

UE Methods & their integration into modern Software Development

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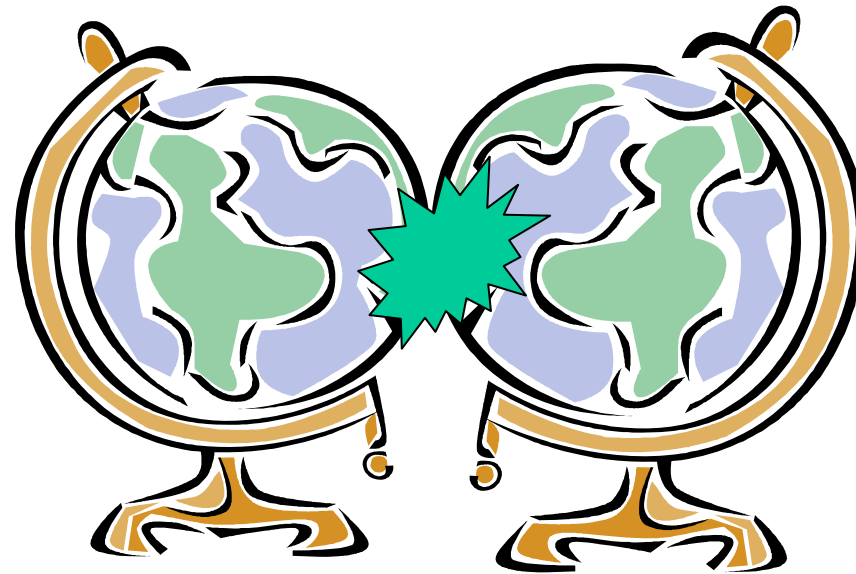
Agenda

- Introduction
- Software development
- Usability engineering
- Methods
 - Styleguide development
 - Conjoint analysis
 - Paper Prototyping: Idle screen study
 - Laddering interviews
 - Field observations
- Lessons learned



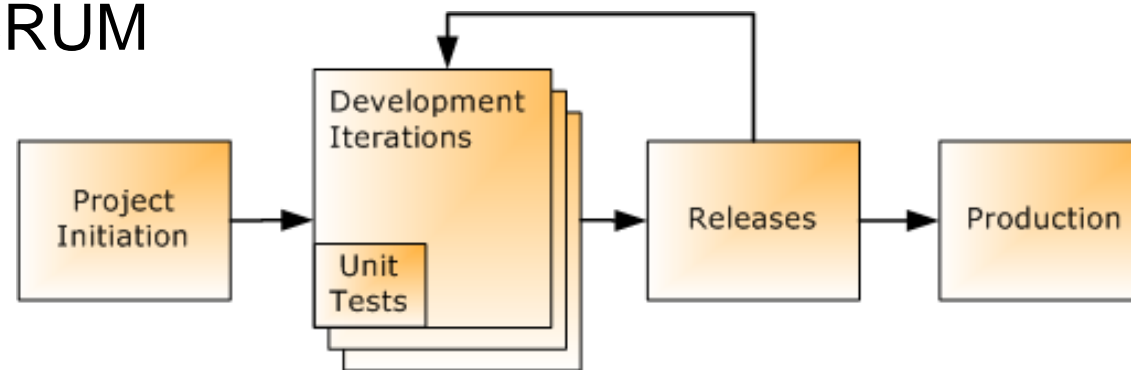
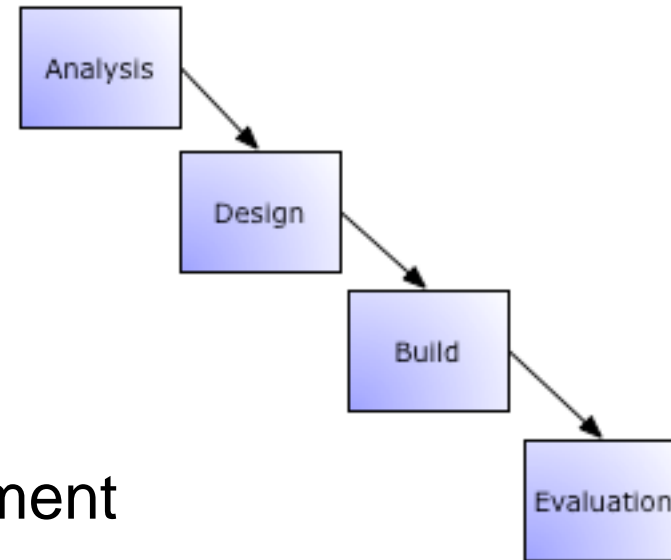
Introduction

- Two worlds clash together
 - Language
 - Expectations
 - Processes
 - Culture



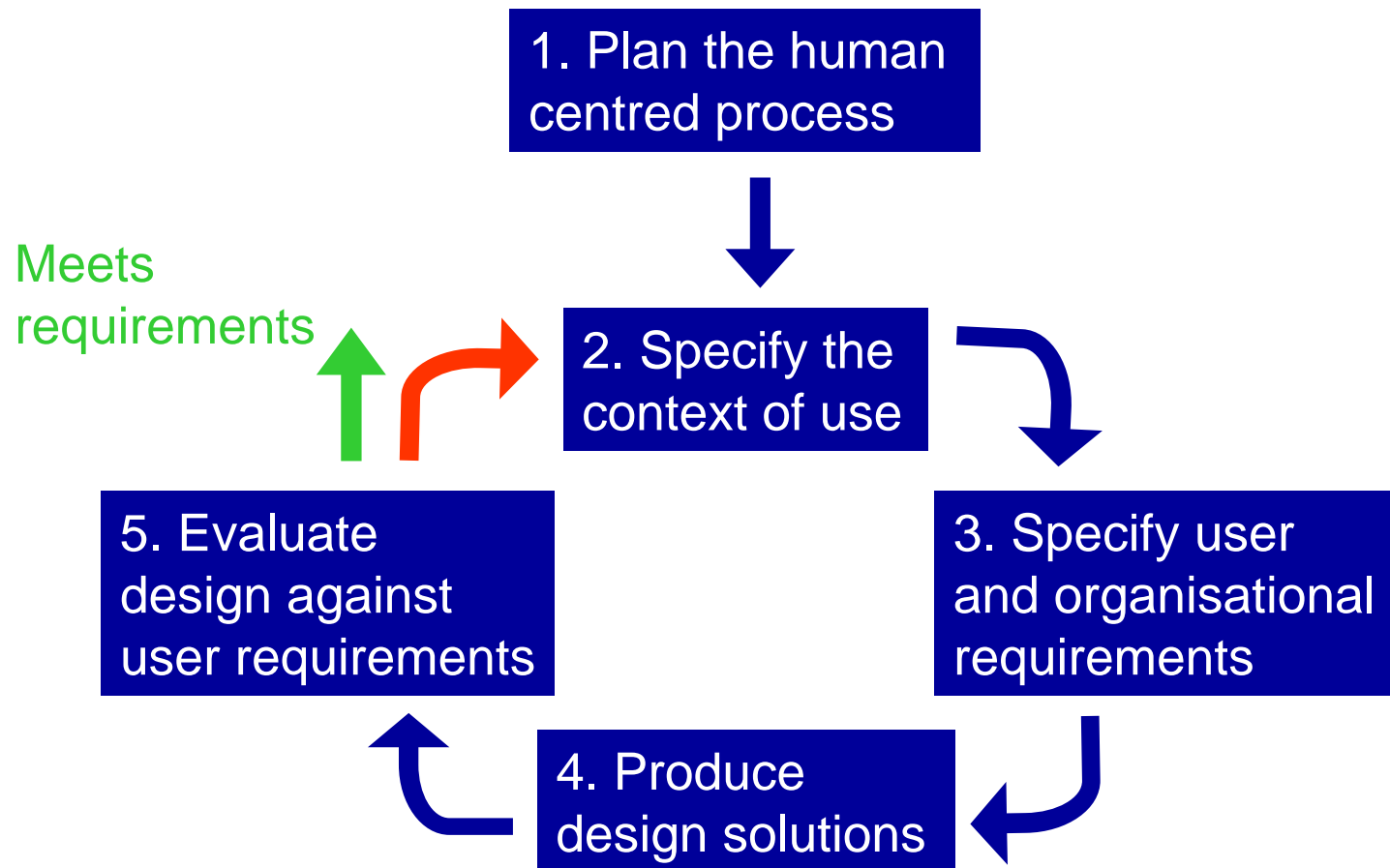
Software Development

- Classical Software Development
 - Waterfall (right)
 - Spiral- model
- Modern Software Development
 - XP (below)
 - SCRUM

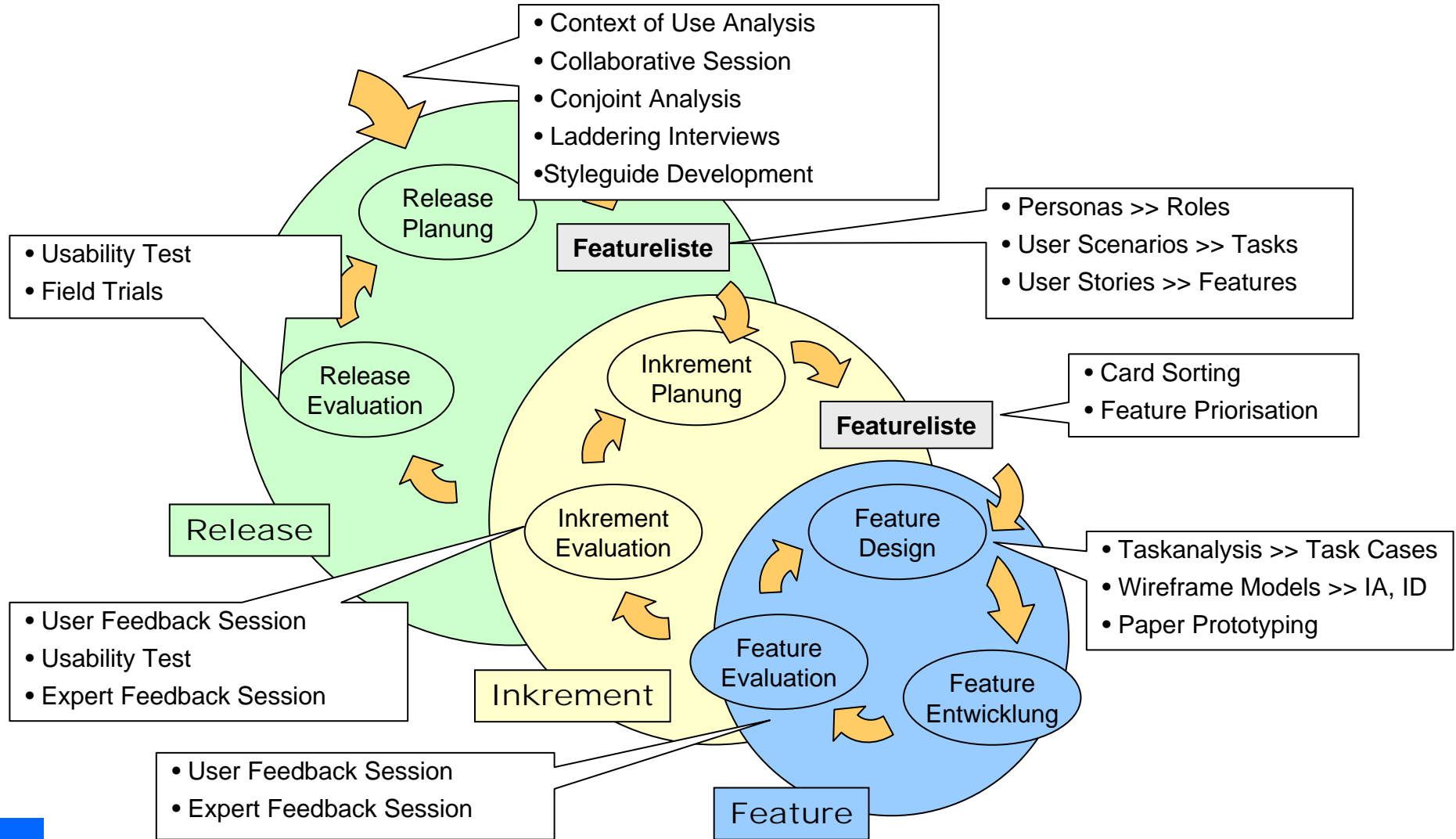


User Centred Design as a Process

International Standard ISO 13407



Software Development & UCD



Methods

- Styleguide development
- Conjoint analysis
- Idle screen study
- Laddering interviews
- Field observations



Styleguide Development

- Goals
 - Embody good practice in UI design
 - Increase the consistency between screens
 - Reduce the development time
 - Improve the quality of the interface
- Description
 - Style guides are used to provide a consistent look and feel. They should be defined as part of usability requirements and conformance should be monitored during development



Conjoint Analysis

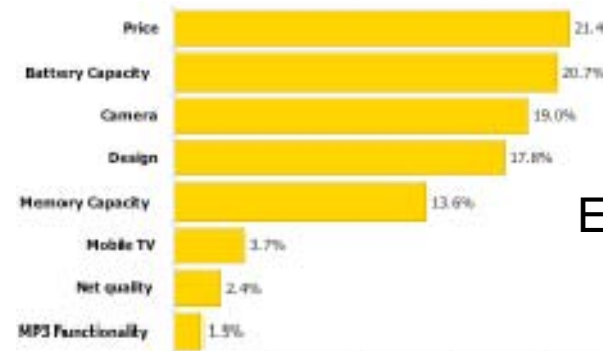
- Goals
 - Provides information on the relative importance of a particular feature compared to other features
- Description
 - Participants choose between two products with varying attributes. The attributes are varied systematically. Statistical Analysis provides a picture on the users preferences and the importance of features.



Conjoint Analysis

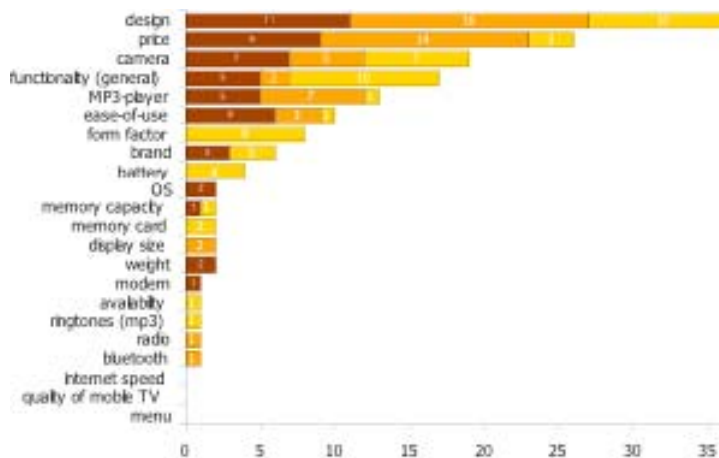
Wenn nur die drei unten beschriebenen Handies zur Auswahl stünden, welches würden Sie kaufen? (Frage 2 von 20)

 <p>Weitere Fotos</p> <p>UMTS/HSDPA 1 GB Speicherkapazität</p> <p>Hoher Qualität bei MobileTV</p> <p>149 €</p> <p>Keine Kamera</p> <p>Hardbuttons für MP3s</p> <p>5 Tage Akkulaufzeit</p>	 <p>Weitere Fotos</p> <p>GPRS 8 GB Speicherkapazität</p> <p>Niedrige Qualität bei MobileTV</p> <p>49 €</p> <p>5 Megapixel Kamera</p> <p>Menu-Steuerung für MP3s</p> <p>3 Tage Akkulaufzeit</p>	 <p>Weitere Fotos</p> <p>GPRS 128 MB Speicherkapazität</p> <p>Niedrige Qualität bei MobileTV</p> <p>0 €</p> <p>2 Megapixel Kamera</p> <p>Menu-Steuerung für MP3s</p> <p>1 Tag Akkulaufzeit</p>	<p>Ich würde keines der gezeigten Modelle wählen.</p>
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Example Attributes

- Battery Capacity
- Price
- Camera
- MP3 Functionality
- Memory
- Internet
- mobileTV

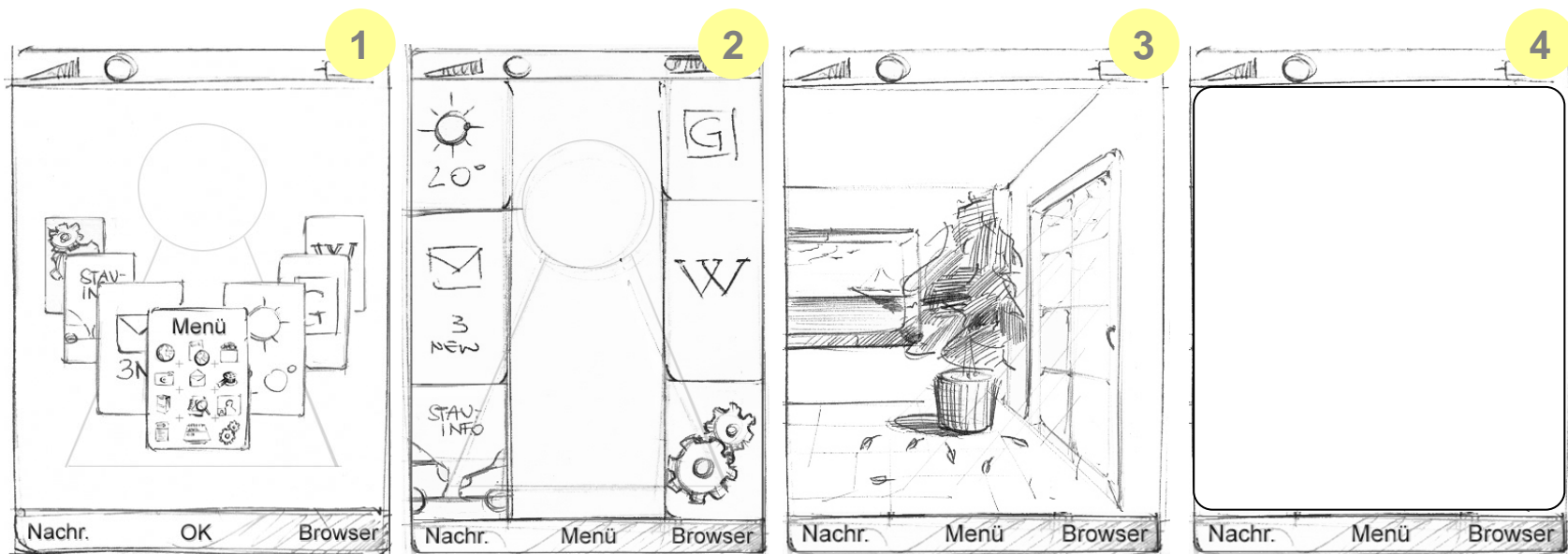


Paper Prototyping: Idle Screen Study

- Goals
 - Which services are liked/hated by a majority of the study participants?
 - Where do the users prefer to use specific services?
 - How could these services be presented to the user in an unobtrusive, useful way on the active idle screen?
- Description
 - Four navigation concepts were presented to the users
 - In a task-based study, users explored the four concepts using paper prototypes and chose the most attractive one



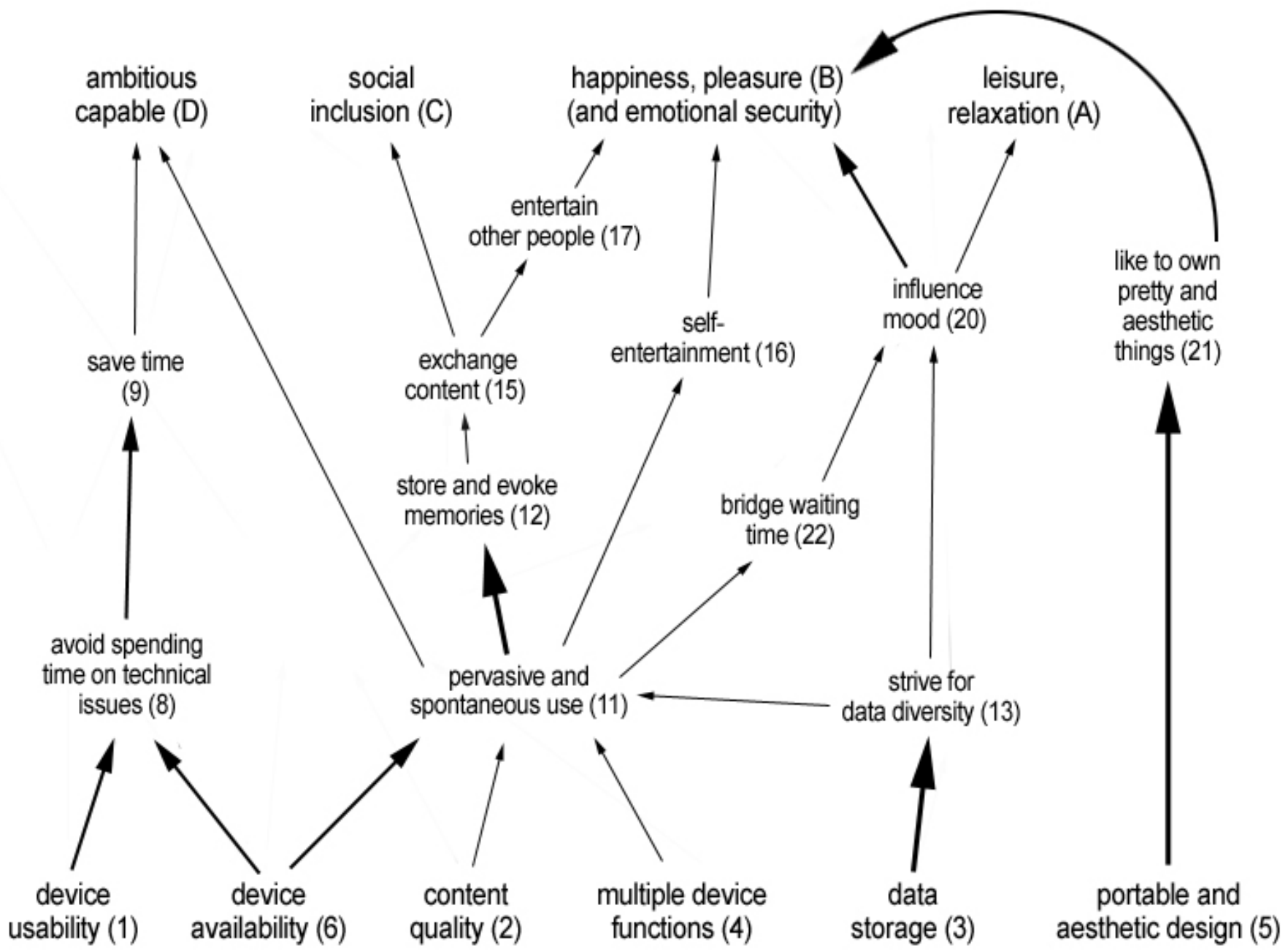
Paper Prototyping: Idle Screen Study



Laddering Interviews

- Goal
 - Identification of user's goals and values
- Description
 - Means-end theory & laddering interviews
 - Result: Hierarchical Value Map (HVM)





Field Observations

- Goals:
 - How do users behave in a real world setting?
 - Which context of use has to be considered?
- Description:
 - Contextual Inquiry
 - Structured Observation



Field Observations

The screenshot displays the 'The Observer XT - Discussion' software interface. The main window shows a timeline of observations with a green bar at the top and a blue bar below it. A line graph at the bottom shows heart rate (BPM) over time. The interface includes several panels:

- Explorer:** A tree view on the left showing the project structure, including 'Discussion', 'Setup', 'Observations', 'Boss-employee', 'Event Files', 'Media files', 'External data', 'Data profiles', 'Default Data Profile', 'Analysis settings', and 'Export settings'.
- Playback Control:** A panel with play, stop, and other control buttons.
- Observation Control:** A panel showing timer information:

Timer	h:m:s:ms:sec
Start	12:07:50 000000
Current	12:07:54 609016
Stop	12:08:10 116663
Elapsed	00:00:20 116663
Maximum	00:01:13 333333
Remaining	00:00:15 507647
- Boss-employee - Event Log:** A table listing events with columns for Event Time and Subject:

Event Time	Subject
12:07:52 224	Boss
12:07:52 224	Employee
12:08:10 116	Boss
12:08:10 116	Employee
12:08:10 000	Employee
12:08:10 116	Boss
12:08:10 126	Boss
12:08:10 116	Boss
12:08:10 116	Boss
12:08:10 116	Employee
12:08:10 116	Employee
12:08:10 116	Employee
12:08:10 116	Boss
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12:08:10 116	Employee
12:08:10 116	Employee
12:08:10 116	Boss
12:08:10 116	Boss
12:08:10 116	Boss
12:08:10 116	Employee
- Physiological Data:** A graph showing heart rate (BPM) and heart rate variability (HRV) over time. The BPM graph shows a fluctuating line around 100 BPM, and the HRV graph shows a fluctuating line around 100.
- Codes:** A table listing codes and their status:

Subjects	Behaviors	Modifiers	Status	Start	Stop
Speech	Talking		s	t	
	Humming		h		
	Gaze		g		
	Looking at		l		
	Looking away		k		
Posture	Upright		p		
	Leaning back		e		
	Leaning forward		n		
	Gesture		r		
	Together		b		
- Category:** A dialog box for selecting categories to show on rows, columns, or sheets. The 'Show on' section has radio buttons for Rows, Columns, and Sheets. The 'Show' section has checkboxes for Total number, Total Duration, Mean, Minimum, Maximum, Std deviation, Standard error, and Rate per minute.



Lessons learned

- Agile (modern) SW development and UCD share same goals
- Cultural problems can be solved
- Careful placing of methods supports high-quality outcome
- Success in combining UCD and agile SW development roots in social competences of project team members



Industrial User Interfaces: Publications

- **Accepted (selected):**
 - Geven, A., Strassl, P., Ferro, B., Tscheligi, M., Schwab, H. (2007). Experiencing Real-World Interaction _ Results from a NFC User Experience Field Trial. Proceedings of the Ninth International Conference on Human Computer Interaction with Mobile Devices and Services, MobileHCI 2007, pp.192-195.
 - Geven, A., Schrammel, J., Tscheligi, M. & Mayer, M. (2008). Cell Phone Design for Teenage Use. In: Proceedings of the IASTED-HCI Conference, 17-19 March 2008, Innsbruck, Austria.
 - Geven, A., Tscheligi, M., Sefelin, R., Mayer, M.: Always-on Information - Services and Applications on the Mobile Desktop. Tenth International Conference on Human Computer Interaction with Mobile Devices and Services, MobileHCI 2008 (in press)
 - Leitner, M., Wolkerstorfer, P., Sefelin, R., Tscheligi, M.: Mobile Multimedia: Identifying User Goals Using the Means-End Theory. Tenth International Conference on Human Computer Interaction with Mobile Devices and Services, MobileHCI 2008 (in press)
- **Submitted (selected):**
 - Geven, A., Schrammel, J., Sefelin, R., Tscheligi, M., Mayer, M.: Mobile Touch Screen Interaction for Teen Use. Submitted to the NordiCHI2008



Thank you for your attention!!!

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