IETF 124
KG Design Team update

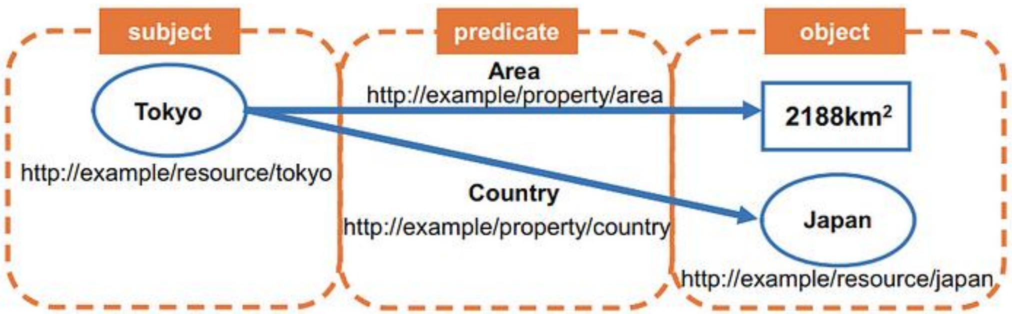
IETF NMOP – KG Design Team (KG DT) – 2025-11-05

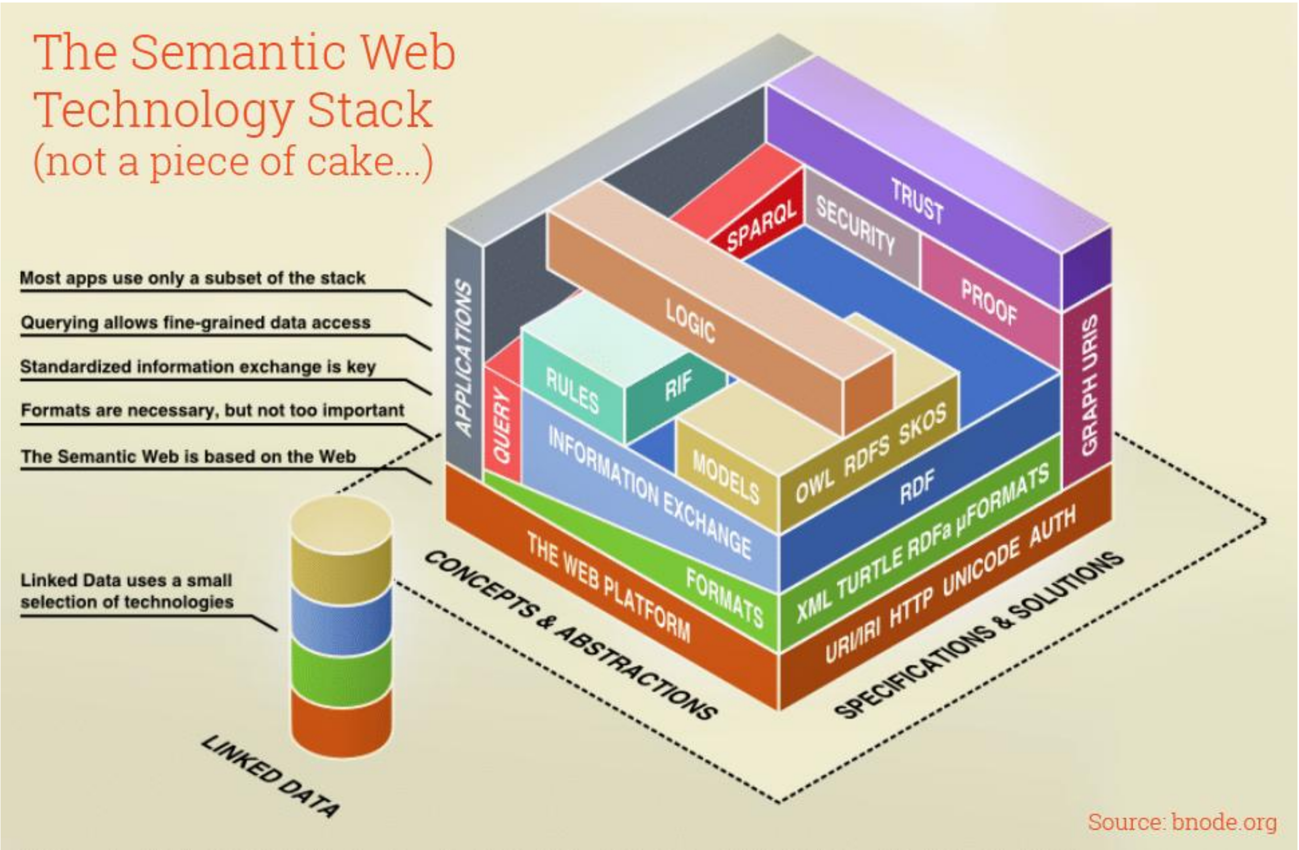
Benoît CLAISE, Ignacio DOMINGUEZ MARTINEZ-CASANUEVA, Pauline FOLZ, Thomas GRAF, Michael MACKEY, Pedro MARTINEZ-JULIA, , Xing MINGZHE, Reshad RASHMAN, Brad PETERS, Lionel TAILHARDAT, Raphaël TRONCY, Daniel VOYER

Reminder: the Semantic Web Stack

A **semantic triple**, or **RDF triple** or simply **triple**, is the atomic data entity in RDF

Subject, predicate and object





Latest version: 1.1 (Recommendation); February 25, 2014; 8 years ago

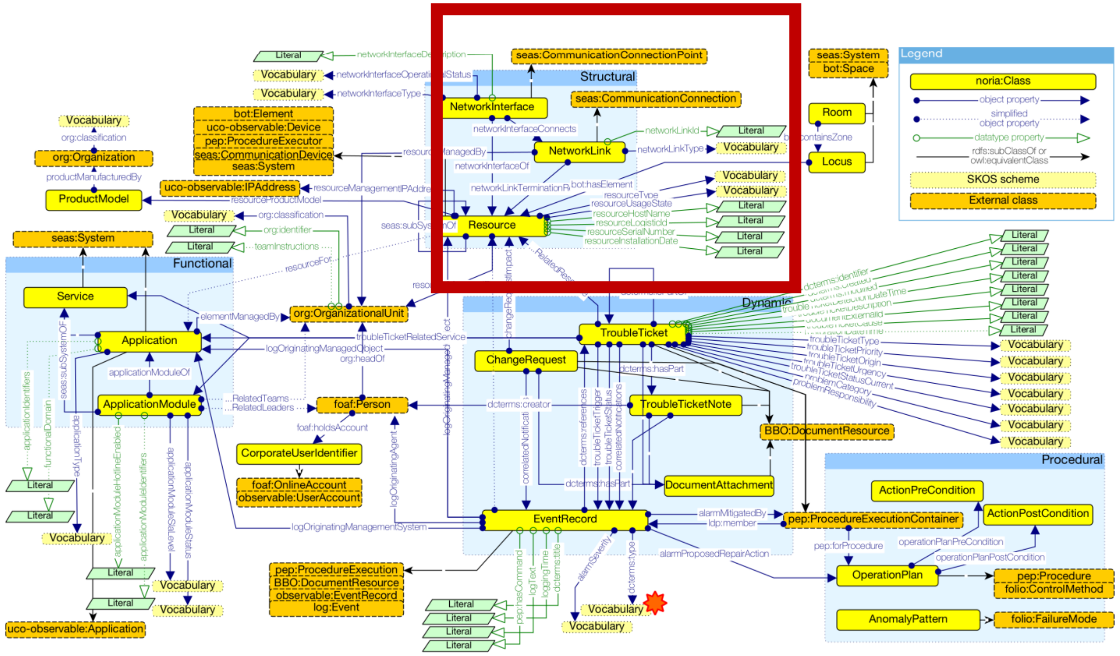
IET 123 Meeting Outcome

- **What Do We Want ?**
  - We want to move as quickly as we can to the point where we can share knowledge and cooperate on defining knowledge in IETF.
  - That requires building a community but right now there is a question whether IETF is the right place for this work.
- **What can IETF do ?**
  - A networking ontology (or multiple ones, in the future but must be interconnected and augmentable)
  - A networking ontology governance by the IETF
  - KG-related tooling
- **Design Considerations**
  - How does the solution scale ?
    - What is the return on investment for operators and storing large amounts of data ?
  - We should start with a simple UC that extends the initial PoC
  - Extend with a more complex UC that brings as much coverage with the least amount of effort.
- **Open Issues:**
  - The IETF process needs to adapt, RFC is too formal, need to move to faster iterative (but still versioned) specifications
  - Are we too experimental ? IETF or IRTF (more like research)?

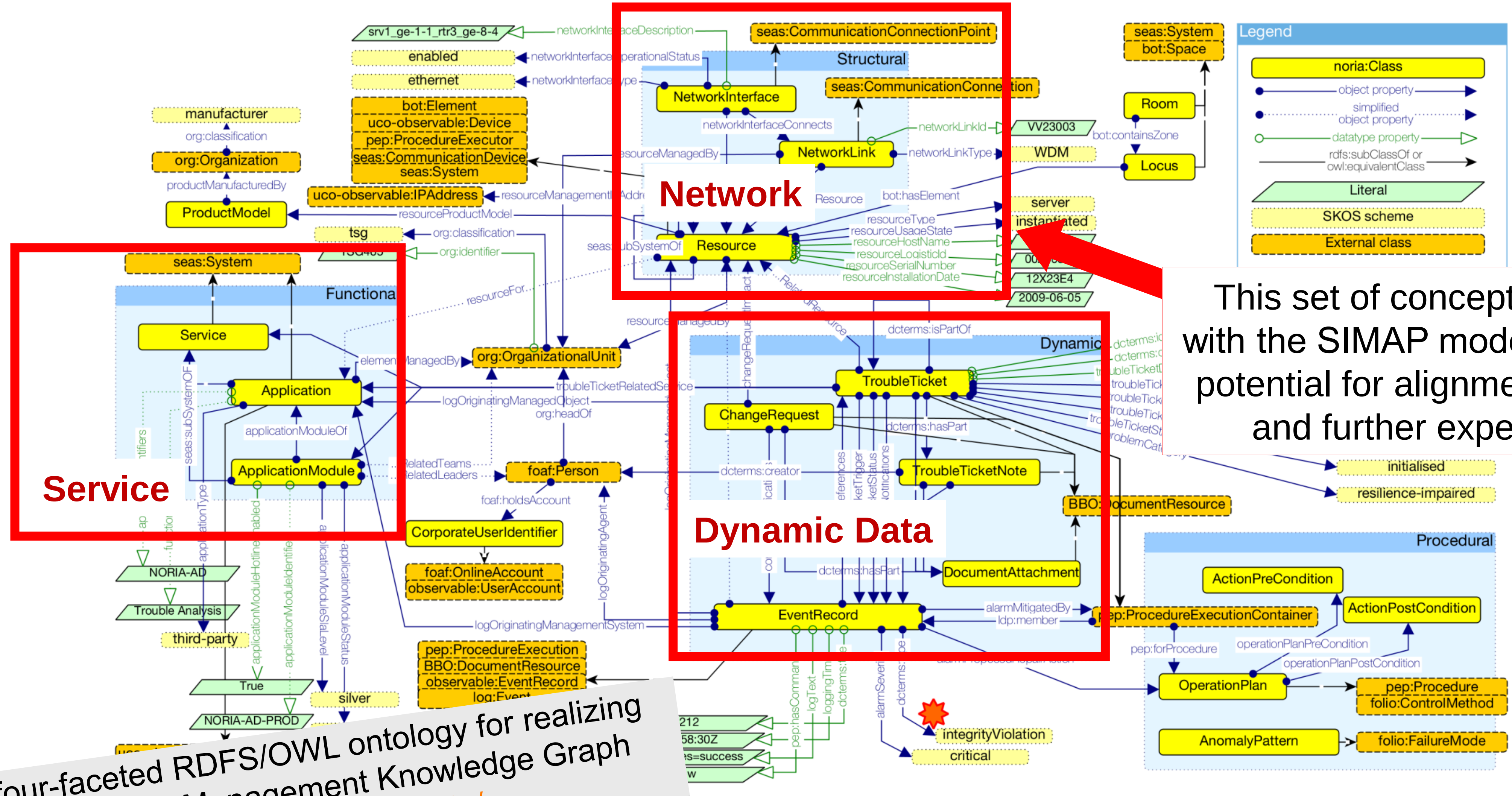
IET 123 Agreed Next Steps

The consensus outcome from the meeting was the following actions:

- Create an initial PoC, fusing the (early) SIMAP model with the NORIA-O incident model to illustrate how existing work with IETF can be quickly integrated into an existing ontology and extended with new knowledge.
- While that work is being prepared the design team will continue its work and find a use case that will showcase the value of the approach within the IETF
  - **Some possible directions:**
    - Anomaly and Incident Management
    - Data tracking across different APIs (ONIONS)
    - Change Coordination



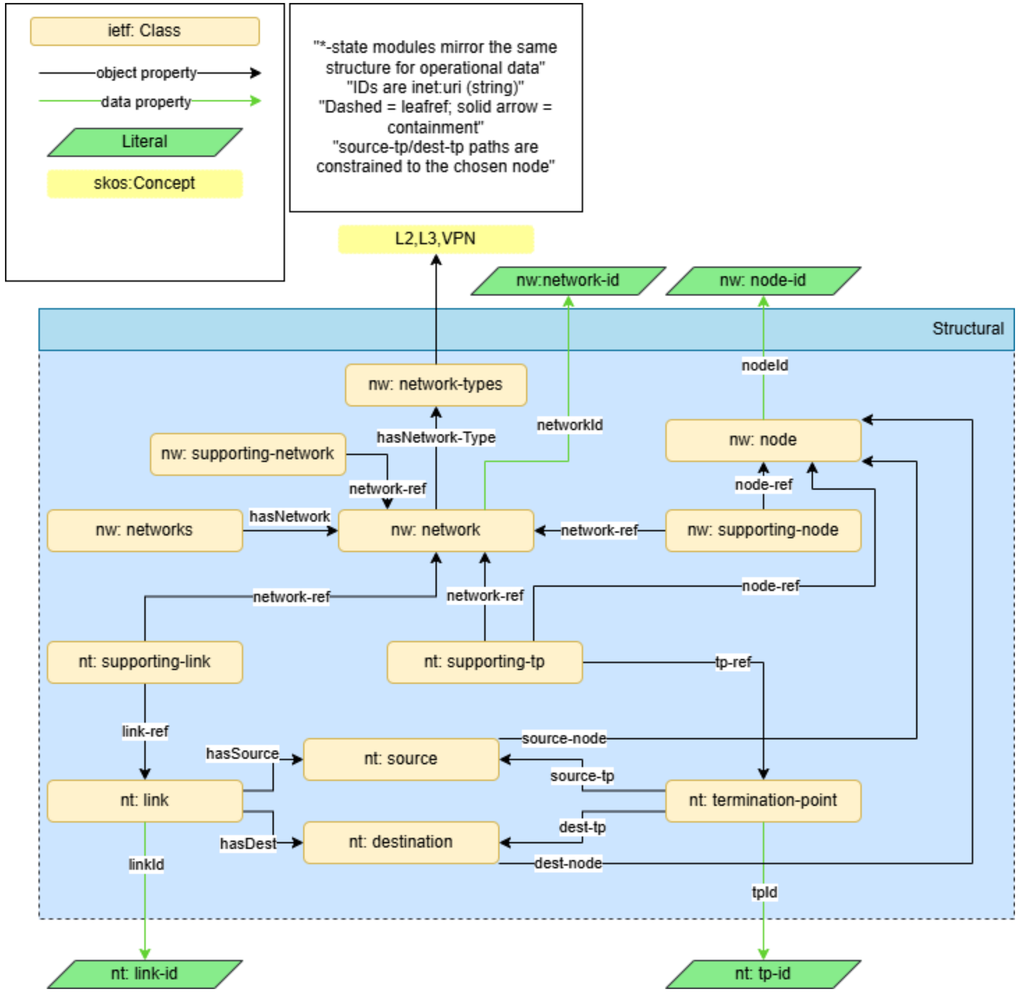
Hackathon 124: NORIA-O

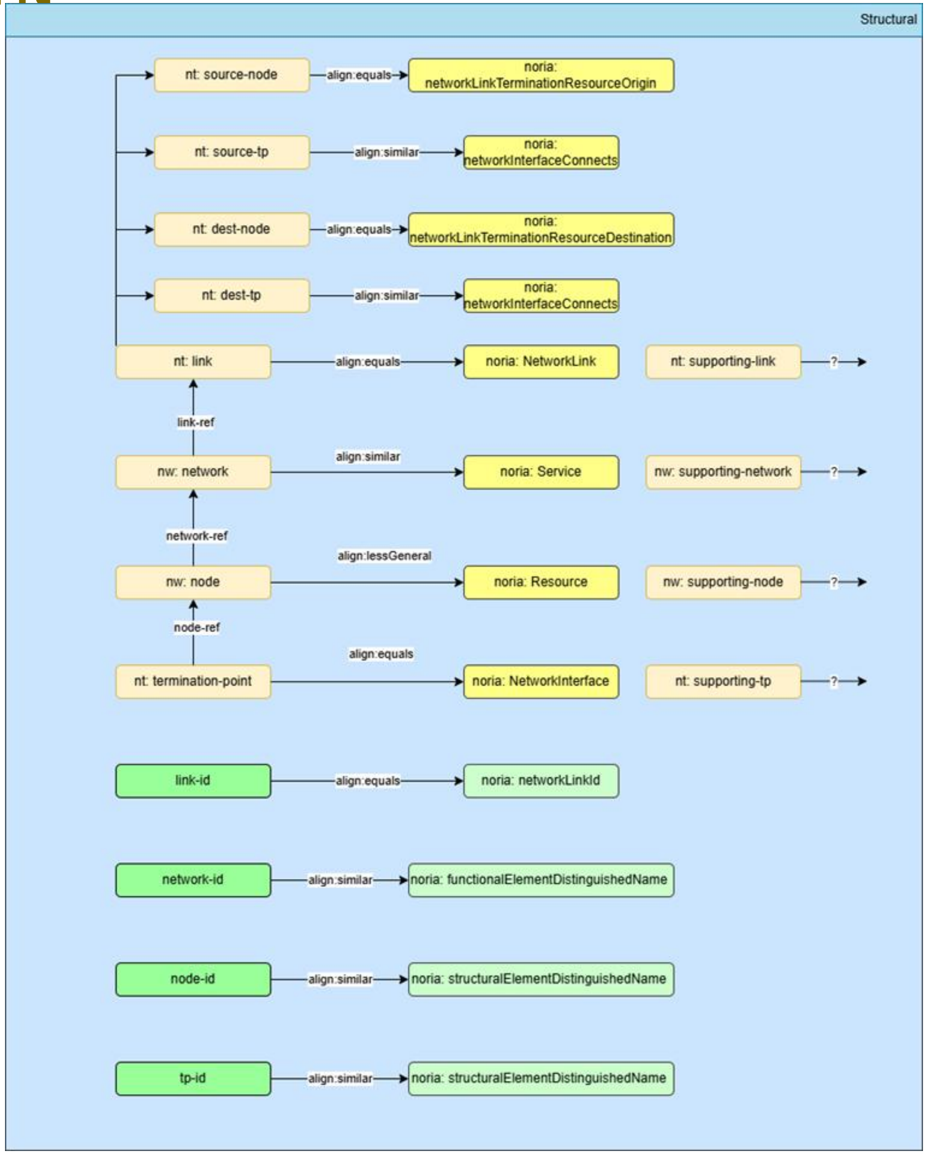


This set of concepts overlaps with the SIMAP model … there is potential for alignment/mapping and further experiments!

A four-faceted RDFS/OWL ontology for realizing an IT Service Management Knowledge Graph
↦ https://w3id.org/noria/

Hackathon 124: SIMAP & NORIA-O Alignment





The SIMAP model in RDFS form, converted from SIMAP YANG files defined in https://datatracker.ietf.org/doc/draft-havel-nmop-simap-yang/

Model mappings based on equivalences and similarities in concept semantics.

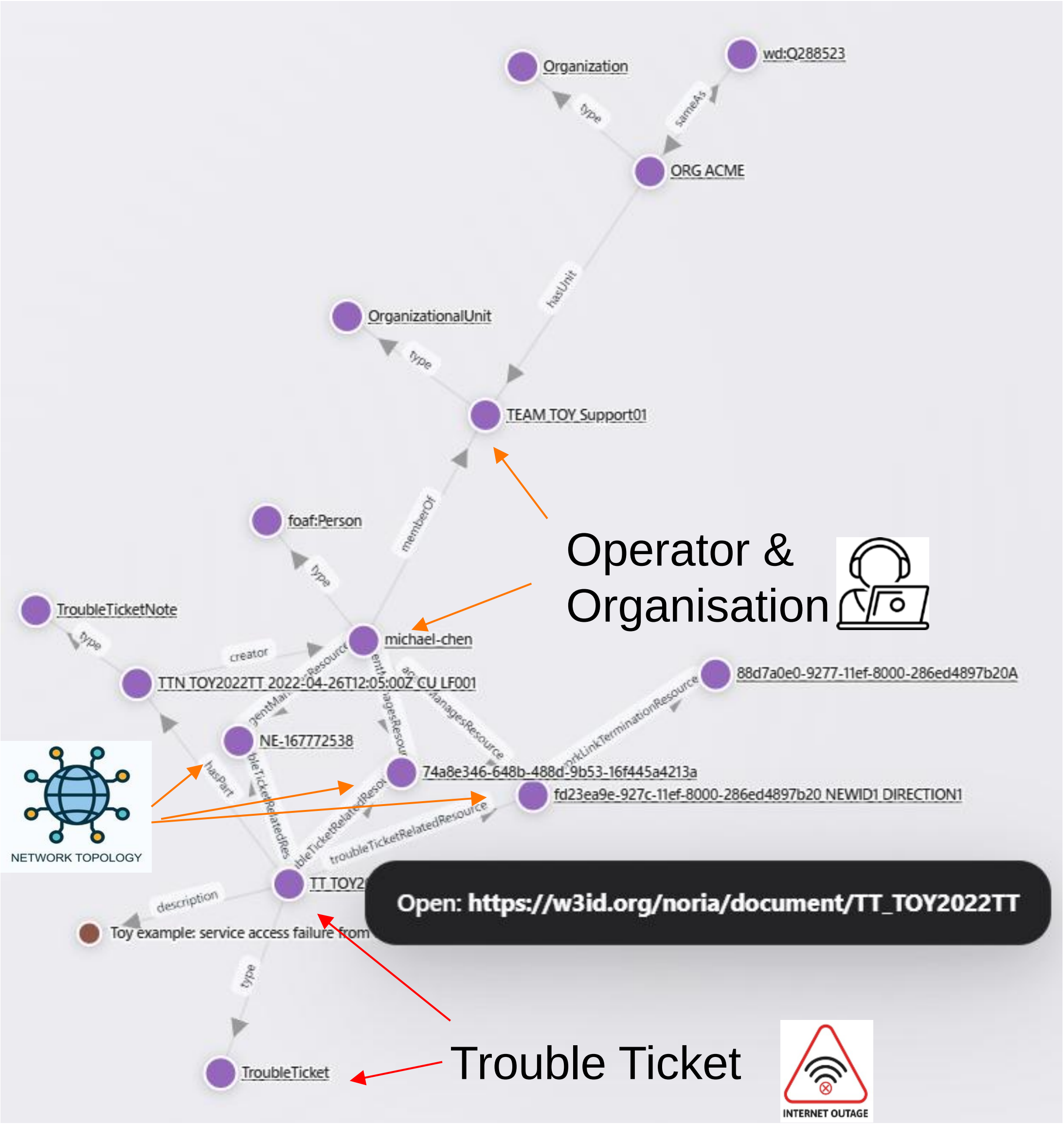
Hackathon 124: Query Example

Link IETF data With Data From OSS/BSS

Query across domains and ontologies linking incident data with network data with responsible engineering team

Combine existing IETF YANG data with external Incident Application Ontology

Checkout the Hackathon "Knowledge Graph For Network Operations"



IETF Questions That Need Answers

Considerations for Having a Successful Birds-of-a-Feather (BOF) Session

https://datatracker.ietf.org/doc/html/rfc5434

- **There is a problem that needs solving, and the IETF is the right group to attempt solving it.**
- **There is a critical mass of participants willing to work on the problem (e.g., write drafts, review drafts, etc.).**
- **The scope of the problem is well defined and understood, that is, people generally understand what the WG will work on (and what it won't) and what its actual deliverables will be.**
- **There is agreement that the specific deliverables (i.e. proposed documents) are the right set**
- **it is believed that the WG has a reasonable probability of having success (i.e., in completing the deliverables in its charter in a timely fashion).**

IETF Questions That Need Answers

- **There is a problem that needs solving, and the IETF is the right group to attempt solving it.**
  - **Yes:** We want to be able to take the existing Knowledge inside of IETF and convert it to format that can enhanced and extended, YANG models in IETF are extensive, but fragmented, inconsistent, we want to connect this data define how those relationships can be defined, documented and used. IETF is the right group as they are the (network) experts in these schemas and data
- **There is a critical mass of participants willing to work on the problem (e.g., write drafts, review drafts, etc.).**
  - **Yes:** Currently we have 10 people part of our design team from Vendors (Huawei, Cisco), Operators (Orange, Telefonica, Swisscom), Academia (Eurecom, Adapt). We have more who are Authors of drafts (DT, NTT, China Unicom, China Mobile).
- **The scope of the problem is well defined and understood, that is, people generally understand what the WG will work on (and what it won't) and what its actual deliverables will be.**
  - **TBD:** There has been discussion this week that it should be driven by sample Use Cases, with an initial set of diverse candidate UCs and potentially new ones not fully materialised (China Unicom).
- **There is agreement that the specific deliverables (i.e. proposed documents) are the right set**
  - **TBD:** Possible outputs: a core set of properties and relationship definitions to support the UCs as defined above (in the form of ontology or specification that could easily become and ontology).
- **it is believed that the WG has a reasonable probability of having success (i.e., in completing the deliverables in its charter in a timely fashion).**
  - **TBD:**

Next Steps

Design Team will continue to meet:

Answer Key Outstanding Questions before IETF 125 Shenzhen:

- *The scope of the problem is well defined and understood, that is, people generally understand what the WG will work on (and what it won't) and what its actual deliverables will be.*
- *There is agreement that the specific deliverables (i.e. proposed documents) are the right set*
- *it is believed that the WG has a reasonable probability of having success (i.e., in completing the deliverables in its charter in a timely fashion).*

Thank you!

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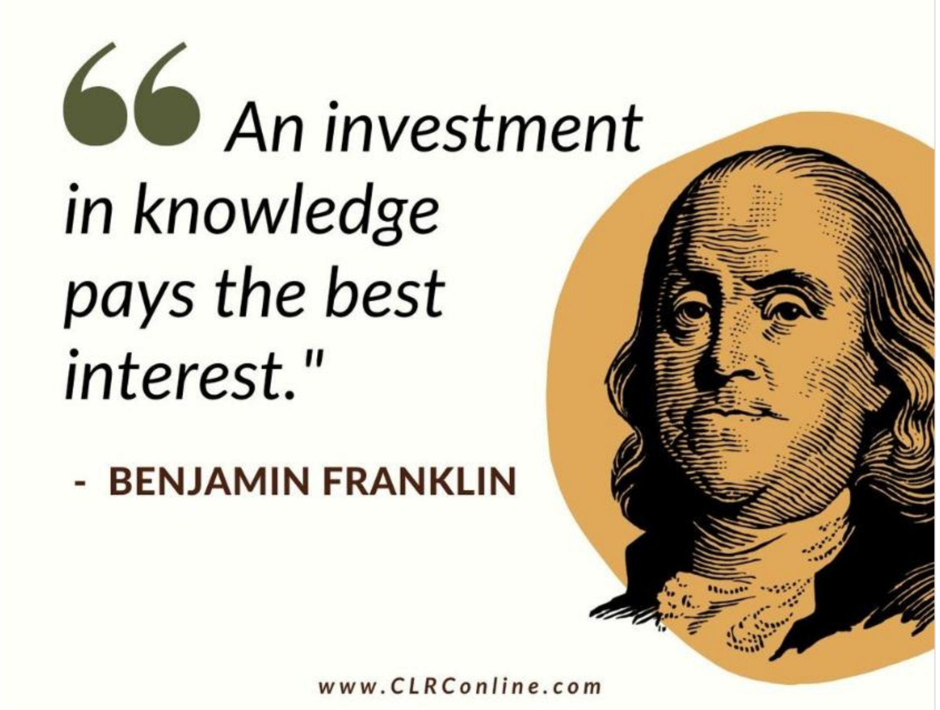

Curious about existing KG DT work? Check:

- draft-mackey-nmop-kg-for-netops
- draft-marcas-nmop-kg-construct
- draft-tailhardat-nmop-incident-management-noria