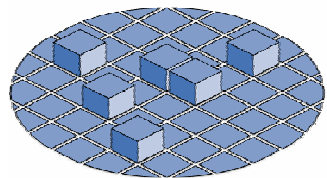


Future Developments in UniGrids and NextGRID

Dr. David Snelling
Fujitsu Laboratories of Europe
Unicore Summit
Nice, France - October 2005

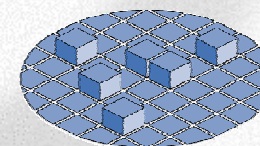


UniGrids



Overview

- + **Status Report**
- + **New Gateway Architecture**
- + **Parallel HTTP based File Transfer**
- + **ETD based Virtual Organizations**
- + **Update on Standards in Unicore**
- + **Discussion**



UniGrids



Quick Status Report

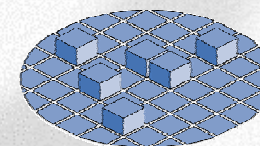
+ UniGrids Highlights

- Unicore/GS V1.0 and V1.1 Released
- Explicit Trust Delegation Implemented
 - Caused a small explosion in portal work
- Grid Programming Environment Released

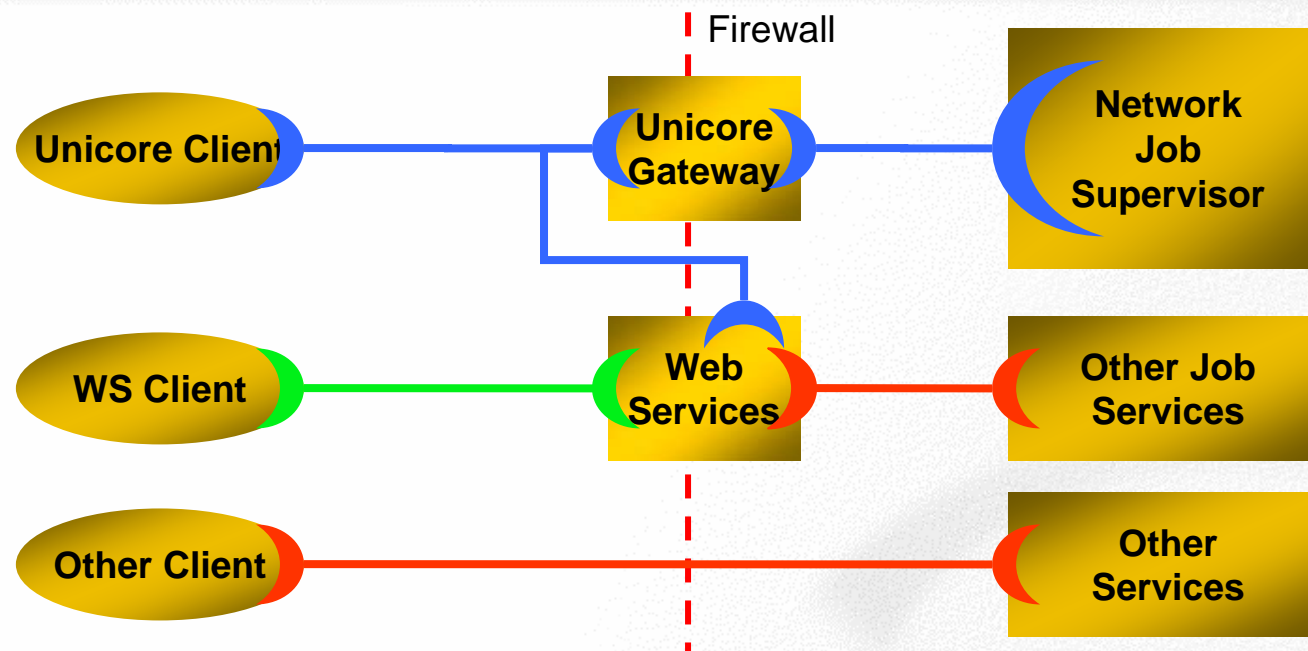
+ NextGRID Highlights

- Architecture White Paper Published
- Service Level Agreement Dynamics
- Semantically Enabled Workflow

+ What Next?

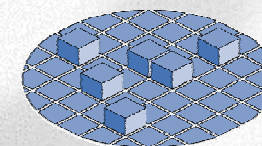


Existing Gateway Architecture



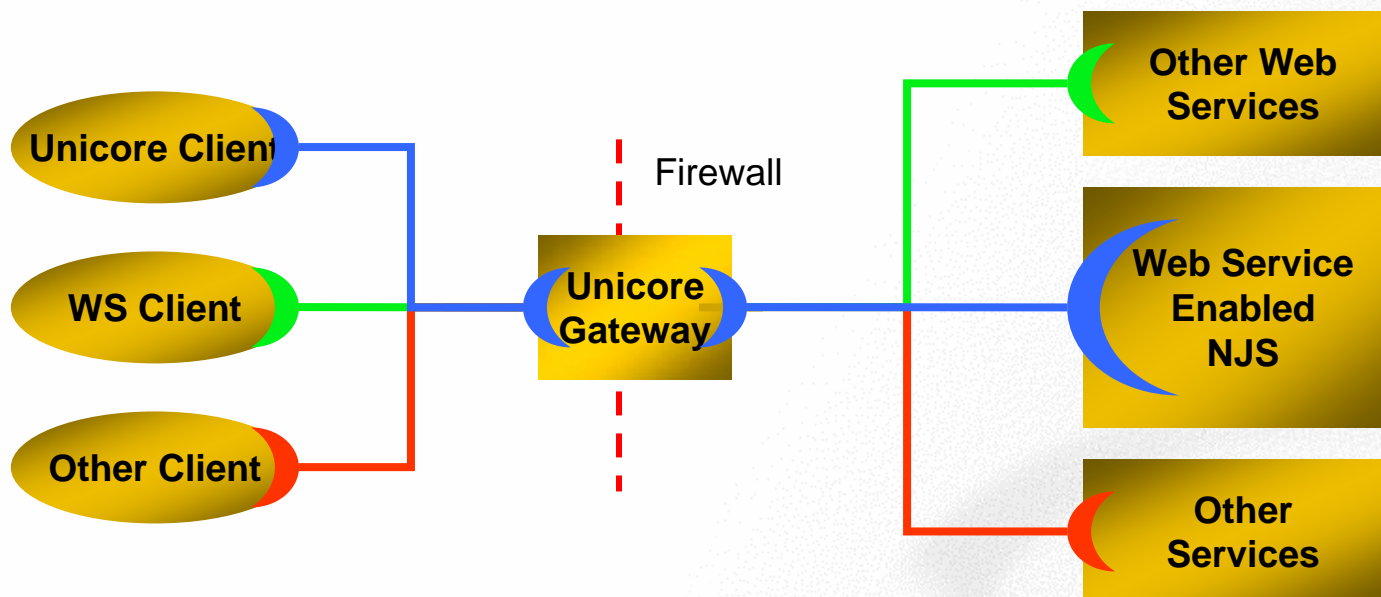
Limitations

- ETD required to support the WS
- Web Server visible outside the firewall
- Complex management
- Many open ports on the firewall



UniGrids

New Gateway Architecture



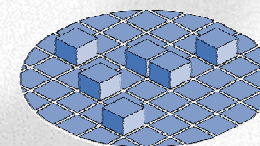
+ Multi-Protocol Support

- UPL, HTTPS, SSH, Custom, ...
- WS-Addressing Support

+ Authentication and Authorization

- When available in the protocol

- Uincore Protocol Layer
- Authenticated HTTPS
- SSH, HTTP, GridFTP, ...



UniGrids

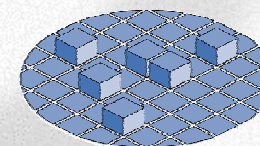
Parallel HTTP File Transfer

+ Status Quo

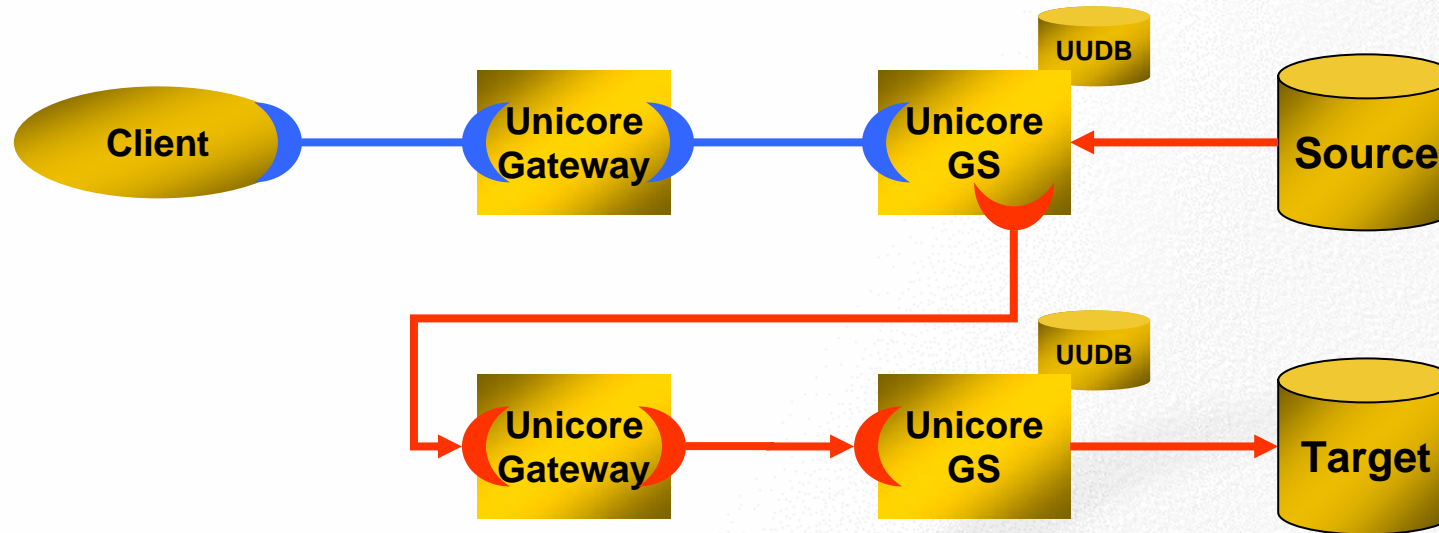
- Unicore UPL
- Web Services: In message body or attachments
- GridFTP
- Open Ports

+ Requirements

- High performance on busy networks
 - Parallel transfer valuable
- Same level of security as Unicore



Basic Idea



Using Web Service Protocols

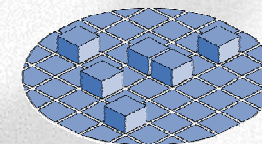
- Advertise available protocols
- Define source and destination
- Monitor progress

— UPL or Web Service

— Authenticated HTTPS

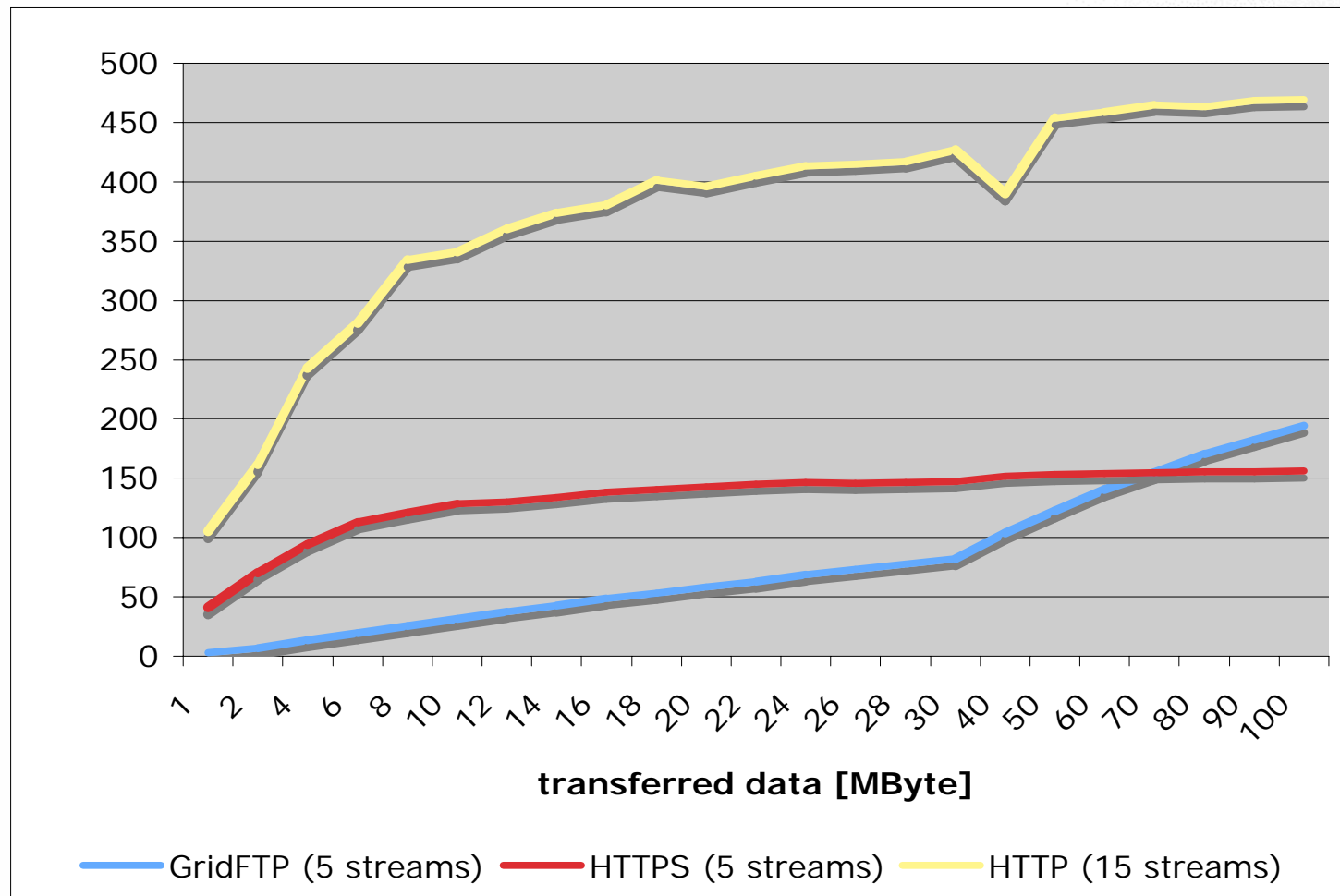
Available for use by Client or Server

Extensive Testing on the NAREGI Network Simulator

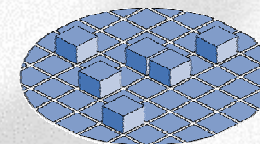


UniGrids

Performance Comparison



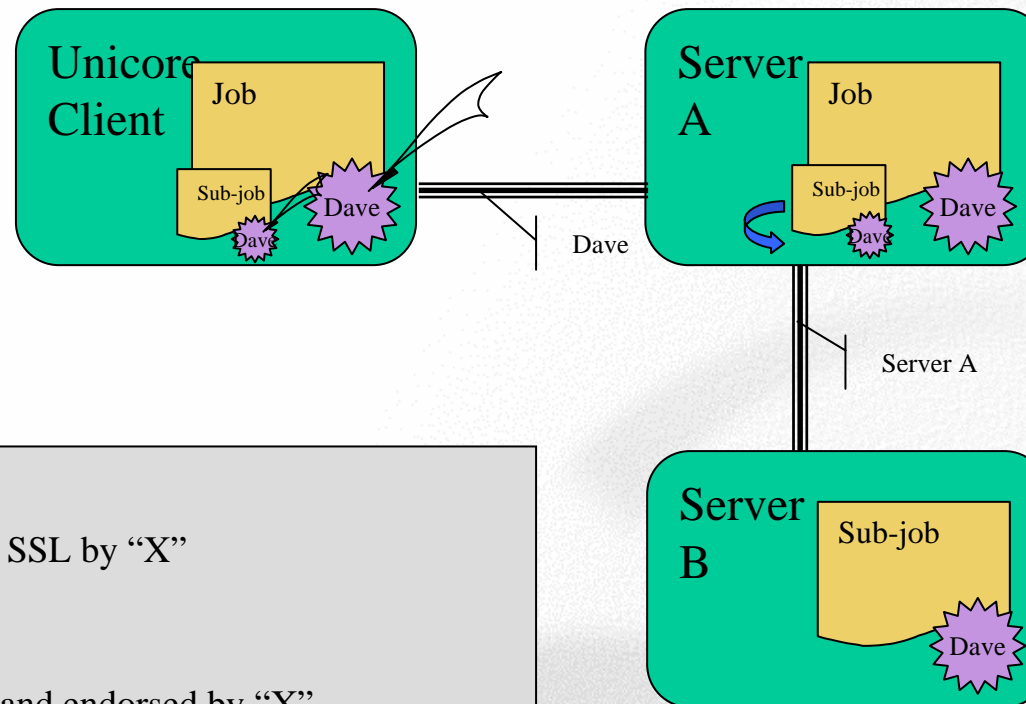
Number of streams is the optimal for each protocol.
 HTTPS is bandwidth limited by Java based encryption.
 These results are for bad conditions.



UniGrids

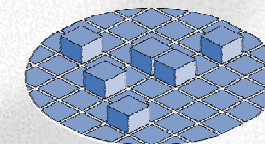
Explicit Trust Delegation

Unicore V4:
Multi-site Job



Key:

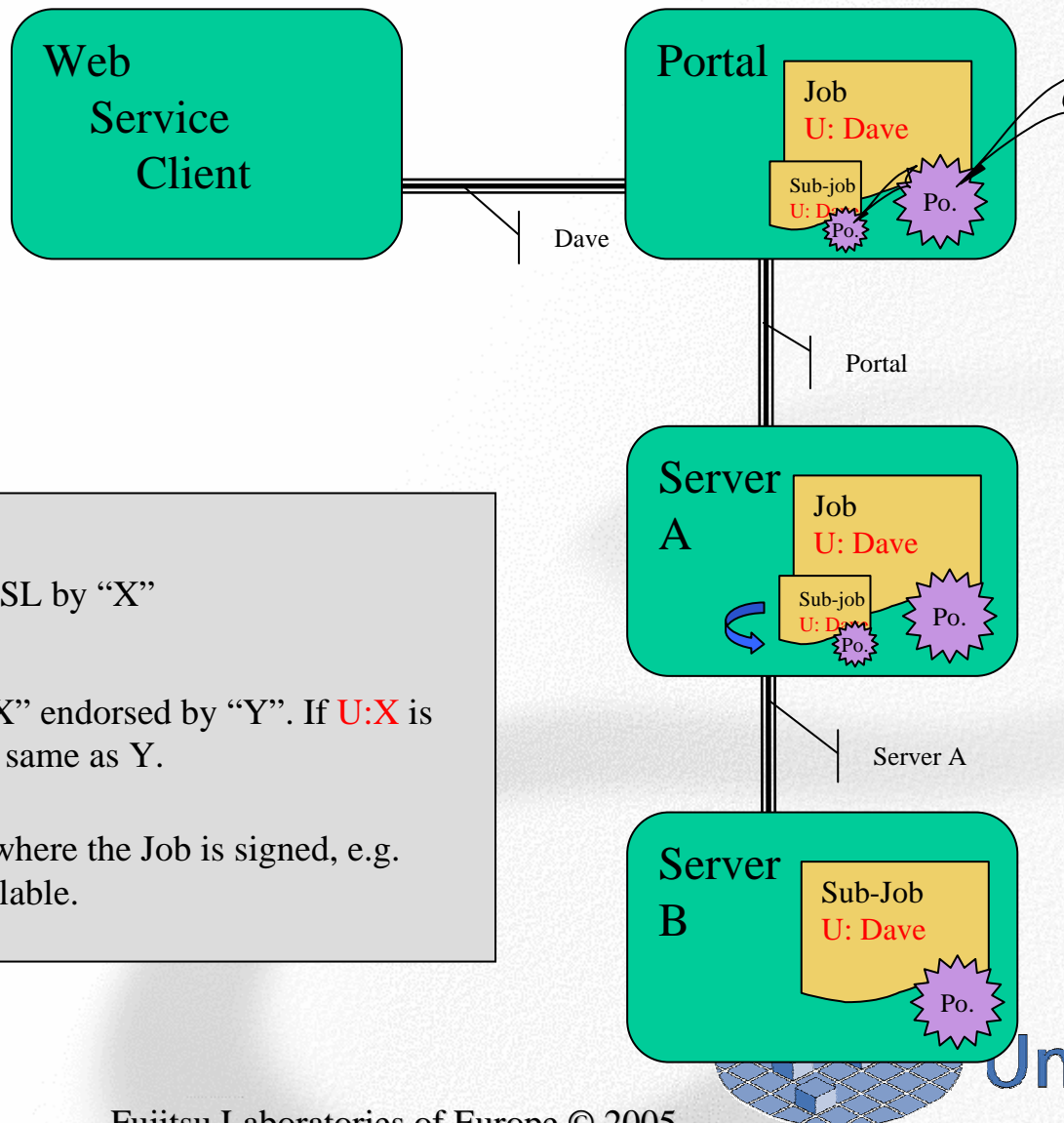
- Authenticated SSL by "X"
- Job to run for and endorsed by "X".
- Quill indicates where the Job is signed, e.g. private key available.



UniGrids

Explicit Trust Delegation

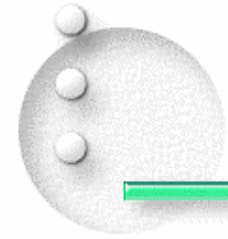
Unicore V5:
Portal Based
Multi-site Job



Key:

- Authenticated SSL by "X"
- X
- Job to run for "X" endorsed by "Y". If U:X is missing it is the same as Y.
- Quill indicates where the Job is signed, e.g. private key available.





EDT Based Virtual Organizations

+ Aim

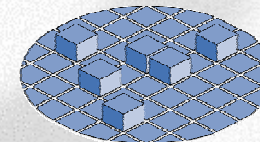
- Provide Support for Virtual Organizations

+ Strategy

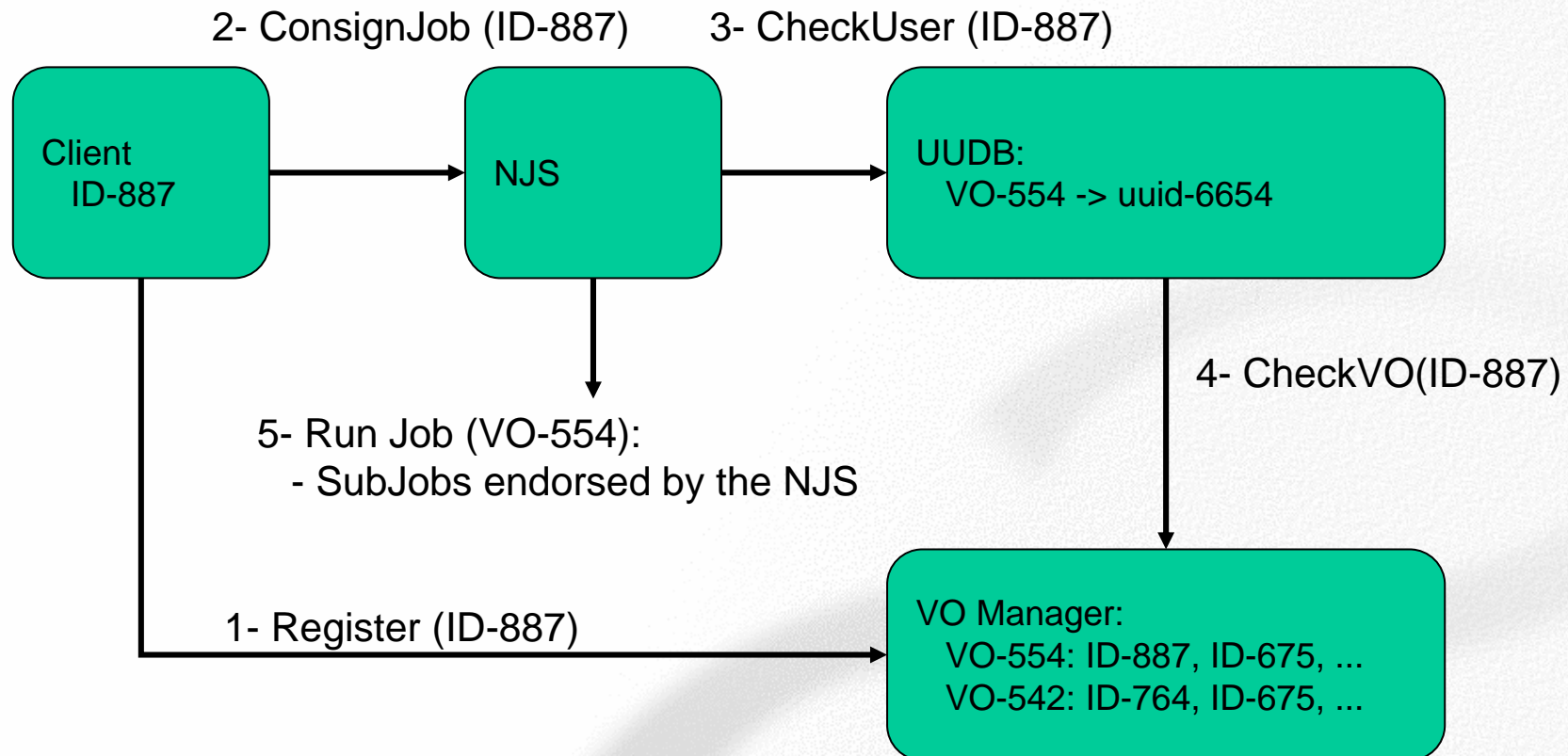
- Unicore User Database (UADB) interacts with a VO Manager.
- EDT is needed to support sub-jobs and remote file transfer.

+ Schedule

- Prototype in the next 8 months
- Call for requirements now!
- Standards needed to provide cross Grid VOs.



Typical VO AuthZ Process





Unicore and Standards

+ Standards Priority

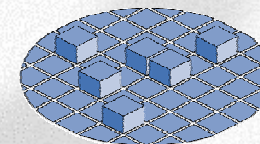
- Use the latest standard, ...
- At the cost of early interoperation.
- Research has a role in standards development.

+ Unicore Commits to:

- Infrastructure: WSRF, WSN, WS-Addressing
- Jobs: JSDL, BES
- IO: Data Transport

+ And Supports:

- Btye-IO, DAI, CCDLM, ACS, SAGA, WSDM, ...



UniGrids

Don't Mix Message and Content

+ FEMA Logo:

- <http://www.fema.gov/about/what.shtm>

+ Questions?

