Vienna University of Economics

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Universal – Weaving the Semantic Web for Education

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Agenda

- **Introduction to Universal**
- **Motivation: Why building knowledge exchanges**
- **Contribution of Universal**

Technology Innovation:
Universal Brokerage Platform

- Objective #1: To develop an enabling technology for creating knowledge exchanges

- The *Universal Brokerage Platform* is a distributed, web-based system to the exchange of learning resources

- *Challenge*: To interface with heterogeneous content delivery systems such as

  - Web servers,

  - Streaming media servers,

  - Videoconference systems, and

  - Learning Management Systems

Business Innovation:

EducaNe✗t

- **Objective #2: Deploy a Pan-European knowledge exchange for higher education based on the Universal Brokerage Platform**

- *EducaNext* **supports the exchange of learning resources**

    – **taking into account the diversity of business interests**

    – **protecting the intellectual property rights of learning resource providers**

- **Challenge: User acceptance**

Why Knowledge Exchanges Matter

- **Distribution channel** for electronic educational material (increased return of investment)

- **Promotion of** offline educational material (e.g. increased textbook sales, ...)

- **Gain reputation** by providing highly demanded educational material

- **Feedback and quality management** via an active user community

- **Management support** for distributed educational activities

Why Knowledge Exchanges Matter (Continued)

- **Enhance** quality of educational offerings
- **Enrich institutional curriculum** through access to high quality external resources
- **Better overview of** fragmented training and education **market**
- **Reuse** existing material instead of paying the costly price of developing it on their own
- **Foster** national and international academic **alliances** and exchanges

Related Projects

Shortcomings

1. **Exchange transactions are not transparent, no rights management**

2. **„Closed World" System**

    – **No interfaces to content repositories**

    – **No reuse of existing meta data descriptions**

    – **One data model imposed**

What Universal aims to do differently:

1. **Make exchange transactions transparent, provide rights management**

2. **Towards an Open System**

   - **Interfaces to content repositories**

   - **Reuse of existing meta data descriptions**

   - **Flexible data model for learning resource descriptions**

Exchange Process Supported by the Universal Brokerage Platform
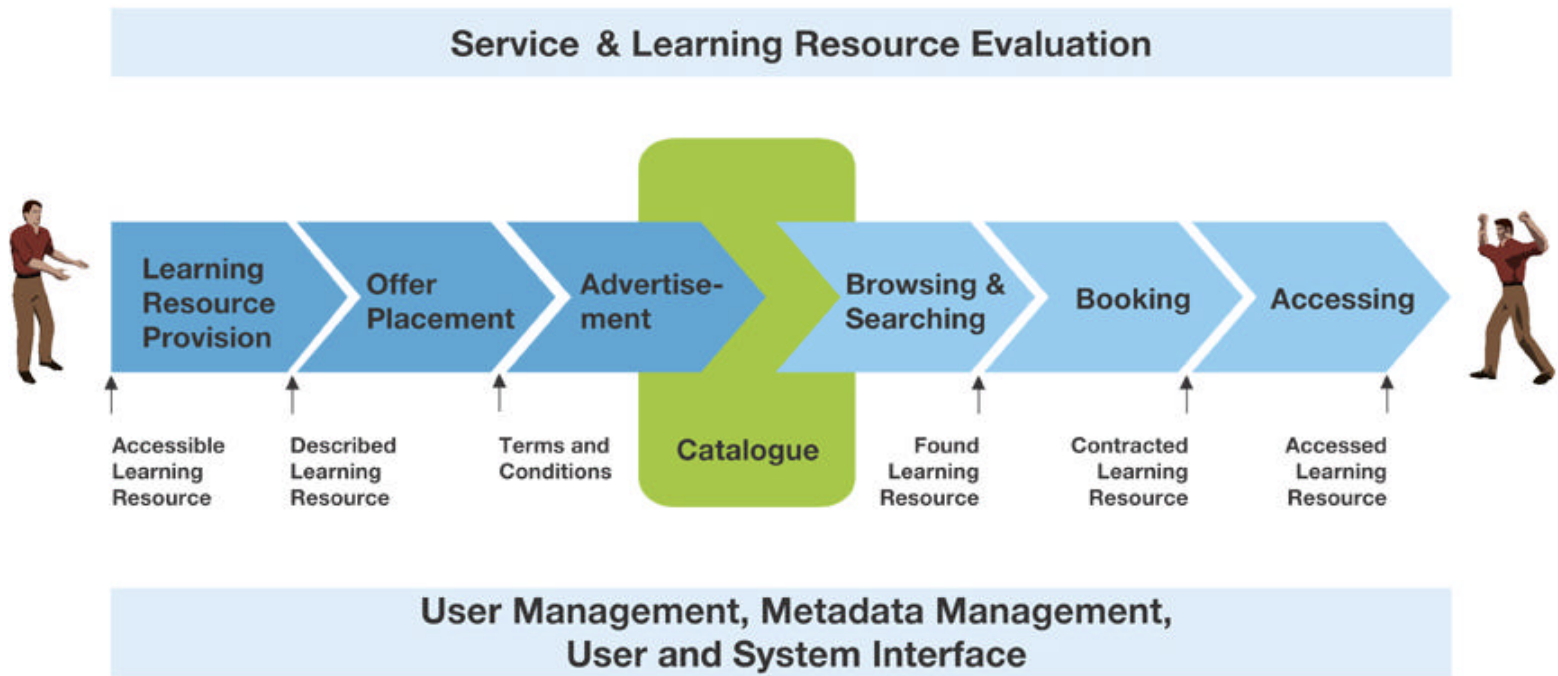
Addressing Shortcoming #1

Browse the UNIVERSAL Catalogue

- Biology (1)
- Business Administration, Organizational Science (13)
- Chemistry (1)
- Communication Studies (10)
- Computer Science (102)
- Economics (3)
- Education, Teaching (54)
- Environmental Science (1)
- General Works (2)
- History (1)
- Language and Literature (3)
- Law (3)
- Linguistics and Theory of Literature (1)
- Materials Science (13)
- Medicine (1)

The UNIVERSAL Brokerage Platform for Learning Resources

The UNIVERSAL Brokerage Platform (UBP) is a web-based platform, which supports the creation and sharing of knowledge. It enables collaboration among educators by providing a full range of services to support the exchange of Learning Resources. The UBP provides functionality for cataloguing and delivering both:

■ *Educational materials*, which refer to sharable chunks of reusable learning content such as electronic textbooks, recorded lectures and presentations, case studies, quizzes, lecture notes, problem statements, project assignments, etc., usually available in formats such as text documents, spreadsheets, presentations, audio and video files.

■ *Educational activities*, which refer to distributed educational and training events such as lectures, tutoring sessions, synchronous group collaboration, complete on-line courses, etc.

If your institution is already a member (see list of institutions), you can apply online for a user account. Then you will soon receive an e-mail with your username and password. If your institution is not yet a member, please contact our executive manager, Gerald Gamauf, (E-mail: gerald.gamauf@bit.ac.at, Tel.: +43 1 5811616 - 203) to ask for an account for your institution. If you would like to receive any further information or assistance, please do not hesitate to contact one of our local representatives.

Most recently added Educational Material

Title	Author	Prov. Date	Bookings

Vision of the Semantic Web

"The vision of the semantic web aims to have distributed data and services defined and linked in such a way that they can be used by machines not just for display purposes, but for automation, integration and reuse of data and services across various applications."

Berners-Lee, Hendler, Lassila 2001

Addressing Shortcoming #2

System architecture

Design goal: announcement of educational material and access control
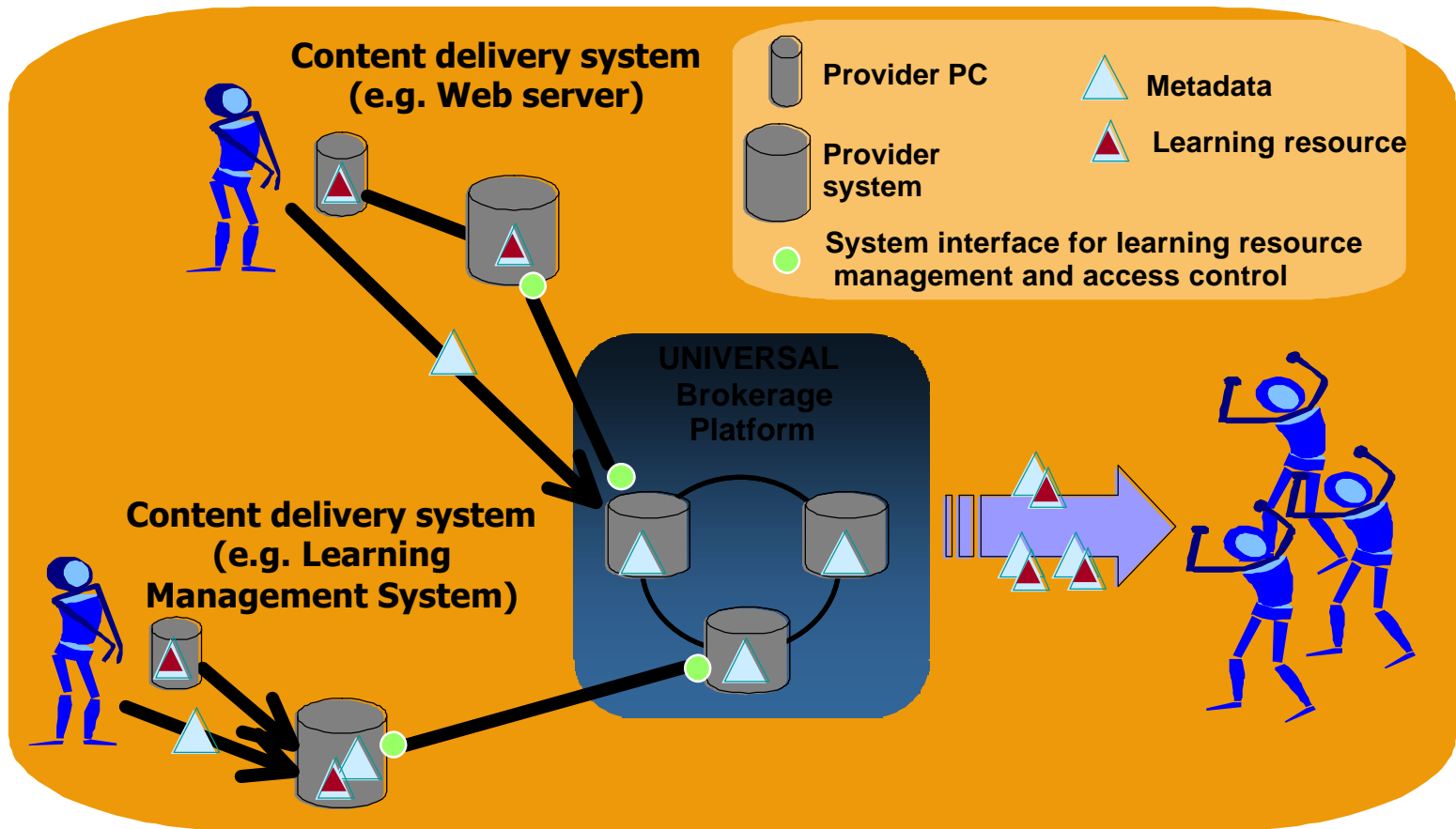
System architecture (Continued)

Design goal: announcement of distributed educational activities and access control

UNIVERSAL Brokerage Platform

1. Announce-ment

2. Booking

3. Launch Info

4. Provision

4. Consumption

4. Consumption

Delivery system for distributed educational activities (e.g. ISABEL)

System interface for learning resource management and access control

System Interfaces

DC/LOM **Provision** **XML/RDF**	**Learning Resource Management**	**DC/LOM** **Querying** **RDF**	**Inspection**	**Access Control**	**Access & Delivery**	**Billing**

System Registration	**Broker User Management**	**Delivery System User Management**

ADMINISTRATION LAYER

Http(s) + **URL Encoding**	**Http(s) +** **SOAP (WSDL)**	**JXTA/EDUTELLA**

COMMUNICATION LAYER

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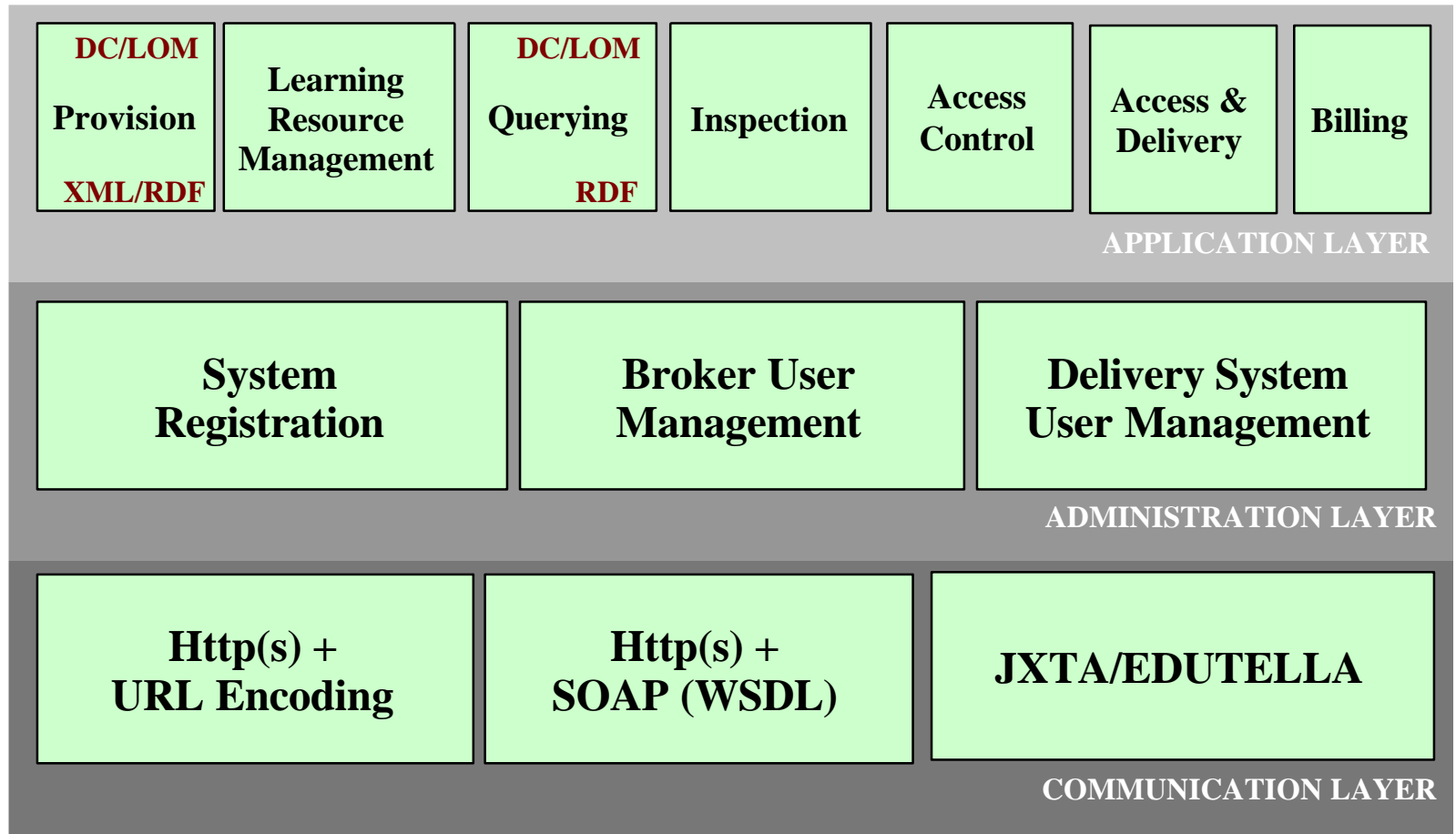
Next Step: Smart Learning Spaces

- **... are understood as peer-to-peer networks (spaces) that mediate educational services (e.g. delivery of courses or educational material)**

- **... take advantage of distributed user profiling to support the selection of services.**

More Educational Services ...

Curriculum Creation & Management	Content Development & Acquisition	Learner Acquisition & Competence Management	Learning Delivery	Learner Assessment & Instructor Evaluation

Accreditation Services

Curriculum Evaluation Services

Development Tools, e.g. AuthorWare, PowerPoint, RealPresenter, Quest

Content Brokerage Platforms, e.g. The Gateway, LydiaLearn, Merlot, Universal

CRM Components of ERP Systems e.g. SAP Virtual Campus

Competence Management Systems, e.g. SABA Learning, Clixx

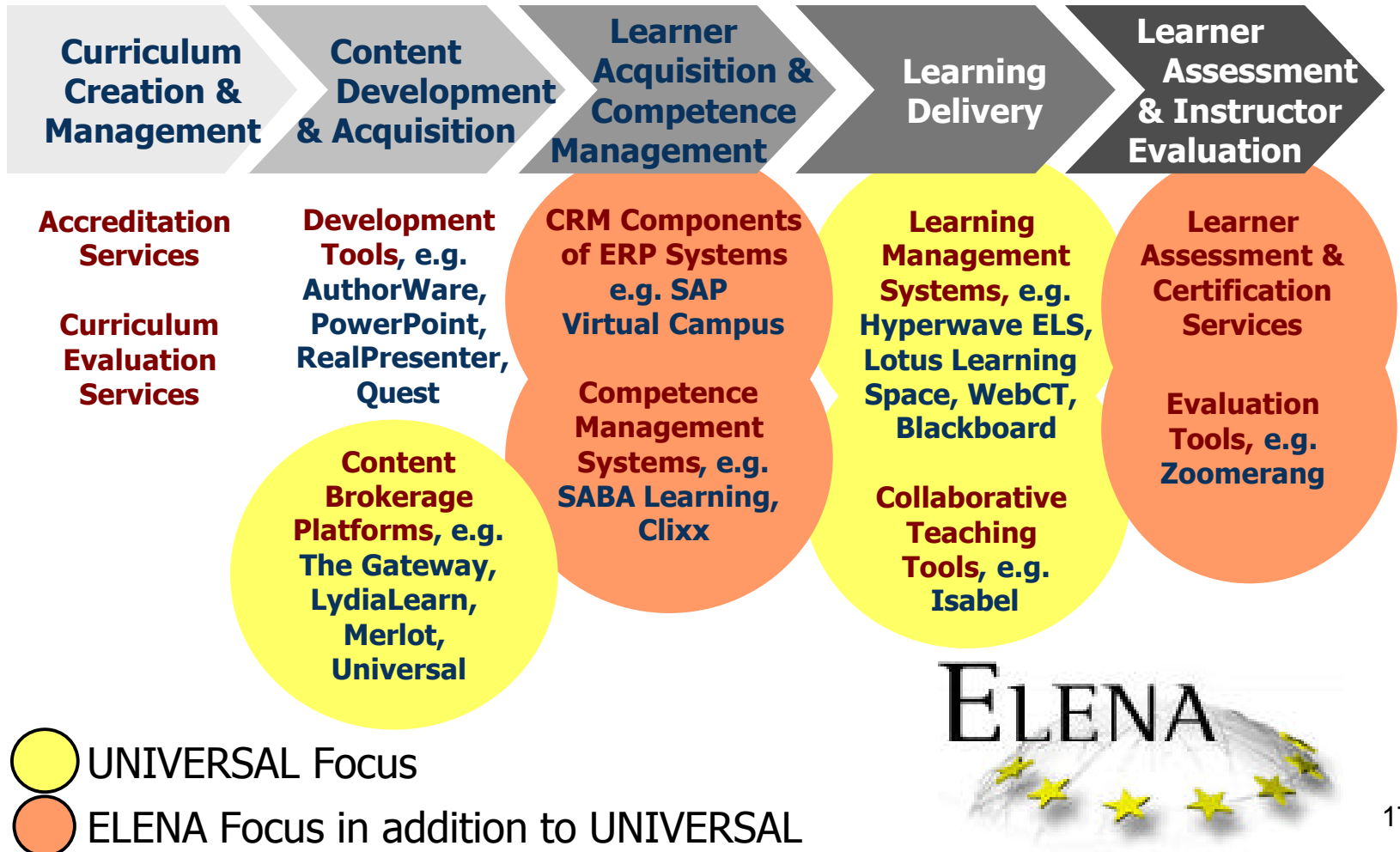**Learning Management Systems, e.g. Hyperwave ELS, Lotus Learning Space, WebCT, Blackboard**

Collaborative Teaching Tools, e.g. Isabel

Learner Assessment & Certification Services

Evaluation Tools, e.g. Zoomerang

ELENA

UNIVERSAL Focus

ELENA Focus in addition to UNIVERSAL

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... integrated in a Smart Learning Space

Smart Learning Space

ELENA - Personal Learning Assistent

ELENA - Personal Learning Assistent

Edutella Peer-to-Peer Infrastructure

Learning Management Network

Resource Discovery and Annoucements

Booking and Access Control via Web Service

Edu. Service Provider

Rating/Evaluation Service Provider

Edu. Service Provider
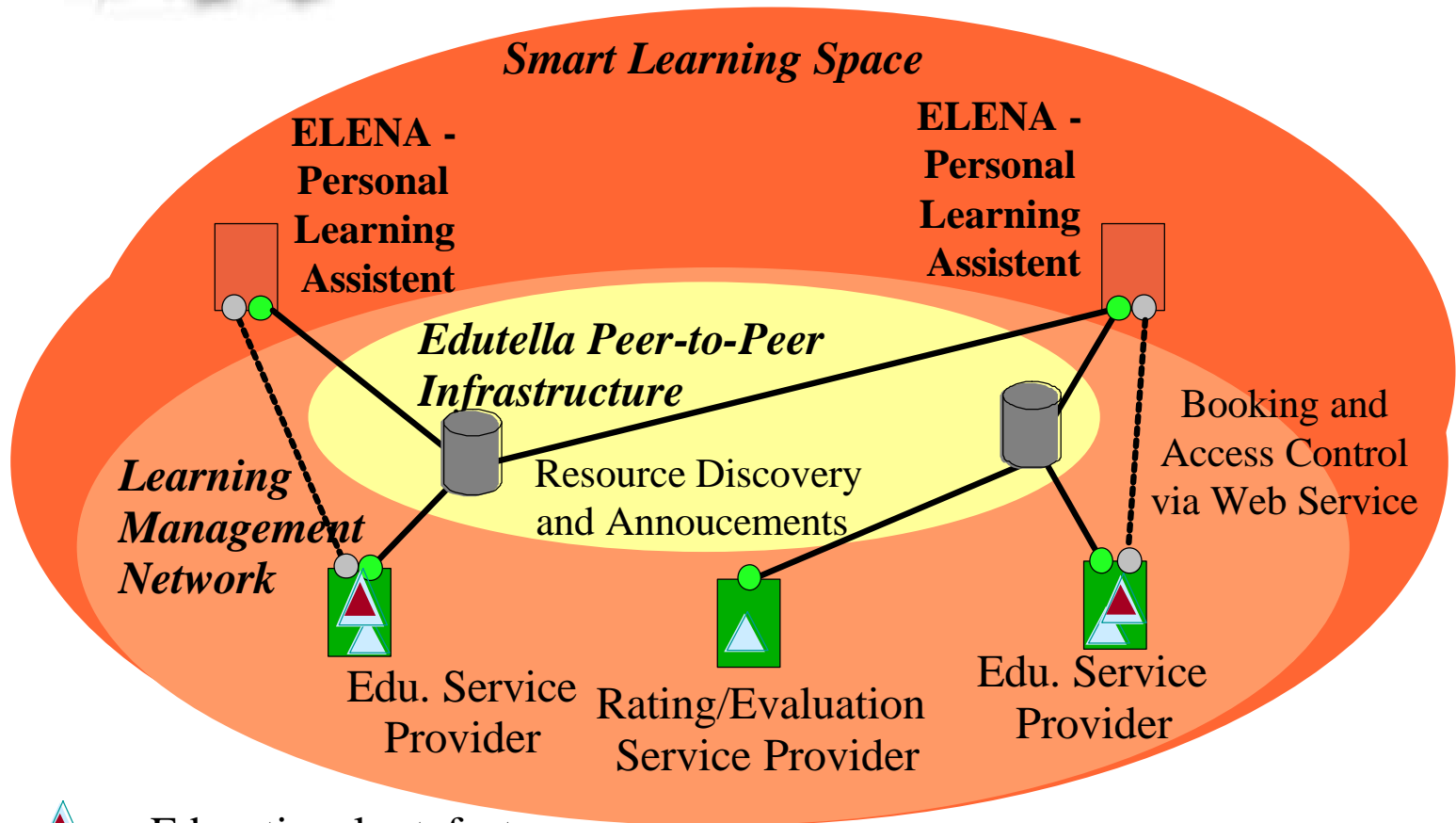
Educational artefacts

Metadata describing educational services, artefacts, educators, platforms, etc.

Edutella query hub

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Further Information

- **http://www.ist-universal.org/**

- **http://www.elena-project.org/**

- **http://www.ten-a.org/**

- **Contact information:**

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