

Improving End User Guidance for Mobile Device Management in an Industrial Corporation

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Abstract

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The purpose of this thesis was to improve mobile device management for the Finnish units of a multinational industrial corporation. The practical goal was to find out how to create and update an end-user guide for mobile device enrollment to the Mobile Device Management solution.

In the study, I utilized Hodgson's (2019) user experience-based tips for creating good IT manuals and Korpela's (2019) instructions for creating professional communication content. This knowledge base was further utilized when creating the actual MobileIron end-user guide.

This case study project is composed of an initial research of what the company's end users' expectations for an ideal MobileIron user guide are. The methodological approach is qualitative, thematic interviews with six end users in the company.

The main outcome of the interviews confirms what Hodgson (2019) and Korpela (2019) state in their experience-based instructions. An IT user-guide needs to be clear, simple and as short as possible but also detailed enough, visual, easily accessible and updated regularly. The end-users also hope to have separate guides for each mobile device model and preferably both in Finnish and English.

The results were in line with the expectations. The research gave practical guidance which can be later used to update and outdated end user guide with a the most suitable way.

Keywords: Mobile Device Management, MDM, MobileIron, User guide, Professional writing

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1 Introduction

The purpose of this bachelor thesis is to improve mobile device management for the Finnish units of a multinational industrial corporation. The practical goal was to find out how to create and update an end-user guide for mobile device enrollment to the Mobile Device Management solution.

The company provides mobile phones for most of its employees. Also, iPads are commonly used if the job description requires one. If the employee wants to use email or other services provided by the corporation (such as calendars, intranet, address lists), this person needs to download a mobile device management application and enrol the device to MobileIron, which is the MDM solution used by the company. MobileIron is a third party mobile device management service used to manage business applications securely on mobile devices. MobileIron will be explained more specifically later.

Even though this may sound like a very simple activity to do and to guide, there has been major challenges to get the employees to act upon the guidance. The number of users contacting the service desk in order to install MobileIron is relatively large and creates unnecessary work for the IT-department to assist with a task the end users should be capable of doing by themselves. The purpose of this study is, therefore, to benchmark and research what would be an efficient way of creating new guidelines that people would actually use.

2 Context of the research

The commissionaire is a multinational corporation operating in over 60 countries and employing over 170 000 people. In Finland the corporation is focused on construction and high-performance materials. The corporation develops, manufactures, and distributes building material and solutions. In Finland there are over 1200 employees. In this Thesis my target area will be the Finnish unit. I am employed by the corporation as an IT supporter and the project is related to my tasks at work.

3 Objectives of the thesis

The objective of the thesis research is to update old and deficient guides, and to create new guides based on the research done in this thesis. Firstly, the aim is to freshen up some very old and deficient mobile guides to meet the current mobile working criteria. Also new guides are needed for the end user, IT department, and possible third-party users. Secondly, the end user guides should be easy to use and clear in order to prevent unnecessary incidents and service request to the IT service desk. The guides are going to be created and updated based on the results during the summer 2019. To achieve this, the users are interviewed to find out the most beneficial output for the guides. Additionally, the research objectives include testing the end user guide with a selected number of various types of internal users.

The objectives are to provide up to date end user guides to mobile device users, guides for the IT department to support the mobile devices and their users and make the available guides as user friendly as possible, so that they are actually used. The target group consist mainly of users without any advanced skills in IT or mobile devices.

The usability of the guides was tested with different techniques. My colleagues and few end users were interviewed after enrolling their devices to MobileIron using the guides provided.

Summarized, the research questions for this thesis are:

- 1. What kind of information is needed in an up-to-date mobile device set of instructions?
- 2. What makes a good and useful internal IT guide?
- 3. What were the main problems of the old guidance?

4 A good user guide

There are plenty of theory and guidance for describing good user guidance in the IT field. I will use here a user experience researcher P. Hodgson's (2019) tips for creating good user manuals and the Finnish communication advisor J. Korpela's (2019) instructions for writing clear instructional texts.

In my project, I will call the guidance a "user guide" but it basically means the same thing what Hodgson (2019) calls a "user manual". Hodgson claims that user manuals have a bad reputation and gives practical and experience-based tips for writing user manuals that can beat the previous negative experiences of some users. Hodgson's tips are very detailed, including instructions on "General guidelines for user manuals", "how to create a great first impression", "How to enhance findability", How to give instructions", "How to design individual pages in the user manual" and "How to design the physical manual". His guidance was used to design the interview questions which are explained in the following chapter.

Korpela (2019) gives additional instructions on writing clear and reader-friendly texts for professional communication situations. An end-user guide's most important aspect is that it is understandable for the reader. In this research, the end user describes a person who is using the mobile device and the related guidance and has no particular IT-skills. Therefore, special attention needs to be attached to the way it is written. Korpela (2019) claims that writing is about serving people. Therefore, an end user guide for MobileIron can also be seen as an internal service within the company and it must thus be created in a "customer-centred" way. Korpela also gives very detailed instructions for writing professional texts which I will not repeat here. To summarize, he emphasises that only the relevant topics need to be written, and the most relevant matter always needs to be communicated first.

5 Methodological approach

A case study is a typical research approach in business economics. The aim of an action-based research is to change something, not just observe the things as they are. (Ojasalo, Moilanen & Ritalahti (2014, 52, 55.) This is in line with my objectives to develop the mobile device guidance at my company.

5.1 Case study

A case study approach suits well when one wants to develop something and generate development ideas. The aim of a case study is to produce in-depth and detailed knowledge about the case that is investigated. According to Yin (2009, 2) a case study is an excellent research strategy when questions "how" and "why" are to be answered or when the "investigator has little control over events" and when "the focus is on a contemporary phenomenon within a real-life context".

The phases of the case study are well illustrated in Ojasalo & al. (2014, 55) (Figure 1). The process starts by defining the initial development task or problem. In the next stage, the researcher familiarizes himself with the topic to be research in practice and in theory. After that, he can start collecting empirical material and analyze it with various methods. Finally, he can produce a proposal or model for the case development.



Figure 1. Stages of case study (Ojasalo & al. 2014, 55)

5.2 My approach

In order to answer the above research questions, I identified the initial practical challenge which the lacking guidance for the company's employees was to update their mobile device. The challenge was identified with recurring contacts to the company's service desk. The next step was to gather data which was twofold. Firstly, I was able to utilize my own several years' experience in working in IT support services in my previous work places as well as in my current position in the multinational corporation. Secondly, I interviewed six employees from which two were expert colleagues from our IT department and the three other ones end users for the guide. The end users were chosen randomly amongst the people who approached the service desk with mobile device enrolment problems. One of the interviewees was a summer trainee who had no previous experience with the company's mobile devices and practices.

The thematic interviews were conducted during April - May 2019 at the company. My questions dealt with the following topics:

- What are the main needs and challenges for end users while installing the MobileIron application?
- What kind of content does the employee need in the guide?
- What would be a preferred format for the guide?

6 Mobile Device Management

Mobile Device Management is a solution to manage mobile devices such as smart phones and tablets. Mobile Device Management is often shortened to MDM. It consists of an endpoint software which is called an MDM agent and an MDM server used by a management console which is usually operated by the company's IT department (Rouse 2017).

Mobile Device Management brings various features and benefits which companies are able to utilize. A mobile device management software has features to enhance security, mobility, usability, monitoring, and user support. The most essential features are described in Manage Engine's website (Figure 2).

One of the most important features is securing the company's data. MDM brings different options to enhance security. As mobile devices have an increased role in different organizations, has the mobile device security become more important. According to IDG (Buying into mobile security, n.d.), 74% of global IT leaders from different enterprises have reported their organizations having encountered a data breach because of a mobile security issue.



Figure 2: Features of Mobile Device Management (Manage engine, 2019)

With MDM it is possible to set policies for the device to require a certain level strength for a passcode, wipe or lock the device completely in case of theft or losing the device. I will describe the most used features of the case company's MDM separately.

6.1 MobileIron

MobileIron is the MDM solution used by the case company. MobileIron is a company that offers a similarly named MDM software for different sized companies to secure information and manage business applications and other content on different mobile devices.

MobileIron consist of the application installed to the users' device and the tools used by the IT department. MobileIron software gives the IT department access to the MobileIron console, which can be used to set different security and management rules (MobileIron FAQ 2019). For instance, MobileIron is used to set a policy that the passcode of the device needs to be at least six digits long and wipe the device remotely from all company owned data. Figure 3 illustrates a Mobile Iron console view used by the IT department.

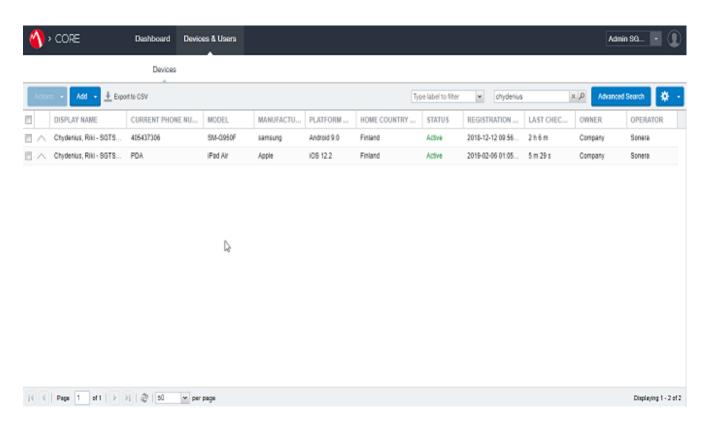


Figure 3: Screenshot from the company's MobileIron management console (MobileIron 2019)

The console can also be used to gather and monitor vital information of the enrolled devices, such as the version of the operating system, security status, installed applications, status of compliance and information of the hardware and the model of the device (Figure 4).

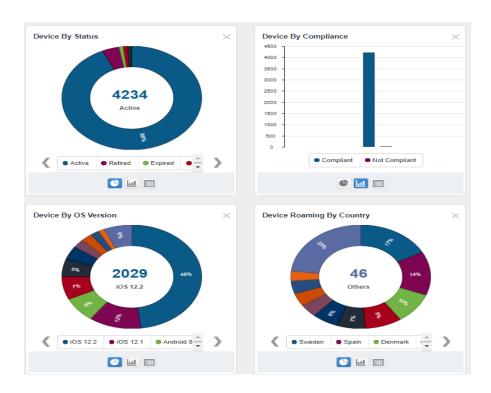
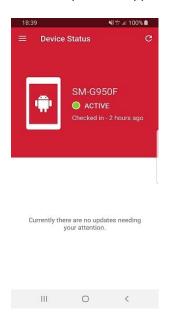


Figure 4: Screenshot from the company's MobileIron management console (MobileIron 2019)

The application installed to the end user's device is called Mobile@Work. It is installed from the App store or Play store, depending whether the device is Apple iOS or Android. When installed, MobileIron keeps the user's personal data and apps separated from the ones that the company provides. All the work information and apps are held together, unable to communicate with personal apps. MobileIron (MobileIron FAQ 2019) describes this as containerization.



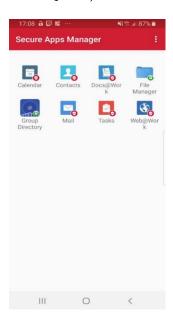


Figure 5: Screenshots from Mobile@Work application and apps provided by MobileIron on an Android phone

Mobile@Work is used to connect the user's device to the company's mobile device management. After installing the applications, the device gets access to different components, such as Apps@Work which is an application store configured by the company. This application store contains apps verified by the company and other work-related apps.

For the end user, the most important reason to enrol the device to MobileIron is to access the company mail and calendar. MobileIron has a tailored Mail application to let the user access the company's mail and calendar securely.

To enrol a device to MobileIron, it has to meet the requirements. The model of the phone has to be verified and the operating system has to be either Android or iOS. Also, the version of the operating system must meet the minimum and the device has to be company owned. Currently the minimum requirements for the operating systems are Android 8.0 and iOS 12.1

In the case company MobileIron can be activated to Mobile Phones and Tablets. Depending on the type of the device, the enrolment process is slightly different and the offered features may vary.

6.2 Mobile phones in the company

MobileIron supports a wide selection of different mobile devices. MobileIron supports the operating systems of Apple iOS, Google Android and Microsoft (MobileIron, 2019). In the case company there is a specific list of verified mobile devices which can be enrolled to MobileIron. The list is called a catalogue of supported devices. This means that each device has been individually tested to support all the applications and services which the company offers. During the tests the devices are checked to meet the security, compatibility and updating criteria approved by the organization.

For this thesis the catalogue (Table 1) was updated with the most recent approved device models and later it will be made to use the company's layout and published. There are currently some new phone models from the Samsung mid-range A-series, which are being tested as writing this thesis. Those models will be added to the finished catalogue later. Previously it had been unclear which models are supported and the already available information was difficult to find. The catalogue will be used by managers and people corresponding for ordering Mobile Devices. With the catalogue, picking a supported model is made simple.

Manufacturer	Model
Mobile Phones	
Samsung	Galaxy A40
Samsung	Galaxy A8 2018
Samsung	Galaxy J6 DS
Samsung	Galaxy S8
Samsung	Galaxy S9DS
Samsung	Galaxy S10
Apple	iPhone 6s
Apple	iPhone 6s Plus
Apple	iPhone 7
Apple	iPhone 7 Plus
Apple	iPhone 8
Apple	iPhone X
Apple	iPhone XR
Tablets	
Apple	iPad 9.7 2018 gris 128Go
Apple	iPad 9.7 2018 WiFi gris 128Go
Apple	iPad Mini 4 Gris128Go - WiFi + Cell

Table 1: Mobile devices used in the case company as of May 2019

7 Interview results

The objective of this thesis was to study what were the main needs and challenges for end users while installing the MobileIron application and enrolling the device. A high amount of incoming service desk calls and people walking in to the IT room indicated that the end users had some challenges. Additionally, I wanted to know what kind of content the employees needed in the guide, and which format they would prefer.

For this I interviewed six users. Five of them were normal end users without any special skills in IT or using mobile devices. One of the users was our new IT trainee. The interview started by asking the users to enrol their devices to Mobile Iron using only currently available guide. The interviews were thematic and resembled informative conversations. Nevertheless, all important themes were covered, and I got answers to the main research questions. The interviews lasted 15 - 30 minutes, and I took careful notes of them.

The following categorizations are based on the interview themes. Some of the category topics can be considered overlapping or vague but they are based on the respondents' answers. For

example, when asking what their needs for the guidance are or what are the requirements for the content the respondents may have been answered quite similarly that they need clear and short guidelines, and for the content requirements they may have answered that the content needs to be simple and clear.

7.1 The main needs and challenges in installing MobileIron

Figure 6 summarizes the main needs the six interviewees indicated. No one comment received support from all of the respondents. I include in the illustration all opinions that received two or more mentions. The challenges turned out to be the opposites of the mentioned needs, e.g. it was considered a challenge if the guide language and terminology was not perceived understandable and clear. Therefore, they are not listed here separately.

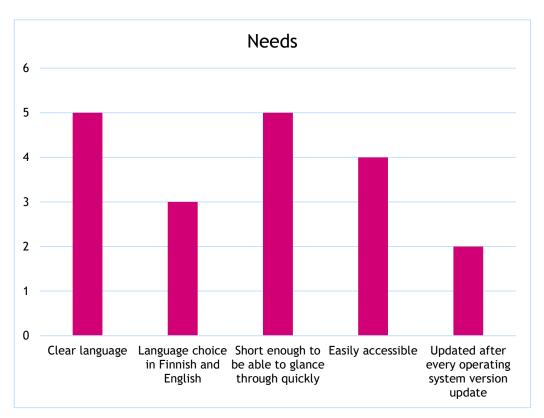


Figure 6: Main needs for the end user MobileIron guide

Five of the interviewed employees said that the guide language needs to be understandable and clear. Someone advised on not using any IT jargon but using everyday terms. It goes without saying that the language also needs to be following good grammar and style standards. It was mentioned that IT guides often include a lot of grammar mistakes like writing compound words wrongly which may lead to misunderstandings. The issue with clear language also raised up some mentions about the choice of language. Currently, the guidance is available only in English. Three respondents said that the guides should be available also in Finnish.

Most interviewees (5) said that the old guidance was way too long and confusing. Thus, they recommended of shortening it and making it more use-friendly. They were not able to specify exactly, what user-friendliness meant for them. When I inquired about it further, comments such as "easy to use", "quick to use" and "visually clear" were mentioned. One main discovery was, that renewal of device models created a discrepancy with the visualization in the guides. The illustration / screens shots did not exactly meet the current views / screen shots of the mobile devices used in the case company. This created a lot of confusion for users unexperienced with IT-related task, who were trying to follow the guide blindly. This creates a challenge for the new guidelines which were also hoped to be as short as possible. In practice, all screens are very similar but when there are known differences in the looks of the screens, one solution could be to leave out the screen shots (in order to avoid listing possibly 16 different illustrations) and guide the user verbally through the stages were there is a lot of variety in the screen views. This applies to a part, when the device is asking different kind of permissions for MobileIron. These permission request may come in different order with different devices and the word order may also vary. As it would be impossible to make every variant a screen shot this part of the guide could be explained by one sentence. Three interviewees also mentioned that the guidelines need to be easily accessed and easily found. Currently the guides are easily accessible on every user's desktop in a specific folder. However, some of them had missed this folder for some reason and were delighted to find about the folder containing all different IT related guides. There were also suggestions that the MobileIron guide could be printed out on a paper and included in the box with the new mobile device. Accessibility can also refer to the usability, e.g that the guidance can be used by vision impaired or people with other physical restrictions.

One interviewee also mentioned, that a too detailed of guidance is also making employees less self-initiated. If the guide looks too technical or long to read, they tend to get frustrated even before trying to continue with the guide contacting the Service Desk instantly. This is a paradox since the purpose of the IT department is to help people to cope with IT issues. The challenge is that the IT department has limited resources, two full-time IT supporters taking care of over 1000 Finnish employees, and there might be much more urgent issues to deal with than helping with email details.

7.2 Content needed for the guide

First of all, three respondents said that they do not want to have any guidance at all but have the IT department to take care of the installations for them. As this is not a realistic case due to lacking resources, these responses are not included in the following Figure 7 which summarizes the content requirements of the guide.

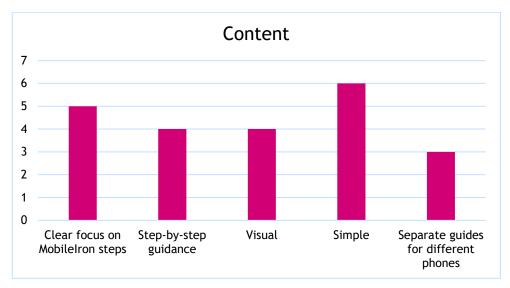


Figure 7: Main content requirements for the MobileIron guide

One clear challenge with the old guidance is that the whole phone use process was described starting from inserting a SIM card. This lengthens the written guidance too much, and thus the respondents said that the guidance should focus clearly on guiding the MobileIron installation steps. Most users are already familiar to set up the device (e,g, inserting SIM cards) without additional guidance. Only the enrolment part is critical and currently it is described in few pages in the middle of the guide. Hence, I plan to cut this initial information away from the new guidance, assuming that most people are by now competent to take mobile devices in use. Both guides can still be found separately.

Four respondents mentioned that the guidance needs to be detailed enough, step-by-step. If was also mentioned that the steps were hoped to be illustrated visually with screenshots.

All respondents said that the guidance needs to be simple. This overlaps with some other topics and the "Needs" and "Format" categories of the interview themes. Simple can mean many things; for some it is a visual step-by-step guidance, for some it means using plain, common and understandable language, for some it may mean simplicity with the format or even accessibility. These two last perspectives are covered in the following sub-chapter.

Three people mentioned that there needs to be separate guides for all different mobile device models, e.g. Android phones, iPhones, iPads. This is actually the case already so in this extent there are no need to change the guidance. However, one respondent hoped to have separate guides for each different phone model, e.g. for Samsung Galaxy, Samsung A8 or iPhone X. Even though this may sound like a real user-centric solution for the guidance, it is not possible to be implemented. Maintaining such a large variety of different guidance is not a realistic choice.

7.3 Preferred format of the guide

There are many ways to provide guides, e.g. digital, paper, videos. The respondents were asked about their preferred choice for the guide format which is summarized in Figure 9.

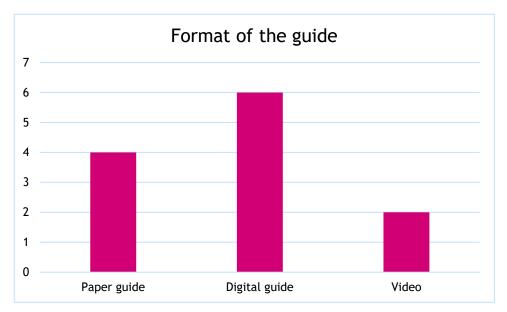


Figure 8: Expected format of the MobileIron guide

All six interviewees mentioned that they want to have the MobileIron guide in a digital format. Four people wanted to be able to print out the guide. Mostly the people interviewed were happy with the current format of the guide which is a digital guide available as a PDF-file. Two people wanted to have the guide in a visual format, requesting for a video. There is actually a video already available explaining the basics of the enrolment, but it needs some updating.

One person mentioned that the guidance could also be in a cartoon format. As it was just one mention it does not mean any measures should be taken. Overall, the interviews confirm that there are no big needs to change the current pdf-format.

8 Discussion and further development needs

The interviews were very enlightening. They will help me to create a user-driven and usable MobileIron guide. However, some of the interview questions should have been more detailed. For example, I was not quite happy with too simple answers like "I want to have the guide as simple as possible". I should have been more active in prompting questions and asking for details. This means that I need to define what is "simple" enough and probably test the new guidance for getting further insights.

The content requirements remained quite general and very similar to the overall needs for the guide. This is not surprising since most of the respondents do not have any IT expertise. But even the IT colleagues did not specify any certain content but mainly advised on shortening the existing guide. One clear challenge is being able to keep up with the constantly changing interfaces and thus being able to provide exact illustration in the guidelines. This means that the guides need to be checked on a regular basis, e.g. take a look at them twice a year and see if any major updates need to be done. Also, if the content and format is simple enough, this shouldn't be too laborious. It means only that the updating process needs to be included in the year plans of the IT department. The shortening of the old guides will be done so that certain sections will be turned into separate guides or dropped completely. For example, most mobile device users are currently able to insert SIM cards without any additional work guidance.

It will be certain that the creation of the guide requires compromises and balancing between different contradictory needs. For example, the hope to have detailed step-by-step guidance can clash with the wish to have simple and short guides. But certain results like the wish for more visuality and clear language or wish to have guides in Finnish can be easily executed. In order to find a right approach, the first guide version will need to be tested among several end users.

An additional research need would be the accessibility of the guide format. In this research, no vision impaired or otherwise challenged people were involved. Therefore, these aspects should be tested and probably even surveyed separately in the corporation. At this point, due to narrowing of the focus, it was not researched what kind of accessibility guidance there may already be in the global corporation.

Besides providing clear and simple guides, internal training and attitude changing campaigns are needed. People should be guided to be in touch with the IT Support only with real and relevant issues which they are unable to solve themselves. By offering easy to understand guidance for the basic tasks will encourage the end users to at least try before contacting the service desk. Also, the encouragement for self-initiative could enhance the user's IT-skills overall, helping them to adapt to new digital practices and systems more easily and improve their work efficiency by learning new things.

During this thesis project I learned a lot of useful skills from which the research-oriented attitude is the most important one. I learned that without researching even in a small scale, many solutions would be created based on the actor's own assumptions. Before doing the interviews, I was pretty confident that, based on my longish experience in the field, I would already know all answers. This proved to be not the case and it will encourage me to develop my research skills and development-oriented mindset further.

The actual Mobileiron guide will be created during the following three months based on the insights gained in this study. For that purpose, I will continue studying Hodgson's (2019) detailed tips for creating great IT manuals / guidance. Korpela's (2019) instructions on writing clear professional texts will be especially handy when creating the content in both English and Finnish.

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