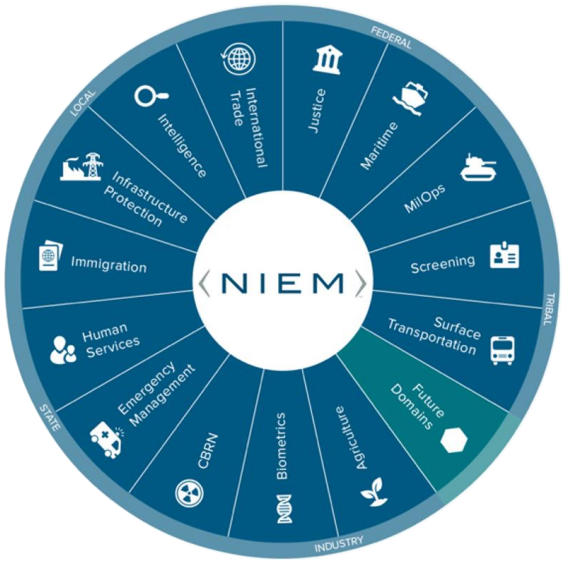
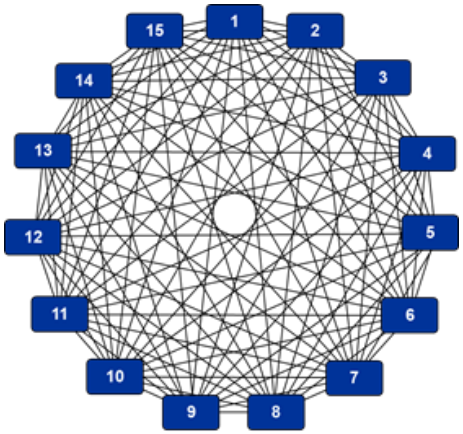


NIEM Overview

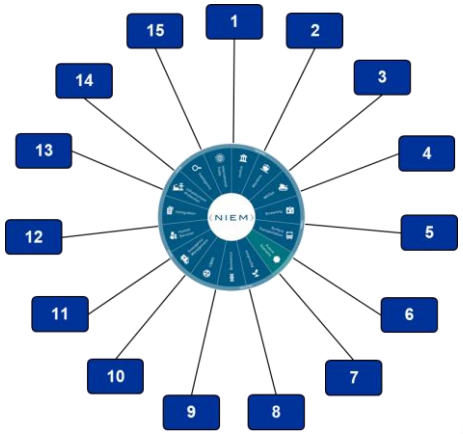
July 12, 2019

NIEM SIMPLIFIED

I say “vessel,” you say “boat,” and she says “conveyance.” We mean the same thing, but we have no way to tell our computer systems to treat the words as having the same meaning. NIEM lets your system and my system speak to and understand each other, even if they’ve never spoken before. NIEM ensures that information carries the same consistent meaning, allowing interoperability.



Vs.



15 systems
210 interface mapping negotiations
Total level of effort is O(210)

15 systems
15 interface mapping negotiations
Total level of effort is O(15)

NIEM IS …

A Community

- Federal, State, Local, International, Non-Govt.
- Self-Managing Domain Stewards
- Voluntary Consensus Standards
- Help Desk & Knowledge Center
- Established Training Program
- Technical Specifications

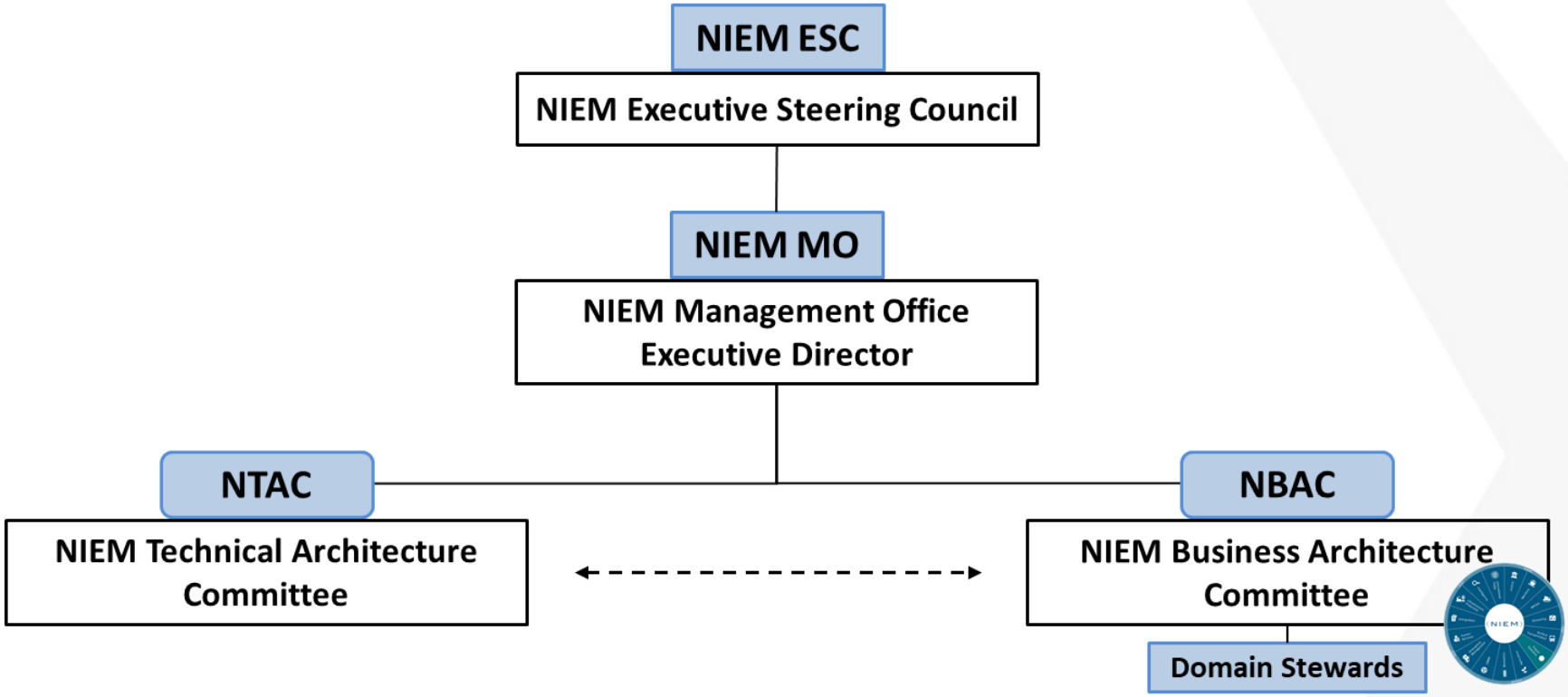
A Data Model

organized as a core plus subject-area domains, expressed as reusable XML Schema components

A Reusable Process

and a template for designing information exchange specifications by reusing XML Schema components

NIEM GOVERNANCE



NIEM provides standardized enterprise-level information exchange across Federal / State / Local / Tribal / International domains

NIEM STEWARDSHIP ORGANIZATION

NIEM Executive Steering Council (ESC)

Chair and DoD CIO Principal
Mr. Peter Ranks SES
peter.t.ranks.civ@mail.mil

DHS Principal
Ms. Donna Roy SES
donna.roy@dhs.gov

DOJ Principal
Mr. Joseph Klimavicz SES
joseph.klimavicz@usdoj.gov

HHS Principal

NIEM Management Office (NMO)

Executive Director
Mr. Stuart Whitehead SES JS J6
(757) 203-5115
stuart.a.whitehead.civ@mail.mil

Managing Director
Mr. Ryan Schultz JS J6
(757) 203-8605
ryan.r.schultz.civ@mail.mil

Technical Manager
Mr. Lanzo Wallace JS J6
(757) 203-8621
lanzo.wallace.civ@mail.mil

Business Manager
Mr. Ralph O'Connell JS J6
(757) 203-8620
ralph.m.oconnell.civ@mail.mil

Strat Comms Manager
Ms. Katherine Escobar JS J6
(757) 203-8631
katherine.b.escobar.civ@mail.mil

NIEM DOMAIN OVERVIEW

NIEM Domain	Organizational Sponsor	Content Focus	Points of Contact
Core	NIEM Management Office (NMO)	Common data types, properties, and code sets across multiple Domains	Ms. Christina Medlin Mr. Ralph O'Connell
Agriculture	U.S. Department of Agriculture (USDA)	Farm Service Agency (FSA) and Risk Management Agency (RMA) reporting data about crops, acreage, and revenue	Mr. Garon Reeves
Biometrics	DHS Office of Biometric Identity Management (OBIM)	Coordinated global identity management effort to support intelligence, law enforcement, international trade, travel and immigration	Mr. Thomas Freed Ms. Jennifer Stathakis (FBI)
Emergency Management	DHS First Responders Group (FRG)	First responder information sharing between homeland security and resource management stakeholders	Mr. Dan Cotter (SES) Mr. Kamran Atri
Human Services	Department of Health and Human Services (HHS)	Improve human service client outcomes, lower costs, and enhance operational efficiencies through standardized information sharing	Mr. Christopher Traver
Immigration	DHS Citizenship and Immigration Services (CIS)	Standardized information sharing to improve federal immigration, customs, and air security law enforcement and operations	Ms. Jennifer Kish Mr. Curtis Ross
Justice	Federal Bureau of Investigation (FBI)	Enable national, state, local, tribal justice and public safety community information sharing	Ms. Cherie Cochran Ms. Kate Silhol
Military Operations	Department of Defense (DoD) Joint Staff J6	Improve military operations and decision making within the DoD and with multinational mission partners	Mr. Ralph O'Connell Mr. Rodney McCoy
Surface Transportation	Department of Transportation (DOT)	Support DOT Traffic Records Coordinating Committee and the State Traffic Records Coordinating Committee information sharing	Mr. Daniel Morgan (SES)

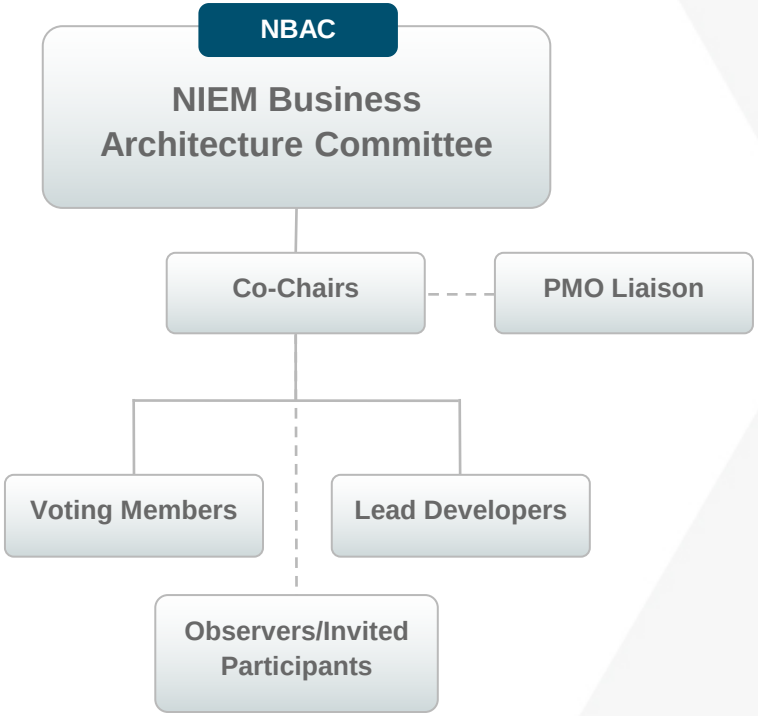
ONBOARDING NIEM DOMAIN OVERVIEW

NIEM Domain (Onboarding)	Organizational Sponsor	Content Focus	Points of Contact
Statistics	U.S. Census Bureau	Standardize information sharing between federal, state, and local 2020 Census data collection and processing organizations	Dr. Chris Carrino
Cyber	DHS Cybersecurity and Infrastructure Security Agency (CISA)	Enable Federal Government and critical infrastructure owners and operators information exchanges	Mr. Preston Werntz Mr. Consti Tudan
Humanitarian Aid	U.S. Agency for International Development	Standardize information sharing between multinational governmental and nongovernmental partners to improve international development and disaster assistance	Mr. Brandon Pustejovsky

NBAC OVERVIEW

The mission of the NBAC is to set the business architecture and requirements of NIEM, manage NIEM core, and facilitate the processes for the regulation and support of NIEM domains.

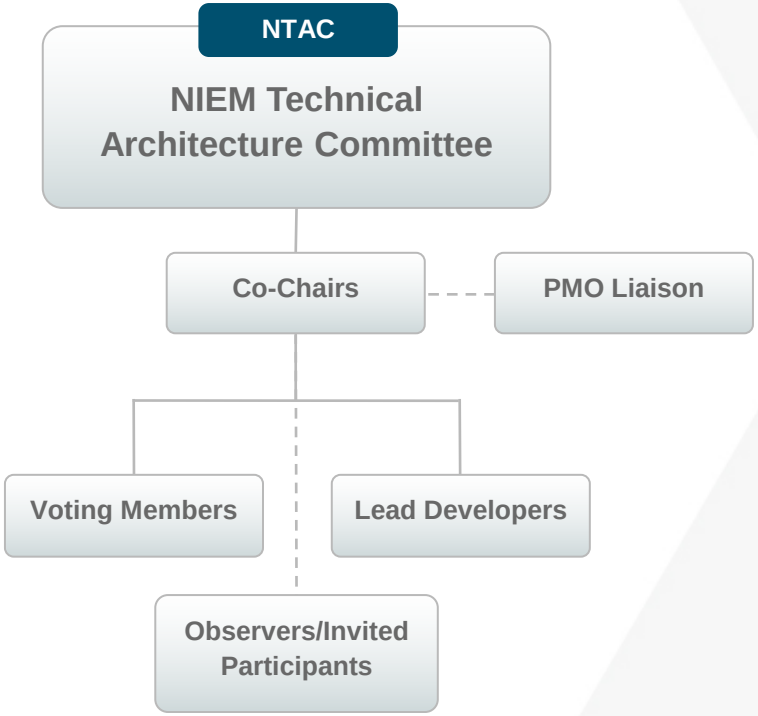
- Provides management and oversight of the NIEM core, the central part of the NIEM data model that is commonly understood across all domains.
- Assists new domains in onboarding to the NIEM community and promotes interactions between domains to collectively guide the NIEM community.



NTAC OVERVIEW

The mission of the NTAC is to define and support the technical architecture of NIEM.

- The NTAC documents, implements, and maintains technical specifications for NIEM.
- In addition, the NTAC is responsible for providing robust and effective development of the NIEM core structure and complementary processes to support and enable users to efficiently develop, use, and reuse NIEM-conformant model package description components.



NIEM COMMUNITY STAKEHOLDERS

The NIEM community continuously communicates with six different stakeholder types. Each stakeholder is interested in NIEM and how it can help its organization or project for different reasons

Executives

NIEM minimizes the time-to-market while allowing maximum flexibility.

Program Managers

NIEM can make a job easier by helping teams build exchanges in less time, for less money time.

Architects

NIEM offers a better way to exchange data and is adaptable; it can be modified or new capabilities added to an existing exchange.

Developers

Tools and support are available to make exchange development easier and faster.

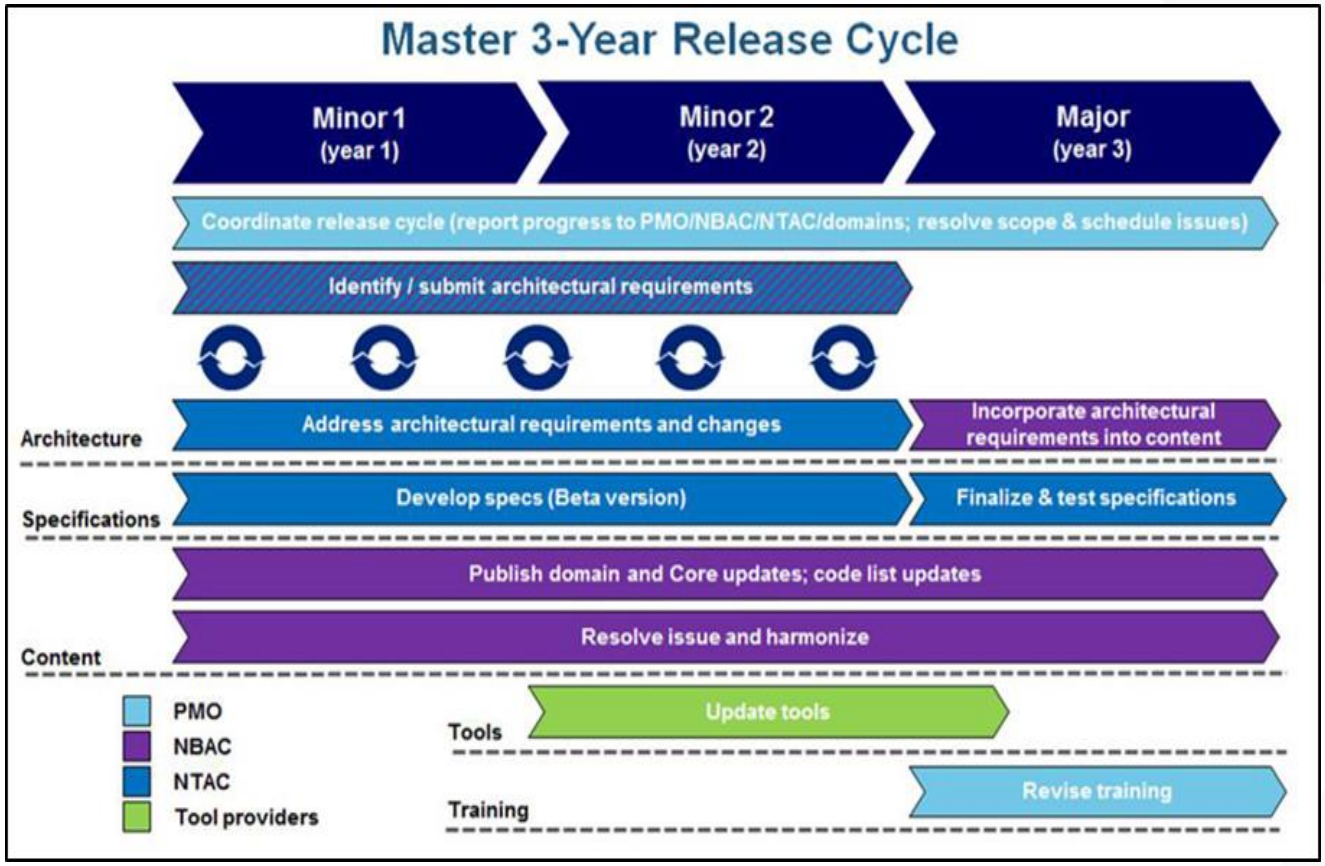
Implementers

NIEM can lower the cost of maintenance in comparison to legacy formats.

Tool Providers

NIEM can be an avenue to connect with customers who have an interest in information sharing capabilities.

NIEM VERSION RELEASE CYCLE



- **Model content changes occur:**
  - **Major Release – every 3 years**
    - **NIEM Core and Domain updates**
  - **Minor Release – every year**
    - **NIEM Domains**

- **Current Release**
  - **Minor Release – 4.1 (2018)**
- **Future Scheduled Releases**
  - **Minor Releases – 4.2 (2019)**
  - **Major Release – 5.0 (2020)**

NIEM 4.1 CONTENT COUNT (JULY 2018)

NIEM 4.0	Property Count	Type Count	Code Count
Core	**1,586**	**269**	**208**
Domains	**9,486**	**2,341**	**8,621**
Agriculture	64	8	
Biometrics	1018	530	1411
Chemical, Biological, Radiological, and Nuclear	608	147	
Emergency Management	670	278	629
Human Services	684	224	785
Immigration	457	95	1388
Infrastructure Protection	31	8	3
Intelligence	66	17	
International Trade	534	91	
Justice	4140	496	196
Maritime	339	47	180
Military Operations	213	95	120
Screening	599	255	3731
Surface Transportation	63	50	178
Code Sets		1084	65500
Grand Total	**11,072**	**3,694**	**74,329**

NIEM 4.1 includes 3,694 types and 11,072 properties for a total of 14,766 data elements

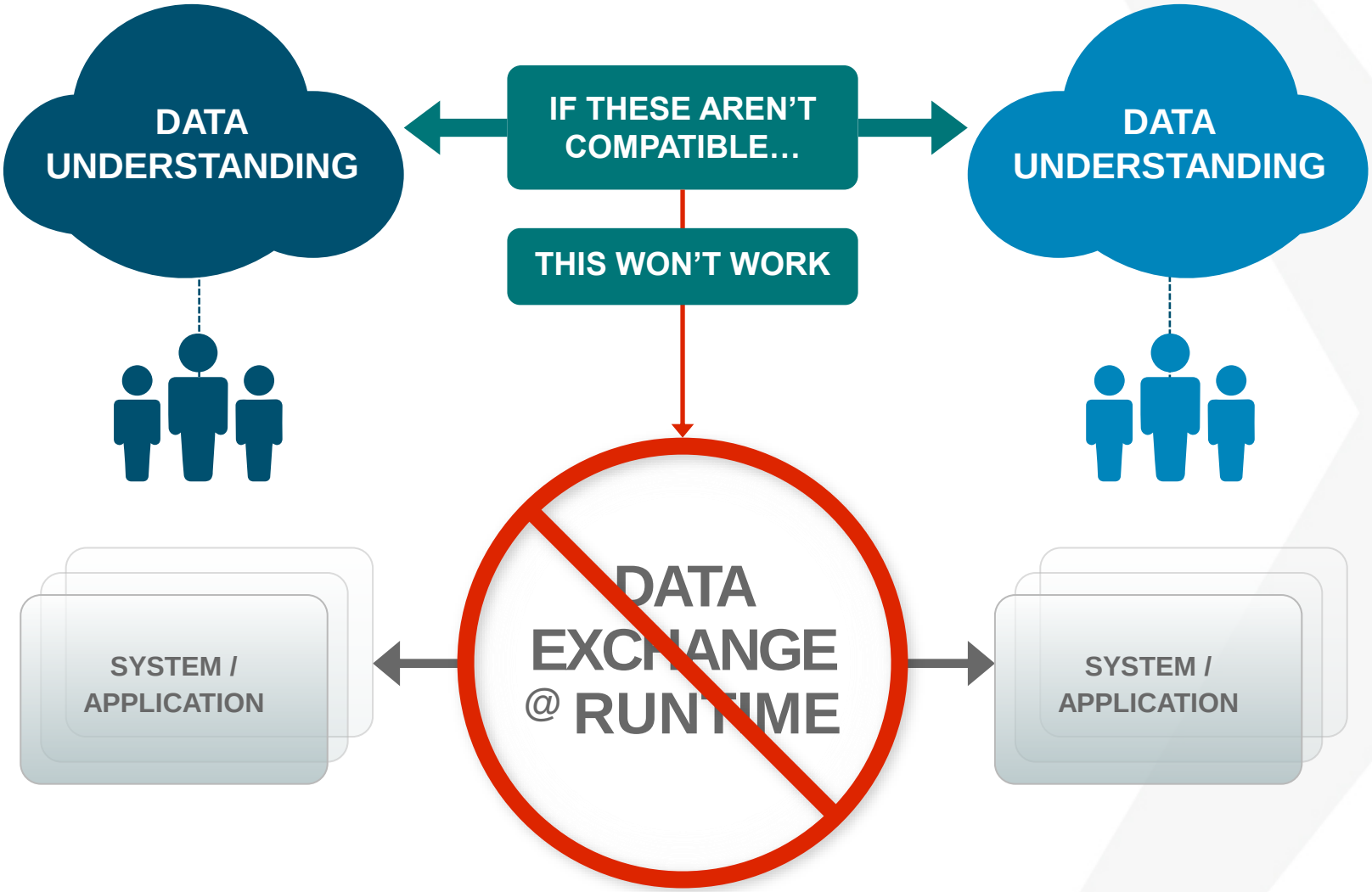
NIEM INTERNATIONALIZATION

- ✓ NIEM Internationalization is a NIEM 2018 Strategic Goal
- ✓ Many NIEM domains (Emergency Management, Immigration, Biometrics, etc.) have significant international information sharing requirements that are coordinated by the NIEM Business Architecture Committee (NBAC)
- ✓ The NIEM community-driven, standards-based approach is an ideal method to improve information exchanges with International stakeholders
- ✓ There is no need for a unique International Domain as the International discussion is freely collaborated across the NIEM community
- ✓ The NIEM technical architecture and model content easily accommodates International considerations and information frameworks
- ✓ The NBAC International Tiger Team is working to identify new International requirements and data content into NIEM

NBAC INTERNATIONAL TIGER TEAM

- ✓ The NBAC International Tiger Team commenced in 2016 to advance information sharing with International stakeholders
- ✓ The NIEM 3.2 release included new global attribute identification and refinement of US-centric references (definitions, attribute structure)
- ✓ The NIEM 4.0 release in 2017 included new domain data elements and attributes that support international humanitarian aid information exchanges
- ✓ NIEM 2019 Strategic Priorities include the following International focused objectives:
  - ➢ Attribute Identification and Model Expansion/NIEM 5.0 Domain Harmonization (Cross-domain/Core alignment)
  - ➢ English to French Translation Effort (and defined NBAC/NTAC technical approach)
  - ➢ Implementation and Technical Considerations (NBAC/NTAC aligned to NIEM 5.0 development process)
  - ➢ Stakeholder engagement (Domain, NBAC/NTAC and NMO level engagement and collaboration)

DATA INTEROPERABILITY PROBLEM



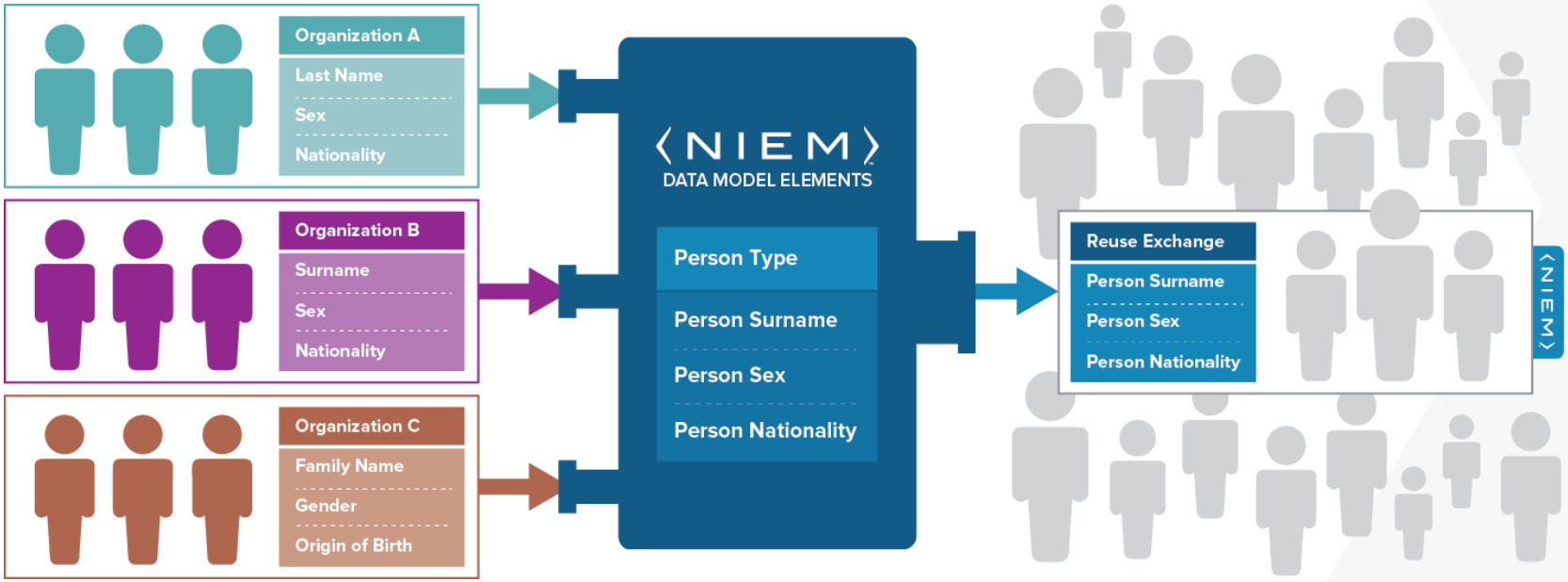
NIEM IN ACTION: HOW NIEM EXCHANGES DATA COMPONENTS AND DATA ELEMENTS

NIEM IS

a common vocabulary that enables efficient information exchange across diverse public and private organizations.

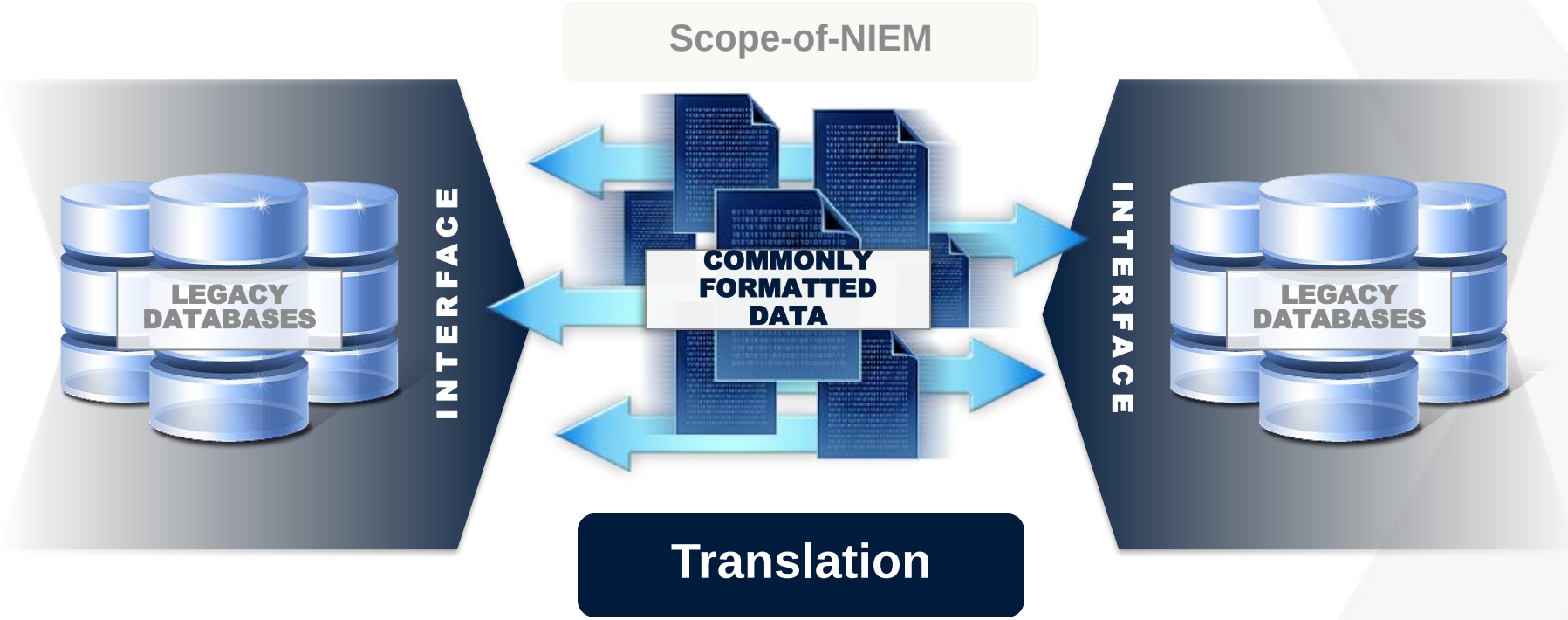
NIEM IS NOT

a system or database; it does not specify how to transmit or store data.



Using NIEM, organizations can come together to agree on a common vocabulary. When additional organizations need to be added to the information exchange, the initial NIEM exchange can be reused, saving time and money.

STANDARDIZING DATA MOVING ACROSS SYSTEMS



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.

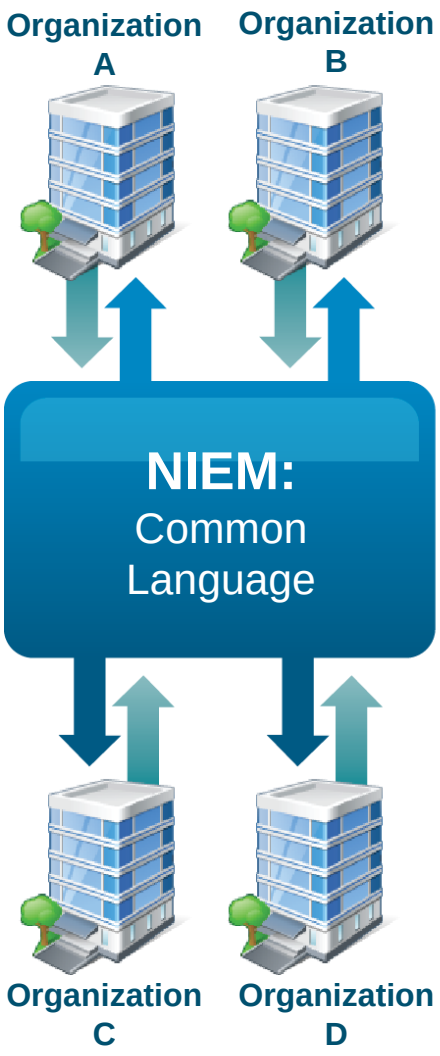
HOW NIEM GOT STARTED

To understand how NIEM began watch this short video.

Please click *play* to begin.

https://www.youtube.com/watch?v=1Syaq9PU_Sw&spfreload=10

BENEFIT: COMMON LANGUAGE



When using NIEM, you only need to "speak" two languages—your own and NIEM.

When developing information exchanges, agreeing to a common set of data elements and definitions is a frequent challenge. NIEM was built to address this challenge.

For example: a previous data exchange included four partner organizations. As one of the four partner organizations, you would have had to connect to three different systems and negotiate a common language between them. Now, it's just your language and NIEM.

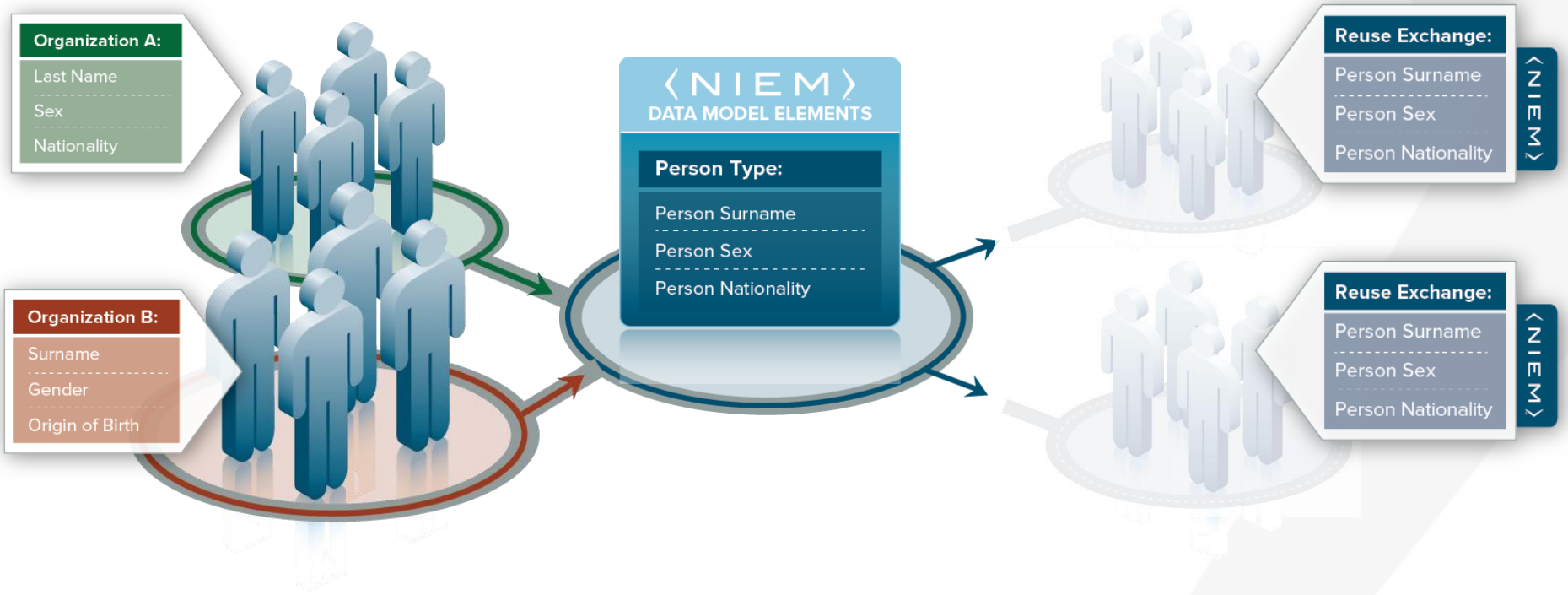
NIEM provides this common vocabulary, thus a place to start—saving time and money.

BENEFIT: INTEROPERABILITY

NIEM provides a consistent starting point for creating information exchanges so that the sender and receiver of information share a common, unambiguous understanding of the meaning of that information.

This ensures that information is understood and carries the same consistent meaning across various communities, irrespective of technologies, allowing interoperability to occur.

Interoperability is a characteristic of information systems that use NIEM to exchange information—NIEM allows for the quick and easy addition of exchange partners, irrespective of technologies being used.

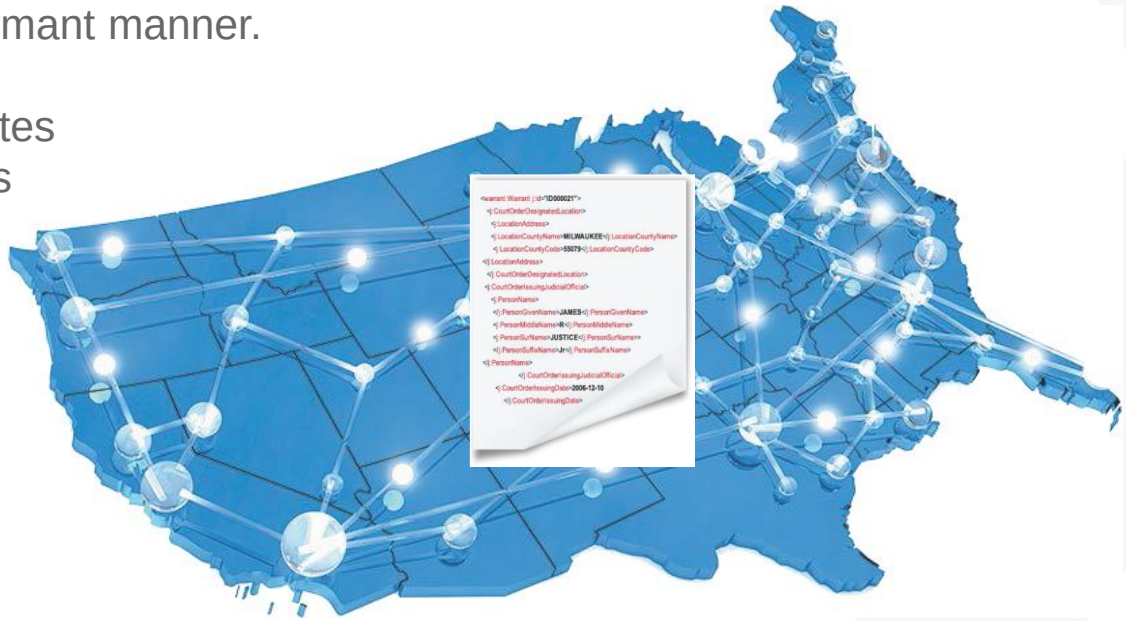


BENEFIT: COMMUNITY COLLABORATION

Mission challenges and opportunities are too large for any one organization, sector, unit, or nation to take on alone—they must be addressed collaboratively.

NIEM is a data model used to facilitate information exchange among partners in various disciplines, government-wide. With NIEM, information exchange partners come together to identify what data needs to be exchanged, then agree to exchange that data in a standards-conformant manner.

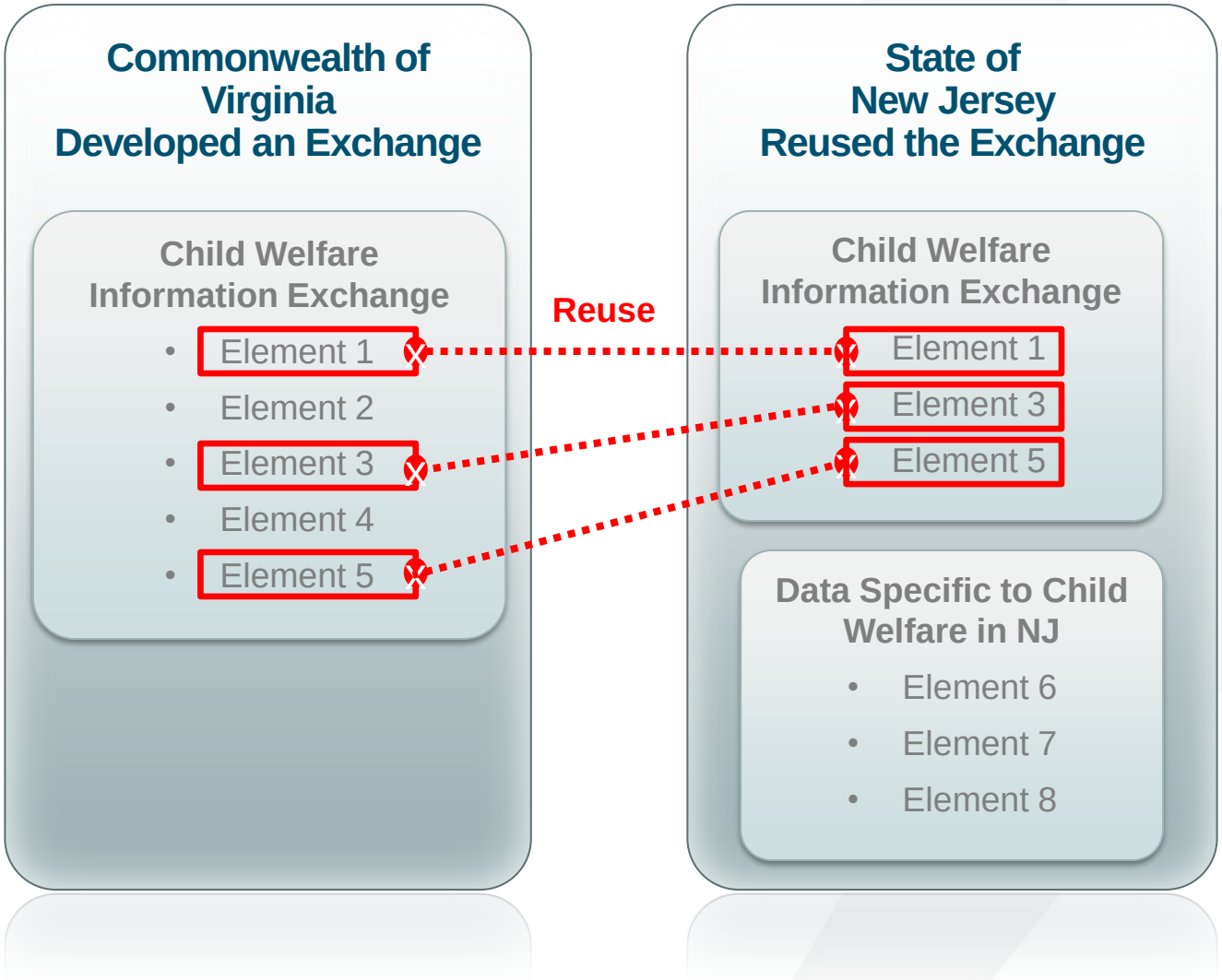
The use of NIEM accelerates collaboration in and across communities.



BENEFIT: REUSE OF AN EXCHANGE

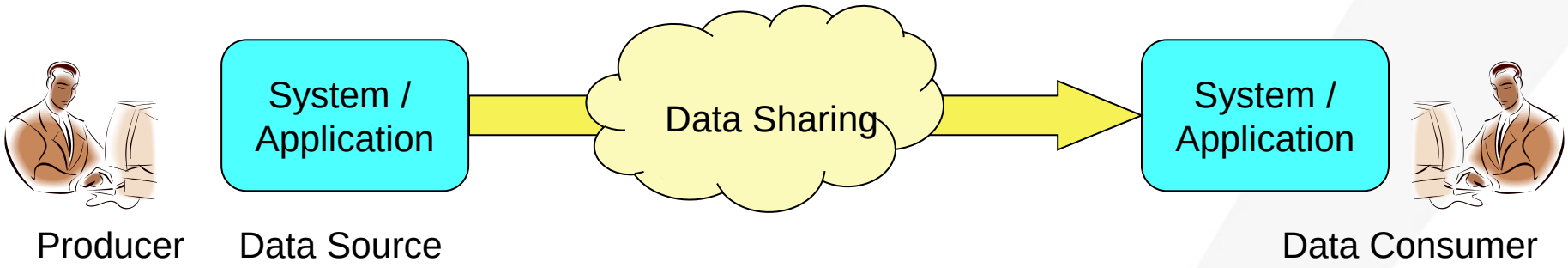
Since NIEM exchange developers follow the same technical framework, they can borrow from and reuse each other's work.

Because the NIEM data model is composed of data elements that cross sectors, functions, and geographic boundaries, an exchange developed for one organizational business requirement could be "reused," partially or fully, for a different need within or by another organization.



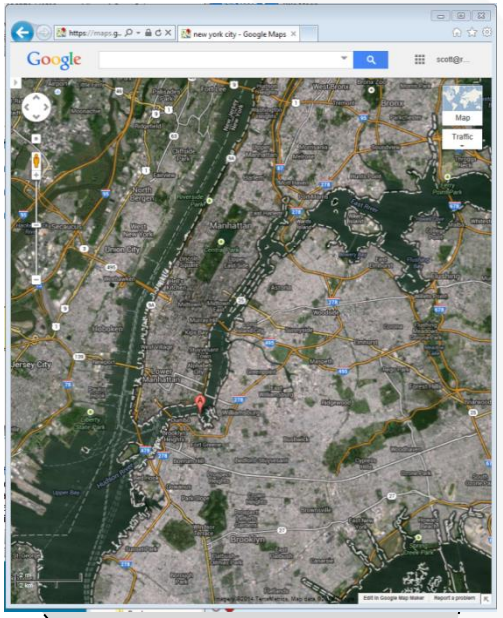
DATA SHARING

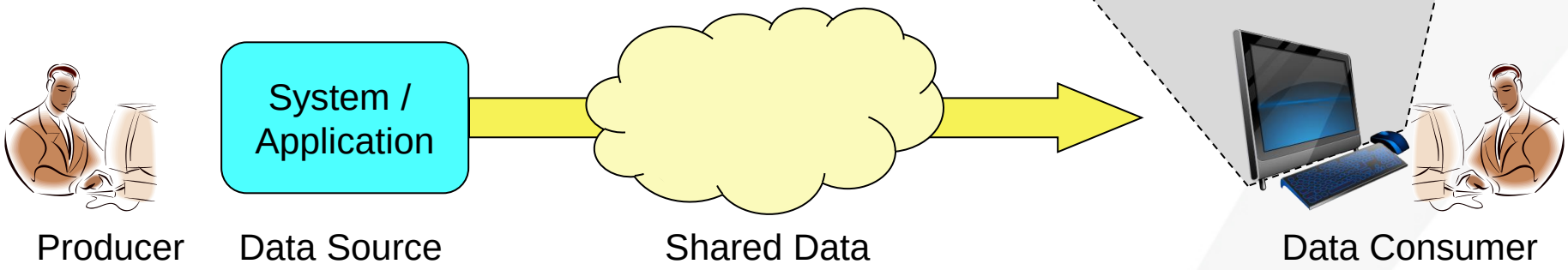
- **Visible** — **Can the consumer discover the source?**
- **Accessible** — **Can he obtain the source content?**
- **Understandable** — **Can he know what the content means?**
- **Trusted** — **Can he believe what the content says?**
- **Interoperable** — **. . .**



SHARING FOR USER PRESENTATION

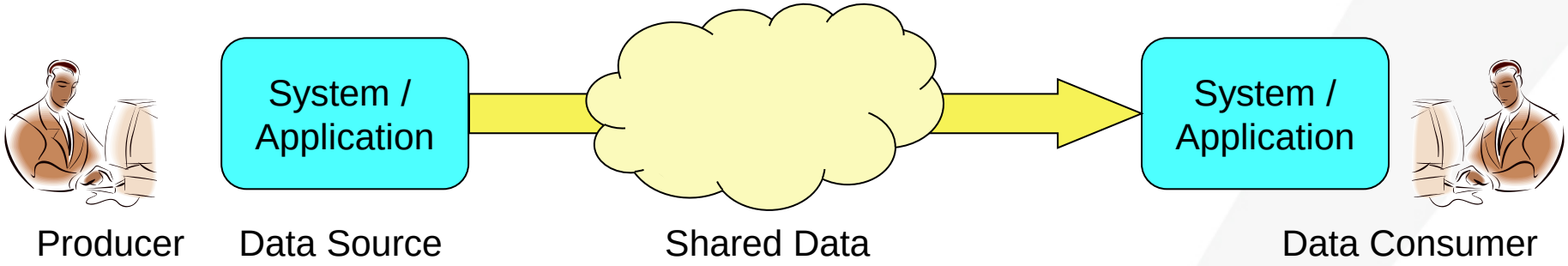
- **Sometimes the purpose of the sharing is to display data to the human consumer**
  - Images, maps, text documents
  - Data that is understood and interpreted by the human user
  - Consumer's application often like a web browser





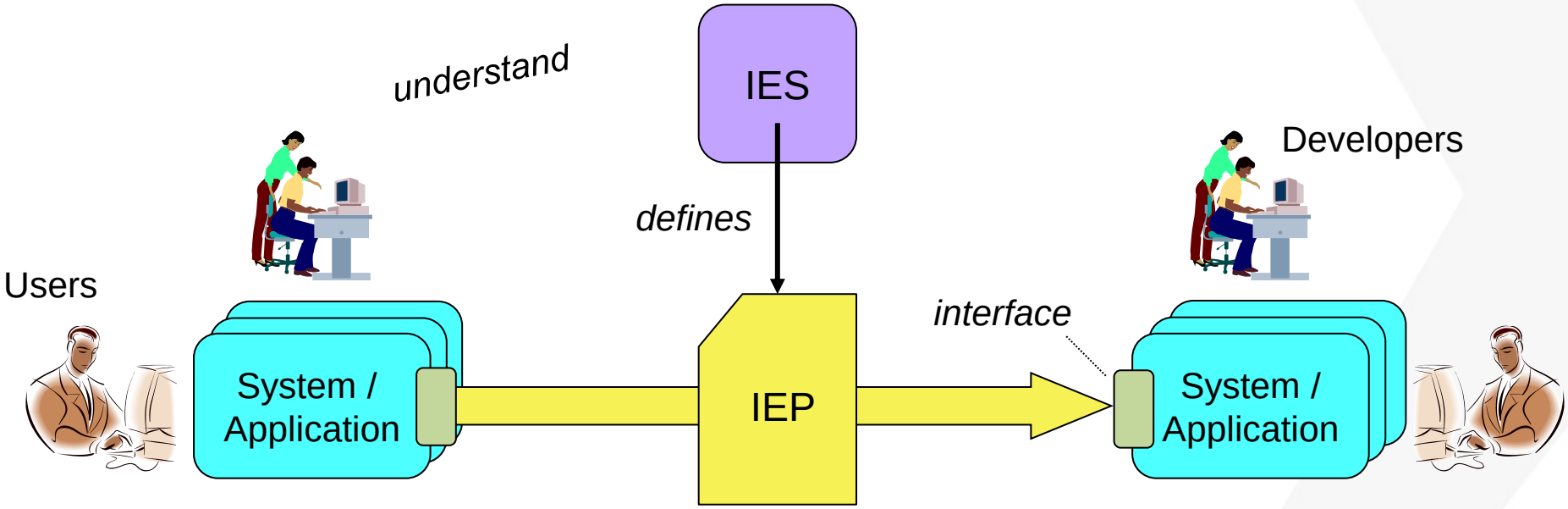
SHARING FOR MACHINE CONSUMPTION

- **Sometimes the purpose is to provide input to an automated process**
  - Data is never seen by the human user
  - Data interpreted according to the assumptions of the software developer
  - Developers don't see the data at runtime, either, so their understanding better be correct!



MACHINE-TO-MACHINE DATA EXCHANGE

Information Exchange Specification
build-time description of the data to be exchanged
the *message format* or *information resource description*

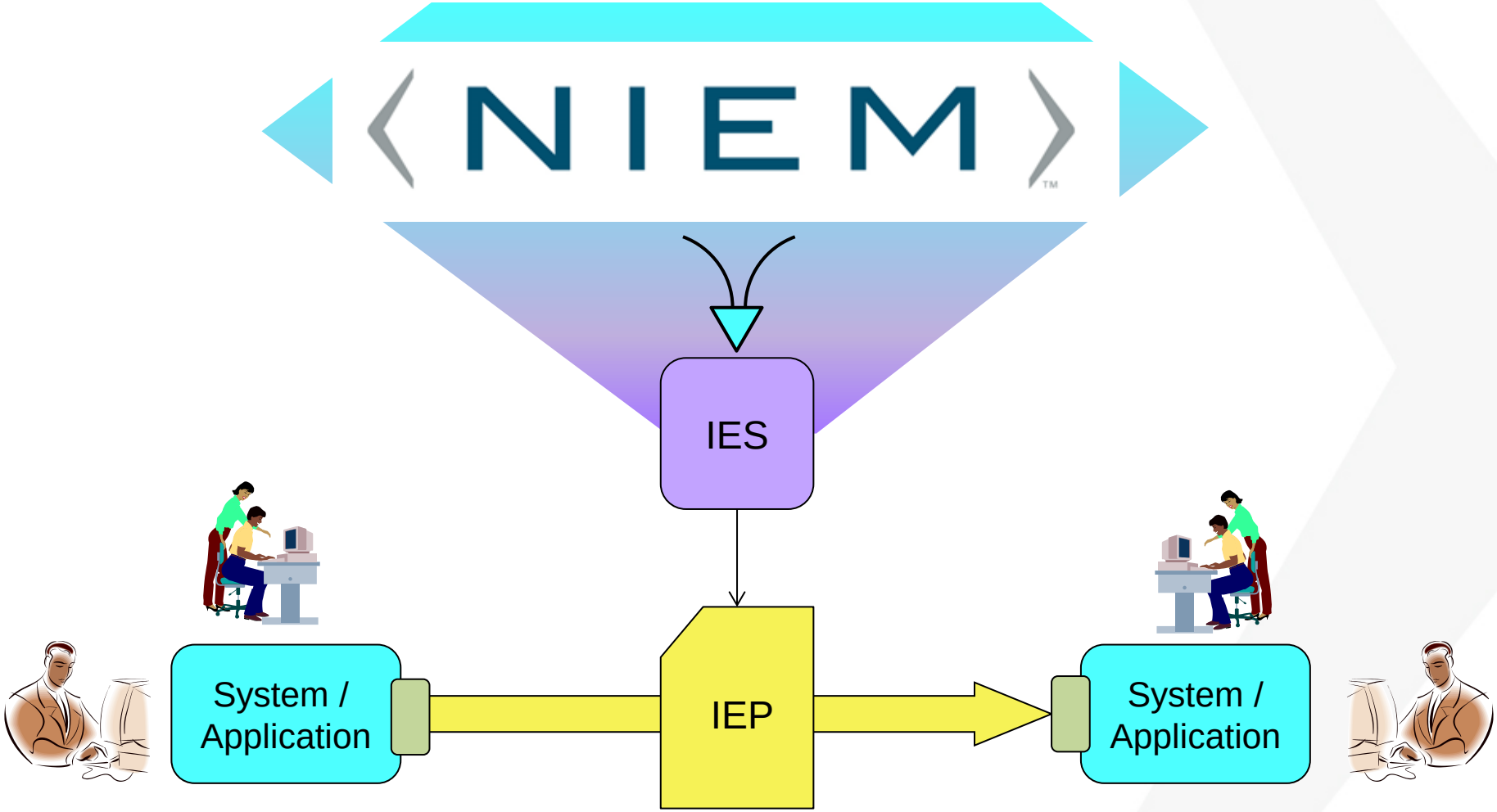


Data Producers

Information Exchange Package (IEP)
the data exchanged at runtime
a *message* or *information resource*

Data Consumers

A STANDARDS-BASED APPROACH FOR INFORMATION EXCHANGE DESIGN



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Movement

https://beta.movement.niem.gov

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Twitter

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