

Understanding Consumer Electronic (CE) Product Landscape through User Experience Assessment: A Systematic Approach

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Abstract: - Many of the organizations, companies, and industries today are focusing on User Experience to differentiate themselves from competitors in the design and development of products, services, and/or applications. Intel Corporation which has primarily been a semi-conductor manufacturing company for a long time has shifted its focus to address the needs, desires, and expectations of users. The fundamental question to be answered is how to design and develop different products, services, and/or applications that add value to users and enhances their experiences. This paper addresses this fundamental question through a systematic approach of understanding the competitive landscape environment. The paper describes the results of the systematic approach in the context of consumer electronics (CE) domain and concludes with the benefits of understanding the competitive landscape environment.

Key-Words: - User Experience, Competitive Landscape, Consumer Electronics

1 Introduction

Many of the organizations, companies, and industries today are focusing on User Experience (UX) to differentiate themselves from competitors in the design and development of products, services, and/or applications. As a result, UX is increasingly becoming an important consideration in the design and development of these products, services, and/or applications. Norman defined UX as dealing “with all aspects of the user’s interaction with the product: how it is perceived, learned, and used” [1]. UX is also defined as the “emotions, attitudes, thoughts, and perceptions felt by users across the usage life cycle” [2].

The above UX definitions indicate that UX methodology provides a robust approach to design and develop products, services, and/or applications that satisfy human needs, desires, and expectations. We believe that these characteristics of humans (needs, desires, and expectations) play a significant role in their decision to purchase and use a product. In addition, UX is measured throughout the usage life cycle including discovery, pre-purchase, purchase, usage (setup and exploring features and functionality), support, maintenance and disposal.

Intel Corporation which has primarily been a chip (semi-conductor) manufacturing company for a long time has shifted its focus to platform solutions [3] to address the needs, desires, and expectations of users. The rationale behind platform solutions is to

integrate the chips with hardware and software as well as to influence industry and to enable the ecosystem so that users will have the best experience when interacting with its products. Digital Home Group is one such platform solution with the mission of understanding users’ needs, desires, and expectations and to create new and innovative consumer electronics (CE) products that exceed users’ expectations [4].

To drive this mission Intel Corporation developed a UX methodology so that users interacting with its products have a positive experience. The UX methodology measures users likes, dislikes, thoughts, perceptions, and desirability of the platform products (based on their interactions) and informs the design and development teams about the form factor, features, audio/video quality, messaging, branding, pricing and purchasing models [3].

A very important, critical, and integral aspect of UX methodology is to understand the products, services, and/or applications competitive landscape environment. This is because we believe that understanding the competitive landscape helps in identifying, defining, integrating, and aligning the user experience goals into product requirement documents (PRD) and marketing requirement document (MRD) which would serve as baseline values for prototype testing purposes. Understanding the competitive landscape would also help in

identifying the gaps and opportunity spaces to enable design and development of new and innovative products.

This paper provides a systematic approach of understanding the competitive landscape environment (Section 2). The systematic approach was put into practice in the CE space and the results are discussed in Section 3. Section 4 discusses the benefits of understanding the competitive landscape environment. Also, the outcome of this systematic approach had a great impact and value with our customers (partners) and therefore wanted to share with you.

2 Understanding Competitive CE Landscape: A Systematic Approach

2.1 Step 1

Take a look into your organizations product development pipeline and identify the key usages you would want to enable in the next 12 to 18 months. For example, in our case we wanted to enable usages associated with IPTV (Internet Protocol Television).

2.2 Step 2

After identifying the key usages it is important to identify the products that already provide or compete with the usages you wish to build from a consumer experience viewpoint. In our case, the information was obtained from 3 different areas: product websites, product reviews, and consumer blogs.

First, learn what the manufacturers are saying about their own products by spending time researching on product websites. The product website showcases the best features and functions of each product. Understand the consumer value proposition that each product wish to fulfill and identify each products target market segments.

Second, learn what third party sources are saying about the product. Sources of third party reviews include the popular press, reviewer blogs, and online resources such as wikipedia.org. Third party sources will provide an indication of how well a particular product is meeting its proposed consumer value propositions, and the needs of the target market segment. This type of research is invaluable. It can be a post-mortem on the engineering choices made for a product already in the marketplace and can bring to light how choices made in the product development realm can constrain or delight the consumer. Your critique of these reviews will help

you to call out decisions made in the Bill of Materials, engineering, and design that define the current user experience. Your team can use these reviews to further define how your product will fulfill the usage criteria.

Third, if the product is already in the marketplace, find out what consumers are saying about their experiences. Consumers will post information, comments, and opinions all over the web. Look for themes in their commentaries; often times, consumers will state where a product meets or exceeds their needs as well as where the shortfalls are. This type of information can provide an opportunity for the product that you plan to bring to market and can provide guidance about engineering decision and product development.

The combination of research from these three areas will provide a body of knowledge about a particular product and its relevant usages. Gaining clarity in this area can help the engineering team make decisions about what features are necessary to be competitive and what features are needed as product differentiators.

2.3 Step 3

Look at a cross section of products that span broader than your target market segment. Pick the right usages and don't feel bounded by market segment. Select the products for their user experience features including best in class user interface, physical design, advertising models, the impact and the value the products generated. For example, in our case we wished to explore many of the usage possibilities associate with IPTV. Therefore, we not only looked at products such as Apple TV*, Joost*, MSN TV*, TiVo Series 3 HD* but also looked at other products categories such as set-top boxes, game consoles, media PCs, remote controls, VOD and premium content services as shown in Table 1 for user experience evaluations.

Internet Access & Watch Pay Per View (PPV)
Rent & Watch Movies
Media Center PC
Programmable Remote Control
Watch TV on PC and Other Devices
Digital audio player
Game box

Table 1. List of product categories related to IPTV

2.4 Step 4

Pick the products that matter to the key usages you are trying to enable and conduct an in-depth analysis in a systematic way. Make sure you have at least one

product in each of the different categories you have classified based on the consumer value proposition(s) for in-depth analysis. Conducting in-depth analysis on the products will set the tone for how consumers perceive the product and what would consumers feel about their new purchase. Everything from the look of the box, its packaging, documentation, and early experience with set-up would contribute to the consumer's user experience. In-depth analysis can be guided by the information you gathered from other research methods and will help you focus on the features and functions that make sense in the competitive landscape you are evaluating. In-depth analysis of the products should be done in real world settings or in a simulated environment that matches closely to the real world settings.

2.5 Step 5

Document all your findings such as strengths, weaknesses, differentiating features, and any other comments to gain a rich understanding of the products you are competing with in terms of user experience. This in addition helps identify representative tasks for conducting group walkthroughs with stakeholders, design teams, and development teams. In our case, we documented all the findings such as likes and dislikes including package study, set-up, navigation, and exploring features and functionality (Figure 1).

Figure 1. Template to capture findings such as likes, dislikes, differentiating features, and set-up

2.6 Step 6

Engage your stakeholders by inviting them and other experts in your organization (including design and development teams) to participate. Including design and development teams in the group walkthroughs would give them first hand experience of the likes, dislikes and issues which they can work upon to enhance the overall user experience. In our case, we conducted 3 group walkthroughs (each group consisting of a mix of designers, engineers, and architects) to start the conversation between various teams.

3 Key Findings

We used the systematic approach to understand the competitive landscape environment in the CE domain. Our analysis of the different CE devices associated with IPTV usages provided us insights of what needs to be done and how it needs to be done so as to enhance user experience in CE space. Below are some of the key findings that helped shape our thinking around CE platform work as a result of this competitive landscape evaluation. These insights are possible by understanding competitive landscape and helps drive unique perspective in the design and development of products.

- Doing one thing well is important. In a multi-function device, the primary function must provide the best experience
- Create an integrated end-to-end process
- “Streaming” premium content (media) provides the best experience
- Almost any natural sequence of events can cause remotes that control many devices to get out of sync. Pick your battles in this space. Controlling a few devices well may be an obvious and laudable goal
- Get the pricing model right (monthly service fees, pay per view, ad placement, lease vs. own, with or without cables)

4 Benefits of Understanding Competitive Landscape

- **Guidance:** To product teams based on trends and common experience with products in the marketplace
- **Repository:** Of knowledge on a product space that can be shared within the organization
- **Do's and dont's:** For product development teams based on marketplace trends

- **Hands-on exposure:** On competitive devices through group walkthroughs with Stakeholders teams and experts within the organization
- **Consumer-centered recommendations:** To teams on topics of interest within your group and organization. For example, “What are the challenges around networking and connectivity?”
- **UX metrics:** Know what is needed to measure to define success
- **Competitive knowledge:** Gain in-depth and hands-on knowledge of devices that your product will compete against in the market place

Product development teams often spend time benchmarking against technology capabilities e.g. bit rates, graphics quality, storage capacity etc. Product marketing will determine the critical set of features to ensure that a product is competitive in the market place. Understanding the competitive landscape from a consumer experience perspective, should also play a role in the product strategy. User experience experts have the opportunity to provide input to product strategy by examining key usages and providing a systematic review of how key usages are currently defined in the marketplace. In addition, user experience experts can provide recommendation and guidance about the competitive landscape and help engineers understand how tradeoffs made in design and development will impact the final consumer experience, the proposed consumer value propositions, and the ability to sell the product to the consumers in the targeted segments.

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