

# CineGrid 2008: Extending NDL to CineGrid

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**SURFnet**

**EU**

**BSIK**

**NWO**

**University of Amsterdam**



TNO  
NCF





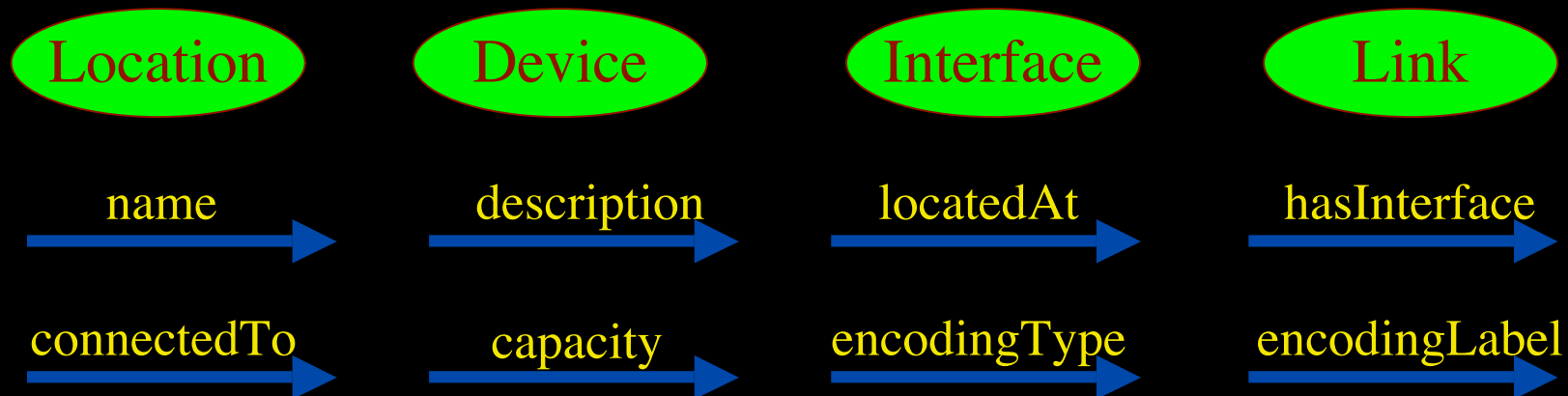
GLIF 2008

Visualization courtesy of Bob Patterson, NCSA  
Data collection by Maxine Brown.



# Network Description Language

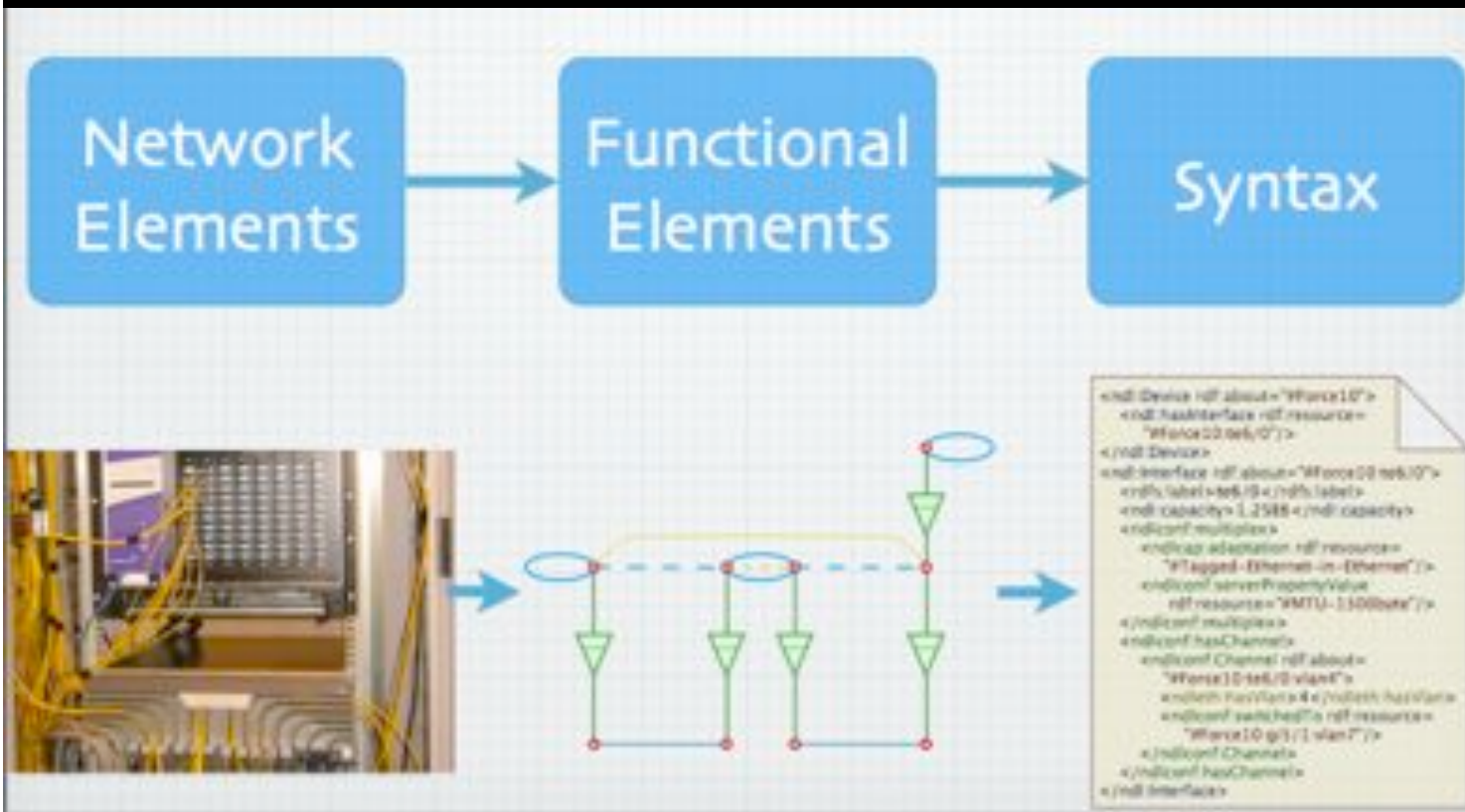
- From semantic Web / Resource Description Framework.
- The RDF uses XML as an interchange syntax.
- Data is described by triplets:



# Network Description Language

Choice of RDF instead of XML syntax

Grounded modeling based on G0805 description:

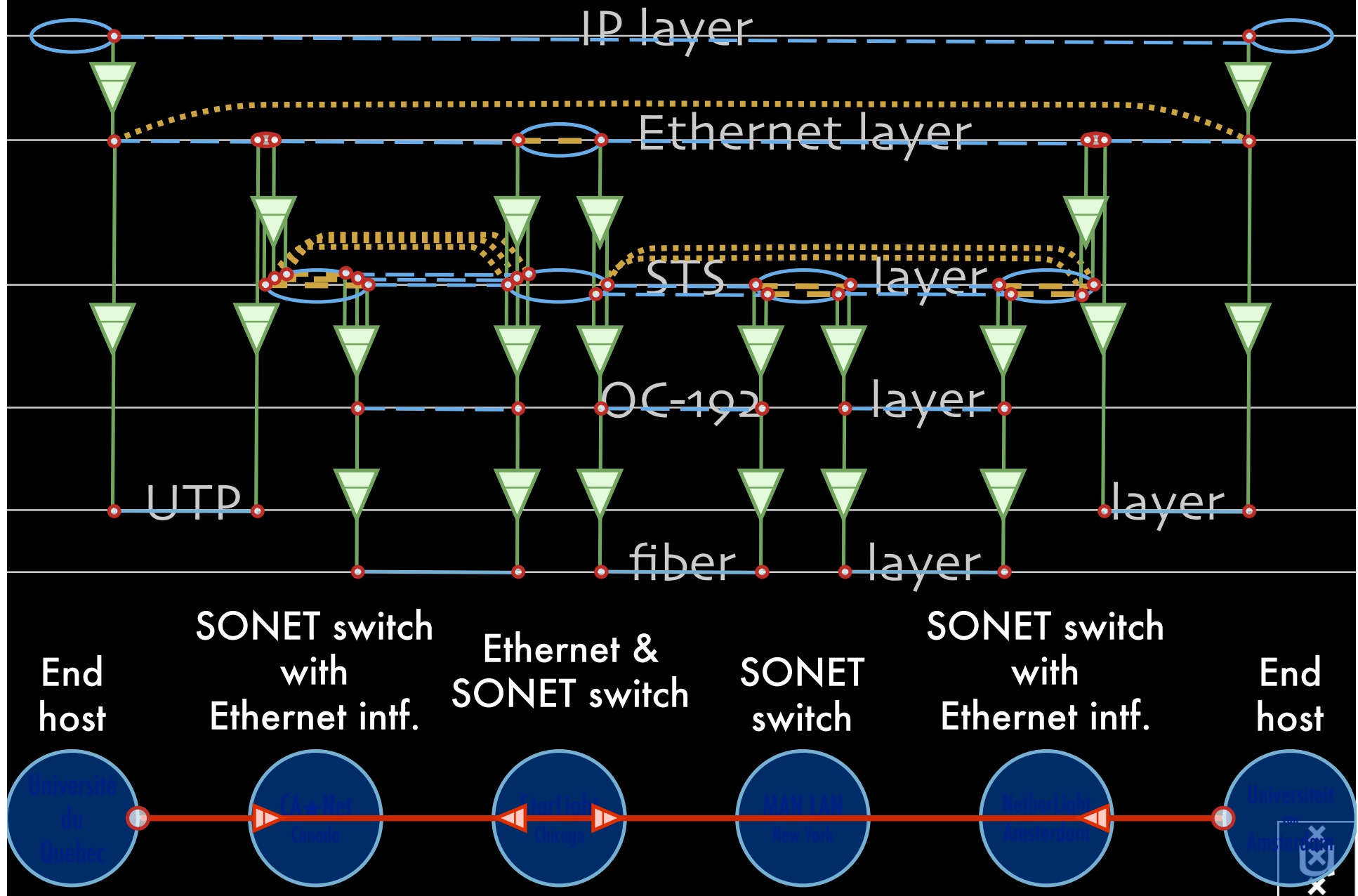


Article:

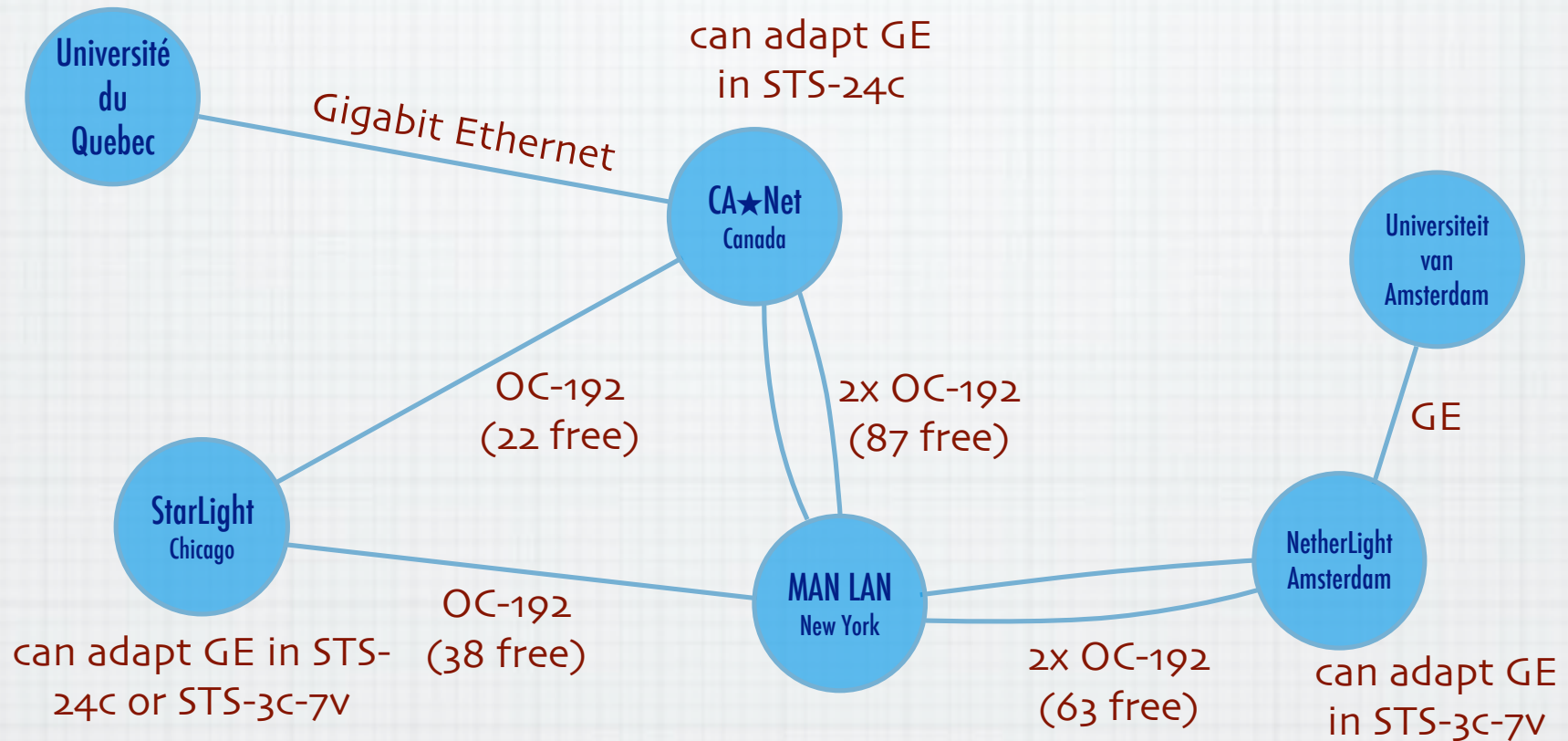
F. Dijkstra, B. Andree, K. Koymans, J. van der Ham, P. Grosso, C. de Laat

*"A Multi-Layer Network Model Based on ITU-T G.805"*

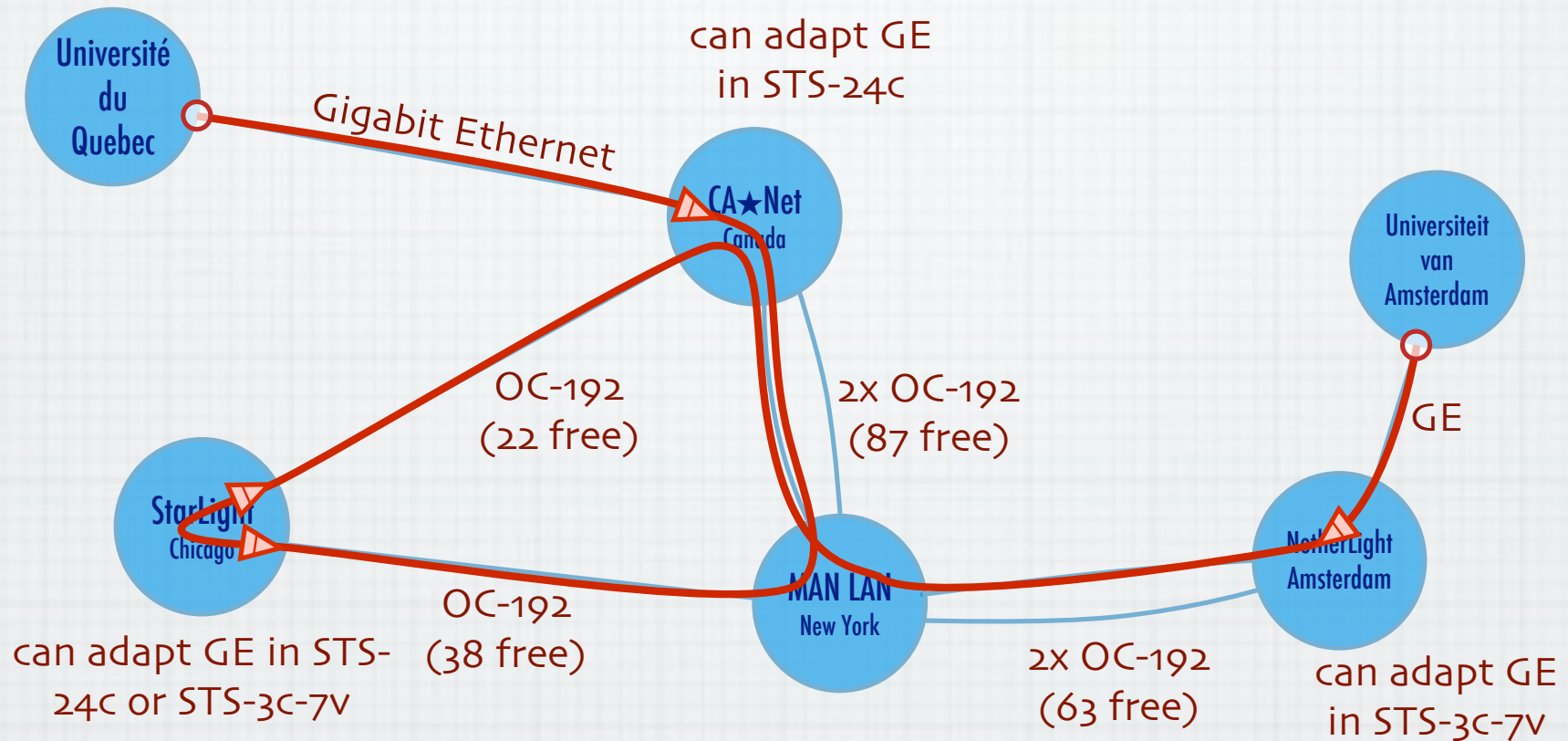
# Multi-layer extensions to NDL



# A weird example



# The result :-)



Thanks to Freek Dijkstra & team

# OGF NML-WG

## *Open Grid Forum - Network Markup Language workgroup*

### Chairs:

Paola Grosso – Universiteit van Amsterdam

Martin Swany – University of Delaware

### Purpose:

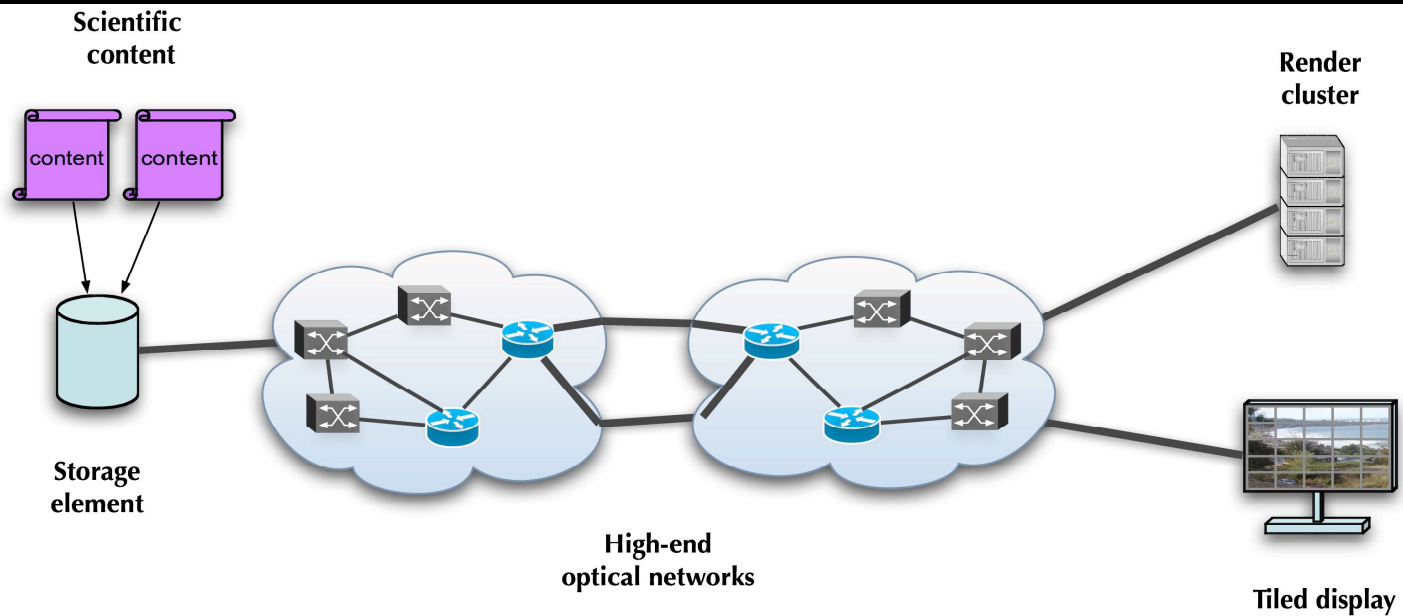
*To describe network topologies, so that the outcome is a standardized network description ontology and schema, facilitating interoperability between different projects.*

<https://forge.gridforum.org/sf/projects/nml-wg>



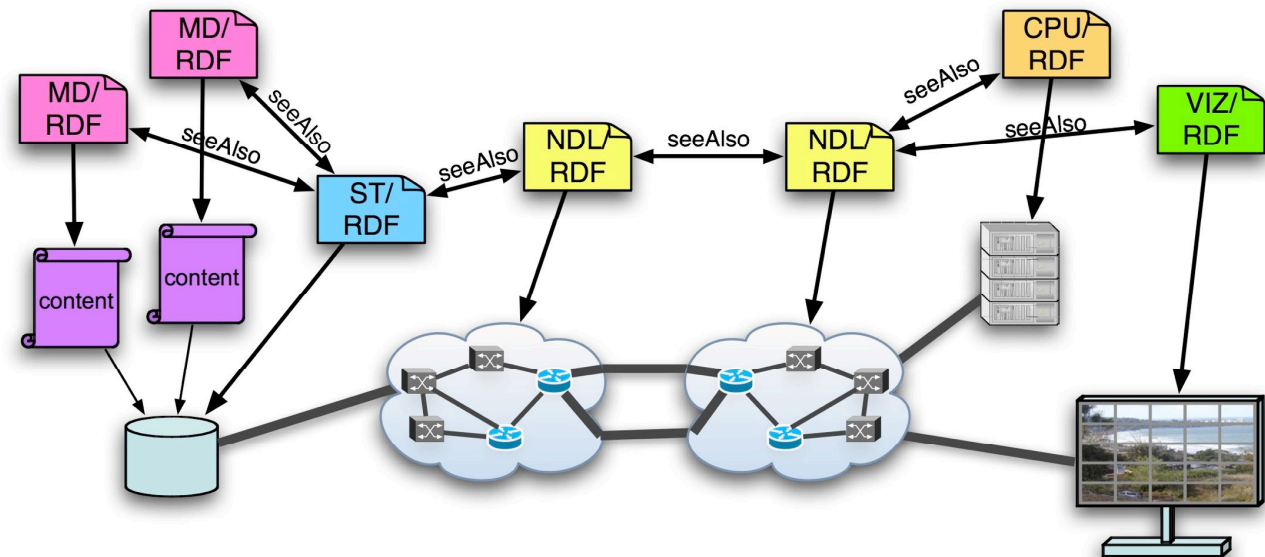


# From network to applications



From the physical architecture

To the semantic model for the architecture



# Amsterdam CineGrid S/F node

## “COCE”

DAS-3 @ UvA

DP AMD processor nodes

comp node

⋮ 77x

comp node

head node

bridge node

bridge node

bridge node

bridge node

bridge node

bridge node

bridge node

bridge node

storage node

100 TByte

M  
Y  
R  
I  
N  
E  
T

NetherLight, StarPlane  
the cp testbeds  
and beyond

Rembrandt Cluster  
total 22 TByte disk space  
@ LightHouse

Opteron 64 bit nodes

head node

comp node

comp node

comp node

comp node

comp node

comp node

comp node

comp node

comp node

streaming node

8 TByte

**GlimmerGlass  
photonic switch**

10 Gbit/s

10 Gbit/s

NORTEL  
8600  
L2/3 switch

F10  
L2/3 switch

10 Gbit/s

suitcees &  
briefcees

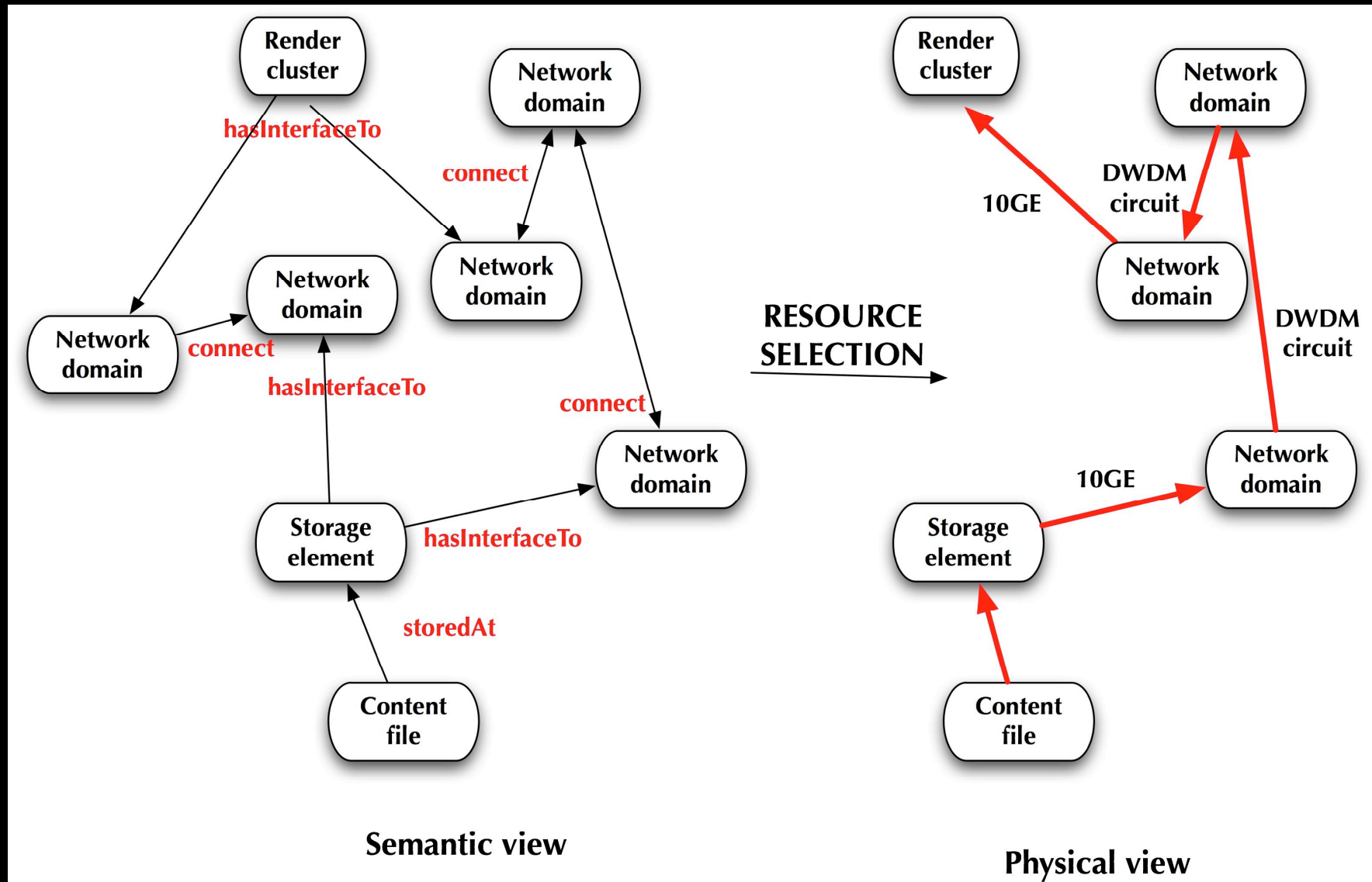
SURF  
NET

Node 41

sara

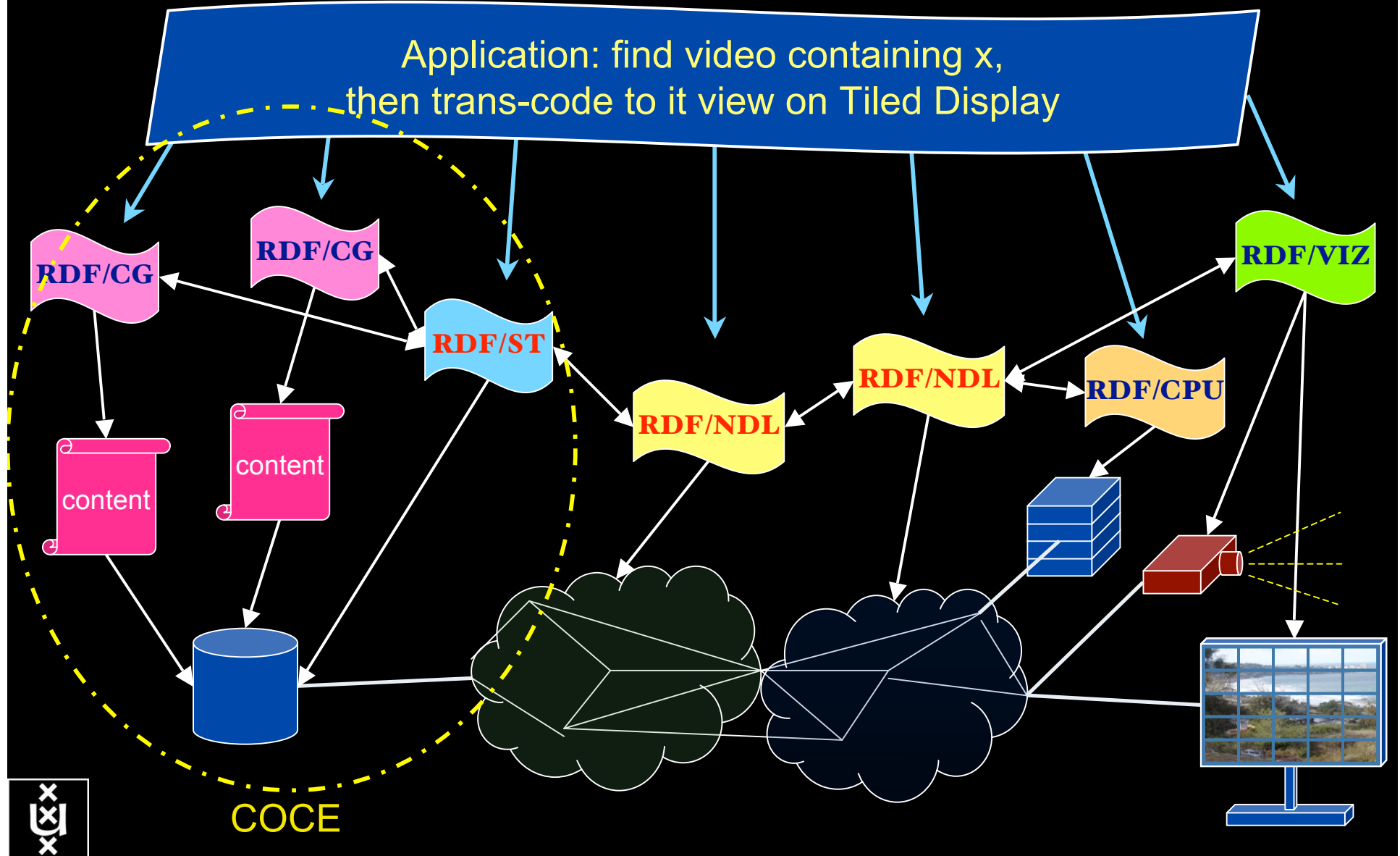


# Semantic Reasoning



# RDF describing Infrastructure “I want”

Application: find video containing x,  
then trans-code to it view on Tiled Display



# CineGrid on Layer2 Paths

Can we use Layer2 Ethernet techniques like PBT for building a high quality media network that protects the media experience?

Benefits of Layer2 engineered paths:

- Traffic Engineering on PBT trunks provides deterministic connections.
- Connectivity monitoring gives detailed statistics and detects broken links.
- Link protection provides a backup path when the primary path fails.
- Compatibility with regular Ethernet hardware allows easy integration in existing networks.
- The scalable approach makes PBT future proof.

(Slide from R. Koning)



# Interactive programmable networks



# CineGrid portal



CineGrid distribution center Amsterdam

[Home](#) | [About](#) | [Browse Content](#) | [cinagrid.org](#) | [cinagrid.nl](#)

## Amsterdam Node Status:

node41:  
Disk space used: 8 GiB  
Disk space available: 10 GiB

## Search node:

Search

## Browse by tag:

amsterdam animation  
antonacci blender boot  
bridge bunny cgi delta holland  
hollandfestival  
leidschevriet  
muziekgebouw  
nieuwmarkt opera prague ship  
train tram waag

via Unversum en Amsterdam

## CineGrid Amsterdam

Welcome to the Amsterdam CineGrid distribution node. Below are the latest additions of super-high-quality video to our node.

For more information about CineGrid and our efforts look at the about section.

## Latest Additions



### Wypke

Wypke

#### Available formats:

4k drc (4.0 KB)

Duration: 1 hour and 8 minutes

Created: 1 week, 2 days ago

Author: Wypke

Categories:



### Prague Train

Steam locomotive in Prague.

#### Available formats:

4k drc (3.9 KB)

Duration: 27 hours and 45 minutes

Created: 1 week, 2 days ago

Author: CineGrid

Categories: delta prague train



### VLC: Big Buck Bunny

(C) copyright Blender Foundation | <http://www.bigbuckbunny.org>

#### Available formats:

1080p MPEG4 (L1) GB

Duration: 1 hour and 0 minutes

Created: 1 month, 1 week ago

Author: Blender Foundation

Categories: animation blender bunny  
cgi

# Portal features

The portal is developed by R. Koning and S. Knopper:

Two main features:

A web-based interface connected to a database holding the information about all content on storage.

A daemon handling the requests made by the end-user. It starts the video stream using the appropriate media player.

Current research work:

Streaming to multiple user-selected destinations

Interfaces to network control plane for configuration of network path.





# *Questions ?*