
Consumer focus in networked product development

Position paper for the workshop: IT@Home: Unraveling Complexities of Networked Devices in the Home
DRAFT

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Abstract

This position paper describes experiences in Philips Consumer Electronics with designing and evaluating networked consumer devices. We will particularly elaborate on the consumer focus in the product creation process.

Keywords

Position paper, Connected Planet, consumer electronics, user experience, simplicity

ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User Interfaces: standardization, user-centered design.

Introduction

The gap between consumer electronics and personal computing is closing. This has mainly been fueled by technical developments, such as innovations in digital processing, miniaturization, storage, broadband Internet and wireless networking. However, the pace of this convergence has often been overrated. The main reason for that is the inherent complexity of the technology, and the difficulty of hiding it.

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As a member of the Digital Living Network Alliance (DLNA) we "share a vision of a wired and wireless interoperable network of Personal Computers, Consumer Electronics and mobile devices in the home enabling a seamless environment for sharing and growing new digital media and content services." [2]

The key aspect of the Philips vision, called Connected Planet [1], is personal freedom: the freedom to choose the entertainment you like to enjoy, the freedom to control the content or service from the comfort of your lounge, and the freedom to connect whatever device you want to connect. The ultimate goal is to provide consumers with uninterrupted access to what is important for them, anywhere, anytime. The vision is based on the assumptions that, eventually:

- All digital multimedia devices and computing devices are wirelessly linked to each other;
- Every house will have a broadband Internet connection; and
- Storage, to record or download to and to stream from, is abundantly available.

The Philips Consumer Electronics organization is made up of different business groups, each focusing on particular product categories. This structure is optimized for device-centric product development. In case of a network-centric scenario a system approach is needed as well, and this requires extra effort across business groups. The following topics have been tackled:

- Optimized process with consumer focus.
- Single repository of consolidated use cases;

- Harmonized user interaction style;
- Common approach to user experience testing;

Optimized process with consumer focus

The development processes are highly structured and have been harmonized across the entire organization. Due to differences in product complexity, actual processes differ in resources and (completion) time. The overall process has been augmented with "simplicity" gates: activities that involve some form of testing and validation with a specific consumer focus, such as:

- Validation of prioritized commercial requirements specification (in order to avoid a large "wish list" as opposed to a clear product specification);
- Structured translation of consumer needs into a product specification ("voice of the customer" tree)
- Appropriate user experience test plan, which is embedded in all milestones checklists.

Single repository of consolidated use cases

A single repository of consolidated use cases has been viewed as an important asset. The new challenge is to focus on system solutions, and hence system use cases.

A set of usage scenarios (including storyline and use of personas) has been incrementally defined and prioritized to get the right focus. Both internal product plans as well as external standards proposals (e.g. DLNA) have been taken into account.

Harmonized user interaction style

The scope of Connected Planet covers all digital consumer appliances: stationary devices, portables, mobiles and computer applications. Two years ago we started a project on UI harmonization with the development of a user interaction standard. The benefits are obvious:

- Consistent UI across products,
- One identity to the consumer, and
- Reduction of development costs.

One of the challenges is to define an interaction style that is *scalable*. It covers both large and small screens, different viewing distances, and different graphics capabilities for the various product platforms. Another requirement is to have a unified approach for standalone and networked applications. Furthermore, UI design and UI implementation must be composed of a limited set of UI building blocks (e.g. widgets) to limit complexity and allow re-use. As a consequence, UI design and widget development have to go hand in hand in the early phase of product development.

The UI standard consists of two parts:

1. A generic identity standard for all product categories. This contains rules about use of visual signatures, word mark, colors, fonts, and general layout.
2. An interaction style guide per product category: TV-screen, Touch screen, PC/web application, local screen stationary, local screen portable, etc. This contains the interaction principles, interaction building

blocks and composition rules.

It was decided to develop the interaction style guides per lead product, and not as a separate, corporate activity in order to get more commitment and buy in from the business. The definition of the style guide is done in parallel with the definition of the product UI. A technical team reviews the style guide proposals, to make sure that they can be implemented.

Common approach to user experience testing

The practice of user experience testing has varied a bit across the different business groups. A concerted effort has resulted in a standard approach to user experience testing. Key elements of this approach are:

- Summative tests of finished products ("validation test"), as well as formative tests of product concepts and prototypes ("development test").
- Combined effort of human factors and market intelligence.
- Focus on user satisfaction.
- Standard set of test protocols (including usability targets, questionnaires, etc.)
- Test facilities and expertise at all development sites

Lessons Learned

We have encountered the following issues:

- The scope of the project has been broadened from only networked products to also include non-networked products (one identity for all products).

- Top-level management endorsement has paved the way to see UI investments as an opportunity for product differentiation rather than just cost.
- Product development processes require only moderate changes to accommodate more consumer focus.
- Resources are always limited, so we have taken a phased approach in UI harmonization.

Citations

[1] Philips Connected Planet.
<http://www.connectedplanet.philips.com>.

[2] Digital Living Network Alliance.
<http://www.dlna.org>