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Metadata Management in the Celebrate European Learning Network

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Outline

- Learning Objects and eLearning
- Celebrate
- Brokerage + federated services
- Federated search

eLearning

Learning that takes place through exchange between a combination of learning resources, tasks, and support-systems (human or otherwise)

The exchange is mediated through information and communication technologies (from BS 8426)

Learning Objects (LOs)

"modular digital resources, uniquely identified and meta-tagged, that can be (re-)used to support learning."

LO-Based Services and Systems

- Learning Content Management (LCM)
 - LO Repositories (LOR)
 - Metadata repositories (MR)
 - Learning Management (LM)
-
- eLearning Systems can offer any combination of these services

CeLeBraTe

(Context eLearning with Broadband Technologies)

- 30 months / € 7 M. project
- Supported by the European Commission's IST Program
- Involves 500 schools across Europe
- 22 partners (European Ministries of Education, universities, leading educational publishers and technology suppliers)

Celebrate's Goals

Aim to create:

- New content (LOs)
- An innovative pedagogical approach - based on LOs
- A European learning network - to exchange LOs
- A new business model

European Learning Network

- A network of eLearning Systems
- Capable of interoperability by searching and exchanging the LOs contained in their repositories

ELN = Brokerage + Federated Services

Federation of Services

- Ability to add new services
- Currently supports:
 - Metadata Search
 - LO Exchange
- Designed to be extensible
- Through a secure and controlled environment

Brokerage

- Supports
 - the mediation of services
 - Rights, contract and collaboration management
- Safely integrates new (commercial) service providers
- Reports usage
- Tracks statistics

A Service Example: The Metadata Search

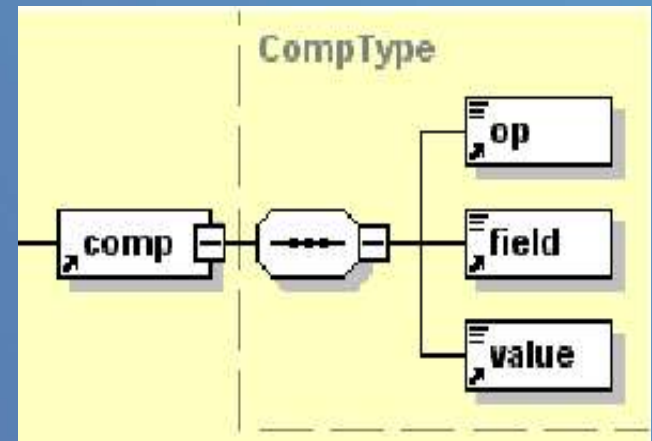
Consists of a client end-user (e.g. a teacher or pupil using an ELN LMS or LCMS) in querying all the metadata repositories currently available on the ELN for references to LOs matching his/her search criteria.

Metadata

- **Metadata:** IEEE LOM
- **Application profile:** customization of a standard to a particular community of implementers with common application requirements (see <http://celebrate.eun.org/docs/>)
- **Binding document:** machine-readable description of a specification

Query Language

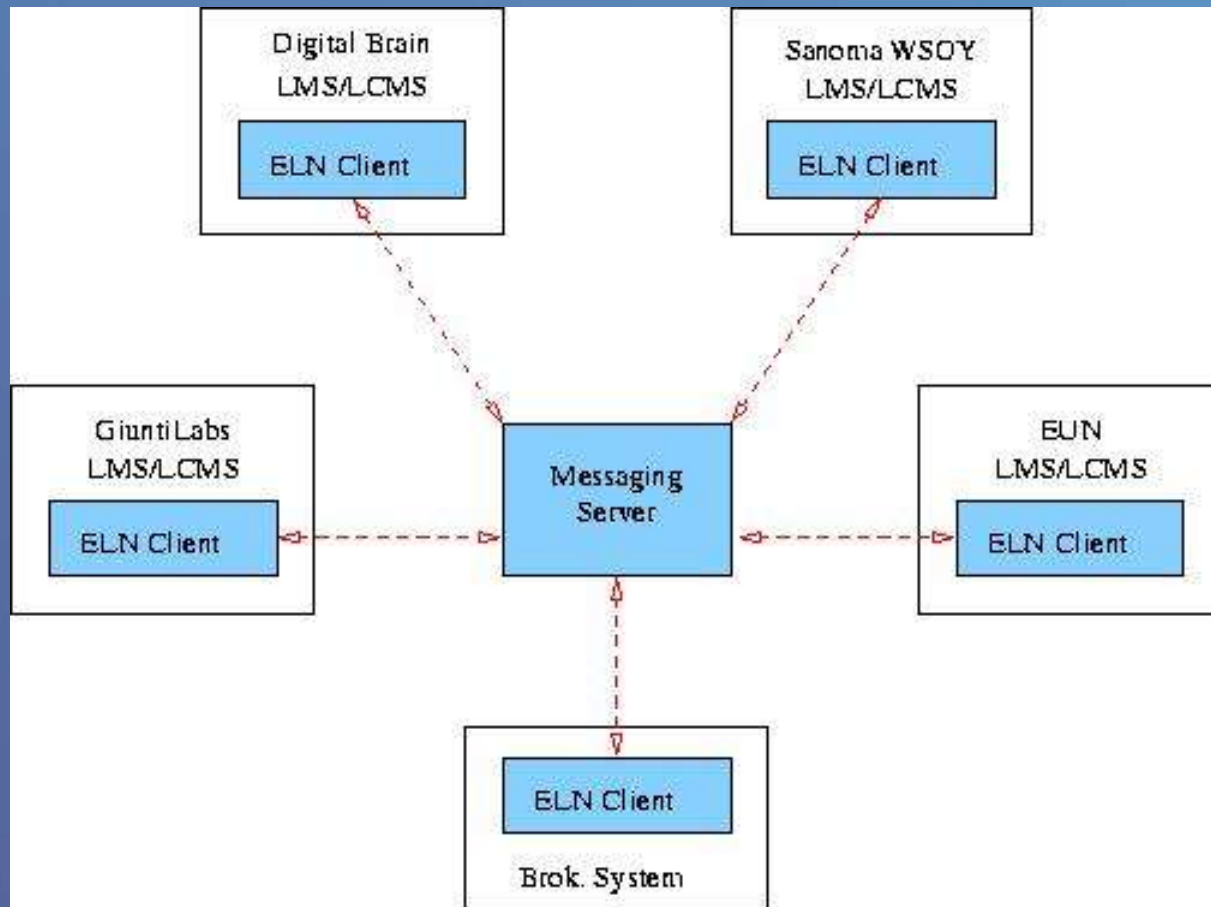
- Based on comparisons:
 - LOM element
 - Operator
 - Value
- Can be combined to build arbitrarily-complex queries (And, Or, Not)



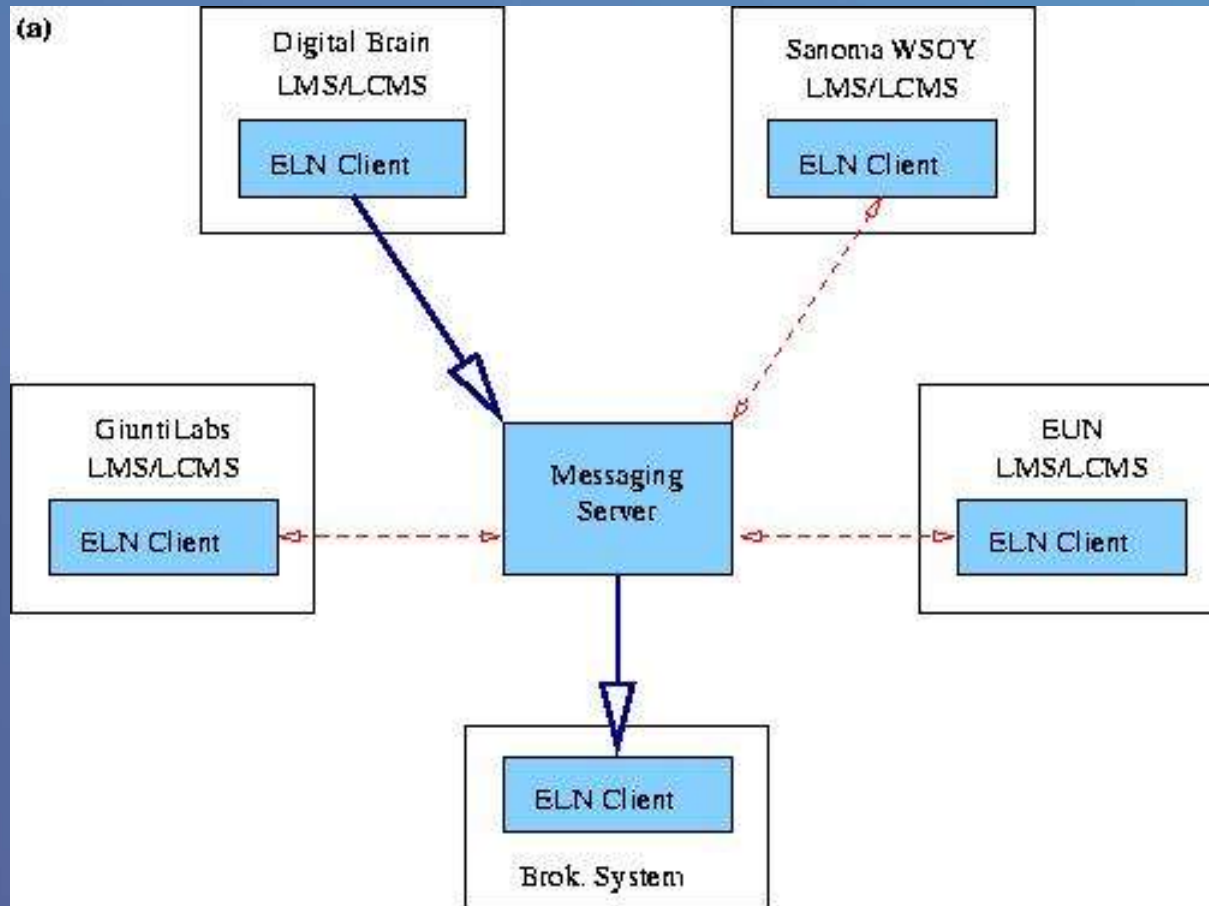
ELN and ELN Client

- A network of systems capable of exchanging LOs
- Built around a Brokerage System (BS) that rules exchanges between systems
- Communication between ELN members is based on different protocols (JMS, web services, etc.)
- Systems avoid the hassle of dealing with the different networking protocols involved by using an “ELN Client”
- “ELN Client” hides the complexity of client-BS communication behind a simplified API
- “ELN Client” let members focus on message content

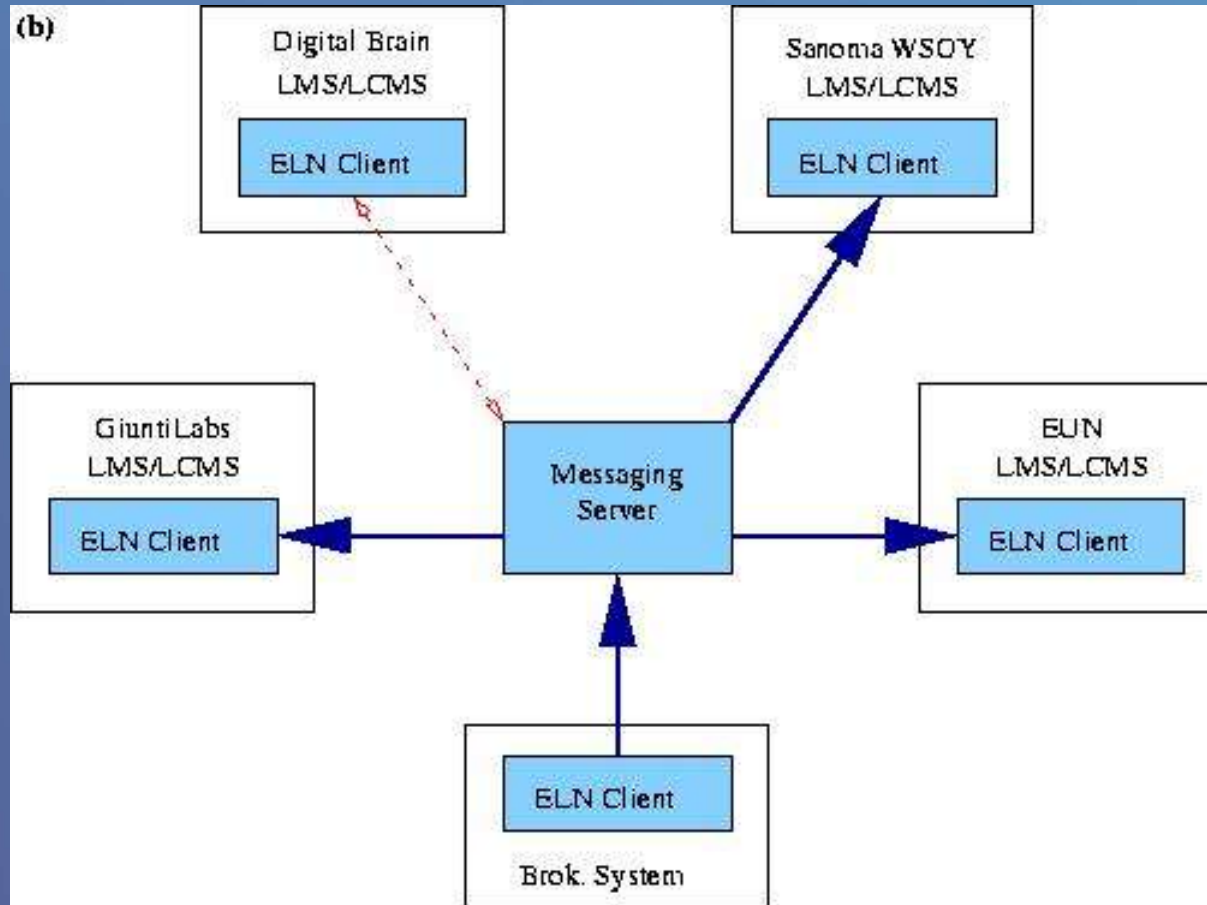
ELN Client



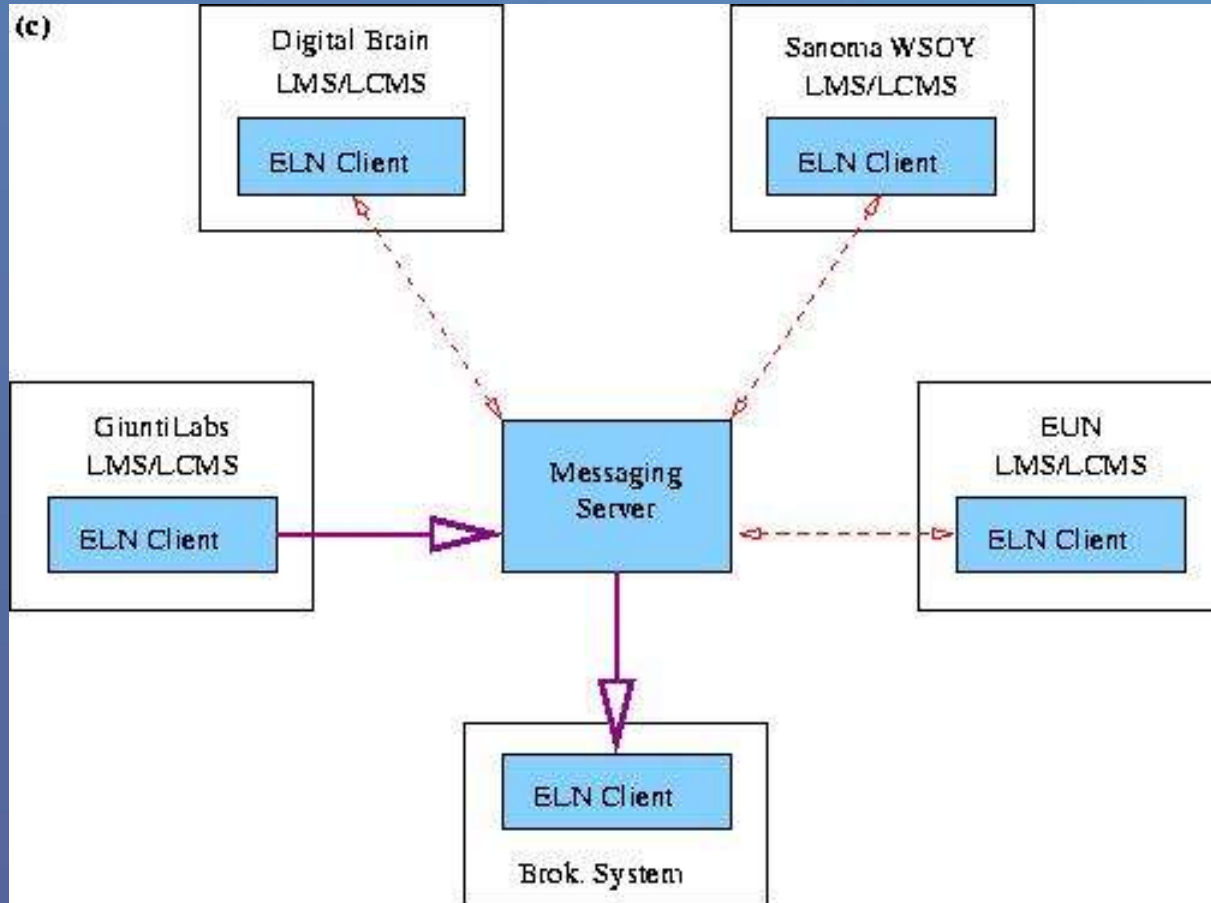
LOM Query



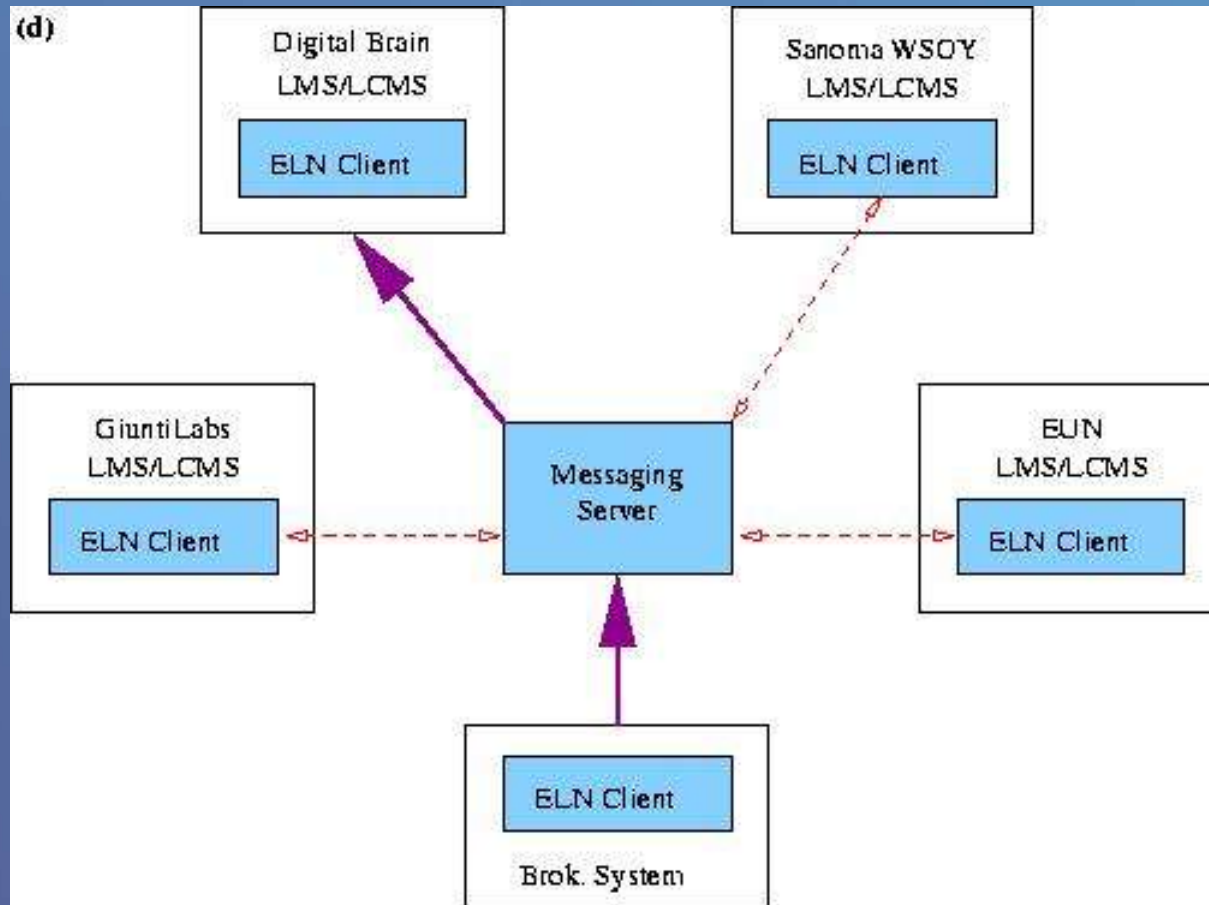
Checked LOM Query



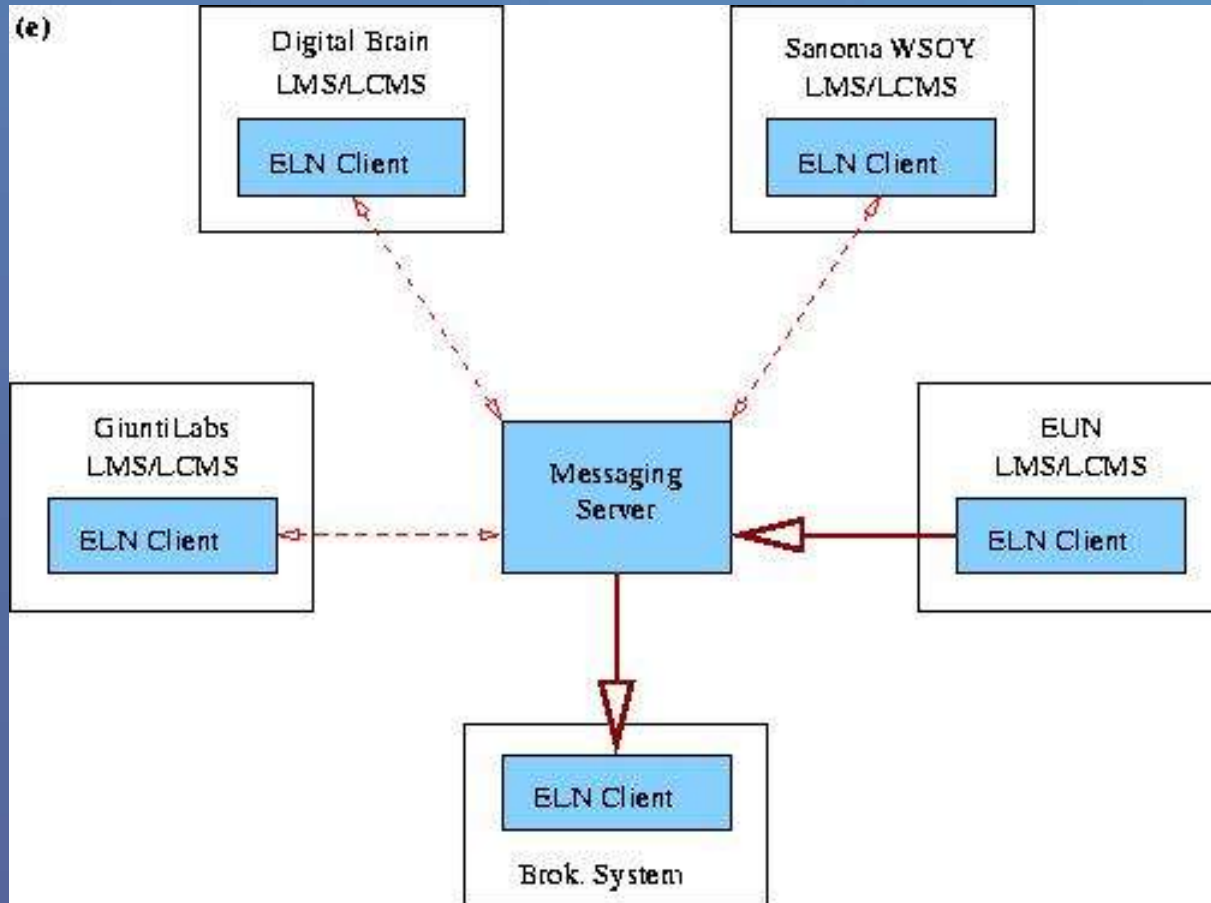
LOM Query Result 1



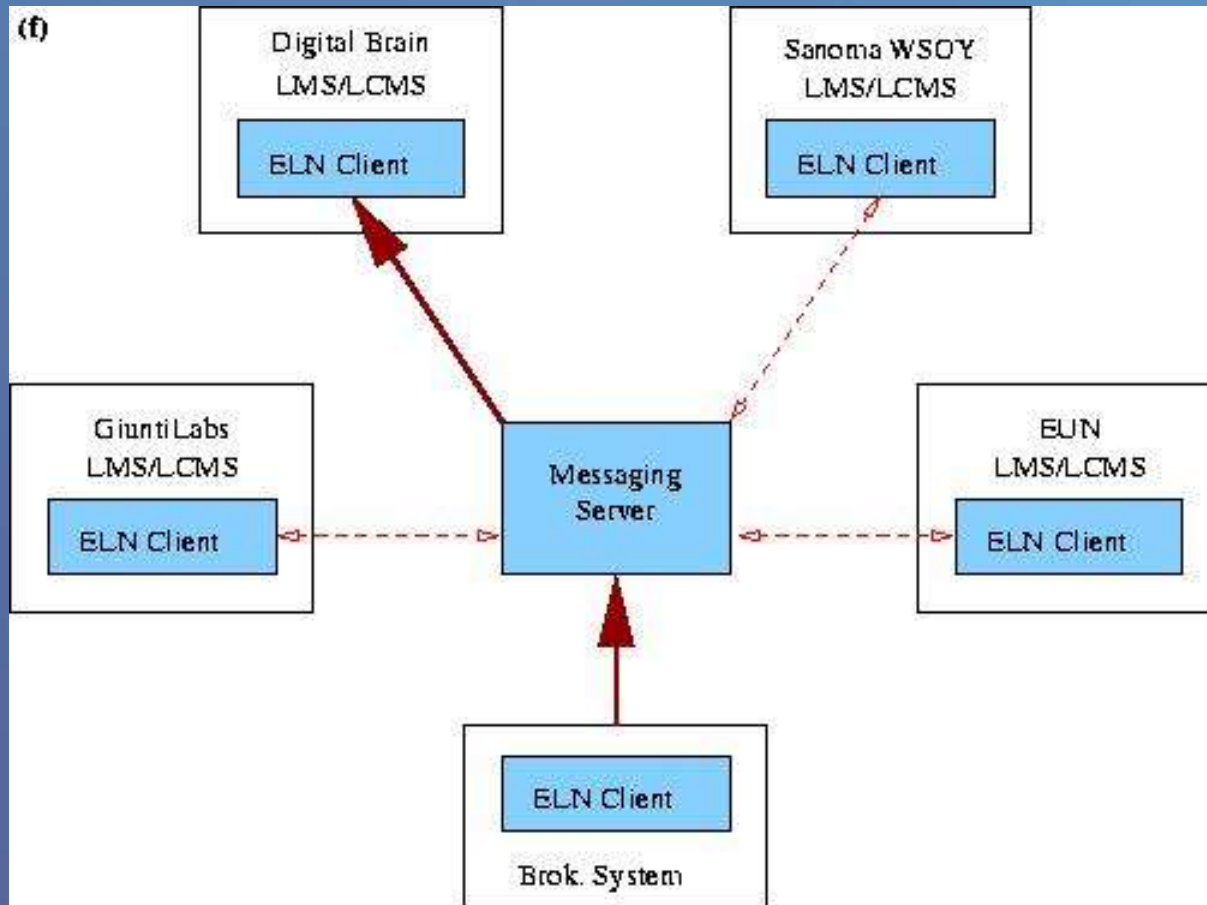
Checked LOM Query Result 1



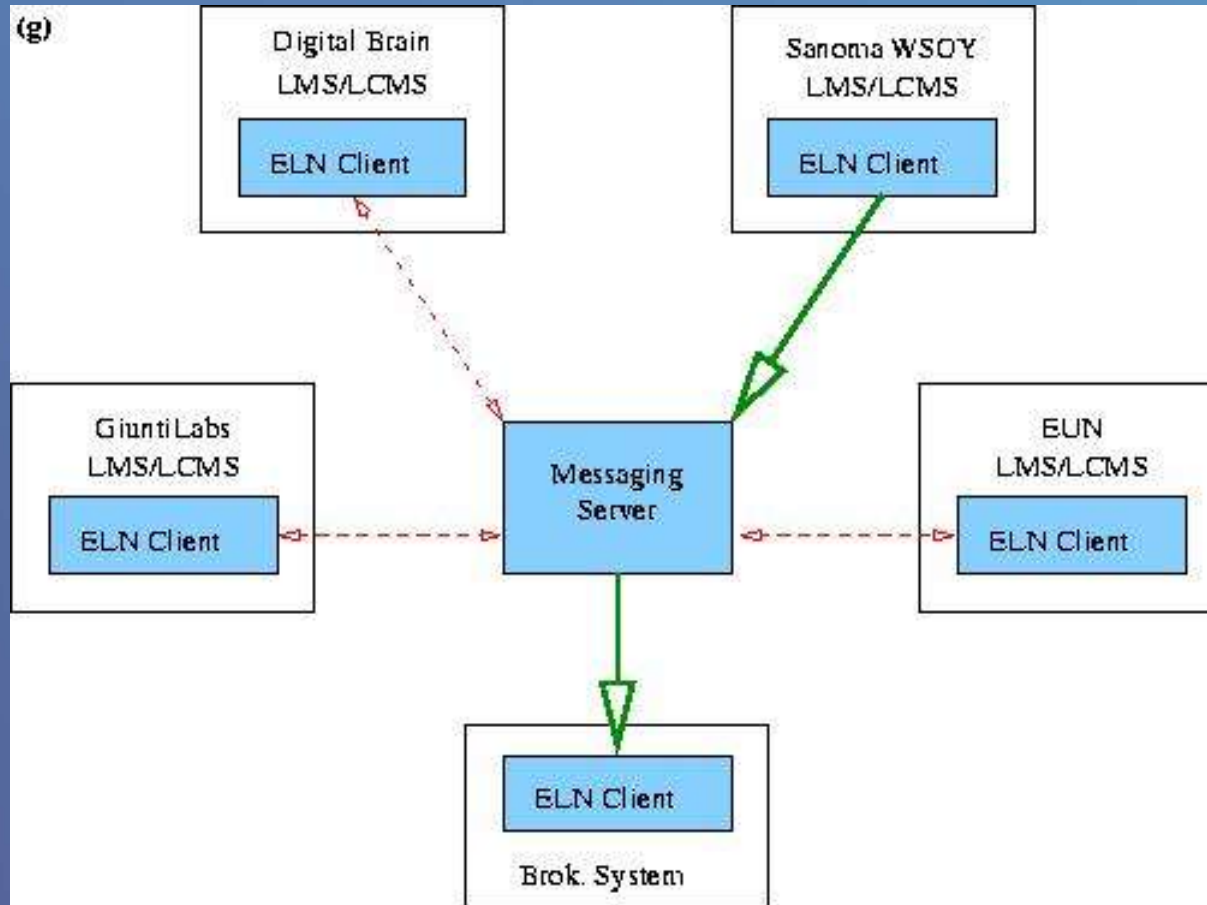
LOM Query Result 2



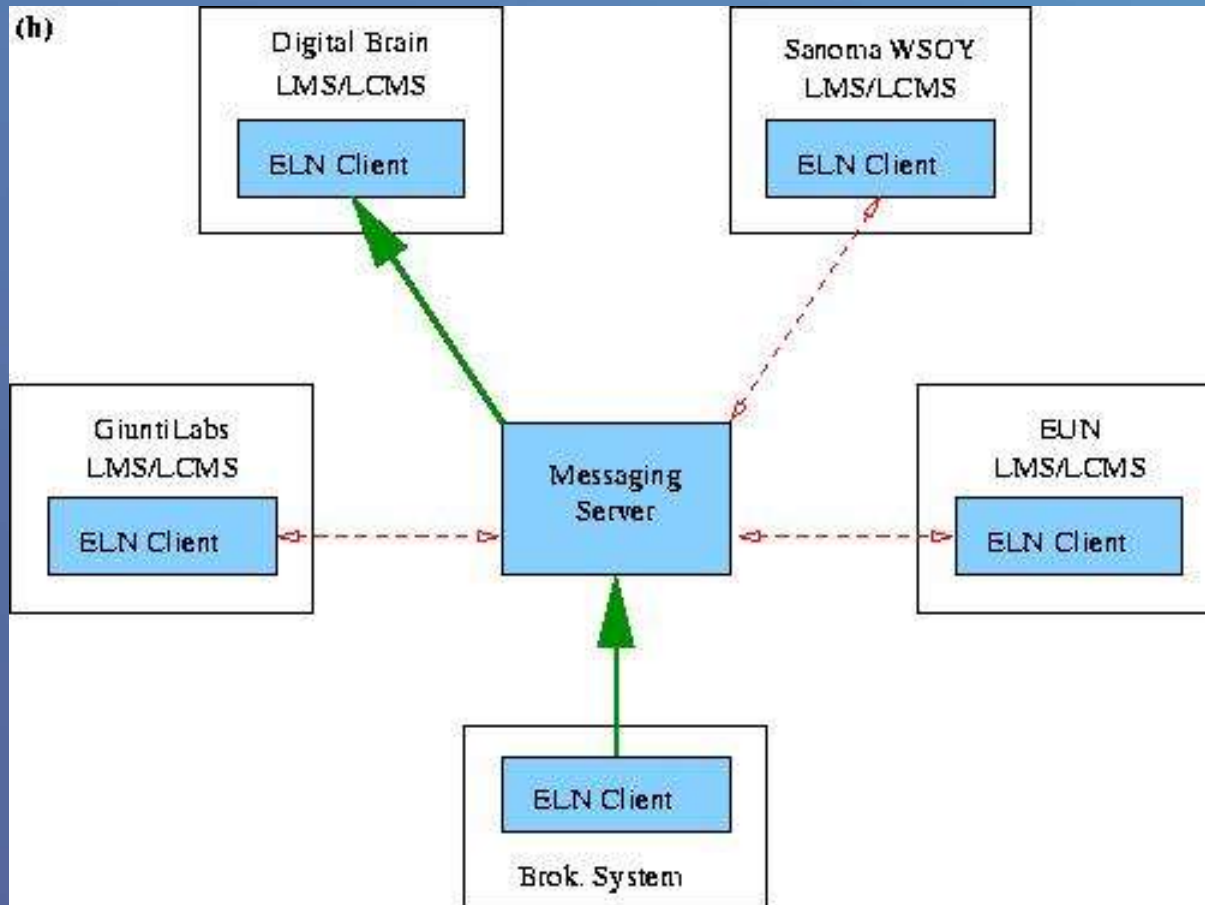
Checked LOM Query Result 2



LOM Query Result 3



Checked LOM Query Result 3



Conclusion

- 2nd versions of the ELN Client and Brokerage System have been released
- LMS/LCMS providers have started to join the ELN
- Preliminary results are encouraging
- The configuration of the ELN described here - 4 systems - to be tested intensively
- 500 schools across Europe

Open Issues

- LO = Content + Pedagogy (let's reuse them separately)
- Add new services (e.g. communities)
- We **need** a business model
- Digital Rights Management