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Evaluation of an Open Source E-Learning Platform

Learning Object Repository (LOR)

12 January 2007, 13:15 – 15:45, SWITCH, Zurich

Agenda

13:15 – 13:30	• Introduction • Goals of this meeting • Project wrap-up	Urs Gröhbiel	15’
13:30 – 14:15	• Test phase results: presentation and feedback	Rolf Brugger	45’
14:15 – 14:30	• *Break*		15’
14:30 – 15:00	• LOR selection criteria	Rolf Brugger	30’
15:00 – 15:15	• SWITCH’s service model	Martin Sutter	15’
15:15 – 15:30	• LOR pilot and next steps	Martin Sutter	15’

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Introduction

Urs Gröhbiel

Goals of This Meeting

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- Participants understand the functions of a LOR and the potential benefits for their organization
- Participants understand the results of the test phase
- LOR selection criteria are defined
- Community is informed about the next steps, in particular the pilot project(s)
- Project management receives feedback

Project Goals

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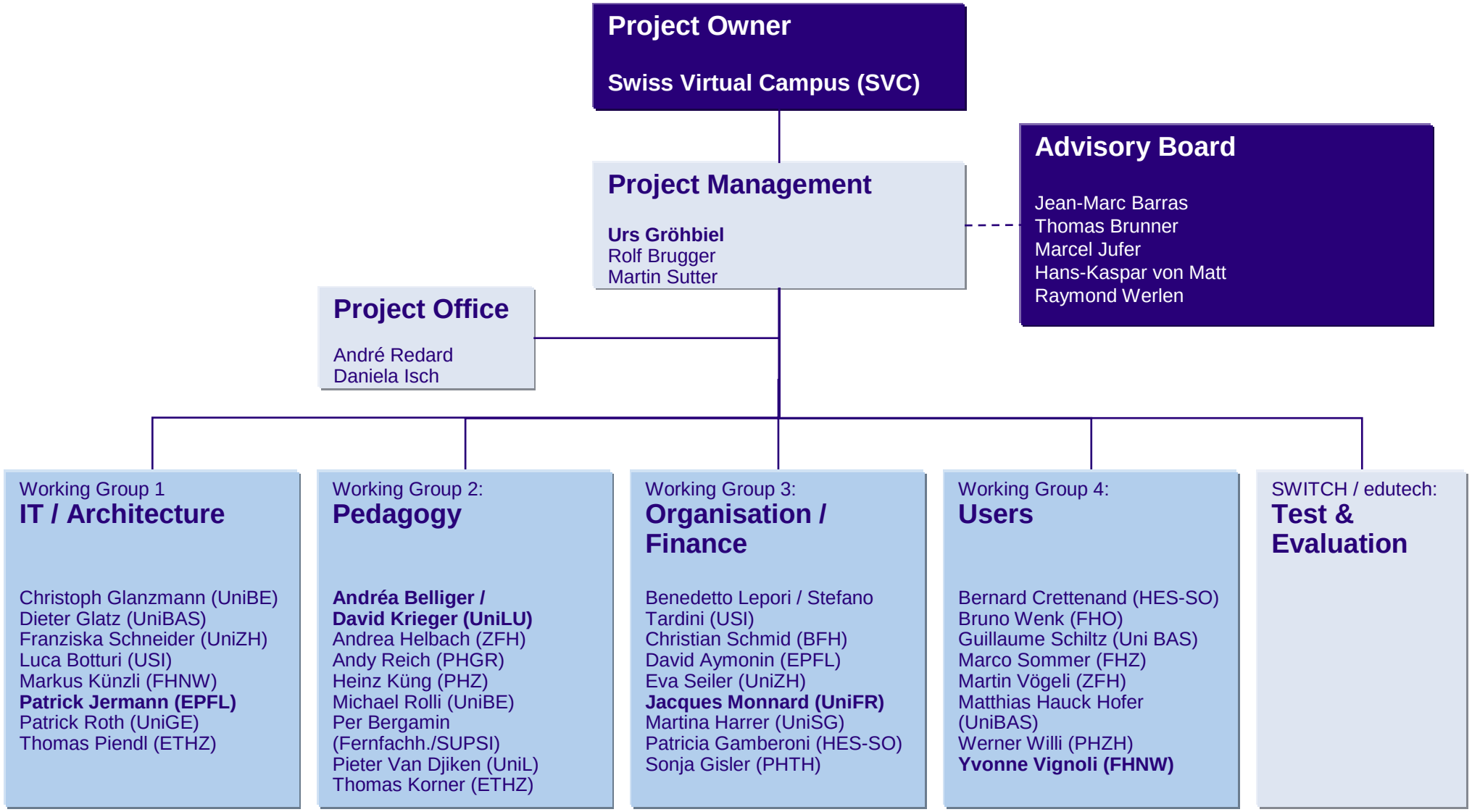
- Open source e-learning platform is evaluated which
  - meets the requirements of Swiss institutions of higher education
  - can be provided by SWITCH as a national service complementing the WebCT Vista offering
- Service model is defined
- Costs for implementing and providing the national service are estimated and financing is defined

Wrap-up: Project Organization



Wrap-up: Project Plan

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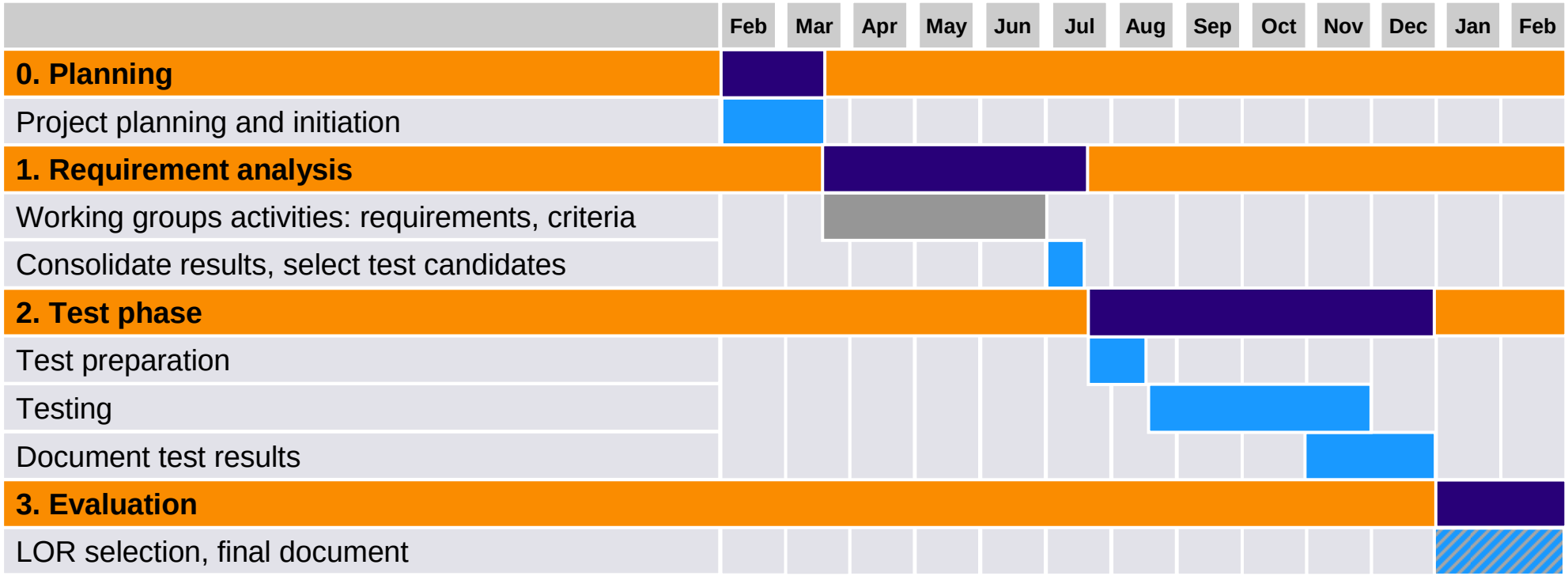

working groups SWITCH/edutech

Results of the Requirement Analysis

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- No immediate and clearly defined need for a nationally hosted OS LMS
- Test phase with focus on national repository with interfaces to
  - Moodle, OLAT (OS LMS)
  - WebCT Vista (commercial LMS)
- Integration of e-learning services into the overall e-Academia framework (e.g. AAI, video conferencing, collaboration tools, …) has been identified as an important issue
- Need for community building and a national competence center for new learning technologies

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Test Phase Results

Rolf Brugger

Test Phase Results

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see http://www.edutech.ch/lms/2006LOR/

Goals and Requirements

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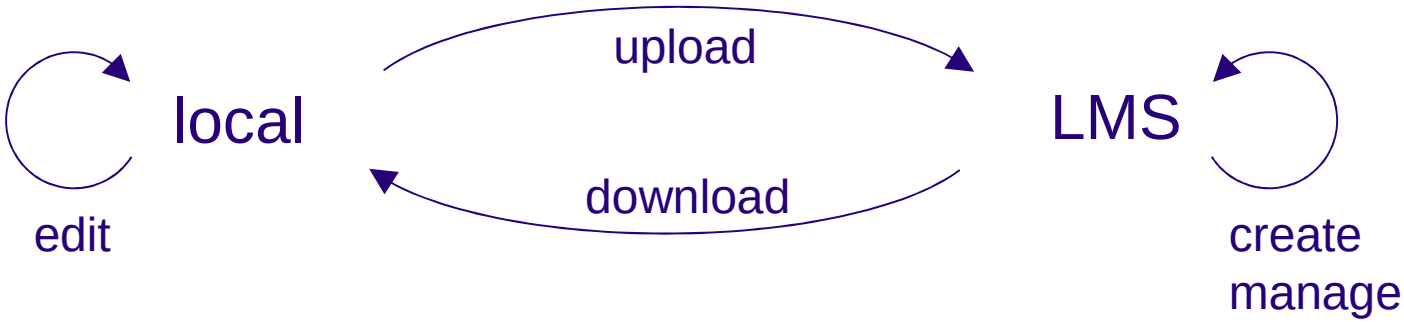
Goals of a LOR:

- re-use existing content (i.e. entire foundation courses, parts of courses)
- enhance collaboration across institutions
- reach larger audience
- enhance reputation due to enhanced visibility of e-learning activities

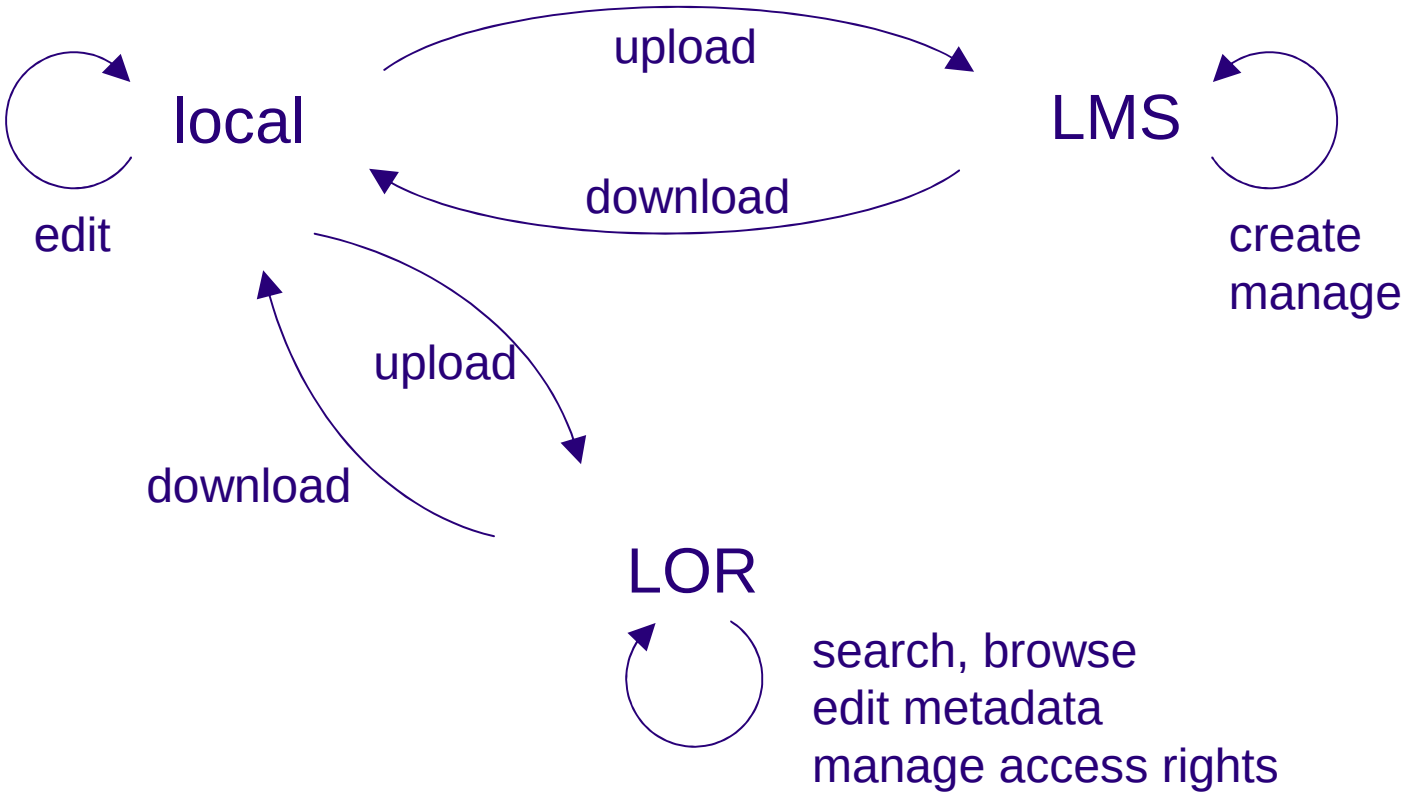
Key requirements:

- very easy to use, in particular for content contributors
- simple metadata model
- share/publish: transfer content from LMS to LOR with one mouse click
- browse for Learning Objects (LOs)
- search for LOs (metadata and full-text search)
- tight integration with existing LMS
- re-use existing metadata from LMS

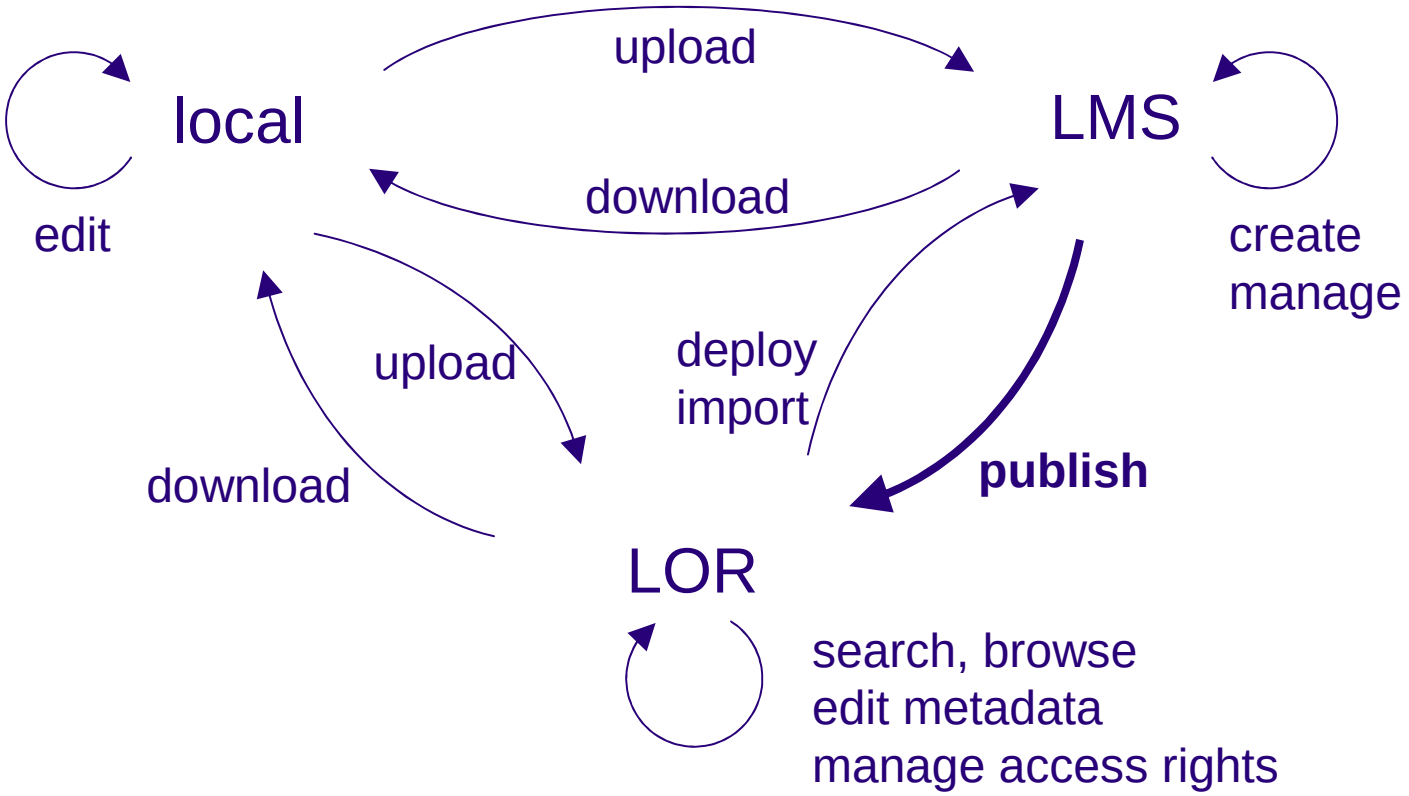
Workflows



Workflows


local
upload
download
LMS
edit
create
manage
upload
download
LOR
search, browse
edit metadata
manage access rights

Workflows


local
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Feasibility Study

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- **Prove technical feasibility:**
  Show, that it is possible to extract courses of a LMS along with their metadata and transfer them to a repository with minimal user interaction.
- **Illustrate interface and workflow:**
  Explore, prove and illustrate how LO publishing may work.

- *Not* an aim:
  - to get fully functional tool
  - optimize design and usability

LO Types

Type	Granularity	Content Formats
Course	1 semester, multiple related lessons	•Proprietary LMS course archive •IMS-CP
Module Complex object	1 lesson or activity, ~15-45 minutes study time, package of related files	•IMS-CP •SCORM •zip, …
File	single file that can be directly (re-)used	•html, css, pdf, doc, ppt, jpg, png, mp3, mpeg, swf, …
Quizz	Questions of a course or module	•IMS-QTI

Moodle / DOOR

- DOOR: Digital open object repository (developed by eLab) http://sourceforge.net/projects/door/
- Moodle: Publish feature developed by eLab

- Demo
  - http://vmelab03.unisi.ch/moodle154/
  - http://vmelab03.unisi.ch/door/

Moodle / DOOR : features

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- Publish from Moodle course to LOR
  - single files (text, image, media) or links
  - entire course (all resources)
- Reuses existing metadata (title, description, course context)
- Possibility to directly re-import assets from LOR to Moodle course

- Repository hierarchically organized
- Search for learning objects
  - specific metadata tags
  - full search in metadata
- Download in raw format or as IMS-CP

Olat / OlatLOR

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- OlatLOR: quickly built LOR prototype based on OLAT technology
- OLAT: publish feature developed by frentix

- Demo
  - http://switch.olat.ch/switcholat
  - http://switch.olat.ch/switchlor

Olat / OlatLOR features

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- Publish from Olat to LOR
  - sepcific learning resources (Content packages, quizzes)
  - entire course
- Reuses existing metadata (title, author, description, content structure)
- All LOs exported as IMS or SCORM packages

- Search for learning objects
  - specific metadata tags
  - full text search
- Browse through hierarchical structure of LOs
- Full featured preview of IMS-CP, IMS-QTI, SCORM and

WebCT Vista

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- Export from WebCT
  - learning module (= chapter)
    - can only be exported manually
    - is not a clean IMS-CP package, but it could be automatically post-processed
  - entire course
    - can be exported programmatically
    - format is IMS-CP with proprietary extensions (all documented)
    - package is encrypted
  - files and directories
    - can be exported programmatically (without course structure)
  - no straightforward way to add a *publish* button to the designer's interface
    > not an open source product
- Submit to LOR
  - post-processed module can be manually imported into OLAT-LOR

Interoperability Tests

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IMS-CP imported to exported from	Moodle	OLAT	WebCT	MS DotLRN
Moodle/DOOR	No	No	No	Yes
OLAT	Yes	Yes	No	Yes
WebCT	No	No	Yes	Yes

IMS-QTI imported to exported from	OLAT	WebCT	Respondus
OLAT	Yes	No	(Yes)
WebCT	No	Yes	No

Summary of Feasibility Study

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- Export (publish)
  - from open source LMS possible with acceptable effort
  - from closed source LMS is very limited
- Retrieve LOs
  - by metadata and full text search
  - preview and re-use LOs and/or their components
- Interoperability needs more work

Fedora

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- **Scope**: general repository for digital assets
- **Developer**: Cornell university, University of Virginia Library
- **API**: all functions also exposed as web services (SOAP, REST)
- **Aggregation**: has-member/member-of reations, nested collections
- **Architecture**: clean and flexible but complex
- **Technology**: Java, Tomcat, OAI-PMH harvesting
- **Customizable**: Allows to design complex and good looking applications
  http://www.encyclopedia.chicagohistory.org/

DSpace

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- **Scope**: general repository for digital assets
- **Developer**: MIT libraries, HP
- **Metadata**: Dublin Core (IMS planned in the future)
- **API**: Java API available, but no remote acces
- **Aggregation**: communities and nested sub-communities, flat collections for an entry
- **Architecture**: clean
- **Technology**: Java, Apache, Tomcat, Oracle/Postgres, OAI-PMH harvesting as provider
- **Customizable**: Most users moderately customize the interface

EPrints

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- **Scope**: archive for research papers
- **Developer**: University of Southampton UK
- **API**: all functions also exposed as web services (SOAP, REST)
- **Aggregation**: no sub-repositories
- **Architecture**: code, api and architecture look good
- **Technology**: Perl, MySQL, Apache. (no harvesting or federated search)
- **Customizable**: Interface well adaptable

Summary OS Repository Systems

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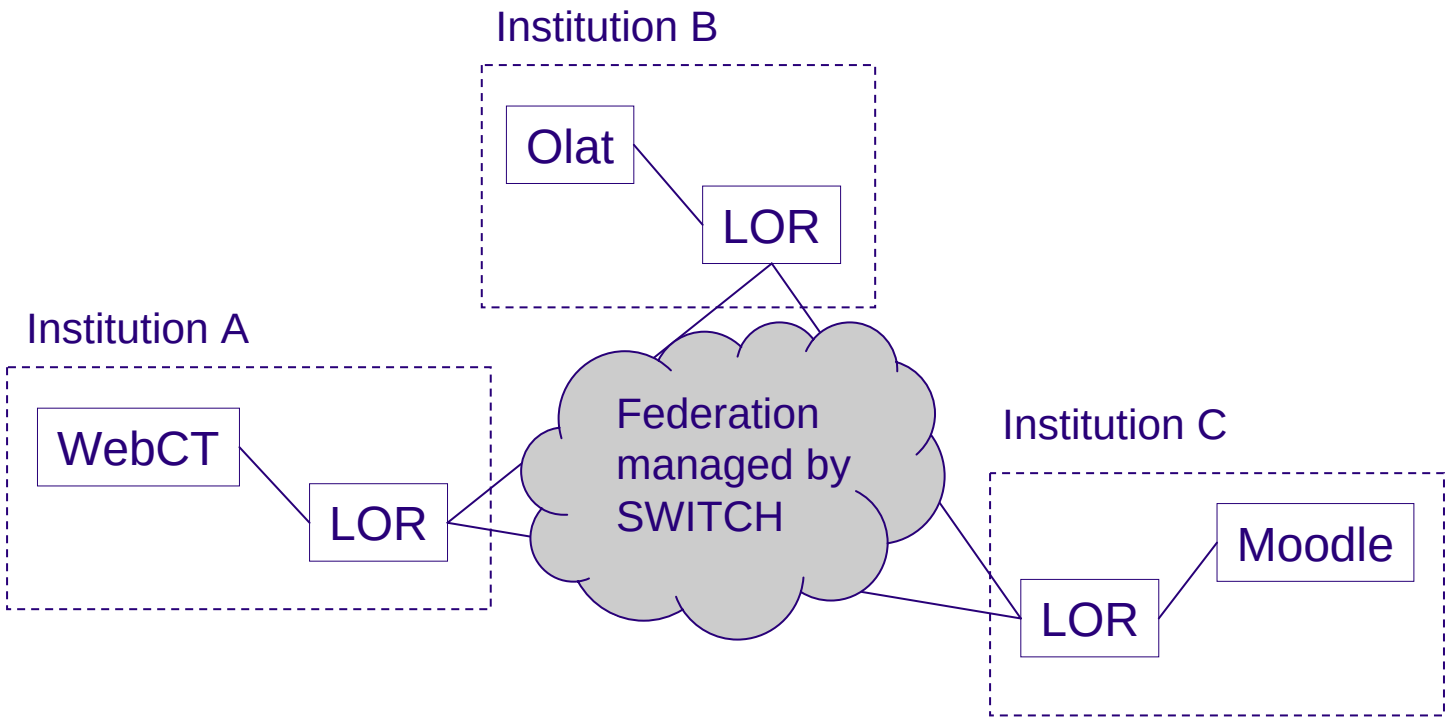
Pros

- Fedora, DSpace and EPrints are widely used and stable
- good acceptance and large communities
- user interface customizable
- technical documentation
- documented APIs
- Federation of LORs
  - federated search
  - harvesting

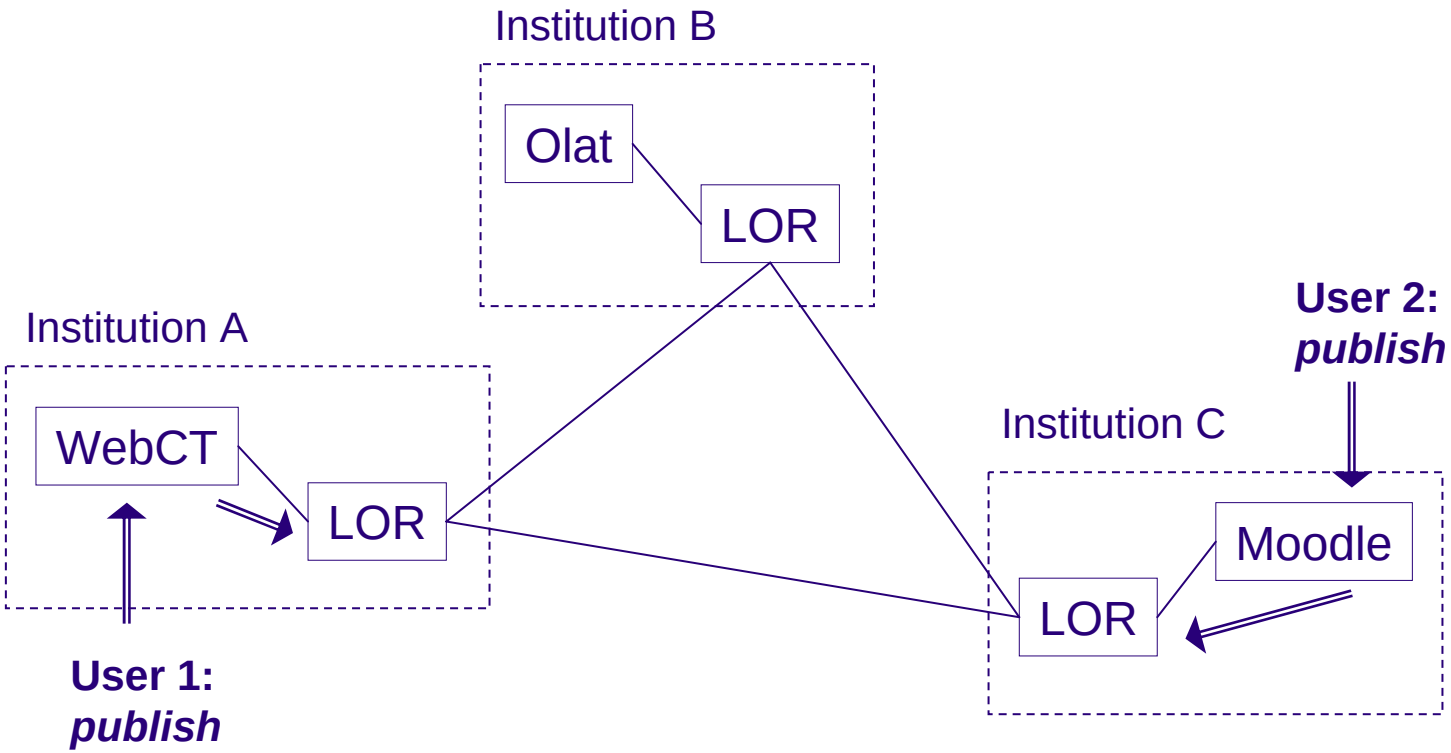
Cons

- not specific e-learning systems
- metadata model Dublin Core
- difficult to implement hierarchical organization at item level
- standard submission workflows too complex
- long-term funding not guaranteed

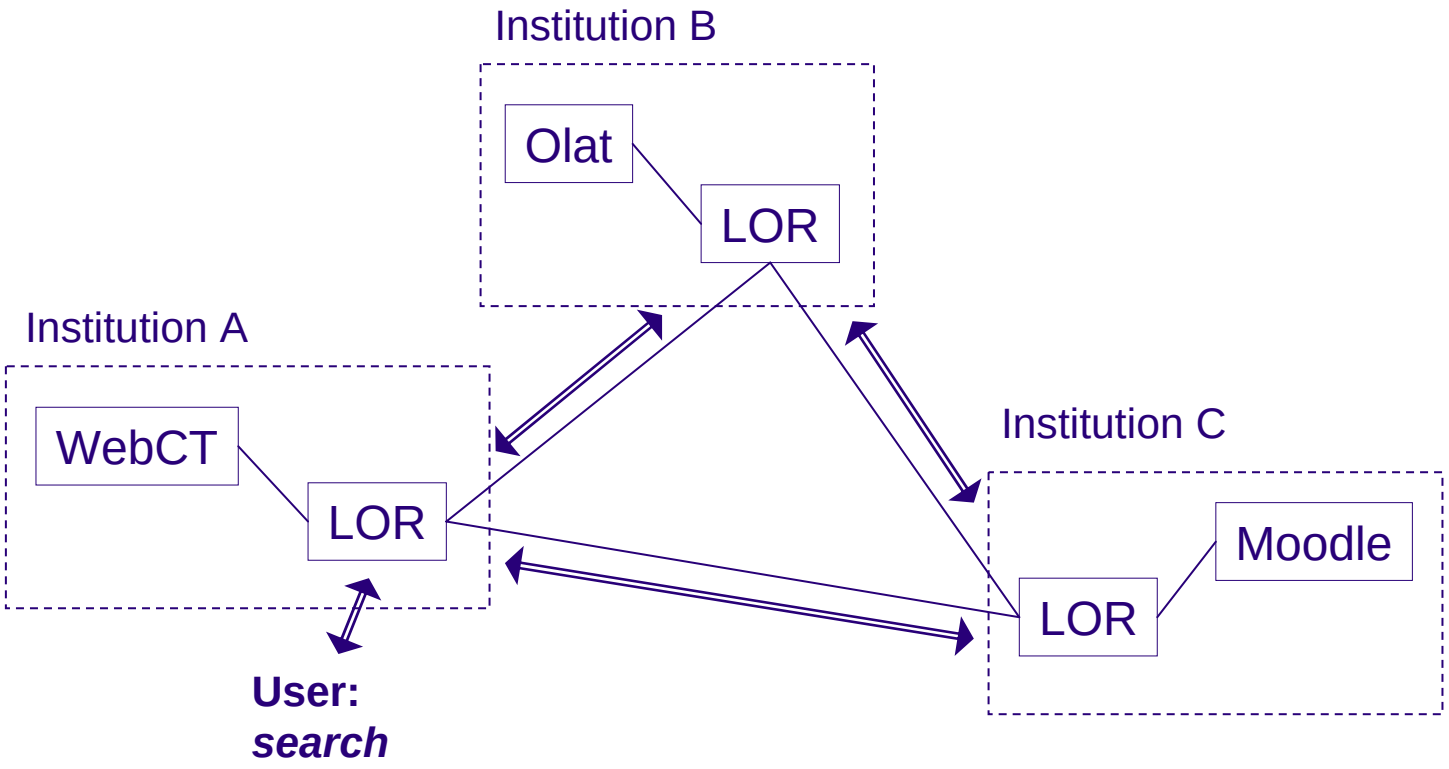
Federated system



Federated system: Publish



Federated system: Search



Scenarios and Benefits of a LOR

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- Personal content management: Lecturers can use their content in different LMS (i.e. as visiting lecturer) and lower migration cost in case of changes
- Corporate content management: Projects or working groups can share common resources and deploy them in different LMS
- Distributed working groups can collaborate and build contents for common courses

Scenarios and Benefits of a LOR - cont'd

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- Institutions with one ore more LMS can manage their content independently from the LMS used now
- Inter-institutional degrees (e.g. Master degrees at UAS, small institutes at universities) can use a common content platform with the LMS provided by the institutions
- National and international synergies: The exchange of learning material is being supported

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LOR Selection Criteria

Rolf Brugger

Selection Criteria as Defined by Working Groups

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- Ease of use
  - Publish: one-click export to repository
  - Retrieve: full-text search or metadata search
- Metadata
  - Simple metadata model (low number of mandatory tags)
  - Adaptable model (extensible with optional tags)
- Quality assurance
  - Quality of metadata (editorial department)
  - Quality of content (peer reviews)
- Access rights
  - Authors control access to their contents
  - Control levels: individual (private), group, institution, world (public)
  - Authentication by AAI
- Federated architecture:
  - Possibility to run institutional repository that is part of a federation

New Selection Criteria Found During Prototype Development

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- User interface
  - Adaptable: simple interface with few functions, complex interface for advanced users
  - Support for multiple languages: en, fr, de, it
- Federation
  - International federation: possibility to cooperate with foreign repositories
  - LOR complies with OAI-PMH standard
- Extensible architecture
  - Flexibility to integrate special applications, e.g. manage e-tests, manage x-ray images
  - Content encryption

New Selection Criteria - cont'd

- Browse by multiple views

by Institution:
- Uni Basel
  - Economy
    - Introduction I
    - Introduction II
  - Psychology
  - Life Science
- Uni Bern
- Uni Geneva

by Domain:
- Economy
  - Introduction I
  - Introduction II
  - Ethics
- Psychology
- Life Science

by Format:
- Flash
  - Economy
    - Cash flow
    - Return on Investemnt
    - supply chain mgmt.
  - Psychology
  - Life Science
- PDF
- JPEG

- By language, date, author, …
- Indexable by public search engines

New Selection Criteria - cont'd

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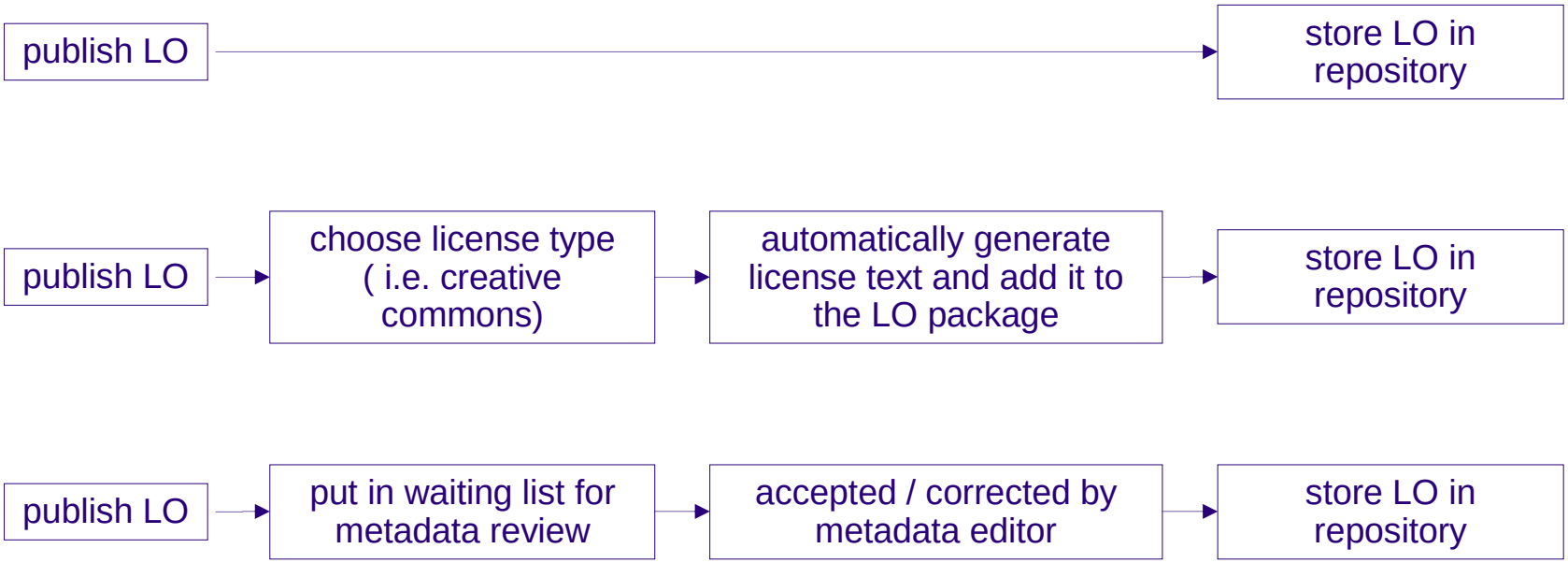
- Adaptable / customizable workflows



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SWITCH‘s Service Model

Martin Sutter

The Vision (2001)

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e-Academia

… a community of students, researchers and lecturers, conveying the free flow of ideas, the exchange of discoveries and the scientific debate into the digital space, is to be translated into reality through the development and provision of a whole range of services.

Overview of “Visible” SWITCH Services

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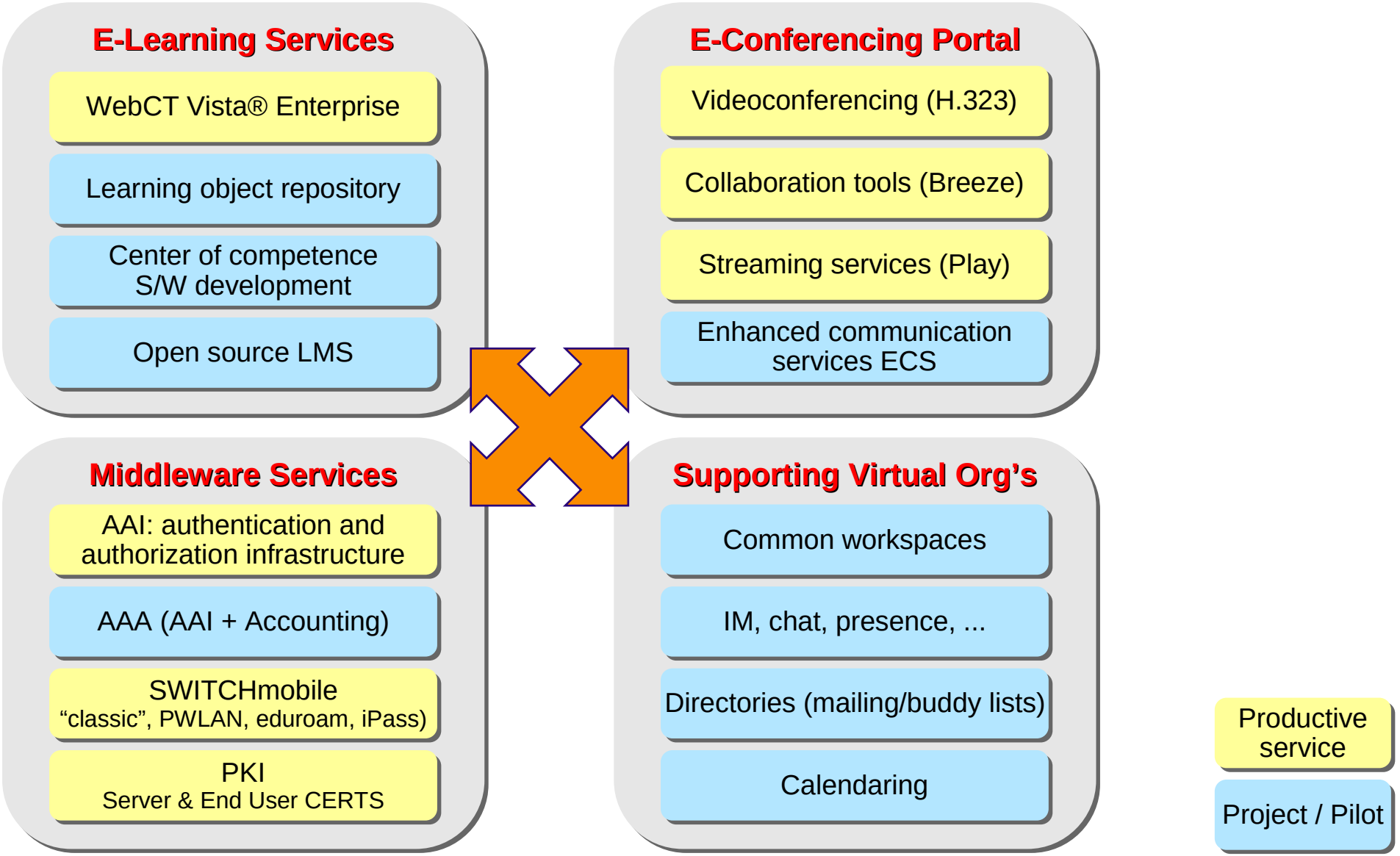

Context of SWITCH ELS

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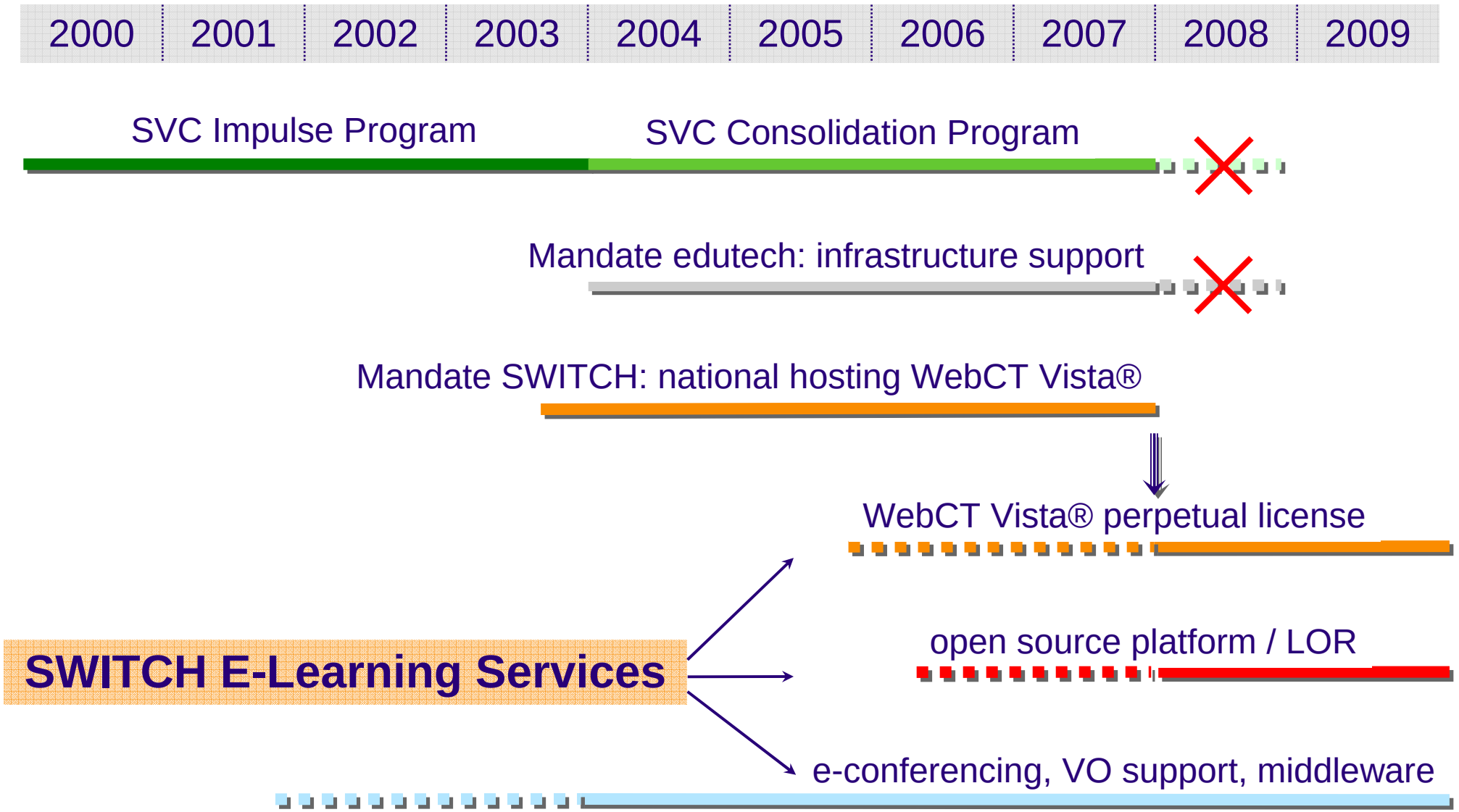
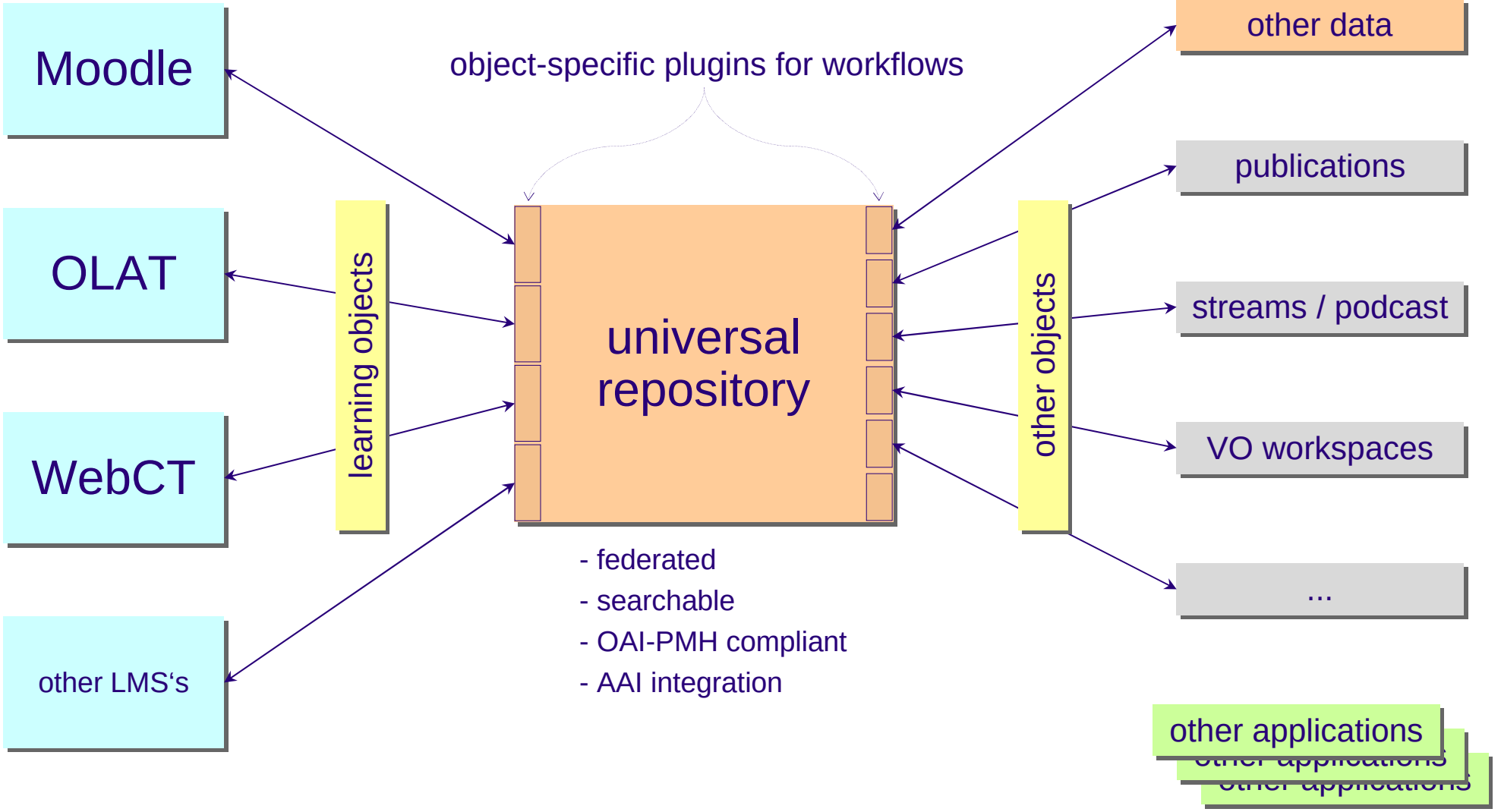


Planned Embedding



SWITCH‘s Service Model

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- Technical services
  - Operation of a national LOR, incl. consulting and support
  - Development support for LMS - LOR integration
- Running the (inter-)national LOR federation
  - Coordination and organization: legal framework, finances, etc.
  - Provision of technical standards (such as OAI-PMH)
  - Integration in the overall e-Academia framework: AAI/AAA, e-conferencing, VO support
- Community services
  - Organization of a yearly „ELS Info Day“
  - Fostering and coordination of working groups
  - Organization or hosting of workshops
  - Maintaining mailing list(s)
  - Other tasks to maintain and develop the “community”: upon demand

ELS “Community”

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- SWITCH’s primordial role: technology and coordination
  - Operating services, central or distributed
  - Coordination of remote services
  - Support and consultancy
  - Defining operating principles and setting standards
  - Dissemination of information
  - Hosting of mailing lists
  - Managing working groups
  - Exploring new technologies
  - Organizing workshops
- SWITCH does not interfere with the core competencies of the participating institutions
- If desired, SWITCH can adopt new tasks to maintain and develop the e-learning community
  - This will have to be a natural evolution emerging from the services offered

Financing

- Original project goal “costs for implementing and providing the national service are estimated and financing is defined” was not reached
- This issue will have to be solved during the pilot phase
- Guiding principle
  - The costs of the project and the pilot phase are covered by SWITCH
  - The operation of the services in the LOR federation, starting in 2008, must be fully financed by the participating organizations
  - There is a chance of subsidies for new developments in the BFI 2008-11 phase, going beyond the goals of the former SVC projects

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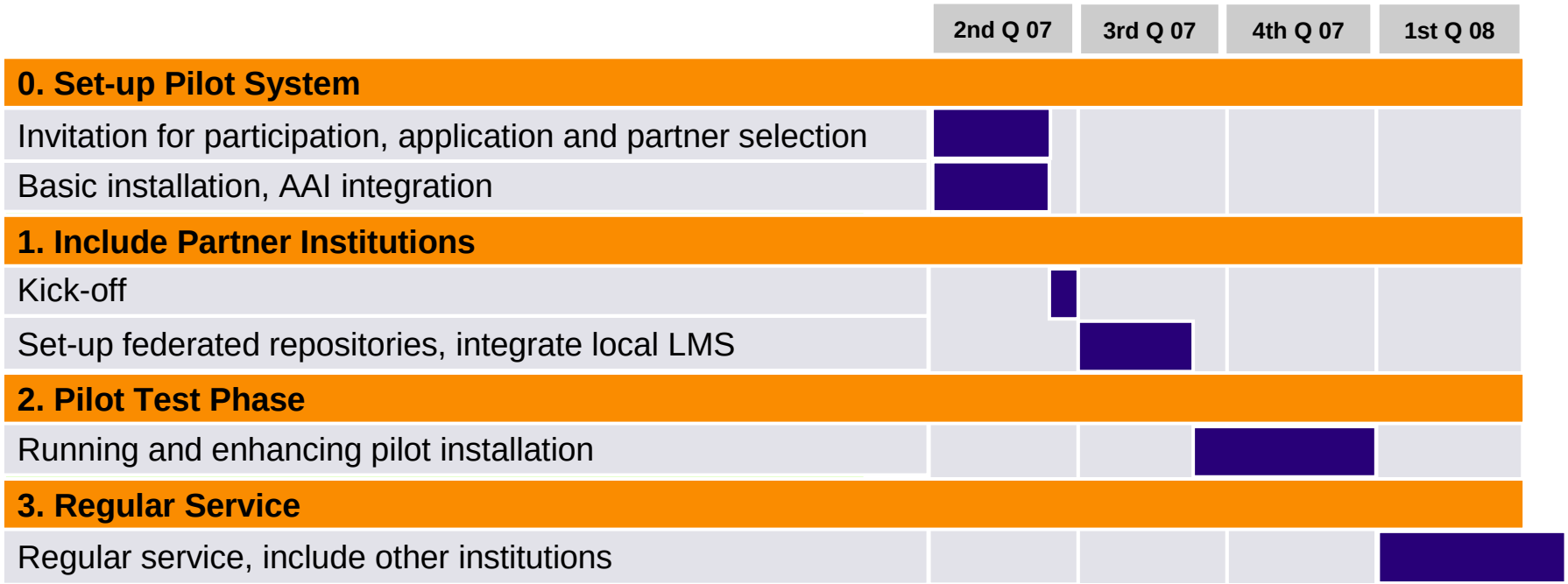
LOR Pilot and Next Steps

Martin Sutter

LOR Pilot: Roadmap



During the pilot phase we will develop the

- Detailed service model
- Legal framework for the LOR federation
- Financial model

Participation in Pilot Project

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- Conditions
  - Pilot partners contribute …
    - working time: ~10%, 3Q07 & 4Q07
    - learning objects: SCORM, HTML, images, quizzes, IMS packages, …
  - Pilot partners operate different LMS → test heterogeneous situation
  - 1 of 3 partners utilizes repository hosted by SWITCH
  - 2 of 3 partners run a local repository as part of a federation
  - Partners from different Swiss regions / languages
  - Participation is free of charge but pilot partners cover their own costs
- Application procedure
  - SWITCH provides application form by end of March 07
  - Application deadline is end of April 07
  - SWITCH selects 3 partners by end of May 07
  - Kick-off planned by mid June 07

Next Steps

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General:

- Workshop participants are asked to help disseminate the information to further interested users in the community!

Project management:

- Terminate the project by end of February 2007
  - Definitive selection of the LOR
  - Issue documentation of the selected solution / architecture
  - Await last feedback from the community

SWITCH:

- Prepare and set up pilot project as shown
- Envisage a first “ELS Infoday” towards the end of 2007

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