

### The National Information Exchange Model February 11, 2021

Sponsored by the NASCIO Enterprise Architecture & Governance Committee

@NASCIO





### Are you listening to NASCIO Voices?

If not, here's what you've missed lately on NASCIO's podcast

- A Decade of Service with Georgia CIO Calvin Rhodes
- From Corporate America to Kansas State Government with CTO Stacy Mill
- Leadership Through the Challenges of 2020 with Minnesota CIO Tarek Tomes
- The Election and Modernization with PA CIO John MacMillan
- And lots more....

Find it here → https://www.buzzsprout.com/704052 (Or wherever you get your podcasts, search for NASCIO Voices)

### **NASCIO Voices?**



#### **Resource Center**

Featured



https://www.nascio.org/resource-center/

### **State Government Data Landscape**



Data stored across multiple systems from multiple agencies in multiple formats



Data quality issues: dirty and messy



Lack of enterprise standards, consistency



Data sharing is difficult – format, language, access, culture, myths



Security risks and privacy issues: data classification



Little insightful, usable data on "customers"







#### STATE CIO TOP 10 PRIORITIES

2021 Strategies, Policy Issues and Management Processes



Digital Government/Digital Services: framework for digital services; portal; improving and digitizing citizen experience; accessibility; identity management; digital assistants; privacy

Cybersecurity and Risk Management: governance; budget and resource requirements; security frameworks; data protection; training and awareness; insider threats; third party risk

3 Cloud Services: cloud strategy; selection of service and deployment models; scalable and elastic services; governance; service management; security; privacy; procurement



Broadband/Wireless Connectivity: strengthening statewide connectivity; implementing rural broadband expansion; 5G deployment



Budget, Cost Control, Fiscal Management: managing budget reduction; strategies for savings; reducing or avoiding costs; dealing with inadequate funding and budget constraints

6 Data Management and Analytics: data governance; data architecture; strategy; business intelligence; predictive analytics; big data; roles and responsibilities



፟፟፟፟፟፟ 🛣 🛣

N A S CIO

Consolidation/Optimization: centralizing; consolidating services; operations; resources; infrastructure; data centers; communications and marketing "enterprise" thinking

Identity and Access Management: supporting citizen digital services; workforce access; access control; authentication; credentialing; digital standards

#### 9 w

8

Workforce: preparing for the future workforce and reimagining the government workforce; transformation of knowledge, skills and experience; more defined roles for IT asset management, business relationship management skills, service integration

10

Customer Relationship Management: internal customer service strategies; building customer agency confidence, trust and collaboration; service level agreements (demand planning)



www.NASCIO.org



#### **STATE CIO TOP 10 PRIORITIES**

2021 Technologies, Applications and Tools Cloud Solutions Software-as-a-service Legacy Application Modernization/Renovation Identity and Access Management Artificial Intelligence / Robotic Process Automation Chatbots, virtual assistants 5 Security Enhancement Tools CDM, advanced analytics, digital forensics Data Analytics 6 Business Intelligence and business analytics; applications; big data Remote Work 7 Provisioning remote work including software, hardware, cybersecurity, virtual meeting and collaboration capabilities 8 Enterprise Resource Planning (ERP) Collaboration Technologies File sharing, document management, workflow, intranet services 10 Customer Service/CRM Technologies and solutions





# **VIERVIEW**

February 11, 2021

Ms. Katherine Escobar Joint Staff J6, DDC5I, Data & Standards NIEM Managing Director



### AGENDA

- SLTT Interoperability Challenges
- National Information Exchange Model (NIEM)
- How to Get Started
- Next Steps

(NIEM)



**Guest Presenter** Katherine Escobar GS-15 Managing Director, National Information Exchange Model Deputy Division Chief Data and Standards Division Joint Staff J6

### **NIEM AT WORK**

- Interstate Justice and Public Safety Network (NLETS) exchange mission-critical law enforcement information.
- **Amber Alert** child abduction emergency alert.
- Prescription Drug Monitoring Exchange (PMIX) Mitigate pharmaceutical drug abuse across state lines.
- FBI Incident Reporting National Data Exchange System (N-Dex) standardized and secure criminal justice information sharing to relevant criminal justice agencies.
- FBI National Crime Information Center (NCIC) United States' central database for tracking crime-related information.
- Centers for Disease Control and Prevention (CDC) Emergency Preparedness and Response Exchange Requirements - exchange and sharing of critical emergency management (EM) data.
- National Electronic Interstate Compact Enterprise (NEICE) placement of children in foster care across state lines.
- Indian Child Welfare Act (ICWA) e-Notice.

https://www.niem.gov/about-niem/success-stories



ATIONAL INFORMATION EXCHANGE MODEL

#### NATIONAL INFORMATION EXCHANGE MODEL

NIEM.gov

### **SLTT INTEROPERABILITY**

Across all industries, all levels of government, and technical solution providers, **interoperability** is an essential tool for:

- Better decision making
- Reduction of manual processing
- Increased productivity
- Reduction of errors

(NIEM)

Management of costs

Everyone agrees it takes *interoperability of systems* to *achieve these benefits*.



#### Industry Use Cases

### **SLTT INTEROPERABILITY CHALLENGES**

# If everyone agrees, why is there a lack of interoperability problem?

- Lack of unified agreement on standards selection and implementation
- Siloed (domain-specific) development efforts driven by need, isolated by incompatibility
- Proprietary and vendor-driven solutions vs. interoperable driven solutions
- Information Blocking business, technical, and organizational practices that prevent or materially discourage access, exchange or use



### **SLTT INTEROPERABILITY SOLUTION**

The key factor to achieve interoperability is data

- Information exchange is critical to ensuring timely information is available when and where it is needed
- To exchange data, systems must have agreement on:
  - **Syntactic**: Data encodings and representation
  - **Semantic**: Consistent terminology and meanings

### NIEM Solves the Interoperability Challenge at the Data Level



IATIONAL INFORMATION EXCHANGE MODEL

# NATIONAL INFORMATION EXCHANGE MODEL



NATIONAL INFORMATION EXCHANGE MODEL

# **NIEM FRAMEWORK**

**NIEM is a community-driven**, government and jurisdiction-wide, standards-based approach to exchanging information

Diverse communities can collectively leverage **NIEM to increase efficiencies** and improve decision-making

NIEM is available to everyone, including public and private organizations

NIEM includes a data model, governance, training, tools, technical support services, and an active community to assist users in adopting a standards-based approach to exchanging data



NIEM.gov

# DATA INTEROPERABILITY PROBLEM



### <NIEM>

NATIONAL INFORMATION EXCHANGE MODEL

### NIEM IN ACTION: HOW NIEM EXCHANGES DATA COMPONENTS AND DATA ELEMENTS

#### **NIEM** is

a common vocabulary – enabling efficient information exchange across diverse public and private organizations

### **NIEM** is not

a system or database – NIEM does not specify how to transmit or store data



Using NIEM, organizations come together to agree on a common vocabulary When additional organizations are added to the information exchange, the initial NIEM exchange can be reused, saving time and money

### <NIEM>

NIEM.gov

### **NIEM – THE BIG PICTURE**

NIEM enables organizations to move information across organizational boundaries in order to interoperate – and act as one – while each maintains authority for their own existing systems





### **MODEL OVERVIEW**

Think of the NIEM data model as a mature and stable data dictionary of agreed-upon terms, definitions, relationships and formats independent of how information is stored in individual agency systems

#### The data model consists of two sets of closely related vocabularies:

- NIEM core
- Individual NIEM domains

**NIEM core** includes data elements commonly agreed upon across all NIEM domains (i.e., person, activity, location, and item, etc.)

#### **Individual NIEM domains**

contain mission-specific data components that build upon NIEM core concepts



### <NIEM>

NATIONAL INFORMATION EXCHANGE MODEL

# NIEM MODEL CONTENT

Think of the NIEM data model as a mature and stable data dictionary of agreed-upon terms, definitions, and formats independent of how information is stored inside individual IT systems.

#### **NIEM Domains**

- Agriculture
- Biometrics
- Chemical, Biological, Radiological, & Nuclear
- Cyber
- Emergency Management
- Human Services
- Immigration
- Infrastructure Protection
- Intelligence
- International Trade
- Justice
- Maritime
- Military Operations
- Screening

(NIEM)

Surface Transportation





### When using NIEM, you only need to "speak" two languages — your own and NIEM

#### **EXAMPLE** Communicating With <u>15</u> Different Systems

WITHOUT NIEM

**USING NIEM** 



LOE Single Program Mapping = <u>14</u> LOE Total Mapping = <u>210</u> <u>210</u> Total Interface Mappings



LOE Single Program Mapping = <u>1</u> LOE Total Mapping = <u>15</u> <u>15</u> Total Interface Mappings

Level of Effort (LoE)

(NIEM)

NIEM.gov

### **NIEM COMMUNITY STAKEHOLDERS**

The NIEM community continuously communicates with six different stakeholder types

Each stakeholder is interested in NIEM and how it can help their organization or project for different reasons



**Executives** 

NIEM minimizes the time-to-market while allowing maximum flexibility.



#### **Program Managers**

NIEM can make a job easier by helping teams build exchanges in less time, for less money time.



#### **Architects**

NIEM offers a better way to exchange data and is adaptable; it can be modified or new capabilities added to an existing exchange.

# **+ \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* • • \* •**



#### **Developers**

Tools and support are available to make exchange development easier and faster.



#### Implementers

NIEM can lower the cost of maintenance in comparison to legacy formats.



#### **Tool Providers**

NIEM can be an avenue to connect with customers who have an interest in information sharing capabilities.

# **NIEM ORGANIZATION GOVERNANCE**

NIEM provides standardized enterprise-level information exchange across Joint, Coalition and Interagency domains



〈NIEM〉



# NIEM IS AN OPEN STANDARD

### The National Technology Transfer and Advancement Act

(NTTAA) directs Federal agencies to adopt voluntary consensus standards wherever possible (avoiding development of unique government standards) and establishes reporting requirements.

#### OMB A-119 Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities

All federal agencies must use voluntary consensus standards in lieu of government-unique standards in their procurement and regulatory activities, except where inconsistent with law or otherwise impractical.

### **NIEM Alignment to Open Standard Criteria**

- ✓ Openness
- Balance of interest
- ✓ Due process
- Appeals process
- Consensus

### <NIEM>

NATIONAL INFORMATION EXCHANGE MODEL NIEM.gov

# **STANDARDS THAT INCLUDE NIEM**

- ANSI 42.42 Radiological Nuclear detectors CBRN Domain
- ANSI APCO Alarm Monitoring Company to Public Safety Answering Point (PSAP)
- OASIS EXDL, Emergency Data Exchange Language FEMA (Emergency Management Domain)
- NIST Big Data Framework Vol 7
- Nation Fire Protection NFPA 950 calls for compliance with NIEM. Emergency Incident Data Document (EIDD) IEPD – NISTIR 8255
- Biometrics ANSI/NIST ITL Standard Biometrics Domain
- Biometric Conformance Test Software (BioCTS)
- BioCTS for AN-ITL v2 is a desktop application which tests electronic biometric data files, known as transactions, for conformance to NIST Special Publication (SP) 500-290
- Conformance Test Architecture (CTA) and Test Suite (CTS) called "BioCTS for AN-2011 NIEM XML" designed to test implementations of AN-2011 NIEM XML encoded transactions.
- NIEM cited in patent Integrated Environment for Developing Information Exchanges patent No: US 8,769,480 B1 Dated July 1, 2014
- Model Minimum Uniform Crash Criteria Guideline (MMUCC) Department of Transportation



### **NIEM DOMAIN OVERVIEW**

NIEM Domain	Organizational Sponsor	Content Focus	Points of Contact
Agriculture	Department of Agriculture	Farm Service Agency (FSA) and Risk Management Agency (RMA) reporting data about crops, acreage, and revenue as part of the federal crop insurance program	Brian Brotsos Jacquie Butler
Biometrics	DHS National Protection and Programs Directorate Office of Biometric Identity Management	Part of a coordinated global effort to maintain and refine operations focused on security, intelligence, law enforcement, international trade, travel and immigration by means of identity management and assurance	John Boyd (SES) Thomas Freed
Chemical, Biological, Radiological, and Nuclear	DHS Domestic Nuclear Detection Office (DNDO) with cooperation of Customs and Border Patrol	National effort to detect and interdict radiological and nuclear threats. The GNDA (Global Nuclear Detection Architecture) involves DHS, DOJ, DOE, DOS, DOD, the Governmental Nuclear Regulatory Commission (NRC), state, local, and tribal agencies	Thomas Tullia Melson Martis
Core	DHS/DOD	Common data types, properties, code sets across multiple Domains	Christina Medlin Ralph O'Connell
Cyber	DHS Cybersecurity and Infrastructure Security Agency	Enable Federal Government and critical infrastructure ownser and operators informaiton exchanges	Preston Werntz Consti Tudan
Emergency Management	DHS Science and Technology First Responders Group	Supports emergency-related services (first responders, responding to disasters), information sharing, and activities such as homeland security and resource communications management	Dan Cotter (SES) Kamran Atri
	Department of Health and Human Services (HHS) Administration for Children and Families	Create and encourage greater collaboration and service integration among human service programs and agencies to improve client outcomes, lower costs, and enhance operational efficiencies	Christopher Traver Dorothy Wan
Immigration	DHS Citizenship and Immigration Services (CIS) and Immigration and Customs Enforcement (ICE)	Standardized information sharing to improve investigative and enforcement responsibilities for federal immigration laws, customs laws, and air security laws to foster better collaboration with their external partners	Jennifer Kish Curtis Ross

### NIEM DOMAIN OVERVIEW (cont'd)

NIEM Domain	Organizational Sponsor	Content Focus	Points of Contact
Infrastructure Protection		Coordinated national program to reduce risks to the nation's critical infrastructure and key resources (CIKR)	Ash Chaterjee
Intelligence	-	Identify the operational needs to exchange intelligence, as well as the opportunities to share information with other domains and functions in justice and homeland security	Matthew Lucas Sue Dohr
International Trade	DHS Customs and Border Protection	Enable resulting in greater facilitation of trade and more effective identification and elimination of security threats before they arrive at ports and borders. Aligns with the World Customs Organization (WCO) Data Model and the Customs Business Process models.	Renee Messalle Shailesh Sardesai
Justice	FBI steward the U.S. Attorney General's Advisory Council on Global Justice Information Sharing	Global Justice XML Data Model (GJXDM) became the first NIEM domain in 2005 to enable the entire justice and public safety communities to effectively share information at all levels – laying the foundation for local, state, tribal, and national justice interoperability.	Cherie Cochran Kate Silhol
Maritime	Office of Naval Intelligence OCIO stewards in coordination with DHS	Support full Maritime Domain Awareness: "the effective understanding of anything associated with the global maritime domain that could impact the United States' security, safety, economy, or environment" including vessels, people, cargo, maritime locations and activities	Benjamin Apple, PhD
Military Operations		Data components necessary to support improved data interoperability between DOD and mission partners for operations	Ralph O'Connell Rodney McCoy
Screening	DHS	Supports, coordinates, and harmonizes a wide range of screening and credentialing activity information across homeland security mission areas	Steve Yonkers
Surface Transportation		Exchange transportation information between organizations to support DOT Traffic Records Coordinating Committee and the State Traffic Records Coordinating Committees	Daniel Morgan (SES)

< NIEM>

NATIONAL INFORMATION EXCHANGE MODEL

### VALUE PROPOSITION – INTEROPERABILITY

The interoperable nature of NIEM establishes:



NIEM enables systems to work together at the data level Implementers decide how agencies' systems are implemented



### VALUE PROPOSITION – REUSABILITY

# The reuse of IEPDs, in part and whole, within NIEM will:

### Decrease Development Time

Decreases the development time for information exchanges that use similar sets of data

### **Increase Consistency**

Allows practitioners to increase the syntactic and semantic consistency in data definitions across their information exchanges



### **VALUE PROPOSITION – STANDARDIZATION**

### The formalization of NIEM as a standard enables

### Large Support Community

NIEM Practitioners can leverage NIEM's large support community to decrease development time for exchanges and increase conformance

### **Structured Approach**

Repeatable approach that decreases the inconsistencies and duration of development



### WHY NIEM?

#### Collaboration

NIEM brings stakeholders together through reuse and community engagement

#### Consistency

NIEM provides consistency through reusable schema, which allows for many implementation options

#### Development

Flexible and extendable, NIEM saves development time through agreed-upon elements, relationships, and formats independent of how information is stored in individual systems

#### Support

New users can leverage what already exists and engage directly with other NIEM members for assistance.

#### WHICH LEADS TO



# NIEM DOMAIN RESOURCES

#### These resources provide additional guidance on managing a domain

### GOVERNANCE

**Guidance on Establishing Domain Governance** – Detailed guidance for the domain governance model. Domains are advised to read this document before drafting a domain charter, and domain operations and maintenance (O&M) plans **Domain Charter Template** – Standard format and guidance for the charter **Domain O&M Plan Template** – Standard format and guidance the domain O&M plan

#### STAKEHOLDER ENGAGEMENT

Domain Community of Interest Guidance – Planned for development by the NMO Domain Stakeholder Communications Guidebook – Planned for development by the NMO

#### DATA MODEL

**NIEM Naming and Design Rules (NDR)** – Detailed design rules for domain data model structure

**Model Package Description (MPD) Specification** – Defines terminology, identifies required/optional artifacts and metadata, specifies normative rules, schemes and syntax, and provides non-normative guidance



# HOW TO GET STARTED



NATIONAL INFORMATION EXCHANGE MODEL

NIEM.gov

# **ROADMAP TO ADOPTION**

#### **NIEM Engagement Process**

The engagement process is a self-service model that includes tools and methods for organizations to:



#### **Results**

- Identify information exchanges where NIEM can provide the most value to the organization
- Develop a tailored action plan outlining how the organization can adopt and sustainably use NIEM for information exchange

For more information on the NIEM Engagement Process, please visit NIEM.gov/roadmaptoadoption



### **CONSIDERATIONS FOR ADOPTION**



Systems on either side of the exchange can use different implementation architectures (i.e. different programming languages, operating systems)



All participants in an information exchange must agree on the definition and structure for the data in the exchange—NIEM provides this standardization



 IEPD Lifecycle should be used to guide development of NIEM conformant information exchanges to make sure all of the necessary artifacts are created



Elements already defined within NIEM should be used whenever possible; exchange elements outside of or created to fill requirements not covered in NIEM should also be reused whenever possible



### SKILL LEVEL TO IMPLEMENT NIEM

- Developers with the skills to design and implement a data exchange can learn the NIEM approach in a matter of hours
- Developer training is available
  - No-cost online courses are on the NIEM website
- Plenty of example IEPDs to follow
- Don't start from scratch, leverage shared IEPDs
- The NIEM technical specifications are complex, however
  - Most developers do not need to read them
  - Free tools can perform most of the conformance checking







# Start your action plan and schedule your resources for NIEM training!





### **FINAL THOUGHTS**

The NIEM Management Office is a resource for your

#### use

- Large group of Federal government information sharing practitioners (15 Domains and counting)
- Working current interoperability issues NBAC
- Developing technical approaches NTAC
- Executive, Manager, and technical-level orientation material available
- Open to your workgroup for tasking and guidance
- The NIEM Management Office can provide a standing representative to your Workgroup


## **CONTACT US**

NMO Katherine Escobar (Katherine.b.escobar.civ@mail.mil), 757-203-8631

NMO Steve Sullivan (stephen.m.sullivan14.ctr@mail.mil), 757-203-8619

NBAC Kamran Atri (katri@a4safe.com), 703-930-6057

NBAC Thomas Krul (Thomas.krul@Canada.ca), 613-949-6513





NATIONAL INFORMATION EXCHANGE MODEL

## **REFERENCE MATERIAL**

- Starting Point: <a href="https://www.niem.gov/">https://www.niem.gov/</a>
- **Training**: <u>https://www.niem.gov/training</u>
- Technical Resources: <a href="https://www.niem.gov/techhub">https://www.niem.gov/techhub</a>
- Current Release: <u>https://www.niem.gov/techhub/niem-</u> model/current-release
- IEPD Developer Resources:
  <a href="https://www.niem.gov/techhub/iepd-resources">https://www.niem.gov/techhub/iepd-resources</a>
- Implementation Support: <a href="https://niem.github.io/">https://niem.github.io/</a>
- Tools: https://www.niem.gov/tools-catalog

NIEM.dov

# 

### BACK UPS AND AMPLIFYING INFORMATION



NATIONAL INFORMATION EXCHANGE MODEL

### STATE IMPLEMENTATIONS OF NIEM

- All 50 States: Amber Alert and Prescription Drug Monitoring
- Arizona
  - Maricopa County CJIS has automated the arrest and booking process for the state of Arizona
  - Pima County, AZ Justice Health Integration Project
- California San Diego has built its regional information sharing system which brings together the San Diego harbor police, the Port of San Diego, the Los Angeles port police, the Los Angeles county sheriff's office.
- Colorado Integrated Criminal Justice Information System
- Florida Volusia County Clerk of the Circuit Court: Comprehensive Case Information System (CCIS 3.0)
- Hawaii and Vermont NIEM enabled automated data exchange communicates
  between booking system and probation and parole case management systems
- Indiana Data Exchange (IDEx) -Includes 21 justice and public safety agencies
- Iowa Criminal Justice Information Sharing Project
- Kansas Criminal Justice Information System (KCJIS): Electronic Disposition Reporting for DUIs and Traffic Safety
- Minnesota the Comprehensive Incident Based Reporting System (CIBRS) will collect incident data from all police departments in the state to create a statewide index to incident data



### STATE IMPLEMENTATIONS OF NIEM CONT.

- New York State
  - New York State Justice Center Incident Report
  - Syracuse police department implemented a small mobile computing system which allows 17 cities and the county sheriff's office to share incident information using the GJXDM Integrated Justice Portal
- North Carolina
  - Families Accessing Services Through Technology (NC FAST)
  - City of Charlotte data integrated with NC's National Incident Based Reporting System (NIBRS)
- Ohio Ohio Chiefs Of Police Association pooled all Home Land Security grant funds for law enforcement in order to fund a common initiative to share information from no less than 900 police departments
- Pennsylvania Data Quality Framework Project
  - Department of Transportation in cooperation with the Pennsylvania Justice Network (JNET) makes drivers' change of address information available to Justice Network (JNET).
- Texas Completion of 28 NIEM-conformant information exchanges to serve as the foundation for statewide information sharing using NIEM
- Virginia:
  - City of Richmond, VA Automated Secure Alarm Protocol (ASAP)
  - Framework for Addiction Analysis and Community Transformation (FAACT)
  - Northern Virginia CAD2CAD Exchange
- Wisconsin Department of Corrections

### (NIEM)

# **NIEM TECHNICAL**



NATIONAL INFORMATION EXCHANGE MODEL

NIEM.gov

### WHERE DOES IT FIT? HOW DOES IT WORK? WHAT SHOULD I KNOW?



# WAYS TO USE NIEM

- Write producer or consumer software for a data exchange specified by others who used NIEM
  - ANSI/NIST-ITL 1-2011 (Biometrics)
  - N.25 Protocol (Radiological and nuclear detection)
  - Developers may not even know about NIEM
- Reuse NIEM data definitions without the exchange framework
  - Treating NIEM like Dublin Core or schema.org
- Design a NIEM-based exchange specification for known partner
- Form a community that creates its own NIEM model extension and/or set of exchange specifications
- Participate in an existing NIEM domain (or join the NTAC)
- Stand up a new NIEM domain and serve as domain steward



### **"THE DATA EXCHANGE DESIGNER IS KING"**

- Nothing in NIEM or any NIEM domain can ever dictate the information content of any data exchange
- NIEM rules for extension and reuse guarantee that every exchange designer will always be able to specify the exact information needed by his exchange participants
- If you want more control over your enterprise or community, you must layer that governance on top of NIEM
- NIEM will work with

(NIEM)

- The agreement you can achieve
- The flexibility you need
- The control you choose to impose (within scale limits on data model size)



### NIEM IS ABOUT COOPERATION, NOT CONTROL

- NIEM Core and NIEM domains create data components by consensus among data exchange designers
- Components are established when participants believe that a common definition will make their exchanges easier to create and implement
- Each domain changes on its own schedule, under its own control
- Changes in the core or in a domain do not force changes in other domains or in any data exchange
- No one is ever required to use a component that does not satisfy the data exchange needs, so there is no leverage for controlling the participants

(NIEM)



## WHAT IS A NIEM INFORMATION EXCHANGE?

In NIEM, an information exchange is also known as an **Information Exchange Package (IEP),** a description of specific information exchanged between a sender and a receiver.

The IEP is usually coupled with additional documentation, sample message instances, business rules, and more to compose an **Information Exchange Package Documentation (IEPD)** 

#### **Core Functions of an IEPD**

- Developed to provide the business, functional, and technical details of the information exchange through predefined artifacts
- Created with a core set of artifacts in a prescribed format and organizational structure to allow for consistency
- Designed to be shared and reused in the development of new information exchanges through the publication in IEPD repositories



NIEM



NIEM is a data layer standard and intentionally does not address all of the necessary technologies needed for information sharing



Exchange partners decide how to store and process the NIEM-conformant data being exchanged



### **NIEM...MORE THAN XML**

#### TRANSFORM A MODEL INTO REQUIRED REPRESENTATIONS



# **STEP 1: NIEM 5.0 RELEASE**

# The NTAC has created a draft metamodel

- Represents a NIEM model (NIEM data definitions) as a data object
- Work in progress

(NIEM)

We can represent NIEM reference schemas as a "model description" data object

- Most features are supported, but not necessarily all; it's a draft
- This could be handled as XML, JSON, or other formats

We can convert NIEM data descriptions into conformant XML Schema

The metamodel is represented as XML data



NIEM.gov

# **NIEM METAMODEL**

The NIEM metamodel is a data model that describes NIEM data models

It carries the aspects of NIEM models that we care about, without a focus on XML Schema-specific features

A data component has a **name**, **namespace**, and a human-readable **definition**:

- A Class defines a category of object. e.g., a vehicle
- A **Datatype** defines a category of simple data: e.g., a string, date, or enumeration
- An Object Property represents a relationship to an object
- A Data Property represents a characteristic with a simple data values





# $\langle N | E M \rangle$

### **Business Indoctrination**

### **NIEM'S GOVERNING STRUCTURE**



(NIEM)

NIEM.gov

# NIEM DISTRIBUTED GOVERNANCE



### **NBAC MISSION**

The mission of the NBAC is to set the business architecture and requirements of NIEM, manage the NIEM core, and facilitate the processes for the regulation and support of NIEM domains

**Business architecture:** NBAC oversees and validates the construction, maintenance, and use of a business architecture framework for NIEM

**NIEM core:** NBAC provides management and oversight of the NIEM core, the central part of the NIEM data model that is commonly understood across all domains

**Community:** NBAC serves as the forum for the admission of new domains and interactions between domains, and coordinates action to maintain the NIEM community



### **NTAC – RESPONSIBILITIES AND SME SKILLSETS**

# WHERE TO GO FROM HERE



NATIONAL INFORMATION EXCHANGE MODEL

# **NIEM REFERENCES**

### Starting Point: <a href="https://www.niem.gov/">https://www.niem.gov/</a>

- Training: <a href="https://www.niem.gov/training">https://www.niem.gov/training</a>
- Technical Resources: <u>https://www.niem.gov/techhub</u>
- Current Release: <u>https://www.niem.gov/techhub/niem-</u> model/current-release
- IEPD Developer Resources:
  <u>https://www.niem.gov/techhub/iepd-resources</u>
- Implementation Support: <u>https://niem.github.io/</u>
- Tools: https://www.niem.gov/tools-catalog

