

The background of the slide is a repeating pattern of stylized blue flowers and leaves on a white background. The flowers vary in shape, including some with multiple petals and others that are more circular or bell-shaped. The leaves are simple, pointed shapes. The pattern is dense and covers the entire slide area.

# Knowledge Graph DT Side Meeting

IETF123

# Knowledge Graph: The Challenge

**Unlock knowledge that is hidden in the network**

*Link data that are currently silo'd, unlock details that are currently hidden enabling connections between data to quickly identified, root cause to be easily located and remediation solution to be automatically suggested*

*Reducing the problem space by understanding the context of the data, the relationships between the data and the data's relationship to the network is key to making automated decisions quickly and unlocking Autonomous Networks*

MODERN OSS SYSTEMS ARE FILLED WITH MODELS AND DATA, WHETHER THEY ARE FROM SDO'S, VENDORS, INTERNAL UNDERSTANDING THE CONTEXT OF DATA ACROSS SILO'D APPLICATIONS IS A MASSIVE CHALLENGE OPERATORS STRUGGLE WITH

# Knowledge Graphs In NMOP

- 3 knowledge graph documents in NMOP
  - [draft-marcas-nmop-kg-construct-00](#), **Knowledge Graph Construction from Network Data Sources**
  - [draft-mackey-nmop-kg-for-netops-02](#), **Knowledge Graph Framework for Network Operations**
  - [draft-tailhardat-nmop-incident-management-noria-02](#), **Knowledge Graphs for Enhanced Cross-Operator Incident Management and Network Design**
- For the use cases, motivation, and background, read the 3 drafts and listen to the NMOP interim meeting

**Design team created to unify this effort**

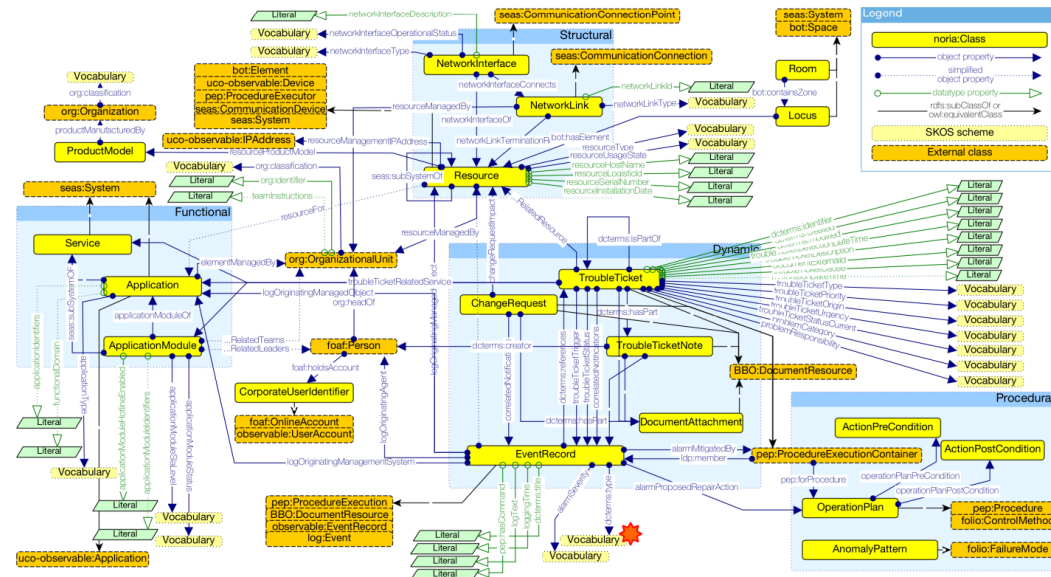
**Design team members:**

Brad Peters, Thomas Graf, Michael Mackey, Ignacio Dominguez, Pauline Fortz, Dan Voyer, Lionel Tailhardat, [Benoit Claise](#), Pedro Martinez-Julia

Under the supervision of Reshad Rahman (NMOP chairs)

# Opensource Artifacts

- NORIO in production at Orange
- Hackathon by Nachos:
  - Mouseworld
    - MW Ontology (<https://github.com/Mouseworld-Lab/mouseworld-ontology>)
    - MW KG (<https://github.com/Mouseworld-Lab/mouseworld-kg>)
  - Network Data Catalog
    - NDC Ontology (<https://github.com/candil-data-fabric/network-data-catalog-ontology>)
    - NDC KG (<https://github.com/candil-data-fabric/network-data-catalog>)
- YANG-2-RDF (by Michael and co.)
  - Schema
  - Instance



# July 22nd 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)?

