

# E-Learning Standards

## Critical and Practical Perspectives

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# Agenda

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  - The standards “madness”
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# Motivation

- **E-Learning** as viable alternative to traditional face-to-face teaching methodologies
  - breaks limitation in *space* and *time* [Yu and Fan [2009]]
- **write-once-use-often** approach
  - encapsulated, reusable **Learning Objects** (LO)
  - described with **Metadata**
  - accessible via **Learning Management Systems** (LMS)
  - inter-operable through **E-Learning Standards**

# E-Learning Standards “madness”

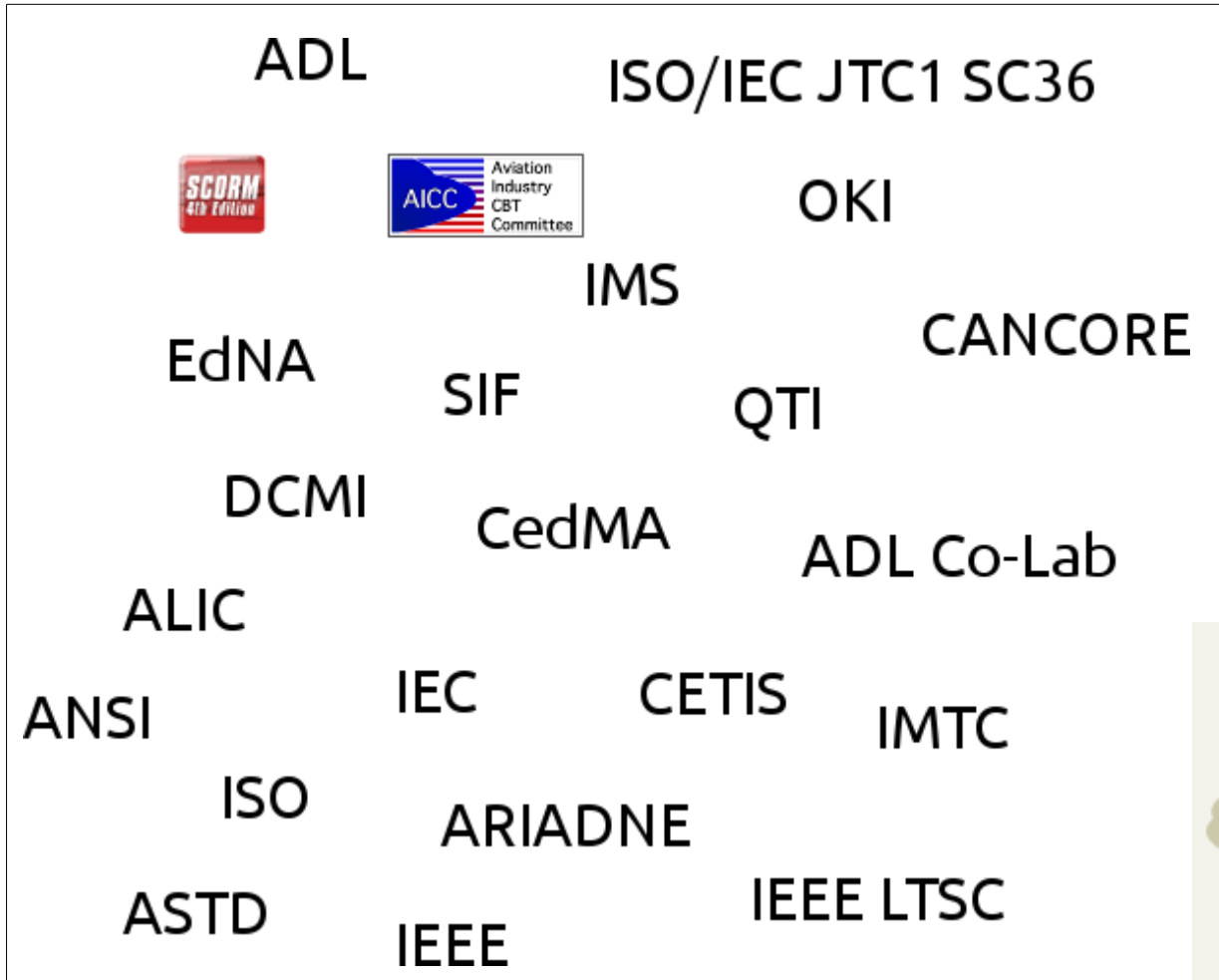


Figure 1: Selection of E-Learning Standards and Bodies

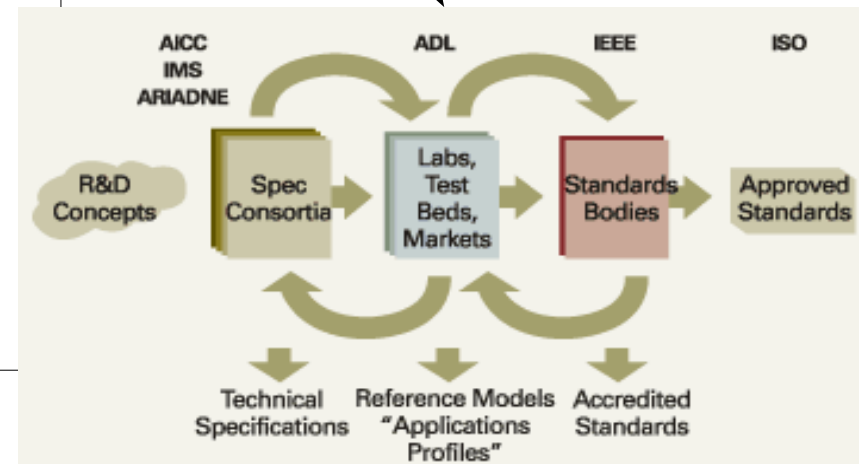


Figure 2: Collab. Dev. Model for Formal Learning Standards [Naidu [2006]]

# SCORM

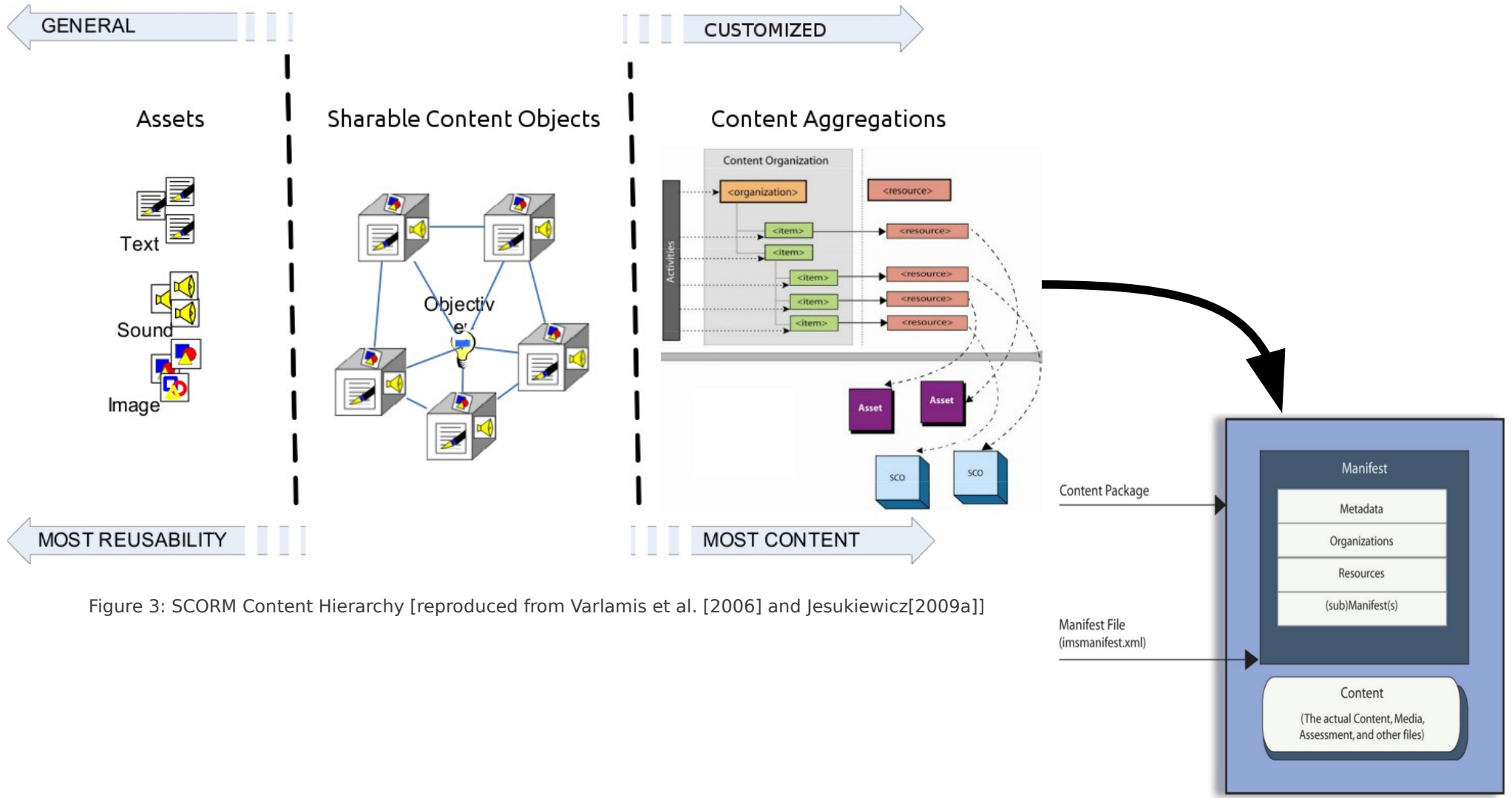


Figure 3: SCORM Content Hierarchy [reproduced from Varlamis et al. [2006] and Jesukiewicz[2009a]]

Figure 4: SCORM Content Package [Jesukiewicz [2009a]]

# E-Learning Standards - **Problems**

- **complexity**
  - very high **abstraction layer**
  - forced to implement **entire specification** (SCORM ~1000 pages)
- technological vs. **pedagogical aspect** of learning
  - learning is not a tidy, mechanical process [Marshall 2004]
  - **heterogeneous nature of education** [Cressman 2005]
- still “only” **de-facto standards**
  - room for interpretation → numerous **proprietary ports** emerged
- **cost-benefit ratio**
  - feasible for less intricate projects?

# EduPunk

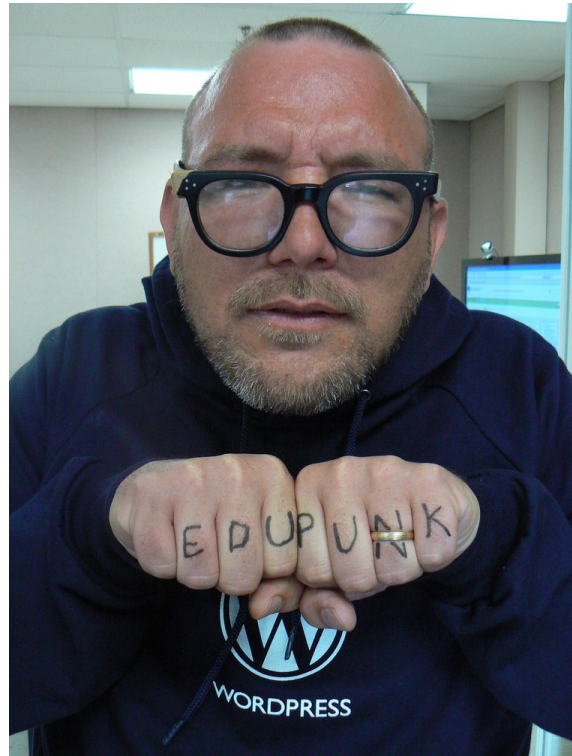


Figure 5: Jim Groom as founder of EduPunk [Groom [2008]]

“Learning does not happen as a by-product of the technology, it is, or rather should be, the **Raison d'être** of the technology.” [Groom 2008a]

“What is BlackBoard doing? Well, they are taking the experiments and innovations of thousands of people and **re-packaging them as their own**, unique contribution to the educational world of Web 2.0.” [Groom 2008a]


# E-learning Platform Wörterwelt

“A proprietary approach with a focus on common Web Standards“

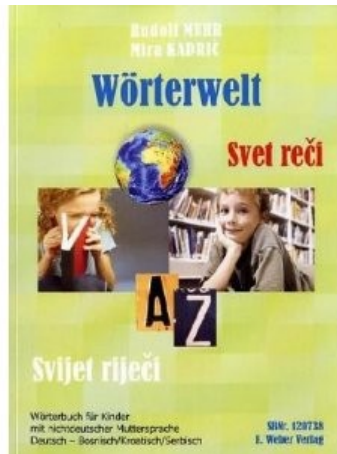
<http://www.woerterwelt.at>



# E-learning Platform **Wörterwelt**

- cooperation between
  - FÖDt (Prof. Muhr) – *linguist* tasks 
  - IICM (Prof. Helic) – *technical* implementation

- **2 main objectives:**



enrich existing language corpus with additional translation languages & define syntax rules

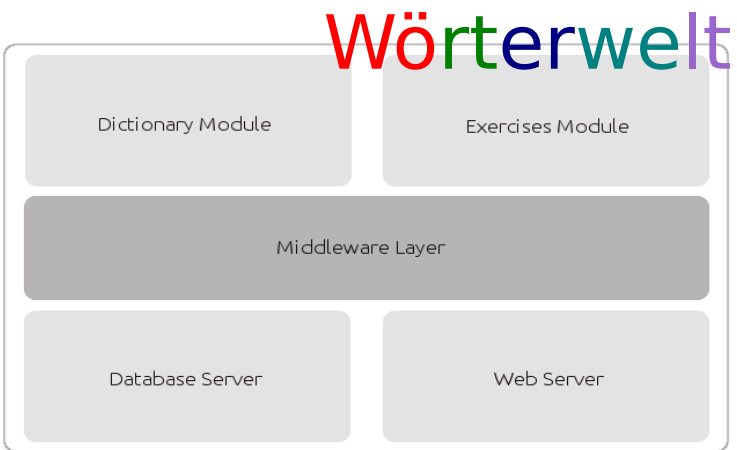
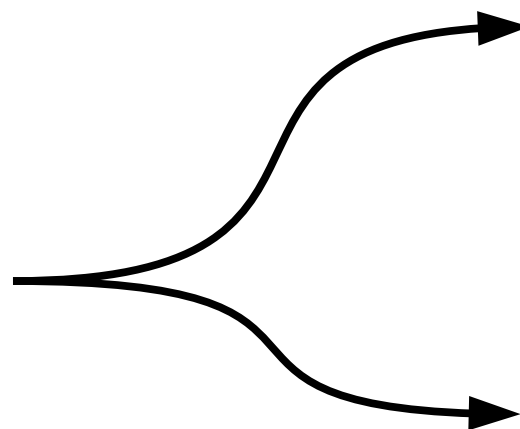
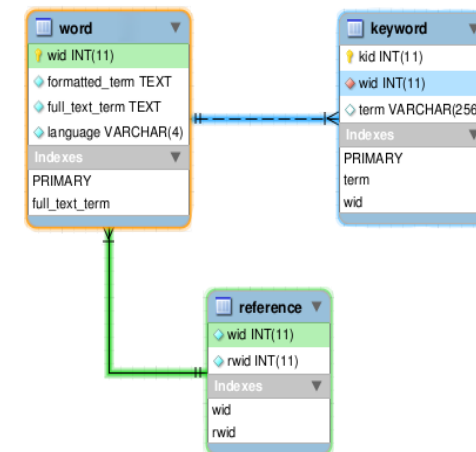


Figure 6: Wörterwelt [Muhr and Kadric [2005]]

# Dictionary Module

- based on **ZK Java Framework**
  - client-server architecture
    - **server-centric**
    - classic **3 tiers**
- 3 main functional components
  - language selection
  - auto-completing search box (*widget*)
  - dynamic grid (*widget*)
- client-server synchronization through ZK's **Direct Push**
  - 1:1 mapping *widgets* ↔ *components*




# Exercises Module

- based on **PHP** and **Dojo JavaScript Toolkit**
  - server-side **exercise repository**
    - accessible through **proprietary Metadata**
  - client-side **business logic**
- 3 main functional components
  - language selection
  - linguistic area selection
  - LP or exercise selection → start course
- client-server synchronization through **JSON** messages
  - server-side **session mgmt.** to monitor user's progress

```
1 {  
2   dateiname: "AL-006-0307",  
3   sprache: "a1",  
4   sprachbereich: "Rechtschreibung",  
5   lernbereich: "Rechtschreibung 01: Fehler korrigieren 1",  
6   lernpaket: "LP01: Rechtschreiben 1: Häufige Fehler üben",  
7   lpindex: "1",  
8   lernstufe: "leicht"  
9 }
```


# Testing & Development

- **spike solutions**
  - 4 prototypical configurations for **dictionary** module
  - overall goal: platform independent setup
- **agile** approach
  - rather short release cycles (8 releases in ~3 months)
  - **TDD** for grid's model: *JUnit*
  - handcrafted test classes
  - monkey testing for presentation layer 

# Usability

- **Usability Test** - an “*informal*” Formal experiment
  - 20 (representative) test participants
  - between-groups design: **GYORB** → linguistic proficiency
  - 10 tasks → no time limit, objective **success rates**
  - feedback questionnaire → subjective **satisfaction ratings**
  - final interview → “How was it?...”
- **Results**
  - **100% success rate**, BUT
    - subj. data indicated need for **further feedback facilities**
    - updated requirements and application

# Results

- all requirements fulfilled → **fully functional**
- usability issues detected and corrected in new release
- 2 additional **tools** for linguistic data mgmt.
  - TextTools (C++), ALEXIK HTE (PHP)
- **Wörterwelt** runs 24/7 at FÖDt
  - <http://www.woerterwelt.at>
- based on exercises module:
  - **follow-up project** *Sprichwort-Plattform* 
  - template based abstraction layer
  - <http://www.sprichwort-plattform.org>



# E-learning Platform Wörterwelt

## Live Demo

## Conclusion

- LMS **feasible** without blindly adhering to standards
- primary focus on
  - common Web standards and practices
  - clean architecture / proprietary Metadata standard
- **more flexible**
  - easily manage exercises
  - **less overhead** when developing learning material
- concept has proven valuable
  - *Sprichwort-Plattform* as follow-up project



## A take-away message

“SCORM is a great standard but it **only gets us 90%** of the way down the road to true interoperability. Even amongst products that are ADL certified there are a number of **different implementations**, interpretations and design decisions – all of which have a **significant impact on interoperability**.

Interoperability issues **will arise**, even in the best SCORM implementations. It is not a question of “if” but rather “**when**” and “**how many**”.

[Rustici 2009]

Thank you for your attention!

Questions?

# References

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- **Image of monkey:** <http://tlc.howstuffworks.com/family/how-to-draw-a-monkey.htm>
- **Flag of Canada:** <http://holger-goes-canada.blogspot.com/>