NIEM International Position

Recommendations by the NBAC

September 2014

Table of Contents

Introduction

Objective

The NBAC International Tiger Team was assembled to evaluate the current and future use of NIEM in an international setting. This report details the findings of the Tiger Team and tries to answer the following question: *What does it mean for an international organization to use NIEM?* The report also aims to provide recommendations on tools and processes that could be used or developed to better enable the use of NIEM by international stakeholders.

Participants

- **Yannick Asselin** – *Public Safety Canada* (Tiger Team Lead)
- **Manoj Bisht -** *CSE Corporation*
- **James Bohling -** *US Department of Defense*
- **Michael Gilman -** *US Department of Defense*
- **Frank Klucznik** – *US Department of Defense*
- **Matthew Lucas –** *US Office of Director for National Intelligence*
- **Lain McNeill –** *CSE Corporation*
- **John Sullivan** – *General Services Administration*
- **Patrick Voss -** *Germany Bundeskriminalamt - Federal Criminal Police Office*
- **Dan Winkowski –** *US Department of Defense*
- **Michelle DeBoer –** *Australia CrimTrac*
- **Derek Nisco** – NIEM PMO, NBAC Liaison
- **Craig Logan** – PMO Support
- **Ted Eccleston** – PMO Support"

Recommendations

The tiger team, through the discussions that led to the redaction of this report, has come up with the following recommendations that should be considered in the NIEM program planning process.

Making a choice on International Growth

Prior to considering how to encourage international participation, the NIEM Program should determine whether or not it wants to be an international standard. Currently, NIEM is heavily used within the United States. International adoption would represent a strategic choice for the program and it must be weighed against other priorities. Until now, such a strategic choice has not yet been made by the Program, which has led to confusion on "where NIEM plays."

Having the word *National* as part of the NIEM acronym may pose a barrier to some international stakeholders when initially searching for interoperability solutions. International adoption might benefit from considering how to mitigate potential barriers that the name might pose or re-evaluating the NIEM name and brand.

Including international partners in NBAC

The NBAC already provides the opportunity for international partners to participate through existing domains. NIEM Domains represents a community of interest in a specific mission space and are meant to draw stakeholders across levels of government and industry. As such, an international partner can either reach out to join existing domains or begin the process of establishing a new domain if there is value to their community and the broader NIEM community.
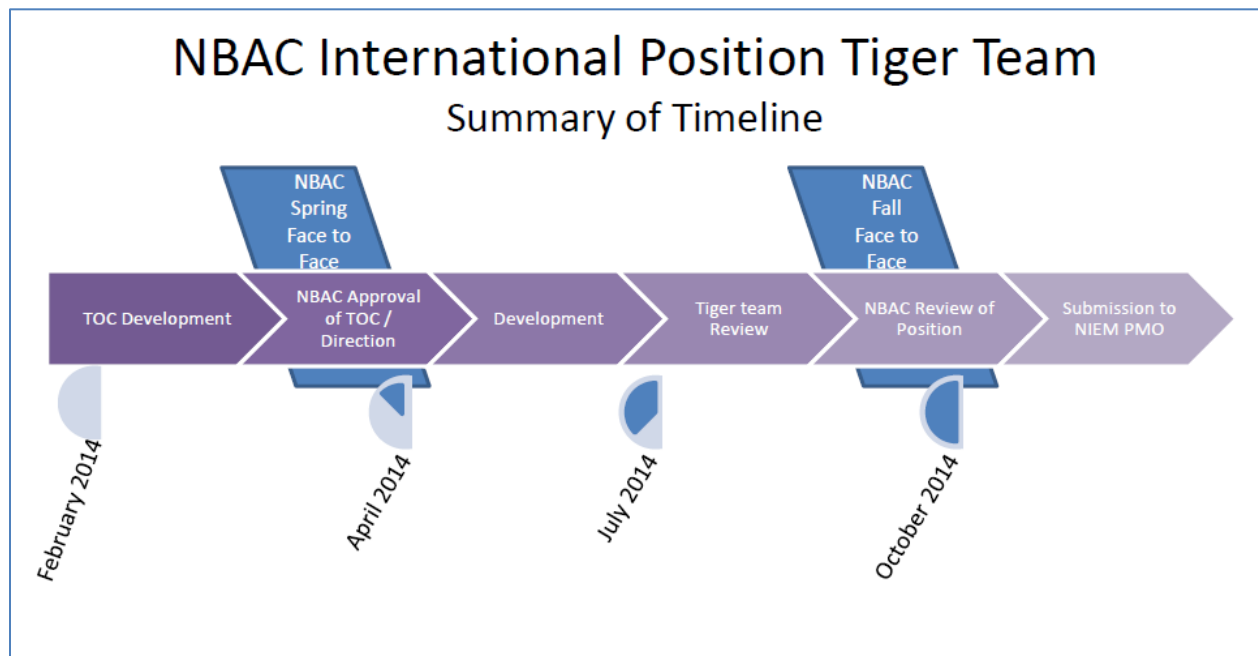
Encouraging international partners to participate in standards development organizations

NIEM should also encourage International partners to collaborate with other stakeholders through existing standards development organizations (SDO). Examples of such organizations include the Object Management Group (OMG), Open Geospatial Consortium (OGC) and OASIS. These organizations enable open collaboration via multi-lateral forums, particularly with industry. This enables industry buy-in for specifications and standards leveraged by international partners.

Multi-Lingual Applications

There is currently no identified need to translate the NIEM elements and this should not be considered unless there is a proven demand for it. Content can be in whatever language. Documents, training and guides could be made available where appropriate in different languages. Tooling should enable the discovery of NIEM elements in non-English languages.

Analysis Process

The NIEM International Position Tiger Team began its analysis and research in February 2014. The Team developed a template for the paper by soliciting ideas for key topics internally and from the broader NBAC. During the April 2014 Face-to-Face, the Tiger Team met to finalize an outline of the paper and gather initial recommendations. At this meeting, the Tiger Team also was briefed on the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT). This presentation was facilitated by John Sullivan, the point of contact for the NIEM Government Resources Management Domain.

Following the Face-to-Face, Team members submitted content and participated in monthly review calls. In August, the Team began weekly check-ins to update the document prior to final delivery in October 2014.

Findings

Using vs Participating

NIEM has greatly benefited from its volunteer community of dedicated members that have contributed to the evolution and the management of the NIEM model. While community involvement through the domains and NIEM core is the best way to ensure that NIEM continues to improve and meet the needs of its users, involvement in NIEM's evolution is not necessary to benefit from the value that has been developed in NIEM over the years. International partners should be able to be end users without feeling the pressures of contributing to the community,. Once the new users are more comfortable with the model and are more established, they are encouraged to get involved in the relevant domains to ensure that the domains evolve to continue to meet their needs and that the domains remain active and thrive.

International organizations of all sizes can benefit from NIEM and achieve a return on their investment without requiring significant efforts to manage the model or active involvement in the various committees associated with NIEM.

NIEM Model

Overall, the International Tiger Team felt that NIEM already provides many useful features for international stakeholders and the interest and usage by other countries, such as Canada and Australia, seems to prove this. However some changes could be considered to assist international stakeholders in their use of NIEM.

Changes

The evolution of the model should follow an organic growth and consider new developments and changes when the business processes and business needs arise. This is preferable than to try to anticipate needs and build functionality ahead of them being required. The NIEM model should then be implemented as a country's functional data exchanges and business processes develop and the missing elements developed during the implementations provided back to the community for inclusion in future versions.

The NIEM Naming and Design Rules (NDR) may impact the ability of to interact with international standards currently adopted by Mission Partners. There will be a need to monitor this on an on-going basis to solve international issues that would come up with the NDR and new elements.

Extensibility

NIEM has built in extensibility that greatly enhances opportunity for international uses. If an element is not in NIEM, NIEM can be easily extended to add the elements in the Information Exchange Package Document (IEPD) in a fairly simple manner. If an element exists but is not quite appropriate for the information exchange being developed, it can be substituted for one that is more suitable for the needs to the organization developing the IEPD. The current NDR do not allow for substitution elements to be named in languages other than English and it is the perception of the International Tiger Team that this does not necessarily need to change at this point in time. In discussions with various international stakeholders, it seems that having English as a basis simplifies the development of IEPD and that most technical folks involved in the IEPD development already have adequate English skills to use the English name elements. The end-users of the information exchange would not see the IEPD and they could benefit from the information exchange even if they do not have English skills. If there is a substantiated request to change the NDR to allow this from an international partner, then it is suggested to have a look at the rationale and make an appropriate decision based on the specifics of the request.

Shared elements and local elements

NIEM should continue to strive to be the universal shared representation of elements and concepts in international information exchanges while data is "in-transit" (not "at rest") and use only the elements that are common to the entities exchanging information. In cases where local concepts not compatible with NIEM models for a subset of partners without applying to all partners or members of a domain, these local elements and concepts should be defined within specific IEPDs and new elements created for

the IEPDs by extending NIEM or substituting NIEM elements without modifying the NIEM core or the domains being used.

An example would be a law structure that applies to only a small subset of countries exchanging information. The various concepts could be modeled in the applicable IEPDs and a mapping or translation could be done between the shared or universal representation of the information and the information sharing partners that have unique local needs.

It is the opinion of the international tiger team that NIEM should not be separated into two or more versions to address national needs versus international needs. It is proposed that implementers can leverage the flexibility and extensibility that is already built into NIEM IEPDs for local or unique needs. NIEM should continue to model the universal representation of shared elements and concepts in the NIEM core and the domains. The long term benefit of keeping to a unique shared model might encourage organizations that use NIEM to, over time and through discussions and agreements, converge to eventually represent elements and concepts in a more aligned fashion.

Code lists

While code lists are substitutable for foreign language or to reflect other differences with new information exchanges, there is no current means of having multilingual code lists that are designated for the information exchange being built. So a French stakeholder that has a code list of colors with Bleu (Blue) would not necessarily be able to exchange information with a Spanish stakeholder that would have a code list with the color of Azul. One possible option would be to have multi-column code lists that would support such as scenario:

ColorCode	ColorEN	ColorFR	ColorSP
1	Blue	Bleu	Azul
2	White	Blanc	Blanco
3	Red	Rouge	Rojo

Alternate language elements

NIEM does not currently appear to support alternate language element for items that would be spelled differently in multiple languages. This is a feature that UMF supports and that NIEM might benefit from supporting. This is one way it could be done:

<Element1>NativeSpelling</Element1>

<Element1 altLang="sp">Spanish Spelling</Element1>

Navigating the model

One concern that was raised through the discussions with the International Tiger Team was that the model may not necessarily be easy to navigate from a foreign language perspective. Some American concepts and spellings may make discovery of elements that would be suitable for use difficult for international stakeholders. Example that were brought forward were the use of the American English

"Offense" versus the British spelling of "Offence" or the concept of a vehicle falling under the "Conveyance" concept in NIEM. Tools could be adapted to better support this and suggestions will be included in the tools section below.

Training materials

There is already a wealth of training resources available for NIEM and the International Tiger Team felt that these assets could easily be leveraged by international stakeholders.

US specificity of existing training options

NIEM already offers a wide variety of training options through formal classroom session, reading materials and interactive online offerings, regular emerging domain workshops and other opportunities for domain and NBAC involvement. A look at US specificity of the training would be beneficial to identify if there are opportunities for making the training more generic and suitable for use by an international audience. A look at translating some of the more popular training materials would provide a start to translate some of the material. Some of this work could be crowd-sourced or coordinated by NIEM PMO to ensure that there is no duplication of efforts by the various communities.

Consistency of new training offering

One concern that was identified by the International Tiger Team was that consistency of message across training and presentations in an international context might be difficult. International stakeholders will likely modify the material to add more specificity for their intended audience to fulfill their needs and might slightly alter the messaging that was developed by NIEM PMO. A suggestion to try to address this would be for NIEM PMO to provide templates and starter kits for international stakeholders that would be interested in developing their own materials and potentially a quality review cycle of materials prior to linking them from the NIEM website.

Inclusivity

As in any distributed efforts, there will be challenges around ensuring that the efforts of every stakeholder is recognized and promoted in a fair fashion. NIEM PMO will need to be careful to be inclusive if it decides to showcase materials developed by international communities to ensure that the process to have these materials featured is simple and transparent.

Certification

The International Tiger Team did not identify a current need to certify NIEM training in other countries, however quality checks should be considered if NIEM would take the foreign language training materials and either distribute them or link to them from their website.

Tools

There are currently many tools available to assist in NIEM development. Most of these tools can be used immediately as they currently are deployed by international stakeholders. Translation of the user interface of these tools or at least the provision of an easy way for the international communities to translate these interfaces would be valuable. Additionally, some suggested modifications as detailed below might make NIEM more accessible to the international audience.

NIEM Website

The International Tiger Team did not have a lot of information about current NIEM.gov visitor statistics. Based on very limited information, it was assumed that most of the visitors are currently coming from US and other English speaking nations. It was not evident that the entire NIEM.gov website had to be translated or that it the benefits from the significant effort of translating the content would be worthwhile. Instead, a look at the most requested documents and other information assets should inform where to focus translation efforts, if any. In some cases, the international community has already come forward to translate some valuable information assets such as the "*What is NIEM*" video and some other publications. The International Tiger Team recommended taking a look at the web log to identify most requested documents as well as establishing the origin of visitors from outside the US and to prioritize any translation efforts accordingly.

Subset Schema Generator Tool (SSGT)

The SSGT is a great tool to quickly search and assemble the elements from NIEM when building new information exchanges. As discussed earlier, the findability of elements could be improved by adding international elements to the search engine. Functionality such as synonyms and translations; alternative spellings; further elaboration on the conceptual elements; translated descriptions; and international notes and comments about usage could be helpful for the international audience.

NIEM WayFarer

The NIEM WayFarer is a great tool to navigate the NIEM model. The same suggestions that apply to SSGT would likely also apply to the WayFarer as well.

NIEM UML

NIEM UML is a profile to assist developers in creating NIEM information exchanges in a graphical fashion. Implementation of NIEM UML profile is done by the tool vendors and as such they would be responsible for creating and maintaining the translations related to their NIEM UML implementation. Implementations will be linked from http://tools.niem.gov.

Collaboration Zones

The collaboration zones available from NIEM.gov are a resource for the community to collaborate and communicate. It would be important for NIEM PMO to evaluate the creation of an international collaboration zone or, as community develops, more specific international focused collaboration zones.

Governance

The current governance structure affords participation through the appropriate domains where stakeholders are involved in information sharing. As such, international stakeholders should seek assistance or participation with the appropriate domains. If there is a need to change or add elements to the model, going through the domain stewards appear to be the best option for international stakeholders. This way, international stakeholders could effect changes through the domains in which they participate for their information exchanges.

The domains could designate international stakeholders to belong as NBAC members if they so desire. Additionally, co-chairs of NBAC have the ability to assign voting members outside of the domains, international stakeholders could be assigned to vote on NBAC if necessary. International stakeholders can inform the decision making process at NBAC already through visitation privileges or as non-voting members.

The International Tiger Team recommends a review the NBAC and NTAC charters to find out if they could include more details to explicitly include international participation on the domains. The Executive Steering Committee (ESC) should also evaluate options to include international stakeholders that may want to be involved in the governance in the future.

Success for internationalization of NIEM might be measured through international participation on the domains as well as number of NIEM information exchanges outside of the USA.

Endorsement as international standard

The International Tiger Team discussed evaluating the possibility of becoming an approved or recognized international standard or seeking endorsements by various international entities (customs, police, etc) and to assess the potential advantages and disadvantages of NIEM becoming a standards development organization (SDO).

If NIEM was an internationally recognized SDO, it might provide more visibility for international stakeholders and might attract more collaborators to help enrich and develop the model further.

For NIEM to become an internationally recognized standard, it would likely require additional processes for international participation, review and approval. This would require more time, effort and resources and would likely shift the control away from the existing governance structure of NBAC, NTAC and the domains which were instrumental in creating NIEM; have provided the nimbleness and flexibility to address information sharing needs; and have worked well for developing and promoting NIEM in the past.

Based on these and given the breadth of domains that NIEM encompasses, it is the recommendation to NBAC that it is preferable for NIEM to seek endorsement of individual IEPDs from specific trade groups, associations and other entities rather than the model as a whole.

Sharing / Collaboration / Communication

The current way to communicate and share information along stakeholders of NIEM is done in a fairly transparent and open manner, and as such, it is already available to international stakeholders. It might be worthwhile to monitor how current domains are collaborating and explore opportunities to extend an invitation to international stakeholders to join the communities where appropriate.

Collaboration Zones

As detailed previously, collaboration zones could be made available to international stakeholders.

IEPD Clearinghouses

IEPD clearinghouses could be used for international stakeholders. This might necessitate reviewing the information fields when submitting the IEPD to the clearinghouse and when searching for IEPDs as well as allowing international and alternate language content to be submitted alongside the IEPD. The International Liaison role of the NIEM PMO could be leveraged here to ensure that, wherever possible, international IEPDs are added to the clearinghouse to encourage reuse.

There is currently a GITHUB initiative being planned for roll out. It will be important to see how this new channel is used to provide more visibility into the IEPDs in addition to the existing repositories, including the two clearing houses and the domain specific repositories such as the one that Human Services Domain maintains on their website.

Findability of domain contacts

It can sometimes be difficult for interested parties to find someone to contact to obtain more information about a specific domain or information exchange. It would be important to ensure that contact information for domains is made available easily and that domain PSEs are aware that international partners may contact them directly. This might also be a role of the International Liaison.

Showcase of international efforts

NIEM may want to feature or showcase international efforts and provide information about how NIEM is used internationally as well as provide contact information easily to interested international stakeholders so that they could connect with each other.

NIEM PMO could enable and encourage international stakeholders to share their success stories with NIEM. The international liaison could proactively contact potential users or owners of information that are starting to or already exchanging information and inform them about the benefits of NIEM while navigating the political issues and resource constraints.

Documentation

The International Tiger Team suggested looking into documenting and making some content easy to access for new stakeholders (documents such as FAQs, rules of engagement, etc).

Roadmap for implementation

Action Item	Responsibility	Target date	Evidence of success
Endorse position on not becoming an international standard and seeking endorsement for individual IEPDs by implementers and associations	NIEM PMO	Apr 2015	ESC endorsement of international tiger team recommendation
Create international liaison role	NIEM PMO	Dec 2014	International Liaison contact information available on NIEM website (can be through the

			existing helpdesk)
Create international repository or modify existing repositories for international IEPDs	NIEM PMO (repository) International stakeholders (provide IEPDs)	Dec 2014	1. IEPD repository can be searched for international IEPDs 2. There is alignment between repositories (clearinghouses, GITHUB, domain specific repositories)
Identify priority translation items	NIEM PMO and international stakeholders	Dec 2014	1. Key informational assets are identified by NIEM PMO and made available for translation by international stakeholders 2. International stakeholders have translated some of the priority materials identified
Adapt tools for international audience	Tool developers (SSGT, WayFarer, etc)	Apr 2015	Tools have the ability to add international and multi-lingual terms and synonyms for easier discovery of appropriate elements by international implementers
Evaluate feasibility and impact of multi-column code lists for multi-lingual values	NTAC	Apr 2015	Recommendation on way forward and potential submission of new code list model for next release of NIEM
Evaluate feasibility and impact of having alternate language elements	NTAC	Apr 2015	Recommendation on way forward and potential submission of method for using alternate language elements for next release of NIEM
Internationalize existing training curriculum and develop certification process	NIEM PMO, international training providers, certification authority	Sep 2015	1. Rules of engagement for international training providers 2. Templates and starter kits for international training providers and developers 3. Quality review and certification process for international training materials 4. Links to international training options from NIEM.gov

Monitor international interest in NIEM	NIEM PMO	Dec 2014	Statistics about international visits to NIEM.gov are collected and analyzed
Collaborate amongst international stakeholders	NIEM PMO (establishment of the CZ) International partners (joining and participating in CZ discussions)	Dec 2014	Collaboration zone for international stakeholders is available and instruction on how to join are published on NIEM.gov
Publish domain information so it is easy to find	NIEM PMO	Dec 2014	Domain contact list is up to date and easily available either published through NIEM.gov or specific instructions on how to obtain it are published on NIEM.gov
Communicate and celebrate international involvement with NIEM	NIEM PMO	Apr 2015	1. International spotlight / corner on NIEM.gov 2. Recognition of international progress and partners at NIEM town hall or other events
Review governance options for international stakeholders	NBAC, NTAC, ESC	Apr 2015	1. NBAC and NTAC charters contain explicit information about role of international stakeholders 2. ESC has an approach to include interested international stakeholders
Review the *"National"* in National Information Exchange Model and the brand and how it might impede international adoption	NBAC, NIEM PMO	Apr 2015	1. Consultation about importance of the NIEM brand and impact of the word *"National"* being part of the brand on international adoption 2. Options to mitigate the "*National"* perception of NIEM and increase inclusion of International stakeholders in the NIEM brand or evaluating if a rebrand is needed

Appendix: Examples of NIEM Integration with International Standards

Using NIEM in an international context will inevitably lead to using it in areas where other internationally developed standards are currently being used. Being rooted in XML, NIEM can likely be used alongside other data standards fairly easily using translation layers and/or extensions. However, thoughtful considerations should still be taken in the approach that NIEM will take in being used alongside these other standards. Should NIEM be modified to accommodate these standards or should the standards be modified to be able to use NIEM? The International Tiger Team recommends creating a role in NIEM PMO that acts as an international liaison that could coordinate discussions with other international standard developing organizations (SDOs) and to ensure that focus to interoperate with these standards remain on track with the greater goals of NIEM. This is most likely already being done in an ad-hoc fashion, the recommendation is to formalize and document the interactions so that they are always the same and that links across communities could be more easily made. This role could also include onboarding, connecting and coordinating efforts of other international stakeholders as discussed in the communication section below.

If any translators between external data standards and NIEM IEPD need to be created, it is recommended that this be the responsibility of implementers and the user community. The recommendation is not for NIEM PMO, NBAC or NTAC to begin pro-actively developing translation layers at this time. The NDR may impact the ability of NIEM to interact with international partners or standards. It would be important to monitor on an on-going basis to solve international issues that would come up with the NDR and new elements (NTAC).

United Nations Centre for Trade Facilitation and Electronic Business

Within the United Nations framework of the Economic and Social Council, the United Nations Economic Commission for Europe (UNECE) serves as the focal point for trade facilitation recommendations and electronic business standards, covering both commercial and government business processes that can foster growth in international trade and related services. In this context, the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) was established, as a subsidiary, intergovernmental body of the UNECE Committee on Trade, mandated to develop a programme of work of global relevance to achieve improved worldwide coordination and cooperation in these areas.

UN CEFACT operates in an analogous fashion as NIEM, with a Bureau of elected officers representing governments, industry, and standards organizations, and develops information standards, XML schemas and EDI EDIFACT packages across several business domains (Figure X).

Figure 2: UN CEFACT Domains

Business	Technical

Accounting & Audit	Audit / Validation
Agriculture	Business Process Modelling
Customs	Communication
Environmental Management	Harmonisation
Finance/Payments	Legal
Government	Library maintenance
Health Care	Library production
Insurance	Methodology
International Trade Procedures	Publications
Procurement	UN/EDIFACT
Supply Chain Management	XML
Transport	
Travel/Tourism	

These business domains are similar to the NIEM domains, and the newly elected CEFACT Bureau Leadership has expressed a strong interest in partnering and discussion options with the US led NIEM effort.

Supporting the UN/CEFACT domains, is a substantial program of work, each led by Bureau Vice Chairs. Underpinning all of this is an extensive Schema/EDIFACT Control Library function that is continually managed by a collection of international experts. The migration to NIEM 3.0 clarified the need for a configuration control process. The UN/CEFACT library maintenance team has for several years produced and managed multiple library versions, and has a very mature process in play for NIEM to leverage whereas NIEM has an extensive library of content that the UN/CEFACT could leverage as well.

ISO Technical Committee 154
In the field of industrial data, the ISO Technical Committee 154 used information interchanges and standardized activities between and within individual organizations to codify the international standardizations and registration of business and administration processes.

The Committee is responsible for the development and maintenance of application specific metadata standards for:

- Process specification (in the absence of development by other technical committees)
- Data specification with content
- Forms-layout (paper / electronic)

NIEM International

NATO Standards

The North Atlantic Treaty Organization (NATO) is a political and military alliance of 28 North American and European countries that have joined together to best pursue security and defense. Information exchange is a key component of NATO and there are numerous standards agreements nations can choose from. NATO has data sharing challenges and interoperability remains of highest importance. The NATO Core Data Framework (NCDF) was initiated to minimize interoperability problems by recommending an extensible "Core" approach. Instead of attempting a single data standard of everything for the community of everyone, a common "Core" of generally accepted terms will be established and specific Communities of Interest (COIs) (Land, Air, Sea) will create their common but more COI unique semantics and syntax for the information they share.

The U.S. Department of Defense Chief Information Officer and Joint Staff J6 are working together to advocate NIEM as the NCDF solution. NCDF will address enterprise level information sharing among Strategic and Operational Commander C2 systems that are provided by both NATO funded and partner countries' C2 systems. NCDF will also enable federation of partner country C2 systems at the operational-tactical level.

The NIEM to NATO project also recommends partner countries consider adoption of NIEM. An additional benefit of NIEM is that it supports confidentially and releasability markings that facilitate use of the next generation of tools for data protection, authorization, accessibility and Identity and Access Management (IdAM).

OGC / GML / GEO4NIEM

Many International organizations use Geospatial references extensively representing geo-locations of a whole host of activities, structures, and entities on maps and charts. Geospatial capabilities serve to enhance situational awareness and result in better decisions in an operational context.

The Geospatial Enhancement for NIEM (Geo4NIEM) initiative is a collaboration of the NIEM Program Management Office (PMO), the Open Geospatial Consortium (OGC), the Department of Homeland Security, and the Program Manager for the Information Sharing Environment (PM-ISE) to enhance NIEM's geospatial exchange capabilities.

The Geo4NIEM initiative provided eight recommendations (specific to GML adapters in NIEM) for consideration in the NIEM 3.0 update. Seven recommendations were implemented; one recommendation had no impact on the model itself. Overall, no significant changes were recommended to the NIEM technical architecture. The Geo4NIEM initiative also culminated in a demonstration of how enhanced geospatial capabilities enable situational awareness through the ability to identify, process, and comprehend critical information during an incident. The initial initiative served as a proof-of-concept for NIEM and GML. Future efforts will look to test and validate additional GML capabilities within NIEM.

Entry/Exit Information System

Organizations typically federate their systems to collectively manage real world events like disaster relief, humanitarian assistance operations and cross border entry and exit activities. Upon federating these systems together, it becomes necessary to establish entering and existing instructions to allow secure systems to system connections access controls, and read / write permissions along with screening and vetting of personal identification Information. Often, data exchanges are to share traveler-related entry and exit permit both countries to reconcile entry records with exit records.

Customs and Border Patrol (CBP) has two systems that exchange data using NIEM-conformant exchanges; they are Global Enrollment System (GES) and CBP- CBSA Entry/Exit.

GES provides a Web Service (GES-WS) for use by clients in order to submit applications and check their statuses. GES-WS uses a resource-based approach, in which XML resources are exchanged with a simple standard set of operations (create / read / update / delete). The GES-WS XML is conformant to NIEM 2.0. This service is currently used by Mexico (December 2010), South Korea (May 2012) and Panama (January 2014) to submit the application data and update the vetting statuses for Global Entry applications of their citizens.

As of June 9th, 2014, the service has received 55,875 applications from Mexico, 1,763 applications from South Korea and 548 applications from Panama.

Under the Beyond the Border Action Plan as announced by the Prime Minister of Canada and the President of the United States in late 2011, the Entry/Exit initiative was identified to coordinate entry and exit information at the common land border. The Entry/Exit Information System (EXIS) is the IT component of the Entry/Exit imitative which includes a new bi-directional information exchange between the Canada Border Services Agency (CBSA) and US Customs and Border Protection (CBP) to share biographical information on travelers in the land mode. The primary focus of the exchange is to share traveler-related entry information such that entry into one nation is deemed an exit from the other, which permits both countries to reconcile national entry records with exit records. Data on entry is held by both CBSA and US CBP in legacy databases, normalized and abstracted with lookup tables and other operational optimization techniques. NIEM was utilized to remove those abstractions imposed by the legacy systems and develop a common approach to data sharing. The NIEM model already contained the elements required for the exchange, allowing the teams from both Agencies to leverage the power of NIEM through reuse and quickly define the structure of the transaction. The transaction set went into production on June 30, 2013 as the first production NIEM-based exchange between the US and Canada. As a result of this initiative, NIEM-based transactions are now flowing between the two nations, 24 hours a day, 7 days a week, in near real-time. This capability, which did not exist previously, has enabled both nations to make significant progress towards ensuring the security of our mutual borders in the land mode.

The data being received by the CBSA is being used as part of a new Entry/Exit program which is in the formative stages of development. As such, the information received on exits from Canada is being reconciled with recorded entries. The CBSA has been able to achieve a 97.8% reconciliation rate, which is comparable to existing CBP reconciliation rates. The program continues to expand, and the data received will be shared with other branches within the Federal government. The NIEM exchange will be re-used and potentially expanded as part of these secondary exchanges, significantly reducing the amount of effort required to put these in place. By having the existing transaction set already in place and available for reuse, there will be a direct and substantial benefit to the CBSA in terms of cost and time savings. It is expected that reuse of the transaction set will save several weeks' worth of IT development work when we expand to share with others (OGDs for example). Historically, CBSA would have had to build another new interface with new data packet description (approx cost $100,000). Now we will reuse this one and its documentation.

Using NIEM enabled both organizations to easily identify existing common elements from the NIEM model rather than to come up with their own separate protocols. This has also helped in the support of the systems in the production environment. From a technical implementation perspective, the NIEM XML format was easily parsed by existing programming language libraries; making implementation easier. This reduced developer time when correcting schema definition issues. Because it is standardized, we anticipate it will be easier to extend and reuse in the future.

International Trade Domain and World Customs Organization (WCO)

The NIEM International Trade Domain was initially created from the World Customs Organization (WCO) Data Model. It was subsequently modified to include International Trade Data Systems (ITDS) metadata, UNEDIFACT metadata, ANSI metadata, and some Customs proprietary data elements

Over the years, CBP adopted a proprietary language for trade messages by importers and brokers (Customs and Trade Automated Interface Requirements (CATAIR)) that uses the Automated Broker Interface (ABI) gateway for both incoming (B2G) and outgoing trade messages (G2B). Since the brokers have had a substantial investment in the systems that create and receive these messages, CBP has elected not to change the import message format/structure until the trade community asks for that change. So CBP and the PGAs will be accepting import trade (commodity) data using the CATAIR format.

For import carriers, CBP accepts a variety of formats for the manifest messages (ANSI x-12 and UNEDIFACT for truck, ANSI X-12 for Ocean and Rail and AIR CAMIR (Customs Automated Interface Requirements) (propriety) for Air).

For exports, there is a similar situation. The AES commodity filing is in a format labeled the AESTIR which is a propriety format much like the CATAIR. Export manifest is currently paper based but is expected to conform.