Components for an extensible Enterprise e-Learning Environment.
Success by Modularity.

Gerald Eichler
T-Systems, Technologiezentrum Darmstadt
Service-Line Systems Integration

Outline.

Introduction and motivation
Planning and conception
Components
Systems and platforms
Conclusions
e-Learning in innovative enterprises.
From the subject to a modular solution.

Granularity allows flexibility.

- describes learning by means of latest information and communication technologies
- is based on methodical and didactical applied teaching and learning concepts
- applies multi-medial training materials

Components for an e-Learning Environment
Gerald Eichler, Technologiezentrum Darmstadt
ETD, May 21-24, 2003, slide 3

---

Active learning beats perceptual methods for successful recapitulation.

How do we learn?
- object oriented learning ⇒ knowledge
- method oriented learning ⇒ ability
- process oriented learning ⇒ proficiency

Components for an e-Learning Environment
Gerald Eichler, Technologiezentrum Darmstadt
ETD, May 21-24, 2003, slide 4
**e-Learning by T-Systems.**
One face to the customer.

**Modular process building blocks**

- **Plan**
  - request for need analysis
  - conception
  - tool-expertise consulting

- **Build**
  - integration solution portal
  - system platform
  - dedicated systems
  - network platform

- **Run**
  - pilots, migration system-hosting
  - content creation
  - course management
  - support, hotline

---

**e-Learning planning and conception.**
Multiple criteria.

**Structured analysis and planning of the entire learning environment.**

**Common view**
Conceptual design by different experts

<table>
<thead>
<tr>
<th>Organisation of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
</tr>
<tr>
<td>Methodology</td>
</tr>
<tr>
<td>Organisation</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
</tbody>
</table>

- **Content**
  - subject
  - amount of content
  - learning requirements
  - qualification

- **Methodology**
  - learning control
  - didactics of media
  - interactivity
  - individualisation
  - need for repetition
  - need for continuation

- **Organisation**
  - location
  - time, schedule
  - number of trainees
  - equipment
  - accessibility
  - pre/post processing

- **Assessment**
  - evaluation
  - result checking
  - quality management
  - certification

---

**What?**
**How?**
**When?**
**Success?**
**Modular planning of presence and remote events**

Useful mixture of presence and telelearning components provides a high grade of independence and individuality.

**Modular course chain**

- Lecture or workshop
- Post processing within the team
- Self study by means of Intranet or home office
- Post processing with the trainer
- Tele-teaching

---

**Learning alternatives**

Support of individual learning strategies by different methods and media.

Choice between different learning methods

Stepwise individual selection of appropriate learning methods

- step 1: script
- step 2: film
- step 3: seminar
- step 4: practical work/test
- step 5: script

---

Gerald Eichler, T-Systems
e-Learning planning and conception.
Virtual learning path.

- Definition of an individual schedule following actual needs and pre-knowledge.
- Based on small indexed learning modules
- Static or dynamic chain through hierarchical topic clusters
- Sub-path selection of a predefined knowledge network
- Creation of new learning modules.

---

E-Learning planning and conception.
The future of electronic teaching and learning.

<table>
<thead>
<tr>
<th>Trends</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• coverage of e-Learning and electronic publishing</td>
<td>• meta-index using selected subsets of standardised attributes (LOM, SCORM) and predefined attributes</td>
</tr>
<tr>
<td>• combination of e-Learning and knowledge management</td>
<td>• choice of intuitive and easy to handle authoring tools</td>
</tr>
<tr>
<td>• adaptive process oriented knowledge libraries</td>
<td>• support of module based annotation and feedback tools</td>
</tr>
<tr>
<td>• traditional trainers move to moderators</td>
<td>• new document quality criteria are required</td>
</tr>
</tbody>
</table>

Trainee becomes trainer and vice versa.
Components for an e-Learning Environment

---

### e-Learning components

Modular set of systems and tools.

- Learning Management
- Knowledge Management
- Communication
- Document Management
- Virtual Classroom
- Evaluation
- CBT/WBT

---

### e-Learning systems and platforms

Multiple views.

- **View of trainee/trainer:** courses, schedule, ...
- **View of administrator:** system & user management, ...
- **View of developer/integrator:** set of single systems
- **View of network manager:** hardware, services, ...

---

Clearly defined interfaces to support interaction of single systems under the roof of a common look and feel.

---

Components for an e-Learning Environment
Gerald Eichler, Technologiezentrum Darmstadt
ETD, May 21-24, 2003, slide 11

---

Components for an e-Learning Environment
Gerald Eichler, Technologiezentrum Darmstadt
ETD, May 21-24, 2003, slide 12
**e-Learning systems and platforms.**

**User portal.**

- Personalised and intuitive look & feel increase user acceptance.

**Characterisation:**
- Central and configurable user entry point

**Advantages:**
- Web-based portal access
- Intuitive handling
- No software installation
- User groups & mandates
- Personalisation
- Integration of additional information services
- Self-registration
- Corporate design

---

**e-Learning systems and platforms.**

**Systems platform.**

- Optimisation of hard- and software, one-stop configuration and maintenance.
- Coming next: ASP solutions

**Characterisation:**
- Customer specific system solution for integration and administration of all system components

**Advantages:**
- Modular configuration
- New systems on-demand
- Single sign-on (login)
- Simple consistent user administration
- Data consistency between systems
- Database reusability
- Reliable security concept
e-Learning systems and platforms.
Network platform.

Characterisation:
- common IP-based network infrastructure for all systems

Advantages:
- minimisation of administration overhead
- integration of multiple access networks (VPN, DSL, ISDN, modem) and different customer premises equipment
- modular extension on demand
- common IT service and security concept

Adapted network access for different equipment from multiple locations.

---

Flexible and secure system access from both, Intra- and Internet.

Characterisation:
- secure access by Intranet- and Internet users to common system components

Advantages:
- each system instance only once in a "demilitarised zone" (DMZ)
- no cross access from Internet into Intranet and vice versa

---
**Conclusion.**
Multi-dimensional modularity.

- Knowledge network
- Synchronous learning units
- Scalable content
- Multimedial presentation
- Learning Modules
- Modularity
- Asynchronous learning units
- Web-based technology
- Systems
- Platform

---

**Conclusion.**
Theses.

- **e-Learning** is an extension of traditional teaching and learning concepts, not a replacement; is part of innovative enterprises.
- **Modularity** supports course consumption, content creation as well as system design and maintenance.
- **ETDs** are looking for more granularity and indexation to be successfully integrated as e-learning content.
- **Single Systems** are selected on demand and are integrated as consistent web-based Portal Solution.
- **Intuitive Use** of tools and **Access** over existing networks (Intra-/Internet) increase user acceptance.

Contact: Gerald.Eichler@t-systems.com

---