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**Sigrún Gunnarsdóttir, Iceland Telecom**

Welcome to



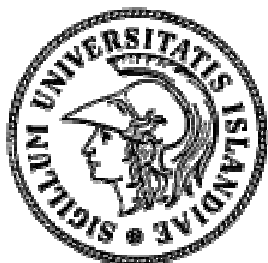
Universal exchange

for pan-european higher education

universal

# Mission

- UNIVERSAL is a world-class **brokerage service** linking **educators** and trainers for the exchange and distribution of **learning resources**
  - **Learning resources** can be lectures, tests, syllabi, texts, tutorials
  - **Educators** are in Universities
  - **Brokerage service**: connecting to databases of LRs by means of delivery services

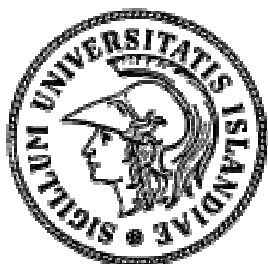
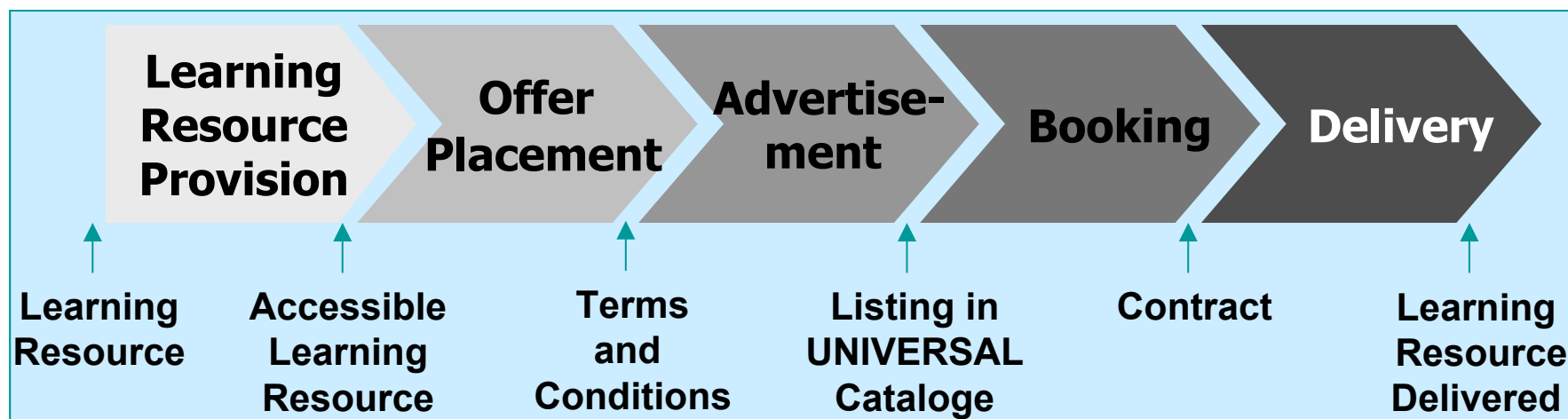


# Problem

- **Environment** of universities is changing
- **Specialization** within the curriculum
- Keeping abreast with **fast advances** in most areas
- **Competition** between universities

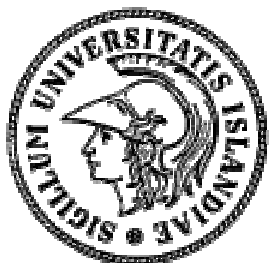


# The Exchange Process



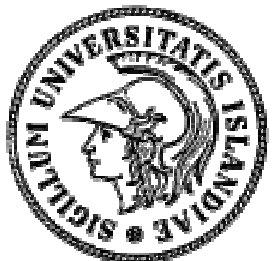
# UNIVERSAL's innovative solution

- Use a delivery system of your choice
  - ◆ Interoperability to delivery systems
  - ◆ Students do not need to learn a new user interface
- Trade in an open market
  - ◆ Open standards to describe data about learning resources
- Describe once – use everywhere
  - ◆ Interoperability to Learning Management Systems

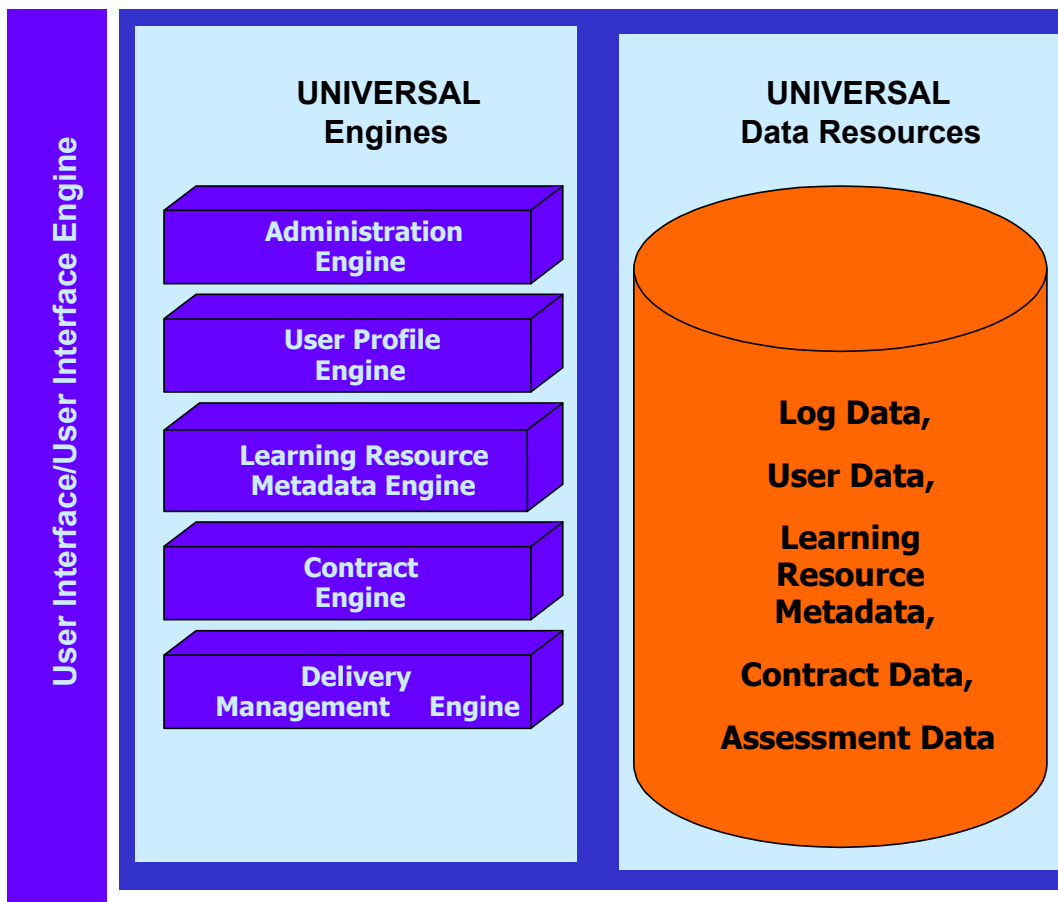


# UNIVERSAL's innovative solution

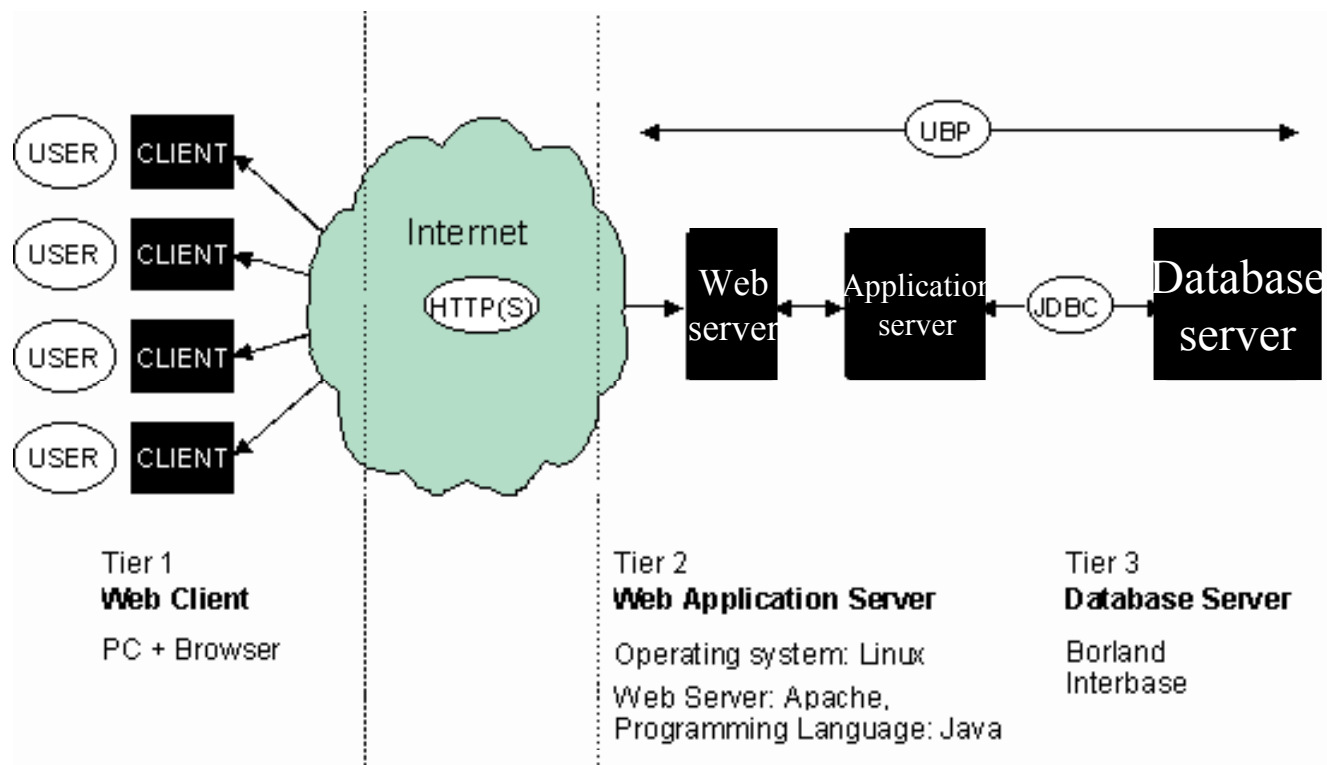
- No garbage, please
  - ◆ Assessment of learning resources
- A clear view of the usage of LR
  - ◆ Information about usage
  - ◆ Notification of bookings



# Architecture

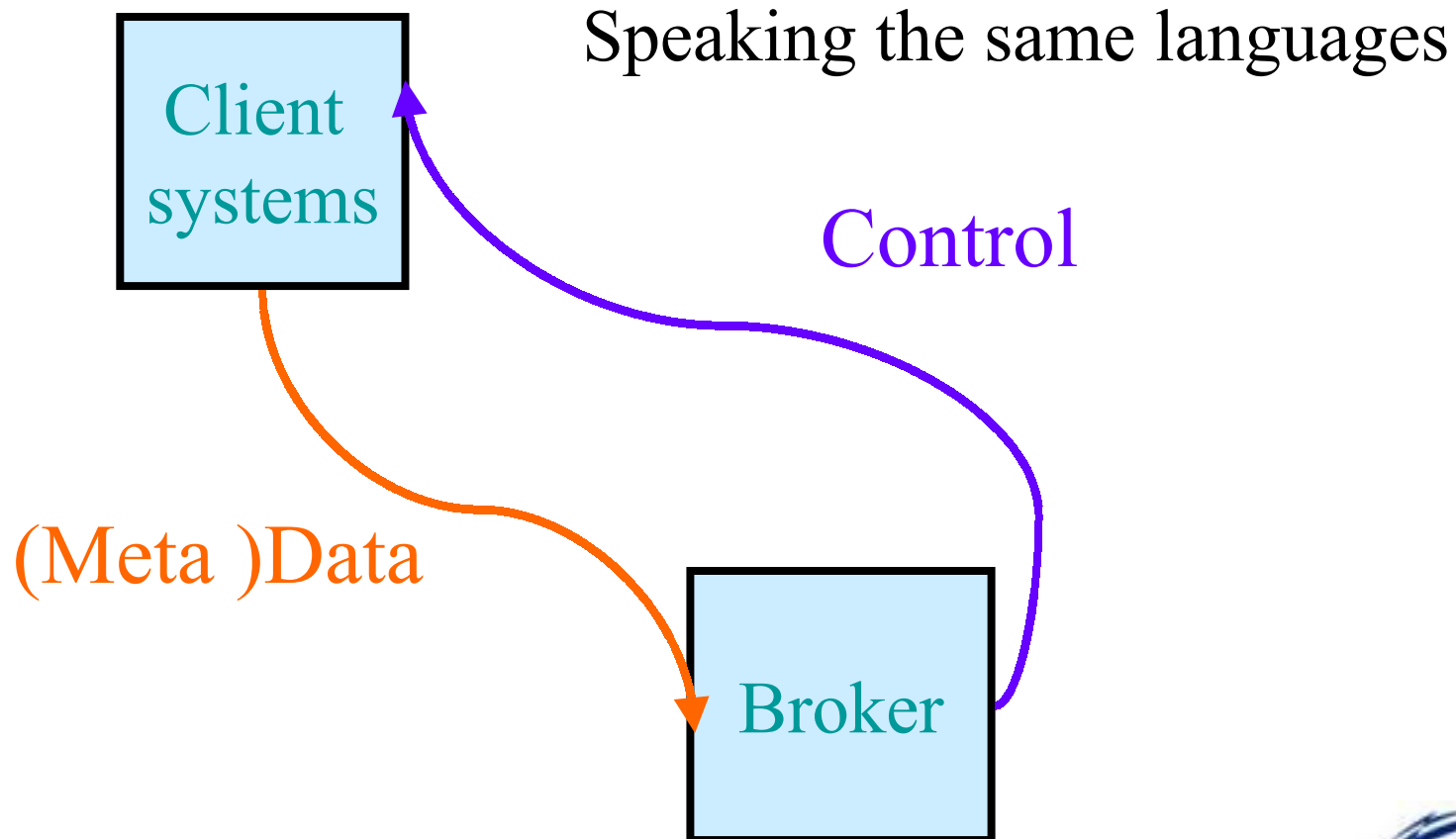


# Architecture



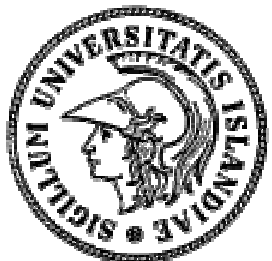


# Driving forces of interoperability



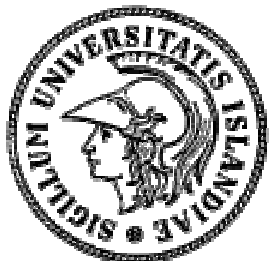
# Describing the learning resource

- Title, **language**, objectives, method of instruction, **author**
- Classification system
- Copyrights
- Scheduling
- **Technical attributes for delivery**

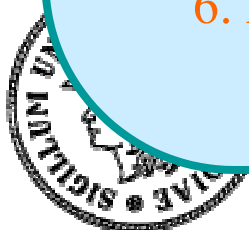
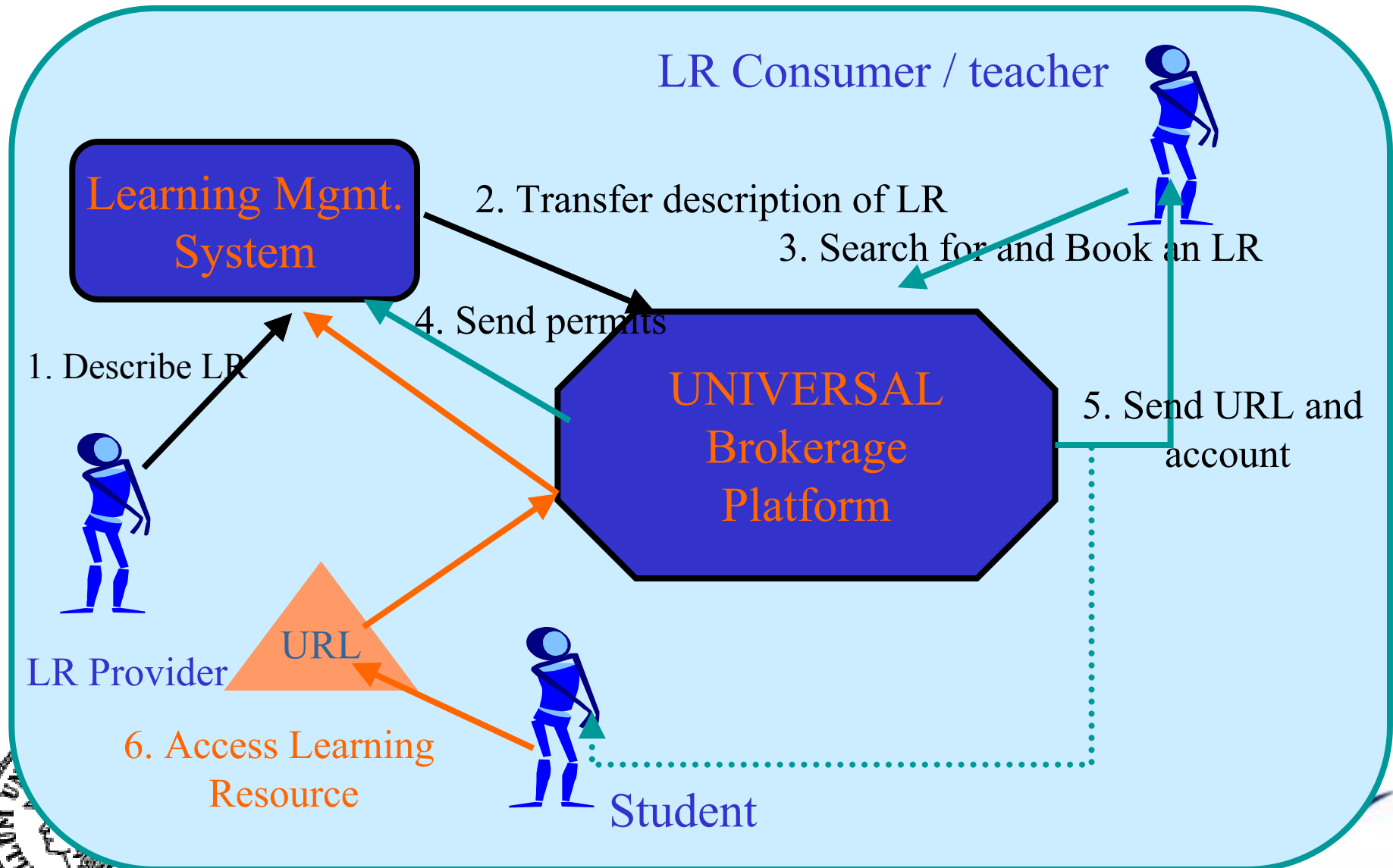


# Trade in an open market

- Resource Description Framework is a method to describe **data** about **resources** on the web.
- RDF is a technique that allows us to **query** or **reason** about learning resources
- RDF is the schema
  - ◆ to describe the data about data
- XML is the format
  - ◆ Extensible Markup Language (XML) is used to encode the RDF-modeled LR metadata.



# Describe once – use everywhere

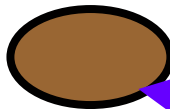
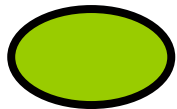


# Use a delivery system of your choice

- Synchronous collaboration tool and video conferencing system
  - ◆ ISABEL
- Asynchronous streaming content
  - ◆ Real Server
- Static content accessed through web-server
  - ◆ HTML pages, power point, etc.



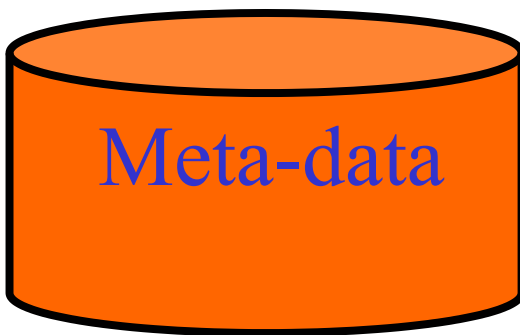
University of Iceland



CGI for Web

Directory for  
Real server

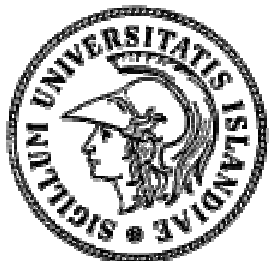
ISABEL  
gateway



UNIVERSAL home



Helsinki University



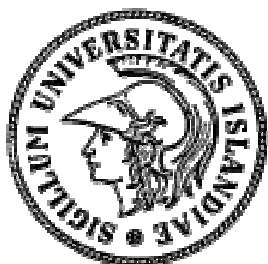
# Scalability

- **Distributed** broker instead of centralised
- Investigate **web services** implemented with e.g. SOAP and service **registries** instead of Java Remote Method Invocation



# Other quality characteristics

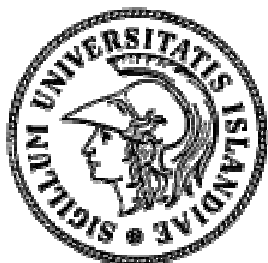
- Security
  - ◆ Secure socket layer
  - ◆ Digital rights - XrML
  - ◆ Administration engine
- User centred
  - ◆ Formal and open user trials with usability tests





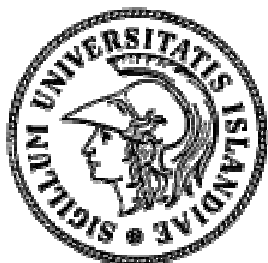
# Development of UNIVERSAL

- Fault tolerance
  - ◆ Defensive programming
  - ◆ Logging of errors into a database
- Quality
  - ◆ Extensive peer review of specification, design and system
- Business case
  - ◆ We are actively seeking alliances to participate



# Changing operational environment

- More collaboration
- Open exchange of ideas
- Reviews
- International cooperation
- Increased specialization
- More demand for quality



# Opportunities

- Collaboration between teachers or schools
- Access through communication network
- Research networks of excellence and training
- Mobility of researchers, teachers and students



If you are interested in joining as an alliance  
please visit:

<http://www.ist-universal.org/>

and contact us:

[ebba@hi.is](mailto:ebba@hi.is)

[sigrung@simi.is](mailto:sigrung@simi.is)

