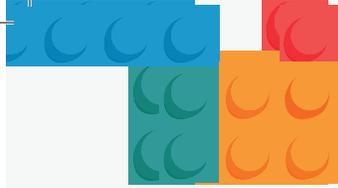


# DEMYSTIFYING MODULARITY

WHAT DOES A MODULAR MMIS LOOK LIKE?



## From There to Here: A History of Modularity

In a very short period of time the Medicaid Management Information Systems (MMIS) industry has been turned upside down. The use of the term “Modularity” has prompted questions and even confusion amongst stakeholders. This concept, however, is not new. It was introduced in 2006 as part of the Medicaid Information Technology Architecture (MITA) Framework and has been elaborated on in future editions. The difference today is a result of the Centers for Medicare and Medicaid Services (CMS) urging States to make a paradigm shift in the way their MMIS’ are procured and implemented—CMS is now actively encouraging modularity as the way to revolutionize MMIS procurement and implementation.

CMS’ suggested modular approach to MMIS is a low-risk, incremental implementation of reusable modules that work with existing systems. Modules can be replaced independently without requiring a complete overhaul of the entire system. The objective is to break down the large MMIS procurement and implementation into projects that are managed more efficiently, to effectively utilize assets and resources already invested, and to initiate smaller acquisition timelines.

While CMS has consistently proposed a modular system as the standard for MMIS, they have not clearly specified how the large MMIS can or should be broken down. CMS does not and will not prescribe a specific technology solution or an architectural design that would define what modules constitute an ideal MMIS. As a result, the industry is abuzz with definitions and approaches to modular systems. Since the introduction of these procurement standards, some States have embarked on a fragmented process based on their own definition of modularity. This confusion has created instances where States have had to re-write their RFP, change their procurement strategies and or cancel awards. These experiences illustrate the impact the absence of a clear definition of modularity has on the procurement process and the impact the inability to achieve a right balance in modularity has on acquisition. Clearly, the existence of multiple interpretations and the resulting confusion—if allowed to persist or multiply—has the potential to overwhelm any of the benefits of a modular approach.

**“CMS is forcing modular, phased development with system integration, reliance upon standards, SaaS and COTS and curtailing over-customization”**

– Jessica Kahn, CMS Director, Data and Systems Group, Medicaid IT Enterprise Innovation & Opportunity at the HIMSS Government Roundtable.

**“The modularity standard requires the use of a modular, flexible approach to systems development, including the use of open interfaces and exposed application programming interfaces (API); the separation of business rules from core programming; and the availability of business rules in both human and machine-readable formats.”**

A hasty conclusion can be made that modularity simply means that a large system is broken down into smaller parts. While there is some truth in that, CMS is encouraging States to not only break down a system’s structure but to also create iterations of its components across modules. The key words in the definition provided highlight the need for modules to interact, interface and share data between modules, but at the core of CMS’ vision for modularity is reuse.



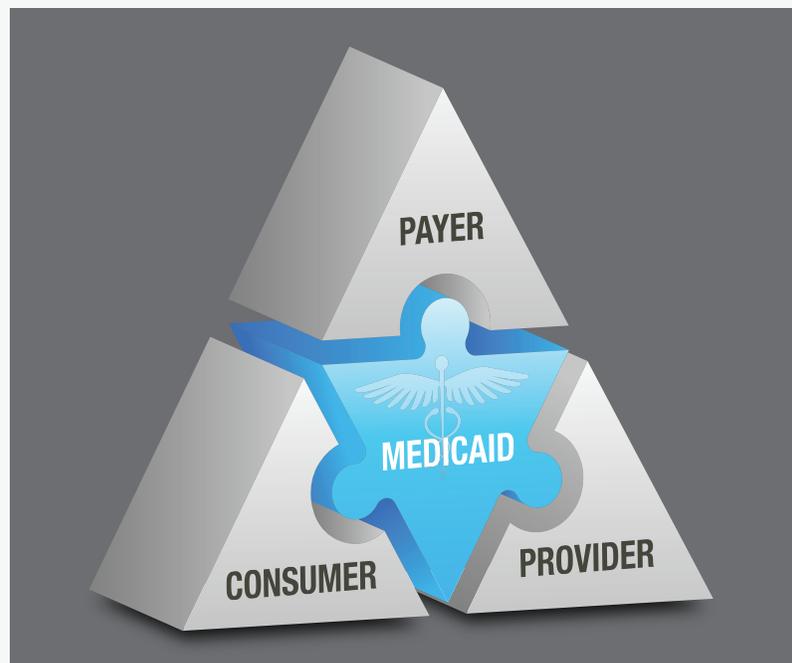
CMS is expecting States and vendors to invest once, and then leverage existing investment by reusing the modules, as opposed to building custom solutions for each MMIS acquisition. In addition, Modularity has become the technological marker creating the paradigm shift in healthcare that focuses on outputs and outcomes rather than just the processes.

## Understanding Modularity

CMS' goal is to drive health outcomes. New strategies and directions in the Medicaid market focus on the impact healthcare activities have on people rather than the processes that deliver healthcare services.

At the recent HIMSS Government Roundtable, CMS explicitly stated that it will be developing “certification criteria that focus more on outputs and outcomes and not the how”<sup>1</sup>. This highlights the need for the industry to focus on the stated objectives of CMS and those who these objectives aim to serve—consumers, providers, and payers. Setting the spotlight on outputs and outcomes, ‘Better Care and Lower Costs’, ‘Prevention and Population Health’, ‘Expanded Health Care Coverage’ and ‘Enterprise Excellence’ are the shared goals Medicaid stakeholders seek to achieve.

When looked at from this prism, the concept of modularity represents a paradigm shift by redefinition of the objectives for MMIS acquisition and implementations.

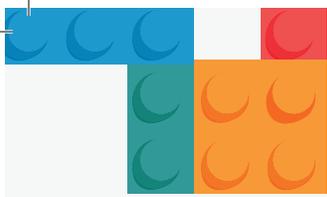


### Three rules to consider when determining modules that form the new MMIS

- **Data Updates:** Data atomicity will need to be maintained.
- **Data Look-ups:** Real-Time access to the latest and most up-to-date data.
- **Process-to-Process Calls:** Level of inter-process communication and reuse of components.

## Basis for Modularity

MMIS systems have evolved over the last few decades, and technology has been the biggest factor of disruption in the architecture. Beginning with disparate systems that existed as independent islands of information in the era of mainframe computing, MMIS' evolved into large monolithic systems where distributed computing and relational databases power enterprises. Systems today have the technical ability, namely Service Oriented Architecture (SOA), Enterprise Service Bus (ESB) and Web Services that allow access to data irrespective of location, storage and accessibility—providing the impetus for the shift to modularity.



It is the technology that allows the breaking up of a single MMIS system into smaller, more manageable modules, and technological conditions help us to determine the best architectural model that will accomplish the goals of a State while still adhering to the directives of CMS.

Technologies have not only disrupted the architectural landscape of MMIS, they have also changed expectations for systems' users. Today's MMIS employ a rules engine-based architecture that powers an auto-adjudication rate of 90% or higher with powerful, friendly and rich user interfaces. They have the ability to plug-and-play leading and industry standard Commercial-off-the-Shelf (COTS) software to leverage best-in-class application processing. These ingredients act as powerful catalysts to help redefine Medicaid MMIS Management Information Systems. By providing the important guidelines to help plan and architect a modular MMIS, MITA is making several principles and criteria available to designers when developing an application, all of them being relevant and valid. However, three key principles—Data Updates, Data Look-ups and Process-to-Process Calls—help identify the functionality within the new MMIS required to develop and acquire modules, separately or together, based on an individual State's objectives, demand and use.

## A Modular MMIS

The MITA framework encourages States to leverage open standards, the latest advancements in technology and best in class Commercial-Off-The-Shelf (COTS) products to define the new modular MMIS. The representation of a *modular MMIS* in *Figure 1.1* achieves an ideal balance in the separation of the work of the core MITA business areas while also fully addressing the CMS objective of reusability.

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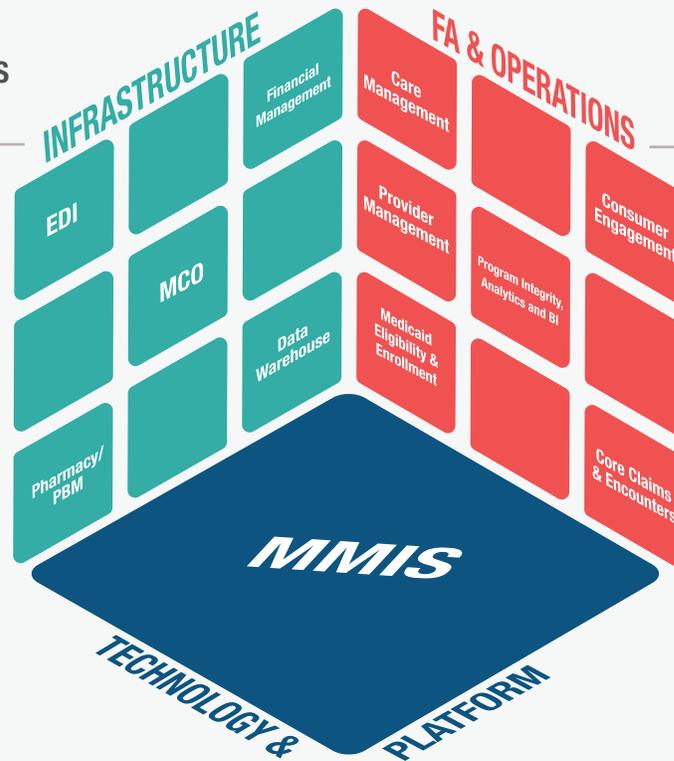
**The MITA framework provides a sound basis for separation of business areas and details the core objectives within each business area, setting the stage for reusability. Adherence to these principles aligns with the following benefits:**

- Increased accessibility to data irrespective of storage or ownership;
- Maintenance of the sanctity and atomicity of data;
- Reduction of duplicative data despite new and expanded sources of data; and
- The ability to reuse components and their functionality between and across modules.



**Figure 1.1 – Modular MMIS**

- Hardware
- Networking
- Data Services



- Call Center
- Business Operations
- Outreach

- Identity Management
- Enterprise Services
- Interoperability

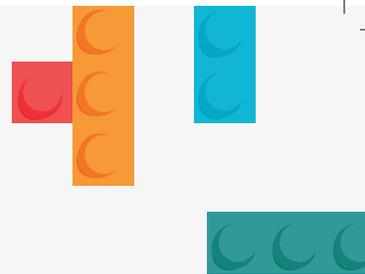
The proposed approach considers the full spectrum of an operational and functional MMIS by also applying this framework to technology platforms, infrastructure, fiscal agent services and business operations— suggesting that these too could be built in modular form to be leveraged or iterated across multiple States.

Each module is just as important as the other and therefore it is difficult for States to establish priorities. It also must be made clear that the ‘Core Claims and Encounter Processing’ module is the single biggest and complex component of this framework. This module will include other sub-modules like Reference, Inquiry, Adjudication, Plan and Program Data, and the Member and Provider Information required to adjudicate and process a claim. It is therefore important to note that in this scenario modules need a shared infrastructure revolving around CORE Claims/Encounters because of the frequency of data look-ups required to process all claims and encounters.

In addition, the functionality of each module must be configurable and reusable, Federally-certified and compliant, and streamlined into a successful operational model. The key factor here is the reusability that permits one module to be leveraged or iterated across multiple States—without reusability the core objective of CMS’ modularity initiative is not achieved.

Each module’s reusable business function consists of a Rules Engine, Process Wizard and Workflows, and standard Application Programming Interfaces (API). Designing a system based on MITA standards for each business area increases the scope of reuse, and allows each State to configure the new MMIS to their individual needs without requiring time-consuming and unique customization.

An effective Modular MMIS that aligns with CMS policy is one that achieves the right balance of modules, acquires and manages data efficiently, and promotes reusability of components. This structure of a Modular framework will allow states to get the best composite solution with greater flexibility and more options in both acquisition and implementation.



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