OpenGridForum
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Production Grid Infrastructure (PGI)

Storage Resource Manager (SRM) Studies

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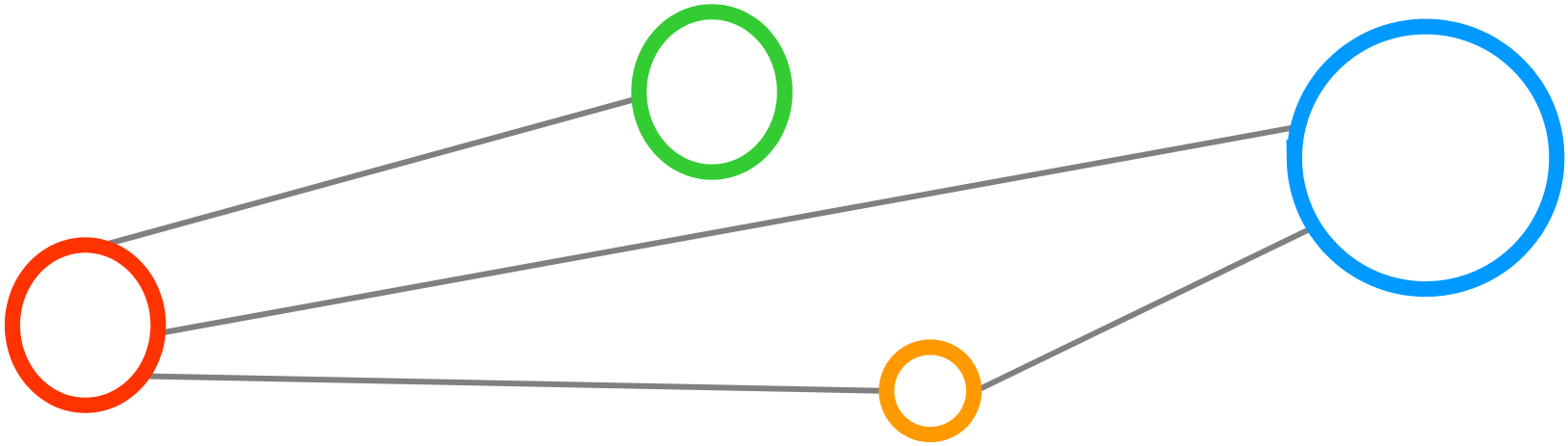
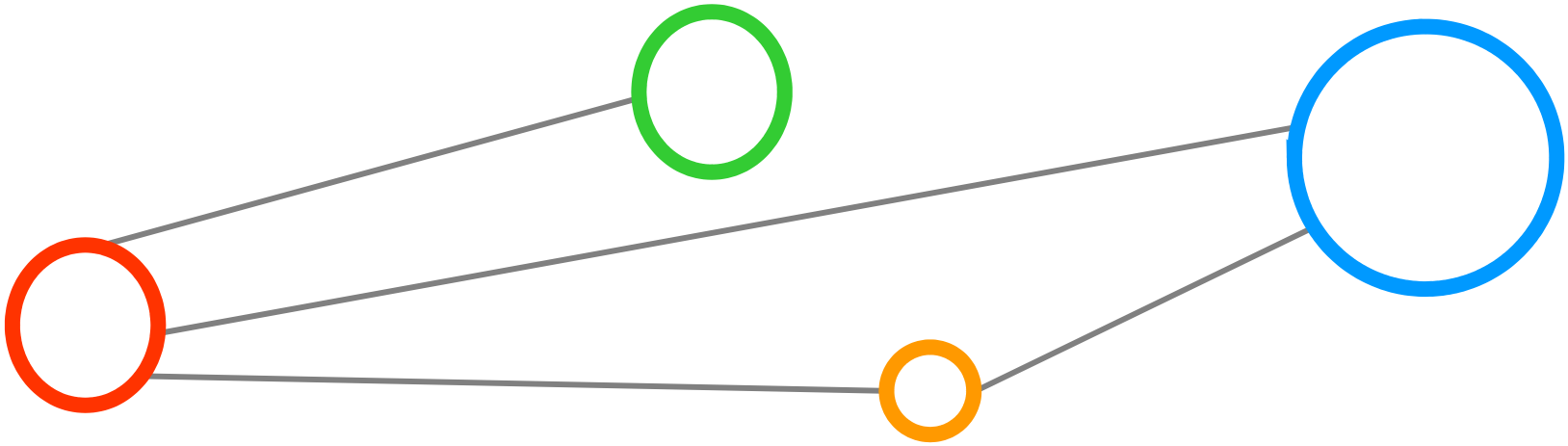
Outline



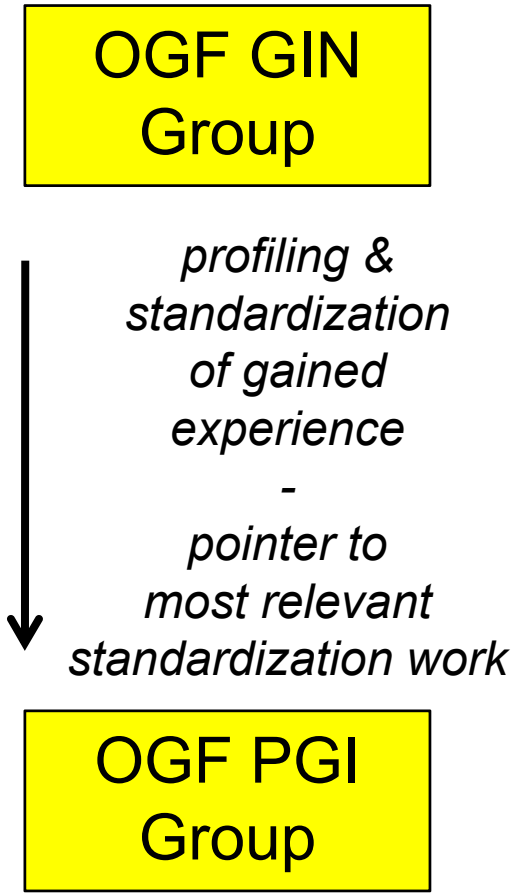
Outline

- OGF GIN & PGI 101
- SRM & Security
- SRM & Data-staging
- SRM Profiling
- Application WISDOM Use Case
- Discussions

OGF GIN & PGI 101



GIN & PGI Groups



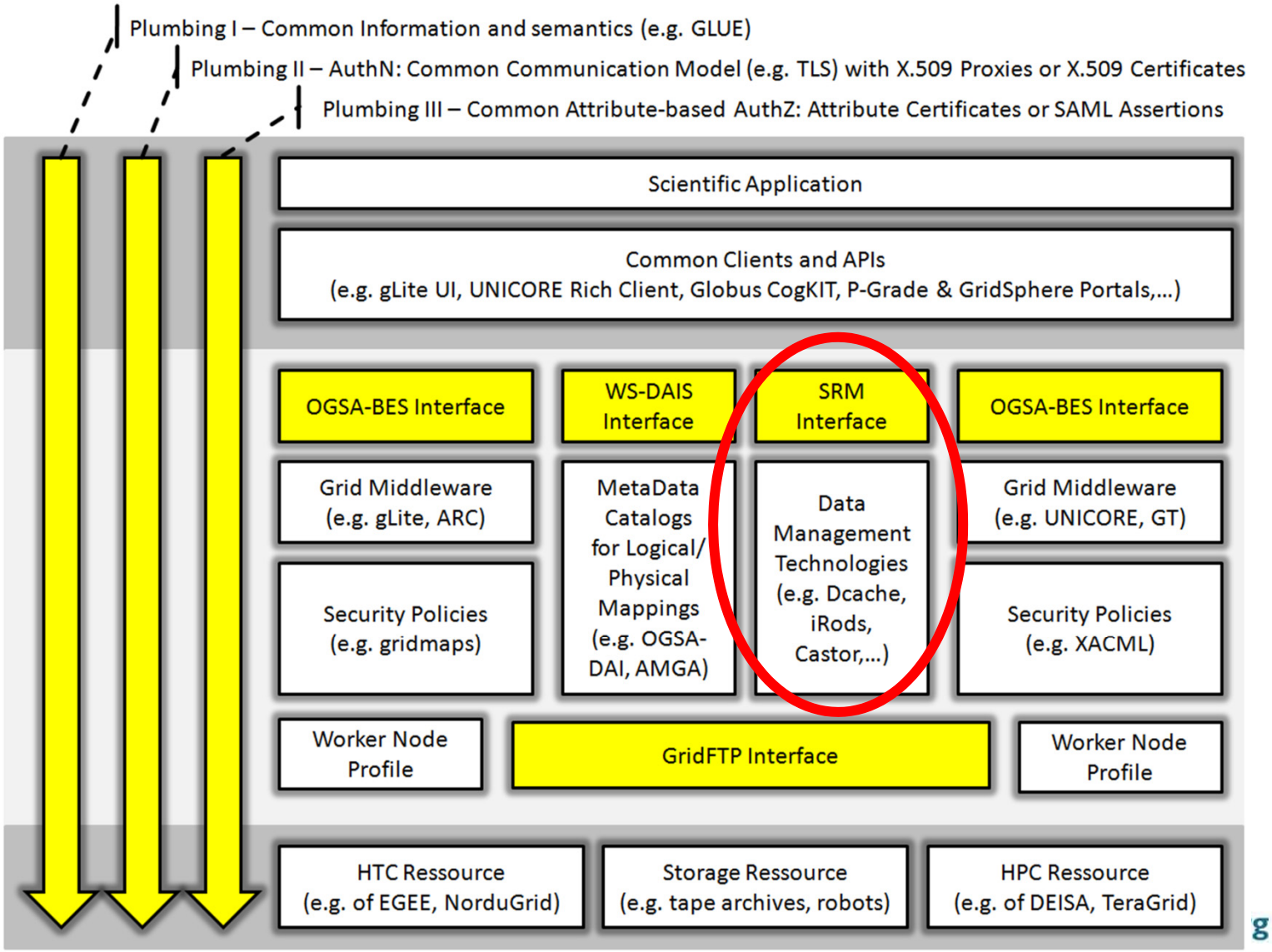
- OGF Grid Interoperation Now (GIN) Community Group
  - Cross-Grid use case applications that require resources in more than one Grid
  - (Often HTC and HPC interoperability)
  - Interoperation of multiple Grid infrastructures based on workarounds and small hacks / modifications
  - E.g. WISDOM, EUFORIA, VPH,…
- OGF Production Grid Infrastructure (PGI) Working Group
  - Takes gained experience from production interop of GIN into account
  - Standardization of a suitable set of standards based on lessons learned
  - Tunings, refinements & focus on missing links between open standards

Scope

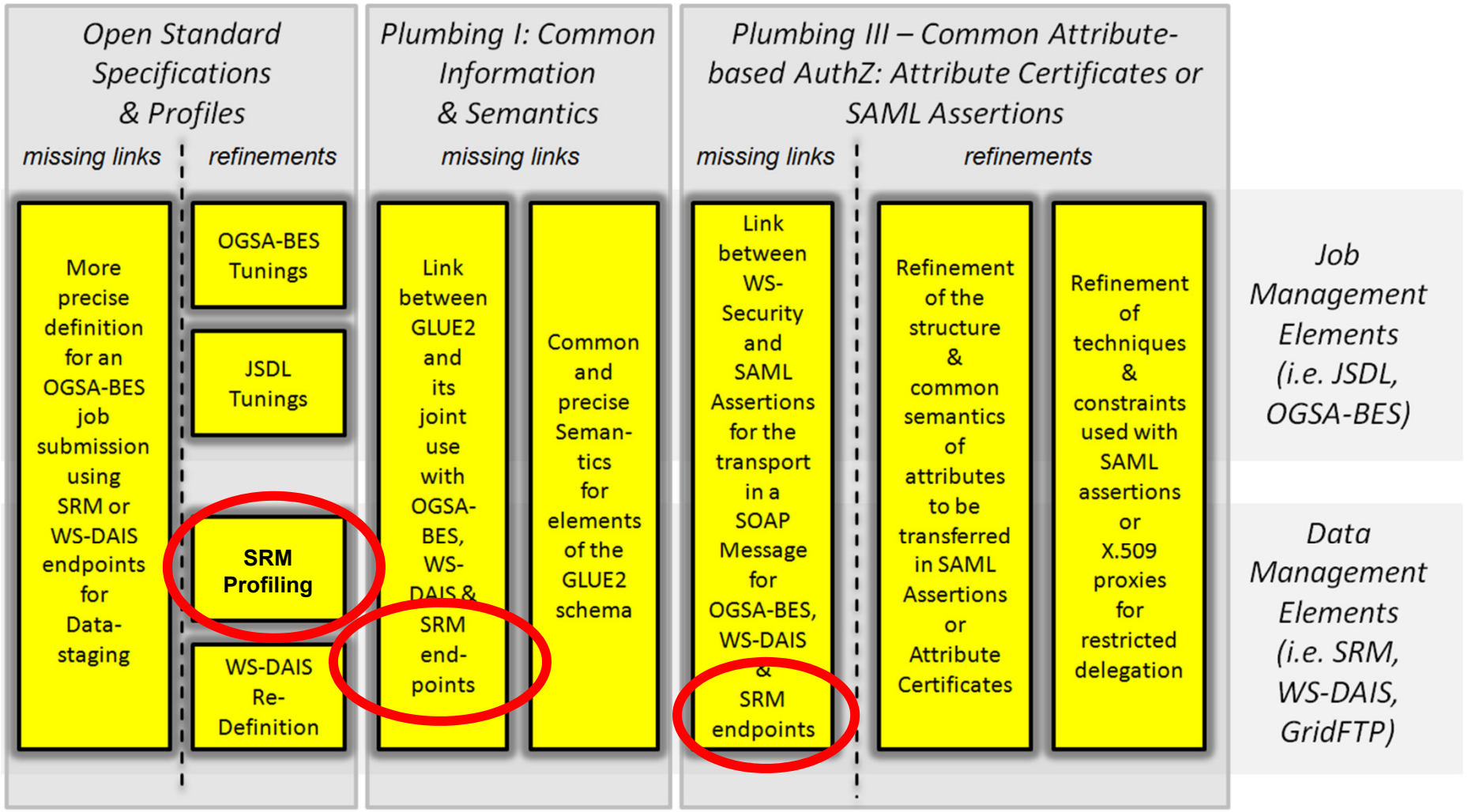
- Identified Basic Use Case
- Only matured specifications
- Specification adoption exist in production middleware systems
- Experience exists in production infrastructures
- Interoperability tests have been performed
- Real scientific use cases require these standards
- Refinements necessary and not complete spec. re-definitions

→ 'Low hanging fruits'

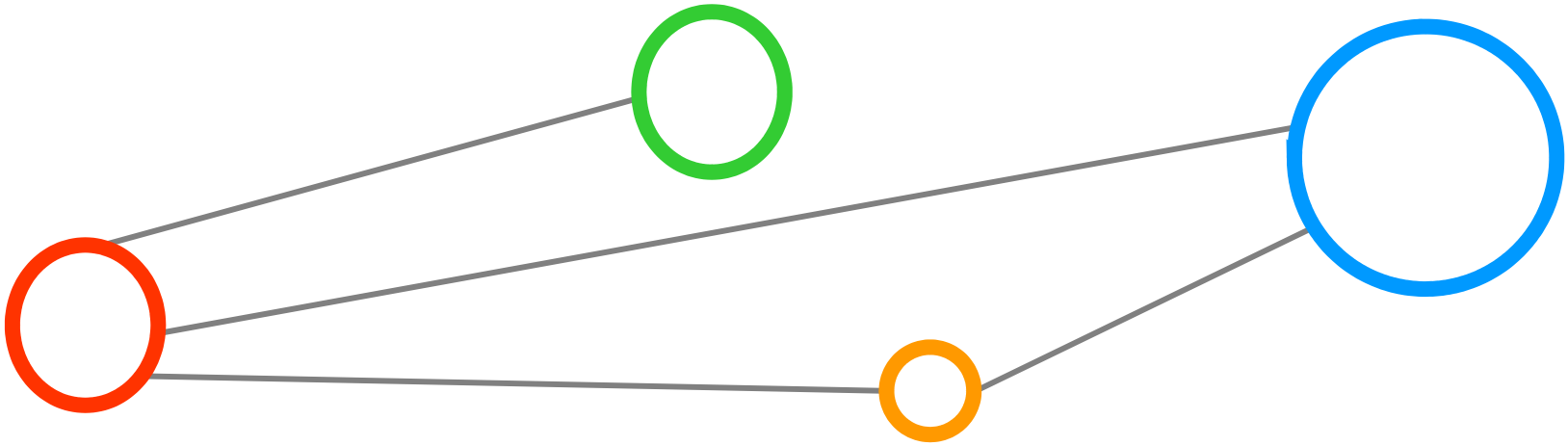
PGI Ecosystem Overview



Missing Links & Refinements



SRM & Security



SRM & Security (1)

- Q: Has PGI to support GSI and if yes for how long
  - TBD: To be discussed

- Meeting in DESY
  - HTTPS (w. x509), two different endpoints (in parallel)
  - New clients go for https (co-existing for a while)
  - Delegation, e.g. SRMCopy, is required
    - GT3, httpg
    - (using gLite delegation mechanisms)
    - Less than a year to be implemented
    - Move to production systems is unknown
    - Alex, Earth
    - Planned for BestMan + DPM (1 year), maybe less w/o srmcopy, turls and GridFTP
    - SRM 1.0/1.1 → SRM 2.2
  - E.g. exchange libraries from GT3 and GT4? (re-compile)

SRM & Security (2)

- Q: Three different security setups for each SRM
  - Description of these SRM setups with GLUE leads to missing ‚fields‘
  - TBD: To be discussed

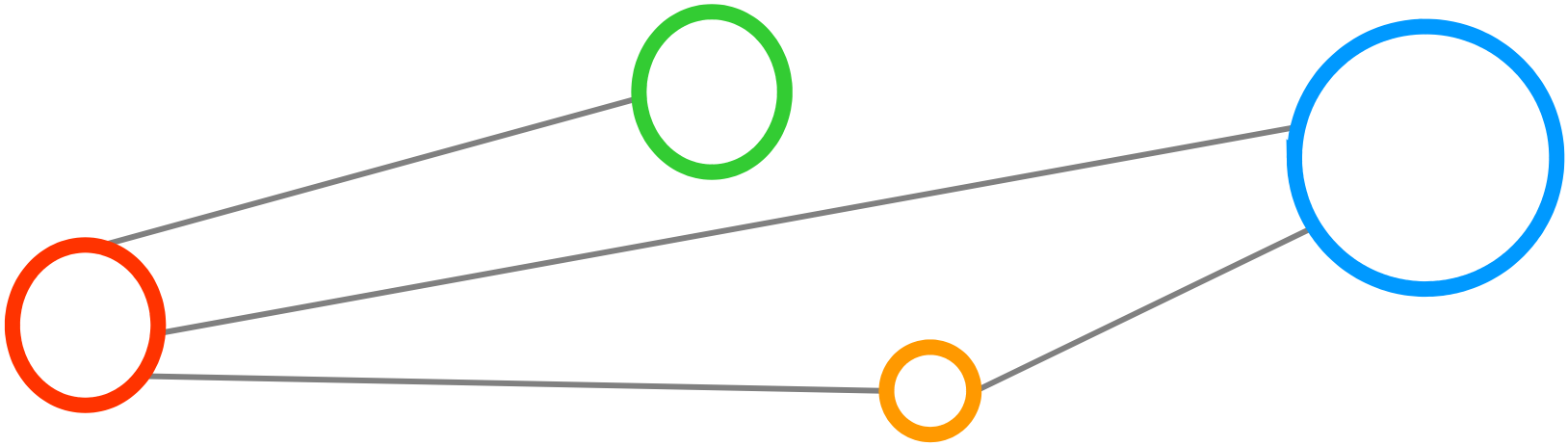
  - Ad-hoc wg, glue wg
  - Access Protocol
  - Control Protocol (published twice)
    - GLUE Service, GLUE SEControlProtocol
    - (both use uri advertisements, e.g. httpg..)

SRM & Security (3)

- Q: SRM authZ attributes usage and encodings
  - TBD: To be discussed

- FQAN encoding for attributes
- Capabilites, policy
- DN role (more than a Gridmap file), authorization
- Depend on implementation, Bestman /dCache supports FQAN (OSG probably has documentation)
- AC in the proxies extension

SRM & Data-Staging



SRM & Data-Staging (1)

- Q: Data - staging in general
  - We have manual data-staging possibilities in mind (i.e. location is known), but for automatic staging…
  - i.e. encoding used by BES/JSDL
  - Unusual for having a two-step way of doing (i.e. TURL)
- One-step might fail
  - Reason for two-step is to ask it there is space available
  - (cp. GridFTP might also fail, in this case the middleware throws a fault)
- We encountered that no one is working on this?! True? Data-staging
  - Usage in wlcg is always manual…
  - We could use a SURL (SiteURL) and filename (TURL – temporary space)
  - Stage-out
  - Logical (SURL), physical (TURL)
- Staging-in
  - Source URI + Filename (local file!) → Copy file to local file system
  - JSDL only has to care on the SURL with a suitable library / standalone program
  - srm://
- Space
  - Spacereservation function
  - JSDL resource requirements, amount of space → linked to SRM reservespace
  - SRM space tokens

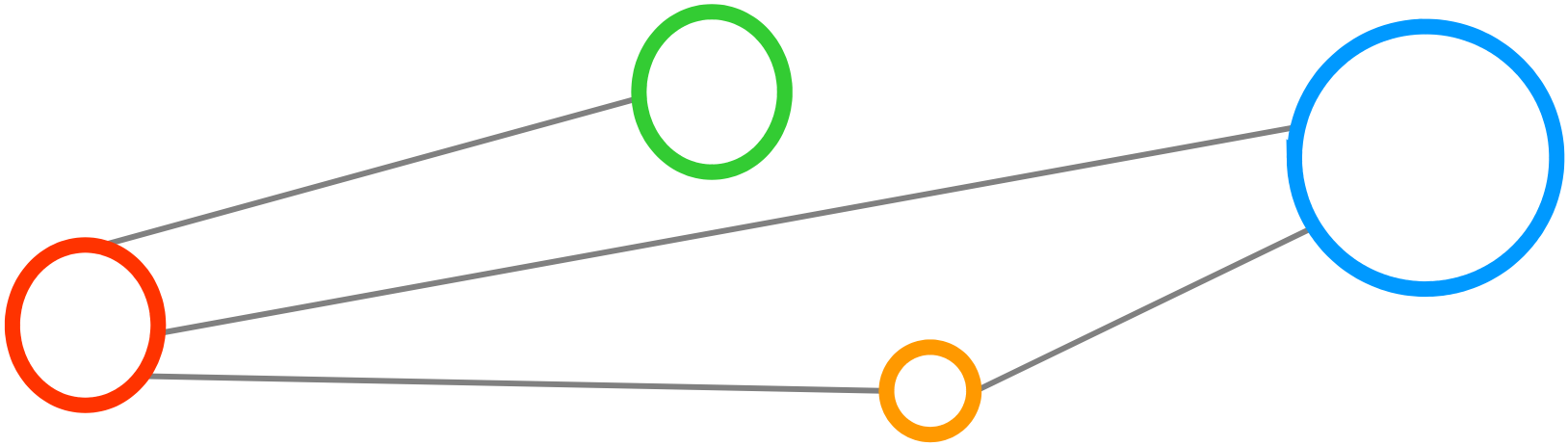
SRM & Data-Staging (1)

- Space (initially to be profiled out)
  - Spacereservation function
  - Retention policy
  - Storage Tokens, named as Space Token (Storage Area Tokens)
  - Some people interpret it differently
  - Not using dynamic space reservations…
  - Job Submission
  - Two concepts pre-allocated vs dynamic space..
  - SRM 2.2 concept should be clear in PGI

SRM & Data-Staging (2)

- Q: Data - staging - credential issues
  - i.e. delegation during “copyTo()”
  - Now with GSI connections, plans in future?
    - portType? Delegation mechanisms not necessarily proxies and SAML maybe more flexible
  - Similar to File Staging Profile?
  - Profile where the credential should be available
    (e.g. a client library needs a file)
    - X.509 proxy + ac for attributes
    - Different for each source/target, maybe using different attributes for each
    - TBD: Figure → CREAM + portType issue
    - No staging by CREAM nor WMS, etc.s
- Storage Elements use GridMap files, need to map users to local accounts (maybe users, pool)
  - dCache / DPM (Gridmap files), Bestman (FQAN)
  - → TBD: Jens issue with write permissions (not attribute?)

SRM Profiling



SRM Profiling (1)

- Q: Subset of functions/operations that work mostly
  - No chance so far to compile experiences / talks since computation / security got focus in the group
  - i.e. ‘wlcg’ subset of SRM discussions
    - gLite subset, osg use functionality out of wlcg subset)
    - Different quato spaces, etc.
    - Core functionality of gsm-wg (SRM 3 plans, but now profiled first)
  - i.e. discussions with Patrick, Akos, and so on (problems with space tokens, no dynamic spaces, subsets only required/used etc.)

SRM Profiling (1,5)

- Q: Subset of functions/operations that work mostly
  - Matrix of Arie
  - Survey that provide clients, users of clients would be useful
  - ACLs not supported
  - setPermission operations

SRM Profiling (2)

- Q: Future or SRMs, roadmap, PGI dependencies
  - Sustainability of SRMs
  - TBD: To be discussed

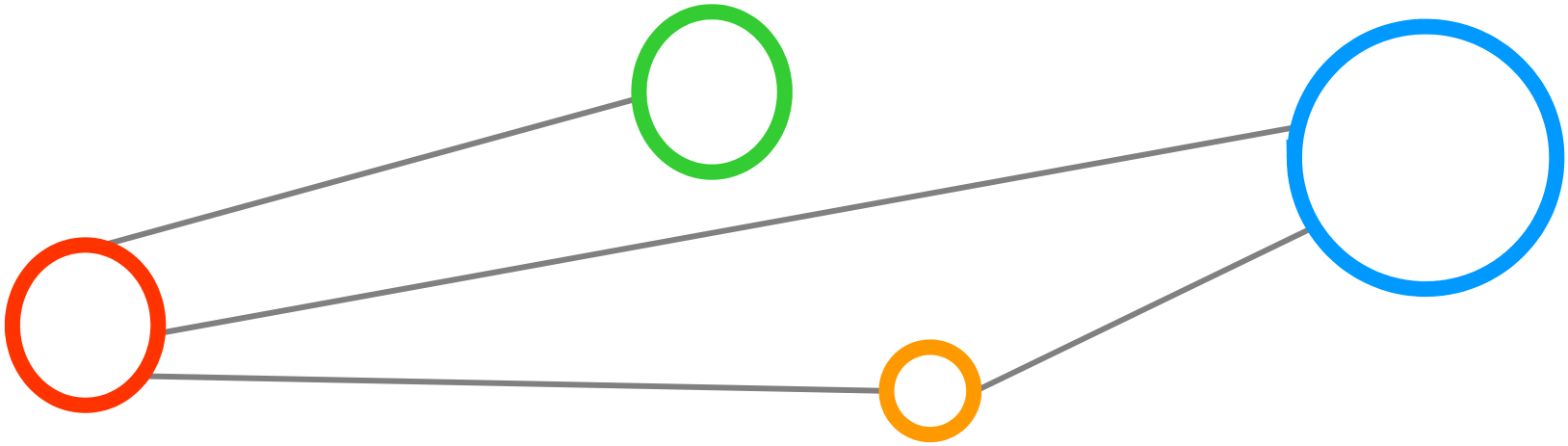
SRM Profiling (3)

- Q: Interoperability Tests using Java Library (BeStMan)
  - Recommendations to PGI work in general and interoperability tests in general (work together with GSM-WG)
  - TBD: To be discussed

SRM Profiling (4)

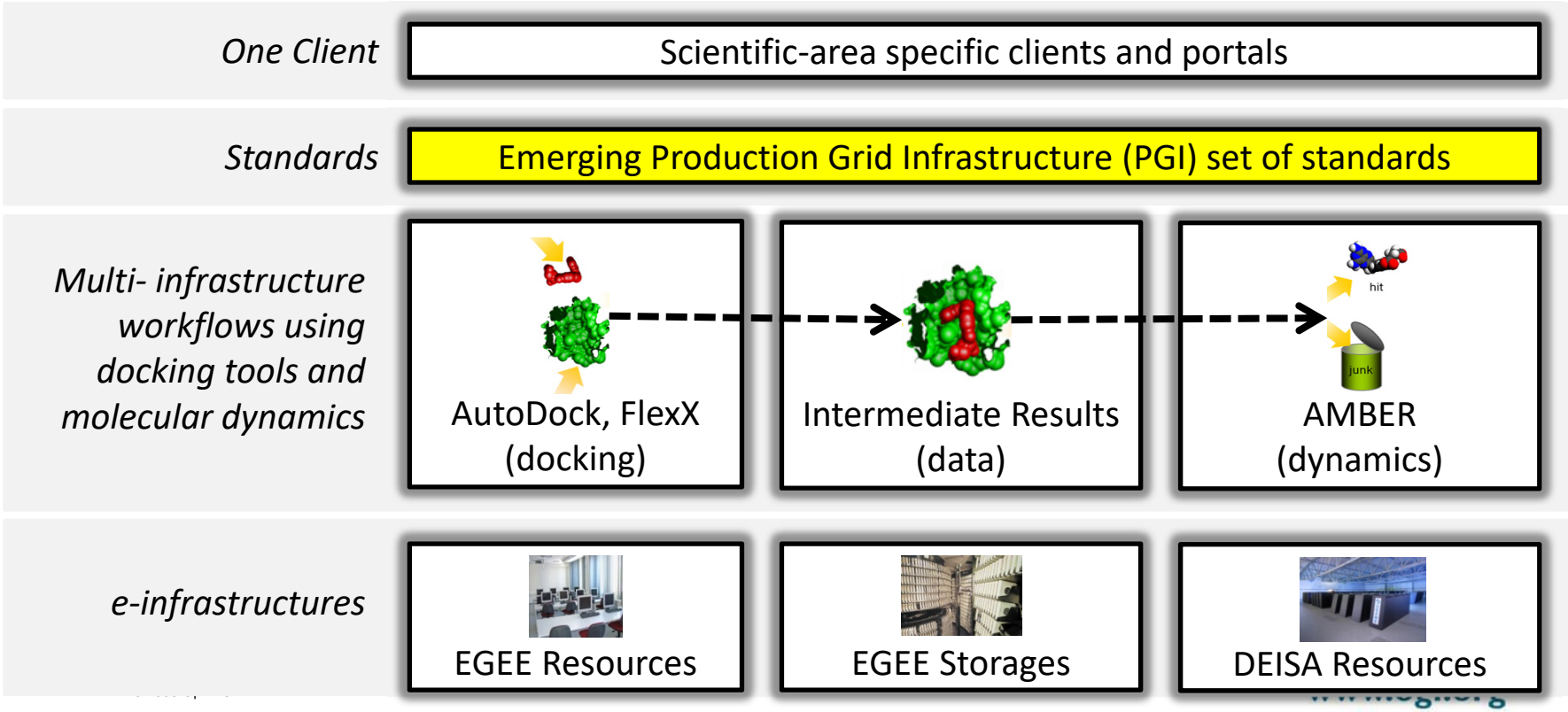
- Q: Discussions on different implementations and interoperability
  - https://twiki.cern.ch/twiki/bin/view/SRMDev/WebHome

Application: WISDOM Use Case

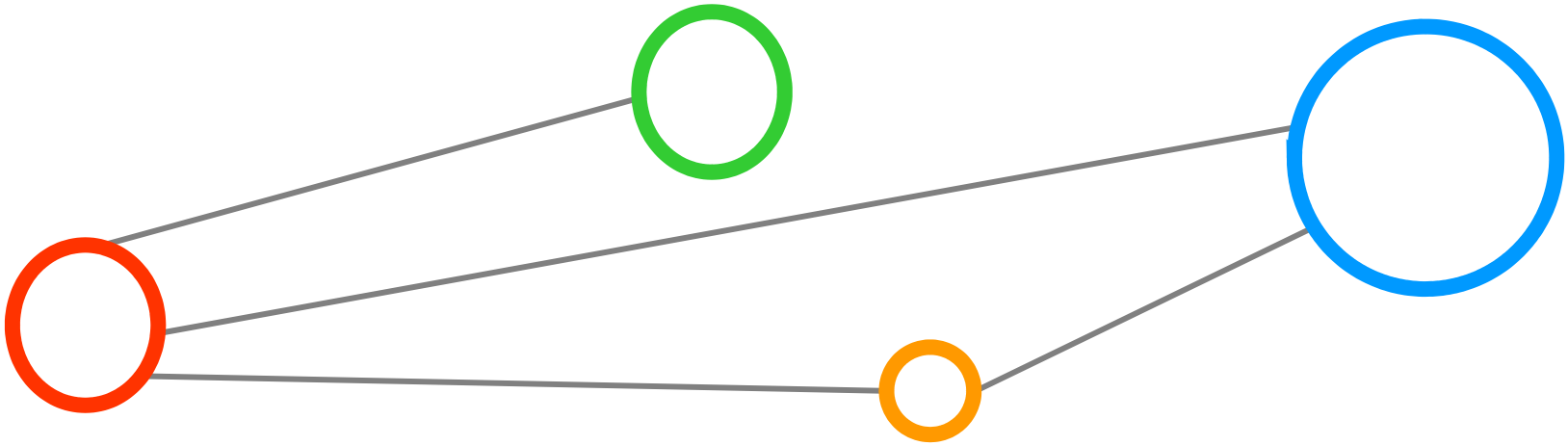


Application: WISDOM Use Case

- Key goal: Cheaper and faster drug discovery
  - Infrastructure interoperability: Drive and use open standards
  - Benefit: Leveraging power of both HTC and HPC resources



Discussions



Discussions

- TBD

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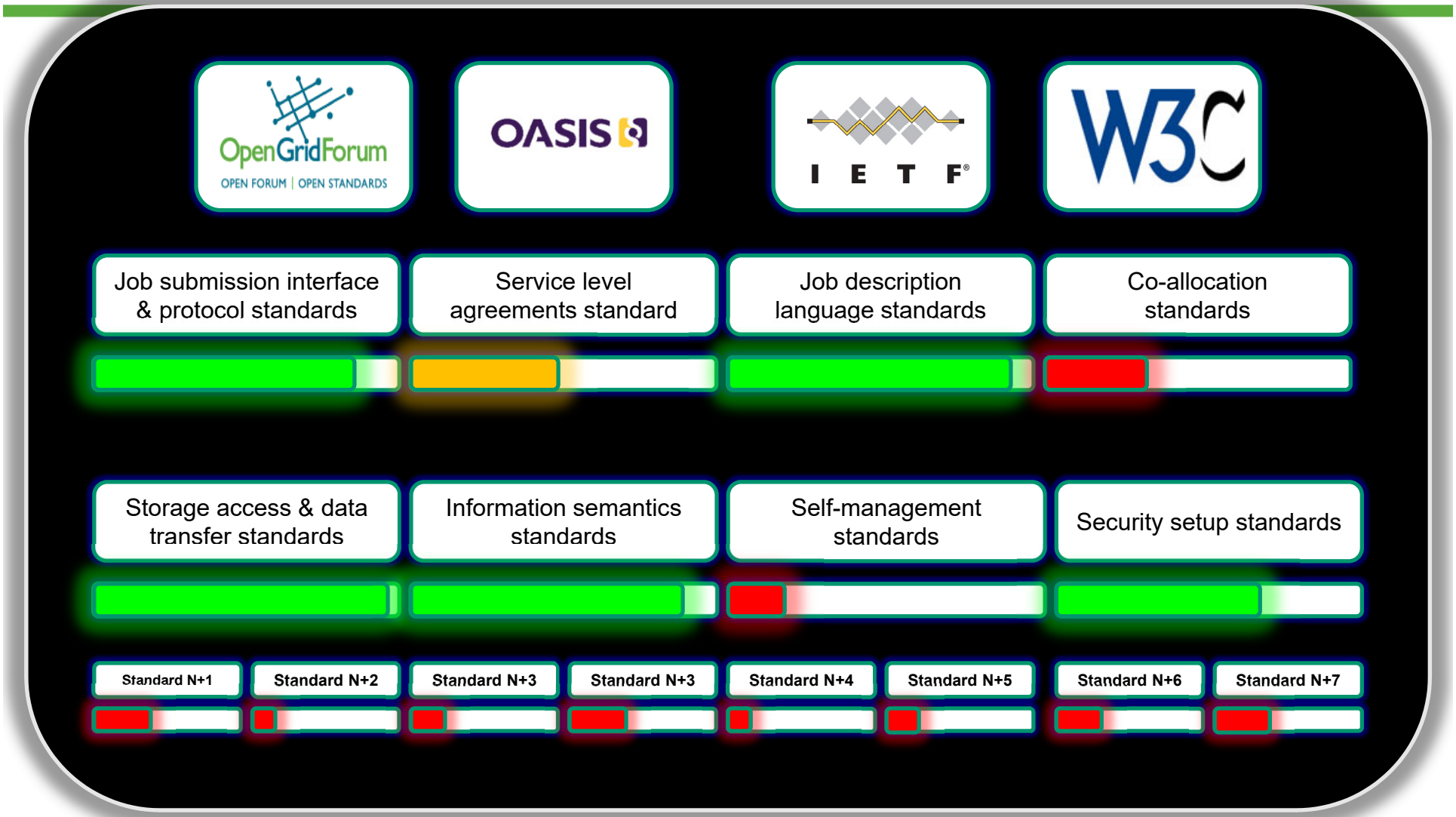
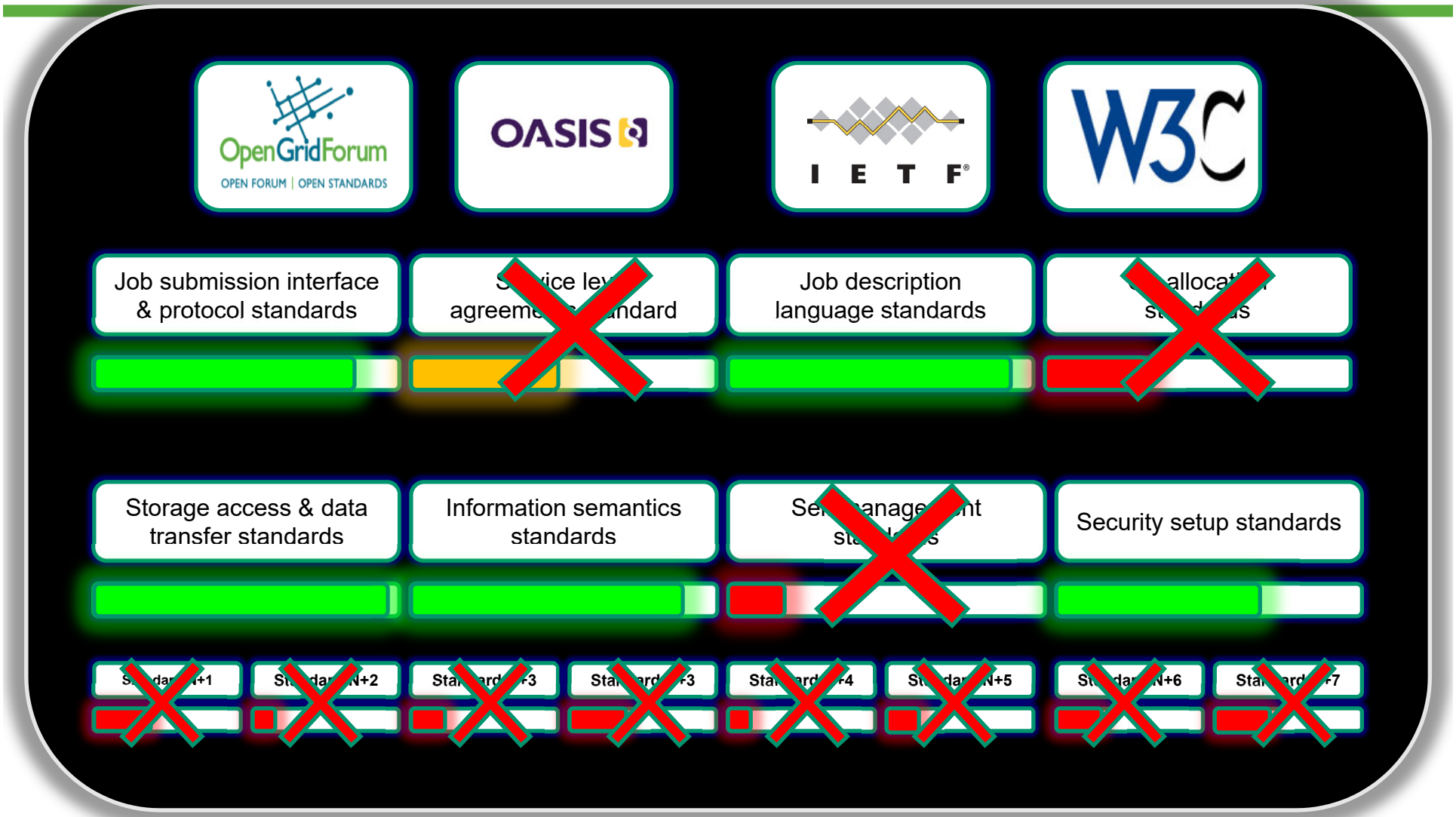
OGSA Standards



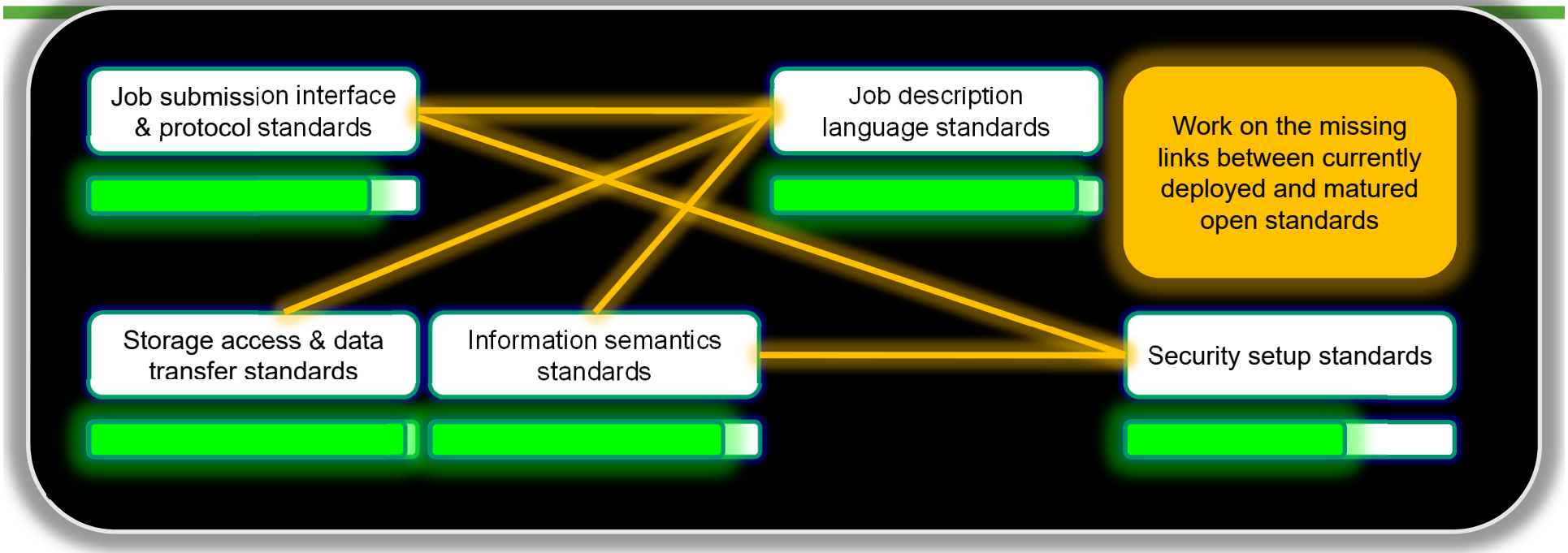
[7] Foster et al., *'The Open Grid Services Architecture'*

GIN Production Experience

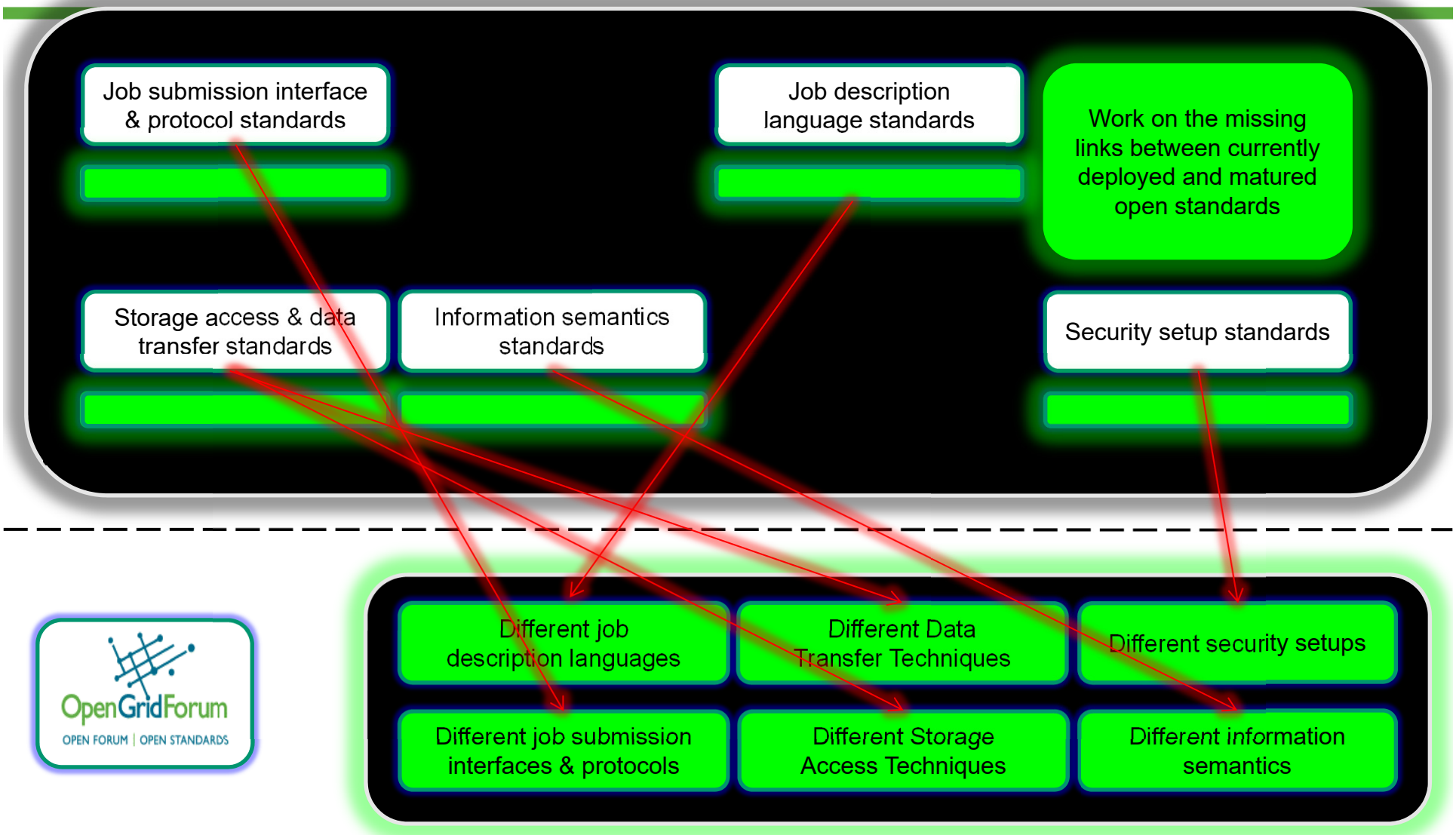


[8] Riedel et al., *'Interoperation of World-Wide Production e-Science Infrastructures '*

PGI Approach (1)



PGI Approach (2)



[5] Riedel et al., *'Experiences and Requirements for Interoperability between HTC- and HPC-driven e-Science Infrastructures'*

Compare History of Computer Science