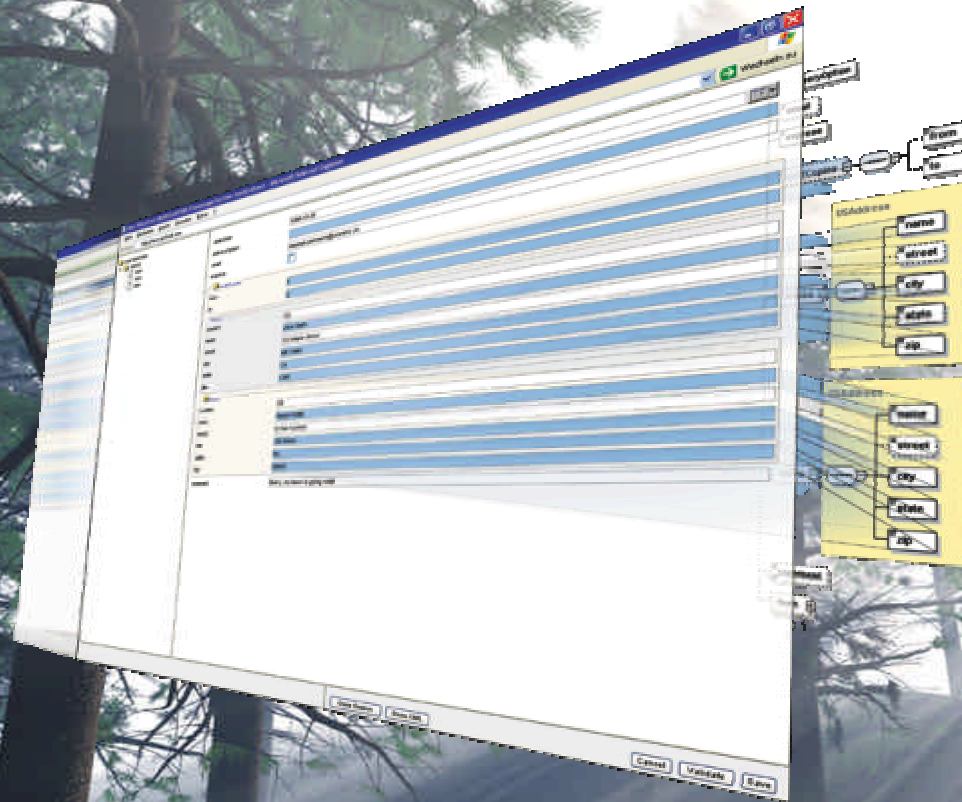


JAXFRONT® – AN XML RENDERING TECHNOLOGY

JAXFRONT
www.jaxfront.com

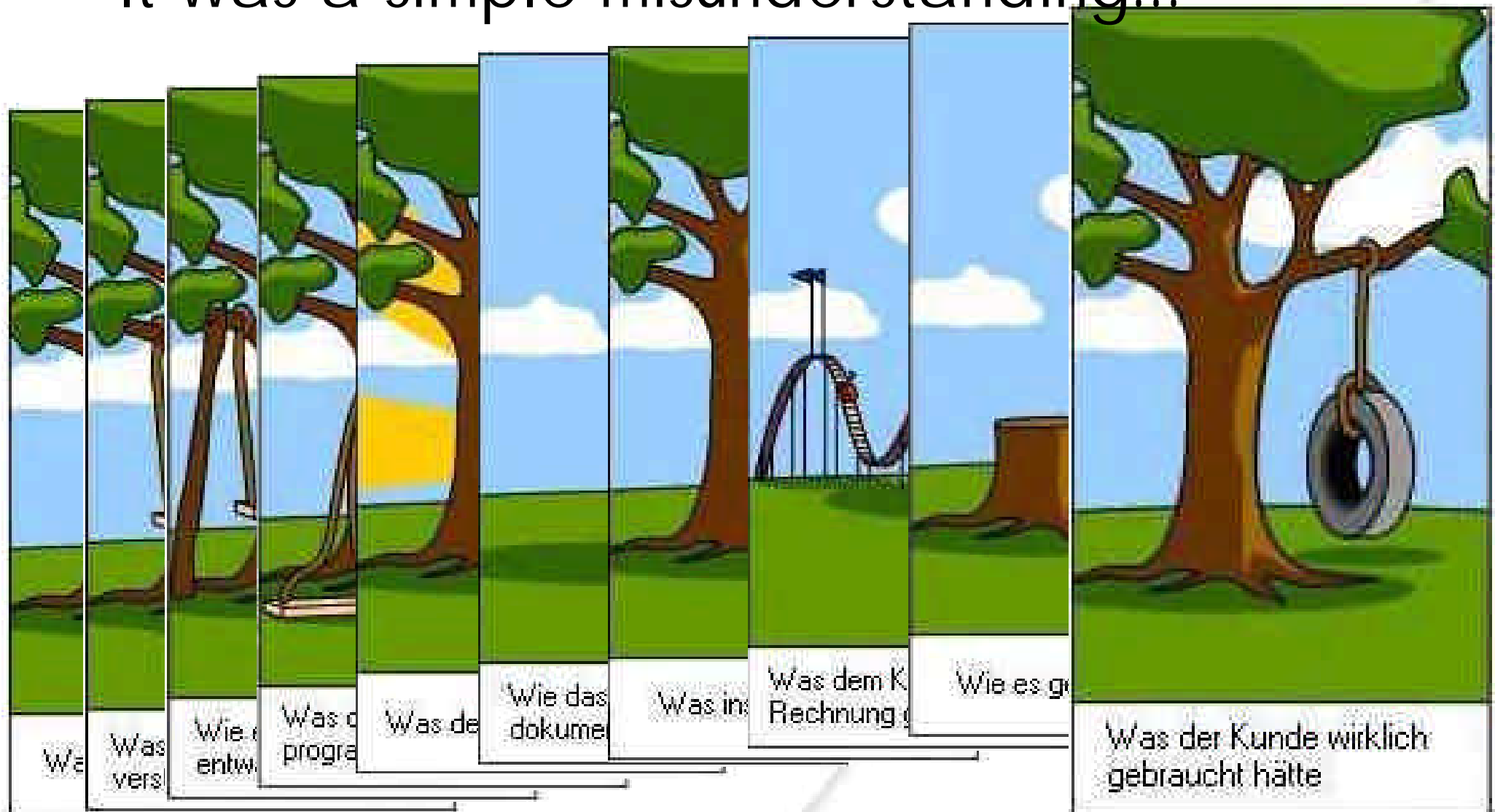


... generating graphical user interfaces

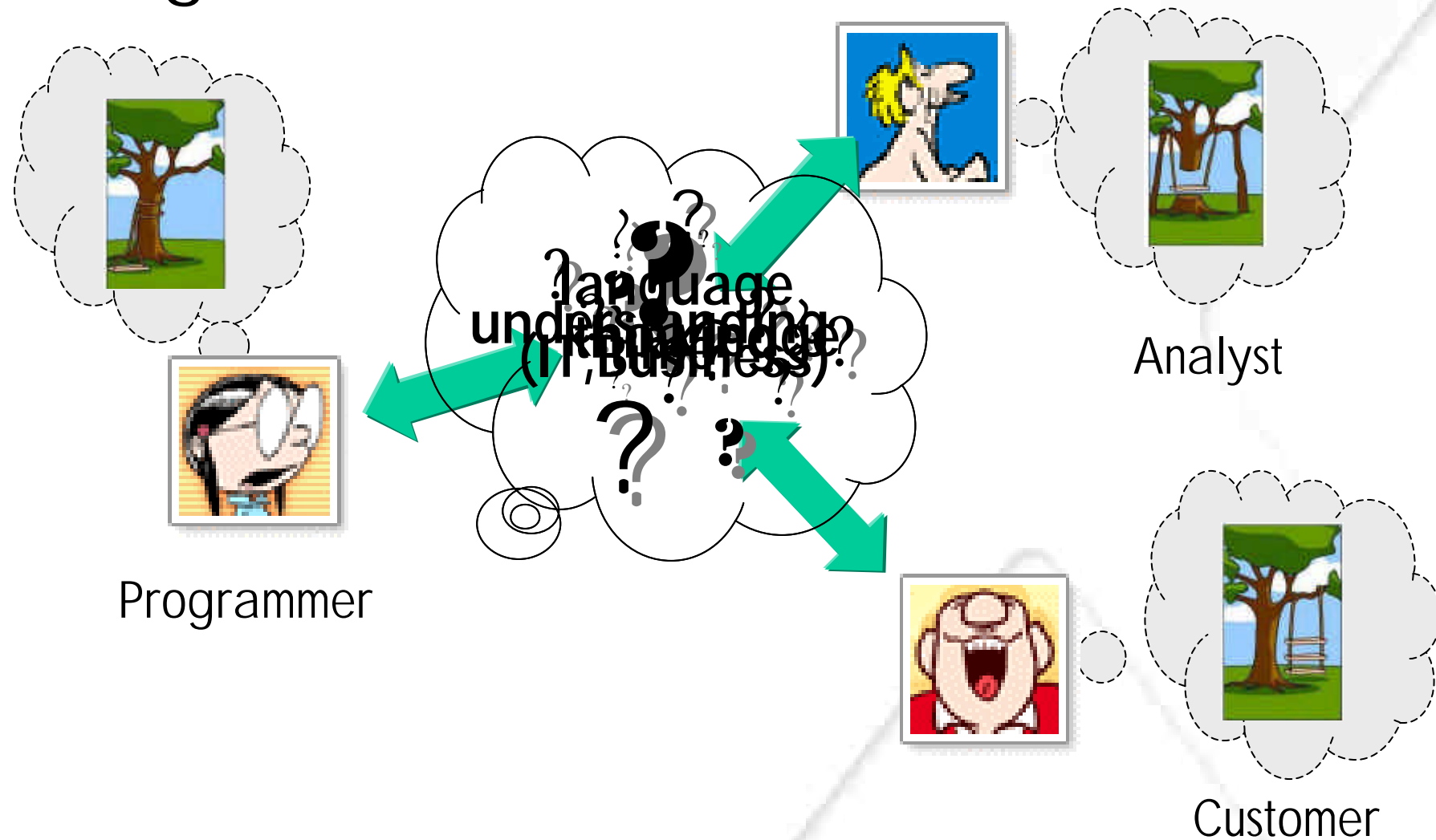
Agenda

1. What is it all about?
2. XML Data Modelling
3. GUI Generation with JAXFront®
4. JAXFront® Reference Projects
5. Live-Demo

It was a simple misunderstanding...



...to give reasons...



JAXFront® has the answers:

- a common language
- a common data model
- a smart rendering technology
- an integrated rule engine
- round trip engineering

(XML Schema, XUI Schema)

(XML Instance Data)

(reduce implementation effort)

(interpretation of business rules)

(to achieve the common purpose)

What is JAXFront?

- Java/XML GUI & Rules Framework
- „Creating dynamic visualizers for interactive graphical user interfaces on multiple UI channels.“

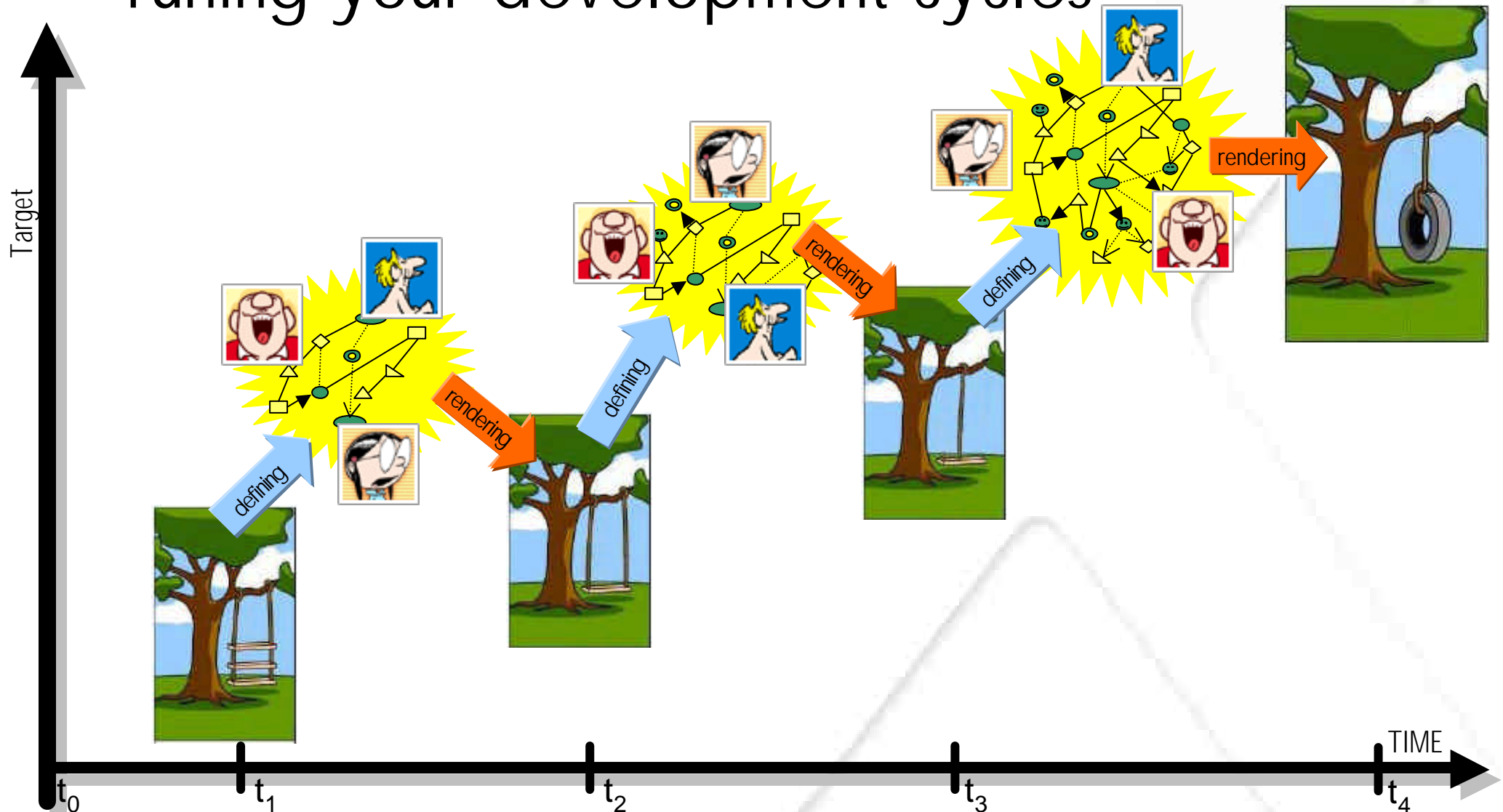
What is XML Schema?

- Standardized, worldwide used modelling language (www.xml.org)
- Hosted by the W3C consortium (www.w3c.org/XML/Schema)
- It's open

What is XUI?

- EXtensible User Interface
- A language to define the style & behaviour of any User Interface (rules, multi language support, tree navigation,)
- Can be seen as an extension to the XML Schema specification from W3C. (e.g. crossfield validations)

Tuning your development cycles



Rendering Advantages

■ Flexibility

- Declarative GUI composition
- WYSIWYG GUI editor
- model driven

■ Simplicity

- easy to handle
- easy to maintain & deploy
- common look & feel

■ Portability

- platform independent visualization (multiple UI channels)

■ Cost conscious

- shorten development cycle
- concentrate on main IT issues

■ „Busibility“

- business driven development (declarative style & rule definition)

Agenda

1. What is it all about?
- ▶ **2. XML Data Modelling**
3. GUI Generation with JAXFront®
4. JAXFront® Reference Projects
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XML Data Modelling

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<catalog>
```

```
<book>
```

```
<title>Learning XML</title>
```

```
<year>2001</year>
```

```
<isbn>0-596-00046-4</isbn>
```

```
<authorRef ref="A-ETR"/>
```

```
<publisherRef ref="P-ORA"/>
```

```
<binding>Paperback</binding>
```

```
<pages>350</pages>
```

```
</book>
```

```
<book>
```

```
<title>Step by Step XML</title>
```

```
<year>2000</year>
```

```
<authorRef ref="A-MJY"/>
```

```
<publisherRef ref="P-MSP"/>
```

```
<edition>Book and CD-ROM edition</edition>
```

```
<binding>Paperback</binding>
```

```
<pages>375</pages>
```

```
<isbn>0-7356-1020-7</isbn>
```

```
</book>
```

```
</catalog>
```

XML data describing a book list.

XML data validation

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<catalog>
```

```
<book>
```

```
<title>My Title 007</title>
```

```
<isbn>999</isbn>
```

```
<authorRef ref=„ref_1“/>
```

```
<publisherRef ref=„ref_2“/>
```

```
<year>8799</year>
```

```
<binding>Paperback</binding>
```

```
<pages>350</pages>
```

```
</book>
```

```
</catalog>
```

Is „999“ a valid ISBN?

Is the reference „ref_1“ a valid author?

Is „8799“ a valid year?

XML Modelling with XMLSchema

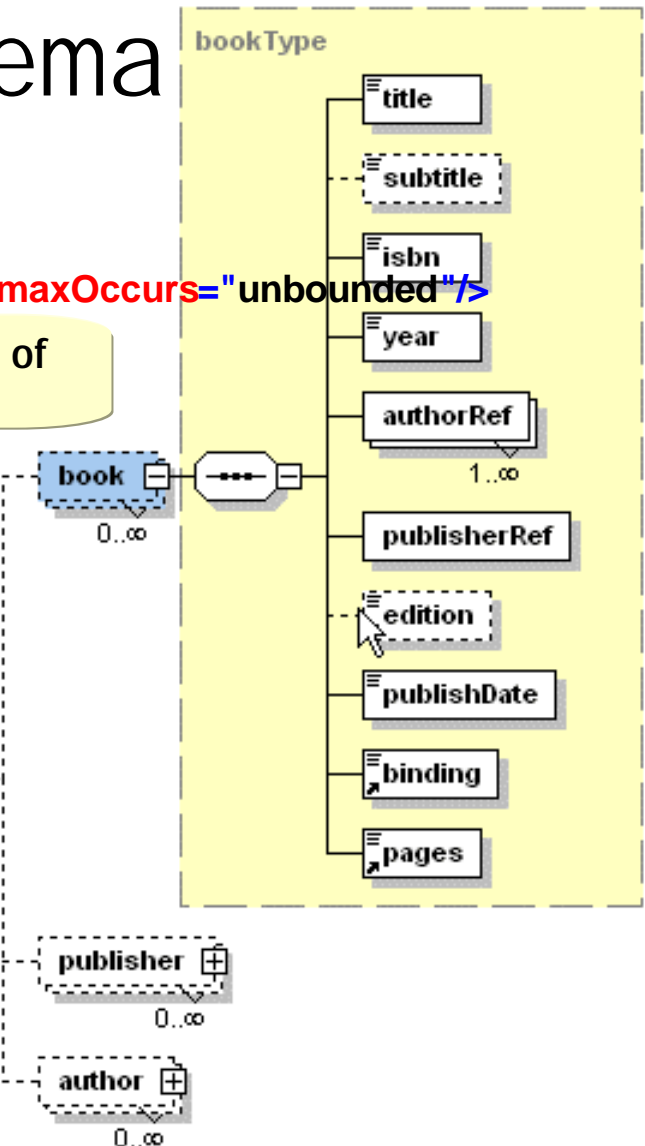
```

<xs:element name="catalog">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="book" type="bookType" minOccurs="1" maxOccurs="unbounded"/>
    ...
  </xs:sequence>
</xs:complexType>
<xs:complexType name="bookType">
  <xs:sequence>
    <xs:element name="title" type="xs:string"/>
    <xs:element name="subtitle" type="xs:string" minOccurs="0"/>
    <xs:element name="year" type="xs:gYear"/>
    <xs:element name="isbn">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:pattern value="3-\d{1}(\d{1}){7}\d{1}-[0-9x]"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
  ...
  </xs:sequence>
</xs:complexType>

```

Element 'year' must be of
Type 'gYear'.

Regular expression for a
german ISBN.



XML Schema Validation

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<catalog>
```

```
<book>
```

```
<title>My Title 007</title>
```

```
<isbn>999</isbn>
```

```
<authorRef ref=„ref_1“/>
```

```
<publisherRef ref=„ref_2“/>
```

```
<year>8799</year>
```

```
<binding>
```

```
</binding>
```

```
</book>
```

```
</catalog>
```

XML Data

XML Schema
Validation Parser

XML Schema

Error on line 5: Value ,999' is not a valid ISBN.
Error on line 6: ref_1 does not exist in authors.
Error on line 7: ref_1 does not exist in publishers.
Error on line 8: Value ,8799' is not valid for type: year.

XML Data Manipulation

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<catalog>
```

```
<book>
```

```
<title>Learning XML</title>
```

```
<year>2001</year>
```

```
<isbn>0-596-00046-4</isbn>
```

```
<authorRef ref="A-ETR"/>
```

```
<publisherRef ref="P-ORA"/>
```

```
<binding>Paperback</binding>
```

```
<pages>350</pages>
```

```
</book>
```

```
<book>
```

```
<title>Step by Step XML</title>
```

```
<year>2000</year>
```

```
<authorRef ref="A-MJY"/>
```

```
<publisherRef ref="P-MSP"/>
```

```
<edition>Book and CD-ROM edition</edition>
```

```
<binding>Paperback</binding>
```

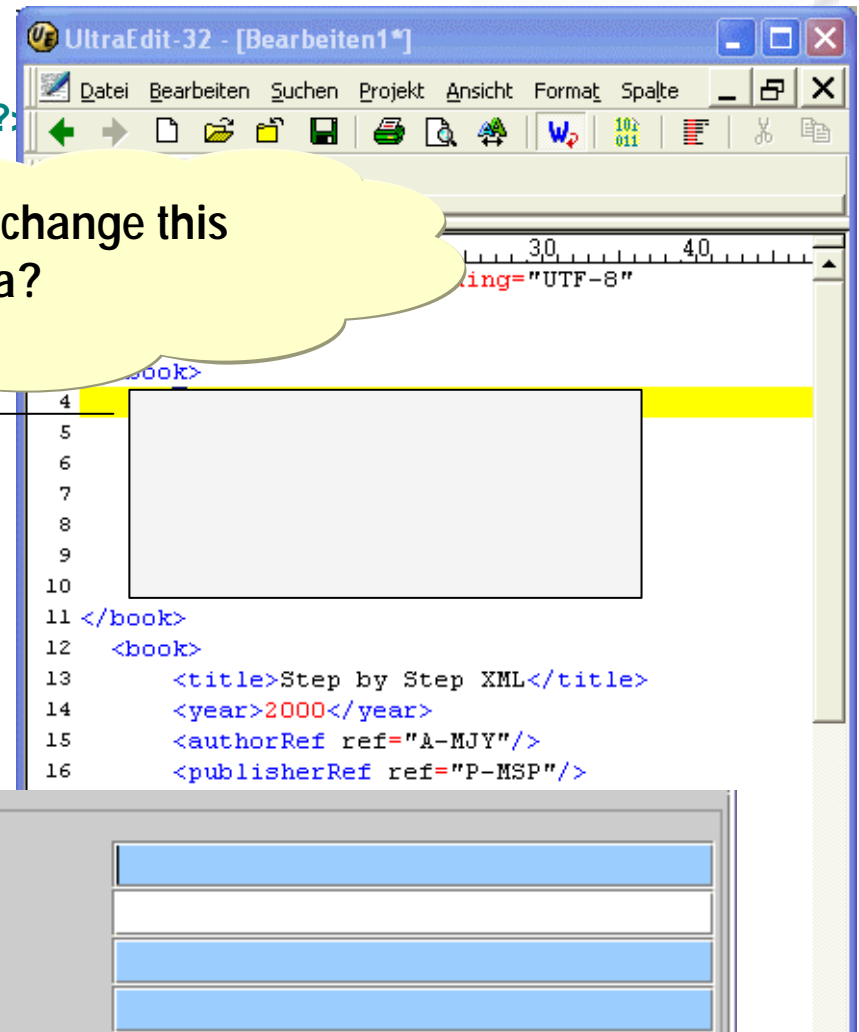
```
<pages>375</pages>
```

```
<isbn>0-7356-1020-7</isbn>
```

```
</book>
```

```
</catalog>
```

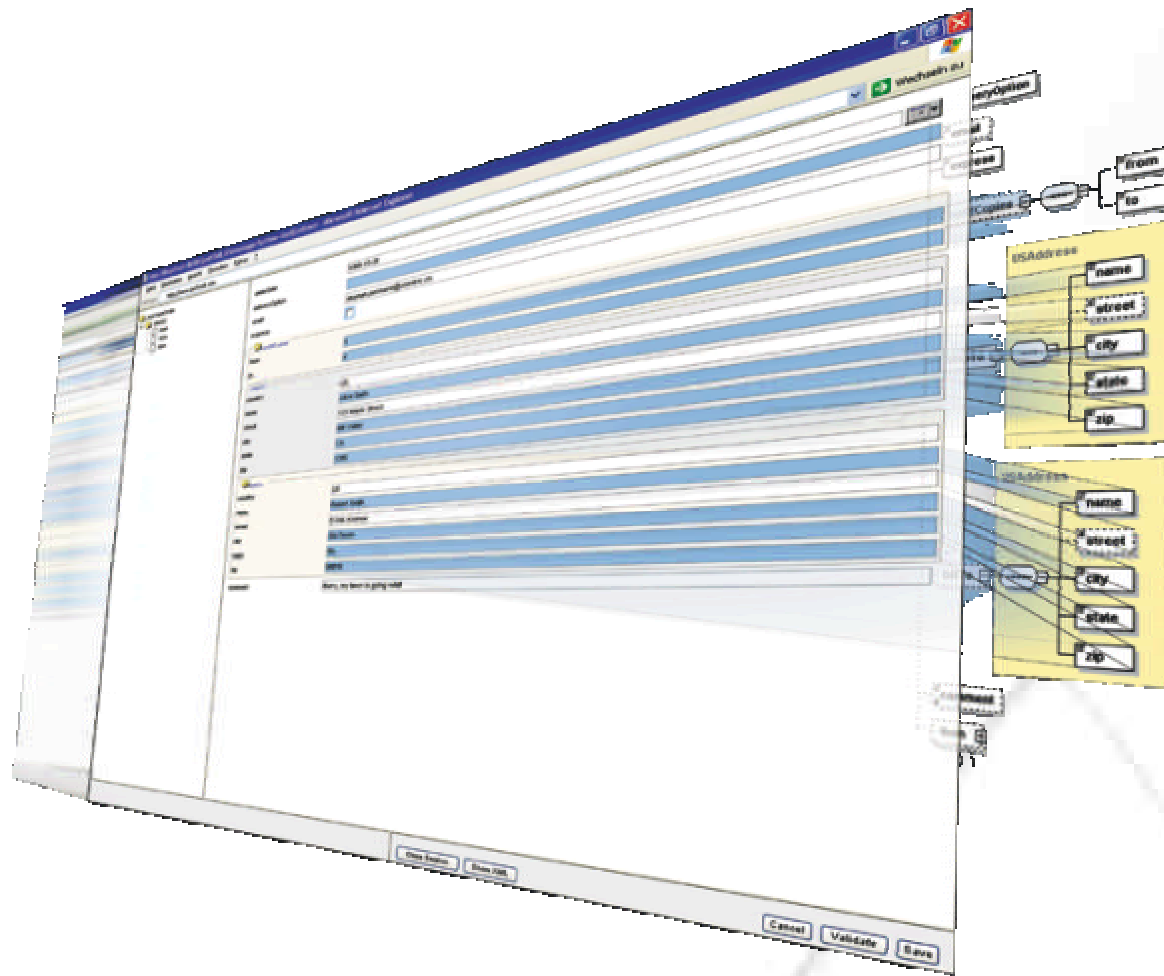
How do you change this data?



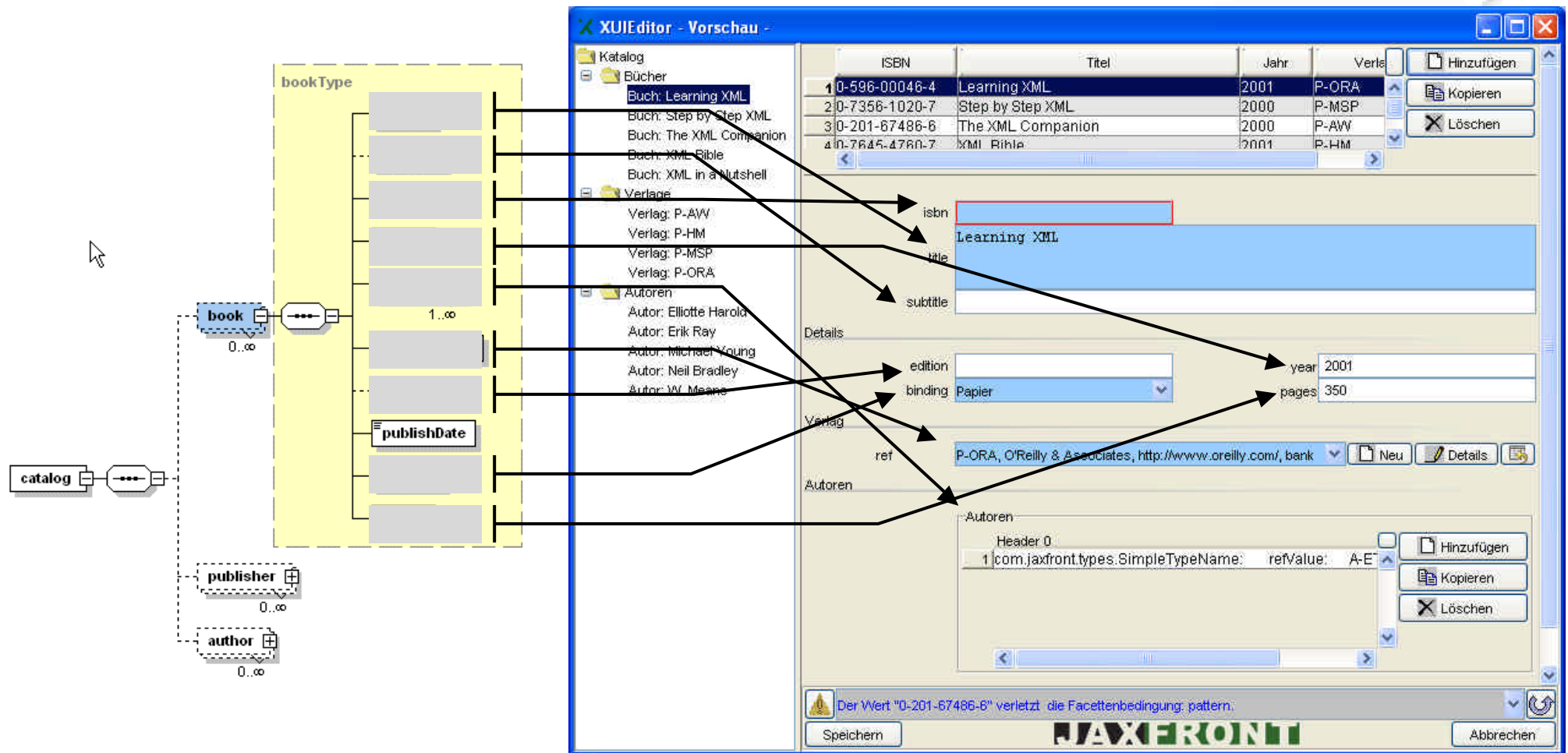
Agenda

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- ▶ **3. GUI Generation with JAXFront®**
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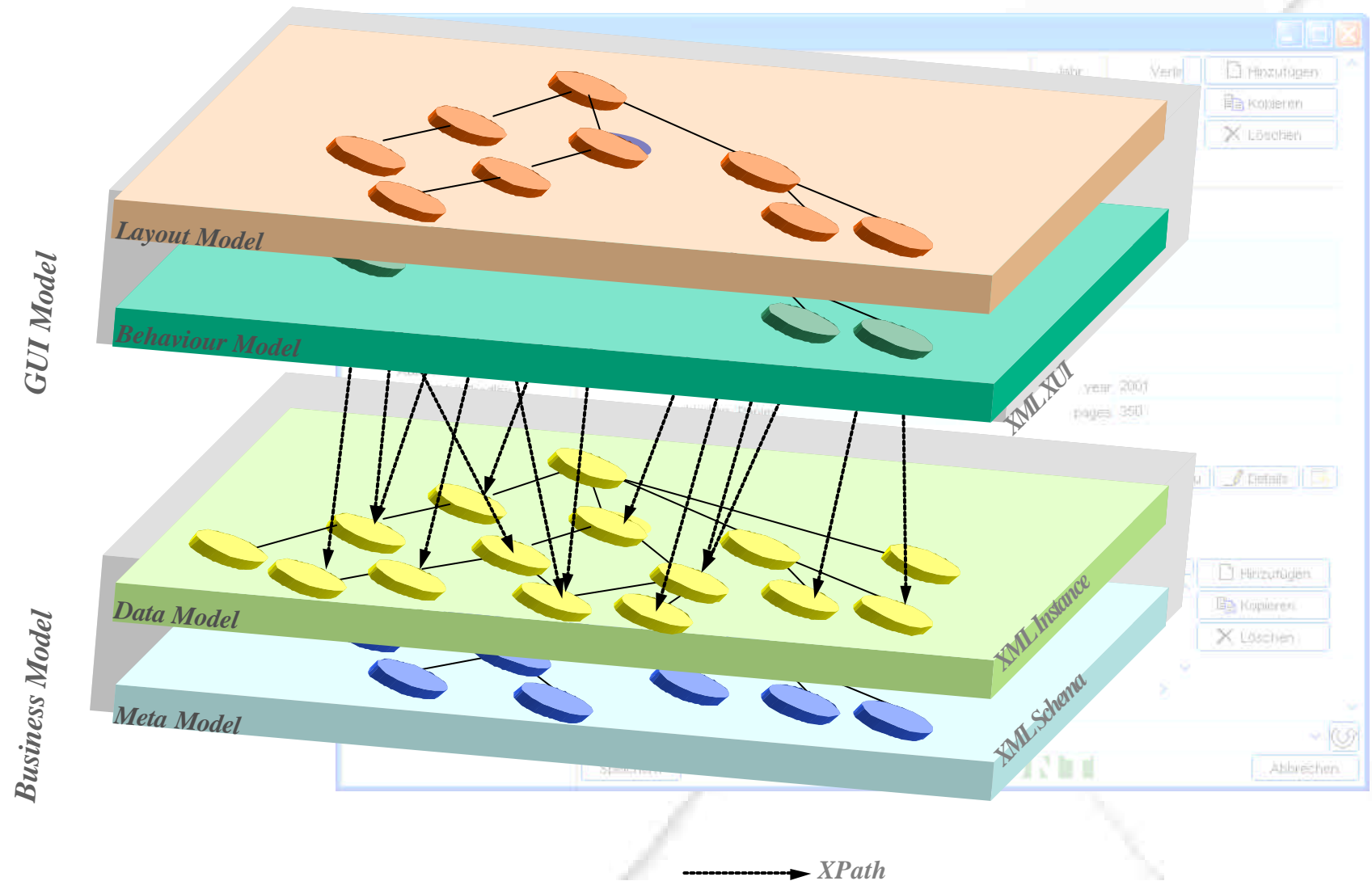
GUI Generation with JAXFront



Example: Catalog



Layers



The diagram illustrates the JAXFront Core Engine Processes, which are part of the XUIEditor Vorschau application. The processes are shown as a sequence of steps, each represented by a green arrow pointing right, connected by a blue line. The steps are:

- parsing**: Receives input from an **XML Schema** (yellow box).
- structure analysing**: Part of the **JAXFront Core Engine Processes** (orange box).
- data binding**: Receives input from an **XML Instance** (yellow box).
- customize layout/rules**: Receives input from a **XUI Spec.** (yellow box).
- data manipulation, validation**: Receives input from the **rendering** step via a red dotted line labeled **serialize**.
- rendering**: The final output step.

The background shows a screenshot of the XUIEditor Vorschau application interface, which includes a table with columns for ISBN, Titel, Jahr, and Verleger, and a list of authors (Autor: Elliott Harold, Autor: Erik Ray, Autor: Michael Young, Autor: Neil Bradley, Autor: W. Michael).

Parsing



parsing

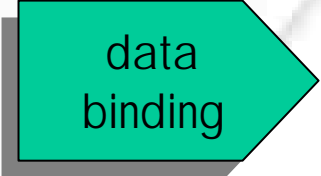
- Syntax analysis via XML-Parser (XML Oracle Parser) → **well formed**
- Structure analysis/validation against XML Schema (XML XSD Oracle Parser) → **schema compliant**
- Building an internal java object tree model → **DOM**

Structure Analysing

structure
analysing

- Analyse the complexity of the XML Schema DOM
- Type each W3C DOM Node to a JAXFront Type (Schema Element Pattern Matching)
 - **SimpleType**: primitive type (leaf node)
 - **SimpleGroup**: contains 0 to m SimpleTypes
 - **ComplexGroup**: contains at least 1 List type or another ComplexGroup
 - **SimpleTypeList**: contains 0 to m SimpleTypes (alterable)
 - **SimpleGroupList**: contains 0 to m SimpleGroups (alterable)
 - **ComplexGroupList**: contains 0 to m ComplexGroups (alterable)

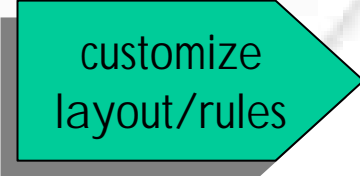
Data Binding



data
binding

- Bind an XML Instance to a typed JAXFront DOM

Customize Layout & Rules



customize
layout/rules

- **Style-relevant informations**

- defines the look and feel (position, color, size, ...) of a representation type

- **Behaviour-relevant informations**

- defines business rules for components (show/hide GUI elements, navigation style, property changes, ...)

Rendering

rendering

- Visualize the JAXFront DOM with a graphical toolkit
(JavaSwing, HTML, ...)

JAVA API Example

```
//Build a JAXFront DOM
Document dom = DOMBuilder.getInstance().build(_xsdURL, _xmlURL, _xuiURL, „root");

//Build a visualizer for the root type
EditorPanel panel = new EditorPanel(dom.getRootType(), this);
//Build a visualizer for any type
JComponent component = TypeVisualizerFactory.getInstance().getVisualizer(dom.getChild(„email"));

//Adding visualizer to a container
JFrame frame = new JFrame("JAXFront API Example");
frame.getContentPane().setLayout(new BorderLayout());
frame.getContentPane().add(panel, BorderLayout.CENTER);
frame.setVisible(true);
```

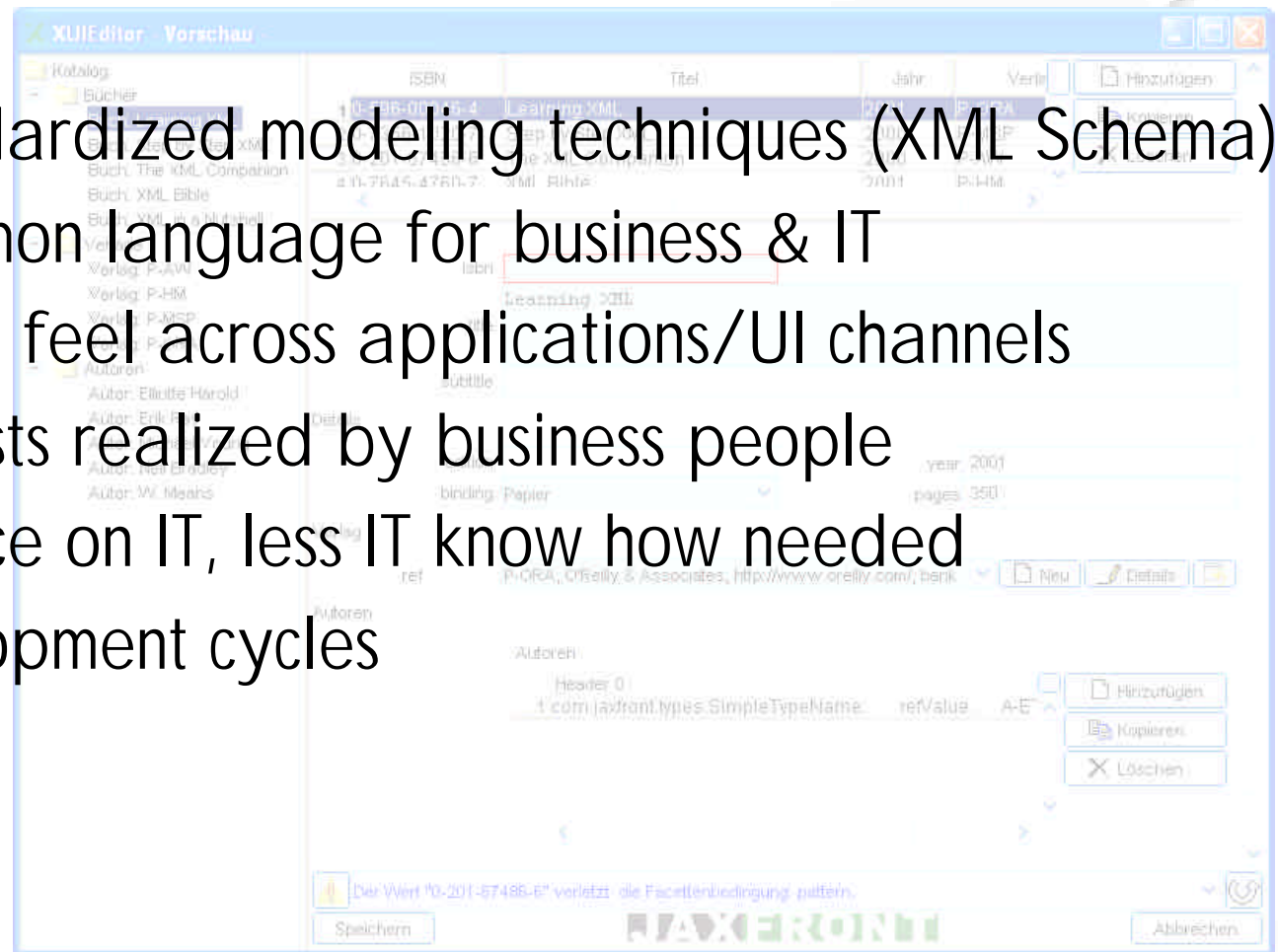
Data Manipulation & Validation

data
manipulation,
validation

- Interaction with the graphical front end → entering data, manipulate list entries, ...
- Immediate type and content validation via XML Schema Parser → facets, regular expressions, ...
- Crossfield validations via XUI Rule Specifications → ECA Rules

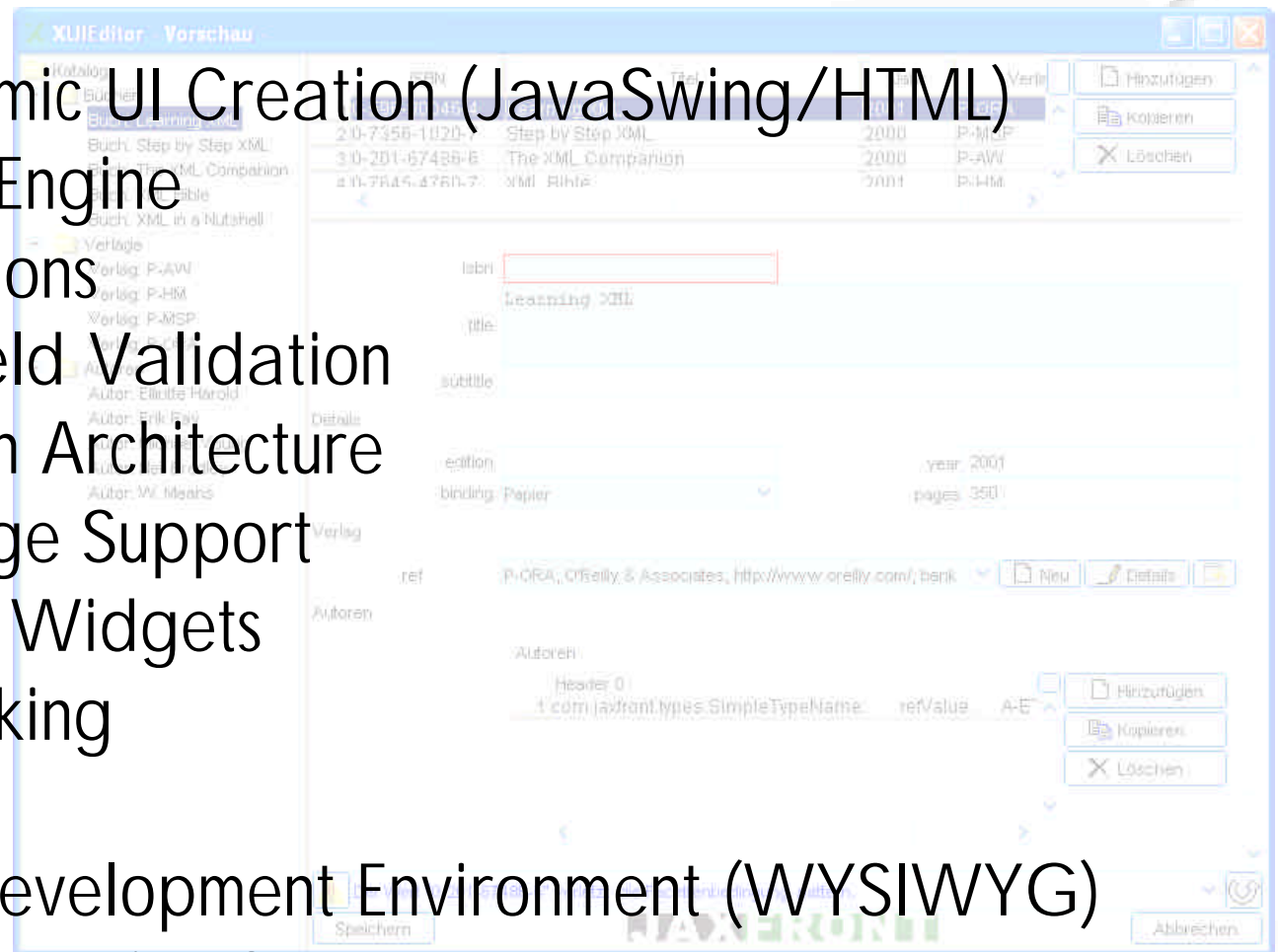
JAXFront Benefits

- ✓ following standardized modeling techniques (XML Schema)
- ✓ defines a common language for business & IT
- ✓ common look & feel across applications/UI channels
- ✓ business requests realized by business people
- ✓ less dependence on IT, less IT know how needed
- ✓ shortens development cycles



JAXFront Features

- Generic & Dynamic UI Creation (JavaSwing/HTML)
- Embedded Rule Engine
- Formula Expressions
- Field & Cross-Field Validation
- JavaBeans Plugin Architecture
- Multiple Language Support
- Type-Safe Entry Widgets
- Visual Error Marking
- Fly-Over Help
- Graphical XUI Development Environment (WYSIWYG)
- Help System Integration Support

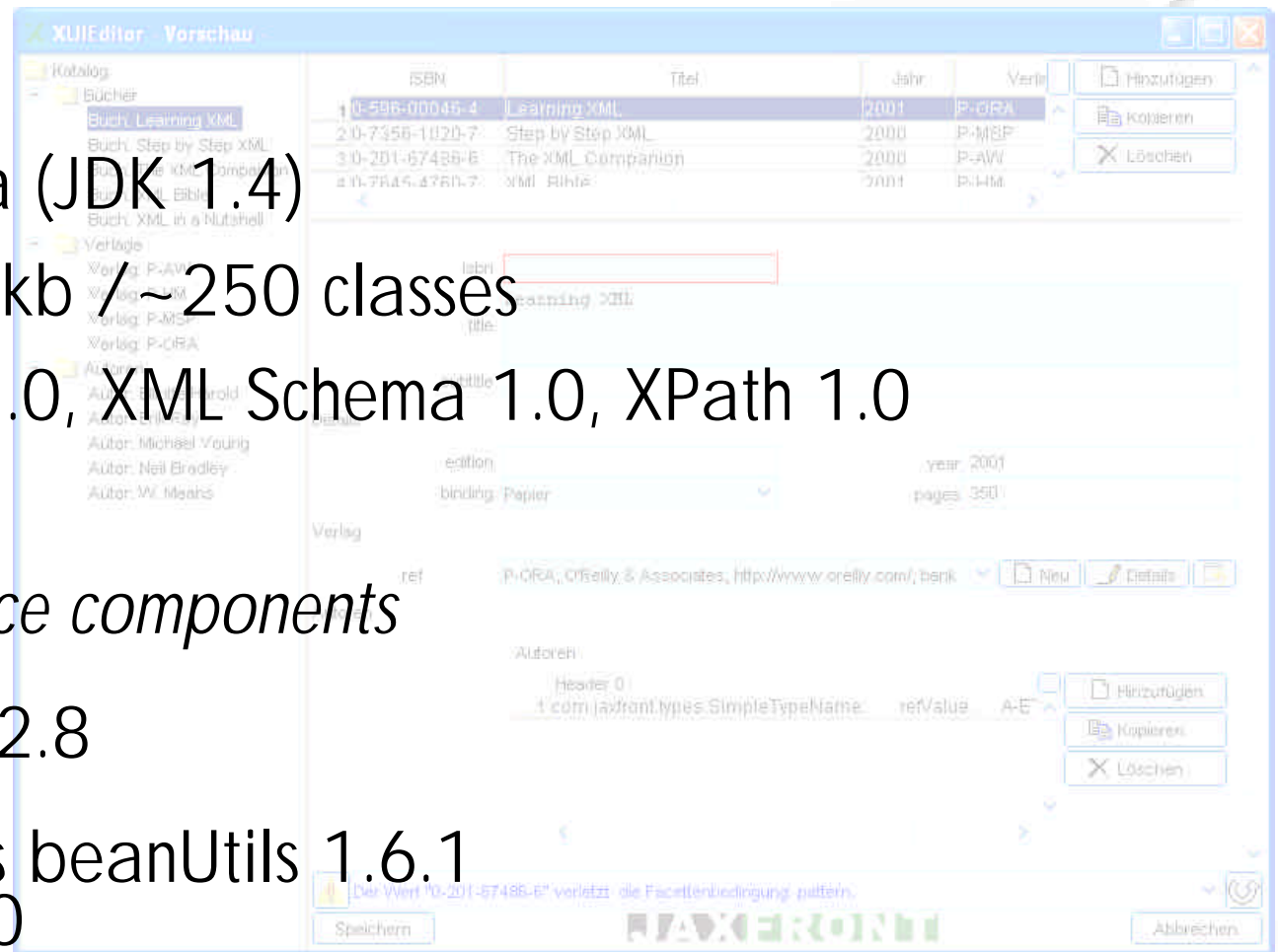


JAXFront Technical Details

- Version 1.42
- 100% pure Java (JDK 1.4)
- Footprint: ~570 kb / ~250 classes
- JAXP 1.1, XML 1.0, XML Schema 1.0, XPath 1.0

included open source components

- apache log4J 1.2.8
- oracle xdk 0.9
- jakarta commons beanUtils 1.6.1
- werken jaxen 1.0
- jep 2.24



Agenda

1. What is it all about?
2. XML Data Modelling
3. GUI Generation with JAXFront®
- ▶ 4. **JAXFront® Reference Projects**
5. Live-Demo

4. JAXFront® Referenzprojekte



xcentric gewinnt den **Innovationspreis**
2001 mit dem Produkt JAXFront® an der
Universitäts- und Hochschulplattform
eduswiss.



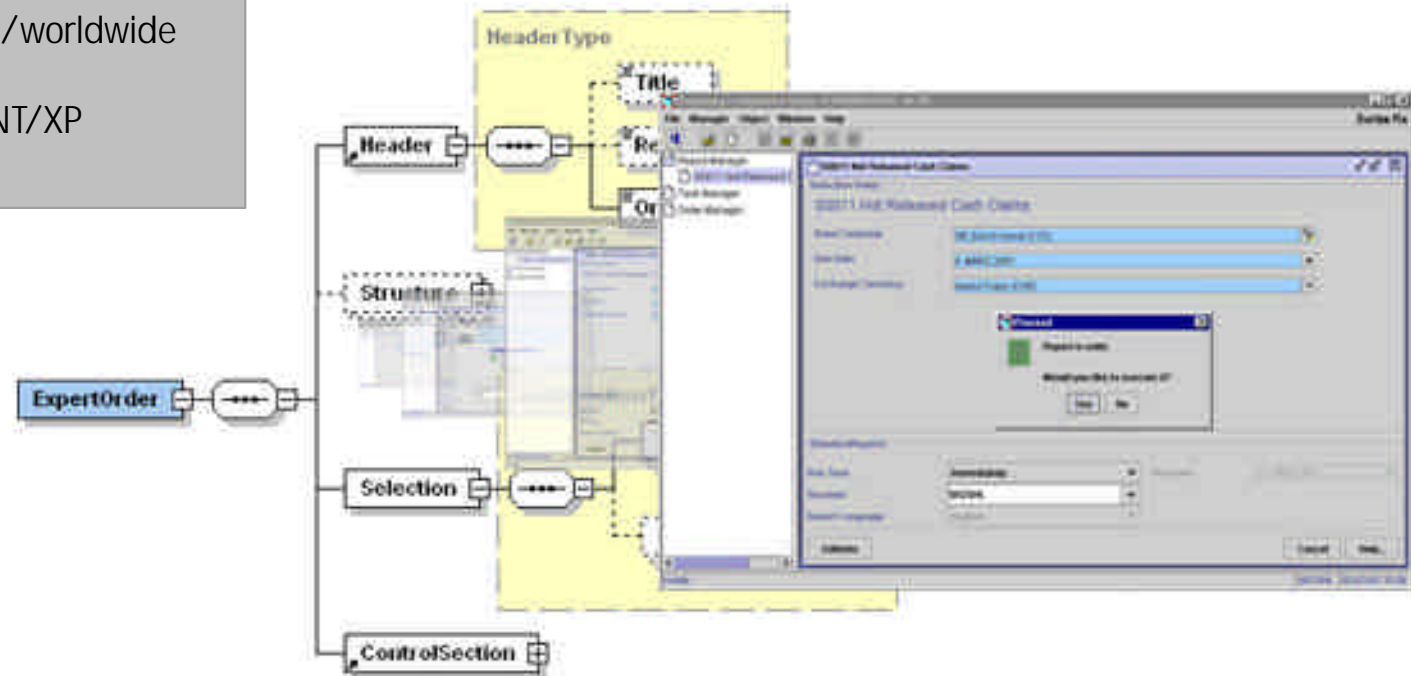
4. JAXFront® SwissRe

Reporting System for Finance Division

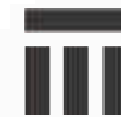
Dynamic rendering of report order forms (150 different types)

Scope
Status
Release
Env.

06.2001 – 02-2002
productive/worldwide
2.12
WindowsNT/XP
Java 1.2



Swiss Re



4. JAXFront® SwissRe

Reporting System for Finance Division

Project Benefits

- ✓ *No deployment* if a new report type is needed
- ✓ Common look and feel
- ✓ *Common language* between the business & the IT (XMLSchema)
- ✓ Business analysts are able to realize their requests on their own
- ✓ *Less dependency* on the IT team
- ✓ The whole development cycle could be *reduced* by 30 to 50%
- ✓ Launch new report types and make them available world wide within hours

Swiss Re



4. JAXFront® Swisscom



Order Management System for Swisscom Shops

Frontend Generator for Swisscom FixNet products

Scope
Status
Release
Env.

12.2001 – 05-2002
productive/national
1.2
WindowsNT/XP
Java 1.2/4

4. JAXFront® Swisscom



Order Management System for Swisscom Shops

Benefits

- ✓ *No deployment* if a new FixNet product is needed
- ✓ *Quality of Service* reduces traffic/bandwidth
- ✓ *Less dependency* on the IT team
- ✓ The whole development cycle could be *reduced* by 30 to 50%
- ✓ Launch new FixNet products and make them available within hours

4. JAXFront® Mobiliar

Die Mobiliar
Versicherungen & Vorsorge

Claim Advice System

Claim advice form generator within Mobiliar swiss wide

Scope
Status
Release
Env.

05.2003 – now
implementation
0.7
WindowsNT/XP
Java 1.2/4

XUIEditor - Vorschau

- Schadenmeldung (de):
 - Meldung (de)
 - Ereignis (de)
 - Branchenauswahl (de)
- Feuer (de):
 - HergangDetail
 - Betroffen
 - Sofortmassnahmen
 - AndereRegressGruende
- M-Haft (de):
 - HergangDetail
 - VersichertesMFZ
 - Vertragsangaben
 - Lenkerangaben
 - Verursacher
 - Geschädigter(s)
 - LeistungspflichtHaftung
- Kundeninformationen (de)
- BVM Check (de)
- Beteiligter Partner (de)
- Massnahmen (de)
- Notizen (de)
- Bearbeitungsprotokoll (de)

HergangDetail

Geschwindigkeit VN (de)

Geschwindigkeit Mitbeteiligter (de)

Strassenverhältnisse (de)

☐ Ausserorts (de) ☐ Innerorts (de) ☐ Autobahn (de)

☐ Trocken (de) ☐ Regen (de) ☐ Schnee (de) ☐ Eis (de) ☐ Nebel (de)

AlkoholDrogen ☐ Nein ☐ Ja

Verschulden (de)

Tatbestandaufnahme (de) ☐ Unklar ☐ Nein ☐ Ja

Zeugen (de) ☐ Unbekannt (de) ☐ Nein (de) ☐ Ja

VersichertesMFZ

Kontrollschild (de)

Fahrzeug gem. Police (de)

MFZAngaben ☐ Nein ☐ Ja

4. JAXFront® Mobiliar

Die Mobiliar
Versicherungen & Vorsorge

Claim Advice System

Benefits

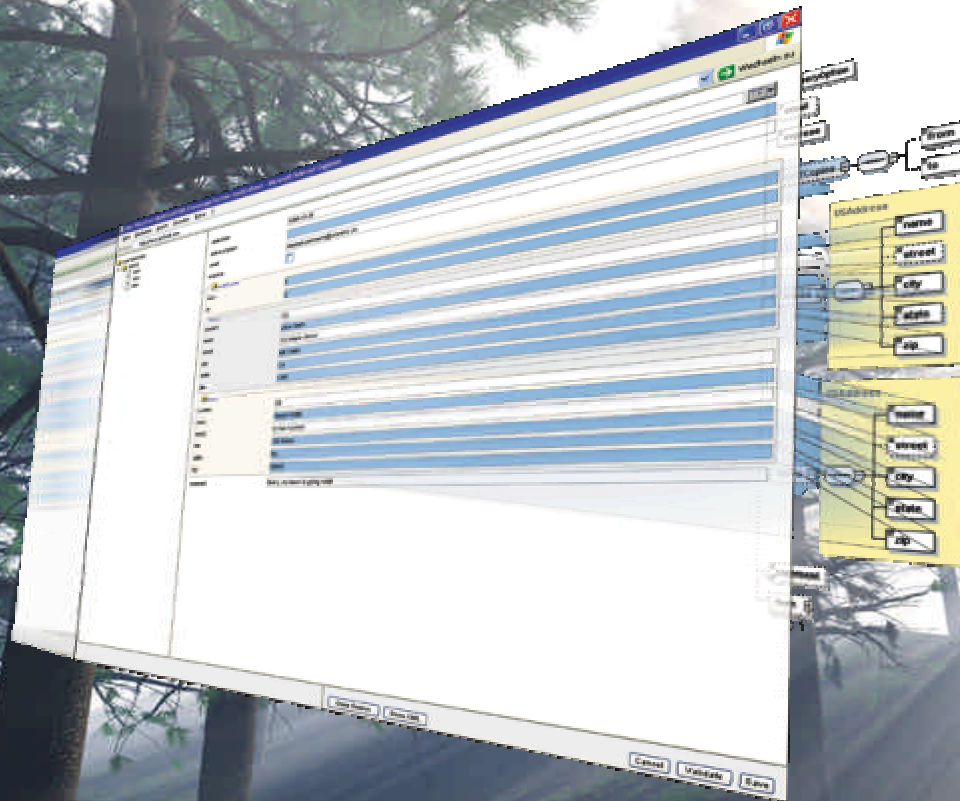
- ✓ *No deployment* if a new claim branch is needed
- ✓ *Quality of Service* reduces traffic/bandwidth
- ✓ *Less dependency* on the IT team
- ✓ The whole development cycle could be *reduced* by 30 to 50%
- ✓ Launch new claim branches within hours

JAXFRONT® – AN XML RENDERING TECHNOLOGY

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jaxfront@xcentric.ch



... try it out today: www.jaxfront.com