NATO Headquarters
Siège de l'OTAN

Using data analytics and machine learning to assess NATO's information environment

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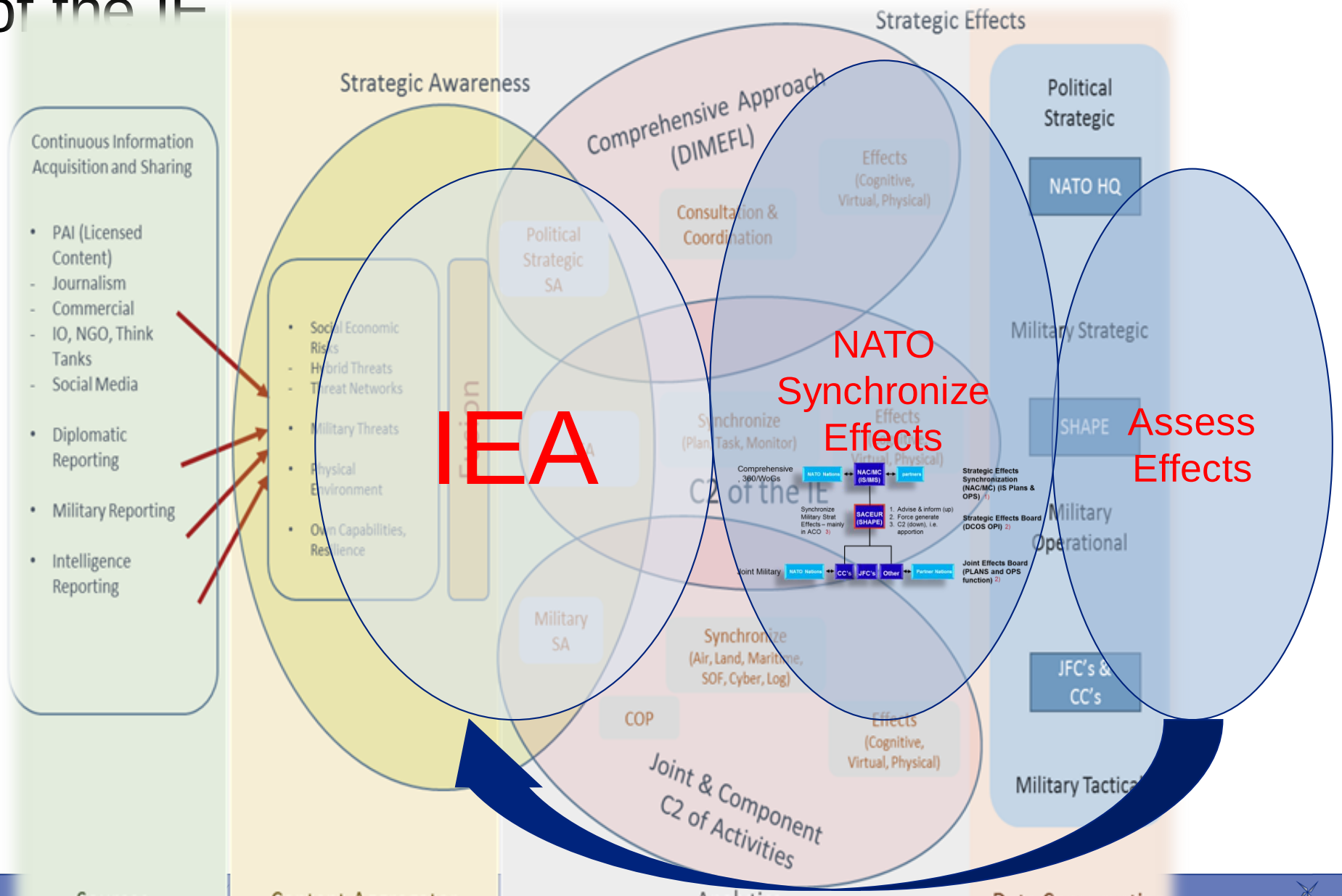
The Information Environment

- Consists of publically available information
  - Mainstream media
  - Social media
  - Specialist reporting e.g. Janes

- NATO's Strategic Communications* operate in this environment
  - Commanders are influenced by the IE

C2 of the IE


Strategic Effects
Strategic Awareness
Comprehensive Approach (DIMEFL)
Political Strategic
Continuous Information Acquisition and Sharing
PAI (Licensed Content)
Journalism
Commercial
IO, NGO, Think Tanks
Social Media
Diplomatic Reporting
Military Reporting
Intelligence Reporting
Social Economic Risks
Hybrid Threats
Threat Networks
Military Threats
Physical Environment
Own Capabilities, Resilience
Political Strategic SA
Consultation & Coordination
Effects (Cognitive, Virtual, Physical)
NATO HQ
IEA
NATO Synchronize Effects
Assess Effects
Military Strategic
SHAPE
Military Operational
JFC's & CC's
Military Tactical
Military SA
Synchronize (Air, Land, Maritime, SOF, Cyber, Log)
COP
Joint & Component C2 of Activities
Sources (Unclassified)
Content Aggregator (IKM, Data Lake Stores)
Analytics (Descriptive, Diagnostic, Predictive, Prescriptive)
Data Consumption (End User Level & Reqt)

IEA, big data and AI

- The information environment is “big data”
- Assessing it requires complex analysis
- AI / ML can help us understand if/how it is being influenced

IEA Development

- To reach IOC in Jun 2019:
  - LoE 1 – NIAG 225 Study “Big Data in support of IEA”
  - LoE 2 – OPEX Experimentation including TRJE18
  - LoE 3 – Improve existing AOSS
  - LoE 4 – Requirements Definition
  - For delivery at IOC (Requirements Set, Proof of Concept, Improved Existing Technology, Proof of Technology, Roadmap to FOC)

- To reach FOC in 2022:
  - Consider recommendations at IOC.
  - Develop wider DOTMLPFI aspects.

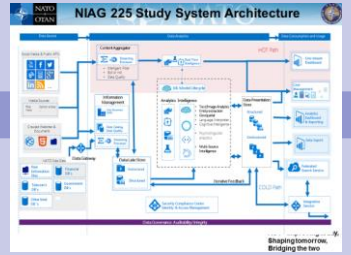
Timeline IEA Development

Jan, 2018 | May | Sep | Jan, 2019 | May | Jun, 2019

Mar | Jul | Nov | Mar

LoE 1 NIAG 225

- NIEATT NIAG Plenary 2
- TIDESprint
- NIAG Proof of Technology
- TIDESprint
- NIAG 225 Report Delivery



- Proof of Tech & Architecture

LoE 2 ACT Experimentation

Ex 2 PoT

- NIEATT NIAG Plenary 2
- Ex 3 TRJE18 LIVEX
- OPEX Report
- Proof of Concept

LoE 3 AOSS development

- JISR POW Addendum
- System Architecture Assessment
- Tech Investigation Complete
- Managed Attribution
- Tech Integration Complete

LoE 4 Requirements Capture

V.1.0

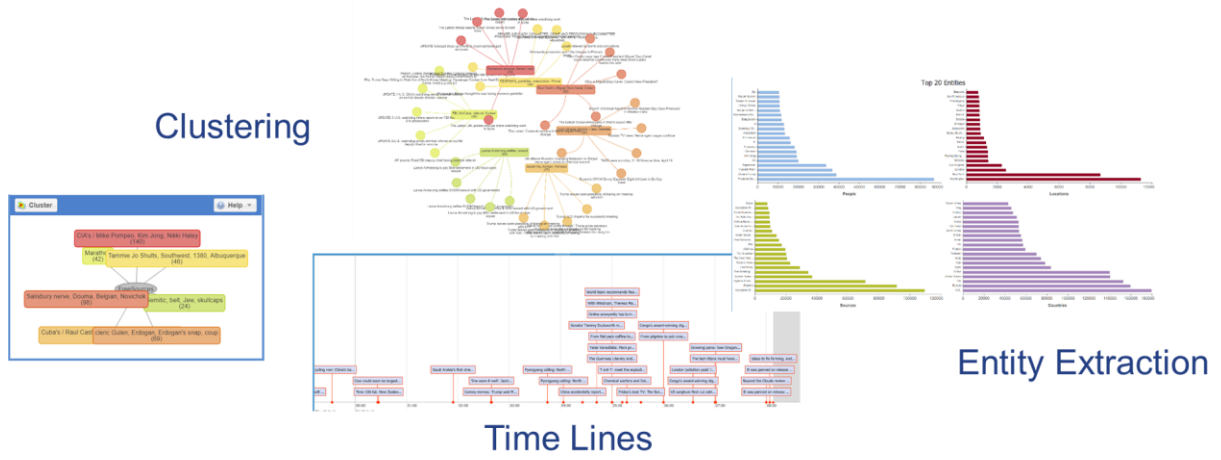
NCI Agency

LoE1: NIAG Study Group 225

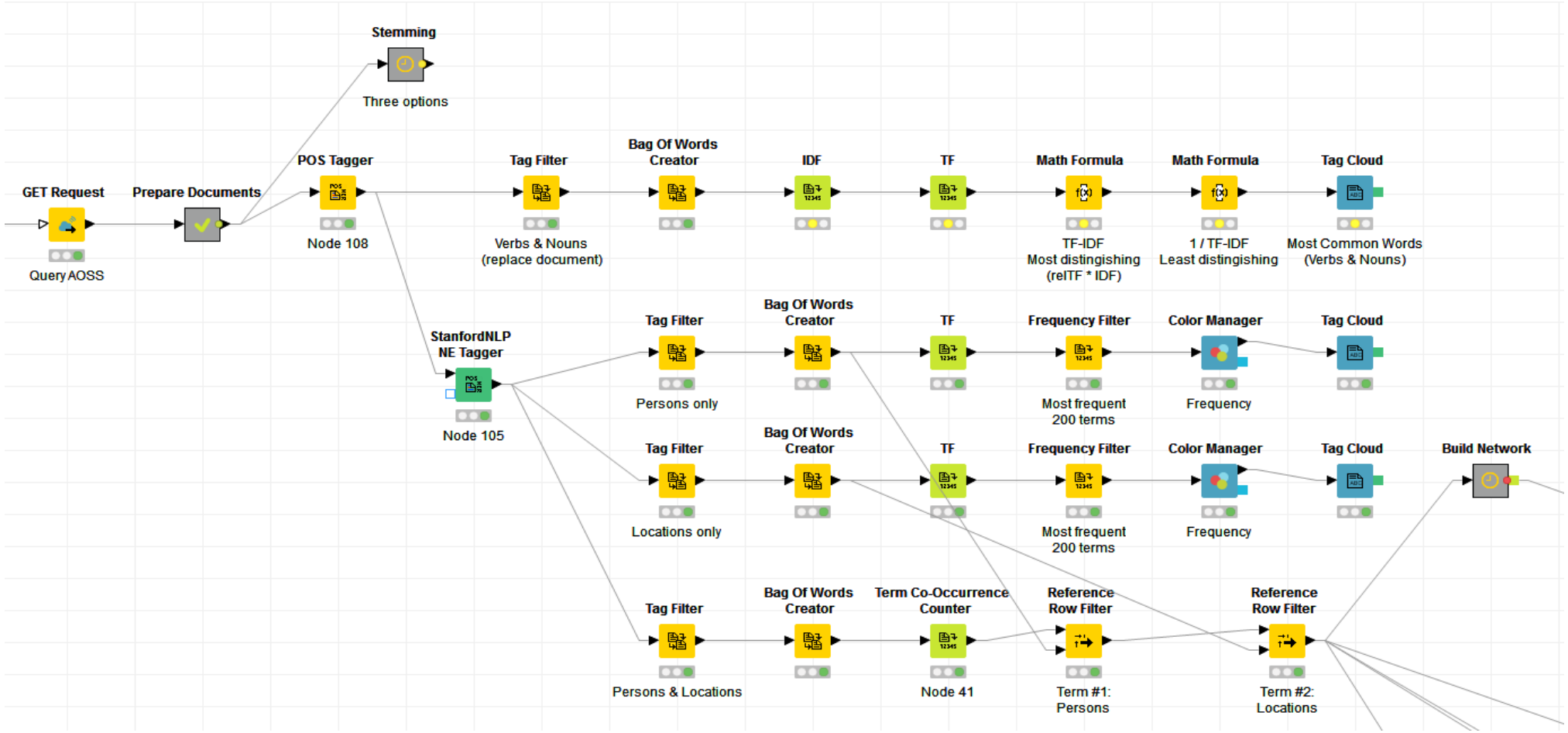
- Follows on from SG 208: “Adopting big data in NATO”
  - Narrows the focus to a specific use case
- Bringing industry experience, tools and concepts
- Proof of Technology demonstration in June
- Demonstration system by Nov 2018
  - Public cloud hosting

LoE3: ACO Open Source System (AOSS)

- Current
  - AOSS is the current tool for OSINT
  - Collects information from the internet
  - Presents info on NS
  - Some analytics capability
- Enhancements
  - Managed attribution
  - Extended data sources
  - Multi-lingual support
  - Analytics based on PMAR



LoE3: AOSS enhancement
KNIME workflows for entity extraction



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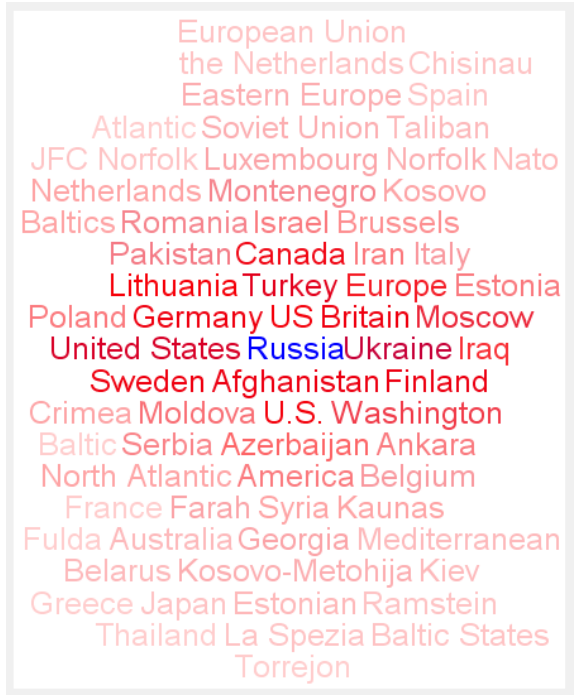
LoE3: AOSS enhancement
Bag of words for Persons and Locations entities



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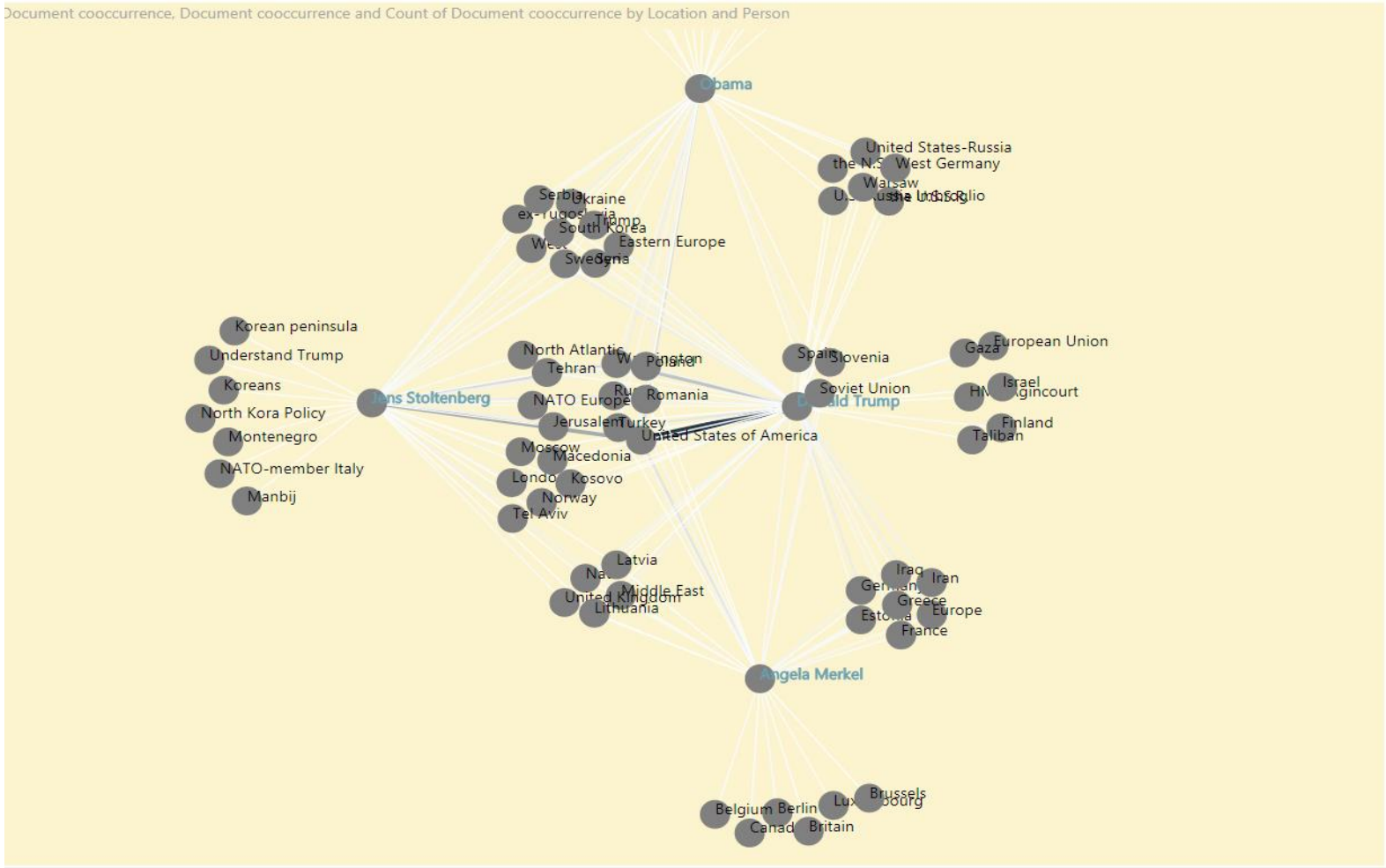
Network graph showing relation between Persons and Locations



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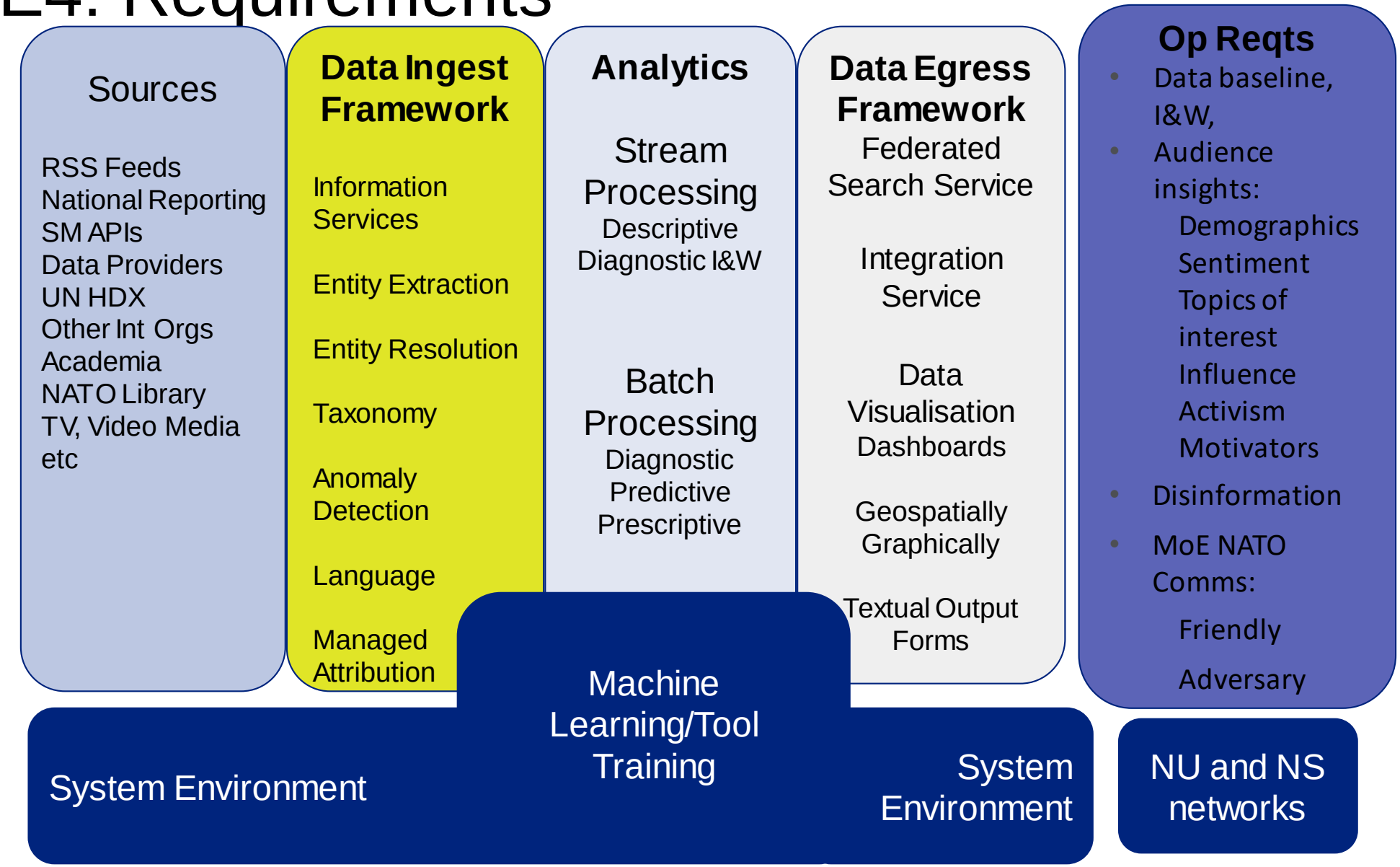
LoE4: Requirements



Summary

- IEA is one of NATO's first capabilities planned to exploit big data and requiring the use of AI
- It is a team effort from ACT, NHQ, NCIA and industry
- Initial steps are underway to develop IEA IOC, using NATO expertise
- The technology to deliver IEA can be applied to more data sources and be applied to more use cases
- IEA capability will have significant impact across DOTMPLFI