

# Benefits of XML LearningObjects

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# Table of contents

- The MiLCA project
- The Current State of Web Based Training
- Structured Content
- The ILIAS DTD
- Benefits
  - Current Benefit - Workflow
  - Future Benefits



# The MiLCA Project

- Teaching Computational Linguistics with Media-Intense Learning Objects
  - Medienintensive Lehrmodule in der Computerlinguistik-Ausbildung
- New Media in Education Funding Programme by the Federal Ministry of Education and Research
  - Bundesministerium für Bildung und Forschung



# The Current State of **Web Based Training**

- WBT platforms have three disadvantages:
  - Non-standard usage of metadata
  - Lack of reuse and import/export capabilities
  - Content often HTML or proprietary data format

**Solution: Use of structured content**



# Structured Content

- Provides information about hierarchical relations between elements
- Strictly separates content and layout
- Markup languages are used to structure content

```
d:\Dokumente und Einstellungen\Maik\Eigene Dateien\MILCA\XMLCVS\milca.xml\1-Grundlagen.xml
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE LearningObject SYSTEM "lo_aktuell.dtd">
3 <LearningObject>
4   <MetaData>
5     <General Identifier="ID01" Structure="Collection" AggregationLevel="3">
6       <Title Language="de">Grundlagen</Title>
7       <CatalogEntry>
8         <Catalog>MilCa</Catalog>
9         <Entry Language="de">A5-1</Entry>
10      </CatalogEntry>
11     <Language>de</Language>
12     <Description Language="de">Diese Lerneinheit befasst sich mit Text und
13       Textsorten</Description>
14     <Keywords Language="de">Text, Textsorten</Keywords>
15     <Coverage Language="de">Gegenstand dieser Lerneinheit ist die Definition
16       von Text, die textlinguistische Arbeit zu Textsorten und die
17       Überleitung vom
18       Text zum Hypertext</Coverage>
19     </General>
20     <Lifecycle Status="Draft">
21     <Version Language="de">0.4</Version>
22     <Contribute Role="Author">
23       <Entity>
24         <vCard>
25           <FN>Maik Stührenberg</FN>
26           <N>
27             <Family>Stührenberg</Family>
28             <Given>Maik</Given>
29           </N>
30           <ORG>
31             <Orgname>Justus-Liebig-Universität Gießen</Orgname>
32             <Orgunit>Angewandte Sprachwissenschaft und
33               Computerlinguistik</Orgunit>
34           </ORG>
35           <ADR TYPE="work">
36             <Street>Otto-Behaghel-Str. 10 D</Street>
37             <Locality>Gießen</Locality>
38             <Pcode>35394</Pcode>
39             <Country>Germany</Country>
40           </ADR>
41           <TEL TYPE="work">0641/99-29056</TEL>
42           <EMAIL TYPE="internet">Maik.Stuehrenberg@Uni-Giessen.de</EMAIL>
43         </vCard> </Entity>
44       </Contribute>
45     </Version>
46   </LearningObject>
47 </XML>
```



# XML – eXtensible Markup Language

- Metalanguage
- Designed to define markup languages for structuring data
- World Wide Web Consortium (W3C) Standard
- Based on ISO Standard SGML
- License free, platform-independent and well-supported



# DTD – Document Type Definition

- Grammar to describe markup language syntax
  - Elements
  - Attributes
- List of elements and attributes available
- Ensures structural validity
- Formalization of the idea of an document type



# The ILIAS DTD

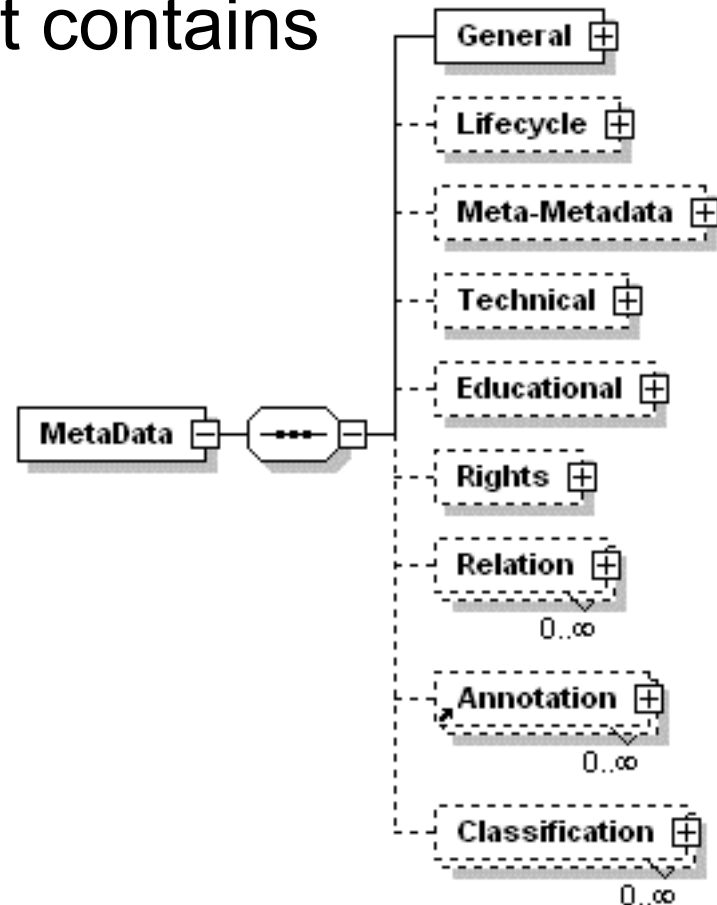
- Based on the MiLCA DTD
- Metadata concepts based on Learning Object Metadata Standard (LOM) WD 6.1
- IEEE Learning Technology Standards Committee
- Content element adapted to the needs of ILIAS





- The **MetaData** element contains information about

- title
- author
- structure
- languages used
- size
- technical requirements
- educational use
- taxonomy
- classification
- copyright
- ...





## Current Benefit – Workflow

- XML documents can be easily transformed into several output formats with the help of XSLT
- eXtensible Stylesheet Language Transformation
  - Open W3C standard
  - XML syntax
  - License free, platform-independent and well-supported

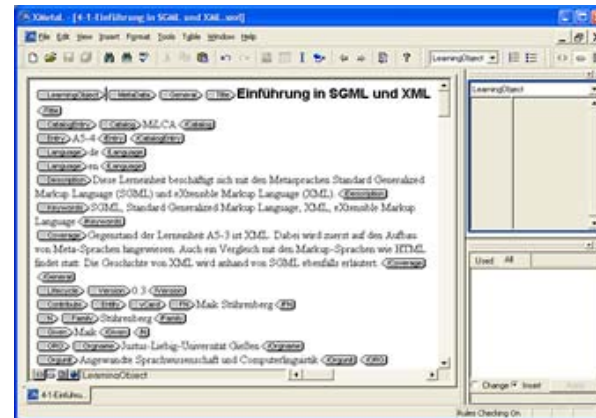
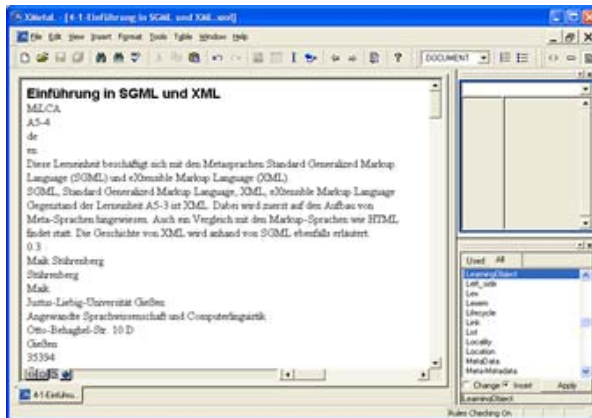
## Single-Source-Publishing





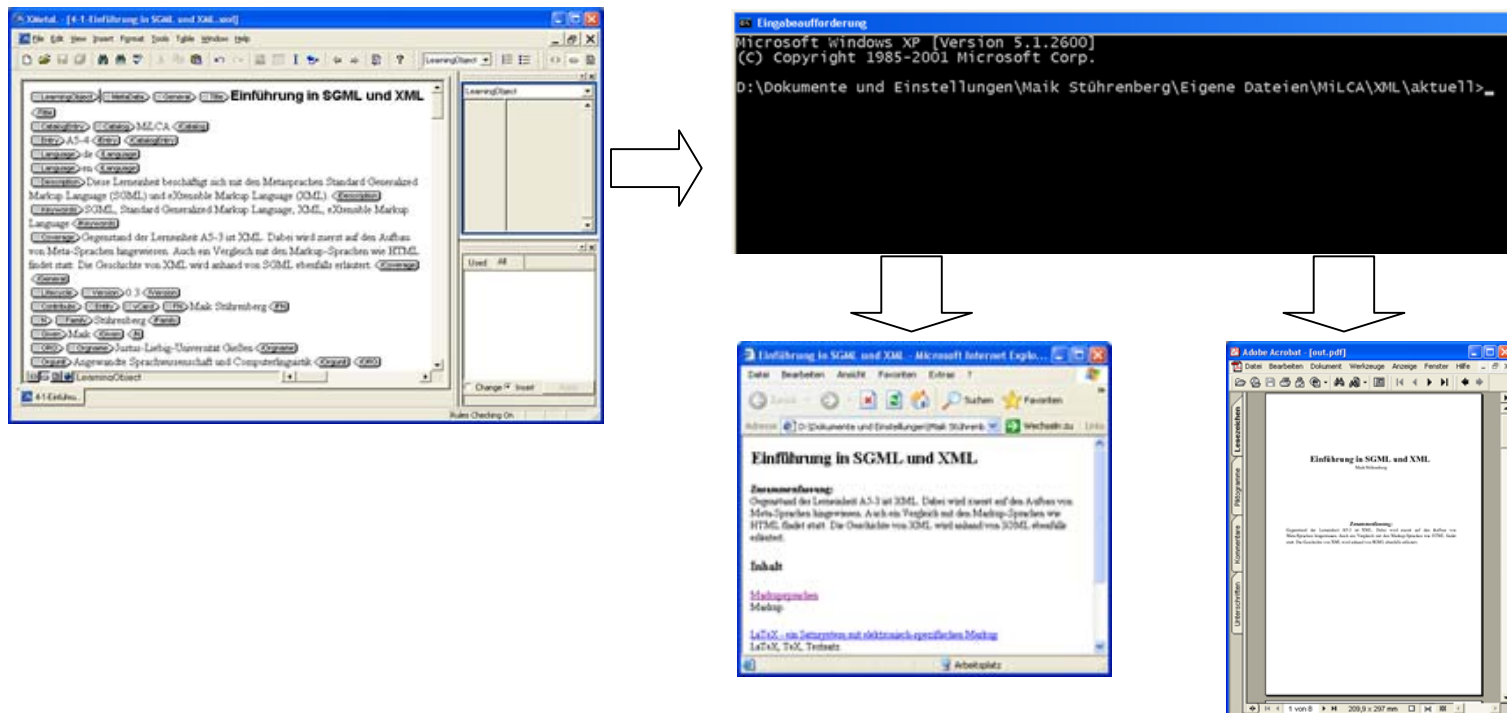
# Current Benefit – Workflow

- Revision and Metadata information



# Current Benefit – Workflow

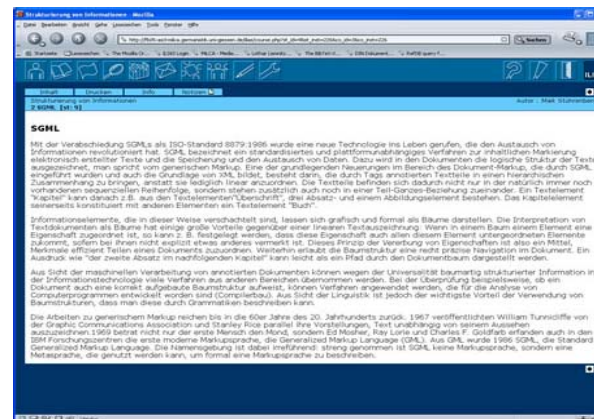
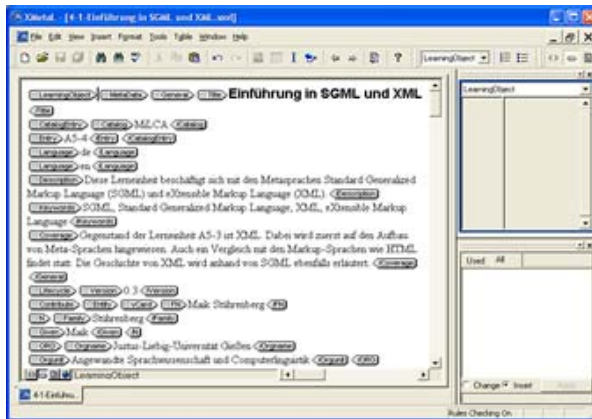
- The XML document is parsed and transformed into its output format (e.g. (X)HTML and PDF)





# Future Benefits

- The LearningObject can be imported into ILIAS





# Future Benefits

- Addition of educationally motivated metadata
  - Support of a plurality of didactic scenarios
  - LearningObjects will be able to adapt to the learner's way of learning
  - Learning model more user-centred





**Thank you!**

