

Developing Component-based Adaptive Web Applications with the AMACONTBuilder

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Structure

- Motivation
- A Component-based Document Format
- Development with the AMACONTBuilder
- Publishing Process
- Conclusion and Future Work

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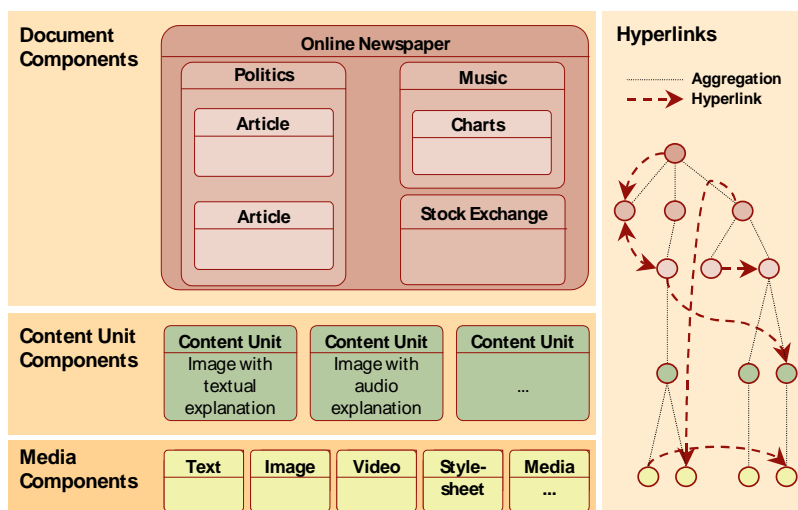
Motivation

- Today's WWW
 - Ubiquitous medium offering personalized dynamic information
 - Need for adaptation (to users, devices, location)
 - Conventional document formats hardly applicable for this challenge
 - Complex authoring process, insufficient tool support
- AMACONT project
 - Component-based development of adaptive Web presentations
 - » from reusable, configurable, declarative document components
 - Here: authoring process aided by the AMACONTBuilder

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A Component-based Document Format



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Describing Adaptive Behavior

```

<AmaDocumentComponent name="T
  <MetaInformation>
    ...
    ...
  </MetaInformation>
  <Variants>
    <Variant name="Normal_Program"
    ...
  </Variant>
    <Variant name="Child_Program"
    ...
  </Variant>
  </Variants>
</AmaDocumentComponent>
  <AdaptiveProperties>
    <If>
      <Expr operator="greaterThan">
        <UserParam>UserAge</UserParam>
        <Const>18</Const>
      </Expr>
      <Then res="Normal_Program"/>
      <Else res="Child_Program"/>
    </If>
  </AdaptiveProperties>

```



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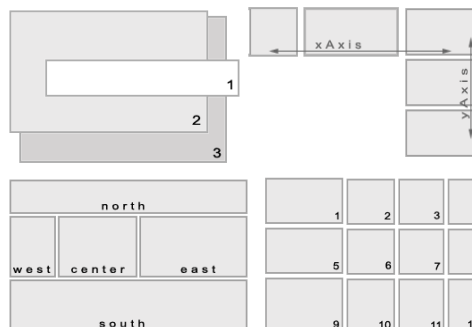
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Describing Adaptive Layout

„Layout Managers“

- BorderLayout
- BoxLayout
- OverlayLayout
- GridLayout

- Transformers for
 - xHTML
 - cHTML
 - WML



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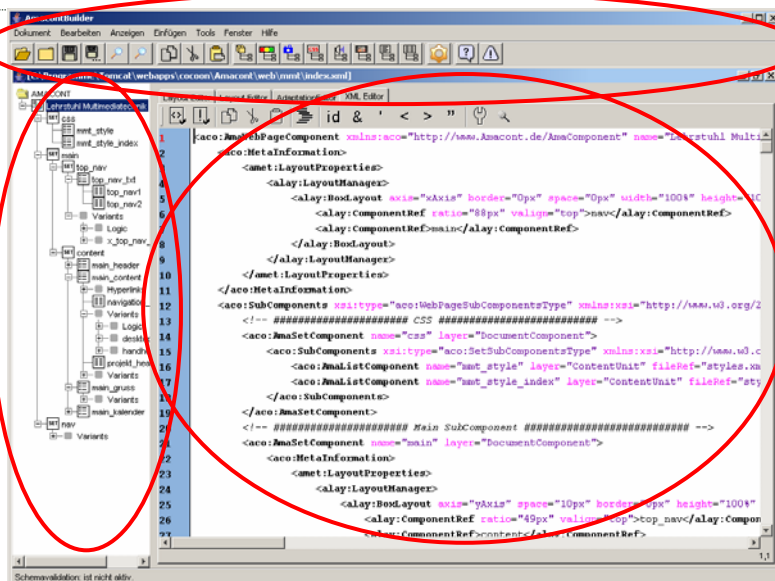
AMACONTBuilder

- Component-based reuse crucial to Web eng.
- Complex development necessitating
 - Structured design and authoring process
 - » Intensive cooperation with the Hera project (design and modeling of Adaptive Web Information Systems)
 - Intuitive (visual) tool support
- AMACONTBuilder
 - Modular authoring tool for arbitrary XML data
 - Provides programmatic access to XML content via JDOM
 - Modular architecture based on Plug-ins
 - » Extendable with format specific visual editor modules

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AMACONTBuilder



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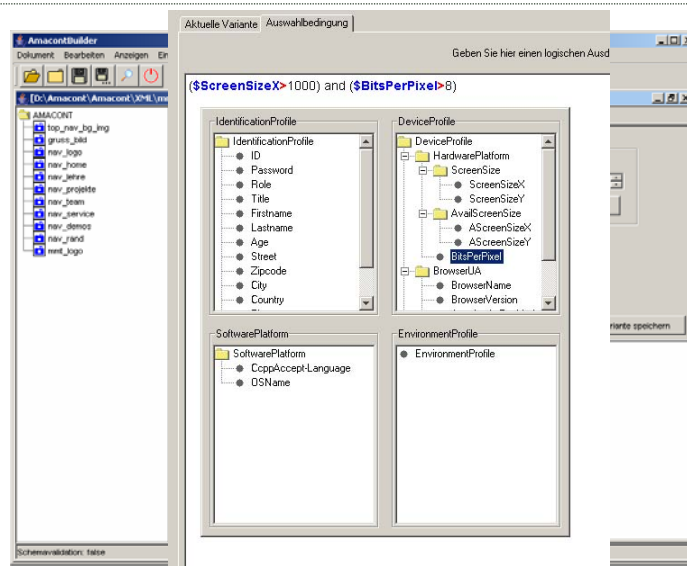
Content Authoring

- Content Authoring
 - Creation of content elements (or templates) to be presented
 - » Creating concrete media components
 - » Setting up a structured data source to retrieve content elements
 - Content Adaptation
 - » Device adaptation: Media elements with varying quality
 - » Internationalization: Content assets in different languages
- AMACONTBuilder:
 - Visual editors for creating media components
 - » Text, Image, Audio, Video, CSS etc.
 - Intuitive support for creating adaptation variants
 - Generalization of authoring operations (on instances) to data-driven component templates

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Content Authoring



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Hypertext Authoring

■ Hypertext Authoring

- Logical, structural, navigational aspects of a Web application
- Combination of content assets to document components
 - » Aggregation: components contain components
 - » Interlinking: hyperlinks between components

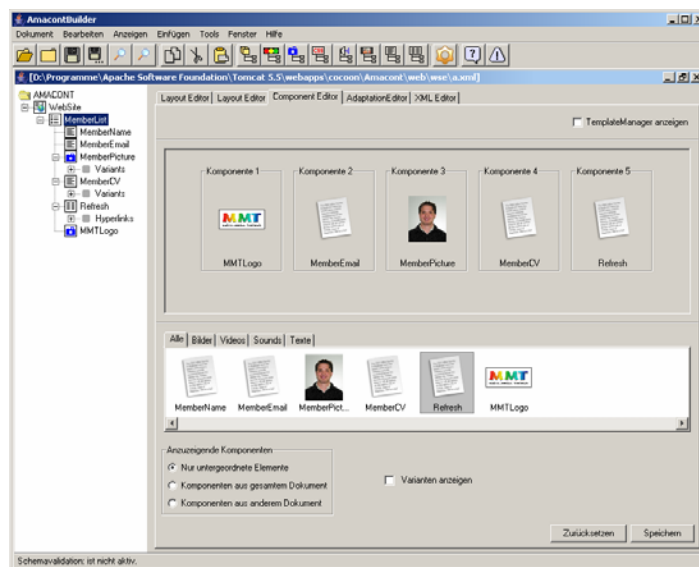
■ Adaptation at Hypertext Authoring

- Personalized navigation
 - » Different navigation structures for different devices/users
 - » Personalized view on content elements for different user roles
- Population of components with different content assets
 - » Adaptation of number and type of included media elements
 - » E.g. preference for multimedia vs. textual information

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Hypertext Authoring



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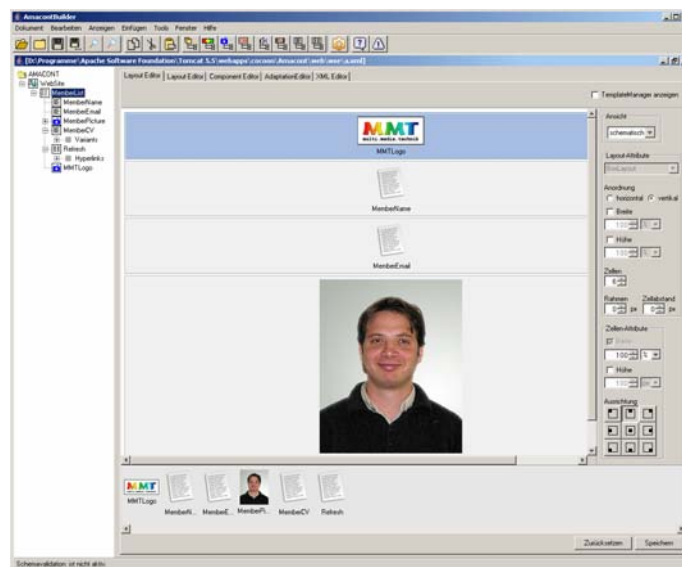
Presentation Authoring

- Presentation Authoring
 - Defining the look and feel of a Web presentation
 - » Spatial arrangement of content elements (components)
 - » Corporate Design: Colors, Fonts, Bullets, CSS elements
- Adaptation Aspects
 - Adaptation of spatial layout
 - » Tabular layout on Desktop PCs
 - » Vertical arrangement of content elements on PDAs
 - Adaptation of style elements (age, accessibility)
- AMACONTBuilder
 - Layout Editor and CSS Editor

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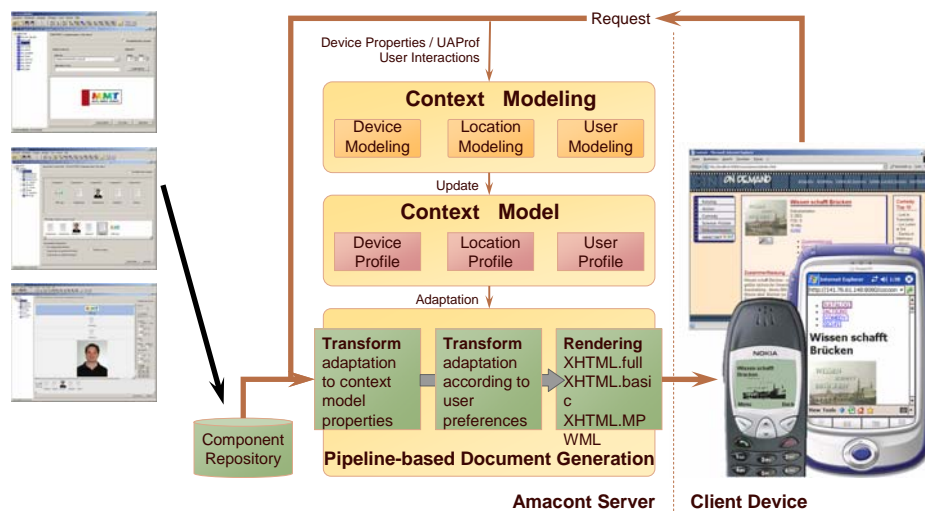
Presentation Authoring



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Publishing Process



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Conclusion and Future Work

■ Conclusion

- Development of component-based document format applications
- Graphical Authoring Tool “AMACONTBuilder”
- Visual support of structured development process
 - » Content, Hypertext and Presentation Authoring
 - » Definition of adaptation aspects

■ Future Work

- New editor plug-ins
 - » Hyperlink Editor, Form editor
- Visual definition of dynamic interactive behavior
- More intuitive visualization of context
 - » Location, device capabilities etc.

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