



# Requirements from the WLCG Experience

Laurence Field (CERN)

PT Leader

# Overview

- The problem
  - Bootstrapping
  - Type of Information
  - Federations
  - Scale
- Requirements

# What is the problem?

- Service Discovery
  - Discover the existence of services
  - Global Scope
  - Federated environment
- What information?
  - Service Type
  - Service Location (URL)

# Bootstrapping

- Federated Environment
  - Campus Grids
  - Regional Grids
    - Local (LondonGrid) and International (EUMedGrid)
  - National Grids
  - Projects (WLCG)
- Service Discovery must enable all the above
  - Single solution
    - Simple, Robust, Scalable
- Enable policies
  - What is the authoritative source?
    - eg LondonGrid?

# Static vs Dynamic?

- Dynamic information
  - Information that changes within a time period
    - Define this period to be the lifetime of the service
  - Adds complexity to the solution
    - Avoid!
- Static information
  - Information that does not change
    - During the time period (lifetime of a service)
  - New service = Add Information
  - Decommission service = Delete Information
  - Handle exceptions
    - Unexpected decommission
      - Does it not exist or does it exist but there is a problem?

# Federations

- The Grid is federated
  - Service Discovery MUST reflect this fact
- Isolated federations can join each other
  - Previously call interoperations activates
    - This must be supported
- A federation can break
  - The guy with the digger again!
    - This must not affect other federations
- Federations do not have defined boundaries
  - Services in multiple federations
  - Only certain services might be visible outside a federation

# Scale

- 2001: 5 sites 10 service
- 2010: 370 sites, 4000 services
- Single Service scalability requirements
  - How many resources behind?
    - How many users in front?
- Service Discovery scalability requirements
  - How big is the Grid?
    - 2020: 2K sites, 1M services?

# Requirements

- Discover the existence of services
  - Do one thing only and do it well
    - Other things can be built on top
- Must be federated by design
  - There is no central authority in the Grid
- Must be bullet proof
  - Everything will depend on this system
- Must scale further than you imagine
  - 10 services in 2001
  - 4000 services in 2010
  - How many services in 2020 and beyond?





**Thank you**

**EMI is partially funded by the European Commission under Grant Agreement INFSO-RI-261611**