

# GENI Intl. Session: Research update from UvA.

Cees de Laat

EU  
COMMIT  
UvA

NWO

PID/EFRO

SURFnet

NLESC

TNO

NWO/nf



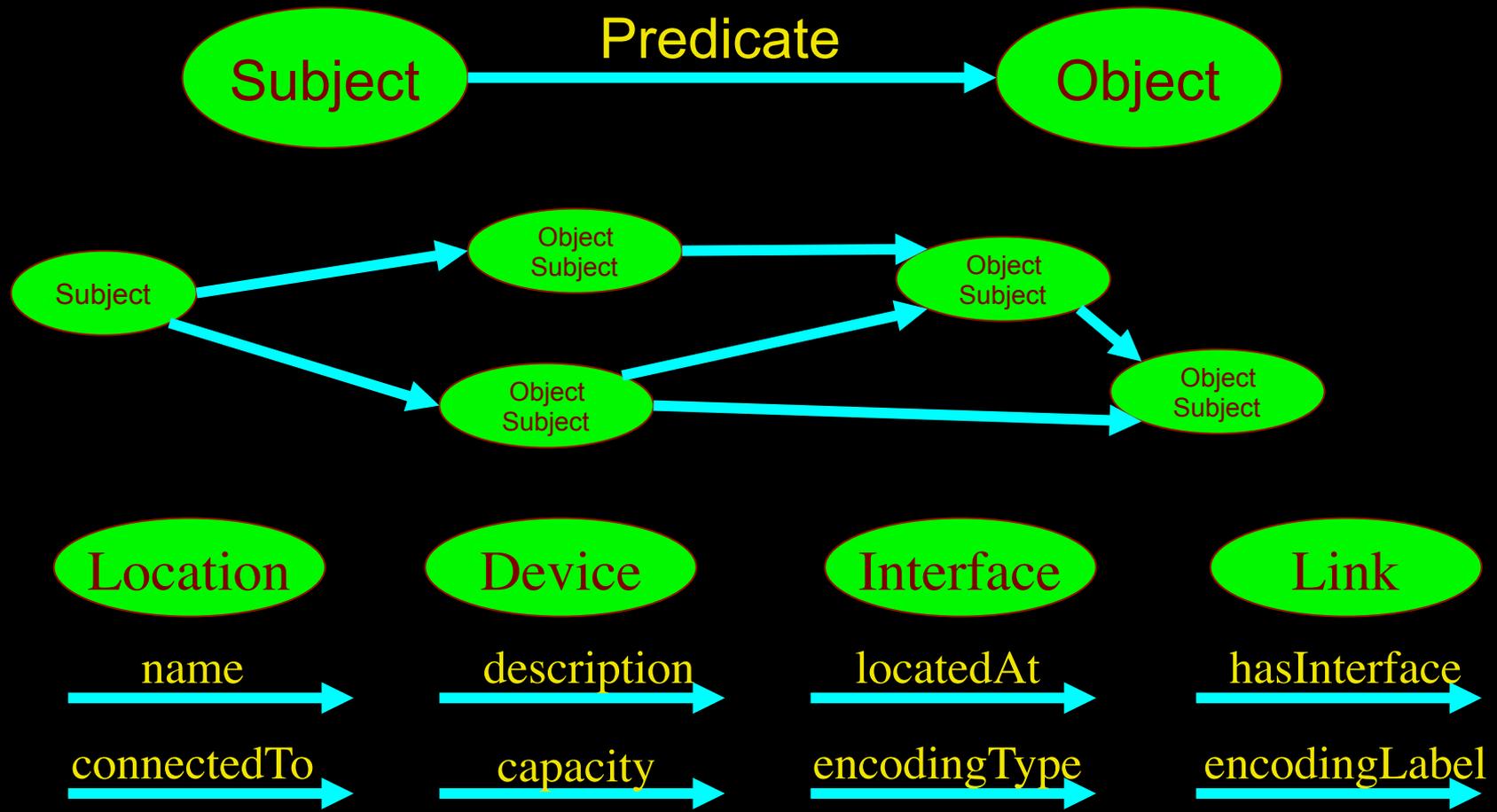




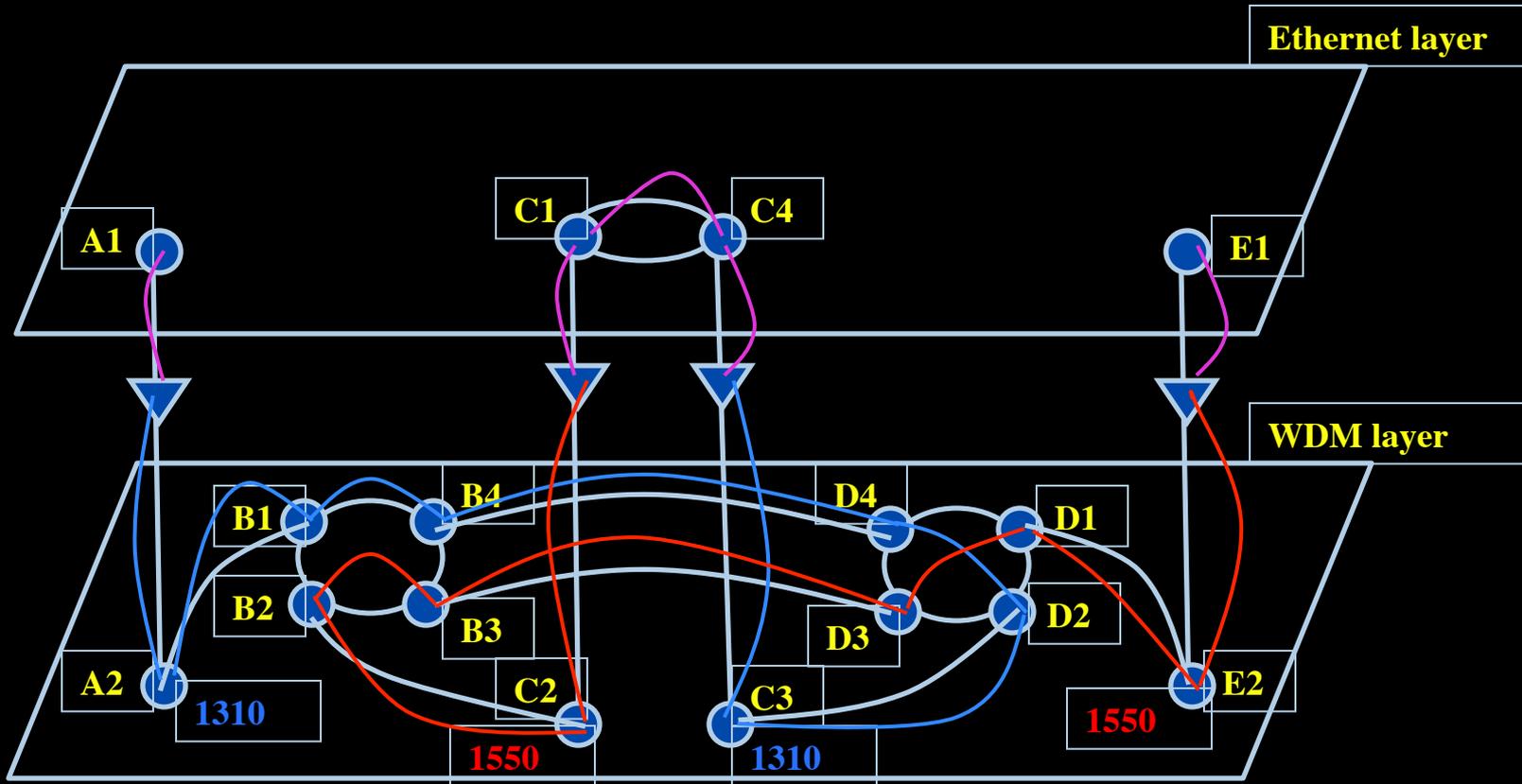
# LinkedIn for Infrastructure



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



# Multi-layer Network PathFinding



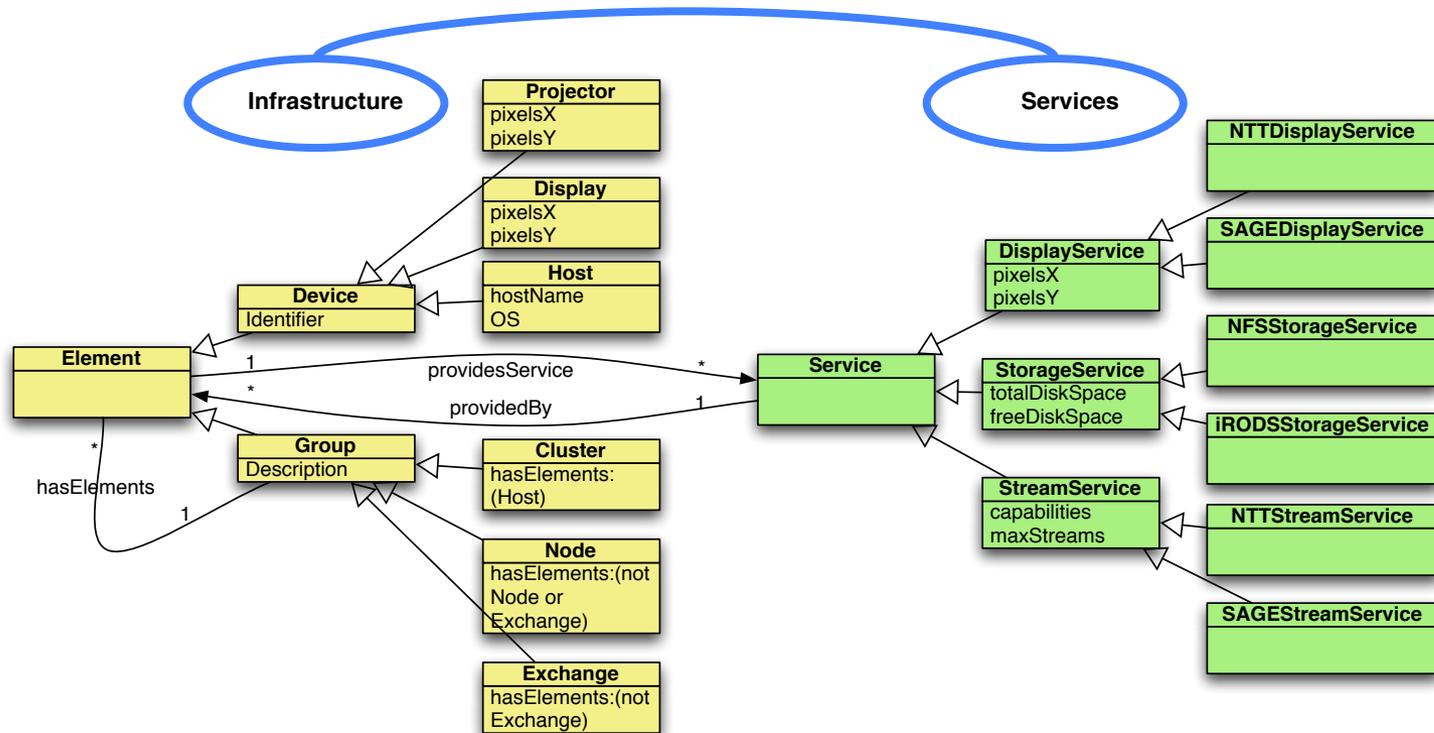
Path between interfaces A1 and E1:

A1-A2-B1-B4-D4-D2-C3-C4-C1-C2-B2-B3-D3-D1-E2-E1

Scaling: Combinatorial problem

# Information Modeling

Define a common information model for **infrastructures** and **services**.  
Base it on Semantic Web.



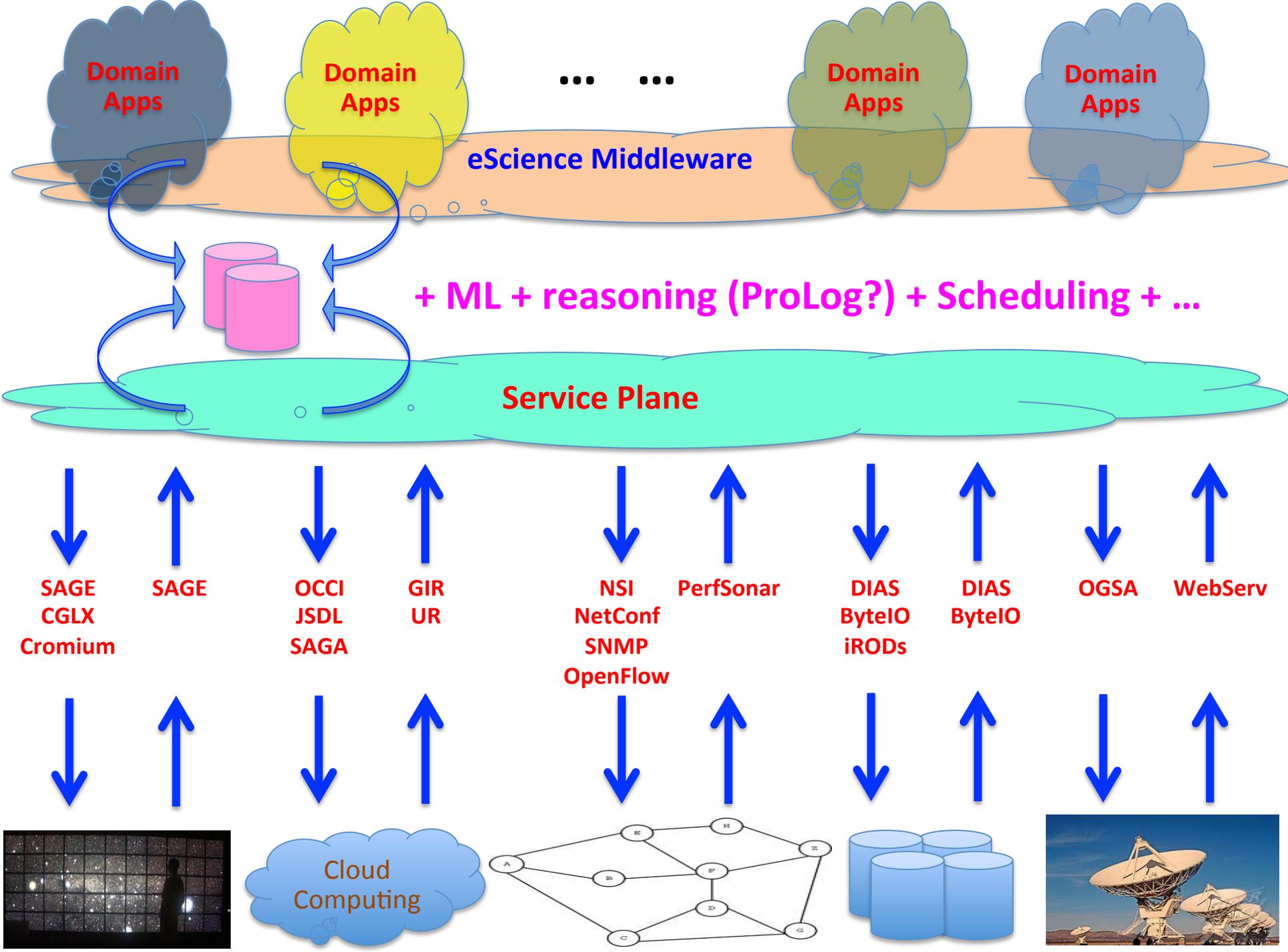


I want to



“Show Big Bug Bunny in 4K on my Tiled Display using green Infrastructure”

- Big Bugs Bunny can be on multiple servers on the Internet.
- Movie may need processing / recoding to get to 4K for Tiled Display.
- Needs deterministic Green infrastructure for Quality of Experience.
- Consumer / Scientist does not want to know the underlying details.  
➔ His refrigerator also just works.



**Domain Apps**

**Domain Apps**

... ..

**Domain Apps**

**Domain Apps**

**eScience Middleware**

**+ ML + reasoning (ProLog?) + Scheduling + ...**

**Service Plane**



**SAGE**  
CGLX  
Cromium

**SAGE**

**OCCI**  
JSDL  
SAGA

**GIR**  
UR

**NSI**  
NetConf  
SNMP  
OpenFlow

**PerfSonar**

**DIAS**  
BytelO  
iRODs

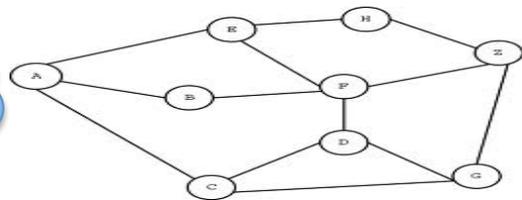
**DIAS**  
BytelO

**OGSA**

**WebServ**



**Cloud Computing**

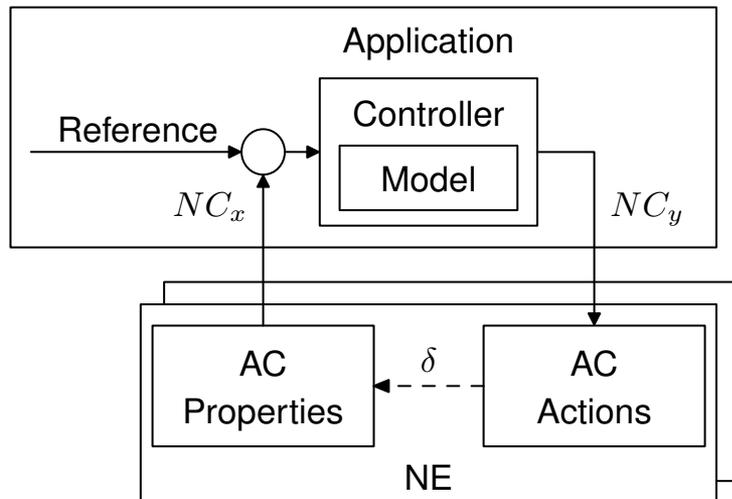


# ECO-Scheduling



# In the Intercloud virtual servers and networks become software

- Virtual Internets adapt to the environment, grow to demand, iterate to specific designs
- Network support for application specific interconnections are merely optimizations: Openflow, active networks, cisco distributed switch
- But how to control the control loop?



# Interactive Networks

Rudolf Strijkers<sup>1,2</sup>

Marc X. Makkes<sup>1,2</sup>

Mihai Christea<sup>1</sup>

Laurence Muller<sup>1</sup>

Robert Belleman<sup>1</sup>

Cees de Laat<sup>1</sup>

Robert Meijer<sup>1,2</sup>

<sup>1</sup> University of Amsterdam, Amsterdam The Netherlands

<sup>2</sup> TNO Information and Communication Technology, Groningen, The Netherlands

# Q & A

I did not talk about:

- CineGrid, digital Cinema on CI
- Knowlegde complexity
- Security & privacy
- AAA
- ...

<http://ext.delaat.net/>

Slides thanks to:

- Paola Grosso
- Sponsors see slide 1. ☺
- SNE Team & friends, see below

