



NIEMOPEN

Book of NIEM

31 July 2025

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1 Executive Summary

Open Standards play a crucial role in the digital economy by fostering interoperability, innovation, and competition across various sectors. The absence of U.S. leadership in establishing these standards allows other nations, such as China and Russia, to set global norms. This lack of strategic vision and investment hampers national security and economic competitiveness, as open standards are essential for enhancing decision-making, reducing errors, and maintaining public trust. The **NIEMOpen** initiative, now under the Organization for the Advancement of Information Standards (OASIS), exemplifies the importance of open standards by providing a standardized approach to data exchange that can bolster emerging technologies including artificial intelligence (AI) and cybersecurity efforts.

NIEMOpen has evolved from the National Information Exchange Model, focusing on creating a common framework for data sharing among diverse communities. The NIEMOpen open-source project emphasizes community interaction, a robust technical framework, and a supportive governance structure to facilitate the development of Message Exchange Packages (MEPs). These packages enable various organizations and specifically the Department of Defense and Department of Homeland Security to implement consistent data exchange protocols, which are vital for effective communication, data exchange and collaboration in areas like national security, southwest boarder security, North Atlantic Treaty Organization (NATO)-NATO Core Data Framework, mission partner environment interoperability, AI, Joint C5I, biometrics, DoD forensics, cybersecurity and a host of interagency, state, local, tribal and industry initiatives. By standardizing data formats and definitions, NIEMOpen ensures that systems (machine-to-machine) as well as humans can understand and interpret information accurately, regardless of their origins.

In conclusion, the transition of NIEM to NIEMOpen under OASIS signifies a key advancement in establishing open standards for data interoperability. This initiative not only reduces costs and enhances the efficiency of information sharing across governmental and private sectors but also positions the U.S. to assert its leadership in global standard-setting. As NIEMOpen continues to grow, its emphasis on community-driven, mission partner development and adherence to established standards will pave the way for improved data sharing, facilitating trust and collaboration in critical areas such as AI and cybersecurity.

2 What IS NIEMOpen?

NIEM Open Project's (NIEMOpen) evolution traces back to 2003 to the Global Justice XML Data Model (GJXDM) initiative and the standup of the Department of Homeland Security (DHS) - [NIEM's History | NIEM Open](#) .

This nascent grassroots effort by Justice and DHS to create common, well defined data elements, semantics, and syntax for data exchange between diverse communities of interest culminated in the formal instantiation of the National Information Exchange Model (NIEM) in April 2005 - [How NIEM Got Started - YouTube](#) .

NIEM entomology - NIEM no longer is an acronym for the National Information Exchange Model but is simply the brand when referring to NIEM Open Project architecture, data model, technical infrastructure, and domain spaces attributable to the former descriptive business name NIEM. Industry is replete with similar synthetic business names such as 3M, Sony, Google among others. Today, NIEMOpen refers to the organization, business operations, functions , and data standard of NIEM Open Project under the auspices of the Organization for the Advancement of Information Standards (OASIS) Open Projects Program, OASIS OPEN - Open Projects Program - OASIS Open . NIEMOpen is an open-source project that manages the data standard branded NIEM.

The NIEMOpen program is a community-driven, government-wide, standards-based approach to exchanging information. Diverse communities can collectively leverage NIEMOpen to increase efficiencies and improve decision making. There are three different aspects to the value of NIEM:

- Community interaction,
- Technical framework that helps define data structures, and
- Support framework that helps from an implementation perspective.

NIEMOpen is described as a framework, because it is not just a Reference Architecture that provides a common data vocabulary for information exchanges, it includes several components to enable implementation and achieve interoperability:

- A common data model called NIEM core that provides data components for describing universal objects such as people, locations, activities, and organizations More specialized business focused data models for more specialized use cases, called domains (examples including Cyber, Justice, Immigration, and Emergency Management)



Figure 1 NIEMOpen Domains & Core/Namespace Illustration

- A methodology for using and extending the building blocks that come from the common and domain-specific models to turn them into complete information exchanges, known as a formerly Information Exchange Package Documentation (IEPD) or current usage, Message Exchange Package (MEP)
- Tools to help develop, validate, document, and share the information exchange packages
- A governance organization that provides training and support and oversees NIEM's evolution over time

NIEMOpen is available to everyone. The NIEMOpen community spans federal, state, local, tribal, international, and private sector entities. It is this diverse group of people who drive NIEMOpen forward. NIEMOpen was built by the community for the community.

2.1 The NIEMOpen Organization

For the first 17 years of the National Information Exchange Model program, overall program governance resided in the Executive Steering Council (ESC). Originally, ESC membership included the Department of Justice (DoJ), and DHS. The Department of Human Services (HHS) Joined in 2009, and the Department of Defense adopted NIEM in 2013, establishing the Military Operations Domain. This corresponded to establishment of DoD’s “NIEM first” policy which was signed by Teri Takai (DoD CIO) in 2013.

The Chair of the ESC eventually rotated among these 4 principals – DoJ, DHS, HHS, and DoD. In September 2021, the NIEM ESC approved the transition of NIEM to the Organization for the Advancement of Structured Information Standards (OASIS) and J. Clark Cully (DoD Deputy, Chief Data Officer) sunset the NIEM ESC on 20 October 2022 – [Cully Sunset Memo](#).

Whereas there were multiple reasons for this transition, having NIEM a part of OASIS Open Project provided a clear path for NIEMOpen to become an accredited open-source standard with the *Bonafides* of a respected non-profit standards body. A description of OASIS core services, lightweight rules, and licenses are found at <https://www.oasis-open.org/open-projects/> . In addition to becoming an OASIS Standard (OS), OASIS provides the opportunity to get American National Standards Institute (ANSI) and International Organization for Standardization (ISO) approval.

The current NIEMOpen organization consists of the **Project Governing Board (PGB)** and **3 Technical Steering Committees (TSCs)**:

- NIEMOpen Management Office (NMO) TSC
- NIEMOpen Technical Architecture Committee (NTAC) TSC
- NIEM Open Business Architecture Committee (NBAC) TSC.

Open Projects are funded by sponsorship, grants, and donations and each sponsor is afforded a seat on the PGB. As of July 2025, there are 11 active sponsor voting members as well as 1 expert voting member from each TSC. Each of the active NIEMOpen domains are represented by a sub-committee under the NBAC or if inactive, under conservatorship of the NBAC. It is not uncommon for domain space sub-committees to migrate between active participation and a more passive posture as their need for new content and exchanges ebbs and flows over time.

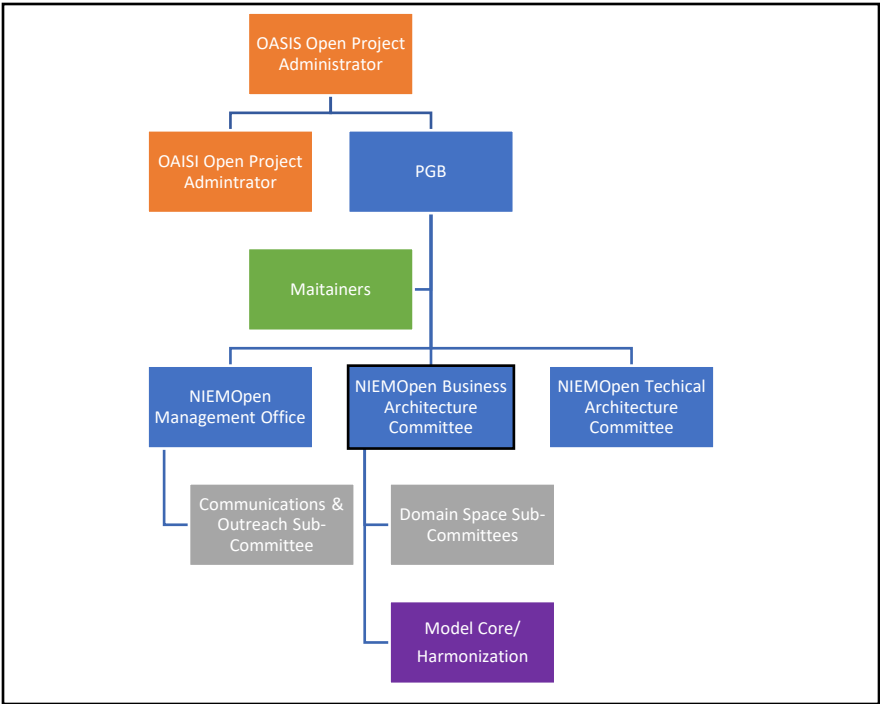


Figure 2 NIEMOpen Organization Chart

Details of roles and responsibilities, governance, committees, specifications, resources, and tools as well as a directory of NIEMOpen GitHub repositories are found at <https://github.com/niemopen/> and OASIS lightweight Rules <https://www.oasis-open.org/policies-guidelines/open-projects-process/> .

2.2 The NIEMOpen Community

The NIEMOpen Community consists of the OASIS Project Administrator, project sponsors, PGB, and NBAC, NTAC and NMOTSCs, sub-committee members, maintainers, contributors ,OASIS members, and guests - <https://www.oasis-open.org/policies-guidelines/open-projects-process/> .



Figure 3 NIEM Domains & Sub-Committees

2.3 The NIEM Model

The NIEM model, and likewise the NIEMOpen community, spans diverse mission spaces across government, industry, Non-Governmental Organizations (NGO), Private Voluntary Organizations (PVO), academia, and international organizations. Currently, the NIEM model includes 18 domains including: Agriculture, Biometrics; Chemical, Biological, Radiological and Nuclear; Cyber; Emergency Management; Immigration; Human Services (Children, Youth and Family Services); Infrastructure Protection; Intelligence; International Human Services, International Trade; Justice; Learning & Development; Maritime; Military Operations, Screening; Surface Transportation; and most recently Forensics. It’s likely that you may find your organization’s mission space within one or more of these 18 domains.

NIEMOpen domains represent both the governance (Domain Space Sub-Committee), and model content oriented around a community’s business needs. NIEMOpen domain space sub-committees manage their portion of the NIEM data model while working with other NIEM domains to collaboratively identify areas of overlapping interest. Future domains are added to NIEMOpen and the NIEM model as necessary, based on an established business need.

The current version of the NIEM model, NIEM Model version 6.0 PS02 specification was approved by the PGB in May 2025 and posted in the OASIS Library. The authoritative version along with zip files of previous releases are available on the NIEM GitHub repo: <https://github.com/niemopen/niem-model> .

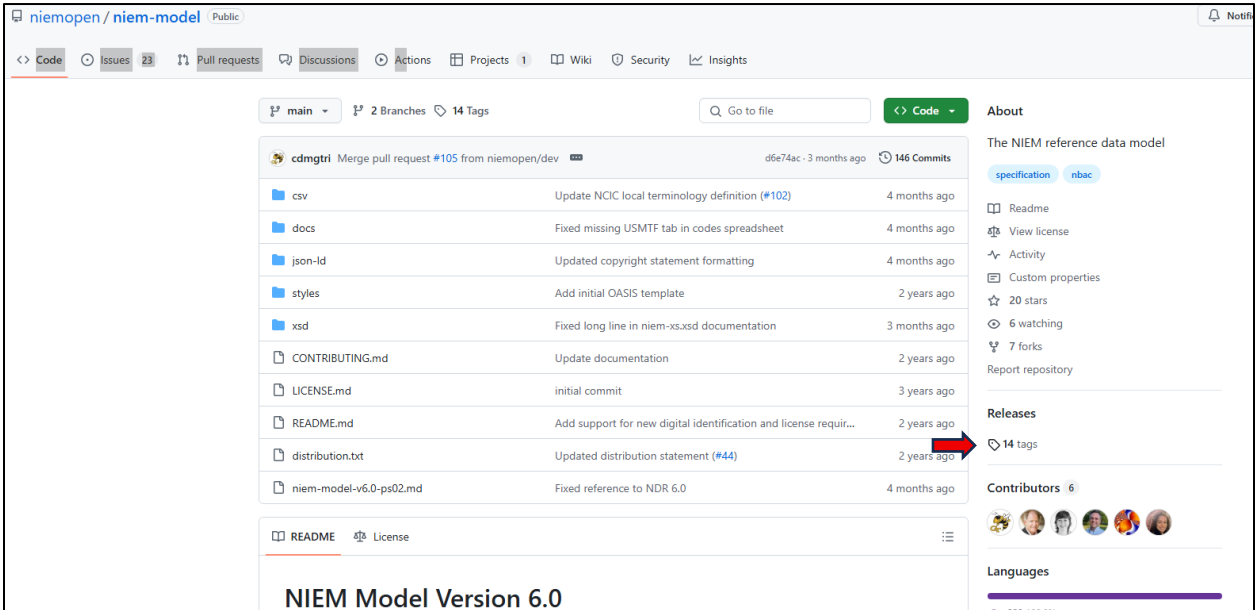


Figure 4 NIEMOpen GitHub Model Illustration

On the left panel of the model repo, click **My tags** to access previous releases:
<https://github.com/niemopen/niem-model/tags>

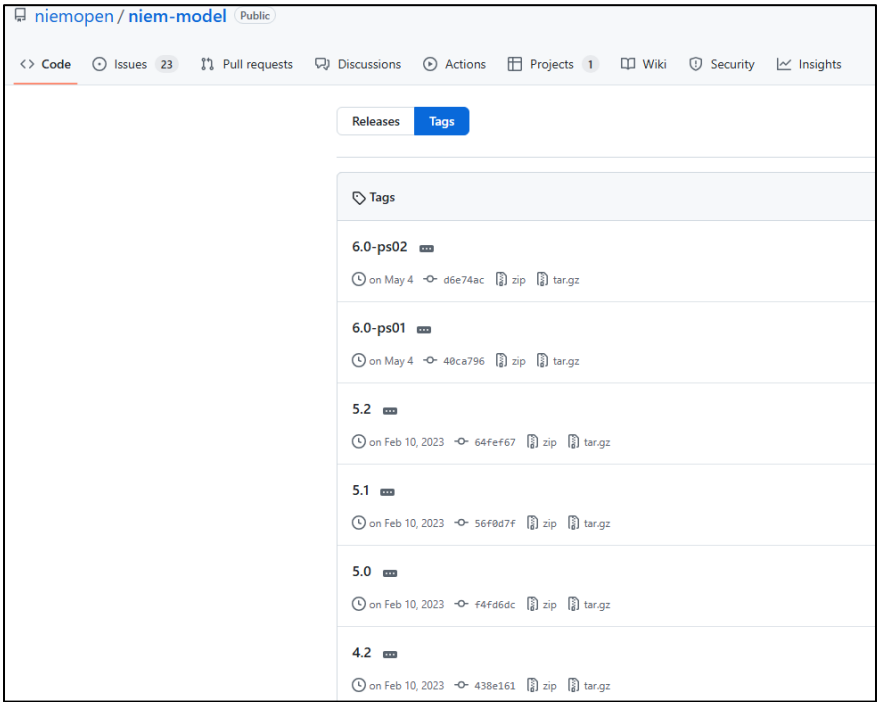


Figure 5 NIEMOpen GitHub Model Version 6.0 & Legacy Zip & Tar Files

2.4 Naming and Design Rule Specification

A companion specification to the model is the NIEM Naming and Design Rules (NDR). A draft NDR version (PSD01) aligned with NIEM Model Version 6.0 is approved by the PGB and is currently under review for approval as a specification and publication to the library:
<https://github.com/niemopen/niem-naming-design-rules> .

2.5 Common Model Format (CMF) Specification

NIEMOpen Common Model Format Specification (CMF) CMF is a NIEM message specification for data models.

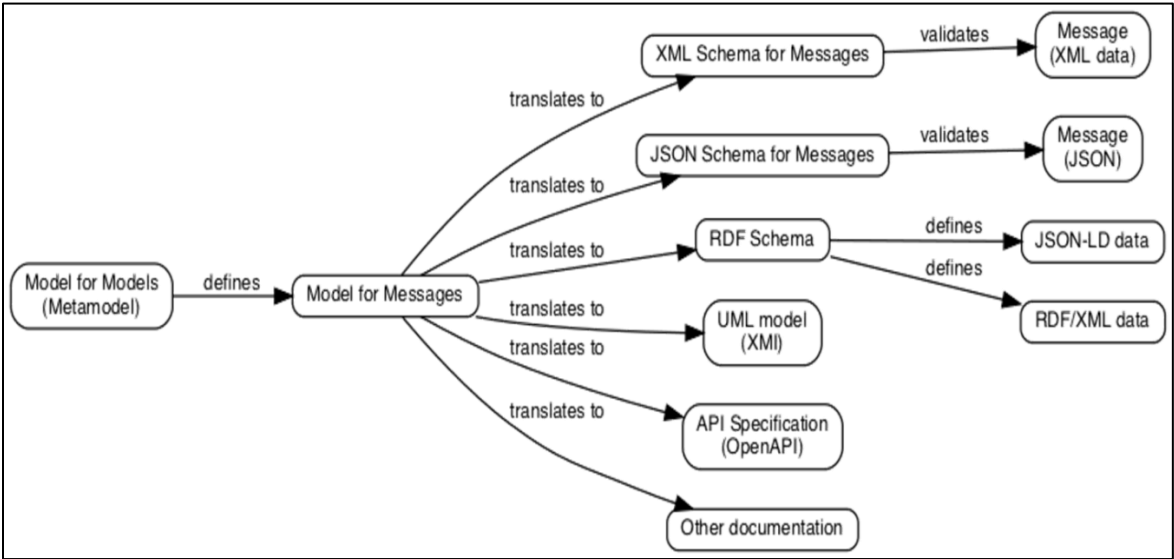


Figure 6 CMF Metamodel Illustration

In all versions of NIEM through version 5, data models are expressed in XML Schema Definition (XSDⁱ). CMF offers an equivalent expression, one that is more suitable for developers not working in XML and is easier to support with developer tools. Using CMF, a data model can be expressed as XML, RDFⁱⁱ, and JSON/JSON-LDⁱⁱⁱ or any other data serialization that NIEM supports, and the data described by the CMF data model can also be expressed in any supported serialization:
<https://github.com/niemopen/common-model-format>

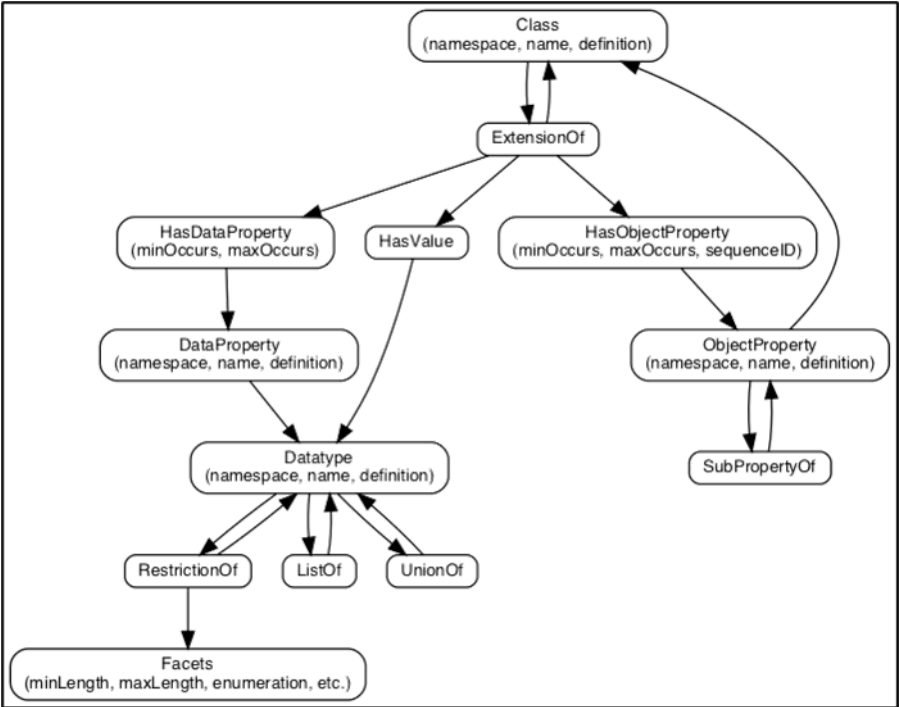


Figure 7 CMF Data Objects

A data model for NIEMOpen data models is a NIEMOpen metamodel. It defines a class of data objects that describe the NIEMOpen data models (a "model description" data object). It represents the aspects of the NIEMOpen model 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 simple data values

2.6 Tools

The NIEMOpen Community has developed tools to assist with:

- Information exchange [Message Exchange Package (MEP) formerly referred to as an Information Exchange Package Documentation (IEPD)] development
 - A MEP/IEPD is a collection of NIEM artifacts that define and describe the context, content, semantics, and structure of one or more implementable information exchanges.
- Model management
- Model search and discovery
- Information exchange storage, search, and discovery
 - The MEP Registry and Repository can be accessed at <https://www.niem.gov/about-niem/message-exchange-package-mep-registry-repository>

The tools catalogue is available at <https://www.niem.gov/tools-catalog> . Two recent tool initiatives include the Common Model Format (CMF) tool and API 2.0.

2.6.1 CMF Tool

The NIEM [Common Model Format \(CMF\)](#) is a data modeling formalism for NIEM-conforming data exchange specifications. CMFTool is a command-line tool for the designers of those specifications.

2.6.2 API 2.0 Tool

[API 2.0](#) is a Java Spring Boot REST API and backend implementation for NIEM tool functionality. It includes support for NIEM and NIEM-based community models, search, transformations, NIEM subset migrations, and validation.

- It will replace the functionality of legacy tools:
 - SSGT <https://tools.niem.gov/niemtools/ssgt/index.iepd>

- ConTesA <https://tools.niem.gov/contesa/>
- Migration Assistance <https://tools.niem.gov/niemtools/migration/index.iepd> .
- Support future NIEM model management
- Maintain legacy support for older NIEM versions, and
- Support multiple serializations of NIEM.

3 NIEMOpen Value Proposition?

The data sharing dilemma:

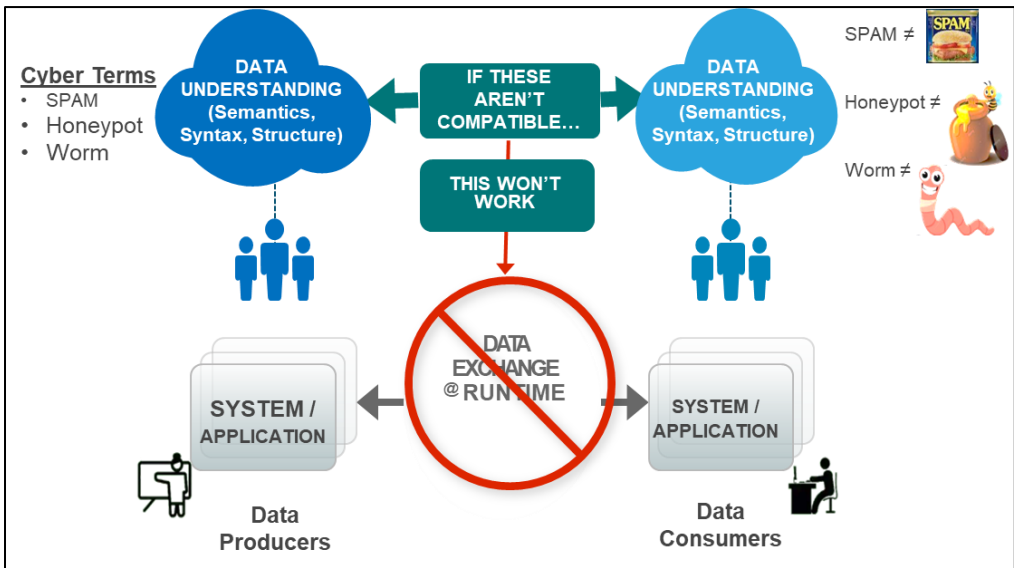


Figure 8 Data Sharing Dilemma - Semantics

Ensuring all partners of an exchange can understand each other is critical to mission success. In this picture, the data interoperability challenge is to ensure that the different systems have a compatible understanding of the data to be exchanged – because if the systems on the left have a different understanding than the systems on the right, then something will be broken, and someone will be unhappy.

Although the graphical comparisons are laughable to a human; computers cannot discern the meaning of one string (e.g., worm vs. worm) from the other unless humans program them to. A computer program designed to recognize a standalone malware worm is not likely to understand a worm insect. They are spelled the same but have different context.

This is the idea behind NIEM—letting your system and my system speak—even if they've never spoken before. NIEMOpen ensures that information is well-understood and carries the same consistent meaning across various communities, allowing interoperability to occur.”

For machine-to-machine data interoperability, there are software developers who build applications on behalf of producers and consumers. They work from a message exchange package, a build-time description of the data to be exchanged at runtime. If they do their jobs right, then the data produced at one side will be properly interpreted at the other, and everyone will be happy.

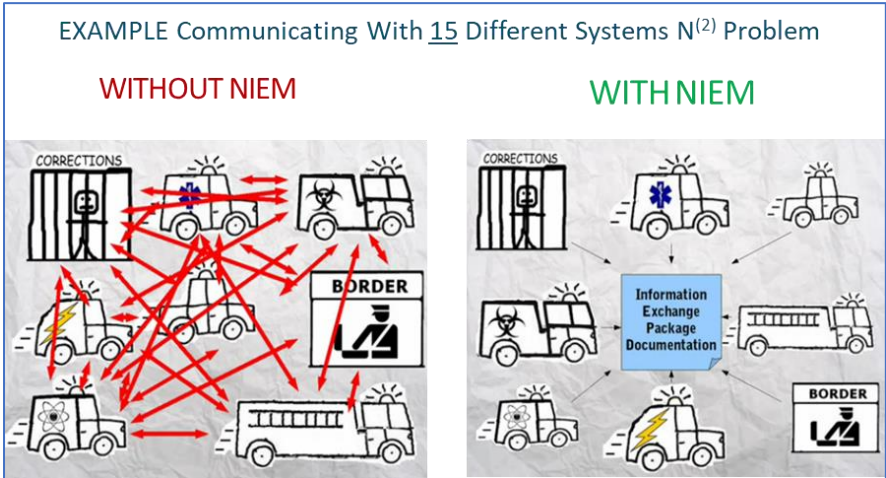


Figure 9 The N Squared Problem

This cartoon depicts a tenant of the NIEMOpen advantage. When using NIEM, you only need to “speak” two languages — your own and NIEM.

For over 20 years, the National Information Exchange Model (NIEM) has been a foundational basis for information sharing within and across domains and communities of interest. Federal, state, and local agencies and other countries have leveraged the harmonization of the 20,000+ data elements in the model and the methodology for developing message specifications based on the NIEM Naming and Design Rules. Having transitioned to NIEMOpen, we have reached a new milestone in its evolution. As a project operating under the auspices of OASIS, we have access to and support from the long-standing and proven OASIS methodology for establishing and supporting standards. To that end, we will be establishing the NIEMOpen platform as an OASIS Standard, ultimately as an ANSI standard, or possibly an ISO standard.

Achieving this advanced level of NIEMOpen can promulgate not only individual message exchange standards but also APIs that form the foundation of data structures, vastly increasing the potential for improving information sharing within organizations and beyond to all connected partners. Several new developments along these lines were recently described in the latest release of NIEMOpen during [the 22 May 2025 IJIS hosted webinar – The New NIEMOpen](#).

4 Who Uses NIEMOpen?

Over the course of 20 years a broad spectrum of communities has embraced the NIEM data model and methodology. Our previous discussion identified 18 domains and associated COIs that formally are part of NIEMOpen (Domain Space Sub-Committees). A summary of domains and their associated sub-committees are found at - <https://niemopen.org/community/>. Additionally, two new prospective domains, Identity Management and Analytical Laboratories, are on the cusp of onboarding. Analytical Laboratories is the NIEMOpen COI representing the Integrated Consortium of Laboratory Networks (ICLN) – <https://www.icln.org/>.

It is difficult to account for all the organizations that have used NIEM and created MEPS/IEPDs since NIEM/NIEMOpen is a voluntary open-source standard without compulsory registration of products developed. Under NIEMOpen as an OASIS Open Project, only formal contributions require an entity or individual license agreement identifying the individual or organization contributor. Similarly, contributing to the MEP repository is voluntary.

NIEMOpen has been adopted in numerous large-scale government information systems, private-sector solutions, and data governance efforts globally. Notable implementations include:

- **Law Enforcement / Criminal Justice:** The FBI’s **National Data Exchange (N-DEX)** program aggregates criminal justice records nationwide. Participating agencies map incident reports, arrest records, citations, etc. into XML using NIEM (and LEXS) standards. N-DEX “connects the dots” by automatically correlating NIEM-formatted data across jurisdictions. Similarly, the Florida Dept. of Law Enforcement’s **CJIS Division** adopted a NIEM XML schema for statewide crime reporting; this standardized, uniform format instantly delivers validated data to state and federal partners, significantly reducing reporting burdens.
- **Immigration and Social Services:** U.S. Citizenship and Immigration Services (**USCIS**) used NIEM to harmonize and migrate data across legacy systems. By embedding NIEM structures in a new Salesforce CRM, USCIS consolidated 55+ attribute definitions and streamlined data mapping for programs like E-Verify/SAVE. In Canada, **Employment and Social Development Canada (ESDC)** adopted NIEM for social program data. ESDC’s projects (e.g. accounts receivable and contact-center systems) use NIEM-based exchanges to enforce consistent definitions and high-volume interoperability with partner agencies.
- **Defense and Security:** The U.S. Department of Defense’s **DCSA** (Defense Counterintelligence and Security Agency) published a NIEM-conformant IEPD for the DD-254 contract security classification form. The DD-254 semantics were embedded in NIEM 4.1 and exchanged in XML/JSON format, enabling standardized dissemination of security requirements across the defense, federal, and cleared contractor communities. NIEM is also identified as a data standard in the Combined Joint All-Domain Command and Control (CJADC2) reference architecture (DoD’s networked defense framework). NIEM’s use in these projects ensures a **common semantic foundation** for classified data and multi-agency defense information sharing.

- Data Governance / Enterprise Architecture:** NIEM’s value extends beyond message formats into **data governance and enterprise modeling**. For example, the Virginia Office of Data Governance and Analytics (ODGA) launched the **Commonwealth Data Trust**, an inter-agency data-sharing environment that “reduces technical costs by onboarding to a single environment using standard NIEM protocols”. By using NIEM as a core data dictionary, Virginia agencies share data under consistent rules and formats. Likewise, NIEM has been used in policy development: Florida’s CJIS leverages NIEM to ensure data quality and to “play a major role in policy development for national sharing of criminal justice information”. In the private sector, companies like InfoStrat embed NIEM in enterprise solutions (e.g. Microsoft Dynamics 365); NIEM serves as a *reference model* that “helps software architects standardize their data definitions” in justice/public safety case-management software.
- Regional and International Projects:** At the city and state level, NIEM enables cross-jurisdictional sharing. Charlotte (NC) integrated its police data with the U.S. Naval Criminal Investigative Service’s LInX exchange and North Carolina’s NIBRS crime-reporting system by adopting NIEM IEPDs (the FBI’s N-DEx schema). Internationally, NIEM is recognized as a model for interoperability: communities in Europe, North America, and Australia “already use NIEM for their information exchange efforts”. For instance, the Canadian federal government (see ESDC above) and the Australian National Archives cite NIEM as a standard for consistent data meaning.

A snapshot of some contemporary Federal customers/products using NIEM/NIEMOpen would include:

- Federal Government**
 - US Air Force – Cursor on Target (CoT)
 - US Army – Tactical Infrastructure Enterprise Services (TIES)
 - US Navy – Maritime Information Sharing Environment
 - Special Operations Forces (SOF)
 - Joint Non-kinetic Effects (JNKE)
 - Tactical Service Oriented Architecture (TSOA)
 - Warfighter Mission Area Architecture Federation and Integration Portal (WMA AFIP)
 - MIL-STD 6016 (Link-16, TDL)
 - MIL-STD 6017 (VMF, XML)
 - MIL-STD 6040 (USMTF)
 - NATO- NATO Core Data framework
 - NORAD/NORTHCOM – Situational Awareness Geospatial Enterprise (SAGE)
 - FBI – Incident Reporting National Data Exchange System (N-DEX)
 - FBI – National Crime Information Center (NCIC)
 - FEMA – National Incident Management System (NIMS)
 - CDC – Emergency Preparedness & Response Exchange Requirements

We will further explore users and implementations in subsequent sections of this document.

4.1 Domain Overview (Table 1)

NIEM Domain	Organizational Sponsor	Content Focus
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
Analytical Laboratory	DHS Integrated Consortium of Laboratory Networks (ICLN) and DoD Defense Forensics and Biometrics Agency (DFBA)	A community of seven (7) federal laboratory networks. This community established operational policies and practices to enable effective communication and coordination across the federal analytical community in the event of a large-scale chemical, biological or radiological/nuclear (CBRN) incident

NIEM Domain	Organizational Sponsor	Content Focus
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
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
Core	NIEMOPEN Community	Common data types, properties, code sets across multiple Domains
Cyber	DHS Cybersecurity and Infrastructure Security Agency (CISA)	Enable Federal/State/Local/Tribal Governments visibility of cyber risks through consistent data and information sharing
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
Human Services	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
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
Infrastructure Protection	DHS Office of Infrastructure Protection	Coordinated national program to reduce risks to the nation's critical infrastructure and key resources (CIKR)
Intelligence	ODNI Criminal Intelligence Coordinating Council and the federal Intelligence Community	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
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.
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.
Learning & Development	Office of the Undersecretary for Defense’s (OUSD) Advanced Distributed Learning (ADL)	Enterprise-level collection, sharing, dissemination, and analysis of data that support the planning and controlling of human capital accession, including education and training.
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

NIEM Domain	Organizational Sponsor	Content Focus
Military Operations	Joint Staff J6 stewards on behalf of the DOD CIO	Military operations and missions data components used to define NIEM-based information exchanges that satisfies mission critical sharing requirements with the U.S. Department of Defense (DOD), and/or with other federal government agencies and mission partners
Screening	DHS	Supports, coordinates, and harmonizes a wide range of screening and credentialing activity information across homeland security mission areas
Surface Transportation	Department of Transportation	Exchange transportation information between organizations to support DOT Traffic Records Coordinating Committee and the State Traffic Records Coordinating Committees

5 Implementations

NIEMOpen Implementations Worldwide

NIEMOpen is unique as an open-source, multi-information domain development and implementation framework. It provides a common vocabulary and structure for sharing data across organizations.

The tables below summarize exemplary NIEM-based implementations:

5.1 DoD MilOps

5.1.1 DoD Policy, Governance, and Adoption

By direction of the Joint Staff (JS) J6 (JSM 12 April 2013 Subject: DoD Adoption of the National Information Exchange Model (NIEM) and Establishment of the NIEM Military Operations Domain and JSM 5100.01F "Organization and Functions of the Joint Staff"), a Military Operations (MilOps) Domain within NIEM (National Information Exchange Model) was established in 2013.

Department of Defense (DoDI 8320.07 3 August 2015 Subject: Implementing the Sharing of Data, Information, and Information Technology (IT) Services in the Department of Defense) which states that states NIEM should be considered first when deciding on an information sharing exchange.

By Direction of the DoD CIO: Effective January 1, 2019, primary sponsorship of the National Information Exchange Model (NIEM) transitioned from the Department of Homeland Security (DHS) to the Department of Defense Chief Information Officer (DoD CIO). NIEM governance consists of an Executive Steering Council (ESC) and a NIEM Management Office (NMO). The ESC exercises leadership, provides guidance, and establishes policy. The NMO provides day-to-day operational leadership. The ESC is chaired by the Deputy CIO for Information Enterprise with membership by senior executives from DHS, Department of Justice, and Health, Human Services and JS/J6. NIEM partners participate at the ESC to ensure adequate representation and provide participating partner requirements. The NMO is led by the Deputy Director, Cyber and Command, Control, Communications and Computers Integration (DD C5I), Joint Staff J6.

In November 2023, the NIEM framework and data model transitioned to an open project under the Organization for the Advancement of Structured Information Standards (OASIS) and became known as

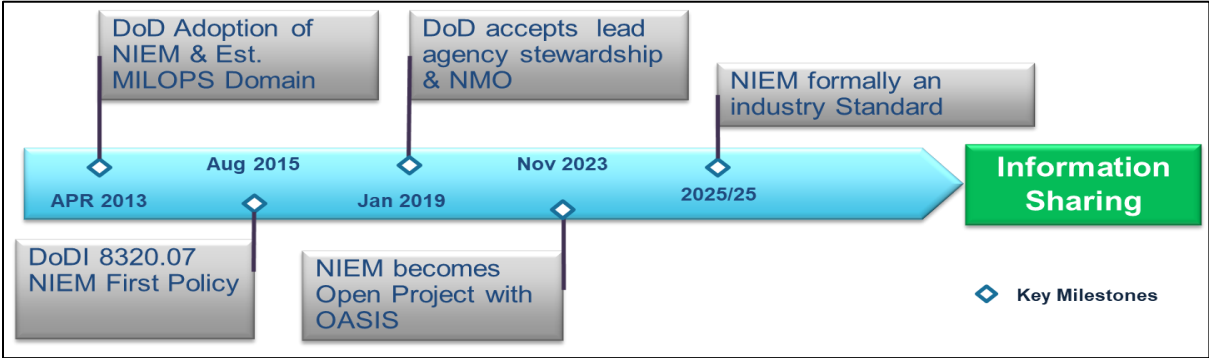


Figure 10 DoD Adoption Timeline

“NIEMOpen”. At this time, the MilOps Domain became a Subcommittee authorized by the NIEMOpen Business Architecture Committee (NBAC) Technical Steering Committee (TSC).

5.1.2 MilOps Domain

October 30, 2013, The MilOps Subcommittee is formally established. MilOps is an operational mission-focused venue designed to provide multifunctional, cross-organizational data elements that DoD and non-DoD information exchange developers may use in creating NIEM-based information exchanges. The Subcommittee continues to support the development of information exchange specifications across the full range of military operations in combination with the existing NIEM Core and other Subcommittees. Due to classification and operational access limitations, a portion of the data model containing restricted content resides within the Warfighter Mission Area Architecture Federation and Integration Portal (WMAAFIP) known as Military Operations Mission Specific (MOMS). MOMS content is governed separately from MilOps, although there is community overlap. domain's data components will be used to support information exchange requirements from the following DOD functional categories:

- Force Support: maintenance and management of a mission ready force
- Battle Space Awareness: dispositions and intentions as well as the characteristics and conditions of the operational environment that bear on national and military decision-making
- Force Application: maneuver and engagement in all environments to create the effects necessary to achieve mission objectives
- Logistics: support needed for the projection and sustainment a logistically ready force
- Command, Control, Communications, and Computers: authority and direction over forces and resources
- Protection: prevention / mitigation of adverse effects of attacks on personnel and physical assets

Note: For the military canonical definitions and a breakout of specified sub-categories please see www.dtic.mil/futurejointwarfare/cap_areas.htm

5.1.3 DOD Implementations (Table 2)

Organization	Project	Summary
Air Force Space and Missile Command (SMC)	Air Force GPS Next Generation Operational Control System (OCX)	Implement NIEM IEPDs in support of next generation GPS information exchanges with the user community.
Airforce Program Office	Joint Non-Kinetic Environment (JNKE)	JNKE: IEPD implemented in COLE (Cyber Ops Lethality and Effectiveness) system. Support data exchanges between cyber weapon designers, intelligence analysts, and operational testers employing a Joint Munitions Effectiveness Manual (JMEM) tool
Air Force Special Operations Command (AFSOC), Air Force Lifecycle Management Center (AFLCMC)	USAF Cursor on Target (CoT)	Implement NIEM v3.0 conformant representation of CoT version 2 0
Army	Global Command and Control System-Army (GCCS-A)	The U.S. Army's Project Manager Mission Command incorporated NIEM into version 4.3 of the Global Command and Control System-Army (GCCS-A), which combines Joint and coalition information onto one digital map.
ASW COI	Antisubmarine Warfare (ASW) Community of Interest (COI)	Map ASW COI data model (ACM) UML track information to allow NIEM conformant information exchanges
Coast Guard	Coast Guard Maritime Information eXchange (CGMIX)	CGMIX uses NIEM to collect and share information about vessels, marine facilities, and related activities, supporting various Coast Guard missions.
Coast Guard	Port State Information eXchange (PSIX)	PSIX, which is based on MISLE (Marine Information Safety and Law Enforcement System), utilizes NIEM for data exchange related to vessel inspections and compliance
Defense Counterintelligence	<ul style="list-style-type: none"> NIEM reference model 	<p>DCSA adopted NIEM as the preferred method of sharing data in its 2018 Enterprise Data Management Strategy</p> <p>DCSA used NIEM to develop a Conceptual Data Model which mapped key enterprise data.</p>

Organization	Project	Summary
and Security Agency (DCSA)	<ul style="list-style-type: none"> • IEPD DD-254 • IEPD NISS/DISS • IEPD for SF86 	The NIEM exchange pulls DD-254 data to a central repository that illuminates complex critical technology protection, safeguarding supplier networks and illuminating chain risks that threaten national security.
Defense Forensics and Biometrics Agency (DFBA)	Defense Forensics and Biometrics Agency (DFBA) Defense Bio-Forensic Enterprise	Technical support: Forensic and Biometric semantic vocabularies re-use elements of the NIEM information exchange schema, to facilitate interoperability
Defense Health Agency (DHA)	Prescription Drug Monitoring Program	The Prescription Monitoring Program (PMP), previously known as the TRICARE 1-1-1 Program, is administered by the TRICARE Pharmacy (TPharm) contractor, Express Scripts, Inc. Prescription Drug Monitoring Information Exchange (PMIX) Specification use NIEM as the data model to share Prescription Drugs related data across state boundaries
Defense Insider Threat Management Analysis Center (DITMAC), Defense Manpower Data Center (DMDC)	Defense Security Service (DSS) Enterprise Data Management Strategy (EDMS)	DSS incorporated NIEM Into its EDMS and exercised NIEM in developing two IEPDs: Contract Security Classification information (e.g., DD-254) and Joint Personnel Adjudication System (JPAS) personnel and facility data.
Defense Security Service (DSS)	DSS adopted NIEM as part of their Enterprise Data Strategy supporting XML and JSON	<p>MilOps 4.2 distro C proposed additions:</p> <ul style="list-style-type: none"> -364 new elements -135 new types -2,264 new code values from 11 code sets. <p>Included new content in MilOps Domain of NIEM v4.2 release in the non-public schema.</p>
DISA	System Access Request (SAR)	Developing SAR IEPD (IT System Access Request)
DISA USMTF CCB	MILSTD 6040 U.S. Message Text Format (USMTF)	Developing IEPDs to transform the 20,000 MIL-STD-6040 USMTF XML data components/ 325 current USMTF messages into a NIEM conformant standard
DoD Biometrics Identity Management Agency (BIMA)	Electronic Biometric Transmission Specification (DoD EBTS)	The DoD Electronic Biometric Transmission Specification (DoD EBTS) is a DoD extension of the NIEM Based, American National Standards Institution/National Institute of Standards and Technology - Information Technology Laboratory (ANSI/NIST ITL) - "Data Format for the Interchange of Fingerprint Facial, & Other Biometric Information"

Organization	Project	Summary
DoD Joint Staff J6 (JS J6) WMA Portal	Warfighter Mission Area Architecture Federation and Integration Portal	NIEM's reusable terms, definitions, and repeatable processes allowed the Department of Defense (DoD) to plan, develop, and implement an enterprise solution faster. The Warfighter Mission Area Architecture Federation and Integration Portal (WMAAFIP) is used by approximately 7,000 DoD staff.
DoD Law Enforcement, Navy Criminal Investigation Service (NCIS)	Law Enforcement Defense Data Exchange (LE D-DEx)	<p>LInX is one of the largest law enforcement information sharing systems in the USA and it continues to grow. LInX connects thousands of law enforcement agencies (including military law enforcement agencies via D-DEx) to seamlessly share their 1.8 billion records amongst each other across jurisdictional lines coast to coast. Thanks to LInX, patrol officers, deputies, detectives, investigators, special agents, analysts, dispatchers, and 911 operators can easily use the program's cross-jurisdictional search and retrieval capabilities to gather critical information. Robust search, analysis, and mapping features enable them to identify subjects, analyze suspects, find missing persons, uncover relationships, find related criminal methods of operation, view mugshots and tattoos, give context, and much more, all via a single intuitive secure web-based user interface.</p> <p>https://www.ncis.navy.mil/About-NCIS/Mission/Partnership-Initiatives/LInX-D-Dex/</p>
DoD Physical Security Enterprise & Analysis Group (PSEAG)	Physical Security Equipment interoperability	<p>The Security Equipment Integration Working Group (SEIWG), a subgroup of the Department of Defense's Physical Security Enterprise & Analysis Group (PSEAG), consists of technical subject matter experts from the Army, Navy, Air Force, and Marine Corps.</p> <p>https://www.acq.osd.mil/ncbdp/nm/pseag/about/seiwg.html.</p> <p>DOD and Industry Partner Usage: Intermodal Security Devices (ISD) Project (Navy), Joint Interoperability Gateway for Security, Anti-Terrorism and Warfighting (JIGSAW) (USMC), TowerHAWK Program (Army), NAVAIR, Future Airborne Capability Environment (FACE) team (Navy), Wide Area Detection (WAD) Systems (Air Force), HQMC Electronic Security Systems Program (USMC), User Centric Cloud (UC2) Project (Navy), SET Corp. Counter Bomber Joint Improvised Explosive Device Defeat Organization (JIEDDO), SBInet (DHS program), Standard Ground Station Base Expeditionary Target Surveillance System Combined (SGS/BETSS-C ICD) (Army), Ultra-Wideband (UWB) Imaging Surveillance Sensor SBIR (Navy), Integrated Ground Security Surveillance & Response Capability (IGSSR-C) (Army), GDAIS Physical Security Open Data Model (ODM), Integrated Swimmer Defense Program (Navy), PNNL Identify Friend or Foe Correlation Project, Standoff Technology Integration Detection Program, & Remote Tracking Systems (RF ID Tags), Tactical Surveillance System (TSS) (Army), Future Fibre Technologies, Anti-Terrorism Force Protection Ashore Program (Navy), Tactical Automated Security System (TASS) 6.0.1c (USMC)</p>

Organization	Project	Summary
		<ul style="list-style-type: none"> •SEIWG 0101C - Force Protection Systems Sensor Information Interchange, •SEIWG 0300 - Force Protection Systems Command and Control Information Interchange, •SEIWG 005 Series - Interface Specification (RF Data Transmission Interfaces) for DoD Base and Installation Physical Security Systems
Headquarters, Department of the Army (HQDA) CIO	NIEMOPEN Land Domain	Working with NIEMOpen to create new Land focused domain leveraging the Multilateral Information Model (MIM)
Joint Staff J6 (JS J6) Architecture Information Division (AID), USA/TRADOC	DoDAF artifacts across a Service level federation (ArCADIE)	Tech Support WMA AFIP NIEM IEPD supporting exchanging DoDAF artifacts across a Service level federation (ArCADIE)
Missile Defense Agency (MDA)	Joint Integrated Air Missile Defense	Adopt NIEM to improve missile defense design planning information exchanges between HHQs and Components
National Maritime Intelligence-Integration Office (NMIO)	National maritime Domain Awareness Plan for the National Strategy for Maritime Security	<p>Improve Domain Awareness through enterprise-level access to data. This Plan promotes maritime information sharing by transitioning from organization centric databases to web-centric enterprise services that retrieve data from multiple sources (e.g., clouds, databases). This shift provides authorized users with more flexible access to a greater number of sources, types, and volume of data, and the ability to search databases without relying on point-to-point access. Data, under this construct, should be authoritative and conform to recognized standards, such as those currently employed under the National Information Exchange Model (NIEM)</p> <p>https://nmio.ise.gov/Portals/16/National%20MDA%20Plan%202023%20%28U%29.pdf</p>
Navy N2/N6	US Navy (Maritime Domain)	Supports the effective understanding of anything associated with the global maritime realm that could impact the United States' security, safety, economy, or environment. NIEM facilitates this understanding through effective, timely sharing of vital, secure information among many key partners by representing vessels, people, cargo, and maritime locations and activities

Organization	Project	Summary
Navy N2/N6	Navy Authoritative Data Environment (ADE) 2.0 NIEM IEPD Pilot	Pilot effort to develop and demonstrate a NIEM IEPD in support of larger Navy Manpower, Personnel, Training, and Education (MPTE) effort to adopt NIEM for ADE 2.0.
Navy N2/N6	NIEM-M Maritime Domain Awareness (MDA) Enterprise Information Exchange Model (EIEM)	The NIEM Maritime EIEM defines core entities (called Business Information Exchange Components or BIECs) that serve as building blocks that are reused in many maritime exchanges
Navy N2/N6	NIEM Maritime (NIEM-M) Indicators and Notifications (IAN)	<p>Notification of a possible activity or event or any piece of discreet information that is used to inform or contribute to the MDA analytical process</p> <ul style="list-style-type: none"> • Maritime Domain Awareness Consolidated Vessel Information and Security Reporting (CVISR) 4.0 • Maritime Domain Awareness Enterprise Information Exchange Model (EIEM) 4.0 • Maritime Domain Awareness Indicators and Notifications (IAN) 4.0 • Maritime Domain Awareness Indicators and Notifications IEPD 3.2 • Maritime Domain Awareness Levels of Awareness IEPD 3.2 • Maritime Domain Awareness Notice of Arrival (NOA) 4.0 • Maritime Domain Awareness Notice of Arrival IEPD 3.2 • Maritime Domain Awareness Position and Tracks IEPD 3.2 • Maritime Domain Awareness Vessel Information (VInfo) 4.0 • Maritime Domain Awareness Vessel Information IEPD 3.2 • Maritime Domain Awareness Vessel Position (POS) 4.0 • NIEM Maritime (NIEM-M) Advance Notice of Arrival (NOA) Version 3.0 • NIEM Maritime (NIEM-M) Indicators and Notifications (IAN) Version 3.0 • NIEM Maritime (NIEM-M) Vessel Track Version 3.0 • NIEM-M Maritime Domain Awareness (MDA) Enterprise Information Exchange Model (EIEM)
OSD DOT&E, DHS CISA, CYBERCOM	Cyber	DHS stewards Cyber Domain: DoD developed Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME) Joint Non-Kinetic Effectiveness (JNKE) cyber content

Organization	Project	Summary
Physical Security Enterprise & Analysis Group	Security Equipment Integration Working Group (SEIWG)	<p>NIEM IEPDs supporting Force Protection Systems Sensor Information message exchanges</p> <ul style="list-style-type: none"> • Intermodal Security Devices (ISD) Project (Navy) • Joint Interoperability Gateway for Security, Anti-Terrorism and Warfighting (JIGSAW) (USMC) • TowerHAWK Program (Army) • NAVAIR, Future Airborne Capability Environment (FACE) team (Navy) • Wide Area Detection (WAD) Systems (Air Force) • HQMC Electronic Security Systems Program (USMC) • User Centric Cloud (UC2) Project (Navy) • SET Corp. Counter Bomber Joint Improvised Explosive Device Defeat Organization (JIEDDO) <p>SBIInet (DHS program)</p> <ul style="list-style-type: none"> • Standard Ground Station Base Expeditionary Target Surveillance System Combined (SGS/BETSS-C ICD) (Army) • Ultra-Wideband (UWB) Imaging Surveillance Sensor SBIR (Navy) • Integrated Ground Security Surveillance & Response Capability (IGSSR-C) (Army) <p>GDAIS Physical Security Open Data Model (ODM)</p> <ul style="list-style-type: none"> • Integrated Swimmer Defense Program (Navy) • PNNL Identify Friend or Foe Correlation Project, Standoff Technology Integration Detection • Program, & Remote Tracking Systems (RF ID Tags) • Tactical Surveillance System (TSS) (Army) • Future Fibre Technologies • Anti-Terrorism Force Protection Ashore Program (Navy) • Tactical Automated Security System (TASS) 6.0.1c (USMC) <p>Source https://www.acq.osd.mil/ncbdp/nm/pseag/about/seiwg.html</p>
SAE / AT&L	Unmanned Control Segment (UCS) Architecture	Incorporate NIEM conformant XML standard to UCS architecture

Organization	Project	Summary
U.S. Navy Data Engineering Services Center	Maritime Information Sharing Environment (MISE) - advance maritime intelligence integration, information sharing, and domain	The Maritime Information Sharing Environment (MISE) has provided an internet-accessible, unclassified information sharing framework. Leveraging Business Information Exchange Components, implementation time for new exchanges has been reduced from weeks to days, and in some cases, to hours. Currently, MISE is leveraged by over 12 active partners within the federal and defense community as well as their first state partner
United States Transportation Command (USTRANSCOM)	United States Transportation Command (USTRANSCOM)	Adopt NIEM to improve mobility operations interoperability for the Joint Deployment and Distribution Enterprise (17,000 data objects)
USSOCOM	USSOCOM Data Strategy	Incorporated NIEM as a standards-based approach to sharing information in the USSOCOM J3x Data Strategy

5.2 NATO

NIEM Adopted by NATO

NATO has adopted the NIEM framework, rebranded as the NATO Core Data Framework (NCDF), to enhance information sharing as mandated by its policy. This initiative supports Federated Mission Networking (FMN) and is integrated into various NATO programs, including the Alliance Future Surveillance and Control (AFSC) and a mission partner data lake. The NCDF aims to improve interoperability among NATO and coalition forces through standardization of information exchanges, focusing on Cross-Community of Interest (COI) and XML. It guides the transition from Information Exchange Requirements (IER) to Information Exchange Schema (IES) and informs all member nations through NATO's governance and policy directives. Aligning with the NIEMOpen framework, NCDF defines information exchange packages in accordance with NIEM guidance, utilizing its naming conventions and developing a pathway towards NIEM conformance for data elements.

- **NIEM relabeled, fully leveraged as NATO Core Data Framework (NCDF)**
 - Required by NATO information sharing policy
 - Enabler for Federated Mission Networking (FMN) cross-Community of Interest (COI) information sharing
 - Integrated into NATO programs
 - *Example: NATO AWACS replacement program (Alliance Future Surveillance and Control (AFSC))*
 - Foundation for mission partner CJTF-level data lake
 - *Example: NATO Link 16 feed, national air track feed, maritime OTH-Gold, land SA feed...*

NATO Core Data Framework (NCDF)

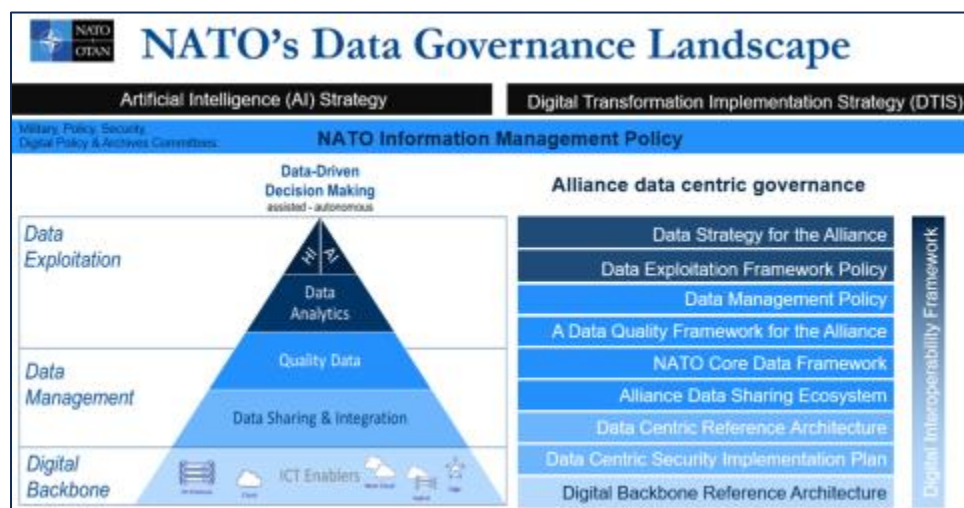


Figure 11 Alignment of NCDF in NATO Governance Landscape (Gernot F.)

NATO initiative to improve interoperability in the NATO Enterprise, the Alliance, and coalitions by standardizing enterprise-level information exchanges

- Cross-Community of Interests (COI) and XML focus
- Guides Information Exchange Requirement (IER) to Information Exchange Schema (IES) to implementation activities

Being incorporated into NATO guidance to all member nations

- C3 Board directed way forward activity
- Allied Command Operations Federated Mission Networking (FMN) requirement
- NATO Data Management Policy directed

Follows NIEMOpen (formerly US National Information Exchange Model (NIEM)) framework

- Information exchange package definition: aligned with NIEM guidance
- Naming and Design Rules (syntax): leverages NIEM rule sets
- Data elements (semantics): convergence path towards NIEM conformance being developed

5.3 International Implementations Highlights (Table 3)

Country	Description
Australia	According to CrimTrac's 2016 annual report, the agency had developed and implemented the National Child Offender System Data Provision Service and was in the process of developing the Bulk Export Consumption Service, both of which used NIEM conventions to facilitate data exchange.
US, Canada, Mexico	Public Safety Pilot: The goal of this pilot project was to test exchanges of stolen vehicle information among the U.S., Canada, and Mexico using NIEM. The trilateral working group conducted a technical demonstration and exchange between the U.S. and Canada. We expect exchanges with Mexico to be completed soon. [2012] https://wiki.nlets.org/index.php/Section_33:_Communicating_with_Mexico NLETS - Mexican Commercial Driver's license Mexico Commercial License Plate File July 14, 2011, Agreement
US, Canada, Mexico	Public Health Pilot: This pilot project's goal was to test an exchange of aggregated public health alerts for food-borne infectious diseases between the U.S., Canada, and Mexico using NIEM. The working group attempted to demonstrate an exchange of real-time, aggregated public health alerts among the three countries. They documented their processes and lessons learned for future exchanges of this type for the public health community and planned to share the NIEM IEPD with the World Health Organization. The working group started to outline a roadmap for moving from a pilot/test environment to full production. [2012]
Canada	[2007/08] The Information Sharing Environment Suspicious Activity Report (ISE-SAR) Functional Standard was implemented in Canada using the SAR IEPD to enable improved information sharing with public safety operations. (<u>NOTE:</u> According to information Thomas Krul sent, this was a pilot project.)
Canada	Trusted Information Exchange System (TIES)
Canada	According to Thomas Krul, NIEM compatibility is "baked into": <ul style="list-style-type: none">* Canada's Offender management system* The RCMP's Canadian Police Information Centre* Fisheries and Oceans Canada's Oceans Protection Plan

Country	Description
Canada	The Entry/Exit Information System (EXIS) is the IT component of the Entry/Exit initiative which includes a new bi-directional information exchange between the CBSA and CBP to share biographical information on travelers in the land mode.
Canada	<p>ESDC interoperability team began using NIEM as its enterprise information exchange model in November 2017</p> <p>* Interoperability solutions have been developed in the following areas:</p> <ul style="list-style-type: none"> - Finance - Human Resources - Labor/Employment - Immigration - Case Management - Document Management - Interactive Voice Response <p>* Interoperability partners:</p> <ul style="list-style-type: none"> - Federal government departments - Provinces, Territories and First Nations, Inuit and Métis communities - Employers
Canada	<p>The Temporary Resident Biometrics Project (TRBP) was delivered through a partnership of three Canadian government departments and the United States Citizenship and Immigration Services (USCIS). The solution includes a collection system, a processing engine to provide workflow and act as the information exchange platform between partner systems, and a standardized interface to receive biometrics from other governments. The use of NIEM shortened delivery time, reduced cost, and aided real-time data exchange and enhanced interoperability. Overall, the solution greatly enhanced identify management capabilities for the processing of Canadian visa applications and screening of foreign nationals at Canadian borders.</p> <p>https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/rprt-plns-prrts-2013-14/index-en.aspx</p>
Canada	<p>NIEM has been endorsed by:</p> <ul style="list-style-type: none"> - Canadian Association of Chiefs of Police (CACP) - Government of Canada's Interoperability Framework - Part of CBSA's Enterprise Architecture Information Sharing vision - Transport Canada - Part of the Interdepartmental Marine Security Working Group (IMSWG) work plan - Part of the CAN-US Communications Interoperability Working Group (CIWG) priorities
Canada	According to Thomas Krul, the Department of National Defence is interested in seeing how DoD implements NIEM and is paying close attention to NATO CWIX.
Mexico	U.S. Customs & Border Protection's (CBP) Global Enrollment System (GES) web service is used by Mexico, according to a NIEM International Tiger Team report.

Country	Description
5CC / FVEY (US, Australia, New Zealand, Canada, UK)	According to an email sent by Kamran Atri, in 2013, a briefing "was requested by the Five Countries Conference, or 5CC, (US, Australia, New Zealand, Canada and UK) representatives to understand the power of unified information exchange structure and showcase how a standardized data exchange would work between the 5 countries. I developed a NIEM data exchange IEPD and a set of coded GUIs to show (live) what happens when a Web form is populated and how NIEM will be in use and how the data exchange works from the front end and the back-end (code). This was well received and the 5CC (or 5i as they are called in DoD) started developing their exchanges this way."
NATO	NATO Core Data Framework uses NIEM's framework and data model.
Sweden	The Information Sharing Environment Suspicious Activity Report (ISE-SAR) Functional Standard was implemented in Sweden using the SAR IEPD to enable improved information sharing with public safety operations.

5.4 Other Federal, State, Local, Tribal, Territorial (SLTT) Implementations

Although most early implementations of NIEM were developed by and for the Federal government, many state, local, and county use cases followed. Two easily recognized state applications of NIEM are the Amber Alert System and the Prescription Monitoring Program Information Exchange (PMIX). We have all experienced the Amber alert notifications on our cell phones and pharmacists routinely check that prescriptions are not duplicated intrastate or interstate. These are examples of NIEM.

The next Table 4. highlights a selection of NIEM use cases that illustrate SLTT or federal-state joint ventures that rely on NIEM.

5.4.1 Federal & SLTT Implementations (Table 4)

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2005	NIEM Impact on the Missing The AMBER ALERTS Information Exchange Packet Document	United States	Information Exchange Package (IEPD)	Improves the sharing of Amber Alerts between jurisdictions and across multiple communications networks and technologies. NIEM connects 120 Amber Alert plans nationwide, with the intent to reach: 18,000 Law Enforcement, 1,500 Television Stations, 10,322 Radio Stations, and 280,958,440 cell phone users
2007	NIEM Helping Children at Risk	United States	National Center for State Courts (NCSC)Helping Children at Risk	The National Center for State Courts (NCSC) convened a meeting of state and national experts, to extend the NIEM model to child welfare data. This working group of experts developed into the Court/Child Welfare NET (National Exchange Template) task Force.
2007	UCORE and NIEM: Creating Potent New Cross-Boundary Networks	United States	Intelligence Community (IC) Interagency Project	The Interagency project team was to find, demonstrate and prove a common core of universal terms for its communities' messaging that everyone could agree to. The team was to specify it, code it, prove it, and in its design assure it was extensible, scalable and implementable.
2008	Global Outreach and Communication Best Practices and Success Stories	Alabama	Virtual Alabama	Virtual Alabama is a computerized database of information superimposed on satellite imagery and aerial photography of all 67 counties.
2008	Global Outreach and Communication Best Practices and Success Stories	California Nevada	California - Nevada Pilot Project Prescription Monitoring Information Exchange (PMIX)	Prescription monitoring programs (PMPs) are state-sponsored initiatives aimed at addressing the diversion and abuse of prescription drugs. Case study highlights the success of the pilot design of an interstate prescription monitoring information exchange (PMIX) program between California and Nevada
2008	Global Outreach and Communication Best Practices and Success Stories	Missouri	Missouri Data Exchange (MoDex)	Coplink allows vast quantities of structured and seemingly unrelated data - including data stored in incompatible databases and records management systems - to be securely organized, consolidated, and quickly analyzed over a secure intranet-based platform
2008	Global Outreach and Communication Best Practices and Success Stories	New York	Citywide Wireless IP Network	The New York City Wireless network (NYCWiN) was rolled out to 70 percent of the city's police precincts and firehouses on 1 April 2008, giving the city's first responders and employees a unique public safety and public service network.

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2008	Global Outreach and Communication Best Practices and Success Stories	Pennsylvania	Pennsylvania State Police First to Transmit Interstate Criminal History Using National Information Exchange Model (NIEM)	Pennsylvania State Police (PSP) migrated its interstate criminal history transmission to the National Information Exchange Model (NIEM) putting Pennsylvania on the map as the first state in the nation to successfully execute the NIEM standard for information sharing
2008	Global Outreach and Communication Best Practices and Success Stories	Texas	Path to NIEM Case Study	Texas decided to update its five-year-old Texas Justice Information Exchange Strategic Plan and develop National Information Exchange Model (NIEM) 2.0-conformant Information Exchange Package Documents (IEPDs) for 28 high-priority information exchanges.
2008	Global Outreach and Communication Best Practices and Success Stories	United States	The National Association of State Chief Information Officers (NASCIO)	<p>Data Governance Part I - An introduction</p> <p>This issue brief is part of NASCIO's series on Enterprise governance and presents an overview of this very broad subject. Data governance is presented as an operating discipline that must ultimately encompass all types of electronic data, information, and knowledge as enterprise assets that must be well managed to enable government to deliver positive citizen outcomes</p>
2008	Global Outreach and Communication Best Practices and Success Stories	United States	Standard Functional Specifications for Law Enforcement Records Management	Specifications were developed to depict the minimal amount of functionality that a new law enforcement records management system should contain. They are not intended to simply be substituted for a request for proposal but rather to assist agencies of any size in their development of a request for proposal. they are designed to serve as living documents and will be modified in concurrence with the ever-changing technological environment and as law enforcement needs mature
2008	Global Outreach and Communication Best Practices and Success Stories	Washington	Whatcom Exchange network (WENET) Portal	<p>Mapping the Blaine Police Service Point to make law enforcement reports from the Blaine Police department available for sharing on the Whatcom Exchange Network (WENET)P portal.</p> <p>WENET is a multijurisdictional law and justice information exchange program that utilized the Global Justice XML Data Model (Global JXDM). WENET provides real-time data sharing between law enforcement agencies in Whatcom County, the What com County Jail, and the Whatcom county Prosecutor's Office. WENET makes available to law and justice practitioners multiple sources of critical information that can now be accessed from one site.</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2009	Global Outreach and Communication Best Practices and Success Stories	Alabama	Global Federated Identity and Privilege Management (GFIPM)	GFIPM is a newly embraced and recommended interoperable justice information sharing security standard that enables partnering agencies and organizations to trust the secured identity each other's users and systems and ensures that only the right people have access to the right information. Full implementation of GFIPM will allow secure justice information sharing and benefit participating states by saving time, money, reducing user administration burdens, safeguarding data, and maintaining privacy
2009	Global Outreach and Communication Best Practices and Success Stories	Alabama	Sharing of Alabama Uniform Crime and Suspicious Activity Reports	Successful development of two National Information Exchange Model (NIEM) 2.0-conformant Information Exchange Package Documents (IEPDS) and electronic data transmission involving the N-Dex subset of Uniform Crime Report (UCR) incident/offense and arrest data Suspicious Activity Report (SAR) data, through the Alabama Criminal Justice Information Center (ACJIC)
2009	Global Outreach and Communication Best Practices and Success Stories	Connecticut		The State of Connecticut Department of Motor Vehicles (DMV) and the Connecticut Criminal Justice Information System (CJIS) have successfully defined a National Information Exchange Model (NIEM) 2.0 exchange and published an IEPD that has reportedly assisted the DMV in their efforts to ensure that persons holding student transportation endorsements maintain proper qualifications
2009	Global Outreach and Communication Best Practices and Success Stories	New Jersey	Law Enforcement Information Sharing	New Jersey began using a standards-based approach to tackle information sharing challenges beginning with the Global Justice XML Data Model (GJXDM) and then incorporated the National Information Exchange Model (NIEM). This case study details the challenges faced, solutions identified, and the results observed from the actions taken to improve information sharing efforts
2009	Global Outreach and Communication Best Practices and Success Stories	New York	New York City Health and Human Services (HHS)-Connect	The New York City (NYC) Chief Information Officer (CIO) for Health and Human Services (HHS), under the HHS-Connect program, has begun to implement functionality for New York City residents to apply for benefits through the online tool ACCESS NYC. The School Meals program is the first benefit available for online application; however, NYC has adopted NIEM 2.0-conformant data exchanges for both ACCESS NYC and the overall health and Human Services Domain, allowing the potential for data exchange across many programs in the future. In fact, the connections between ACCESS NYC and the School Meals program data at the NYC Department of Education were made possible by implementing these NIEM 2.0-conformant exchanges

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2009	Global Outreach and Communication Best Practices and Success Stories	New York	New York Intra-State Criminal History Report (Rap Sheet) Project	<p>The NYS Division of Criminal Justice Services (DCJS) is in the process of converting legacy systems, including the mainframe rap sheet. New York is the last agency dependent on the mainframe rap. As part of NYC Datashare's Arraignment process, NYC will be the pilot site. DCJS has developed the NIEM-conformant XML rap sheet to replace the mainframe rap sheet to NYC. The XML rap sheet will also be available to any other NYS criminal justice agency that wishes to participate in that exchange.</p> <p>Results of this project include creation of a NIEM 2.0-conformant rap sheet IEPD, completion of all required IEPD artifacts, and publication to the U.S Department of Justice IEPD Clearinghouse for use by other states.</p>
2009	Global Outreach and Communication Best Practices and Success Stories	Pennsylvania	Global Federated Identity and Privilege Management (GFIPM) Initiative	<p>Pennsylvania uses the Pennsylvania Justice Network (JNET) for access to criminal justice related data. A Key component to this information sharing success was the development of a central user identification process, the implementation of access privilege management, and a mature secure network connecting all municipal, county, state and federal justice agencies throughout the Commonwealth. The challenge, however, was JNET's ability to extend services to other state and federal users and in turn to provide JNET users with access to out of state data services. Participation in the GFIPM initiative has presented a secure option that will allow stakeholders to bridge that very gap and justice users throughout Pennsylvania now understand the benefit of a healthy and secure exchange between data providers throughout the nation</p>
2009	Global Outreach and Communication Best Practices and Success Stories	Pennsylvania	Court Case Event GJXDM to NIEM (G2N) Pilot Project	<p>Case Study highlights the successful development of a National Information Exchange Model (NIEM) 2.0-conformant Information Exchange Package Document (IEPD) for Pennsylvania's Court Case Event Messages through Pennsylvania Justice Network (JNET). The case study aims to draw attention to documentation resulting from the creation of this IEPD, including a NIEM Adoption Whitepaper that outlines the best practice for moving GJXDM (Global Justice XML Data Model) messages to NIEM; a Performance Measurement Plan including performance measures that benchmark conversion of existing exchanges; and a Lessons-Learned Report that summarizes the progress and various lessons learned throughout the GJXDM to NIEM project</p>
2009	Global Outreach and Communication Best Practices and Success Stories	United States	U.S. Citizenship and Immigration Services E-Verify	<p>Case study highlights the success of E-Verify from a data sharing perspective among the Social Security Administration (SSA) and different systems within the U.S. Department of Homeland Security (DHS)</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2010	Global Outreach and Communication Best Practices and Success Stories	Massachusetts	Mass Gangs	Mass Gangs is an intelligence and investigative Tool that allows authorized users to electronically exchange, store, and facilitate the analysis of gang-related data maintained by public safety and law enforcement agencies throughout Massachusetts
2010	Global Outreach and Communication Best Practices and Success Stories	Washington	Driver's License Photo Exchange	<p>Law Enforcement Officers must have the ability to accurately and positively identify he individual in question. From writing a check to renting equipment, a driver's license is a fast, effective, and familiar method to verify a person's identity. Providing this verification to law enforcement officers in the field will help ensure that honest mistakes are treated as such and those that are less than honest will be further questioned</p> <p>NIEM 2.0 - Conformant Information Exchange Package Document (IEPD) for Law Enforcement Access to Driver's License Photos in Washington State, will provide law enforcement the access they need to driver's license photos for positive identification</p>
2010	The Domestic Nuclear Detection Office Goes NIEM (DNDO)			What we want to do with NIEM is to get better technology in place to give first responders better tools for guaranteed delivery, so they're not interrupted by system filters, human or other, when we're talking about national security
2011	Indiana Data Exchange Return on Investment	Indiana	Indiana Data Exchange (IDEx)	A statewide initiative to advance information sharing. The initiative seeks to connect data from disparate justice and public safety systems together for enhanced decision making and increased public safety, leveraging prior investments.

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2011	Program Director's View	North Carolina	North Carolina Families Accessing Services through Technology (FAST)	<p>Global Case Management and Food and Nutrition Services (FNS)</p> <ul style="list-style-type: none"> — Global reception - logging of clients and hand-off to a worker for the interview — Screening, intake and assessment for FNS — Eligibility determination and benefit delivery for FNS — Legacy System replacement: Food Stamp Information System (FSIS) <p>Eligibility Information System (EIS)</p> <ul style="list-style-type: none"> — Eligibility determination and benefit delivery for Work First (TANF), Medicaid, Refugee Assistance and Special Assistance — SSI Medicaid (1634) Processing, including State Data Exchange (SDX) exception processing — Quarterly reporting for Work First (TANF) and Transitional Medicaid <p>— Legacy System replacement: Employment Program Information System (EPIS), EIS, and Temporary Assistance for Needy Families-Data Collection System (TANF-DCS)</p>
2011	NIEM Program State and Local Outreach Strategy Draft	United States	NIEM Governance Structure	A subcommittee of the NIEM Business Architecture Committee (NBAC) is being formed to help guide state and local outreach. This subcommittee will comprise of individuals at the state and local level who are already highly knowledgeable and active within the NIEM community. The purpose of this subcommittee is to further expand state and local adoption by leveraging the guidance of experts who are already supporting the state and local mission areas.
2011	NIEM and the HHS Meaningful Use "Sprint"			Develop a process to ensure the implementation of the provisions of the HITECH Act - and get the nation's health information systems talking to each other.
2012	NIEM, Juvenile Justice & Child Welfare	Colorado	National Juvenile Information Sharing Initiative (NJISI)	<p>The National Juvenile Information Sharing Initiative (NJISI) is a cooperative grant agreement with the Office of Juvenile Justice and Delinquency Prevention (OJJDP) to help state and local level jurisdictions improve information sharing practices.</p> <p>The purpose of the National JIS Initiative (NJISI) is to improve procedures and policies of information sharing across state and local agencies, and with youth juvenile services within communities.</p>
2012	Hawaii Integrated Information Sharing and the Open Justice Broker Consortium (Webinar)	Hawaii		<p>Learn how the state of Hawaii has partnered with state and local government to share justice information using NIEM , and the Global Reference Architecture (GRA)</p> <p>Presentation will focus on the Hawaii integrated Justice Information Sharing (HIJIS)</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
				program, the state of Maine Incident Reporting Service, and the Open Justice Broker Consortium (OJBC).
2012	Prescription Monitoring Information exchange (PMIX)	Oklahoma Kentucky Ohio United States	Prescription Monitoring Program Information Exchange (PMIX) Architecture Version 1.0	Provide the framework to make Prescription Monitoring Program (PMP) interoperability possible and to reduce the risk and cost of implementation
2013	NIEM Impact on Agricultural Reporting	United States		Create a "one-stop" reporting process so that the USDA agencies could share data internally, allowing farmers to provide their information just once
2013	NIEM's Impact on Maritime	United States International	Joint Inter-Agency Task Force South's (JIATF-S) Mission	Requires sharing information about activities among mission partners. Each mission partner, many of whom are international partner nation (PN), has their own IT systems and programs with limited funds for modifications or upgrades. All JIATF-S solutions must be low cost and easy to implement
2013	Commonwealth of Virginia's Enterprise Information Architecture & NIEM Integration Strategy NASCIO Innovations Forum	Virginia	NIEM Person Standard	<p>— Adopt as a Commonwealth Data Standard the NIEM Core Person Data elements</p> <p>— Foster semantic interoperability among Commonwealth Agency data systems based on adopted Federal standards / specifications and industry best practices</p> <p>— Meet the statutory requirements under Item 427 of the 2012 & 2013 Appropriation Acts, requiring standardization of "all citizen-centric" data</p>
2013	NIEM Schema Development and Model Search Vendors & Products		NIEM Unified Modeling Language (UML)	The NIEM Program Management Office (PMO) anticipates NIEM-UML will enable greater adoption of NIEM by tool vendors, whose tools will simplify the development and implementation of NIEM-based information exchange and domain development and management.
2014	NIEM: The Key to Improved Information Sharing			Urge the Obama Administration to fully support NIEM and champion its use throughout the government.
2015	Kansas Criminal Justice Information System (KCJIS): Electronic Disposition Reporting for DUIs and Traffic Safety	Kansas		<p>The Kansas Bureau of Investigation (KBI) and the Kansas Department of Transportation utilized the Kansas Criminal Justice Information System (KCJIS) to improve electronic disposition reporting for DUI offenses.</p> <p>NIEM helped make electronic disposition reporting possible for KCJIS. It served as the data layer foundation for turning a time-consuming paper-based system into an efficient, web-based system.</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2015	NASCIO & NIEM Working Together: Advancing Information Exchange Efforts Across All Levels of Government	Kansas Florida	Best of NIEM Awards	<p>Kansas Kansas Criminal Justice Information System (KCJIS): Electronic Disposition Reporting for DUIs and Traffic Safety KCJIS improved electronic disposition reporting for DUI offenses, which empowers public safety agencies to make informed, timely decisions that could improve transportation safety, prevent DUIs and even save lives</p> <p>Florida Volusia County Florida Clerk of the Circuit Court: Comprehensive Case Information System (CCIS 3.0) An effort to standardize and centralize crucial justice information, CCIS 3.0 enables diverse organizations and state agencies to effectively share, access, and query local court data and case files in real time.</p>
2016	Medicaid Innovation Accelerator Program Beneficiaries with Complex Care Needs and High Costs (BCN)	Denver DC New Jersey Oregon Texas Virginia	IAP BCN National Dissemination Webinar	<p>BCN track of IAP has worked with five States over 10 months on issues such as:</p> <p>Identifying and stratifying BCN target populations</p> <p>Incorporating social determinants of health into targeting and program design activities</p> <p>Designing Alternative Payment Methodologies</p>
2016	Project Interoperability in Puget Sound: A Regional Mission-Centric Perspective on Information Sharing and Safeguarding	Washington	Project Interoperability in Puget Sound (PIPS)	<p>Need to better understand this mission-centric, distributed stakeholder side of Project Interoperability (PI); to find out what impact, if any, the more standards-based PI tools were having on the regional operational communities; and to recommend how to best move forward to improve interoperability at the regional operation level. PIPS began with three overarching questions:</p> <p>(1) How useful and applicable to mission accomplishment are the interoperability tools and concepts?</p> <p>(2) Why may some tools not be useful?</p> <p>(3) What strategies can be used to improve tool design, usability, and outreach?</p> <p>The goal was to answer these questions and develop a plan for moving forward towards improved interoperability from the perspective of the diverse operational community of regional information sharing stakeholders.</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2017	Information Sharing Between Medicaid and Corrections Systems to Enroll the Justice-Involved Population: Arizona and Washington Medicaid Areas of flexibility to Provide Coverage and Care to Justice-Involved Populations	Arizona Washington	Medicaid Suspension Project Health Information Exchange Projects	Arizona has several initiatives designed to connect the justice-involved population to Medicaid coverage and services. ⁴ Pima County was the first in Arizona to enroll adults returning to the community from jail and piloted Arizona’s initial Medicaid suspension project. The county also partners with area nonprofits to provide enrollment assistance for those who were not previously enrolled in Arizona Health Care Cost Containment System (AHCCCS), the state’s Medicaid program, and are about to be released or awaiting trial. Finally, Pima County has initiated health information exchange projects designed to promote continuity of care and a more seamless transition between health care services provided in the jails and in the community. All these systems involve collaboration between multiple agencies and ongoing communication of information and records to facilitate both enrollment and care.
2017	NIEM Impact on Government Accountability Transparency	United States	The Recovery Act Information Exchange Package Document	NIEM enables: Detection and analysis of potential waste, misuse and fraudulent activities
2018	New York State Division of State Police and Division of Criminal Justice Services	New York	New York State EJUSTICENY Integrated Justice Portal (IJP)	New York State's e-JusticeNY Integrated Justice Portal (IJP) replaces a key mission critical, high-performance mainframe-based system, New York Statewide Police Information Network (NYSPIN), to provide criminal justice information to authorized criminal justice personnel within and beyond New York State.
2018	Transportation Security Administration (TSA) Information and Data Electronic Enterprise Explorer (IDE3) Increasing efficiency Through the development process, driving consistency in data definitions, and aligning with TSA's Enterprise data standards	United States	IDE3	IDE3 provides developers with centralized access to established enterprise data standards and mappings, while also allowing users to generate data dictionaries for applications. As a NIEM-based application, IDE3 allows developers to more easily discover/re-use established terminology, efficiently build customized data dictionaries (without having to create their own), and export to a desired format all while adhering to established TSA standards

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
2020	City of Charlotte, North Carolina Innovations & Technology Department	Charlotte, NC	NIEM Drives Major Police Department's Data Integration Projects	<p>Charlotte-Mecklenburg Police Department data integration projects for regional information sharing and federal law enforcement reporting programs.</p> <p>Charlotte's first initiative integrated data with Naval Criminal Investigative Service's (NCIS) Law Enforcement Information Exchange (LinX) and "LinX Carolinas."</p> <p>Charlotte's second project was the integration of Police Department's data with the State of North Carolina's Incident Based Reporting System (NIBRS) program.</p>
2020	State of Florida Department of Law Enforcement Criminal Justice Information Services	Florida	NIEM Ensures Accurate Statewide Crime Reporting and Analysis	CJIS developed a NIEM XML schema for agencies to collect and share standardized, uniform criminal justice data.
2021	COVID-19 Updates New York State Police	New York	National Information Exchange Model (NIEM) - Conformant Information Exchange Package Documentations (IEPDs)	New York State has published the National Information Exchange Model (NIEM)-conformant Information Exchange Package Documentations (IEPDs) for the purpose of building approved web service message exchanges by authorized agencies
	State of Iowa Department of Public	Iowa	Criminal Justice Information Sharing Project	The state of Iowa Criminal Justice Information Sharing (CJIS) project leveraged the National Information Exchange Model (NIEM) to reduce delays and address major information gaps between agencies as well as redundancies in the processing of crucial public safety information. As a result, the Iowa CJS project has achieved cross-boundary collaboration, a more transparent justice enterprise, and measurable results.
	Global Nuclear Detection Architecture	Los Angeles, CA Kansas United States		Information sharing prototype capable of transmitting millions of transactions per second. Data is integrated into NIEM-conformant standards and routed, as appropriate, to other systems and users in a familiar format.

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
	Global Justice Best Practices and Success Stories	Massachusetts Washington State United States Pennsylvania Alabama Connecticut New York New Jersey California Nevada Texas		<p>Statewide Gang Data Sharing 2010 Mass Gangs is an intelligence and investigative tool that allows authorized users to electronically exchange, store, and facilitate the analysis of gang-related data maintained by public safety and law enforcement agencies throughout Massachusetts. Information can be metered directly into Mass Gangs via a Web application, or it can be exchanged electronically with agency systems using a NIEM-conformant schema and Information Exchange Package Documentation (IEPD). By Using NIEM in the Mass Gangs project, the Commonwealth has streamlined the gang data management process, providing a single, unified way for agencies to share gang intelligence information within Massachusetts. Mass Gangs also aids current and planned interstate and federal information sharing initiatives.</p> <p>Pilot Driver's License Photo Exchange 2010 The purpose of this case study is to highlight the success of the development of the NIEM 2.0-conformant Information Exchange package Document (IEPD) for Law Enforcement Access to Driver's License Photos in Washington State, which will provide law enforcement the access they need to driver's license photos for positive identification.</p> <p>U.S. Citizenship and Immigration Services E-Verify 2009 It works within the U.S. Department of Homeland Security (DHS), in partnership with the Social Security Administration (SSA) to provide a means for employers to verify the employment eligibility of newly hired employees.</p> <p>This case study highlights the success of E-Verify from a data-sharing perspective among the Social Security Administration (SSA) and different systems with the U.S. Department of Homeland Security (DHS).</p> <p>Pennsylvania's Success with the Global Federated Identity and Privilege Management (GFIPM) Initiative 2009 A key component to this information sharing success was the development of a central user identification process, the implementation of access privilege management, and a mature secure network connecting all municipal, county, state, and federal justice agencies throughout the Commonwealth.</p> <p>ACJIC Letter to Justice Executives and Leaders 2009</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
				<p>The Alabama Criminal Justice Information Center (ACJIC) is piloting a solution for cross-jurisdictional identification, authentication, and privilege management called Global Federated Identity and Privilege Management (GFIPM).</p> <p>GFIPM is a newly embraced and recommended interoperable justice information sharing security standard that enables partnering agencies and organizations to trust the secured identity of each other's users and systems and ensures that only the right people have access to the right information.</p> <p>Connecticut DMV/CJIS 2009 The State of Connecticut Department of Motor Vehicles (DMV) and the Connecticut Criminal Justice Information System (CJIS) have successfully defined a National Information Exchange Model (NIEM) 2.0 exchange and published an IEPD this reportedly assisted the DMV in their efforts to ensure that persons holding student transportation endorsements maintain proper qualifications.</p> <p>Pennsylvania's Court Case Event GJXDM to NIEM (G2N) Pilot Project 2009 The purpose is to highlight the successful development of a National Information Exchange Model (NIEM) 2.0 conformant Information Exchange Package Document (IEPD) for Pennsylvania's Court Case Event Messages through Pennsylvania's Justice Network.</p> <p>New York City Health and Human Services (HHS) - Connect NYC has adopted NIEM 2.0-conformant data exchanges for both ACCESS NYC and the overall Health and Human Services Domain, allowing the potential for data exchange across many programs in the future.</p> <p>New Jersey Law Enforcement Information Sharing New Jersey is a hoe-rule state; therefore, no centralized technology can be dictated to the local agencies. As a result, there is a hugely diverse collection of platforms for records management systems (RMS), computer aided dispatch (CAD), and information sharing query systems. New Jersey began using a standards-based approach to tackle information sharing challenges beginning with the Global Justice XML Data Model (GJXDM) and then incorporated the National Information Exchange Model (NIEM).</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
				<p>New York Intra-State Criminal History Report (RAP Sheet) Project The purpose is to highlight the success of the development of a National Information Exchange Model (NIEM) 2.0-Conformant Information Exchange Package Document (IEPD) for New York Intra=State Criminal History Report (Rap Sheet) Project.</p> <p>DCJS has developed the NIEM-conformant XML rap sheet to replace the mainframe rap sheet to NYC. The XML rap sheet will also be available to any other NYS criminal justice agency that wishes to participate in that exchange. Results include creation of NIEM 2.0-conformant rap sheet IEPD, completion of all required IEPD artifacts, and publication to the U.S. Department of Justice IEPD Clearinghouse for use by other states.</p> <p>Alabama Uniform Crime and Suspicious Activity Reports Purpose is to highlight the successful development of two National Information Exchange Model (NIEM) 2.0-conformant Information Exchange Package Documents (IEPDs) and electronic data transmission involving the N-DEx subset of Uniform Crime Report (UCR) incident/offense and arrest data and Suspicious Activity Report (SAR) data, through the Alabama Criminal Justice Information Center (ACJIC).</p> <p>California - Nevada Prescription Monitoring Information Exchange (PMIX) Prescription monitoring programs (PMPs) are state-sponsored initiatives aimed at addressing the diversion and abuse of prescription drugs. One of the first programs was established in California more than 60 years ago, but the entire initiative received a boost when, in 2002, Congress appropriated funds to the Department of Justice (DOJ) to support development of a national PMP capability.</p> <p>Texas Path to NIEM The state of Texas was confronted with the challenge to coordinate the development and operation of justice systems that are maintained managed by participating state and local justice entities, so that these systems are able to share information consistently and accurately in a manner that maximizes the services provided to justice information users in Texas. In its approach, Texas decided to update its five-year-old Texas Justice Information Exchange Strategic Plan and develop National Information Exchange Model (NIEM) 2.0-conformant Information Exchange Package Documents (IEPDs) for 28 high priority information exchanges.</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
				<p>The NIEM standard provided the solution Texas was looking for and has facilitated the exchange of information between the participating State and local justice entities.</p> <p>Pennsylvania State Police First to Transmit Interstate Criminal History Using National Information Exchange Model (NIEM) The Pennsylvania State Police (PSP) has migrated its interstate criminal history transmission to the National Information Exchange Model (NIEM) putting Pennsylvania on the map as the first state in the nation to successfully execute the NIEM standard for information sharing.</p>
	NIEM Impact on Pharmaceutical Drug Monitoring	United States	The Standard Prescription Monitoring Information Exchange Package Document	The Prescription Monitoring Program Information Exchange Package Documentation (IEPD) assists law enforcement, health agencies, and prescribers in identifying potential abuse and diversion
	Suspicious Activity Reporting	United States	Extensible Mark-up Languages (XML) Global Justice XML Fusion Centers	<p>Using XML-based metadata (data about data), State and local justice agencies and their Federal counterparts who wished to exchange information - where lawful and appropriate - could keep their own "legacy" system names for things, and agree instead to a metadata dictionary.</p> <p>The XML-based exchange model enabled all to translate and share data between systems quickly</p> <p>Fusion Centers An analytic resource that support the efforts of State and local law enforcement and investigate crime and terrorism in local communities.</p> <p>Fusion centers provide the Federal Government with critical State and local information and subject-matter expertise that it did not receive in the past - enabling the effective communication of locally generated terrorism-related information.</p>

Year	TITLE	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
	U.S. Citizenship and Immigration Services	United States	E-Verify	An internet-based system operated by the U.S. Citizenship and Immigration Services (USCIS). It works tithing the U.S. Department of Homeland Security (DHS), in partnership with the Social Security Administration (SSA), providing a means for employers to verify the employment eligibility of newly hired employees. E-Verify compares the information of newly hired employees taken from Form I-9 (paper-based employment eligibility verification used for all new Hires) against more than 425 million records in SSA's database and more than 60 million records in DHS's immigration databases.
	NIEM Impact on Cybersecurity How can we Secure Our IT Systems	United States Canada	Cyber Incident Information Sharing (CIIS)	What if Cybersecurity specialists around the world could respond to cyber incidents as a collective force to minimize loss and disruption

6 NIEMOpen ROI

Return on Investment (ROI) serves as a vital benchmark for assessing the financial effectiveness of data exchange development projects. It enables organizations to evaluate whether the advantages gained from employing established methodologies and standards outweigh the associated costs. This metric is particularly significant in justifying investments in data exchange, guiding businesses and organizations in making informed decisions regarding resource allocation and ensuring that initiatives align strategically with overall objectives.

Key components of ROI analysis for NIEM include a comprehensive comparative analysis of data exchange investment options. The Department of Homeland Security (DHS), as a pioneer of NIEM, utilized a cost model to compare the ROI of the NIEM methodology against custom XML development. This assessment, illustrated in Figure 10, demonstrates that NIEM offers a more cost-effective and valuable solution. Moreover, as an OASIS Standard, NIEM ensures compliance with federal statutes, reinforcing its credibility over custom boutique solutions.

In conclusion, the ongoing enhancements to NIEM, including the implementation of CMF, NIEM Model Version 6.0, NDR 6.0, and expanded serialization options to accommodate XML, JSON, and RDF formats makes NIEM an even better competitive choice when weighing ROI and value. These advancements not only strengthen NIEM's competitive edge in data exchange development but also underscore its role as a reliable framework for organizations seeking effective and compliant data sharing solutions.



Recovery.gov developed 3 NIEM* exchanges to be used across 100 systems.

- The cost model estimated an overall cost savings of \$18,747,757 (72%) for the use of NIEM over custom XML development in Recovery.gov.

Development of 3 Exchanges	NIEM*	Custom XML	Savings	% Savings
Initial Exchange (X)	\$417,111	\$401,336	(\$15,775)	(4%)
Additional Exchange (no re-use) (Z)	\$315,787	\$374,421	\$58,633	16%
Development Cost (X+Z+Z) ¹	\$1,048,686	\$1,150,177	\$101,491	9%
IEPD Re-use across 100 systems	NIEM	Custom XML	Savings	% Savings
Re-use of the three exchanges across one systems (Y)	\$62,503	\$248,966	\$186,463	75%
Re-use of the three exchanges across 100 systems (100*Y)	\$6,250,312	\$24,896,576	\$18,646,265	75%
Total Cost (develop 3 exchanges and re-use across 100 systems) ²	\$7,298,997	\$16,046,753	\$18,747,757	72%

Figure 12 ROI - NIEM vs. Custom XML

7 Executive Orders, Laws, Policies, & Standards

7.1 Executive Orders

Presidential Executive Orders Supported:

- **EO #1: 20 March 2025 Stopping Waste, Fraud, and Abuse by Eliminating Information Silos**

“Removing unnecessary barriers to Federal employees accessing Government data and promoting inter-agency data sharing...”

- **EO #2: 16 Apr 2025 Ensuring Cost-Effective Solutions in Federal Contracts**

“...agencies shall procure commercially available products and services, including those that can be modified to fill agencies’ needs, to the maximum extent practicable, including pursuant to the Federal Acquisition Streamlining Act of 1994 (Public Law 103-355, as amended)”

7.2 Laws and Statutes

Public Law 82-436, “Cataloging and Standardization Act”

- Establishes a Single, Unified Standardization Program in the Department of Defense
- Requires Standardization of Items Used Throughout DoD to the Highest Degree Practicable

Public Law 104-113, “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.
- Unless Inconsistent with Law or Impractical, Federal Agencies Should Use Voluntary Consensus Standards
- Federal Agencies Should Participate in Development of Voluntary Consensus Standards, If Compatible with Agency Mission, Priorities, and Resources

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.

7.3 Policies and Standards

7.3.1 DoD Information Sharing Policy & Guidance

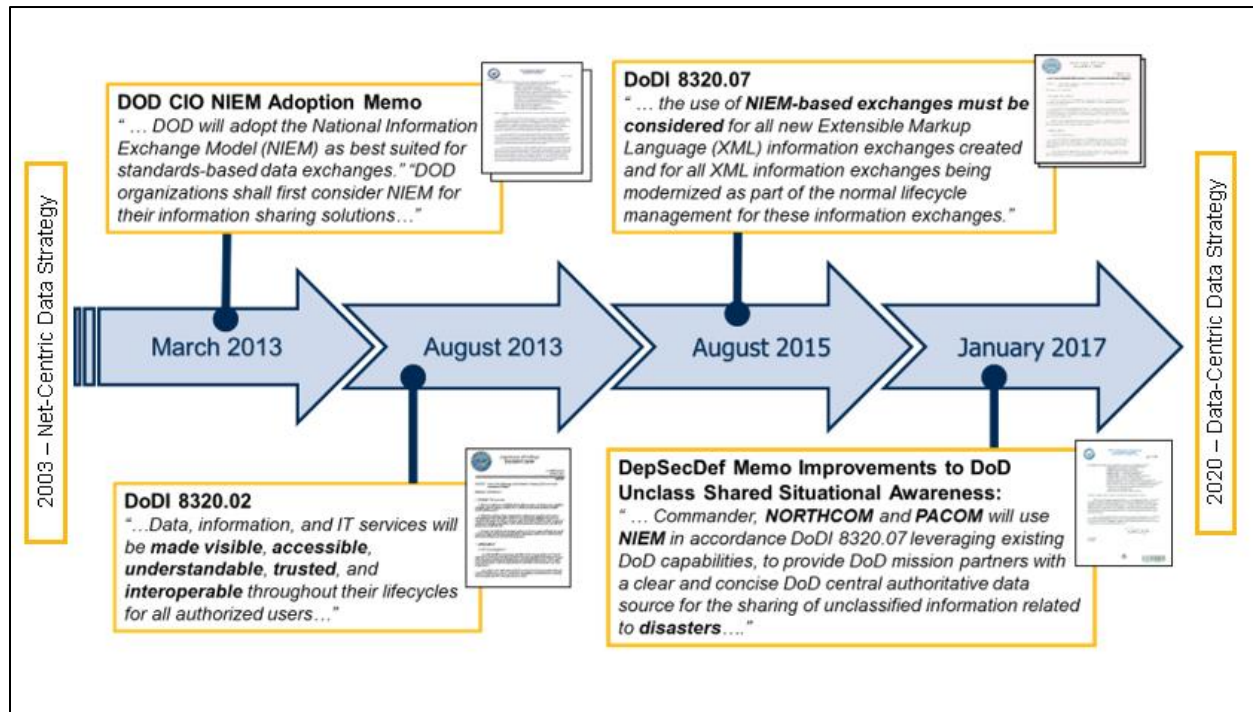


Figure 13 ROI - Policy Timeline

DoDI 8320.07: Directs consideration of "NIEM first" for new DoD data exchanges and is referenced in the following:

- Army Regulation 25-1 – Army Information Technology
- SecAF Manual 14-401 – Intelligence Analysis and Targeting Tradecraft/Data Standards
- SecAF Mission Directive 1-26 – Chief Information Officer
- DCMA Manual 4502-15 – Enterprise Data Governance
- MCO 5230.19A – Logistics Data Management
- DoDI 1322.26 – Distributed Learning
- DoDI 1312.01 – DoD Occupational Information Collection and Reporting
- DoDI 6440.03 – DoD Laboratory Network
- DoDI 8010.01 – DoD Information Network Transport
- DoDI 8110.01 – Mission Partners Environment Information Sharing Capability Implementation for the DoD
- DoDI 8260.03 – The Global Force Management Data Initiative
- DoDI 8310.01 – Information Technology Standards in the DoD

- DoDI 8320.05 – Electromagnetic Spectrum Data Sharing
- DoDI 8330.01 – Interoperability of Information Technology, Including National Security Systems
- DoDI 8420.02 – DoD Satellite Communications
- DoDI 8500.01 – Cybersecurity
- DoDI 8510.01 – Risk Management Framework for DoD Systems

7.3.2 Tactical Edge Interoperability & Standards Using NIEMOpen

- DoD CIO / DISA / JESC Teamwork
- Data Technical Working Group (TWG)
- Country Code Working Group
- US Message Text Format Configuration Control Board
- Joint Symbology WG
- NATO
- CJADC2 to NATO Core Data Framework (NCDF) interoperability
- US-NATO Military Messaging interoperability
- US-NATO Link 16 interoperability (+ FMS + FVEY +UK)
- HOD: Communications and Information Services Capability Panel
- Chair Data Management Capability Team (DM CaT)
- HOD: Data Management Syndicate (FMN)
- USA Rep: TDL XML Syndicate
- Lead: Link-22 Transactional Workshop (TWS)
- NATO Symbology Capability Team
- Operational SME: Tactical Data Link

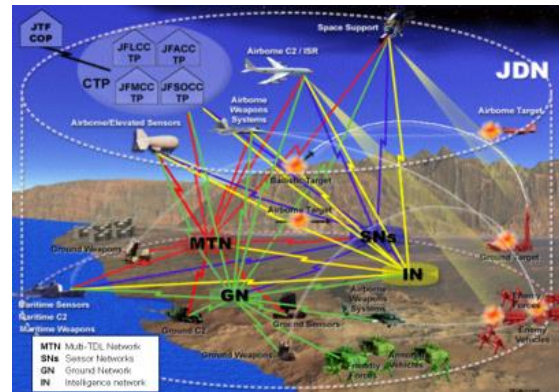


Figure 13 Joint Data Network (JDN)

- (TDL) and
- Message Text Format (MTF), Data Centric Security (DCS) Capability Team (CaT)
- NIEM-conformant development
- MilStd 6016 (Link 16)
- All Domain Coordinated Time On Top Link 16 message
- MilStd 6040 (Military Messaging MTF)
- MilStd 6017 (VMF)
- Various NATO data-related STANAGs (NCDF, Biometrics, etc.)
- Various Allied Procedural Publications (APP) for interoperability

7.3.3 Data Management Book of Knowledge (DMBOK) Reference

[DAMA International](#) is recognized as an organization pivotal in advancing data management practices.

“Central to DAMA®'s contributions is the **Data Management Body of Knowledge (DAMA-DMBOK®)**, first published in 2009. This comprehensive guide offers best practices and a common vernacular for enterprise data management. The second edition, DAMA-DMBOK® 2, was released in 2017, with a revised edition in 2024, encompassing topics such as data architecture, security, quality, modeling, governance, big data, and data science.”^{iv}

An excerpt from the DAMA – DMBOKs speaks to NIEM.

1.3.8 Data Exchange Standards

Data Exchange Standards are formal rules for the structure of data elements. ISO (International Standards Organization) has developed data exchange standards, as have many industries. A data exchange specification is a common model used by an organization or data exchange group that standardizes the format in which data will be shared. An exchange pattern defines a structure for data transformations needed by any system or organization exchanging data. Data needs to be mapped to the exchange specification.

Although developing and agreeing on a shared message format is a major undertaking, having an agreed upon exchange format or data layout between systems can significantly simplify data interoperability in an enterprise, lowering the cost of support and enabling better understanding of the data.

The National Information Exchange Model (NIEM) was developed to exchange documents and transactions across government organizations in the United States. The intention is that the sender and receiver of information share a common, unambiguous understanding of the meaning of that information. Conformance to NIEM ensures that a basic set of information is well understood and carries the same consistent meaning across various communities, thus allowing interoperability.

NIEM uses Extensible Markup Language (XML) for schema definitions and element representation, which allows the structure and meaning of data to be defined through simple, but carefully defined XML syntax rules.

DAMA is in the process of updating the DMBOK. The Project Manager for this effort has reached out to NIEMOpen - OASIS to discuss updating the next edition.

8 Summary

The NIEM Open Project (NIEMOpen) is an evolution of the National Information Exchange Model (NIEM), which originated in 2003 from initiatives aimed at enhancing **data interoperability** across various sectors. Transitioning to a **community-driven approach** under the OASIS Open Projects Program, NIEMOpen emphasizes collaboration between the government and private sectors to establish standardized data frameworks. This initiative aims to streamline data sharing across diverse domains, which encompass critical areas such as national defense, justice, immigration, and emergency management. The project's architecture includes a common data model, known as NIEM core, and a methodology for creating Information Exchange Package Documentation (IEPD), now referred to as Message Exchange Packages (MEP), which facilitate the implementation of data exchanges.

NIEMOpen offers significant advantages by fostering **data standardization**, which enhances mutual understanding between different systems and organizations. This interoperability is crucial for mission

success, particularly in contexts where distinct parties need to share information seamlessly. The project not only provides a technical framework for defining data structures but also offers tools that support the development, validation, and documentation of information exchanges. As a result, NIEMOpen has become a valuable resource for over 20,000 data elements utilized by federal, state, and local agencies, as well as international partners and industry, enhancing their capability to exchange information effectively.

In conclusion, NIEMOpen represents a pivotal advancement in data sharing and interoperability efforts across multiple sectors. Its community-driven nature and collaboration with OASIS facilitate the creation of reliable data standards that meet the needs of diverse agencies. By establishing NIEMOpen as an accredited open-source standard, the project not only enhances **data interoperability** but also sets the foundation for future innovations in information exchange, potentially leading to ANSI and ISO standardization. This ongoing evolution underscores the importance of collaborative efforts in addressing the complexities of modern data sharing and governance.

9 Acronyms

A

AI	Artificial Intelligence
ANSI	American National Standards Institute
API	Application Programming Interface

C

CDC	Center for Disease Control
CJIS	Criminal Justice Information Services
CMF	Common Model Format
COI	Community of Interest
C5I	Command, Control, Communication, Computer, Cyber and Intelligence

D

DCSA	Department of Defense counterintelligence and S3ecurity Agency
DoD	Department of Defense
DoJ	Department of Justice
DHS	Department of Homeland Security

E

ESC	Executive Steering Council
ESDC	Employment and Social Development Canada

G

GJXDM	Global Justice XML Data Model
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H

HHS	Health and Human Services
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I

IEPD	Information Exchange Package Documentation
ISO	International Standards Organization

J

JSON	Java Script Object Notation
JSON-LD	Java Script Object Notation for Linked Data
L	
LInX	Law Enforcement Information Exchange
M	
MEP	Message Exchange Package
N	
NATO	North Atlantic Treaty Organization
NBAC	NIEMOpen Business Architecture Committee
NCDF	NATO Core Data Framework
N-Dex	National Data Exchange Program
NDR	Naming and Design Rules
NGO	Non-Governmental Organization
NIEM	National Information Exchange Model former acronym prior to transition to OASIS in 2022
NIEM	NIEMOpen Project brand name when referencing data model, architecture, technical infrastructure, and domain spaces
NIEMOpen	NIEM Open Project
NMO	NIEMOpen Management Office
NTAC	NIEMOpen Technical Architecture Committee
O	
OASIS	Organization for the Advancement of Information Standards
ODGA	Office of Data Governance and Analytics
P	
PS02	Project Specification 02
PSD01	Project Specification DRAFT 01
PVO	Private Voluntary Organization
PGB	Project Governing Board

R

RDF	Resource Description Framework
	T
TSC	Technical Steering Committee
	S
SAVE	SAVE is an online service for registered federal, state, territorial, tribal, and local government agencies to verify immigration status and naturalized/acquired U.S. citizenship of applicants seeking benefits or licenses.
	U
USCIS	U.S. Citizenship and Immigration Services
	X
XML	Extensible Markup Language
XSD	XML Schema Definition

10 Endnotes

ⁱ XSD - **XML Schema Definition (XSD)** is a powerful language used to describe the structure and constraints of XML documents. XSD defines the legal building blocks of an XML document, including elements, attributes, and their data types. It ensures that the XML document is both well-formed and valid. A well-formed XML document follows the basic syntax rules of XML, while a valid XML document adheres to the rules defined in the XSD; [XML Schema Tutorial](#) .

ⁱⁱ RDF - RDF stands for **Resource Description Framework** and is a standard for describing web resources and data interchange, developed and standardized with the World Wide Web Consortium (W3C). RDF is a standard way to make statements about resources. An RDF statement consists of three components, referred to as a *triple*; [XML RDF](#) .

ⁱⁱⁱ JSON/JSON-LD -JSON stands for **JavaScript Object Notation**. JSON is a lightweight format for storing and transporting data. Data is in name/value pairs, data is separated by commas, curly braces hold objects, and square brackets hold arrays. The JSON syntax is derived from JavaScript object notation syntax, but the JSON format is text only. Code for reading and generating JSON data can be written in any programming language. **JSON-LD (JavaScript Object Notation for Linked Data)** is a method of encoding linked data using JSON. It allows data to be serialized in a way that is similar to traditional JSON, making it easy for developers to transform their existing JSON to JSON-LD with minimal effort.; [JSON-LD 1.1](#) .

^{iv} <https://dama.org/about-dama/who-we-are/> .