MNM TEAM
MUNICH NETWORK MANAGEMENT TEAM

An identity management web service for privacy-preserving course authorization in federated E-Learning

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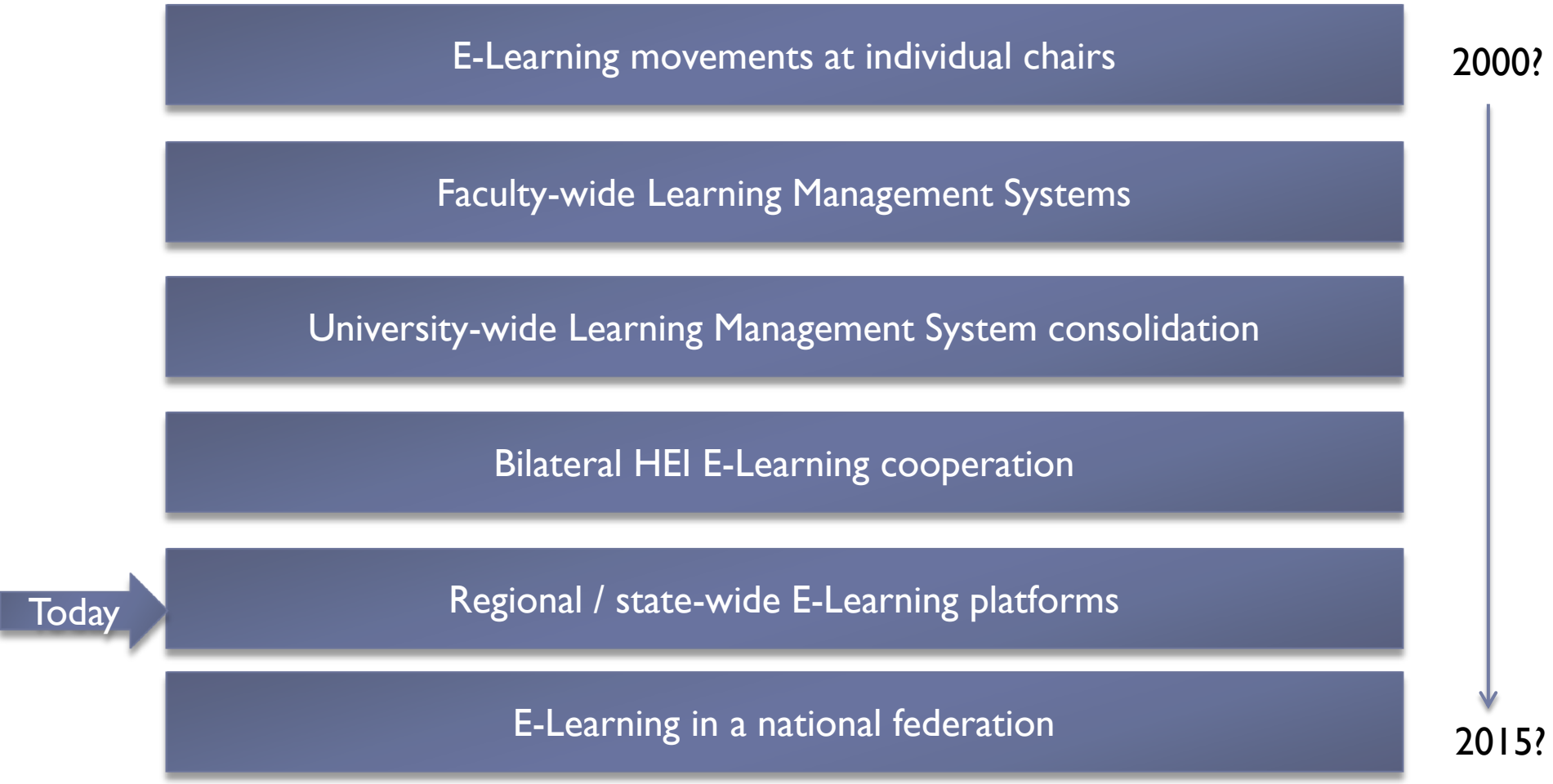
EUNIS 2009: E-Learning in Shibboleth-based federations

- E-Learning milestones at German HEIs:



E-Learning in federations

- Why?
  - Lecturers can reach a much larger audience
  - Students can take courses not offered locally and obtain certificates of achievement
  - E-Bologna & virtual mobility

Image source: TU Clausthal

- How?
  - Integration of Shibboleth-enabled Learning Management Systems in national authentication / authorization infrastructures (AAI)
  - German DFN-AAI provides a standardized data schema: Compatible syntax and semantics across German HEIs

Prototype implementation for the Virtual University of Bavaria (VUB)

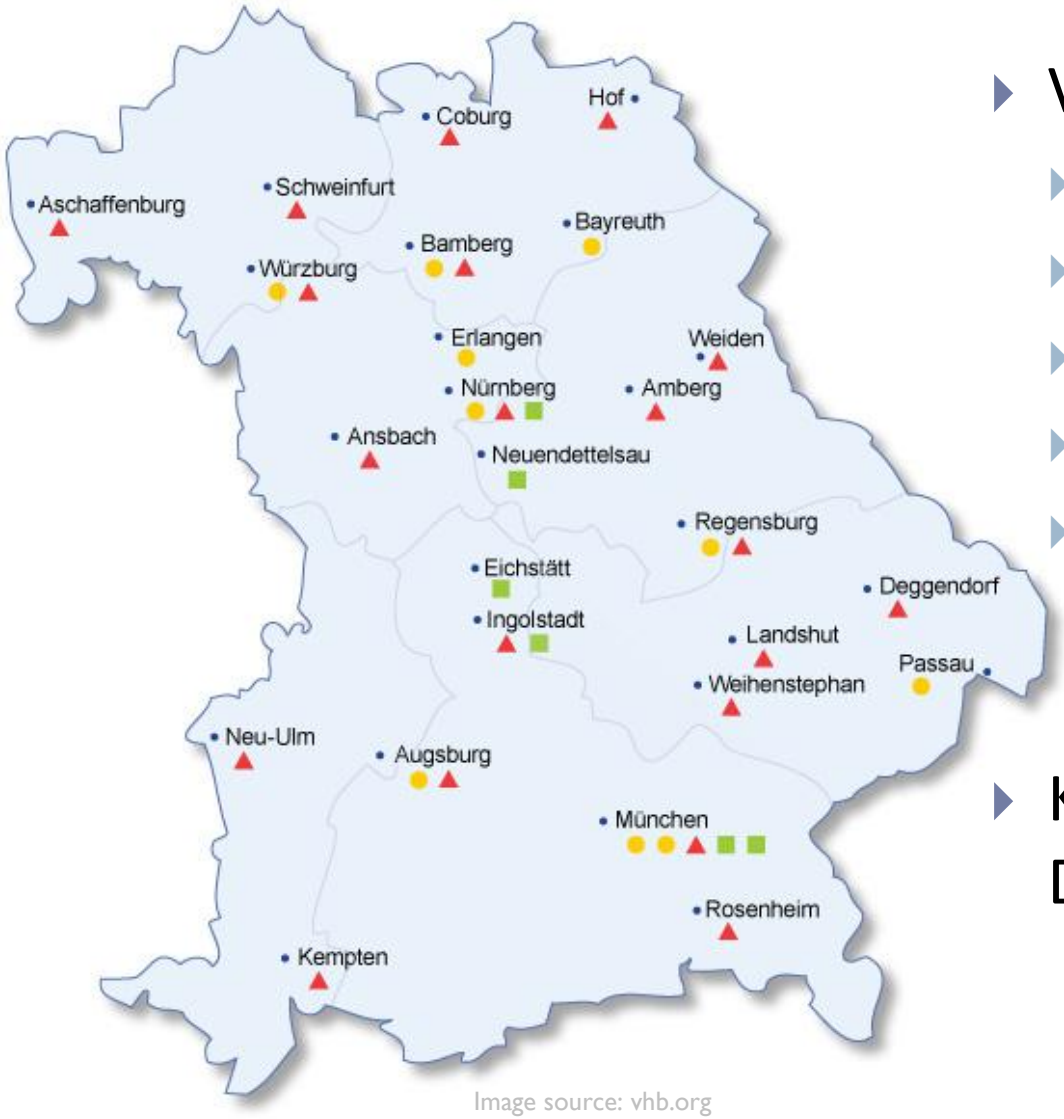
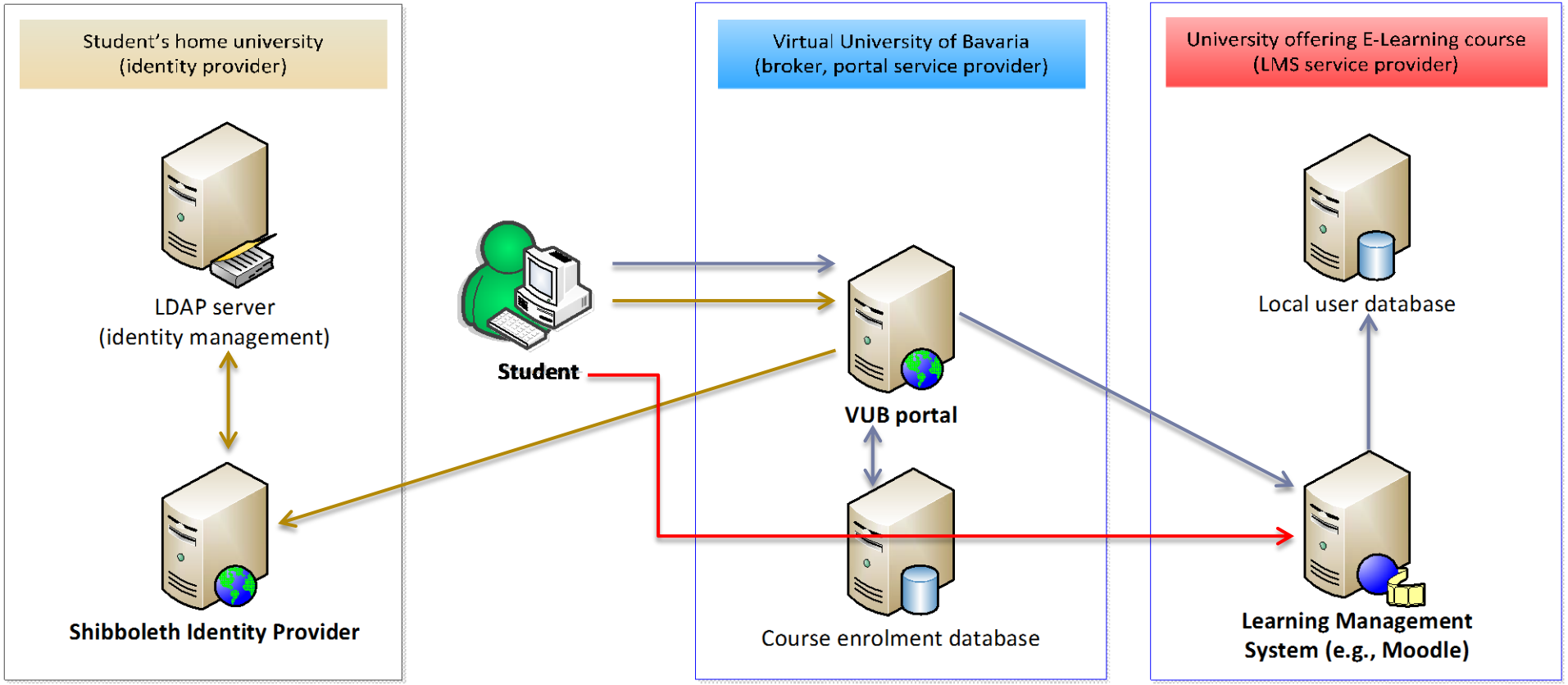


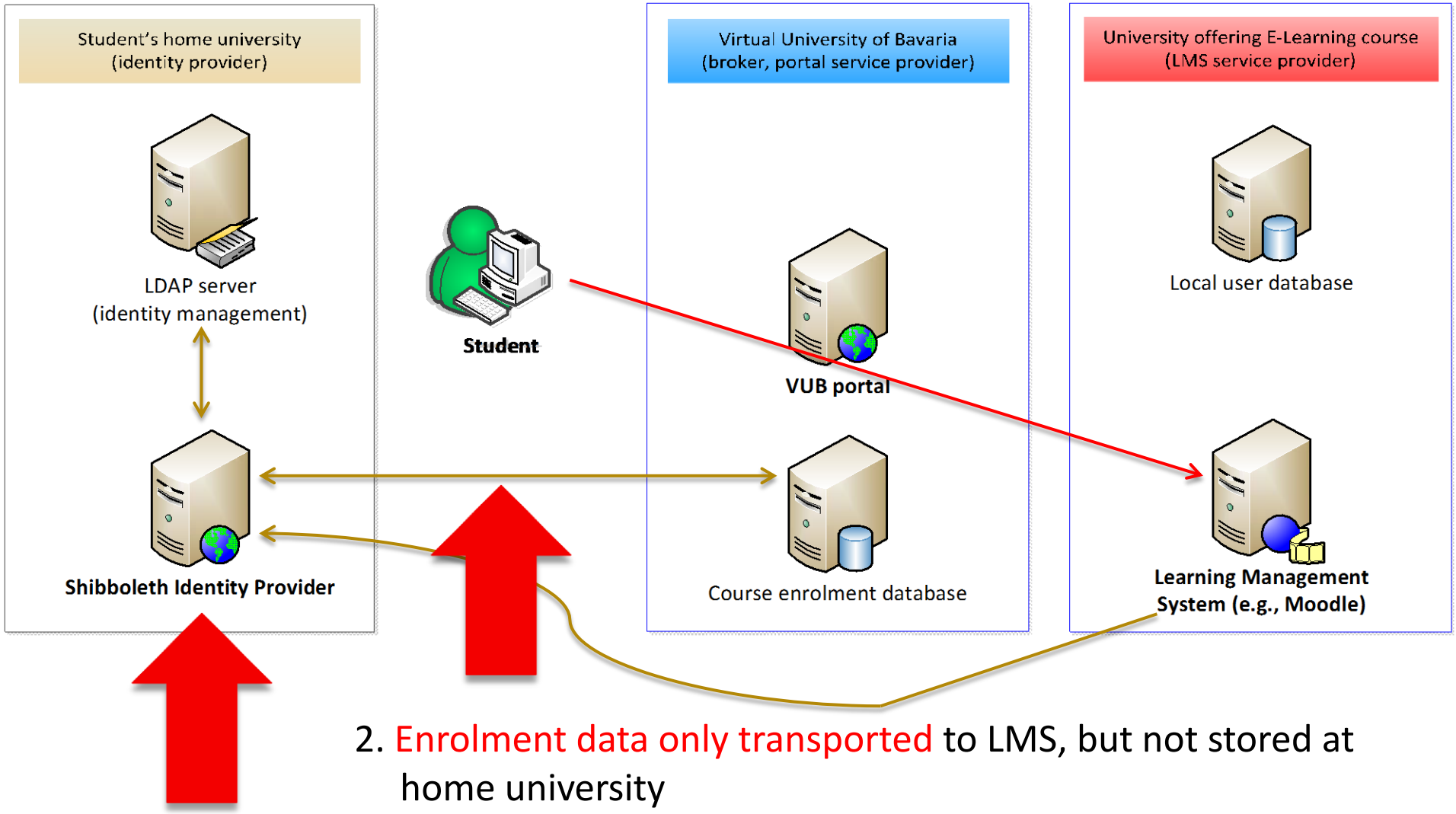
Image source: vhb.org

- VUB in figures:
  - Founded in 2000
  - 30+ member HEIs
  - ~20,000 students per semester
  - ~40,000 enrolments per sem.
  - 200+ courses offered per sem.
- Keynote by managing director Dr. Paul Rühl tomorrow noon

How VUB course enrolment works (logical view)



How we thought federation integration works (Shibboleth-based technical view, simplified)



2. Enrolment data only transported to LMS, but not stored at home university

1. Privacy issue: Login by anyone to any SP implicitly "reported" to VUB

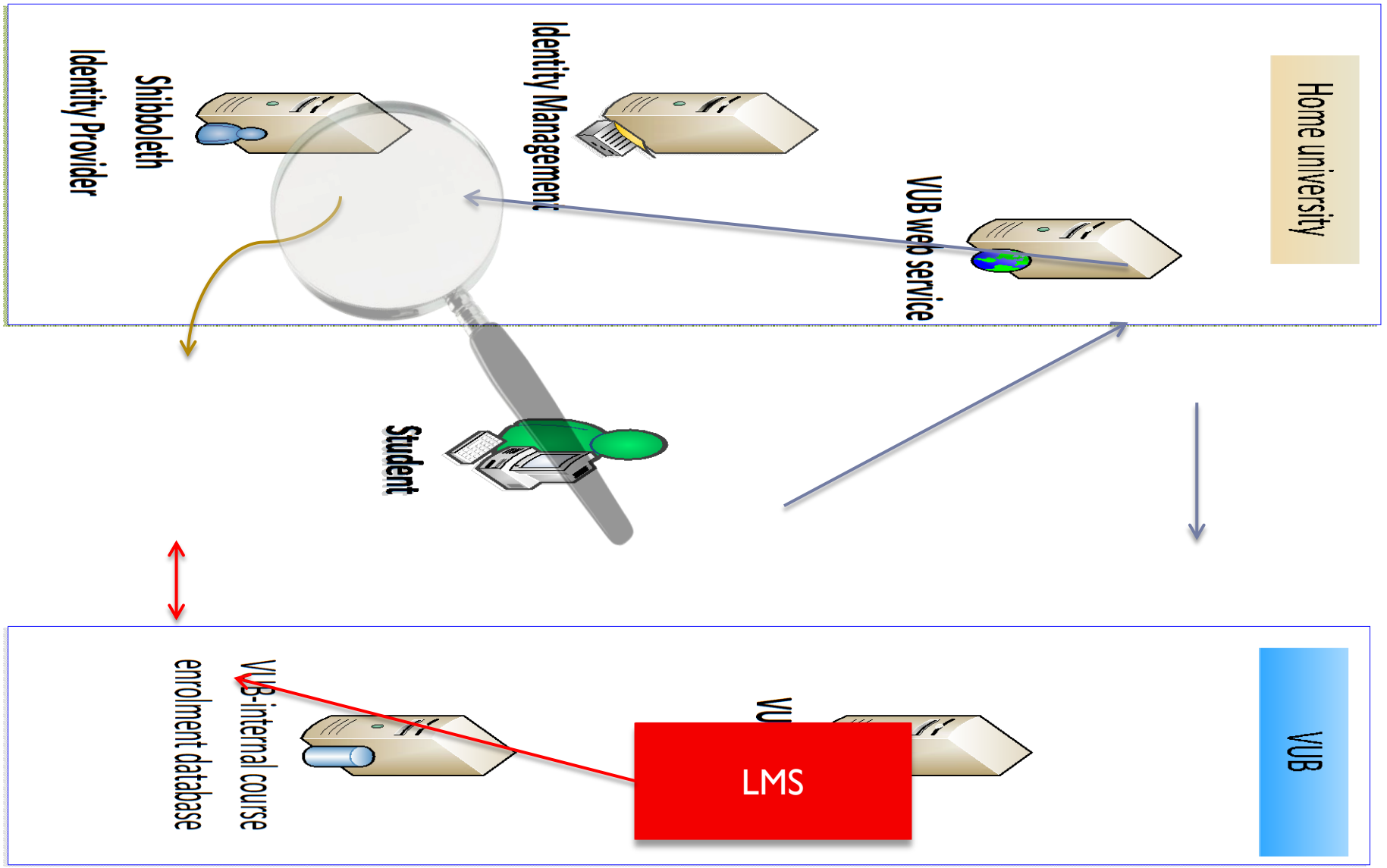
Issues that needed to be addressed

- 1. Privacy issue
- 2. Home university's enrolment overview issue

- 3. Stability issue:
  - Temporary unavailability (e.g., network failure or maintenance) of VUB course enrolment database results in technical error message

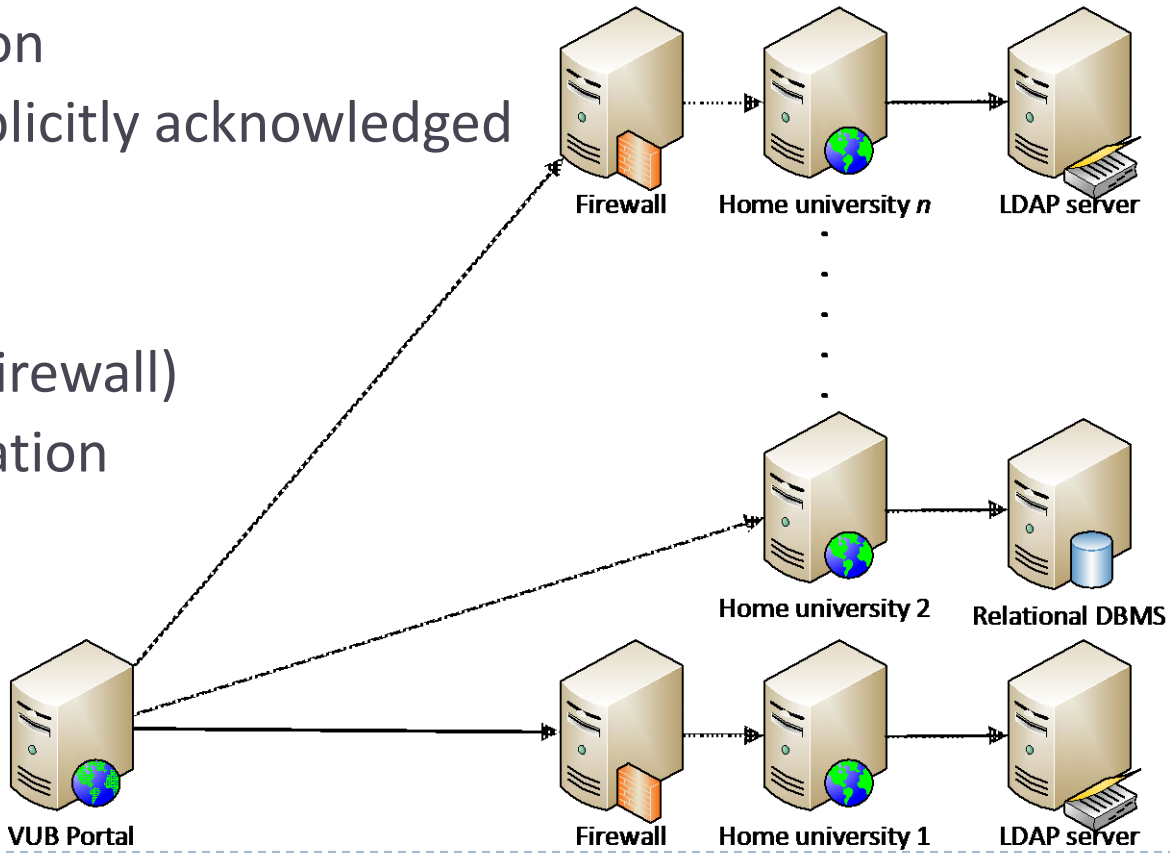
- 4. Incomplete Shibboleth coverage:
  - Not all of Bavaria's HEIs have a working Shibboleth IDP yet
  - Organizational issue, various solution strategies are available, e.g., IDP hosting as a DFN service

Basic workflow with the new solution



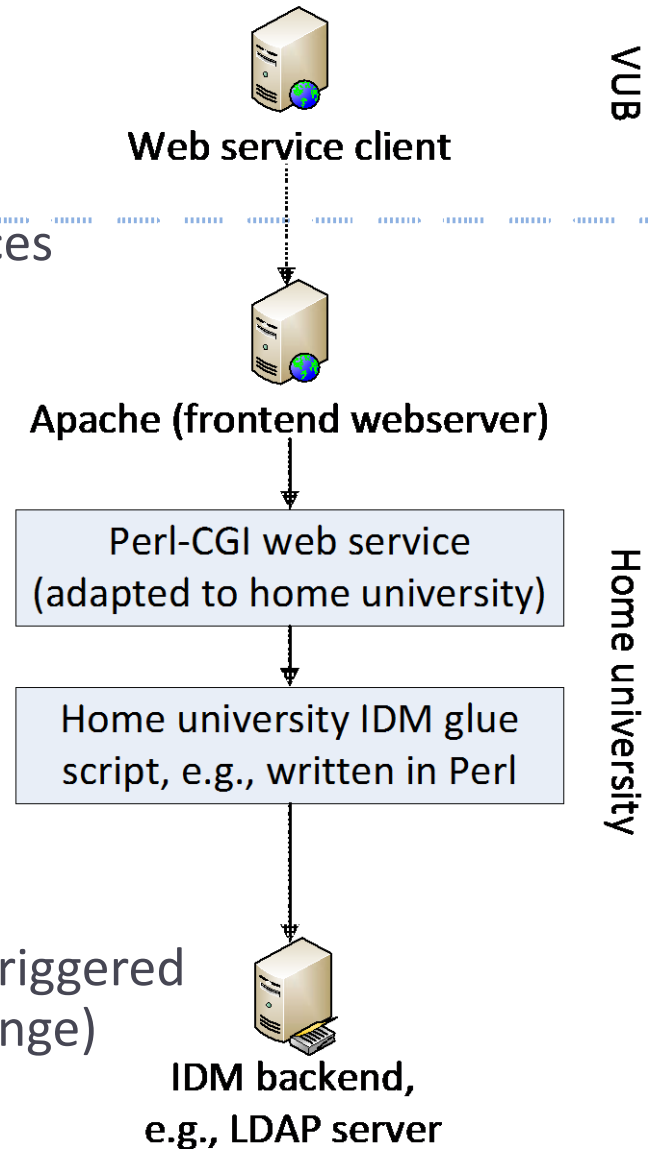
Key aspects of the connector (1/2)

- Functionality
  - Send add / delete events in near-real-time
  - Batch operations
  - Full re-synchronization
  - Each operation is explicitly acknowledged
- Security
  - IP address filtering (firewall)
  - SSL-based authentication and encryption
  - Operation counter limits (“anti-DoS”)



Key aspects of the connector (2/2)

- Platform independence
  - 30+ HEIs have various OS, web application servers, and programming language preferences
  - Runs on Linux/Apache and Windows/IIS
  - Supports LDAP and SQL backends
  - Axis2-based Java and Perl-CGI implementations
- Automated metadata mgmt. (later)
  - Manage endpoint changes w.r.t. IP filters
    - VUB's web service client IP address may change
    - Home universities' service IP:port may change
  - VUB-sided web services for home-university-triggered actions will be needed (re-sync, metadata change)



Conclusion

- Lightweight technical solution had its drawbacks
  - User privacy
  - Operational stability
- New web service based solution
  - Fixes these issues
  - Has additional benefits
  - But comes at higher implementation costs
- Pilot usage planned for 3rd quarter 2011