AAA developments

www.science.uva.nl/~delaat

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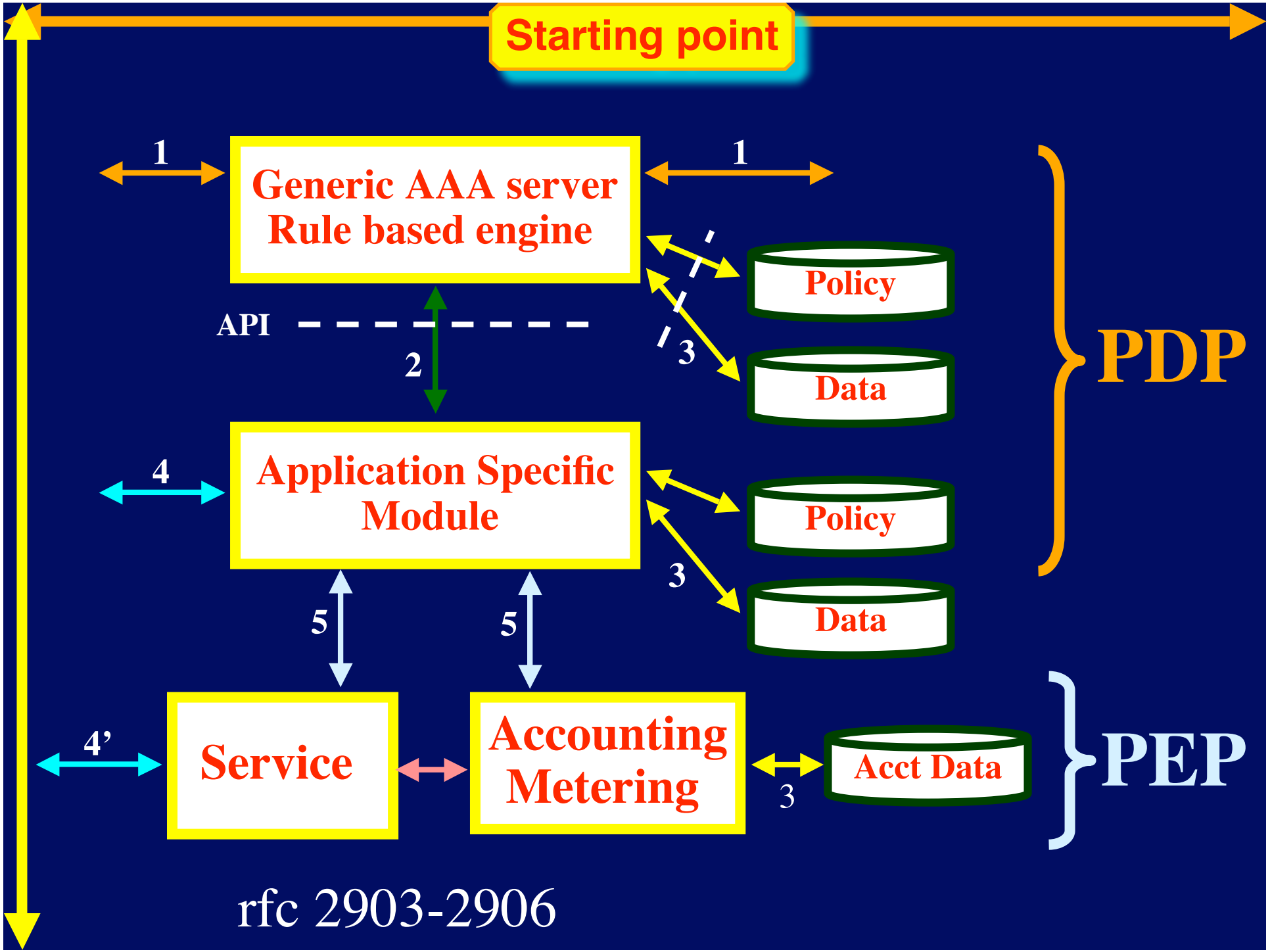
SARA

TI

TNO

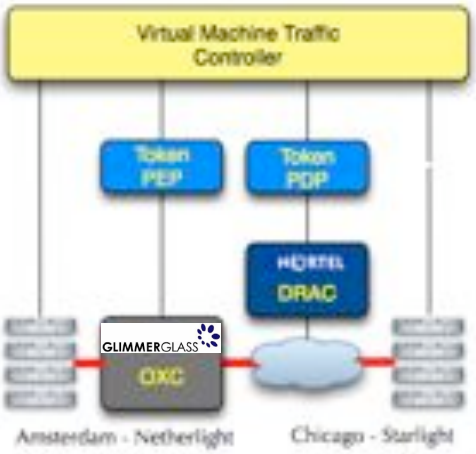
NCF


Starting point
1
Generic AAA server
Rule based engine
1
Policy
API
2
3
Data
PDP
4
Application Specific
Module
Policy
3
Data
5
5
4'
Service
Accounting
Metering
3
Acct Data
PEP
rfc 2903-2906

Token Based Networking

Access Control, Resource Management and Path Selection in Optical Networks using Tokens

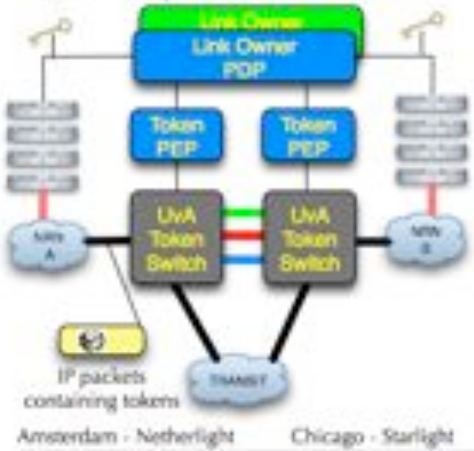
Tokens performing Resource Management and Access Control in Virtual Machine Turntable Experiment.



Tokens will allow:

- Separation of (slow) authorization process and real time usage.
- Binding to many different types of attributes: user, time, resource, etc.
- Policy Decision to be abstracted from Policy Enforcement Point.
- Anonymous usage
- Resource Management

Tokens performing Path Selection and Access Control at Optical Inter-Connection Points



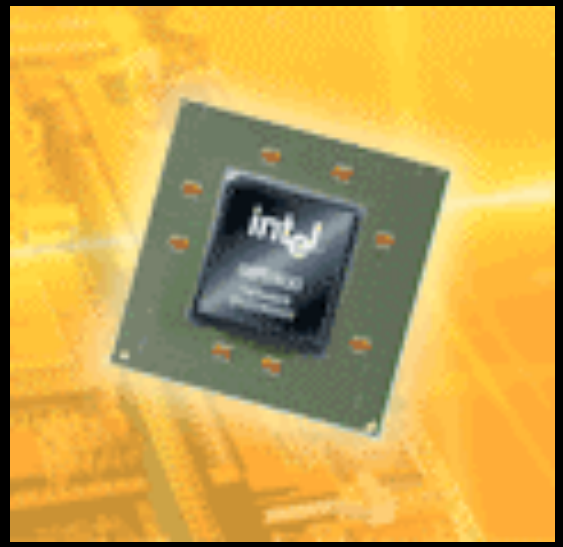
Token marked IP packets will allow:

- Economic Link Owners to assign usage rights without routing changes.
- Recognition at Inter-Connection Points (Optical Exchanges). When authentic and valid, token marked traffic will use the Link Owners path.
- Implementations that support different business models
- Hardware (NPU based) recognition rate expected to be a 10 Gb/s.

UvA Universiteit van Amsterdam
Leon Gommans
Fred Wan, Cees de Laat
Mihai Cristea

GigaPort NextGRID

IXP series Network Processor Units

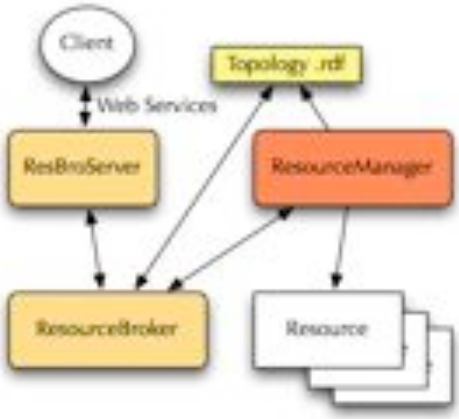


Features:

- The IXP 2850 is able to perform packet functions at 10 gb/s
- 16 programmable Micro Engines to allow parallel dataplane processing.
- Two crypto units support bulk security algorithms (AES, DES, 3DES, SHA1)
- Designed for IPSec, however is general enough to do other things.
- Supports Cypher Block Chaining in combination with MAC.

Resource Brokering:
Your Ticket Into NetherLight

Application architecture:



Lambda networking allows the creation of application specific light paths.

Lambda networking facilities empower users to request services and provision **end-to-end light paths** if and when they need it.

NetherLight, located in Amsterdam, The Netherlands, is one of such facilities.

The Amsterdam **LightHouse** is a joint research laboratory of the UvA and SARA.

Resources in the LightHouse can be used by collaborators to prove the concepts of hybrid networks.

Lightpath setup components:

Topology information → We make use of **semantic web** techniques. The description of the network is contained in RDF files.

Reservation system → We provide **web services** interfaces to the client for:
- resources and path inquiries;
- reservation handling.

Management system → We provision the paths on the LightHouse equipment.

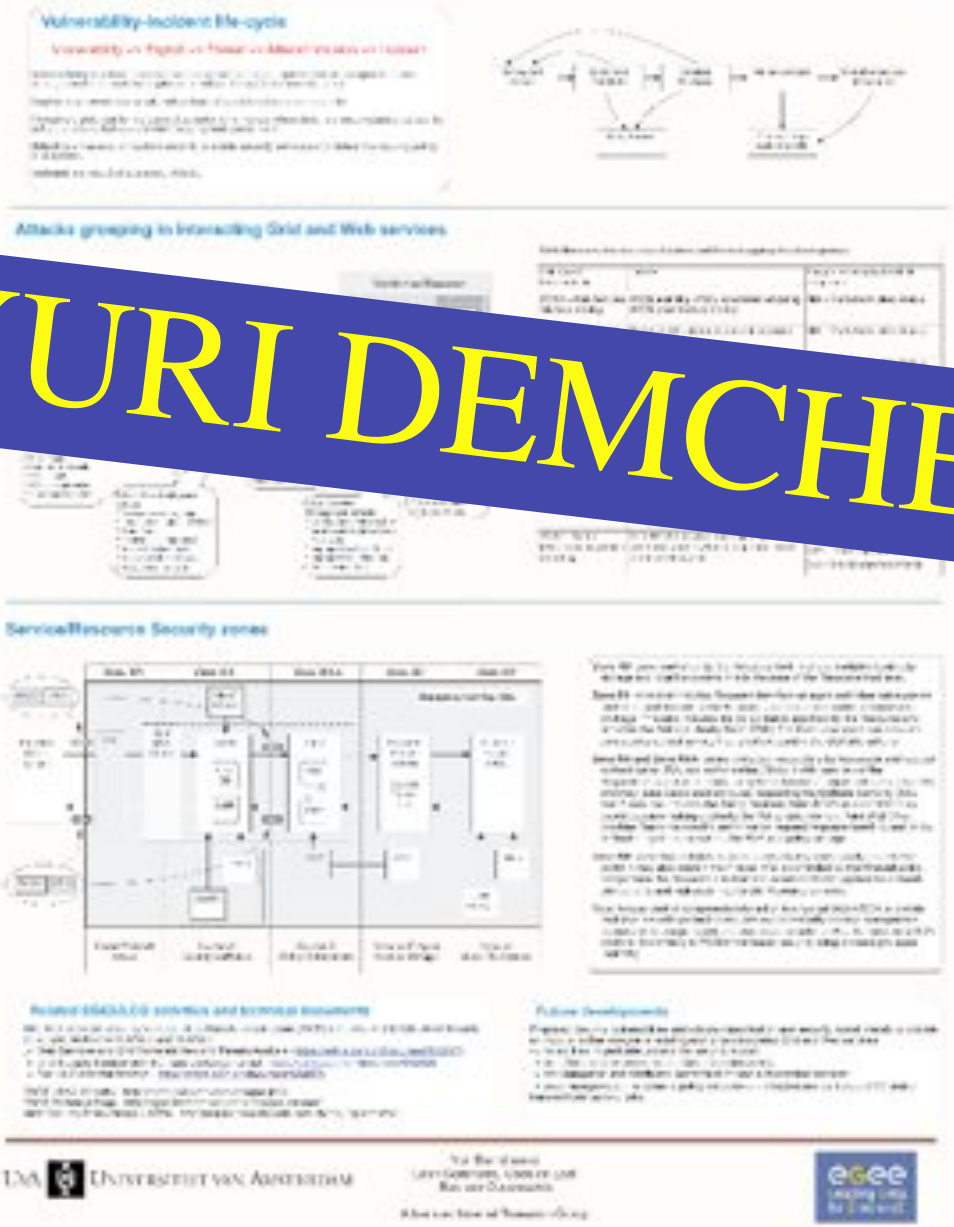
Semantic web
The Network Description Language, an RDF Schema, describes networks in a standard, interoperable way.

Web Services
A WSDL file describes the interfaces to the service available to clients. Clients can interact with the service directly or via a portal.

Our SC|05 demonstration
We show the setup of dynamic connections between two computing nodes through the LightHouse/ NetherLight Optical Exchange.

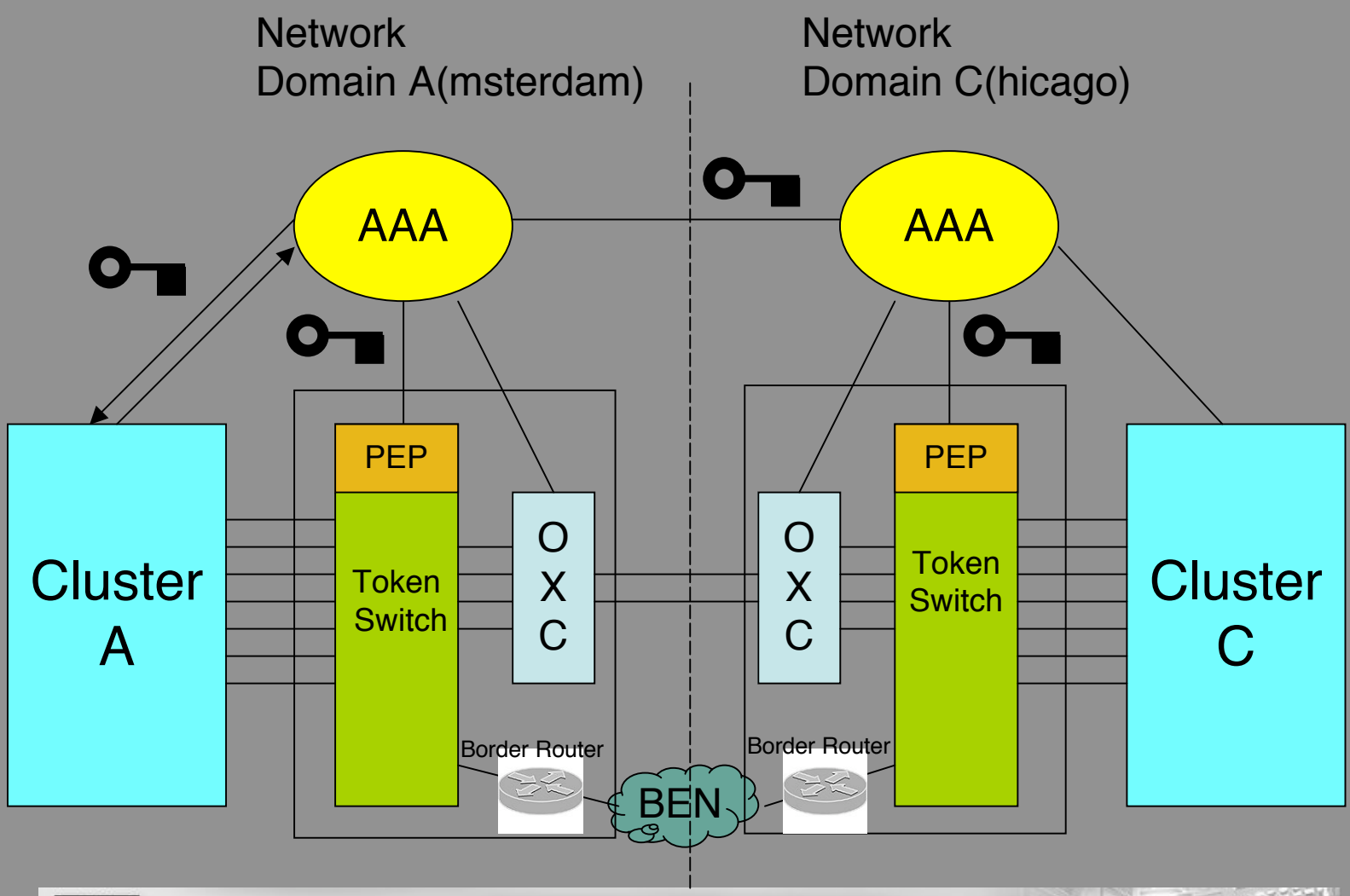
UvA Universiteit van Amsterdam
Paola Grosso
Jeroen van der Ham
GigaPort

Web Services and Grid Security Vulnerabilities and Threats Analysis and Model

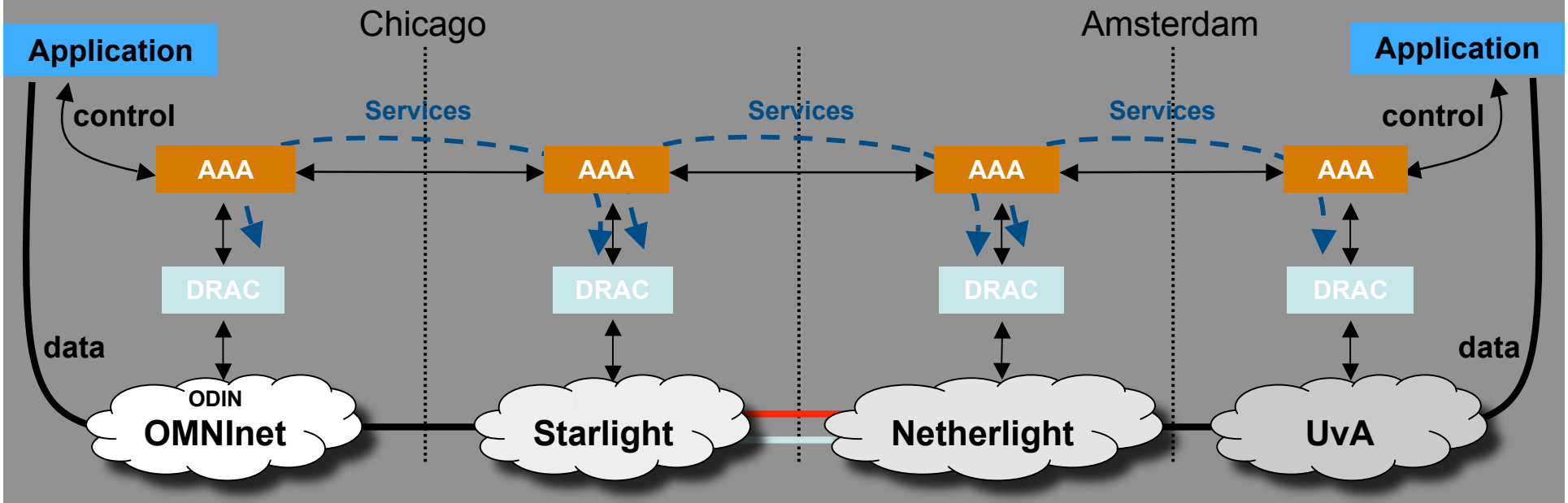


ASK YURI DEMCHENKO

Example experiment agent model



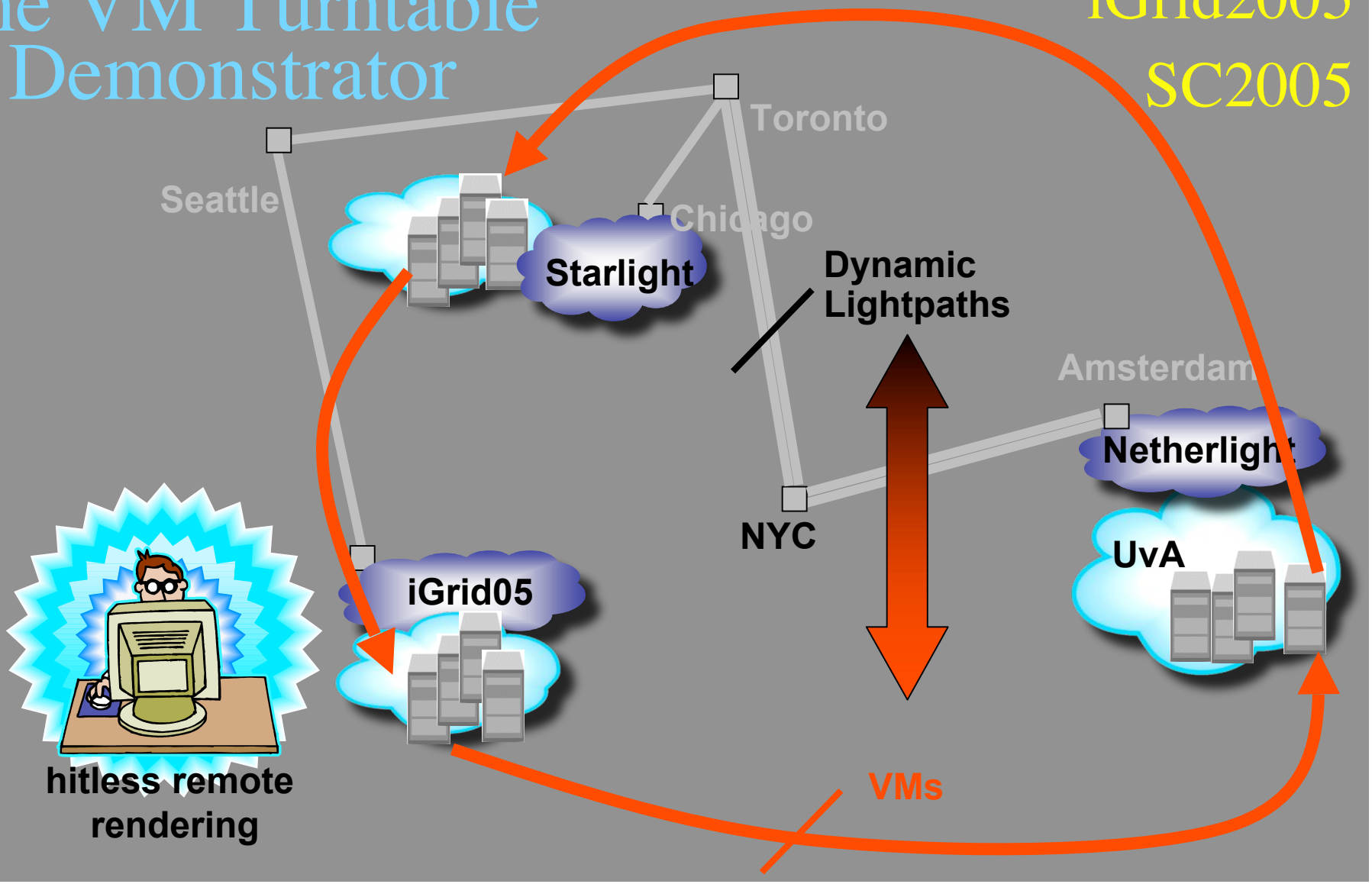
SC2004 Lambda Service Demonstrator



- finesse the control of bandwidth across multiple domains
- while exploiting scalability and intra- , inter-domain fault recovery
- thru layering of a novel SOA upon legacy control planes and NEs

The VM Turntable Demonstrator

iGrid2005
SC2005



The VMs that are live-migrated run an iterative search-refine-search workflow against data stored in different databases at the various locations. A user in San Diego gets hitless rendering of search progress as VMs spin around

Software Status

- The AAA toolkit CVS repository is downloadable. It requires JAVA programming skills tu use at this point.
  - http://www.science.uva.nl/research/air/projects/aaa/demokit
- Also available demo-scenario's (magic 8 ball by Fred Wan)

- Low- en highlevel components in Lighthouse and Netherlight AAA manageable (Glimmerglass / Calient OXC's) en DRAC. It requires a scenario to use or show something.

Software To-Do

- If we can agree on an appliation-scenario in OptIPuter, we can work out how to fill in the AAA components. That is why scenario's, as shown by Paola at SC2005, are important to push our work.

- We currently try to bring in workflow tools like BPEL to make AAA easier applicable. This is currently the focus of our brainstorm sessions.

- Flexible complex multi domain policy management and excecution is key! [ref dr. Carl]

Business as usual :-)

Questions ?

Credits:

- Leon Gommans, Paola Grosso, Bas Oudenaarde, Arie Taal, Freek Dijkstra, Bert Andree, Jeroen van der Ham, Hans Blom, Yuri Demchenko, Fred Wan, Karst Koymans, Martijn Steenbakkers Jaap van Ginkel
- SURFnet / GigaPort, Kees Neggers, Erik-Jan Bos, et al!
- NORTEL: Franco Travostino, Kim Roberts, Rod Wilson
- SARA: Anwar Osseryan, Paul Wielinga, Pieter de Boer, Ronald van der Pol, teams
- Joe Mambretti, Bill stArnaud, GLIF community
- Tom & Maxine & Larry, Laurin, OptIPuter, OnVector team !!!!