



Sustainable DCI Operations scalable in size, time, and complexity

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GridKa, 08.09.2011, Karlsruhe, Germany





Sustainable DCI Operations

- Agenda
 - **The DGSI project**
 - Interoperation, Federation, Operation
 - Implementation Technology
 - Standardization in OGF & IEEE
 - Rational for a federated DCI future





The DGSI Project

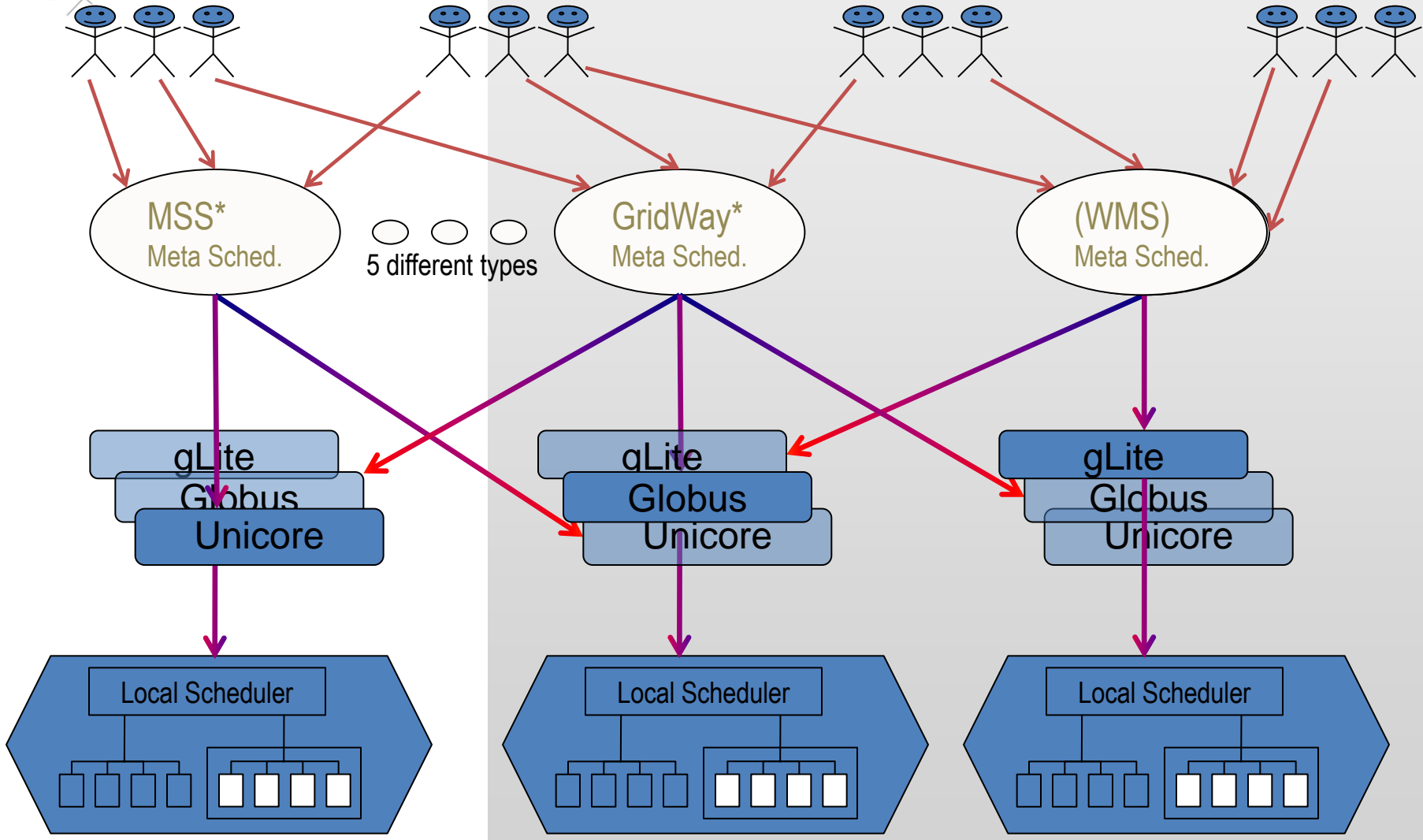


- DGSI – D-Grid Scheduling Interoperability targets:
 - #1: Interoperation of multiple technologies
 - #2: Federation of Grids & Clouds
 - #3: Operation, sustainable & scalable
 - Scalable in size: interoperability of “regions”
 - Scalable in time: interoperability of “versions”
 - Scalable in complexity: interoperability of “technologies and concepts”



DGS

Interoperation of multiple technologies

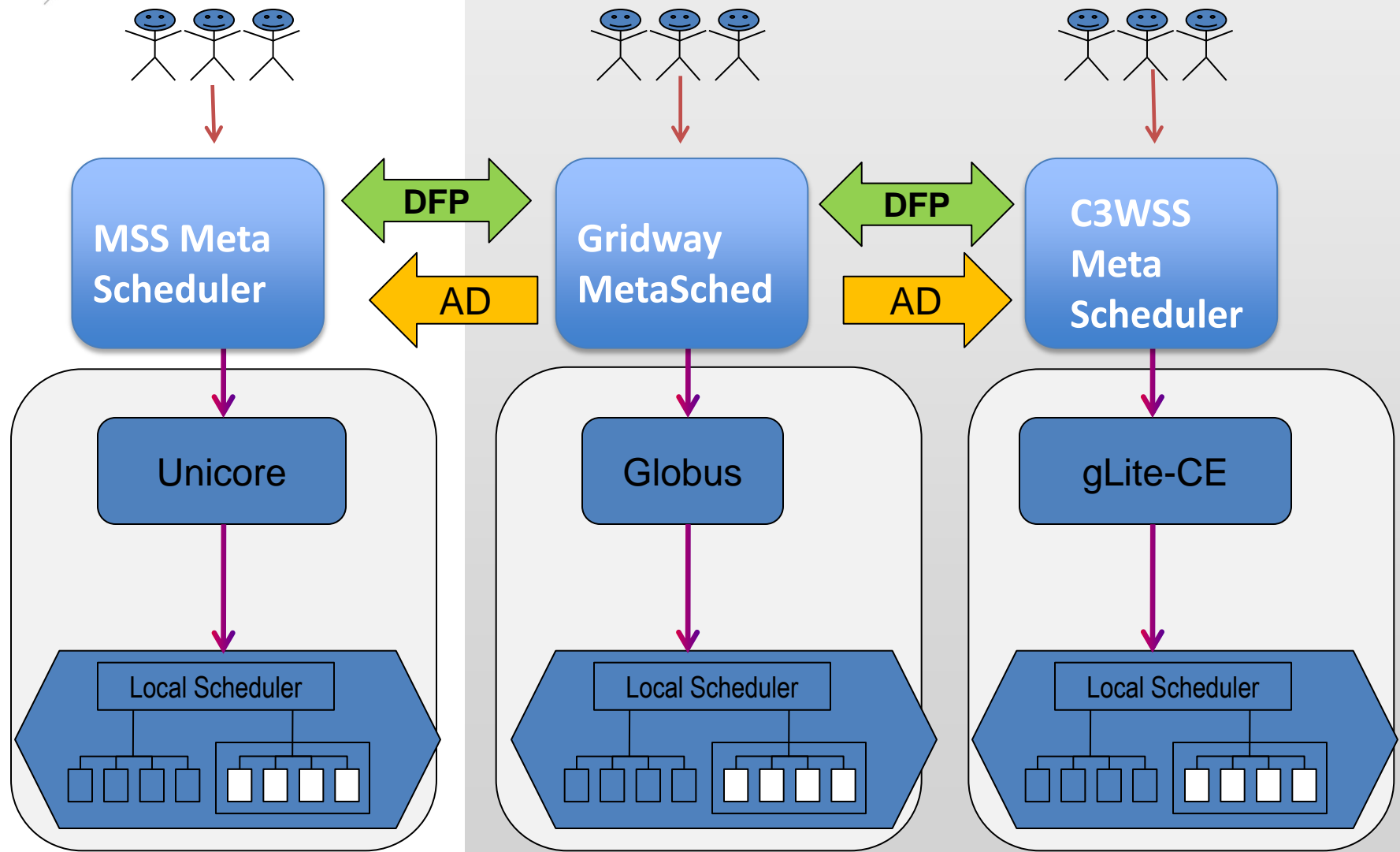


○ ○ ○
5 different types



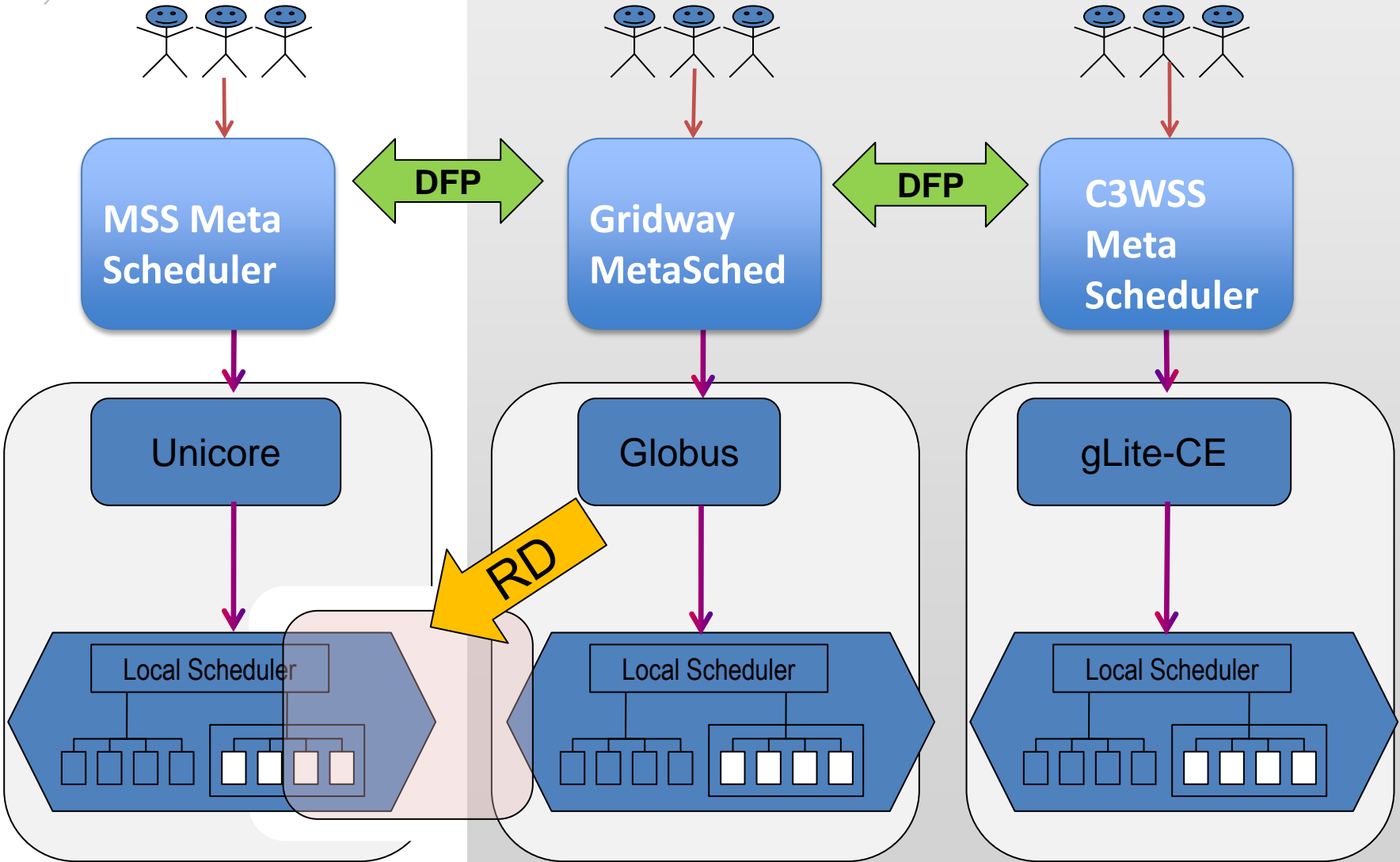
DGS

Federation Mode 1: Activity Delegation



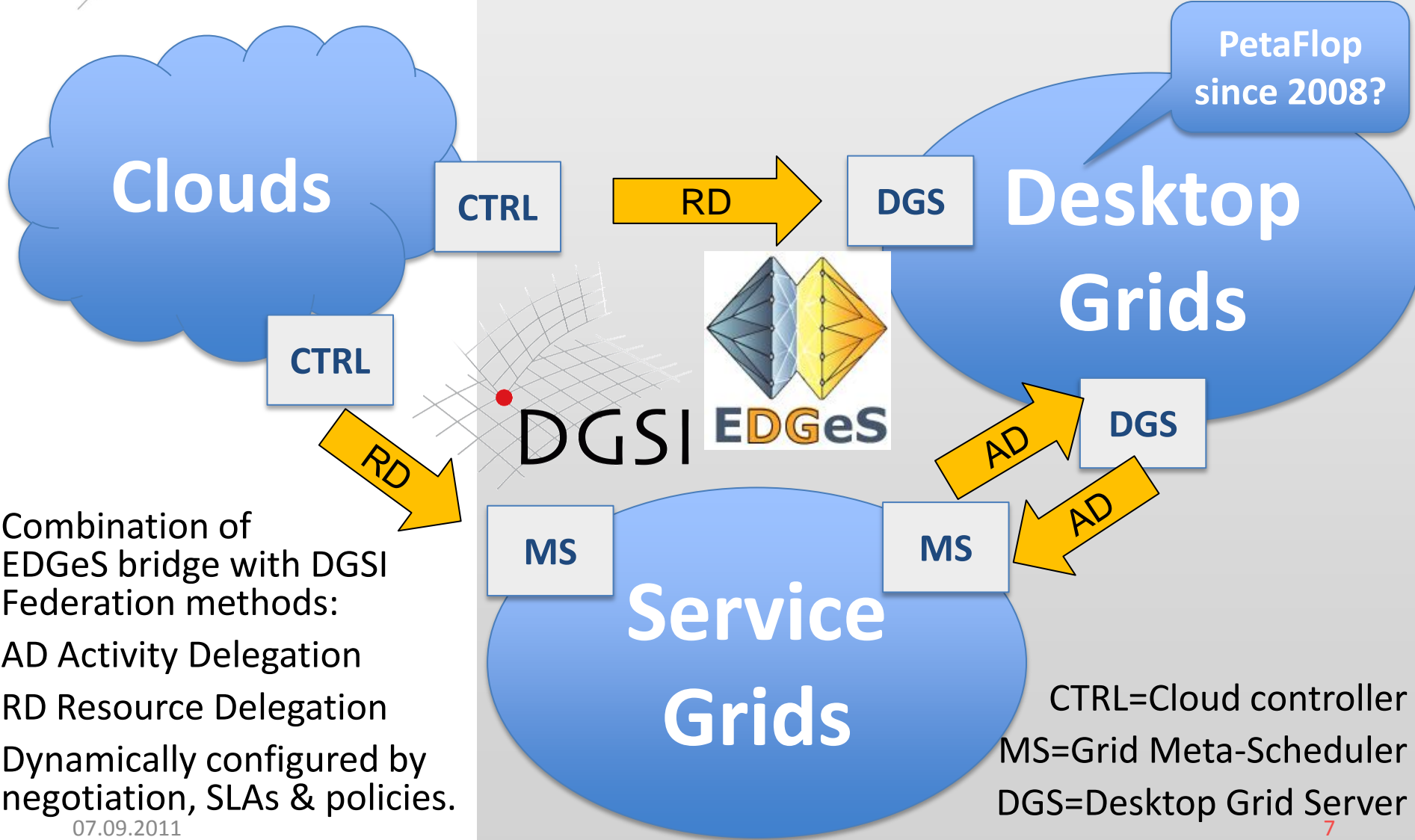


Federation Mode 2: Resource Delegation





Federation of Grids & Clouds



PetaFlop since 2008?

Combination of EDGeS bridge with DGS Federation methods:
 AD Activity Delegation
 RD Resource Delegation
 Dynamically configured by negotiation, SLAs & policies.

CTRL=Cloud controller
 MS=Grid Meta-Scheduler
 DGS=Desktop Grid Server



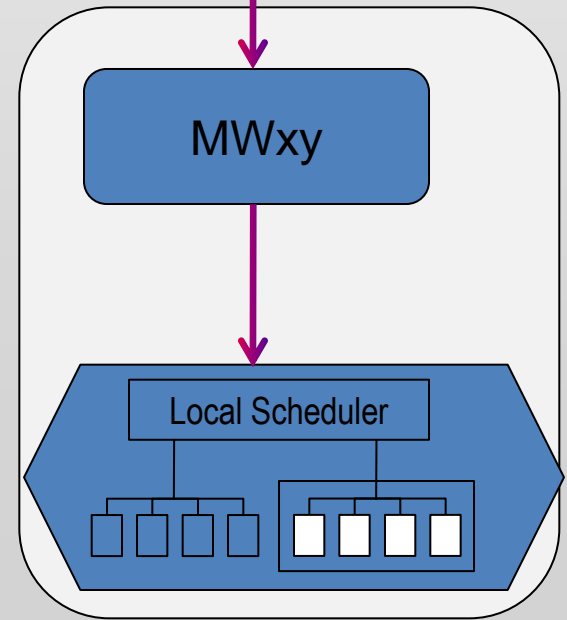
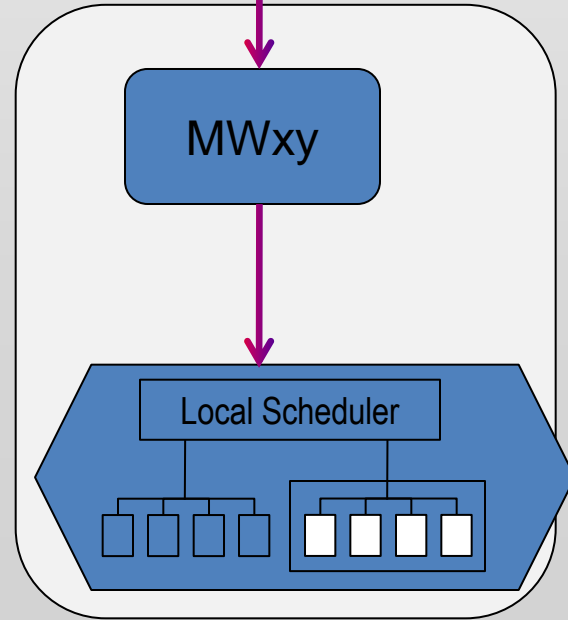
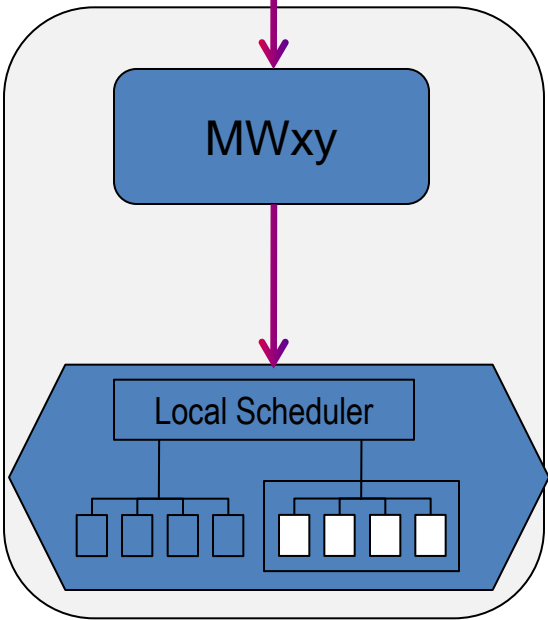
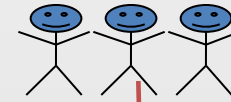
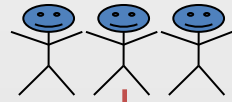
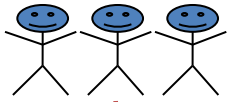
DCI Operations: sustainable & scalable

- Operation, sustainable & scalable
 - Scalable in size: interoperability of “regions”
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DGS

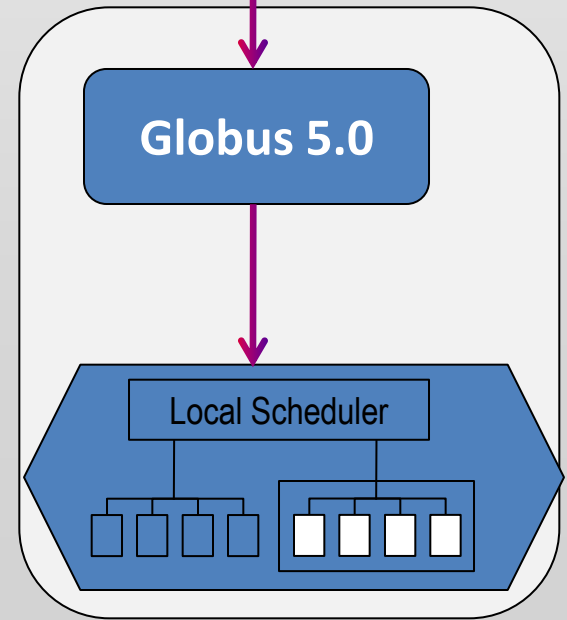
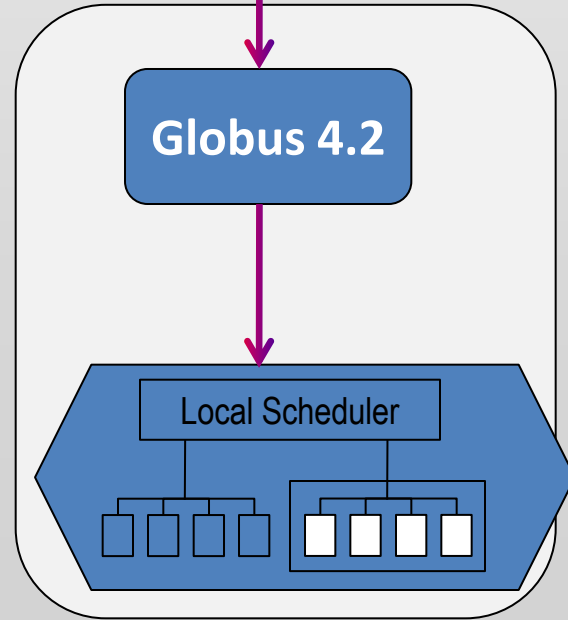
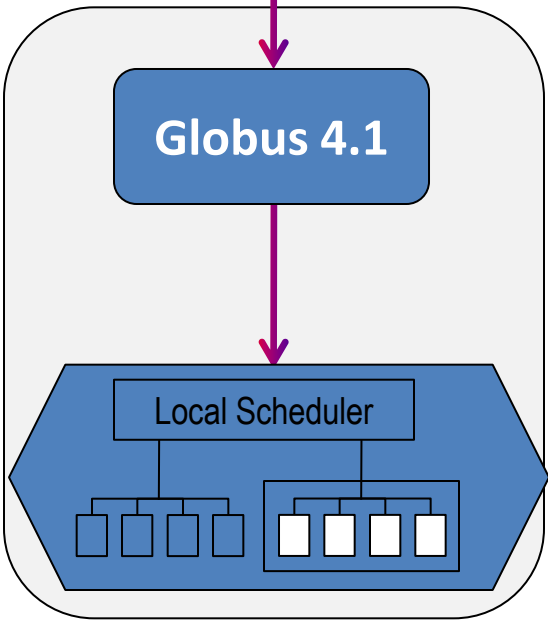
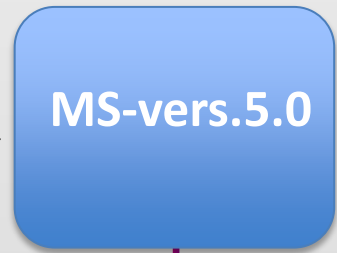
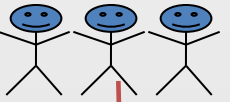
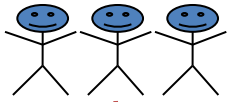
Operation, sustainable & scalable: interoperability of regions





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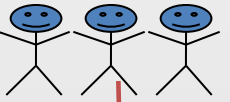
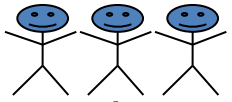
Operation, sustainable & scalable: interoperability of versions





DGS

Operation, sustainable & scalable: interoperability of versions



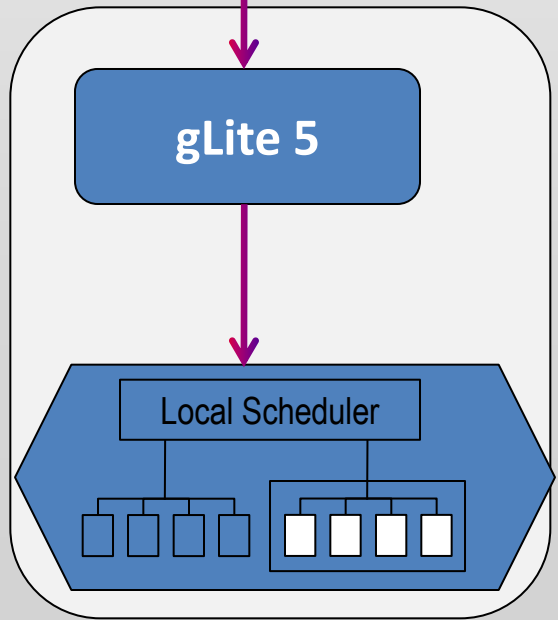
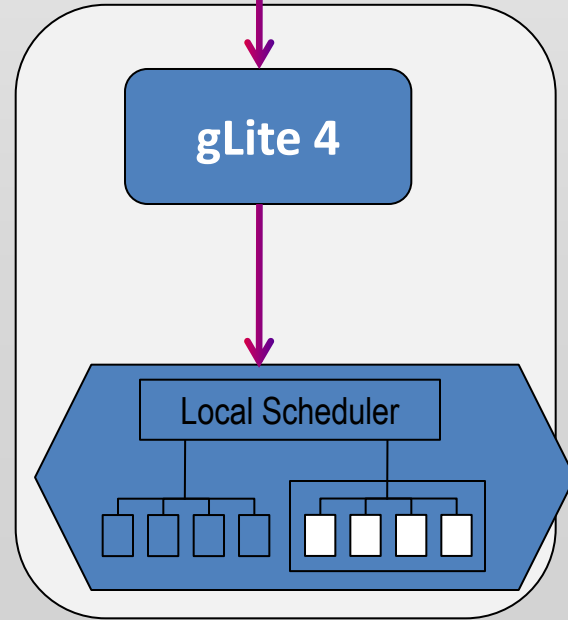
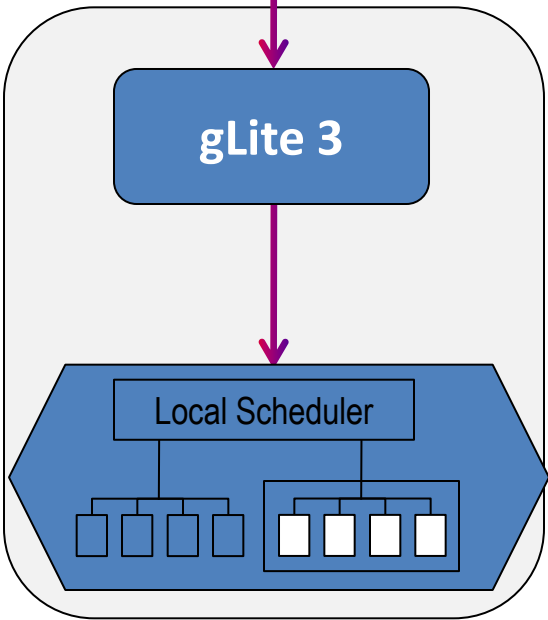
MS-vers.1.2



MS-vers.2.3

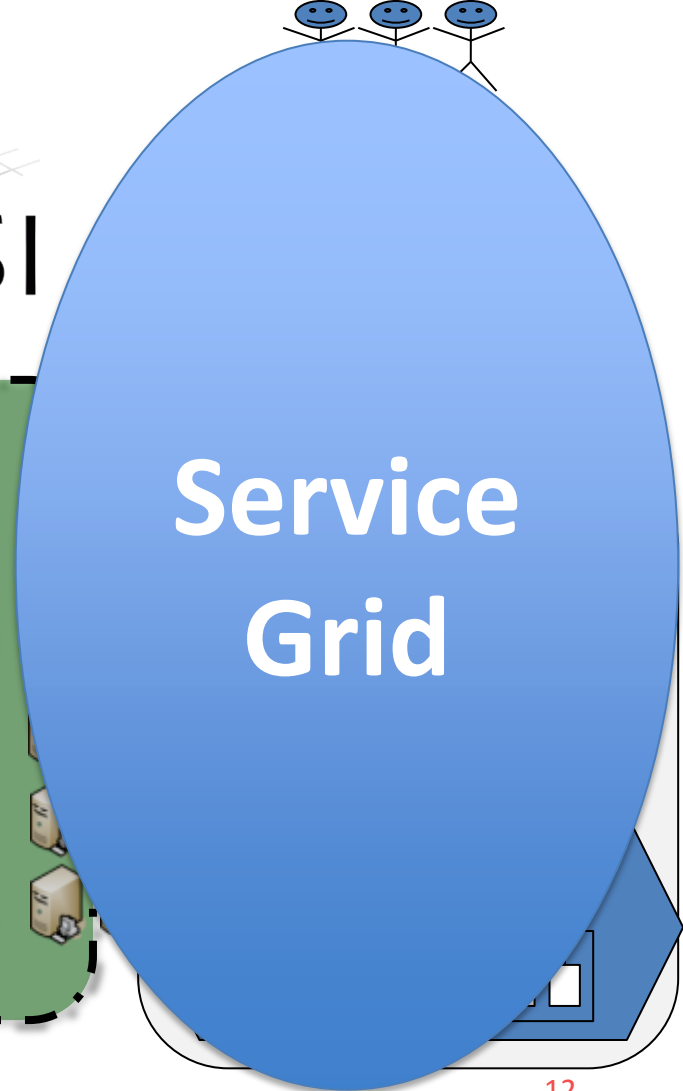
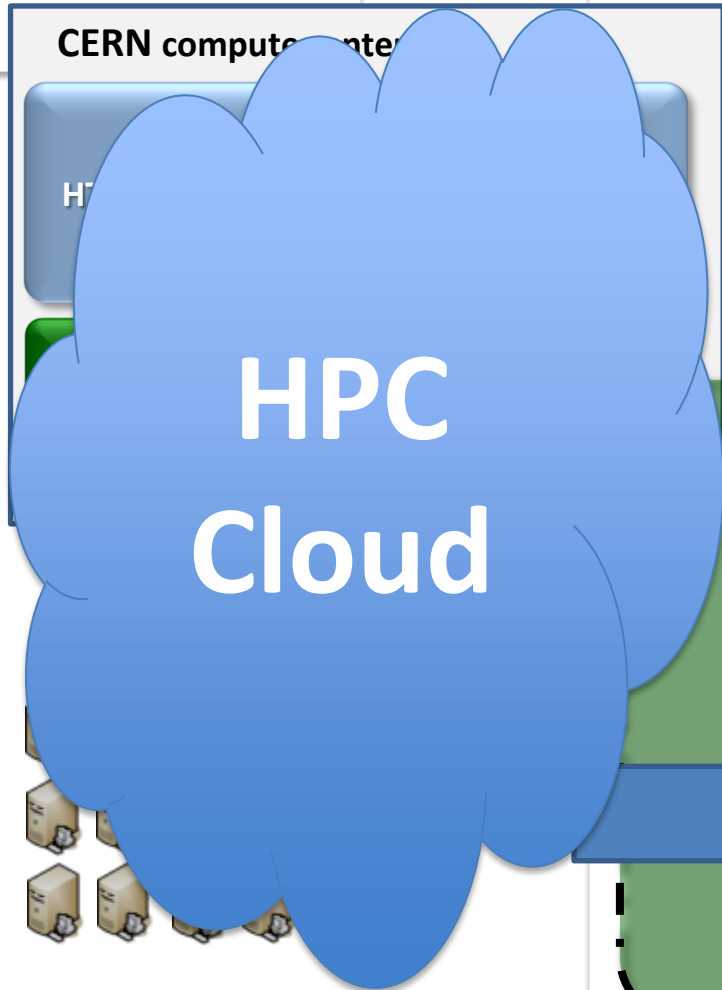


MS-vers.5.0

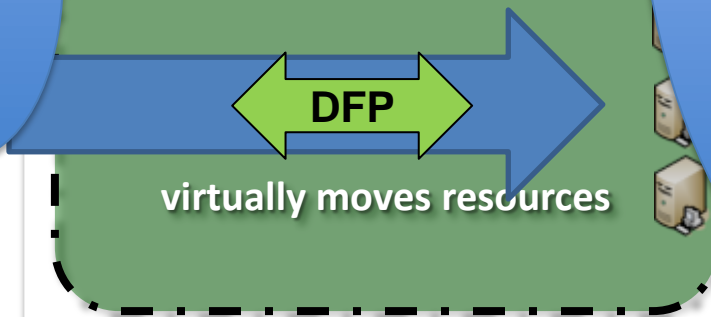


Interoperability of concepts: ISF & DGSII

Platform Computing

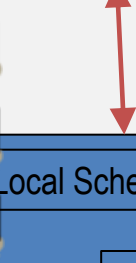
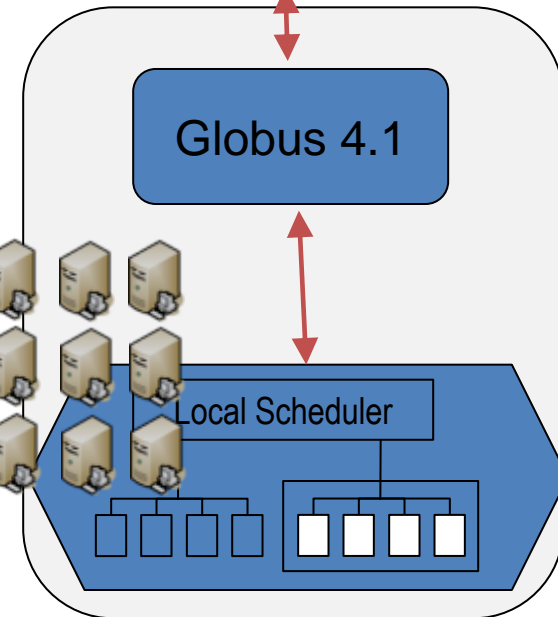
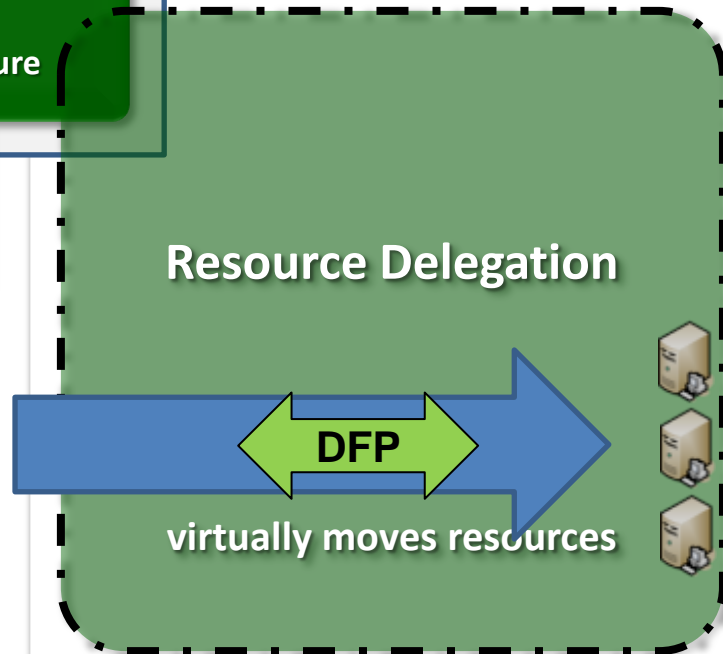
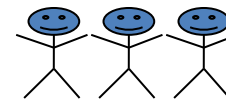
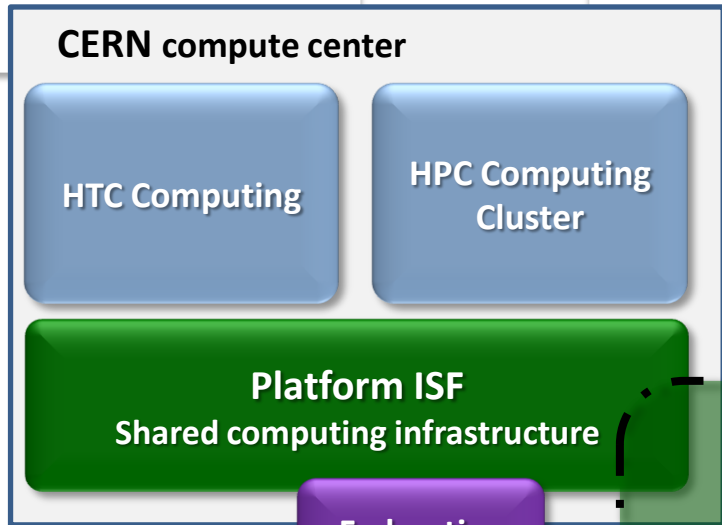


Resource Delegation



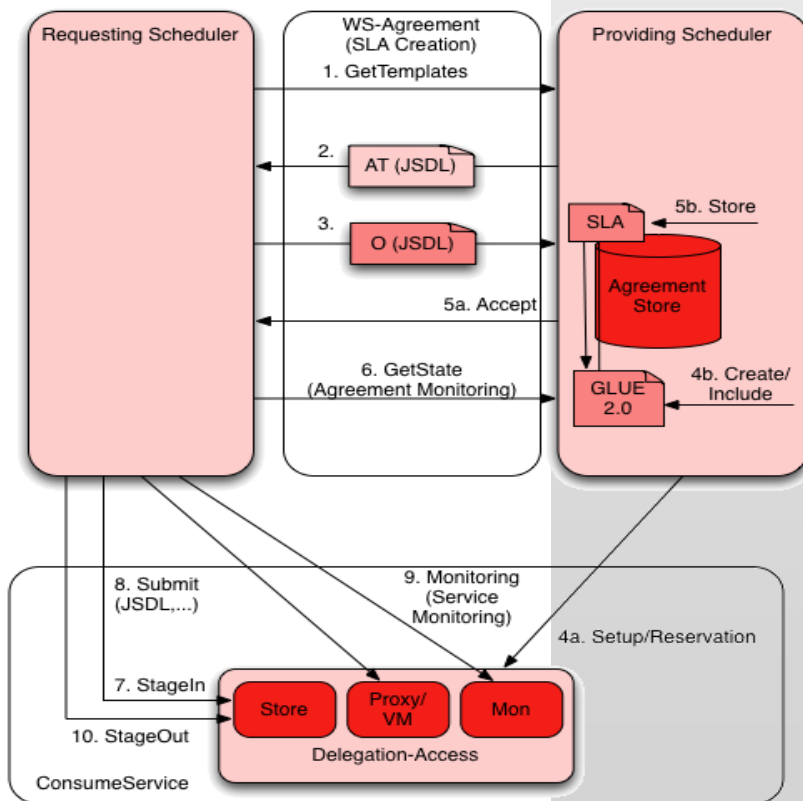
Interoperability of concepts: ISF & DGSII

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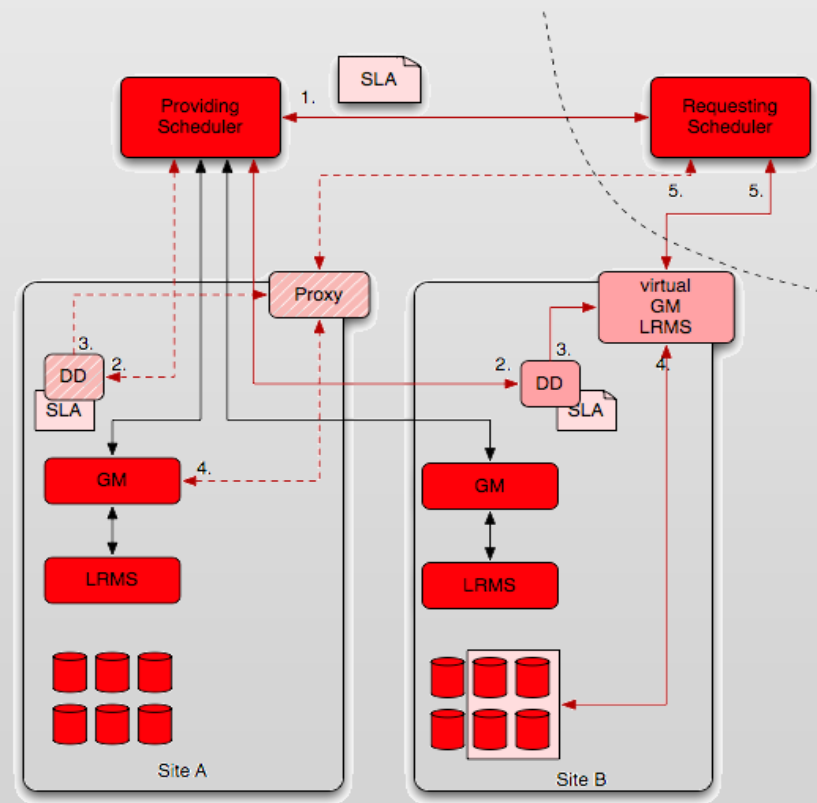


Implementation Technology

Activity Delegation



Resource Delegation





The 4 reasons why Standards matter

Or why Standards* rock!

Thijs Metsch, Senior Software Engineer
08-09-2011, GridKa School 2011, Karlsruhe

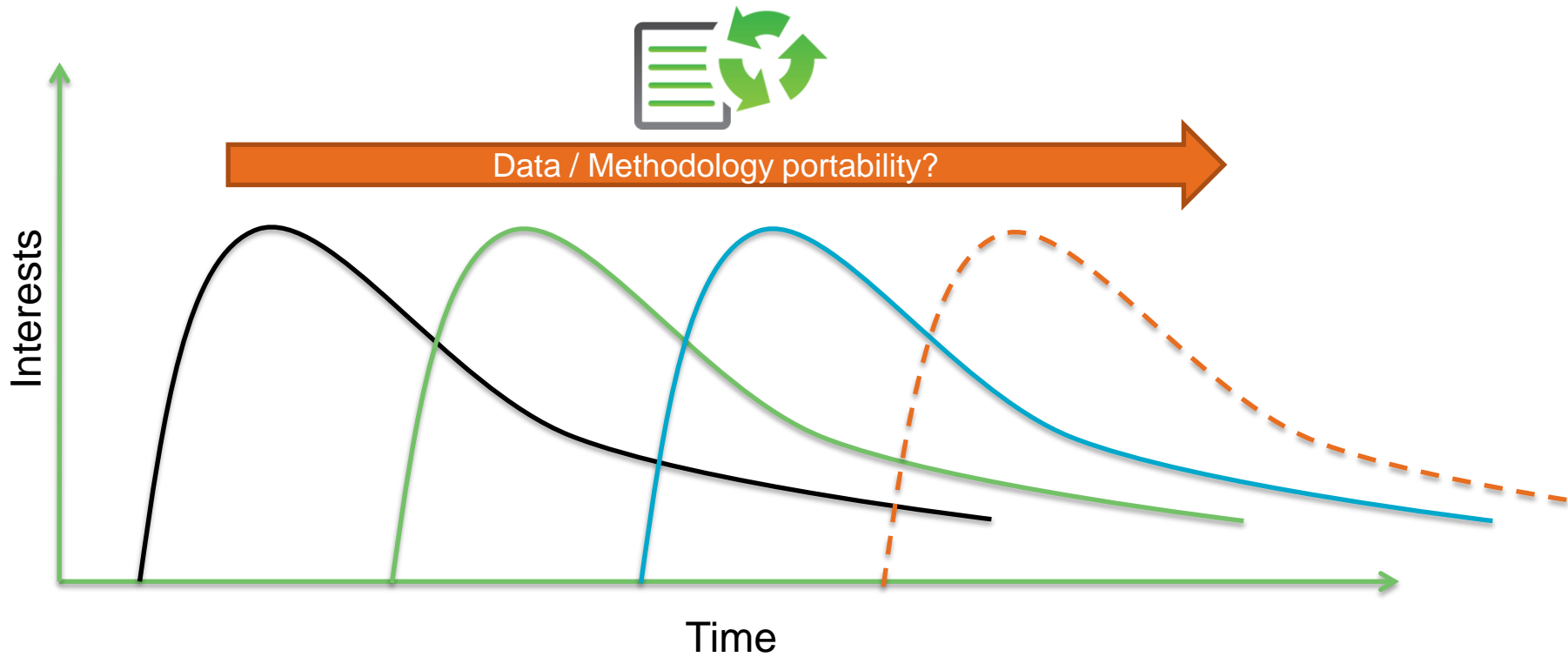
*Industrial, Programming language, SDOs, ...

PORTABILITY

“Transport” / Format Definition

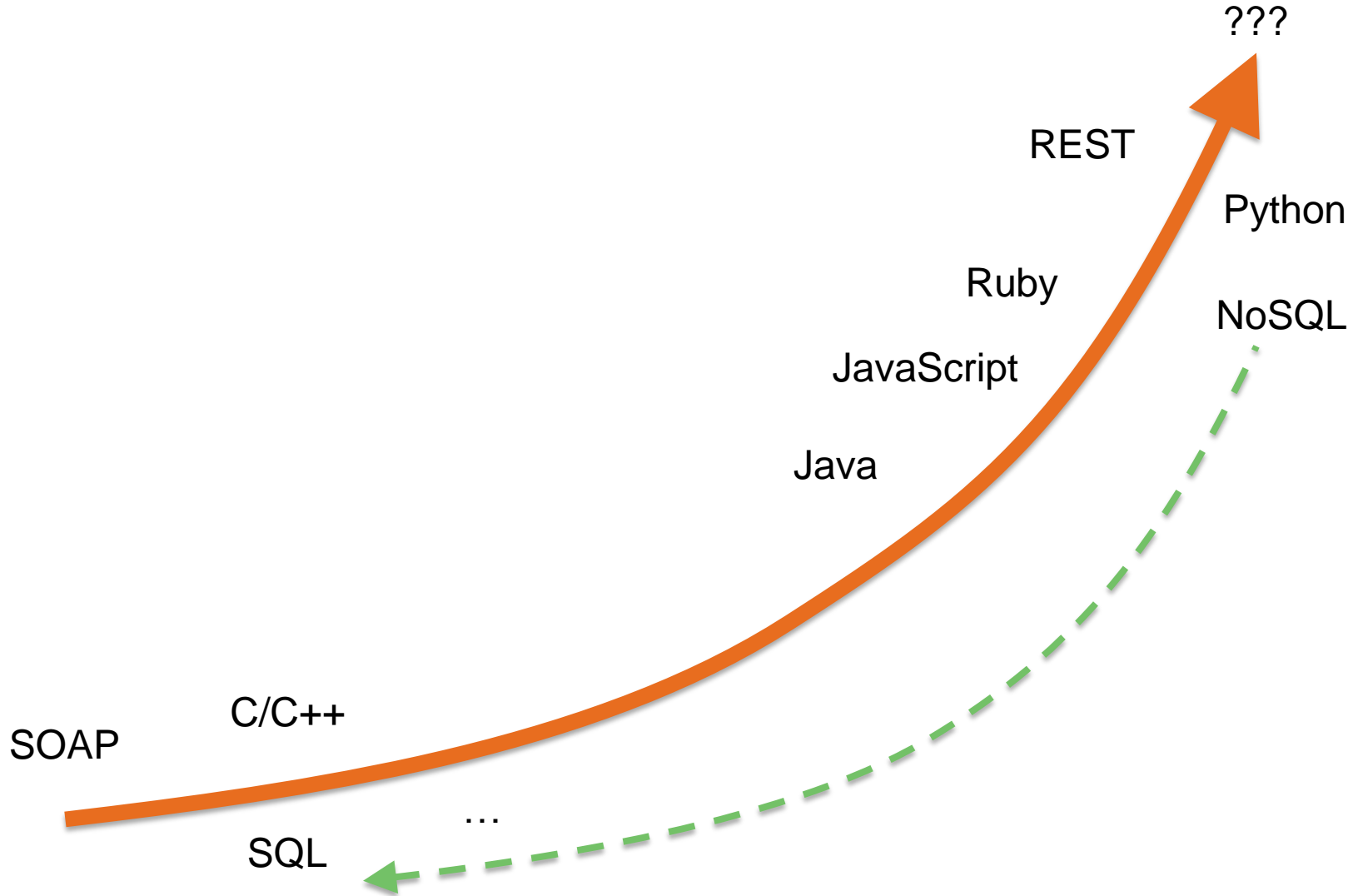


Funding Program Interests



Technology

{ Platform Computing



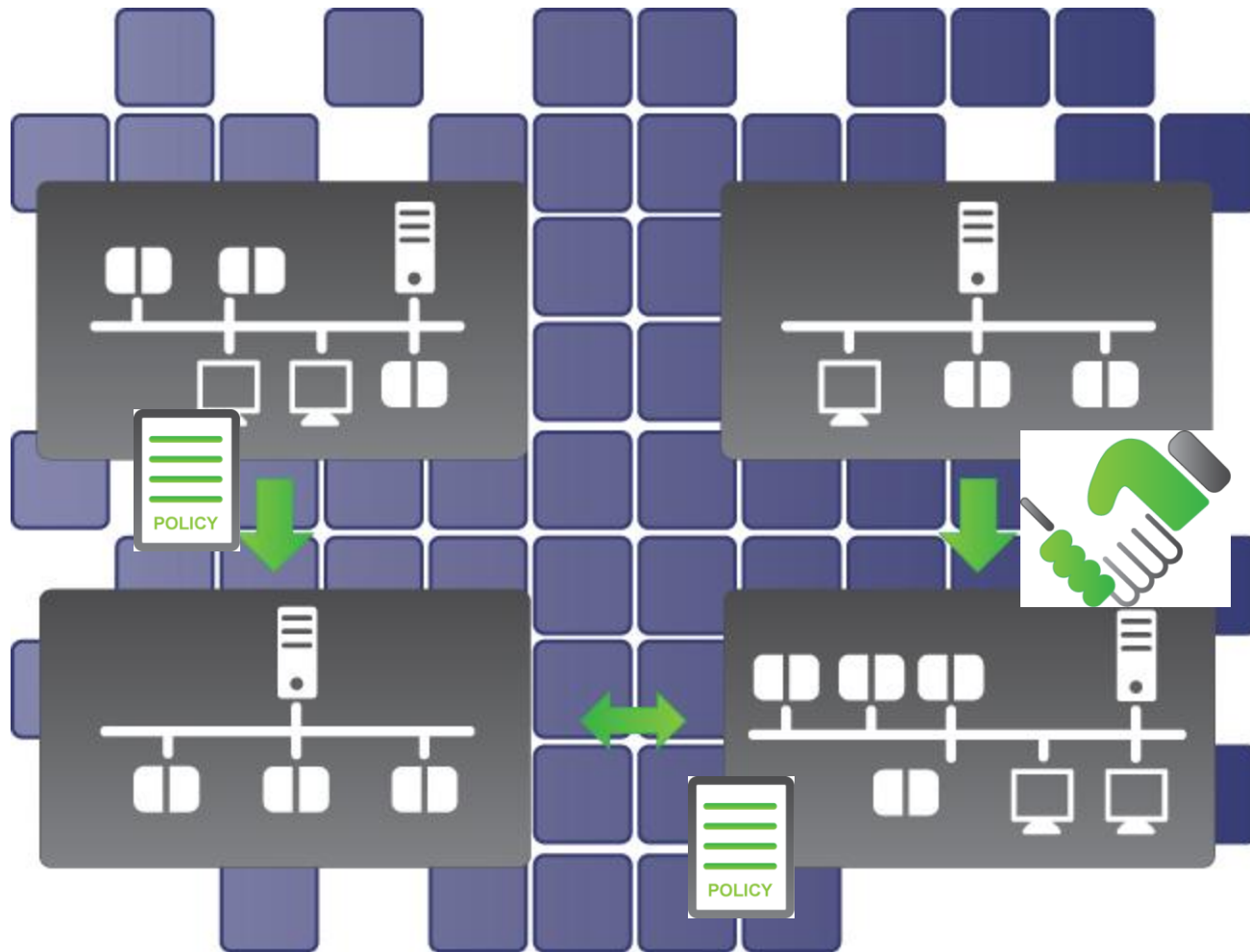
Compute power?

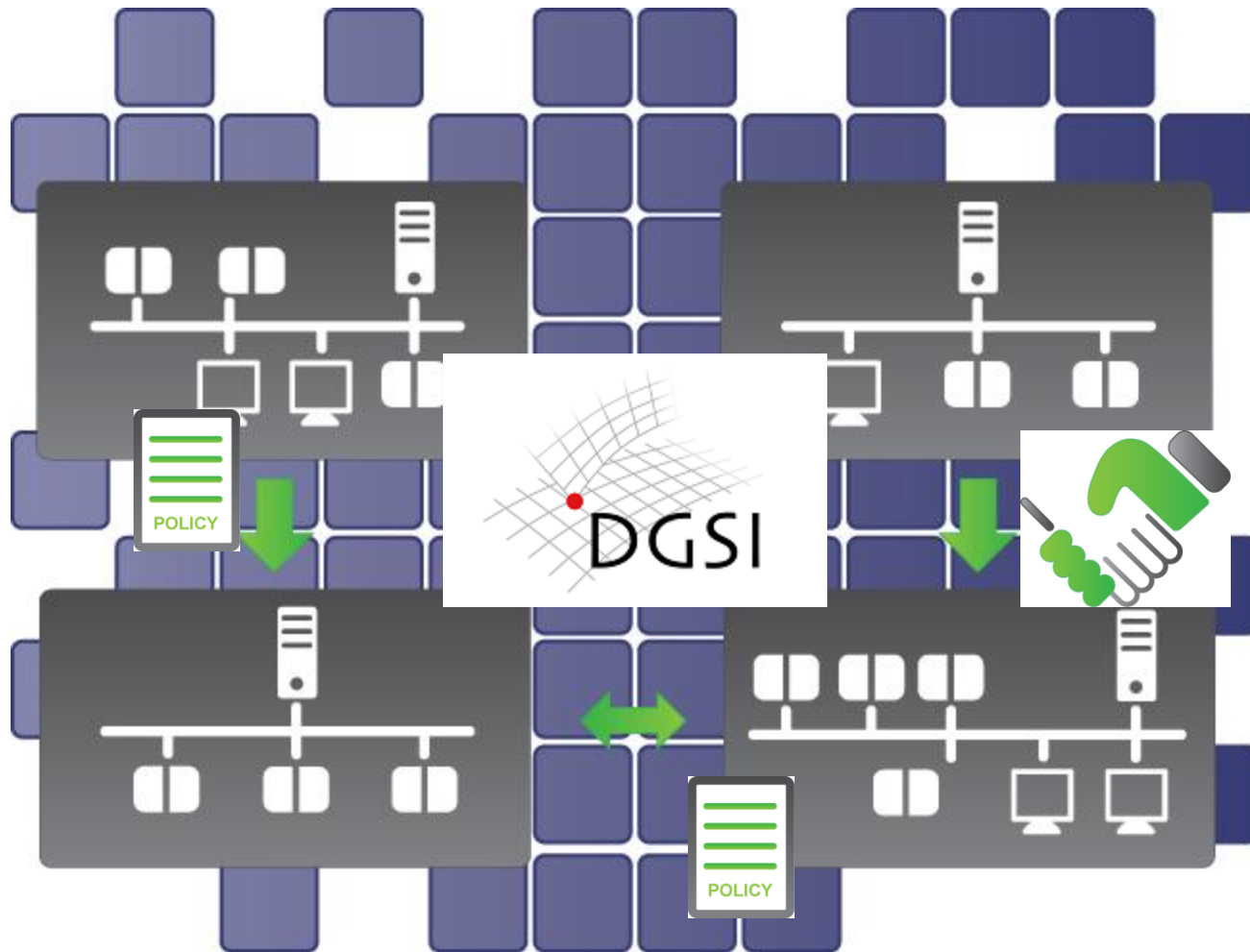


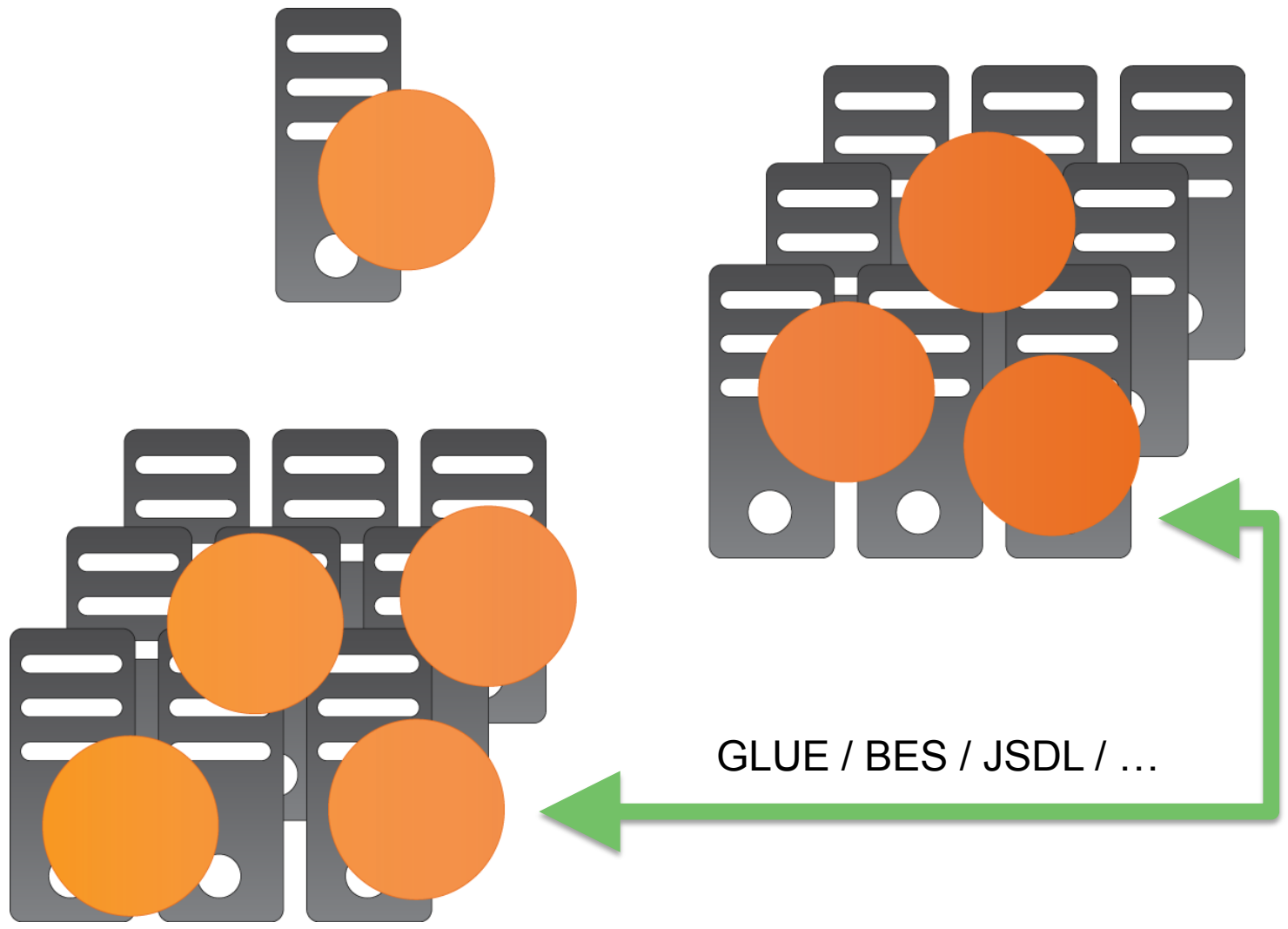
INTEROPERABILITY

DUH??

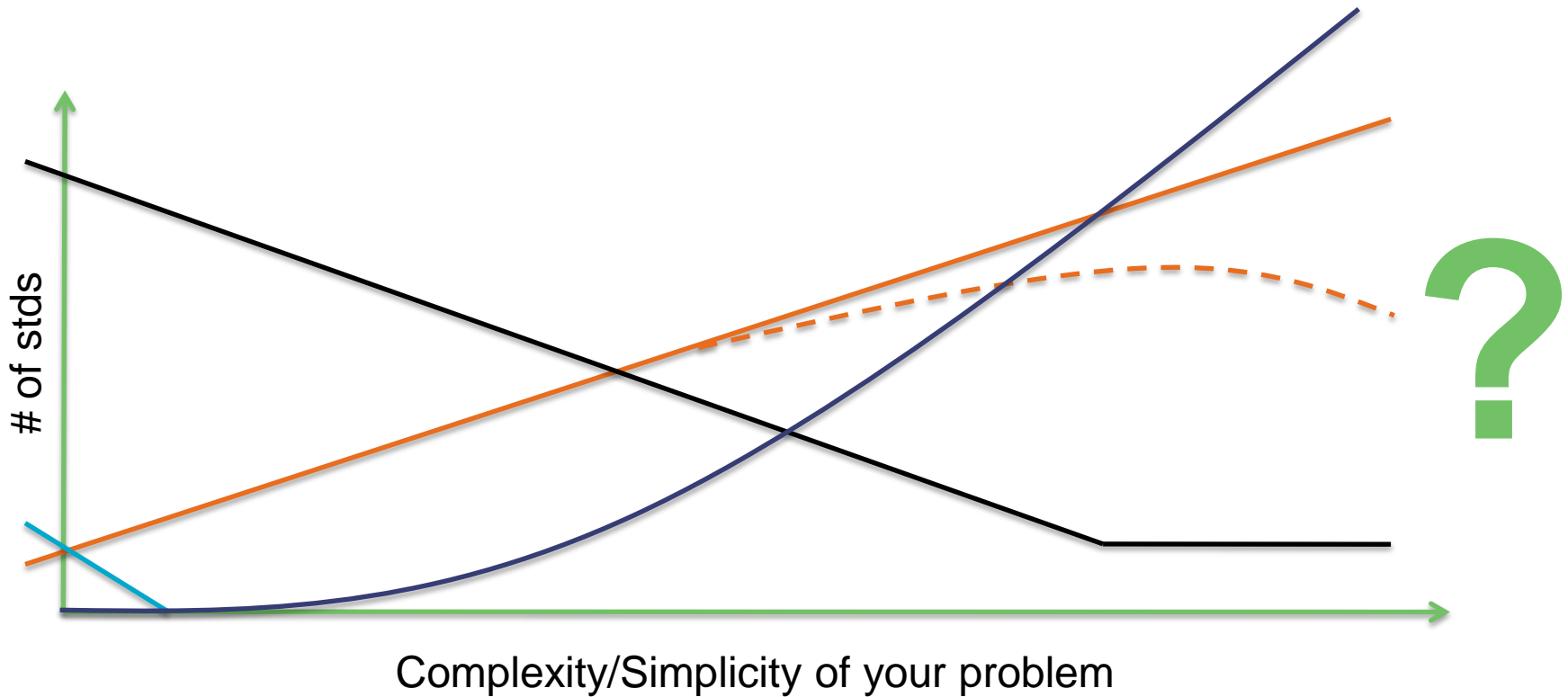
...IT ISN'T EASY...



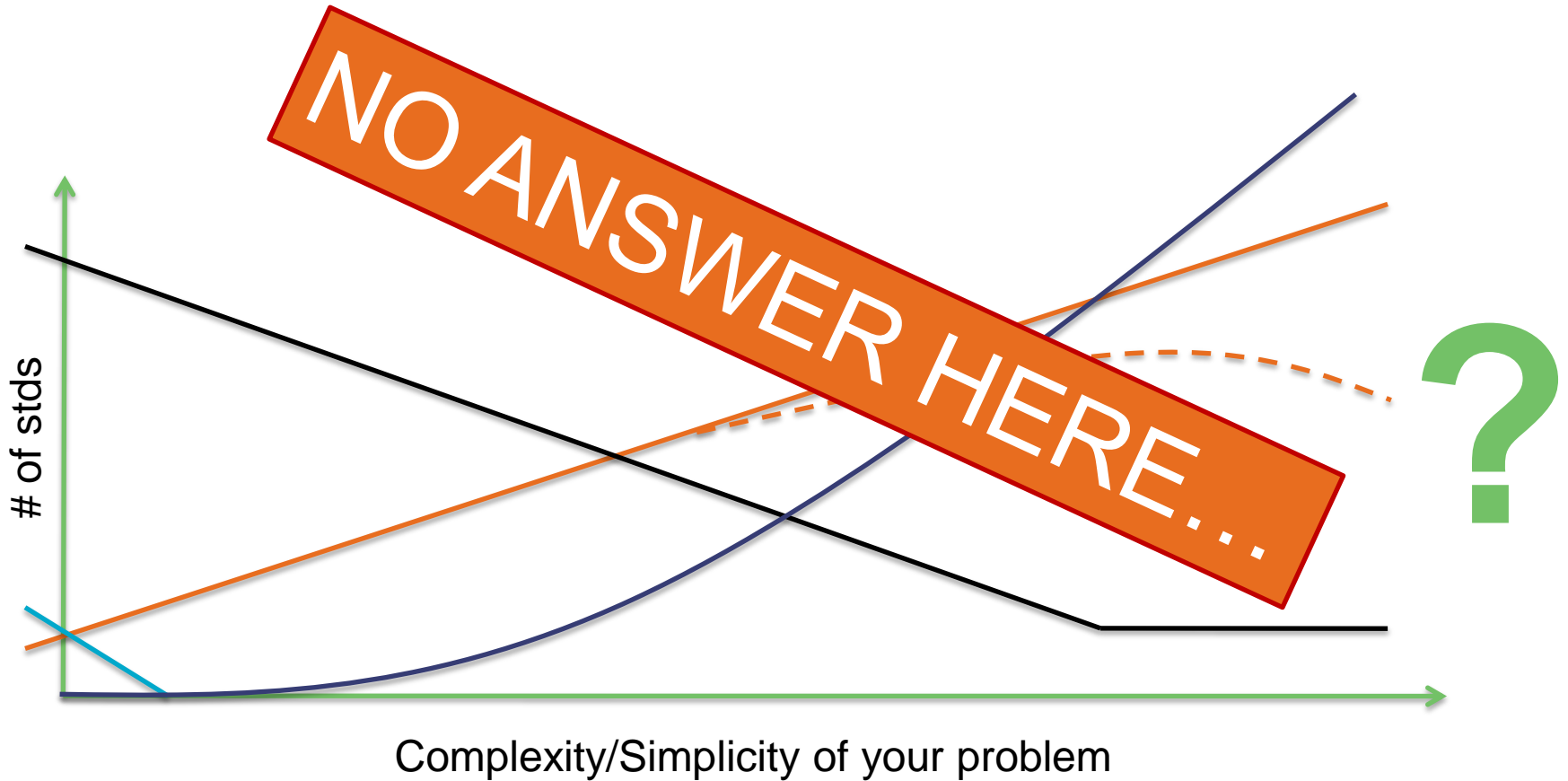




of Standards to solve a Prb. ???

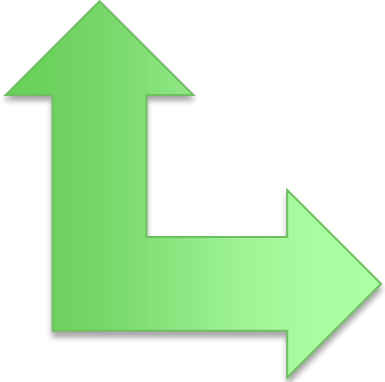


of Standards to solve a Prb. ???



<http://xkcd.com/927/>

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

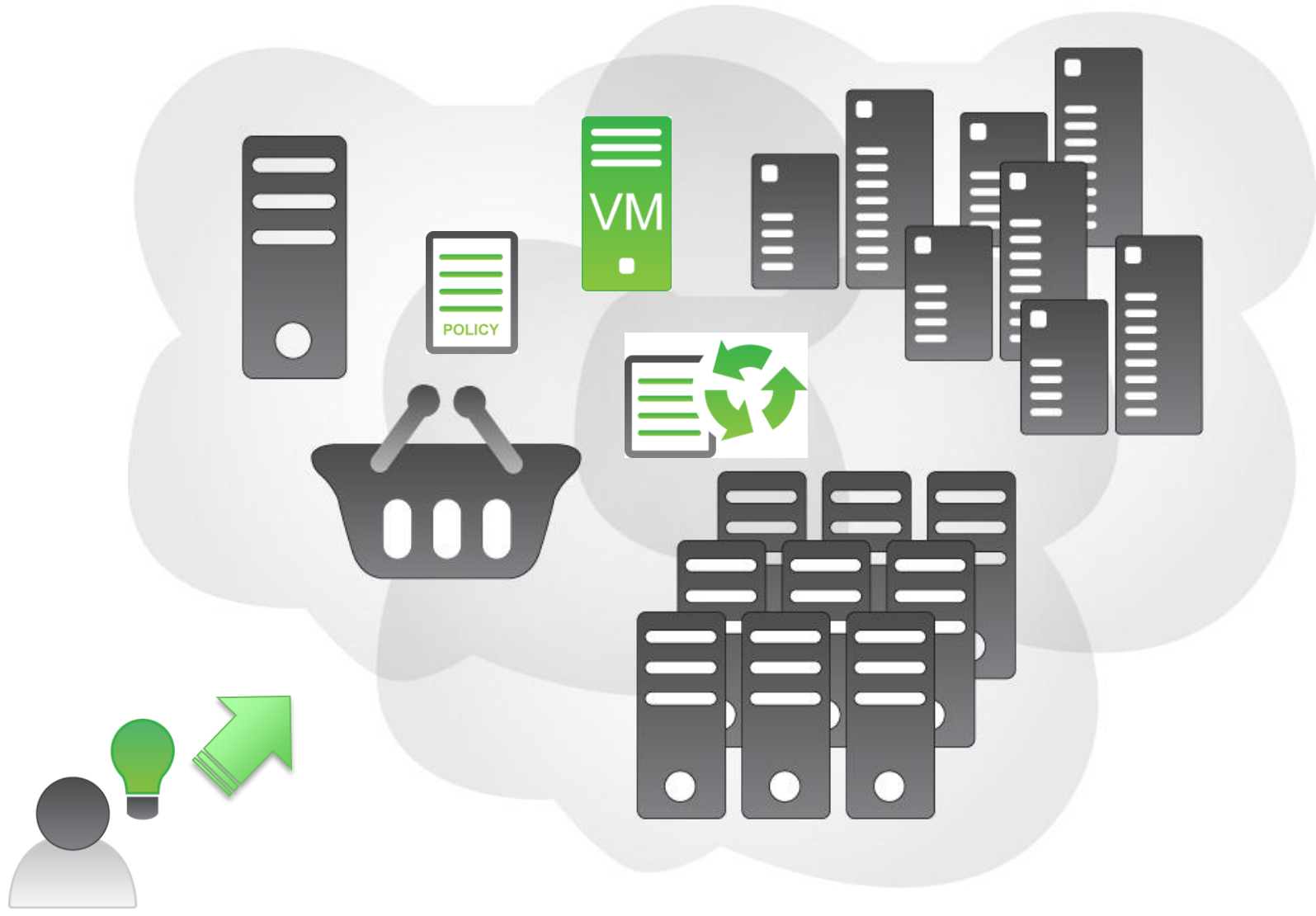


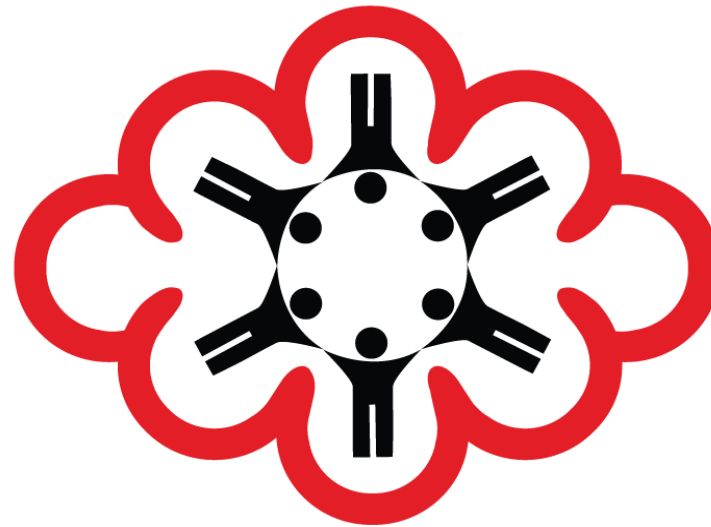
http://nighthacks.com/roller/jag/entry/xkcd_on_standards

Interoperability is hard! Creating/Using a Standard is not necessary going to solve the problem...

Protipp: Do it right!

How? Depends 😊 - there is no recipe (but learn from the past – which standards and their processes are good which bad etc.)





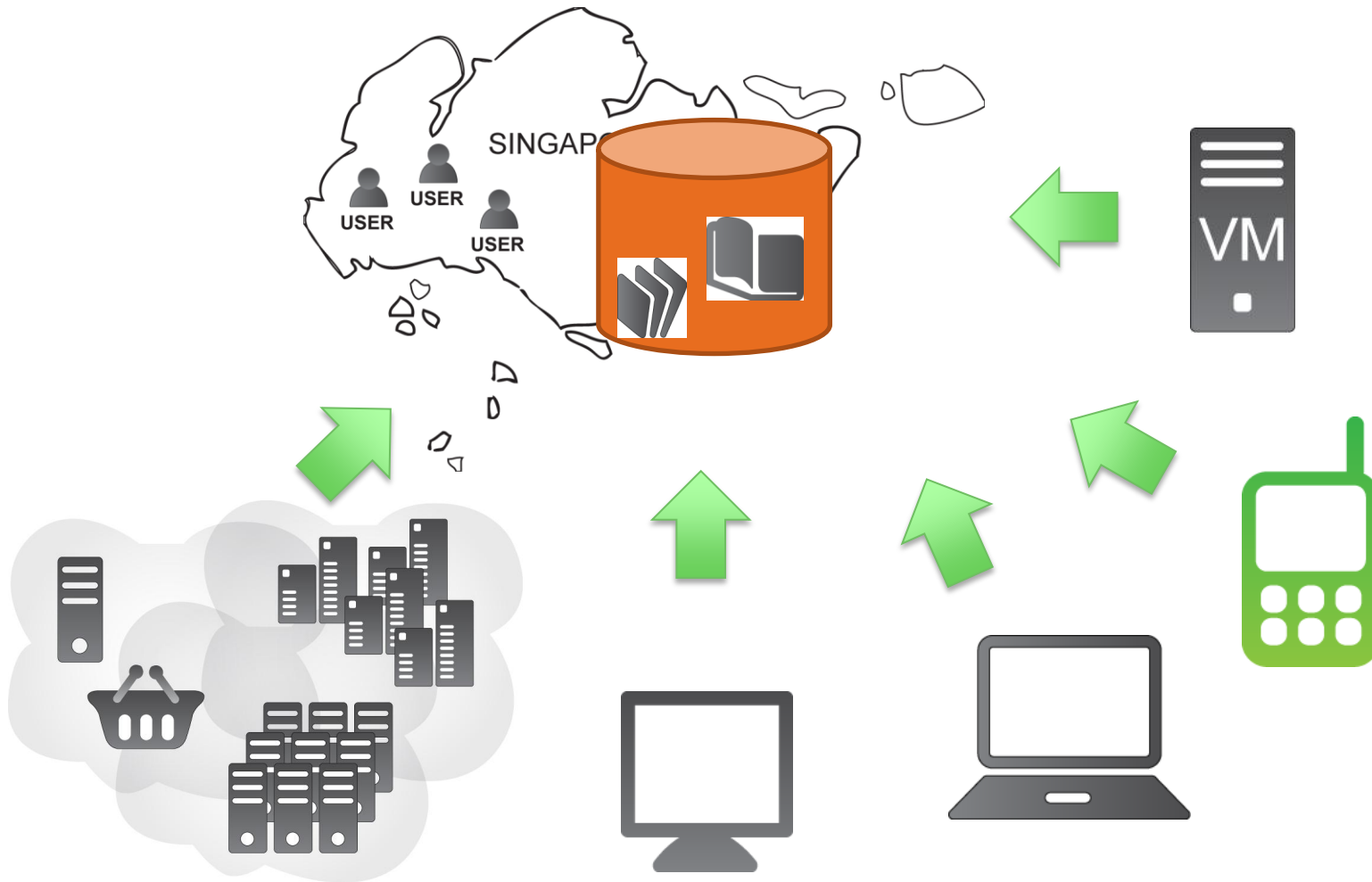
Occi

Open Cloud Computing Interface



INTEGRATION

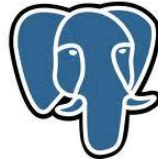
Devices & location



(Some) Startups: plug' it together?



PostgreSQL



HTTP



INNOVATION

FUN

~~INNOVATION~~

If **technology** thrills you...

...and you like **working** in groups...

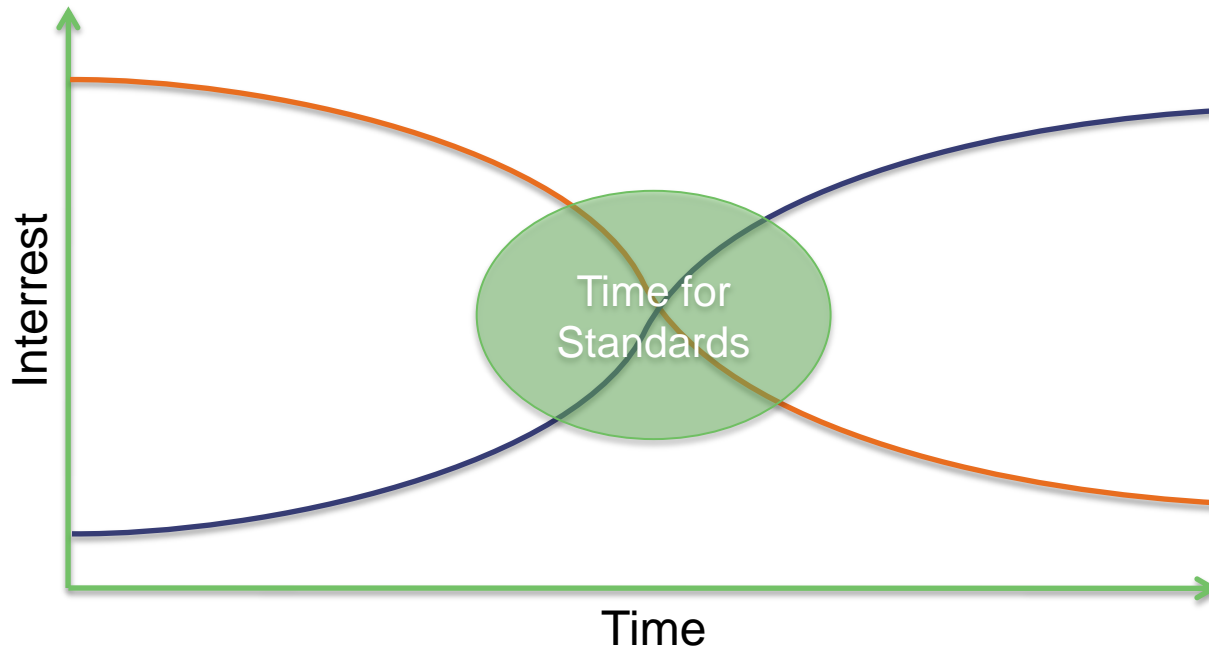
...join a **group** and...

...create **cool** standards & technology.

Don't forget: **share it...**

...and write it in you CV!

The time is now...



Thank you...