
Part III — Technical Architecture

Chapter 5 — Technical Capability Matrix

Introduction

This chapter presents the Medicaid IT Architecture (MITA) Technical Capability Matrix (TCM) and explains its role in the MITA Framework and how States and vendors will use it to design and implement better Medicaid systems. The MITA TCM provides a mechanism that allows a State to systematically mature the Medicaid enterprise to keep up with the constantly changing world of technology. Technical capabilities are enablers of business capabilities. Technical capabilities are associated with the shared timeframe (0 – 10+ years) established in the MITA Maturity Model (MMM) (Part I Chapter 3).

This version of the Framework only contains an initial draft of the TCM. It discusses the TCM and principles associated with the TCM. An incomplete TCM is provided. Specific technical capabilities and their associated Technical Services will be developed in a future version of the Framework. New technical areas and functions may also be identified as part of this process.

This chapter answers the following questions:

- What is the MITA Technical Capability Matrix?
- How does the Technical Capability Matrix fit into the MITA Framework?
- How was the Technical Capability Matrix created?
- How will the Technical Capability Matrix evolve?
- How will States use the Technical Capability Matrix?

Purpose

The purpose of the TCM is to describe the boundaries and behavior of each MITA technical function in the context of the five levels of the MMM as described in Part I Chapter 3, and in the MITA principles, goals, and objectives (Part III Chapter 2). The TCM is one of the principal building blocks of the MITA Framework. Technical capabilities enable business capabilities and are the principal drivers of Technical Services (see Part III Chapter 6, Technical Services). It is a MITA principle that “business drives technology,” and it is the TCM that fills the role of the “enabler.”

Scope

This chapter describes the TCM in this chapter and provides a baseline package of technical capability statements. All technical capability statements require review and consensus building

in a collaborative effort involving the States and Centers for Medicare & Medicaid Services (CMS).

It is intended that the technical capability definitions will be expanded in future releases to include conformance criteria. Conformance criteria are used to independently verify that a Technical Service has been implemented at a specific level.

What Is the MITA Technical Capability Matrix?

A technical capability describes a technical function at a specific level of maturity. (The technical functions are described in more detail in Part III Chapter 6, Technical Services.) Technical capabilities are assigned to a maturity level based on the maturity level of the business process that they are enabling and on the MITA principles, goals, and objectives (see Part III Chapter 2). Technical capabilities can affect multiple business processes but also provide benefits to stakeholders. While business capabilities are mapped to Business Services, technical capabilities are mapped to Technical Services. Technical capabilities are associated with IT solutions or enablers.

The Technical Capability Matrix

The TCM consists of technical capabilities allocated to five maturity levels for all technical functions. Each technical capability corresponds to technical functionality that provides the technologies for one or more of the following:

- Enabling one or more business capabilities (e.g., forms management and workflow for automating provider enrollment)
- Realizing one or more MITA goals or objectives (e.g., the goal “promote reusable components — modularity” is enabled by the technical capabilities that are part of a service-oriented architecture [SOA] such as the use of an enterprise service bus [ESB])
- Enabling the transition of a legacy system or process to MITA

MITA technical capabilities fall into categories and subcategories. The top-level categories are as follows:

- Business-enabling services
- Access channels
- Interoperability channels
- Data management and data sharing
- Performance measurement
- Security and privacy (S&P)
- Adaptability and extensibility

The MITA TCM is presented in **Table 5-1**. Each row in the table is traced to its sources, which include the following:

- Medicaid mission
- Medicaid goals
- MITA goals
- MITA objectives
- Business capability or capabilities that the TCM enables

These sources are listed below with their abbreviations for reference:

- Medicaid Mission
 - MM — Provide quality healthcare to members by providing access to the right services to the right people at the right time for the right cost
- Medicaid Goals
 - MG1 — Improve healthcare outcomes for Medicaid beneficiaries
 - MG2 — Ensure efficient, effective, and economical management of the Medicaid program

MITA Goals

- G1 — Promote an enterprise view that supports enabling technologies that align with State business processes and technologies
- G2 — Make performance measurable for accountability and planning
- G3 — Develop systems that can communicate effectively to achieve common program goals through interoperability and common standards
- G4 — Promote an environment that supports flexibility, adaptability, and rapid response to changes in programs and technology
- G5 — Provide data that is timely, accurate, usable, and easily accessible to support program analysis and decision making
- G6 — Reduce unnecessary costs for collection of data that is available elsewhere and that can be used to administer the program more effectively

Table 5-1. MITA Technical Capabilities Matrix

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
B.0 Business Enabling Services						
B.1 Forms Management	MM Level 2, O4, G6	Manual data entry on hardcopy forms	Online data entry on electronic forms			
B.2 Workflow Management	O4, G4, G6	Manual routing of hardcopy files to individuals involved in processing	Electronic routing of files to business processes and individuals involved in processing Responsible for processing completion and other individual and business processes			
B.3 Business Process Management (BPM)	G4	Manual, by user		Specification and management of business processes in conformance with MITA BPM standards (e.g., Business Process Execution Language [BPEL])		
B.4 Business Relationship Management (BRM)	O4	Manual (e.g., by attaching annotations to case files)		Basic BRM, including tracking relationships between Medicaid system users (e.g., beneficiaries and providers) and the services they have requested and received	Advanced BRM, which includes basic BRM plus analytics support and personalization capabilities	
B.5 Foreign Language Support	1. Manage Applicant and Member Communication, Level 3 2. O4	Manual translation of messages into supported foreign languages		Foreign language translation support for real-time and offline interaction with beneficiaries in designated languages		

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
B.6 Decision Support						
B.6.1 Data Warehouse	G5, O7			Extracting, transforming, and loading data from multiple databases into a data warehouse that conforms with the MITA Logical Data Model		
B.6.2 Data Marts	G5, O7			Importing data into data marts that conform with the MITA Logical Data Model		
B.6.3 Ad hoc Reporting	MG2 Level 2	Ad hoc reporting, typically using coded procedures	Ad hoc reporting against databases using COTS tools			
B.6.4 Data Mining	MG2 Level 2	Data mining to detect patterns in large volumes of data, typically using coded procedures	Data mining to detect patterns in large volumes of data using COTS tools			
B.6.5 Statistical Analysis	MG2 Level 2	Statistical analyses (e.g., regression analysis), typically using coded procedures	Statistical analyses of designated data (e.g., regression analysis) using COTS tools			
B.6.6 Neural Network Tools	MG2 Level 2	None	Analyses using neural network (e.g., learning) tools			

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
A.0 Access Channels						
A.1 Portal Access	1. O4 2. MM Level 2 3. Enroll Provider, Level 2 4. Manage Applicant and Member Communications, Level 2	Beneficiary and provider access to appropriate Medicaid business functions via manual or alphanumeric devices	Beneficiary and provider access to appropriate Medicaid business functions via portal with single online access point	Beneficiary and provider access to appropriate Medicaid business functions via portal with single online access point		
A.2 Support for Access Devices	1. O4 2. MM Level 2 3. Enroll Provider, Level 2 4. Manage Applicant and Member Communications, Level 2	Beneficiary and provider access to services via manual submission, alphanumeric ("green screen") devices, or EDI	Beneficiary and provider access to services via browser, kiosk, voice response system, or mobile phone	Beneficiary and provider access to services online via PDA		
I.0 Interoperability						
I.1 Service-Oriented Architecture						
I.1.1 Service Structuring and Invocation	G4, O2, O5	Nonstandardized definition and invocation of services	Service support using architecture that does not comply with published MITA service interfaces and interface standards	Services support using architecture that complies with published MITA interfaces and interface standards	Services support using a cross-enterprise services registry (to be verified)	
I.1.2 Enterprise Service Bus	G4, O2, O5	None or nonstandardized application integration	Reliable messaging, including guaranteed message delivery (without duplicates) and support for nondeliverable messages	MITA-compliant ESB	MITA-compliant ESB interoperable outside of a State Medicaid agency	

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
I.1.3 Orchestration and Composition	G4, O2, O5	Nonstandardized approaches to orchestration and composition of functions within and across the Medicaid Management Information System (MMIS)		MITA-standard approach to orchestrating and composing services		
I.2 Standards-Based Data Exchange	G3	Ad hoc formats for data exchange		Data exchange (internally and externally) using MITA standards		Data exchange (internally and externally) in conformance with MITA-defined semantic data standards (ontology-based)
1.3 Integration of Legacy Systems		Ad hoc, point-to-point approaches to systems integration		Service-enabling legacy systems using MITA-standard service interfaces		
D.0 Data Management and Sharing						
D.1 Data Exchange Across Multiple Organizations	G5, G6	Manual data exchange between multiple organizations, sending data requests via telephone or e-mail to data processing organizations and receiving requested data in nonstandard formats and in various media (e.g., paper)	Electronic data exchange with multiple organizations via a MITA information hub using secure data, in which the location and format are transparent to the user and the results are delivered in a defined style that meets the user's needs	Electronic data exchange with multiple organizations via a MITA information hub that can perform advanced information monitoring and route alerts/alarms to communities of interest if the system detects unusual conditions		

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
D.2 Adoption of Data Standards	G3, O3	No use of enterprise-wide data standards	Data model that conforms to the MITA model and maps data exchanged with external organizations to this model	Data model that conforms all shared data used by a State Medicaid agency's business processes to the MITA model	Data model that conforms all shared data used by a State Medicaid agency's business processes to the MITA model and includes standards for clinical data and electronic health records	Data model that conforms all shared data used by a State Medicaid agency's business processes to the MITA model and that includes national standards for clinical data and electronic health records and other public health and national standards
P.0 Performance Measurement						
P.1 Performance Data Collection and Reporting	G2		Collect and report using predefined and ad hoc reporting methods and currently defined performance metrics	Define, implement, collect, and report using a set of business process-related performance metrics that conform to MITA-defined performance metrics	Generate alerts and alarms when the value of a metric falls outside limits	
P.2 Dashboard Generation	G2		Generate and display summary-level performance information (i.e., performance dashboards)	Generate and display summary-level performance information (i.e., performance dashboards) within a State Medicaid agency for all MITA-defined metrics		Generate and display summary-level performance information (i.e., performance dashboards) from external sources (e.g., other States and agencies) within a State Medicaid agency for all MITA-defined metrics

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
S.0 Security and Privacy						
S.1 Authentication	MM	Access to MMIS system capabilities via logon ID and password		User authentication using public key infrastructure in conformance with MITA-identified standards		
S.2 Authentication Devices				Support for user authentication via kiosks based on fingerprints and delivery of results to authentication and authorization functions	Support for user authentication via SecureID tokens and delivery of results to authentication and authorization functions	Support for user authentication via kiosks based on retinal scans and delivery of results to authentication and authorization functions
S.3 Authorization and Access Control			User access to system resources depending on their role at sign-on			
S.4 Intrusion Detection		TBD	TBD	TBD	TBD	TBD
S.5 Logging and Auditing		Manual logging and analysis	Access to the history of a user's activities and other management functions, including logon approvals and disapprovals and log search and playback			
S.6 Privacy		Procedural controls to ensure privacy of information		Access restriction to data elements based on defined access roles		

Technical Area/Technical Function	Applicable Sources	Level 1 Capabilities	Level 2 Capabilities	Level 3 Capabilities	Level 4 Capabilities	Level 5 Capabilities
F.0 Flexibility – Adaptability and Extensibility						
F.1 Rules-Driven Processing	1. Determine Eligibility, Level 3 2. G4	Manual application of rules (and consequent inconsistent decision making)		Linking a defined set of rules into business processes or using applications executed with a Basic Rules Management System (often called a Rules Engine)		
F.2 Extensibility	G4	Extensions to system functionality that require pervasive coding changes		Services with points at which to add extensions to existing functionality (changes highly localized)		
F.3 Automate Configuration and Reconfiguration Services	G4	Configuration and reconfiguration of distributed application that typically requires extensive hard-coded changes across many software components and/or applications across the enterprise (and with significant disruption)			Consistent distributed applications using common business change processes that coordinate between active components and ensure minimal disruption	Consistent distributed applications using common business change processes that coordinate between active components and ensure minimal disruption
F.4 Introduction of New Technology	O2, O5	Technology-dependent interfaces to applications that can be significantly affected by the introduction of new technology		Technology-neutral interfaces that localize and minimize the impact of the introduction of new technology (e.g., data abstraction in data management services to provide product-neutral access to data based on metadata definitions)		

MITA Objectives

- O1 — Adopt data and industry standards
- O2 — Promote modularity and component reuse
- O3 — Promote efficient and effective data sharing
- O4 — Provide a beneficiary-centered focus
- O5 — Support interoperability and integration using open architecture
- O6 — Promote secure data exchange (e.g., single entry point)
- O7 — Promote the use of good practices (e.g., the Capability Maturity Model [CMM] and data warehouse)
- O8 — Support integration of clinical and administrative data
- O9 — Break down artificial boundaries between systems, geography, and funding (within the Title XIX program)

How Does the Technical Capability Matrix Fit Into the MITA Framework?

The MITA Technical Capability Matrix is used to provide requirements for the definition of the MITA Technical Services based on MITA technical areas, goals, principles, and objectives. It also assigns a capability level for each service. The relationship between technical areas (TCM – Technical Services) is equivalent to the relationship between business processes (BCM – Business Services).

How Was the Technical Capability Matrix Created?

The MITA teams' methodology for creating the MITA TCM used the following steps:

1. Define technical functions based on the needs of the MITA business process and business capabilities
2. Refer to MITA technical principles, goals, and objectives
3. Apply technical availability and adjust the level as required (this may also require adjusting the maturity level of a business process if the technology needed to implement it will not be available within the given timeframe)
4. Document the technical capabilities and their attributes for each technical function

How Will the Technical Capability Matrix Evolve?

Over the next 10 years, CMS foresees that maturing business capabilities and the advancement of associated technology will transform the Medicaid agency and that this transformation will be a constant. Even as State Medicaid enterprises evolve, increased functionality and better performance outcomes will always be “just around the corner.” States do not have to achieve the higher levels of capability all at once for all Technical Services. The MITA Framework encourages growth and transformation by illustrating the benefits of improving State operations and provides tools to help States achieve that transformation. States will be active participants in refining the definition of capabilities for each level. States will identify capabilities that meet their business needs: Some capabilities will be selected from the MITA TCM, and others will be new capabilities created by the State. These new capabilities will be added to the MITA TCM (in accordance with MITA procedures) and will be available for other States to use.

How Will States Use the Technical Capability Matrix?

The MITA TCM will help States assess their levels of technical maturity. This assessment, coupled with State self-assessments (SS-As) of business capabilities, will help States plan their transition to the MITA Business Architecture (BA) and Technical Architecture (TA). States will use the TCM to develop Technical Services in the same way they use the Business Capability Matrix (BCM) to define MITA Business Services.