Making Progress

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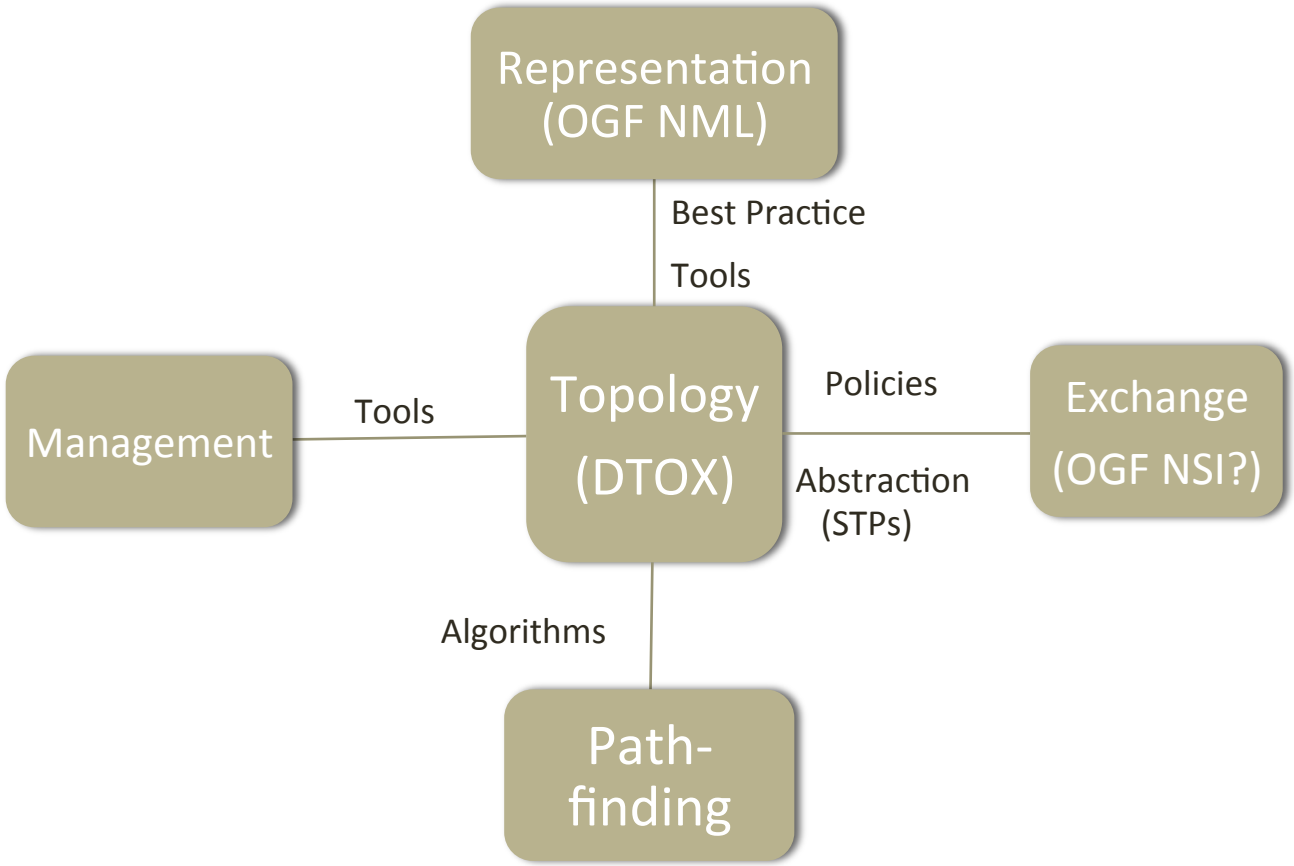
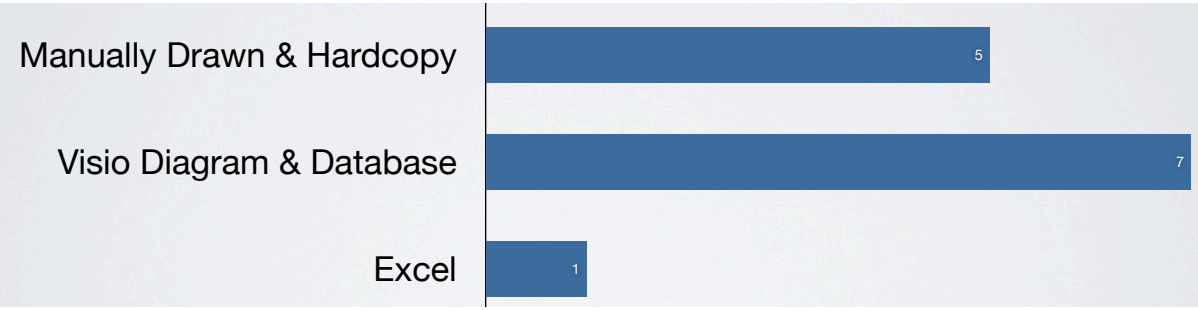
Issues and potential solutions

- No standard → Clear requirements for DTOX
Simplifying assumptions
- No Time → Collaborate and share
- No Tools → Open-source efforts
- Skepticism → GLIF Prototypes

Elements of DTOX

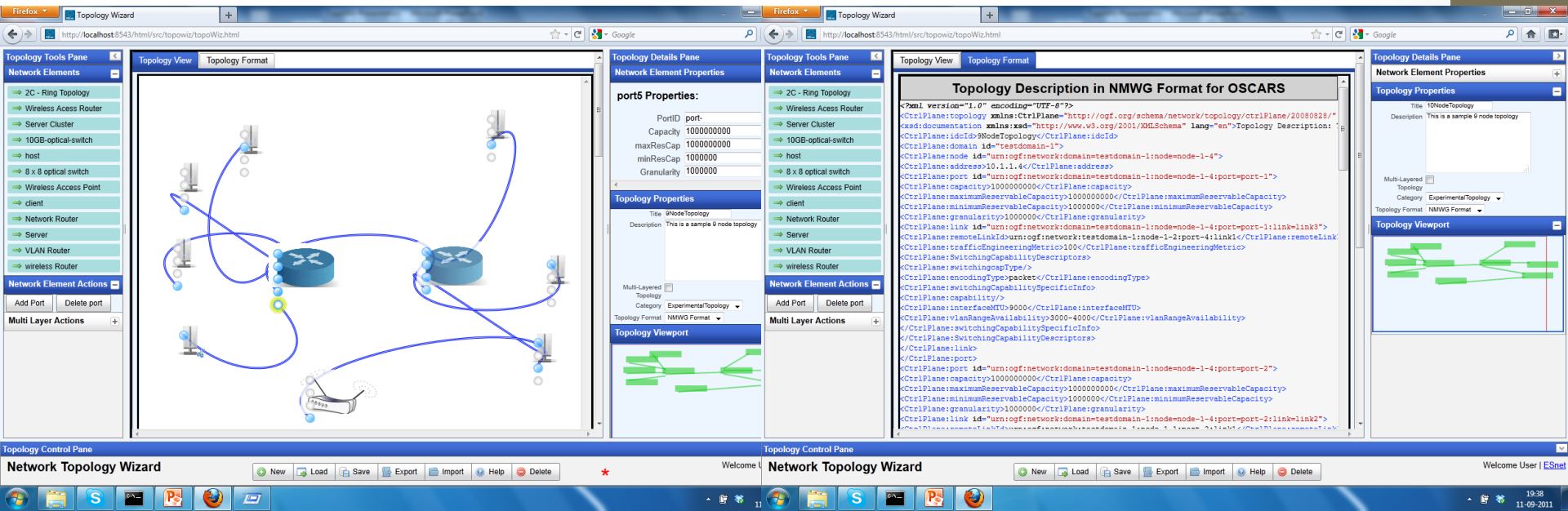


Representation



- Solution – tools to visually draw and represent topology
- Not in NML format yet, is there a subset of standard needed?

Courtesy: Bharat Ramaprasad, U Mass Dartmouth with ESnet mentorship



Exchange

- Question: Is it fine for the NSI to specify the topology exchange mechansim?
- Question: Is it exchange or publish?
- Question: What role does policy play?

- Clear requirements needed with operational and security considerations

- Internal representation of the STP abstraction needs to be specified and maintained
  - Tools to create STP representations of internal topology?
  - Resolution of STP to an internal topology representation

Path-finding

- May be an implementation question
- Interoperability needs to be tested
  - Given the same constraints, do multiple implementations come up with the same answer?
  - Multiple constraint optimization?

- Open-source implementation of a path-finding algorithm that works with NML
- More efficient mechanisms a research problem?
  - OSCARS framework for chaining multiple PCE's

Management

- Topology needs to be maintained and updated
  - What frequency?
  - How are maintenance events handled? Fiber cuts?
  - How frequent is the exchange?
  - New interfaces/cross connects
- Process and tools for updating topology and pushing it to be "exchanged"
  - Is it a manual process?
  - What automation can be achieved?

- This area requires discussion, research and tools development

What does GLIF work on?

- Proposals
  - Focus on NSI application
  - Near term:
    - Tools to allow network engineers to easily draw the external topology and create a NML topology description
    - Identify one person from your organization to do it for you
    - Demo?
  - Mid-term
    - Topology databases and updates (processes, tools requirements)
    - Path-finding across multiple domains using above topologies and NSI STPs
    - NSI + DETOX over Auto-GOLE: Demonstration
  - Longer-term
    - Topology management best practices
    - Policy filter specification and demonstration

Volunteer