

Abschlussvortrag Diplomarbeit

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

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Outline

- Motivation
- Mobia Framework
- Goals and related work
- Sample application
- Mobia Modeler
- Implementation
- Evaluation
- Summary and conclusion
- Future work



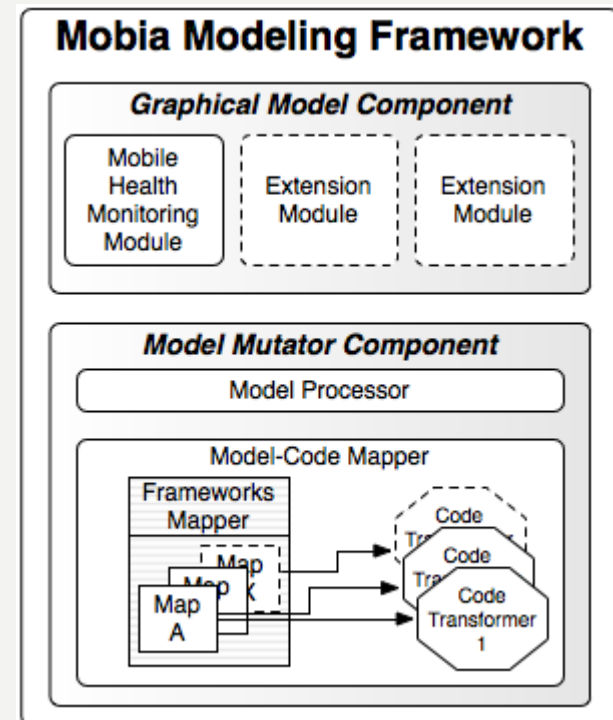
Motivation

- Mobile phones
 - Changed the way people think and behave
 - Will become the primary computing platform
 - Mobile applications
 - Success of the iPhone and App Store
 - Open platforms and SDKs
- ⇒ Development is restricted to programmers



Mobia Framework

- **Goal:** Enable non-programmers to easily build mobile applications
- **Domain:** Mobile health monitoring
- Domain-Specific Modeling (DSM)
- Mobia Modeler
 - Visualization, modules, export
- Mobia Processor
 - Processing, code transformation



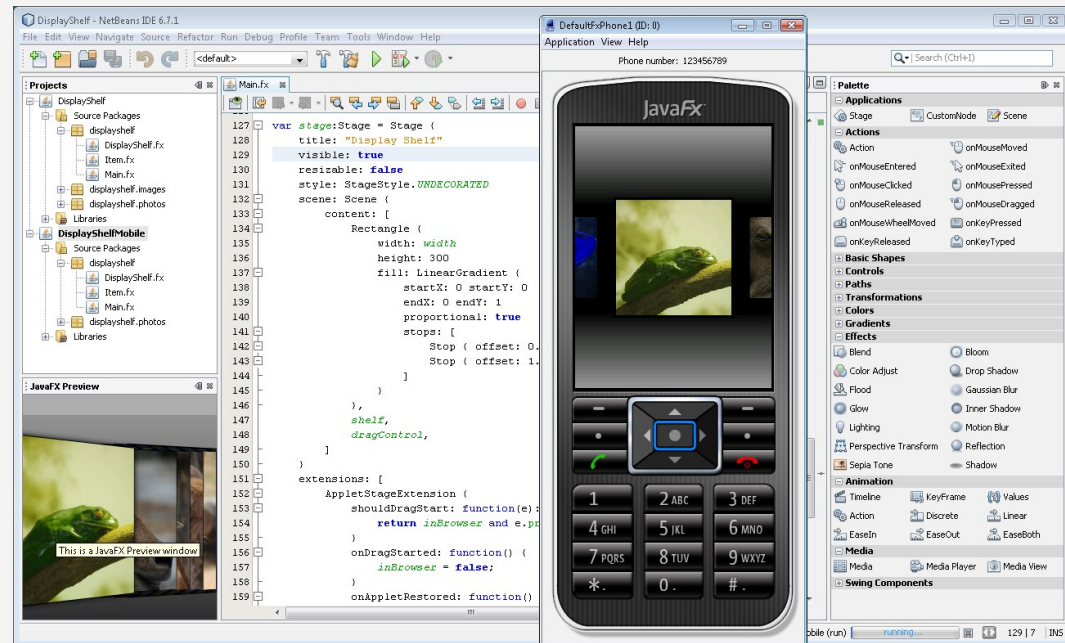


Goals

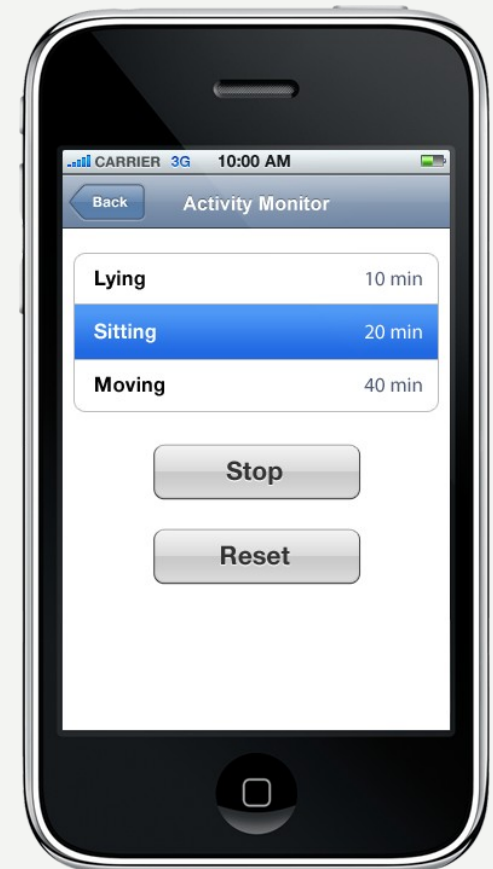
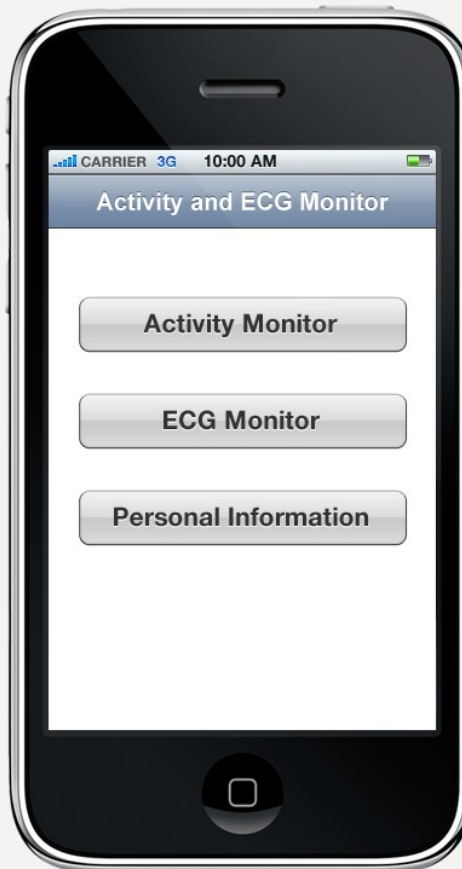
- Enable non-programmers to easily develop mobile applications in the domain of mobile health monitoring
⇒ Mobia Modeler
- Create a tool to develop mobile applications that can adapt the user interface to the needs of non-programmers
⇒ Adaptation

Related Work

- Domain-Specific Modeling
- Integrated development environments
- Visual programming
- Prototyping
- Mobile health



Sample Application: Activity and ECG Monitor



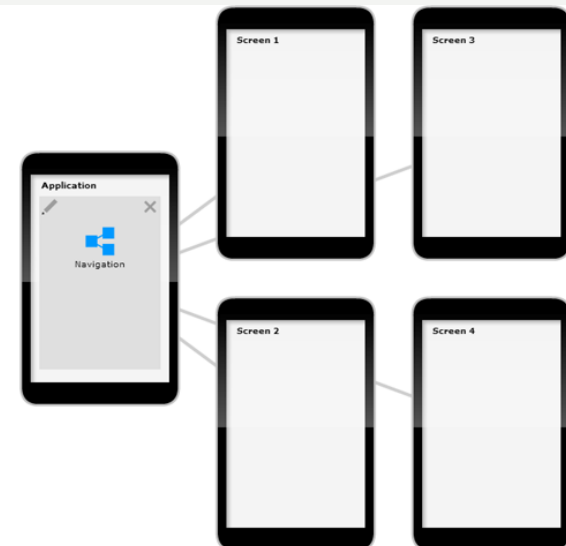
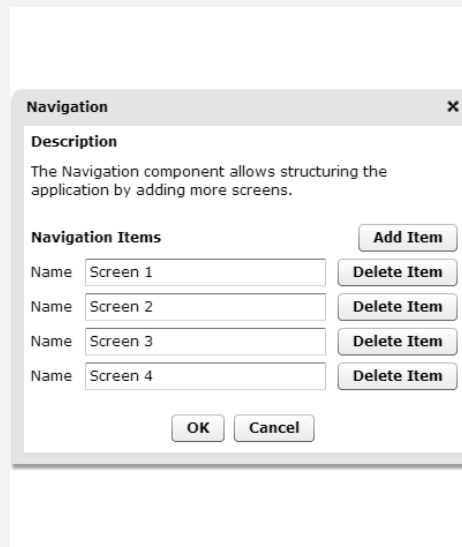


Mobia Modeler: Motivation

- Level of abstraction
- Modeling of logic
- Modeling of transitions
- Layout problems
- Input and output
- Devices and platforms

Mobia Modeler: Screen Management

- No manual adding of screens
- Instead implicit adding of screens
- Automatic creation of transitions
- Default screen



Mobia Modeler: Screen Layout

- No manual adding of user interface elements
- No WYSIWYG editing style
- Instead automatic layout of screens
- Impossible to create invalid combinations

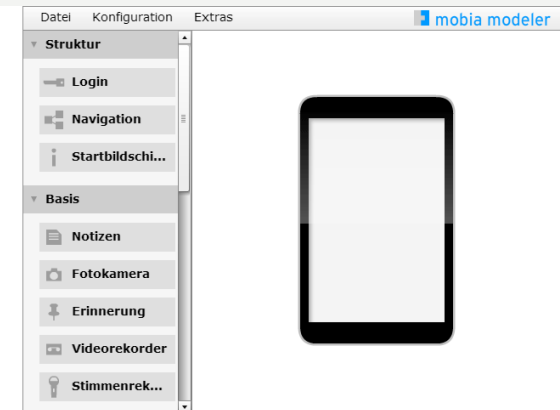


Mobia Modeler: Adaptation

- Adaptable systems vs. adaptive systems
- Areas of adaptation
 - User interface adaptation
 - Content adaptation
- Wizard
 - Basic
 - Users
 - Devices



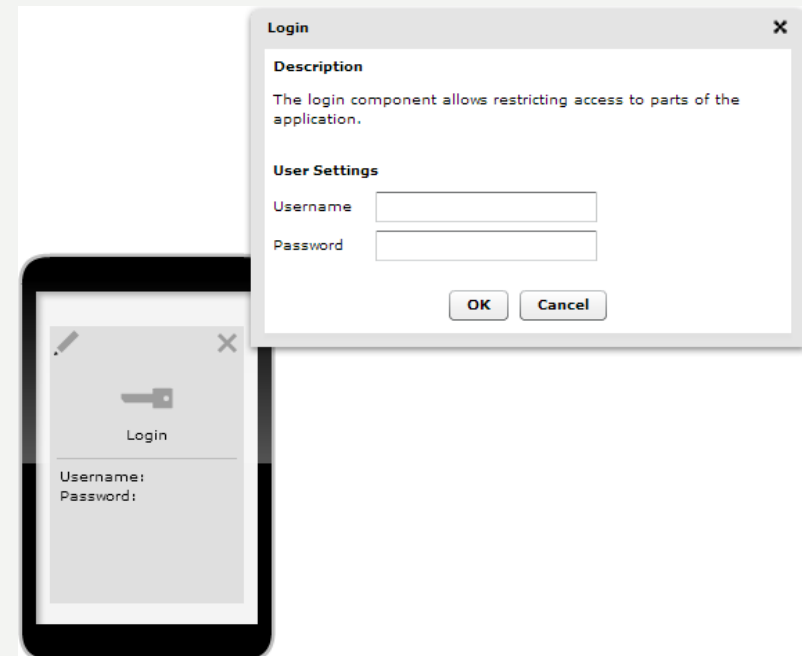
Default



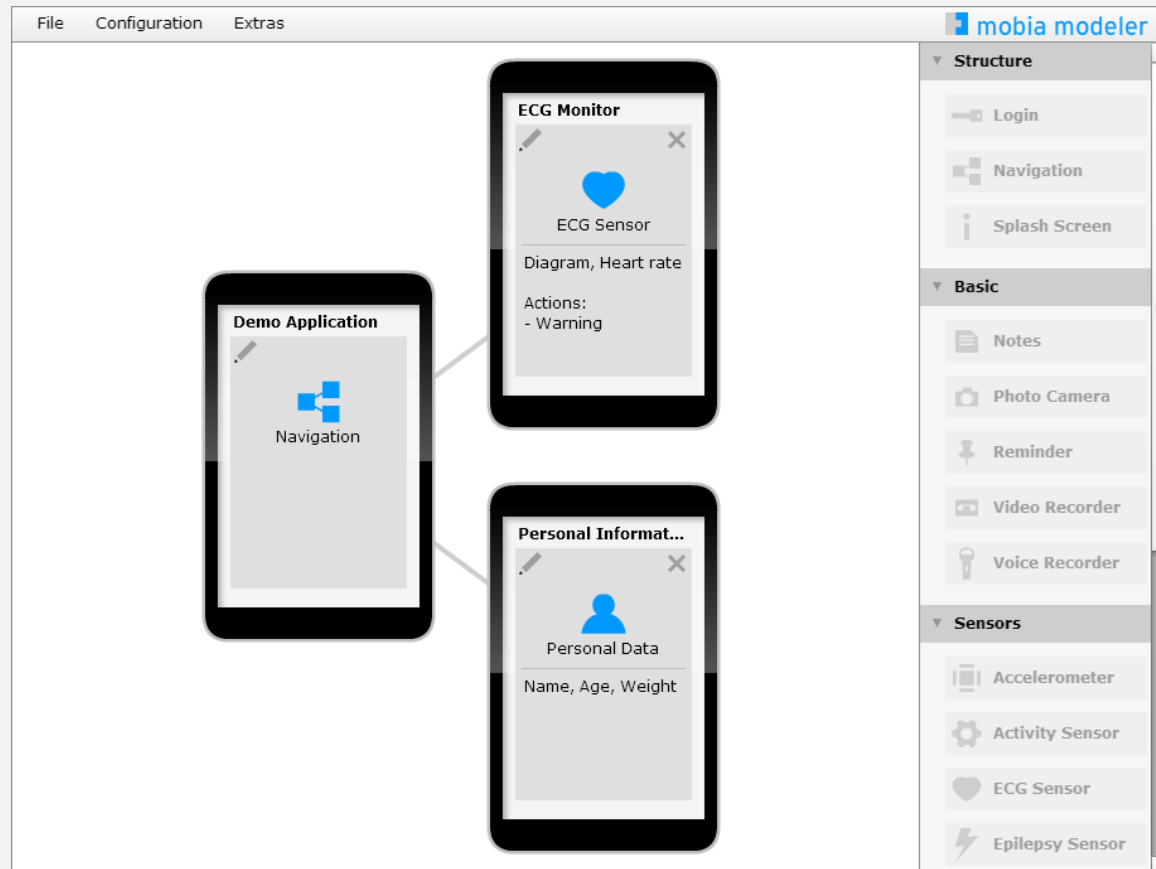
Adapted

Mobia Modeler: Configurable Components

- **Definition:** *A configurable component is a group of user interface elements with a clearly defined meaning.*
- **Features:**
 - High-level
 - Configuration
 - Context
 - Validation
 - Devices and platforms
 - Learnability and usability



Mobia Modeler: Live Demo





Implementation

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



Evaluation: User Study

- Goals
 - Adaptation, workflow, user interface, feedback
- Participants
 - 16 participants: 6 programmers, 10 non-programmers
- Hypotheses
 - **H1** Users with and without programming experience can build mobile applications equally easy
 - **H2** Users are faster when the user interface is adapted
 - **H3** User prefer the adapted version

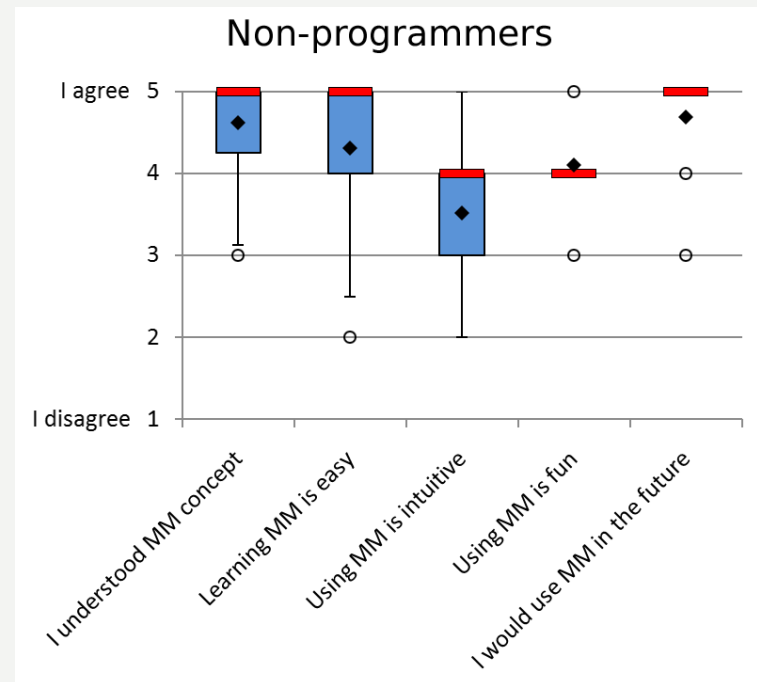
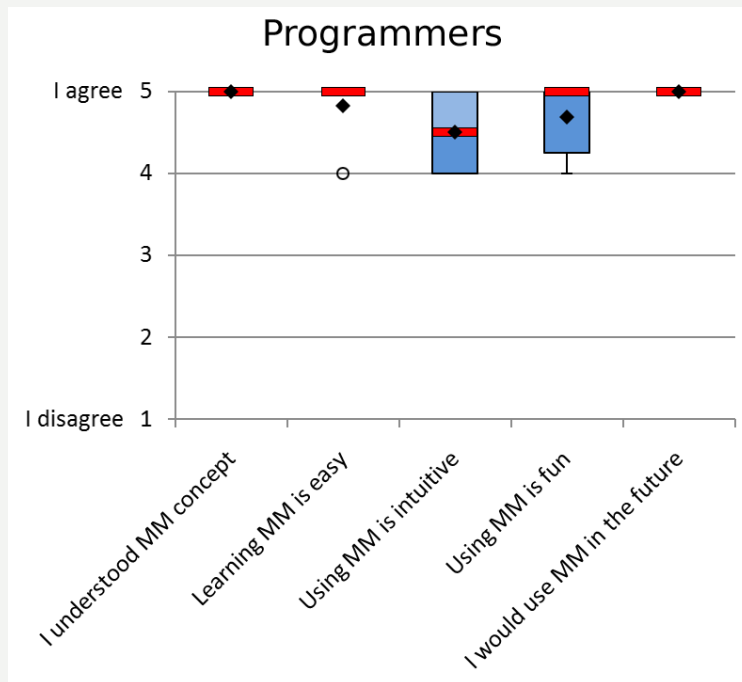


Evaluation: Tasks

- Exploration
 - 5 minutes with subsequent questions
- Tasks
 - Building two sample applications in steps
- Feedback
 - Very positive
 - Concept understood
 - Good remarks

Evaluation: Results and Analysis

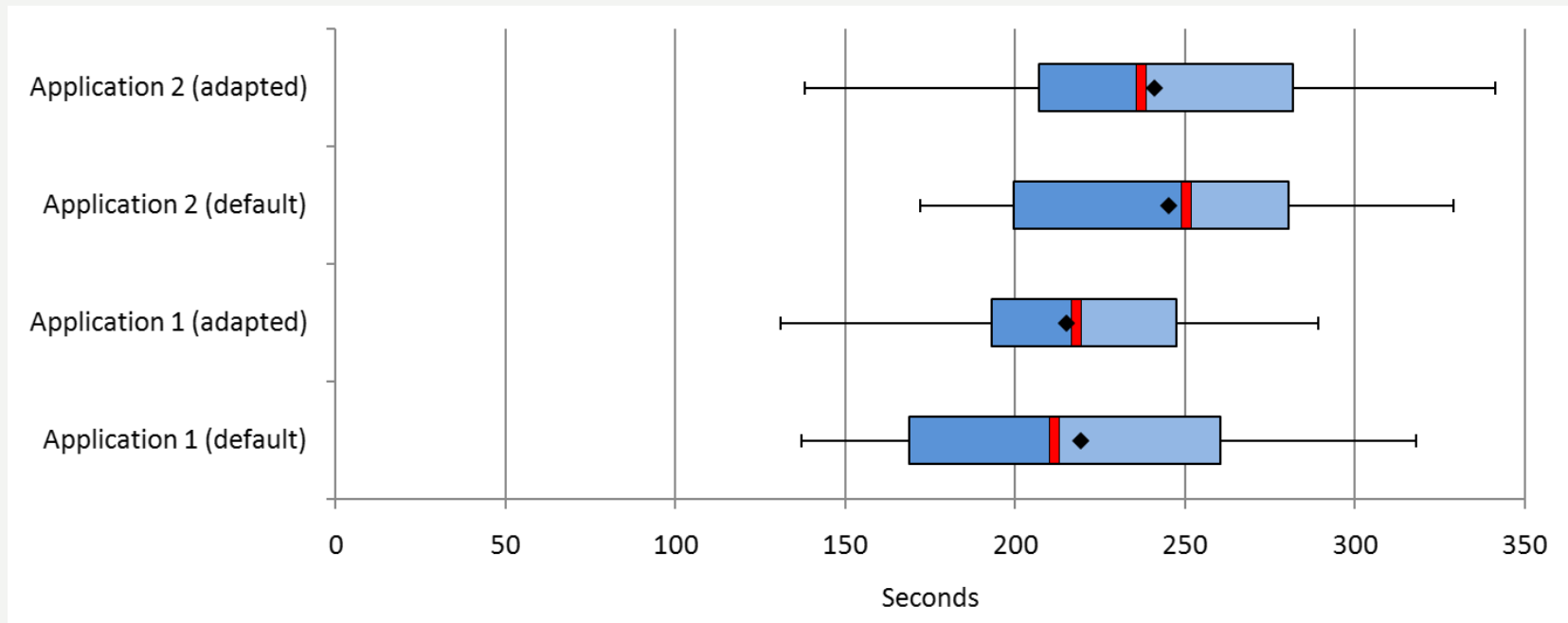
- H1** Users with and without programming experience can build mobile applications equally easy





Evaluation: Results and Analysis

- **H2** Users are faster when the user interface is adapted
⇒ T-test showed no statistical significance





Evaluation: Results and Analysis

- **H3** User prefer the adapted version
 - ⇒ **88%** said adaptation is a good concept
 - ⇒ **100%** said the adaptable version is easier to use



Summary and Conclusion

- Mobia Framework
- Goals: Mobia Modeler and adaptation
- Sample application
- Mobia Modeler
 - Configurable components
- Evaluation
 - All goals achieved
 - Two of the three hypotheses confirmed
 - High acceptance



Future Work

- Mobia Framework
 - Integration of the Mobia Processor, more domains
- Configurable components
 - Improve components, more components, reflective configurable components
- User interface
 - Obvious adaptation, coloring system for groups
- Workflow
 - Simulation, plug-and-play for sensors



Questions and Discussion