

Metadata Editing and Validation for a Digital Mathematics Library

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The Metadata Editor

- A tool developed for the Czech Digital Mathematics Library (DML-CZ) project.
 - A client–server web application.
 - Designed to
 - manage,
 - edit,
 - and validateeach article's metadata and full texts prior to their integration into the digital library.
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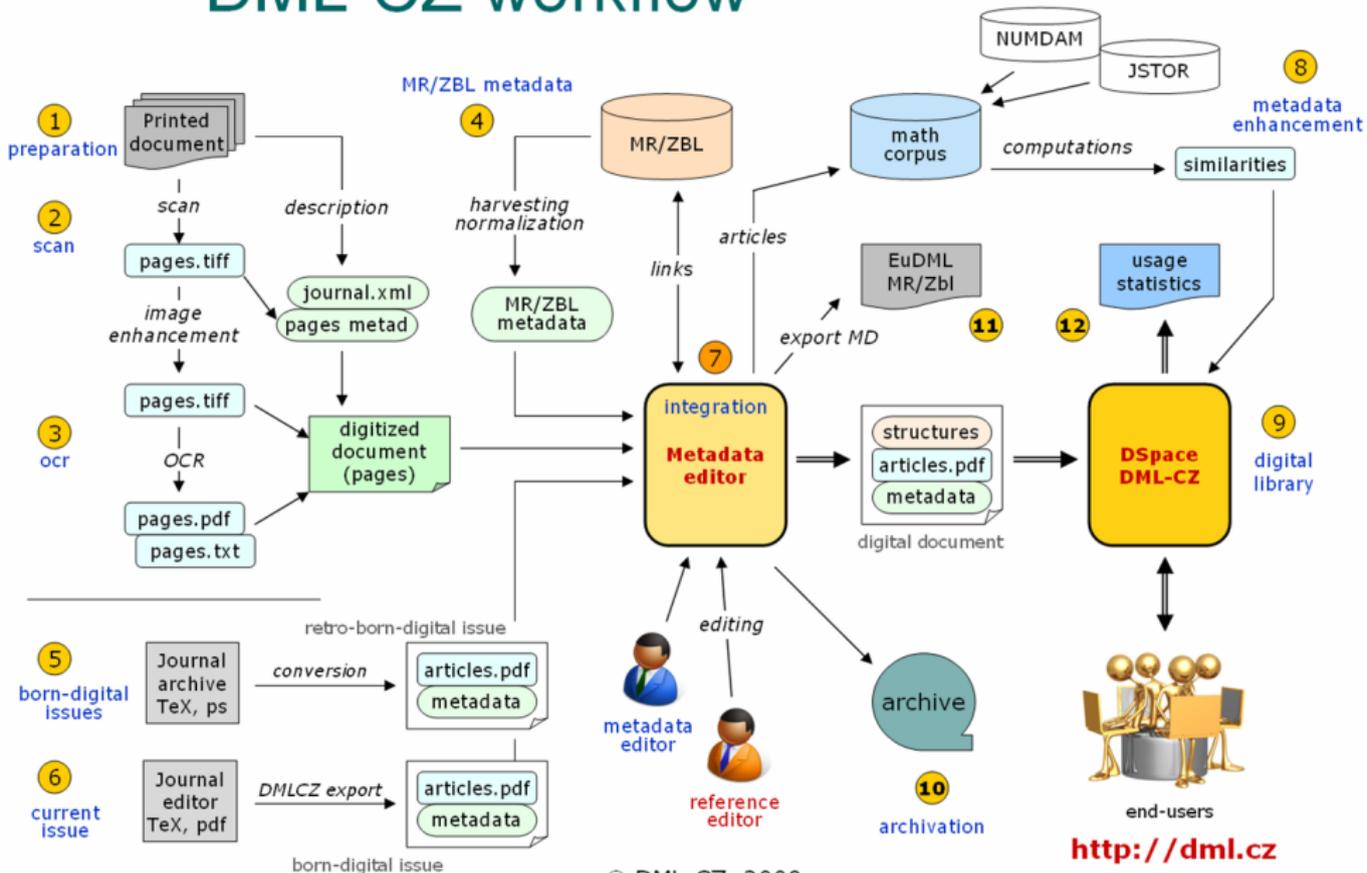
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DML-CZ workflow



The Metadata Editor (cont.)

The Metadata Editor workflow is as follows:

- input data loading,
- articles building,
- metadata editing,
- references processing,
- verification,
- pdf-compilation,
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DML-CZ: Metadata editor (serial)

DML-CZ / CZECHOSLOVAK MATHEMATICAL JOURNAL / Volume 04 / Issue 3 /

<input type="checkbox"/> (#1) Über zwei neue ebene Konfigurationen $\$(12_4, 16_3)\$$ (4-29)	193-218
<input type="checkbox"/> (#2) The theory of characters of finite commutative semigroups (30-58)	219-247
<input type="checkbox"/> (#3) System of congruence relations on lattices (59-93)	248-282
<input type="checkbox"/> (#4) Sur les espaces à connexion affine partiellement projectifs (94-101)	283-(290)
<input type="checkbox"/> (#5) Characters of commutative semigroups as class functions (102-103)	(291)-(292)

Delete Articles

Change Ranges

Save Contents

(193a) [2]



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(193b) [3]



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Move Pages

Create Article

(#1) Über zwei neue ebene Konfigurationen $\$(12_4, 16_3)\$$ **193-218**Obsah

193 [4]  <input type="checkbox"/> edit ocr scan	194 [5]  <input type="checkbox"/> edit ocr scan	195 [6]  <input type="checkbox"/> edit ocr scan	196 [7]  <input type="checkbox"/> edit ocr scan	197 [8]  <input type="checkbox"/> edit ocr scan
198 [9]	199 [10]	200 [11]	201 [12]	202 [13]



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Remove Pages

Move Pages

Create Article

Delete Article

(#10) --- Název článku nebyl zadán ---

149-(154d)

[go Top](#) | [Check](#) : [All](#) : [None](#) : [Invert](#)

[149 \[74\]](#)



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[\(154b\) \[81\]](#)



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[\(154c\) \[82\]](#)



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[\(154d\) \[83\]](#)



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Remove Pages

Move Pages

Create Article

Delete Article

Save contents

On-line Submissions and Validation

- The viability of a digital library rests with new acquisitions emerging mainly in the form of born-digital publications.
- The born-digital inputs to the Metadata Editor come from different sources, primarily from editors of various journals. \Rightarrow There is need for data validation.
- $\text{T}_\text{E}\text{X}$ code have to be correct.
 - The digital library could use the metadata to generate $\text{T}_\text{E}\text{X}$ document.
 - Conversion to MathML.
- The editors themselves need feedback \Rightarrow on-line application.
 - Make it possible to validate metadata during preparation of a new journal issue.
 - Make it possible to submit final version of data to the digital library.

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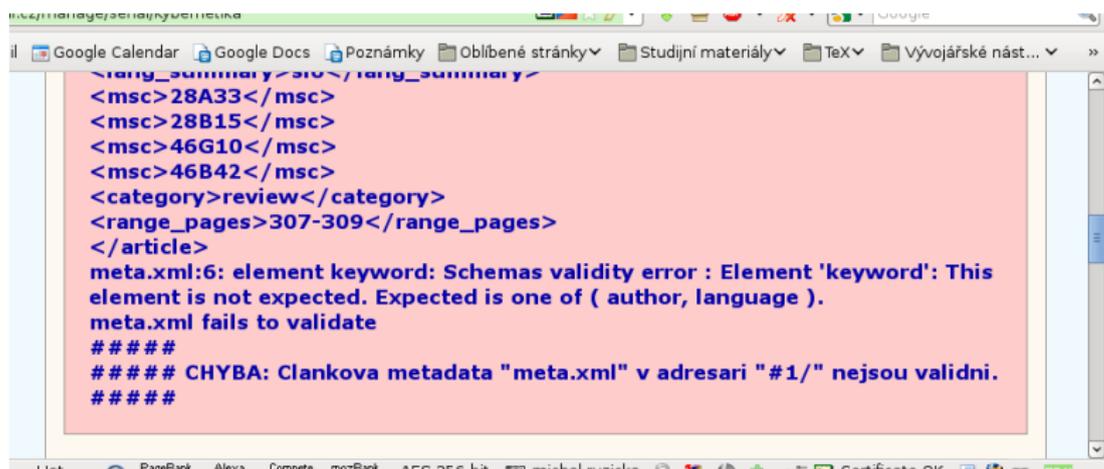
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On-line Submissions and Validation (cont.)



The screenshot shows a web browser window with a pink error message overlay. The XML code in the background is as follows:

```
</range_summary>  
<msc>28A33</msc>  
<msc>28B15</msc>  
<msc>46G10</msc>  
<msc>46B42</msc>  
<category>review</category>  
<range_pages>307-309</range_pages>  
</article>
```

The error message reads:

**meta.xml:6: element keyword: Schemas validity error : Element 'keyword': This element is not expected. Expected is one of (author, language).
meta.xml fails to validate

CHYBA: Clankova metadata "meta.xml" v adresari "#1/" nejsou validni.
#####**

On-line Submissions and Validation (cont.)

The screenshot shows two browser windows. The top window displays XML code with a red error message box overlaid. The XML code includes elements like `<range_summary>`, `<msc>`, `<category>`, and `<range_pages>`. The error message states: "meta.xml:6: element keyword: Schemas validity error : Element 'keyword': This element is not expected. Expected is one of (author, language). meta.xml fails to validate". Below the error message are four hash symbols (#####). The bottom window shows a green box with the text "Issue is valid".

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Manage

Issue is valid

Reload Items

Dynamic Generation of Editing Forms

- One of the most important functions of the Metadata Editor consists in facilitating interactive modification of metadata.
- The operators are allowed to browse the contents of the repository and make necessary adjustments through the web-based interface of the relevant forms.
- The metadata language is formally defined by an XML Schema \Rightarrow it is possible to generate the forms dynamically based on the XML Schema definition.

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Dynamic Generation of Editing Forms (cont.)

- The mechanism consists of server-side and client-side scripting.
 - The XML Schema is processed on the server by a Perl script.
 - The script generate the JavaScript code that is included in the web page and which is subsequently sent to the client.
 - This JavaScript code runs in the web browser of the end user and generates a form that matches the language defined by the source XML Schema.
- Not all features of the XML Schema are supported, but the mechanism is powerful enough to satisfy the requirements.
- A generalized version of the forms generator is available as a standalone open-source project.

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- When dealing with source and target regions that are not similar, a complete localization of an application is difficult to achieve.
- How time or date are displayed – the number of digits used, the separators, the order of date components, whether the 24- or 12-hour format is used – these can all vary from region to region.
- More specific issues may be encountered
 - pluralization,
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Internationalizing the Metadata Editor

- The part of the Metadata Editor that interacts with the user is mostly handled by Ruby.
- *l18n* – a library that is now the *de facto* standard for the internationalization of Ruby applications.
 - A general solution that does not provide complex internationalization facilities.
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Choosing a Locale

- Since the Metadata Editor is a web application, the locale has to be set per request.
- With the help of sessions and cookies it is possible to remember a given locale between requests of the same user.
- The question is: Which locale is to be introduced for a new user with no cookies?
 - The HTTP/1.1 protocol defines the `Accept-Language` header.
 - Many users are unaware of the setting which was probably set when the user agent was installed and it might not conform to their preferences.
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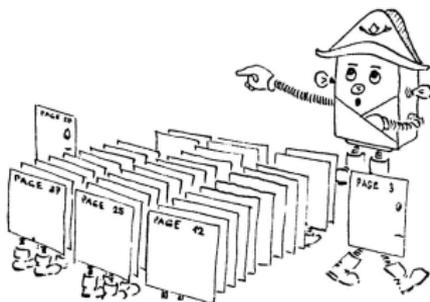
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- The Metadata Editor is used in several projects and will possibly be used in the EuDML project as well.

Conclusions (cont.)

- The Metadata Editor is a live, continuously developing project. New features are added as needed.
- The on-line input and validation service was worked in to provide users with a comfortable and safe interface for data inclusion.
- The user interface is dynamically generated based on the formal definition of the metadata.
- The localization of the Metadata Editor is in progress.
- The Metadata Editor is used in several projects and will possibly be used in the EuDML project as well.

Questions?





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