

Considerations for Achieving the Objectives of Modularity

A WHITE PAPER SUMMARIZING THE
RESULTS OF A HEALTH AND HUMAN
SERVICES INDUSTRY SURVEY

CompTIA



Human Services IT
ADVISORY GROUP



Private Sector
Technology Group

A collaborative industry survey conducted by the Private Sector Technology Group (PSTG) and the Human Services Information Technology Advisory Group (HSITAG)

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Executive Summary

The Private Sector Technology Group (PSTG) and the CompTIA's Human Services Information Technology Advisory Group (HSITAG) collaborated to understand the Medicaid Management Information Systems (MMIS) industry's readiness to provide modular solutions to State Medicaid Agencies (SMA). The PSTG and HSITAG Boards authorized the creation of the Modularity Survey Committee to canvass Health and Human Services (HHS) and MMIS vendors to determine the availability of deployment-ready modules that can support SMA requirements and Centers for Medicare and Medicaid Services (CMS) standards for enhanced Federal Funding Participation (FFP). The survey set out to determine what modular solutions exist and gather information related to CMS's stated objectives for modularity, which include increasing interoperability, reducing risk and cost, increasing speed to market, and promoting competition.

Some of the high level insights from the survey include:

- Respondents cited the lack of consistent definitions for modules as a risk to investing in modules and achieving reuse goals from state to state.
 - The lack of module definition, which CMS purposefully left vague for states to individually define, limits product interest and investment.
- Respondents identified procurement and acquisition requirements as significant risks in making progress toward modularity.
 - State procurement regulations and practices are generally not aligned with the concepts of modularity, which cause confusion in the market, particularly between what is desired and what is required in RFPs.
- Most respondents, both existing and new entrants, have more than 5,000 employees, suggesting size and scale may still be a factor for participation in the MMIS vendor market.
 - Size and scale remain relevant; smaller and innovative new entrants may be limited in approaching the market, potentially impacted by the lack of module definition from state to state.
- Respondents reported offering modules that aligned with CMS and the Standards and Conditions for Medicaid Information Technology.
 - The degree of alignment with CMS' standards and conditions indicate that the vendor market has a solid understanding of module requirements and is making some investments to improve solution alignment with these standards.

This white paper presents a synopsis of the survey findings and potential next steps to further explore the transformation to modularity. The background, methodology, survey questions and other related information are included in Appendix A.

The Modularity Survey Committee thanks the respondents from the vendor community for investing their time in this survey. The market's participation is invaluable to achieving the objectives of modularity.

Statement of Objectives

The Modularity Survey Committee's objectives were to conduct an industry-wide survey to assess the market's readiness to provide modular solutions across the Medicaid enterprise. The results of this survey would provide guidance to states and federal partners as they seek to procure and implement modular solutions that align with CMS' requirements for enhanced FFP. The Committee also sought to gain insight into the characteristics of deployment-ready modules to determine the fit/gap of the modules with CMS' guidance and general SMA requirements.

The Committee's charter identified the following tasks:

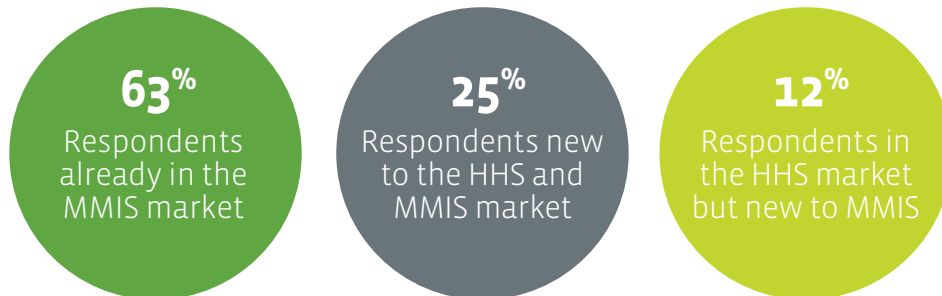
- Conduct an industry survey of available modules that support business processes required by SMAs and defined in the Medicaid Information Technology Architecture (MITA) framework, CMS certification requirements, and the Standards and Conditions for Medicaid IT
- Summarize survey results and make them available to federal and state agencies and the vendor community
- Identify challenges and considerations to achieve the objectives of modularity

Survey Results

Market Characteristics

The survey was sent to over 130 companies. There were 29 respondents representing a 22% response rate. Most respondents were large companies, with more than 5,000 employees. Five respondents had fewer than 100 employees.

Some of the goals of a modular MMIS is to attract new vendors to the market, encourage competition, and provide more options for states in their purchasing decisions. The survey results indicated that the trend toward modularity is attracting new vendors to the MMIS market. Respondents described their market participation as:



Thus, combining the last two categories, 37% of respondents were new to the MMIS market.

We asked respondents to classify their company and offerings. Respondents could select multiple classifications. From highest to lowest, the results were:

- **Module Provider – 71%**
- **System Integrator* – 57%**
- **Other** – 39%**
- **Project Management Provider – 29%**
- **Quality Assurance Provider – 29%**
- **Fiscal Agent – 29%**
- **Independent Verification and Validation Provider – 14%**

* While Systems Integration (SI) is not a module as envisioned by CMS' definition, some states are considering the MMIS integration platform and Enterprise Service Bus (ESB) as a module. Therefore, it was included it as a category.

** Other included several discrete categories, such as Analytics, Mobility, Content Management, and Web Portal.

Modules Represented in the Market Today

To create a standard vernacular for survey purposes, the Committee canvassed a broad cross section of states and looked for commonalities. The following list of modules is a result of identifying at least two states that were planning or procuring a module represented by the titles below. We should note that within a category, such as Provider Management, some states use a comprehensive approach from initial application to ongoing claims and prior authorization processing, while others separate eligibility and enrollment from ongoing service.

TABLE 3.2 STANDARD LISTING OF MODULES

MODULE NAME/CATEGORY	PERCENTAGE OF RESPONDENTS REPORTING MODULES READY TO DEPLOY*
Behavioral Health Management	24%
Business Intelligence/Decision Support	59%
Care Management	52%
Dental Benefits Management	10%
Enrollment Broker	10%
Enterprise Data Warehouse	48%
Fee-for-Service Claims Processing	35%
Financial Management	28%
Member Eligibility and Enrollment	52%
Member Service and Management	48%
Pharmacy Benefit Management	24%
Population Health Management	38%
Prior Authorization/Utilization Review	38%
Program Integrity/Fraud Waste and Abuse	52%
Provider Eligibility and Enrollment	66%
Provider Service and Management	52%
Systems Integrator	41%
Third Party Liability	28%
Other**	25%

*Note: The percentages do not represent the prevalence or concentration of the module category in the market, rather, it represents the offerings of the respondent companies.

**Other” responses included the ESB, Marketing and Outreach, Citizen Engagement, Call Center, Mobile, and Patient Engagement.

Module Characteristics

We questioned module characteristics to determine the features and functions that generally define the modules. While the characteristics were self-reported and not verified, the respondents indicated a high level of alignment with the CMS and state objectives, especially those embodied in the Standards and Conditions for Medicaid IT.

- Respondents who reported modules that support non-MMIS solutions, including commercial solutions – 80%
- Respondents who reported modules that exchange data in real-time with other modules – 86%
- Respondents who reported modules that separate the presentation layer from applications and data layers – 85%
- Respondents who reported modules that use a rules engine, with a majority of those responding the rules engine is native to the module – 86%
- Respondents who reported modules that contained native workflow management triggers – 88%
- Respondents who reported modules that have on-demand/ad-hoc reporting capabilities – 98%
- Respondents who reported modules that interact with other modules by sending and receiving web services brokered by an ESB – 90%
- Almost half of the respondents used quarterly releases to update and enhance solutions.
- Most vendors support legacy data conversion for their modules.
- More than half of the modules are implemented as part of a certified MMIS.

We asked questions about module bundling to gain understanding from the respondents on what made most sense from a system perspective. Unfortunately, the responses were not sufficient to allow for meaningful analysis. Respondents generally reported that their modules were conducive to bundling with other related modules and some of the responses are provided in later sections of the white paper.

The preferred delivery models among respondents was Software-as-a-Service (SaaS) and Cloud hosted, followed equally by vendor hosted and on-premise at the state.

Module Details: Respondents were asked to select up to four modules that they wanted to answer further questions on regarding architecture, structure, and capabilities to capture further insights into how these specific modules function.

In the following pages, we provide detailed survey data for the modules that are most represented in the market. The detail can be used by State Medicaid Agencies to understand common features and trends, which will help inform their requirements and the ability of the market to respond to them.

1) Provider Eligibility and Enrollment

Of the vendors responding:

- All respondents reported that this module supports non-MMIS solutions, including commercial solutions.
- Forty percent of respondents said this module has already been implemented as a part of a certified MMIS.
- All respondents said this module can exchange data in real-time with other modules.
- All respondents said this module interacts with other modules by sending and receiving web services brokered by an ESB.
- Most respondents said that this module's presentation layer is separated from the business and data layers.
- Most respondents reported that this module uses a rules engine, with only one respondent saying its module does not. Multiple scenarios were reported, including, native to the module, capable of interfacing with any rules engine, and capable of interfacing with only specific rules engines.
- All respondents said the module engages workflow triggers, with the majority reporting it triggers tasks to external workflows using web services and the minority reporting it triggers tasks to other workflows only when the same workflow software is used.
- Only one respondent's module does not include reporting functionality while the remaining respondents were split between having integrated reporting packages and interfacing capabilities to other reporting solutions.
- The standards used most for publish interface definitions were through exposed web services and through supports of standard interface definitions.
- Respondents indicated that this module currently interfaces with the following agencies/systems:

Human Service Agency – 88%

Community Organizations Providing Outreach – 75%

Care Coordination – 63%

Health Insurance Exchange – 50%

Referral or Other Local Services – 50%

Other – 38%

Health Information Exchange – 38%

Public Health Agency – 38%

Electronic Health Records – 25%

- Most respondents release updates or enhancements for this module semi-annually.
- All respondents support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered include:

SaaS/Cloud Hosted – 89%
On-premise at State – 56%
Hosted at Vendor Data Center – 33%
Hosted by Third Party – 33%

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

Provider Service and Management – 78%
Care Management – 56%
Fee-for-Service Claims Processing – 44%
Prior Authorization/Utilization Review – 44%
Financial Management – 33%
Member Eligibility and Enrollment – 33%
Enrollment Broker – 33%
Member Service and Management – 33%

2) Enterprise Data Warehouse

- Only one respondent reported that this module does not support non-MMIS solutions, including commercial solutions.
- Half of the respondents said this module has already been implemented as part of a certified MMIS.
- More than two-thirds said this module:
 - o Can exchange data in real-time with other modules
 - o Interacts with other modules by sending and receiving web services brokered by an ESB
 - o Separates the presentation layer from the business and data layers
- Respondents reported multiple rules engine features, including native to the module and capable of interfacing with any rules engine. A few respondents said that the module does not use a rules engine.
- Half of the respondents said this module cannot trigger tasks outside the module. Others said the module triggers tasks to external workflows using web services or it triggers tasks to another module's workflow only when the same workflow software is used.
- All respondents' modules include reporting functionality, evenly split between having integrated reporting packages or interfacing capabilities with other reporting solutions.
- The standards most used for the module to publish interface definitions were through exposed web services and through standard interface definitions.
- Respondents indicated that this module currently interfaces with the following agencies/ systems:

Health Insurance Exchange – 83%

Public Health Agency – 83%

Human Service Agency – 83%

Care Coordination – 83%

Electronic Health Records – 83%

Health Information Exchange – 67%

Referral or Other Local Services – 67%

Community Organizations Providing Outreach – 50%

Other – 33%

- Most respondents release updates/enhancements for this module quarterly.
- All respondents support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered include:

SaaS/Cloud Hosted – 75%
Hosted at Vendor Data Center – 75%
On-premise at the State – 63%
Hosted by Third Party – 50%
Other – 13%

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

Business Intelligence/ Decision Support – 86%
Population Health Management – 57%
Fee-for-Service Claims Processing – 43%
Provider Eligibility and Enrollment – 43%
Financial Management – 43%
Program Integrity/Fraud Waste and Abuse – 43%
Member Eligibility and Enrollment – 43%
Systems Integrator – 43%

3) Fee-for-Service Claims Processing

- Only one respondent said that this module does not support non-MMIS solutions, including commercial solutions.
- Only one respondent said that this module has already been implemented as part of a certified MMIS.
- All respondents said this module can exchange data in real-time with other modules.
- All respondents said this module interacts with other modules by sending and receiving web services brokered by an ESB.
- All respondents said that this module's presentation layer is separated from the business and data layers.
- Most respondents reported using rules engines native to the module. Only one respondent said it does not use a rules engine.
- Most respondents reported that the module can trigger workflow tasks outside of the claims processing module. Respondents were split on the use of web services and requiring the same workflow software to trigger tasks.
- All respondent's modules include reporting functionality; evenly split between having integrated reporting packages and interfacing capabilities with other reporting solutions.
- The standards most used for the module to publish interface definitions were through standard interface definitions, followed by a tie between proprietary interface definitions and exposed web services.
- Respondents indicated that this module currently interfaces with the following agencies/ systems:

Care Coordination – 100%

Human Service Agency – 80%

Health Information Exchange – 40%

Public Health Agency – 40%

Other – 40%

Health Insurance Exchange – 20%

Community Organizations Providing Outreach – 20%

Referral or Other Local Services – 20%

Electronic Health Records – 20%

- Most respondents release updates/enhancements for this module quarterly.
- All respondents support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered with this module:

SaaS/Cloud Hosted – 67%
Hosted at Vendor Data Center – 50%
On-premise at State – 50%
Hosted by Third Party – 33%

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

Financial Management – 100%
Provider Eligibility and Enrollment – 80%
Provider Service and Management – 80%
Third Party Liability – 80%
Prior Authorization/Utilization Review – 80%
Member Eligibility and Enrollment – 80%
Member Service and Management – 80%
Program Integrity/ Fraud Waste and Abuse – 80%
Care Management – 60%
Pharmacy Benefit Management – 40%
Behavioral Health Management – 40%
Dental Benefits Management – 40%
Population Health Management – 40%
Systems Integrator – 40%

4) Member Eligibility and Enrollment

- About half of the respondents reported that this module is not used in commercial and other environments, including non-MMIS.
- About half of the respondents reported that this module has already been implemented as part of a certified MMIS.
- Eighty percent said this module can exchange data in real-time with other modules.
- All respondents said this module interacts with other modules by sending and receiving web services brokered by an ESB.
- All respondents said that this module's presentation layer is separated from the business and data layers.
- All but one respondent reported that a rules engine is used but none are native to the module.
- Most respondents reported that this module triggers workflow tasks outside the module. The most common method was the use of web services.
- All modules include reporting functionality; evenly split between having integrated reporting packages and interfacing capabilities with other reporting solutions.
- The standards most used for the module to publish interface definitions were through standard interface definitions, followed by exposed web services.
- Respondents indicated that this module currently interfaces with the following agencies/ systems:

Health Insurance Exchange – 100%

Public Health Agency – 100%

Human Service Agency – 100%

Community Organizations Providing Outreach – 100%

Care Coordination – 100%

Health Information Exchange – 67%

Electronic Health Records – 67%

Other – 33%

- The most common release for updates or enhancements for this module were tied between monthly and quarterly.
- All respondents support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered with this module:

- **SaaS/Cloud Hosted – 75%**
 - **Hosted at Vendor Data Center – 50%**
 - **On-premise at State – 50%**
 - **Hosted by Third Party – 25%**

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

- **Enterprise Data Warehouse – 67%**
 - **Business Intelligence/ Decision Support – 67%**
 - **Program Integrity/ Fraud Waste and Abuse – 67%**
 - **Member Service and Management – 67%**
 - **Care Management – 67%**
 - **Population Health Management – 67%**
 - **Systems Integrator – 67%**
 - **Fee-for-Service Claims Processing – 33%**
 - **Pharmacy Benefit Management – 33%**
 - **Provider Eligibility and Enrollment – 33%**
 - **Provider Service and Management – 33%**
 - **Financial Management – 33%**
 - **Third Party Liability – 33%**
 - **Prior Authorization/Utilization Review – 33%**
 - **Enrollment Broker – 33%**
 - **Behavioral Health Management – 33%**
 - **Dental Benefits Management – 33%**

5) Business Intelligence/Decision Support

- All respondents said that this module supports non-MMIS solutions, including commercial solutions.
- Half of the respondents said that this module has been implemented as a part of a certified MMIS.
- Only one respondents said this module cannot exchange data in real-time with other modules.
- All respondents said this module interacts with other modules by sending and receiving web services brokered by an ESB.
- Most respondents said that this module's presentation layer is separated from the business and data layers.
- All respondents said this module uses a rules engine, split between being native to the module or being able to integrate with any rules engine.
- All respondents said the modules engages workflow triggers, with all saying they trigger tasks to external workflows using web services.
- This module includes reporting functionality with the majority having integrated reporting packages.
- The standards most used for the module to publish interface definitions were through exposed web services, followed by a tie between proprietary and standard interface definitions.
- Respondents indicated that this module currently interfaces with the following agencies/ systems:

Health Insurance Exchange – 100%

Human Service Agency – 100%

Health Information Exchange – 80%

Public Health Agency – 80%

Community Organizations Providing Outreach – 80%

Care Coordination – 80%

Referral or Other Local Services – 80%

Electronic Health Records – 80%

Other – 40%

- Respondents reported that they release updates or enhancements monthly, quarterly, or semi-annually.
- All respondents except one support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered with this module:

SaaS/Cloud Hosted – 100%
Hosted at Vendor Data Center – 60%
Hosted by a Third Party – 60%
On-premise at State – 40%

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

Enterprise Data Warehouse – 100%
Provider Eligibility and Enrollment – 80%
Population Health Management – 80%
Care Management – 80%
Third Party Liability – 60%
Systems Integrator – 60%
Provider Service and Management – 60%
Program Integrity/Fraud Waste and Abuse – 60%
Prior Authorization/Utilization Review – 60%
Pharmacy Benefit Management – 60%
Member Service and Management – 60%
Member Eligibility and Enrollment – 60%
Financial Management – 60%
Fee-for-Service Claims Processing – 60%
Enrollment Broker – 60%
Dental Benefits Management – 60%
Behavioral Health Management – 60%

6) Provider Service and Management

- All respondents said that this module supports non-MMIS solutions, including commercial solutions.
- Only one respondents said this module has not been implemented as a part of a certified MMIS.
- All respondents said this module can exchange data in real-time with other modules.
- All respondents said this module interacts with other modules by sending and receiving web services brokered by an ESB.
- All respondents said that this module's presentation layer is separated from the business and data layers.
- All respondents said this module uses a rules engine but the capabilities were varied, including native to the module, interfacing with any rules engine and interfacing with only specific rules engines.
- All respondents said the module engages workflow triggers. Three said it triggers tasks to external workflows using web services and while the remaining respondents said it triggers tasks to other modules only when the same workflow software is used.
- All respondents include reporting functionality with this module, split between having an integrated reporting packages and capability to interface with other reporting solutions.
- The standards most used for the module to publish interface definitions were through standard interface definitions.
- Respondents indicated that this module currently interfaces with the following agencies/ systems:

Health Information Exchange – 100%

Human Service Agency – 100%

Health Insurance Exchange – 67%

Public Health Agency – 67%

Community Organizations Providing Outreach – 67%

Care Coordination – 67%

Referral or Other Local Services – 67%

Electronic Health Records – 67%

- Most respondents release updates and enhancements for this module quarterly.
- All respondents support the conversion of legacy data to a format that is compatible with this module.
- Deployment options offered with this module:

SaaS/Cloud Hosted – 75%

On-premise at State – 75%

Hosted at Vendor Data Center– 25%

Hosted by Third Party – 25%

- Respondents said this module is most conducive to being procured as a bundle with the following modules:

Provider Service and Management – 78%

Care Management – 56%

Fee-for-Service Claims Processing – 44%

Prior Authorization/Utilization Review – 44%

Financial Management – 33%

Member Eligibility and Enrollment – 33%

Enrollment Broker – 33%

Member Service and Management – 33%

Modularity Risks

More than half of respondents indicated the biggest risk to modularity is state procurement and acquisition requirements/regulations. Modularity suggests a dynamic, flexible approach to procurement, yet most states are tied to prescriptive processes that offer little room for innovation or outcome-based contracts. For example, while a state RFP may include requirements for innovative approaches, such as SaaS or cloud hosting, other standard procurement regulations may have requirements that run counter to the innovative approach.

Respondents mentioned other specific constraints and obstacles that pose the greatest risk to achieving modularity, as follows:

- Lack of common definition and scope for specific modules
- Lack of role definition and potential conflicts over who is making decisions on modules – the state, SI or module vendors
- Procurements too frequently cancelled resulting in vendors leaving the market
- RFP requirements that favor incumbents
- Outdated procurement rules and requirements that do not align with what states are trying to acquire
- Lack of clarity around the SI's role and requirements
- Insufficient enterprise planning
- Lack of project management to manage dependencies from module to module

Next Steps and Considerations to Achieve Objectives of Modularity

CMS Modularity Objectives

CMS developed a modular vision for the MES and MMIS with several goals in mind, including a desire to spur innovation, increase market competition, and reduce risks and costs. It is clear that additional work is needed among the three parts of this market – CMS, states, and vendors – to achieve these goals. In addition to collecting information on the modules available in the market today, the Committee also looked at considerations needed to achieve the objectives of modularity. The key findings and suggested next steps are prioritized immediately below. Additional observations and potential next steps can be found in Table 4.1: Topics and Considerations later in this white paper.

Key Findings & Recommendations

- **Modularity Definition & Implementation Framework**

Lack of clarity around module definitions, as well as role definitions in a multi-vendor implementation, present one of the worst risks – the risk of the unknown. This negatively impacts interest from the vendor community and limits investment in pursuing market opportunities.

- **Commercial Reuse of the Modules**

The survey results indicate vendors have modules that support similar business needs in non-MMIS environments. As such, reuse should hold great promise in the modular MMIS environment. However, as identified above, the lack of a common definition for a module may limit the full potential of reuse. Vendors voice concern regarding how to assess the size of the market when definitions for modules vary from state to state, making the investment calculation very challenging.

- **Procurement**

The concept of modularity is new and creating some confusion in the market, as states are adjusting RFPs and project approaches. In some states, procurement regulations or practices may severely impede alignment with a modular solution approach. Reissued procurements and ones that result in many assumptions to bind scope, negatively affect time lines and drive vendors costs. This also affects new entrants as they will be reluctant to build individual, customized responses for each RFP.

- **Recommendations:**

States and industry should work together more closely to share best practices and lessons learned to drive toward more common and uniform visions of a modular MMIS. While CMS has purposefully refrained from defining the scope of modules, some level of commonality is required for the industry to invest in modules that will meet the needs of states and align with the guidelines set by CMS.

States and industry should continue their collaboration on the Uniform RFP Guide developed by the PSTG, which seeks to define common MMIS requirements that can be included in RFPs. Best practices and lessons learned should be shared broadly to influence procurement modifications or reforms in states needing to modernize their procurement practices to accommodate modular requirements.

The PSTG and HSITAG plan to continue their collaboration and conduct bi-annual surveys to research and present trending data relative to the market’s progress toward achieving the objectives of modularity.

The table below describes what we learned through the survey, as well as through industry meetings and conferences. This information offers some thoughts, for further exploration or potential next steps that could be taken to advance the goals of modularity.

TABLE 4.1 TOPICS AND CONSIDERATIONS

Topic	Result Observations	Potential Next Steps
New Market Entrants	Size and scale potentially remain relevant. Smaller, innovative new entrants may be reluctant to approach the market.	Conduct a study with small, innovative firms to identify barriers to entering the MMIS market.
Module Definition	The lack of module definition by CMS may limit product interest and investment.	Engage innovative companies that are new to the market, but not yet successful in securing business, to determine if module definition was a factor. Engage legacy MMIS vendors to gain feedback on module definitions in which they would be more likely to invest. Combine the results from both of the above exercises to create a baseline of market-recommended module definitions.
Workflow	Automated workflow across applications is key to modularity’s success yet capabilities are inconsistent.	It may be beneficial to conduct more focused surveys around the level of or specific targets for workflow automation that vendors currently support. The results could be used to make recommendations for baseline workflow standards. Additionally, it may be worthwhile to explore workflow standards that would advance MITA maturity.
Business Rules	Standard business rules may be candidates for reuse, thus advancing the objectives of modularity.	It may be valuable to survey vendors to gauge how many have experience exporting business rules for sharing with other states directly or via CMS’ Collaborative Application Lifecycle Management Tool (CALT). This could inform policies and practices for reusing business rules.

Topic	Result Observations	Potential Next Steps
Certification	More than half of respondents indicated their modules are operating as part of a certified MMIS. However, this does not mean that the module itself has been certified.	It may be valuable to learn from CMS how many vendor solutions have successfully completed the certification process.
Project Management and Multi-Vendor Management	Vendors expressed concerns that a lack of role definition and clear decision-making processes across the state, SI and module vendors create project risk.	Engage in regular best practices and lessons learned forums to share experiences. Leverage PSTG and HSITAG to facilitate these sessions.
Procurement	The concept of modularity is still new and creates some confusion in the market as states are adjusting RFPs and project approaches to include modularity.	Engage in regular best practices and lessons learned forums to share experiences. Leverage PSTG and HSITAG to facilitate these sessions. Continue to build on the Uniform RFP guide and Supplements developed by the PSTG to provide baseline standards for states to use for modular procurements.
Commercial Reuse	About 90% of modules are used commercially and in other non-MMIS environments but only half of these are operating as part of a certified MMIS.	Examine the barriers within the commercial space that prevent reuse in the MMIS market.
Rules Engine	Rules engines are prevalent but the capability of these engines to integrate with other rules engines is inconsistent. Additionally, it does not appear to appreciably matter whether the rules engine is native to the application or the application uses an enterprise rules engine.	It may be valuable to collaborate with states and CMS to determine if there is a business case justification for a preferred business rules engine module.
SaaS and Cloud Delivery and Procurement Requirements	The predominant and preferred delivery model is SaaS or a cloud-hosted. This finding, weighed against procurement requirements that constrain SaaS or cloud hosted models, presents a challenge.	As the trend appears to suggest that vendors are more inclined to offer modules through SaaS or cloud hosted delivery modules, it may be valuable to form a workgroup to develop standard RFP language for alternate delivery models. Leverage PSTG and its Uniform RFP Guide to develop RFP standards language.

Conclusion

The transformation to a modular MMIS and MES is a significant change for HHS and the Medicaid market. As the market is learning, there are many facets of this effort that must align before the goals of modularity will be achieved. Whether evaluating key objectives, such as the degree to which modularity results increases competition, reduces time to market, or cost of ownership, there is much to be learned. The PSTG and HSITAG offer our survey findings and observations to assist in the ongoing process of gathering to inform decisions and practices. As we share these results at industry events and examine next steps, we welcome your feedback.

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APPENDIX A: BACKGROUND

Purpose

The purpose of this paper is to report the results of an industry survey initiated to identify the availability of MMIS modules that exist in the market and to determine their fit with the needs of states and CMS. Specifically, the survey focused on the availability of modules to replace traditional monolithic MMIS components and provide the benefits that modularity is hoped to achieve.

Methodology

The methodology for the survey is rooted in the Project Charter for the Modularity Survey Committee:

- Provide guidance to states and federal partners on what technologies exist today that may meet the business needs of the Medicaid Enterprise
- Identify considerations that need to be acted upon to achieve the objectives of modularity, including, increasing interoperability, reducing risk and cost, increasing speed to market, and promoting competition.

Survey Instrument

The goal of the survey instrument was to develop an approach for collecting as much information as possible, while ensuring a balance of the respondent's investment of time required to complete the survey with the need for detail. The Committee's goal was to develop a survey instrument that presented as much information as possible to the respondent, so answers could be completed with a simple "point and click" and include dynamically created next step responses to further reduce completion time. The goal was also to significantly reduce reliance on free format type responses to optimize result compilation and analysis. Free format questions were reserved for clarification of a respondent's selection of "other" or in areas such as "risk" concerns.

Complicating this approach, however, is the lack of common definitions or scope of the various modular solutions. Therefore, for this survey, the Committee created a common list of modules that was shared with survey participants. This same list was used to prompt questions throughout the survey. The list of common modules was deconstructed to smaller solutions, recognizing that some vendors have more niche or discrete solutions.

The survey offered 18 different choices for module solutions along with an "other" option. A listing of the module choices presented to the respondents is provided in Section 3.2.

The list of modules presented to respondents included the role of the SI. Since several early state procurements for a modular MMIS solution included the integration platform and ESB as a component of the SI scope, the Committee opted to include it in the survey.

Vendor List

Since a key objective was to identify what solutions are in the market that states can leverage to meet their needs for a modular MMIS/MES, the Committee began its process by identifying a universe of potential solution vendors. Key to this identification process was the notion that the pool of vendors would potentially include respondents not currently selling into the state market, but who had solutions that could potentially address this market. To do this, the Committee initially reviewed major industry HHS conferences to compile an initial list of potential respondents who attended or sponsored the events. This included the following conferences:

- Medicaid Enterprise System Conference (MESC)
- American Public Human Services Association- IT Solutions Management (APHSA ISM)
- Healthcare IT Connect Summit
- Healthcare Information and Management Systems Society (HiMSS) Conference

A subcommittee analyzed a compiled list of these vendors, which exceeded more than 1000. Its task was to identify known vendors, (those already selling into the state Medicaid market with full or partial MMIS solutions), and potential vendors, (those selling solutions that aligned with MMIS requirements but currently only selling into the commercial or non-MMIS HHS space).

Once the subcommittee completed its work to compare the list of potential vendors to a list of known and potential vendors, the resulting list was shared internally with the full Committee and representatives from CMS. Based on input from reviewers, the list was modified and a final target universe of approximately 130 vendors was created.

Conducting the Survey

The survey was developed and conducted as an online survey. The process and survey questions were piloted to a limited number of companies prior to its distribution to the larger target community. Feedback from this process was incorporated in the overall process, instructions for the survey, and the survey questions.

The survey was then released to the target community through email, with a soft closing deadline that was followed by reminder email requests to companies that did not respond. The survey was open for completion for approximately one month.

The survey was administered by the Research Committee at CompTIA. To avoid any concerns regarding member companies having insight into potential competitor information during the survey, respondents were assured confidentiality. CompTIA collated the results from the survey and responses were kept confidential and are not attributable back to individual respondents. The Modularity Survey Committee members, in partnership with CompTIA, analyzed the topline data, the results of which were announced and shared in summary format at the annual MESC Conference in August 2017 in Baltimore, Maryland.

During the MESC conference, the Co-chairs of the Committee shared summary results of the survey during a panel on modularity, which included a question and answer session with the audience. The Co-chairs also presented this information to an All Industry session sponsored by the PSTG and facilitated a brain-storming session at this meeting. Input provided by participants of these various sessions, including opportunities and challenges, helped inform and refine the results of this survey.

TABLE 5.1 SURVEY QUESTIONS

#	Question	Answer Choices
1	How many total employees work at your company?	1 to 99 100-499 500-999 1000-4999 5000 or more
2	To help provide context to the survey results, approximately what percentage of total company staff are devoted to Health and Human Services (HHS) market activities? For staff partially involved in the HHS market, please estimate as full-time equivalents (FTEs).	Open field
3	Approximately what percentage of total company revenue are derived from HHS market activities?	Open field (add a comment field to this question)
4	To start, please indicate your company's offering(s) in the HHS market. Check all that apply:	QA Provider Module Provider IV&V Provider PMO Provider Fiscal Agent System Integrator Other, please specify (open field)
5	Thinking about procurement opportunities in the MMIS environment, are there any notable constraints, risks, or obstacles that are likely to prevent your company doing business in this space?	Yes - Please describe (open field) No
6	Which of the following categories of modular MMIS solutions does your company market, sell and deliver?	Fee-for-Service Claims Processing Pharmacy Benefit Management Enterprise Data Warehouse Business Intelligence/ Decision Support Provider Eligibility and Enrollment Provider Service and Management Financial Management Third Party Liability Program Integrity/ Fraud Waste and Abuse Prior Authorization/Utilization Review Member Eligibility and Enrollment Enrollment Broker Member Service and Management Behavioral Health Management Dental Benefits Management Care Management Population Health Management Systems Integrator Other- Please describe (open field)

#	Question	Answer Choices
7	Please select up to four modules for which you would like to answer further questions regarding architecture, structure and capabilities.	Shows the modules they selected in Q6
	For each module selected in question 7, the following questions will be asked.	
8	You indicated your company is involved in the following MMIS solution(s). For each item, please indicate if the module supports non-MMIS solutions, including commercial solutions.	Yes, supports non-MMIS solutions No Please explain
9	Has this module already been implemented as part of a certified MMIS?	Yes No What year was it last certified? (open field)
10	Does this module exchange data in real-time with other modules?	Yes No
11	Does this module interact with other modules by sending and receiving web services brokered by an enterprise service bus (ESB)?	Yes No
12	Is this module's presentation layer separated from the business and data layers so it can integrate with other modules to produce a more seamless user experience if multiple vendors provide modules for a single MMIS?	Yes No
13	Does this module use a rules engine?	Yes - native to the module Yes - requires a specific rules engine Yes - integrates with any rules engine No Other- please explain (open field)
14	Does this module engage in workflow triggers?	Yes - triggers tasks to external workflow using web services/APIs Yes - triggers tasks to other modules' workflow only when the same workflow software is used No - cannot trigger tasks outside the module Other - Please explain (open field)
15	Does this module have on demand/ad hoc reporting capabilities?	Yes - integrated reporting package Yes - capable of interfacing with external reporting package or enterprise data warehouse No - reporting functionality included Other- Please explain (open field)
16	Next, what standards does your module use to publish interface definitions? Select all that apply.	Supports standard interface definitions (e.g. X12, HL7) Uses proprietary (or customized) interface definitions Through exposed web services Other - Please explain (open field)

#	Question	Answer Choices
17	Please indicate those solutions with which this module: (name module) is currently interfacing:	Health Insurance Exchange Health Information Exchange Public Health Agency Human Service Agency Community Organizations Providing Outreach Care Coordination Referral or Other Local Services Electronic Health Records Other - Please explain (open field)
18	How often do you release updates/enhancements for this module, not including bug fixes or minor patches?	Monthly Quarterly Semi-annually Annually Other - Please explain (open field)
19	Does your company support the conversion of legacy data to a format that is compatible with this module?	Yes No Other - Please explain (open field)
20	What deployment options do you offer for this module?	SaaS/Cloud Hosted On-Premise at the State Hosted at Your Data Center Hosted by Third Party Other - Please explain (open field)
21	Is this module (name module) conducive to being procured as a bundle with others? If yes, which ones?	Fee-for-Service Claims Processing Pharmacy Benefit Management Enterprise Data Warehouse Business Intelligence/ Decision Support Provider Eligibility and Enrollment Provider Service and Management Financial Management Third Party Liability Program Integrity/ Fraud Waste and Abuse Prior Authorization/Utilization Review Member Eligibility and Enrollment Enrollment Broker Member Service and Management Behavioral Health Management Dental Benefits Management Care Management Population Health Management Do not believe there are any modules more conducive to being procured independently No opinion
22	Lastly, are you willing to be contacted to provide further or follow-up information, or to provide further information on your modules?	Yes - Please share contact information (open field) No

Stakeholders

The survey was designed to provide information for state HHS leadership, federal oversight partners at CMS and the HHS/MES/MMIS vendor community.

Timing

The PSTG and HSITAG industry groups began their collaboration on this industry survey in late 2016 with committee members identified and working by January 2017. The survey was conducted during the late spring and early summer with results discussed at MESC in August 2017. After delivering a presentation with preliminary results, the Modularity Survey Committee further analyzed the results and drafted this white paper. A timeline of the major activities is included below.





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