



Medicaid Modularity: The Path to Better Outcomes

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- HOW WE GOT HERE: THE DYNAMIC CHANGES IN MEDICAID TECHNOLOGY
- START WITH A VISION AND EXECUTE A PROCESS THAT WORKS FOR YOUR STATE
- TAKE CHARGE OF YOUR PROCUREMENT
- GET READY FOR CHANGE
- PUT DATA AT THE CENTER
- TAKE ADVANTAGE OF THE CLOUD
- TIPS FOR WHEREVER YOU ARE ON YOUR JOURNEY
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Foreword

From shifting to managed care, to examining social determinants of health, states have been innovating Medicaid for years. Over the last six years, in order to keep pace with programmatic change, a driving topic in Medicaid Enterprise Systems (MES) technology has been modularity — software systems designed to be, as the Centers for Medicare and Medicaid Services (CMS) recommends, “partitioned into discrete, scalable, reusable components.”

The purpose of modularity was to bring an end to large-scale monolithic system implementations that all too often incur mounting risk over years-long implementations, stifle program innovation, or make seemingly simple tweaks feel like burdensome undertakings. But the narrative around modularity became myopic. In government and vendor communities alike, modularity became an end goal in and of itself, as opposed to serving as a vehicle for innovation in delivery of Medicaid systems. What’s more, technology became the crux of modularity: IT divorced from holistic change, and that change divorced from Medicaid’s overall transformative journey.

We need to change the way we talk about modularity. And, as everyone who cares about Medicaid knows, one of the hardest things to do is to foster open conversations between vendors and states. This whitepaper is an attempt to help advance those conversations.

Over the past few months, Amazon Web Services (AWS) has been gathering insights and observations from across the vendor community — not just from AWS Partners, but from anyone with interest in and experience with supporting Medicaid. We’ve asked them what they’ve learned about delivering Medicaid technology through the modularity era. These projects touch everything from procurement to data to organizational change management, and that align with agencies’ evolving needs.

Within this paper, we offer a recap of ideas sparked from a myriad of contributors — about modularity, the complexity of innovation, and general tips — to deliver better technology project outcomes. We understand each Medicaid program works within a unique set of circumstances. No two programs are exactly alike, nor will their MES be duplicated. But we sought to identify common themes or universal insights that can be broadly leveraged.

We hope this paper sparks a discussion in the Medicaid community about how to make the most of technology for the improvement of our Medicaid programs. Please contact us with feedback, questions, or additional guidance so we can keep building the knowledge base together.

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How we got here: the dynamic changes in Medicaid technology

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In 2010, the Affordable Care Act (ACA) jump-started the dynamic era in Medicaid technology. Modularity launched in 2016 amid changes predicated by the ACA, projects in several states nearing completions of monolithic MES deployment, and evolving Medicaid policies state by state. The ensuing years have seen two changes in presidential administrations, the rise and reversal of the Section 1115 Demonstration Grants for Work Requirements, the introduction of both Outcomes-Based (OBC) and Streamlined Modularity (SMC) certification protocols, a global pandemic, and the Interoperability and Patient Access final rule (CMS-9115-F) of 2020, among other changes that bring forth technical edits to mission-critical Medicaid systems.

The guidance for modularity came out as a broad framework, initially defined in the CMS State Medicaid Director Letter # 16-010, August 16, 2016. At the time, CMS wanted to move away from funding the design, development, and implementation of monolithic systems. They deemed so-called big bang implementations too costly in their time to value and risk of failure. Vikki Wachino, then-director of CMS, anticipated, “With smaller, more incremental projects, risk and costs should be reduced for all aspects of the project.”

The variability across Medicaid systems has been diverse, customized to each state, and strategic, according to the needs of each state’s Medicaid enterprise. Medicaid directors have always had the autonomy to define the breadth, scope, and duration of services within their Medicaid programs to meet the essential requirements for medically necessary services. Their IT systems also require that same level of uniqueness. As such, carrying out the guidance for modularity was left open to interpretation by each state.

The past six years have seen a spectrum of interpretations on modularity. Some states broke down the systems within their MES and released batches of procurements for component systems. Other states sought to keep their recently modernized (already modular) MES intact while layering on enterprise systems and data warehouses to create Medicaid enterprise systems. Some stitched together pharmacy benefits, integrated eligibility, enterprise case management, and other systems with a robust system integrator (SI) function. Others took a lift and shift approach for their modular MES, and await the next cycle of innovation to drive granular enhancements.

Across the diversity of approaches, there are some common lessons learned, best practices, and insights that might be useful for leaders who are preparing to undertake the next evolution for their Medicaid IT systems. We share this distillation of four themes from our collection of interviews with industry partners and our own observations to advance the ongoing journey towards technology that accelerates the mission of the Medicaid program.

The themes include:

- Start with a vision and execute a process that works for your state.
- Take charge of your procurement.
- Get ready for change.
- Put data at the center.

Read on for some tips along the way.

Start with a vision and execute a process that works for your state

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Before any strategic undertaking, a shared vision and definition for what success looks like should set a target that drives all tasks. Medicaid agency directors and their Chief Information Officers (CIOs) must continuously collaborate to assure that IT strategy enables their missions and achieve their vision. Ideally, an IT strategy responds to “What is the vision for Medicaid in my state?” and then explores how technology can enable that.

For a state Medicaid agency (SMA), this means taking an outcomes-based approach that focuses on people, process, and systems when defining your desired goals. It starts with understanding as-is inefficiencies and outcomes your agency is targeting, along with challenges. Once you have a clear understanding of what’s not working, recognize that all three components are needed to effectuate change in your program and agency.

With a defined Medicaid program vision and set of outcomes, your next step is to establish a manageable and sustainable technology strategy. Start by evaluating what you need and strategizing about how modularity can be leveraged to move it forward. The evaluation should review the impact modularity can have on how agencies deliver Medicaid services.

This means:

- Account for change across people, process, and platform. A state’s career civil servants, who may have a lifetime of policy, administrative, and business expertise, are important stakeholders with whom your technology and agency leadership should confer at length throughout the entire implementation. Putting people at the center is critical to future success. Allow for opportunities to pause, regroup, or pivot, if your initial assumptions start to crumble.
- Know your needs so you can leverage modularity to meet them. Regardless of your agency’s goals, modularity can help states more directly meet user needs. To further meet user needs, states can utilize modularity to layer in a human-centered design approach. One of the most popular ways to do this is to have some type of tactile participation, whether it be a collaboration app for a virtual brainstorming session (many apps are affordable and free to try) or a simple stack of post-its and a box of sharpies for a brainstorming session. Whatever the selected approach, make sure it requires active participation and collaboration rather than a lecture model. Collaboration exercises will delight most client groups from executives to end users.
- Determine the size and scope of the different projects at a high level. Compared with the technical solutions historically obtained for Medicaid,

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modularity was intended to reduce project risk by shrinking the size and scope of technology projects. That way, if one piece goes wrong, you know pretty quickly, and it doesn't jeopardize the entire system. When delivery is more efficient and modular, this lets you as the state see what you're getting sooner rather than later. That helps prevent lock-in and makes it easier to switch vendors when desired.

- Establish a manageable and sustainable technology strategic roadmap that fits your agency goals and vision. As a state Medicaid agency, you're best positioned to identify what's needed and how your vendors should deliver. Part of this means accepting the fact that unanticipated risks will emerge over time and materially change the scope, budget, and timeline for your modernization initiative. An agency that published its roadmap in late 2016, for example, would likely have rewritten its plan up to four times to account for the policy changes identified in the first section. When you are defining a roadmap with a sustainable technology strategy, take into account existing enterprise assets that could be re-used. Collaborate with CMS throughout.

Take charge of your procurement

One consistent takeaway is that you can't get better systems if you can't procure better systems. That means working with your procurement teams in new ways and taking charge of the quality you demand from your systems. Lean on your vision and roadmap to keep you focused on what you're trying to accomplish, whether that's with an entire system or a specific module.

State procurement rules can be one of the most significant limiting factors to executing on modularity. Many states' rules impose burdensome—and therefore time-consuming—requirements for preparing requests for proposals (RFPs). Combining procurement of innovative approaches for technology and system design with competitive RFPs that limit interaction with the state for clarification and questions increases the chances of misunderstanding and misaligned expectations. As of 2022, we are seeing innovation in this arena as Medicaid leaders recognized this challenge and seek the use of invitations to negotiate, release of requests for information (RFIs), and use of early stage pre-briefings.

Some considerations that we would like to draw your attention to when thinking about executing on a strategy that involves procuring IT post-Modularity:

- Work with your procurement officers to operate in new ways. The current state procurement process is too drawn out. It's also weighted toward big-bang procurements with the widest scope possible to reduce the number of procurements that need to be done. Clear and accurate requirements in RFPs, effective sequencing and coordination of procurements, and timely resolution of vendor protests all require expert management to support acquisition of solutions that represent the best value to the state, and minimize project start delays. SMAs must develop effective working relationships with state procurement authorities to encourage competition while also protecting the state's interests. That starts with figuring out the difference between rule (this is legally like this) and custom (we've always done it like this), and understanding the impact of unlimited liability, indemnification, and mandatory performance bonds on vendors' decision to participate in states' procurements.
- Understand if procurement rules might conflict with the goals of interoperability. These large-scope procurements often focus on detailed requirements but devote little attention to contract transition, particularly around the migration of data from one system to another. This is detrimental because data is more likely to be mishandled when there's no strict oversight.
- Make sure you clearly communicate your roadmap and vision to the vendor community. Put your roadmap in your RFP and make sure vendors understand it so they know how to bid for what you need. Don't issue a contract based on requirements or statements of work. Instead, issue one based around goals and statements of objectives, so vendors (and agencies) have the flexibility to figure out what's right during the development process.

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- Cooperative purchasing programs have the potential to save every state time and money. NASPO ValuePoint is a cooperative purchasing program, under which a consortium of states can collaborate to conduct procurements of mutual interest, with one state as the designated lead. The states work together to develop RFPs, evaluate proposals, and negotiate master agreements.

An example of a cooperative purchasing program is a Medicaid Management Information System (MMIS) – Provider Service Module approved by the NASPO ValuePoint Management Board approved in 2017. The sourcing team included members from five states. Ultimately, six vendors won Master Agreements and, subsequently, CMS provided a written approval letter for any state to utilize the NASPO ValuePoint MMIS – Provider Services Module Participating Addendum for any of those vendors without conducting an independent competitive procurement.

Get ready for change

Business process change is hard, and Medicaid programs are complex. People, communication, training, and change management must be at the center of an organizational change strategy, rather than an afterthought.

The Medicaid community has begun to embrace organizational change management (OCM) as an underpinning to the successful implementation of technology projects. OCM is the human capital support needed to align the project, or element of change, with operations and processes throughout the project lifecycle. Numerous states have issued independent procurements for the gamut of inter-related OCM tasks, such as: stakeholder engagement, communications, training, and facilitating workforce adaption—sometimes even restructuring to support the change. The most successful OCM efforts start at the very beginning of a project, identifying change agents in the agency, and developing the capabilities to help define, design, validate, and promote the case for change and its underlying business value.

Change management is the key to the success of modularity. Tell people what you're going to do and when and why and how this is going to benefit them. If technology changes how something is done, but those who are impacted directly and indirectly have not been notified or haven't processed the change, things will be worse than they were before. A once inefficient process can transform into a complete operational standstill. Not only is this frustrating for the worker, but service delivery might suffer. In order for programs and agencies to run efficiently, people need to know how to do the tasks they need to do and who needs to do it. A thoughtful change management process can help address this challenge.

- Acknowledge that modularity can make things harder in the short-term but articulate the case for change. Think about modularity as a paradigm shift—one that will touch all parts of the organization. As such, there is a need to engage staff throughout to prep them for change. Humans naturally have an aversion to change. States and vendors alike can prepare for fear and resistance and ease the transition with listening sessions, communication, and explanation.
- Provide training and make sure staff have the time and permission to participate in them. Offer training at the right time (not too early, not too late) and make sure the content isn't overwhelming. Take advantage of curriculum design to make best practice training programs. Don't just rely on your vendors to do training. Find the internal change champions to drive peer-to-peer adoption.
- Connect the reason for the change to the mission of the organization, not just the IT project. This project is about outcomes and agency vision. Make sure your state team knows that. Then, find the change champions and ask them to lead the way. Listen for frequently asked questions and codify them. OCM is a process not a task. It's beneficial to be open to feedback and iterate as you go with the institutional knowledge within the agency.

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- Modularity can lead to agility. A roadmap should recognize that multiple stakeholders within an agency are required to complete current jobs as well as support IT implementations, and allows for everyone to get what they need. For example, a Medicaid implementation for a certain business function or division will have very different needs compared to another. Or, maybe a specific department has had a bad experience with a failed sub-system upgrade and needs a consultant that spends a lot of time building the department's trust in their abilities and arrives a week or two ahead of schedule to foster that relationship and help with go-live readiness activities. This extra effort will pay off as word-of-mouth travels from site to site, that the management approach is insightful and provides capable support.

Put data at the center

Medicaid executives and policy makers are increasingly expected to present evidence related to program policy changes as well as progress toward digitization of Medicaid program outcomes and quality measures (as required by CMS, by 2025). Developing a compelling data narrative to support policy decisions requires real-time access to quality data that reflects more than administrative or process points in healthcare coverage or service delivery. Most MMIS systems already collect administrative data that track eligibility, some aspects of service delivery, billing, and payment transactions, but stop short of tracking case management, narrative or categorical health record elements, short- and long-term patient outcomes, and the complex connections across healthcare networks. Even the few systems that do successfully track some, or all, of the data elements necessary for a whole-person view of Medicaid policy effectiveness, still lack the ability to consolidate, link, and automate analytics to provide actionable insights to practitioners, policy makers, and the public.

Actionable insights will vary by data consumer group, and data lifecycle curation should reflect those differences. Data intake mechanisms, data architecture, purpose-built data stores, and data analytics products should theoretically align with needs (noted in section 2) of key Medicaid stakeholders. Information system interoperability should facilitate connections across the data ecosystem to meet the needs of targeted data consumers. For example, the needs of a doctor are different than the needs of a healthcare administrators, which are different than the needs of federal policy makers. These needs should be simultaneously considered across component parts of a modular system and be reflected in investments related to data governance, standards, definitions, architecture, access, warehousing, and analytics.

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Data quality and patient confidentiality are at the center of building trust around Medicaid technology investments. Systems should be implemented with the highest level of integrity, auditability, and security. Delivering comprehensive quality data insights from interoperable MES technology will improve patient care, streamline program administration, garner public trust, inform state and federal policy makers, and allow reliable evidence to drive transparent policy changes.

Some themes on data include:

- Prioritize data governance throughout the data lifecycle. Data frameworks should be mapped against Medicaid program needs in order to identify gaps, define ownership, establish strategic data priorities to close gaps, and outline objective continuous quality improvement (CQI) processes. Focusing on governance early in the strategic planning process allows for each contributing data entity to discover synergies, openly discuss pain points or gaps, and adopt practices that facilitate data quality in priority areas cyclically. Teams should consider the boundaries of all technology modules—not just from a technical perspective, but from a data perspective as well.
- Showcase the importance of data in decision making. Modularity has elevated the role of data in Medicaid IT projects. Data is the connective tissue that binds modules to one another and motivates modern infrastructure updates. To ensure integrity and reusability of data, SMAs must pay attention to the data architecture (how the data are organized), the accuracy of the data dictionary (how the data are described), and the stability of data provenance (how the data are governed). The higher the quality of data, particularly for elements used for linking data, the more useful the data is. As modularity propagates in a Medicaid technology ecosystem, SMAs will find that the technology used will change but their data is a constant asset that appreciates over time. Giving workers and information system administrators access to regular reports, engaging them in CQI cycles, and using data narratives to show stakeholders how they impact decisions will aid with buy-in across the data lifecycle. People need to know why their work matters, and data can help paint that picture. With each data element prioritized, ask: Does this contribute to a Medicaid narrative worth showcasing?
- With every technology module decision, keep the patient and the provider at the center. Delivering a whole-person view of patients to enable holistic care by providers requires interoperable technology that can facilitate the exchange of usable information between systems in near real time. To achieve that vision Medicaid agencies should look for technology that facilitate nimble web services and connections that enable insightful information to end users and decisions makers. Solutions should provide all the necessary interfaces to enable integration and interaction with current and emerging technologies, like fast healthcare interoperability resources (FHIR), across the healthcare landscape.

Take advantage of the cloud

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Medicaid’s journey to the cloud also began five years ago. In 2016, there were no Medicaid systems on the cloud. In 2017, The (CMS) moved all Medicaid records to AWS Cloud. Throughout the years since, and the whirlwind of changes in Medicaid policy and technology, some states have found success with cloud infrastructure for a few reasons. They can move faster, upgrade to improve performance, save costs, and integrate disparate applications, products, and vendors through automated programming interfaces and gateways. They also benefit from granular controls, logs, and services for security, monitoring, and compliance support.

When modularity was first introduced, many Medicaid CIOs saw the promise of moving their MES infrastructure out to the cloud, but alignment among program and policy changes needed to come first. And, many MMIS had just been modernized/modularized through big bang implementations.

Cloud infrastructure may provide the platform upon which modernization can occur, but it does not have to mean a complete system turnover. Some states have deliberately chosen a lift, shift, optimize, then modernize approach. Such a stance is well-suited to the cloud and to the Medicaid agency because policies and programs can evolve as needed without the concern of: Will our infrastructure be able to handle the new load?

Cloud services were relatively new to government customers at that time and state CIOs were unsure how to draw apples-to-apples comparisons about security, data integrity, and costs to their state data centers, which were also a sunk cost that required agency tenancy to keep viable. Recent years have seen an explosion in the range of support services available through the cloud—bringing the concept of DevSecOps as a viable solution development lifecycle (SDLC) to a global audience—as well as service management options that provide SMAs with very predictable cost models for their enterprises.

On-premises infrastructure is increasingly less competitive every year. State Data Centers tend to struggle to make the investments necessary to support HIPAA compliance, and MES modules available in the marketplace are increasingly cloud-ready or even cloud-native.

If you are curious about how a cloud journey can help you achieve your Medicaid vision and goals, there are two areas we recommend to explore: system integration and data strategy.

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To integrate the systems of a modular MES (SI Function)

CMS guidance called out the system integrator (SI) as having the core responsibility for providing the alignment, integrity, and interoperability of the Medicaid IT architecture and cohesiveness of the various modules incorporated into the Medicaid enterprise.

General consensus has been to issue the SI function as the first technical function after the roadmap, program management office (PMO), and governance are in place. The cloud can accelerate the time to value for an SI architecture. Forming the foundation means it can help the state define technologies that will work best with their integration platforms, resulting in better defined RFP requirements, more targeted solutions, and lower-risk integration of modules to the MES.

For the SI function, below are tips and themes to keep in mind:

- **Integration platform:** Establish and/or manage enterprise service bus (ESB) adapters, meta-data repository, transfer engine, process orchestration engine, dashboard, batch engine
- **API management:** Publish and promote APIs, automate and control connections, monitor traffic, and provide memory management and coaching mechanisms
- **API governance:** Manage governance platform, API subscriptions, API promotion meta-data and design checkpoints, synchronize with SOA governance and business strategy and goals

To power your data strategy

The adage that data is the new oil has never rung truer than at this point in time when it comes to Medicaid. Data to power the MES and data to extract value and insights from and for the overall Medicaid program are invaluable. Data to design programs that will improve healthcare outcomes, and access to and quality of care, will help drive down costs, and ultimately, save lives. Medicaid agencies can benefit from recurring, legislatively required data reports and dashboards to ad hoc queries that arise from a new hypothesis. Most Medicaid leaders are certain there is untapped potential in their systems, and there are many vendors in the community with the skills, creativity, and willpower to draw that out. While there are governance, policy, program, and political hurdles that stand in the way of deep data mining in the Medicaid enterprise, most feel certain that technology should never be a blocker. The capability exists today and is only getting better.

There are two distinct areas where a data strategy can be pivotal to the modularity MES: 1) within the MES, meaning rapid data flows, forwards, and exchanges across software as a service (SaaS) products, applications, and/or modules; and 2) Medicaid data insights extracted from across disparate stores, including: operational data, claims, clinical, social, economic, human services agencies, schools, and service providers, and many more. For the first area, the SI function

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with a powerful data lake can process and exchange systems data and iterate quickly allowing for speeding implementation across modules. For the second area, Medicaid agencies can incorporate data into strategy and healthcare delivery with increased power and dynamism.

A data lake can be a mechanism to harness the data from the within disparate Medicaid systems and accelerate the data needed for the MES:

- Data storage and analytics solution offers more agility and flexibility than traditional data management systems.
- A data lake allows agencies to store all of their data, structured and unstructured, in a centralized repository.
- Features of an effective data lake should include: scalability, security, resiliency, and durability; it should support search and analysis capabilities on a variety of data types.
- Data lakes should be easy and quick to spin up and spin down, as needed.

Tips for wherever you are on your journey

1. Too often care coordination has not been a major focus for a robust MES contract. As the healthcare industry increasingly focuses on providing whole-person care and seek value—not volume—in care, facilitating health information exchange across the care continuum will continue to play a large role in healthcare moving forward.
2. Utilizing HIT Modularity can allow Medicaid agencies to coordinate the right care at the right place and the right time as modular technology can easily connect to various systems being utilized in the Medicaid enterprise, providing flexibility in complementary technologies.
3. Address other issues in healthcare, including advancing health equity and the social determinants of health with modularity. Medicaid programs use systems that source social data directly from clinical encounters, both via formal ICD-10 diagnoses and free text analysis of chief complaints that serve as proxies for social needs like housing instability and food insecurity. These data can be used to supplement fragmented and sparse patient-reported data and connect beneficiaries with state or community-based.

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We know that the Medicaid community has only scratched the surface when it comes to modernizing Medicaid technology and realizing benefits from modularity. As states build and execute on their strategic visions, take charge of their procurement, prepare for transformation, and leverage quality data, we will accelerate our ability to use technology for Medicaid program improvement. We hope this paper will spur new conversations and collaboration among states and vendors. Please reach out to our team or any of this paper’s contributors to further this discussion.

Thanks

Thank you to all the contributors who provided insights and observations:



