



# **A Nordic Resource Sharing Framework**

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Workshop on Monitoring , Logging and Accounting, in  
Production Grids – MLA  
Munich, June 10<sup>th</sup>, 2009



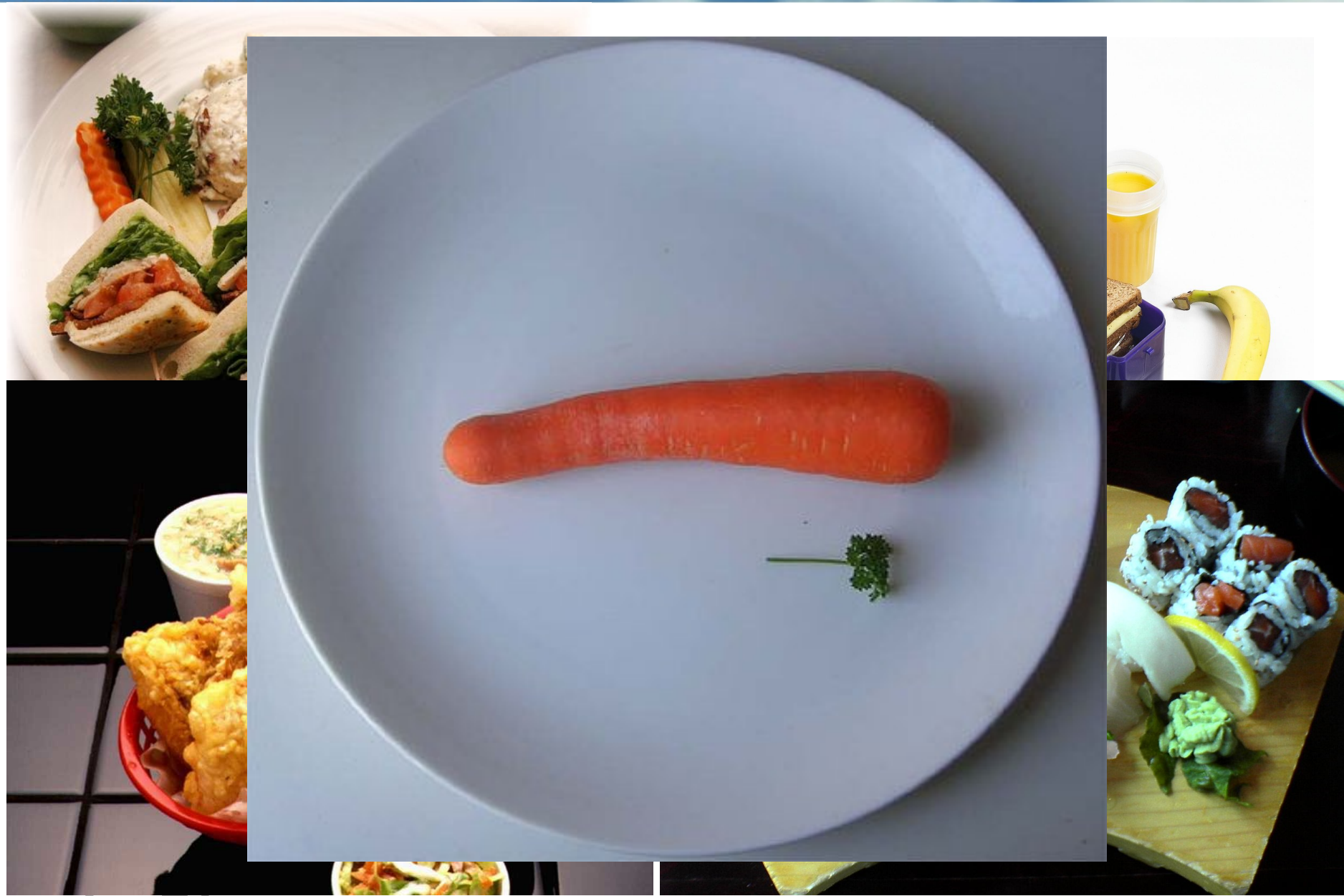


## Sharing of Resources !





# This is Free Lunch...





# No Free Lunch!



- Free lunch is bad lunch
- Use of Grid services need to come with a “price”
- But first we need to know who used what ...





**9**  
**Read note 9.**

**IMPORTANT**  
You must date section 9.

**IMPORTANT**  
If a parent or guardian is signing section 9, they must have parental responsibility and should give their relationship to the child. If the parents are not married, the father will not normally have parental responsibility. Please see the guidance notes for more details.

**Declaration** This must be filled in by the person named in section 2. If under 16, their parent or guardian must fill this in instead. SE/04/04

**Caution** It is a criminal offence to make a false statement to get a passport. If you have made a false statement on this form, you could be prosecuted and could go to prison. Our work includes checking that the countersignature in section 10 is genuine.

I declare that I am 16 years or over (or will be within two weeks) and that:

1. I will return the lost passport to a UK passport office if it comes into my possession;
2. I do not owe any money to the UK Government for registration or similar relief;
3. I, or the person named in section 2 of this application (if different), am in the United Kingdom today;
4. I, and the person named in section 2 (if different), as far as I know, all the information I have given in this application is correct;
5. If the application is for a child, I have parental responsibility and I have enclosed any court orders that relate to the child's residence, contact or removal from the UK;
6. I have read both the guidance notes and the caution about Name. If signing on behalf of a child (first name and surname)

Relationship to child: \_\_\_\_\_ Date: \_\_\_\_\_

**Countersignature** If a countersignature is needed, they must fill in this section after the rest of the form has been filled in.

**Caution** It is a criminal offence to make a false statement to help someone get a passport. Check the form properly before you fill in this section. If you have made any false statements on this form, or if you know that the person applying has made any false statements on this form, you could be prosecuted and could go to prison. Our work includes checking that your details are genuine. As a result, we may need to contact you. You should not sign this form if you are a relative of the person applying.

**IMPORTANT** If the application is for a child, you are confirming the identity of the adult signing in section 9. You must also be able to identify the child in order to certify the photograph.

Fill in the following in CAPITAL LETTERS and in block ink. I, (press X) box Mr, Mrs, Miss, Ms, or write your title:

Mr ☐ Mrs ☐ Miss ☐ Ms ☐ or title \_\_\_\_\_

(insert your first name) \_\_\_\_\_

(insert surname) \_\_\_\_\_

I confirm that I have known the person named in section 2, or in the case of a child, the adult signing in section 9 (insert their name) \_\_\_\_\_

(insert name) as (please say how - for example, employer, colleague, friend and so on) \_\_\_\_\_

As far as I know, the information on this form is correct. I hold a full current UK or Irish passport. I have read the caution and I understand it.

Profession, professional qualifications or position in the community \_\_\_\_\_

Your employer's name and the address you work at (or your private address if this does not apply) \_\_\_\_\_

Postcode \_\_\_\_\_ Daytime phone number \_\_\_\_\_

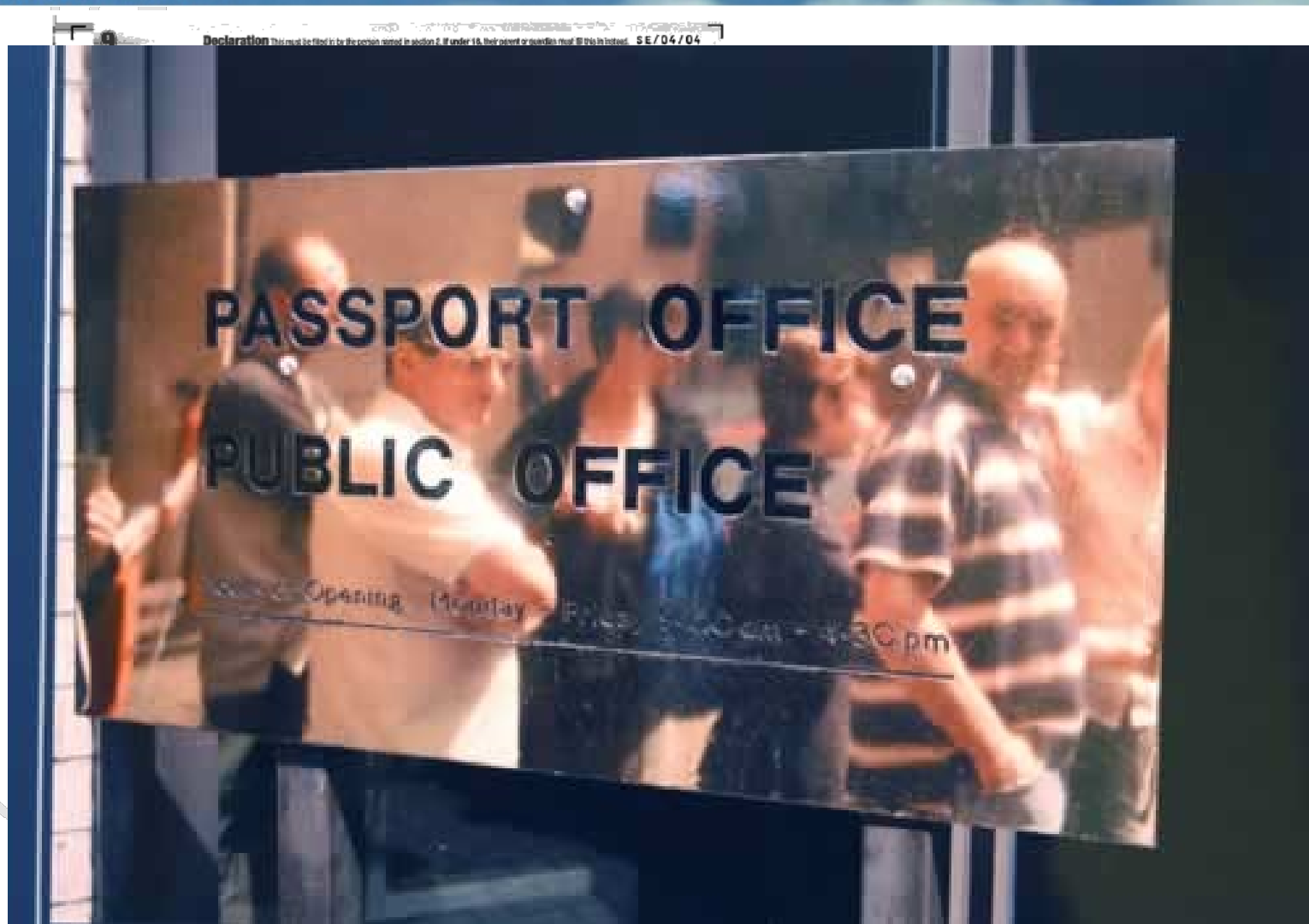
Current UK or Irish passport number \_\_\_\_\_ Evening phone number \_\_\_\_\_

Date: \_\_\_\_\_

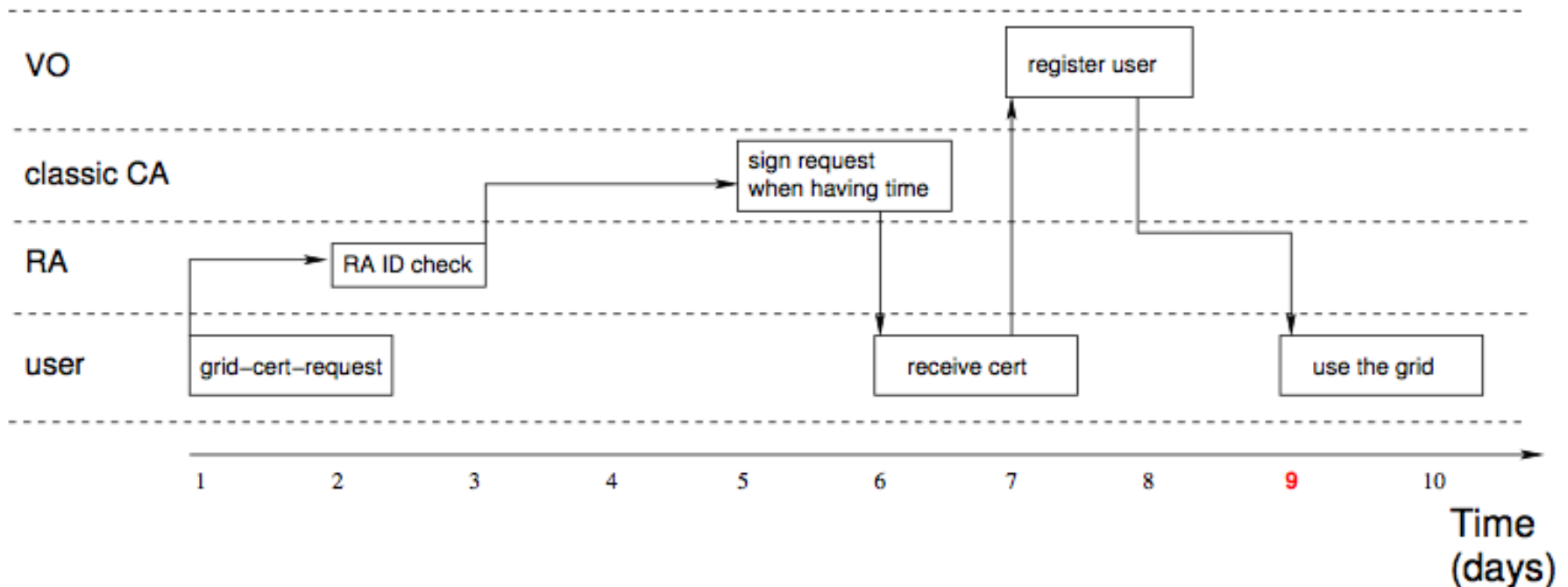
Sign in the box using black ink. Important - keep within the border. If you fail to do this, the application will not be valid.

By countersigning this application, you agree to us checking passport records to confirm your countersignature.

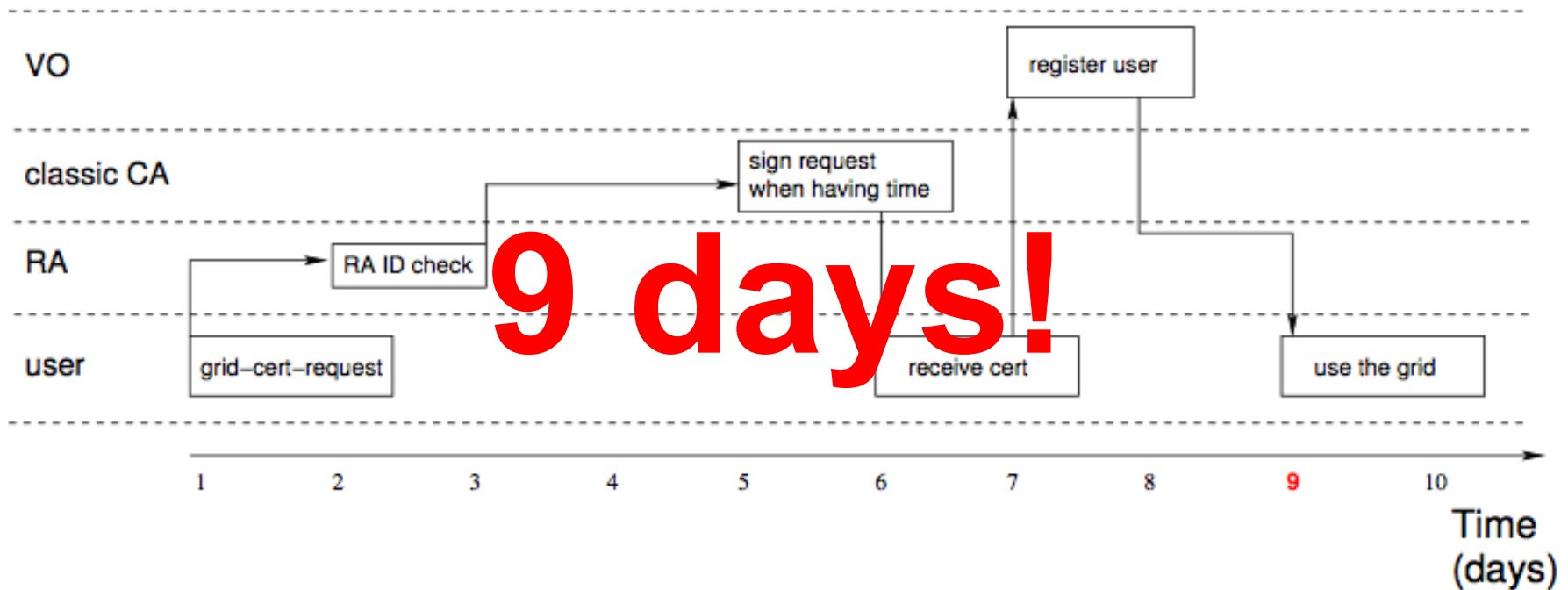




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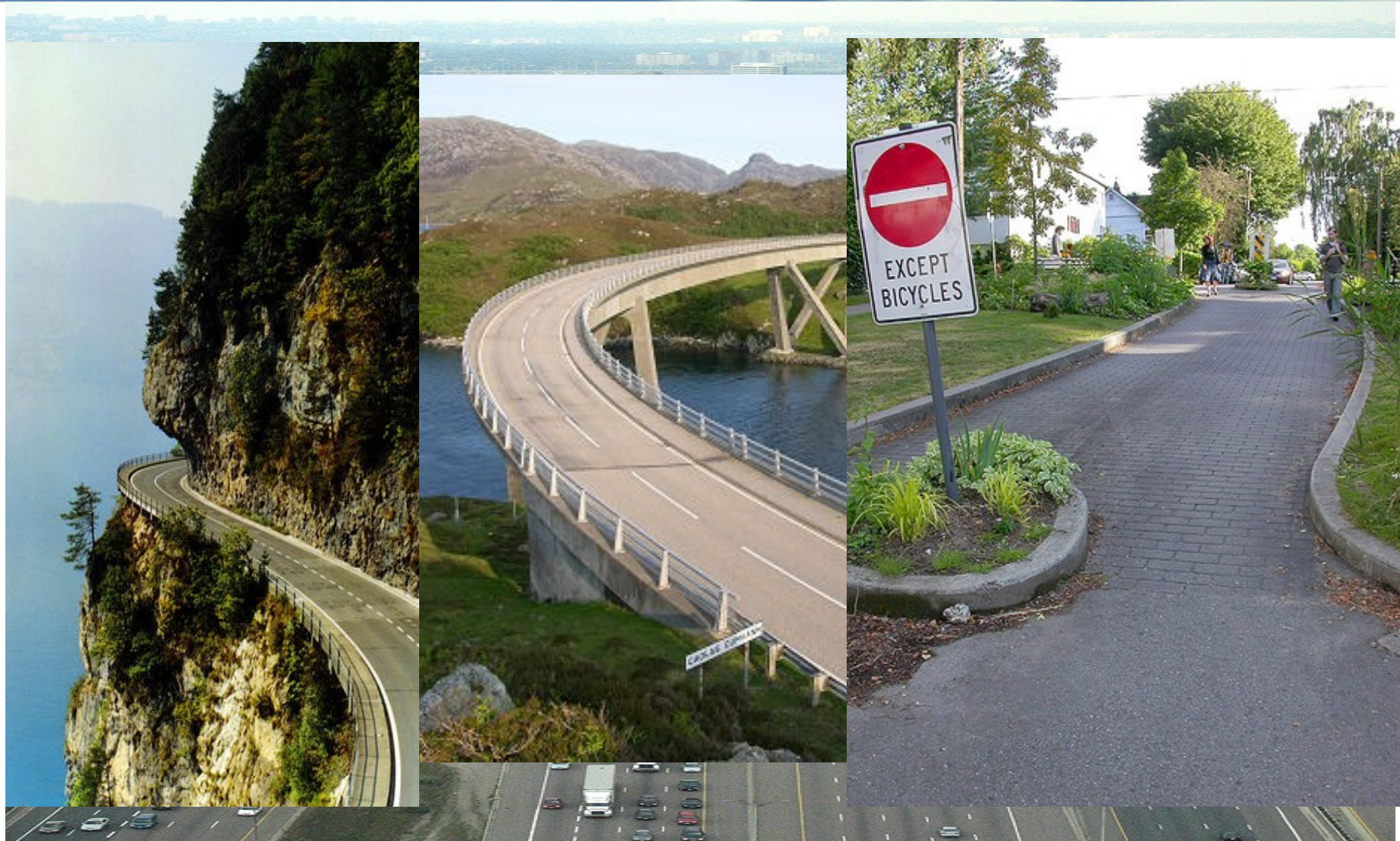








# Access patterns



- Resources in different infrastructures:
- DEISA: ~10 sites, ~100k CPUs
  - ▣ shared machines, access is mainly (?) through login accounts
- EGEE: ~300 sites, ~70k CPUs
  - ▣ (almost ?) dedicated machines, half (?) of the access is through grid
- NDGF / NorduGrid: ~70 sites, ~40k CPUs
  - ▣ shared machines, 10% of access is through grid, rest is local
- Let's build infrastructure for all the users...

- The perceived infrastructure depends today too much on the access pattern
  - ▣ SSH
  - ▣ Portal
  - ▣ Grid
  - ▣ Cloud
- We need to solve **Problem I** and **II** independently of the users **access pattern**



- User
  - Administration
  - Authentication
  - Authorization
  - Accounting
- Independently of access pattern

# UAAAA

- Administration
  - Users home institutions (IdP), and by VOMS
- Authentication:
  - IdP
  - The TERENA Grid CA Pilot Service:
    - A Short Lived Certificate Service (SLCS) based on National Identity Federations
- Authorization (also as prioritization):
  - IdP, SAML2, and VOMS, SGAS
- Accounting:
  - SGAS and FSGrid

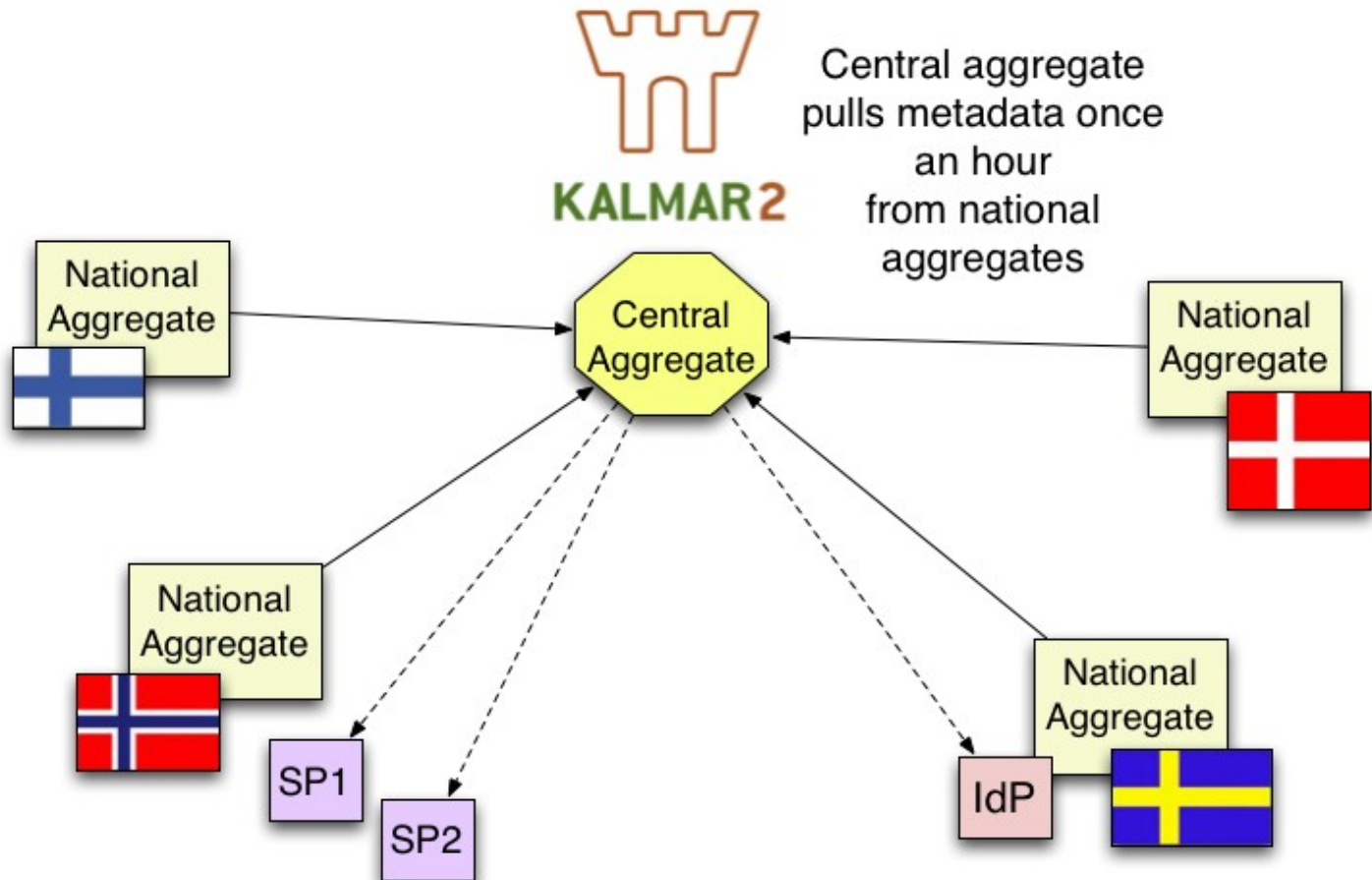
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- Users are already registered at their home institutions
- This identity vetting can be reused by services
  - (Shibboleth, SAML2...)
- In the Nordics we have national federations:
  - WAYF.DK in Denmark (and Iceland)
  - HAKA in Finland
  - FEIDE in Norway
  - SWAMI in Sweden
- And a Nordic confederation KALMAR2
- The IdPs provide access to campus and administrative resources and partly also to research resources

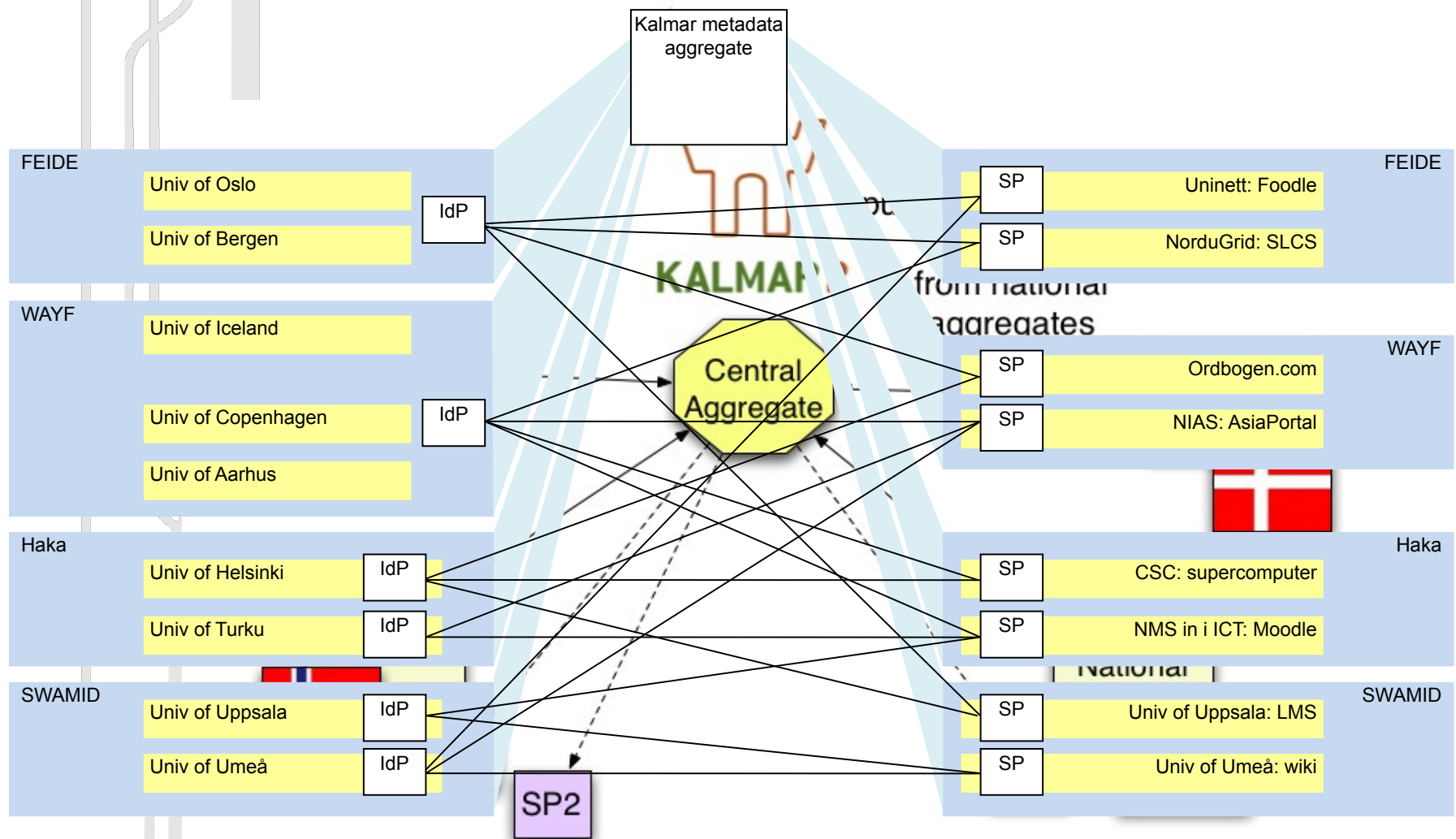




# Meta-data aggregation

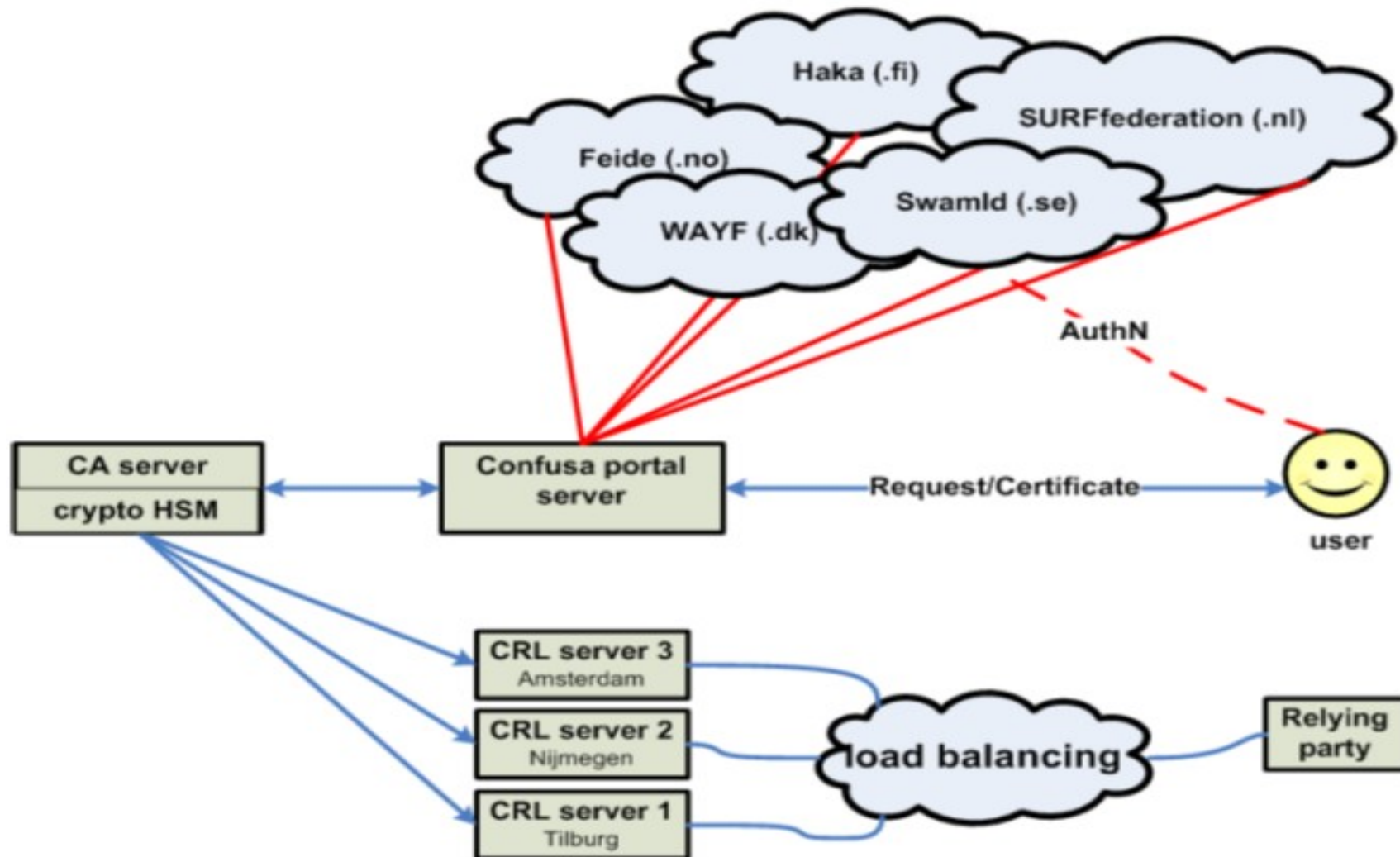


# Meta-data aggregation



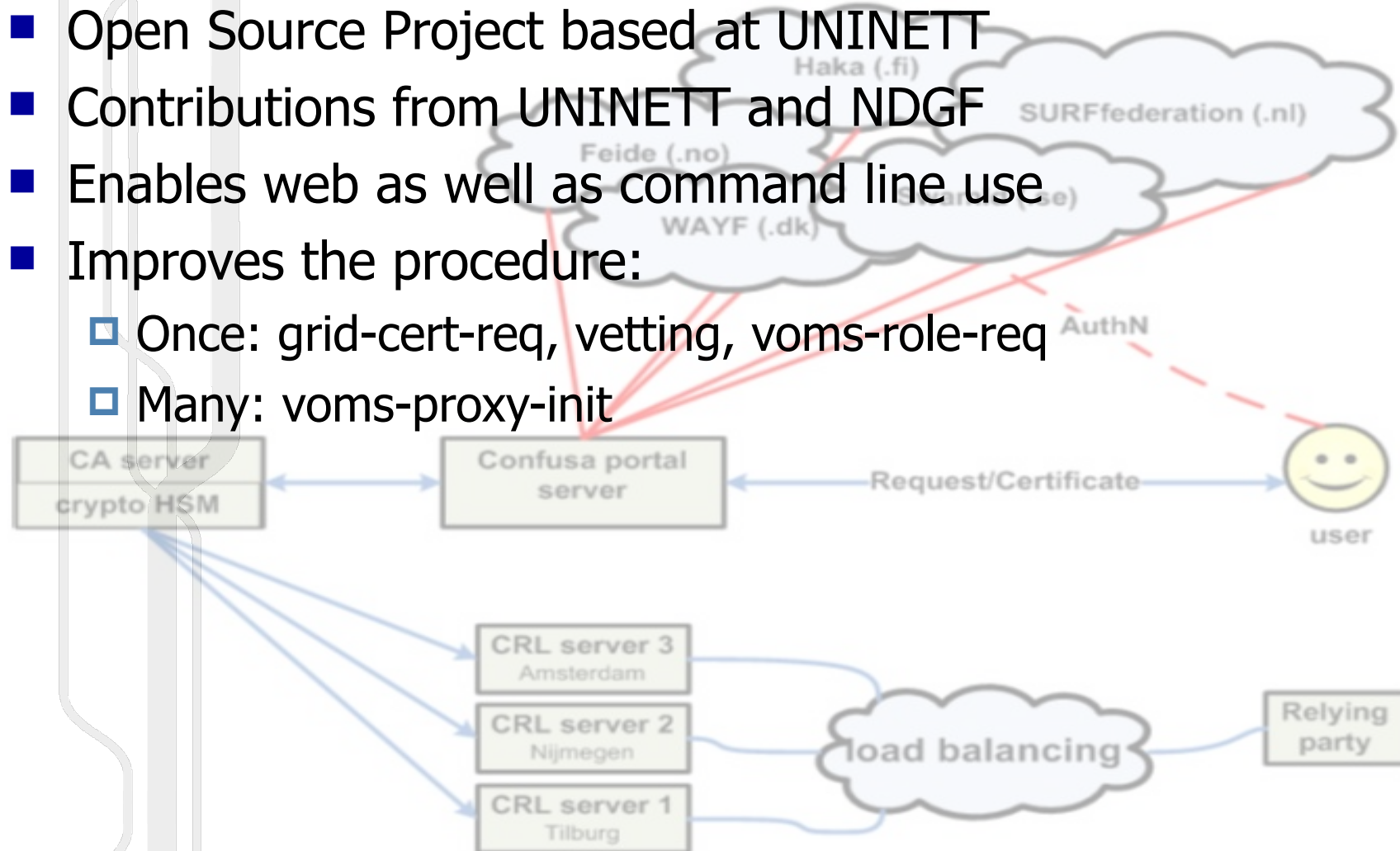
- Initiated by UNINETT in Norway and became the Nether-Nordic Short Lived Certificate Service
- Now TERENA is the organizational platform
- Ties Fed-Ids to Grid-Ids
- Enables creation of:
  - SLCs: Short Lived Certificates
  - MICs: Medium ... Certificates
- TERENA already provides a server certificate service
- Based on same root CA (COMODO) which means:
  - To become part of IGTF (can be used for Grid)
  - Part of Web of Trust
- **End of Pop-Up-Windows when using Grid!**



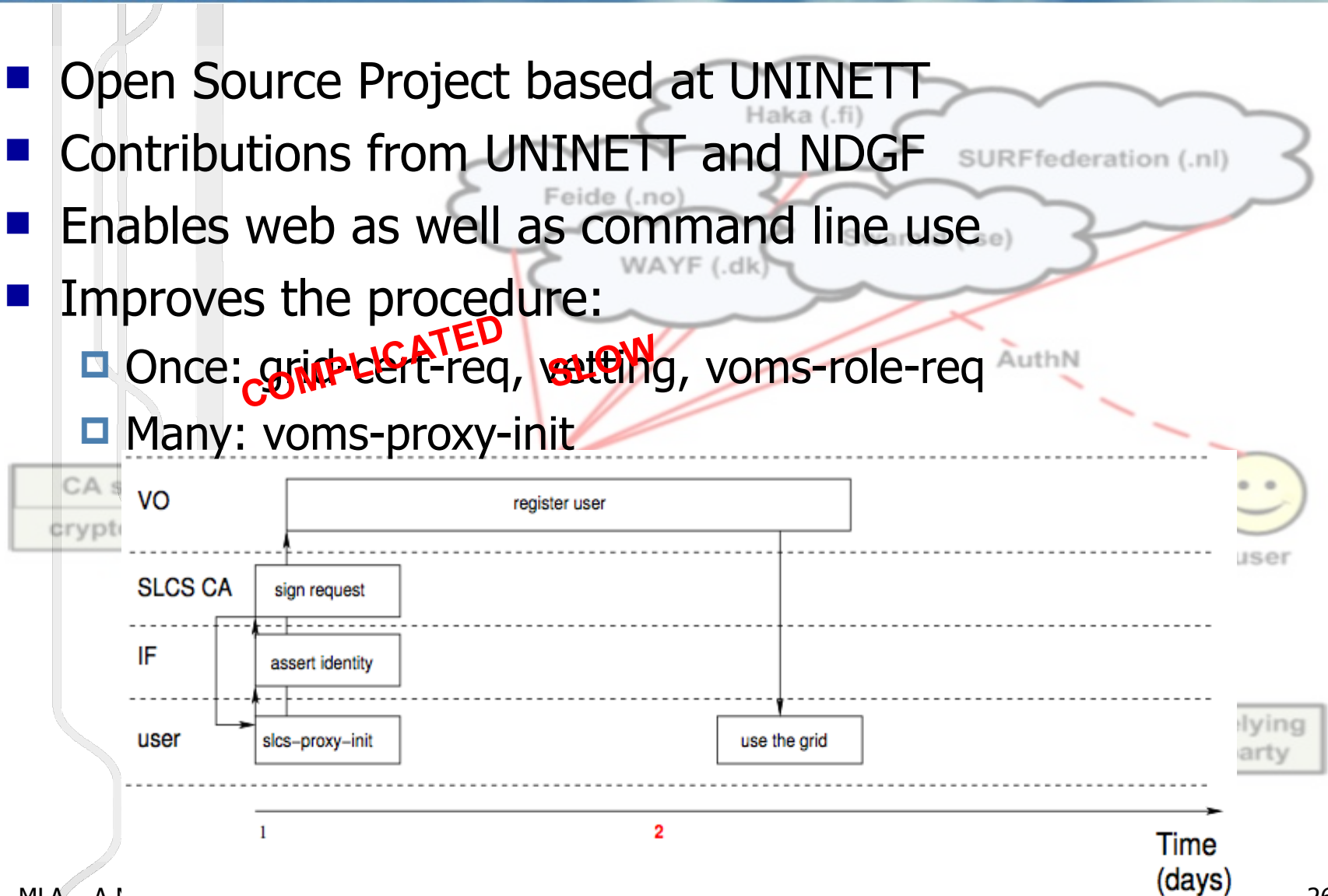




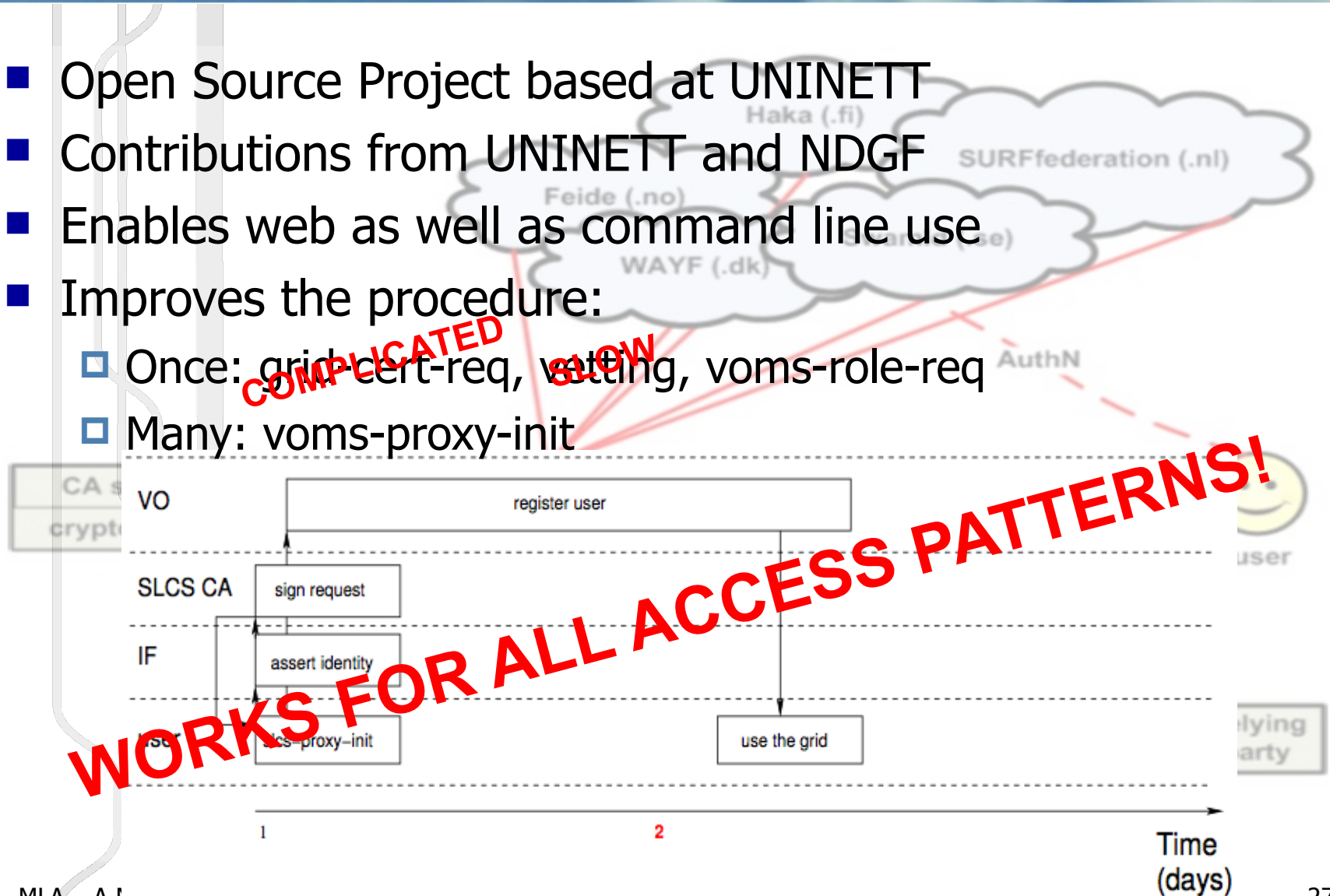
- Open Source Project based at UNINETT
- Contributions from UNINETT and NDGF
- Enables web as well as command line use
- Improves the procedure:
  - ▣ Once: grid-cert-req, vetting, voms-role-req
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- We want to account to be able to control users priorities!
- This means that there is a loop between accounting and authorization
- And authorization, when it is variable, it is priority:
  - Less or More access to the resource
- Two kinds of priority:
  - On / Off (quota or economy based)
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- In the Nordics the SGAS accounting system has been deployed
  - Account grid use (only job reporters for grid)
  - Account pr DN
  - Account pr VO (soon)
  - Account pr Site/Country (federated support coming)
- We need accounting independent of access pattern!
- We need also nice reporting
- SGAS stores and presents OGF-URs !

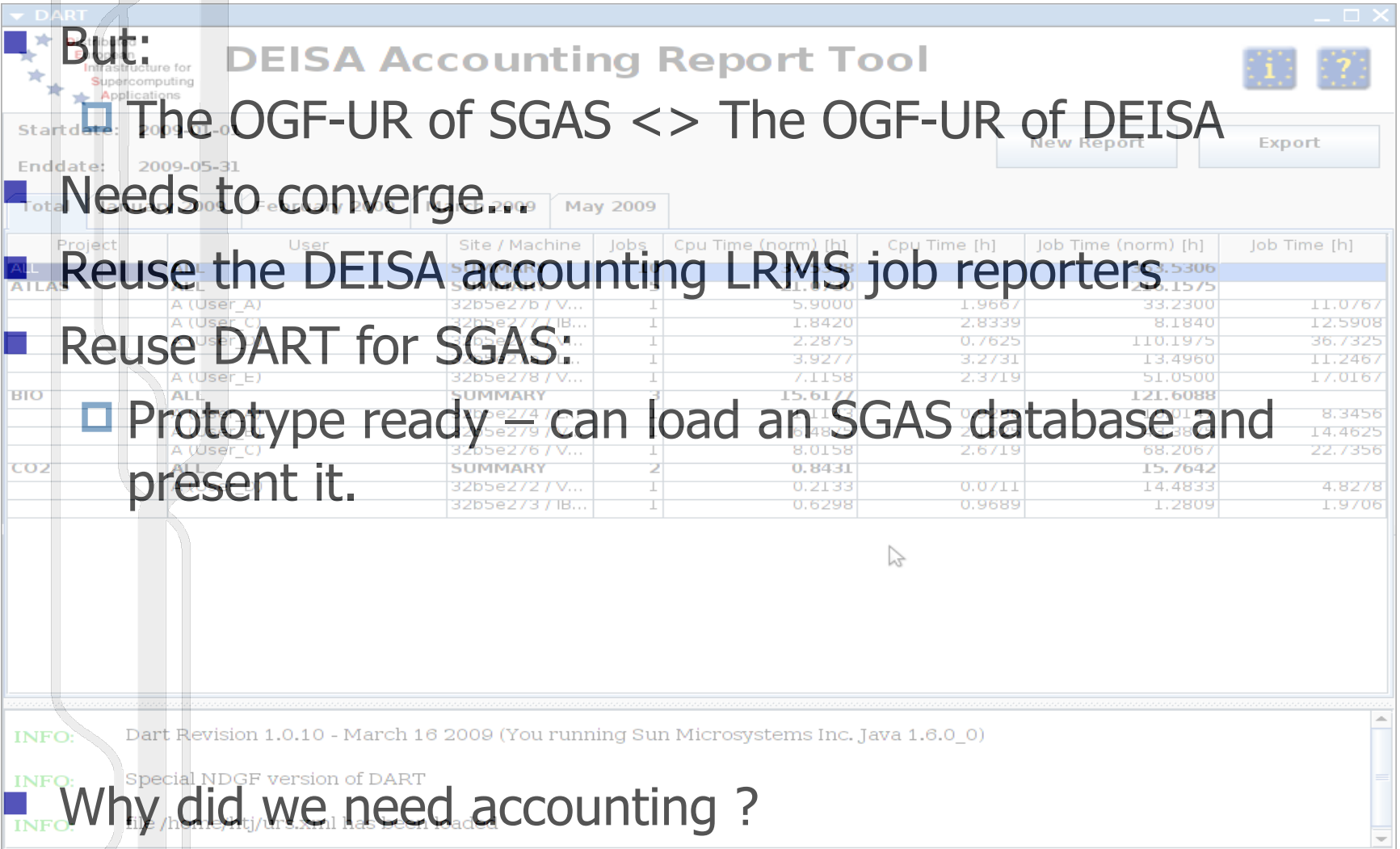


- The DEISA accounting system works with:
  - UNICORE
  - Several LRMSes...
- Has a nice reporting tool (DART)
- It stores and presents OGF-UR!



**But:**

- The OGF-UR of SGAS <> The OGF-UR of DEISA
- Needs to converge...
- Reuse the DEISA accounting LRMS job reporters
- Reuse DART for SGAS:
  - Prototype ready – can load an SGAS database and present it.



The screenshot shows the 'DEISA Accounting Report Tool' window. It has a menu bar with 'DART' and a toolbar with 'New Report' and 'Export' buttons. The main area displays a table of accounting data for May 2009. The table has columns for Project, User, Site / Machine, Jobs, Cpu Time (norm) [h], Cpu Time [h], Job Time (norm) [h], and Job Time [h]. The data is grouped by project: ALL, AILAS, BIO, and CO2. Each group has a 'SUMMARY' row and several user-specific rows. The status bar at the bottom shows 'INFO: Dart Revision 1.0.10 - March 16 2009 (You running Sun Microsystems Inc. Java 1.6.0\_0)' and 'INFO: Special NDGF version of DART'.

Project	User	Site / Machine	Jobs	Cpu Time (norm) [h]	Cpu Time [h]	Job Time (norm) [h]	Job Time [h]
ALL	ALL	SUMMARY	3	15.5306	15.5306	15.5306	15.5306
AILAS	ALL	SUMMARY	1	11.1750	11.1750	11.1750	11.1750
	A (User_A)	32b5e27b / V...	1	5.9000	1.9667	33.2300	11.0767
	A (User_C)	32b5e277 / IB...	1	1.8420	2.8339	8.1840	12.5908
	A (User_D)	32b5e277 / IB...	1	2.2875	0.7625	110.1975	36.7325
	A (User_E)	32b5e278 / V...	1	3.9277	3.2731	13.4960	11.2467
BIO	ALL	SUMMARY	3	15.6177	15.6177	15.6177	15.6177
	A (User_A)	32b5e274 / V...	1	0.1113	0.1113	8.3456	8.3456
	A (User_C)	32b5e279 / V...	1	14.4833	14.4833	14.4833	14.4833
CO2	ALL	SUMMARY	2	0.8431	0.8431	0.8431	0.8431
	A (User_C)	32b5e276 / V...	1	8.0158	2.6719	68.2067	22.7356
	A (User_D)	32b5e272 / V...	1	0.2133	0.0711	14.4833	4.8278
	A (User_E)	32b5e273 / IB...	1	0.6298	0.9689	1.2809	1.9706

INFO: Dart Revision 1.0.10 - March 16 2009 (You running Sun Microsystems Inc. Java 1.6.0\_0)

INFO: Special NDGF version of DART

INFO: file /home/rtj/ur.xml has been loaded



# Capacity vs Quantity





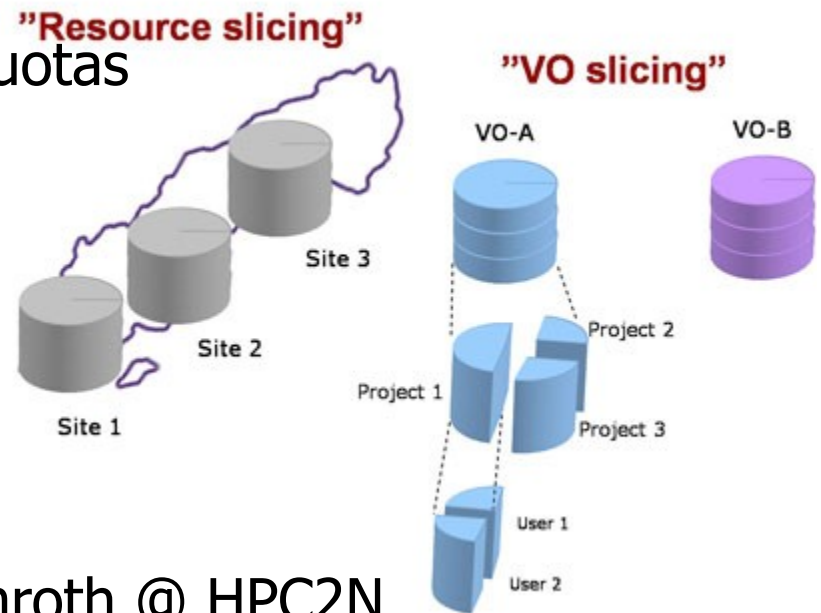
# Capacity vs Quantity

- Network is a capacity resource
- Storage is a quantity resource
  - But temporary storage (cache) is a capacity resource!
- Computing is capacity
  - But fixed allocations is a quantity resource!
- Economy works for Quantity resources
- Priority (like “fair share”) works for Capacity resources



Works with

- Hard quotas
- Max number of jobs allowed to run for user, groups, roles
- Fair share scheduling
  - ▣ Better utilization then hard quotas
  - ▣ Handles different use cases
  - ▣ Grid wide job priorities
- Support site policies
- Being implemented in SGAS
- Named FSGrid
  - ▣ Credit for this goes to: E. Elmroth @ HPC2N



We are getting closer to solving problem I, II and III:

- SGAS/DEISA accounting and FSGrid priorities for prob. I
- Federated IdPs, Confusa and TERENA SLCS for prob. II
- IdPs, DEISA tools for prob. III
  
- Still Problem III is very important:
  - Infrastructure has to be independent of access pattern!
  
- Everyone are welcome to help out – we do this not because we can, but because we need it...

A diamond-shaped collage of several pieces of white paper, each featuring a large black question mark. The papers are layered and slightly offset, creating a three-dimensional effect. This graphic is centered on the slide, behind a light blue rectangular box containing the word "Questions?".

# Questions?