

<NIEM>

NATIONAL INFORMATION EXCHANGE MODEL

NIEM Business Architecture Committee (NBAC)

ANNUAL MEETING

14—18 September 2020

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ANNUAL MEETING

14—18 September

Daily Morning & Afternoon Sessions

All Morning Sessions 10 a.m.–12 noon EDT

All Afternoon Sessions 1–3 p.m. EDT

**Monday 14 September**

Morning session

Advancing NIEM Adoption

Afternoon session

State, Local & Tribal Tiger Team

**Tuesday 15 September**

Morning session

Supporting Domain Growth

Afternoon session

Emerging Technologies Tiger Team

**Friday 18 September**

Morning session

NIEM 2021 Priority Planning

Afternoon session

2020 Meeting Wrap-up

**Wednesday 16 September**

Morning session

Improving NIEM Implementations

Afternoon session

International Tiger Team

**Thursday 17 September**

Morning session

NIEM Release Planning

Afternoon session

NBAC/NTAC Joint Collaboration

**JOIN US!**

**SESSIONS ARE FREE**

<NIEM>

# Virtual Annual Meeting (NBAC)

14 September 2020 → 10-12PM

## Advance NIEM Adoption



**Kamran Atri**  
**NBAC Co-Chair**

Director  
A4SAFE Inc  
katri@A4SAFE.COM



## Speakers

### – Primary Facilitator

- Kamran Atri



### – Support Facilitator

- Thomas Krul



### – Guest Speaker

- Kshemendra Paul



## HOUSEKEEPING:

- ***MUTE** your mic when you're not talking*
- ***Identify yourself before you start to speak***
- ***Speak clearly***
- ***Disable “call waiting” feature***  
(the clicking noise can be heard by all)

**Please note:** All 2020 sessions are audio recorded for NIEM training & communications purposes

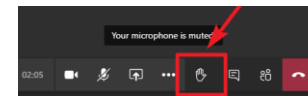
## QUESTIONS & ANSWERS ARE ENCOURAGED!

**To signal you want to contribute without interrupting the speaker**

- Enter comments via **CHAT** window at any time

**To signal a question or respond to a question**

- Click on ‘**Raise your hand**’ button on meeting toolbar



(Lower hand after you've talked by clicking hand button again)

All session briefings are available on **NIEM's GitHub** for download as they occur



# A SHORT VIDEO



**Avoidable Complexity?**

**YES**

**NIEM Can Help**

# SESSION AGENDA



NEXT  
BIG  
THING

- NBAC Mission
- Guest Speaker: Kshemendra Paul
- Brief History of NIEM
- 2020 at a Glance
- Why Data Standardization?
- Expanding NIEM Adaption



# NIEM BUSINESS ARCHITECTURE COMMITTEE (NBAC)

## The mission of the NBAC:

- ✓ **Business Architecture:** The NBAC oversees and validates the construction, maintenance, and use of the business architecture framework for NIEM.
- ✓ **NIEM Core:** The NBAC provides management and oversight of the NIEM Core—the central part of the NIEM data model that's commonly understood across all domains.
- ✓ **Community:** The NBAC serves as the forum for the admission of new domains and interactions between domains, and coordinates action to maintain the NIEM community.
- ✓ **Forecasting:** Determine the need for new data model releases as necessary, such as to accommodate new domains content or to provide business requirements to the NTAC.
- ✓ Submit recommendations to the ESC concerning the admission of a new domain into the NIEM data model.

Data Sharing Facilitated

Data Governance Enforced

Collaboration Maximized

Data Resources Harmonized

Data Direction Orchestrated

Data Architecture Longevity

Data Standards Enforced

Data Management Outreach

# INTRODUCING KSHEMENDRA PAUL

- 2019 – Current, US Department of Veterans Affairs (VA.GOV) – **Chief Data Officer**
- Executive Director, Data Governance and Analytics in the Office of Enterprise Integration (OEI)
  - Mr. Paul serves as VA's Chief Data Officer and is responsible for leading data governance, data analytics, and business intelligence capabilities to inform VA-wide decision making and providing an authoritative clearinghouse for the collection, analysis and dissemination of information about Veterans and VA programs.
- From 2016-2019, Mr. Paul served as the **Cloud Action Officer** for the Department of Homeland Security (DHS) and helped coordinate efforts to migrate information technology assets to cloud management platforms and optimize data centers. He also served as the **Information Sharing and Services Office Deputy Director** for Mission and Strategy within DHS's Office of the Chief Information Officer.
- From 2010-2016, Mr. Paul led information sharing environment efforts for the Office of the Director of National Intelligence. In this role he was the U.S. government lead for advancing terrorism-related information sharing. Mr. Paul worked closely with federal, state, local, tribal and territorial partners, as well as private sector and international allies, to balance the needs for information sharing and safeguarding to enhance national security and protect the American people.
- From 2005-2010, Mr. Paul began his federal service in 2005 as the **Chief Enterprise Architect** at the Department of Justice (DOJ) where he led the delivery of the National Information Exchange Model across public safety, law enforcement and homeland security sectors. From that position, he moved on to serve as the **Federal Chief Architect** in the Office of Management and Budget (OMB) where he led federal enterprise architecture activities. His tenure spanned two administrations, four budgets and an \$80 billion portfolio. At OMB, Mr. Paul directed initiatives that promoted innovation and transparency within the government, including Data.gov.





# BRIEF HISTORY OF NIEM

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

The Department of Homeland Security (DHS) was established November 25, 2002.

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 Biometrics Domain Created 2012.

2012 – 2017 New Domains were created (Human Services, MileOPS, Surface Trans, Agriculture, ...).

NIEM 4.0 Released 2017.

NIEM 5.0 Released 2020. Over 12000 Data Attributes Standardized

NIEM Cyber Domain Created 2020.

Identified Data Sharing & Data Standardization as primary issues; And requested that agencies work together to overcome info exchange challenges & gaps across government boundaries in 2004.



2005 – 2010 New Domains were created (CBRN, Maritime, Screening, Immigration, Justice, International Trade, IP, EM...).

NIEM 2.1 Released with 5 Domain in 2006.

NIEM 3.0 Released with 12 Domain in 2013 - 2014.

NIEM 3.0 Released with 12 Domain in 2013 - 2014.

NIEM Requirement was added to Gov Grants Funding - 2018

NIEM Leadership Transferred from DHS to DoD 2019-2020.

NIEM continues to mature adding new communities & building partnership.



# 2020 NIEM ADOPTION AT A GLANCE



- ✓ US Bureau of Reclamation (USBR) Dept of Interior
- ✓ Possible NIEM Statistics Domain
  - ✓ Coordinated with Census Bureau and Office of MGMT & Budget (OMB)
- ✓ Plan DHS M&S COI NIEM adoption and way ahead
- ✓ Large push for NIEM adoption in Canada in multiple fronts
- ✓ Interaction with IRS on NIEM adoption
- ✓ Controlled Unclassified Information (CUI) NARA
- ✓ National Oceanic and Atmospheric Administration (NOAA)
- ✓ NIEM International tiger team
- ✓ NIEM State, Local and Tribal tiger team
- ✓ NIEM Emerging Technology tiger team
- ✓ Defense Acquisition University (DAU) to develop a course geared towards Program Managers and NIEM
- ✓ ADLNET.GOV – Advanced Distributed Learning (ADL) Initiative, Office of the Secretary of Defense
- ✓ ...



# WHY DATA STANDARDIZATION?

- Critical to info sharing & the compatibility of software to software, business to business, and everything in between.
- Enable the essential elements of a data exchange & related infrastructure working together in sharing the right data with others.
- Provide specifications to software developers... To create IT products that will work/communicate with other IT products.

## Deviation from data standardization:



Wrong item dispatched to support disasters management.  
Wrong water type was sent. No drinking water for 5 days.



# WHY IS IT IMPORTANT?

Water-Pump  
Request



Response

Response

Response

Response

Response

Response

Response

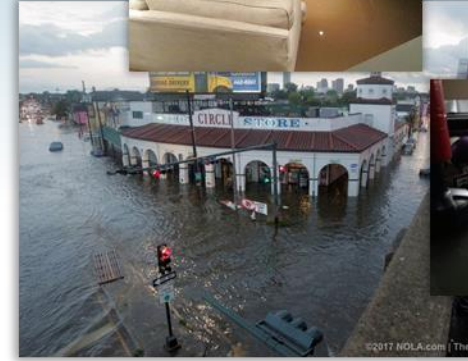
Response

Response

Response

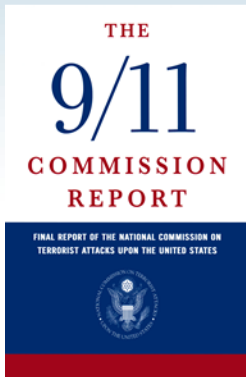
Response

Response





# WHY IS IT IMPORTANT?



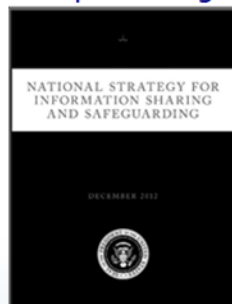
Following the September 11 attacks, a series of reviews uncovered failures of information sharing both within and between agencies that resulted in the government's failure to prevent the 9/11 attacks. The Report from the National Commission on Terrorist Attacks upon the United States, commonly called the 9/11 Commission, described a number of information sharing failures and recommended a series of reforms to prevent future failures.

It's not about how much information you have, but about having the right information.

**Gartner**

leading research and advisory company.

"NIEM is now used by many federal agencies, state governments, private sector organizations, and foreign partners. As a side benefit, NIEM promotes information technology (IT) industry adoption as a result of partnering with standards development organizations (SDOs)."



President Obama

12/19/2013



*"What is the best investment in government I have ever seen? It turns out it is the small investment we have made in NIEM,"* Spires said.



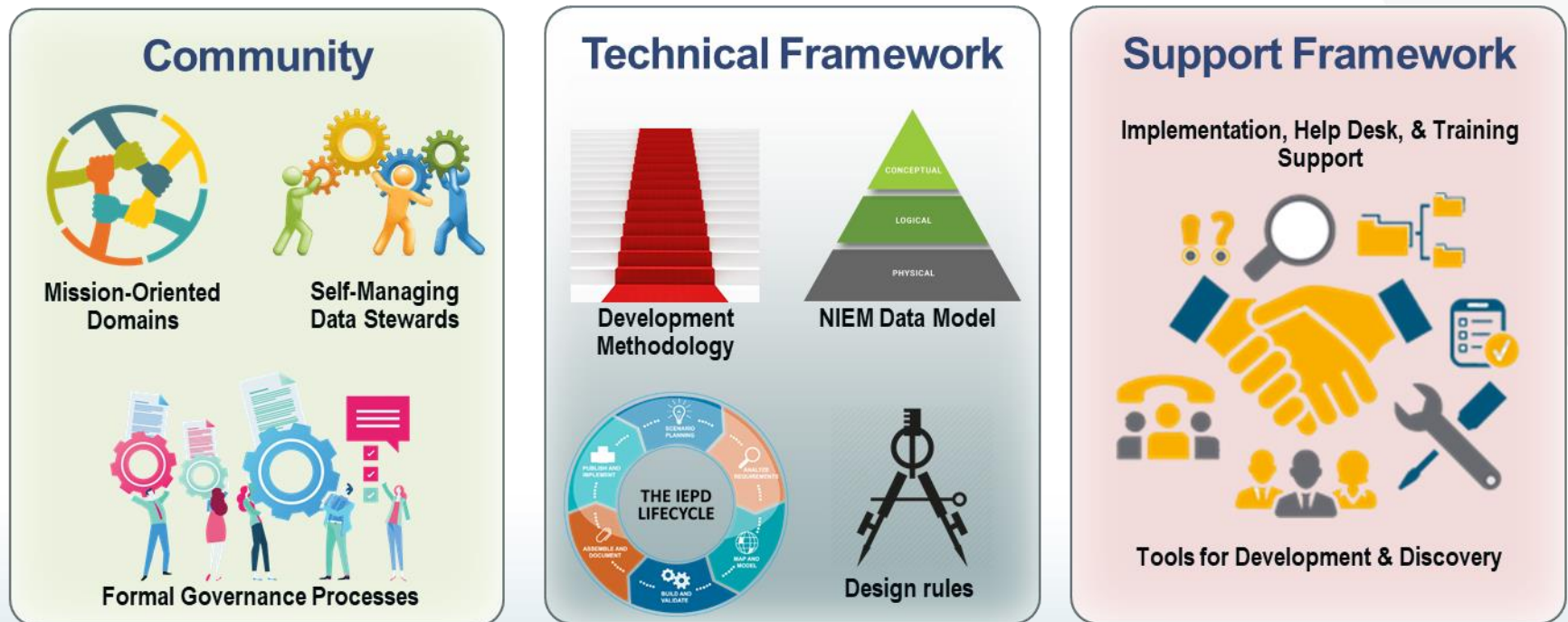
**DHS CIO Richard Spires** May 2012



# NIEM OVERVIEW

**NIEM is a community-driven**, government-wide, **standards-based** approach to exchanging information. Diverse communities collectively leverage **NIEM to increase efficiencies** and improve decision-making.

It is available to everyone, including both public and private organizations. NIEM includes a large data model (over 12000 attributes), governance, training, tools, technical support services, and an active community to assist users in adopting a standards-based approach to exchanging data.



# HOW NIEM ENABLES

## Collaboration

Brings stakeholders together through data model or IEPD reuse

## Consistency

Provides a standardized framework and mature governance

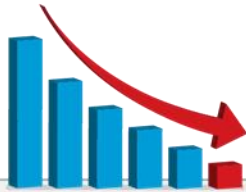
## Development

Supplies tools and vetted code-list to aid in discovery and creation of exchanges

## Support

Provides technical assistance and training

Which Lead To



Reduced Maintenance Costs



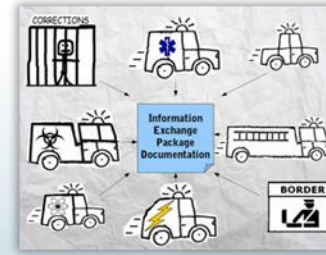
Enhanced Mission Capabilities



Common Vocabulary



Lower Development Costs



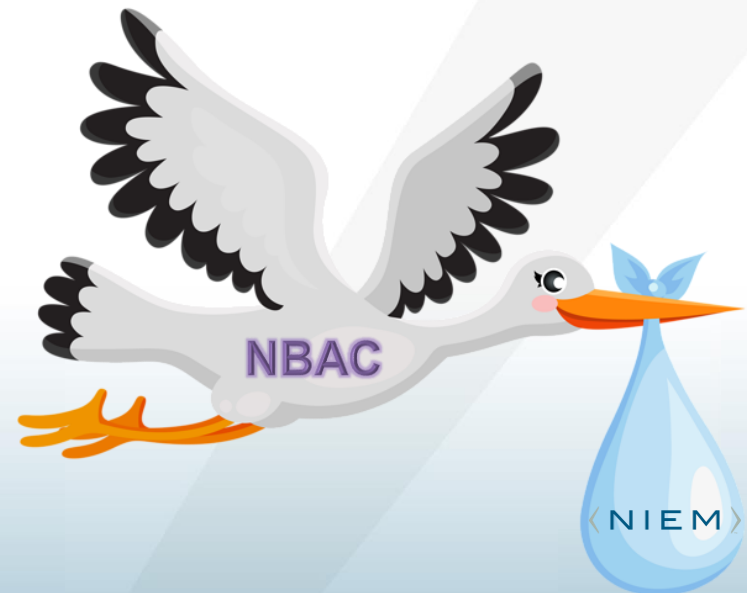


# ADVANCE NIEM ADOPTION

- **Expend NIEM Using GAO Reports**
- **Incorporating NIEM into Contract Acquisition (Gov. Contract Vehicles)**
- **Mature NIEM Data Model**
- **Increase NIEM Adoption Through NIEM Teams**
- **Engage Agencies Publications and or Newsletters**



## Teams



# TAKING ADVANTAGE OF GAO REPORTS



## Sample GAO Reports:

- Actions Needed to Ensure Investments in Key Data System Meet Mission and User Needs
- DHS Is Assessing Fusion Center Capabilities and Results, but Needs to More Accurately Account for Federal Funds
- Agencies Could Better Coordinate to Reduce Overlap in Field-Based Activities: They are: Joint Terrorism Task Forces, Field Intelligence Groups, Regional Information Sharing Systems (RISS) centers, state and major urban area fusion centers, and High Intensity Drug Trafficking Area (HIDTA) Investigative Support Centers



## Recommendations

- Evaluate GAO Reports monthly and establish way forward to assist report recipient through NBAC and NIEM PMO.
- Engage with GAO PMO and showcase NIEM Value Proposition.

The screenshot shows the GAO website's 'Reports & Testimonies' page. The 'Information Management' report is highlighted with a red box. Below the main list, there are three smaller preview cards for GAO Highlights reports: 'Data Fact: DHS Reported That Quality of Agency-Submitted Data Varied...', 'Information Sharing: DHS is Assessing Fusion Center Capabilities and Results...', and 'Agencies Could Better Coordinate to Reduce Overlap in Field-Based Activities'.



# ENGAGE GOVERNMENT CONTRACT VEHICLES

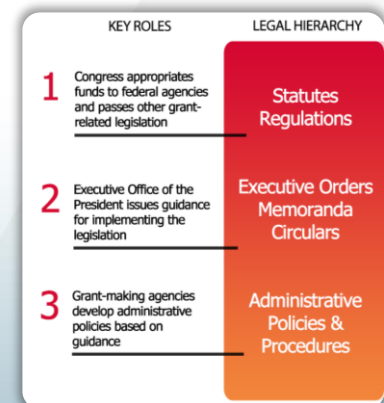
- Government IT Work is Management through Government Contract Vehicles such as:



- Recommendations:**

- NIEM PMO and NBAC Engaging the Government Contract Offices to Showcase NIEM Value Proposition and assist in Adding NIEM Requirements into future Government Contracts.
- Ensure NIEM Requirements stays in the Grants.GOV as a requirement when awarding Grants related contracts.

*How Federal Grant Policies Are Made →*



# MATURE NIEM DATA MODEL

- **Current Model Inventory:**

Cloud diagram of the most commonly appearing terms in NIEM Core element names



- ✓ Over 12,000 elements (5.0 RC1)
- ✓ The number of elements in Core is 1,810
- ✓ There are 1,025 code lists

# Elements	1.0	2.0	2.1	3.0	3.1	3.2	4.0	4.1	5.0 RC
Core	1,540	1,478	1,478	1,423	1,423	1,423	1,586	1,586	1,816
Agriculture							64	64	
Biometrics				240	617	707	1,018	1,014	1,012
CBRN			451	630	608	608	608	608	59
Emergency Management	176	169	261	295	295	548	670	687	822
Family Services / CYFS			213	609	609	609			
Human Services					53	82	684	812	812
Immigration	343	325	343	464	464	464	457	457	447
Infrastructure Protection	23	22	25	31	31	31	31	31	31
Intelligence	82	72	77	72	72	72	66	66	66
International Trade	119	114	451	540	538	538	534	534	534
Justice	1,300	1,236	1,386	2,828	2,832	4,173	4,140	4,147	4,206
Maritime			438	359	359	359	339	339	339
Military Operations					190	217	213	306	306
Screening	507	487	571	599	599	599	599	599	599
Surface Transportation						39	63	63	63
CUI									1
Statistics (GSIM)									12
Total	4,090	3,903	5,694	8,090	8,690	10,469	11,072	11,313	11,505

### Element Stats (All Releases)

Category	Name/Place	5.0 Properties	5.0 Types	5.0 Codes
Core	NIEM Core	1810	282	101
Domains	Agriculture	64	8	
Domains	Biometrics	1008	590	1327
Domains	CBRN	592	137	
Domains	Emergency Management	918	365	1240
Domains	Human Services	806	275	1048
Domains	Immigration	445	94	1388
Domains	Intelligence	56	14	
Domains	Infrastructure Protection	31	8	3
Domains	International Trade	530	90	
Domains	Justice	4023	489	361
Domains	Maritime	333	47	180
Domains	Military Operations	296	130	134
Domains	Screening	577	253	3731
Domains	Surface Transportation	64	51	178
Auxiliary	CUI	19	12	164
Auxiliary	Statistics	520	133	7
Code Sets	awms_d20		92	743
Code Sets	ag_codes		62	79
Code Sets	apco		8	206

## Sample Code List

- **Recommendations:**

- Treasury Data Lines of Business
- Public Works Lines of Business → Social Services, Recreation, Energy, Movements (goods), Infrastructure ...
- Grants Data Lines of Business
  - 23 Agencies Involved.
  - Over 43 Billion Dollars in Grants Funds Transactions.
  - Impact and consequences for State and Locals Entities



## NIEM Grants Data Concepts in GITHUB

# MOBILIZING NIEM TEAMS

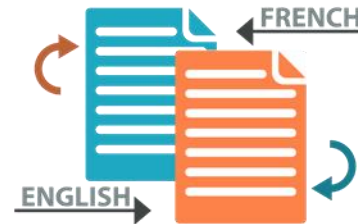
- **State, Local, and Tribal Tiger Team**

- Co-Chair: Cait Ryan / Tom Carlson



- **International Tiger Team**

- Co-Chair: Thomas Krul / Kamran Atri



&



- **Emerging Technologies Tiger Team**

- Chair: Jalal Mapar, Co-Chair: Lain McNeill



Mod & SIM

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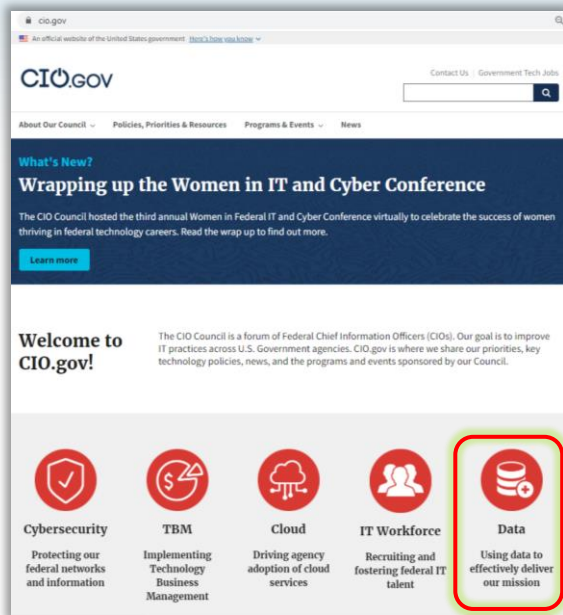


Working Groups



# ENGAGE AGENCIES

- Engage Fed CIO Organizations and Showcase NIEM Value Proposition:



Fed CIO



Code.GOV

- Recommendations:

- NIEM PMO Outreach to Agencies Identifying Internal Communication POCs to Showcase NIEM Value Proposition.
- NIEM PMO to Work with NBAC to Develop Customize NIEM Showcase Message per each Agency.
- Participate in Agency Specific Industry (Summits) days.

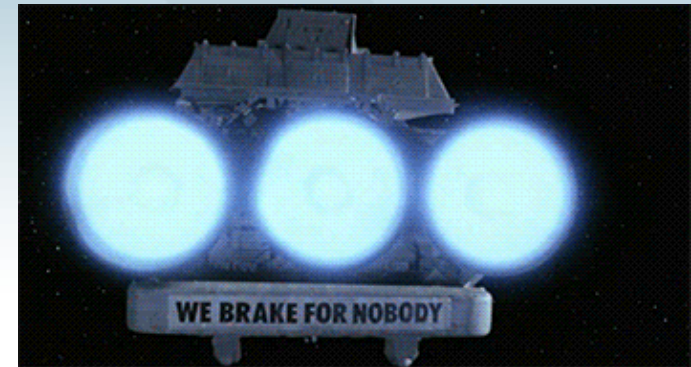
# Q&A

# CLOSING REMARKS

LIGHT SPEED

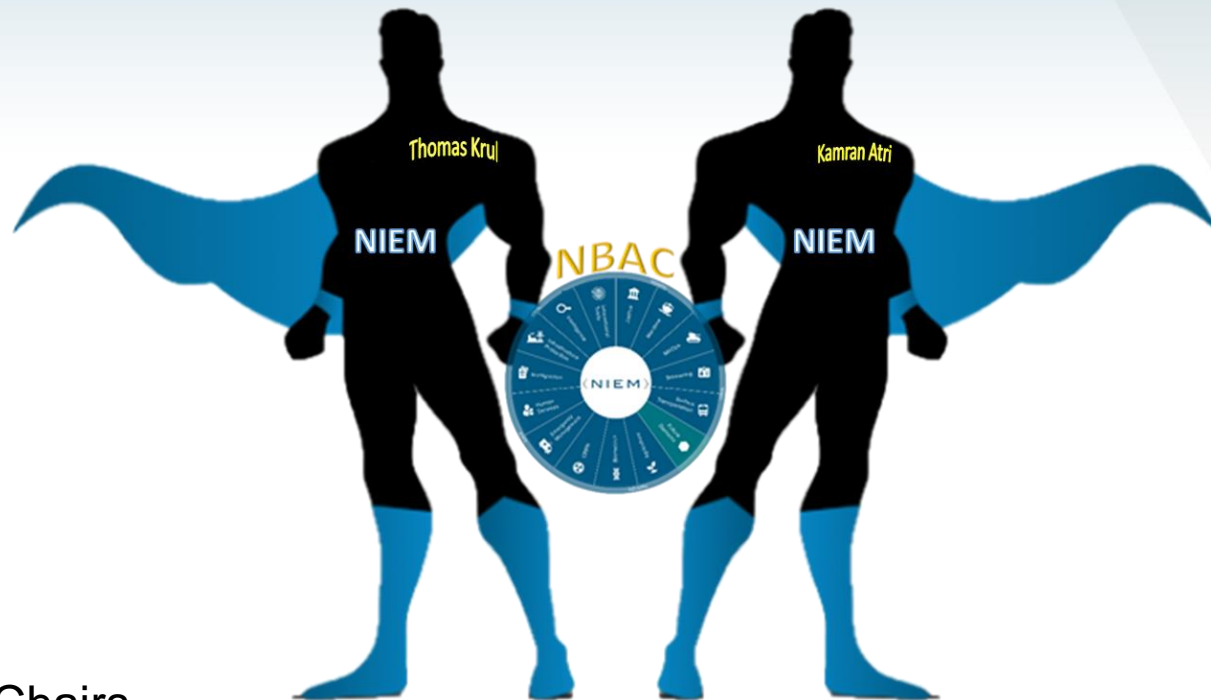
RIDICULOUS SPEED

LUDICROUS SPEED



- IBM → Microsoft → Oracle ... Hadoop → Flink → NIO4J ...
- Data Warehouse → Big Data → Streaming Data ...
- Stored Procedures → Machine Learning → Artificial Intelligence ....
- *Data Collections, Analysis, Output are Performed LIVE.*
- NIEM Plays a Key Role in:
  - Designating an Organization as a “ **Data Driven Organization** ”
  - Organizations that must Consume, Access, Manipulate, Manage, Analyze, Standardize, Share and Distribute all Available Data from Existing or New Potential Data Sources.
  - Data Architecture, Data Management and Data Engineering are Key Components of any IT Modernization Life Cycle.

# Enabling Connected ~~Future~~ Now



- NBAC Co-Chairs



➤ Thomas Krul



[thomas.krul@canada.ca](mailto:thomas.krul@canada.ca)



➤ Kamran Atri



[katri@A4SAFE.COM](mailto:katri@A4SAFE.COM)

# ANNUAL MEETING OVERVIEW (14-18 SEPTEMBER)

	Session Date & Time	Session Topic	Planned Speakers	Facilitators
1	<b>Monday, 14 Sept</b> 10 a.m. – Noon EDT	<b>Advancing NIEM Adoption</b>	<b>Kshemendra Paul</b> NIEM Executive Steering Council	Kamran Atri Thomas Krul
2	<b>Monday, 14 Sept</b> 1 – 3 p.m. EDT	<b>State, Local, Tribal Tiger Team</b>	<b>Eric Sweden</b> National Association of State Chief Information Officers (NASCIO)	Cait Ryan, Tom Carlson Thomas Krul
3	<b>Tuesday, 15 Sept</b> 10 a.m. – Noon EDT	<b>Supporting Domain Growth</b>	<b>Brian Gattoni</b> DHS CISA CTO	Kamran Atri Thomas Krul
4	<b>Tuesday, 15 Sept</b> 1 – 3 p.m. EDT	<b>Emerging Technologies Tiger Team</b>	<b>Syed Mohammed</b> Director, US Department of Homeland Security, Modeling and Simulation Technology Center	Jalal Mapar Lain McNeill
5	<b>Wednesday, 16 Sept</b> 10 a.m. – Noon EDT	<b>Improving NIEM Implementation</b>	<b>Jon Kirk, Patrick Lagioia</b> Treasury Board of Canada	Thomas Krul Kamran Atri
6	<b>Wednesday, 16 Sept</b> 1 – 3 p.m. EDT	<b>International Tiger Team</b>	<b>Poewan Lau</b>	Thomas Krul Kamran Atri
7	<b>Thursday, 17 Sept</b> 10 a.m. – Noon EDT	<b>NIEM Release Planning</b>	Working Session	Christina Medlin Web Roberts
8	<b>Thursday, 17 Sept</b> 1 – 3 p.m. EDT	<b>NBAC/NTAC Collaboration Planning</b>	Working Session	Kamran Atri , Webb Roberts Thomas Krul, Scott Renner
9	<b>Friday, 18 Sept</b> 10 a.m. – Noon EDT	<b>NIEM 2021 Priority Planning</b>	<b>Stuart Whitehead</b> NIEM Executive Director	Katherine Escobar Stephen Sullivan
10	<b>Friday, 18 Sept</b> 12 -12:15 p.m.	<b>Annual Meeting 2020 Wrap-up</b>		Kamran Atri Thomas Krul Stephen Sullivan