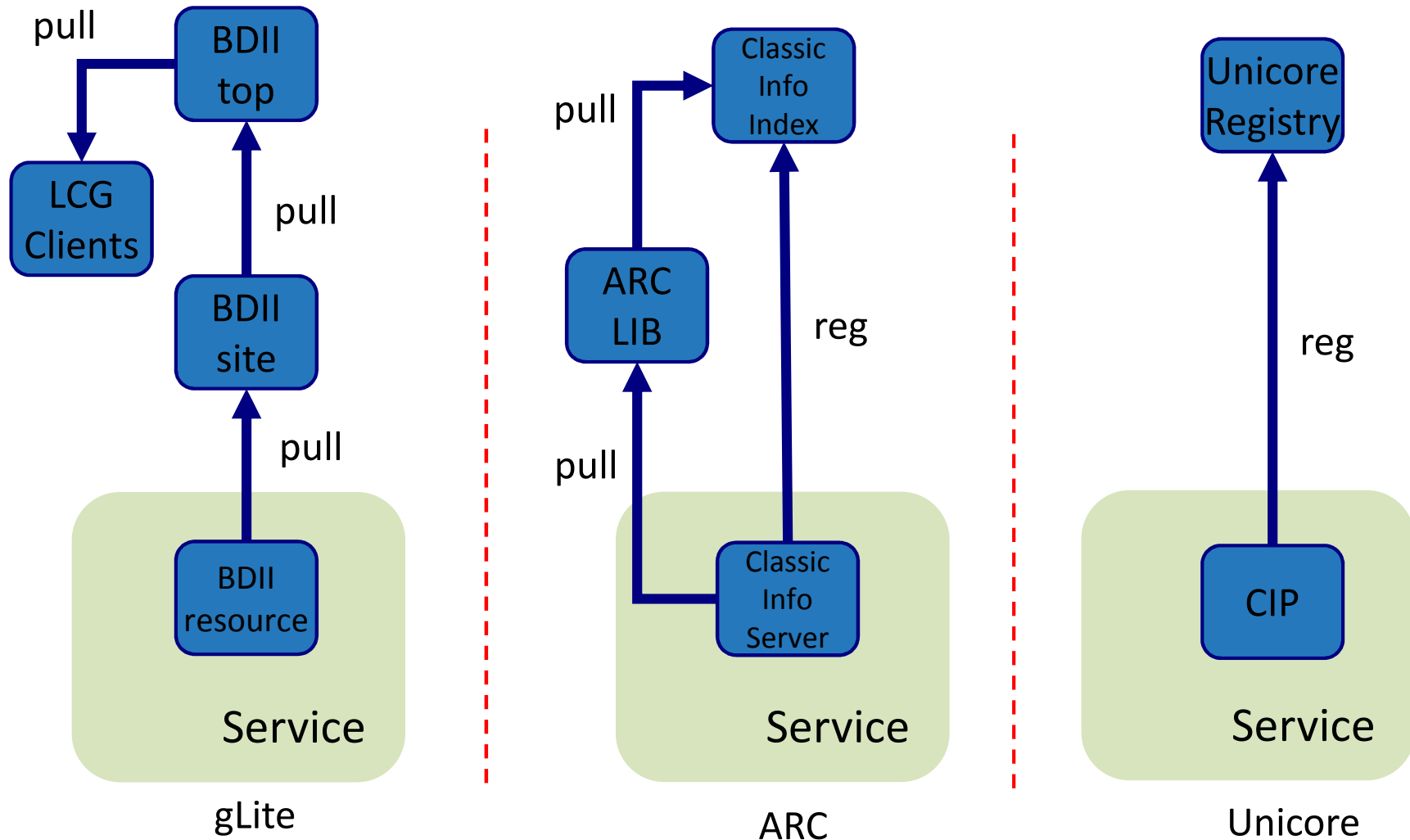# EMI Status And Plans

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GDB, 11 January 2012

Outline

- Status Before EMI

- Consolidation and Harmonization
  - GLUE 2.0
  - ERIS
  - EMIR

- Envisaged Situation post EMI

- General Remarks

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Situation Before EMI

pull

BDII top

LCG Clients

pull

BDII site

pull

BDII resource

Service

gLite

pull

Classic Info Index

ARC LIB

reg

pull

Classic Info Server

Service

ARC

Unicore Registry

reg

CIP

Service

Unicore

Comparison Matrix

| Stack	Service Level	Registry	Information Model	Data Model	Global Cache	Transport Model	Federated
gLite	BDII (resource)	GOC DB (Not EMI)	GLUE 1.3	LDIF	BDII (Top)	Pull	Kind of
ARC	Classic Info Server	Classic Info Index	NorduGrid Schema	LDIF	No	Pull	Not really
Unicore	CIP	Unicore Registry	GLUE 2.0	XML	No	Pull	Not really
EMI	*ERIS*	*EMIR*	GLUE 2.0	LDIF	BDII	Pull	Yes

GLUE 2.0

- Activity started before EMI

- Brought together many stakeholders

  - Within an open forum (OGF)

- Produced an agreed standard (recommendation)

  - Widely accepted

- 90% of the problem solved

  - Agreement on use cases

  - Agreement on naming and semantics

  - The rest is just a translation and data transport issue.

GLUE 2.0 Status

- ## GLUE 2.0 support from EMI 1

  - Information System Components

- ## GLUE 2.0 in EMI 2

  - All Service must publish GLUE 2.0 information

  - Consumers should be able to use GLUE 2.0

    - *WMS, FTS etc.*

- ## 46% of Sites are GLUE 2.0 enabled

  - 181 out of 390 are publishing the GLUE2AdminDomain

    - *See GGUS Ticket #75529*

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Resource Information Service

- ## Service-level information interface

  - ### Fundamental building block

- ## Recommended Interface

  - ### LDAPv3 interface to GLUE 2.0 information

    - *We already have 10 years of experience*

    - *Path of least resistance (low-cost, low-impact)*

  - ### Information providers

    - *Extract information from the underlying service*

    - *Produce GLUE 2.0 information in the LDIF format*

# EMI Registry - Aims

- Common Index Service

  - For Publication and Discovery of Services

    - *Discover all the ERIS*

- Unified Information Model

  - The GLUE Service part of the GLUE 2.0 model

- Support for federations

  - Natural to existing Infrastructures

  - Inter-Federation Lookups

    - *Campus Grids, NGIs etc.*

  - Multi-Federation service discovery

    - *EGI, WLCG etc.*

- Proposed solution from EMI

EMI Registry - Architecture

Clients, APIs and Libraries
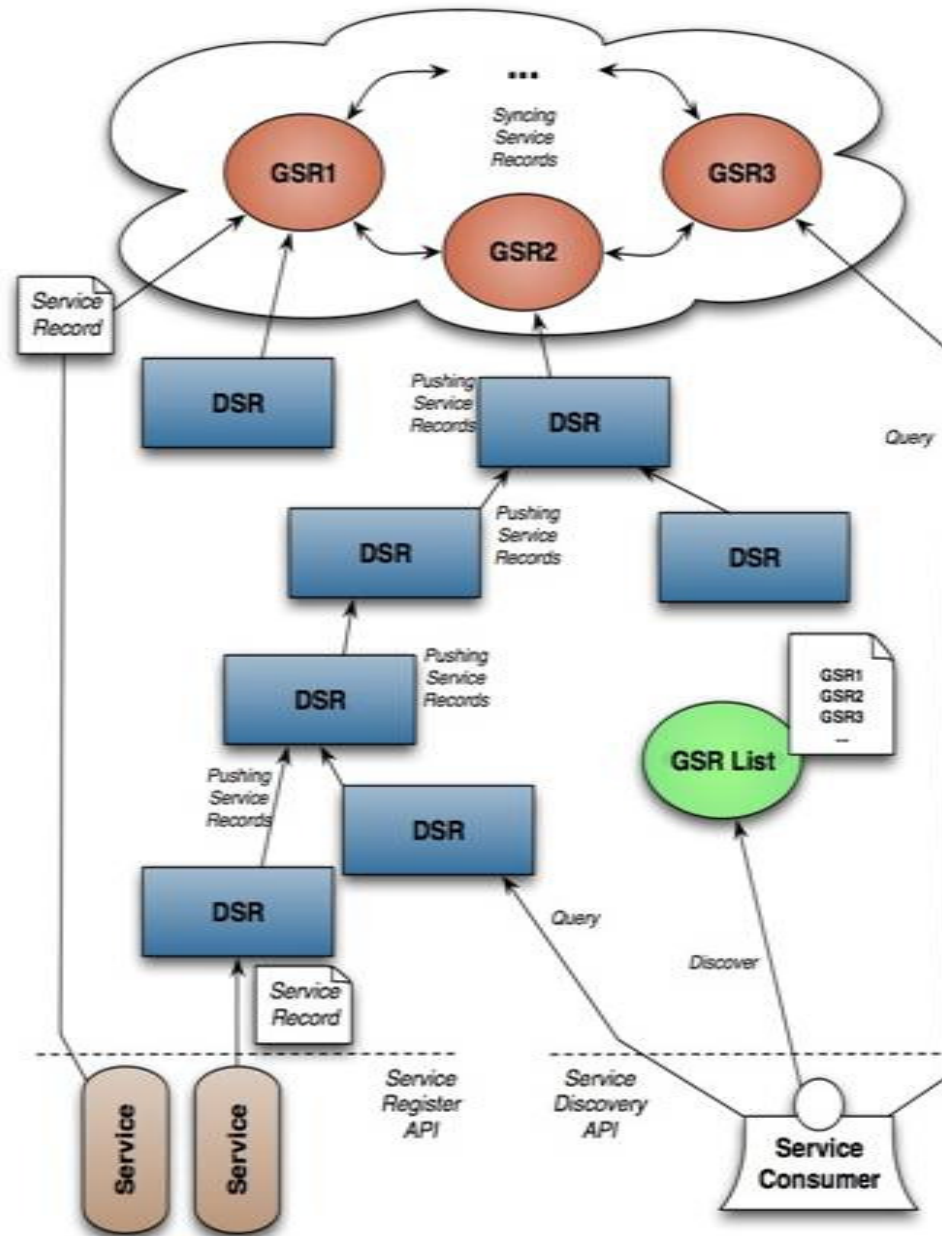
- ## WLCG clients
  - Glue 1.3 only
- ## ARC lib
  - GLUE 2.0 enabled
- ## EMI Registry client
  - This is required and can be considered an internal EMI interface
- ## SAGA SD API
  - Can incorporate the EMI Registry client
- ## Unicore CLI
  - Uses and internal library
- ## What does WLCG want?

Global Information Aggregation

- Top-level BDII
  - Caches all information from all resources
  - Currently no major plans
    - *Waiting for requirements*

- Possibilities
  - Use EMI Registry for Service Discovery
    - *Contact the resources (ERIS) directly for further information*
  - Publish dynamic information using messaging
    - *Remove freshness requirement from global cache*
  - Global Metadata cache for detailed search
    - *Discover resources using the EMI Registry*
    - *Obtain dynamic information from the messaging system*

EMI's Vision

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Impact for WLCG
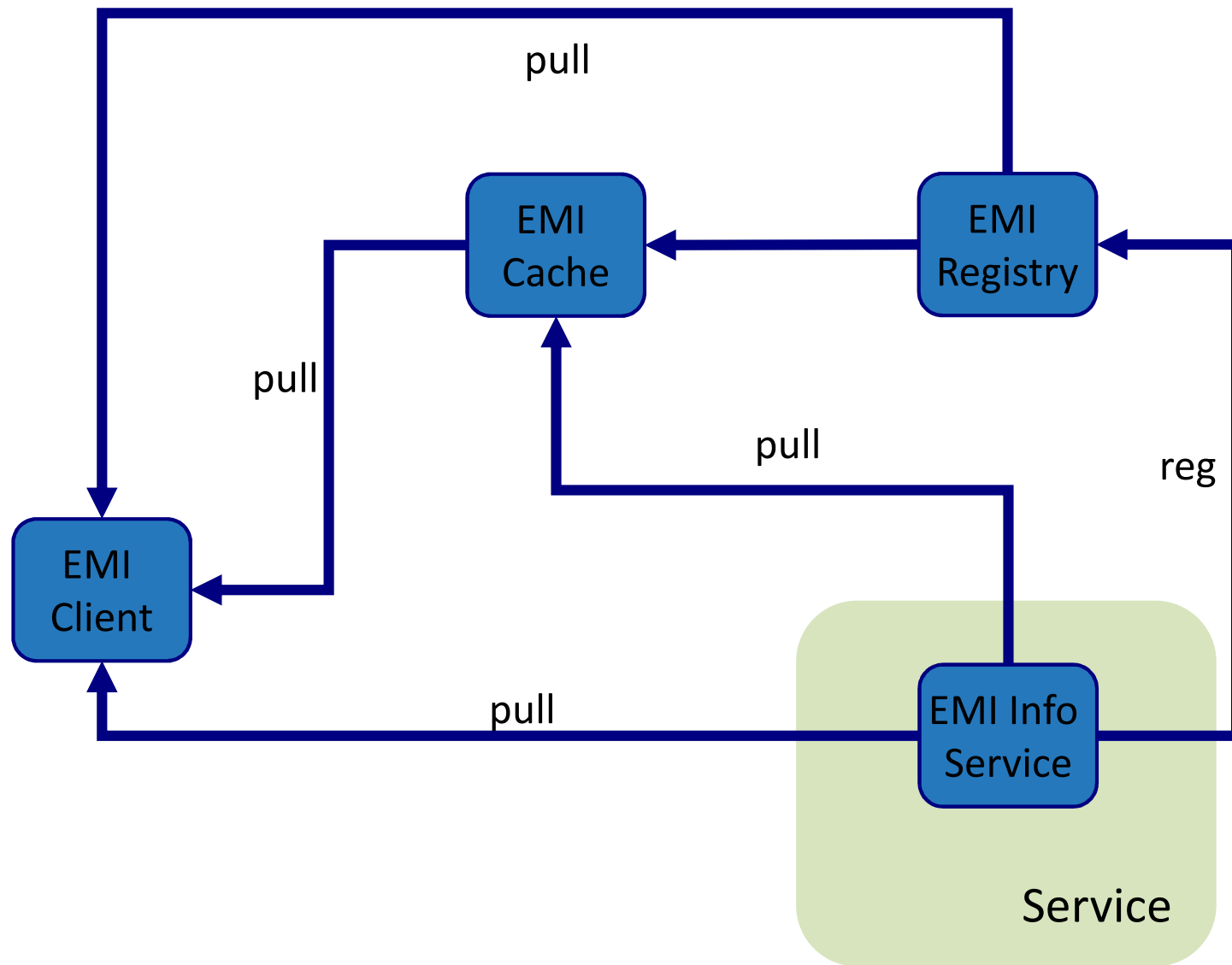
- No change required for top-level BDII usage

  - Exists client do not need to change

- No change required for service-level usage

  - Interface stays the same

- New service for service discovery

  - No complex migration required

- Lays the foundation for the future

  - Provides solid building blocks

  - Common solutions for all middleware components

    - *Hence interoperable*

  - Still need to address the clients issue within EMI

General Comments

- The information model is key
  - Describes the real entities in a Grid infrastructure
    - *Objects, relationships and attributes*
  - Use cases interact with the model
  - The model should evolve with the technology
    - *From a protocol based architecture in the late 90s to a SOA in 2002*
  - Minor updates address missing use cases
  - Major updates address technology changes
  - A common forum already exists
    - *The place to go for discussing changes*
  - The model is implementation independent.

General Comments

- Be careful with dynamic information and multiplicity
  - Affects service quality due to data volume and turbulence
- Split use cases (KISS)
  - *Service Discovery*
    - Static information only
      - *Static for the lifetime of the service*
  - *Service Monitoring*
    - State information
      - *Which is dynamic*
  - *Service Metadata*
    - Everything else

General Comments

- Information Quality
  - Garbage in, Garbage out
  - Need to validate information before it is published
    - *Improved configuration*
      - Validation step
    - *Improved information providers*
      - Automate where possible
      - Validate output
  - Only publish what is required
    - *If it is important it will be correct*
    - *It is better to publish 1 attribute accurately than 10 inaccurately*

Summary

- ### Harmonization

  - Major goal for EMI

- ### Three core building blocks

  - GLUE 2.0

  - ERIS

  - EMI Registry

- ### Focus on the information model

  - Update GLUE 2.0 if required

  - The model should evolve with the technology and use cases

- ### Agree on the primary interfaces

  - Service level

  - Global Level

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