NIEM BUSINESS ARCHITECTURE COMMITTEE (NBAC) ANNUAL REPORT

FY 2016

NBAC Annual Report provided to the NIEM Program Manager highlighting the FY16 activities of the NBAC and the State of NIEM.

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NBAC ANNUAL REPORT FY16

Executive Summary

This annual report provides a summary and highlights of the NIEM Business Architecture Committee (NBAC) for the fiscal year 2016 and recommended actions for (FY?)2017.

The NBAC continues to be a very active committee, with several effective tiger teams and good representation across the community. During 2016, the NIEM program updated and published minor release NIEM version 3.2. Working collaboratively with the NIEM Technical Architecture Committee (NTAC) and the Program Management Office (PMO), the NBAC continues to mature and support the NIEM program and community. The NBAC has made significant foundational progress towards the development of an anticipated 2017 major release NIEM version 4.0, which will include additional international elements and continue to demonstrate the vitality of the NIEM program.

The NIEM program continues to gain momentum in the establishment of new domains and increased adoption within the federal, state, local and tribal governments.

Looking to the future, the NIEM program needs to continue to strengthen the international community engagements and embrace emerging technologies that facilitate community-based information exchanges such as Java Script Object Notation (JSON). However, the NIEM program must maintain its proven practices of a sound and transparent governance, continual review and adoption of industry best practices coupled with stakeholder outreach and engagement.

To continue moving the NIEM program forward, the future planned release schedule should be resourced and maintained with a major release for 2017 followed by minor releases in 2018 and 2019 A strategic multi-year plan should also be developed to align desired goals with matching resources.

This report will mark the transition of NBAC leadership with the one co-chair being replaced after several years of effective, active service. His contributions were significant.

The co-chairs would like to thank those who contributed to this report and appreciate their diligent work and dedication to the NIEM community.

Pat Brooks
NBAC Co-Chair
October 5, 2016

Ryan Schultz
NBAC Co-Chair

Current State of NIEM

Over the past calendar year, we have seen growth within the NIEM community. We have seen new communities come onboard as domains. The US Department of Agriculture (USDA) created a value proposition, which was voted on and approved by the NBAC, resulting in the establishment of the Agriculture domain. Another huge success story is the onboarding of the new Surface Transportation domain by U.S. Department of Transportation.

We saw substantial updates to the NIEM Emergency Management domain led by DHS Science & Technology in collaboration with the first responder community. We saw additional content updates to the Biometrics, Military Operations, Justice, and Human Services domains.

In another sign of NIEM community maturity we successfully began the planned transition of useful content from the retiring Child, Youth and Family Services domain to the actively maintained Human Services domain. We also saw a successful transition in leadership for the CBRN domain. All of this points to normal domain life cycle activity for mature and fully functioning NIEM community.

The NIEM community successfully completed a minor release and began preparations for the first scheduled major release (4.0). With these successes, we have also seen declines in participation from several domains (Infrastructure Protection, Immigration, and Intelligence) that have fallen out of tolerance with domain stewardship agreements and lack resourcing to continue proper management of the domain.

FEDERAL PARTICIPATION

We have seen an increase of participation within the NIEM community at the federal level. Department of Agriculture, Department of Transportation, and the Census Bureau have participated on tiger teams and/or on monthly NBAC calls.

The Department of Defense released guidance to consider NIEM first when upgrading, modernizing or developing new XML information exchanges, thus creating more interest across DoD for NIEM. Although DoD is not yet a formal member of the Executive Steering Council, they have fulfilled roles both as the NBAC co-chair and tiger team leads throughout the year.

STATE, LOCAL AND TRIBAL PARTICIPATION

This year both winners of the *Best of NIEM* award were state and local entities (?). We continue to see mature implementations of NIEM at the state and local level. Unfortunately, there has been a decline in state and local participation within the tiger teams.

INTERNATIONAL PARTICIPATION

We have seen some increase in international interest and have had initial discussions within international forums on the use of NIEM. We hope to see an increase in participation in FY17.

NBAC Highlights

NIEM 3.2 RELEASE

NIEM release version 3.2 and its associated products were released and available for download and use in June 2016. Products include NIEM XML schemas (XSD), alternate database formats (MS Excel, MS MDB, and CSV), a spreadsheet (MS Excel) of all data components in the model, and other documentation. NIEM 3.2 is a minor release that incorporates new content and content changes identified since NIEM 3.1 (May 2015). The NIEM Program Management Office (PMO), NBAC, NTAC, and the NIEM domains collaborated and worked closely with community subject matter experts to develop, review, and enhance reusable content in the model for this release.

Highlights included:

- Onboarding the new Surface Transportation domain by U.S. Department of Transportation.
- Onboarding of the Agriculture domain by the U.S. Department of Agriculture.
- Substantial updates to the NIEM Emergency Management domain led by DHS Science & Technology in collaboration with the first responder community.
- Additional content updates to the Biometrics, Military Operations, Justice, and Human Services domains.
- Updates to code lists including DEA controlled substance codes and GENC country codes.
- Updated versions of the NIEM reference tools: Schema Subset Generation Tool, the Migration Assistance Tool, and the Conformance Testing Assistant (ConTesA).

NIEM 4.0 ACTIVITIES

Early technical activities (including analysis, design, review, and harmonization) were initiated in August 2016 for the next NIEM major release v4.0. This release is projected for June 2017, will potentially include some new domains, and is expected to incorporate new International content, significant updates to country code lists, and several significant improvements to the technical architecture of the model. That said, the volume of content and architectural changes in the NIEM 4.0 release will not be as great as they were in NIEM 3.0 because the Release Optimization Strategy (now part of the NIEM High-Level Version Architecture) is designed to prevent issue and harmonization backlog. NIEM 4.0 will also be the first release to allow the use of the new NIEM Code List Specification (approved and released in June 2016). This new specification contains rules and guidance for easily representing code lists that require additional metadata and

are more complex than simple lists of code-value/definition pairs. NIEM 4.0 may also allow Schematron business rules within the XML schema documents. The new NIEM specification Embedding Schematron in XML Schema Documents (currently an alpha draft) should be available by the end of 2016.

DOMAIN LIFECYCLE TIGER TEAM

- Co-led by LTC Karla Porch and Ms. Shuchita Bora. Team met every other week for five months.
- Proposed to the NBAC co-chairs the refinement of the current definitions of "domain" and "community of interest" and also proposed five new terms and definitions to better define each phase a domain may be in.
- Updated the Domain Lifecycle Maturity Model which became the basis for the Domain Self-Assessment Scorecard

INTERNATIONAL CONTENT TIGER TEAM

- The International Content Tiger Team was led by Chair Kamran Atri (Biometrics and EM Domains) and Mike Gilman (MilOps). During the NIEM 3.2 review and release cycle, the tiger team initiated efforts to identify new attributes for inclusion in core that would increase NIEM's international usability.
- Early attributes identified in data models from NATO and the EU proved too general to provide increased functionality, so it was decided that a more comprehensive effort to identify unique new international attributes would ensue.
- Approximately in line with the release of NIEM 3.2, the team began reviewing existing international data models and NIEM stakeholder exchanges with international elements in order to prepare a list of new international attributes for inclusion in NIEM 4.0.
- Meetings currently occur on a bi-monthly basis and will continue throughout the NIEM 4.0 harmonization and development period. All proposed attributes will be reviewed by the tiger team, NBAC and following approval vetted by GTRI for inclusion in 4.0.

DOMAIN MODELING GUIDE

- An online reference that provides basic instructions, guidance, and help for modeling NIEM content in XML Schema Definition Language.

- Presents material in a somewhat less technical manner than the Naming and Design Rules (NDR) specification.
- Designed primarily to help jump start new and on-boarding domains that are building domain content; also serves as a potential reference for existing domains, NBAC content tiger teams, and IEPD developers who may need to create new NIEM data components for IEPD extension schema documents.
- Indexes a wide assortment of NIEM references, resources, and tools that NIEM modelers find useful.
- Designed to be a working set of Web pages that can be easily updated from time to time through GitHub at https://niem.github.io where it will reside when the first draft is finished and approved.
- Current beta draft: https://reference.niem.gov/niem/guidance/dmg/technical/domain-modeling-guide.html

BEST OF NIEM WINNERS

- Two state and locally focused projects were presented with *Best of NIEM* awards: Kansas Criminal Justice Information System (KCJIS) and Volusia County Florida Clerk of the Circuit Court's Comprehensive Case Information System (CCIS 3.0). The winning NIEM implementations addressed complex information sharing challenges in the justice, public safety, and transportation mission spaces.
- Implementation at the state and local level remain the best use cases for showcasing NIEM.

Recommended Way Ahead for FY17

Looking to 2017, the co-chairs believe the NIEM program should build upon its 2016 successes and needs to:

1) Maintain focus on and commit needed resources towards achieving a summer 2017 major release of NIEM version 4.0. Planning should also begin to scope anticipated minor release versions in both 2018 and 2019.

2) Continue to strengthen the international community engagements. This includes the harvesting of selected key date elements as well as organizational and governance level engagements to promote adoption and help align technical and approaches and frameworks. Direct international participation in the NIEM governance should be considered for selected international organizations if timing and mutual objectives are properly aligned.

3) Ensure and embrace selected emerging technologies, especially JSON, to support the community based information sharing approach. The way ahead for JSON developed at the October 2016 NIEM face-to-face should be fully resourced.

4) While appointment of at large voting members is authorized per the NBAC charter, the practice has been used sparingly. An increased emphasis on at-large representation will be desirable in 2017 to increase the number of NBAC participants. Members will be chosen by the NBAC co-chairs and approved by the NIEM PMO. Members will be actively recruited through selected state, local, and tribal representation through the NIEM domains as well as through Best of NIEM awardees.

5) Develop a combined NIEM PMO, NTAC, and NBAC strategic guidance document. This document could provide the planning guidance and strategic vision for needed to focus collaboration and guide resourcing decisions.

6) Grow and mature the NIEM community of domains. Of concern to the co-chairs is needed emphasis on cyber and intelligence representation and participation within the NIEM community.

7) Transition NBAC co-chair leadership by maintaining a two-year rotation cycle and replacing one co-chair by October 2017. This will help ensure fresh vision and broad participation from the growing, mature NIEM community.

The co-chairs believe 2016 was a successful year and is properly positioned to continue the important progress made by focusing on the above areas in 2017.

Attachment A: Domain Lifecycle Tiger Team (DLTT) Results

The DLTT provided recommendation to the NBAC co-chairs for NIEM program consideration for additions and changes to domain stage terms and definitions. The following table is the submission to the NBAC co-chairs:

Term		Proposed Definition	Source/Reasoning
Domain types	Potential Domain	A representative organization of the community of interest which stated that they have an interest in becoming a NIEM domain to the NIEM PMO.	Eliminates the term "emerging" which has been used in the verbally past.
	Onboarding Domain	A community of interest that has begun the official process of becoming a domain.	Domain in the Onboarding stage of the domain lifecycle Phase 1 - Establish Business Need Phase 2 - Establish Domain Operations Phase 3 - Formalize Domain
	Active Domain	An establish domain which participates within the NIEM community.	Domain in the Participation stage of the domain lifecycle Phase 4 - Active Domain Phase 5 - Mature Mentorship
	Inactive Domain	A domain which doesnot participate within the NIEM community. Eg. without active stewardship, may be due to a constraint in resources, turnover in governance, or change in priority or strategy.	A domain which is in Closeout stage Harmonization of the domain lifecycle Phase 6 - Transition
	Retired Domain	A formally existing domain in NIEM in which the governace has been disolved and the content has been transitioned.	A domain which is in Closeout stage Harmonization of the domain lifecycle Phase 7 - Disestablish

Recommendation: For NBAC Co-Chair endorsement and recommendation to the NIEM PMO to be included in the NIEM glossary of terms and Communications/Outreach material.
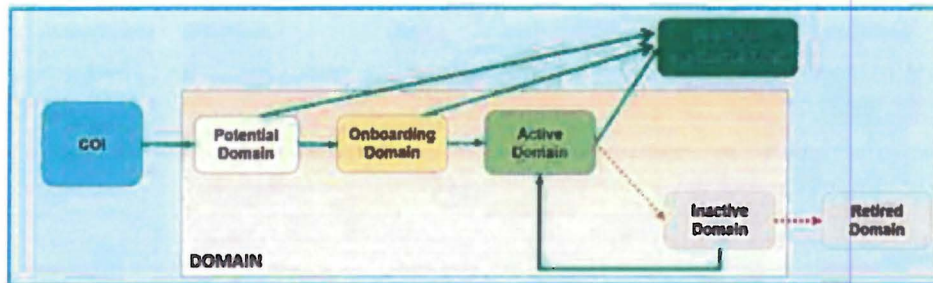
The DLTT also updated the Domain Lifecycle Maturity Model which was created by last year's DLTT. This product served as the basis for the NIEM Domain Performance Scorecard used by domains to assess their health and maturity. See Excel document embedded below.

NIEM Domain Lifecycle Maturity M(

Attachment B: International Content Tiger Team Results

1) Initiated tiger team formation and invited participation from interested parties from multiple domains, as well as targeted international partners and stakeholders. An initial request was made to the team members to provide the team with examples of data models or exchanges that our members felt provided high utility for international users or that included unique international attributes. The team will review artifacts and develop a list of unique attributes.

2) The tiger team held its kick-off calls and meetings to discuss the review of artifacts as provided by international partners, including CrimTrac (Australia), NATO, and the EU. The team then consolidated unique attributes into the initial draft target lists for inclusion in 4.0, reviewed them with the tiger team, and collected comments via email and multiple tiger team calls.

3) As of the August 17, 2016 tiger team meeting, the identification of artifacts and analysis of contents is ongoing. The initial 20 attributes that have been identified are moving forward for 4.0 inclusion. Additional attributes will be progressively added to the list as identified via artifact review and partner dialogue. This process will continue throughout the 4.0 development and release process.

4) Once the international target list has been finalized by the tiger team, it will be reviewed by NBAC on successive calls, vetted by GTRI and aligned via the 4.0 harmonization process prior to final inclusion into NIEM 4.0.

Attachment C: FY2016 NBAC Annual Review Performance Scorecard / Domain Self-Assessment Summary of Results Overview

Based on recommendation from FY2015 Annual Review, in an effort to continuously improve and ensure the NBAC has an enhanced understanding of each domain's health and maturity, the NBAC recommended that the Domain Self-Assessment Survey measures be refined. Additionally, the NBAC recommended that the meaning of each measure's metrics be clarified. Finally, it was noted that some of the lifecycle Stages were not applicable to all the domains. Providing tailored measures and metrics for domains depending on where they are in the lifecycle process would provide a more enhanced understanding of a domain's health and maturity.

In response, during FY2016, the DLTT refreshed the domain performance scorecard and updated the scorecard to redefine measures within four lifecycle Stages: Engagement, Onboarding, Participation, and Closeout Harmonization. The scorecard also clarified metrics defined specifically and uniquely for each measure. Generally, metrics are defined as:

- "Does not demonstrate (DEFICIENT)"
- "Progressing (GOOD)"
- "Matured (EXCELLENT)"

During the latter half of FY2016, domains conducted self-assessments based on the new domain performance scorecard. Furthermore, domains assessed themselves only on the Participation Stage, the stage applicable to active domains.

Figure 1 illustrates which domains and communities responded to the FY2016 Domain Self-Assessment Survey.

Domains and Communities	Provided to	Responded to Survey
Agriculture	✔	✔
Biometrics	✔	✔
Chemical, Biological, Radiological, and Nuclear (CBRN)	✔	
Emergency Management	✔	✔
Health (Potential Domain)	✔	
Human Services	✔	✔
Immigration	✔	
Infrastructure Protection	✔	
Intelligence	✔	

International Trade	✓	
Justice	✓	✓
Maritime	✓	✓
Military Operations (MilOps)	✓	✓
Screening	✓	
Surface Transportation	✓	

Figure 1 - Domain & Community Survey Responses

GENERAL FINDINGS

Domains assessed their health and maturity within the domain lifecycle process. Figure 2 provides a high-level summarization of domains' self-assessed maturity. Additional Domain Lifecycle Self-Assessment Survey results may be found in Appendix A.

Domain (color is aggregate of ratings)	Self-Assessment Findings
	Objective comments justifying responses. Newly on-boarded domain. Progressing with activity in areas of information management, data architecture, and data exchange programs. Participates in NBAC meetings. Demonstrates high performance in their approach to onboarding and developing information exchanges.
Biometrics	High performing domain. Performance and comments are in line with ratings. Consider asking domain point of contact to mentor other domains.
CBRN	Not received.
Emergency Management	High performing domain. Performance and comments are in line with ratings. Consider asking domain point of contact to mentor other domains.
Health (Potential Domain)	Not received.
Human Services	High performing domain. Performance is in line with ratings. Consider asking the domain point of contact to take on leadership role in tiger teams.
Immigration	Not received. Resource constrained. Continue to include NIEM in analysis and definitions. Still waiting on our data governance positions to become available so they can begin onboarding more resources. Collaborating with Screening domain to plan on reestablishing the Immigration and Screening domains.
Infrastructure Protection	Not received.
Intelligence	Not received.
International Trade	Not received.
Justice	High performing domain. Performance is in line with ratings. Consider asking the domain point of contact if they are interested in taking on a leadership role in tiger teams and in mentorship opportunities.
Maritime	High performing domain. Performance is in line with ratings. Consider asking the domain point of contact to participate more regularly in NBAC meetings even when meetings do not directly affect the Maritime domain. Additionally, given the domain point of contact's experience, ask that they share their perspectives more regularly. The insights may serve in a valuable

	mentorship/leadership and education role in support of increasing positive NIEM culture and other domains' performance.
MilOps	High performing domain. Performance is in line with ratings. Consider asking domain point of contact to mentor other domains and incoming state and local members to bolster NABC membership and leadership.
Screening	Not received. Resource constrained. Collaborating with Immigration domain to plan on reestablishing the Immigration and Screening domains.
Surface Transportation	

Figure 2 - Domain Lifecycle Self-Assessment Results

RECOMMENDATIONS

Through analysis of the Domain Lifecycle Self-Assessment Survey results, recommendations were developed. Figure 3 summarizes the recommendations.

	Recommendations	Domain
1	Consider asking domain point of contact to mentor other domains.	Biometrics Emergency Management MilOps
2	Consider asking the domain point of contact to take on leadership role in tiger teams.	Human Services Justice
3	Consider asking the domain point of contact to participate more regularly in NBAC meetings even when meetings do not directly affect the domain. Given the domain point of contact's high level of experience with NIEM, consider asking them to serve in a future valuable mentorship/leadership and education role in support of increasing positive NIEM culture and other domains' performance.	Maritime
4	Based on success of the two latest on-boarded domains (Surface Transportation and Agriculture), within the Onboarding Section of the NIEM Domain Performance Scorecard, replace Business Need Template with Value Proposition Template. Additionally, update NIEM.gov to include Value Proposition Template instead of Business Need Template.	Domain Performance Scorecard, niem.gov

Figure 3 - Recommendations from Domain Self-Assessment Survey Results

CONCLUSION

The NBAC co-chairs would like to thank everyone who participated in refining the domain performance scorecard and those who participated in the FY 2016 NBAC Self-Assessment Survey. Detailed responses of the surveys are contained in Appendix A. Results from the Domain Self-Assessment Survey will serve as a baseline for assessing a domain's health and maturity in future years.

NIEM Domain Performance Scorecard 2016:

NIEM Domain
Performance Scorec