User-Centered Design 2020
Demo 2_3 Report

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According to the authors, UCD/HCD methods are built upon “an iterative cycle of investigation”(Norman and Verganti, 78). This cycle typically consists of observations, analysis/reflection upon those observations, and then rapid development of a prototype or rapid employment of testing. The authors explain that this cycle is then followed with another iteration until the goals are met or until the project’s deadline has passed (Norman and Verganti, 78). Interestingly the authors equate this iterative approach to “hill-climbing” which is a mathematical technique for finding a local maximum. This shows the potential weakness of iterative design as being able to achieve only one possible “best” product, which may not truly be the maximum of a product’s potential. The overall message conveyed by the authors is: “Because HCD is a form of hill-climbing. It is only suited for incremental innovation”(Norman and Verganti, 79). Norman explains that radical innovation typically occurs from technology changes, and that HCD is not suitable for producing radical innovation; however, HCD is useful for honing the results of radical innovation into better products. The authors also stress their definition of design as “making sense of things” and the importance of this definition with respect to the paper’s goal of discovering what research is being conducted on design, and understanding how this research influences innovation output(Norman and Verganti, 81). The authors finally explain that the overarching purpose of the paper is to “provide a theoretical framework” which allows for the distinction between radical and incremental innovation meanwhile discussing the “fundamental activities of innovation”(Norman and Verganti, 81).

Design research has two perspectives. In this paper, the authors concentrated on the design research which focuses on the improvements of products and sales. Whereas, the other approach focuses on the development and application of theories. Also, the authors focused on two types of innovation for products/services. Incremental innovation, which is continuous improvements to the existing practices, products/services, and Radical innovation, which is new, unique, and discontinuous. Both innovation types are essential. Radical innovation leads to new models and domains, also creates a possibility for major changes. Whereas, incremental innovation helps to capture the potential created by radical innovation.

Technology, meaning, and innovation are enchained together and they are both incremental and radical. In this section, this claim will be shown with two categories; video game consoles and watches. In video games, users connect machines and they enter a whole different virtual world with a privilege grant. Some companies such as Microsoft(Xbox) and Sony(Playstation) tried to develop their virtual worlds with better graphic cards and microprocessors to attract more users and keep high-level interaction with the games. (For example, faster response time). Also, they created MMOLG(Massive Multiplayer Online Games) which allows us to connect thousands of gamers simultaneously and play together. On the other hand, Nintendo has decided to go with a different strategy which is games for everyone not only experts. Nintendo focused playful, enjoyable, the low system required games for every age. They created games for everybody who can enjoy themselves with their family also. Moreover, Nintendo has developed its sensor while playing games like an accelerometer instead of Microsoft and Sony. Microsoft and Sony denied this strategy and invested in more game power such as a microprocessor. Finally, Microsoft recognized the future of this strategy and invested in with Microsoft Kinect. At this point, the meaning of games and consoles has changed within these strategies while also gamers were changing.

When watches first came out it was a symbol of luxury and rich life. Because Watches were made with hand and it was very challenging to finish a single watch. Switzerland was the world-leader about hand made watches in time. However, Japan changed the meaning and usage of the watches. They managed to accept watches are tools not luxury. Japan made watches using technological tools and they equipped watches with a stop-start, timer, gamer etc. features so they became the world-leader of the watches. In time, Switzerland came up with a different idea which is watches need to fit your style of clothing. So, they emphasized to people that you need more than one watch with different clothing. They used fashion to change the meaning of the watches. Also, they created massive factories for mass production. They reduced the time for assembling and they used inexpensive manufacture materials. Withing this they again become world-leader for watches. Today, the meaning of watches also shifting to precious and expensive watches unique for you. Technology meaning and innovation intersect their fields. The

technology uses to change the meaning of things while the way of thinking(meaning) changes technology. In this course, we learn how to adopt up-to-date designs for these three categories.

The author introduced human-centered design as a science that does not contain exact ways of doing things. However, creativity comes from being near the stakeholders and actually knowing how they use that piece of software or getting to know their needs and requirements. Moreover, the human-centered design consists of a good examination of the stakeholder's requirements and needs and makes a recurring loop over a few things such as testing, etc. Incremental innovations tend to decrease after the first step since it is considered as a limitation but it is realistic at the same time. The difference between incremental and radical innovation is quite big and it is very important to point out how things work. In the document, there is a figure for better visualization. In fact, the two ways could connect to assemble a two-dimensional graph to define innovation. Speaking of two-dimensional visualizations, the design rectangle splits the research into four categories each one with particular specifications and they are interrelated. This structure leads to better and more effective design research since there are steps to follow as well as space and freedom for creativity to happen.

This paper reframes discussion over the innovation of products using design and management. We explain radical product innovation by exploring three tools: topology of product space, two dimensions of meaning change and technology change, how innovation is viewed in two dimensions (general knowledge improvement, practical applications of research). Unlike Incremental innovation, radical innovation hasn't been explored and applied. So, we suggest radical innovation is driven by exploring the meaning of an object, development of new enabling technology. By enabling technology we mean that it should be robust and affordable for people. Although, It takes decades for innovations to achieve it, eg: Fax machines. Sometimes redefining products according to the user's emotional needs leads to successful designs, eg: Philips CT scanners. Yes, design research can lead to radical innovations but, only if designers understand the difference between technology-driven innovations and meaning-driven innovations. Technology-driven innovations are often from the analysis over self-observation of possibilities, e.g. Xerographic copier by Xerox, electronic calculator HP. Meaning driven innovations are often from the analysis of patterns over events. It helps to explore technical ideas

in different directions based on sentiments, traditions, usability, etc. A combination of these two approaches results in meaningful radical innovation.

The generally supposed idea related to iterative design approach is that it brings out a great design by using continuous feedback during the product development. But companies should be able to afford to lose a lot of money experimenting with iteration more specifically called design Darwinism. One of the reasons why iteration and incremental improvement is not leading to a meaningful product because if the users do not find the beta release of the current product useful and complete to them there will be a countless number of iterations to make all those required changes on the product. Along with the rising problems with the user feedback, no one tells anything about how to do all those required changes. Therefore, the never-ending desires of the users without knowing how to solve those problems cannot create delight. When it comes to making a comparison between the iterative development and incremental approach, while the iterative design approach tries to solutions to the usability and design problems discovered by the users, the incremental design approach is trying to build a product by adding new and small functionalities. There is a term called “Evolution” which is a technique for producing the appearance of stability. Larman C. & Basili Victor R. (2003) states that we have the opportunity of receiving feedback from the real world before throwing in all resources intended for a system.

New Reference

1. Larman C. & Basili Victor R. (2003) Iterative and incremental development: A Brief History.