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WV Purchasing Division

Response to Request for Information (RFI) No. CRFI 0511  
BMS2200000001

## MES Strategic Planning

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### Contact Information

For further information and discussions, please contact	
Name	Rick Brady
Designation	Practice Lead, Government Health Care
Address	Infosys Public Services, Inc. Suite 505, Three Irving Center. 800 King Farm Blvd. Rockville, Maryland (MD), -20850 USA
Phone	510-926-5641
Email	Rick_Brady@infosys.com



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Response to Request for Information

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## 1. Corporate Overview

**Infosys Public Services (IPS)** – A wholly owned U.S based subsidiary of Infosys Limited, is a leader in business consulting, technology solutions and next-generation digital services. IPS helps public sector organizations renew existing systems and build new capabilities to become more connected, smart, and agile.

IPS exclusively focuses on the North American public sector organizations, helping them navigate their digital transformation journey. Specifically, IPS focuses on the following sectors:

US	Canada
Civilian federal agencies like Veterans Affairs, Centers for Medicare, and Medicaid Services	Federal departments like the Treasury Board Secretariat, Public Services and Procurement Canada
State & local agencies including health and human services agencies, transportation agencies and CIO office	Provincial & municipal governments of Ontario, British Columbia, Alberta
Quasi-government and/or non-profit organizations like the United Nations	

**Corporate Structure:** Infosys Public Services, backed by Infosys’ global strength and expertise, delivers value and outcome through proven and flexible execution.

Infosys Limited, parent company of IPS, started as an entrepreneurial adventure in 1981 with seven engineers and \$250. Infosys is now a publicly traded company with annual revenues of more than US\$ 14.9 billion (LTM - as of Q2, FY22). Infosys, for more than 40 years, have been a company focused on bringing to life great ideas and enterprise solutions that drive progress for our clients. Infosys has a growing global presence with more than 279,617 employees. Globally, we have 110+ delivery centers.

We work with public sector organizations across the world through independent practices. The image below depicts global presence of Infosys in public sector.

We combine the following key capabilities to accelerate digital transformation for public sector organizations

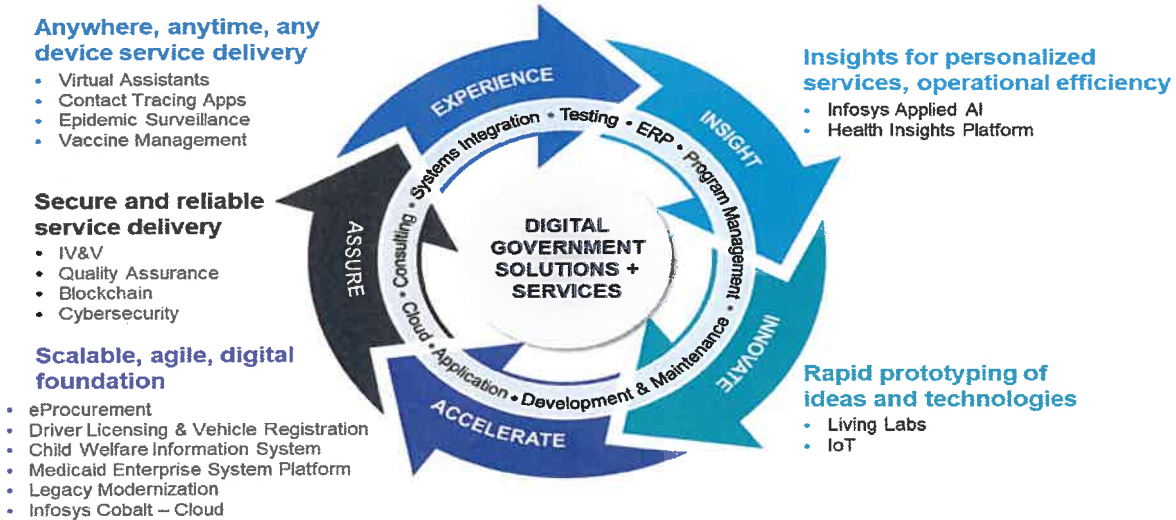
- Access to Infosys’ 40+ years of cross industry insights and experience:** Public sector agencies are always looking at ways to learn from their commercial peers. We adapt Infosys’ experience with organizations across different industries for the public sector, helping them accelerate their key initiatives.

For example, Infosys has helped multiple organizations automate their legacy modernization initiatives. We are using this experience and our tools like Modernize IT to help a [\*US City accelerate its modernization program by up to 50%\*](#).
- Public sector specific solutions + Infosys’ offerings** that address each dimension of the digital framework: We’ve built specific offerings for our key clients – like The Medicaid Enterprise System Integration Platform and Infosys Celtic Vehicle & Licensing Solution– an enterprise platform to digitize driver licensing & vehicle registration. We combine these with Infosys’ other offerings to help agencies drive outcomes across the five areas – constituent experience, data & insights, innovation, accelerated digitalization and security. For example, we combined our driver licensing modernization solution with ERP capabilities, program management methodologies & digital offerings (e.g.

responsive web portal etc.) to successfully implement a [modern vehicle registration solution for Ontario Ministry of Transportation](#)

- Proven execution framework for predictable, on-time, on-budget execution:** Our proven and flexible execution models (like Agile) ensure on-time, on-budget execution of public sector programs. We have also been appraised at [CMMI Level 5](#) which acknowledges our focus on quality and ability to execute IT programs in a predictable manner using different methodologies – agile, waterfall or iterative  
 For example, [The District of Columbia Health Benefit Exchange](#) was among the only few marketplaces that successfully went live on-time and within the budget.
- Accelerating innovation:** IPS has been actively using Be the Navigator framework to help clients innovate. We’ve won numerous awards for our ideas for clients like [Innovapost](#) and [Long Term Care Partners](#)

These capabilities enable us to deliver the following suite of comprehensive business and technology solutions and help our clients accelerate their digital transformation:



## 2. Questions

**4.2.1 Please describe any elements BMS should consider incorporating into its vision, planning, and implementation for a modernized, modular MES.**

**Infosys Response:**

When establishing procurement there are many ways from relying on one system integrator (SI) to having different SIs or RFPs for each module. We have found States to be more successful with having different RFPs for each module and a separate one for the SI. Often when states go down this route the SI is excluded from bidding on other modules. When having different RFPs, it's important to have a vehicle to source development teams that can implement connectors between the different modules. It is also recommended to set up a center of excellence for the MES Project to reduce risk and ensure the technology is being implemented correctly.

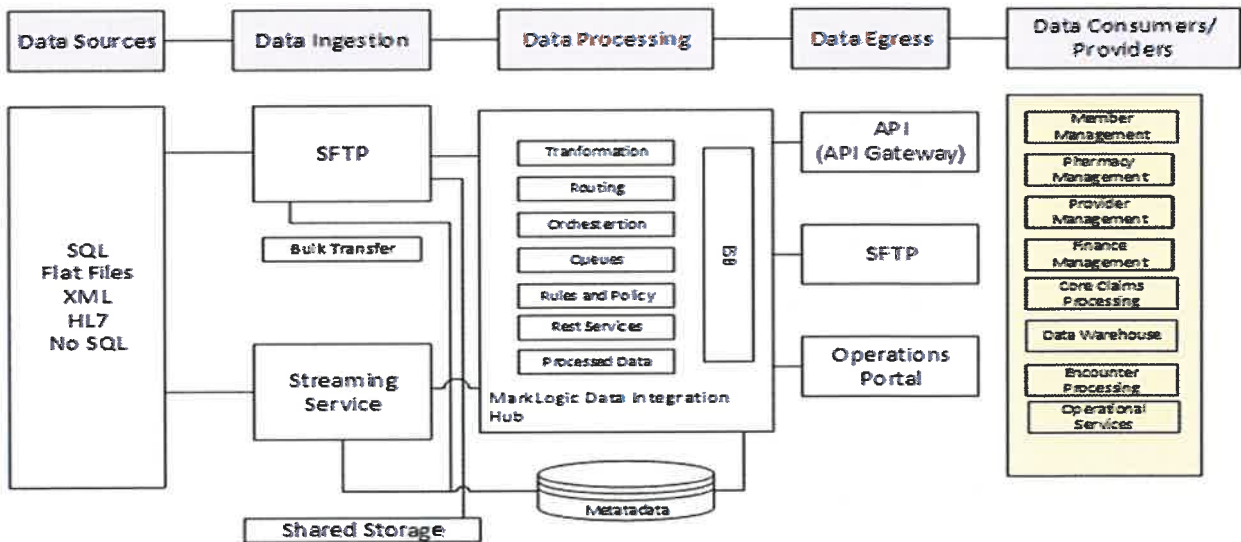
Using an Agile methodology is recommended to lower defect rates, decrease development times and most importantly obtain stakeholder feedback quickly. The Agile methodology allows for a phased approach in creating a Medicaid Enterprise System (MES). The Medicaid Management Information System (MMIS) has many different processes within it. It is recommended to create a plan where implementation schedules and milestones match processes within MMIS so that these processes can be evaluated and then retired.

Lastly, the Medicaid Data Hub and Data Integration layer allow States to own their data and schedules. Once the data for a process is in the Medicaid Data Hub the States can feed that data back to the source system ensuring it's ready for a module.

**4.2.2 In the projects you have been on, what was the optimal configuration of MES modules specific to functionality, integration of other solutions, and management of data?**

**Infosys Response:**

Infosys proposed Solution will be based on MarkLogic Data Integration platform which will be hosted on Public Cloud provider. Proposed Solution will also be augmented with managed Cloud services like API Gateway and Kafka cluster to meet current and future needs of WV's MES Platform. The below diagram depicts a logical architecture of the components of the proposed SI platform.



**Figure 1. Infosys MES Integration Platform**

**Data Sources:**

Proposed SI Solution will leverage multiple Data Sources. SI Data Platform will be supports following File mechanisms SQL Files, CSV files, XML files, JSON Files etc.

**Data Ingestion:**

Data from multiple Data Sources is ingested using multiple mode Batch Mode, Online mode and Real time streaming mode. Solution provides manage File Transfer for Batch mode and messages using Kafka Cluster or any streaming service. Data ingested from managed File transfer will be stored in Cloud Provider Data storage (For example AWS S3).

**Data Processing:**

Once Data is ingested into SI Platform, MarkLogic Data Integration Hub will read, orchestrate, route, process and transform data to be consumed by multiple Consumers. MarkLogic Data Integration Platform is a unified data platform that brings all of your multi-structured data together and curates it for both transactional and analytical purposes. Solution works by ingesting data as is from any source, indexing it for immediate query and search, and curating it through a process of harmonization, mastering, and enrichment. Marklogic Data integration Platform is powered by the MarkLogic Multi-Model Database, a modern NoSQL database with flexibility and scalability that also meets enterprise requirements for security and transactional consistency.

**Data Egress:**

In Data Egress Layer, Solution will provide mechanisms for different Consumers to Consume Data from SI Platform. Following are high level components of Data Egress Layer.

**API Gateway:** Infosys Proposed solution provides the capability to provide in REST and Web Services using multiple formats. Solution will also enforce authentication, Access Management, publish APIs and API Products to external consumers and partners and internal users. Solution also provides Developer Portal to track Customer analytics and monitor SLA and Performance.

**Operations Portal:** Operations Portal will provide web-based access to monitor, configure, control SI platform services. Data from Kafka Cluster, Infrastructure monitoring tools and integration flows directly into metadata Store. Solution will provide Angular JS based Light weight Portal to manage integrations.

4.2.3

**Describe Medicaid Enterprise solutions your organization provides or is developing that BMS should consider during its roadmap planning. BMS is interested in learning about the following:**

1. **The Medicaid Enterprise business processes or discrete functionalities targeted by the Medicaid Enterprise solution.**
2. **How the Medicaid Enterprise solution is packaged (i.e., commercial-off-the- shelf (COTS) or proprietary; modular or tightly integrated; cloud or local).**
3. **How the Medicaid Enterprise solution is priced (please include methodology only, e.g., Per Member per Month, fixed price per year, data usage—please do not provide actual purchase prices).**
4. **In how many states is your Medicaid Enterprise solution currently deployed, or expected to be deployed, and how long has it been in use.**
5. **Configurations and customizations typically requested to adapt the product for use in a State Medicaid Program.**
6. **Technical architecture and processing capacity/scalability.**
7. **User-facing and self-service capabilities.**
8. **Interface support, flexibility, and extensibility to other stakeholders and State agencies.**

**Infosys Response:**

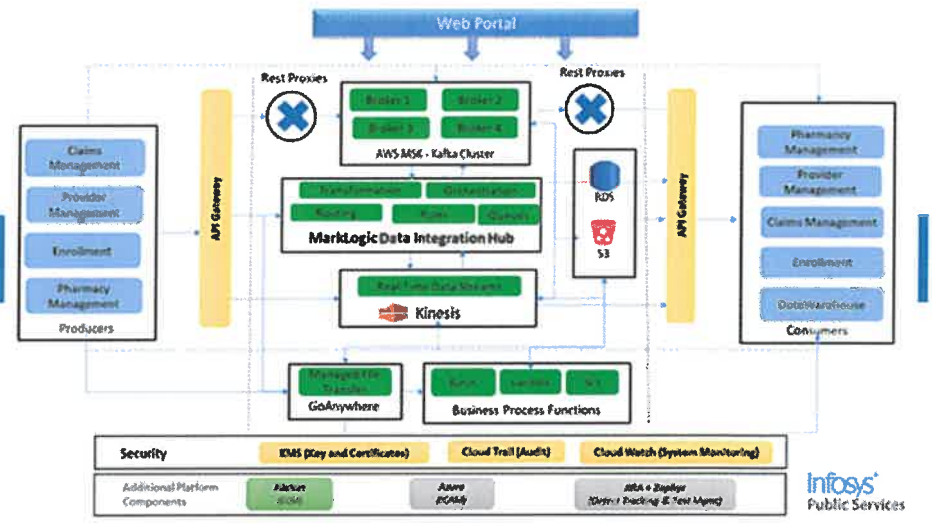
Infosys offers 3 solutions that should be considered in your roadmap planning. The first is a System Integration Platform aimed at providing an easy and fully transferable cloud environment that completely addresses the core



features of a modular MES ecosystem. The second solution is our provider module that addresses the MITA 3.0 Provider Management business area. Lastly, we present our analytics platform Infosys Health Insights Platform (IHIP).

**System Integration Platform (SIP)**

The proposed SIP through **MarkLogic’s Data Integration Hub** provides a seamless coordination and integration with exchanges including HIE, HIX and any other agencies run by State or Federal government. The following figure illustrates the primary components of the platform, how they interact, and how the data flows between data producers and data consumers.



**Figure 2. SIP Components**

The SIP is delivered as a turn-key solution that **leverages commercial off the shelf (COTS) software** that can be easily configured through the portal. As depicted in the figure, the proposed Systems Integration Platform supports multiple modes of data ingestions. Producers ingest data through the API Gateway to MarkLogic’s Data Integration Hub by invoking the exposed representational state transfer (REST) APIs. This operations portal will allow the authorized users to onboard new consumers to ingest new data based on their preferred method of data exchange - Kafka, API Gateway, Kinesis or MFT. The data transformation, orchestration, and routing will be performed by MarkLogic’s hub. MarkLogic also externalizes common transformation rules so they can be easily configured through the portal. Apart from data ingestion through the API Gateway to the integration hub, producers can also directly input data to the Kafka queues or Kinesis streams. Both these solution components offer REST integration which will be governed through the API Gateway.

All data that is transformed and massaged can be stored in the cloud hosted database like AWS Relational Database Service (AWS RDS) or the cloud hosted object storage of Amazon Simple Storage Service (AWS S3) until it is accessed by the consumers, or Medicaid processes. Like producers, consumers have different methods of data consumption:

- Use the publish- subscribe pattern supported through Kafka
- REST calls directly to files in stored in cloud providers object storage
- REST calls to the integration hub governed by the API Gateway

Managed file transfers can be supported through **GoAnywhere**, which provides centralized management of secure transfer for files between producers and consumers. Batch processing capabilities from AWS Batch will be used for processing large files and large data streams, whereby processed files will be stored in the cloud before being consumed. GoAnywhere also generates reports of file transfer activity, user statistics, and completed jobs from within the console. Reports can be filtered by date, user id and other criteria to select only the information that you are interested in.

The cloud provider’s serverless functions, such as AWS Lambda, will be used for any real time transformation needed by Kafka or the cloud provider’s streaming service (e.g.l, Kinesis in AWS). Our platform will allow for

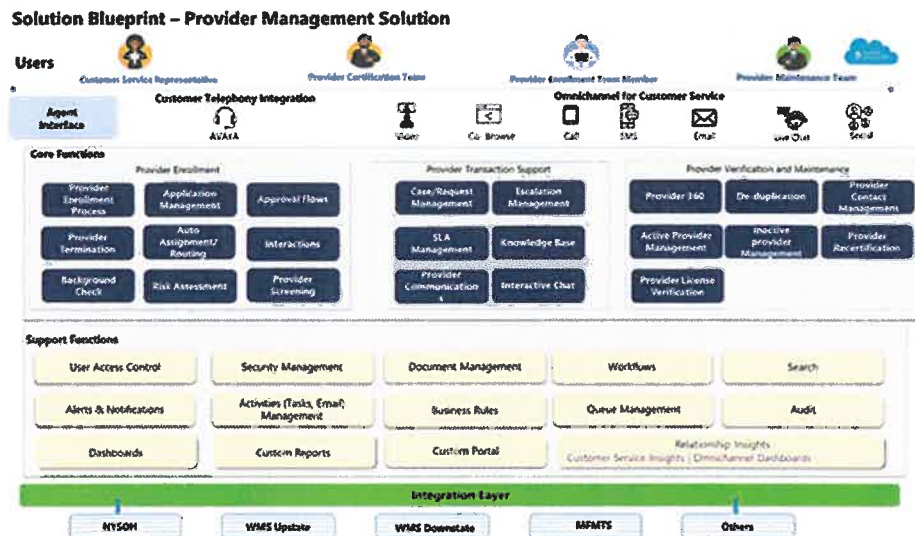
easy configuration of quality, exception and reconciliation metrics through Cloud provider’s monitoring tools like AWS CloudWatch and operations portal. Email services of the cloud, like AWS Simple Email Service, will be used for sending alerts and notifications to the end users. We will provide encryption for the transmission of email and attached data that is sensitive relative to confidentiality.

We will manage security for the State’s MES at all layers using Key Management services, and audit using a cloud provider service such as AWS CloudTrail. All traces of data access, API calls, configuration changes, and infrastructure modifications will be monitored and reported. Performance monitoring will be performed with Cloud provider’s services like AWS CloudWatch. MarkLogic’s capabilities also include the security features to enable data integrity through element-level security, redaction, and database encryption at rest with external key management. Security is provided through role-based access control (RBAC) along with a “compartment security” option.

**Provider Management Solution**

Infosys has envisioned a proprietary **Provider Management Solution** for State Medicaid Agencies purpose-built to streamline and automate the entire Provider Management lifecycle including Provider enrolment, termination, recertification, Risk Assessment, Background Check, Provider Screening, Provider Support, alerts, and notification requirements for Medicaid Agencies.

Backed by our strategic partnership with Microsoft and our strong experience in execution of complex and large enterprise transformation projects, Infosys proposes to implement its proprietary Provider Management Solution through accelerated cloud deployment methodology that we believe would meet the State’s future requirements. The solution is an application operated on a Software As a Service (SaaS) model built on Microsoft Dynamics. It is modular, and scalable and consists of subsystems/components that address different but related functionality sets within Provider Management.



**Figure 3. Solution Blueprint – Provider Management Solution**

The Provider Management Solution operates across the following areas, namely:

**Provider Enrolment**

As a part of Provider enrolment module, the solution enables creation of application from various channels e.g. Website, phone call, live agent etc. The solution simplifies the assignment of the application to respective teams leveraging pre-configured auto-assignment rules. The solution allows teams to review, validate and approve provider applications with the help of guided business process flows. API integrations with federal systems will be done to monitor, automatically screen and verify the provider enrolment application. The enrolment subsystem enables provider to apply for enrolment, re-enrolment, termination, recertification, or revalidation and provides real-time notification to the providers of the receipt of the enrolment application.

**Provider Verification and Maintenance**



The solution enables the user to store all the provider related data in one place called Provider 360. All the license related data is also stored, and the solution is configurable to capture data by provider role. Solution automatically highlights the providers who are due for revalidation of their enrolment information and initiate notification(s) to the provider and agency staff. It also enables the user to initiate a background check for the provider and all the communication details are stored with in Interactions section of the module

**Provider Reporting and Insights**

The solution offers pre-built and configurable reports and insights leveraging out of the box dashboards and reporting functionality. Some reports that are available as a part of the solution are risk assessment report, Provider Support Insights reports. All the reports can be modified/new reports can be created based on the requirements

**Provider Transaction Support**

**Self Service Portal:** The solution offers a Power Portal which is a Low code no code-based build for the User Interface along with the branding Guidelines. The portal allows providers to register, edit their details, submit and track their application, raise queries and view their historical transactions with the agency. The portal also allows the providers to view the attachments, and provide a facility to download, add, and delete documents

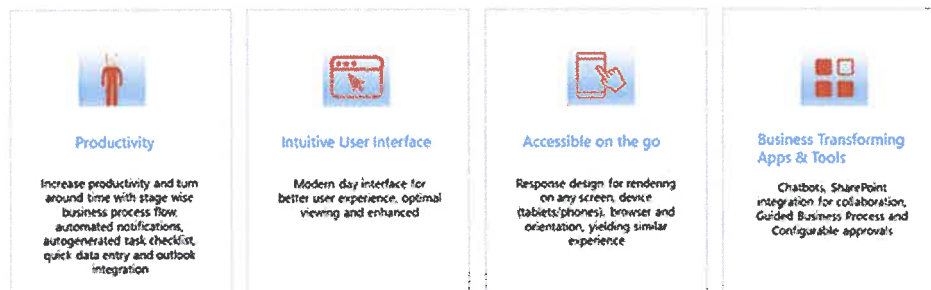
**Chatbot and Omni channel capabilities:** A QnA (Question and Answer) AI/ML based conversational Chatbot is offered as a part of this module providing a cost-effective way to interact across multiple business functions.

With the capability to be deployed on any channel the chatbot will be configured to meet any future requirements of NY MES in order to improve the end-to-end provider engagement and client experience. This will also help position AI enabled innovation in the digital transformation journey at West Virginia.

The solution also provides omnichannel capabilities that enables support service representatives instantly connect and engage with providers across digital messaging channels. It offers online interactive chat as a reliable transaction channel that allows enrolled and authenticated users to chat directly with a customer care representative. The chat session can be recorded, stored, and accessible to internal staff for reference. Supervisors also get real-time and historical visibility and insights into the operational efficiency of agents and the utilization across various channels.

**CTI:** Using the Microsoft Dynamics 365 Channel integration Framework, the solution can integrate with third-party Computer Telephony Integration (CTI) systems. It also has provision for supporting single session and multi-session agent interactions across phone channels.

The solution will be extended to integrate with other systems for CMS data matching for provider screening and monitoring, Social Security Administration’s Death Master File, the National Plan and Provider Enumeration System (NPPES), the List of Excluded Individuals/Entities (LEIE), the Excluded Parties List System (EPLS). The solution is compliant with HL7 and FHIR to capture al the provider related data. The key benefits delivered by the solution are depicted below:



**Figure 4. Provider Management Solution Packaged Solution Benefits**

**Infosys Health Insights Platform (IHIP)**

Our analytics platform, Infosys Health Insights Platform (IHIP) enables AI-driven analytics to not only derive insights from today’s data, but to predict future trends and needs. IHIP enables modern analytics for a State’s Health and Human Services Enterprise.

IHIP is a cloud-based data management platform. The focus of this platform is to instantly ingest, validate and extract relevant attributes to create a golden record data lake defined in form of an entity subject area. The platform was built to enable automated aggregation of disparate data types (structured and non) along with the ability to use machine learning and artificial intelligence technologies in an automated fashion to minimize the need of data scientist inputs and an extensive process. As a practical output, human services data is entered, the system discovers patterns between the sources, and enables both decision making and predictive analysis based on the combined data. Key functionalities include:

**Business Intelligence:** The golden data derived by feeding the data through the data pipeline of the platform is exposed through data APIs. These data APIs hide the complexity of data collection from the underlying gold data schema. The APIs convert the collected data into a canonical data format (JSON) which can be easily consumed by any consuming component. By leveraging the data APIs, the BI component helps to blend data across multiple dimensions of the data entity stored in the gold schema on the fly, including munging structured and unstructured data. Users will be able to modify existing reports, dashboards, and letters provided under appropriate security permissions and all changes can be versed in the downstream tools that have been used to create/maintain those assets. Some business rules and workflows may be incorporated into the curation, harmonization and BI process. Business rules contained at the report/dashboard level also will be able to be modified by end users. There are enterprise-level data security features that enable admins to govern access and curate datasets.

**Data Visualization:** The IHIP dashboard component supports ready connection and visualization in minutes. It leverages the data APIs built on top of the gold schema of the platform to access the golden version of the data. It has a built-in NoSQL as well as statistical functions which enables efficient data transformation, aggregation and numeric analysis of data required for analytics purpose. Through natural language BI capabilities, we enable non-technical users with the power to ask questions in English and get answers and instantly create purpose-built dashboards, visualizations and elastic search within the user interface. Key metrics could include IHIP is flexible to visualize data in a manner that is easy to use and read to drive data driven decisions. The visualization component also provides ability to customize based on specific business needs, ready integration with open-Source Tools - R, Shiny Python Notebooks, other SDKs, ability to combine multiple views of data to get richer insight, etc. all that let's user interact with data and perform analysis. The dashboards can be extended to any mobile platform. There are multiple options to share data from exposing it via a REST-API to scheduling publication to individuals or groups or ad-hoc download of CSV or Excel formatted files.

Through our Predictive Analytics and Advance Data Science component we help to automate the process of model building, model selection, model deployment, and model management. Our automated machine learning (ML) component uniquely offers the following capabilities:

- Optimizes feature engineering
- Code-free user interface
- Comprehensively tests algorithms -- currently, from 29 open source libraries
- Automates time series analysis
- Automates model validation and custom model creation
- Delivers interpretable models
- Delivers reports for regulatory compliance
- Exports prediction pipelines
- Supports an open prediction API
- Monitors models in production
- Supports Python extensions
- Connecting to and storing enterprise data for use in the creation of models for machine learning
- Read data from URLs (including S3 buckets), HDFS, Databases (via JDBC drivers), and directly from files uploaded (csv, xlsx, tsv, to name a few). All data is encrypted in transit to the application server.

The ML module can serve to predict future caseloads, financial and social impact to regulatory and policy changes, and support Social Determinants of Health analysis. Its use can expand outside WV MES ecosystem to serve as an analytics platform for the State's Health and Human Services Enterprise.

<b>4.2.4</b>	<b>What do you see as the benefits and risks of including business process outsourcing (BPO) services together with technical services?</b>
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**Infosys Response:**

Our recommendation on this topic is to separate BPO from technical services. Through making this separation the State can procure the work with the best vendors in each separate category.

<b>4.2.5</b>	<b>Describe your experience, if any, with CMS Outcomes-Based Certification or Streamlined Modular Certification.</b>
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**Infosys Response:**

Team Infosys was engaged as the prime system contractor to implement the Eligibility and Enrollment system “District of Columbia Access System (DCAS)”. As part of implementation, Infosys incorporated Medicaid Information Technology Architecture (MITA) 2.0 and 3.0 standards and followed Medicaid Eligibility and Enrollment Toolkit (MEET) standards. Along with MITA standards, Infosys has leveraged CMS MEET (Medicaid Eligibility and Enrollment Toolkit) to ensure that all parties are involved in development and maintenance of Eligibility and Enrollment system for successful implementations and to ensure project stay within Budget and schedule project delays and costs.

As part of the DCAS implementation, Team Infosys implemented MEET requirements to assure all processes involved in development and maintenance of Eligibility and Enrollment system followed CMS standards for successful implementations.

For its Integrated Eligibility System, Team Infosys helped District of Columbia to achieve CMS certification. All necessary documentation for the same was provided by Team Infosys team per CMS standards.

Team Infosys complied with MITA 3.0 Framework during the implementation of the Health Insurance Exchange for District of Columbia Access System (DCAS). The Team Infosys proposed solution for DCAS is built on the IBM Curam product and has followed software architecture principles. DCAS incorporates MITA and National Human Services Interoperability Architecture (NHSIA) standards to the enterprise architecture by:

- Developing an interoperable architecture, useful in communicating with different agencies within the ecosystem such as the IRS and SSA
- Implementing SOA (Service Oriented Architecture) and ESB (Enterprise Service Bus) as integral components to the architecture
- Using COTS software to minimize life cycle costs in developing shared services accessed by multiple human services programs at the state and local level such as determining eligibility and approving client eligibility
- Building a trusted environment which emphasizes Identity and Access management, Network and Infrastructure Security and Data Privacy, Identity Management, and Federated Single Sign- On
- Developing an architecture that is scalable independent of technology

The DCAS Implementation complied with the Standards and Conditions as noted in the table below. The table below provides details on Team Infosys’ implementation following CMS MITA 3.0 and Standards and Conditions for DCAS.

**Table 1. Standards and Conditions**

Standard/ Condition	Summary Description	Infosys Implementation
Modularity	Requires modular, flexible approach to development, including exposed APIs; business rule/code separation, and rules in human and machine-readable formats	The Team Infosys solution used service-oriented architecture (SOA) and leveraged a business rules engine (not hard-coded) to achieve modularity

MITA	Aligns to MITA Maturity for business, architecture, and data.	Team Infosys conducted a MITA Assessment and ensured that necessary standards are met so that necessary Business processes related to integrated eligibility are added.
Industry Standards	Requires compliance with industry standards: HIPAA security, privacy and transaction standards, accessibility standards, federal civil rights law, and ACA section 1104 and 1561	The Team Infosys solution complies with the MITA, NHSIA, HIPAA standards and guidelines.
Leverage	Promotes sharing, leveraging, and reuse of Medicaid technologies and systems within and among states	The Team Infosys solution promotes sharing and leveraging of technologies and systems through shared services such as address verification.
Business Results	Supports accurate, timely claims processing (including claims of eligibility), adjudications, and effective communications with providers, beneficiaries, and the public	The Team Infosys solution leveraged IBM Curam to help determine client eligibility. Curam and HP Exstream provide effective client communication.
Reporting	Produces transaction data, reports, and performance information for program evaluation, continuous improvement, transparency, and accountability	Use of an Enterprise Operational Data Store and Data Mart to help produce transaction data and Micro-strategy and Splunk to produce performance and transactional data reports
Interoperability	Ensures interoperability and information exchanges with public health insurance exchanges, agencies, human service programs, and navigators	Interoperability is ensured with the use of an Enterprise Service Bus (ESB) to interface with local and federal agencies

For risk management -related information security and privacy for the DCAS project, per CMS specifications, Team Infosys leveraged MARS-E 2.0 (Minimum Acceptable Risk Standards for Exchanges) standards, which are applicable to all Affordable Care Act administering entities, including exchanges or marketplaces — federal, state, Medicaid, and CHIP agencies administering the Basic Health Program.

For information protection, Team Infosys leveraged National Institute of Standards and Technology (NIST) standards and updated security controls specified in MARS –E 2.0 to address mandates of the Patient Protection and Affordable Care Act (PPACA, also known as ACA) and regulations of the Department of Health and Human Services that apply to the ACA. All controls related to ACA were implemented for our implementation in District of Columbia.

Team Infosys performed the below activities at DCAS to maintain compliance with MARS-E 2.0, NIST 800-53, IRS Pub1075 and other applicable state regulations, policies, and procedures:

- Ensured access to all relevant policies, procedures, guidelines, and any other documents required to maintain compliance
- Conducted security assessments to periodically assess implemented security controls worked as effectively as intended
- Captured deviation and provided recommendations to remediate the identified findings.
- Worked with the respective stakeholders for control implementation or alignment for risk mitigation



- Regularly monitored the internal security controls to ensure compliance against the MARS-E 2.0, NIST 800-53, IRS Pub 1075, and other applicable federal and state regulations, policies and procedures
- Provided compliance dashboard and highlighted any issues or challenges to the stakeholders and/or management
- Performed continuous monitoring of security controls
- Evaluated security posture against control’s metrics and measurement criteria at pre-agreed intervals
- Conducted annual assessment and documented the assessment report
- Updated Plan of Action – POAM quarterly and Corrective Action Plan - CAP on semi-annually basis
- Updated system security plan at regular intervals
- On a semi-annual basis or as requested, an evaluation of Team Infosys's performance, which includes results of internal security audits, independent third-party audits, self-assessments, and evaluation of Team Infosys's handling of and response to Security Incidents and Security Threats was provided
- Provided a single point of contact for security assessments, remediation efforts and coordinating audit activities
- Utilized Infosys Enterprise Data Privacy Suite (iEDPS) tool for data masking to lower environments. iEDPS is an enterprise class, cross-platform data masking software, developed by Infosys Labs, which helps enterprises in protecting sensitive personal data as mandated by various data privacy regulations.
- Developed a process by which a Team Infosys or a DCAS approved independent Third-Party (i.e., auditor) will conduct a review of Team Infosys’s security processes and associated service delivery that will identify any Team Infosys's processes that are not in compliance with ‘CAS security requirements and Service Levels
- Performed reviews of DCAS selected aspects of security policies, procedures and requirements and provide reports in the Security Dashboard to DCAS on the recommended changes to such security requirements, with the goal of improving operational efficiency and effectiveness
- Facilitated, tracked, and verified closure of audit observations
- Provided audit report and documentation
- Communicated assessment or audit report to DCAS IT Security Team

**4.2.6 What approaches to supporting consistency in business process functions and data architecture across multiple systems and vendors have you encountered?**

**Infosys Response:**

Infosys’ Service Oriented Architecture (SOA) and Enterprise Application Integration (EAI) enable hyper connectivity to help the Department meet its digital transformation and modernization goals. We will collaborate with you to visualize the problem areas, identify the solutions and activate the right frameworks, tools, accelerators and partners to unlock value and deliver innovative, scalable models. Furthermore, we will support the activities necessary for the MES to achieve CMS certification.

SOA and EAI form the epicenter of all enterprises and constitute the middleware platform which is the hub for all data flows and process integration. These lie at the core of Human-To-Machine, Machine-To-Machine and even Human-To-Human interactions. Our deep experience of over 20 years on these technologies and industries have helped create 50+ accelerators and ready to deploy solutions that will help reduce the Department’s total cost of ownership.

**EAI Practice Implementation and Integration for SIP Consulting**

Team Infosys' SIP consulting methodology encompasses the following aspects:

- Identifying key requirements around scalability, security, disaster recovery, and integration
- Blueprinting platform capabilities of heterogeneous systems, as well as understanding the best-in-class feature set for each capability
- Product evaluation and product fitment assessment
- Key architecture decisions and product/service selections



- Fitment of right toolset with efficiency in cost
- Defining the SIP roadmap covering tactical and strategic outcomes

The common setup activities of Team Infosys’ system integration consulting services include the following:

- Capacity planning
- Product installations in data center and cloud environments
- Non-disruptive configurations, changes, and upgrades
- Setting up application management, log management, and monitoring tools
- DevOps platform toolsets installation and configuration

**4.2.7** Please provide your recommended strategy for ongoing compliance with the CMS Interoperability and Patient Access final rule (CMS-9115-F). The rule can be found at the following location: <https://www.cms.gov/files/document/cms-9115-f.pdf>.

**Infosys Response:**

We will not be providing a response to this question, at this point.

**4.2.8** Provide your strategy for compliance with the Health Insurance Portability and Accountability Act (HIPAA) and Federal Risk and Authorization Management Program (FedRAMP) Requirements.  
Information about HIPAA compliance can be found at the following location: <https://www.hhs.gov/hipaa/for-professionals/privacy/index.html>. Information about FedRAMP can be found on [www.fedramp.gov](http://www.fedramp.gov).

**Infosys Response:**

We will not be providing a response to this question, at this point.

**4.2.9** Provide your strategy for assisting states in achieving compliance with CMS, and federal rules, regulations, and guidance related to modularity, leverage, reuse, and outcomes achievement.

**Infosys Response:**

We will not be providing a response to this question, at this point.

**4.2.10** What approaches do you suggest for Disaster Recovery processes in a modular MES that accounts for integration and communication across multiple partners?

**Infosys Response:**

The diagram below represents various components of Disaster Recovery (DR) and the responsibility of each component. Team Infosys will support the State of West Virginia for DR testing and DR operations will also work with the State of West Virginia to conduct DR assessment, design and modernize the DR solutions, as stated previously.

**Table 2. Understanding of Disaster Recovery Components and Responsibilities**

Activities by Team Infosys	Infosys Accelerators (Tools/Processes)
<ul style="list-style-type: none"> <li>• Review the as-is process of requirement analysis and prioritization method</li> <li>• Identify gaps and improvements by working with the stakeholders</li> <li>• Present the proposed improvement process to Governance board for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Best practices in Disaster Recovery Analysis from Infosys COE</li> <li>• Review and Approve to-be Cloud based framework</li> <li>• Create new Network Architecture between Cloud Infrastructure and Warwick Datacenter</li> </ul>

- Facilitate collaborative Risk Management and DR workshop
- Review current DR landscape and its utilization
- Changes, Upgrades, Set-up to identify impact on plan and gaps
- Ensure gaps and risks are captured and tracked via business sign-off
- Identify action owners and communicate it to stakeholders

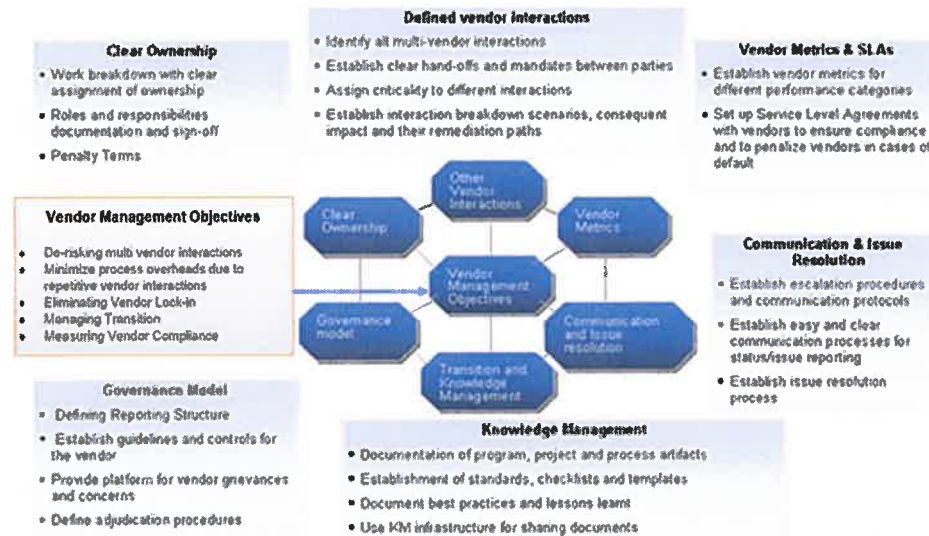
**4.2.11** **What organizational change and communications management processes have you seen employed for a modernized, multi-vendor MES implementation? How would you help support the evolution of the Medicaid Enterprise as a whole?**

**Infosys Response:**

As an organization we pride ourselves on building a framework and having mature processes and methodologies for identifying and handling risk, and managing organizational change and communications management processes. However, there are risk factors that can arise that are not directly in the control of Infosys. These can be categorized into risks that are non-controllable that can be identified, and the more challenging uncontrollable risks that cannot be identified.

We have found that most of the risks that are non-controllable that can be identified are those related to other vendors or to the client itself. To mitigate these external risks, we use a Multivendor Operational Model. At project initiation we develop a responsibility assignment matrix that aids in transparency of roles and responsibilities in multi-vendor engagements. The RACI (Responsible, Accountable, Consulted and Informed) matrix is a way to ensure a seamless collaborative working environment when multiple stakeholders are involved by describing the participation and roles in completing deliverables for the project.

The complexities and the associated risks can then be identified and mitigated through a strong vendor management process and well-defined framework as depicted below:



**Figure 5. Infosys Vendor Management Framework**

Through experience with the vendor management framework we have learned the following best practices to minimize risks and dependencies due to multi-vendor scenarios by utilizing PMO to:

- Provide Account Governance
- Resolve issues that arise out of dependencies of responsibilities between vendors

- Supervise and oversee the performance of the account from a multi-vendor perspective
- Conduct detailed operations reviews that include key projects being worked across multiple vendors
- Strong Governance Structure that extends multiple levels of touch points for 3rd party vendors to enable efficient end to end service delivery
- Align strategies with 3rd party vendors using joint strategy planning sessions to align with overall Business and IT strategy
- Align roles and responsibilities by clearly defining protocols for all the touch points with 3rd party vendors
- Align architectural strategies and technical solution using joint architectural forums
- Governance Structure that is aimed at Integrating with Client and Client’s suppliers
- Communication – Regular reporting of service levels
- Project work – Involvement from Client and Client’s suppliers is critical to success and all projects will be designed and implemented with cross party involvement across all stages of the project life

**4.2.12** How does a multi-vendor environment change how you manage your own Design, Development, and Implementation (DDI) work? How should dependencies be identified, negotiated, and implemented in a multi-vendor environment?

**Infosys Response:**

Team Infosys has proven experience in organizing all the project plans in multivendor engagements in a manner that provides accurate and verifiable updates.

Team Infosys will utilize its project management approach that has been developed and refined through years of real-world project experience gained on system integration and other transformation programs. Our framework is compliant with the Project Management Institute’s (PMI’s) Project Management Body of Knowledge (PMBOK) and enhanced through sources such as Meta Group, Giga, AMR Research, and Gartner. We work to ensure we use current best practices in project management. We will tailor and align methodologies with MITA 3.0 guidelines and work with the State on the desired details. This includes coordinating all timelines that provide an accurate and verifiable project plan.

We recommend utilizing PMO to carry out following governance activities which may help identify, track and negotiate dependencies:

**Table 3. PMO Activities**

#	PMO Activities	Examples of Tools/Processes
1.	<b>Create and Share integrated project plan.</b>	
	<ul style="list-style-type: none"> <li>• Understand Strategy, Portfolio-level schedules</li> <li>• Maintain schedule and key milestones across the program</li> <li>• Identify dependencies, activities and milestones with due dates and dependencies in the project plan</li> <li>• Align the project plan with the scope of the project</li> <li>• Monitor activities and schedule to avoid delays</li> <li>• Identify risks and register in the Project Risk Register; Integrate mitigation strategy into the project plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Governance tool such as, Jira queries, example reports</li> <li>• Product Roadmap, Release Plan Best practices/examples</li> </ul>
2.	<b>Schedule and facilitate project governance meetings and steering committee meetings with all stakeholders.</b>	
	<ul style="list-style-type: none"> <li>• Define meeting cadence and meeting schedule, Publish the information in the form of an online (SharePoint) calendar</li> <li>• Define standing agenda for the governance board meetings</li> <li>• Set up process to collate, review content before it is presented in the governance board meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Gov board presentation templates</li> <li>• Automated meeting minutes generator</li> </ul>



	<ul style="list-style-type: none"> <li>Define guidelines and timelines for sending pre-reads and meeting minutes</li> <li>Organize governance meetings, facilitate meeting proceedings</li> </ul>	<ul style="list-style-type: none"> <li>Automation of messages to track action items</li> </ul>
<b>3.</b>	<b>Perform active risk / issue management to develop mitigation plans and to ensure proper escalation when required</b>	
	<ul style="list-style-type: none"> <li>Define program-level risk management plan, including risk/issue impact levels, risk probability levels, Risk Matrix (e.g. 4x4 matrix)</li> <li>Define guidelines and process to mark items from Issue Log and Risk Register for escalation to governance board (e.g. Manual or automatic flagging of risks for escalation to the governance board based on risk rating)</li> <li>Conduct periodic issues/risk review meetings</li> <li>Develop Risks and Issues Dashboard</li> <li>Identify continuous improvement opportunities (e.g. automated notification for risks, mobility)</li> </ul>	<ul style="list-style-type: none"> <li>Risk dashboard designs</li> <li>JIRA Queries</li> <li>Automation of processes related to risks (e.g. system notifications for risks nearing target closure date)</li> </ul>
<b>4.</b>	<b>Provide project organization charts with well-defined roles and points of escalation</b>	
	<ul style="list-style-type: none"> <li>Define organization chart</li> <li>Indicate various aspects (e.g. Business/IT, resource location, resource type (employee/contractor))</li> <li>Define roles and responsibilities</li> <li>Ensure the structure has 'accountable' roles and escalation points</li> <li>Ensure that organization chart is continuously updated throughout the program duration</li> </ul>	<ul style="list-style-type: none"> <li>Template and examples of organization charts from previous implementations</li> </ul>
<b>4.2.13</b>	<p><b>Describe your experience, if any, with collaboration tool(s) such as or equal to Jira®, Confluence, and IBM® Rational Team Concert (RTC) or other tools to track items, which include, but are not limited to, project milestones, deliverables, and/or implementation testing. Do you recommend any specific approaches or tool(s) for collaboration in a multi-vendor environment? Does your company prefer using its own collaboration tool(s) to support an implementation, or do you prefer using collaboration tool(s) provided by a state and/or a systems integrator (SI)?</b></p>	

**Infosys Response:**

Given our vast experience in supporting project delivery through PMO services, we have extensive knowledge of various project management tools across multiple project delivery methodologies. Some examples of these activities and tools are listed in the table below:

**Table 4. PMO Activities and Tools**

#	PMO Activities	Tools
<b>1</b>	<b>Provide and maintain tools to manage the workflows which support the project governance</b>	
	<ul style="list-style-type: none"> <li>Review as-is processes and content structure for tools associated with governance (ServiceNow, JIRA) and identify gaps/changes with respect to the to-be governance and program organization</li> <li>Define to-be processes ServiceNow and JIRA, including process for intake of new items, review and approval of new items</li> </ul>	<ul style="list-style-type: none"> <li>Best practices for ServiceNow and JIRA set up</li> <li>Best practices and examples of product backlog set up: JIRA hierarchy</li> <li>Examples ServiceNow workflows, approval matrix</li> <li>Repository of JIRA queries</li> </ul>

	<ul style="list-style-type: none"> <li>• Define processes for different types of changes (e.g. normal, standard, emergency) and associated with decision framework</li> <li>• Build dashboards, SharePoint views, integration (e.g. PowerBI) as required</li> <li>• Develop JIRA hygiene reports to measure quality of data/deliverables (e.g. Completeness, Currency, % complete, Trends of tickets, Mandatory fields population)</li> <li>• Explore opportunities to automate (e.g. ServiceNow-JIRA integration)</li> </ul>	<ul style="list-style-type: none"> <li>• Examples of dashboards, reports from JIRA and ServiceNow</li> <li>• Automation opportunities based on experience</li> </ul>
<p><b>2 Administration and maintenance of tools utilized to support the PMO function</b></p>		
	<ul style="list-style-type: none"> <li>• Define the tools to be used as “formal” tools for various aspects of project management (e.g. IT Service Management-ServiceNow, Content Management-SharePoint, DevOps practices and scrum – JIRA)</li> <li>• Identify Business and IT tags for each tool for decision making (e.g. upgrade, maintenance)</li> <li>• Define administration and maintenance guidelines for all the tools from process, data and technology perspectives</li> <li>• Define admin and maintenance schedule</li> <li>• Define Communication Plan associated with administration and maintenance of the tools associated with PMO</li> <li>• Identify opportunities to make the tools better (e.g. Upgrade to the latest version which offers new functionalities, integration opportunities, mobility)</li> </ul>	<ul style="list-style-type: none"> <li>• Best practices related to administration and maintenance of PMO function tools (e.g. JIRA, ServiceNow, SharePoint)</li> </ul>
<p><b>4.2.14</b></p>	<p><b>What roles and responsibilities have you seen for a system integrator (SI) in a modular systems environment? Was this role fulfilled by a separate vendor, incorporated with other services, or performed by the state Medicaid agency itself? What are the key success factors and risks to success related to using a SI?</b></p>	
<p><b>Infosys Response:</b></p> <p>An SI serves in both advisory and delivery roles. Depending on your organization’s size, in-house expertise and other needs, an SI can advise you on strategic technology planning, perform custom application development, implementation services, and deliver system integration and/or support. A good SI will tailor its services around the size and needs of your organization.</p> <p>A system integrator will provide the implementation and integration services and, if needed, custom development. Implementations may require several vendors and partners, and an SI can facilitate the coordination of all the third-party actors, increasing the efficiency of the project and freeing up your team to work on mission-critical tasks rather than coordinating work efforts and tracking timelines.</p> <p>Team Infosys has the necessary infrastructure providing project resources necessary support 24/7/365 days per year from one its integration hubs for the project. The hub’s operations facility will provide the infrastructure necessary to support all required SI project functions.</p>		
<p><b>4.2.15</b></p>	<p><b>Describe your depth, breadth, and frequency recommendations for performing periodic vulnerability scans of production and development environments?</b></p>	



**Infosys Response:**

The scope of the Vulnerability Assessment service includes all IT assets that are connected to the MES network. Vulnerability Assessments is performed in two formats:

- **External Vulnerability Assessment:** Performed remotely with no internal access provided to the SOC team. The goal of this test is to identify and classify the weaknesses of the internet-facing IT assets such as Web applications, web servers, network endpoints, VPN, and e-mail, chat, IVR servers. This test helps to learn what external IT assets need security controls, patches, and general hardening.
- **Internal Vulnerability Assessment:** Performed from within the premises, usually to identify and classify threats and weaknesses in the internal network. It helps to determine the compliance to global or local policies, standards and procedures in terms of information security, data protection and segmentation of networks.

Overall, Infosys performs vulnerability scanning at least once per quarter. Quarterly vulnerability scans tend to identify any major security gaps that need to be assessed, but depending on MES organizational needs, scans can be performed monthly on the Production environment or even weekly to the Development environment. Mostly vulnerability scanning frequency is determined by the following parameters:

**1. Compliance Framework**

Many compliance standards include requirements for regular vulnerability scanning. Some standards require a higher frequency of vulnerability scanning than others. MES architecture has a combination of these compliance and regulatory standards requirements for vulnerability scanning:

- **ISO 27001:** Requires quarterly external and internal vulnerability scans
- **HIPAA:** Requires a thorough risk assessment and vulnerability process, which can be identified with vulnerability scanning
- **PCI DSS:** Requires quarterly external and internal scans conducted by an ASV (Approved Scanning Vendor)
- **FISMA:** Requires documentation and implementation of a vulnerability program to protect the availability, confidentiality, and integrity of IT systems
- **NIST:** Requires either quarterly or monthly vulnerability scans depending on the particular NIST framework (8001-171, 800-53, etc.)

**2. Major Infrastructural and Other Changes**

Infrastructural changes, software changes, and deployment of patches may create new risks and disrupt the security posture. It is suggested to conduct vulnerability scanning after any major infrastructural and other changes to the systems/ application/ IT architecture.

**3. Agility**

In case of Third party Vendors and Associated service providers often make changes in their IT architecture, systems, and applications. Few of the known changes include, Deployment of new code, changes in the security configurations and when new vulnerabilities potentially affecting the system/applications are identified and reported.

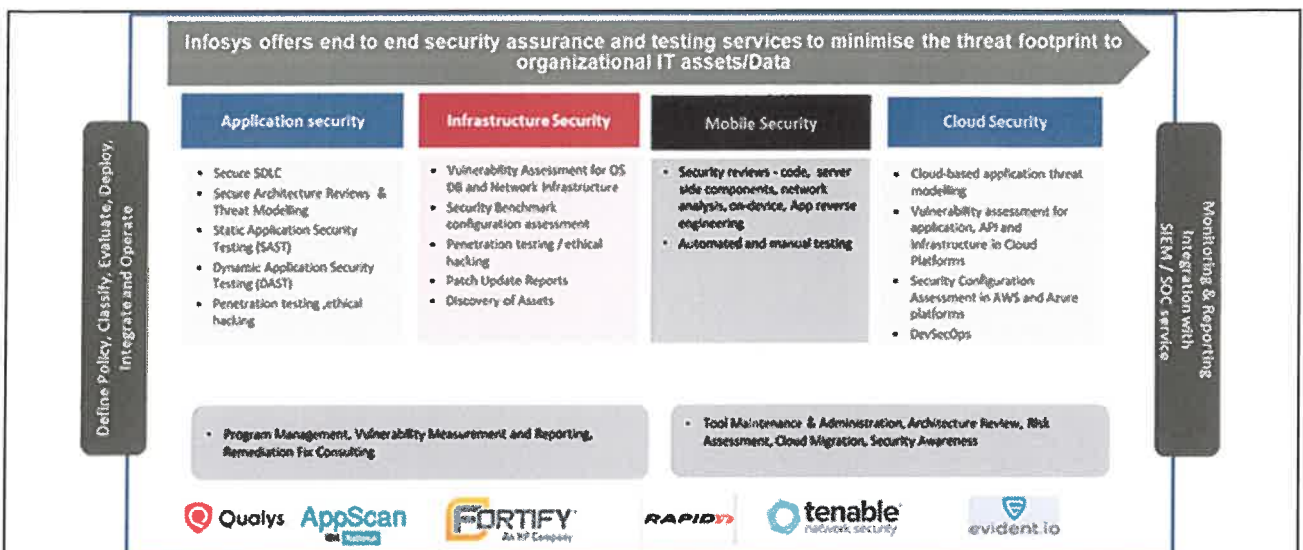


Figure 6. Infosys Security Assessment Framework

**4.2.16 What processes, techniques, and solutions does your organization consider critical for delivering optimal data sharing throughout the MES?**

**Infosys Response:**

It is critical for development teams within the Medicaid Data solution and other downstream systems such as modules to have access to data feeds that are as close to production data as possible. Only data that is required by the recipient should be provided. Techniques such as redaction, de-identification, and element-level security should be used to facilitate data sharing.

These techniques have allowed our customers to be able to provide data that has been cleansed of Protected Health Information (PHI) and Personally Identifiable Information (PII). The data can be replaced with valid values allowing for development teams to test with “production like” data without having to deal with PII and PHI.

When sharing actual production data it's important to ensure its security and to track what data was shared and to whom it was shared.

We have seen a number of approaches and techniques that facilitate data sharing in a MDL, and data sharing generally.

- Use Data APIs (typically RESTful with JSON data payloads) to standardize data interchange, and decouple components. APIs are easily documented (e.g. using the OpenAPI spec), can be standardized across the enterprise, and can be versioned, discovered and managed by API gateways and other technology. As a standard technology they are familiar to developers and can usually be consumed by various components. Exposing MDL data primarily via APIs is consistent with a servicesbased approach.
  - Note that some systems will use only business APIs, with direct database access and tight coupling to underlying data formats and stored. This is not at all what we mean here – it is critical to have data APIs served directly from the Data Hub and MDL to avoid tight coupling to data formats and expensive relational-JSON mapping layers.
- “Data First” development: define data and implement the Data Hub and MDL aspects early. To standardize, it is important to define a good model that will work well for all data consumers. This is much easier if done early on, and not as part of (or even concurrent with) the first MMIS modules or systems that are integrated. Starting early allows the State to stand up a team to think through and standardize APIs and interchange formats while considering the big picture for Medicaid and State future needs. As noted elsewhere in this response, we support basing the enterprise standard model on

FHIR. Data dictionaries, documentation and industry expertise standardized in FHIR can be leveraged even if the persistent model is slightly different from fully-compliant FHIR. Conversion to true FHIR for interoperability is then easy even as the persistent layer is customized for other needs.

- Early focus on data processing also provides data access and APIs early on to drive module development, and even to drive module evaluation during procurement.
- FHIR supports JSON, XML and RDF interchange, but we recommend using JSON, due to the ubiquity and simplicity of that format, to drive greater and easier sharing via RESTful APIs.
- We recommend direct NoSQL (non-relational) storage of the JSON messages in the Data Hub data store. MarkLogic is an ideal technology to use here, as it natively augments JSON data with RDF and SQL data for storage. RDF is useful because JSON data is tree-structured, and it must be augmented with “graph” linkages such as RDF provides – this helps with “graph-y” data such as provider networks, family structures and other relationships that are not purely tree-based. RDF is a W3C standard for rich graph relationship data. MarkLogic adds SQL projections to provide a convenient interface for typical reporting and BI tools, as well as some data interchange tools while still enjoying benefits of a NoSQL storage approach.
- Fresh, timely data improves data sharing by making data more actionable. Therefore, move processing toward real-time to the extent possible. MarkLogic’s open-source “State Machine” processing framework is ideal for this, using data-oriented events and conditions to run data through required transforms, validations and modifications as it flows into and through a Data Hub.
- Combine operational and analytic systems into one system, to avoid complexity. MarkLogic has built-in technology to support this (Template Driven Extraction creates transactionally up-to-date SQL views of all JSON data such as FHIR records), and we find this greatly facilitates data access and sharing because:
  - Combined analytic and operational data storage allows real-time reporting to be the default, rather than an add-on or proprietary approach.
  - Combining them reduces barriers to access and delays by eliminating complex and slow re-modeling of the operational data into a dimensional EDW model for analytics. It also avoids the issues and delays inherent in data movement jobs, monitoring, DevOps provisioning. Also combining them avoids additional technology components, additional vendor management, additional monitoring, and additional security compliance overhead of a separate EDW component.
- Paradoxically, strong security enhances and enables data sharing. Therefore, build in security at the Data Hub and database level. The reason security enhances sharing is that a person cannot access a data store at all if that data store (database) contains un-secured data they should not have access to. (E.g. adding a bank account number to a database without RBAC or similar controls immediately means nobody without financial data access can use that database directly). To facilitate this, the Data Hub database should support
  - Role-based security (RBAC)
  - Attribute-level (field-level) security
  - Query-based security (QBAC, or query-based access control, allowing complex conditions to enforce security)
  - Universal security enforcement regardless of access pattern. API-based access, file exports, and SQL views should all respect the same, universal, declarative security policy.
- Build a capability to produce and manage De-identified data into the MDL
  - Much as how good security actually facilitates data sharing (see above), data sharing also sometimes requires de-identification of the data, per the HIPAA rule and guided by NIST 800-122.
  - Use Limited Data Sets for testing and procurement. True “de-identification” per the HIPAA rule is often difficult for highly-dimensional data (because the combination of various data values can technically identify a person), and therefore the production of Limited Data Sets per the HIPAA rule is often needed. Limited Data Sets require removal or masking (or randomization or other

obfuscation) of a set of clear identifiable information such as name, address, and ID numbers, but allow certain data such as dates and diagnoses to be left in place.

- Produce de-identified or Limited data sets with a particular “purpose” in mind – think “fit for purpose” when sharing data. How much, and how fully de-identified is required? One purpose – statistical analyses for population health – requires diagnoses and population demographics to remain intact, but MMIS module software testing requires completely different data to remain the same to exercise module business logic.
- Declarative configuration for de-identification and Limited Data Set production. We have found that declarative de-identification configurations are more governable because they are understandable by the data and security experts, who are often not coders, and declarative artifacts can be tracked and versioned more easily than scripts or routines written in python or Java code that implement de-identification via coding.

- Robust, multi-model data storage and query. Consider all types of data access, including future access. Initial uses are often simple access using simple queries, but ultimately full-text search, graph analyses and binary handling are all likely to be needed. E.g. processing a claim may only require simple, structured data queries for enrollment status and third-party liability checks. However, finding a provider may require text name search together with geospatial proximity query and graph analysis to determine the participation of the providers via their networks. A “no wrong door” social services support capability requires a graph-based query of the family and non-family relationship structure. Handling all types of data in this way requires “multi-model” storage and processing, or requires that the systems integrator cobble together a collection of multiple databases of different types (document store, relational, graph database, search engine, binary data store, and geospatial query tool). Choosing a multi-model storage technology up front reduces cost in the out years and avoids building a brittle, non-portable environment

**4.2.17 What standards and practices would you recommend with regards to key data governance, master data management, data stewardship, and data-sharing concerns? What approaches do you recommend for engaging business data owners separately from technical data system managers?**

**Infosys Response:**

Data Stewards need to have access to the data. Data stewards should be involved in the mapping of the data from the source systems to the canonical model. As well as the mastering of the data to create a 360 view of the data. Its recommended to have technology that gives the Data stewards the ability to own the modeling, mapping, and mastering of the data.

Some mappings and mastering may require complex implementation beyond the skills set of the Data stewards. Data stewards should interact with the technical development team to handle these outlier cases. Data Stewards should not be required to ensure the systems are running. The systems should generally handle operations themselves. The technical data system managers should handle any case of manual intervention.

The Medicaid Data solution has to deal with many different data types and processes. There will inevitably be different Data Stewards of the different data types and processes. It is recommended to allow the Data Stewards to only have access to the data that they are stewards over.

We recommend ensuring the safe sharing of data through the use of a strong data security posture. When data is secured, with access provisioned to users with appropriate credentials, this helps to ensure the safe sharing of data. Striking the right balance between security and accessibility can be a challenging policy exercise to undertake, making this primarily a business challenge than a technical challenge.

A technical strategy that can be employed to help ease this burden is to create custom data sharing API’s whose only purpose is to make shared data accessible to those authorized to see it. While the same data security policy can govern the data itself, it can be helpful to separate “shared data” access points from “production data” access points.

<b>4.2.18</b>	<b>Describe your company’s current roles and responsibilities as a fiscal agent, if applicable, in a modular systems environment. Describe how you coordinate with other vendors to incorporate their services in a modular systems environment. What are the key success factors and risks for separating Fiscal Intermediary functions from technical functions?</b>
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***Infosys Response:***

Our current role within State MES projects is that of system integrator, we are not currently involved in the role of fiscal agent.

<b>4.2.19</b>	<b>Describe the division of responsibilities on successful projects, in relation to a multi- vendor environment, between vendor and subcontractor Project or Portfolio Management Offices (PMO), and an Enterprise PMO provided by either BMS or a separate vendor?</b>
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***Infosys Response:***

Allocation of responsibilities and unequivocal definition of key tasks will promote an overall MES solution of the highest quality and with minimal risk. Based on our extensive experience in operating in a multi-vendor / multi-partner environment, we will arrive at a detailed responsibility assignment (RACI) matrix as part of the project initiation. The RACI matrix confirms a seamless collaborative working environment when multiple stakeholders are involved by describing the participation and roles in tracking, managing, and reporting on integration requests. For this engagement we will leverage our Multi-vendor Operational Model and tailor it for all integration activities.

We will facilitate the system integration configuration functions using a Role/ Responsibility/ Accountability framework that is agreed between all parties that provides:

- Scope Clarity
- Well defined processes for documentation management, master plan control, status communication and health checks
- Regular meetings facilitated by client middle management to address all risks of all vendor integration or interface issues

The complexities and the associated risks should be mitigated through a strong vendor management process and well-defined framework. This includes the adherence to applicable change management, configuration management, and incident and release management disciplines. Clear communication channels (status meeting, dashboards, and weekly status report meetings) will keep stakeholders abreast of the status of integration requests.

<b>4.2.20</b>	<b>Describe your recommended approach to addressing the complex relationships between a variety of vendors working on separate parts (or modules) of the overall Medicaid Enterprise System. To what degree do you recommend BMS require these approaches in any RFP(s) it issues?</b>
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***Infosys Response:***

Infosys believes successful multi-vendor management is a critical factor for a large and complex program and it requires a deliberate strategic approach. Infosys will assist the BMS in integrating the various services in scope offered by the multiple vendors as the Multi Sourcing Integrator (MSI) to help meet the end to end SLAs and OLAs.

**Critical Success factors**

- Work towards achieving common goal of providing seamless support to the end users
- Extending support to vendors.
- Maintaining a well-documented communication plan with clear roles and responsibilities.



- Promoting knowledge sharing activities.
- Provide governance framework which provides integrated SLA management considering OLA agreements with the vendors and OEMs.

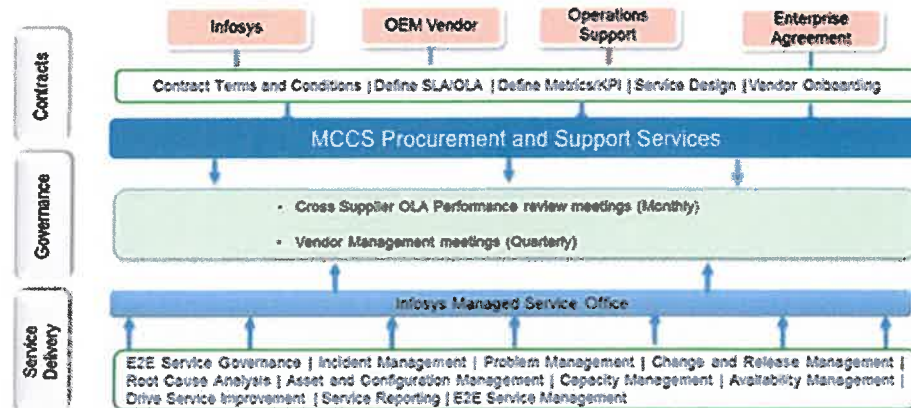


Figure 7. Multi-Vendor Governance

4.2.21	<b>What factors (technologies, development methodologies, frameworks, etc.) would you recommend BMS require in an RFP in order to accelerate the DDI of MES modules?</b>
<p><b>Infosys Response:</b></p> <p>Infosys expects BMS to mention at least the following information in the RFP</p> <ul style="list-style-type: none"> <li>• Architectural framework</li> <li>• Preferred SDLC methodology for implementation</li> <li>• Detailed scope of work</li> <li>• Training requirements</li> <li>• Any other specific consideration</li> </ul>	
4.2.22	<b>Describe ways you feel BMS should structure an RFP to encourage competition and innovation from Medicaid Enterprise solution bidders.</b>
<p><b>Infosys Response:</b></p> <p>When establishing procurement there are many ways from relying on one system integrator (SI) to having different SIs or RFPs for each module. We have found States to be more successful with having different RFPs for each module and a separate one for the SI. Often when states go down this route the SI is excluded from bidding on other modules. When having different RFPs it's important to have a vehicle to source development teams that can implement connectors between the different modules. It is also recommended to set up a center of excellence for the MES Project to reduce risk and ensure the technology is being implemented correctly.</p>	
4.2.23	<b>What recommendations do you have for establishing procurement and implementation timelines that help deliver value sooner, reduce risk, maximize Federal Financial Participation (FFP), and achieve Outcomes-Based Certification or Streamlined Modular Certification,?</b>
<p><b>Infosys Response:</b></p> <p>We will not be providing a response to this question, at this point.</p>	
4.2.24	<b>Describe the major trends in your Medicaid Enterprise solution category that you believe BMS should be aware of, including any product or approach changes that you believe will come to market within the next 12 – 24 months. How do your Medicaid Enterprise solution roadmaps</b>

	<b>stay current with such trends? If possible, please be specific regarding how these trends affect Medicaid, WVCHIP, or healthcare IT in West Virginia.</b>
<p><b>Infosys Response:</b></p> <p>We will not be providing a response to this question, at this point.</p>	
<b>4.2.25</b>	<b>Identify any innovations in your Medicaid Enterprise solution for addressing Medicaid Business Priorities (cost savings, performance efficiencies, improved care outcomes, etc.).</b>
<p><b>Infosys Response:</b></p> <p>Innovation in healthcare is one of the highest global strategic priorities for Infosys. We are committed to align with MES's vision and aims to bring innovation in the space of data analytics blended with healthcare domain competency, and our focus is on providing MES with cutting-edge insights into their members and providers to improve engagement, uncover opportunities for performance improvement, and ultimately to enhance quality, outcomes and control costs.</p> <p>The Infosys Health Insights platform is a next generation data science solution. The solution make creative use of clinical and non-clinical data elements &amp; niche data science techniques to create a 360 degree of members, pinpoint opportunities for engagement, create segmentation, perform member behavioral and economic analysis, risk stratification, monitor provider performance in relation to cost, quality, integrity and efficiency and help enable the optimal interventions strategies for targeting the right members using the right communications channel at the right time as well as drive clinical &amp; financial outcomes.</p> <p>The solution is delivered by a robust, agile team (comprising of Doctors (MD), Data Scientists, PhDs, Healthcare SMEs) with advanced population health, MES knowledge and clinical, cost of care, quality management analytics-led high-performance engineers leveraging niche data science technologies and tools.</p> <ul style="list-style-type: none"> <li>• Comprehensive approach to data driven intelligence: <ul style="list-style-type: none"> <li>○ Increased speed to value and productivity gains enabled through driverless, end to end multi-modal data management- that makes SMA staff members focus on member health rather than on data collection, management and processing</li> <li>○ Next Best Action oriented- delivers actionable insights for consumption by operational apps/downstream systems</li> <li>○ Out of the box, support for various advanced machine learning techniques for automated and rapid predictive model development and deployment, democratizing the use of data analytics within enterprise and simultaneously reducing the dependencies/freeing up the data scientist time</li> <li>○ Enabled with governance to drive responsible AI model creation and through explainability that helps to get rid of any biased outcomes</li> <li>○ Supports self-service, creation of purpose-built dashboards, visualizations and search within the user interface leveraging Natural language processing</li> <li>○ Enables the use of Social Determinants of Health (SDOH) driven care attributes (100+ SDOH care composites) to support even more personalized population healthcare navigation so members, case managers are empowered to understand and navigate care process, and make the right decisions about next steps</li> </ul> </li> <li>• Supports scale and agile data transformation: <ul style="list-style-type: none"> <li>○ As-Is data integration (irrespective of type, format, structure) with no upfront data modeling need</li> <li>○ Brings semantics capabilities which is a W3C standard for "web of linked data" represented in RDF (resource descriptive format) triples. This helps with automated data mapping to CPT/HCPCS files, ICD10 files and grouper (e.g., DRG, ETG, ERG) risk score classifications, NDC and other non-claims-based data sources, etc., for data enhancements.</li> <li>○ Provides an in-built entity modeling capability to define the entities and relationship the context of the business.</li> <li>○ Comprehensive data harmonization with match &amp; merge of the Provider, Member data across disparate datasets based on the weightage-based match criteria and custom thresholds on attributes</li> </ul> </li> </ul>	

- (e.g., name, gender, address, phone number, DOB, specialty/subspecialties, degree, affiliations, NPI, EIN/Tax ID and SSN like attributes) and assigns unique identifier to create a provider master directory and master patient index, respectively.
- In-built data governance driven by meta data management, lineage, catalogue and glossary functions
- API first approach and FHIR compatibility to support cross agency data exchange & interoperability
- Easy retrieval of data without the need for multiple query/extract tools.
- In-built data pipeline monitory observatory and data quality check
- Driven by automation and DevOps across the data management and analytics lifecycle
- “NOT a BLACK BOX”, “container managed”, delivered as “analytics in a box” to enable faster deployment, easy end user handling

Our solution will enable MES to drive innovation on care management, member prioritization and outreach planning, provider performance evaluation, monitoring fraud, waste and abuse, enabling claims and cost saving operations, drive quality care and ultimately enrich overall population/member health experience.

The solution was chosen as one of the top finalists in the ACT-IAC 2020 Innovation Awards (from 140 nominations) and has received recognition from top industry analysts' firms.

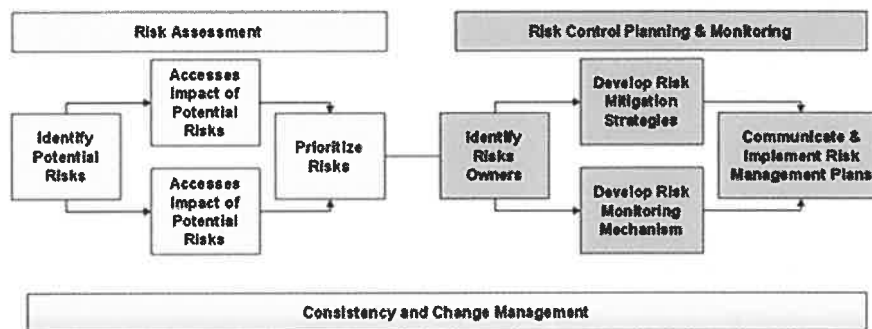
**4.2.26 Identify any innovations in your Medicaid Enterprise solution for addressing technical risk management.**

**Infosys Response:**

Technical risk management is incorporated into our risk management framework when our solutions are implemented and delivered. We have a well-defined risk management process that provides a disciplined environment for proactive decision-making to:

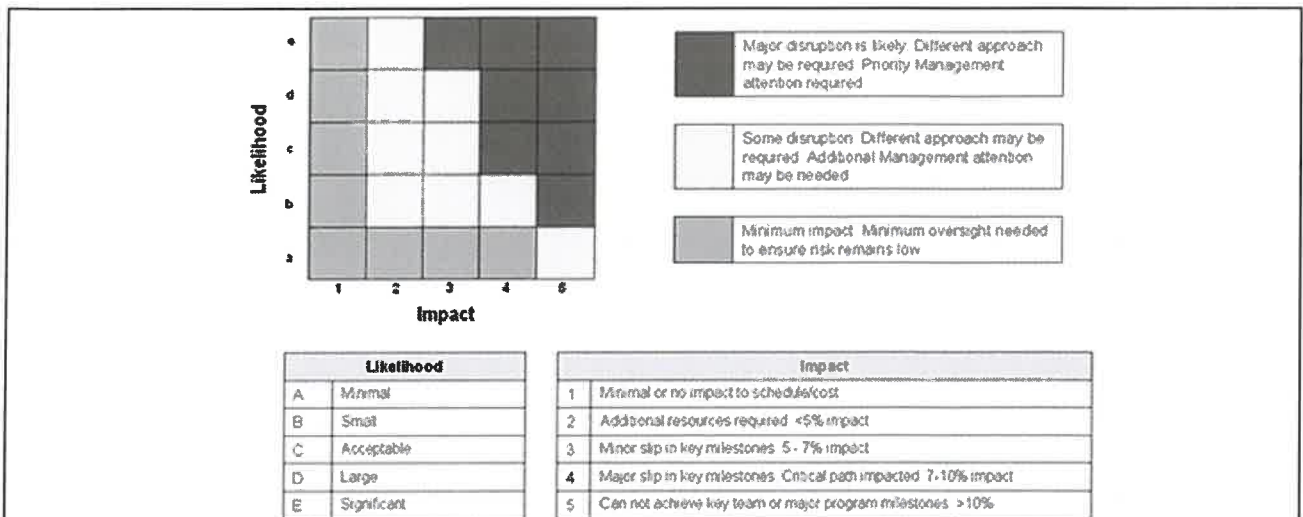
- Assess continuously what can go wrong (risks identification)
- Determine what risks are important to deal with (severity analysis)
- Implement strategies to deal with those risks (mitigation planning)

The overview of the risk management process is given below:



**Figure 8. Risk Identification and Control Process**

The following picture shows the framework used to prioritize risks:



**Figure 9. Risk Identification and Mitigation Framework**

Detailed risk identification, monitoring and mitigation plan is put together as part of all our engagements. This will encapsulate the risks (measured for their impact & severity) faced by the project at any point in time as well as the steps identified to mitigate those risks. The status of risks is continuously tracked/reviewed in IPM+ (Infosys integrated project management system).

While the Risk Management Plan is dynamic in nature and is continuously updated to reflect new realities, a list of some of the risks that could potentially impact the project have been listed below based upon some of the experiences and learning we have collected from other, similar, engagements, as well as our understanding of West Virginia’s environment landscape based on this RFI.

**Table 5. Risk and Mitigation**

Category	Potential Risk	Exposure		Mitigation Plan	Impact
		Probability	Impact		
Technology & Architecture	During the design and development window there could be scope creep due to new requirements to meet business scenarios	Medium	High	<ul style="list-style-type: none"> <li>Follow the defined Change Management process</li> <li>Estimate and staff new requirements on approval of change request</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> <li>Schedule</li> </ul>
Rollout	Schedule delay due to unknown / unplanned issues during rollout	Medium	High	<ul style="list-style-type: none"> <li>Rollout process includes a readiness check at least 3 weeks before the rollout</li> <li>Continuous updates on rollout progress, readiness, issues arising out of dependencies will be tracked and monitored through rollout portal</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> <li>Schedule</li> </ul>

Operation	Sudden spike of support requests	Medium	High	<ul style="list-style-type: none"> <li>Proactive demand planning exercise ahead of launch of any new services, implementation of new services.</li> <li>Utilization of higher skill resources, enhancement team in support activity and ensure business continuity.</li> <li>Possible reprioritization of enhancement team and involve them in high-priority issue resolution</li> </ul>	<ul style="list-style-type: none"> <li>Quality</li> </ul>
Infrastructure	Loss of Connectivity between Infosys Data Center and State	Medium	High	<ul style="list-style-type: none"> <li>Well backed-up Infosys WAN backbone to be used for establishing connectivity between Infosys hub and offshore location</li> <li>Build in redundancy at possible points of failure</li> <li>Detailed DR strategy to address contingency</li> </ul>	<ul style="list-style-type: none"> <li>Schedule</li> </ul>
Infrastructure	As the design of the application has not been finalized, the infrastructure hosting and bill of material might change during the design phase.	Medium	High	<ul style="list-style-type: none"> <li>Revisit the infrastructure design and hosting requirements based on the finalized design</li> <li>Follow the defined Change Management process</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>
Disaster Recovery	Availability of infrastructure in case of disaster	Medium	High	<ul style="list-style-type: none"> <li>Infosys will ensure minimum disruption of connectivity and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Schedule</li> </ul>



				availability by building a robust DR and business continuity plan.	
Data Security	Any security breach and theft of data can lead to federal liability.	Low	High	<ul style="list-style-type: none"> <li>Data security &amp; confidentiality agreement will be signed with Hosting Service Provider</li> <li>Infosys has documented policies and procedures to prevent data tampering, maintaining confidentiality and adhering to client company policies. Infosys has in place sufficient controls to protect the confidentiality of data</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>

**4.2.27 Describe 1 to 3 use cases where innovations in your Medicaid Enterprise solution would apply and the value your Medicaid Enterprise solution would add when applied to them.**

*Infosys Response:*

**1. Use case- Enable a “Responsible AI framework” to bring model explain ability and data analytics for public good-**

Majority of the healthcare AI models developed lead to unwittingly targeted or disadvantaged specific portions of our constituencies—and outcomes are largely found to be unethical, inequitable, discriminatory and worse. To get rid of this unwanted bias, Infosys aims to empower government healthcare agencies, SMAs and their leadership to make use of AI more judiciously to enhance human decision making with rationale and by appropriate use of diversity, equity, and inclusion. Within our IHIP solution we are building a Responsible AI governance framework that will help with regular reviews, interpretation of ethical norms, transparency to the process, lineage and provenance, use of correct tools and balanced data sets, and a plan for potential lapses, etc. Through this innovation, MES before attempting to scale on AI & data science use for larger population health management will be able to establish a pre- and post-mortem process to ensure that AI is used responsibly. The predictions from AI/ML models will in-turn be fair and their derived insights (member risk analysis, provider attribution, cost trending, mental and behavioral health risk, opioid analytics, etc.), and consequently the actions, will less likely lead to any unintended consequences related to gender, age, race, ethnicity like sensitive attributes, and ensure equity, integrity, fairness and social justice through analytics driven action points for the communities that they are designed to help.

**2. Use case- “Data Marketplace” for MES data democratization and monetization-**

For MES to continue operating at the necessary speed, they will need to move toward more significant implementation of data democratization. An ability for data to be aggregated managed, shared and analyzed

through an online transactional store like Amazon, such that anyone in an organization can access and understand the necessary data related to their specific role and execute varied healthcare analytics use cases with higher performance and productivity. The Infosys IHIP solution delivers a data marketplace portal that is developed leveraging the advanced data engineering, data interoperability, self-service data management, functions for MES to better aggregate data from cross agencies, inter-department, publish and share wide variety of curated data under appropriate security and compliance to empower stakeholders explore them to innovate operations to benefit their constituents. All data assets like reports, datasets, data sources that are approved by respective data owners through the data cataloging tool can be exposed via the data marketplace portal for further exploration purposes. The data marketplace portal will help MES to share data with both external and internal stakeholders in an efficient way and make information boundaryless.

**3. Use case- Govt. AI solution based on Deep, Complex Language Models**

With over 175 billion parameters in its GPT-3 version, GPT language models are the largest in existence. And with their ability to generate state-of-the-art, human-like text, these powerful models are transforming the world of text-based AI (NLP & NLU). To enhance constituent experiences and engagement while accelerating innovation, we are working in expanding our IHIP solution to help SMAs tap into the innovation in this space of language computation and modeling and provide access to the pre-trained deep language AI models developed on crowdsourcing data, social media interactions, unstructured scripts etc. to derive various AI solutions towards better member engagement and increased operational performance, e.g. member sentiment, emotion analysis, multi-lingual virtual assistants/chat bots, language conversion, fraud analytics, etc.

**Proven MMIS Modernization Success**

Around the US, states are successfully transforming Medicaid services with MarkLogic.

- **MMIS replacement to improve health services for 800,000 beneficiaries:** A southwestern US state Human Services Department (HSD) selected MarkLogic to drive transformation in the data processing core of their MES systems.
- **Improved Medicaid eligibility and claims processing:** In just 120-days, this southeastern state’s Department of Health and Human Services (DHHS) configured the core of their Medicaid Enterprise System (MES) to streamline processing and serve as the foundation for a series of new modules that have since been built out and integrated, including administrative services (AS), claims processing, third party liability and others.
- **Modernizing MMIS in the cloud:** A state department of community health is building their future MMIS using MarkLogic as the ODS and Master Data Management solution on the AWS Cloud. MarkLogic was chosen due to its proven success with other state health departments, robust product features and strong solutions engineering capabilities. The first phase involved data consolidation and analysis, and future plans include extending the Medicaid data to support case management and a variety of human services.

4.2.28

**In the states where you have implemented, what have been some of the higher value outcomes? What performance metrics were you able to provide to substantiate this success?**

*Infosys Response:*

MarkLogic’s outcomes have been expedited time to mission and results using the MarkLogic Data Hub. By way of example, in a southeastern state the initial project stand-up (including all project iterations, data flows, etc) for a use case was stood up in 4 months with one (1) data source. Over the next 30 days thereafter, an additional eight (8) data sources were able to be added to the system

The primary drivers for implementing a MarkLogic Medicaid Data Hub are the following:

- **Accelerate Modernization** - MarkLogic’s Medicaid Data Hub enables data to be integrated and made discoverable up to 4 times faster than with legacy approaches. We recommend building the ODS before individual modules are implemented, which jump-starts data modeling, sharing and governance immediately.

- **Simplified Architecture** – MarkLogic’s Medicaid Data Hub contains a multitude of capabilities traditionally seen several different software technologies. By leveraging MarkLogic, states can realize the cost benefit of not having to perform prolonged systems integration tasks, and instead focus on application and module development activities. Additionally, MarkLogic’s Medicaid Data Hub contains the necessary enterprise features – such as high availability, disaster recovery, government-grade security, ACID transactions – to ensure that states can rely upon to run mission critical systems. The MarkLogic ODS platform eliminates or reduces the need for other systems, such as an enterprise data warehouse or data lakes. The same real-time, service-based architecture in the ODS supports business intelligence and reporting as well, saving hours and complexity otherwise needed to model, copy, transform and manage multiple data stores. MarkLogic natively handles JSON, XML, relational, text and graph data in one platform.
- **Share data safely:** MarkLogic secures data at the data layer. Every query, record and field can be secured using declarative configurations. Every “data lens” from REST query calls to SQL access or even knowledge graph access via RDF respect the unified security configuration in MarkLogic. Test or analytic data exports can be run through de-identification and redaction, to enable data sharing instead of inhibiting it.
- **Enable unified 360° views needed for use outside of Medicaid:** A complete view of members, providers, hospitals and any other important entity supports integrated case management and integrated eligibility and verification for benefits programs like TANF, SNAP, energy subsidies, and even services like behavioral health programs and child welfare provided by other agencies. With MarkLogic Smart Mastering, getting a complete, real-time, person-centric view from disparate data silos – a true golden record – is faster, easier and cheaper.
- **Future-proof your MES** - APIs, REST services, and schema flexibility ensure that your organization can swap out modules or take in new data sources without disrupting the entire enterprise. If the APIs are stable and tested, internal data changes will not break downstream data consumers

**4.2.29 Discuss any experiences you have had integrating your Medicaid Enterprise solution with legacy system management and lessons you have learned for implementing new Medicaid Enterprise solutions. Do you recommend any specific approach for modifying, interfacing with, and managing the legacy system while implementing a new Medicaid Enterprise solution?**

**Infosys Response:**

Infosys was engaged as the prime system integrator for the District of Columbia, initially implementing the District’s Health Benefit Exchange, DC Health Link, and then subsequently modernizing the District’s legacy eligibility system for Federal and local health and social programs for District of Columbia residents known as “District of Columbia Access System (DCAS).

- The first phase included development of Health Exchange to comply with the federal Patient Protection and Affordable Care Act (PPACA). This processing also included hand-offs to legacy programs for which eligibility was determined. For example, if a MAGI determination is deemed ineligible but the member/household has characteristics that may benefit from Traditional Determination (such as a disability) then system referred the application to the legacy Medicaid system.
- The second phase aimed to modernize the District’s complex eligibility and enrolment system for food assistance, cash assistance, and other social services benefit programs.

Infosys configured and customized COTS product for the overall eligibility solution for both Health Exchange and Social Programs. The system simplified access to multiple social programs like Medicaid (a health insurance program for low-income individuals, children, their parents, the elderly and people with disabilities), Food and Cash Assistance for DC residents. Performed data conversion assessing the District’s legacy data, planning for its conversion, and testing with converted data early in the development process.

Business/Process Services for the solution components were exposed via the Oracle ESB, providing a unique and qualified view for all the service consumers (User Interface, Legacy Applications, External systems, etc.).

The integration solution primarily offered the following capabilities to seamlessly integrate the solution system with enterprise applications and partners:

- **Transformation:** This capability translated the data transmitted over the service bus from one format into another format. The integration server support formats like XML, SOAP, iDoc, Tab Delimited data, fixed width messages, EDI formats etc. This helped to transform the request from requestor schema to the services provider schema in case of request/response interaction over the service bus. Similarly, it helped to transform the message payload from the source application format to destination(s) format in case of publish/subscribe interactions. The DC Oracle Suite has healthcare adapters that were leveraged to meet the EDI requirements like HIPAA transactions or carrier transactions.
- **Validation:** The integration server offered a data validation service that examined a message to ensure that the contents adhere to established business rules and metadata.
- **Enrichment:** This capability helped to augment the message payload by adding information from external data sources to ensure completeness of data.
- **Routing:** The integration server offered message content based dynamic routing and rule based static routing capabilities to help route messages to one or more destinations over the service bus.
- **Distribution:** Helped to distribute messages to interested subscribers in a standardized way.
- **Messaging:** Offers the messaging backbone for SOA connectivity that enabled application/ service interaction over a variety of communication protocols.
- **Service Wrapping and Service Invocation:** Integration server helped to expose application access and data distribution as service. The integration server also acted as a service broker by invoking services exposed by applications and enabling even non-SOA compliant applications to avail the service.
- **Data Correlation:** Capability to derive complex events from message or event streams by applying data correlation rules for pattern identification and rules that react to pattern discovery.
- **Service Registry:** Provided a common repository for reusable services which enterprise components can search for and use them. It is also an important component for adherence to the Governance principles.
- **Monitoring capabilities:** Provided a rich features for Monitoring of the services and overall health of the System

#### **Data Conversion and Migration**

Infosys used its proven data conversion framework based on ETL scripts and Business Process Objects (BPO) to convert data from ACEDS (legacy system) and other source systems to DCAS system. Using this framework, we achieved a conversion rate of 99.9 % in DCAS.

#### **Lesson Learned**

- Development test data should also include existing old data. To simulate the real production scenario to an extent possible.
- Cross module knowledge sharing should happen regularly
- Environment specific changes must be taken care of before propagating the change to a higher environment

#### **Recommendation**

- Using Agile Methodology is recommended to lower defect rates and decrease development times. The Agile Methodology allows for a phased approach in creating Medicaid Enterprise Systems (MES). The Medicaid Management Information System (MMIS) has many different processes within it. It is recommended to create a plan where implementation schedules and milestones match with processes within MMIS so that these processes can be evaluated and then retired.
- Provision for manual retries for failures in data synchronization
- Incorporate error logging for better traceability
- Choose the integration approach considering the latency permissible between integrating systems. For real-time integrations, the performance and throughput need to be tested at peak loads as part of integration

- Incrementally replacing legacy systems is much easier if the various systems (both modern and legacy) are de-coupled via APIs.
- The solution should be able to handle the security requirements of the Medicaid Data. Such as encryption at rest and in transit.
- The solution should be able to implement the principle of least privilege and be able to only give out data that is required for the user or system that is requesting it.

This project demonstrates Infosys has extensive experience in designing, developing, implementing, enhancing and supporting eligibility systems.

**4.2.30** What staffing levels, including experience and skillset, are typically required to implement your Medicaid Enterprise solution? What are the suggested state Medicaid agency staffing levels to support DDI and ongoing operations? How do these staffing requirements compare to other offerings in your Medicaid Enterprise solution?

*Infosys Response:*

**Table 6. MES SI Contractor Staffing Table**

Project Role	Role Description	Years of Experience	Education / Certifications	Dedicated Full Time Employee (FTE) or FTE %
Account Manager/ Program Manager	<ul style="list-style-type: none"> <li>• Primary point of contact with the State leadership, governance bodies and other State executive sponsors for activities related to contract administration, overall project management and scheduling, correspondence between the State and Infosys, dispute resolution, and status reporting to the State for the duration of the contract</li> <li>• Serve as a liaison between the State and the Infosys team</li> <li>• Available for State requests for consultation and assistance</li> <li>• Responsible for establishing and maintaining a positive client relationship</li> <li>• Provide timely and informed responses to operational and administrative inquiries that arise</li> <li>• Play an active role in day-to-day management of the engagement to be knowledgeable and aware of all issues, concerns, and requirements</li> <li>• Coordinate with the program partner and take overall responsibility for delivery</li> </ul>	Fifteen years of experience	Ten (10) years of experience managing large government accounts and contracts. Significant experience with stakeholder engagement and focused on customer experience.	FTE



<p>Contract / Vendor Performance Manager</p>	<ul style="list-style-type: none"> <li>• Manage Overall Program budget including reconciliation, accruals, invoicing</li> <li>• Manage vendor financials (invoicing, manage cost elements, validation of invoicing)</li> <li>• Manage program business &amp; benefits case</li> <li>• Manage contracts</li> <li>• Track performance against finance targets</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing large service and consulting contracts. Significant experience with stakeholder engagement and focused on customer experience.</p>	<p>FTE</p>
<p>Technical Architect / Consulting Lead</p>	<ul style="list-style-type: none"> <li>• Define and evolve policies and standards to drive a consistent and optimal usage of the database platform</li> <li>• Manage platform configuration change requests</li> <li>• Develop a technology roadmap</li> <li>• Provide inputs in Proof of Concepts (POC) and Proof of Value (POV)</li> </ul>	<p>Fifteen years of experience in this role.</p>	<p>Ten (10) years of experience leading large-scale technology initiatives with significant system integration experience.</p>	<p>FTE</p>
<p>Project Manager</p>	<ul style="list-style-type: none"> <li>• Analyze, model, and report on project financials</li> <li>• Provide project status communication of milestones, achievements, plan, and actuals along with risks and issues</li> <li>• Develop and maintain onboarding/offboarding materials, resource status tracking and resource reporting</li> <li>• Responsible for business process mapping and analysis, and data reconciliation, analysis, and reporting</li> <li>• Manage the professional services provided by the field operations work streams</li> <li>• Provide ad-hoc executive reporting as required</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing a similar project of equal or greater scope.</p>	<p>FTE</p>
<p>Technical Manager/ Technical Lead</p>	<ul style="list-style-type: none"> <li>• Coordinate with team members to prioritize work</li> <li>• Coordinate with project stakeholders, technical teams for troubleshooting and issue resolution</li> <li>• Analyze user issues and guide towards a solution</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing a similar project of equal or greater scope.</p>	<p>FTE</p>

	<ul style="list-style-type: none"> <li>• Involvement in defining/maintaining the coding standards</li> <li>• Code review</li> <li>• Deliver code to different environments</li> <li>• Attend client meetings for providing status</li> <li>• Track progress of ticket resolution.</li> <li>• Provide detailed application knowledge in support of complex application issues/incidents</li> <li>• Review all potential changes (e.g. configuration, warranty fixes, enhancements) from a technical perspective and provide guidance technical design/assessments</li> <li>• Be available to the project team for consultation on future enhancements (e.g. changes to achieve strategic objectives, implement a new program)</li> <li>• Prepare root cause analysis reports and proactive suggestions</li> <li>• Prepare effort estimates and ensure delivery</li> <li>• Maintain support procedures</li> <li>• Coordinate all the technical development effort related to applications</li> <li>• Enforce process adherence</li> <li>• Track SLAs/OLAs</li> </ul>			
<p>Functional Manager/ Functional Lead</p>	<ul style="list-style-type: none"> <li>• Facilitate discussions with business stakeholders on their needs, document these needs.</li> <li>• Provide requirements in traceable form to technical staff for analysis products against user requirements.</li> <li>• Document and decompose user stories and system requirements, develop use cases, workflows, and journey maps, maintain traceability matrices.</li> <li>• Facilitate end user acceptance testing in the field</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing a similar project of equal or greater scope</p>	<p>FTE</p>
<p>Test Manager/ Test Lead</p>	<ul style="list-style-type: none"> <li>• Review test cases, test scripts</li> <li>• Share test results</li> <li>• Generate and report on test reports</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing a similar project</p>	<p>FTE</p>

	<ul style="list-style-type: none"> <li>• Update tickets in the ticket monitoring tool</li> <li>• Support UAT</li> <li>• Be well-versed with ITIL framework, Agile software development, and testing principles used for high quality software development</li> <li>• Provide experience in automated testing of web applications in an agile and continuous delivery environment</li> <li>• Collaborate with Hybrid Agile development teams and act as the single point of contact for guidance for testing needs for the project</li> <li>• Provide expertise in implementing test automation and performance testing</li> <li>• Facilitate automation for continuous integration and regression testing</li> <li>• Facilitate the execution of tests</li> </ul>		of equal or greater scope	
Security Manager	<ul style="list-style-type: none"> <li>• Perform vendor outreach and collaboration</li> <li>• Implement network security, endpoint security, policies, and procedures, evaluate the risk posture of the organization</li> <li>• End-to-end project management per the SaaS model starting from procurement to delivery</li> <li>• Participate meetings to determine requirements for software and for delivering projects in a highly flexible and interactive manner for managing the security aspect of the project</li> </ul>	Fifteen years of experience	Ten (10) years of experience managing a similar project of equal or greater scope	FTE
Release Manager	<ul style="list-style-type: none"> <li>• Maintain, operate, and improve all release management processes</li> <li>• Maintain inventory of hardware and software and include tracking of current version as well as latest available version refreshed quarterly</li> <li>• Maintain the overall project schedule and release runway</li> <li>• Support business programs to enable release planning and to coordinate scope prioritization</li> </ul>	Fifteen years of experience	Ten (10) years of experience managing a similar project of equal or greater scope	FTE

	<ul style="list-style-type: none"> <li>• Maintain release runway</li> <li>• Produce weekly Release Scorecards to track the status of each release</li> <li>• Complete all aspects of release preparation (development, testing)</li> <li>• Complete application release deployments and all associated configurations, data changes, and batches</li> <li>• Complete vendor side post-release validations and monitoring</li> <li>• Manage post-deployment validation communications</li> <li>• Support release materials</li> </ul>			
<p>Infrastructure Manager</p>	<ul style="list-style-type: none"> <li>• Monitor disk space growth, CPU, memory, and alert when necessary</li> <li>• Provide capacity reports on a quarterly basis and maintain hardware software inventory and versioning</li> <li>• Maintain Infrastructure, network, and physical architecture diagrams</li> <li>• Help in annual program level updates for infrastructure updates</li> <li>• Coordinate with State data center lead for data center maintenance and outages</li> <li>• Coordinate with State staff and/or sub-contractors for operations of project hardware/software, internet connectivity, and outages</li> <li>• Perform archiving and purging of files</li> <li>• Maintain and operate process automation activities related to infrastructure system</li> </ul>	<p>Fifteen years of experience</p>	<p>Ten (10) years of experience managing a similar project of equal or greater scope</p>	<p>FTE</p>
<p>Business Analyst</p>	<ul style="list-style-type: none"> <li>• Analyze the operations of a department or functional unit with the purpose of developing a general systems solution to the problem that may or may not require automation</li> <li>• Serve as a liaison among stakeholders to understand the structure, policies, and operations of an organization, and to recommend solutions that enable the organization to achieve its goals</li> </ul>	<p>Ten years of experience</p>	<p>Seven (7) years of experience managing a similar project of equal or greater scope</p>	<p>FTE</p>



	<ul style="list-style-type: none"> <li>• Support initial triage of issues</li> <li>• Review and support bug fixes, test cases/test scripts</li> <li>• Provide strong understanding of the business processes and functionalities</li> <li>• Assist the State in writing unambiguous requirements and setting up priority</li> <li>• Participate in workaround/job aid discussions</li> <li>• Provide required support to system users</li> <li>• Support UAT</li> </ul>			
Developers	<ul style="list-style-type: none"> <li>• Analyze, Code and unit test the application and deliver defect free components</li> <li>• Modify and enhance existing application functionalities, small to medium enhancement; monitor production system and take preventive actions</li> <li>• Maintain documentation like procedure manual and application operations</li> <li>• Proactively identify any issues</li> <li>• Update tickets in the ticket monitoring tool</li> <li>• Preventive maintenance</li> <li>• Job monitoring</li> </ul>	Ten years of experience	Seven (7) years of experience managing a similar project of equal or greater scope	FTE
Testers (QA)	<ul style="list-style-type: none"> <li>• Test bug fix solutions</li> <li>• Write test cases, test scripts</li> <li>• Share test results</li> <li>• Generate test reports</li> <li>• Update tickets in the ticket monitoring tool</li> <li>• Support UAT</li> </ul>	Ten years of experience	Seven (7) years of experience managing a similar project of equal or greater scope	

**Table 7. MES SI Agency and MES PMO Roles and Responsibilities**

Project Role	Responsibilities	% of Time Expected
PMO Director	<ul style="list-style-type: none"> <li>• Manage PMO Office</li> <li>• Provide strategic direction to the program in line with State vision</li> <li>• Provide strategic planning support</li> <li>• Review program progress and approve any change in program scope, schedule and budget</li> <li>• Address program level issues</li> <li>• Ensure collaborative working of all stakeholders</li> <li>• Planning and alignment of performance goals for project team's goals</li> </ul>	50



	<ul style="list-style-type: none"> <li>• Program level decision change control</li> <li>• Manages budget allocations and utilization</li> <li>• Review of key program level risks and mitigation plans</li> </ul>	
Project manager	<ul style="list-style-type: none"> <li>• Act as a liaison between multiple teams</li> <li>• Have project decision approving authority</li> <li>• Review and provide approval on scope, estimations, schedule, cost, and staffing plan.</li> <li>• Provide detailed status of project to PMO</li> </ul>	100
Subject matter expert (SME)	<ul style="list-style-type: none"> <li>• The SME should have knowledge of the business processes, State and Federal Polices</li> <li>• Take part in Joint Application Design</li> <li>• Provide the approval for the Functional design documents</li> <li>• Validate the test results and provide feedback</li> <li>• Take part in system demo and provide feedback</li> </ul>	50
Technical Manager	<ul style="list-style-type: none"> <li>• Provide functional and technical leadership</li> <li>• Conduct code and technical documents review</li> <li>• Validate the test results and provide feedback</li> <li>• Provide approval for moving the solution to next stage.</li> </ul>	100
Operations supervisor	<ul style="list-style-type: none"> <li>• Take part in Joint Application Design</li> <li>• Provide inputs on system usability</li> <li>• Provide approval on Functional design documents</li> <li>• Take part in system demo and provide feedback</li> <li>• Conduct User acceptance testing (UAT)</li> </ul>	25
System End users	<ul style="list-style-type: none"> <li>• Take part in system demo and provide feedback</li> <li>• Conduct User acceptance testing (UAT)</li> <li>• Conduct smoke testing</li> </ul>	25

**4.2.31** Describe the System Development Lifecycle (SDLC) approach that you use for implementing your Medicaid Enterprise solution. Can your SDLC approach be incorporated into an environment that uses a traditional “waterfall” SDLC approach? What about “agile” methodologies to support the implementation of your Medicaid Enterprise solution? If so, how can this be accomplished?

**Infosys Response:**

Using a Hybrid Agile methodology is recommended to lower defect rates, decrease development times and most importantly obtain stakeholder feedback quickly. The Agile methodology allows for a phased approach in creating a Medicaid Enterprise System (MES).

Our go-to approach suited for projects where time to market is of the utmost importance, user needs are changing and there is flexibility in budgetary constraints. Various agile methodologies have evolved mainly to cater to the changing business needs and reducing time-to-market. At Infosys we have an expert in-house agile methodology (InfyAgile) that revolves around closely knit motivated individuals, being flexible to changes, delivering working software frequently and keeping the least amount of process overheads. Below are the highlights of the InfyAgile experience and capabilities.

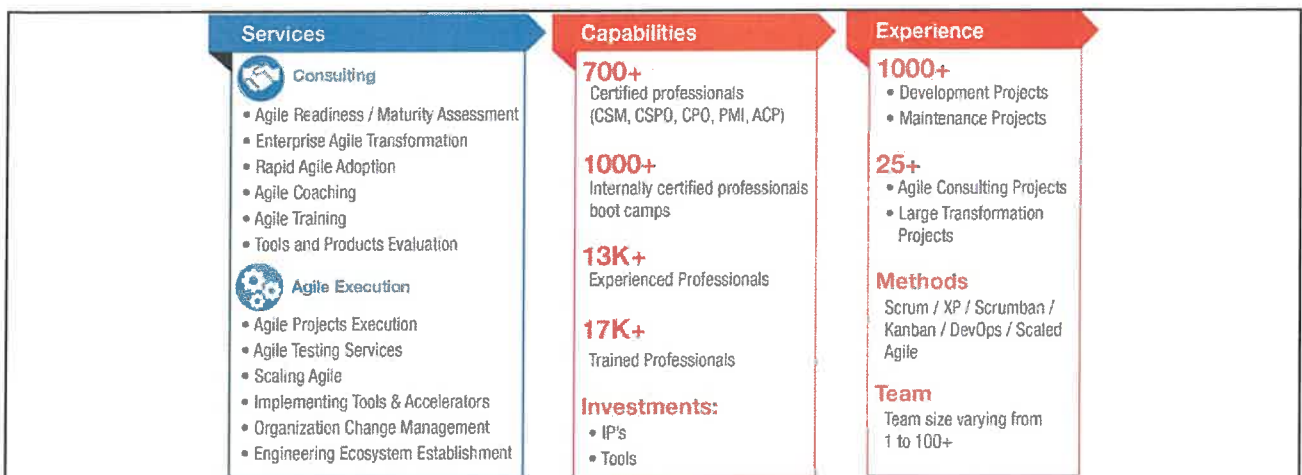


Figure 10. InfyAgile Highlights

Below is an example of phases and activities to utilizing a Hybrid Agile methodology to execute the program and bring in the best industry practices:

**Discover and Co-design Phase:**

1. Creation of Solution Architecture in collaboration with State IT stakeholders to plug feedback loops for a better solution design
2. Iterative solution design with a well laid out requirement gathering phase to clearly identify the requirements and reduce ambiguity. A fit gap analysis is a critical part of this phase.
3. Data migration planning during discovery phase to start the cleansing activity early
4. Involvement of Software Engineers for Architecture review and Solution Modelling discussions

**Configuration & Custom Development through sprints:**

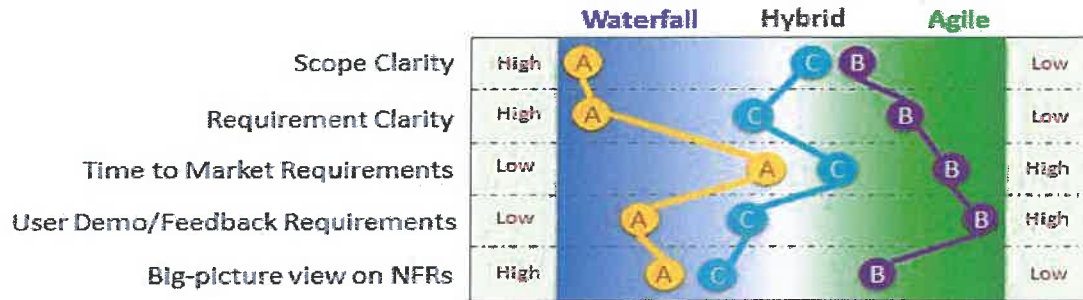
1. Re-use of out-of-the-box entities for to avoid complex data structures and entity relationships. This is the guiding principle we follow in our implementations.
2. Usage of agile methodology for implementation to ensure continuous communication between business, testers, developers and other stakeholders and delivery of functionality.
3. Optimize the number of custom attributes and code
4. No unsupported customizations will be done to ensure that the implemented solution is within the support scope of the COTS product
5. Security and privilege best practices to be applied to ensure only authorized users have access to the required minimal amount of data
6. Show & Tell sessions / demos ('retrospectives') at the end of every sprint to accommodate the feedback in timely manner and get business sign off

**Production Rollout and user adoption:**

1. Incremental phase wise releases to familiarize users with the usage, features, and functionality.
2. Train-the-trainer workshops for trainers and super users
3. No downtime for incremental deployments to ensure business continuity
4. Limited number of System Administrators to have centralized control of admin tasks
5. Training videos for critical High Priority/ High usage scenarios to be shared with the users for enhanced training approach

Over the last 30 years, Infosys has built rich experience in executing large and complex engagements leveraging various proven system development life cycle (SDLC) methodologies. As a CMMi L5 company, we have executed all the projects at the highest quality standards, completing 92% of our projects, on-budget and on-time. We have extensive experience in all industry standard SDLC models, including but not limited to, Agile, DevOps, Extreme Agile, Iterative, and Waterfall.

As part of our extensive SDLC journey we have observed the shift over the last decade from Waterfall to Agile, however many Public Sector programs still land somewhere in between with a hybrid Agile approach. We have implemented this development methodology across projects and industries. Typically, the Hybrid Agile SDLC is selected based on the high level characteristics of both the organization and the project. For example, large organizations with an extensive Waterfall background may find the immediate transition to agile impractical, and instead opt for implementing Agile techniques while transitioning. In other scenarios the ability to choose between methodologies based on the risk profile of a project leads to a best of both worlds approach. The following chart illustrates factors that we have encountered and consider through our Agile CoE when viewing a hybrid approach:



**Figure 11. Considerations for a Hybrid Agile Development Methodology**

The use of Hybrid Agile requires a well-defined communication model to assure teams collaborate effectively between the Waterfall and Agile components of the project. Frequent communication with stakeholders and product owners is also required. Lastly, the correct tools, templates and status reports selected for the project must also support the approach. Under a hybrid SDLC the planning and requirements phases are executed in a traditional Waterfall approach. Once these design and requirement needs are well-defined they transition to Agile for sprint based development and testing. UAT is then compartmentalized back to Waterfall along with the actual deployment.

At Infosys we take our frameworks for SDLC and use them to complement a client’s existing approach. We are well equipped to implement and deliver using the client’s preferred methodology and tailoring using our best practices and experience. Tailoring is customizing the process steps from organization-wide processes to suit client specific SDLC requirements. It helps in making project processes flexible and easy to implement while assuring adherence to established client practices and preferences.

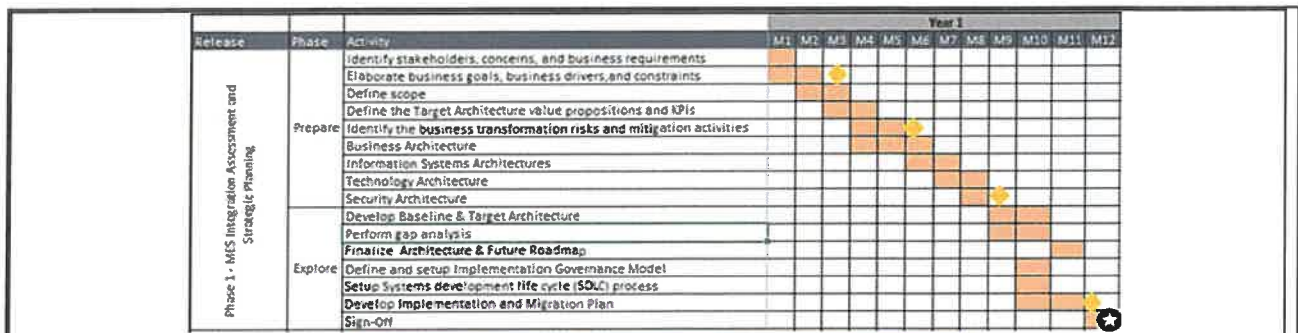
Regardless of whether The State of WV decides to adopt a waterfall, agile, or hybrid method of delivery, our PMO processes can get tailored with ease.

**4.2.32** What is the typical duration of a project to implement your Medicaid Enterprise solution? How does this timeline break down across the planning and DDI phases?

**Infosys Response:**

**Phase 1: MES Integration Assessment and Strategic Planning**





**LEGEND**

- ◆ Quality Gate
- ★ Go-Live
- ▲ SteerCo

Entry Criteria	Exit Criteria
<ul style="list-style-type: none"> <li>Signed Contract</li> <li>Notice to proceed</li> </ul>	<ul style="list-style-type: none"> <li>Approved System Architecture</li> <li>Approved MES Modernization Roadmap</li> </ul>

**Figure 12. Phase 1: MES Integration Assessment and Strategic Planning**

**Phase 2: DDI of the Integration Solution**



**LEGEND**

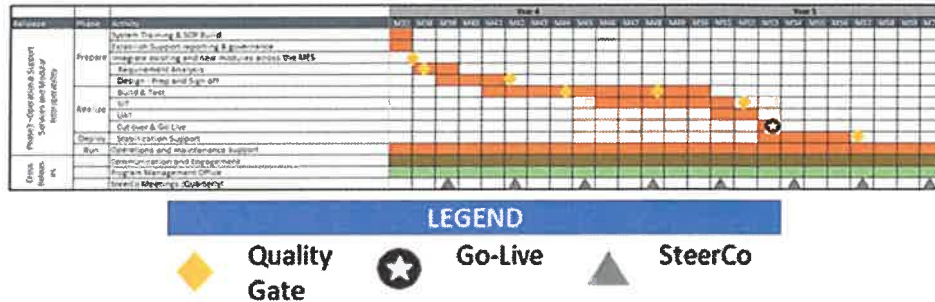
- ◆ Quality Gate
- ★ Go-Live
- ▲ SteerCo

Indicative Entry Criteria	Indicative Exit Criteria
<ul style="list-style-type: none"> <li>Signed off Phase 1 deliverables</li> <li>Customers sign off on the “to-be” business model, iteration specific requirements (including scope/boundary/performance/security requirements), and UI prototypes</li> <li>Standards for all deliverables defined</li> <li>Architecture documents are available</li> <li>Test Plan is available</li> <li>Business requirement document reviewed</li> <li>Interface requirements baselined</li> <li>Project Plan reviewed for any impact due to changes in previous phases</li> <li>Signed off security requirements at the end of requirement elaboration stage</li> <li>Notice to proceed Phase 2</li> </ul>	<ul style="list-style-type: none"> <li>Unit-tested software objects are promoted to the system test region for integration/system testing. Test results are reviewed and authorized</li> <li>All test cases during unit testing were successfully executed</li> <li>All code review and unit testing defects are fixed, verified and closed</li> <li>All security test cases were successfully executed</li> <li>Source code is ready for integration/system testing</li> <li>Testing was successfully executed per the test plan</li> <li>RTM is reviewed and updated</li> <li>Security test results reviewed and authorized</li> <li>Acceptance testing completed and signed off</li> <li>Performance testing completed and signed off</li> </ul>

- User training completed
- UAT and Regression
- Training conducted and end users trained as per the training plan

Figure 13. Phase 2: DDI of the Integration Solution

**Phase 3: Operational Support Services and Modular Interoperability**



Indicative Entry Criteria	Indicative Exit Criteria
<ul style="list-style-type: none"> <li>• Signed off pre-migration and post-migration forms</li> <li>• Application installed in Production</li> <li>• SOP signed-off</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare Knowledge Transfer Plan</li> <li>• Conduct knowledge transfer sessions with the support team</li> <li>• Create Production Turn Over document and Troubleshooting guidelines</li> <li>• Complete Satisfaction survey</li> <li>• Signed Off Transition</li> </ul>

Figure 14. Phase 3: Operational Support Services and Modular Interoperability

4.2.33	<p><b>What do you see as the key cost drivers for implementing your Medicaid Enterprise solution? What recommendations do you have for managing MES costs and demonstrating outcomes that mitigate any unnecessary costs of a Medicaid Enterprise solution?</b></p>
<p><b>Infosys Response:</b></p> <p>The cost drivers for an MES implementation are no different than any other public sector implementation, which are good planning, strong governance, and solid execution.</p>	
4.2.34	<p><b>Using your Medicaid Enterprise solution as an example, what guidelines do you recommend for “phasing in” your modules and/or services? How do these guidelines maximize efficiency and/or minimize risk? What constraints would they place on DDI partners and BMS?</b></p>
<p><b>Infosys Response:</b></p> <p>We will not be providing a response to this question, at this point.</p>	
4.2.35	<p><b>What do you believe would be the optimum duration and the minimum duration for DDI of your Medicaid Enterprise solution?</b></p>
<p><b>Infosys Response:</b></p> <p>Infosys believes the minimum duration for DDI for the Medicaid enterprise system is 18 months and optimum duration is 24 months. Infosys will be able to provide a more accurate estimate when the RFP is available.</p>	



**4.2.36 List and describe the documentation developed by your company and/or the state Medicaid agency that is essential to DDI and operations of your Medicaid Enterprise solution.**

**Infosys Response:**

Infosys will create a Documentation Management Plan which identifies all the documentation and deliverables that will be produced to support the project.

Example of deliverables created by Infosys to support PMO functions and different DDI phases of the project:

**Table 8. Project Management Core Activities and Deliverables**

Activities	Deliverables
<b>Project Phase: Project Initiation and Planning</b>	
<ul style="list-style-type: none"> <li>• Conduct kick-off meeting (s)</li> <li>• Define Objectives &amp; Confirm Scope</li> <li>• Define Project Success Criteria</li> <li>• Define Overall Project Approach</li> <li>• Review and Finalize Project Methodology</li> <li>• Identify Change, Risk, Mitigation &amp; Configuration Management Plans</li> <li>• Finalize Organization Structure &amp; Processes</li> <li>• Define Project Team Organization &amp; Identify roles and responsibilities</li> <li>• Identify Communication, reporting and escalation needs</li> <li>• Define and develop the Work Breakdown Structure (WBS)</li> <li>• Estimate Effort and prepare detailed project plan</li> <li>• Set Quality Goals and define strategies to meet those goals</li> <li>• Identify Defect Prevention Team and set targets</li> </ul>	<ul style="list-style-type: none"> <li>• Change Management Plan</li> <li>• Incident Management Plan</li> <li>• Project Management Plan</li> <li>• Project Perf. Reporting Plan</li> <li>• Governance Plan</li> <li>• Risk Management Plan</li> <li>• Requirements Mgt Plan</li> <li>• Security Monitoring Plan</li> <li>• Communications Mgt Plan</li> <li>• Escalation Mgt Plan</li> <li>• Implementation Plan</li> <li>• Release Management Plan</li> <li>• Configuration Mgt Plan</li> <li>• Communication Plan</li> <li>• Project management tools &amp; templates</li> </ul>
<b>Project Phase: Project Execution and Control</b>	
<ul style="list-style-type: none"> <li>• Execute and Maintain Project Plan</li> <li>• Manage Requirements, Scope and Staffing needs</li> <li>• Manage Issues and Risks</li> <li>• Prepare various status reports</li> <li>• Prepare milestone analysis reports</li> <li>• Manage communication within the team, within Infosys and with Client’s stakeholders</li> <li>• Perform causal analysis at periodic intervals for defect prevention</li> <li>• Track the project with respect to-</li> <li>• Effort at component level</li> <li>• Risks and mitigation steps</li> <li>• Defects at component level</li> <li>• Cost and Timelines</li> <li>• Quality</li> <li>• Statistical Analysis on key Project metrics</li> <li>• Prepare transitioning after Go-Live</li> </ul>	<ul style="list-style-type: none"> <li>• Project dashboard with key metrics</li> <li>• Steering committee reports</li> <li>• Status reports</li> <li>• Project Change tracker</li> <li>• Issue Tracker</li> <li>• Risk Register</li> <li>• Quality Audit Reports</li> <li>• CMS Certification Plan</li> <li>• Test Management Plan</li> <li>• NC PTA</li> <li>• NC VRAR</li> <li>• EA Documentation</li> <li>• Documentation Mgt Plan</li> <li>• Quality Mgt Plan</li> <li>• BC/DR Plan</li> <li>• Online/End User Documentation</li> <li>• Training Plan/WSG</li> <li>• Transition Plan</li> </ul>
<b>Project Phase: Project Closure</b>	
<ul style="list-style-type: none"> <li>• Perform Closure analysis (document lessons learned, evaluation reports, etc)</li> <li>• Capture learning through Book of Knowledge (BOKs)</li> </ul>	<ul style="list-style-type: none"> <li>• Closure Report</li> <li>• Project Artifacts</li> </ul>

- Submit project artifacts to the Process Assets System as per Documentation Management Plan
- Conduct debrief meeting to analyze project
- Update process database with the Project’s metrics

**4.2.37 Detail how your Medicaid Enterprise solution could support BMS in improving data analytics and reporting capabilities, data sharing initiatives, and overall confidence in health data.**

**Infosys Response:**

Our aim is to empower MES through transformation, rationalization & modernizing existing legacy data systems to new cloud-based Data Analytics Platform (i.e.IHIP), powered by AI based data engineering, modern data standardization (e.g. FHIR in healthcare), comprehensive data governance, self-service Analytics, automated predictive modeling framework, all of which will make SMAs agile with their data estate management, eliminating inefficiencies, bottlenecks, and unnecessary complexities surrounding legacy systems that traps the data and keep in them in silos and make data and intelligence boundaryless, more aligned to support new business standards, with scalability on data computation, consumption to insights generation.

The IHIP solution’s machine learning component helps with advanced analytics methods in an automated fashion (it automates the complete lifecycle of machine learning) that can predict binary, interval level and categorical variables with case-by-case explanatory predictors. In the course of our client engagements, we have developed various healthcare centric predictive analytics models that helped to generate actionable reports, executive dashboards with drill-downs around population health management, member behavioral economics, risk stratification, cost of care analysis, utilization of services, care gap monitoring, provider profiling, attribution patterns, peer provider benchmarking, quality measures, and so on, which have been valuable insights for our clients to direct their program strategies and policies.

Our IHIP solution is powered by automation/MLOps to ensure the investments in MES data analytics bear fruit with delivering quality products at scale and at a reduced timeframe. Through the MLOps capabilities we aim to bring together data scientists, data analysts, developers and IT operations professionals to efficiently deliver machine learning models into production, improving the quality of the AI models and reducing the time it takes to go from idea to deployment. We are invoking the use workflow API and metrics for automating the stages in data science, machine learning pipeline with repeatability and auditability.

The solution provides a consumption layer for facilitating BI reporting and advanced analytics- The data (golden/business ready data exposed as service in SOAP, REST or flat formats) consumption layer power all the consumption use cases in a self-service manner, e.g., BI Reporting, visualization, A Data Market Place to enable data discovery and data exploration capabilities for both internal and external stakeholders and running Specialized Analytics through machine learning.

The IHIP solution is developed with an API first approach, and it provides standard out of box REST APIs and webservices to be consumed by different channels for easy data sharing. The internal integration interfaces use a common business dictionary and enterprise values leveraging data standards such as NIEM and data formats like HL7, FHIR etc.

**4.2.38 Describe or illustrate your data visualization capabilities.**

**Infosys Response:**

The IHIP dashboard component supports ready connection and visualization in minutes. It leverages the data APIs built on top of the gold schema of the platform to access the golden version of the data. It has a built-in NoSQL as well as statistical functions which enables efficient data transformation, aggregation and numeric analysis of data required for analytics purposes. Through self-service BI capabilities, we enable users to instantly create purpose-built dashboards, visualizations and search within the user interface. The solution helps to explore data from a range of sources and analyze, visualize and run advanced analytics models on the fly; as

well as support the analytical processes of the business which may include the use of analytical tools and techniques.

1. Fresh UI approach designed by UX designers to convey a story of growth
2. Use of action buttons to allow users to easily slice/dice data as per needs.
3. Delivery of both detailed or summarized (along standard dimensions) data.
4. Ability to print and export report and raw data for detailed analysis.

Some of the pre-built dashboards include key metrics on clinical, financial, Quality Program, utilizations, pharmacy, member claims cost trends, disease distribution, population health 360 and risk assessment, member view, Physician performance analysis, “gaps in care” identification, evaluating quality metrics (i.e. 30-day readmissions), PMPM attribution and various types of custom dashboard with detailed drill-downs capabilities across various parameters.

IHIP provides flexible way to visualize data in a manner that is easy to use and read to drive data driven decisions. The visualization component (built in Tableau but can also support other industry leading BI tools) also provides ability to customize based on specific business needs, ready integration with Open-Source Tools - R, Shiny Python Notebooks, other SDKs, ability to combine multiple views of data to get richer insight, etc. all that let’s user interact with data and perform analysis. The dashboards can be extended to any mobile platform. There are multiple options to share data from exposing it via a REST-API to scheduling publication to individuals or groups or ad-hoc download of CSV or Excel formatted files.

<b>4.2.39</b>	<b>How does your Medicaid Enterprise solution improve the coordination of care, detect and prevent fraud, waste, and abuse to support Medicaid program integrity, and improve stakeholder access to state Medicaid Enterprise data?</b>
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***Infosys Response:***

Our Solution is a comprehensive data integration and analytical solution that provides advanced analytical insights to help enable better decision making along the care continuum. It will help SMAs to unify disparate data sources across various modular (MES) systems (claims, provider, case management, pharmacy, eligibility, etc.) and run diagnostic, descriptive and predictive analytics to generate actionable reports, executive dashboards with drill downs around member behavioral economics, risk stratification to identify members most likely to engage in care management, cost, utilization of services, care gap monitoring, analysis for targeted outreach and etc. that are important in today’s evolving industry to drive a patient centric coordinated care delivery through an effective population health management.

Our solution leverages a proven and tested analytics approach based on sophisticated techniques like robust regression and cluster analysis techniques for identifying fraud, waste and abuse activities. We have implemented Multivariate analysis using distance based statistical derivatives and Benford analysis along with robust regression, clustering to detect member, provider behavior patterns e.g. Avoidable services, use of high value services, utilization, activity, high cost prescription trends, high value provider claims amount compared to allowed amount, huge volumes of medical claims related to unnecessary investigations, blocks billing for medical services that are never delivered, medical service rendered & billed, which are not prior authorized, etc. It has also created a framework for implementing predictive modeling/machine learning techniques such as logistic regression, artificial neural networks and Support vector machines to detect fraudulent behavior patterns.

The IHIP data marketplace portal that is developed leveraging the advanced data engineering, data interoperability, self-service data management, will function for stakeholders to better aggregate data from cross agencies, inter-department, publish and share wide variety of curated data under appropriate security and compliance and quickly empower stakeholders to explore them to innovate operations and benefit their constituents. All data assets like reports, datasets, data sources that are approved by respective data owners through the data cataloging tool get exposed via the data marketplace portal for further exploration purposes. The data marketplace portal will help MES to access, manage and share enterprise data with both external and internal stakeholders in an efficient way and make information management & access boundaryless.

**4.2.40 Describe how your Medicaid Enterprise solution increases access and shared use of data with both the State and other vendors, improves healthcare quality management, and increases automation capabilities.**

***Infosys Response:***

We understand the building blocks of MES are best-of-breed, distinct functional modules often developed by different vendors. While this ensures modularity, it makes data integration and management a challenge. Each module may offer a unique approach to integrate data, complicating the ability of a SMA to ingest and process cross-module data effectively. Further, the ability to effectively report and share insights on public health is related to an SMA's ability to unify data across modules to ensure consistency and veracity. Hence, we are addressing these data challenges and creating a unified approach for end-to-end data lifecycle management by leveraging cloud-first, AI-powered data transformation platforms- IHIP. The solution will allow SMAs to adopt automated approaches that simplify processes and operations to rapidly onboard new and unforeseen data sources, perform record matching, increase audibility via lineage and comprehensive metadata management, and enhance data governance and integrity. By more easily allowing for consistent and reliable data to make actionable decisions with higher value reporting and analytics.

The IHIP solution is developed with an API first approach, and it provides standard out of box REST APIs and webservices to be consumed by different channels. The internal integration interfaces use a common business dictionary and enterprise values leveraging data standards such as NIEM and data formats like HL7, FHIR etc. for data exchange and interoperability. The Data Market Place portal further enables data discovery, data sharing and exploration capabilities for both internal and external stakeholders.

Our IHIP solution helps to improve in healthcare quality management that includes clinical, such as Healthcare Effective Data and Information Set (HEDIS); member, such as analysis related to Consumer Assessment Health Plan Survey (CAHPS) or Health Outcomes Survey (HOS); STARS Quality Program, claims, pharmacy, or any type of dashboard required by HAO. Our process and data stored within the platform is flexible and adaptable to the changing needs, requirements, measures, and metrics mandated by a state, CMS, NCQA, URAC, or any entity with which MES works. Our solution is not limited only to that which impacts member care, we provide flexibility to track the preventive screening measures, breast cancer screening, comprehensive diabetic care measures, medication adherence for high risk members, satisfaction and engagement. This capability can be customized/custom developed to address MES specific requirements.

The IHIP solution is powered by automation capabilities like DevOps & MLOps for end to end data lifecycle management and analytics.

This will be a two-part answer. Infosys IHIP MES solution – Analytics part would answer how the different metrics, KPIs, trends, Patterns, models, predictions etc. would help State to improve healthcare quality management, increase automation and improve State's population healthcare outcome. Whereas MarkLogic would respond to data management/ data integration part of the overall solution.

In order to increase data access and shared use of data across MES system with both the State and other vendors, it is very essential and critical to integrate data across various MES modules and have a 360 degree consolidated view of Claims, Providers and Members in order to improve healthcare quality management, increase automation and improve State population healthcare outcome. MarkLogic Enterprise NoSQL multi-model database with built-in advance search, semantics, data-security and data governance and Data Hub Framework (DHF) architecture accelerates the data ingestion, curation, and mastering 10 to 12 times faster than traditional ETL/Relational based data integration systems.

Once the data across various MES modules and source systems, ingested, curated and mastered using MarkLogic DHF, the MarkLogic Data Services APIs, provides easy access of curated and consolidated 360 degree view of Claims, Providers, and Members etc of MES system data to increase shared data across MES with the State and other vendors/ agencies. Infosys IHIP MES solution powered by MarkLogic Data Hub, provides the API as well as persistent data model supporting HL7 FHIR standards to support standards mandate by CMS for interoperability and to simplify unified data access/ data-sharing with the State and across other agencies. And all of these comes with out of the box robust data security in MarkLogic with RBAC and

Redaction features to facilitates increased access and shared use of data with the State and other vendors, increase automation capabilities and facilitate State to achieve their goal of improved healthcare quality metrics and improvement of State population’s healthcare outcome.

**4.2.41 If applicable, how does your Medicaid Enterprise solution improve access to end- users, such as a user’s data or access to additional services?**

**Infosys Response:**

The Platform ensures role-based security to the different data elements. Access to each data cell can be configured there by giving the ability to expose specific attributes to different individual user group based on their roles and responsibilities. There is user management workflow that helps with user role creation, assignment of tasks, access and controls. Roles can be created, modified and deleted. Actions performed on the data by any role or system can be logged and can be monitored through a dashboard. The application allow integration with the existing LDAP servers or any other authentication engines The application have an authorization engine built-in that will govern the data access rules for each of the role authenticated by the external authentication engine.

Further various stakeholders' access to data (based on authorization policies) is enabled through the data market place and the built in consumption layer.

**4.2.42 How can your Medicaid Enterprise solution help address gaps in health outcomes? Please provide outcomes from other engagements, if applicable.**

**Infosys Response:**

Through integration of various data sources (claims, provider, case management, pharmacy, eligibility, etc.), our solution enables creation of a longitudinal view of a member that includes demographic, clinical and utilization/cost metrics that provides insights about member population conditions, care gaps and cost / utilization trends. It also provides the ability to search and list members based on specific characteristics and behavior traits in conjunction with clinical aspects based on their healthcare outcomes and care gap trending.

The IHIP solution is further enriched by social determinants of health and care attributes, and risk drivers that can readily help with various analytics around gaps in care, and clinical risk analysis, care program outcomes, medication adherence, and member engagement, communication issues, behavioral, social and attitudinal barriers, distribution of compliance measures by geography and by various chronic disease trending (Asthma, Diabetes, CHF, etc), hospitalization trends, ER visits, re-admission rate, etc.

Through automated Machine Learning, we help to develop predictive models to identify population segments and individuals with risky health outcomes and ready to change specific behavior(s). Moreover, the models can predict engagement rates by using different channels (i.e. email, short messages (SMS), mail, and phone) based on MES’s historical intervention success.

**4.2.43 Describe your experience with payment milestones during the DDI of your Medicaid Enterprise solution. In other DDI projects, were payments tied to deliverables, acceptance criteria, and/or other DDI milestones?**

**Infosys Response:**

In other projects, payments were tied to the acceptance criteria (exit criteria) for the deliverables.

A list of deliverables and acceptance criteria for each deliverable is proposed by Infosys and is finalized through discussions with the State. Each submitted deliverable goes through review cycles until the acceptance criteria have been met. Upon sign off, Infosys submits an invoice to the State to process the payment.

In other DDI projects, payment was typically tied to deliverables that are agreed to as part of the contract.



4.2.44	<b>Do you have a short demonstration of your approach and/or Medicaid Enterprise solution that you would like to present to BMS? If so, please describe the method of presentation for the demonstration and suggestions for who should attend. If BMS wishes to take part in a demonstration, they will reach out to the Respondent for further information.</b>
<p><b>Infosys Response:</b></p> <p>Yes, we do have a demonstration that we can showcase to BMS. We can do the demonstration remotely (via WebEx/Zoom/TEAMS/etc.) and we encourage all the stakeholders from BMS to attend.</p>	
4.2.45	<b>Is there additional information you would like to share with BMS related to the topics addressed in this RFI?</b>
<p><b>Infosys Response:</b></p> <p>Below are additional considerations we would like to share regarding this RFI:</p> <ul style="list-style-type: none"> <li>• When establishing procurement there are many ways from relying on one system integrator (SI) to having different SIs or RFPs for each module. We have found States to be more successful with having different RFPs for each module and sometimes the SIs win multiple RFPs. When having different RFPs it's important to have a vehicle to source development teams that can implement connectors between the different modules. As well as setting up a center of excellence for the MES Project to reduce risk and ensure the technology is being implemented correctly.</li> <li>• Use of Agile Methodology is recommended to lower defect rates and decrease development times. The Agile Methodology allows for a phased approach in creating Medicaid Enterprise Systems (MES). The Medicaid Management Information System (MMIS) has many different processes within it. It is recommended to create a plan where implementation schedules and milestones match to processes within MMIS so that these processes can be evaluated and then retired.</li> <li>• Consider use of a Medicaid Data Hub and Data Integration layer, it allows States to own their data and schedules. Once the data for a process is in the Medicaid Data Hub the States can feed that data back to the source system ensuring it's ready for a module.</li> <li>• Use cloud technologies for agility up front but avoid cloud lock-in to reduce costs and preserve agility in future years; allow for hybrid cloud processing as this trend evolves and matures.       <ul style="list-style-type: none"> <li>○ Standing up new servers and entire new environments in a commercial cloud environment is recommended, or at least is efficient. This provides agility. However various proprietary cloud technologies can lock the State into a particular cloud vendor.</li> <li>○ In particular, we see a recent but strong trend toward cost reduction using a private cloud as a system matures. Some (questionable) recent studies indicate as much as a 3x savings by migrating key functionality off the cloud, or to a better-suited cloud vendor in a hybrid-cloud approach. The benefits of agility in using a single cloud may be overwhelmed by the cost of those cloud tools once the system is no longer under active development. In this trend, development is accelerated, and risk reduced in a cloud environment during a years-long period of intense development, and then cost reductions can be obtained by moving the rather static system to a different (or private) cloud environment that is less agile, but cheaper.</li> <li>○ We recommend using provisioning and other technologies that minimize dependence on a particular cloud vendor stack. These include terraform provisioning templates, Kubernetes container management, and using 3<sup>rd</sup> party cloud-neutral technology components where possible.</li> <li>○ Particularly avoid building a cloud-specific “Franken-beast” that knits together many cloud-specific components with custom “glue” code. This makes moving much more expensive</li> </ul> </li> </ul>	

### 3. Certification

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By signing below, I certify that I have reviewed this Request for Information in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this response for review and consideration on behalf of my organization.

Infosys Public Services

(Company)

Rick Brady, Lead for Government Health Care

(Representative Name, Title)

510-926-5641

(Contact Phone/Fax Number)

January 7th, 2022

(Date)

