Making today’s Learning Management Systems adaptive

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Learning Management Systems

• Software for delivering, tracking and managing training/education.
  – Systems for managing training/educational records
  – Distribution of training over internet and online collaboration.
LMS applications

- Record-keeping automation as well as the registration of employees for classroom and online courses.
- Student self-service (e.g., self-registration on instructor-led training)
- Training workflow (e.g., user notification, manager approval, wait-list management)
- On-line learning (e.g., Computer-Based Training, read & understand)
- On-line assessment, management of Continuous Professional Education (CPE)
- Collaborative learning (e.g., application sharing, discussion threads)
- Training resource management (e.g., instructors, facilities, equipment).
LMS Strengths – Weaknesses

• Strengths
  – Provides a standard of training to anyone
  – Provides records of training made and progresses.
  – Can reach a wide and broad number of people (as online course)
  – It has a low marginal cost to train more people.

• Weaknesses
  – Not customisable (Not tailored for the learners)
  – Static (non adaptive to the progress–made and needs of the learner).
Key Words for a learning environment

Adaptation Adaptation Adaptation Adaptation

Personalization Personalization Personalization Personalization

Strong connection that allows the learner to

Access the most appropriate, interesting and challenging learning activities

Avoid learning material already acquired and then not any more necessary
Adaptive Learning Environments (ALE)

- Personalization and related adaptation are possible through adaptive learning technology:
  - WINDS, an adaptive learning environment integrating an intelligent tutoring system, a computer instruction management system and a set of cooperative tools
  - AHA!, an open source general-purpose adaptive hypermedia system mainly used in education domain (adaptive guiding, link annotation, link hiding and adaptive presentation)
  - InterBook, tool for authoring and delivering adaptive electronic textbooks on the World Wide Web
  - APeLs, a multi-model metadata driven adaptive hypermedia system that manages narrative, content and learner into different models.
Adaptive Learning Environment & existing LMSs

Manage user
Manage enrollments into courses
Administrative workflow management
Delivery of learning materials
Assessment and evaluations
Portfolio management

Service oriented framework

Single Sign On facility (SSO)
Providing communication channels
User modeling facilities
User Profile exchange facilities

Adaptation of page content on User Profile
- pre-knowledge
- prerequisites
- preferences

Adaptation of page content on device
Adaptation of testing tools
Collaborative filtering of resources
Adaptive guidance
Adaptive Learning Environment architecture integrated with existing Learning Management Systems.
Integration through the GRAPPELLE Event Bus.

GRAPPELLE EVENT BUS (GEB)

GUMF = GRAPPELLE User Model Framework
GALE = GRAPPELLE Adaptive Learning Engine
GAT = GRAPPELLE Authoring Tool
Shibboleth (Single Sign On)
Conclusions

• The existing LMSs are not able to provide to the final students learning activities tailored to their needs

• In GRAPPLLe we have proceeded to satisfy this issue by involving
  – an engine able to deploy adaptive courses,
  – a user model framework able to provide the proper user data and
  – an authoring tool that allows creating courses

• Wednesday 30th September, Tutorial 1: Creating and Delivering Adaptive Course Material through GRAPPLLe.