

# **Digitalize your business with Kiho**

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Bachelor's Thesis

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**SAVONIA UNIVERSITY OF APPLIED SCIENCES**  
**THESIS**

**Abstract**

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Abstract <p>The objective of this thesis was to provide a report of the development work made for Mastercom Oy. The aim of the development work was to provide the company a service description of their product. The topic was chosen due to a need for a service description; that would ease the internationalisation process for the client company. As a result of rapid growth and product development the company required a comprehensive summary of their service. The Internet of Things is still a rather new term, especially in the transportation business, and requires great deal of reasoning for the customers to see the benefits of it. This development work will provide a tool from the company to ease this challenge.</p> <p>The thesis is divided in three parts, first one providing general information about the thesis and the customer, as well as explaining the thesis process. The second part is dedicated to the theory behind the thesis, furthermore to explain the essence of the Internet of Things and the effects of digitalization. The third part provides an overview of the development work done for the customer and the summary of the thesis with the analysis of the process and the writer's view of it.</p>			
Keywords Internet of Things (IoT), digitalization, mobile work management, Kiho, development, service description			

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## 1 INTRODUCTION

Internet of Things (IoT) is an increasingly growing term in the markets today. Being able to monitor your company and its employees with ease as well as create savings at the same time is one part of IoT. In few words IoT means to be able to connect any device to internet, with a possibility to switch it on and off, as well connect the devices to each other. IoT brings companies countless changes to gather information of its operations, connect its existing systems to new ones and gain profit from the optimized operations. The companies do face the challenges from harvesting the data, because, if you are not able to handle the data load with ease, you end up having endless amount of information you are not able to take in use. (Morgan, 2014.)

It has become more and more crucial for companies to be able to benefit from the possibilities the IoT has created. At same time the companies are facing the challenges the IoT brings; the staff must be familiarised to the new systems as well as update the existing devices to meet the needs of new systems. The focus of this report is to show the results of the work done with Kiho. The thesis process is in two parts; this being the report of work done for the company. The purpose of this thesis is to produce a service description of Kiho service, to ease the internationalisation process as well as the initialising process of the system for the resellers abroad. The guide has been delivered directly to the customer and will be published as an attachment of this Thesis as well as used as a tool for the company's internationalisation process.

As from the marketing aspect; a thorough guide will ease the selling as well as the marketing of the product. When the system seems comprehensive to the customer rather than complex it is easier to reason the benefits of it to them. The guide consists of smaller parts that can be separated to explain the system in fewer words; this enables the marketing of the product to be easier abroad.

The personal interest to this specific topic came from my work, I work with se system daily as well as with customers. The biggest challenges the company faces are the difficulty to initialize the system in a way that the customers would benefit the most from it, straight from the start.

## 1.1 Thesis structure

In this chapter, the structure and form of the thesis is explained. As mentioned before the thesis is divided in two separate parts, the one being the production part in which is done for the company's use, which contains the ready guide for the system that has been delivered directly to the customer and can be found as an attachment of this Thesis. The second part is this report that consists the theory behind the report.

The thesis contains all together six chapters, with each having its own sub-chapters. The first chapter of thesis is the introduction, which provides the general information about the topic of the thesis, it contains a brief overview of the structure of the thesis. In the introduction is a company presentation to familiarize the reader of the system. The second chapter describes more thoroughly the thesis process as well as the objectives of the thesis.

The third chapter is dedicated to research methods providing the reasoning and validity of the methods used in this thesis.

The fourth chapter provides more information about the theory behind the thesis as well as explains the IoT more thoroughly. In this chapter, the aspect of marketing will be discussed and reasoning for it will be provided.

The fifth chapter presents the briefly the production, summarizing the work and its benefits to Kiho. The final chapter is to conclude the results of the thesis as well analyze the process in whole. The sixth chapter will ponder on the questions what could have been done differently, was there something to improve and how the process effected. In the end of the thesis can be found the list of references and the appendix document.

## 1.2 Introduction to Kiho

Mastercom Ltd was established in 2003 in Siilinjärvi Eastern Finland. It started developing fleet telematics services in 2005 with the name GPS-Msolutions. Kiho brand was established in 2010. Since then the company has been the leading developer of mobile management services. The company has now 20 employees and the turnover was 1,4M€ in 2016. The company is a market leader in mass transportation telematics, and has over 500 customer companies. (Kiho, 2017.)

The main products of the company are:

- Telematics
- Tasks
- Worktime
- Noticeboard
- Tire pressure monitoring
- Invoicing
- Driving logbook

The service is a web based service (Kiho V3), with a mobile app for Android devices.

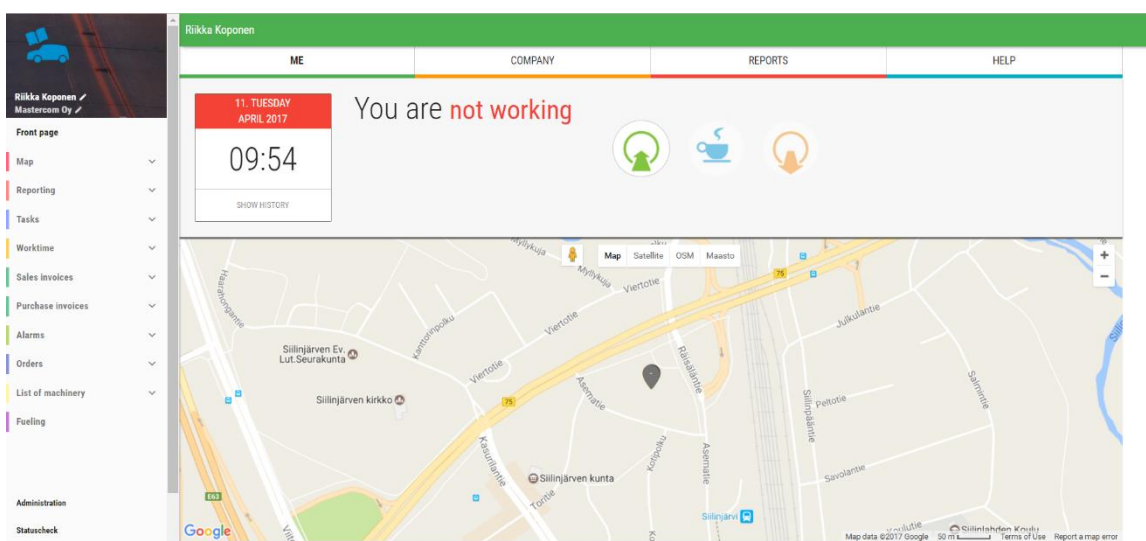


FIGURE 1. Front page of Kiho V3. (Mastercom Oy, 2017.)

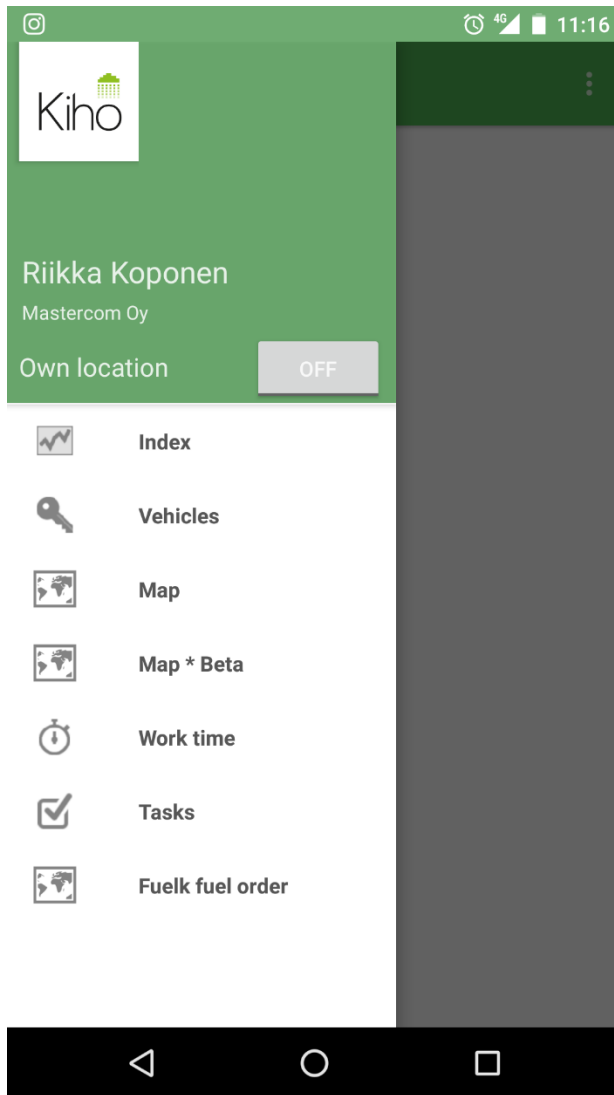


FIGURE 2. Front page of Kiho mobile app. (Mastercom Oy, 2017.)

At beginning of the 2017 the company launch a completely new version of its Worktime service and during Spring 2017 the invoicing part has had new features, due to that the production of the thesis was delayed until those renewals were done.

The company has been operating mainly in Finland, but during 2016 and 2017 the company has expanded abroad. Kiho has customers in Russia, Sweden, Jordania and Tanzania. Overall the company has grown rapidly during 2016-2017, and as a part of that the need for documentation of the service is needed.

## 2 THESIS PROCESS

The purpose of this thesis was to provide a guide for the resellers abroad in able to ease the internationalisation process, as well as provide the company a thorough service description for other purposes, such as applying Tekes funding. The company has been in the markets for several years and has developed a multifunctional system to meet the need of customers from several different fields of expertise, from hairdressers to woodcutting industry. Due to the rapid growth of the company, it has lacked a thorough service description that would allow the initialising process to be easier and faster. This thesis will provide the company a Service description in English, that can will be translated to Swedish and Russian.

This work is done in close relation with the developers of the system. The software designers were consulted in able to provide a truthful guide. The learning process has contained close work with customers and the company lead. Familiarizing and supporting new employees has been a crucial part of process, allowing to detect the parts of process that are difficult. Moreover, recognising the difficult parts, explaining those in a way that the system will work in a most beneficial way has been important to notice.

The objectives of the thesis were set together with CEO Antti Koponen and development director Lari Tirkkonen at beginning of autumn 2016. The main goal of this thesis was to produce the guide for the company as a crucial part of that was the be familiar with the system and to understand the view from customers' side. To be able to achieve the set goals, the work at customer service was necessity. Additionally, understanding the theory and importance of IoT and digitalization was one of the objectives. This report focuses on explaining the theory behind the system and how the system enables the customers work, as well as to find the reasoning how the guide will ease the marketing of the product.



### 3 RESEARCH METHODS

The partner company had a very straightforward problem to solve. Although the problem was straightforward, the amount of the material was extensive. To be able to conduct the thesis, a very thorough undergo of the system was necessary, as to be able understand and recognize all the areas of the system. The work began in the autumn 2016 and as a part of the customer service work, the needs for the thesis clarified. To limit the amount of material as well as the area of the report, it was agreed together with the company, that the report will focus on providing a guide for resellers abroad.

As an important part of the reports research were the discussion done with the resellers and sellers in Finland as well as with the software developers. These discussions provided important knowledge of system and the needs of the customers.

This thesis is a development work to meet the needs of customer. In the following paragraphs, the reasoning and methods of the thesis are explained.

#### 3.1 Quantitative and qualitative Research

This thesis relies mostly on qualitative research. In able to understand the difference of these, the methods are explained, furthermore the reasoning why the chosen method was used in thesis, will be provided. As in few words the quantitative data consists of information that can be presented in numbers and qualitative data on the other cannot be. (Explorable, 2014.)

Quantitative research relies on that the gathered material can be measured in a mathematical way and that the conclusion done based on the material can be approved or disapproved. Quantitate research requires the author to have meaningful amount of data to analyze and to be able to conduct from it. Quantitative research can provide a clearer way to find an answer to the questions due to the more straightforward analyzing of the data than quantitative research. One of the most common ways to conduct a quantitative research is a

questionnaire, for example in a form of customer satisfactory survey. (British Library, 2017; Explorable, 2017.)

The reason why quantitative method was not seen appropriate to use in this report, was the fact there was no need for questionnaires from Kiho's side and it would have not provided meaningful material for the topic. As mentioned in the article "Four basic research methods for business start-ups" in British Library webpage; qualitative research can provide extensive amount of material to analyse in short period of time and does not require hefty financial investments from company's side.

Qualitative research examines the feelings and reactions people have towards a certain issue, for example Kiho service and how it appears to them. Qualitative research, as from the point of view of a small and medium size company, can provide valuable insight to the addressed issue from the marketing aspect. With the help of qualitative research, the company can gain information from its customers in able to market its products to them more efficiently with less time. Qualitative research in its nature is more free and unstructured than quantitative research. (British Library, 2017; Explorable, 2017.)

As for the service description, the qualitative research was a key tool to find the answers to the questions. The insight that came from the sellers and resellers set the structure for the guide and gave the leading questions to answer.

### 3.2 Literature Research

As an extensive part of the qualitative information was obtained from literature. This part was not required from the company's side, however it was found important by the author to understand the concept of digitalization and marketing so that the appropriate approach for the guide would be found. Most of the literature is from electronic resources. The literature material consists of various publications and articles to build up a versatile reference material that would provide the author a thorough knowledge of the theory behind IoT, digitalization and marketing. All the data is qualitative as there was no need to gather statistic information for this report.

### 3.3 Discussions

As for the discussions conducted with the sellers and resellers in Finland and with the software developers the data can be seen as qualitative due to the amount of people that were discussed with. As well as the form of the discussions indicates to qualitative research; the discussions were not recorded in any way, there were no specific questions, the questions rose from the need to find an answer to a problem. The discussions were unofficial. Permission to use these discussions as a base for this report was asked from the attendees.

## 4 THEORY

The theory behind the development work is mostly based on the material gathered from the Kiho service. Furthermore, in able to understand the system better, this chapter will provide more in-depth information about IoT as well as digitalization as whole. This chapter will provide information for the reader about the different aspects of digitalization and provides examples of how the digitalization has affected and how it might affect in the future. This chapter will ponder on the marketing aspect of the guide as well.

### 4.1 IoT and digitalization

In able to create new, one must change the existing. That is Internet on things and digitalization in few words, from the authors point of view. The same thought is discussed in the article written by Kim Lindgren, the CIO of Tieto. Digitalization is the future and the present. The past must be adapted to meet the requirements of it. As written in the article:

*“is clear that replacing old technologies with new ones is a relatively small shift compared to the revolution in operating cultures and strategies required for success in the digital age.”* (Lindgren. K, 2016).

It has been one of the key factors for Kiho as well, to create a system that is usable with existing technologies but provides a new way of doing things so that is most beneficial. As a part of that the usability of the product has been the utmost important part of development work. As mentioned in the article, it is important to see the digitalization as completely new way to do things, but at same time *get closer to the customer* and create a system that is more personalised. Digitalization enables companies to analyse the data the customers produce by using internet and with the help of that you are able to create systems that meet the needs of the customer.

One essential part of creating new systems is the usability of the systems. The biggest challenge Kiho has faced has been the difficulty to assure the customer that even their oldest and most unwilling employee is able to learn to use the system. It is a common obstacle when selling a digital system to people who are not using them fluently. Kiho has used countless hours in product development to

design a system that is straightforward to use by the common users. The important part, when designing a usable product, is to listen the customers. The software developer might think that usable product is something that is easy to use, however placing the buttons in a certain way or having just few buttons, does not make a product usable. Depending on a user the usability comes from the need to accomplish the needed with ease. In some cases, this might require more buttons or certain colours. The challenge the companies are facing is to find the customers to tell their needs. Furthermore, the process is time-consuming and requires a major portion from the budget. A good usability creates a value for the brand and provides competitive advance, for that is should not be neglected. (Lynch. K, Gillmore. S, 2007.)

Industries, especially manufacturing industry is undergoing a massive change. Digitalisation is enabling more effective ways to do work and at the same time manmade work is not needed as much as before. On the other hand, new technologies are needed and doers for those technologies. Nordic countries are the leading producers of digital technologies. In the report “Digitalisation and Automation in the Nordic Manufacturing Sector: Status, Potentials and Barriers” written by Nordic Council of Ministers the digitalisation is referred as “industry 4.0”. With this term the authors are referring to the change that the digitalisation and IoT is bringing. The authors do not see it as a negative change, on the opposite, the digital technologies will enable to produce with more efficacy, less costs, bring consumers closer to the producer and produce more green manners for example using less electricity. The report argues that Nordic countries have better ability to be ready for digital technologies, the arguments were:

- *Digital skills. The Nordic people are world leading when it comes to use of digital technologies. A higher fraction of people in the Nordic countries (comparing to the rest of the EU) have “above basic” digital competence when it comes to digital information, digital communication, digital content-creation and digital problem solving.*
- *Digital readiness. INSEAD and World Economic Forum have developed an index that measures the ability of individual countries to take advantage of ICT and digital technologies. It consists of 53 ICT-related indicators within areas like skills, ICT-usage, infrastructure and regulation. Among 143 countries, Sweden, Finland and Norway are ranked in top 5, while Denmark and Iceland are ranked in top 20.*<sup>13</sup>
- *Research and development. High investments in research and development are important in order to develop and implement digital technologies. The Nordic countries are among the leaders in private research and development (compared to GDP) with Finland and Sweden placed in top 5 in OECD.*

- *Broadband coverage. The Nordic countries are among the top in OECD when it comes to number of fixed and mobile broadband subscription per inhabitants, 2014.*
- *Culture and work place organization. Optimal use of digital technologies is closely linked to intra-organizational cooperation, production in small batches, close link to customers, etc. Hence, the Nordic model characterized by an informal work place culture and low power distance might represent an important competitive advantage.*
- *Strong ICT-sectors. The ICT sectors share of value added and total private employment are high in the Nordic countries (especially Sweden and Finland) compared to the OECD-average. (Nordic Council of Ministers, 2015).*

From these arguments can be concluded that especially Finland can be seen as one of countries leading the digital change in the Nordic. To thrive in this industry and to be able to generate systems that are leading the way can be challenging. (Nordic Council of Ministers, 2015).

Kiho's opinion is that the next step in digitalisation will be the AI (artificial intelligence) technology, that will make the reporting and recording your work easier and leaving more time for actual work. Digitalisation and IoT should not be seen as a negative thing that will take away all the work from humans, it should be seen as a tool to enable humans to have more time to do the actual work and create new. It is true that in the future more and more people will lose their work to machines, it is estimated that in Finland only approximately 42,000 manufacturing jobs will be lost by 2020 (Alsén, A., Colotia, I., Daniel, M., Kristoffersen, B., Vanne, P., 2013.), and for that reason it is important to find ways to bring the digital technologies closer common people. Kiho aims to produce products that are user friendly and usability is easy, there is no sense in producing technologies that are difficult to use and would make the user feel uncomfortable. The main thought behind digitalisation and IoT is to be able to connect the work you do to be part of the big picture, to connect the different phases of a process together in a way that is possible to make conclusions and create savings. To bring your work closer to the end user and vice versa. Furthermore, access information related to your work easier and use available resources the most efficient way. Digitalisation does not need to mean that one's work is no longer needed, it can mean the work one does is more meaningful and efficient.

Digitalisation and environmental friendliness walk hand in hand, information that generates by connecting devices, provides more awareness of climate change, economic situation and innovations related to these issues and therefore enables

possibilities to do things differently. “The sharing economy” is the ground stone of environmental friendliness, as an example of this can be seen the Live map of Kiho, where you can see the available resource with one glance and make sure the most efficient one is used. In the future one might be able to order the suitable resource based on the location. (Breton, T., 2016.)

Internet of things (IoT), the solution for today. Kiho’s product is an excellent example of a product that meets the need of IoT; the service provides you an application that enables employee to record their work easily and a user interface for the employer to gather the data and form needed documentation for salary payment, invoicing, driving logbooks and such. As mentioned in the beginning of this report; IoT means to be able to connect any device to internet, with a possibility to switch it on and off, as well connect the devices to each other. Kiho service uses tracking devices to harvest data from the vehicles, the gathered data is then composed into readable and meaningful reports for the customers to use. One of the key points in defining the IoT is to connect the devices to cloud in a way that the user can benefit from the data you can harvest from it. One excellent example of how the Kiho system is used to help the customer connect the device to the cloud, is the ignition of the internal heater of the engine; customer can start the engine anywhere at any time, even if you are hundreds of kilometres away from the device. (Morgan, 2014; Buyya, Vahid Dastjerdi 2016, 3-22.)

So what’s new? asks the book written by Mike Loukides, the difference is that, that you can connect devices together in way it is possible to collect data from all of them and then bring it all together to create new. Connecting factories, machines in them to investors and banks as well as re-sellers and consumers, all this information is possible to bring together and create factors that measure the process. Image 4 is describing the diversity of IoT and the possibilities it brings. The author presents that in the future only few is required to have in-depth understanding of every part of the process, but even more people will need basic unified knowledge of both hardware and software. The author of “What is Internet of things?” introduces these eight concepts that can be found from every hardware project, starting from electrical accessories to aeroplanes. The concepts are described in the image 4. In the following chapter these concepts are briefly described.

## SOLID

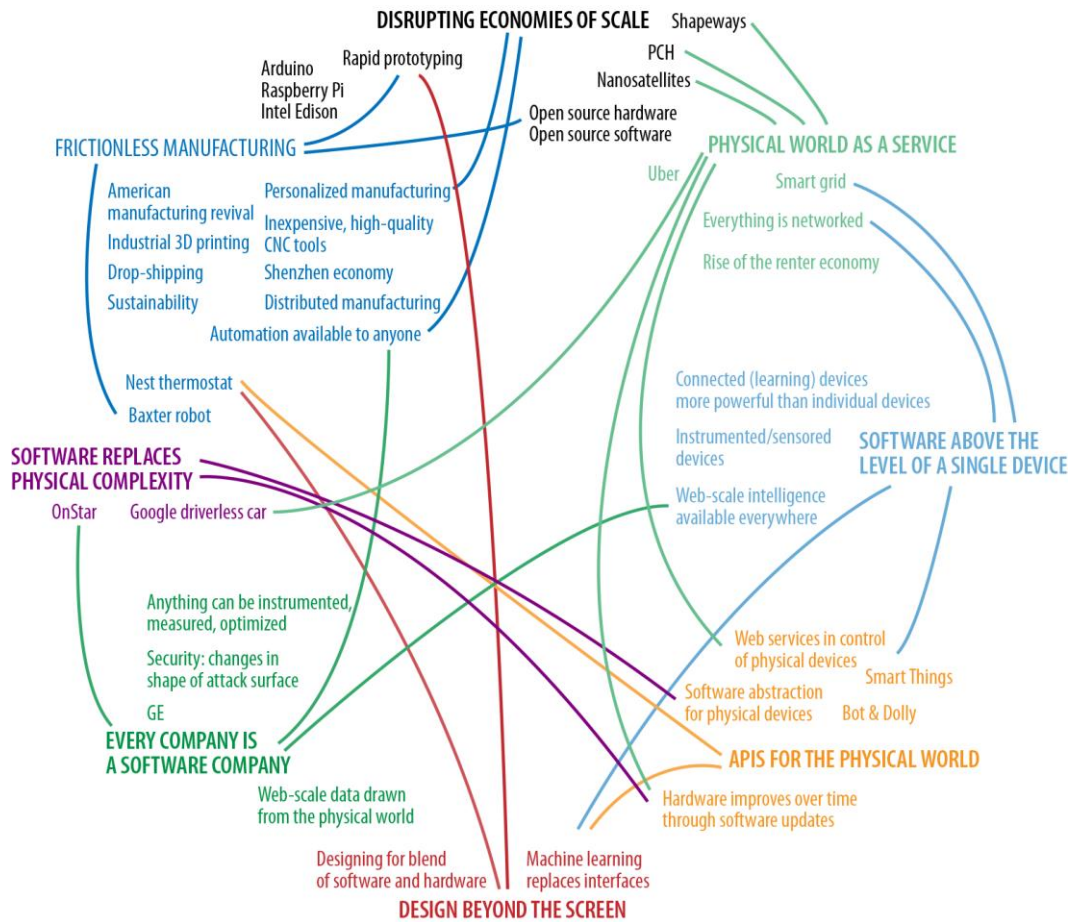


FIGURE 4. What is Internet of things? (Loukides, M.; Bruner, J. 2015.)

Disrupting economies of scale; today it is possible to create new innovations with less engagement of resources, it is not even required to have anything ready to be able to access funding. Basically, an idea is all you need and channel (Kickstarter) to promote it. This eases Kiho's funding process as well, it is possible to apply funding with just an idea, especially when the company already has a operating system.

Being a software company; everything can be measured, you can optimize everything, even the tiniest detail. Imagine that you go to work daily to the same locations, what if the Kiho application would suggest to you automatically to log into work when you access the area? That is possible to do even now, Kiho's next step will be to improve the system in a way that it can predict the moves and suggest the most suitable step.

Frictionless manufacturing; remove the unnecessary abrasion from the process, make the system easy to use, technology does not need to be complicated. A good example is Kiho Tasks, you can manage every step of the process with one



application, from producing the product, delivering it to customer to invoicing the process and paying the salary for the employer, either based on driven kilometres or by the hour.

Software above the level of a single device; everyone knows that there is “intelligence” in every electrical device. Software above the level of a single device refers to that process when a device is controlled from outside. As from Kiho’s point of view an excellent example is the voltage alarm; when a vehicle has a tracker installed to it, it is possible to set an automatic alarm that tells when the voltage level of that vehicle has gone under the set level, this prevents the problems that might come from voltage changes.

Standards for connected devices; to be able to use same device from different service provider, these devices need to operate the same way. Same goes for software designing, in able to access different systems to bring the data together, the software needs to be on the same level, API. As for Kiho, the company has its own API, that is accessible for anyone and via API even the competitors tracking data can be brought to Kiho’s system. Invoicing and worktime data can be transferred into outside system via interface.

Design beyond the screen; the system you are using is learning from your actions and will create automatic actions, so the user does not need to repeat them. Or the system is collecting relevant data in the back ground, so the user is not required to do so. Kiho tracking is an example of this this, it is possible to record the driven time and kilometres from your phone or vehicle. When performing a task, the system collects the used time according to different statuses as well as the driven kilometres.

Everything as a service; the thought of everything as a service can be intimidating and even oppressive, but when you think about it makes sense; the car with GPS tracker tells you where to go, applications provide suggestions based on your internet behaviour. The author of the book presents the IFTTT (if this, then that) programming to be the future, that would enable users to connect their devices with simple commands; if this, then that. Like in Kiho service the addresses of customers are automatically suggested and in the future the worktime process and tasks will suggest the most commonly used selections. IFTTT programming will be part of Kiho’s future alongside with AI technologies.

Software replaces physical complexity; to be able to update and improve massive machine with just a click. Software brings savings and innovations to places where

physical ability used to be needed. Like Kiho, it is not needed to actually go and update the trackers to newest software version, it can be done with remote access, or when starting the webasto, you only need to select the heater from mobile applications instead of actually going into the vehicle.

(Loukides, M., 2015.)

## 4.2 Marketing

The marketing point of view for the service description is rather straightforward. When the product is, complex and provides vast number of features, the selling of the product becomes somewhat challenging. The understanding of the product is essential for the sellers and resellers. Furthermore, if the sellers are not able to present the system in a way that the customer finds it simple to use, they might not be a deal. From the customer's point of view, it is easy to understand that when acquiring new systems, the usability of it is a key factor. Especially, when the product is supposed to ease the workload and make paperwork useless. The service description is answering to these needs, by providing a guide that describes all the features and answers to most common questions.

When looking at the 7Ps- Product, Price, Place, Promotion, People, Process and Physical evidence, the need for service description can be easily justified. In the following chapter, these areas of marketing will be discussed.

**Product** - having a great product is not enough, to be able to reach your customers, you need to know to whom and how you will sell it. The service description enables the resellers to understand the product.

**Price** – To sell your product the price must be right and arguable. The service description provides the needed background to justify the price for the product.

**Place** – The product must be available for the customers with ease. When the resellers can relate to their customers, they can find the right place and time to reach their customers.

**Promotion** – The service description is an implement for marketing. As you become familiar with product and the features, you are able to market the product to the customers.

**People** – This is one of the most important parts of the marketing and selling, from the author's point of view. The customers often relate to the seller and see them

as a part of the product. If the seller is not confident about the product the customer most likely will not acquire the product. Moreover, it is utmost important to understand what you are selling and to whom provide the right kind of impression to the customer.

**Process** – To provide a thorough experience for the customer, it is not just the product you are selling, it is the big picture, the company. The service description is an essential part, that provides the needed information to be on top of the information needed for the selling.

**Physical evidence** – The service description provides the needed evidence about the system for the sellers to convince their customers to make the purchase. (CIM, 2015.)

Furthermore, the service description is required by the government when acquiring allowances or loans. It provides information for marketing companies and eases the marketing. When looking at a system as complex as Kiho the marketing must be planned carefully, to be able to reach the right customers at right time. This can be problematic if the marketer is not familiar with system and its operations, furthermore, finding the right target group can be complex.

Marketing the product and the digitalization come hand in hand. Digitalization is the word for today and aims to bring more benefits. Considering this from the marketing point of view, digitalization can be used as a part of your marketing. People are more familiar with different technological systems and understand the benefits from it. A company, that provides online services must be visible in digital channels as well. Today the marketing in social media and other digital services is extremely cost efficient. However, to succeed in digital marketing company must be familiar with its customers as well be prepared to provide them the ultimate experience. David Edelman and Jason Heller introduce the “Big Five”, in their article about the digital marketing. In the image below the different elements of digital marketing are shown. It is, from authors opinion, an excellent guide for companies to boost their digital marketing operations.

In the digital era, marketing operations must know how to exploit and scale the capabilities of digital channels cost effectively.

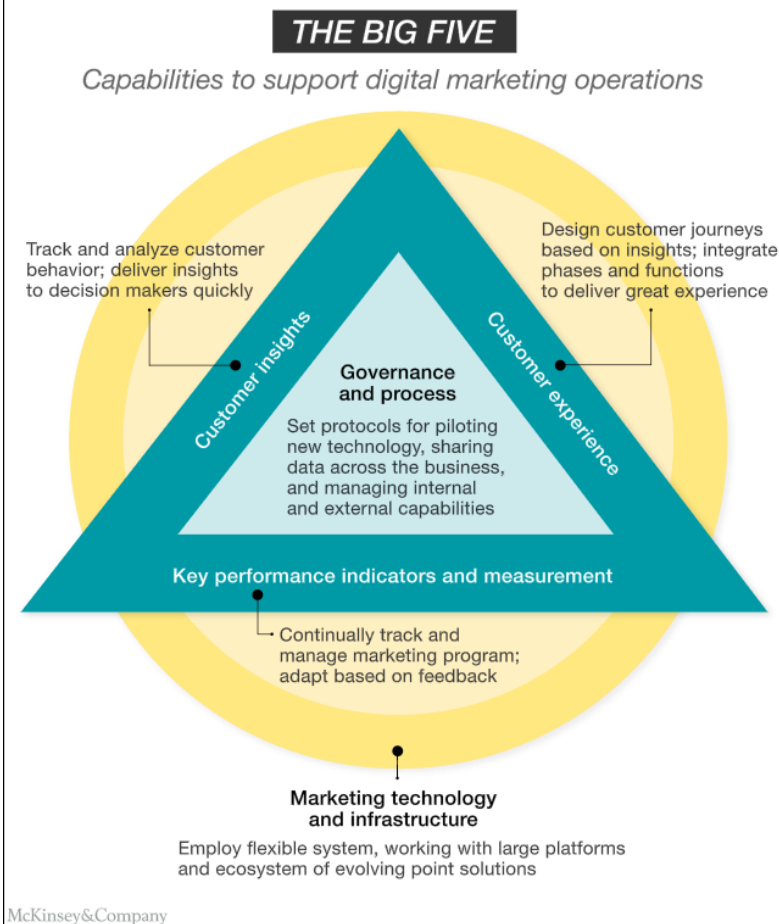


FIGURE 5. The big five. (McKinsey&Company, 2015.)

The article discusses how digital marketing can thrive the company's marketing, however, the marketer must be aware of the customers' needs as well as the right placement of the marketing technology. As a part of that the understanding of the product becomes crucially important. (Edelman, D. Heller, J., 2015.)

*"We're standing at the dawn of a digital business revolution."* (Wang, R., 2015, 3.)

And now, today it is here. Wang discusses in the book about the importance of keeping the brand promise in the era of digitalization. The companies must meet the needs of their customers and have brand that provides an answer for that need. Wang introduces five areas the companies must master, enable to produce business models like no other, here is the key points for the areas from Kihō point of view:

- Transformation focused: Kihō provides transformative product that can meet the needs of different customers. As an example: A construction

company and a taxi company can use the Kiho tasks to master their activities and invoicing. Kiho is extremely large-scale product, providing worktime surveillance, task management, tracking and all of these components can be invoiced; either separately or combined.

- Relevant: The product provides real-life help and actual savings in costs, as well as means to measure the savings.
- Authentic: Kiho has its own API, which can be used by outside operators. Company is aiming to provide a development platform that can be accessed by developers. This would enable the use of outside developers as well. The key codes are not accessible to outside developers. The company has a well-planned process for data protection.
- Intention driven: One of Kiho's strengths is the openminded and innovative product developers, who constantly seek new ways of doing things. They find ways to do things differently and follow the development of new systems.
- Networked: Kiho is doing co-operation with several companies, Kiho has interfaces to outside systems. Kiho drives towards co-operation and seeks for new talents to work with.

Kiho's aim is to disrupt digital business in the area on mobile work management, before anyone else does it. (Wang, R., 2015, 3-10.)

## 5 DEVELOPMENT WORK

As a result of the development work was a Service description of the Kiho service. The guide can be found as an attachment of this thesis. The guide has been delivered to the company and is in general use for the re-sellers as well company's own use. The research methods to obtain the needed information for the guide has been explained previously in this report. The company will be using the guide to ease their internationalization process and the initializing process for resellers. Up until now it has been somewhat challenging to for re-sellers to sell the product family, due to its complexity and diversity. This guide can ease the process by providing a description of the service as well as answers to most common questions of the system.

One of the needs that the company had for the service description was, that it could be used as a reference when applying funding from different institutions such as Tekes and Finvera. as one of the aims for the company is to become an international company it was clear choice to have the service description in English. The discussion with the company representatives was the guideline for this part, so that the guide could answer this need. From the company's point of view this was successful, and the guide has already been used as a reference.

The guide consists of thorough description of Kiho- service as well as guide for resellers to be able to initialize the service together with the customer. Special consideration has been provided to be able to produce a comprehensive and straightforward guide for complex system. The guide provides answers to most frequently asked questions and has links to web addresses that provide help. The guide is compiled in a way that parts of it can be separated as smaller pieces of guides for customers to use. Great consideration has been used to contribute the guide in such way that the customers would be able to benefit the most from the system, straight from the start.

Company logos, colors and images were used to provide a consistent guide to match the image of the company. The marketing aspect of the product was considered as well when making the guide. It is easier to mark an accessible and explicit system, than one that appears complex and difficult. As a part of the guide

a demo company was established by the author, to be able to demonstrate the system in a better way, it is easier for the customer to purchase a product that they have an idea what it can contribute to their business. As for the marketing point of view for the re-seller's point of view the guide answers the need of providing enough information for the re-sellers to appear trustworthy in front of a customer.

Discussions with resellers in Finland took a great part of the development work, enable to provide a guide that would match their needs as well. From the usability point of view the customers' needs were one base for the service description, since the initializing process must be fluent and comprehensive enough that the customers would feel they are able to use system and benefit from it.

As for improvements and feedback, the service description does not provide information or guidance for reporting, and the lack of this has aroused discussion should reporting be part of the service description. It was decided that a comprehensive guide for the reporting is not part of the service description as it is not the base part of the system. Reporting as whole is one of the most important part of the system and it was seen, that it will require a guide of its own. Overall the service description has received positive feedback from the company and from the re-sellers. As the company's Tanzanian affiliate comment *"it is easy to understand the system now, that I have the guide where I can find answers and guidance"*.

## 6 CONCLUSIONS AND REVIEW

This thesis in total has been eye opening proses, getting familiar with the digitalization and IoT has provided knowledge and understanding for the change the world is in. No being familiar with the topics has been one of the reasons the proses has been rather lengthy, starting from autumn 2016 when the need for the thesis rose from the employer's side, to spring 2017 when the topic was introduced at the seminar. Collecting the data and writing the thesis has been going hand in hand, since being familiar with the topic was crucial for the development work. Finding time when working full time has been a challenge, furthermore finding suitable literature and material has not been very straightforward.

The topic was altogether interesting and after finishing the development work, the company has been able use as a tool for their marketing and sales. Due to the nature of their product the Service description will need updating constantly and it has been a pleasure to be able continue doing so. The updating process requires closeup work with developers and understanding the theory behind the system has been helpful for the author. As a part of this the guide for reporting will be in process in the future.

There is always room for improvement, more literature could have been used as reference, although it was discussed with the company, that their recommendation is to use up-to-date information, rather than books written few years ago. More time could have been used for the writing process, and the areas good have been reviewed in a larger scale.

As for the personal and professional growth, this thesis has provided a great deal of knowledge and understanding of the IoT and digitalization, which both are crucial elements of company's product development. As being responsible for the project management and customer service this knowledge has provided tools to manage these positions even better. I feel that this process has taught me a great deal about the impact the digitalization has to us and furthermore how we can impact even more in the future and benefit from it.



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SERVICE DESCRIPTION

# **SERVICE DESCRIPTION**

For Kiho service

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### **Introduction**

Kihō is a service provided by Mastercom Oy. Kihō is service for mobile work management that enables you to manage your workforce with ease.

The main products are:

- Telematics
- Driving logbook
- Worktime
- Tasks
- Invoicing
- Tire pressure surveillance
- Machinery

Service consists of mobile application and web based user interface. In addition, the can be vehicle assembled trackers, mobile devices, tyre pressure monitors, where data is gathered for the service.

### **Handling personal information**

Information found [here](#) (in Finnish at the moment)

### **User rights**

Information found here (in Finnish at the moment)

### **Contract terms**

Information found here (in Finnish at the moment)

## 1. How to set up the system

To initialize the system, you need to contact Kihō administration. The reseller channel will be initialised at the end of 2017 - beginning of 2018.

To be able to set up an account for the customer the following information is needed:

- Name of the company
- VAT number
- Address
- Contact person's information (name, email, phone number)
- Head user's information (name, email, phone number)
- What features will be activated
  - Live-map
  - Driving logbook
    - Confirming drives
  - Reporting
    - Action report
    - Areal report
    - Driver based reports
    - Vehicle based reports
    - Alcolock report
    - Cost calculation report
    - Driving habit report
    - Tasks location report
    - Mobilieye profile
  - Machinery
  - Route history
  - Fueling
    - Allow to edit fueling
  - Tasks
    - Material report for task

- Invoicing
  - Send invoices
  - Add tasks as invoice lines
  - Add worktime as invoice lines
  - Manage customers
  - Manage products
- Worktime
  - Allow to see all employee's worktime entries
  - Own reports
  - Hour notice report
  - Worktime monitoring
  - Information transfer to outside systems
  - Inspector
  - Material report for worktime
  - Managing material report
  - Hour report
- Qualifications
  - Allow to edit user's qualifications
- Alarms
- Log

## 2. Company settings

You can access company setting by clicking the company's name

### 1. General settings

- a. You can change the company name, Business ID, address and contact information here.
- b. You can add your company logo here.

### 2. Customers

- a. You can add company's customers and sort them by group
- b. You can add a new customer by selecting New Customer and filling in the needed information.
- c. **NOTE! Please add customer to a role, if the customer and its cost centre is supposed to be visible in mobile Kihon (Worktime and tasks)**

### 3. Cost centres

- a. You can add company's customers cost centres and sort them by group
- b. You can add a new cost centre either by selecting the customer, you wish to add the cost centre and click the green New tab at the end of the customers line. Or you can add a new cost centre by selecting Add new at the cost centre tab.
- c. **NOTICE!** If you wish to use the Ilmoitin.fi (Finland tax office service to declare the workers for working site) you must provide the Contact person for the cost centre, Estimated time for finishing and the employees at the site.

### 4. Products and pricelists

- a. You can add company's products and pricelists.

### 5. Invoicing settings

- a. Enable to invoice Tasks and worktime, you need to set up the Invoicing setting for the company
  - i. Set products for Work hours, Vehicle, if these are supposed to be invoiced



- ii. You can set if the invoice lines are transferred to directly to invoicing, this enables users to transfer ready tasks to invoice lines.
- iii. You can set the invoicing payment terms.
- iv. You can set the parameters shown on the invoice by adding the needed components to “Description for task's invoice line”

## 6. Worktime settings

- a. Create wage types. There are three types of wages types:
  - i. Working time, for example:
    - 1. Working
    - 2. Bank holiday compensation
    - 3. Annual leave
    - 4. Family leave
    - 5. Sick leave
    - 6. Paid holiday
    - 7. Saldo-free
  - ii. Allowances for example:
    - 1. Evening allowance
    - 2. Night allowance
    - 3. Saturday allowance
    - 4. Sunday allowance
    - 5. A public holiday allowances
    - 6. Day overtime 50%
    - 7. Day overtime 100%
    - 8. Week overtime 50%
    - 9. Week overtime 100%
  - iii. Other, for example:
    - 1. Lunch hour
    - 2. Travel
    - 3. Commuting
    - 4. Training / study

Wage types have a four-digit code that should be the same as the payroll software you are using.

Wage types that have been selected for mobile visibility are displayed in the working time view.

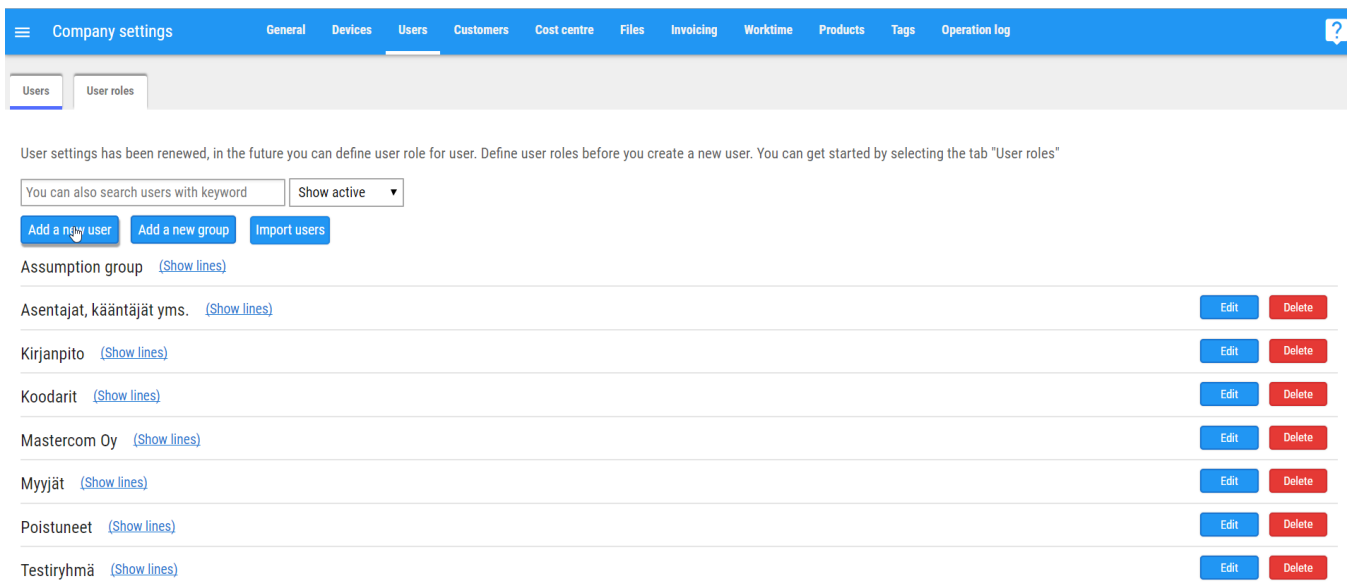
- b. Create compensations
  - i. Compensations are for example
    - 1. Food compensation
    - 2. A partial per diem
    - 3. Per diem
    - 4. Kilometre compensation, own car
- c. Create Customers and Cost Centers. (If you want to differentiate working time by customer, project or site)
  - i. Creates user roles. User roles determine which users see which customers. If all employees can see all customers, you can name the "Admin" role as "See all customers" and list it below all clients.
- d. Create Users ([Guide](#)).
  - i. If a user can only see and edit their own working time, only a mere working time tracking session (no bursts to the lower parts) will be activated.
  - ii. If the user can only see a working time report (but not edit), give the worker the right to ask the working time report.
  - iii. Appropriate rights definitions are easy to remember when creating one demo user, setting appropriate user rights, and copying the rights of new employees from a demo user.
- e. Create working time profiles and activate the employees according to the instructions.
- f. Instruct employees sign up for work on the v3.kiho.fi page or mobile app.
  - i. The recorded work time is viewed, accepted and edited in the review view.
  - ii. Working reports are available for ready reports or you can create a custom report using the My Reports tool.

Accepted working hours can be exported directly to the payroll software over the interface. Ask questions about Kiho customer service.

### 3. Users

#### 1. How to add a new user

- a. Start by selecting the company settings (from the company's name), Notice you must have the Administrative role enable to this.
- b. Select Users tab



The screenshot shows the 'Users' management page in the Kihon system. At the top, there is a navigation bar with 'Company settings' and various menu items like 'General', 'Devices', 'Users', 'Customers', etc. Below the navigation bar, there are two tabs: 'Users' (selected) and 'User roles'. A message states: 'User settings has been renewed, in the future you can define user role for user. Define user roles before you create a new user. You can get started by selecting the tab "User roles"'. Below this message, there is a search bar with the text 'You can also search users with keyword' and a 'Show active' dropdown menu. There are three buttons: 'Add a new user', 'Add a new group', and 'Import users'. Below these buttons, there is a table of user groups with columns for the group name, a 'Show lines' link, and 'Edit' and 'Delete' buttons.

Assumption group	(Show lines)	Edit	Delete
Asentajat, kääntäjät yms.	(Show lines)	Edit	Delete
Kirjanpito	(Show lines)	Edit	Delete
Koodarit	(Show lines)	Edit	Delete
Mastercom Oy	(Show lines)	Edit	Delete
Myyjät	(Show lines)	Edit	Delete
Poistuneet	(Show lines)	Edit	Delete
Testiryhmä	(Show lines)	Edit	Delete

- c. To create a new user select add new user
- d. Complete the form and check that the information is correct.  
Finally, remember to press Save.  
If your business does not have User roles, select Admin.  
NOTE! User group only sorts users by group at the Users

tab.

NOTE! If you leave the box next to Send IDs (at the bottom), the system will not send any user IDs. You can either choose a text message or e-mail or both.

If you want to get the IDs to your email, just click below to send me an email.

NOTE! Be sure to set permissions and vehicles to the User after creating the IDs.

### Create a new user

Fields marked with \* are mandatory

---

Registration information

---

Login

Mobile login PIN-password has not yet been created

User level User ▼

User role Admin ▼

Select user role for employee. Roles must be defined before you create a new user. With user roles you can define which employee can administer which customers/cost centres

User group Select ▼

Front page Default front page ▼

---

User's basic information

Firstname \*

Lastname \*

Phone (+358)

Email

Identity number

Language Suomi ▼

Time zone Europe/Helsinki ▼

Delivery of service messages I will not take service messages to my em ▼

---

Information used in worktime

Date of birth (ddmmyy)

Tax number

Home country Select ▼

Employment type Ei tiedossa ▼

---

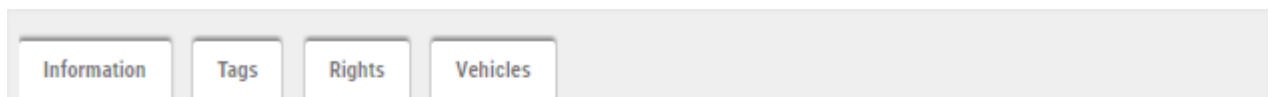
Send login to user

Delivery method Email ▼

Send password also to me (riikka@kiho.fi)

Save Cancel

- e. Once the new User is created, be sure to specify User Rights and Vehicles.
- f. You can access Rights and Vehicles from those tabs in User Preferences. You can copy the Rights and Vehicles from another user, by selecting the right user from the list.  
**Remember to save the changes.**

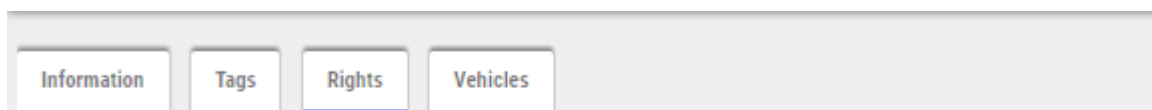


### Edit user **Iso Kiho** vehicles

Below you can see the list of vehicles, to which the user **Iso Kiho** has right to log in and see their reports

You can also copy other users information directly

Remember to save the changes **in the end**



### Edit user **Kiho Iso** rights

New features can be seen from **this colour**

You can also copy other users information directly

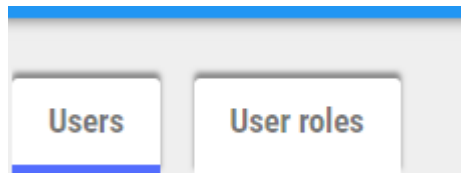
Remember to save the changes **in the end**

- g. Tags - if the user is supposed to log in to vehicle or to worktime with RFID or tachograph tag, you can add the number of the tag here (NOTE! NFC tags can be added from mobile only)

**If the new user is supposed to elicit the working time, the user must be added to the working time profile. Guide [here](#).**

### 2. How to add a user to a role

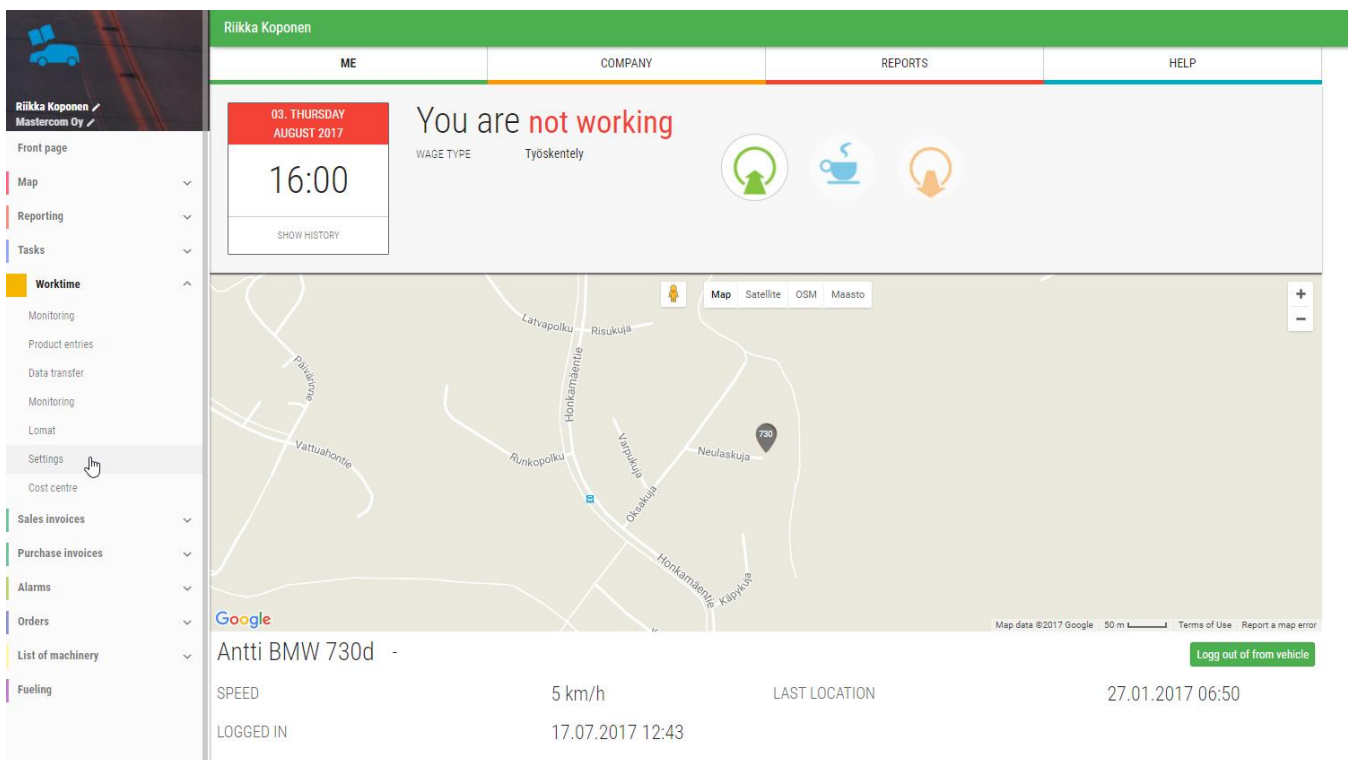
- a. If your company is using user roles, you can change the role either from
- b. the Users settings:
  - i. Go to Users, select user by clicking the pencil at end of the line.
  - ii. Change the User role (NOTE user group does not change the user role)



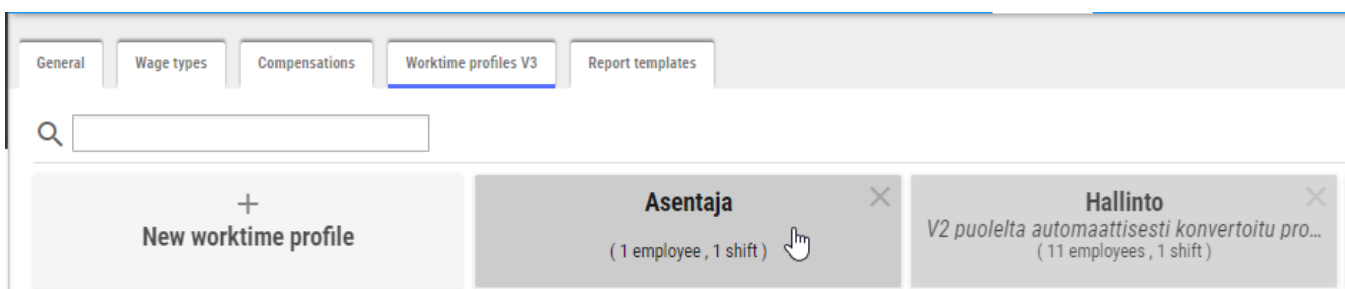
- c. Or from the User roles:
  - i. Go to Users tab
  - ii. Select User roles
  - iii. Edit the role by clicking the pencil at end of the line
  - iv. Here you can add customers to roles as well.

### 3. How to add user to worktime profile

1. You can add user to worktime profile from the Worktime settings. Start by selecting the Worktime (from the menu on the left) and then the Settings from below. Notice you must have the Administrative role enable to this.



2. From the worktime profile tab, you can see the all of company's profiles. If you wish to set up worktime profile for the first time, please contact Kiho support for this. Select the right profile and open it by clicking it.



3. From the worktime profile you can see all the definitions and settings done for the profile.  
You can add a new user to the profile at the end of the page by selecting + sign or move user from another profile to this one by selecting the sign with a person.
4. Select the user from the list and define the needed information for gathering worktime.  
NOTE! If you don't select any forming type, the worktime will not be gathered.
  - a. Forming
    - i. Vehicle - worktime is gathered from the vehicle, requires setting the Vehicle
    - ii. Selection switch - worktime is gathered from the vehicle, requires setting the Vehicle
    - iii. Driver identifier - user must have the number of the identifier set at the user settings
    - iv. Data terminal / mobile - used when the user logs worktime with Kiho mobile
    - v. Digital tachograph - user must have the number of the tachograph card set at the user settings
  - b. Vehicle
    - i. Select the vehicle from the list
  - c. Social cost centre
    - i. If the user is using the same cost centre, you can define it here.
  - d. Automatic locking
    - i. The worktime lines can be locked automatically, here you can set it
  - e. Starting date
  - f. Worktime bank
    - i. Here you can activate worktime bank. NOTE! Worktime bank requires activating the bank for the profile as well.



## ← Employee's profile settings


Employee


Daavitsainen Sampsa

Forming

 Vehicle

 Selection switch

 Driver identifier

 Data terminal / Mobile

 Digital tachograph

Vehicle

Select a device

Social cost center

Select an Option

Automatic locking

No

Starting date

01.08.2017

Worktime bank

No

Save



## 4. Devices

### 1. How to manage devices

- a. You can access company setting by clicking the company's name, select tab devices from the top.
- b. Here you have the list of your company's devices that have trackers (In the future all of the equipment will be listed under the machinery, where you can list vehicles without trackers.)
- c. You can edit the device by selecting the pencil at the end of line.
- d. You can edit the name of the device, map identifier and registration number. You can set CO-2- consumption, type of calculation, consumption, speed limit eg.
- e. Remember to save the changes

### 2. How to manage device rights

- a. With device rights you can determine who can see the device and log into it.
- b. Follow the steps above and select the Users tab. Here you can see the users that have access to vehicle. Green ones are active and grey one deactivate (cannot see the device or log into it).
- c. You can change the users by clicking the name and saving the changes.

It is possible to manage the rights from the user settings as well. Go to users, select the user from the lists and edit settings by clicking the pencil at the end of the row. Select Vehicles and you can see the vehicles visible to user on the right.

You can edit the list by clicking the vehicle and it will change side.

Remember to save settings.



## 5. Service settings

From the table below, you can see what features each product ha

	Driving logbook 10€/month/vehicle	Telematics 25€/month/vehicle	Worktime 15€/month/employee	Tasks 15€/month/employee	Invoicing 15€/month/employee	Notice board 20€/month/screen	Qualifications 5€/month/employee
Live-map		x	x	x			
Fuel based heater remote ignition		x					
Mobile Kiho		x					
Route history		x					
Driving logbook	x	x					
Driving habit report		x					
Comparison reports		x					
Areal report		x					
Customers, cost centres and products		x	x	x	x		
Alarms		x					
Electronic service manual		x					
Automatic service reminders		x					
Automatic inspection reminders		x					
Fuelings		x					
Machinery		x					
Automatic driving state (sanding etc.)		7e/kk					
Tire pressure monitoring		7e/kk					
Digital tachograph remote reading							
Worktime			x		x		
Tranferring workitme via interface			x				
Customers, cost centres and products			x				
Mobile worktime			x				
Worktime reports			x				
Worktime invoicing			x*		x		
Tasks				x			
Customers, cost centres and products				x			
Tranferring tasks to invoicing via interface				x*	x		
Tasks reporting				x			
Performing tasks in mobile				x			
Tasks invoicing				x*	x		
Sales and purchace invoicing					x		
Qualifications							x
Notice board/ Advertising boards						x	
<b>* requires invoicing</b>							



## 1. Telematics

- a. Requires tracking
- b. Activate driving logbook
- c. Activate Live map
- d. Activate reporting
- e. Activate alarms
- f. Activate fueling
- g. Create users
- h. Create customers and cost centres

## 2. Driving logbook

- a. Requires tracker
- b. From rights activate only driving logbook

## 3. Worktime

- a. From rights activate Worktime (V3)
- b. Set up worktime profile(s)
- c. Create users
- d. Create customers and cost centres
- e. Activate worktime profile for users

## 4. Tasks

- a. From rights activate Tasks
- b. Requires vehicles with trackers or android devices with tracking
- c. Create users
- d. Create customers and cost centres

## 5. Invoicing

- a. Activate invoicing from rights
- b. Set up Invoicing [settings](#)

## 6. Tire pressure surveillance

- a. Requires tracking and tire pressure equipment installed to vehicle
- b. Requires Telematics
- c. Tyre pressures can be seen from the map



## SERVICE DESCRIPTION

### 7. Machinery

- a. Requires Telematics
- b. Activate Machinery from the rights
- c. NOTE! Not ready yet. Will be ready at the end of 2017 - beginning of 2018.

