Mobia Modeler: An Adaptable Mobile Application Modeler for Non-Expert Users

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Outline

- Mobia Framework
- Goals and Questions
- Sample Applications
- Concept
- Implementation
- Next Steps
Mobia Framework

- Mobia = **Mobile applications**
- Simplify the development of applications for mobile platforms
  - Small, platform independent, custom, domain specific
- Domain-Specific Modeling (DSM)
  - High-level, graphical
- Non-expert users
- Focus on mobile health monitoring
Mobia Framework

- Graphical Model Component
  - Visualization
  - Modules
  - Export
- Model Mutator Component
  - Processing
  - Code transformation

- Project at LFE Medieninformatik
Goals

• Enable non-expert users to easily develop applications in the domain mobile health monitoring
  ⇒ Modeler

• Create a modeling tool for mobile applications that can adapt the user interface to the needs of non-expert users
  ⇒ Adaptability
Questions

• Modeler
  – Level of abstraction?
  – Program logic?
    • Visualization?
    • Modeling?
  – User interface?
  – Usability?

• Adaptability
  – Questions?
  – User interface?
    • Layout?
    • Elements?
Diplomarbeit „Mobia Modeler“

Activity and ECG Monitor

Username

Password

Login

ECG Monitor

Personal Information

Activity Monitor

Lying  10 min

Sitting  20 min

Moving  40 min

Stop

Reset
Epilepsy Safety System

- Input from sensors
- Output
  - Device
  - SMS
- Focus on logic
- Real application
Concept: Adaptability

- Wizard with questions
  - Basic Information
    - Target device?
    - Domain?
    - Type of user?
  - User interface (Modeler)
    - Font size?
    - Handedness?
    - Sidebar left or right?

- Features
  - Health problems?
  - Inputs available?
  - Outputs required?
  - Simple or advanced options?
Concept: Tool

- Problems
  - Modeling of logic
  - Layout errors
  - Input and output
  - Complex use cases
  - Target platforms

⇒ Configurable components
Configurable Components

- High-level
- Complex
- Context
- Configuration
- Layout
- Help
- Validation
- Security
- Transformation
Workflow

User Info → Adapt → Use → Load/Save → Export
<?xml version="1.0" encoding="utf-8" ?>
<application>
  <properties>
    <property type="name">Activity and ECG Monitor</property>
  </properties>
  <screens>
    <screen id="1">
      ...
    </screen>
    ...
  </screens>
  <components>
    <component id="1" type="login" screenRef="1">
      <users>
        <user>
          <username>test</username>
          <password>test</password>
        </user>
      </users>
    </component>
    <component id="2" type="navigation" screenRef="2">
      <items>
        <item targetScreen="3">Activity Monitor</item>
        <item targetScreen="4">ECG Monitor</item>
        <item targetScreen="5">Personal Information</item>
      </items>
    </component>
    ...
  </components>
</application>
Implementation

- Adobe Flex 3.3
- Adobe Flash CS3
- MXML
- ActionScript 3.0
- Mate Flex framework
  - Tag-based
  - Event-driven
  - Dependency injection
Next Steps

- Implementation
- User study
- Thesis paper
Questions and Discussion