

# Database-Supported XML Processors

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## Part I

### Preliminaries



## Welcome to this Course ...

- We will discuss the use of **relational database systems** as highly efficient, scalable processors for **XML** languages like XPath, XQuery, and XML Schema.
- This means that
  - 1 you will get to know these XML technologies quite well, and
  - 2 you can apply and deepen your (rusty?) knowledge of RDBMSs in a challenging, unusual, and fun domain.

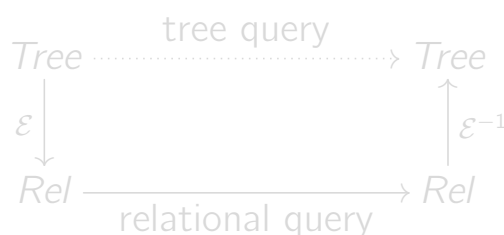
## Relational XML Processing

- XML Processors  $\equiv$  Tree Processors  
 $\Rightarrow$  This is a course on **Relational Tree Processors**.

### Relational Tree Encoding $\mathcal{E}$



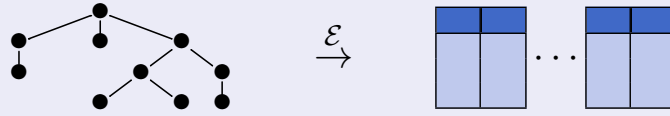
- Map tree queries into relational queries over tree encodings:



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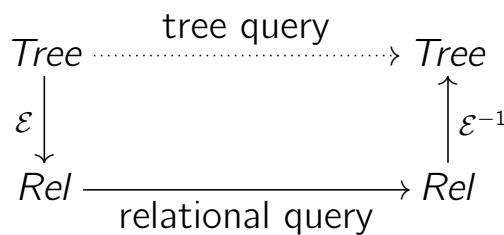
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## Hands On!

- You and I will use **use XML processors** throughout this course (during lectures and assignments):

### BaseX ([basex.org](http://basex.org) — please download)

XQuery processor, highly standards-compliant, efficient, interactive shell. Actively developed at U Konstanz, based on ideas developed in the **Pathfinder** project.

### Pathfinder ([monetdb-xquery.org](http://monetdb-xquery.org))

XQuery processor and XML database system prototype, based on relational database technology. Joint development with CWI Amsterdam.

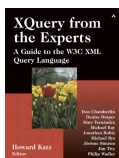
## Further Reading Material ...

- ... the XML standard family: **W3C** <http://www.w3.org/XML/> (links marked with **W3C** are frequently found on the slides)

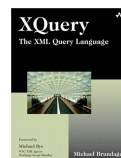
**Warning:** rather impenetrable on first sight!



- ... on XPath and XQuery:



*XQuery from the Experts*  
Jonathan Robie *et al.*  
ISBN 0-321-18060-7  
Addison-Wesley, 2003



*The XML Query Language*  
Michael Brundage  
ISBN 0-321-16581-0  
Addison-Wesley, 2004

- ... various research papers on how database technology can embrace XML, XPath, and XQuery (this is a vivid research area); downloadable from the course web page.

## Further Reading Material

- Easily digestible introductions to XML and XPath:

### The Annotated XML Specification

<http://www.xml.com/axml/testaxml.htm>

### Chapter 'XPath' of 'XML in a Nutshell' (O'Reilly)

<http://www.oreilly.com/catalog/xmlnut2/chapter/>

## Organisatorisches

### Termine

	<b>Zeit</b>	<b>Ort</b>
Vorlesung	Do, 10:15–11:45	A301 (A104?)
Übung	Di, 14:15–15:45	Sand 6/7, kleiner Hörsaal (Alex Ulrich)

### Homepage + Material zur Vorlesung

[db.inf.uni-tuebingen.de/teaching/ws1213/dbxml](http://db.inf.uni-tuebingen.de/teaching/ws1213/dbxml)

- Folien [PDF] zum Download verfügbar (ca. einen Tag vor Termin).

## Wie profitiert man von dieser Vorlesung?

- Übungsaufgaben und Klausuraufgaben werden sich *sehr ähneln*.  
**Aktiv dabei sein!**
  - Übungen starten nächsten Dienstag (30. Oktober)
- Beispiele nachvollziehen und eigene Experimente starten:
  - BaseX ([basex.org](http://basex.org))
  - (Pathfinder)
- Klausur/mdl. Kolloq zum Ende des Semesters bestehen.



### “Sprechstunde” nutzen

Fast immer, wenn die Türen zu unseren Büros (Sand 13, B314 und B318) offen stehen. Effektiv sind das 90% unserer Anwesenheitszeiten.