Department of Health and Human Services

Centers for Medicare & Medicaid Services

Guidance for Exchange and Medicaid Information Technology (IT) Systems

Version 2.0

May, 2011

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1.   Introduction

1.1   Purpose and Scope

The purpose of this *Guidance for Exchange and Medicaid IT Systems*, Version 2.0 (hereafter referred to simply as "IT Guidance") is to assist states as they design, develop, implement, and operate technology and systems projects related to the establishment and operation of Health Insurance Exchanges as well as coverage expansions and improvements under Medicaid and the Children's Health Insurance Program (CHIP), and premium tax credits and cost-sharing reductions under the Affordable Care Act. The Centers for Medicare & Medicaid Services (CMS) publishes this guidance to help states achieve interoperability between information technology (IT) components in the federal and state entities that work together to provide health insurance coverage through the Exchange, Medicaid or CHIP programs. IT systems should be simple and seamless in identifying people who qualify for coverage through the Exchange, tax credits, cost-sharing reductions, Medicaid, and CHIP.

Starting in 2014, Exchanges will help qualified individuals and small employers shop for, select, and pay for high-quality, affordable private health plans that fit their individual needs at competitive prices. By providing a place for one-stop shopping, Exchanges will make purchasing health insurance easier and more understandable. As with other industries, having a sophisticated, consumer-friendly IT infrastructure will be critical to success. This document replaces version 1.0 published on November 3, 2010. As noted in the prior version, we will continue to revise, update, and expand this document over time. If in establishing final policies via rulemaking, CMS revises the framework and approach for developing IT systems, CMS will revise this guidance as well. This IT Guidance reflects the combined work of the Center for Consumer Information and Insurance Oversight; the Center for Medicaid, CHIP and Survey and Certification; and the Office of Information Services.

Version 2.0 establishes a framework and approach for developing IT systems, focusing primarily on those components and functions that are the subject of the Early Innovator IT Cooperative Agreement awards issued to seven applicant states/state consortia on February 26, 2011 (http://www.healthcare.gov/news/factsheets/exchanges02162011a.html), and the Final Rule on Federal Funding for Medicaid Eligibility Determination and Enrollment Activities published in the *Federal Register* on April 19, 2011 (Volume 76, Number 75, at 21950).

In addition, on January 20, 2011, the U.S. Department of Health and Human Services (HHS) announced a new funding opportunity for grants to help states continue their work to implement Exchanges. The Exchange establishment grants recognize that states are making progress toward establishing Exchanges but are doing so at different paces. States that are moving ahead at a faster pace can apply for multi-year funding. States that are making progress in establishing their Exchange through a step-by-step approach can apply for funding for each project year. States can use the Exchange establishment grants for a number of different activities, including conducting background research, consulting with stakeholders, making legislative and regulatory changes, governing the exchange, establishing IT systems, conducting financial management and performing oversight, and ensuring program integrity. For more information, visit http://www.healthcare.gov/news/factsheets/exchestannc.html.

Further guidance will be based on best IT practices, future policy decisions and regulations; ongoing feedback from states, vendors, and other stakeholders; lessons learned from early IT development projects; and further development and evolution of standards. States receiving funding under a Cooperative Agreement for Exchange development or under an Advance Planning Document (APD) under Medicaid for eligibility system development should pay close attention to and comply with this guidance. To ensure that states remain on target with their IT development projects, states should review and adhere to this guidance. Although CMS will use additional avenues for communication and guidance to assist and oversee states as they request and utilize federal funds for Exchanges and Medicaid IT development, this document and its future iterations, including any iterations that incorporate final policies described in any Final Rule, should be considered a key source of information to states. CMS will use this guidance in reviewing state applications for funding under Exchange grants and federal match under Medicaid.

This *IT Guidance* provides national direction on how IT systems should support and enable business operations and the processes for health care coverage through Exchanges and Medicaid under the Affordable Care Act. We do not intend to impose a single IT solution on individual states and will actively ensure the development of solutions and approaches that will work in all states to meet key business objectives.

1.2   Collaborative IT Development Approach

Improving the availability of high-quality health care coverage to families and individuals will be achieved through a collaborative partnership between and within federal agencies and states responsible for implementation of the Exchanges and the Affordable Care Act's Medicaid and CHIP provisions. We encourage states to work together and with federal agencies to develop and deploy shared services to minimize the expense and reduce the risks associated with individual state, end-to-end IT development and implementation. This collaboration should also occur within states and within the federal government to ensure effective and efficient data exchange between state health coverage programs and sources of authoritative data for such elements as income, citizenship, and immigration status. In addition, a high degree of collaboration between the private and public sectors will ensure appropriate coverage and financial support for employers and employees.

We intend to promote and foster the development of IT components and models to drive the delivery of intended business results. We will promote standards and foster the development of shared business process models, requirements, specifications, technical architecture, and programming to the extent feasible. We intend to communicate and provide access to those IT capabilities or components developed and maintained at the federal level as they become available, recognizing that they may be modified as new information and policy are developed.

We expect that, in this collaborative atmosphere, the solutions will emerge from the efforts of private-sector vendors, business partners, and governmental projects funded at both the state and federal levels. Because of the demanding timelines for development, testing, deployment, and operation of IT systems for Exchanges and Medicaid agencies, we want to support and identify promising solutions early in their life cycle. We also want to ensure that state development approaches are sufficiently flexible to integrate new components as they become available.

1.3 Document Organization

This document is organized as follows:

- **Section 2, Governance** – defines responsibilities for this IT Guidance within the federal government.

- **Section 3, Business Architecture** – defines the key business assumptions and goals for Exchanges, Medicaid, and CHIP.

- **Section 4, Cost Allocation** – describes the mechanisms and considerations for funding and coordinating between sources of funding for responsibilities shared among Exchanges, Medicaid, and CHIP.

- **Section 5, Technical Architecture** – identifies initial standards and high-level architectural guidance for use in implementing provisions of the Affordable Care Act relating to Exchanges, Medicaid, and CHIP.

2. Governance

This *IT Guidance* provides guidance to states on the implementation of information technology (IT) for health insurance coverage under Exchanges, Medicaid, and CHIP. This guidance is the product of a joint development and review process within CMS that involves multiple Centers and Offices. It is envisioned that the Health Insurance Exchange core functions, as well as the eligibility and enrollment functions for tax credits, Medicaid and CHIP, will be governed using this *IT Guidance* through a System Development Life Cycle (SDLC)-type model that includes life-cycle phases and transition stage gate reviews for such items as business service descriptions/definitions, requirements specifications, system design specifications, data models, interface control documents, and integration test cases.

Future versions of this *IT Guidance* will be developed with additional input from and consultation with the states. States are invited to provide comments and ask questions relating to this guidance by contacting CMS.

This *IT Guidance* will not supplant or override statutory or regulatory direction or requirements established by the Secretary of Health and Human Services. States that plan or implement IT systems under the Affordable Care Act should consult existing law, regulations, and policy guidance as well as this document.

3. Business Architecture

We expect IT systems to support a high quality customer experience, as well as seamless coordination between Exchanges, Medicaid and CHIP and between the Exchanges and plans, employers, Navigators and brokers, and community-based organizations and providers providing enrollment assistance. We also expect these systems to generate data in support of program evaluation efforts and ongoing improvements in program delivery and outcomes. In addition to reviewing the statutory requirements contained in the Affordable Care Act, states should use the following assumptions and goals in their IT roadmaps:

- Customers should experience a high level of service, support, and ease of use, similar to that experienced by customers of leading service and retail companies and organizations doing business in the United States.

- States should aim to provide the same customer experience to all individuals seeking coverage, regardless of source or amount of financial assistance for which they may qualify or whether they enter the process through the Exchange, Medicaid, or CHIP. States should aim to replicate this customer experience with other stakeholders and business partners, including plans, employers, and Navigators.

- States should make it easy for individuals to explore information on their health coverage options, and should quickly and accurately enroll individuals into coverage. For most people, this routing and enrollment in the Exchange, Medicaid or CHIP will happen in real time. Some people may experience discrepancies between the information they provide and the information obtained through authoritative sources, which affects their eligibility. For those individuals, a timely and responsive resolution process is required by the Affordable Care Act. Other individuals may seek a specific determination by Medicaid (because of disability, for example) that may require more information and processing time.

- Most individuals will be evaluated for eligibility in the Exchange, tax credits, Medicaid, and CHIP using a coordinated set of rules. As a result, we expect the use of a common or shared eligibility system or service to adjudicate placement for most individuals. Integration of systems, programs, and administration will limit duplication of costs, processes, data, and effort on the part of either the state or the beneficiary. Such integration will support Exchanges as they execute responsibilities for Medicaid and CHIP eligibility determinations under the ACA and Medicaid and CHIP agencies that interact with Exchange-eligible individuals.

- States should not assume they will have to operate a "shadow eligibility system" for the purpose of claiming appropriate match for Medicaid individuals based on whether they were eligible under state rules in effect prior to 2014 or are "newly eligible." We expect that federal rulemaking will propose other methods for managing appropriate accounting between the federal and state governments.

- A federal data services hub will support certain functions and responsibilities of the Exchange, Medicaid, and CHIP (see subsection 5.1 for more detail).

- IT systems should be able to generate data in support of performance management, public transparency, policy analysis, program integrity, and program evaluation.

The following description of eligibility adjudication provides a view of the consumer experience based on these principles and assumptions under this new coordinated system of coverage.

Determining Eligibility under the Affordable Care Act

An individual seeking health coverage in 2014 will be able to access information and assistance, and apply for health coverage, through multiple channels. All of these channels will connect with a standardized, web-based system to evaluate the individual's eligibility for coverage through one of four programs—qualified health plans through the Exchange (with or without

advance premium tax credits and cost-sharing reductions); Medicaid; CHIP; or a Basic Health Program, if established by the state.

We envision a streamlined, secure, and interactive customer experience that will maximize automation and real-time adjudication while protecting privacy and personally identifiable information. Individuals will answer a defined and limited set of questions to begin the process, supported by navigation tools and windows that open to provide or seek additional information based on individual preferences or answers. The application will allow an individual to accept or decline screening for financial assistance, and tailor the rest of the eligibility and enrollment process accordingly. The required verifications that will be necessary to validate the accuracy of information supplied by applicants will be managed in a standardized fashion, supported by a common, federally managed data services hub that will supply information regarding citizenship, immigration status, and federal tax information. Tools for calculation of advance premium tax credits will also be provided. Business rules will be supplied that will allow for resolution of most discrepancies through automation, including explanations of discrepancies for the consumer, opportunities to correct information or explain discrepancies, and hierarchies to deal with conflicts based on source of information and extent and impact of conflicts on eligibility. Individuals will attest to the accuracy of the information they supply.

The goal is to serve a high proportion of individuals seeking health coverage and financial support through this automated process. We want most individuals to be able to complete their online application and receive a program placement quickly (for example, 15 to 20 minutes). Health plan selection and enrollment into plans is not included in these targets, although we expect that this will occur within the same session as eligibility for the vast majority of individuals. We will continually test and refine our assumptions as well as adoption and performance targets by consulting with state officials and other policy, business process, and technology experts in a variety of different settings. We may establish ramp-up service level targets since we expect experience and results to improve from year one of program operation to subsequent years, based on continual refinement of policy and operations as well as technology enhancements. Ultimately, our collective ability to reach a high degree of online use, automation, and real-time adjudication will rest on policy streamlining; simplification, transparency and clarity of business rules and business process; technology innovation; emphasis on the user experience; and data availability.

Even with this interactive, online business model, customer service or caseworker support will be needed for a number of reasons. Although we plan to support systems development with research and prototypes to optimize ease of use, site navigation, and maximize self-service, individuals may still be unsure how to answer certain questions. We anticipate that individuals will be able to access education or assistance online, and connect with a customer service or caseworker representative through online chat or by calling a toll-free customer service line. In other cases, the online service may not be able to resolve discrepancies between information supplied by the applicant and that returned from authoritative third-party data sources, and will require more in-depth interactions either in person or by phone, including the submission and adjudication of paper documentation. Some individuals may be uncomfortable with using an online system and will want to apply for assistance by phone, by mail, or in person. Our goal will be to both continually improve and refine the user experience in the online channel and ensure customer service or caseworker support is available as appropriate to support complex cases and targeted customer needs.

4.   Cost Allocation

The high degree of interaction and seamlessness required between Exchanges, Medicaid, and CHIP necessitates highly integrated systems. There are, at present, opportunities for significant leverage between Exchanges and Medicaid. As described in this section, states should use cost allocation appropriately in accordance with Office of Management and Budget (OMB) Circular A-87, between the federal grants made available for Exchanges under the Affordable Care Act and federal match available through Medicaid or other federal programs for IT support.

Federal grant funding made available to Exchanges under the Affordable Care Act cannot be used as the state share for claiming federal matching funds.

States will need to allocate the costs of their IT systems proposals, considering OMB Circular A-87, between the Exchanges, Medicaid, and CHIP. The services or functions necessary to adjudicate eligibility for premium tax credits and reduced cost sharing, Medicaid, or CHIP (in accordance with the foregoing business architecture discussion) based on MAGI must be cost allocated among those programs.

At a minimum, states must allocate the costs for the following services or functions among Exchange, Medicaid, and CHIP:

- **Health Care Coverage Portal –** the online service that allows direct input and interface from other systems for population of the single, streamlined application required under section 1413 of Affordable Care Act.

- **Business Rules Management and Operations System –** the system that contains and applies the rules associated with eligibility for individuals covered by MAGI. This includes functionality and processing logic to register, define, classify, and manage the rules; verify consistency of rules definitions; define the relationship between different rules; and relate some rules to IT applications that are affected or need to enforce these rules for such purposes as adjudicating eligibility based on MAGI or supporting workflow for the resolution of discrepancies.

- **Interfaces to federal data services hub**

- **Interfaces to other verification sources**

- **Account creation and case notes –** the electronic casefile containing all the information supplied by the applicant, electronic returns/verifications, eligibility determinations and enrollment information, notices, and notes from the discrepancy resolution process, ready to transfer for ownership to the appropriate program.

- **Notices –** communications to applicants concerning results of determination, including if applicable, notice of referral to Medicaid for applicants who may be eligible on a basis other than MAGI.

- **Customer Service technology support –** to assist applicants in completing online or print applications and support call centers and related applications.

- **Interfaces to community assisters or other outreach organizations.**

States should also allocate costs for the necessary enabling services to support these functions, such as identity management and security and privacy controls.

Other functionalities may or may not be part of the shared service or infrastructure within a given state because their performance and workflows may differ among Exchanges, Medicaid, and CHIP. We note that there is potential similarity, and therefore synergy, among Exchanges, Medicaid, and CHIP on a whole host of these and other activities. We encourage states to take maximum advantage of those opportunities to make efficient investments and improve program performance and customer service. The services that may or may not be cost allocated include:

- All the above functions for individuals whose eligibility is based on factors other than MAGI

- Member education, selection, and enrollment into plans

- Member communications post-determination (other than determination notice)

- Communicating and contracting with plans

- Risk adjustment.

If certain systems capabilities already developed and paid for by Medicaid, CHIP, or other programs are reused, no retroactive cost allocation adjustments should be made. If development is in progress, states must recalculate and adjust cost allocation on a prospective basis. We will work with states to ensure proper adjustments on an expedited basis and encourage states to consult with us early as they identify such circumstances.

5. Technical Architecture

5.1 Data Services Hub

To ensure reliable, standardized service to Exchanges, Medicaid, and CHIP programs, and in recognition that it is inefficient for state Exchanges and other coverage programs to organize a multiplicity of point-to-point interfaces for the exchange of data and routing of queries, HHS will establish a data services hub. We plan to work with states in the coming months on the design, functionality, and specifications for this data services hub through ongoing consultations and collaboration on business and technical designs.

To validate initial assumptions about the function and priorities for the data services hub, we consulted with the Health Information Technology (HIT) Policy Committee, which formed an Enrollment Workgroup to develop recommendations pursuant to section 1561 of the Act. Following the initial recommendations of the HIT Policy Committee adopted by the Secretary on September 17, 2010, we plan for the data services hub to verify citizenship, immigration, and tax information with the Social Security Administration (SSA), Department of Homeland Security (DHS), and Internal Revenue Service (IRS). The HIT Policy Committee found that the development of a federal data service for verifying consumer-provided information against required federal data sources (i.e., SSA, DHS, IRS) would be useful to Exchanges and would be the most efficient and cost-effective approach to deliver these services. We plan for the data services hub to support the delivery of this information to Exchanges, Medicaid, and CHIP agencies. We also agree that the data services hub can play a role in reducing costs and improving reliability by organizing other interfaces that would otherwise require multiple point-to-point interfaces and redundancies. The HIT Policy Committee concluded that it would be useful for HHS to identify a consumer's other available coverage, to the extent that information

is available. Consistent with the HIT Policy Committee's analysis, we will evaluate the extent to which information on federal coverage and coverage through other Exchanges and state programs could be made available through the data services hub, and will explore the potential for the data services hub to be useful in finding and identifying employer coverage.

We are continuing to explore additional functions that the data services hub might provide to support access to accurate, reliable information, including information needed to pay advance premium tax credits and cost-sharing subsidies. We will continue detailed consultations with states and others on the design of the data services hub to ensure it meets the needs of state Exchanges, Medicaid, and CHIP programs in running effective and efficient programs.

5.2   Standards

Standards help achieve and sustain secure interoperability among state and federal health programs and with providers and community organizations that deliver care and promote and organize access to coverage and benefits. It is our intent to ensure that any IT system development projects supported through Exchanges, Medicaid, or CHIP funding comply to the fullest extent possible with standards in wide use within the U.S. health system and with standards endorsed or adopted by the Secretary of Health and Human Services. These include Health Insurance Portability and Accountability Act of 1996 (HIPAA) transaction standards, standards and protocols adopted by the Secretary pursuant to sections 1104 and 1561 of Affordable Care Act, standards to ensure accessibility, as well as security and privacy standards consistent with federal law. The following subsections provide information relating to these and other standards.

5.2.1   HIPAA Transaction Standards

To improve the efficiency and effectiveness of the health care system, HIPAA included administrative simplification provisions that required HHS to adopt national standards for electronic health care transactions and code sets, unique employee and provider identifiers, and security and privacy of individually identifiable health information (called "protected health information" or PHI). IT projects undertaken by states in support of the Affordable Care Act should comply with all relevant HIPAA standards, including those for protection of protected health information.

5.2.2   Additional Transaction Standards in the Affordable Care Act

Section 1104 of the Affordable Care Act requires HHS to adopt a single set of operating rules for each HIPAA transaction. Section 1561 of the Act calls upon the Secretary, in consultation with the HIT Policy Committee and the HIT Standards Committee, to develop interoperable and secure standards and protocols for enrollment. These standards were approved by Secretary Sebelius on September 17, 2010 and are accessible at: http://healthit.hhs.gov/aca/section1561. One of the chief recommendations from the Committees is that states use the National Information Exchange Model (NIEM) and unified form to develop, disseminate, and support standards and processes that enable the consistent, efficient, and transparent exchange of data elements between programs and states.

As a background, NIEM provides standardization of information exchanges based on XML; a common vocabulary of data elements (including terms, definitions, and formats); and a structured approach to developing information exchange that is implementation ready.

In essence, NIEM provides a common language foundation for use at federal, state, local, and Tribal levels and within the private sectors. NIEM also provides a consistent approach to develop and implement artifacts of various data exchanges based on repeatable and reusable processes to be shared and reused.

It is the intent of CMS to design and develop an information exchange model and tools that are fully compliant with NIEM requirements as part of Exchange, Medicaid, and CHIP operations. As states and federal agencies evaluate and finalize their Exchange system framework, requirements to be fully NIEM compliant should be built into the overall framework and design. Information on NIEM can be found on http://www.niem.gov. Future versions of the *IT Guidance* document, Exchange Architecture Guidance (EAG) supplements, and Medicaid Information Technology Architecture (MITA) supplements will provide updates on CMS' approach and progress of NIEM implementations.

Any additional standards, protocols, or approaches adopted by the Secretary pursuant to these two sections of the Affordable Care Act should be considered and integrated into the IT development life cycle undertaken by states.

5.2.3 Standards for Accessibility

Enrollment and eligibility systems should be designed to meet the diverse needs of users (e.g., consumers, state personnel, other third-party assisters) without barriers or diminished function or quality.

Systems should include usability features or functions that accommodate the needs of persons with disabilities, including those who use assistive technology. State enrollment and eligibility systems are subject to the program accessibility provisions of Section 504 of the Rehabilitation Act, which include an obligation to provide individuals with disabilities an equal and effective opportunity to benefit from or participate in a program, including those offered through electronic and information technology. At this time, HHS will consider a recipient's websites, interactive kiosks, and other information systems addressed by Section 508 standards as being in compliance with Section 508 if such technologies meet those standards. We encourage states to follow either the Section 508 guidelines or guidelines that provider greater accessibility to individuals with disabilities. States may wish to consult the latest Section 508 guidelines issued by the US Access Board or W3C's Web Content Accessibility Guidelines (WCAG) 2.0 (see http://www.access-board.gov/sec508/guide/index.htm and http://www.w3.org/TR/WCAG20/).

States should also take reasonable steps to provide meaningful access by persons with limited English proficiency.

5.2.4 Security and Privacy

Information systems containing individually identifiable information and/or PHI are required to implement adequate privacy and security protections of the information. The HIPAA Privacy and Security Rules specify privacy and security requirements that HIPAA-covered entities and business associates must follow. In designing their information systems, agencies should also be

aware of state laws that impose additional restrictions on the sharing of sensitive health information.

The National Institute of Standards and Technology (NIST) has published a series of documents that provide security guidance to federal Chief Information Security Officers (CISO). Although the NIST Special Publications on security are compulsory only for federal agencies, they can serve as useful guidance to non-federal agency CISOs in the implementation of a security program aimed at the protection of both individually identifiable information and PHI.

NIST's Special Publications are available at: http://csrc.nist.gov/publications/PubsSPs.html and a guide to implementing the HIPAA Security Rule can be found at: http://csrc.nist.gov/publications/PubsFIPS.html

Finally, certain classes of data may be subject to additional restrictions or protection on data use or transmission. For example, information systems containing tax return information must comply with the taxpayer privacy and safeguards requirements of Section 6103 of the Internal Revenue Code.

5.2.5   Other Standards

Under the Clinger-Cohen Act (Public Law 104-106), the Secretary of Commerce approves standards and guidelines developed by NIST for federal computer systems that extend beyond security and privacy. IT development projects should consider and apply NIST standards as appropriate.

5.3   Architecture Guidance

To assist in establishing Exchange IT systems, CMS has established an Exchange Architecture Guidance framework and a volume of documents that serve as a master architecture plan designed to ensure that systems communicate effectively and efficiently with each other and also provide the extra measure of speed, knowledge management, and agility demanded by today's competitive environments. CMS's Exchange Architecture Guidance consists of the currently available volume of technical documents for Exchange systems development. CMS has provided drafts of the following EAG documents to Exchange grantees; once finalized, these documents will be available on the CMS website:

- *Exchange Reference Architecture: Foundation Guidance*: provides the business architecture, information architecture, and technical architecture for the nationwide health insurance exchange(s). This Foundation document provides an overview and description of the approaches to defining the architectures; additional supplements will be released that contain the details of each architectural component.

- *Collaborative Environment and Governance Approach – Exchange Reference Architecture Supplement*: provides the collaborative environment and governance approach for the nationwide health insurance Exchange(s) and federal data services hub.

- *Harmonized Security and Privacy Framework – Exchange TRA Supplement*: introduces and defines a risk-based Security and Privacy Framework for use in the design and implementation of the Exchanges and the data services hub. The intent of this document is to foster a collaborative discussion between the states and CMS to assure that the Harmonized Security and Privacy Framework and the overall Exchange and Hub solution

provide the necessary and effective security and privacy for the respective systems and data in compliance with all applicable federal and state security and privacy laws and regulations.

- *Eligibility and Enrollment Blueprint – Exchange Business Architecture Supplement*: provides the initial description of the business architecture for the Exchange Eligibility & Enrollment business area for use in discussions with states and federal partners. This document identifies and defines the major Eligibility & Enrollment business functions, processes, and services to be implemented by Exchanges.

- *Plan Management Blueprint – Exchange Business Architecture Supplement*: defines the business architecture for the Exchange Plan Management business area. This document identifies and defines the major Plan Management business functions, processes, and services to be implemented by Exchanges.

Future additions to the EAG volume of documents will include:

- *Financial Management Blueprint – Exchange Business Architecture Supplement*

- *Customer Service Blueprint – Exchange Business Architecture Supplement*

- *Communications Blueprint – Exchange Business Architecture Supplement*

- *Oversight Blueprint – Exchange Business Architecture Supplement*

- Detailed definitions and requirements of the *Harmonized Security and Privacy Framework* to guide its implementation as well as information for use in compliant operations and oversight purposes.

Together, current and future EAG documents will provide initial, broad guidance for developing IT system architectures that support the Health Insurance Exchanges and Medicaid and CHIP provisions contained in the Affordable Care Act. Over time, the depth and breadth of these architectural standards will expand, providing technical reference architectural guidance for secure and interoperable IT health care solutions to support Exchanges and Medicaid as required by the Affordable Care Act. Systems developed or enhanced to support functions of the Exchange should adhere to these architectural principles when possible.

In all cases where overlapping functionality is shared or able to be leveraged between Exchanges, Medicaid, and CHIP, these guidance documents will align to the Medicaid Information Technical Architecture (MITA), and MITA technical supplements and models will also be created. Further updates to the MITA framework, business, and information architectures are expected to be released in 2011. These updates will support states as they comply with the seven conditions and standards that must be met to receive enhanced federal match. Those conditions include (1) modularity; (2) MITA alignment; (3) leverage and reuse within and among states; (4) industry standard alignment; (5) support of business results; (6) reporting; and (7) seamlessness and interoperability. All of these conditions and standards are similarly reinforced within this guidance and in the EAG volume of documents.

Each IT system that is operated in support of Exchanges, Medicaid, and CHIP will develop and maintain the following technical documentation:

- A high-level view of workflow and detailed views where needed

- A high-level logical data model
- A data dictionary that includes all entities and attributes that are core to system
- A system interface diagram with all application programming interfaces (API) shown
- A network diagram for host infrastructure.

Systems developed or enhanced to support functions of the Exchange should adhere to the following architectural principles to the fullest extent possible.

5.3.1   System Integration

- Provide high-level integration of process flow and information flow with such business partners as Navigators, health plans, small businesses, brokers, employers, and others.
- Apply a modular, flexible approach to systems development, including the use of open interfaces and exposed APIs, and the separation of business rules from core programming, available in both human and machine-readable formats.
- Ensure seamless coordination between the Exchange, Medicaid, and CHIP , and allow interoperability with health information exchanges, public health agencies, human services programs, and community organizations providing outreach and enrollment assistance services.

5.3.2   Service-Oriented Architecture

- Employ Web Services Architecture/Service-Oriented Architecture methodologies for system design and development and to ensure standards-based interfaces to link partners and information at both federal and state levels.
- Employ common authoritative data sources and data exchange services, such as but not limited to, federal and state agencies or other commercial entities.
- Employ open architecture standards (non-proprietary) for ease of information exchanges.

5.3.3   Isolation of Business Rules

- Use standards-based business rules and a technology-neutral business rule repository.
- Consistent with the recommendations issued pursuant to section 1561 of the Affordable Care Act, clearly and unambiguously express business rules outside of transactional systems.
- Enable the business rules to be accessible and adaptable by other states.
- Submit business rules to a federally designated repository.

5.3.4   Security and Privacy

- Support the application of appropriate controls to provide security and protection of enrollee and patient privacy.

5.3.5   Efficient and Scalable Infrastructure

- Leverage the concept of a shared pool of configurable, secure computing resources (e.g., Cloud Computing).

  On December 9, 2010, the U.S. Chief Information Officer (US CIO) published the *25 Point Implementation Plan to Reform Federal Technology Management*. This plan prescribes use of cloud IT services to improve operational efficiency of federal IT systems. In addition, the Federal Cloud Computing Strategy was published by the US CIO on February 8, 2011. The strategy prescribes that federal agencies modify their IT portfolios and take full advantage of the benefits of cloud computing to maximize capacity utilization, improve IT flexibility and responsiveness, and minimize cost. In support of the federal Cloud Computing policy, as introduced in the plan, federal systems are to begin leveraging Software-as-a Service, Platform-as-a-Service, and Infrastructure-as-a-Service. An objective of this policy is to utilize "regional clouds with state and local governments where appropriate." Wherever possible, Exchange and Medicaid IT Systems should leverage Cloud Computing environments. This will provide a rich set of capabilities and tools supporting development, test, and production operations.

  CMS will support the federal Cloud Computing strategy by establishing CMS' Exchange collaborative environment utilizing both Platform-as-a-Service and Infrastructure-as-a-Service. Additional details on CMS' adoption and approach for Cloud Computing can be found in *Collaborative Environment and Governance Approach – Exchange Reference Architecture Supplement*. In summary, CMS will offer cloud environments that already meet all applicable federal and state security and privacy rules and regulations to all states and federal agencies involved with Exchange IT system development.

  A copy of the US CIO's 25 Point Implementation Plan can be found at http://www.cio.gov/documents/25-Point-Implementation-Plan-to-Reform-Federal%20IT.pdf. A copy of the Federal Cloud Computing Strategy can be found at http://www.cio.gov/documents/Federal-Cloud-Computing-Strategy.pdf.

5.3.6   Transparency, Accountability and Evaluation

- Produce transaction data and reports in support of performance management, public transparency, policy analysis, and program evaluation.

- Leverage Commercial Off-the-Shelf business intelligence functionality to support the development of new reports and respond to queries.

5.3.7   System Performance

- Ensure quality, integrity, accuracy, and usefulness of functionality and information.
- Provide timely information transaction processing, including maximizing real-time determinations and decisions.
- Ensure systems are highly available and respond in a timely manner to customer requests.

Acronyms

APD	Advance Planning Document
API	Application Programming Interface
CHIP	Children's Health Insurance Program
CIO	Chief Information Officer
CISO	Chief Information Security Officer
CMS	Centers for Medicare & Medicaid Services
DHS	Department of Homeland Security
EAG	Exchange Architecture Guidance
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act of 1996
HIT	Health Information Technology
IRS	Internal Revenue Service
IT	Information Technology
MITA	Medicaid Information Technology Architecture
NIEM	National Information Exchange Model
NIST	National Institute of Standards and Technology
OMB	Office of Management and Budget
PHI	Protected Heath Information
SDLC	System Development Life Cycle
SSA	Social Security Administration
WCAG	Web Content Accessibility Guidelines
XML	eXtensible Markup Language