EMI Data, the Introduction

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Our wiki : https://twiki.cern.ch/twiki/bin/view/EMI/EmiJra1T3Data

Outline

- EMI in the European FP7 context.
- What is EMI doing ?
- Why are we doing this ?
- ***EMI Data*** in the EMI context.
- When are we doing what ?
- What is ***EMI Data*** doing in particular ?
- Some selected topics.
- Conclusions

EMI Factsheet

EMI Factsheet

Budget : about 24 Million Euros

Funding : about 50% by EU-FP7, rest by partners

Covers : JRA, SA and NA

Partners : 22

Middlewares: Arc, gLite, UNICORE and dCache

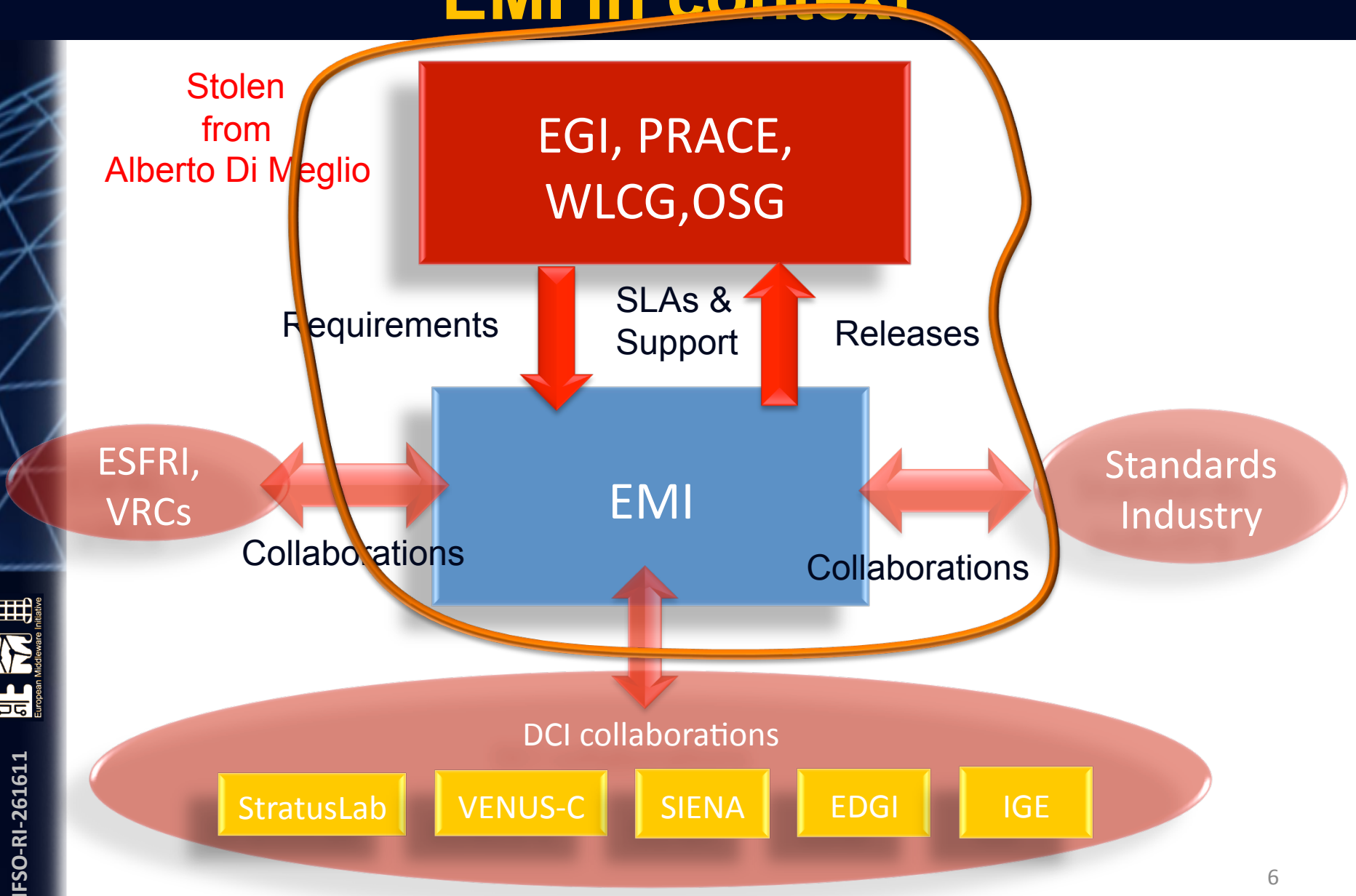
EMI INFSO-RI-261611

Why

According to our Project Director, Alberto Di Meglio :

The European Middleware Initiative (EMI) project represents a close collaboration of the major European middleware providers - ARC, gLite, UNICORE and dCache - to establish a sustainable model to support, harmonise and evolve distributed computing middleware for deployment in EGI, PRACE and other distributed e-Infrastructures

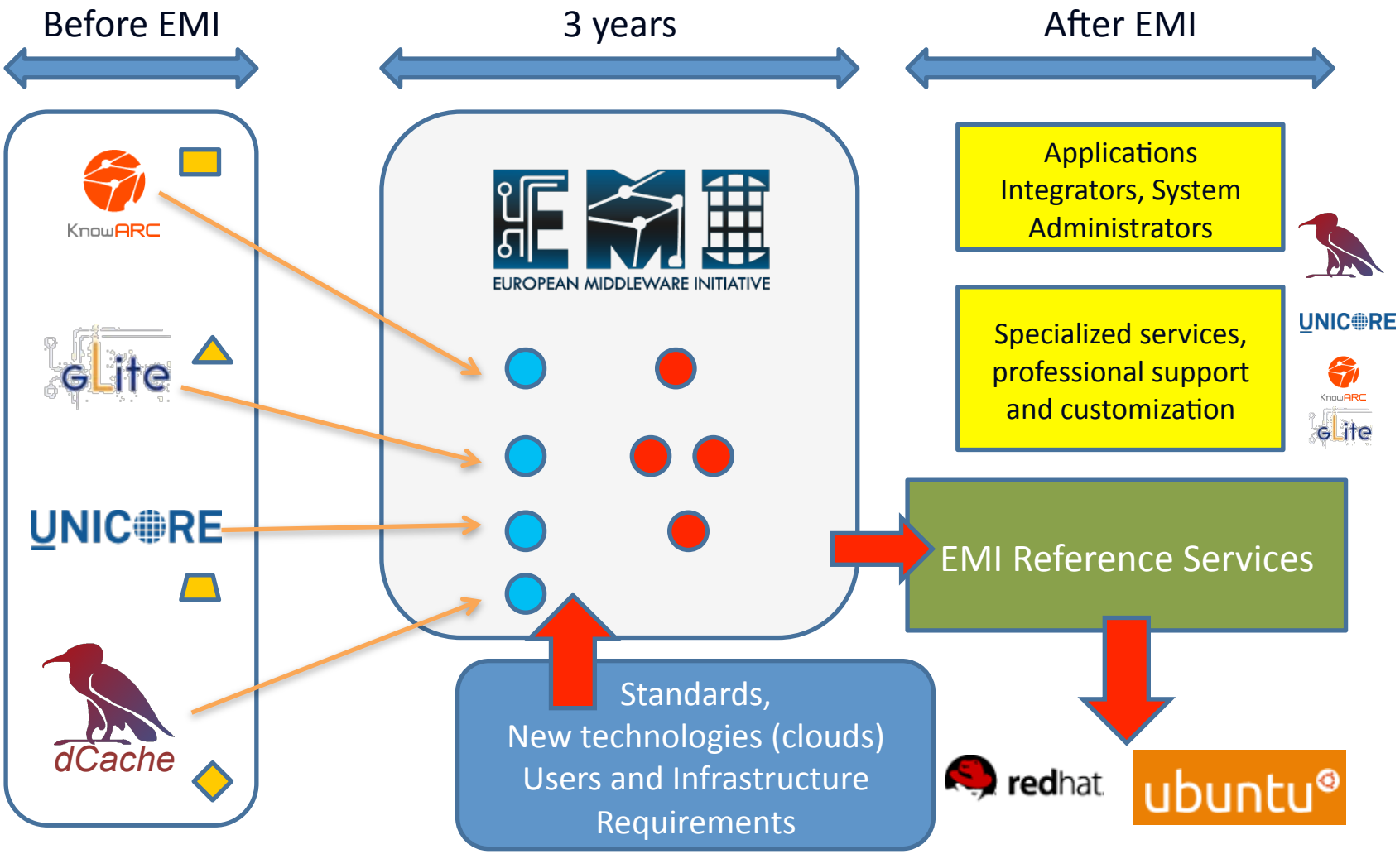
EMI in context



What is EMI doing

EMI Middleware Evolution

Stolen from Alberto Di Meglio



Why again ?

Why are WE doing this ?

Because with EMI we got the money and the organizational infrastructure to achieve goals, which we were planning to do anyway but didn't find time nor money yet, e.g. :

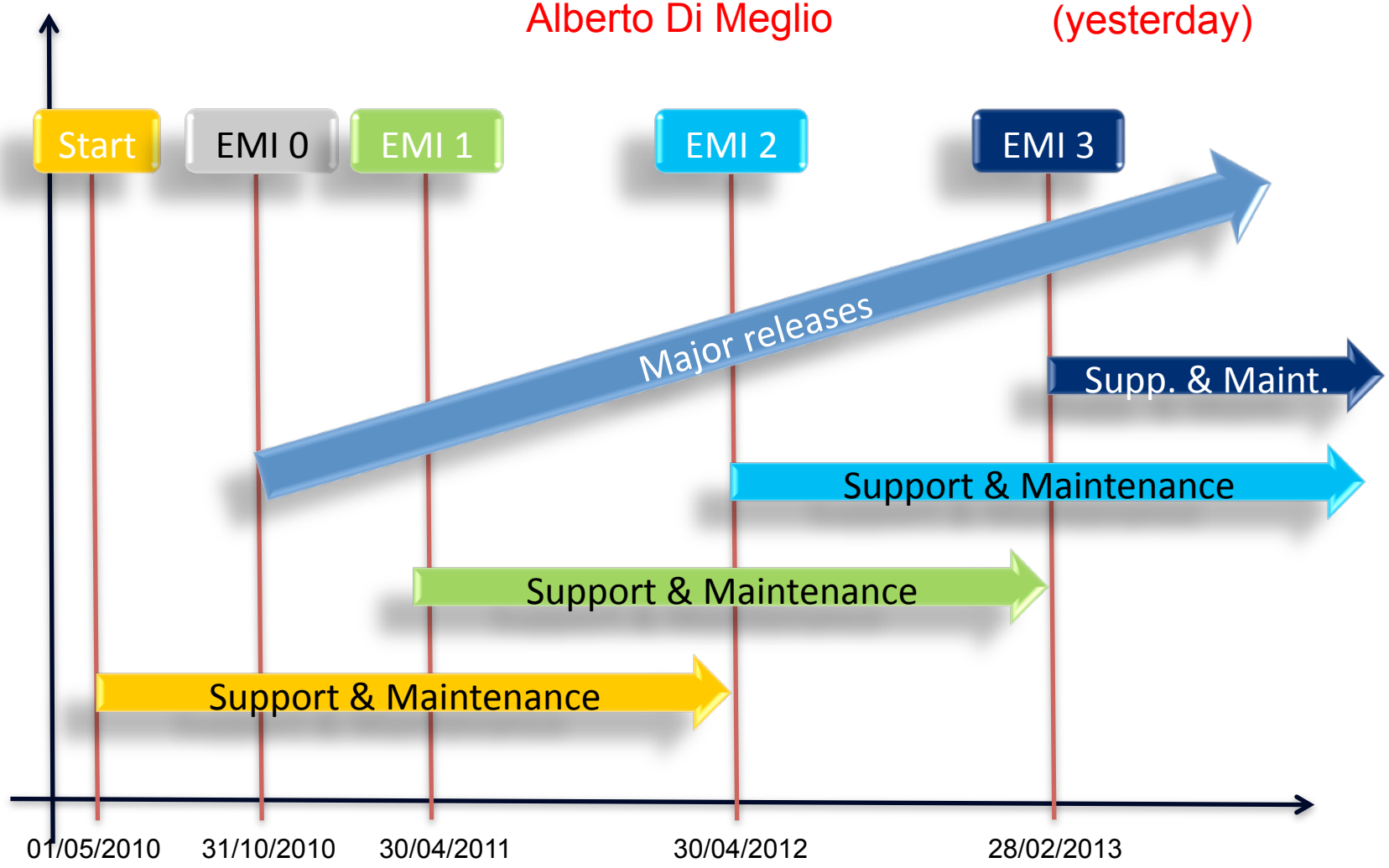
- Moving towards standards
  - ✓ https / webDav
  - ✓ NFS 4.1
  - ✓ SRM
- Fixing flaws
  - ✓ Catalogue synchronization
- Improving usability
  - ✓ Storage Accounting
  - ✓ Monitoring Interface
  - ✓ Individual efforts of product teams of components

When will it happen ?

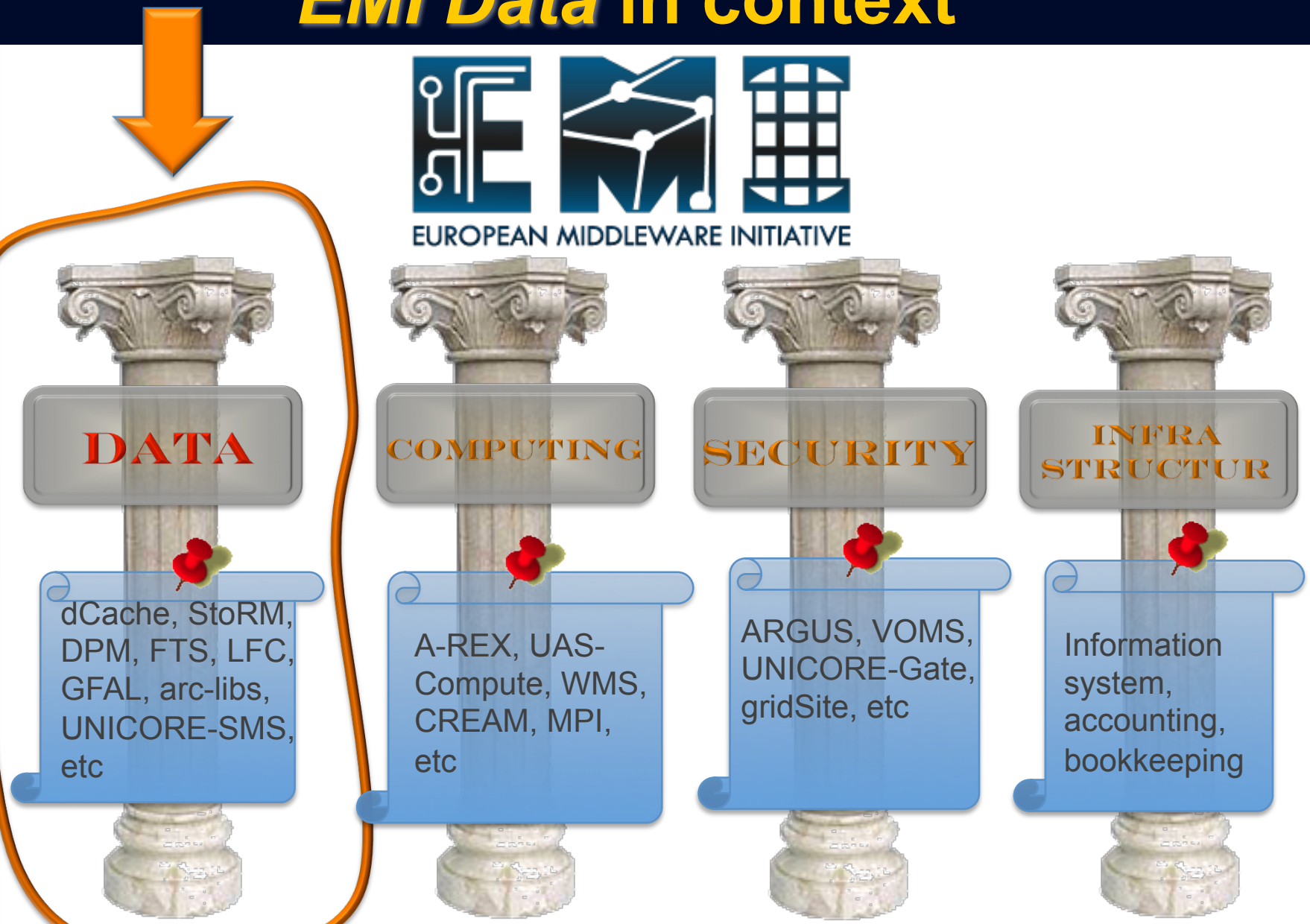
Release Plan

Stolen from Alberto Di Meglio

See Alberto Aimar's presentation for details (yesterday)



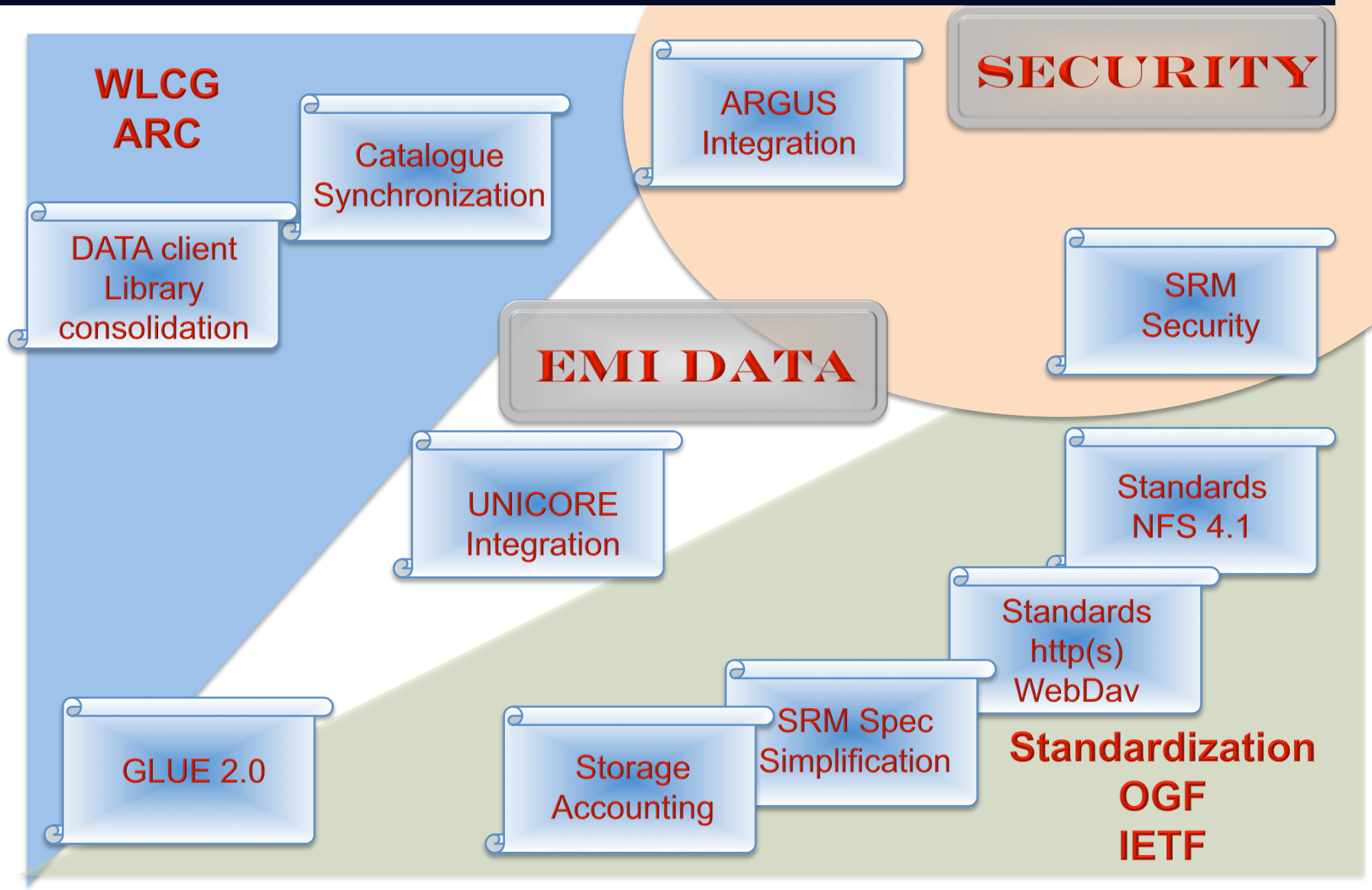
EMI Data in context



EMI data layout

How does *EMI Data* contribute.

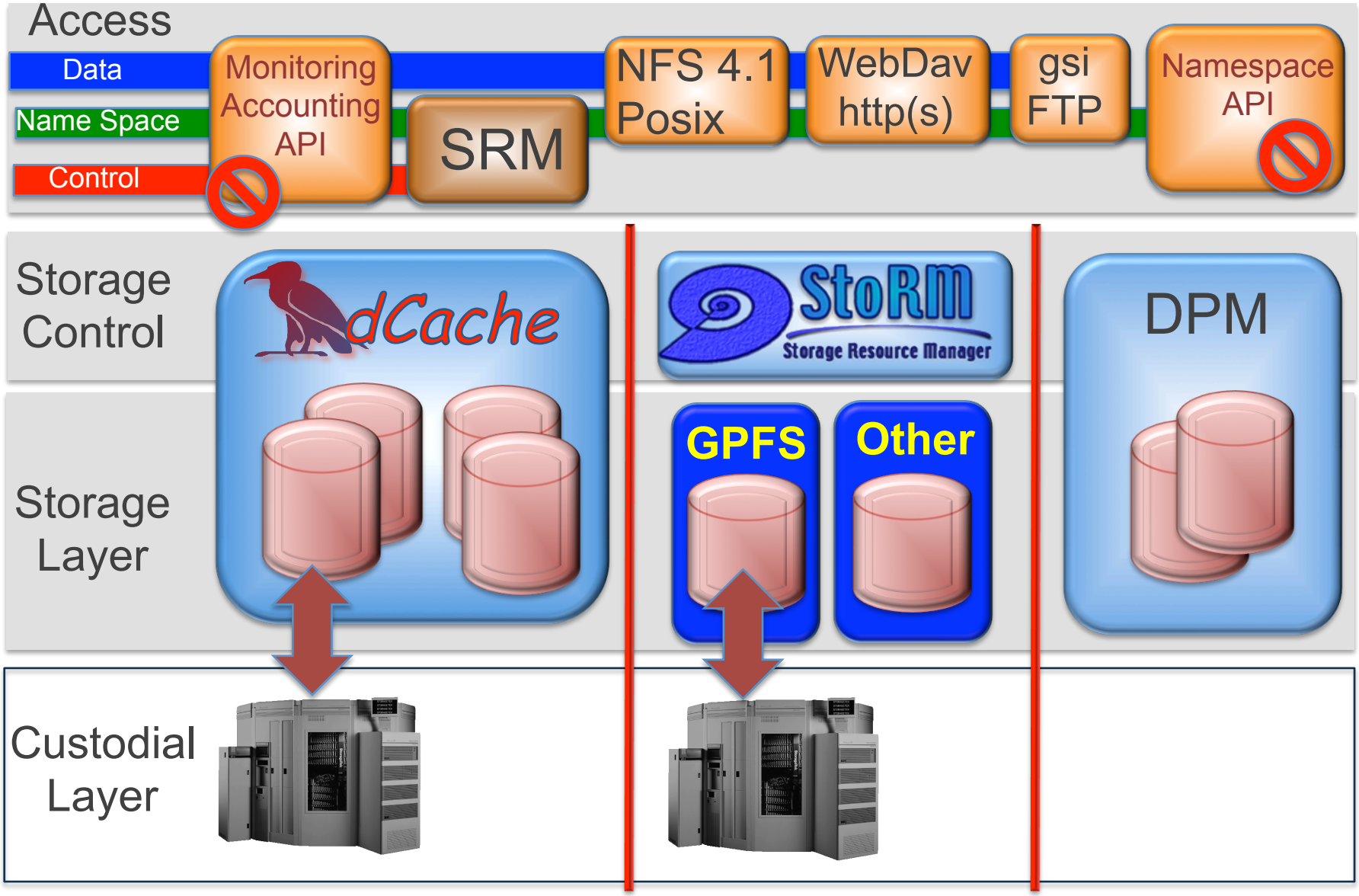
EMI workplan (activities)



Standardization

Standardization efforts

The EMI SE bundle

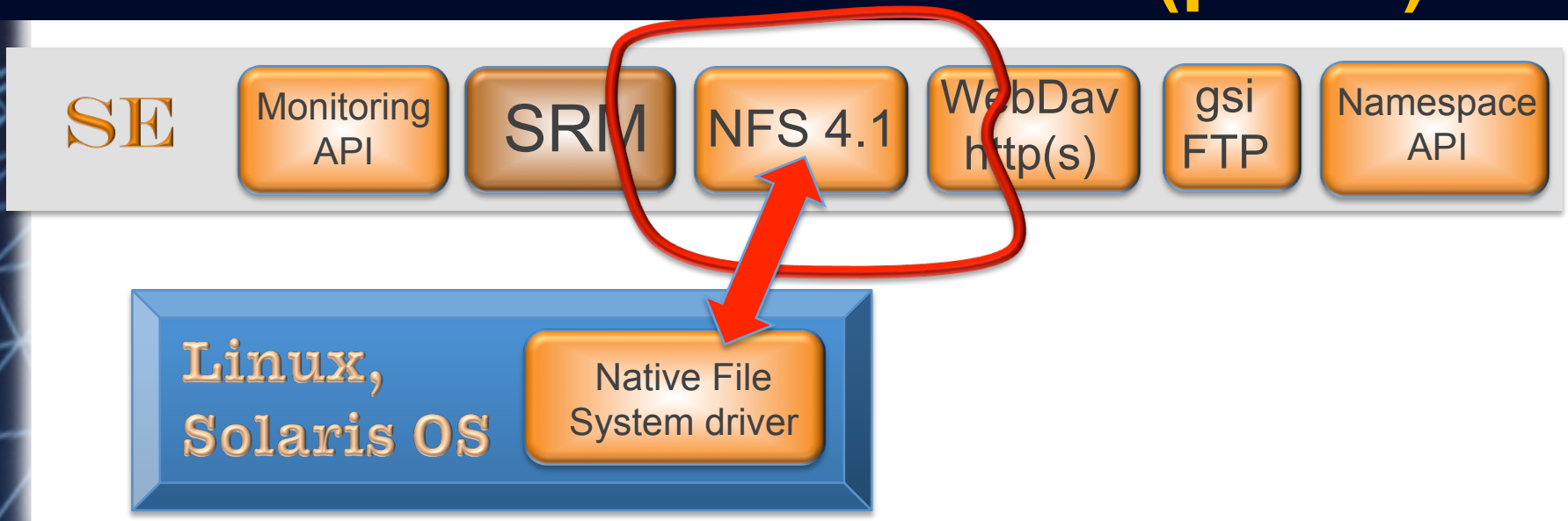


Standardization : WebDav

WebDav

- Very useful for new (non-LHC) communities.
- Already available in dCache.
- Will be added to StoRM and DPM after EMI-1.
- Allows “File system like” access with
  - Mac OS
  - Linux
  - Windows

Standardization : NFS 4.1 (pNFS)



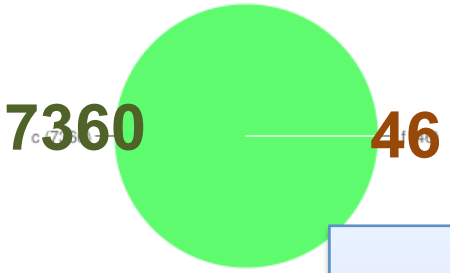
- NFS 4.1(pNFS) : industry standard (defined by IETF)
- Genuine POSIX access through mounted file system.
- pNFS supports highly distributed data sources.
- Clients provided and maintained by OS.
- Will be used by industry heavyweights : IBM, EMC, Panasas…
- Production dCache 1.9.10 ; beta in DPM; considered for StoRM

Standardization : NFS 4.1 (pNFS)

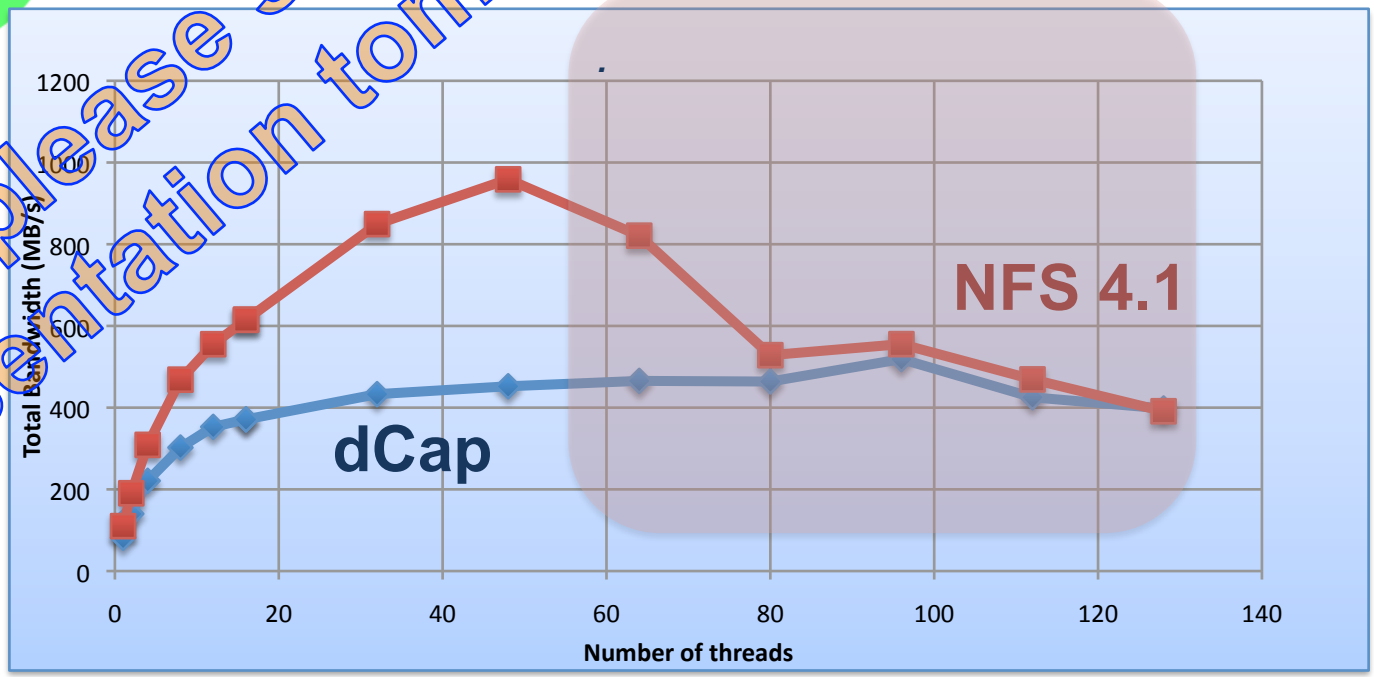
Ongoing NFS evaluation with dCache

Stability (Hammercloud)

Overall Efficiency



Simple I/O 'cat … >/dev/null



Draft, please see Yves Presentation tomorrow

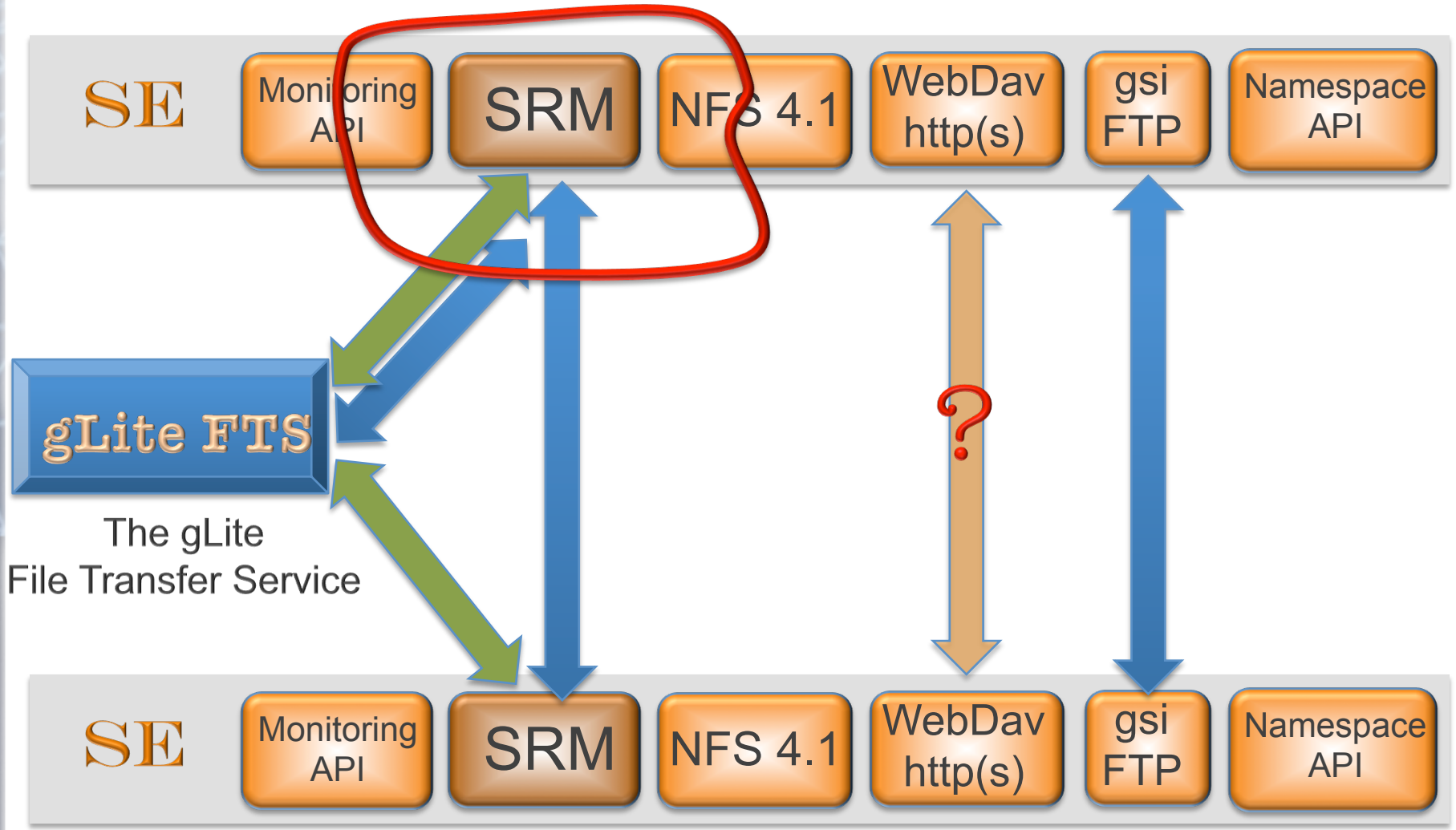
Standardization : SRM, specification

- SRM is a remote *storage management* protocol.
- The SRM does :
  - Transfer protocol negotiation
  - Name space operations
  - Space management
  - Storage Management : access latency, retention policy (tape, disk,…)
  - Allows bulk operations.
- Specification not easy to understand by customers.
- Spec might need a cleanup based on our experience.
- Better documentation from user perspective.
- The SRM is an extremely useful and btw the only tool to remotely manage data in a standardized way across SE's.

Standardization : SRM, security

- Right now : GLOBUS : library and protocol (non standard)
- Goal : replacing GSI by SSL/TLS-X509
- Step I :
  - No delegation (srmcp)
  - GLOBUS library in SSL compatibility mode.
  - Prove of concept done : dCache SRM server and client.
- Step II
  - No delegation.
  - Server and client can use standard java/openssl libraries.
- Step III
  - Agreement on delegation service : done GDS
  - Agreements in progress ☺
    - Who tells to create delegated proxy : client or server
    - How does the server tell the client w/o changing the WSDL
    - Where do we store the delegation ID (w/o WSDL change)
    - How close should the delegation service be to the SRM service

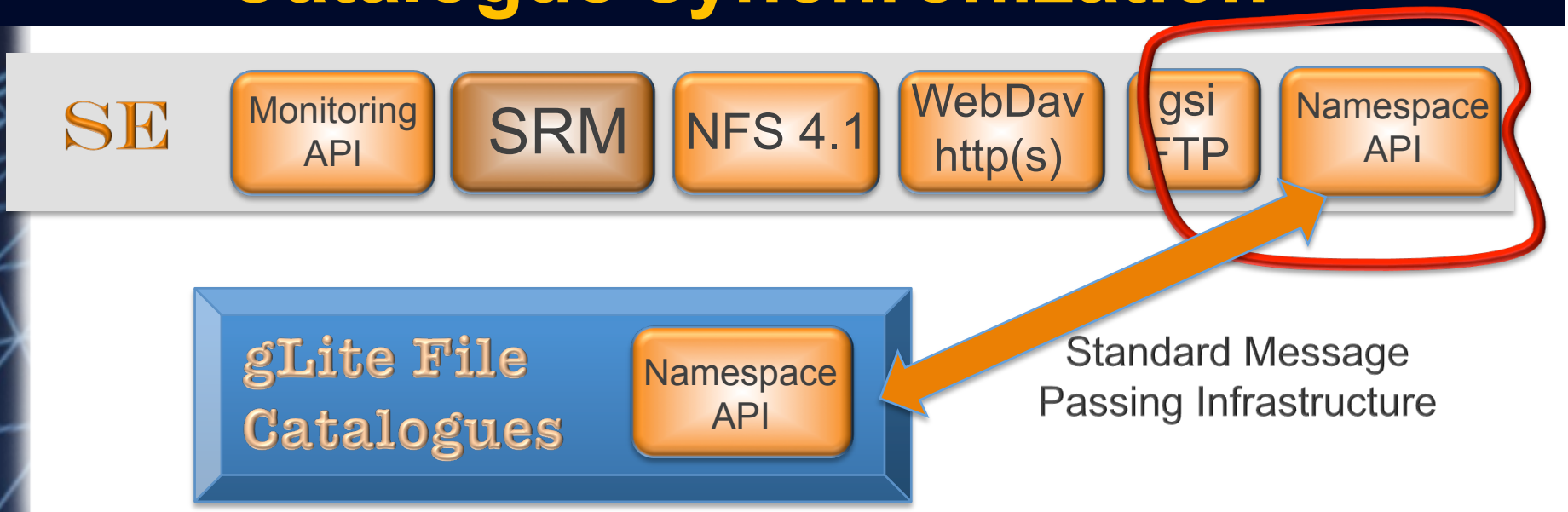
Standardization : Storage Resource Mgr



More efforts

Fixing a design flaw

Catalogue synchronization

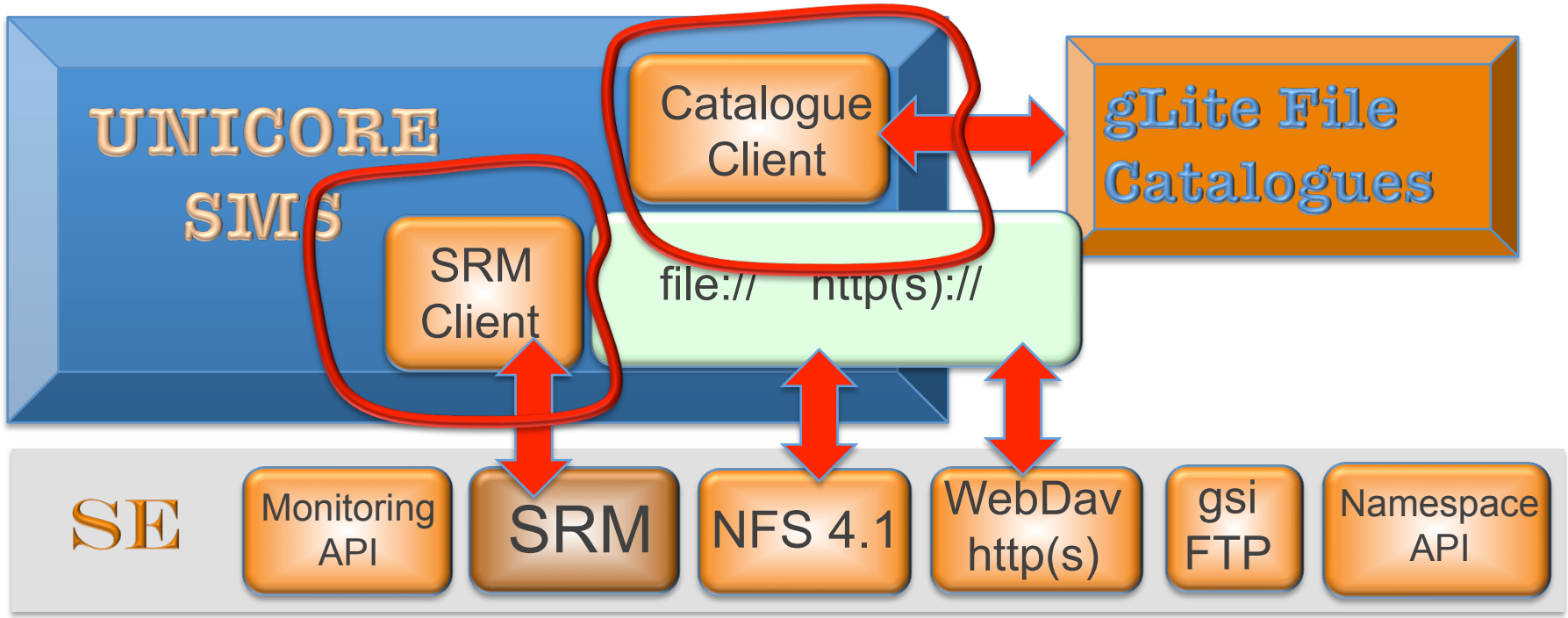


- Catalogues storage file locations (Storage URLs)
- Catalogues and SE's get our of sync over time.
- Current (full dump) synchronization approach is painful and doesn't scale.
- Message Passing is envisioned to fix this flaw.

Even more efforts

Harmonization / Integration

UNICORE integration



- UNICORE SRM-Client to do remote Storage Management.
- Interaction with gLite file catalogue to get Storage URL
- Already available :
  - http(s) client.
  - Posix I/O via mounted filesystem.

Conclusions

- *EMI Data* is a good opportunity to get our storage management middleware into a maintainable shape.
- Standardization is the way to get broader acceptance by other communities.
- Everybody can join or may provide suggestions through WLCG or EGI.eu.

Further reading

https://twiki.cern.ch/twiki/bin/view/EMI/EmiJra1T3Data

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