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An Effective Approach to Design Customized Mobile Phone

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Abstract: ***In recent years, companies started not only to ask customers by means of market research but to integrate them into the innovation process. Within information systems (IS) research, both customization as a way to serve the inside-out of customers and as a form of customer integration and value co-creation (outside-in) has been considered. However, since many software vendors have consummated the shift from being manufacturers to being service firms, in practice, customization as a service highlights the continuance of customization projects Mobile phones are highly personal, customizable mobile computing devices that allow users to precisely control how they interact with the device and their environment. This would serve two fold purposes of increasing digital literacy and strengthening the information communication network within the mobile. We present a user case study of how 60 mobile phone users personalized their mobile phones during the first few weeks of ownership, and how they perceived different personalization methods. Customizing offerings to match customers' specific needs is a common practice for manufacturers striving to maintain their competence in markets.***
Keywords: React Native, Firebase

I. INTRODUCTION

Mobile phones have become common everyday devices and many countries are reporting close to a 100% adoption rate for their population. Technical development has led to a growing number of features and today's mobile phones can be regarded as versatile small computing devices often employing cameras, color screens, battery, display, and user interface (UI) animations. In the era of smartphones, the requirements of a regular user in phones are changing day in and day out. Most of the smartphone users around the world are making a sacrifice by sticking with phones manufactured with a fixed specification by big brands. With this interface, we are aiming to provide an interface where people can build their own phone which suits their requirement and budget. An effective mobile app enables a targeted group of users to carry out a specific set of related tasks.

We aim on an interface that lets people design their own phone for their needs instead of compromising with the fixed specification phones that are available in the market. This interface should be also able to helps people who are unfamiliar with the mobile hardware or not sure about what to choose for their needs to build a phone for themselves. The interface also enables users to share the phone designs that are built using the interface which allows users to not only design phones for themselves they can also design phone for others which helps everyone to access the customized phone interface.

Many experts have predicted that mobile apps are the way of the future in the last decade, and they haven't been incorrect, just look at where we are now. Mobile apps are quite popular and, without a doubt, help us live better lives. Mobile applications are popular for a reason: they're easy. They help us keep track of our health and allow us to access services like food delivery, transportation sharing, etc. with just a few clicks.

Personal customization of a user interface by end-users is already a familiar phenomenon within the computing world, where users often customize the look and functionality of their desktop computer, e.g. by changing wallpapers and installing different search tools. Personal customization of mobile phones has gradually evolved from exchangeable covers and ringing tones to the ability to change the UI themes and overall graphical UI components. This customization is often solely concerned with the style or appearance of the phone, and can be considered to have more aesthetic than functional value. But in addition to these aesthetic changes, more functional customization has allowed users to adapt the phones interface and how it interacts with the network and other users (e.g. Bluetooth security settings). Features such as user-defined shortcuts and voice commands allow the user to improve the interaction efficiency according to their personal needs or usage styles.

The Puzzle, can hold up to eight different modules on its rear side. For its final version, Puzzle promises all modules will be interchangeable, which might allow users to put a camera in the place where it best fits her/his needs. Individual parts -- like

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cameras, screens or processors -- snap onto the phone's frame. That means you could theoretically choose a camera from one manufacturer, a display from another, and a processor from yet another hardware maker to build the specific phone want. Different modules have different sizes and each one has only one connection. It is necessary that each connection ties in with the skeleton of the phone to work properly. Puzzle wants to take customization to another level.

Each module can be customized with a color, a pattern, a photo or drawing. The probabilities are endless, so each phone can be unique. At the top we find the module that integrates various sensors and speaker to hear during a call. The design of the module can also be customized to suit your taste. A phone's thickness may vary according to what goes in each module. In this particular phone we could see what a large battery would look like. In this paper we present our survey based study that looks at mobile phone users, who had recently started to use a new mobile phone, and the customizations they undertook during the first weeks of usage. The study aims to chart how extensively customization possibilities are used, and examines any patterns of personalization of different mobile phone features. The study participants were self-selected from a population of active mobile phone users to ensure high levels of mobile phone use and familiarity with the non-standard features available in newer phones.

II. WORKING METHODOLOGY

The Puzzle is Brand of a Customization phone built under this project. These phones will let you mix and match hardware parts, such as cameras or screens and snap them together…

The users are given two options to choose from Expert or Amateur:

1) *Expert User:*Under this option users are provided with numerous options to customize their phone for their needs by providing the entire technical thing to select from.
2) *Amateur User:* Under this option users are asked to select what they need in a phone by questions and answers. After the completion of this process the system builds a phone itself with all the provided answers from the user. User will be given option to further modify the phone to match their budget

Individuals can build a phone for their needs and not make sacrifices or overpay for under-powered devices and help people who are not familiar or unsure about what they want to help build their devices accordingly.

Puzzle provides a graphical user interface for the user to build their own phone. This helps people to get exactly what they want in a hardware and not to make a comprise and have under-powered or have needless features in their phone and overpay for unwanted things. This app provides login and sign-up features so that the user built phones can be saved in the cloud.

After the login the the user will be provided with two option to specify the kind of user he is so that to make the building of the phone a lot clearer to elaborate people who are unfamiliar with mobile phone are provided options with description to select basic kind of features which he wants in his phone and the system will automatically build the phone that matches the user needs.

On the other hand people who are familiar with mobile phone can choose to select specific details or hardware for their phone according to their requirement. After the user completes the designing of the phone user will be provided with the cart feature where he can save his designed phones to place orders. The use will also be provided with share design option so that the designed phone can be shared with people who need help building the phone.

III. LITERATURE REVIEW

A. *How to Customize Your Android Phone Exactly How You Like It*

Author:- JULIAN CHOKKAT

Today, Even Microsoft, despite largely tapping out of its own mobile operating system aspirations, offered a darn good Android launcher called Arrow for two years; it freshens up your wallpaper every morning, and promises quick access to your most frequently used apps and contacts. Why tend to the other facets of your Android aesthetic but leave that real estate up to each app developer's whims? Icon packs serve a dual purpose in that respect. Tell your friends! Texting The stock Android messaging app, Android Messages, is totally fine.

One last option worth serious consideration: Text SMS, the power user's go-to Android messaging app. If you're looking for something a little more involved, some Android apps let you build your own custom widgets. You're not going to get a ton of new functionality out of a lock screen app; you're mostly going for the look here. EXECUTIVE EDITOR, NEWS TOPICS HOW -TO ANDROID PHONES MORE FROM WIRED Google Finally Gets Serious about Android Tablets More than 20 Google apps will be updated with tablet optimizations in the coming weeks.

How to Customize Your Android Phone Exactly How You Like It Don`t settle for the look and feel of your Android smartphone out of the box. YOU CAN LIVE a perfectly delightful mobile existence using an Android phone without tweaking a single setting.

And if you're an Android power user, if you've installed a custom ROM (or even know what that means), this guide is not for you. And if there's anything about that Pixel or Moto or Galaxy or LG that bothers you even a little—the keyboard, the gestures, the app icons—know that you can make it better.

Let's start big with the piece of software called the launcher, which dictates not just how your smartphone looks but how you interact with it. Your phone came with a launcher, although you likely just think of it as "the way my phone works. " A lot of the time, your out-of-the-box experience works just fine, especially if it hews close to the stock Android you'll find in a Pixel or Nexus phone. For all of those times, you can simply install a launcher.

ACTION LAUNCHER One Launcher transforms your Android phone into something that very much resembles iOS. Even Microsoft, despite largely tapping out of its own mobile operating system aspirations, offered a darn good Android launcher called Arrow for two years; it freshens up your wallpaper every morning, and promises quick access to your most frequently used apps and contacts. It recently overhauled that into Microsoft Launcher, now in beta, which among other features lets you pick up where you left off on your PC. It's like the macOS Handoff feature, except between a Windows computer and an Android device.

B. The design of a system architecture for mobile multimedia computers

Author:- Chandrakasan A., Brodersen R.W

User interfaces - Traditional keyboards and display based interfaces are not adequate for the mobile systems of the future because of the required small size and weight of these system. Our vision is that there is a vital relationship between hardware architecture, operating system architecture, applications' architecture and human-interface architecture, where each benefits from the others: the applications can adapt to the power situation if they have appropriate operating system API for doing so; the operating system can minimize the energy consumption by keeping as many as components turned off as possible; the hardware architecture can be designed to route data paths in such a way that, for specific functions, only a minimum of components need to be active.

The ability to integrate diverse functions of a system on the same chip provides the challenge and opportunity to do system architecture design and optimizations across diverse system layers and functions.

A system level integration of the mobile's architecture, operating system, and applications is required.

Security protocols can be run in an environment beyond the direct control of 3 - 14 THE DESIGN OF A SYSTEM ARCHITECTURE FOR MOBILE MULTIMEDIA COMPUTERS the operating system or applications.

Mobile multimedia computers This chapter1 discusses the system architecture of a portable computer, called Mobile Digital Companion, which provides support for handling multimedia weight is an important factor for the size and the weight of the Mobile Digital Companion, energy management plays a crucial role in the architecture. The Mobile Digital Companion has an unconventional architecture that saves energy by using system decomposition at different levels of the architecture approach is based on dedicated functionality and the extensive use of energy architecture with a general-purpose processor accompanied by a set of One of the most compelling issues in mobile computing is to keep the energy portable computer, called Mobile Digital Companion, which provides support for handling multimedia applications energy efficiently. The Mobile Digital Companion was summer school on mobile computing `98, August [1998]. 3 – 2 THE DESIGN OF A SYSTEM ARCHITECTURE FOR MOBILE MULTIMEDIA COMPUTERS issues in the architecture, design and implementation of low-power hand-held 3..

C. Personal customisation of mobile phones: A case study

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We present a user case study of how 60 mobile phone users personalised their mobile phones during the first few weeks of ownership, and how they perceived different personalisation methods. Despite of the pervasive nature of mobile phones in everyday life, systematic studies on personal customisation of mobile phones have not yet been reported. The motivation 'to make the phone feel like the one I had before' appeared in several comments, and was linked with comments where the participant wanted to be able to find device functions and navigate the phone menus as they had done with an older phone.

The result is consistent with previous research identifying the personal nature of mobile phones and users desire to control access to their phone. See discussions, stats, and author profiles for this publication at: https://www. researchgate. net/publication/221248235 Personal customisation of mobile

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D. Elemental Modularity Design in Smart Phones

Author: Neelam Sharma, Nitish Pathak, Anand Kr Shukla, Vaibhav Vivek, Danish Ather

To make modularity more lucid to understand, a camera module will be implemented as the special purpose module in this model, for that an additional module i.e. memory module is necessary.

The division of pins among the essential and special purpose modules is done, and as in the present experiment the camera module is implemented as special purpose module, hence most of the pins are occupied by essential modules As there will be more manufacturers for each type of technology of a mobile phone, the pace of innovation may increase which further states that the components are likely to get outdated much faster, which could turn the tables against the idea, as it‟d result in expanding e-wastage.

One revolution in the software industry was initialized by the open source movement which points towards a theory for solving this tediousness in the hardware industry and paves ways for concepts like modular phones. This paper will demonstrate modularity as a concept, its present and future scope and an experiment-based hypothesis to create a generic modular phone based on any OS.Keywords: Module, Cognitive artifact, MDK (Module Developer's Kit), Project Ara, Phone Blocks, Hardware EndoskeletonI.

E. From Phoneblocks to Google Project Era.

Author : Google era

we reviewed secondary data based on an evaluation of Google's and Phonebloks' webpages, videos and other materials from development conferences, Ara's twitter account and newspaper articles related to Era. While the first set of questions should help to review the success chances of Project Ara from a practical viewpoint, the second one is necessary to evaluate the potential of initiating deeper changes coming along with an SI. The questions in the final block are important for the assessment of the environmental impacts and therefore the answer why Project Ara can be an EI that has the potential to lead to a more sustainable use of mobile devices. Considering the fundamentals of EI, Project Ara is in line with the theoretical framework as follows: Firstly, the Project Ara business model includes co-design during the configuration process: the customer can select parts he/she requires and does not need to buy a preconfigured smartphone with functions he/she perceives as redundant [29, 36]. Thus, the possible reduction of not needed modules

In a second step, we analyzed whether Project Ara can be seen as an EI. We revealed positive environmental benefits related to the co-design element of Project Ara's business model.

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Project Ara Twitter account: Project Ara, from Google's Advanced Technology & Projects group, is making an open, modular smartphone platform.With Google's "Project Ara",a modular and customizable smartphone approach is very likely to reach market maturity and its economic, social and ecologic impacts are stillunclear. Furthermore, we use the two theoretical conceptsof Eco Innovation (EI) and Systemic Innovation (SI) to assess Google Ara's potential to lead to changes in terms of ecologic and social concerns. In our analysis, we show that Project Ara has the potential to outperform its competitors of modular smartphones.

F. An Customization of Product Software

Author :Matthias Bertram, Mario Schaarschmidt, and Harald

Companies increasingly need to understand their customers’ wants and needs in order to strengthen their competitive positions. Thus, in recent years companies started not only to ask customers by means of market research but to integrate them into the innovation process . Concurrently, since the late 1970s the co-creation of value has become a field of intense research in marketing and service science. Researchers have analyzed co-creation under many different aspects as for example: productivity gains through customer self-service customer satisfaction, quality, employee’s performance and emotional responses and the opportunity to differentiate their products and services . Thereby, customization has emerged as a concept to provide customers with tailor-made products and services. In the early days of software development, when software and hardware was still closely bundled, the prices for those systems were extremely high since the market for software products was simply not existent. Usually those systems were solely developed for individual companies according to their individual needs and requirements. In the late 1960s computer manufactures started to unbundle hardware and software systems foundations as a result of an IBM initiative . As a consequence, an independent software market for business-to-business (B2B) was built where during 1980s, a new class of software vendors started to pre- built and offer software for ranges of business functions that could be delivered separately in large scales.

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The research aim of this paper is to draw a coherent picture of ideas and concepts of customization in current IS literature and thereby helps to categorize existing ideas and concepts and furthermore identify potentials for future contributions to that field.

G. Mobile apps for product customization and design of network

Author :D. Mourtzis M. Doukas, C. Vanderad

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Author Title Methodology Benefits

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Google era Future feasibility analysis on modular smartphones. functional durability is as of a smartphone should always keep up with the The concept of modularity shows great potential a kind of modular smartphones, allowing users In a modular smartphonemodular smartphone can reduce e-waste. advice for future research of modular smartphone analyzes the reasons of obsolescence and the effects-modularity can bring to the longevity of devices

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Mobile apps for product customisation and design of network Both applications are developed for mobile devices with ARM-based processor software design was performed using Unified Modelling Language programming and debugging of the apps

application focuses on a typical production engineering scenario, where the OEM receives a customized product order from the customer and designs the manufacturing network to carry out the production

.Table 1.0

Author	Title	Methodology	Benefits
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Chandrakasan A., Brodersen R.W	The design of a system architecture for mobile multimedia computers	The system architecture of a portable computer,called Mobile Digital Companion, which provides support for handling multimedia weight is an important factor for the size and the weight of the Mobile Digital Companion.	high-speed wireless networking to reduce the amount of computation required on the portable. It will be clear that current mobile systems are primarily either data processing terminals or communication terminals.
Craig Chatfield,jonna hakkila	Personal customisation of mobile phones:	Used for find device functions and navigate the phone menus as they had done with an older phone.Identifying the personal nature of mobile phones and users desire to control access to their phone.	switching between multiple mobile phones and prevent data loss in the event of losing the phone.

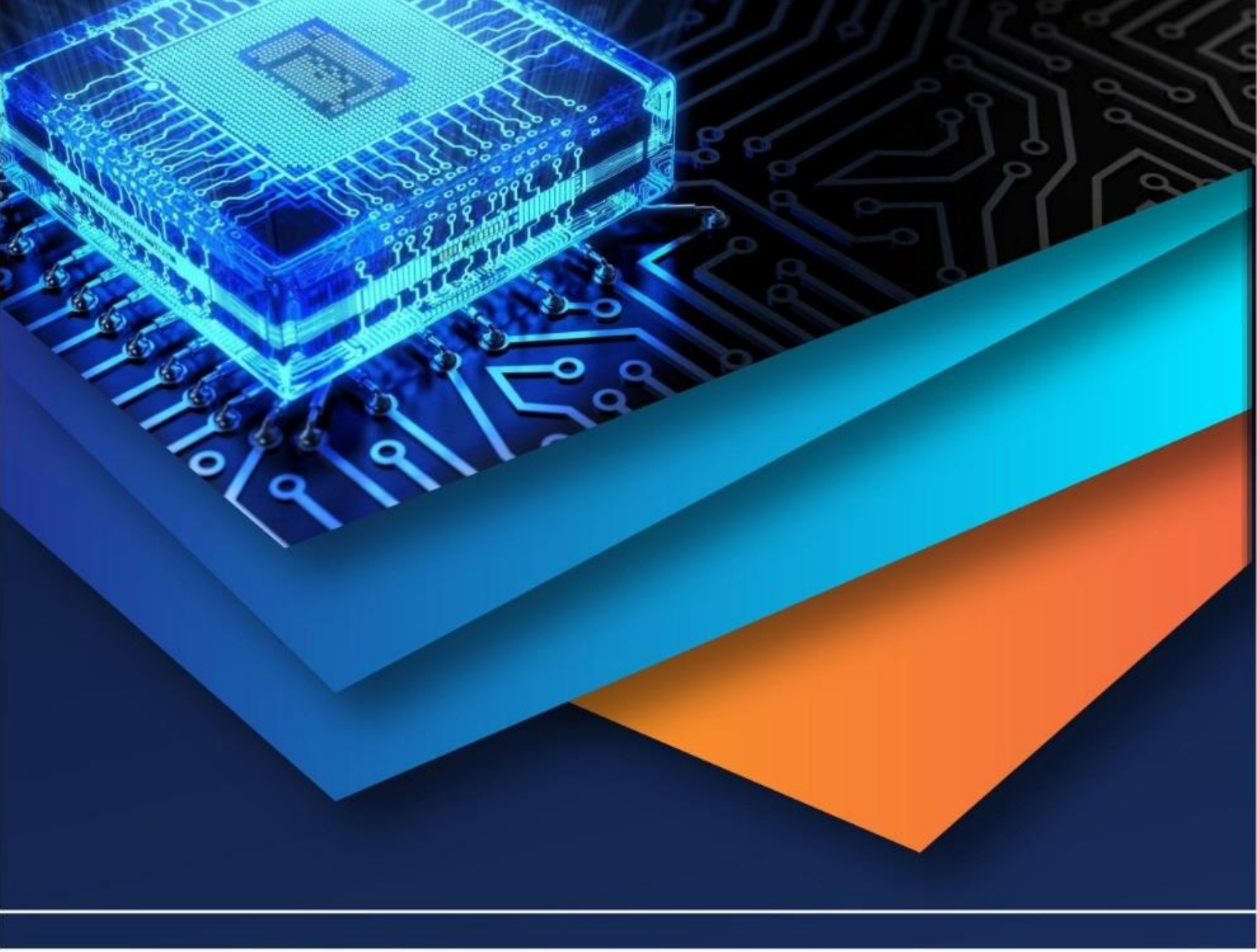
Neelam Sharma, Nitish Pathak, Anand Kr Shukla, Vaibhav Vivek, Danish Ather	Elemental Modularity Design in Smart Phones	The use of modularity production process with respect to smartphone device scan be more properly understood by studying modern day examples of modular phone devices as mentioned earlier.	the pace of innovation may increase which further states that the components are likely to get outdated much faster, which could turn the tables against the idea, as it"d result in expanding e-wastage.
Google era	Future feasibility analysis on modular smartphones.	functional durability is as of a smartphone should always keep up with the The concept of modularity shows great potential a kind of modular smartphones, allowing users In a modular smartphone	modular smartphone can reduce e-waste. advice for future research of modular smartphone analyzes the reasons of obsolescence and the effects-modularity can bring to the longevity of devices
Matthias Bertram, Mario Schaarschmidt, and Harald	An Customization of Product Software	software was designed in a way that each customer could adapt certain parts without changing the source code of the software.	approaches as well as a way of integrating customers into the innovation process. customer integration and satisfaction have to be reconsidered in relation to innovation
D. Mourtzis M. Doukas, C. Vanderad	Mobile apps for product customisation and design of network	Both applications are developed for mobile devices with ARM-based processor software design was performed using Unified Modelling Language programming and debugging of the apps	application focuses on a typical production engineering scenario, where the OEM receives a customized product order from the customer and designs the manufacturing network to carry out the production .

IV. CONCLUSION

Gives users control over what they get in their phone. Helps people to focus on what they actually need in their phone Helps people manage their budget or spending for phones. Let's users with good knowledge of mobile hardware help other people to build their phone. Customization will evolve to specialized forms where customers will be involved directly in the process of designing thier products The major benefit include customer involvement and customer satisfaction The future of mobile customization is likely to be depended on technological advancement.

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