



The development of new and improved online booking system for a small-scale IT maintenance company: A case of Tietsikkari

Evert Kuusamo

2021 Laurea





Laurea University of Applied Sciences

**The development of new and improved online booking system
for a small-scale IT maintenance company: A Case of Tietsikkari**

Evert Kuusamo
Business Information Technology
Bachelor's Thesis
01, 2022

Eevert Kuusamo

The development of new and improved online booking system for small-scale IT maintenance company: A Case of Tietsikkari

Year	2022	Number of pages	37
------	------	-----------------	----

Every company needs a way to connect with its customers. Without a working way to connect with customers, customer experience suffers alongside revenue. The objective of this thesis project was to improve and increase the functionality of a booking system, which will improve the customer experience and decrease the workload caused by an inadequate booking system. This thesis project was commissioned by small-scale IT maintenance company Tietsikkari.

The need to identify the requirements of a functioning booking system and the preferences of the client for their homepage was paramount. This information makes it possible to develop a working system which keep both customers and client in mind.

The methods used in this thesis project included interviews with the client about the feature wishes and how the system should work. Also benchmarking and service design were used. The final results will include working and usable online booking system, usage data of how many customers are using the booking system and visual upgrades to the website. These results will decrease workload and increase connectivity with customers.

Keywords: Web development, WordPress, Website

Contents

1	Introduction	7
1.1	Limitation.....	7
1.2	Thesis structure.....	7
2	Literature review.....	8
2.1	History of electric repair	8
	2.1.1 Modern electronic technician.....	9
2.2	Importance of websites.	9
2.3	How are websites done.....	10
3	Background Information	12
3.1	Client Tietsikkari	12
3.2	Challenges.....	12
3.3	Research methodology	13
4	Implementation.....	13
4.1	Different options for website building	14
	4.1.1 Option 1: Fix the existing booking system	14
	4.1.2 Option 2: WordPress new plugins	15
	4.1.3 Option 3: Squarespace	16
4.2	Implementation of booking system	16
	4.2.1 Current booking system.....	16
	4.2.2 Bookly plugin	18
	4.2.3 New booking system with Bookly.....	24
5	Training and recommendation for future development	26
5.1	Staff training to Bookly.....	26
5.2	Future development recommendations	27
6	New visuals for website	27
6.1	New theme	27
6.2	Images	28
6.3	Buttons	28
6.4	Cookies	28
6.5	After and before screenshots.....	28
	6.5.1 After screenshots	28
	6.5.2 Before screenshots	31
7	Conclusion.....	33
	Figures	37

1 Introduction

Connecting with potential and already existing customers is one of the most important parts of having company which offers services. By connecting with customers companies can get new customers and increase customer loyalty. This will in turn increase repeated customers which increase revenue. (Bonine n.d.) One fairly easy way to connect with customers is to have proper and customer friendly website which customers can use to browse products and services and contact the companies representees in easy manner. This can be done by providing email address or phone number which the customer can use to contact the company. Other way for companies that provides services to contact customers is to use online booking systems which are common in hair salons, maintenance store. Booking systems eliminates to need for human contact on phase of booking an appointment. In this thesis I will be researching and developing new booking system for small-scale IT maintenance company called Tietsikkari to increase their customer experience and to decrease the workload the old system has created for the company.

1.1 Limitation

As the company already has prior website <https://www.tietsikkari.fi>, they wanted to keep the same WordPress site as they were used to it and had previous contracts with provider. New specific features were needed which would have been easy and straight forward to use so the staff could easily learn the new system. New system that was made needed to work even after the project so writing completely new code was unlikely option. This meant that already made WordPress plugin with a lot of already existed guides would be needed.

1.2 Thesis structure

The thesis is structured from seven chapters. The first chapter introduction introduces the topic of this thesis, limitations which were realized in development period and the structure. In second chapter literature review we look into history of electric repair and bring it to modern day on how it is done today. Second chapter also includes importance of websites and how websites are generally done. In third chapter client company is introduced with background information alongside with methodology used in this thesis. In forth chapter implementation we look into development process and how and why used methods were used. In fifth chapter training and recommendation to future development we explain how staff of the client company was trained to use new system, and we discuss future

development options. In sixth chapter we look into what extra updates were done to the client's website. Sixth chapter also includes screenshots of old and updated website. In final seventh chapter we conclude the thesis.

2 Literature review

Modern life in twenty-first century is powered by technology and electronics. We see electronics in our everyday life from sound of alarm that our phones produce when we wake up, the smell of coffee that coffee machines make on morning, music from headphones while traveling to work, to computer screens that we use to work and make even better products for tomorrow. This all has of course been around quite sometime but everyday these products gets smarter, faster, stronger, and better. But as technologically advanced some of our products are, all product breaks or malfunctions at some point. It is just nature of use products. Because of this we have people who have educated and specialized themselves to maintain, repair and even recycle these said products. They are called electronics technicians, or by some accounts it-guys. They have been around as long as the technology itself.

2.1 History of electric repair

Electronics technicians has been around longer than many of us could think of. They started helping and maintaining consumer products way before computers or mobile phones were a thing. Before first computers for individual home use came in the 1970s (Gregersen n.d.) electronic technicians maintained and repaired radios. These radios are the ones that can be found from grandparent's home with wooden frames and without Bluetooth or AUX-slot. At the time without internet people were unable to find information of how they could fix these products themselves, so they needed to take their products to the repair store for fixing more often.

Some technicians specialized to maintaining first mass-produced computers such as "The HEC 1 Computer that was used in Britain. (The National Museum of Computing n.d.) By the time first home computers came in the 1970s and first mobile phones in the 1980s (Goodwin 2021) electronic technicians were forced to learn and adapt to new market that the new ground-breaking products that we take for granted now came. After that the industry would expand exponentially as new and more extraordinary products were introduced every year. By this point all the repairs and maintenance would have been done by customer walking into the store and asking for assistance but after phones started to become more and more popular by everyone, electronic technicians started using this brand-new possibility to call in booking

where customer who needed help could call and ask for help and even reserve time for product that needed maintenance and fixing. This way of communicating with the customers started to resemble to what we are used to now. In 90s first types of online booking tools immersed. One of which was called EAASY SABRE. Use of such systems were very limited and only handful of flight agencies were able to use it. Unfortunately, this system died out in few years after its launch. (History of Flight Booking: CRSs, GDS Distribution, Travel Agencies, and Online Reservations 2019) But as technology developed, this kind of system would reemerge and later become norm.

2.1.1 Modern electronic technician

Now days modern electronic technicians are more looked up to and needed more than ever before. Modern technicians must be able to operate variety of devices, systems, and programs. Many cases they must adapt their knowledge to work on new software that they haven't come across before. (K n.d.)

As the need for technicians has increased so has ways to contact them and get help faster. Modern technicians use combination of variety of systems to keep connected to customers. Before everything was mostly done manually now days the workload has been lifted from these manually taxing tasks and done mostly automatically by instructions from customer. It is nothing new for us to these days, but most common way of contacting technicians are their websites. On most websites customers can find contact information of the company and booking form for specific cases. These booking systems are processors of the ones that came in 90s

Booking online makes the work easier not only for the service provider but also for the customer. It reduced the amount of time service provider must use on booking compared to traditional phone booking. This also makes it easier for customers to book services as there is not another person selling or pressuring to buy, and they are able to browse different services and times that fits them best. Online booking also makes it easy for provider to see statistics of booking as most booking systems saves and records all bookings and gathers them in easily to view and understandable report or graph. All of this is possible if companies have website that most companies already have.

2.2 Importance of websites.

It is difficult to find companies that does not operate on internet. Internet can be powerful tool for businesses to grow and improve their reputation. Ease of use makes it so that almost

anyone can find the company online. This whatever is possible only if company takes use of their own websites.

Now days almost every company has website. On websites companies can provide information about their services, goods, locations, and other information. Customers and others who might be interested or are just looking for specific services and products online can find companies websites by coincidentally or by ads run by google or other advertisement providers. As websites are open 24 hours per day it doesn't matter when the customer looks for information or products. Customers are also more comfortable browse the selection of company's services or goods as they don't have to go to the physical store, nor they don't have to make contact to the company until they are interested of their services.

By having professional website companies add credibility even if the users haven had any business with the company before. It could be said that company's website is like their storefront and their main presence online. Companies are also able to run ad campaigns online which can direct possible customers straight to their website without any use of real personnel. This makes sales easier and possibly cheaper. These ad campaigns can be run wanted amount of time and for specifically targeted people. In other hand if website lacks design and critical information customers are easily turned away by this deficiency.

For small-scale companies websites are crucial as they are not able to reach all the customers they would want. Customers will spread the word from mouth-to-mouth and by having good website it makes these new customers more likely to find company's website. (The Importance of Having a Business Website n.d.)

2.3 How are websites done

Making the websites them self isn't just thing that can be done by clicking one button. Now days making website is much easier are approachable than it was before. CMS content management systems are used to crate websites. CMS or so called drag on drop web website builders which is accurate to some platforms are easy to use and doesn't always need knowledge of coding nor design to make simple and even complex sites. Of course, traditional HTML, CSS, JS hard coding is possible, but this process is rendered useless as CMS does everything easier and faster. But sometimes hard coding is needed to make website as wanted. Setting up website has three essential steps that are needed to get website up and running. These steps include choosing the platform, Choosing the domain and host, and designing the website.

First and foremost, choice of which platform is used is needed. These platforms are previously stated CMS's. Fairly many platforms are used today but one which was also used in this project is called WordPress. Others such as Wix, Squarespace and Weebly are also in use. WordPress is used in 43% of all internet pages and is mostly preferred as it is free, highly customizable, user-friendly and user does not need to worry about issue of responsiveness as WordPress does it automatically. WordPress comes with its own limitations such as issues of injection of own code and getting bugs which is caused by updated plugin or theme. But these are easy to fix if user knows the code used.

Top In CMS Usage Distribution on the Entire Internet











Technology	Websites	%
 WordPress	30,462,105	43
 Wix	7,043,216	9.94
 Progress Sitefinity	3,210,462	4.53
 Squarespace	2,760,038	3.9
 Plesk	2,221,471	3.14
 Google Search Appliance	1,712,890	2.42
 GoDaddy Website Builder	1,712,066	2.42
 Joomla!	1,466,892	2.07
 CPanel	1,424,558	2.01
 Weebly	1,009,655	1.43

Figure 1: Top in CMS usage Distribution on the entire internet

<https://trends.builtwith.com/cms>

Secondly proper Domain name and host is needed. Having proper domain name and host costs little bit money but this shouldn't be problem as the cost is around one to five euros per month. Free domain names are also available, but these domains are owned by someone else, and the name might not be what user wants them to be. By getting own domain and quality hosting service the company can look more professional as they can name the domain as they want presuming the domain is not already own by someone. By having quality host service, the website won't go down without proper reason.

After these setup choices are done it is time to get to designing and implementation of the practical website. With WordPress, installation is easy as most hosting services supports one-click-installation. After installation user can let the artistic mind to wonder as next is time to choose theme and start adding content to the site. WordPress has multiple additional customization options such as menus, widgets and one of the most powerful tool plugins. With plugins multiple new features can be added to the site such as online booking, cookies, e-

commerce store and many more. Most of the setting in WordPress has free and premium option but with free option small-scale company can get easily proper website. After everything looks fine and user is happy how the site looks it is time to launch the site and let others see the content that has been done. (Schäferhoff 2021)

3 Background Information

This thesis was done for client Tietsikkari which provides it-maintenance for consumers. Client wanted to decrease workload caused by broken online booking system which needed total rework. For this development, proper methodology was not used but inspiration was gotten from agile methodology.

3.1 Client Tietsikkari

Tietsikkari is small scale it-maintenance company that provides maintenance, support and help with electric devices which includes computers, phones, consoles and even ghost boxes including all the brands and manufacturers. Tietsikkari was found in 2016. Tietsikkari provides services to single consumers to other companies at the company's workshop, at customers home or online through zoom or another application that the customer prefers. They operate in Pohjois-Pohjanmaan area which include areas of: Oulu, Oulunsalo, Kempele, Lumijoki, Liminka, Tyrnävä, Muhos, Jääli, Kiiminki, Haukipudas and Ii. (Esittely - Tietsikkari 2021) At the time of writing Tietsikkari has two employees and collaborates with several companies including Taitonetti.fi, Oulun Huoltotalo and Teleman Service. Tietsikkari is auxiliary business under Omapaja Oy that share the Y-ID 2399894-2 (Omapaja Oy 2021)

3.2 Challenges

Challenges Tietsikkari was facing was lack of workforce which was caused by increasing demand and reputation of the company. More consumers were contacting Tietsikkari which already had strained small workforce. For these challenges two options were realized. First one which is self-explanatory was to hire more staff which in turn would counter the increasing demand. Another option that was realized because of number of phone calls and email contact request, was to update the already existing website. Website had all the basics any small-scale company needs but the online booking system was broken and inaccessible for

consumers. Which in turn made everyone to call to the company. By updating and fixing the online booking system, some part of the contacts would become semi-automatic through the website.

3.3 Research methodology

Because of nature of this thesis proper methodology was impossible to follow. As work was only made by one person and the CEO of Tietsikkari was involved in interviews and even in the last phases of testing there wasn't any methodology that I could follow by a dot. But this does not mean that any methodology was not used in this project. As work process for mostly trial and error. Agile methodology was used in informal way. In agile methodology collaboration is crucial as the developer and stakeholders in this case CEO will review and reevaluate made changes. (Tipton 2020)

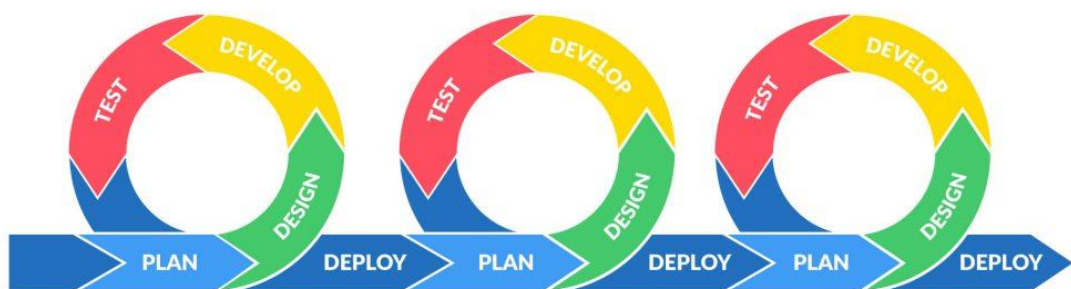


Figure 2 Agile methodology

On this project firstly client was interviewed and information about what problems and what features was needed. Interview data was analysed, and after this WordPress plugins were researched, installed, and configured. In the end of a cycle, tests were made and shown to the client. Client would give feedback and this process would repeat multiple times.

4 Implementation

In this chapter development process is discussed from first interview with client to publishing and further updates. As development was collaborated closely with client, progress was able to keep good speed, keep the quality high and design stayed as close as client wanted. This was possible only because Client was able to comment in every part of the development. This was satisfactory for both the client and for researchers.

Before start of development, it was known that Tietsikkari was using WordPress for their website. Before any suggestions were able to be given to client, first options were needed to be researched. Familiarizing to the tools that client was already was needed before start of development.

4.1 Different options for website building

Client only wanted new or fixed online booking system, but more options to choose from was better for client. Because of this different website builder's and different plugins in WordPress was needed to be researched. Before first interview with client multiple possibilities with different website builders and various WordPress plugins was researched. All options had their ups and downs that was needed to present to the client.

4.1.1 Option 1: Fix the existing booking system

First option was simple, fix the current broken booking system. This option would have been most time effective and it would have been easiest for the client as they would not have needed to train and learn new booking system. In first interview with the client about this option, client wanted brand new online booking system as the current system didn't have the features and capabilities that they wanted.

The main problem with the current booking system was that it simply did not work. Whenever new booking was sent into system, it would give an error "Request did not clear the security check! Refresh the page and try again." Other big issue that client had with the current system was that it was only able to book two-hour slots at the time which were not customizable. It also had very little options for visually customization and as new employees had been hired system did not have capability to have more than one service provider.

Ajanvaraus

Ajanvaraus toimii mutta toistaiseksi rajoitetusti, päivitämme järjestelmää.
Tällä hetkellä voit varata huollon vain 2 tunnin pätkissä, otan yhteyttä tarkemman ajan
sopimiseksi.

Virhel Pyyntö ei läpäissyt turvatarkistusta! Päivitä sivu ja yritä uudelleen.

Kesäkuu 2021						
MA	TI	KE	TO	PE	LA	SU
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Powered by [Booking Calendar](#)

Alka*:

10:00 - 12:00 12:00 - 14:00 14:00 - 16:00

16:00 - 18:00

Figure 3 Old booking form with an error

4.1.2 Option 2: WordPress new plugins

As the first option was scrapped, plugins that were offered in WordPress plugin selection was researched. WordPress has huge selection of various online booking and service provider plugins which was most related to the project. As research continued, plugin called Bookly came up various times. Many websites recommended it as it was free with limited features, it has responsive and modern interface, and it has simple but effective admin panel which enables more than one worker to book times. Bookly had everything that client wanted, and it also had abilities to grow and adapt to changes to the company with it paid extra features. (Thomas 2021)

Bookly has plugin demo that they call sandbox which can be used to test the features and capabilities of the plugin. Sandbox has all the main features such as booking form, admin panel and all the paid add-ons that the customer can buy if needed. (Bookly Main Plugin Demo n.d.) This demo helped decided if the plugin was right for the project. Bookly's sandbox version was used to show client the possibilities and capabilities of the plugin. Client was very had good first impression with the plugin, and it was decided to use it in the project.

4.1.3 Option 3: Squarespace

Even though client was happy with the Bookly plugin, which was showcased, third option of making the website completely new with Squarespace was introduced. As Squarespace was researchers most familiar CMS it was offered. Squarespace has millions of websites created and its ease of use make it so both professionals and people with no experience with web development can edit and transform the website. The user interface is made very simple, and everything is done with drag and drop basis.

Squarespace and other so called drag and drop website builder can be more restricting than WordPress or hard coding website. But this usually allows it to be very user-friendly for people without web development skills. Using this option would have given the website totally new look but it would have taken far more time to develop.

Client did not want to completely overhaul the whole website as they already had contract with the provider of WordPress and was already familiar with the interface. Because of this option of making brand-new website was scrapped.

4.2 Implementation of booking system

Before development of first prototype with Bookly, account to get into WordPress space was needed and familiarization with the used WordPress space was important. Client gave account with full rights and general tour of the workspace.

4.2.1 Current booking system

The client had been using very lightweight WordPress booking plugin which was very simple and had minimum options to customize. The booking form itself was very plain and almost old-school compared to the ones the companies use nowadays. Booking system only gave options to book two hours slots which was not optional. Employee could not make manual appointments nor mark them self as reserved so customers would be unable to book when employee was unavailable. This also meant that employees always needed to email or call customers when booked time slot was unavailable which increased the workload. The dashboard was also very minimal which gave very little information.

Following screenshots are taken so that no personal information of customers or employees and so that not any confidential information relating to the company is shown.

Figure 4 Old front-end booking form

Figure 5 Old back-end calendar

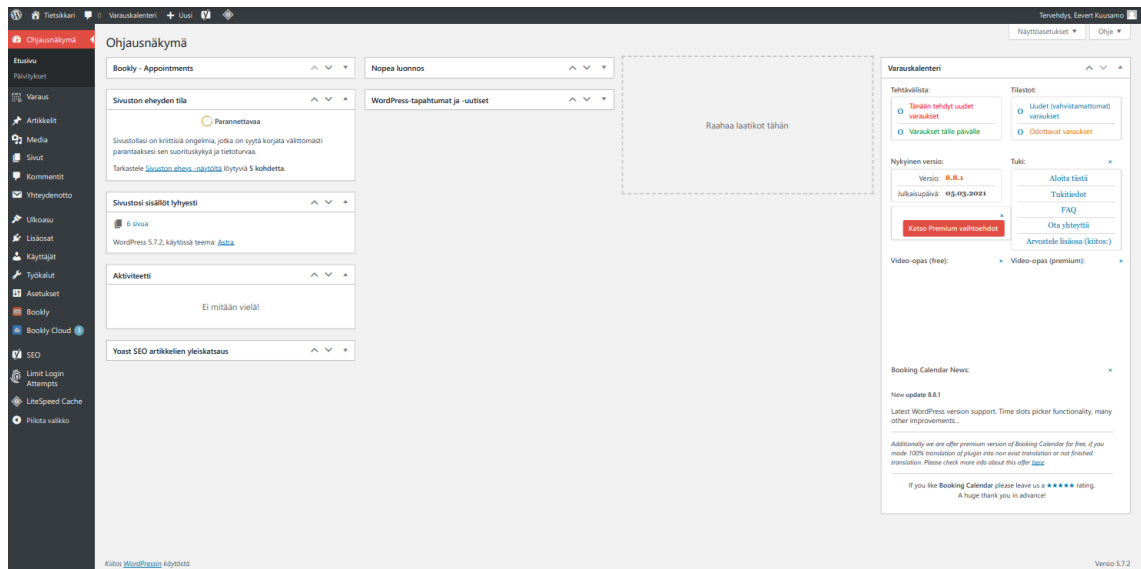


Figure 6 Old back-end dashboard

4.2.2 Bookly plugin

As mentioned before Bookly has wide range of features which are suitable for small to medium-sized companies. Bookly has two versions, Bookly Free and Bookly Pro. Free version has very limited capabilities and is only made for small scale companies. Bookly Pro costs around 89 dollars which is around 79 euros for lifetime is made for small scale companies that has more than one service provider and medium size companies. (Bookly #1 WordPress Appointment Booking Plugin for all types of businesses, n.d.) Bookly Pro opens up big number of new options and more personally customizable services. Bookly Pro can be further expanded and enchanted with add-ons which range from coupon add-ons methods to SMS reminder service. These add-ons vary from zero dollars to 49 dollars. (All add-ons' Archives n.d.) Client wanted first to try the free version before jumping to the Pro version. Because of this mostly only free version features are discussed.

4.2.2.1 Dashboard

Dashboard is first page shown when opening Bookly in admin panel. Dashboard show graph of appointments and revenue with week basics. Period range can be customized showing graph with different time period. Dashboard also shows number of any pending appointments. Dashboard is good tool to keep track how many bookings are done from the website. In free version of Bookly only payment method is cash and client wanted to disable payment feature

because of this reason. Because of this any payment done doesn't go through Bookly, so Bookly is unavailable to show revenue properly.

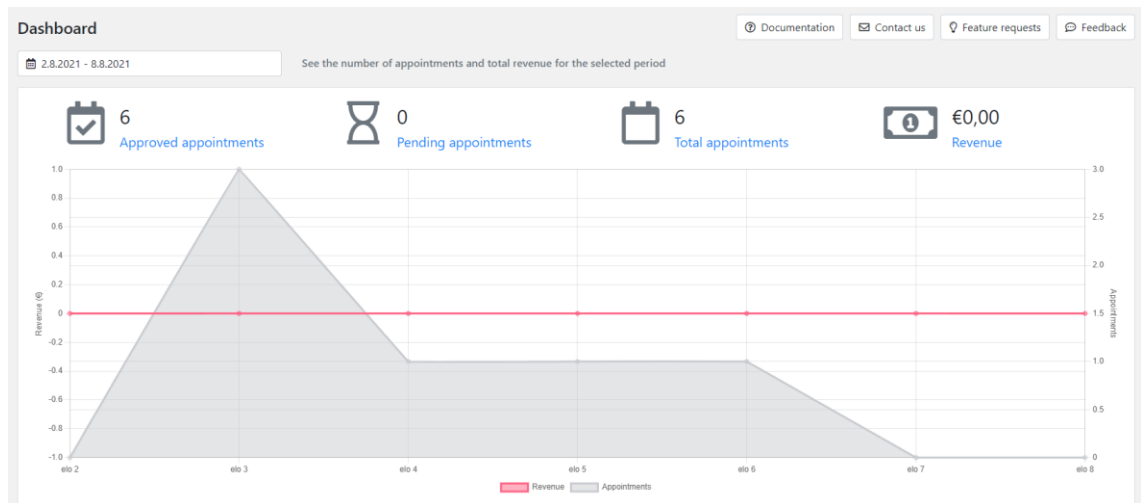


Figure 7 Bookly dashboard

4.2.2.2 Calendar

Bookly's calendar keeps track of all appointments. Appointments booked with online booking will automatically update to the calendar and disable the time slot so no double bookings can be done. Employee can also manually make appointments by themselves if appointment is done with another source like by phone or face to face. Calendar displays the customer's information, the status of appointment and extra note that employee can leave. Calendar is also colour coded with assorted colours corresponding different services. The information shown in calendar can be changed to what ever the user wants to. All the appointments can be also in more detail from appointments tab.

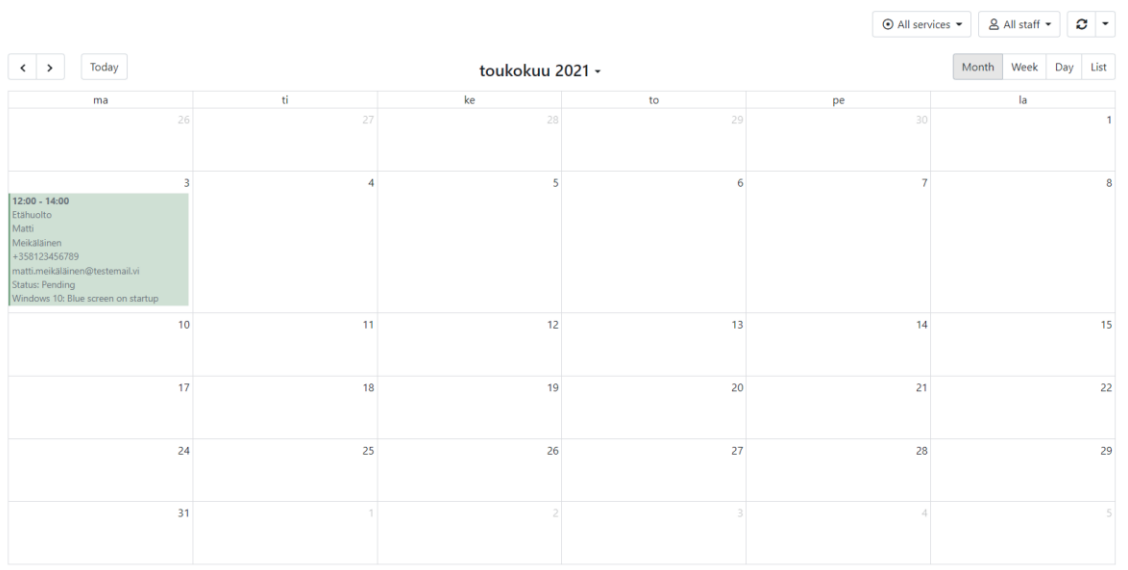


Figure 8 Bookly Calendar

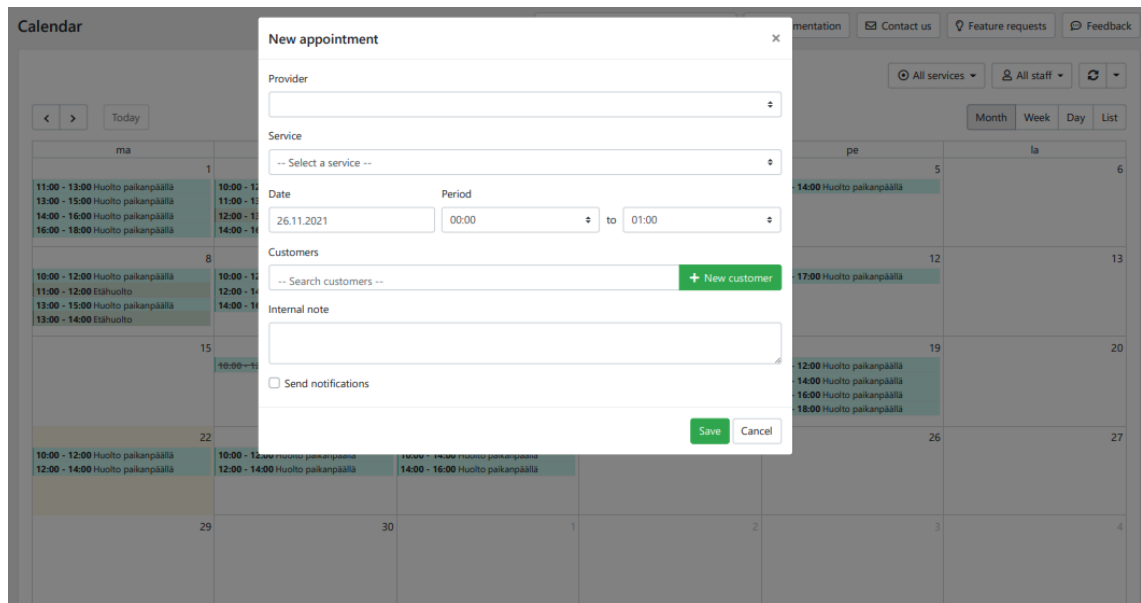


Figure 9 Bookly new manual appointment

4.2.2.3 Staff members

Staff members feature keeps track of all the employees who has made possible to offer services through Bookly. From here staff members service types, prices and times can be changed. Staff members can be also added to holiday list which will automatically disable

them from specific days. In Bookly Free staff members is very limited as only one staff member can be inputted. But with Pro version this amount can be increased.

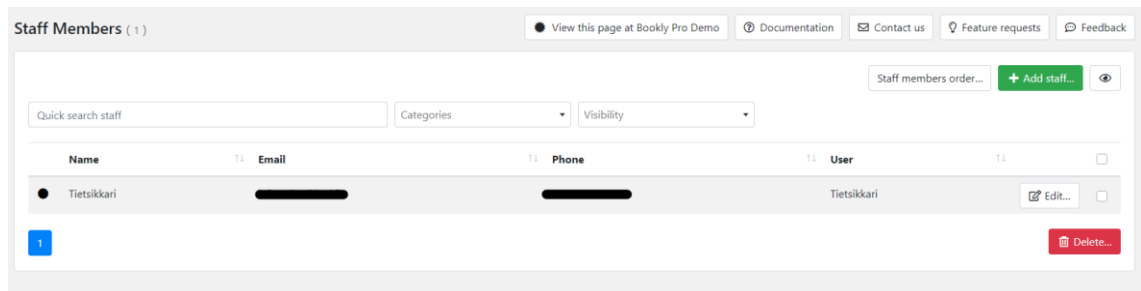


Figure 10 Bookly Staff members

4.2.2.4 Services

Services lets staff to add services what they want to offer to customers. From services staff can name the service, change its duration, and add price. Also slack before and after service can be added if needed. In free version number of services is limited to three but in Bookly Pro user can add as many services as needed.

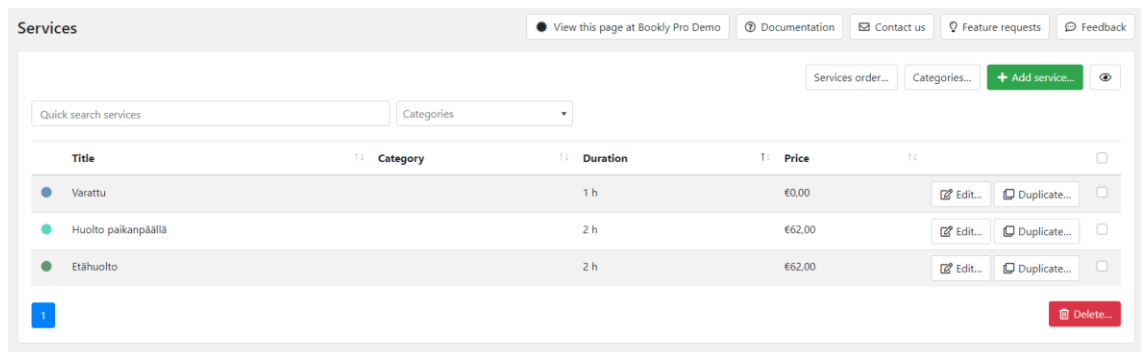


Figure 11 Bookly services

4.2.2.5 Customers

Bookly saves every customer's information and makes profile for them when customers make an appointment. Bookly keeps track of current and past appointments, so staff are able to look at the appointment history if needed. This feature is only available for staff in Bookly Free but in Bookly Pro customer can log into their profile and look their past appointments.

4.2.2.6 Email notifications

If enabled Bookly sends automatic email to customers email address. This email can be anything the staff wants it to be. Automatic email can be used in various different situation. Example of these is when customer books an appointment or when appointments is cancelled. Bookly also can send notification by SMS, but this isn't included in free version of Bookly.

Name	State	
Ilmoitus vahvistetusta varauksesta asiakkaalle	Disabled (enable)	Edit...
Ilmoitus vahvistetusta varauksesta henkilökunnalle	Disabled (enable)	Edit...
Ilmoitus käsiteltävästä varauksesta asiakkaalle	Enabled (disable)	Edit...
Ilmoitus käsiteltävästä varauksesta henkilökunnalle	Enabled (disable)	Edit...
Ilmoitus peruutetusta varauksesta asiakkaalle	Enabled (disable)	Edit...
Ilmoitus peruutetusta varauksesta henkilökunnalle	Enabled (disable)	Edit...
Ilmoitus hylätystä varauksesta asiakkaalle	Enabled (disable)	Edit...
Ilmoitus hylätystä varauksesta henkilökunnalle	Enabled (disable)	Edit...
Ilmoitus vahvistetusta varauksesta asiakkaalle	Enabled (disable)	Edit...
Ilmoitus vahvistetusta varauksesta henkilökunnalle	Enabled (disable)	Edit...
Notification to customer with verification code	Enabled (disable)	Edit...

Figure 12 Bookly Email notifications

4.2.2.7 Payments

Bookly can have various different payment methods, but these payment methods can only be used in Bookly Pro and with proper add-ons. Bookly Free only include cash payment option.

4.2.2.8 Appearance

Appearance is most noticeable to the front-end of the booking system. This is where the visuals of the booking forms are changed and what information is asked. Various settings can be fine-tuned to adapt the need of use. Settings for colour scheme, title names, additional information text and information needed can be changed. Bookly also allows injection of own CSS code if more specific fine-tuning is needed. When injecting own CSS code user has to be aware that in case of update in Bookly, injected CSS code might break and not work as intended.

Figure 13 Bookly Appearance

4.2.2.9 Settings

From settings any general settings can be changed. These vary from time zone selection to business hour information. Most of the settings effects directly how Bookly front-end and back-end works.

Figure 14 Bookly Settings

4.2.3 New booking system with Bookly

After decision to pursue the solution with Bookly, and orientation with used WordPress space was done it was time to download the Bookly plugin from WordPress plugin selection. Installing plugins with WordPress is just matter of clicking a button. After Bookly was successfully installed it was time to make draft page and add Bookly to it. Process of adding bookly is similar to any another plugin that is added to page. Bookly's most settings are done from admin panel, so the adding process is done very straight forward by just attaching the tool to the page.

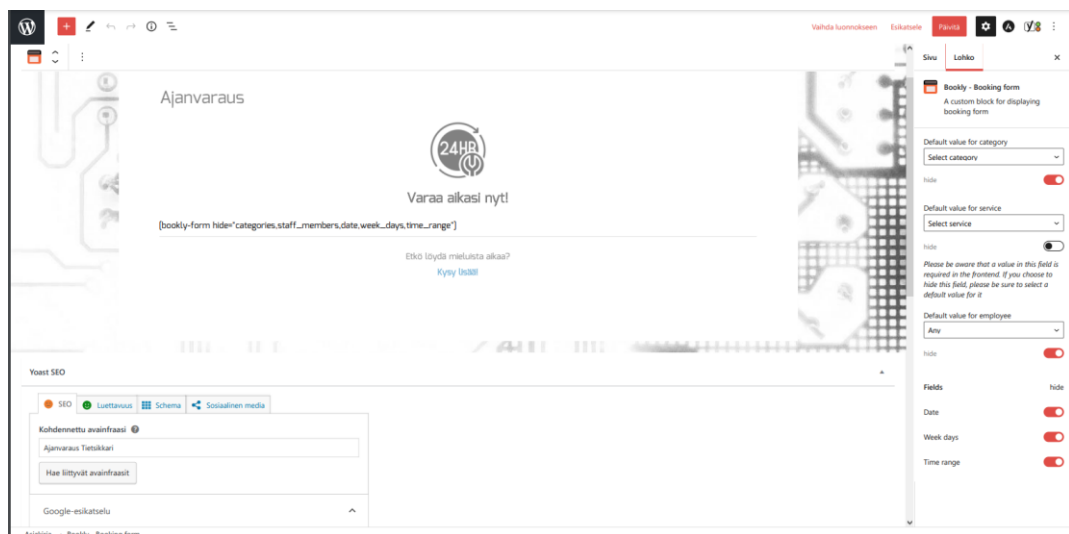


Figure 15 Bookly booking system in page edit screen

Before any visual changes were done, configuration to general settings were needed. These settings included company information, business hours, payment methods and changing all default values to client liking that Bookly had set.

After configuration of settings were done, first visual prototype was made with dummy customer, dummy service, and dummy staff member. When developing the first prototype of booking system all listed features were added but Bookly free limitation became apparent. Client requested that if possible Bookly's calendar would automatically synchronize with Tietsikkari's google calendar. This becomes obstacle as Bookly Free doesn't support any calendar synchronization. Only Bookly Pro version supported wanted feature. After first prototype was done, prototype was shown to the client for feedback and opinion. First prototype was success as it had nearly all features wanted in first place, and it was visually pleasing. Client also becomes more certain that this was the plugin we would use in final result. Discussion of buying Pro version was opened but client wanted to first see the final

product before buying the pro version. Client also gave list of new features and changes that needed to be added.

In process of making second prototype Bookly Free limitation become clearer as custom customer information fields were disabled and needed Bookly Pro. This was not problem as we were able to tweak premade input fields to need of the client. In back end such tweaks looked little strange as values that was indented to be something else was something different. But this did not affect to functionality in front-end nor neither in back-end. When second prototype was finished Tietsikkari had hire new employee who had background in bug-testing, and he was able to give feedback with the client when presenting the prototype. Second prototype was success as all wanted features were successfully added. With new employee, client was able to give new list of features and adjustment to front-end of booking system.

Third prototype added new employee and new visuals to front-end. These adjustments to front-end started resembling the look which would be the final result. Feedback session of third prototype prompted discussion of adding new visual to rest of the website but this had to be discussed more after booking system was done. Feedback of third prototype gave minor adjustment ideas which was done in prototype four

After prototype four was done, researcher, client, and new employee started stress testing and bug testing the system. Testing gave important data such as if in front-end appointment form send button was clicked too many times repeatably system would give error and not book appointment. In last version, prototype five these bugs were fixed in best the possible way.

Fifth version was stress tested and bug tested before making decision to make it the published version. But before publishing new system staff needed to be trained and oriented how to use and maintain the system. Old system was deleted and replaced with new Bookly online booking system on 22.06.2021.

Figure 16 Bookly Front-end booking form

5 Training and recommendation for future development

Before the new online booking system was published all staff was trained how to use Bookly and how Bookly's back-end and front-end works. After the training possibilities of future development was discussed which mainly included discussion to upgrade to Bookly Pro.

5.1 Staff training to Bookly

Day the Bookly booking system was published staff training for Bookly was done through Discord application which works similar to Zoom. Staff was introduced to Bookly in general, the possibilities, capabilities, and limitations of the plugin was shown to the staff. How appointments can be accepted and edited and how keep contact with customer. Staff was show and explained carefully what every tab and setting do. With this every staff member would be able to troubleshoot if something happened with the system. With draft site we

were able to show staff how appointment is booked and how does it show up in back-end in admin panel.

After new system was published everyone tested the site before it was linked to the buttons so the customers could easily find it. Training was successful as every staff member was able to learn and use booking system in back-end and front-end.

5.2 Future development recommendations

New booking system had several setbacks that was caused by fact that Bookly Free version was used. When new system was published free version fitted the needs of company barely. If company grew in size even by one-person free version would become bothersome as employee limit was already reached. As this might sound critical, discussions with the client were done about buying Bookly Pro which will increase the employee size, add custom information fields, and add google calendar support which was previously discussed. Client decided to stay with free version until it was necessarily upgrade to Bookly Pro. Client was interested and considering the Pro version.

Because of this interest Bookly Pro was shown with Bookly sandbox using all the add-ons the client would want. With this demonstration of capabilities and possibilities of the Bookly Pro was shown.

6 New visuals for website

While developing new booking system for Tietsikkari, discussions with client came up about updating the visuals of whole website and adding few needed features. Website was made in 2016 and had minor layout update on 2020 it was missing key features and visuals which would make page much more visually pleasing and professional. This in turn would also increase customer experience.

6.1 New theme

New colour theme was added as black was introduced to navigation bar and footer and all added new mini-icons were made black. All text sections were bordered with light greyed soft cornered border. Contact information was missing background which was also added to be more readable and formal with rest of the page.

6.2 Images

Business related images were added to home page and to introduction page to add more visual attraction. Also, self-advertisement advertisement was added below contact information and new partner logos were added. Mini icons were added to every page from website called Flaticon (Access +6.4M vector icons & stickers n.d.)

6.3 Buttons

Navigation bar got new buttons as previous were simple links which had minimum interaction and style. New buttons are more stylish and interact to user's mouse movements. These buttons were injected CSS code. Also search icon which was not working was removed.

6.4 Cookies

As cookie policy has become must in any website using them, plugin that prompts cookies was needed as they were not added before. This was done easily as WordPress has multiple cookie prompt plugins that is GDPR compliant. Cookie policy was also added in privacy policy section.

6.5 After and before screenshots

Following photos are taken after new Bookly booking system was done and new visual update was added. Photos taken before are before any development work was done.

6.5.1 After screenshots

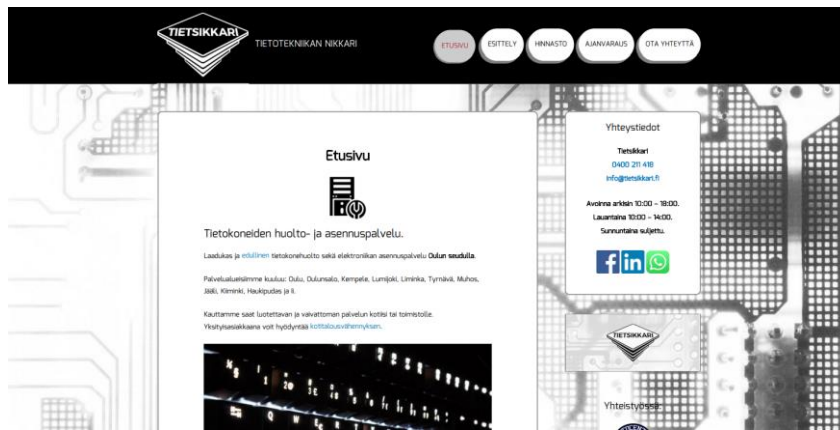


Figure 17 New Home page

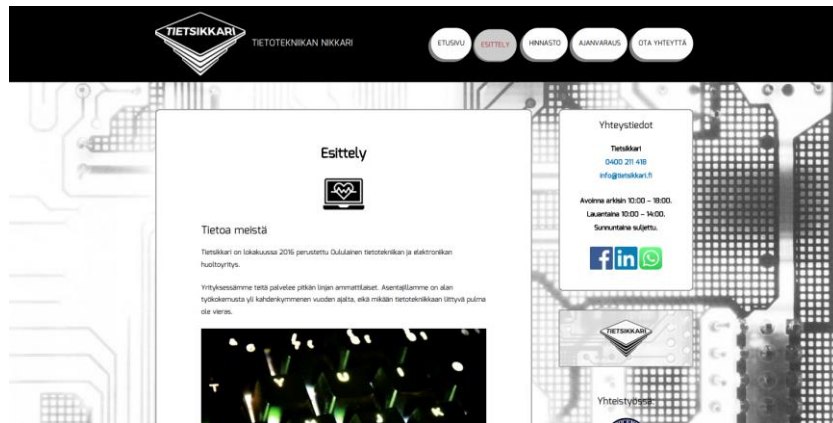


Figure 18 New Introduction page

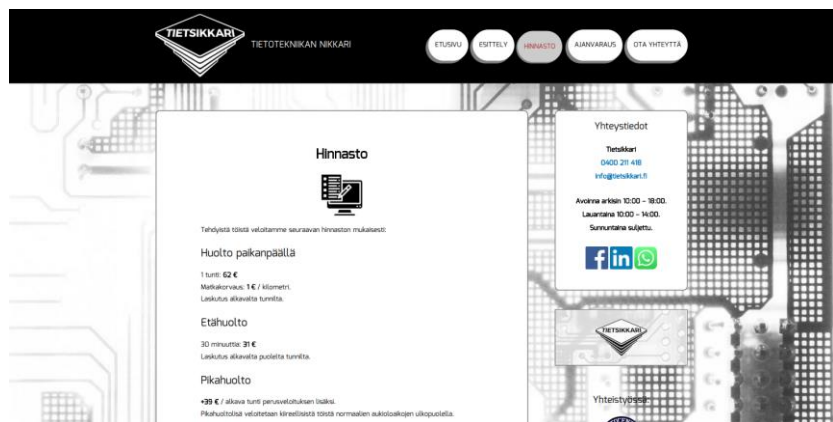


Figure 19 New Price page

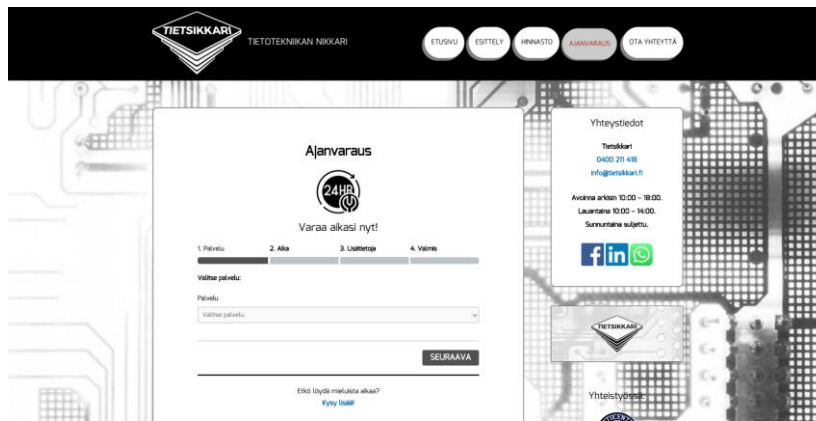


Figure 20 New Booking page

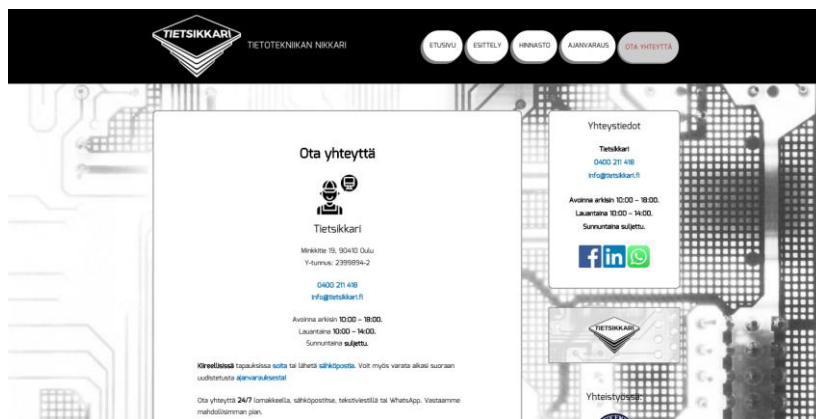


Figure 21 New Contact us page

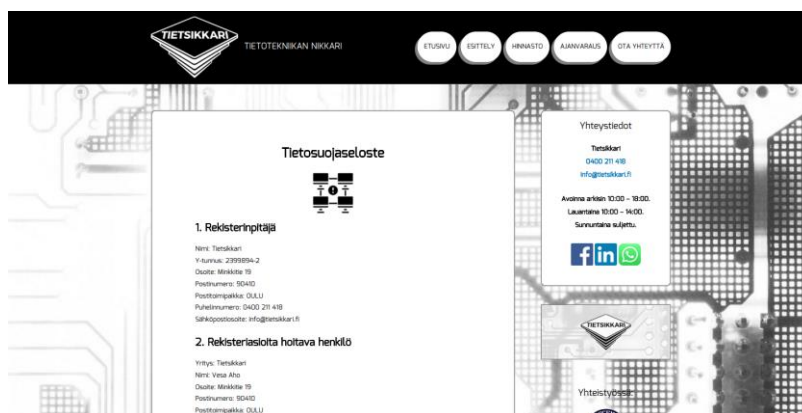


Figure 22 New Privacy policy page



Figure 23 New Home page with cookies prompt

6.5.2 Before screenshots

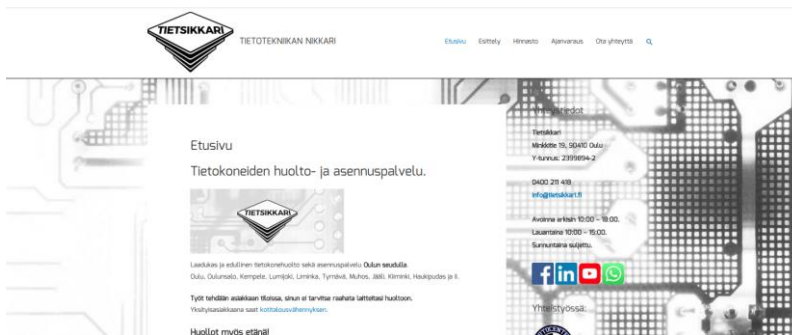


Figure 24 Old Home page

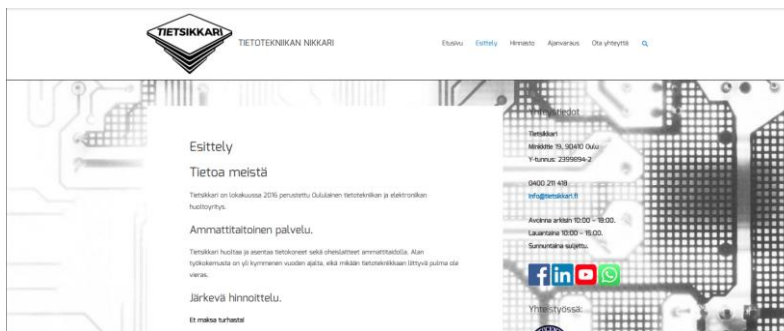


Figure 25 Old Introduction page

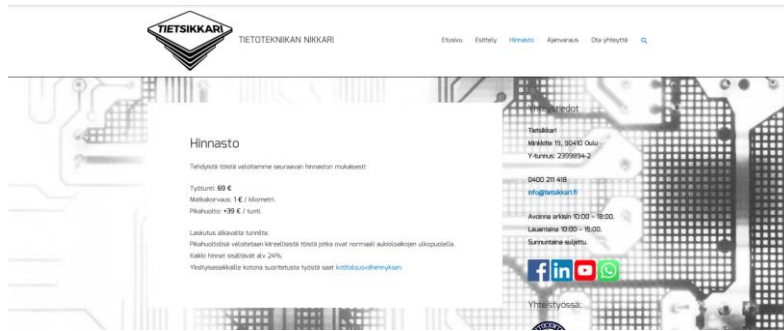


Figure 26 Old Price page

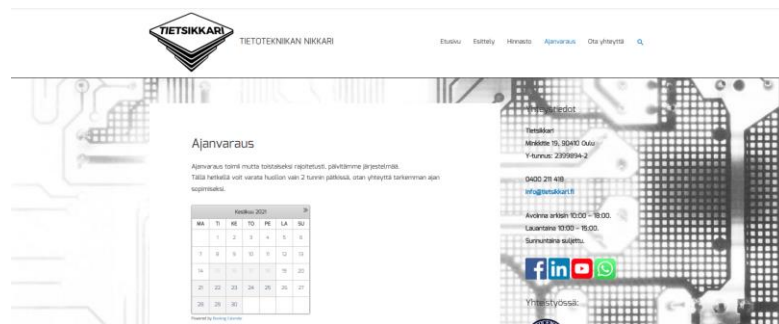


Figure 27 Old Booking page

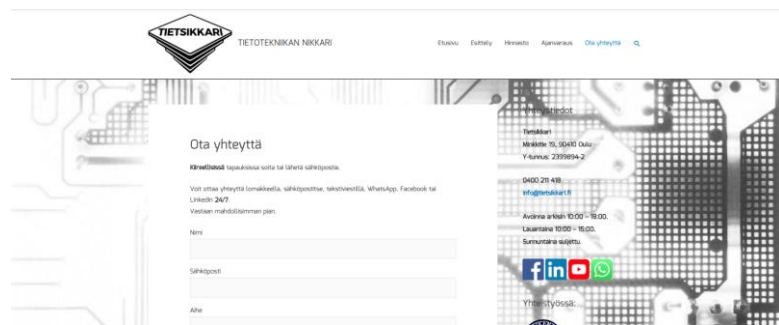


Figure 28 Old About us page

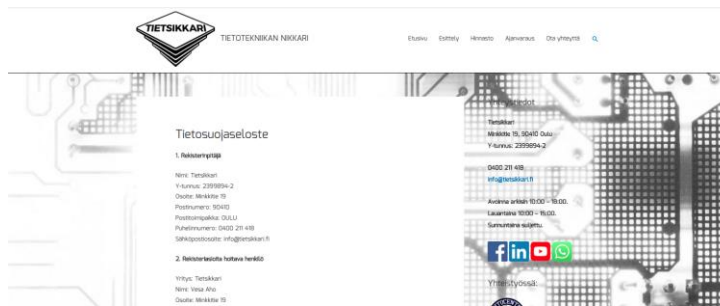


Figure 29 Old Privacy policy page

7 Conclusion

The objectives of this project were achieved by making new and functional online booking system decreasing the workload which was caused by not functioning online booking system. Booking system was changed and updated which made old and new customers able to use online booking again. On time of writing this thesis since new booking system came live in 22.06.2021 there has been 212 new appointments which is around 30 per month. This has moved significant number of customers who used to call in for appointment to online booking. New booking system has also made it easier for new customers to get in touch with Tietsikkari.

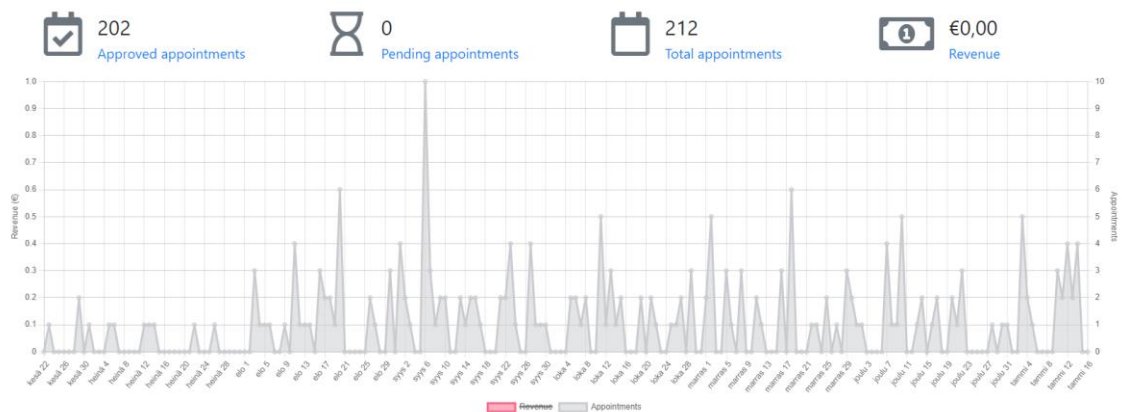


Figure 30 Bookly appointment graph

All staff have been trained appropriately to use the new system and taught how maintain the system if system stops working which is evident from almost 7 months of use and feedback from client. As website is done with WordPress any staff member is able to customize the page and access to booking systems settings if needed.

In development process Tietsikkari's website in whole and overhaul where new visuals were added to make website more professional and customer friendly. New themes were introduced alongside with business related photos and interactive navigation bar.

As Tietsikkari is ever growing company possibilities of upgrade and update are easily done by upgrading to Bookly Pro which allows company's booking system keep up with growing size. Bookly Pro has been introduced to client and introductions of how to upgrade to it has been given. This allows client to keep upgrading booking system as needed.

References

Electronic

AltexSoft. 2019. History of Flight Booking: CRSs, GDS Distribution, Travel Agencies, and Online Reservations.

AltexSoft, April 12. Accessed 12 December 2021.

<https://www.altexsoft.com/blog/travel/history-of-flight-booking-crss-gds-distribution-travel-agencies-and-online-reservations/>

Blue16media. n.d. The Importance of Having a Business Website.

Blue16media. Accessed 12 December 2021.

<https://blue16media.com/blog/2019/08/01/the-importance-of-having-a-business-website/>

Bonine, T., n.d. The Importance of Connecting with Customers.

Industrial Supply Magazine. Accessed 22 November 2021.

<https://industrialsupplymagazine.com/pages/Sales---The-Importance-of-Connecting-with-Customers.php>

Bookly, n.d. Bookly #1 WordPress Appointment Booking Plugin for all types of businesses.

Bookly. Accessed 15 January 2022.

<https://www.booking-wp-plugin.com>

Bookly, n.d. All add-ons Archives.

Bookly. Accessed 15 January 2022.

<https://www.booking-wp-plugin.com/product-category/all-add-ons/?product-page=1>

Bookly, n.d. Bookly Main Plugin Demo.

Bookly. Accessed 14 January 2022.

<https://www.booking-wp-plugin.com/demo-list/>

Flaticon, n.d. Access +6.4M vector icons & stickers.

Flaticon. Accessed 15 January 2022.

<https://www.flaticon.com>

Goodwin, R. 2021. The History of Mobile Phones From 1973 To 2008: The Cellphones That Made It ALL Happen.

Know Your Mobile, 24 August. Accessed 12 December 2021.

<https://www.knowyourmobile.com/phones/the-history-of-mobile-phones-from-1973-to-2008-the-handsets-that-made-it-all-happen-d58/>

Gregersen, E. n.d. Personal computer.

Encyclopedia Britannica. Accessed 4 December 2021

<https://www.britannica.com/technology/personal-computer>

K, E. n.d. What does an Electronics Technician do?

Wisegeek. Accessed 13 December 2021.

<https://www.wise-geek.com/what-does-an-electronics-technician-do.html>

Schäferhoff, N. 2021. How to Create a Website.

WebsiteSetup, April 21. Accessed 12 December 2021.

<https://websitesetup.org/#step-2>

The National Museum of Computing, n.d. 3D Virtual Tour.

The National Museum of Computing. Accessed 13 December 2021.

<https://mpembed.com/show/?details=1&ga=UA-32443811-1&hdir=2&m=pq6v8gMmxMw&mdir=3&minimap=2&minimaptags=0>

Thomas, M., 2021. 7 Top WordPress Appointment Plugins To Streamline Online Booking and Reservations on Your Website.

Bluehost.com. Accessed 14 January 2022.

https://www.bluehost.com/resources/wordpress-appointment-plugin/?utm_source=google&utm_medium=genericsearch&gclid=CjwKCAiA24SPBhB0EiwAjBgkhjJBzRKANnucV6a7N1uBzKpKPC1mu9TSn0vYvNYTVgEFRPtM-w3EChoCxZwQAvD_BwE&gclsrc=aw.ds

Tietsikkari, 2021. Esittely - Tietsikkari.

Tietsikkari. Accessed 30 December 2021.

<https://www.tietsikkari.fi/esittely/>

Tipton, D., 2020. What is Agile Methodology?.

Eoiin Connect. Accessed 30 December 2021.

<https://eoiinconnect.com/what-is-agile-methodology/>

Yritys- ja yhteisötietojärjestelmä, 2021. Omapaja Oy.

Yritys- ja yhteisötietojärjestelmä. Accessed 30 December 2021.

<https://tietopalvelu.ytj.fi/yritystiedot.aspx?yavain=2319784&tarkiste=8D1E0FB2579140F5C70700B7FFAAC23299A4920>

Figures

Figure 1: Top in CMS usage Distribution on the entire internet	
https://trends.builtwith.com/cms	11
Figure 2 Agile methodology	13
Figure 3 Old booking form with an error	15
Figure 4 Old front-end booking form.....	17
Figure 5 Old back-end calendar	17
Figure 6 Old back-end dashboard	18
Figure 7 Bookly dashboard	19
Figure 8 Bookly Calendar	20
Figure 9 Bookly new manual appointment	20
Figure 10 Bookly Staff members.....	21
Figure 11 Bookly services.....	21
Figure 12 Bookly Email notifications.....	22
Figure 13 Bookly Appearance	23
Figure 14 Bookly Settings.....	23
Figure 15 Bookly booking system in page edit screen	24
Figure 16 Bookly Front-end booking form	26
Figure 17 New Home page.....	29
Figure 18 New Introduction page.....	29
Figure 19 New Price page	29
Figure 20 New Booking page	30
Figure 21 New Contact us page.....	30
Figure 22 New Privacy policy page.....	30
Figure 23 New Home page with cookies prompt	31
Figure 24 Old Home page.....	31
Figure 25 Old Introduction page.....	31
Figure 26 Old Price page.....	32
Figure 27 Old Booking page	32
Figure 28 Old About us page	32
Figure 29 Old Privacy policy page	33
Figure 30 Bookly appointment graph	33