National Information Exchange Model

The Grand Translator for Data Exchange

DAMA
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NIEM State, Local, Tribal, Territorial Tiger Team

INFORMATION EXCHANGES BUILT ON NIEM

- International Justice and Public Safety Network (Nlets) - exchange mission-critical law enforcement information.

- Amber Alert - child abduction emergency alert.

- Prescription Drug Monitoring Exchange (PMIX) - Mitigate pharmaceutical drug abuse across state lines.

- FBI Incident Reporting National Data Exchange System (N-Dex) and NIBRS, standardized and secure criminal justice information sharing to relevant criminal justice agencies.

- FBI National Crime Information Center (NCIC) - United States' central database for tracking crime-related information.

- Centers for Disease Control and Prevention (CDC) Emergency Preparedness and Response Exchange Requirements - exchange and sharing of critical emergency management (EM) data.

- National Electronic Interstate Compact Enterprise (NEICE) - placement of children in foster care across state lines.

- Indian Child Welfare Act (ICWA) e-Notice.

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

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ROADBLOCKS TO INTEROPERABILITY

- Silos of incompatible and proprietary software
- Lack of consensus on data standards
- Cultural impediments to information sharing
- Resources for making improvements

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ORIGINS OF NIEM

DOJ Global advisory committee

Global Justice XML Data Model (GJXDM)

DHS joining the effort—rename as NIEM

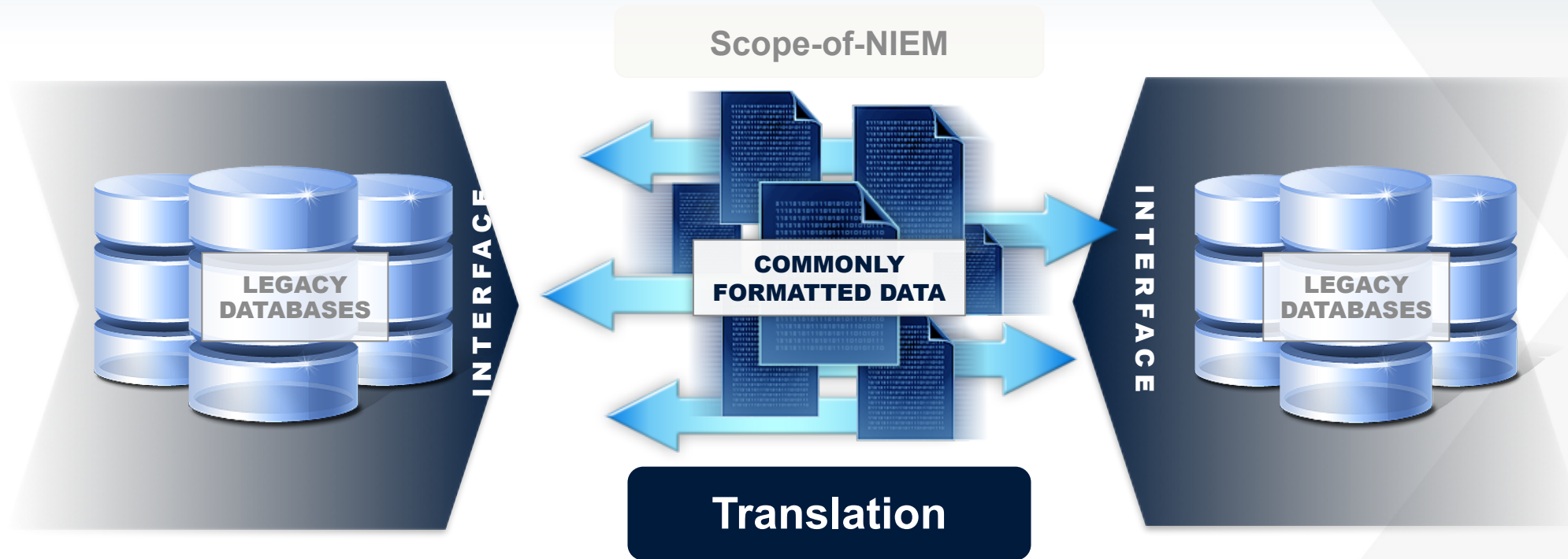Governance model derived by DOJ, DHS

Shared NIEM Management—DOJ to DHS to DoD

New OASIS Branding

EXCHANGING DATA IN MOTION

Scope-of-NIEM

LEGACY DATABASES

INTERFACE

COMMONLY FORMATTED DATA
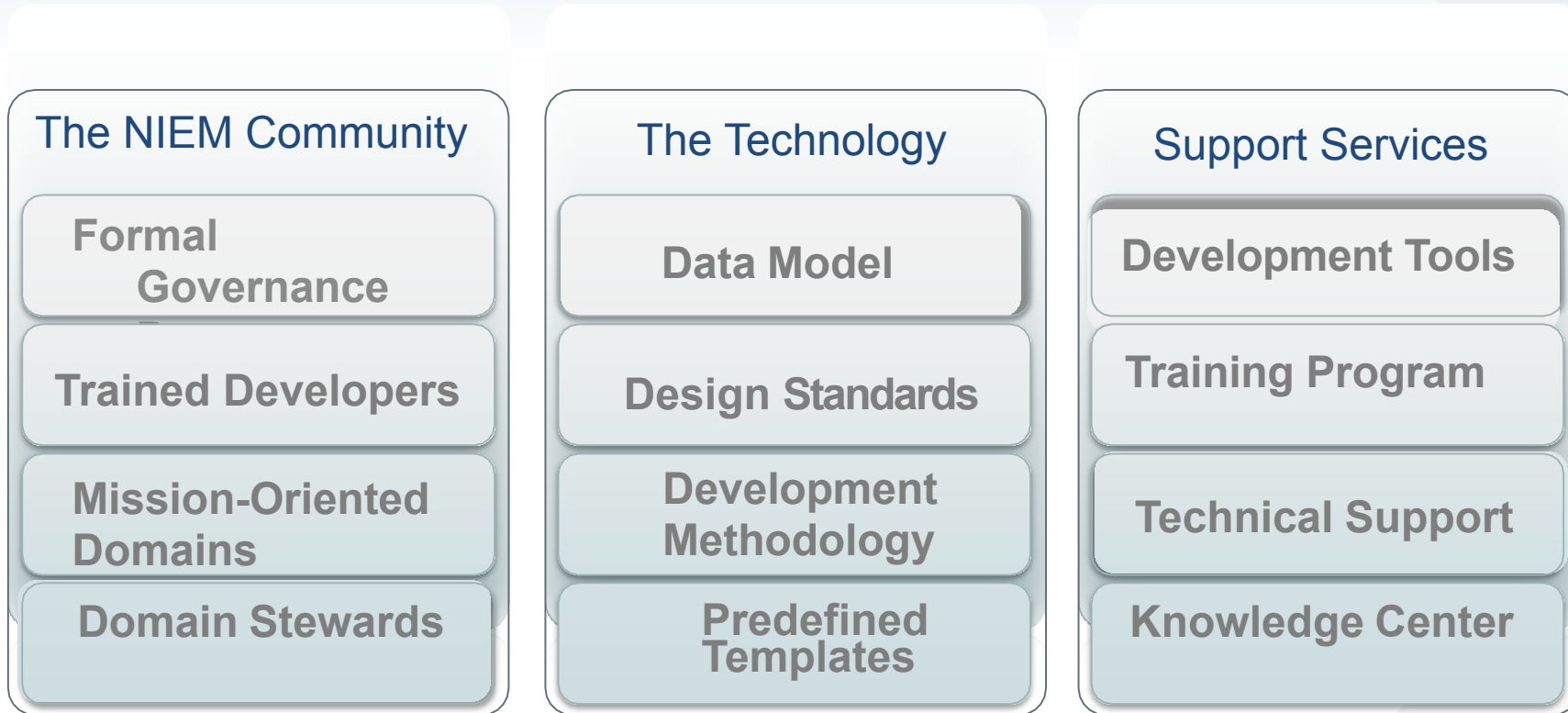
INTERFACE

LEGACY DATABASES

Translation

NIEM intentionally does not address standardizing data inside legacy systems. NIEM serves as a translation layer (providing a common understanding) between and across disparate systems.
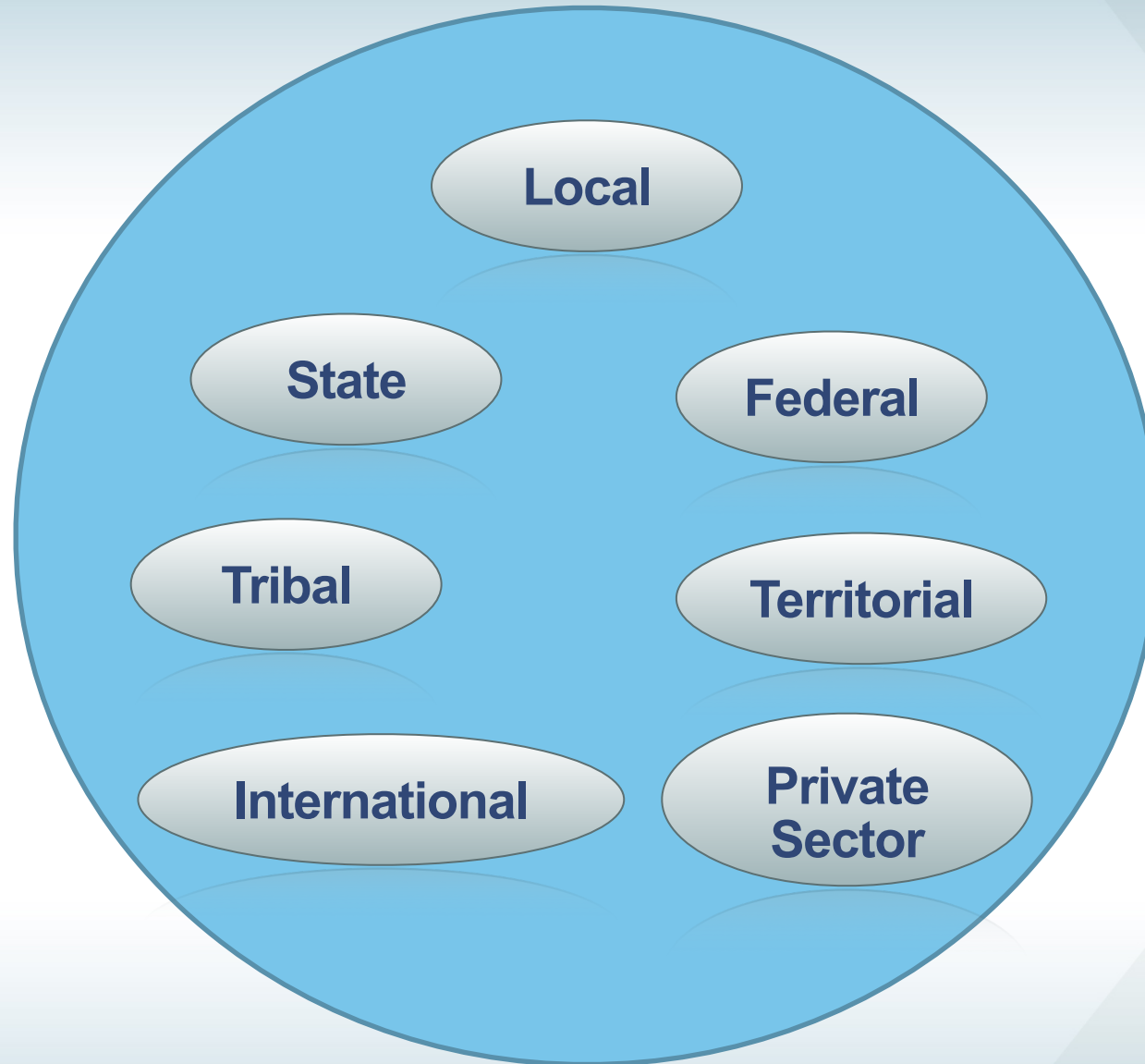
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NIEM CONTRIBUTION

- **Semantic Interoperability**: Agreement on consistent terminology and meanings

- **Syntactic Interoperability**: Standards for how data is represented

THE NIEM FRAMEWORK

The NIEM Community

- Formal Governance
- Trained Developers
- Mission-Oriented Domains
- Domain Stewards

The Technology

- Data Model
- Design Standards
- Development Methodology
- Predefined Templates

Support Services

- Development Tools
- Training Program
- Technical Support
- Knowledge Center

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The Voices Of NIEM

Local

State

Federal

Tribal

Territorial

International

Private Sector

COLLABORATION

CONSENSUS

EQUALITY

NIEM

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THE NIEM COMMUNITY--GOVERNANCE

NIEM OPEN

Project Governing Board

NIEM MO

Management Office
Managing Director

NTAC

NIEM **Technical** Architecture
Committee

NBAC

NIEM **Business** Architecture
Committee

Domain Stewards (17+)

IEPD Developers

Stakeholder / User
Community

Technical
Architecture /
Specifications

Sematic Content for
Reference Models
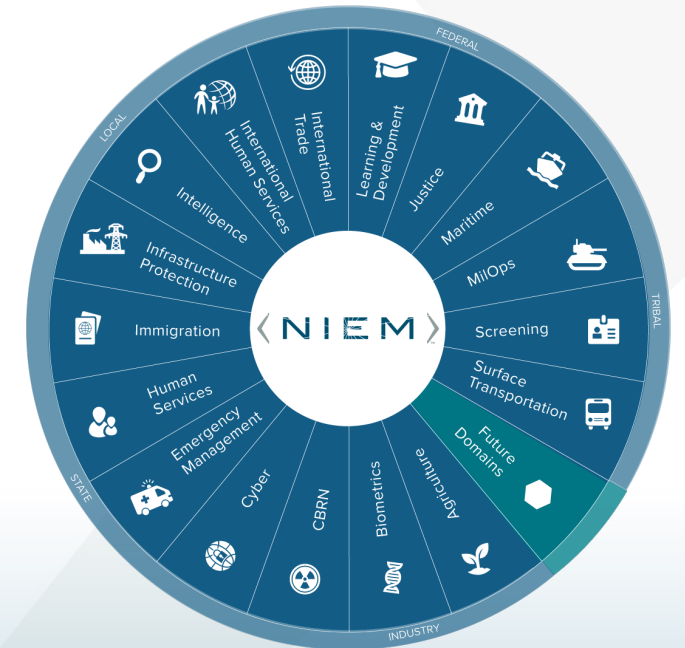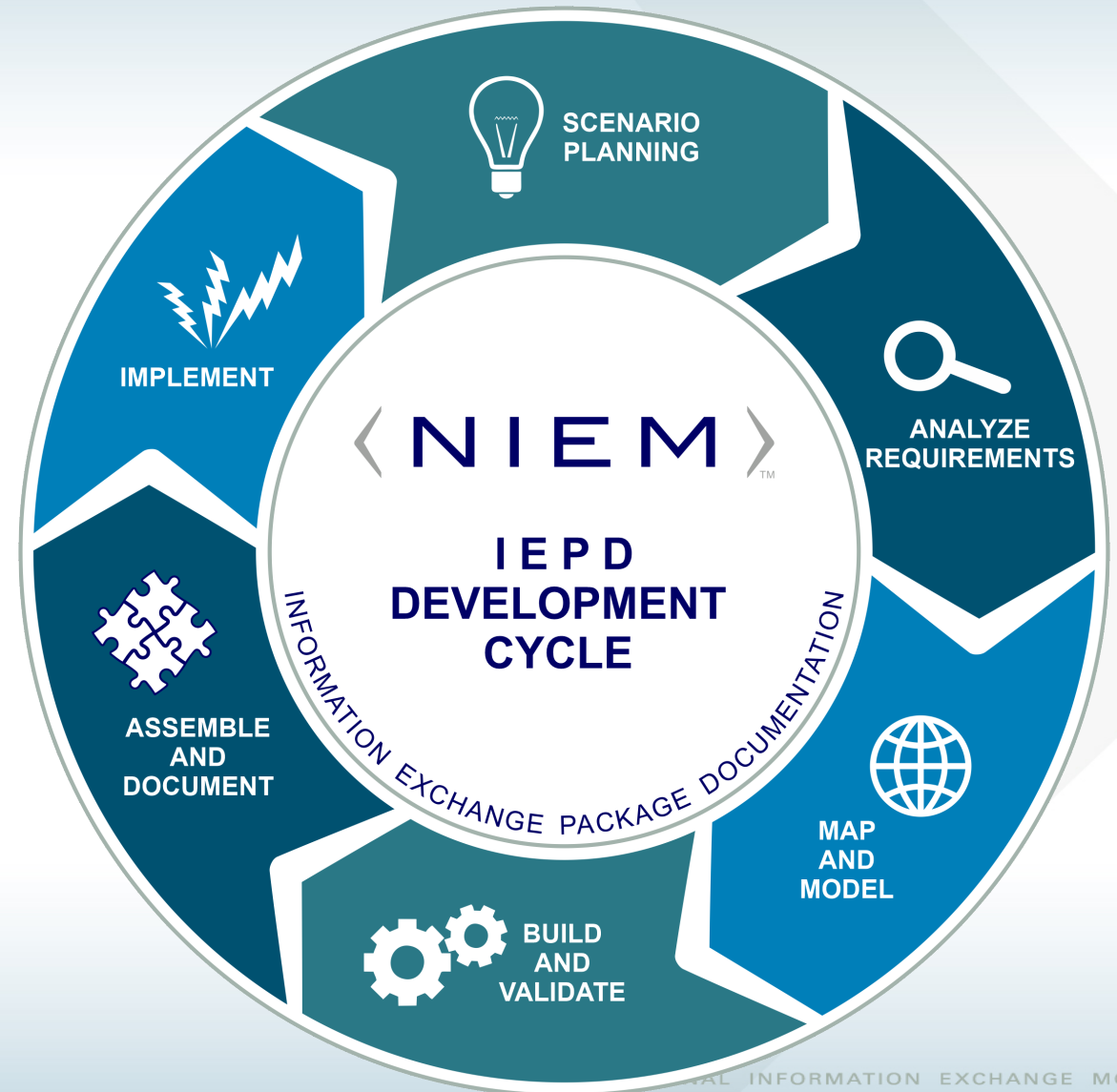
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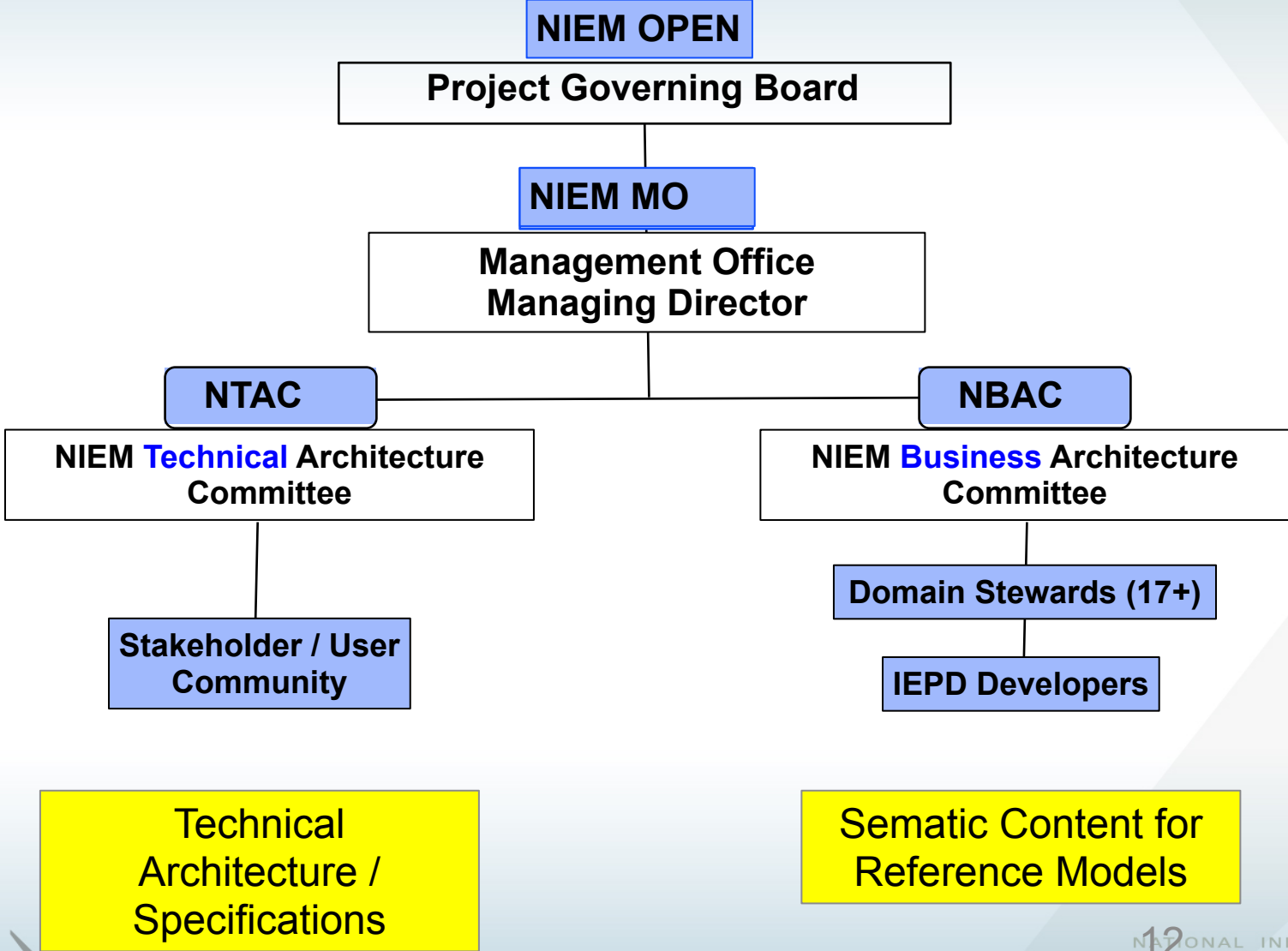
THE NIEM COMMUNITY—DOMAIN UPDATES

- Agriculture
- Biometrics
- Chemical, Biological, Radiological, & Nuclear
- Cyber
- Emergency Management
- Human Services
- Immigration
- Infrastructure Protection
- Intelligence

- International Trade
- Justice
- Maritime
- Military Operations
- Screening
- Surface Transportation
- International Human Services (New)
- Learning and Development (New)

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THE NIEM TECHNOLOGY—THE DATA MODEL 5.1

- **NIEM Core**—data elements harmonized across all domains

- **Domain Specific**—data elements unique to a domain expanding beyond the core

Naming and Design Rules

THE NIEM TECHNOLOGY—METHODOLOGY UPDATES

- **Beyond XML—JSON**
- **Creation of a Common Meta Model**
- **New Message Exchange Specification replacing the IEPD**

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I E P D DEVELOPMENT CYCLE

SCENARIO PLANNING

ANALYZE REQUIREMENTS

MAP AND MODEL

BUILD AND VALIDATE

ASSEMBLE AND DOCUMENT

IMPLEMENT

INFORMATION EXCHANGE PACKAGE DOCUMENTATION

NIEM SUPPORT SERVICES EXTENSIONS

- Tool Catalog
  - Building a message exchange specification
  - Model management
  - Model search and discovery
  - Information exchange storage, search, and discovery
- On-line training classes updated
- Migration and other technical assistance

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STANDARDS BASED ON NIEM

- ANSI 42.42 Radiological Nuclear detectors – CBRN Domain
- ANSI APCO Alarm Monitoring Company to Public Safety Answering Point (PSAP)
- OASIS EXDL, Emergency Data Exchange Language FEMA (Emergency Management Domain)
- NIST Big Data Framework Vol 7
- National Fire Protection NFPA 950 calls for compliance with NIEM. Emergency Incident Data Document (EIDD) IEPD – NISTIR 8255
- Biometrics ANSI/NIST ITL Standard – Biometrics Domain
- Biometric Conformance Test Software (BioCTS)
- Model Minimum Uniform Crash Criteria Guideline (MMUCC) – Department of Transportation

NIEM IMPACT
ON PHARMACEUTICAL DRUG MONITORING

- The Standard Prescription Monitoring Information Exchange

WHY NIEM?

Collaboration	Consistency	Development	Support
NIEM brings stakeholders together through reuse and community engagement	NIEM provides consistency through reusable schema, which allows for many implementation options	Flexible and extendable, NIEM saves development time through agreed-upon elements, relationships, and formats independent of how information is stored in individual systems	New users can leverage what already exists and engage directly with other NIEM members for assistance.

WHICH LEADS TO

Lower Development Costs	Enhanced Mission Capabilities	Common Vocabulary	Reduced Maintenance Costs
Faster Mediation	Rapid Implementation	Increased Interoperability	Reuse

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NIEM EVOLUTION UNDERWAY

- **OASIS – NIEM OPEN to become an official open standard**

- **Tribal Outreach**

- **International Adoption**

- **Exploring the use of Knowledge Graph Technology and ontologies**

- **Public / Private Partnerships**

- **Encouraging Private Sector Participation**

NIEM SLTT TIGER TEAM

State, local, tribal and territorial information exchange

POTENTIAL UTILITY INFORMATION EXCHANGES

Sharing	Sharing information on potential threats with other utilities
Creating	Creating standards for government reporting
Sharing	Sharing information with other utilities and government agencies on cyber attacks and preventive measures
Exchanging	Exchanging data on demands for service
Preparing	Preparing cross-sector public reporting

Open Knowledge Network:

……….multi-domain access to linked data in a federated system accessed by natural language queries empowered by artificial intelligence

POSSIBILITIES FOR COLLABORATION

- Creating a dialog between government and industry
- New domains of interest to DAMA to promote standards
- Influence international standards for information sharing
- NIEM OPEN included in the DMBOK
- NIEM OPEN developer certification program
- Promote public/private partnerships around standards

CONTACT US

NIEM.gov

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