A simple demo
(english with dutch settings :-)

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Naar keuze

This little demo shows the use of xml2lms.

Startpunt

You have to produce teaching material in different formats, but you want to manage only one data source. Sometimes you need also a mathematical formula. Then *xml2lms* is a choice for you.

Eerste vereisten

You need a little knowledge about XML and should be able to use a text editor under Linux.

Inhoudsopgave

Lijst met Tablellen

Lijst met Figuren

Lijst med Slides

Lijsten

1 Block elements

Demonstratie 1.1. If you want to show a demonstration in this lession, you can use the element *demo* to mark it.

1.1 Simple blocks

The document is written in eXtensible Markup Language (XML) with the grammar `xml2lms.dtd`. Here you see the use of acronyms. You can also select the short form: LMS or only the long form: Learning Management System.

We use the *p* element to mark a paragraph. We have also the elements *dl*, *ol*, and *ul* for lists. On Beamer slides, the *li* element supports the attribute *ovl*:

Slide 1.1 Demonstration of overlays

- First point
- Second point
- Third point

Here you see also the using of slides. You can produce HTML slides (format `slide`) and LaTeX Beamer slides (format `beamer`). The slides are embedded in the script (formats `cp` and `latex`).

1.2 Teaching elements

To mark tasks, use the element *task* with one of the classes *task* (default, you can omit it), *question*, and *discussion*.

Taak 1.1. Compute the first 100 prime numbers.

Antwoord Use the sieve of Erathostenes.

Vraag 1.2. How many prime number have you found?

Discussion 1.3. Discuss the question, if there are infinite prime numbers.

You will see the answer text only if you transform the document with the option

```
xml2lms -f format -d draft
```

For remarks, use the element *remark* with the classes *remark* (default), *definition*, *hint*, and *warning*.

Opmerking 1.1. *It is not so simple to compute a prime number with 1000 digits. But we have stochastic method like the Miller-Rabin method to check if such a number is prime with a very high probability.*

1.3 Listings

You can use listings in two forms: simple with element *example*, or you can add a title and show it in the list of listings if you embed the example in a *listing* element.

A simple listing can show the content in three classes: *default* (don't add the class), *syntax*, and *result*.

```
\begin{align}
leftPart &= rightPart \\
...
\end{align}
```

To show a file, use the attribute *href* (shows a link for downloading) or *src*. You can restrict the shown lines with the attribute `lines` and set the encoding with attribute `encoding`. We put the example here in a *listing* element.

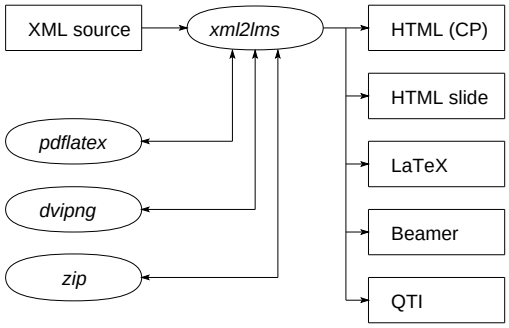
`formula.xml`

```
<title>Prime numbers</title>
<p>
We start with a definition. There is no extra element for it, we
use the <term>remark</term> element with class <term>definition</term>:
</p>
<slide id="slide:defprime">
<title>Defintion of prime numbers</title>
<remark class="definition">
<title>Prime number</title>
<p>
A positive integer is <term>prime</term>, if it has exactly two dividors:
</p>
<eq>
<![CDATA[
\text{$p$ is prime}\, \Leftrightarrow\,\forall i = 2\ldots p-1:\, i\not|p
]]>
</eq>
</remark>
</slide>
<p>
For a theorem, we use a <term>remark</term> element with class
```

Lijst 1.1: Source of formula.xml (part)

1.4 Figures

Use the *fig* element to include a figure. Omit the file extension, *xml2lms* looks for the appropriate format. The formats `png` and `jpg` can be used for LaTeX and HTML output, but for scaleable graphics you should better provide a pdf file. SVG is not supported yet (but it would be useful :-).



Figuur 1.1: The transformation process

2 Mathematical formulas

Demonstratie 2.1. This section shows the use of mathematical formulas.

2.1 Prime numbers

We start with a definition. There is no extra element for it, we use the *remark* element with class *definition*:

Slide 2.1 Defintion of prime numbers

Definitie 2.1 (Prime number)**.**
A positive integer is prime*, if it has exactly two dividors:*

$$p \text{ is prime} \Leftrightarrow \forall i = 2 \ldots p-1 : i \not| p$$

For a theorem, we use a *remark* element with class *theorem*. We put it also on a slide:

Slide 2.2 Amount of Prime Numbers

Theorem 2.2 (Prime number theorem)**.**
The amount of prime numbers $\Pi(n)$ *up to a number* n *is approximately:*

$$\Pi(n) \approx \frac{n}{\ln n} \tag{1}$$

For inline formula use the element *m* (see slide 2.2). The element *eq* is used for block formulas. With class *align* multiline formulas are possible:

$$
\begin{aligned}
x_0 &= 1 \\
x_1 &= 1 \\
x_n &= x_{n-1} + x_{n-2} \quad n = 2, \ldots
\end{aligned}
\tag{2}
$$

The *CDATA* declaration is necessary to protect the & signs. If you add the *id* attribute, you can set a reference to this formula 2.

3 Tables

According to the different table model between LaTeX and HTML, we must specify different alignments and widths in the *col* element of *colgroup*. For LaTeX we set the alignments `l c r` for small columns and `p{width}` for block columns. The *width* attribute is ignored for LaTeX, the *p* specification is ignored for HTML output.

$\boldsymbol{f} \backslash \boldsymbol{g}$	$3/x$	$\log_2(n^3)$	$\frac{n}{5} - \frac{5}{n}$	$n^2 + 3n - 2$	$5^{\log_2 n}$	3^n	$n!$
$3 \cdot \ln(\frac{n}{3})$							
$3 \cdot x^3 - 5 \cdot x + 2$							

Tabel 3.1: Complexity classes

Referenties

Books

[Gon08] Gonzalez, Woods: *Digital Image Processing*. Pearson 2008.
Expensive, but very useful book about image processing.

Online Resources

[url:demo1] This demo (`http://xml2lms.in-chemnitz.de/demo-1/`)

Acroniemen

XML *eXtensible Markup Language*
A universal grammar for semantic markup of texts and structured data.

LMS *Learning Management System*