

# On Out-Of-Box Experience And Online Support

*Pekka Ketola*

*Nokia Multimedia, Tampere, Finland*

[pekka.ketola@nokia.com](mailto:pekka.ketola@nokia.com)

## Abstract

Out-of-box experience (OOBE) plays an important role in the adoption and activation of a new system or service. The difficulties in taking an information technology product into use are known among users, manufacturers and academy. Problems are related to physical set-up difficulties, combinatory problems, online service that is needed to use the product, or local wireless connection problems. We reviewed manufacturers' and operators' online support and analyzed what content is provided and how it relates with OOBE. The same technology and usability topics appear in manufacturers and operators support content, such as activating the product, using the functions and services for the first time and connecting to PC. We provide new categories for OOBE development, and discuss research and practical implications.

**Key words:** First use, out-of-box experience, frequently asked questions, online support.

## 1. Introduction

“Computer equipment is hard to choose, install, maintain, and, especially, operate.”

(Landauer 1995)

Information technology (IT) products are difficult to take into use because of the operations required by the user prior to use. We can differentiate electronic products that are easy to take into use (TVs, land phones, cars, calculators) and products that are difficult to take into use (Computers, TiVos, mobile phones). Problems are typically related to physical set-up difficulties, combinatory problems, service is needed to operate the product, or connections. Typical OOBE use cases are:

- New physical product is taken into use.
- Service or application is used for the first time.
- Product is enhanced by physical or SW extension.
- Product is replaced with a new product.
- Doing work during product repair or maintenance (for example, a temporary replacement product is given).

We take a special look at the mobile phone OOBE. Users engage in closer and more personal relationships with mobile technology than with other forms of IT. The phone stores data valuable and essential for the user's daily life. Mobile phone lifecycle is typically 2-3 years and decreasing. Changing the phone to a new one presents a potential disruption in the life management. At the end of the lifecycle the phone is normally replaced with a new one. There

is a pattern of shortening lifetime, increasing penetration and need for product replacement, seemingly applying to most IT product categories.

Perceived ease of use and experiences are an important factor influencing user acceptance, expectations and usage behavior of information technologies [Venkatesh and Davis 2000], [Jarvenpaa and Lang 2005]. Low usage is considered as one consequence of system non-acceptance. Positive experiences encourage the user interact more and with positive attitude with the system. A negative experience discourages the user to use the system.

Most help desk calls occur when the product is taken into use or during the first use of a function. OOBE with IT products often follow a script-like pattern when the product is taken into use. [IBM 2006] summarizes the eight typical OOBE phases:

1. Packaging (how the product is packed and presented in the package)
2. Unpacking (how the package is opened)
3. Hardware setup (how the physical parts are composed)
4. Power-on (how the device behaves when it is started for the first time)
5. Configuration (what set-up is needed before the device can be used)
6. Initial use (first use of a function)
7. Doing Work (using the product)
8. Further assistance (what support is provided)

We will study the online support documentation for mobile phones since we believe it tells us, to certain extent, what are the typical first use problems with mobile phones and how common they are across manufacturers and service providers. We are also interested to find out what kinds of first use support are provided for mobile phone customers in the online support functions. We set the following research questions:

1. *What kinds of online support elements are available to mobile phone customers?*
2. *Which questions are answered in the online forums (what are the typical problems)?*

We will review the previous work in Section 2 and then define our main concepts in Section 3. In Section 4 we describe our data and present the findings. We propose a new OOBE framework in Section 5, and conclude with discussion in Section 6.

## **2. Previous work**

[Sinkkonen 2001] studied the first use of a cordless phone for solving how devices or services should be designed for novice or casual use. She found that when analogical reasoning is not enough for learning, the user applies exploratory trial-and-error method. “we have so far very little knowledge about how devices or services should be designed for novice or casual use.” [Fouts 2000] studied the development challenges when OOBE implementation extends to several organizations. [Personal and Ubiquitous Computing 2005] provides an OOBE theme issue with seven articles discussing expectations, personal contexts and user segments, organisational contexts, learning, design, evaluation and user experience. [Palen and Salzman 2002] show that the insufficient understanding of mobile communication causes problems in the set-up of a mobile phone. [Ikonen et al. 2002] continue that users have difficulties even in understanding what the product or service can or cannot do. [Kantola et al. 2003] studied the setup of digital TV system with 20 pilot families. During the study, six of 20 set-top box installations failed. [Rieman 1996] studied strategies for exploratory learning. He reports that:

- Users are primarily concerned with accomplishing their tasks. The time pressures are a major factor in determining how and what user chooses to learn.
- Users prefer “just-in-time” task-driven learning and support.
- Users learn by trying out different things, and this approach is often combined with looking at manuals and asking for help.
- On-line help is disliked. According to comments from persons working at helpdesks, 2/3 of the users either show aggressive reactions or are ashamed for asking for help.

### 3. Definition of OOBE and OBR

We propose two views. *Out-of-box experience* addresses the user perspective (How do I experience the set-up of a new product?). *Out-of-box readiness* addresses the manufacturer’s view (How do I build good OOBE for the user?).

- *Out-Of-Box Experience* (OOBE) is the initial experience a user has in taking a new product out of the box and setting it up, in preparation for use.
- *Out-of-Box Readiness* (OBR) is the state of a system being easy to use for a person who is using a new product, application, or service for the first time.

It is useful to make a distinction between OOBE and first use. OOBE starts with the product purchase and ends when the primary functions of the product are ready to be used. First-use is experienced when the user starts to work with the system for some specific task for the first time. OOBE and first-use may overlap with some tasks.

### 4. Empirical data: Frequently asked questions online

Online FAQ is useful for studying OOBE since it shows the topmost problems in using the products and reasons for complaints. We reviewed the support pages and frequently asked questions (FAQ) of six mobile phone manufacturers and six cellular operators<sup>1</sup>. One manufacturer did not provide support content online. We did not analyze detailed product specific issues. The qualitative review provided a database of 120 FAQ items. The review was conducted for online support targeted for customers in United Kingdom at January 2006. We found out the following larger themes: Power on, first use, local connectivity, PC connectivity, unexpected behavior, getting support, using the services, and upgrade.

There are different ways for presenting FAQ content and supporting the users online, such as product specific or general FAQ, support discussion forums and support wizards. Due to the different ways and different levels of details in presenting the topics, we needed to generalize the data. Then we grouped it to OOBE and non-OOBE topics, based on the criteria if this problem or question emerged when the product or a new product component was taken into use. About 50% of the topics were related to OOBE.

*1. Power on.* Both operators and manufacturers provide support in powering on and activating the device. Power-on topics cover:

- Physically setting the phone ready for power on
- What to do if the phone does not power on
- Charging the battery and related problems

---

<sup>1</sup> Nokia, Motorola, Sony Ericsson, Samsung, Siemens, O2, Hutchinson 3G, Vodafone, Orange, BT, Carphone Warehouse.

- Phone doesn't attach to network (no network, calls not allowed, SIM card warnings).

Our data indicates that power-on problems are a common problem. A typical guidance is to start over again. The four phases in power on are the physical set-up (e.g. inserting battery and charging), pressing power key, doing the initial set-up activities, and letting the device to complete the start-up. In our data problems were experienced in all phases.

2. *First use.* Almost 50% of the OOB data deals with the first use of applications and features, and equally discussed by manufacturers and operators. First use problems cover:

- Set-up problems and configuration
- Having practical problems in using the feature
- Understanding the feature and its usage in general
- Understanding how online elements behave
- How much does it cost to use the feature.

With a new phone the user primarily wants to continue using familiar features needed for daily life. Secondly, the user tries to adopt and understand new functions if they are useful or interesting enough. Familiar features, such as voice mail and text messaging, are seen as straightforward configuration questions among the first use topics (How do I setup my voicemail?). New functions are primarily seen as what questions, such "What is media messaging", "What can you transfer between devices" and "Where does my data go".

3. *Local connectivity.* We recorded local connectivity topics related to Bluetooth and infrared connections, but not topics related to cable connections. Infrared connectivity topics were primarily related to the question of using phone as a modem. Bluetooth topics had larger variation, including connectivity with accessories, other phones and PC. Most Bluetooth comments were about troubleshooting emerging connectivity and interoperability problems and setting up for the first connection.

4. *PC connectivity.* Each manufacturer has FAQs on PC connectivity and provides several support solutions. Operators provide only little support on PC connectivity. The common PC connectivity problems are related to:

- Finding out if PC and phone are compatible
- Establishing and troubleshooting the connection between PC and phone with cable, Bluetooth or infrared.
- Changing existing connection settings in the PC software
- Setting up the synchronization features
- Using phone as modem for the PC
- Transferring documents from phone to PC and from PC to phone

Most contemporary mobile phones are able to connect with the PC. The usage model of content rich *smart phones* is based on several PC connectivity use cases, such as back-up, synchronization and content libraries. There are technical problems and usability problems. Technical problems cover connectivity, interoperability and combinatory issues. Usability problems are related to user's limited technical skills, insufficient guidance, difficulties in problem solving support, and human errors.

5. *Unexpected behavior.* Several FAQs answer to the question why the phone behaves in an unexpected way. Most of these seem to be system errors ("Why my phone turns itself off?"), sometimes service errors ("Why can't I make calls?"), and some are related to activities in the

user interface (“What are the scrolling messages on my screen?”). Unexpected behavior seems to be typical phenomena in complex consumer devices. In error situations the user often does not understand what caused the unexpected behavior, what does it mean, how it can be fixed, or is it an error at all.

6. *Getting support.* Two common questions are often seen: “How do I contact you?” and “Where do I get user manuals?” Support functions are sometimes presented in the front pages (top level or second level) of the online services, and sometimes in the background. In some cases the user is required to know the exact phone model before finding the correct support. The more hidden the support element is, the more we could see questions related to the support accessibility. Product user guides (in PDF format) were widely available in the support pages. Two manufacturers and two operators provide automated configuration support for setting the most important communication functions. A typical solution is a settings wizard that sends the configuration information to the phone.

7. *Using the services.* Several support comments discuss *download* problems, especially related to music. The devices’ connectivity capabilities and functions, based on online services, are rapidly increasing. Also the usage of these services is steadily increasing. The same services are often accessible both via the mobile phone and via PC, such as Email, text messaging, or music download. Music topics deal with complex combinations and task flows, including online purchase, required software in the PC, connectivity between the phone and the PC, and finally the supported music playback formats in the phone. Several service topics are about using the device outside home country (“What happens when I travel abroad?”).

8. *Upgrade.* In contrast to what we expected, we didn’t find topics that are related to usability or technical problems that occur when the product is upgraded to a new one. The problems related to, for example, back-up and restore are not yet visible in FAQs. Operators provide help in upgrading the phone and updating the service plans.

## 5. Tentative OOB categories

A mobile device provides several interfaces [Ketola 2002]. *User interface* deals with the user interaction. *External interface* consists of the physical and wireless connections to accessories and other devices in the vicinity. *Service interface* connects the device to online services. A PC is often mandatory element in the use and maintenance of mobile devices and a major source for OOB difficulties. The use of service interface requires both software configuration and agreements with the service providers. [Palen and Salzman 2002] describe *netware* (system components in telephony network) and *bizware* (socio-technical elements, such as service provider policy). We consider *netware* and *bizware* as part of the service interface. Most mobile devices *require* the use of PC at some phase of the lifecycle. Based on our data, we add *PC interface* to the set of interfaces, and separate it from external interface.

The user has out-of-box experience several times during the product lifecycle. First this happens when the product is initially taken into use. It is faced again when the product is replaced with a new product (last use). In addition, expanding a system with new components, updating components or having several products in active use require similar activities as when taking the product into use, such as unpacking, installing software and synchronizing. Hence we need to consider novice users (new product), casual users (product replacement) and expert users (software updates) (Figure 1).

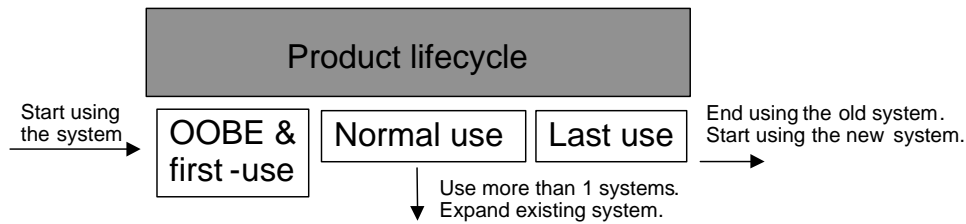


Figure 1. Out-of-box experiences in the product lifecycle.

We propose a framework for organizing further research (Table 1). It captures the main phases related to OOBE, and organizes each phase to four interfaces that are needed to work with the product. In the *first use* the user wants to have the product ready for use. The four interfaces should be studied with usability and design foci, such as configuration user interface, first use and learning. The *product extension* often poses problem solving and interoperability questions, such as what should be changed in old configuration and how to make the new configuration functional. In the *product replacement* the user is given new interfaces and new ways to deal with the familiar tasks. Hence in the product replacement we may see similar questions as with both first use and product extension.

Table 1. Framework for OOBE research.

	First use	Product extension	Product replacement
User interface			
External interface			
PC interface			
Service interface (Bizware, Netware)			

We can test the framework by asking if our findings from online support fit to it. It seems that all groups (power on, first use, local connectivity, PC connectivity, unexpected behavior, getting support, using the services, and upgrade) can find their place in the framework.

## 6. Discussion

The industry is developing solutions to improve the customer's capability to take products into use. Examples of *good* solutions and applicable technologies at consumer markets exist. Televisions and radios are able to scan automatically for available channels, PC MP3 players are able to search for music titles from Internet without user's effort, and a digital camera can be taken into use without reading a page of a manual. PC Roundtable demonstrates an inter-company task force that has been able to produce guidelines for better OOBE. For the mobile industry there are numerous OBR challenges to be solved before the pocketable devices can provide universal usability, easy product replacement and product extension. In this section we shall first consider the implications of our results to research. Thereafter we try to give practical recommendations. Finally we pay attention to the limitations of this study.

### 6.1. Research implications

Our framework for OOBE is new and seems to capture relevant OOBE aspects in the product lifecycle. In our view, using online support data to understand a system design problem, seems to be novel and useful. Online support material provides a large real life database in an electronic format covering most customer oriented manufacturers and service providers, open for research activities. Further research should explore the different ways of providing online

support, including informal support methods such as discussion forums, wikis and blogs. We suggest applying human action concepts [Aulin 1982] (subject, object, acts) rather than human-computer interaction concepts (user, system, operation) since the “system” may be a computer, a user guide, call center contact or some other non-IT object.

Our data emphasizes the role of PC connectivity. Peripherals Initial Experience Checklist [PC Quality Roundtable 2006] addresses the external interface of products, and gives a checklist for improving the configuration of peripheral devices and related software. The list can be used to develop OOB. Product extension, such as installing new application or connecting with a Bluetooth headset, provides a useful arena for research. Most OOB elements are present in this scenario and online support provides rich data on this. Some related research questions are proposed below:

- How to maintain old functionality?
- How to design for easy attach and detach for extensions? How to provide immediate feedback that extension was successful?
- What are the OOB error scenarios and how to prevent error possibilities by design?
- What kind of guidance should be provided in case of difficulties?

## **6.2. Limitations**

Our data should not be used as exact description of the user problems with the devices since we do not explain what are the problems and why they occur. The main FAQ areas are similar across the manufacturers and operators, and the same questions are discussed in different sources. We have confidence that online FAQ provides reliable, but not exhaustive, snapshot data of typical problems in the use of mobile devices.

In some online support services there was large number (20-30) of products that were handled in the support material. In these cases we did some intelligent guesses in selecting the products for our study. We did not cross check whether our choices were right and if they provided the best possible content for us. We may have missed something due to this practice.

## **6.3. Practical implications**

Most discussed themes in the online support are related to the first two phases in our lifecycle model, first use and product extension. If our proposed framework (Table 1) is correct it suggests that in the future we will see more user problems with product replacement. We expect this due to the increase in personal content and larger memories, larger offering of personalization capabilities, and larger offering of applications and online functions.

A set-up defines how the device behaves or how the device interacts with another system. With interacting systems the problems can be related to incorrect set-up in either or both devices or in the connection in-between. Changes in one system configuration, such as expiring password, may require changes also in the other system. We noticed a slight difference between the FAQ content compared to discussion forums. Discussion forums were more active in solving the combinatory problems, such as how to get the two systems to work together, than static online support. We agree with [IBM 2006] and [Ikonen et al. 2002] and suggest that design for the first use experience and product support should:

- Explain product features and capabilities
- Communicate sources of assistance
- Give problem solving support in case of difficulty

## References

- Aulin A. (1982). *The cybernetic laws of social progress*. Pergamon Press, Oxford.
- Fouts J.W. (2000). On site: an “out-of-box” experience. *Comm. ACM* 1(43) 2000. 28-29.
- IBM (2006). *Out-of-box experience*. [http://www-306.ibm.com/ibm/easy/eou\\_ext.nsf/publish/577](http://www-306.ibm.com/ibm/easy/eou_ext.nsf/publish/577). Ref. 11.1.2006.
- Ikonen V., Ahonen A., Kulju M. and Kaasinen E. (2002). Trade description model – helping users to make sense of the new information technology products. In Wiszniewski B. (Ed.): *Electronic Commerce. Theory and applications. Proc. of ECOM-02. 2nd International Interdisciplinary Conf. Electronic Commerce*. Gdansk, Poland. 57-63.
- Jarvenpaa S.L. and Lang K.R. (2005). Managing the paradoxes of mobile technology. *Information Systems Management* 22(4) 2005. 7-23.
- Kantola K., Lahti M. and Väättänen A. (2003). *First steps towards viewing digital television. A digital television set-top-box trial*. VTT Research notes 2188. ISBN 951-38-6124-4 Otamedia Oy, Espoo.
- Ketola P. (2002). *Integrating Usability with Concurrent Engineering in Mobile Phone Development*. University of Tampere. A-2002-2. Dissertation, PhD.
- Landauer T.K. (1995). *The Trouble with Computers: Usefulness, Usability, and Productivity*. MIT Press Cambridge, MA.
- Palen L. and Salzman M. (2002). Beyond the Handset: Designing for Wireless Communications Usability. *ACM Transactions on Computer-Human Interaction* 9,2 2002.
- PC Quality Roundtable (2006). *The Ease of Use/PC Quality Roundtable*. <http://www.eouroundtable.com>.
- Personal and Ubiquitous Computing (2005). Special issue on out-of-box experience and consumer devices. *Personal and Ubiquitous Computing* 9(4) 2005. Springer-Verlag London Ltd. ISSN: 1617-4909
- Rieman J. (1996). A field study of exploratory learning strategies. *Comm. ACM* 3(3) 1996. 189-218.
- Sinkkonen I. (2001). Designing for humans: The first use of a product. In Pantzar E., Savolainen R. and Tynjälä P. (Eds.): *In search for a human-centred information society*. Tampere University Press, Tampere. 215-233.
- Venkatesh, V. and Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science* 46 (2) 2000. 186-205.