Integrating Human-Centered and Model-Driven Methods in Agile UI Development

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W04: IFIP WG 13.2 Workshop on User Experience and User-Centered Development Processes

Holger Fischer

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Motivation

• Usability/UX
  • Increasing importance as a quality aspect
  • Not just a quality aspect of the product
  • Fundamental attribute of the process

• Challenges
  • Integration of human-centered design in software development
  • Acceptance is difficult for development
  • Concurrent processes executed by usability professionals
Human-Centered Design

- Big upfront analysis before starting to implement
  ➔ communicates a misleading understanding

- Missing formalization of concepts and artifacts
  ➔ e.g. to foster reusability

- Continuously refined design solutions
  ➔ limit the portability of prototypes

- HCD needs people and iteration
  ➔ difficulties for linear processes
Agile Development

• Misleading roles (e.g. product owner, customer)
  ➡ implies that HCD is already there

• Misleading techniques (e.g. user stories)
  ➡ nothing to do with users if based on assumptions
  ➡ doesn’t work with multiplicative complexity

• Feature-based development
  ➡ leads to ignorance of dependencies
Model-Driven Software Development

- Linear development from models to code
  - no validation through iteration
  - no continuous evolutionary development
  - created models are perceived to be not changeable

- Communicates a lot of rigidity
  - user interfaces are inflexible
Our Objectives

• Integrated development approach
  • Formalization of users’ tasks and interactions
    ➔ to foster consistency in the UI
  • Decoupling & flexibility between workflow and technology
    ➔ to enable suitability of the tasks and controllability by the user
  • Flexibility & exchangeability of UIs
    ➔ to foster agility and prototyping
• Iteration & user involvement
  ➔ to enable feedback and model refinement
Our Approach

- **Structured Evaluation (days)**
- **Unstructured Evaluation (+ x days)**
- **Structured Evaluation (days)**
- **Models Base**
- **Transformation (days)**
- **Modeling (days)**
- **Iteration n (weeks)**
- **Synthesis (days)**
- **Envisioning (week)**

**Phase Details**

- **Requirements Engineering**
- **User Interface Development**
- **Quality Assurance**
- **Software Architecture**

**Key Steps**

1. **Envisioning**
2. **Synthesis**
3. **Structured Evaluation**
4. **Transformation**
5. **Modeling**
6. **Unstructured Evaluation**
7. **Iteration n**
8. **Quality Model**
9. **Backlog**
10. **User Interface Components**
11. **User Interface Release**

**Timeline**

- **Weeks**
- **Days**
- **Unstructured Days** (x)

**Focus Areas**

- **Vision**
- **Quality Model**
- **Backlog**
- **Bugs**

**Tools**

- **Strategies**
- **Techniques**
- **Frameworks**

**Case Studies**

- **Examples**
- **Results**
- **Improvements**

**Conclusion**

- **Implications**
- **Future Research**
- **Next Steps**
Thank you very much.
Thanks a lot for using these images within this scientific presentation


