emergent challenges promptly and maintain forward project momentum. Our approach employs a high degree of adaptability and partnership, enabling joint collaboration to define, adjust and document issue resolution procedures as needed.

Early Detection and Prevention is Key

A successful issue management plan begins with early detection and prevention. Similarly, an issue management plan must be aligned with other project management processes, including Risk Management and Change Management, in order to achieve early issue detection. Risks identified during the Risk Management process may escalate into issues and, conversely, risks may be identified during the execution of issue resolution activities. Both risks and issues may

result in the need for Change Management steps to update project scope, timelines, and even contracts. Alignment between these processes and acknowledging their inter-dependencies is a key component of identifying potential issues early.

Staffing the tiered help desk

Predicting the number of staff needed for a tiered help desk involves volume and nature of support requests, reviewing the service level agreements (SLAs), and defining the roles and responsibilities for each tier. Based on Dimagi's experience with similar help desk staffing, we recommend a model estimate of the following:

- **Tier 1:** 3-5 help desk staff
- **Tier 2:** 2-3 help desk staff
- **Tier 3:** 1-2 help desk staff

Looking at Tier 1, we anticipate that more agents will be needed for the first couple of months of the stabilization period of M&O ahead of the move to steady-state. We recognize that, as more waves of users come on board, the Tier 1 staff is particularly critical to intercept and resolve low-hanging fruit issues, enabling Tier 3 expert knowledge to be protected for the issues that require SME involvement.

Help Desk Training and Resource Access (Attachment K, Section 12.2.2.2)

Dimagi's Support Team will equip the Help Desk for success through hands-on training, custom documentation, and regular communication. The T1 and T2 Help Desk will have direct access to the Dimagi Support Team, both with the ticketing system and with meetings or direct channels, and will have clear guidance on when to escalate user issues to the Dimagi Support Team for resolution. The Help Desk will have access to a test environment that mirrors the production environment to confirm presence of issues reported and provide replication steps to the next tier. During the M&O phase, Dimagi will conduct monthly Support refresher training sessions to ensure help desk staff remain up-to-date on the latest system developments. The help desk staff will have access to all release notes ahead of system updates to ensure they are apprised of all upcoming system changes.

Technical Consultation (Attachment K, Section 12.2.3)

Throughout the M&O phase, Dimagi anticipates offering ongoing consultation and support to IDOH. Dimagi anticipates leveraging its expertise to support IDOH in determining how to best tailor IT practices to meet emergent or known state needs. To operationalize this consultation, Dimagi proposes a whiteboarding meeting whereby Dimagi brings proposed ideas based on our observations and insights from working with IDOH. From that whiteboarding session, Dimagi anticipates creating a backlog of topics and allocating resourcing accordingly. This backlog is inclusive of all topics proposed by the State: MCH Data System operations, interfaces with external systems, purchase/upgrade/testing/deployment or any peripheral requirement, technical feasibility estimates for enhancements, fixes, configuration, data items, or system upgrades. When appropriate, Dimagi leverages SMEs outside of the immediate project team or even pulls in SMEs from our network to amplify the consultation.

For the consultation, Dimagi proposes allocating 15 hours of consulting time per quarter of the M&O period. This may be split among staff resources. If IDOH waives consulting in a quarter,

hours can be rolled over for one additional quarter (meaning the most consulting that could be completed in a given quarter is 30 hours).

Dimagi will complete all appropriate reports, meeting items and associated tasks required with the delivery of the consultation services.

Software Upgrades (Attachment K, Section 12.3)

Dimagi plans to make regular software upgrades available to IDOH throughout the M&O phase. Dimagi's layered technology approach means upgrades can be available to support:

1. **Front-End MCH Data System:** The CommCare MCH Data System is configured, managed, and monitored by the Dimagi Project Team to meet the needs of IDOH. Throughout M&O, Dimagi plans to offer IDOH regular opportunities to make configuration changes to the front-end solution. The Project or Account Manager will review the backlog of requirements and propose options for the IDOH team to review and consider for upcoming finetuning of the MCH Data System.
2. **CommCare Platform:** CommCare is a mature open source software platform that the MCH Data System will be built on, and is currently utilized by many partner organizations. The CommCare platform is enhanced, maintained, and monitored by Dimagi's team of platform engineers. Dimagi plans to host product roadmap reviews on a monthly basis during the stabilization period of M&O, and move those to quarterly during the steady-state period of M&O. All upgrades will be subject to the strict testing protocols Dimagi adheres to as part of our global product platform.

For any software upgrade, Dimagi will adhere to all controls detailed in the [Change Management Plan](#). Dimagi's system documentation approach ensures that all system upgrades will be reflected in release notes. When appropriate and requested by IDOH, Dimagi will develop supplementary training materials, including videos or instead opt to host live webinars.

System Documentation (Attachment K, Section 12.4)

Developed during the DDI project phase, Dimagi's approach to system documentation persists throughout the M&O period. Our full approach to system design documentation is in our DDI phase proposal. Modified hybrid agile ceremonies for the M&O phase include updates to all system documentation to reflect any time a change is made to the system. This is documented as part of our Change Management activities.

Dimagi will maintain an updated repository of all system design documents, release notes, and data dictionaries. We understand that users have competing priorities, so our team ensures that technical communications are comprehensive while being easy to read and understand. All system changes are described in a Release Notes document using images, screenshots and simple language. It is updated and sent to users along with each deployment to production, describing the most recent updates at the top of the document. Dimagi will ensure all source code comments are made available through the configuration platform as well as the open source library on Github.

Pending the nature of the change or upgrade released, Dimagi will develop training tutorials and/or offer live office hours with user groups. Dimagi anticipates collaborating closely with the State to hone a documentation approach best suited to the user group.

Warranty (Attachment K, Section 12.5)

Dimagi will provide a warranty period in compliance with M&O requirements. Please see [Section 13. Software Warranty](#) for details regarding the warranty period.

2. Assumptions on Levels of Service Required for Stabilization and Steady-State M&O

Dimagi supports the State's vision for a two-part M&O phase, whereby the first six months is considered stabilization and the next six months is considered steady state.

During the stabilization phase, the team will be right-sized to support the immediate post-DDI phase, including and not limited to: user engagement support, help desk, and ongoing release planning. Embracing the hybrid agile model, if DDI has active and recurring sprints, stabilization M&O will have a recurring cadence of longer sprints, with fewer design and build tasks associated within each sprint.

For the DDI phase, Dimagi proposes an average of 1,280 monthly hours across 25 staff resources. Therefore, for the M&O stabilization phase, Dimagi proposes an average of 590 monthly hours across 25 staff resources, inclusive of the Tier 3 help desk. Finally, for the six month steady-state period, Dimagi proposes an average of 72 monthly hours across 11 staff resources, with the ability to draw on surge resourcing in the event that necessitating conditions arise.

Towards the end of the stabilization phase, sprint planning will account for a large release to address as many outstanding items as possible prior to the reduction in staffing that will accompany the transition to steady-state. Primary to reducing staff, Dimagi will ensure all mutually agreed upon milestones for phase transition have been met. These milestones may include metrics that look at:

- Number or percentage of issues resolved
- Incorporation of priority user feedback tickets
- Percentage of users actively engaged in the tool

Once these gates have been achieved, Dimagi will recommend the move to steady-state, planned for six months of stabilization services. The steady state team will have an account manager, solution architect, and application builder available to support ad hoc inquiries and updates when appropriate. However, the assumption is that all active sprint work has concluded. Given the projected reduction in technical and design throughput, a smaller team is commensurate with the nature and volume of the planned work. Accordingly, the support team will be reduced as fewer inquiries are anticipated. It's expected that help desk staffing will persist to support questions that may arise, including from the onboarding/offboarding of new team members.

3. Dimagi Capacity and Plan to Provide Surge Support

For the States of Alaska, Colorado, New Jersey, and New York, Dimagi developed case investigation and contact tracing solutions for COVID-19 response efforts. During this unprecedented public health emergency, Dimagi often needed to provide additional capacity to meet surge needs. Often our need to staff up was directly related to either new policy measures that were being rapidly rolled out by partner agencies (and thus necessitated urgent software changes) or due to the surge in cases that corresponded with an all-hands-on-deck support approach. In our experience providing surge capacity and support, there are several levers we have successfully drawn on to address urgent needs:

- **Dimagi Services Team:** Often we're able to pull team members from other project teams to support a project facing surge or peak capacity conditions. With full-time exempt staff of 15+ project managers, solution analysts, and application builders, we have flexibility to call upon team members to shift roles and support other projects when appropriate.
- **Cross-Divisional Team:** Dimagi is a tight knit organization of about 250 team members. As a company, we often support other divisions and have a long-standing practice of resourcing cross-divisional teams when surge conditions emerge. IDOH would benefit from our community of practice and commitment to work as a collective to support the team.

All team members allocated to IDOH in surge conditions would be subject to the same staffing standards contained in the Attachment M Resource Management Plan.

4. Approach to Providing Help Desk and Short Term Increase in Volumes

Our approach to providing Help Desk support is designed to meet the defined SLAs, ensuring timely and effective assistance for all users. Here's how we manage our Help Desk support and handle unexpected short-term increases in volumes:

Comprehensive Support Structure

1. **Tiered support model:** As described under [Help Desk Tiers](#) in Section 14.1 above, Dimagi leverages a tiered support model to effectively triage and escalate issues.
2. **Dedicated Tier 3 Support Team,** managed by Dimagi: We have a dedicated team of support professionals trained specifically on the tools and systems in use. This ensures they have the expertise to handle a wide range of issues and provide high-quality assistance.
3. **Comprehensive Training and Documentation:** All help desk agents undergo rigorous training and have access to detailed documentation and resources. This enables them to resolve issues effectively and provide consistent support across all levels.

Handling Unexpected Short-Term Increases in Volumes

1. **Scalable Staffing Model:** Dimagi's flexible workforce and cross-team staffing experience enables us to staff up against short-term surge needs. Our team is cross-trained to enable flexible resourcing against emergent needs.
2. **Performance Monitoring & Analytics:** Leveraging existing monitoring tools, including real-time monitoring, allows us to have data-driven insights into potential spikes and respond proactively with staff and support.

3. **Proactive Communication:** CommCare platform enables banners and other communication tools to get out messages to users. This allows users to be informed of potential delays and provide alternate resources while they await feedback.
4. **Continuous Improvement:** Ongoing training and regular feedback loops enable Dimagi's Support Team to continuously improve and learn. This refines the support process and ensures improvement to the overall user experience.

By implementing these strategies, we ensure that our Help Desk support remains responsive and effective, even during periods of unexpectedly high demand. Our commitment to excellence and continuous improvement allows us to meet the needs of the State in both surge and non-surge conditions.

In closing, the Maintenance and Operations plan is an integral element of the project that ensures the sustained efficiency, functionality, and compliance of the project's ongoing operations. By adhering to best practices, incorporating stakeholder requirements, and maintaining transparency through reporting, this plan establishes a robust framework for the project's enduring success.

15. System Enhancements (Attachment K, Section 14)

1. Agreement with the requirements in Section 14 of Attachment K

Dimagi agrees with the requirements for System Enhancements found in Section 14 of Attachment K, including enhancements following a substantial Change Request or more minor, non-billable changes. Our team will provide post-production support and training on enhancements as described in our responses throughout this proposal.

2. Experience with enhancements and partner capacity building

Dimagi frequently maintains continued partnership with government clients following implementation to support ongoing maintenance activities and change requests, including with several state-level data systems projects within the past five years. During this period, Dimagi remains communicative and available to address priority needs, while strategically reducing Dimagi staffing and scope of ownership. This approach helps ensure costs remain sustainable and provides opportunities for State staff to take the lead on key system maintenance activities in a steady-state environment. Dimagi offers needed technical consultation for the State, as outlined in Section 12.2.3 of Attachment K. We appreciate the need for a system that is sustainable over time and does not require intensive maintenance to continue operations, while acknowledging that a complex solution typically warrants some ongoing investment.

Navigating the Change Order Process

Dimagi highly recommends maintaining a standardized and consistent approach for change request documentation and approval and agrees to the change order process outlined by the

State in Sections 14.1-14.3 of Attachment K. During the M&O period, Dimagi will maintain our hybrid agile release methodology and change requests will be scoped and implemented in regular sprint cycles. We recommend a longer sprint duration than during the DDI period to ensure system stability and limit the required investment in enhancement training from Dimagi and from system end users.

Dimagi staff are experienced in navigating ongoing system enhancements following implementation. Provided that change requests (CRs) are conducted according to the stipulations outlined in Attachment K, Dimagi is well-equipped to effectively scope and complete sprint-based changes within committed SLAs, despite reductions in allocated hours likely staffing across multiple projects. During M&O, our approach will be to maintain a partially-allocated team of staff to address minor change requests submitted by the State, while ensuring availability of additional trained staff within Dimagi and our subcontractors to respond to more substantial change requests required by the State. For more information on how Dimagi handles surge staffing, please refer to [Section 14, Maintenance and Operations \(M&O\)](#).

Empowering State Staff to Adopt System Ownership

Authorized users from the State can make changes to the application, as preferred by the State. As an LCAP, CommCare is an ideal tool for State self-administration, particularly of relatively low-complexity changes that are a routine part of long-term system maintenance. Globally, many of Dimagi’s partners have assumed full ownership of configuration and maintenance of their CommCare applications, including some of our state-level partners in the United States.

To enable rapid delivery of an impactful solution, Dimagi suggests the State not make changes during DDI or Stabilization M&O. Beginning at the start of the training period of DDI, Dimagi will offer capacity building services so State internal resources are empowered with the level of application ownership desired. Dimagi’s partners across our many projects have had different preferences for this level of ownership, and Dimagi is agreeable to supporting a variety of paths for the State.

Table 35: Example Recommended Capacity Building Sessions (non-exhaustive list)

Session Title	Session Topic(s)
CommCare Platform	
User Provisioning	How to provision new CommCare users, including creation of new users, assignment of user roles and permissions, situating users within the organizational structure, and triggering user welcome emails
User Roles and Permissions	How to create or edit user roles in CommCare
Organizational Structure	How to build and update the organizational structure in CommCare; defining and adding organizational levels
Lookup Tables	What is a lookup table; how to create, view, download, edit,

	and upload lookup tables; how to use lookup tables in multiple choice questions; testing lookup tables
Data Dictionary	Best practices for viewing, searching, updating, and maintaining CommCare's data dictionary
Conditional Alerts and Communications	Configuration of conditional alert logic (in order to send SMS, email, and other correspondence); creation of conditional alert templates; translation of conditional alerts; troubleshooting conditional alerts (including navigating the Messaging History Report)
Automatic Update Rules	How to configure and test automatic update rules to automatically update records, as defined by business logic
Dimagi Data Analytics Platform (see Section 7.2 for additional detail)	
Foundational Tableau Report Development	Report development through web-editing for individuals with proficiency in statistical analysis and data visualization
Foundational Snowflake Analysis	SQL-based querying for individuals with proficiency leveraging Microsoft Excel for analysis

Post-Production Support

Included in the State's CommCare subscription is access to the Dimagi support team, which is available to address identified issues in alignment with the SLAs specified by the State in Attachment O. This includes availability during standard working hours Eastern Time following the implementation of a new release. Dimagi's standard practice does not include releasing on Fridays, with the exception of urgent issue resolution, to ensure help desk availability on the day following a release.

CommCare supports reversion to previous software versions, both with respect to application-level configuration changes and to platform-level development releases. The Dimagi team is prepared to support reversion to the most recent version (or mutually agreed upon version) if significant defects or work disruptions are identified as a result of a software release and approval to revert has been obtained from the State.

Training on System Enhancements

As part of the ongoing training activities described in [Section 12. Training](#), Dimagi will provide training on all system enhancements, to occur prior to the enhancement release. Enhancement training typically includes a live remote training session led by Dimagi staff, which can be recorded for on-demand viewing. Additionally, Dimagi will provide written release notes and an updated data dictionary for all system enhancements and may provide in-depth feature-specific written training guides for larger functionality or net new workflows. Existing user training guides will also be updated to ensure alignment with the most recent version released. Final enhancement training approaches will be submitted by Dimagi to the State for formal approval.

16. End of Contract Turnover (Attachment K, Section 15)

Dimagi confirms its acceptance with the requirements for End of Contract Turnover in Section 15 of Attachment K.

As an impact-driven organization, Dimagi is committed to ensuring that program stakeholders can maintain their solutions through our SaaS hosted offering independently. We are dedicated to avoiding vendor lock-in and promoting our Open Source approach. In addition to meeting the requirements of the End of Contract Turnover, Dimagi will provide the State with complete open source code and platform documentation, all data from the State's SaaS hosted project space, and migration instructions for a full handover to the State or a new vendor. This ensures that the State has all the necessary information to run the system independently, should they wish to make a change.

17. Performance Measurement – Service Level Management and Withholds (Attachment K, Section 16)

Dimagi is committed to meeting the requirements and performance targets for the IDOH SLA, ensuring the sustained success and reliability of the MCH Data System. Our comprehensive approach, proven through engagements with clients like the Colorado Behavioral Health Administration, integrates robust monitoring tools, proactive issue management, and transparent communication. With the dedicated oversight of the Dimagi Account Manager, we ensure accountability, responsiveness, and continuous improvement, positioning the MCH Data System for long-term success.

1. Agreement with the requirements and performance targets

Dimagi confirms agreement with the requirements and performance targets in Section 16 of Attachment K.

2. Collecting and reporting service level data

Dimagi is committed to meeting the service level metrics outlined in Section 16.3 of Attachment K. Our approach involves systematic data collection, robust reporting processes, and continuous monitoring to ensure compliance with the defined thresholds. Below, we explain how data for each enumerated service level metric will be collected and reported, and how we propose to meet or exceed the compliance thresholds.

Table 36: Service Level Data Collection and Reporting

Metric	Data Collection	Reporting Process	Compliance Strategy
1. System Uptime	Monitoring tools: Datadog, AWS CloudWatch	Service Level Reports detailing uptime percentages and instances of downtime with incident reports	<ul style="list-style-type: none"> ● Proactive monitoring and automated alerts ● Address potential issues before they impact users ● Maintain uptime at required threshold
2-3. Issue Notification and Incident Reports	Support Team activity metrics for response and resolution with data from Jira ticketing system	Service Level Reports containing support team statistics	<ul style="list-style-type: none"> ● Real-time alerts for critical issues ● Incident reports updated every 24 hours for critical severity until resolved ● Follow-up incident reports within 24 hours of permanent solution definition
4-7. Issue Resolution	Support Team activity metrics for response and resolution with data from Jira ticketing system	Service Level Reports, detailing resolution times and compliance with SLAs	<ul style="list-style-type: none"> ● Early detection and prevention through proactive system monitoring ● Prioritization of issues based on severity ● Regular updates and communication with stakeholders during resolution process
8. Change Request Response	Change Request Log	Service Level Reports including change request logs submitted monthly	<ul style="list-style-type: none"> ● Timely response to change requests with high-level summaries within 15 days ● Detailed estimates and design documents within 30 days for small to medium changes, 60 days for larger changes
9. Non-Billable Change Implementation	Change Request Log and Jira for tracking implementation timelines	Service Level Reports detailing implementation status of non-billable changes	<ul style="list-style-type: none"> ● Adherence to agreed timelines for non-billable changes ● Continuous communication with the State to ensure alignment on priorities and timelines
10. Change Request Commencement	Change Request Log and Jira for tracking start of work	Service Level Reports including CR commencement dates submitted monthly	<ul style="list-style-type: none"> ● Maintain sufficient staff coverage to allow work on change requests to start quickly
11-12. Change Request Implementation	Change Request Log and Jira for tracking implementation timelines	Service Level Reports including CR implementation dates submitted monthly	<ul style="list-style-type: none"> ● Maintain sufficient staff coverage to allow work on change requests to start quickly, utilize the configurable

			solution components that allow for rapid resolution of low complexity CRs
13. Reports/Files	Automated and manual tracking of report and file processing as part of M&O monitoring	Monthly Service Level Reports With details on accuracy and timeliness of reports/files	<ul style="list-style-type: none"> • Ensure outbound and inbound files are processed accurately and on time with comprehensive monitoring • Notify the State of any processing issues promptly
14. System Documentation	Sharepoint management system for tracking updates	Monthly Service Level Reports detailing documentation accuracy and updates	<ul style="list-style-type: none"> • Maintain and update all system documentation as per the approved M&O plan • Provide detailed release notes and documentation updates with each system change

3. Dimagi process for Identifying, Prioritizing, and Communicating Problems

Dimagi has a comprehensive process for identifying, prioritizing, and communicating problems that may contribute to a failure to comply with performance targets, ensuring issues are swiftly addressed to maintain system reliability and performance.

Identification

Dimagi utilizes robust monitoring tools such as Datadog and Sentry to continuously monitor system performance and detect anomalies. This proactive approach allows for early detection of potential issues before they impact users. The monitoring includes tracking key metrics such as system uptime, error rates, transaction timings, and performance of specific modules.

Issues can be reported by the State’s Help Desk, directly by State project stakeholders, or identified by the Dimagi Project Team. These issues are logged into our central ticketing system, Jira, ensuring all reported issues are documented with detailed information including description, reproduction steps, and impact assessment.

Prioritization

Once an issue is identified, the Dimagi Support Team conducts an initial assessment, categorizing issues by severity and impact. This triage process prioritizes issues based on their urgency and potential impact on performance targets. Priority levels range from P1 (critical) to P4-7 (normal to low), with defined resolution targets for each level. Additionally, each issue is evaluated for its impact on critical functionalities and compliance with Service Level Metrics. High-priority issues that could lead to performance target failures are escalated immediately for prompt action.

Communication

Effective communication is central to our issue management process. The Dimagi Support Team, Solutions Analyst, and Project Manager work closely to coordinate the investigation and

resolution of issues. Regular check-ins and updates ensure all team members are informed of the issue status, with high-priority issues escalated to the appropriate technical resources for immediate action.

During Stabilization M&O, Dimagi Project Manager maintains regular communication with the State's Project Manager, providing updates on issue status, resolution progress, and any potential impact on performance targets. For critical and high-priority issues, initial incident reports are provided within 24 hours, with updates every 24 hours until resolution.

The Dimagi Account Manager, who is accountable for success in the steady state M&O phase, plays a crucial role in this communication process. They ensure that all stakeholders are kept informed about the status of issues and resolutions, and they are responsible for delivering Monthly Service Level Reports. These reports include detailed metrics on system performance, incident resolution, and compliance with SLAs, ensuring transparency and accountability in maintaining performance targets. The monthly reports include information such as system uptime, support team statistics, change request logs, and any incident reports.

Corrective Action Plans (CAPs)

In the event of non-compliance with performance targets, the Dimagi Account Manager prepares a Corrective Action Plan (CAP) detailing the cause of the deficiency, impacts, and measures being taken to remedy the issue. The CAP includes a schedule for implementing the solution, with clear timelines for both temporary and permanent fixes.

By maintaining rigorous monitoring, efficient issue management, and transparent communication, Dimagi ensures that any problems contributing to potential performance target failures are swiftly identified, prioritized, and addressed. The involvement of the Dimagi Account Manager ensures accountability and coordinated efforts across all teams, thereby maintaining the reliability and effectiveness of the MCH Data System.

More information on key activities contributing to the identification, prioritization, and communication of problems is covered in [Section 14, Maintenance and Operations](#).

18. Optional Elements

Dimagi offers the following details and recommendations based on our understanding of the MCH Data System and project requirements. As a partner to IDOH, our team remains open to discussion and collaborating on approaches that best meet the project needs.

1. Hosting Options

Dimagi strongly recommends our fully managed Software as a Service (SaaS) hosted approach for the MCH Data System due to its complexity and specific needs. Our fully managed SaaS approach enables us to provide comprehensive monitoring, maintenance, and continual investment in the system's performance and security. While the CommCare platform remains open source, ensuring State access, Dimagi's monitoring tools and maintenance activities are deeply integrated with our hosting environment, as described throughout this proposal.

a. Approach and Timeline Impacts

Our proposed solution is optimized as a fully managed SaaS platform. This configuration allows us to leverage our established infrastructure and tools, ensuring a streamlined deployment and efficient ongoing operations. Transitioning to a State-hosted solution is not feasible within the proposed DDI timelines due to the extensive setup and customization required to align with the State's hosting environment, compared to the speed and level of effort benefits from the SaaS set up, in addition to other cost considerations.

b. Cost Impacts

Dimagi's proposed SaaS solution benefits from the investment platform, including advanced monitoring tools, performance tuning, ongoing security audits, and pre-built configurations, contributing to the overall cost-effectiveness of our solution. These cost benefits would go away with State-hosted approaches. Transitioning to a State-hosted approach would forgo these benefits, potentially increasing both DDI and M&O labor costs due to the need for additional customization and integration work.

Hosting the solution independently might reduce direct environment costs that are reflected in Dimagi's SaaS fee. However, these savings may be offset by the State's expenses in establishing and maintaining a comparable hosting environment and maintenance practices. By choosing our fully managed solution, the State ensures an efficient deployment and maintenance, supported by Dimagi's extensive experience and specialized tools.

2. Alternative Helpdesk Services

In our proposal, Dimagi includes our Technical Support Team as an T3 Help Desk for the MCH Data System. We recommend that IDOH either utilize existing internal help desk resources or contract a dedicated T1 and T2 Help Desk vendor to accept and triage issues. This support design offers a more efficient and scalable delivery of support as the project grows. It also ensures that the first points of contact are more informed about non-technical issues in the program context, such as questions around participation requirements, and do not require the deep expertise in CommCare that our Technical Support Team offers as a point of escalation.

In addition to our own T3 services, Dimagi has experience in identifying and onboarding dedicated vendors for T1 and T2 Help Desk services. We recommend Microknowledge INC, a New York State Certified Woman-Owned Business. Microknowledge has provided T1 and T2 technical support to users of CommCare in both Colorado and New York projects and has excelled at timely issue triage, resolution, and customer satisfaction. The pricing included in Table 2 of Attachment D Tab 8 reflects an engagement with Microknowledge to provide T1 and T2 services, based on the user count and timeline assumptions from this proposal.

Dimagi remains flexible in accommodating different Help Desk structures and believes strongly that support is important, as it is the face of the program to users. As helpful for the project, Dimagi will support IDOH in identifying and procuring support resources.