Design Decisions in Multi-Device Cross-Platform Environments

What should touch-based user interface design for an application be like when:
• a variety of devices from different vendors (multi-device)
• cooperate or used separately but synchronized over all involved operating system (cross-platform)?

Multi-device cross-platform user interfaces can be as consistent (1) as possible, as adapted to the device platform (2) as possible, incorporating their specific human machine interaction patterns or can be in a balance between adaption and consistency (3). Which approach is most appropriate for the User Experience (UX) in this context?

Degree of platform adaption
Degree of consistency
(1) Multi-Device Cross-Platform User Experience

Degree of platform adaption
Degree of consistency
(2) Multi-Device Cross-Platform User Experience

Degree of platform adaption
Degree of consistency
(3) Multi-Device Cross-Platform User Experience

Step 1: Interviews (presented study & foundation for further studies)
Participants n = 11 (m = 6, f = 5) | Selection Criteria = work experience in the field of user interface development | Duration = 1 hour | Preparation: literature review and creation of structured guideline for the interviews | Evaluation: audio record and protocol

How are multi-device cross-platform user interfaces designed today in the context of cars?

Problems
• Except for use cases, no valid guidance (including studies, methods and tools) for design decisions
• No valid knowledge if adoptions or consistency are most important for optimal m.-d. c.-p. User Experience
• No time and capacity within daily business to address specific challenges

Assessments
• Habits, daily practiced patterns and established paradigms were named as possible reasons for a platform specific adaption (referring to expectation and platform experience of users)
• Acknowledgement between devices, fast orientation and product-specific experience were named as reasons for consistent user interfaces among involved devices
• Advantages of both approaches could not be applied and are not trivial
• A balance between adaption and consistency is preferred – even not knowing how to achieve it

Estimations
• As possible candidates for adaption experts expect application architecture (information architecture and navigation concepts) and interaction elements (buttons, sliders) – as well as a combination of both
• As possible candidates for consistency experts expect graphical design (font, forms and colors)
• No knowledge how to achieve concrete balance and generate a holistic product experience
• Todays design decision are made by designers and their work experience or they are made by stakeholder requirements

Step 2 Benchmark Analysis
Analysis of Human Interface Guidelines and Patterns

Step 3 Low fidelity Testing of meaningful user interface adaption for specific parts (Architecture, Interaction elements or Layout) according to users

Step 4 Testing of high fidelity porotypes of an multi-device cross platform application

Multi-device cross platform guideline for touch-based user interface.
Stable knowledge about what parts of an user interface need to be consistent across all device and which adaption to the device specific platform and patterns should be made for an optimal User Experience

Authors
• Maximilian Kautetzky | University of Regensburg | Daimler AG
• Dr. Tobias Schwarz | Daimler AG
• Prof. Christian Wolff | University of Regensburg