Continuing Cross-Government & Industry Collaboration

NIEM OVERVIEW

History of NIEM, How NIEM Works, Governance

HISTORY OF NIEM

Started by a handful of organizations supporting state and local government, NIEM is a community-driven, government-wide, standards-based approach to exchanging information. Diverse communities can collectively leverage NIEM to increase efficiencies and improve decision-making.

By joining forces to overcome the challenges of information exchange across government boundaries, a grassroots effort called the Global Justice Information Sharing Initiative was established.

The Department of Homeland Security (DHS) was established in November 2002.

The Global Justice XML Data Model (GJXDM) was announced in April 2003.

Built upon GJXDM's success and lessons learned, NIEM was launched in April 2005 by DHS and DOJ. HHS joined as the third primary sponsor in 2010.

NIEM continues to mature with new communities and partners…most recently DoD.

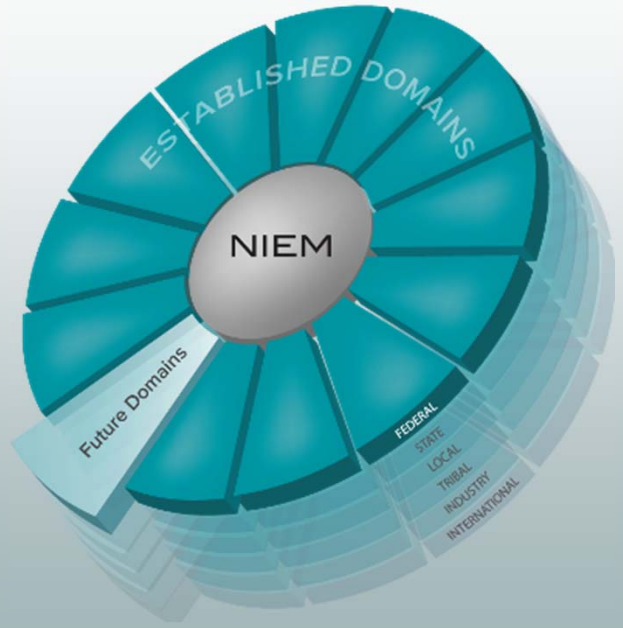
NIEM OVERVIEW

NIEM connects communities of people who share a common need to exchange information in order to advance their missions. **NIEM provides a foundation** for information exchange between federal, state, local, and tribal agencies. Much more than a data model, **NIEM offers an active user community** as well as a technical and support framework.

Community	Technical Framework	Support Framework
Formal Governance Processes	Data Model	Tools for Development and Discovery
Online Repositories	XML Design Rules	Established Training Program
Mission-Oriented Domains	Development Methodology	Implementation Support
Self-Managing Domain Stewards	Predefined Deliverables (IEPD)	Help Desk & Knowledge Center

HOW NIEM WORKS

Common Language
(Community-driven Data Model)



Built and governed by the business users at federal, state, local, tribal, international, and private sectors

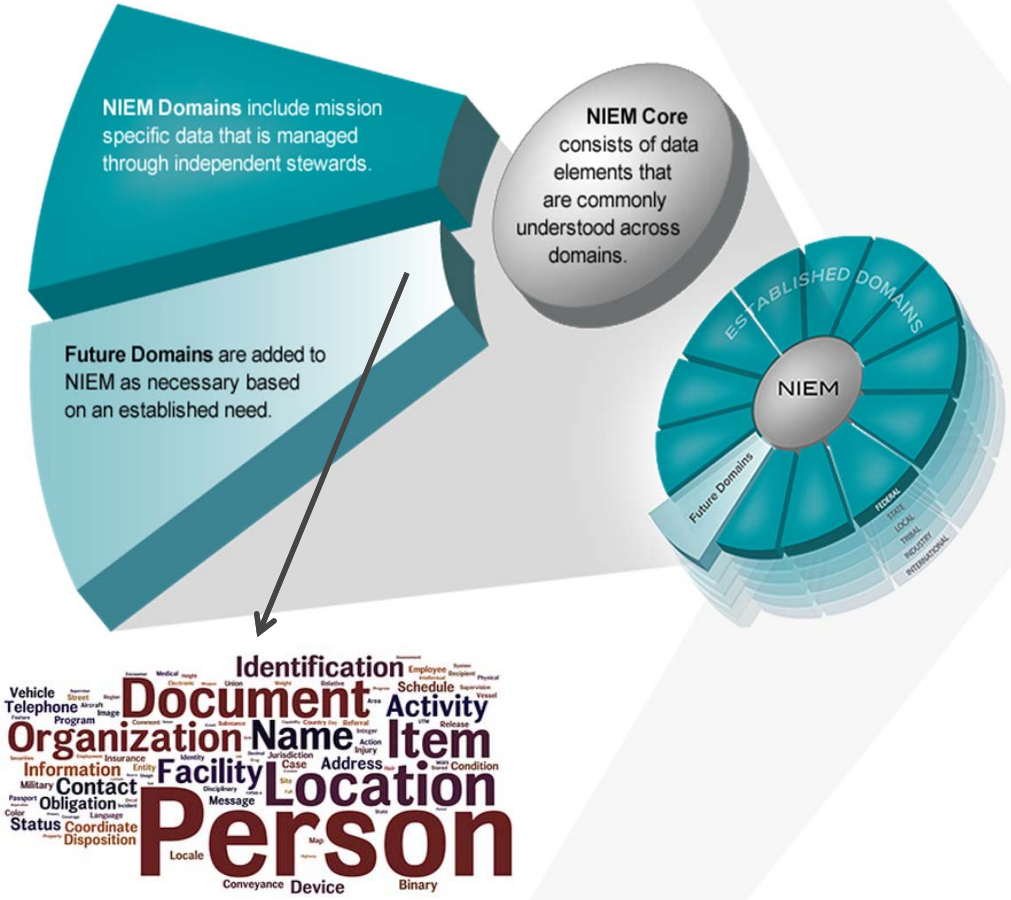
Repeatable, Reusable Process
(Information Exchange Development Lifecycle)

MODEL OVERVIEW

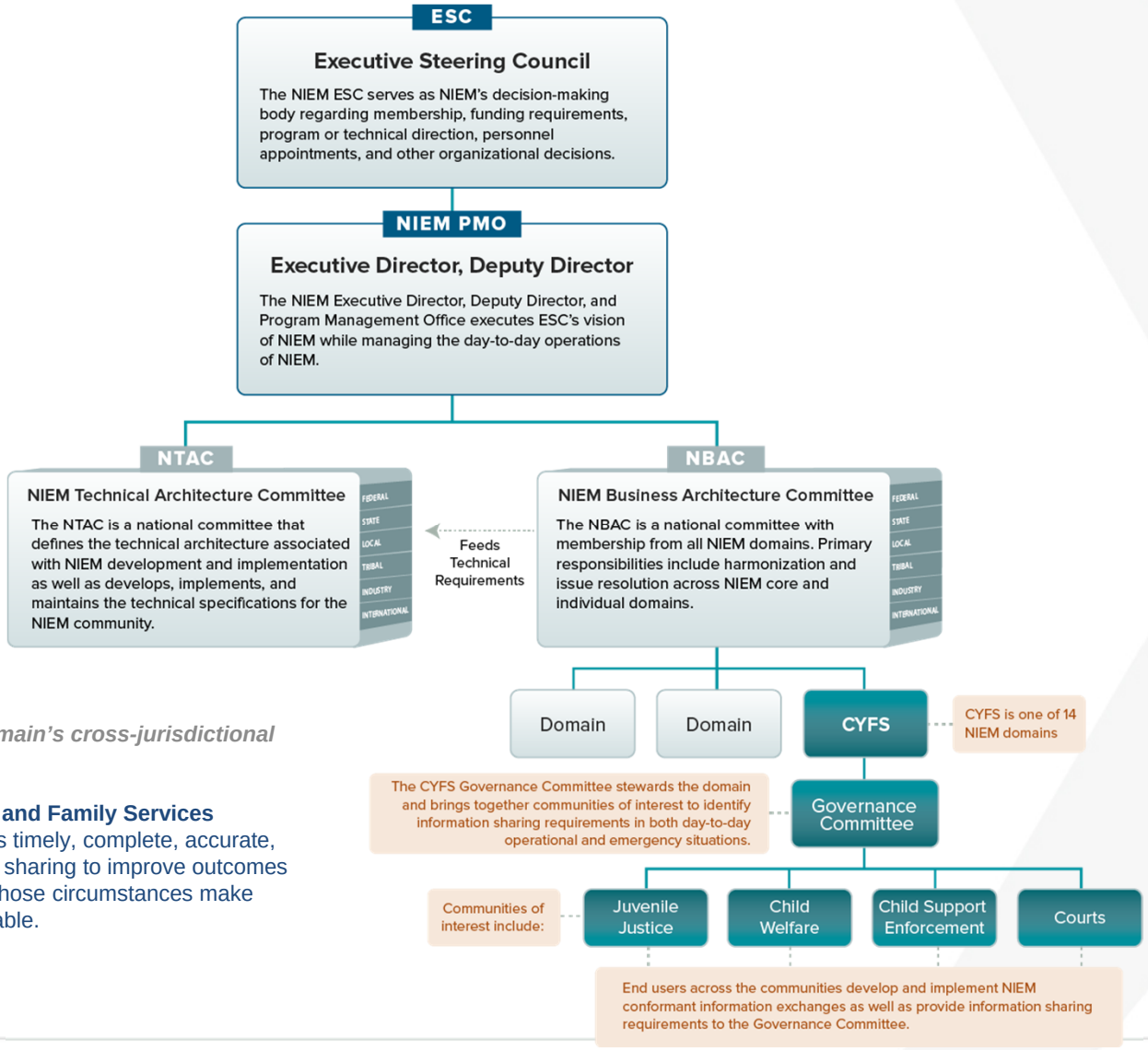
Think of the NIEM data model as a mature and stable data dictionary of agreed-upon terms, definitions, and formats independent of how information is stored in individual agency systems.

The data model consists of two sets of closely related vocabularies: ***NIEM Core*** and individual ***NIEM Domains***.

- Biometrics
- Chemical, Biological, Radiological, & Nuclear
- Cyber *(emerging)*
- Children, Youth, and Family Services
- Emergency Management
- Health *(emerging)*
- Human Services *(emerging)*
- Immigration
- Infrastructure Protection
- Intelligence
- International Trade
- Justice
- Maritime
- Military Operations
- Screening



NIEM GOVERNING STRUCTURE



Example of a NIEM domain's cross-jurisdictional governance structure:

NIEM Children, Youth, and Family Services (CYFS) domain supports timely, complete, accurate, and efficient information sharing to improve outcomes for children and youth whose circumstances make them particularly vulnerable.

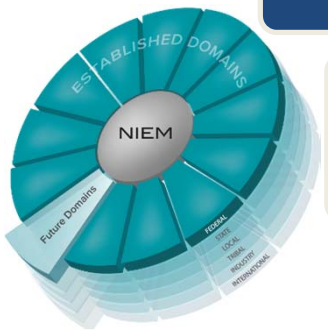
GEO4NIEM

FY2013 Recap, FY2015 Potential Activities

RECAP: GEO4NIEM FY2013 SCOPE

Specific Outcomes:

- Recommendations for the inclusion and standard use of embedded GML within NIEM-conformant information exchanges (i.e. IEPDs).
- Recommendations for the standardized use of (NIEM) Naming and Design Rules (NDR) and the use of external adapter concept with GML.
- Testing and demonstrated use of a standardized embedded GML and adaptors within NIEM IEPDs.
- Architecture documentation and fact sheet for the use of embedded GML and adaptors for use with NIEM IEPDs.
- Recommendations for the inclusion of a NIEM Geospatial Domain.



Collateral Outcomes:

- Embedded GML:
  Broader applicability as a candidate OGC Best Practice for 'embedded GML' in any other open standard or broadly used specification.
- Hybrid Approach:
  Embedding NIEM components in GML Application Schemas.
- Context of Usage Guidance*:
  Recommendations for architectural guidance/ constraints related to capability, e.g., NIEM- or OGC-centric framework.
- Additional Scaling:
  Potential for scaling into all OGC standards/ practices (e.g. SensorWeb-Enablement (SWE) and CityGML).

THE GEO4NIEM TEAM

INTEROPERABILITY PROGRAM OVERSIGHT

OGC®
Making location count.

PARTCIPANTS

ARDENTMC

LUCIAD
high performance visualization

galdos systems inc.

exactEarth

The Carbon Project

OBSERVERS/INTERESTED PARTIES

DISA

GWG

fgdc
Federal Geographic Data Committee

MITRE

Georgia Tech Research Institute

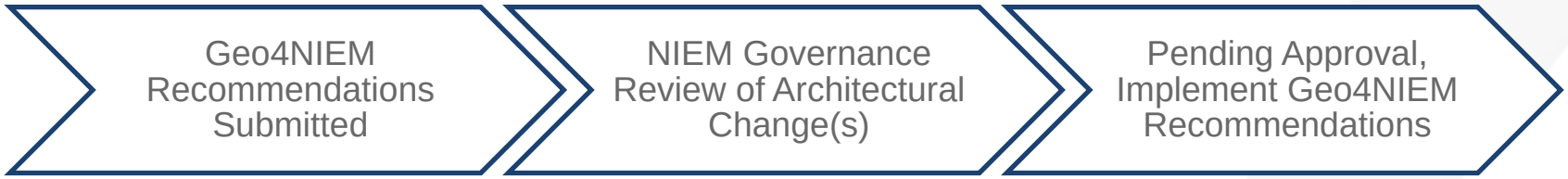
RECAP: GEO4NIEM FY2013 OUTCOMES

Engineering Report

- Geospatial Enhancements to NIEM
- Embedded GML and External Adapter Guidance
- https://portal.opengeospatial.org/files/?artifact_id=55342

Fact Sheet (Summarization of Engineering Report)

NIEM Embedded GML and Adapter Test and Demonstration



MOVING AHEAD: GEO4NIEM FY2015

Capability Context Driven – Implementation Pattern

Non-Map Visualization Context:
NIEM Adaptor with GML (embedded GML pattern)

Map Visualization Context:
NIEM Objects in GML Application Schema (hybrid pattern)

GEO4NIEM FY2015 PROPOSED COLLABORATIVE STRATEGY

OGC®
Open Geospatial Consortium, Inc.

Interoperability Program

IJIS Institute

Springboard

POTENTIAL GEO4NIEM FY2015 PRIORITIES

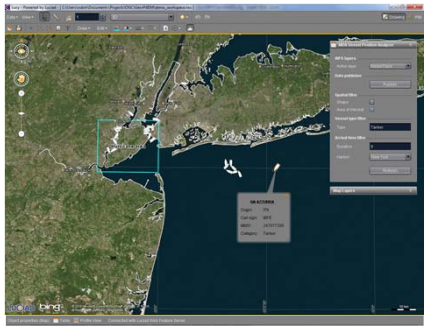
- NIEM/OGC pilots will leveraging security tagging (i.e. IC-ISM, IC-NTK, TDF, etc.).
- Documenting NIEM-community architectural guidance based on context and capability needs.
  - Map-Centric: OGC-centric information exchange pattern, e.g., GML Application Schema with NIEM components (aka Hybrid)
  - Non Map-Centric: NIEM-centric information exchange pattern, e.g., IEPD with embedded GML
  - Result reduces integration burden with WFS; provides improved efficiency with other key OGC capabilities and standards
- Further exploration of OGC standards and practices specific to:
  - CityGML: NIEM Emergency Management and Infrastructure Protection Domains
    - InfraGML, SmartCity, IndoorGML, etc., related
  - SensorWeb-Enablement: NIEM Chemical, Biological, Radiological, Nuclear (CBRN) Domain
  - Community needs specific to OGC Fusion and Portrayal

POTENTIAL COMMON OPERATIONAL PICTURES (COP) USE CASE FOR GEO4NIEM FY15

Develop a Model Package Description (MPD) using the GML Application Schema with NIEM Components “Hybrid” approach for Common Operational Picture (COP) Community of Practice (CoP) usage, incorporating:

- Security Tagging, demo with FICAM/IdAM
- Evaluate ISO 10000 based ‘common profile’ for the MPD
- . . .

Resource Location



Simple – Simple Position Information

Most Common Operational Pictures Need Both Complex and Simple Exchanges

Air Control **Sensor Integration** **ISR**

Weather

CBRN Event

Correlation/ Fusion

Predictive Analytics

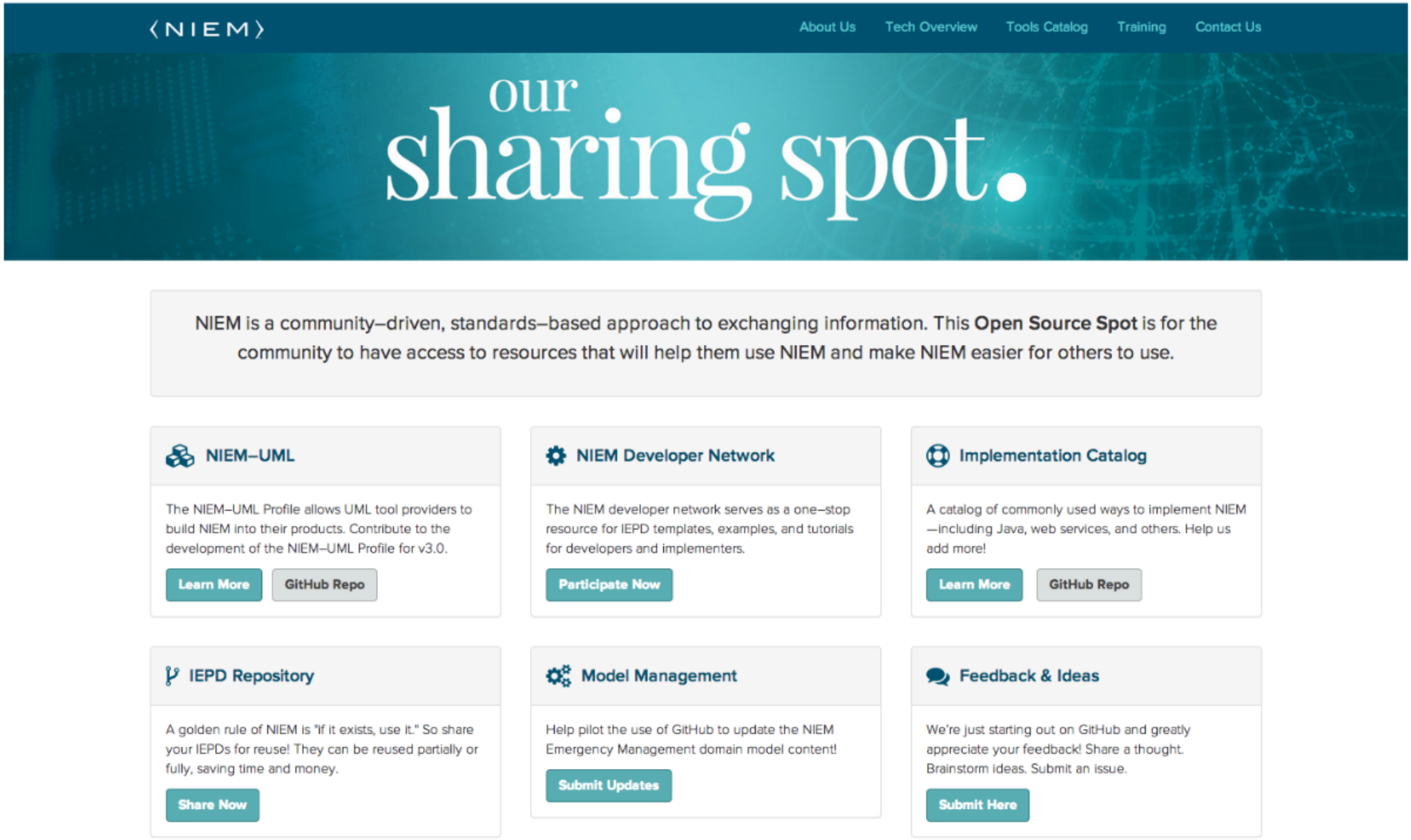
Complex – Integrates Sources/Analytics

Complex COP Exchange Design scales into Simple (reverse – not so well)

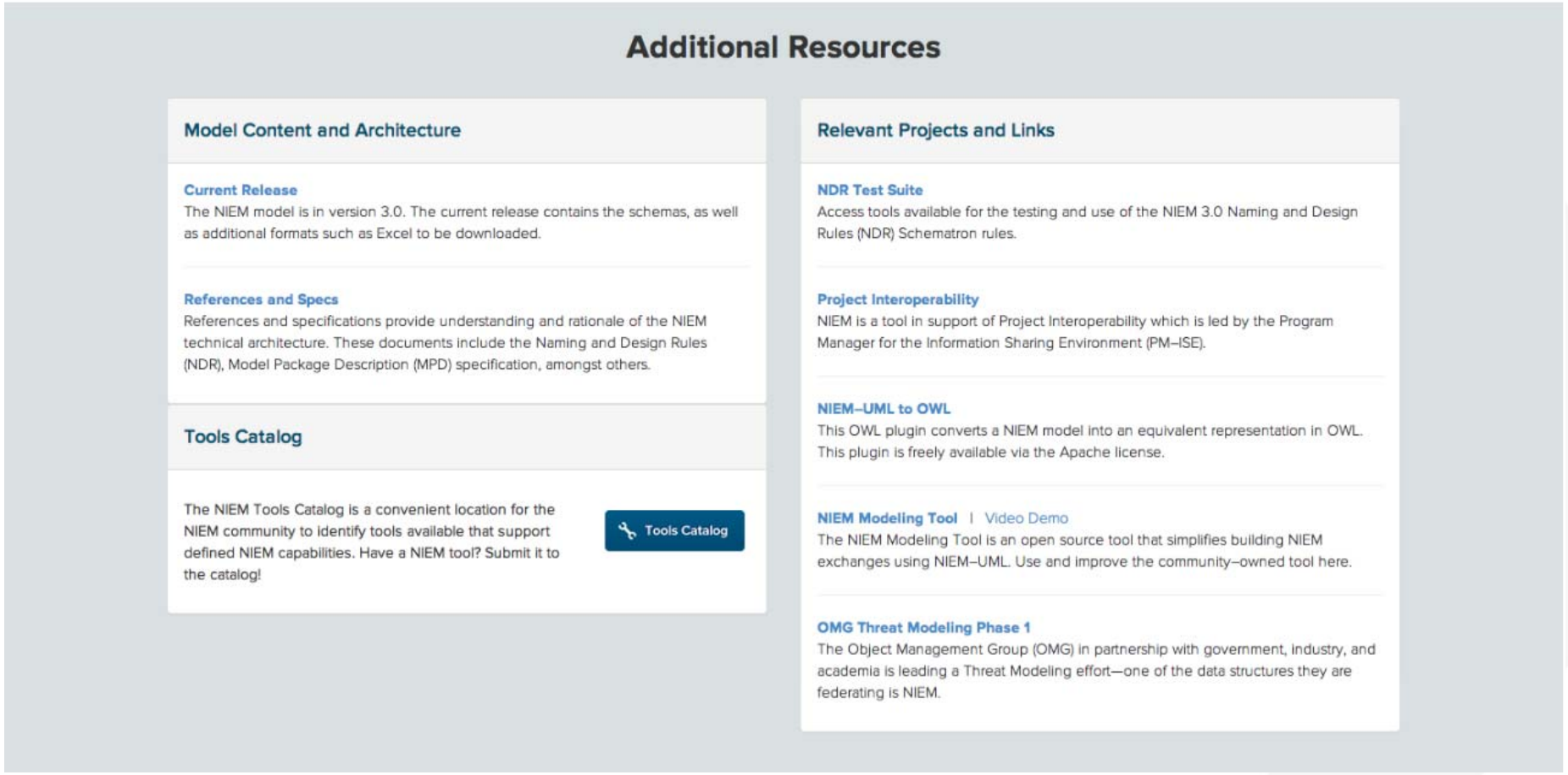
COLLABORATION

Open Source Collaboration & "NIEM Future"

LAUNCHING SOON!



LAUNCHING SOON!



Stay tuned to NIEM.gov for information on how YOU can contribute!

PM ISE WIS3 "STANDARDS WAY AHEAD": PROMOTING NIEM & SDO COORDINATION

WIS3 Roadmap

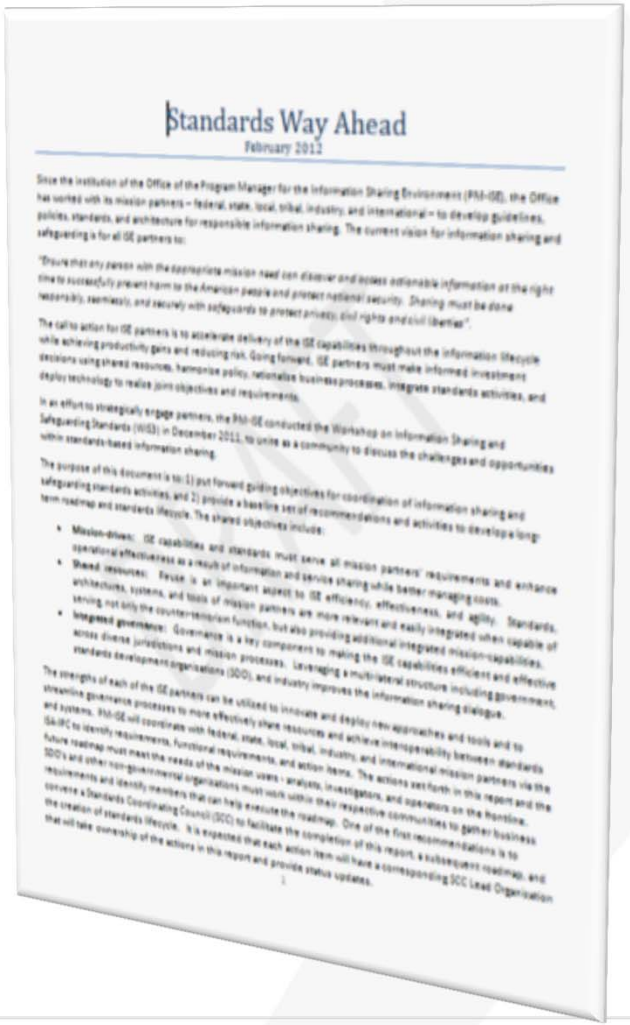
As an outcome of the Workshop on Information Sharing and Safeguarding Standards (WIS3) in December 2011, **PM-ISE, in conjunction with industry and government standards organizations, created a roadmap to address:**

- Standards coordination and governance
- National Information Exchange Model
- Standards development and interoperability
- Identity and access management
- Policy automation
- Geospatial
- Procurement and standards testing and certification

An Emphasis on Geospatial

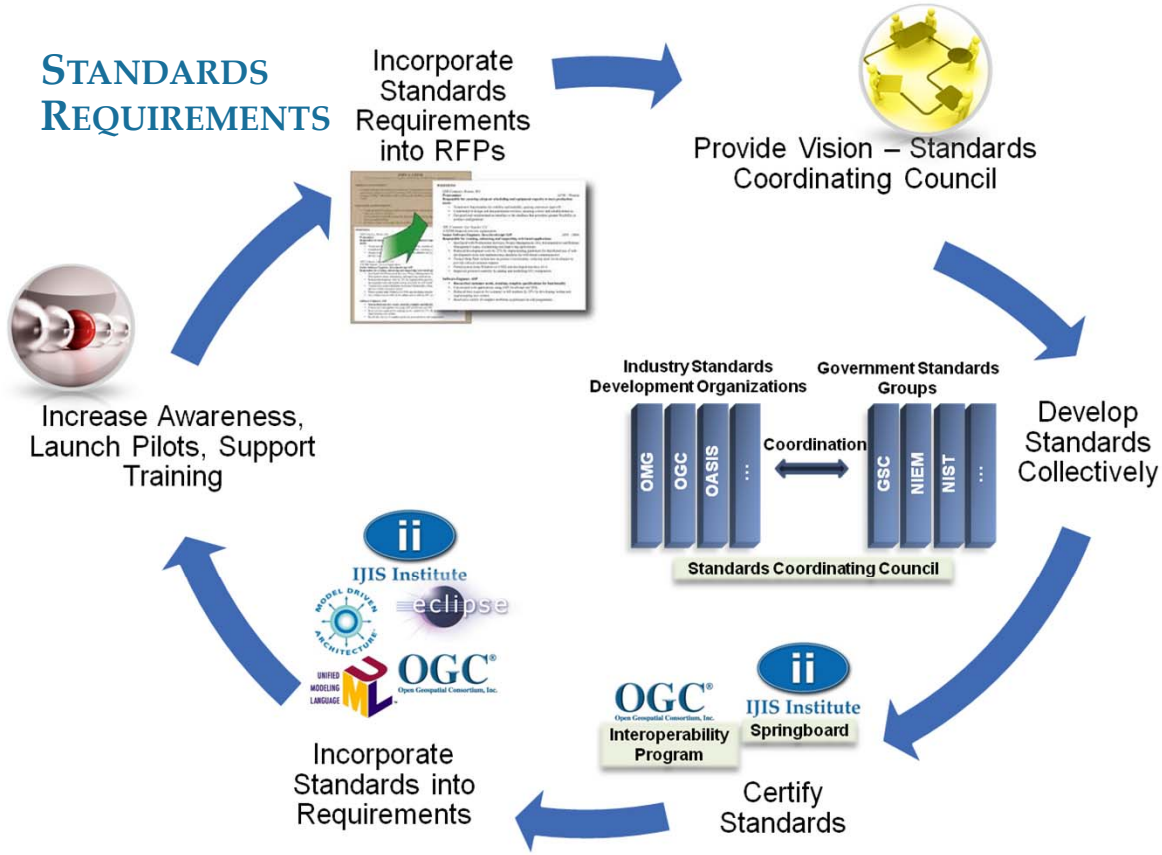
Emphasis on Geospatial included:

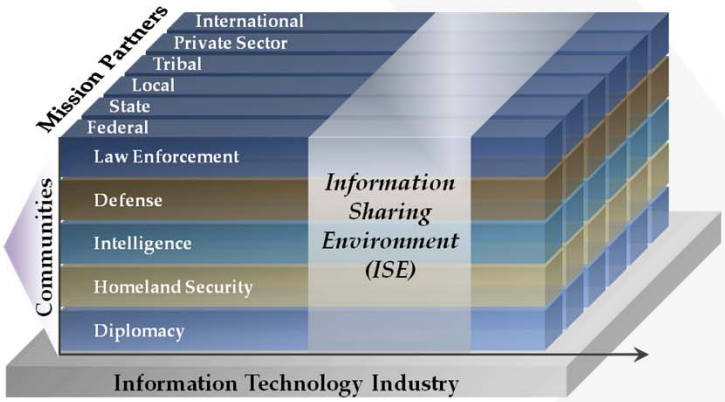
- Integrate NIEM and Geospatial activities:
- Standards Certification (OGC Testbeds / IJIS Springboard)
- Outreach
- Visualization metadata
- Interoperability pilots

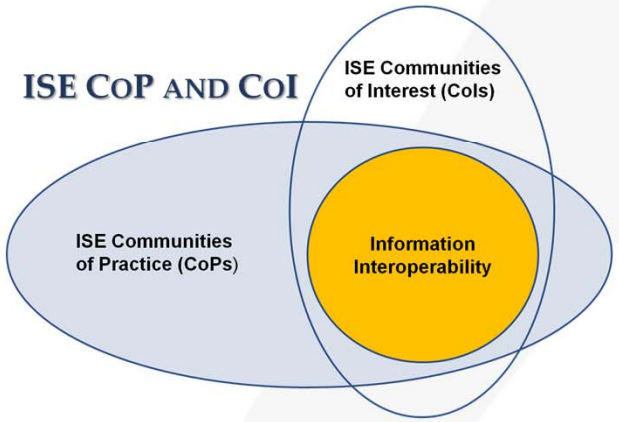

Standards Way Ahead

February 2012

WHOLE OF GOVERNMENT INFORMATION SHARING "STANDARDS ECOSYSTEM"







"NIEM FUTURE"


FUTURE
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
WHAT'S NEXT FOR
NIEM?

BACKGROUND & GOALS

As NIEM matures in a funding-constrained environment, the program is considering how it creates, captures and delivers value.

Challenges

- Government budget trends
- Moving beyond the "inner circle"
- Proper scaling of support services
- Community participation often dependent on organizational funding

"NIEM Future" Business Transformation

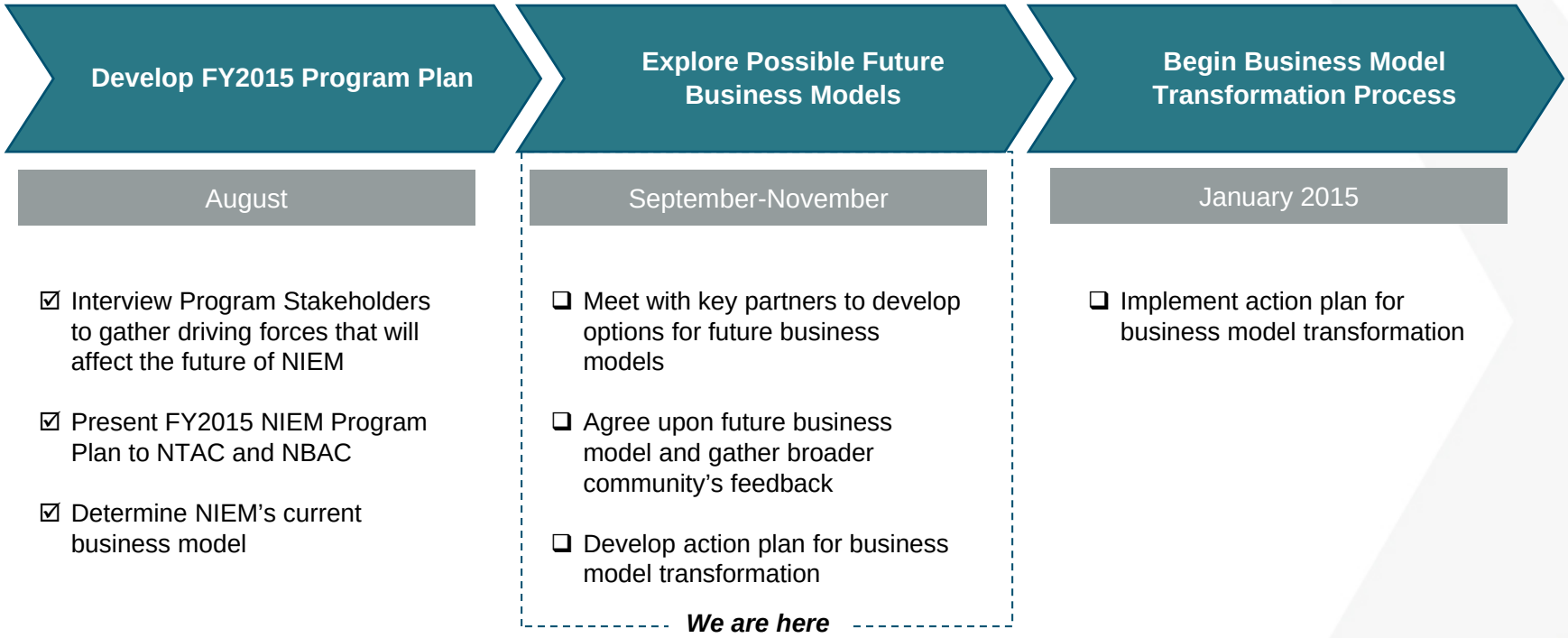
Opportunities for Growth

- Increased international interest & adoption
- Department of Defense "NIEM-First" Policy
- DATA Act
- Technology trends beyond XML (e.g. JSON, OWL, RDF)
- Open Data initiative

NIEM's transformation efforts are well underway and the NIEM PMO is looking to the SCC to help inform the development of a new business model.

CURRENT STATUS

NIEM is currently reaching out to program stakeholders to develop its FY2015 Program Plan, with a focus on how the future could change for NIEM



The August Program Planning Workshop provided the foundation for discussions around future business models

UPCOMING NIEM EVENTS

Upcoming NIEM events include September Virtual Town Hall, Best of NIEM, and NIEM in November. Visit NIEM.gov for more information on all three.

Event	Description	Timeline
	• Recognizes NIEM implementation projects that improve performance, increase efficiency, and support government transparency • Winners will be announced at NIEM in November	*Submission Timeline:* ***Open until October 3, 2014***
	• Half-day event with panels, demonstrations, and so much more! • In-person and virtual attendance	*Event Date:* ***November 4, 2014*** *Event Time:* ***12:00 – 4:30 p.m. ET***

APPENDIX

For more information visit NIEM.gov/Geo4NIEM

INFORMATION EXCHANGE PACKAGES

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

Functions of an Information Exchange Package (IEPD):

1. Provides the **business** and **technical** details of an information exchange through predefined artifacts
2. Created with a core set of artifacts in a prescribed format and organizational structure promoting **consistency**
3. Designed for **sharing** and **reuse** in the development of new information exchanges

WHO STEERS NIEM CURRENTLY?

Primary Sponsors

- Dept of Justice
- Dept of Homeland Security
- Dept of Health and Human Services

Ex-Officio Members

- Global Justice Information Sharing Initiative
- Office of Management and Budget
- Program Manager, Information Sharing Environment
- National Association of State Chief Information Officers

Partners

- Terrorist Screening Center
- Dept of Defense / Dept of Navy
- Public Safety Canada

INFORMATION EXCHANGE CONTEXT:
GML ADAPTERS IN NIEM

- Revise adapter cardinality
- Support for GML Simple Features (GMLSF) profile
- Define a generic feature adapter
- Define a general-purpose geometry adapter
- Remove adapters for curve segments
- Deprecate specific GML adapter elements
- Add general-purpose geometry adapter to nc:LocationType

Open Geospatial Consortium

Approved Date: 2013-MM-DD
Posted Date: 2013-09-05

Reference number of this document: OGC 13-054
Reference URL for this document: http://www.opengis.net/doc/ER/Geo4NIEM

Category: Engineering Report

Editor: Richard Martell

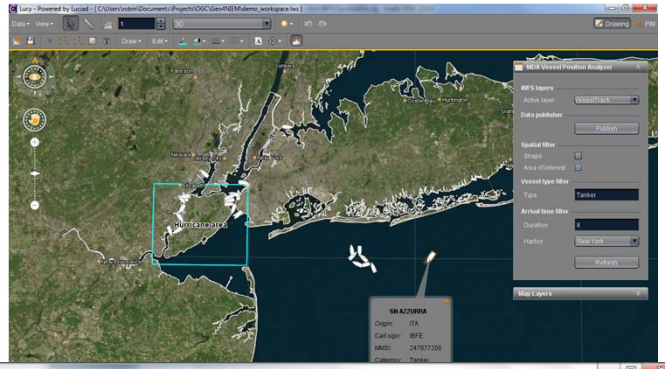
Summary and Recommendations of the Geospatial Enhancement for the National Information Exchange Model (Geo4NIEM) Interoperability Program Pilot

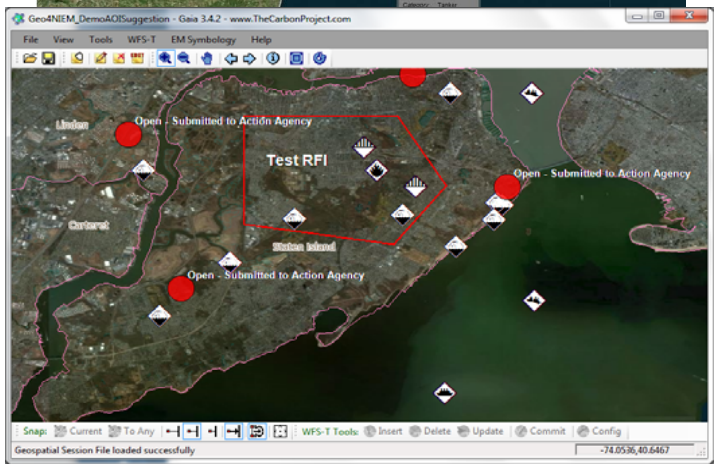
Warning

This document is not an OGC Standard. This document is an OGC Public Engineering Report created as a deliverable in an OGC Interoperability Initiative and is not an official position of the OGC membership. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an OGC Standard. Further, any OGC Engineering Report should not be referenced as required or mandatory technology in procurements.

RECOMMENDATIONS REFLECTED IN NIEM VERSION 3.0!

MAP VISUALIZATION CONTEXT:
NIEM OBJECTS IN GML FEATURE REPRESENTATIONS (HYBRIDS)





- Operationalize NIEM Exchanges
  - Map & transform NIEM IEPs into GML feature types for use with OGC web services
  - Capture NIEM-conformant schema instance metadata in GML application schema instance metadata entity
- Use & Adapt OGC Web Services
  - WFS v2 implementations are able to accept NIEM-conformant instances and input/output formats – internally transforms to features
  - Leverage Catalog services to store and retrieve shared information resources

LEVERAGING NIEM CONTENT WITHIN GML FEATURES EXPANDS THE POSSIBILITIES FOR OPERATIONALIZING NIEM INFORMATION EXCHANGES.

ARTICULATING RECOMMENDATIONS:
USE CASES & REQUIREMENTS

Request for Information (RFI)

- Mechanism for intelligence analysts and operations managers to request and receive relevant information for processing and analysis.
- Connects the collection step of the Intelligence Cycle with the Situational Awareness step of the Incident Management Cycle.

Requirements:

- Share and track an information request
- Share and track the location (coordinate and address) of the related incident.

Maritime Domain Awareness Vessel Position/Track

- Maritime Domain Awareness (MDA) is an inter-agency and international effort to detect and prevent threats at sea or in any navigable waterway.

Requirements:

- Share vessel, cargo, and location information (coordinate, address, track, track bounding area)