A Call to Action:
Information Exchange Strategies for Effective State Government

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*NASCIO Recommends State Government Adopt the National Information Exchange Model (NIEM) to Enable Government Information Sharing
April 28, 2011*

The National Information Exchange Model (NIEM) provides a broad range of products and capabilities for planning and implementing enterprise-wide information exchanges. Government effectiveness and citizen centric government services require effective cross line of business collaboration and communication. Use of national standards will avoid redundant investment and unnecessary variation. What is needed is a common discipline for information sharing that is employed by all government lines of business. The National Information Exchange Model (NIEM) exists as that discipline for federal, state and local government.

NASCIO recommends that state government adopt NIEM capabilities as a component of state government enterprise architecture and data management strategy. This brief will provide some of the history and rationale for NIEM, the future of NIEM, success stories and guidance on how to get started. The appendix presents a number of relevant references.

In general, NASCIO recommends that state governments:

- **Learn** how to plan an information exchange and how to employ NIEM.
- **Gain Support** through executive and technical staff briefings.
- **Train** - take advantage of NIEM training – online and on-site.
- **Begin** to use NIEM – leverage NIEM technical support.
- **Grow** staff knowledge, experience and skills through ongoing training and NIEM National Events.
- **Stay connected** to the NIEM site for new developments, additional domains, and continued adoption across government.
- **Promote NIEM** for government interoperability by adopting NIEM as part of State Government Enterprise Architecture, Data Management Strategy and Standards.
- **Incorporate NIEM** into Project Management and Procurement Requirements.
- **Explore and Evaluate** inter-line of business relationships that can enhance or transform agency service delivery.

What is NIEM?

NIEM is a discipline to[1]:

- Bring stakeholders and Communities of Interest together to identify information sharing requirements in day-to-day operational and emergency situations;

- Develop standards, a common vocabulary and an on-line repository of information exchange package documents to support information sharing;

- Provide technical tools to support development, discovery, dissemination and re-use of exchange documents; and

- Provide training, technical assistance and implementation support services for enterprise-wide information exchange.

NIEM Components include:

- Shared Semantics – mutually agreed upon data elements and definitions

- A model for organizing data elements into a distributed data model

NIEM is a Federal, State, Local ,Tribal and Private inter-agency initiative providing a foundation for seamless information exchange. NIEM is more than a data model, it is a community and has a technical and support framework[2].

A Short History

As a longtime advocate of architecture, policies and technology to support government information sharing, NASCIO has been actively promoting NIEM as an enabler of cross line of business collaborative information sharing. The genesis of NIEM was a "grass roots" effort on the part of federal, state and local government to develop a common vocabulary for facilitating cross jurisdictional information sharing within the justice community. That work led to the development of the Global Justice XML Data Model (GJXDM). NASCIO actively promoted the GJXDM within the justice line of business but had also examined its application for other lines of business. NASCIO produced a scenario-based video that presented a strong case for establishing common vocabularies for government information exchanges[3]. This video references GJXDM and XML – but more importantly makes the case for inter-enterprise / inter-jurisdictional collaborative information exchange. In the future, governments will increasingly demand and rely upon policy and technology that enable and promote government inter-operability.

In 2005, the U.S. Department of Justice (DOJ) and the U.S. Department of Homeland Security (DHS) signed a memorandum of understanding to expand the GJXDM to accommodate collaborative information exchanges for homeland security and justice related government lines of business. This is was inception of the NIEM concept. Subsequently, additional domains have been added to the NIEM portfolio of information exchange vocabularies. Current NIEM domains are presented in the following diagram[4].

In October of 2010, the Chief Information Officer for the US Department of Health and Human Services (HHS) signed a Memorandum of Agreement (MOA) for HHS to join DOJ and DHS as the third primary sponsor of the NIEM program. The MOA outlines a cooperative effort to commit resources to support development and implementation of NIEM, as well as adds HHS as a member of the Executive Steering Council[5]. In March of 2010, the Federal Office of Management and Budget (OMB) required each agency to evaluate NIEM for their cross-boundary information exchanges and submit a plan to OMB[6].
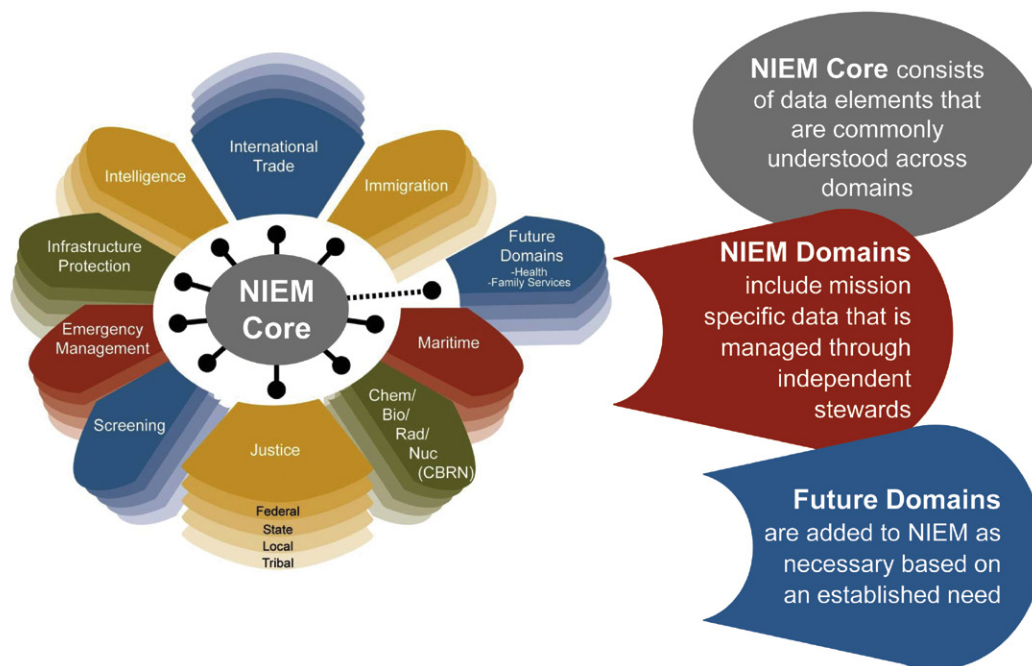
NIEM Domains

NASCIO had presented a strong recommendation for cross boundary collaboration and information sharing in its *Call for Action A Blueprint for Better Government: The Information Sharing Imperative*[7]. In this May 2005 report to Congress, NASCIO presented the case for establishing a common vocabulary that would enable communication at all levels of government and the recommendation to leverage the work and progress already accomplished within the justice community with DOJ's GJXDM initiative. NASCIO also stated its support of NIEM and the need to avoid a proliferation of diverse vocabularies.

NASCIO published a comprehensive review of the issues related to information sharing and collaboration in its publication *PERSPECTIVES - Government Information Sharing: Calls to Action*[8]. Not surprisingly, most of the challenges to achieving an environment of information sharing are related to organization, culture and governance. These dimensions must be recognized as not only potential barriers to collaborative information exchange, but also enablers, if they are properly managed. This issue is further addressed later in this report in the section "Planning and Implementing an Information Exchange."

In March 2011, NASCIO accepted an invitation to join the NIEM Executive Steering Council as an ex-officio member representing state government. NASCIO's presence on the NIEM Executive Steering Council ensures state government participation and support for the NIEM initiative. Partnering with state chief information officers also emphasizes the expanding scope of NIEM to include all government lines of business.

The National Information Exchange Model Initiative will have a tremendous impact on how government interoperates with the intention of enabling the communication among government lines of business at all levels of government. The NIEM initiative has continued to mature through disciplined versioning and release processes. As more government lines of business adopt NIEM and the number of domains expands, government can expect improved cross line of business communication, interoperability capabilities, and shared government services which will enable and enhance cross line of business collaboration. With greater communication and collaboration, citizens will harvest the benefits of improved delivery and coordination of government services.

Effective information exchange can enable agencies to:

- Breakdown stovepipe information systems for enhanced visibility and understanding, enabling agencies to connect the dots in their mission-centric areas;
- Increase engagement with organizations at the federal, state, local, and tribal levels including the private sector as well as international partners;
- Eliminate interagency mistrust by improved transparency, data quality, and accountability through establishing authoritative sources for information;
- Adopt consistent policies, processes, and governance capabilities;
- Increase use of description and definition of data and information for increased data protection and security; and
- Realize cost avoidance through the use of repeatable processes and reusable artifacts[9].

What Will the Future Bring?

It is important to understand the federal government is placing strong support behind NIEM. Conformance with NIEM is already a mandate for some federal grant awards[10]. As stated earlier, the federal Office of Management and Budget (OMB) asked all federal agencies to evaluate their adoption and use of NIEM as part of their FY 2011 Passback reports.

By 5/1/2010, all agencies shall evaluate the adoption and use of the National Information Exchange Model as the basis for developing reference information exchange package descriptions to support specification and implementation of reusable cross-boundary information exchanges. A cross-boundary information exchange is one that crosses a bureau or agency boundary, including information sharing with international, State, local, tribal, industry, or non-governmental organization partners[11].

Federal agencies responded by June of 2010. In April of 2011, the Federal CIO Council issued its evaluation of these responses in its report "Agency Information Exchange Functional Standards Evaluation – Adoption and Use of the National Information Exchange Model (NIEM)"[12]. Twelve federal agencies reported that they are *committed* to adoption of NIEM for information exchanges. Eight agencies are still in the evaluation process. Many of these agencies specifically list state, local and tribal governments in their list of stakeholders.

The Federal CIO Council recommended "next steps" for federal agencies to continue the development of their individual strategies for NIEM implementation.

- **Establish centralized governance** – Agencies should assess their current governance structure and identify steps to align with the NIEM framework governance best practices.

- **Develop and implement information exchange guidelines** – Agencies should develop NIEM implementation plans to identify relevant strategies and steps for integrating the NIEM framework into their information exchange practices.

- **Create collaborative sharing agreements** – Agencies should develop methodology and guidance for standardizing agency sharing agreements with respect to data and information assets with the intent of enhancing performance and increasing efficiency through information exchange.

- **Develop enterprise data maturity** – Agencies should assess their current data management maturity and map the agency-wide enterprise logical data model to NIEM, or an agency specific information exchange model.

- **Complete the evaluations** – Those agencies that are still evaluating NIEM should complete their evaluations.

The goal of standardizing cross-boundary information exchange is to promote and enhance agency capabilities for the development of shared services and increasing the sharing of information. Standardizing information exchange includes the business processes, policies, procedures, architecture, and governance that support effective decision-making and mission-focused actions by providing timely, accurate, and relevant information to the appropriate individuals across all levels of government[13].

In the future, as NIEM adoption and scope are expanded, it can be anticipated that NIEM conformance will be mandated within more federal agency programs. More importantly, government agencies are not only sharing information, they are leveraging NIEM to enhance existing business processes to facilitate inter-agency integrative collaboration. That is, government agencies working together as "one government" to provide new levels of excellence in citizen services.

Success Stories

With respect to NIEM adoption, NASCIO presented a number of Innovations Forums during 2010 to help raise awareness of NIEM; promote reuse of existing IEPDs; and present business scenarios that can be repeated. These forums have included strong promotion of the IEPD Clearinghouse as the central library resource for uncovering *reuseable* IEPDs. Examples of *cross line of business* collaboration and information sharing have been highlighted in these Forums. The illustrations below outline a few of the scenarios which were presented during the NASCIO 2010 Innovations Forums[14]:

- **The Prescription Monitoring Exchange (PMIX) project** is an exciting collaboration of participating states with support from federal agencies, to utilize technology and standards including NIEM to implement a solution that will allow for efficient and cost effective sharing of Prescription Drug Monitoring Program (PDMP) data among states.

- **The State of Colorado - Child Support, Child Welfare, and the Courts** are able to share information and collaborate. These agencies are employing NIEM standards to develop schemas and information exchange packages (IEPD's) for use in "staying connected." Timely information exchange between social workers and the courts can mean the difference between life and death for a child. It is essential that child welfare and the courts are communicating current developments as custody and child support cases are being discussed and before the courts make final decisions. Colorado has enabled this necessary information exchange through the use of NIEM.

- **The New York City Connect Initiative** employed NIEM to develop standards based information exchanges within state Health and Human Services. Information exchange standards provide strategic capabilities that are making New York City a "connected city." As integrated components of the city's enterprise architecture, standards based information exchanges allow information to be assembled, presented and shared across a wide agency user base. New York City's HHS-Connect program has broken down stove piped organizational boundaries, created dynamic data driven integration, enabled feature rich applications, and provided more complete and timely information at the point of service delivery.

More success stories are presented on the NIEM website[15].

Components of NIEM

A semantic understanding and common vocabulary has been created to allow for those elements of information that are shared by all lines of business. This constitutes NIEM *Core Elements*. Separate vocabularies are established for bounded subject areas such as Justice, Homeland Security, Intelligence, and Maritime. Additional subject areas, or communities of interest will be added in the future. These are termed *domains* within the NIEM vernacular.
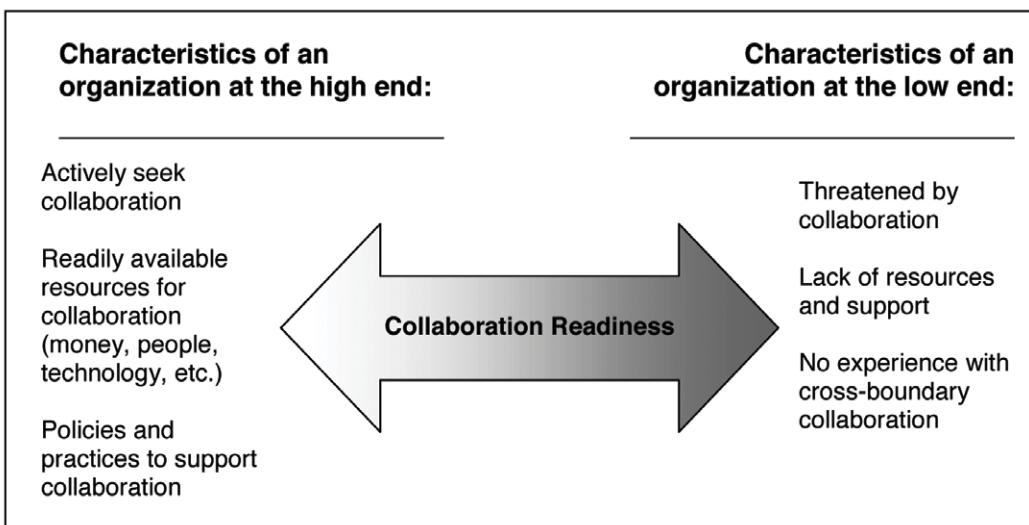
Core is a collection of knowledge objects that are common to all such domains.

Domain-specific is a collection of those knowledge objects that are unique to each subject or domain.

One of the foundational principles of NIEM is *reuse*. Proper planning and implementation of information exchanges is grounded in what is termed the NIEM Information Exchange Package Document process, or *IEPD process*. The IEPD process prescribes the need for creating a business case, clearly documenting business rules and content, developing the exchange schema, and cataloging the exchange documentation for future reuse and reference. Through the *IEPD process*, knowledge objects from the various domains are assembled into meaningful collaborative information exchanges.

Planning and Implementing an Information Exchange

NIEM is more than an XML data dictionary. It is intended to be a complete discipline for planning, implementing and reusing government information exchanges. The process begins with an identified business need for exchanging information. This need is documented through the use of business scenarios and use cases. Some information exchanges can be complicated. Other types of exchanges are more straight-forward. It is necessary to identify and manage the inherent risks associated with planning and implementing an information exchange. A first step, particularly when the information exchange itself is complex, or the exchange partners have identified organizational complexities, is to employ the Capability Assessment Toolkit[16]. The Toolkit was created specifically to assist in the planning of government exchanges and ensure such exchange efforts deliver the outcomes that triggered the need for the exchange.

Characteristics of an organization at the high end:

Actively seek collaboration

Readily available resources for collaboration (money, people, technology, etc.)

Policies and practices to support collaboration

Collaboration Readiness

Characteristics of an organization at the low end:

Threatened by collaboration

Lack of resources and support

No experience with cross-boundary collaboration

Characterizing Collaboration Readiness

It may not seem obvious at the outset that it is necessary to evaluate the readiness of exchange partners for sharing information. However, it is prudent to not only evaluate such readiness, but to identify risk factors and deliberately plan for the mitigation of such risk factors. Ignoring the risks associated with information exchanges until they are encountered will result in project delays; potential budget and funding timeline issues; and organizational and relationship issues. Additionally, there is the risk that an information exchange package is not fully harvested for its value. In such a case, an information exchange that should be reused multiple times may not be used, or used only once. For routine exchanges, the level of assessment can be expected to be easier. For more complex exchanges, an assessment can ensure the risks are identified up front, and the project plan provides for the necessary steps to mitigate such risks. The Toolkit is a necessary component of the project management discipline for planning and implementing successful government information exchanges.
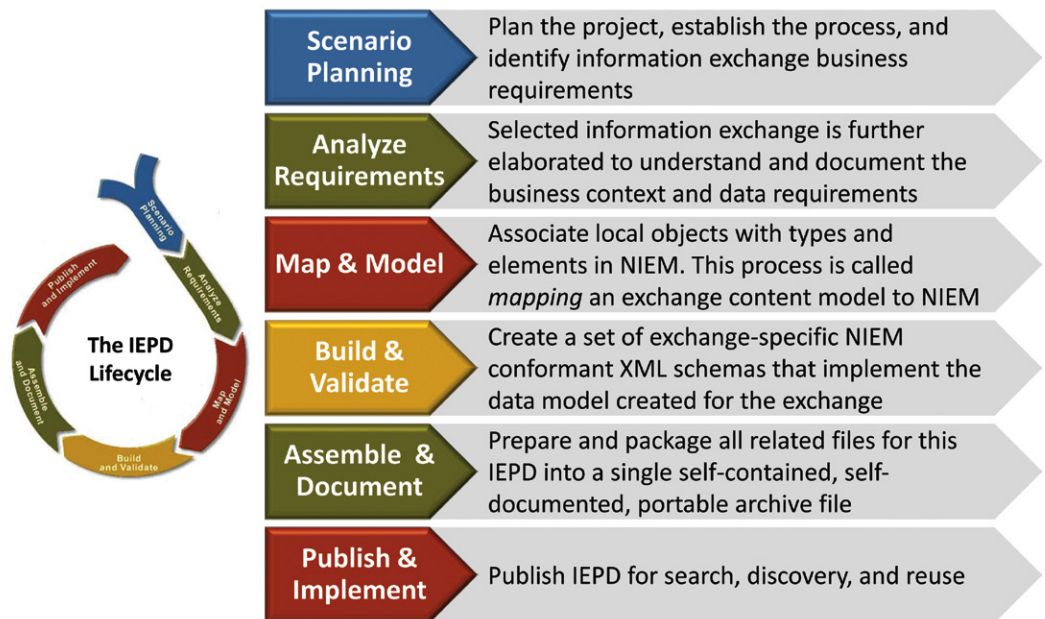
The IEPD Process

Once the need for an exchange has been identified, and the project planning effort has evaluated the collaboration readiness using the Capability Assessment Toolkit, the next step is to employ the Information Exchange Package Document (IEPD) development process. The IEPD process is depicted in the following diagram.
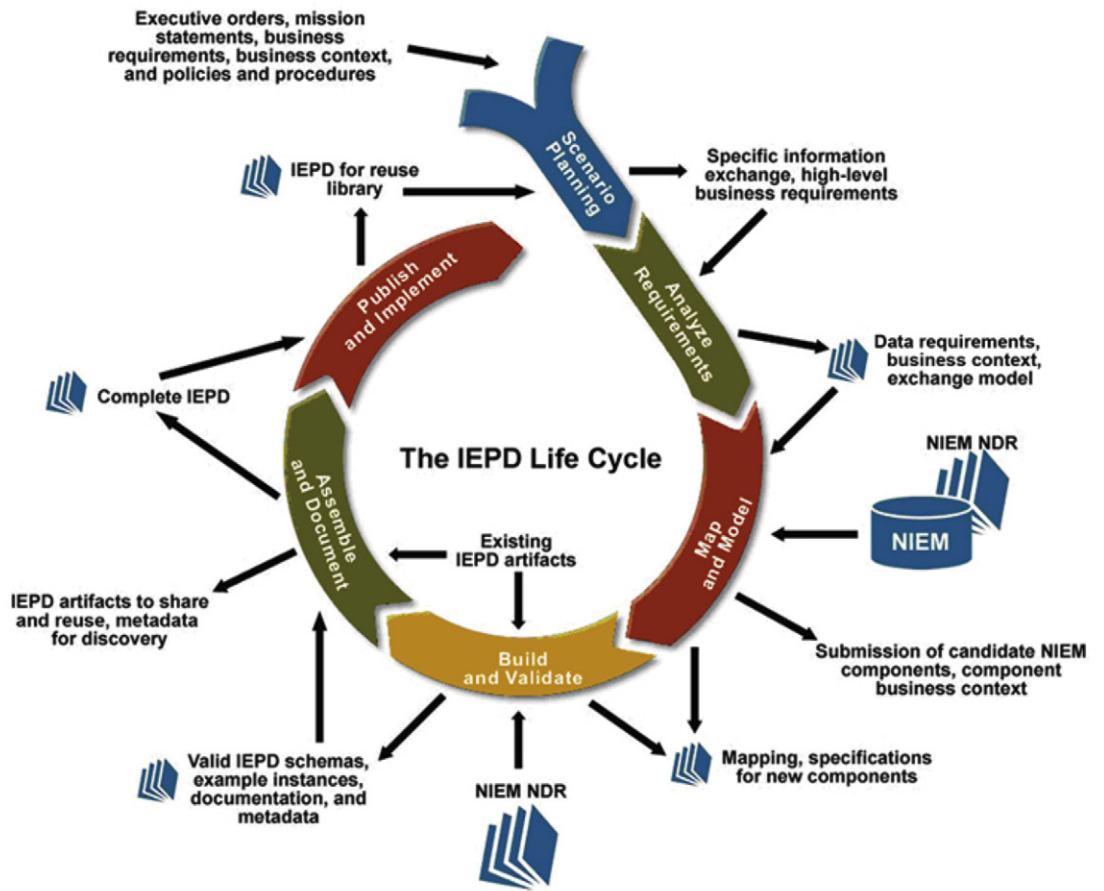
The IEPD Life Cycle

Definitions for the major phases are described in the following diagram.

Phase	Description
Scenario Planning	Plan the project, establish the process, and identify information exchange business requirements
Analyze Requirements	Selected information exchange is further elaborated to understand and document the business context and data requirements
Map & Model	Associate local objects with types and elements in NIEM. This process is called *mapping* an exchange content model to NIEM
Build & Validate	Create a set of exchange-specific NIEM conformant XML schemas that implement the data model created for the exchange
Assemble & Document	Prepare and package all related files for this IEPD into a single self-contained, self-documented, portable archive file
Publish & Implement	Publish IEPD for search, discovery, and reuse

IEPD Major Process Steps

Reuse

Reuse has at least three direct touchpoints in the IEPD Process. A new initiative should discover any potential reusable information exchanges in Step 1, the "Scenario Planning" process step which places that activity very early in the process. Finding an existing IEPD is not only prudent. It contributes toward *conserving* limited state government resources. Step 2 "Analyze Requirements" is where existing IEPDs are searched in order to discover detailed specifications from existing IEPDs that may be relevant and reusable. IEPDs may be reused as is, or modified to create a new IEPD. Step 6 "Publish & Implement" is where a newly created IEPD or a modified IEPD is cataloged in the *IEPD Clearinghouse* allowing for future search, discovery, reuse, and modification to create a new IEPD. The Clearinghouse can be accessed at http://www.it.ojp.gov/framesets/iepd-clearinghouse-noClose.htm. More detail on the IEPD process steps is presented in Appendix II.

Example of a Search in the IEPD Clearinghouse

A Call to Action for State Government

How Do I Get Started with NIEM?

In general, NASCIO recommends that state governments:

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- **Train** – take advantage of NIEM training – online and on-site.

- **Begin** to use NIEM – leverage NIEM technical support.

- **Grow** staff knowledge, experience and skills through ongoing training and NIEM National Events.

- **Stay connected** to the NIEM site for new developments, additional domains, and continued adoption across government.

- **Promote** NIEM for government interoperability by adopting NIEM as part of State Government Enterprise Architecture, Data Management Strategy and Standards.

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- **Explore and Evaluate** inter-line of business relationships that can enhance or transform agency service delivery.


Learn

The starting point is to do a little homework. Before discussing NIEM and the IEPD process, it is important for government executive leadership and policy makers to understand and embrace the essential need for sharing state government information across state agencies and across jurisdictions. Professional and technical staff must also understand the need for sharing information across government lines of business. Collaborative information sharing will enhance government delivery of services, ensure citizens see one face of government, and ensure state government avoids redundant effort and investment. This outcome will require that government employees embrace an *enterprise perspective*. Cross boundary exchanges enable *cross boundary collaboration*. NIEM enables cross boundary exchanges. Cross boundary collaboration will require organizational change management including communication and marketing. Cross boundary collaboration must be embraced by agency executives in order gain the support of agency employees and to ensure resources are managed accordingly.

Learn how to plan an effective information exchange that delivers outcomes for citizens. This begins with understanding the *strategic intent* of the agency. That strategic intent is described in the form of agency mission, desired outcomes, directives, and goals/objectives/strategies. That intent then drives the definition of management initiatives for achieving that intent. Those initiatives will invariably involve the sharing of information internally and externally. Exchanges should be identified then prioritized based on some criteria that ensures alignment with the strategic intent, stated goals and objectives, and directives. This will *establish line of sight traceability* for the information exchange project and the *strategic intent* of the project, management initiative and ultimately state government.

Once the priority exchanges are identified, it is necessary to establish the business context for the exchange. This results in the development of a *business scenario*. The scenario can be simple or may be more complicated. The main point is – *write it out and evaluate it*. The scenario must include the citizen outcomes sought which justifies the effort. This constitutes the *strategic intent* of the exchange initiative. An example of a scenario is available in the NASCIO publication *Concept for Operations for Integrated Justice Information Sharing*. This report is available on the NASCIO publications website at www.nascio.org/publications. The scenario describes: the outcome sought; the exchange partners; what information is shared; what action is to be taken with that information; all the various steps from the *triggering event* through delivery of a government service, or achievement of a desired outcome. Information exchanges must include attention to privacy and security. This includes information classification which will prescribe necessary information valuation, authorization, and identity management.

Employ the Capability Assessment Toolkit to evaluate the Collaboration Readiness, identify the risk factors and plan the mitigation of those risk factors. The Toolkit publication includes worksheets in the appendices for conducting an evaluation.

Plan for success. Visit the NIEM website at www.niem.gov. There are multiple resources that present the purpose of NIEM, the IEPD process, frequently asked questions, and online training. On-site training is also available.
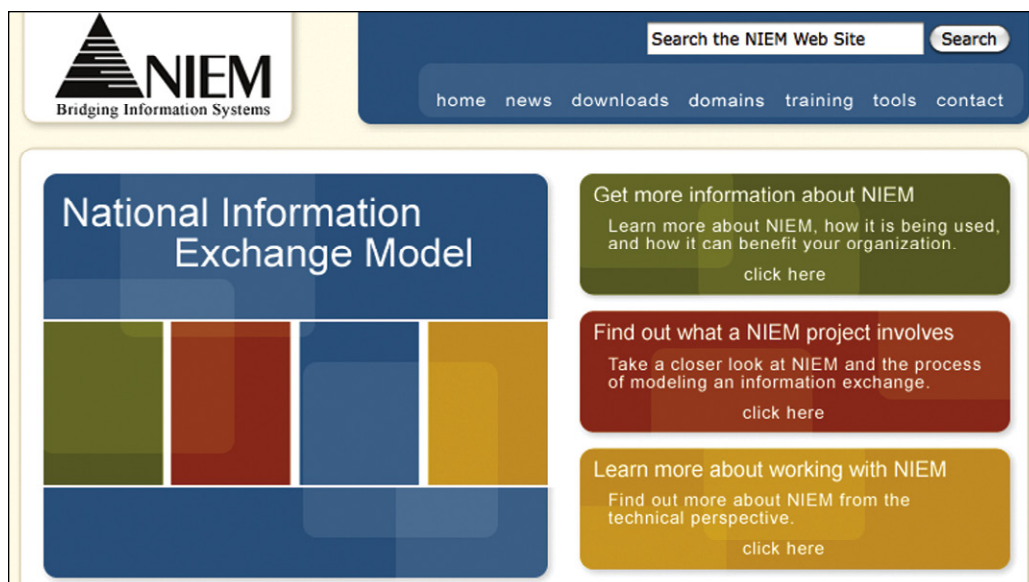
NIEM Website at www.niem.gov

It is essential that the strategic intent of the initiative is clearly articulated and the risk factors have been identified and managed. The written scenario describes the context and the business process that requires an information exchange. Once these elements of the exchange have been created it is prudent to explore the IEPD Clearing House to determine if there is an existing IEPD that can be used or modified for use in the current circumstance. Existing cataloged IEPDs can be accessed at http://www.it.ojp.gov/framesets/iepd-clearinghouse-noClose.htm. This is also an excellent resource to evaluating the content other initiatives have created.

Gain Support

The NIEM Program Management Office (NIEM PMO) has published executive and technical briefings online. Onsite briefings are available and can be requested through the NIEM website. Conduct briefings as part of a *change management process* to: gain support and commitment; ensure stakeholders understand that there is a deliberate process for planning for information exchanges; effectively communicate the value of national standards; and communicate the value of NIEM for planning and implementing information exchanges.

It is important to engage the involvement and the support from industry as a strategic partner and supplier to government. NASCIO held an Innovations Forum for its Corporate Partners focused on the business value of NIEM for industry. The intention of this forum was to gain support and commitment from NASCIO industry partners to embrace NIEM as part of their internal delivery discipline[17]. Among the highlights were the economic efficiencies and reduced project risks that can be gained through the use of NIEM.

"Gaining Competitive Advantage through NIEM - How NASCIO Corporate Members Can Position Themselves as Enablers of Government Collaboration"

This event is archived for NASCIO Corporate Partners on NASCIO's website at http://www.nascio.org/committees/ea/webinarArchive.cfm.

Train

NIEM has available online training that can be accessed at any time. This training includes feedback to ensure mastery of the topics. This training is focused on how to build exchanges using the NIEM and the elements that make up an IEPD.

Other training that should be incorporated into an overall state government data strategy includes conceptual and logical data modeling, and business process modeling. These disciplines will help ensure appropriate *business information models* and *business process models* are created that are *technology agnostic*. The preferred method for logical data models is the use of entity-relationship diagrams that are developed by qualified data modelers working in close collaboration with the business. This will ensure conceptual and logical data models are developed that accurately render business rules and that they are not technology oriented. Technology implementation choices will change over time. Accurate conceptual and logical data models will have sustained value and will only change if the business itself has changed. Well done conceptual and logical data models also contribute toward building the enterprise information model over time. Appendix I provides a list of candidate references for conceptual and logical data modeling.

Accurately capturing business processes requires similar attention to business process modeling at the logical level of abstraction. Business processes should be examined for enhancement with appropriate analytics. Cross line of business relationships or interaction should be captured using Rummler-Brache swim lane diagrams, which will uncover cross line of business collaborative information sharing. That *sharing* is implemented through either information access or the creation of information exchanges[18].

These business information models and business process models are *precursors* to developing an exchange in XML using the NIEM vocabularies, and are important elements of the IEPD process steps *Scenario Planning* and *Analyze Requirements*.

Begin

Start employing NIEM in planning, designing and implementing information exchanges – particularly inter-agency and inter-jurisdictional exchanges. Experience will build skills and efficiencies over time.

Grow

Grow staff knowledge through the use of ongoing training and conferences. Hold internal NIEM briefings for executive and technical staff which highlight success stories. Fully leverage the training and tools available through www.NIEM.gov.

Stay Connected

Stay connected by accessing the NIEM newsletter. Contact others who have experience employing NIEM. Read the case studies and collaborate with the authors of those case studies. Attend the NIEM conferences and events to learn about new developments; hear success stories; attend executive and technical training sessions; and stay connected with peers in federal, state and local government, and industry.

Promote

Promote continued adoption of NIEM by incorporating NIEM into state government enterprise architecture operating discipline. This should be part of state government initiatives to build an enterprise perspective, leverage national standards, participate in national communities of interest, and pursue business process enhancement and transformation efforts.

Incorporate

Incorporate NIEM into project management and procurement processes. Include NIEM compliance as part of performance requirements for applications and business services. It is important to understand conformance with NIEM is already a requirement for federal grants from the US Department of Justice and the US Department of Homeland Security. In future, NIEM conformance can be anticipated as a requirement for US Department of Health and Human Services grants.

Explore and Evaluate

Consider current strategic intent of the organization. Evaluate that intent to determine how to *continually improve* the delivery of that intent. This kind of behavior is an ongoing activity that is characteristic of a *change competent organization*. In that evaluation process identify: collaborative relationships; business process interaction; and shared data, information, and knowledge. Explore and evaluate how elements like these could enhance the organization's capability and capacity for delivering on its intent. The concept of change competency is described in NASCIO's publication *Transforming Government Through Change Management – The Role of the State CIO*[19].

10 Key Points about the National Information Exchange Model (NIEM)[20]

1. NIEM supports cross-domain information exchanges as well as intra-domain exchanges.
2. NIEM provides a common set of reusable components which are collaboratively managed with stakeholders under the NIEM governance process and architectural framework.
3. Information Exchange Package Documentation (IEPD) is central to many NIEM processes.
4. Governance processes allow NIEM domains to manage their content and leverage existing standards, while staying within the NIEM model and architectural framework specified in the NIEM Naming and Design Rules (NDR).
5. NIEM supports the use of external standards.
6. The NIEM architecture will support a concept of version independence for NIEM domains.
7. NIEM is requirements-driven.
8. Developers of conforming NIEM IEPDs can reuse data components from the NIEM core, NIEM domains, and existing external domains and standards to accelerate development.
9. Exchanges modeled in NIEM IEPDs and the systems that implement them are not required to be migrated to each new release of the NIEM model.
10. Data components are introduced into NIEM through an iterative process.

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Appendix I

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PERSPECTIVES - Government Information Sharing: Calls to Action

NASCIO has pulled together interviews and articles from a variety of contributors from integrated justice, homeland security, environmental protection, transportation, public health and economic development. "Perspectives" includes discussions with federal, state and county government. Not so surprisingly, according to the contributors to this first issue of Perspectives, technology is not the major barrier. This report presents barriers to information sharing and the "Calls to Action" to overcome these barriers.

http://www.nascio.org/committees/EA/download.cfm?id=19

A National Framework for Collaborative Information Exchange: What is NIEM?
March 2006

This brief both summarizes the intention of this national initiative and provides guidance on participation in this effort.

http://www.nascio.org/committees/EA/download.cfm?id=47

In Hot Pursuit: Achieving Interoperability Through XML

https://www.amrms.com/ssl/nascio/store/index.cfm#21

Data Governance - Managing Information As An Enterprise Asset: Part I - An Introduction

Data governance entails a universe of concepts, principles, and tools intended to enable appropriate management and use of the state's investment in information. Part I on data governance presents an introduction that describes the basic concepts. Governance, and particularly data governance, is an evolutionary process. It begins with an understanding of the current investment and then manages that investment toward greater value for the state.

http://www.nascio.org/committees/EA/download.cfm?id=100

Data Governance Part II: Maturity Models – A Path to Progress

Data governance maturity models provide a foundational reference for understanding data governance and for understanding the journey that must be anticipated and planned for achieving effective governance of data, information and knowledge assets. This report continues to build on the concepts presented in Data Governance Part I. It presents a portfolio of data governance maturity models.

http://www.nascio.org/committees/EA/download.cfm?id=111

Data Governance Part III: Frameworks – Structure for Organizing Complexity

This issue brief presents the concept of frameworks that describes what constitutes a data governance program, with a focus on frameworks from the Data Management Association (DAMA), the Data Governance Institute (DGI), and IBM. Use of frameworks can assist state government in planning and executing on an effective data governance initiative. They assist in achieving completeness in a program. In any subject or discipline frameworks and maturity models assist in describing the scope – both breadth and depth – of an initiative. This holds true as well for data, information and knowledge management.

http://www.nascio.org/committees/EA/download.cfm?id=114

National Information Exchange Model – www.niem.gov

This website includes presentations, case studies, overview documents, technical documents, E-Learning (Online Course), executive briefings, frequently asked questions, concept of operations, implementation guidelines, and more.

The National Information Sharing Environment (ISE) - http://www.ise.gov/default.aspx
> End-to-end mission process improvement is at the heart of building the ISE. The primary focus of the ISE is any mission process, anywhere, which has a material impact on detecting, preventing, disrupting, responding to, or mitigating terrorist activity. End-to-end mission processes are operated by ISE mission partners and directly support frontline law enforcement, public safety, homeland security, intelligence, defense, and diplomatic personnel. They encompass a broad range of activities and include processes that support alerts and notifications; suspicious activity report gathering, vetting, and sharing; terrorist "watch list" maintenance and use; and other activities and processes with direct mission impact.

Office of the Federal Chief Information Officer – www.cio.gov
> *Memorandum for the Federal Chief Information Officers*, April 11, 2011
> This document provides a summary of the evaluation of the National Information Exchange Model across the Federal Government.
>
> *Agency Information Exchange Functional Standards Evaluation – Adoption and Use of the National Information Exchange Model (NIEM)*, April 12, 2011. Data was submitted as of June 11, 2010. This report presents a matrix illustrating planned or potential cross-domain opportunities for connecting data through standardized information exchange throughout the federal, state and local government and private sector. This report compiles information gathered from the agency response submissions and discussions.

References for Logical Data Modeling and Data Management

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Appendix II

The IEPD lifecycle

As the focal point of interoperability, the concept of IEPD (Information Exchange Package Documentation) is fundamental to the National Information Exchange Model (NIEM) reference architecture. An IEPD itself is a specification for a data exchange and defines a particular data exchange.

The NIEM IEPD lifecycle has 6 steps:[21]

1. Conduct Business Analysis and Requirements Review: This step defines the business requirements associated with an information exchange for which NIEM is used. It incorporates scenario-based planning, which is the recommended methodology for elaborating the business context of events, incidents or circumstances in which information exchange takes place.

2. Complete Information Exchange Mapping and Data Modeling: This uses established methodologies to map and model operational information exchanges. Moreover, it describes the process a community of interest (COI) follows to map their data sources to NIEM and identify IEPDs available for reuse and/or gaps between its data source and NIEM. **The COIs can use the NIEM repository to search and discover existing data components to decrease the time needed to construct their IEPDs.**

3. Build and Validate IEPDs: This step addresses the importance of using common documentation standards, such as IEPDs, to ensure there is consistency in the way information is captured, stored and exchanged, and that uniform methodologies exist to support the generation of the IEPDs. Once the COI validates its IEPD, it may submit the IEPD to its domain-specific area (proceed to step 5) or nominate data components for inclusion into Universal or Common (proceed to step 4).

4. Data Harmonization and Promotion: The appropriate NIEM governance stakeholders form a team to review an IEPD submission and determine whether any of the data components should be included in Universal or Common. The team evaluates the submission and makes a recommendation regarding which, why, how and when to integrate the proposed changes into NIEM.

5. Publish and Implement IEPDs: Once an IEPD is approved, it is stored in the NIEM repository. Other stakeholders or COIs can then search and discover published IEPDs for reuse or extend for a specific instance of the information exchange.

6. Garner Feedback and Enhance and Expand IEPDs: This step describes how the COIs work with the NIEM PMO to ensure existing IEPDs remain up to date and compliant with NIEM.

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