dLCMS

dynamic Learning Content Management System

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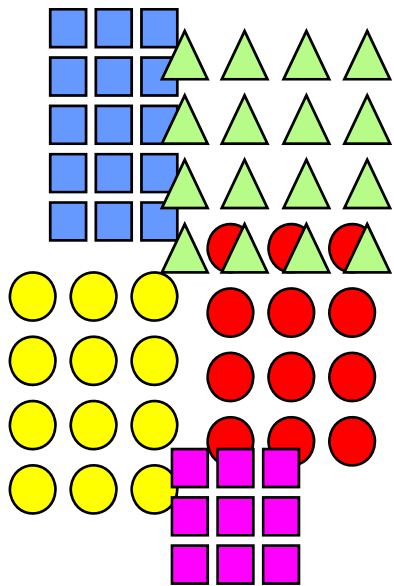*iha* **Institut für Hygiene und Arbeitsphysiologie**

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Contents

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E-Learning Content Today
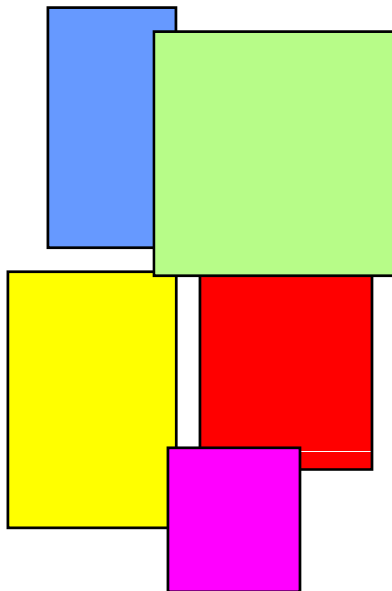
- ✛ Creating e-learning content is costly.

- ✛ Existing electronic courses are seldom reused.

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Learning Objects (LOs)

⊕ Small modular building blocks

⊕ Can flexibly be assembled to larger learning units

⊕ Can be shared among teachers, according to their specific needs

⊕ Reusable, accessible, interoperable, durable

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Standardization

- Learning objects standardization
  - Metadata
  - Packaging
- No established standards for learning content and its structures!

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Learning Objects (1)

epsych - Psychology Department at Mississippi State University
http://epsych.msstate.edu/descriptive/Vision/muller_ly/index.html

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Learning Objects (2)

Read Instructions for using Visual ANOVA
Read an online, printable lecture about One-way ANOVA
Do Computer-graded Online Homework
Do Handwritten Homework with Answer Key

Understanding ANOVA Visually

○ MS Between   ○ MS Within   ○ Instructions

Drag red group icons to change means and create variability between groups

Grand Mean
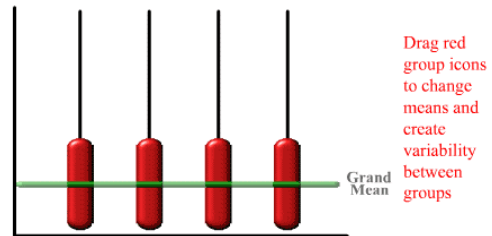
Use buttons to increase or decrease variability within each group

$$F = \frac{\text{Var Between Means}}{\text{Var Within Groups}} = \frac{MS_{Bet}}{MS_{Within}} =$$

0 1 2 3 4 5 6 7 8 9 10

$$F =$$

Visual ANOVA Instructions

Copyright 1998, 2000 Tom Malloy

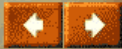Note: These instructions are abstracted from and can be supplemented by the full web lecture on

Tom Malloy

http://www.psych.utah.edu/stat/introstats/anovaflash.htm

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Learning Objects (3)

Robin Rathsack 2004
http://www.wisc-online.com/lrnobj/psycHR/PHR300/index.html

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*d*LCMS Goals

1. Use of small modular learning objects
2. Standardized structuring to separate content and graphical presentation
3. Centralized content management
4. Flexible and easy-to-use assembly of learning objects to larger learning units
5. Flexible graphical layout and design
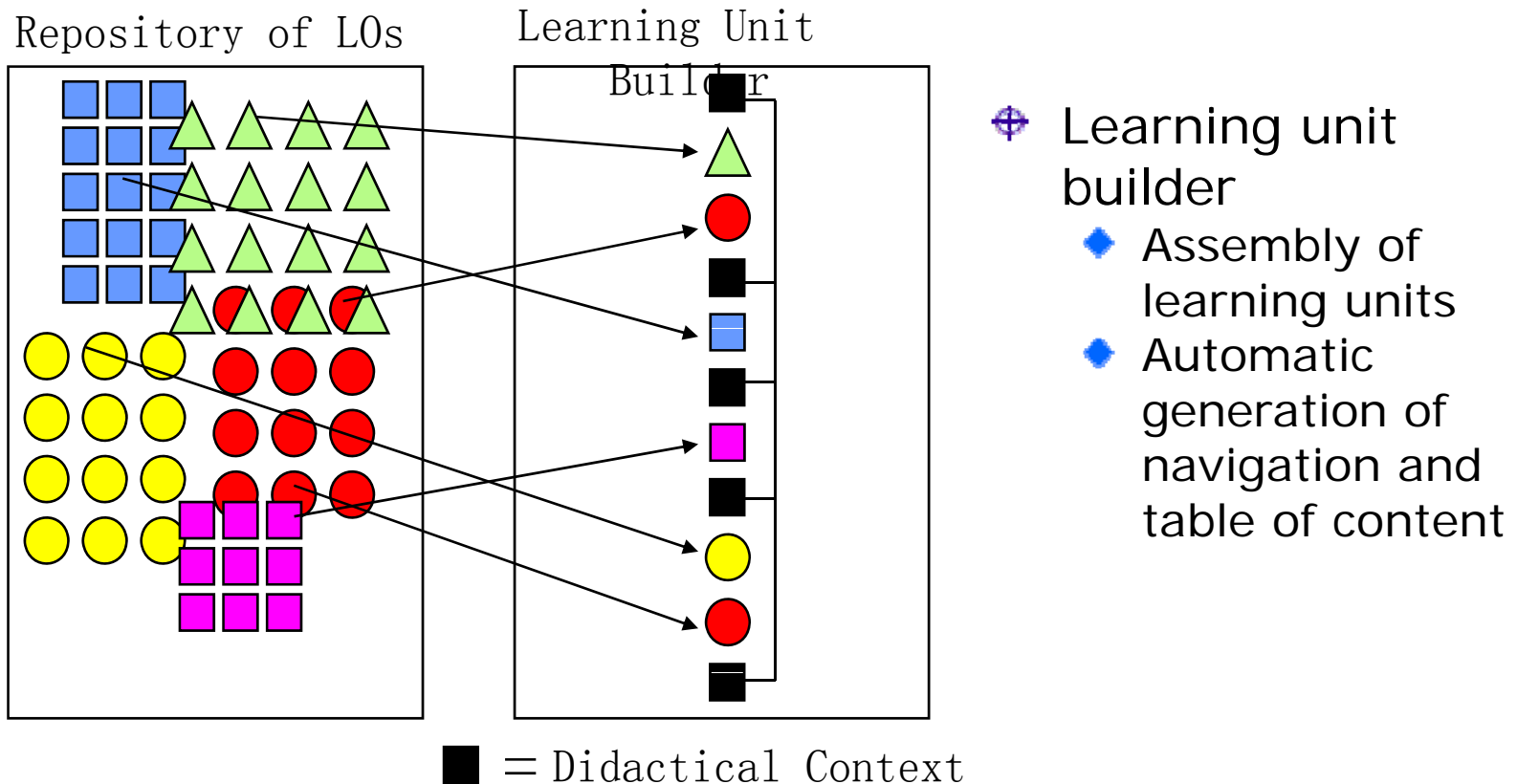6. Future-proof data formats for learning content

*d*LCMS Architecture
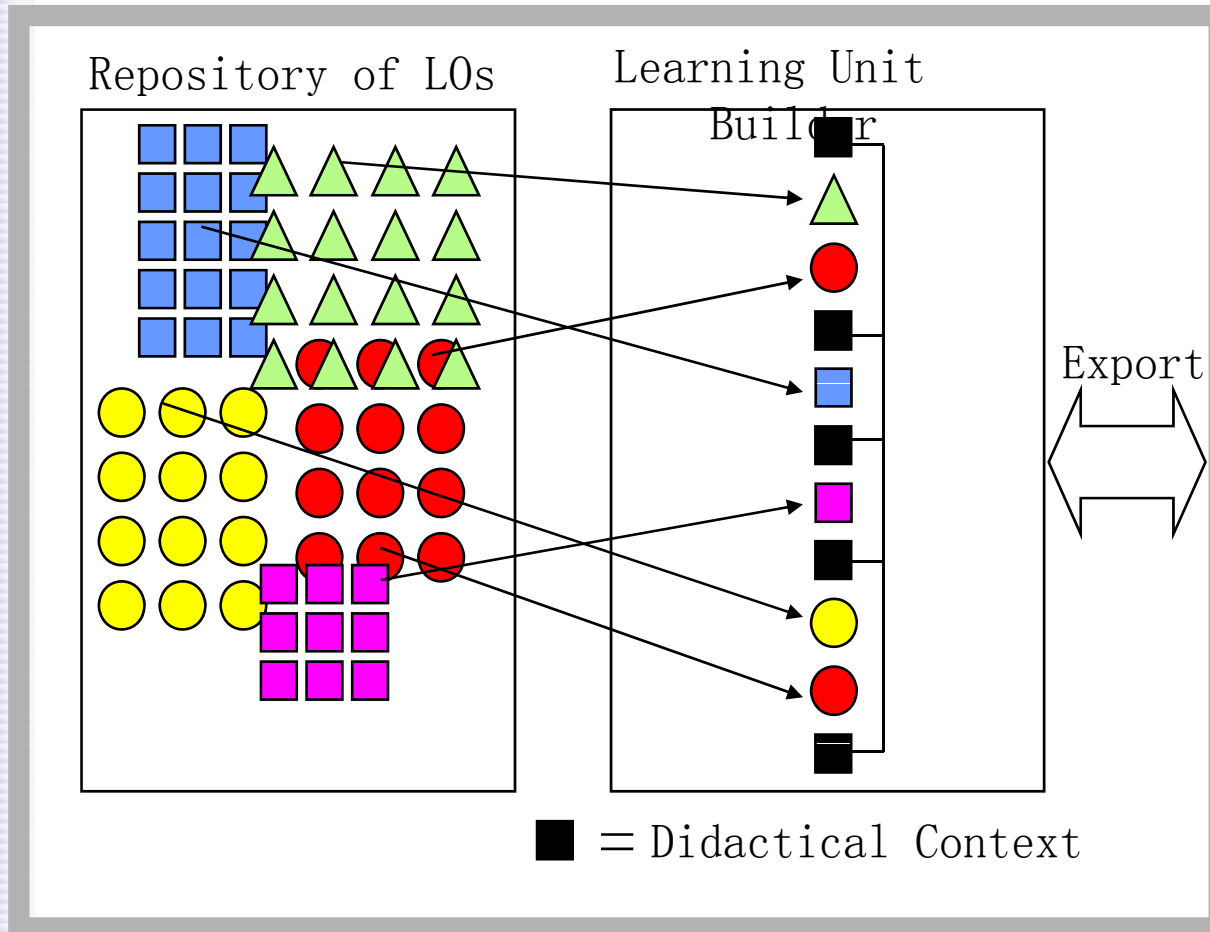
Repository of LOs
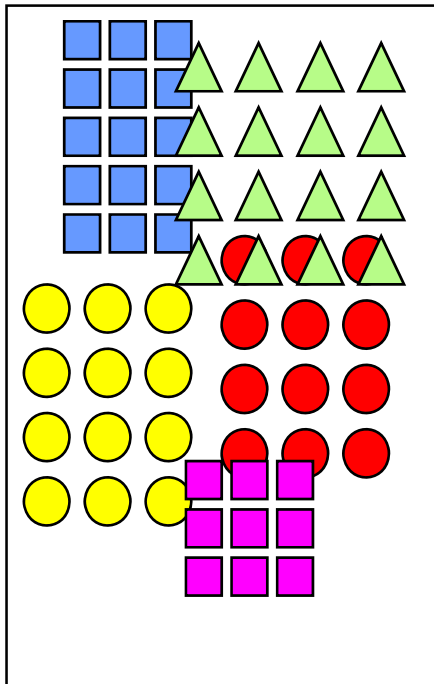
- ⊕ Centralized repository
  - ◆ Collaborative use of learning objects
  - ◆ Flexible retrieval of learning resources

- ⊕ Authoring
  - ◆ Easy to use online editor for XML-based content
  - ◆ No programming skills needed

*d*LCMS Architecture

Repository of LOs

Learning Unit Builder

■ = Didactical Context

- ✛ Learning unit builder
  - ◆ Assembly of learning units
  - ◆ Automatic generation of navigation and table of content

dLCMS Architecture

Repository of LOs

Learning Unit Builder

Export

■ = Didactical Context

- Learning Units are *published* as:
  - Web
  - LMS online courses (SCORM)
  - Paper-based lecture notes (PDF)
- Coherent layout and styling with templates

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*d*LCMS Implementation

- No existing LCMS accesible
- Development based on the Silva/Zope open-source CMS
- Implementation as an Silva extension product
- Prototype:
  - Online editor
  - Centralized repository
  - Learning unit builder
  - Flexible layout and graphical designs through style templates
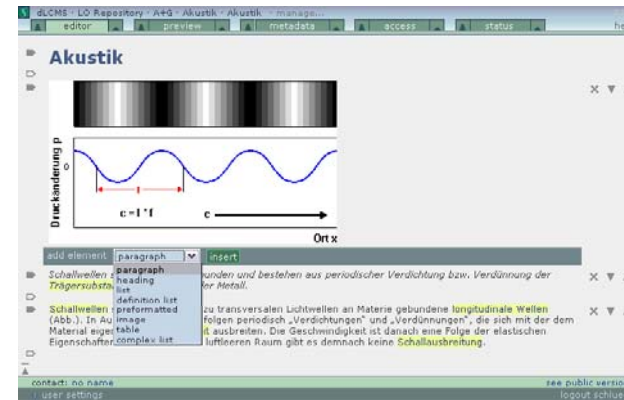 - Export function as static web-site

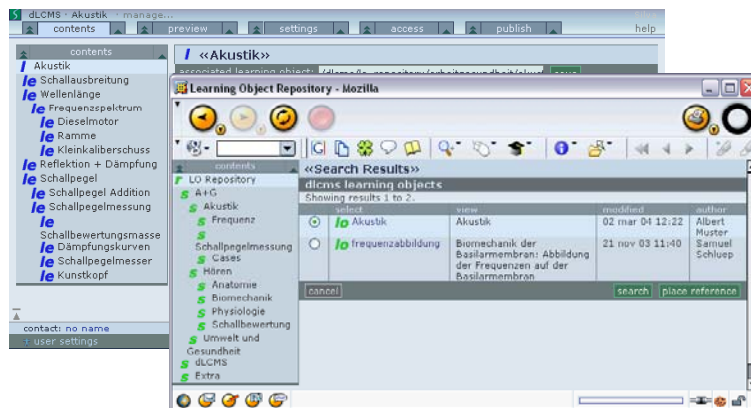*iha* **Institut für Hygiene und Arbeitsphysiologie**

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Demo

XML-based content structuring

Online-editor

Learning unit builder
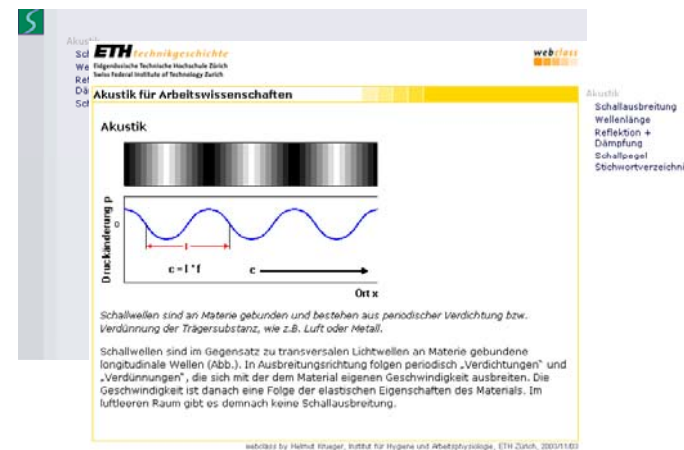
Flexible graphical Design

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Conclusions

- *dLCMS* offers small modular building blocks and XML-based structured content
- Authors can concentrate on content instead of programming languages
- Flexible layout and graphical designs through style templates

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Thank you for your attention

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