Designing a Mobile Multiple Destination App for City Traveling

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ABSTRACT

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Nowadays, there is neither a certain way nor practice for planning long or short distance trips with multiple destinations on mobile specifically. Smartphone use in traveling is growing daily, but real-time tour planning is not commonly used. Offline GPS offers a great opportunity for navigation, yet travelers literally cannot plan their travel day on mobile with a full program of sightseeing, eating and entertainment included. With growing customer demands, how can we solve this and ease the trip planning procedure, instead of looking for everything on desktop in advance?

The objective of this thesis was to investigate navigation and mobile guides in tourism and understand the following – why is mobile important in travel day trips and how to utilize mobile application and interaction design in multiple destination planning? The purpose of this study was to engage in research within the current travel applications market, understand the functionality of certain products, and create an app prototype with a multiple destination planner function.

Quantitative methods were applied to obtain unbiased data through statistics, whereas qualitative methods were utilized in analyzing the results of the user tests and questionnaires. A survey with 46 participants was implemented to collect insights on human needs in travel. In addition, interviews with Finnish families were held at Särkänniemi theme park and five respondents took part in user tests of the prototype. Finally, a competitive benchmarking analysis was carried out.

Based on the research, the findings showed that people have common ground in how they use mobile in traveling and that navigation and sightseeing is important to them. The result provided a workable prototype and a user interface design of a destination planner, with explained user experience architecture and user flow.

This thesis suggests that the demand for easy traveling with mobile will continue to grow and the concept idea of this work is a good start for further development of a potential product. The participants expressed their interest in the multiple destination function - it can be a practical solution for planning trips and improving tourism experience by being flexible and efficient in day trips in the future. For the business side, such application is a good platform for advertising and publicity of places or services.

Key words: mobile travel application, tour planner, day trips, interaction design
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# GLOSSARY

<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>TAMK</td>
<td>Tampere University of Applied Sciences</td>
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<tr>
<td>cr</td>
<td>credit</td>
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<tr>
<td>m</td>
<td>Million</td>
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<td>bn</td>
<td>Billion</td>
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<td>IT</td>
<td>Information technology</td>
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<td>ICT</td>
<td>Information and Communication technology</td>
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<tr>
<td>CRS</td>
<td>Computer reservation system</td>
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<tr>
<td>VR</td>
<td>Virtual reality</td>
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<tr>
<td>AR</td>
<td>Augmented reality</td>
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<tr>
<td>App</td>
<td>Mobile application</td>
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<tr>
<td>Travelogue</td>
<td>A travel catalogue, including overviews and statistics about different places / destinations</td>
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<tr>
<td>HSL</td>
<td>Helsingin Seudun Liikenne, public transport company based in Helsinki</td>
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<tr>
<td>k</td>
<td>thousand</td>
</tr>
<tr>
<td>Tips &amp; tricks</td>
<td>useful piece(s) of advice about the subject</td>
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<tr>
<td>Wi-Fi</td>
<td>Wireless local area networking (Wireless Fidelity)</td>
</tr>
<tr>
<td>Cellular</td>
<td>Wireless mobile internet connection</td>
</tr>
<tr>
<td>Meet-and-greet</td>
<td>A socializing even between the press / guests and leader / host</td>
</tr>
<tr>
<td>User flow</td>
<td>A sequence of steps a person makes to achieve their goal</td>
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<tr>
<td>Itinerary</td>
<td>A route / path</td>
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<tr>
<td>UI</td>
<td>User interface</td>
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<tr>
<td>UX</td>
<td>User experience</td>
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<tr>
<td>Demola</td>
<td>A student innovation company in Tampere</td>
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<tr>
<td>Wireframe</td>
<td>A sketch (blueprint) of a product / device</td>
</tr>
<tr>
<td>Mockup</td>
<td>A prototype / model of a digital device or product</td>
</tr>
<tr>
<td>Persona</td>
<td>A fictional character, representing a type of user</td>
</tr>
<tr>
<td>Hamburger button</td>
<td>A digital icon of 3 parallel lines, representing menu in mobile applications</td>
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1 INTRODUCTION

International tourism has become an ordinary practice of our modern world through several causes, such as globalization, freedom of movement, internet accessibility etc. Overall statistics of international tourist arrivals has grown exponentially over the last 20 years, from 540m in 1995 to 1,16bn in 2015 (The World Bank Group 2015). Companies are now on the urge to track and follow latest travel industry trends to keep being competitive in the global market and attract potential customers.

A great reason for such an intensive trend race in tourism is the spread of computer knowledge – with internet, there have been multiple web channels produced for the industry and nowadays, there is still a lot of room for further development. VR and AR technologies are already invading travel (Balandin & Laizane 2013); however, to focus on something already successful on the market of digital travel, we need to look at mobile services. A key point was surpassed in October 2016 – Yoni Heisler (2016) shows that mobile devices have already outweighed desktop visitors, and the difference is now at 51,3% to 48,7% (Heisler 2016).

More specifically, an interesting chapter of mobile in tourism is real-time connection – online use of digital services during the actual travel. Not to mention big mobile giants such as Facebook, Instagram or Snapchat, there are also guides and navigation which are a necessity in a foreign or simply unknown place. Without it, travel experience can turn into an uncomfortable hassle and uncertainty; particularly, pre-planning cannot guarantee a well-established navigation through a destination, when customers check the directions before departing. And what about having multiple places a customer would like to visit, but checking each of them for directions is either too much of a hassle or just inefficient on the go?

Being able to travel and connect not only socially in terms of entertainment, but also for smoother and organic touring experience (especially, for free) though mobile is essential for modernity. New mobile solutions for multiple destination touring need to be introduced to keep touristic experience relevant, time-sufficient and enjoyable.
2 ICT IN TRAVEL INDUSTRY

The root of change in travel industry comes back to late 80’s – the time of Information and communication development. ICT is an extended version of IT, covering wireless systems as in smartphones, digital TV / telecommunication and more, in addition to the existing computer tech (Wikipedia 2017b). The growth of internet in late 90’s resulted in proportional growth of ICT, which affected the productivity and consistency of many travel organizations (Buhalis 2008, 4). ICT leveled up the competitiveness of tourism businesses – now it is extremely crucial to improve the quality of companies’ services by constantly introducing new digital communication solutions.

In the beginning, the connection between ICT and tourism would be based on CRS, coming from airline companies (Wikipedia 2017b). That has been a great advantage of ICT till recent times – the automation system. That means that all the reservations and actions are handled faster and more accurately by the machines – the reason why travel has been growing. Later, it spread onto whole hospitality sector, where travel agencies took part in ICT incorporation. Now it is not only airline booking automation, but nearly any sphere of travel. ICT has also been admitted as the driving force to increase smaller company’s revenues and strategies – Buhalis (2008) explains that now, ICT provides perfect tools for worldwide growing in times of globalization (Buhalis 2008, 4).

2.1 Impact of ICT on tourism

ICT has shown how user-centred design and approach works. It provided a huge variety of digital services to customers, allowing them to have a much bigger choice through its means. User experience became an influencer on businesses too – users feel and needs are in the centre of product offerings. As Buhalis (2008) mentions, “— making websites more user-friendly and with simple pricing could help attract customers”– information technology, presented in a functional and easy way to users, leads to corporation success and excellent customer service (Buhalis 2008, 9). That said, ICT has opened doors for both travel businesses to grow and for customers to have new opportunities and information to look upon. It impacted tourism on making it more social, connected and open.
3 DIGITAL SERVICES IN TOURISM

Digital travel services introduced new independent ways of customizing future travel experience. With internet, travelers can study, choose or modify their preferences freely at any time. When looking at traditional, non-digital tourism methods, customers would be connected to an agency system, which becomes responsible for the organizational matters of the trip, including accommodation, transportation, insurance and such. That leaves less choice in customization; however, it’s upside would be avoidance of big data research. That is also why these traditional ways try to adapt and transform their models into digitalized services, where new mobile-only travel agencies keep coming up (Bovykina 2014). These digital solutions allow users to always stay connected, which fulfills the current customer demands.

Tourism on itself can be broken down to 3 main sections, which compile the traveling basis: accommodation, transport and attraction, or entertainment (G/Egziabher). Those are the necessary parts of any tourism experience, locally or internationally. Mekonnen G/Egziabher adds why digital travel services are most convenient to customers:

In the accommodation sector, also the contribution of information technology is prominent. – – A visitor can access an information about the kind of hotels at the destination, their ranges of product, the price and other relevant information without leaving his/her office or home. (G/Egziabher).

An approximate summery of digital platforms for travel services can be split in three parts (table 1). The technique applied causes overlaps to highlight the connection between all.

<table>
<thead>
<tr>
<th>TABLE 1. Digital fields in travel industry, Potapkina 2017</th>
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<td>WEB</td>
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This base, introduced to tourism industry, is the current fundament for most services and offers. Web is the largest service provider for travel businesses, being the first platform on the market of ICT since 90’s. Most of the products in mobile and sometimes VR have a main site on the web, therefore it’s the main platform of many travel services.
Mobile is heavily influencing tourism because it’s the only outlet used on the go. Sergey Balandin and Santa Lazaine (2013) explain that travel phase is an important part of real-time connection with users and they should have an instant connection during the trip for better service quality. They also analyze different products, where, for example, 3D virtual visualization of a destination can potentially increase users interest and lead to action of real touristic visiting (Balandin & Laizane 2013). In addition, many digital services have already developed a so-called hybrid type, where they combine both accommodation and transport, or advertise 3d party service-providers within. Examples vary greatly; some to mention are Booking.com, TripAdvisor and such.

3.1 Accommodation

 accommodational aspect is the first step of the travel experience which comes into consideration, following the destination choice. Some of the travel accommodation types are hostels, hotels, guesthouses, home stay networks, camping, villas and any rental types of homes (Wikitravel 2015). Horwath HTL (2014) states that in hotel business, technology is already leading and changing it (Horwath 2014). And truly, nowadays it is most likely to be researched through digital service providers, if not completely.

Despite typical reservation systems online, there are new ways of adapting technology into hosting businesses. Strong example is shown buy NovaVeolia (2017) – check-in and check-out are done directly from a mobile application. In addition, companies invest in changing technology, such as Starwood Hotels, which offers replacement of physical hotel keys for smartphone dematerialization (NovaVeolia 2017).

Accommodation is a common sector to build digital business on as being an inevitable part of tourism. Digital services have yet room to develop, especially mobile – more and more bookings have been made with smartphones nowadays (Smith 2015).

3.1.1 Booking platforms

Booking platforms are an example of digital self-service for traveling customers - these service providers supply users with data as well as the function of reserving selected items (not only accommodational, but also entertaining, food and other services). Although, accommodation sector is primary for booking businesses - it is mandatory for long-distance traveling, and there is no faster way than to look for needed places on the web. “…56 percent of hotel bookings were made online.” – Bob Carr summarizes on web technologies for accommodation booking (Carr).

Reserving accommodation is a good way to secure your future stay outside home, since the rest of the process can be changed and reconsidered while already traveling. A good example is well-known Booking.com website – an accommodation booking platform with different filters and functions for housing selection (picture 1). It provides users most important information about the accommodation, its location, services etc. Booking.com is present in both web and mobile.

![Booking.com website screenshot](picture1.png)

PICTURE 1. Booking.com website accommodation page, Potapkina 2017
3.1.2 Travelogues & reviews

Travelogue can be defined as a travel journal or even a book; in digital field, travelogue is rather a website or community platform for travel experience sharing, including different data – from storytelling to just photos and videos. In digital, travelogues commonly provide necessary accommodation, food or attraction places information, where users can leave reviews and rates themselves. That type of service creates authentic and trusted feedback, which gives better reputation to travel places / destinations, rather than standard pushed marketing campaigns.

![Tripadvisor.com website](Image)

**PICTURE 2.** Tripadvisor.com website, Potapkina 2017

A good example of this digital product, covering accommodation sector and other places will be the famous TripAdvisor website (Picture 2). The resource is very popular for specifically peer reviews and ratings from real users. It also has a mobile application and the company even offers paid tours around different travel destinations. TripAdvisor combines the accommodation booking as well, although it’s a promotion for 3d party websites.

Blair (2015), from Social media today, explains that TripAdvisor succeeds in staying connected with their customers because such companies often reply to their customers
directly, not involving third parties, and that creates a better trust to the users (Nicole 2015). Additionally, digital travel service will not lose its popularity due to simple strategy of providing honest feedback – it is essential for customers to hear real user experiences, which affect their decision making and buying behaviour.

3.2 Transportation

Transportation is another subject of being a big digital service provider in travel. As mentioned earlier, transportation was first ICT adapted section, with automated airline systems. Now, when we talk about transport in digital, we might imagine digitalized maps, navigation guides, mobile tickets and such. But speaking more broadly, ICT has improved both internal and external transportation services: it made it more accessible for the masses, enabled to have instant connection between customers and the transport system (which is quite important), and allowed better communication and movement not only locally but internationally as well. GPS was initially used in the military and adventure sports, and now it has improved travel user experience with public transport (How ICT impacts Transportation 2012). ICT has pushed transport into rapid development – even taxi is now accessible through a single app. Needless to mention self-check-ins at the airports nowadays – digital in transport has made it much faster than before, and new technologies are about to come up.

For transportation, there is a big variety of digital products. To mention a few, there are:

- Ticket research / purchasing
- GPS navigation
- Route planning
- Maps

These are the basic branches of transport present in digital. You can find the cheapest tickets to travel, maps will help you navigate, GPS helps to find your location on the map, which then allows you to make a route. All of them are closely connected to each other and it’s not that easy to take something out. Moreover, companies like Google already cover all the branches listed above and they constantly add new functions and products for easier transportation and movement.
3.2.1 Maps & journey planners

Digital maps are one the greatest technology in modern society, and not just in travel industry. It has changed our views on the surroundings, allowed us to have a broader vision and literally, have the whole world inside our pockets. If 20 years ago it was hard to imagine having the whole world packed into a device the size of your palm, now it’s a routine for everybody, since most of us have smartphones, or at least a computer with internet access. In tourism, maps are a must-have, and digital city mapping has changed the speed and efficiency of our information consumption. Maps are not just geography, it’s also transportation, route planning and the search of interesting places based on your location. As Thomas McMullan points out with humour – “You are here” no longer needs to be said. We are by default the centre of the world.” (McMullan 2014).

In this picture (picture 3), we can see Google Maps user interface with opened function of “Directions”, from point A to point B in Saint-Petersburg, Russia. Google automatically suggests best matches for route selection including distance, time of completion, various options for public transport and departure / arrival time. It’s a beautifully designed system so simple to understand yet containing enormous amounts of data and work done.
behind. “Thanks to up-to-date digital travel tools like Google Maps and TripAdvisor, there’s no need to lug around a 2-inch thick brick any more.” – Hanna Francis (2015) proves the importance of digital maps and navigation tools in modern society. She then adds that without it, we wouldn’t have known many other apps based on digitalized maps and directions routes, such as Uber, Citymapper, AirBnB and much more. (Francis 2015).

In this example (picture 4), we can see a local website for public transport trip planning around Helsinki, HSL. The website is done by the local travel company covering the capital region, and provides a lot of useful info on transportation, ticket prices and such. In the picture sample, we can see the interface of the city map on the right and public transport suggestions on the left. The way transportation works in Helsinki is one of the best examples of how well implemented ICT works in travel. Public transport becomes much more reliable and attractive, and most importantly, it doesn’t just affect locals but makes the city of Helsinki a better travel destination because of the progressive use of digital services in transportation.
3.3 Entertainment

3.3.1 Games & social media

Entertainment in travel can cover games, social mobile applications, geo-catching and such. A phenomenal example of traveling combined with GPS and AR would be the recent release of Pokemon Go on mobile. This game, consisting of geo-pokemon-catching, has obtained massive attention and engagement in summer 2016 – 100 million downloads only in the first month of release and 10m dollars in revenue daily (Lanaria 2016). It’s an amazing example of how a single app game managed to make people go outside and if not getting deep into sightseeing, but at least discovering new places outdoors and even using the app while traveling abroad. The following screenshot shows user interface, where AR is used through in-build camera to add characters to the surroundings and city mapping view with possible character location (picture 5).

Such success was perhaps caused by the well-known brand of Pokemon and a quick nostalgia of young generation, who witnessed the golden times of the brand’s early rise and weren’t old enough not to enjoy the rebirth of the series again in today. Nevertheless, it’s interesting how the game made simple walking and traveling short distance much more enjoyable and fun. Especially, if a person happened to travel abroad and connecting to the game, taking a photograph with a pokemon would have had value of a small souvenir. Even though it is a trend, it still shows great impact of mobile making movement fun.

![Pokemon Go app](picture5)  
PICTURE 5. Pokemon Go app, O'Neil 2016
Second part of travel entertainment would be independent blogging, vlogging, and social media content sharing. It also represents travelogues in a way that its travel storytelling via visual, and it gives reviews, like TripAdvisor, from user perspective, but through personal branding and different channels. But unlike reviews channels, social media has a more artistic, entertaining and exciting approach to tourism. Digital platforms have been a success for many users to engage with big groups of people interested in travel and tourism, and in 21st century digital has an advantage of global coverage with numbers of daily users. Platforms like Instagram are growing by day, and traveling and tourism is one of the most popular topics among. We can see a highly-followed profile (picture 6) of Allan Dixon – travel blogger who posts his experiences on Instagram. So far, he has nearly half a million subscribers and we can assume his posts gain around 20k likes per photo, according to the number of followers.

![Instagram profile of Allan Dixon](picture6.png)

**PICTURE 6.** Screenshot of Allan Dixon’s Instagram profile, Potapkina 2017

These social media stars are a helpful tool for businesses too. Because they are in direct contact with social media users, they have a great effect on their audience. Depending on the number of subscribers and popularity, instagrammers make their travel blogging into successful earning income by advertising different destinations and hotel accommodation with visually appealing photographs.
Blair (2015) adds that “97 percent of millennials are now using social networks while traveling, while over 50 percent are eager to meet other people staying at their hotel.” – showing that social media is a strong game-changer in traveling (Nicole 2015). That proves that people are more interested in choosing what they can see themselves, especially visual language through videos and pictures, and are far from old-fashioned ways of information consumption. Instead of having a call to the company, people look directly into digital to find real experience peer reviews or stories on social media (Hewitt). Digital storytelling is a rising discipline and companies rely on many vloggers and social media influencers as part of their organic marketing.

Bloggers and social media influencers could be useful in terms of audience engagement, as mentioned earlier, but not only that. Social media can be a great platform for creating unique content to attract more customers and keep in touch with modernity, by establishing a Facebook page for certain travel businesses, for example. Steve Olenski (2014) discusses that the Four Seasons Hotels & Resorts brand could increase their booking revenue by 5% and Facebook fan base by 10% over a 12-week period – the reason behind is a successfully implemented Facebook campaign of travel places guessing through photos. Moreover, other platforms such as Pinterest or Twitter were hired to promote the campaign as well, which means that social media businesses combined to achieve a common goal is more relevant to travel and tourism rather than most of the traditional marketing agencies and ads (Olenski 2014).

It is common now to focus on social media more than business website, since it has quicker access to users. If used correctly, social media can help travel companies grow and make good impression about their services and offers.
4 TRAVEL GUIDE APPLICATIONS

Despite digital services starting from desktop booking to social media storytelling in tourism, there are also very useful and necessary tools such as guide applications on mobile. Travel guide applications are both services and products for smartphones, meant for travellers who seek directions and guidelines during their pre-travel / travel phase. Guide applications are a branch of the whole mobile travel applications market, representing a specific product / service of city tours, sightseeing guides and / or navigation. It is usually a collection of tips & tricks about destinations and sometimes offline digital maps.

Laura Parro (2013) discusses that in general, mobile travel applications are necessary products of consumption, because the actual travel phase is densely packed with quick decision making and things on the go, which require instant response and efficient usability for users. That’s why travel apps are the easiest way to look for information; however, an obstacle for the usage of those could be limitation of Wi-Fi or cellular connection, since many app products rely on constant internet access (Parro 2013, 15 – 19).

Nevertheless, the demands are growing and consumer behavior is changing with it – as the famous phrase says, “time is money”. The value of time is important to many consumers and rapid interaction within real-time mobile guide apps could be a time-saver for many in terms of planning and following a city / sightseeing travel tour. Many apps have started offering paid tours with real guide or online version; still, users feel yet insecure of investing money into this, as their behavior is not used to such offers (Parro 2013, 22). On the other hand, that is the reason why many apps offer designed tours free of charge or browsing sightseeing places offline.

There are several applications offering offline navigating and sightseeing with in-app purchases. However, till recent times, not too many destination guides have been of common use. Thankfully, technology is constantly evolving and users have plenty of products to choose from and we will look closely into 3 most famous examples of travel planners and guides. For highlighting the selected function inside the following app screenshots (pictures 9 -12), a red circle will be applied for visual enhancing and better understanding which element of the UI was clicked on.
4.1 AirBnB

AirBnB, initially created as “Airbed and Breakfast” (Wikipedia 2017a), is a hosting service of accommodation for rent, dedicated to people looking for a place to stay during traveling or people willing to rent their housing. It is a broker company, which doesn’t own any property of its own, but only provides a hospitality service for safe connection and transactions between hosts and guests.

AirBnB is primarily a web service, but it also has a handy mobile app, which replicates same functions as desktop version – touristic places browsing, meet-and-greet events, and, of course, accommodation booking. In the picture above (picture 8) we can see a glimpse of the app with the first 3 screenshots in the following order: registration screen, home page and profile page. To start using the application, one needs either create an account or login with Facebook – after that, as pictured, we can see a couple of functions available, such as homes, experiences and places in the header, and functions listed in the footer of the screen.

The top function change the content of the page according to the location selected, whereas functions of the bottom bar stay the same, adjusting to the selection.
In the beginning, the app sets the location to “Anywhere” by default; however, to start browsing specific places according to the user taste, we will have a look at the specific case of user flow for place selection. The app can be used for primary accommodation purpose, though this investigation will set an example in terms of tour guide applications.

Following the image sequence (picture 9), we can see the destination selection on top, which leads users to the reset homepage with new suggestions in the middle content. The location, in this case, is set to Paris (as the red selection circle highlights) and second step applied is “Filters”, the button below. Continuing, the app redirects users to a new page with different filter options for places, such as Food Scene, Sightseeing etc. Those are available for selection as well, and the big button “See places” in the footer is selected to see new places updates, after desired modification.

From these first steps, we can conclude that this app doesn’t include pre-made tours or guide navigations, according to the presented functions and their names. Nevertheless, from this visual content we did not yet get to the map and location of places, therefore it might be available after certain selection chain. Next selection to be made is one of the suggested places named “Where to see and be seen” to continue the experience.
In the next image (picture 10) we can see the first screen showing description of the selected item, its author and a button “Map” at the bottom bar. It is now clear that multiple places inside guides and destinations from the content screen contain more information within than displayed in the beginning. That is a conscious decision in application design called the rule-of-thumb, when certain functionality is invisible to users but appears later through selection process. In this case, it is justified, as one primary action, such as “Map” or “Filters” button at the bottom, are important at certain stages and are not revealed all at once. It is important for users to understand the logical pattern easily and learn faster, while their attention is not distracted by secondary functions (Babich 2016).

Moving on through the same image, we can view different places this guide contains on a map in the middle screenshot. The design includes well-made icons showing different types of places included to the guide – we can slightly see a few, such as a cup of coffee, an art palette etc. Below the map there are the same places, structured into horizontal line available for scrolling – at this point, the actions allowed to users are scrolling and tapping. The limitation in this step is inability to choose multiple places for a tour – after selecting on of the destinations from this guide item on the map, we can see the last screenshot with now a specific description for one of the places. The only call to action presented is “Add to itinerary”, selected afterwards.
Now, after completing the journey to find needed touristic place, the following image structure (picture 11) can be viewed in the app. Once a desired place is added to itinerary, we can set the date and time as shown in the first 2 screenshots. However, one problematic point at this stage is, as mentioned, inability to select multiple places simultaneously. If we go back (picture 10), we can add places to either Wish list (the heart on each picture below the map) or to Itinerary. At the end, the last screenshot (picture 11) on the right is the list of places in section “Trips”, which the user added their Itinerary.

To reach the Trips page, one obstacle within the app is the fact users must go all the way back to the home page (picture 9). Obviously, it has a meaning behind – allowing users not to leave the selection page too quickly; in addition, the home page footer always stays the same – it basically just repeats a standard slider menu, but at the bottom. But once the Trips page is opened, each place added to itinerary must be reviewed separately and the app does not provide internal navigation. The UI seems to be resembling of Google places – indeed later, (picture 12), we can see that for directions AirBnB offers Google Maps or Citymapper – another handy app for more precise scheduling and journey planning with public transport, including scheduling and transportation time.
4.2 Multiple destination planners

To describe multiple destination planners in short, an example of digital maps with routes can be pictured as such. It is a service with functionality of selecting multiple places on a map or list and create a path with, at least, descriptive directions between each. For example, AirBnB app allows users to create paths with multiple destinations, though it does not provide its customers an easy way to preview the created trip on a map with following directions. Unfortunately, even Google Maps do not yet support such complex trip planning, only providing different types of directions from point A to B (picture 3).

An exception to this rule would be Yandex maps service. “Yandex is a Russian multinational technology company specializing in Internet-related services and products. Yandex operates the largest search engine in Russia with about 65% market share in that country.” (Wikipedia 2017f). Yandex has a big variety of services, starting from search engine ending with branded Yandex taxi, but more importantly, it includes digital maps with common direction search even with traffic jam infographics.

Yandex maps can be defined as multiple destination planner, since it includes planning and direction finding between many places, rather than just commonly 2.
In this screenshot (picture 13), an example of a multiple destination tool is demonstrated – Yandex allows users to select the “Routes” option from the top right of the navigation bar and add as many points as preferred. In this sample, a map of the city centre of Saint Petersburg, Russia is displayed with 3 selected destinations showing direction to each. It is also possible to change the order by simply dragging any destination bar in the right column up or down, without having to retype it.

The service provides standard selection for transportation category, whether it’s by car, public transport or walking. This system is a great advantage to multiple destination planning, as it includes places by type in the search bar (when clicked for modification) and contains all the needed data within, also the distance and timing between each destination.

One disadvantage of this tool would be ineffective selection of places – in other words, to be able to add a new way point, users must type the name or the address of it in the destination bar on the right and can’t pin the sight from map directly to the planner.
Another great example of multiple destinations planning is HERE maps (picture 14). HERE maps is a service for navigation, formerly known as Nokia maps, which is nowadays available on all the mobile platforms, including iOS and Android.

HERE maps contain desktop extended version and mobile application; however, the 2 versions differ from each other. From the sample below (picture 14), we can see how multiple destination works on the main website – users are able to display places by category and pick different types from the drop-down menu on the left (the colored icons at the bottom). To be able to connect the dots between each other, user need to hover over a new destination and click plus sign to add it to the route.

Nevertheless, the process of multiple destination planning is not that obvious – by just clicking on the new place pick, the website will commonly open it’s description and start a path from that point. Users are only discovered the option of adding places to the tour by chance when they hover and see a small plus in the pop up box. Moreover, such functionality is completely unavailable on mobile, though it could be a useful tool.
4.2.1 Redigo

A good example of a travel guide app with a touring functionality would be the product named **Redigo**. It’s an application by Rambler Internet Holdings LLC, developed for the Russian market, aiming specifically at tourists who would be interested in having a travel tour. The app works a certain way – you select the country and specific destination within, and after you can download an offline map and see interesting sightseeing places either picked by the company or from the overall mentions.

![Redigo home page and map screens, Potapkina 2017](image)

This collection of screenshots (picture 15) displays the beginning of the user flow of Redigo. The journey starts with the country pick, as translated in the first screen, and continues onto city or district selection. Since this app is mainly a source of offline city maps, each destination included to the application library contains offline maps and sights data, as shown on the middle and right screens.

This product, in addition to offline maps, contains routes and tours, seemingly to be created by the app development team. They include the best sightseeing places packed into a route and structured by their distance between each other. That is a significant and most usable service when it comes to traveling in an unknown city without having to spend time on complicated direction planning.
In the first picture (picture 16), we are demonstrated how to reach the pre-made tours inside the app. The country in this case is Italy and the city of Venice (translated from Russian). From the first two screenshots, there is no info displayed yet; although when we move further (picture 17), we can see each destination within the tour described and marked with time and distance, and the second screenshot opens the pre-made tour on the map. Two buttons at the bottom are available – the one being selected is “Description”, which leads us to the sight in the last screenshot. It is possible to pick on any number in the tour to select a sight and read the description.
One problematic part of this app is that it does not always have created tours – therefore, when there is no path, users are offered offline maps with the sights marked. However, there is no functionality of making a customized tour by oneself with the help of such maps (picture 14). Secondly, the tour itself cannot be adjusted and sights cannot be removed, although it might not be significant to some. Additionally, this application is available only in Russian language and is not marketed abroad.

4.2.2 Google Trips

Google Trips, a new service available from Google, is the closest to travel guide applications compared to the rest. Apparently, it is new in the market – Casey Newton (2016) explains that the company announced its release in September 2016 and that the app is now to compete with other travel planners such as Tripit. Google Trips, however, is an application which collects data from your Google account and can display your booked flights, tickets and give suggestions based on your history. It is also possible to download walking directions and maps for offline use, which is a big bonus for saving cellular abroad and not waste extra money on unnecessary internet browsing (Newton, 2016).
Google Trips is not only beautifully designed but also includes great customization freedom. In the picture above (picture 18), we can see the first home page screenshots. What makes Google Trips stand out is that it provides users an option to select and remove places from their planned trips and it also shows suggested content, according to personal Google search / browsing / saving and such. It also includes filtering for narrowing suitable places and save plans for later use.

Firstly (picture 18), the app asks users to select a destination in the top search bar, or select the ones suggested below. That is what was described earlier as retrieved information – in the given picture, Google recognized a personal email with train tickets booked earlier, and in this case, displayed “Toulouse” city in suggestions, since it is the destination mentioned in Google mail. After choosing the upcoming destination, in the user flow below (picture 19), we can see the “Day trips” option selected, which transfers users to a map with attractions marked as blue circles.

Following the screenshots, we can spot an icon with 3 bars, which stands for “Filters” – after selecting, it provides users options such as length of the trip and a day to choose (which is important for saving the trip). This way, filtering helps narrowing user selection and focus on the most important places to suit the travel needs. It is essential to provide this functionality for both people on the run and those who plan their trips in advance.
After completing the filtering steps, we can start considering the sights on the map. In the screenshots (picture 20), it is visible how pinning and customizable tour is made in Google Trips. The red button with a magic wand stands for random ready tour, in case the person decides to use a pre-made path during the process. We can see the description for each place below, like AirBnB structure (picture 10).

The great advantage of this is easy-to-use structure of tapping sights for selection while the app connects the pinned destination itself to create a tour. It is the closest multiple destination planning model to have the perfect functionality and design. Essentially, a tour can be started from any pin in the customizable mode and pins can be removed from the tour at any time; that gives the app a great use on the go.

UI of the app is consistent as important selected items are always highlighted in bright blue – that teaches users and creates a certain understanding environment. The colour choice is thought out as blue is a clear yet not irritating or screaming colour. Google Trips resemble overall Google Maps design (picture 3); at the same time, it adds more playful and bright design elements to the application which is important for users’ appeal.
Despite the great UX and goal achievement with Google Trips, a few things to be noticed are the following: while having a great system of sights pinning and custom tours making, Google Trips completely lacks any type of internal navigation and directions. As shown in the example (picture 21), the app only redirects users to look for directions for each of the destinations separately, similarly to AirBnB experience (picture 12). Only Google Maps and Citymapper are presented to users, requiring downloading these side apps.

Additionally, no description of the sightseeing places is presented, apart from basic rating stars given and feedback from the users, which we are used to see in Google Maps. With this limitation, users are required to know the names and places by themselves and what each represents. In comparison to AirBnB (picture 10), Google Trips is not using descriptive text and custom design – basically, it is a desktop version of Google places into mobile, with few visually appealing additions, but not major changes in core.

Compared to the rest, Google Trips is the lead in design of tour making; however, only visual image seems to be the main attraction. Compared to Redigo (picture 17), it lacks GPS directions and a full list of the sights from the tour, which makes Redigo stand out.
5 CREATING A DESTINATION PLANNER

The introduction and personal research of the tour planner market is a starting base for the practical part of this thesis. A mobile destination planner and its visual prototype is to be the result of the processed data and careful analysis, to demonstrate an alternative and potential functional tool to any travellers familiar with smartphones to improve their UX.

The very first research and practical work applied to the destination planner creation started back in 2014. A travel application project with 4 team members, where the team developed a strategy and potential application design, was held at Demola company in Tampere, where I closely worked with UX and UI content. However, during those times, the travel guide market was different and often limited in variability, therefore personal research and investigation was conducted to understand its level in the current state.

To create a destination planner, we need to revive previously discussed material as part of travel app market investigation and conduct a few user surveys and test sessions. As destination planner is a tool on mobile, certain principles should be considered, such as UX methodology, UI rules in mobile and such.

5.1 Benchmarking analysis

Benchmarking was a necessary methodology for comparison and analysis of the listed digital products in tourism: to understand the potential, business model, advantages and such, of the researched products. The definition of benchmarking is described as the following:

Benchmarking is a systematic comparison of organizational processes and performance to create new standards or to improve processes. Benchmarking models are used to determining how well a business unit, division, organization or corporation is performing compared with other similar organizations. (Management Library Vector Study Group).

In this context of study, a particularly competitive benchmarking was applied to the AirBnB, Redigo, Google Trips and part of Yandex maps services. Competitive bench-
marking is a branch of analysis, where direct competitor-to-competitor research is conducted in the same field of expertise. It is important to understand one’s products better, figure out flaws and technology of the competitors and use the derived data to your own advantage. Competitive benchmarking is a good exercise for businesses, even though it is also used for alliances against common competitors (Geigle Safety Group 2016).

Having looked at the 3 main examples of tour planner applications on mobile (AirBnB, Redigo, Google Trips), we can conclude that the concept of a tour planner is a useful service, though each business model has its own advantages, disadvantages and limitations to it. For the visual consumption, a comparison table was created to highlight the key differences as well as similarities in the products, crucial for destinations planning.

<table>
<thead>
<tr>
<th>Functionality</th>
<th>AirBnB</th>
<th>Redigo</th>
<th>Google Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Places browsing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Touring</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pre-made tours</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Customizable tours</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Category filter</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time filter</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Budget filter</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal directions</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Offline maps</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Route timing</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Icons of places</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the presented table (table 2), we can see that none of the applications have an absolute advantage over the rest – each of the product share certain functionality, while lacking other important features. In terms of multiple destination planning, the best goal achievement is presented in Redigo, while Google Trips have better UI and functionality without limitation from not having available pre-made tours and such.
To explain a few more detail from the table, the key lacking features of each app are:

- **AirBnB** – complicated in terms of tour making, no GPS or directions within the app, no multiple place selection, bad saving and lags inside the “Trips”
- **Redigo** – no tours available for many countries and cities, no English language, no customizable tours, UI is too inefficient with countries lists
- **Google Trips** – no function of starting a tour with directions, no description of sights in detail, weak filtering

My observations listed can be summarized into a visual graph (figure 1), from which we can see the strongest parts of the products on a scale from 1 to 5. This is a personal evaluation aimed to create some basic statistics to figure out the best system patters in an objective way. As presented, it is visible that there is a tie between the app services – each product has 2 best performance places in the chart.

![Functionality Evaluation Graph](image)

**FIGURE 1.** Functionality evaluation, Potapkina 2017

To conclude this investigation and utilize the data taken from each application testing, it is fair to say that a hybrid model of the best features from each product can be considered and applied into the prototype of an alternative destination planner application.
5.2 User survey

Apart from data analysis of the existing products, user surveys or tests are important to underline necessary demands from customers, since the destination planner tool is initially created to serve people’s needs. The definition of user surveys can be described as a set of questions, helping to find out user behaviour and psychology when using particular digital products. User surveys are a methodology used by design teams in the production stages of a product or web service (User Survey for Design 2006).

The first target group interview was developed and conducted by Katri Kaul, Tiia Isoviita and myself in summer 2014, which is now utilized in this thesis work. The objective was to understand whether Finnish families and theme park visitors, as initial target audience, had certain patterns of their touristic behaviour and were they satisfied with the services provided to efficiently look for interesting places to visit. The research questions were developed in English while documented in Finnish to ease interview flow for native speakers. The age varied, from 25 to 55, including families with kids.

Narrowed to Tampere area, the interview report showed that the problem occurring to travellers is poor information appearing in the search and inability to find relevant places to visit. The results for places to visit appear to be either weak or lead customers to do more browsing through the web and more and more digital links. In addition, traditional options like sightseeing excursions seems to be time consuming, especially when the time limit or the distant to reach the tourist information point is pressuring to customers. Paper maps seems to be challenging in terms of finding the best suitable route due to its simplicity and lack of flexible proposals (Isoviita, Kaul, Kinner, Penttinen & Rauma 2014).

The results provided useful insights and information, which can be helpful for building a meaningful service to travellers. From the first user report, we can conclude that a tool for finding information faster is essential is needed; to avoid the hassle of searching for touristic destinations it is important to provide a wider choice while keeping it straight to the point that customers can be independent and don’t have to always rely on friends’ advice instead of making decisions themselves while traveling (appendix 1).
The second part of the user survey, done in spring 2017, was a questionnaire conducted within a group of young students from the TAMK School of Art, Music and Media. The meaning of that interview was to understand the same behavioural patterns of travellers, but unlimited from locations and mobile oriented way. All the results can be found in the final report pages (appendix 2).

The survey had 46 participants and resulted in chart infographics about the services people use while traveling (figure 5) and what their preferences are in their typical travel days abroad. The online software chosen for this task was Google Forms – it provides a fast overview of the whole survey and can be completed online.

The interview held 16 questions with multiple choice answers mostly. It started from determining whether the selected group travelled abroad often or not – 65,2% of the people travel at least 2 or more times a year and 80,4% of the whole group use smartphones in their travel phase, as pictured below (figure 2, 3).

![FIGURE 2. Traveling frequency, Potapkina 2017](image)

![FIGURE 3. Smartphone usage in travel, Potapkina 2017](image)
From the graph statistics (figure 4), we can see one of the survey questions displayed in a figure statistics about direction between tour destinations. This chart support previously conducted survey, where customers expressed their dislike of not being able to easily approach a tourist service point or find relevant information, which resulted in changing their plans and looking for other places.

More interestingly, this chart and the questionnaire in general showed that many people use mobile services while traveling, but none of them know about multiple destination planners, as the ones listed in this research previously. This important piece of information can have 2 meanings – firstly, people are tech savvy enough to find what they need without app help, and second – they are simply unaware what could help them potentially improve their travel experience (figure 5).

In addition, 63% of respondents said they have never planned their trips with smartphones, perhaps of no need or lack of proper functional tool, able to store notes and directions (figure 6). Nevertheless, one out of 46 participants used Redigo, at least 5 used traditional paper maps and one user HERE and Apple maps.
Concluding the second part of the user questionnaire, the insights derived are supportive of the previous user research and helpful for considering what kind of things are to include to a prototype model of an alternative destination planner. The results can be summarized and structured into a list of points most of the respondents had in common:

- **Mobile in day trips**
  - 71.7% use navigation and maps
  - 93.5% use web search for destination selection
  - 56.5% prefer to visit multiple places
  - 65.5% prefer to include food places in their trips
- 84.8% prefer to search places by category
- 47.8% use directions for multiple places separately
- 67.4% had no time to plan a trip

This material can be fetched and transformed to suit a new mobile product, if applied carefully – most importantly, the demand for place search efficiency, sometimes lack of personal time to look for places and preference of sorting them by category is a good starting material to build a filtering base.

5.3 Prototyping

Prototyping (in software engineering) is a stage of mobile application development process, aiming to test and check the design, technological and architecture solutions on possible flaws and/or present the product on its early stage to the investor. It is a useful discipline conducted during early development (Wikipedia 2017c).

Prototyping does not require perfect or polished final design; instead, its purpose is to create a well-functioning and understandable model that customers can use, to detect any mistakes done during production and concept stages. There are several tool design teams use for prototyping, such as FluidUI, Invision, Balsamiq and such.

Many software programs are created to help designers and architects build their prototypes fast and even create transitioning and animations, close to native mobile apps; still, many designers prefer implementing visual identity in specific software, such as Adobe Photoshop, Adobe Illustrator, Sketch or Experience Design.

Experience Design is a new program, developed by Adobe, and is meant for UX or UI designers to not only keep the same functionality that designer are already familiar with from their professional skills, but also be able to create prototypes directly inside the software without the need of 3d party applications.

For this project, I used Experience Design for my prototype development, visual identity and delivery material – the outcome turned out usable and was documented on video as well, showing the user flow through the application and its functionality.
5.3.1 Wireframes

Wireframes, also known as blueprint, is the framework of a digital product, either website, user interface of a product or mobile application, with the purpose of showing architecture and structure of an idea and elements around it. Wireframes are used in design and architecture and their purpose is to demonstrate functionality rather than visual style. Wikipedia summarizes about wireframes in prototyping:

The wireframe depicts the page layout or arrangement of the website’s content, including interface elements and navigational systems, and how they work together. The wireframe usually lacks typographic style, color, or graphics, since the main focus lies in functionality, behavior, and priority of content. In other words, it focuses on what a screen does, not what it looks like. (Wikipedia 2017c).

In this project, wireframes were of a good direction to understand and sketch out multiple destination planner’s user flow and basic functions. One common way to do wireframes is to simply use paper and pencil to draw the first screens and buttons/elements inside. Because of this simplicity, I started with a few sketches of the basic UX flow.

In the paper sketch (picture 22), I have practiced how selection system would work inside the application. The initial idea was to improve the selection process from Google Trips,
combine it with more descriptive windows for each location and add filters. At the beginning, I also developed a way to select patterns for each trip (whether it would include food places, sights etc.), where users could select a specific pattern and the application would adjust places on the map to fit that sequence.

I used simple geometrical shapes for each type of the place (sightseeing, nature, food, entertainment) and connected them into one line, representing destinations of the day trip. However, this idea turned out too complicated to implement – it was difficult to figure out the way of including multiple days and over 20 places into a consistent UI screen.

Later, I decided to create digital wireframes in Adobe Illustrator with more defined shapes and typography. I abandoned the idea of destination patterns and focused on main goal of multiple destination planning for travel day trips.

PICTURE 23. User flow digital wireframes, Potapkina 2017
From the digital wireframes (picture 23), the application demonstrates how the user goes through the process of selecting customized tour option and completing it after. Main goal is to let users know that the global navigation and the controls always stay in the left slider menu, as shown in the 3d top wireframe from the picture.

From that sketch, I was unsure whether to put the profile as the main page or keep the home page with stack of pre-made tours, as shown earlier (picture 22). In the digital version, however, the basic multiple destination idea and listing of places is kept within and stays the same. At the end, one more feature was of my consideration, which is positive messaging or rewarding users after each completed tour.

Creating emotional background in application design is also an important addition to the development, since users tend to seek something bigger than just achieving their goals. Speaking more generally, Abraham Maslow created a pyramid of basic human needs, regardless from gender, social status, age etc. (picture 24).
As we can see from the pyramid chart, Maslow shows that as soon as individuals pass through the basic physical needs, they tend to create a demand in love and self-actualization. This can be applied the same way to the design – as soon as users achieve their goals and needs, they will have to have something more to it to keep using the product.

Inside the wireframes (picture 23), in the last screen mockups I tried to create an awarding system, which will benefit the users after completing tours inside the application. This meant to create positive emotional appeal to the app, which would potentially contribute to higher continuous usage, rather than only completing one task and leaving the product.

However, I encountered a few problems with such system during wireframing. First – lack of knowledge and expertise of what could possibly be the best rewarding benefit to users. Second – as the focus was on easy functionality, emotional appeal was left open for further brainstorming in the future.

At the end, I stick to the initial sketch (picture 22), and went straight to Adobe Experience Design to make a digital mockup of the drawn application. I intended not to use other side apps, because part of my research was to also learn the UX designing software. It took me around 3 weeks to sketch the idea, collect notes, create the prototype and record it.

### 5.3.2 Selection tool architecture

For the selection tool function, I made a separate graph with the cycle interaction of the app. Users learn and go through the same pattern when they want to start a day trip with multiple destinations – as the diagram shows (figure 7), there are 2 main choices, which lead to further sub-choices. This kind of graph is called UX flowchart – a type of deliverable in User Experience design, aiming to show how the process of taking certain steps goes for either the whole product, or some of its functions.

In the example below, we are looking at the broad flow, regardless of different user personas and their behaviour. The steps to be taken for tour completion stay the same – and go back once they have been done. With this system, we can build the prototype and see which functionality to reveal step by step to users, and which to hide.
The graph does not include certain function, such as profile page, settings, log in etc., but for a reason. To this point, we do not consider side tasks sufficient – to concentrate on how users build trust and understanding to the app for tour making, we only need to figure and sketch out the flow for the multiple destination tour achievement. As users learn quickly, such functionality as profile and settings will be easy to recognize later, once it will be added to the menu or navigation bar, following the rules of simplicity.

The diagram suggests that the application has 2 key ways of interaction – whether to create a custom tour on the map or select a readymade tour (provided by the application) from the list. Pre-made tours have a sub-function of editing – providing users a choice to remove certain places from the tour list if they wish. This suggests making the app democratic to a certain extent, and attract users to select pre-made tours. The time efficiency, by calculation, will be faster with pre-made tour selection, and it can be a useful platform for the application to promote and include specific places to the list.

It is a matter of taste if this flowchart is supposed to be created before or after wireframe making. Nevertheless, as UX is a relatively new field, both can be created simultaneously or without a specific order. This graph, however, helped to define the direction, previously made with wireframes, and shift the work from sketching stage and functions definition to user interface designing and structuring.
5.3.3 User interface

User interface is the outcome of the design process for machines, software, products, services or other digital devices, with the goal of building a smooth and efficient visual structure for specific goal achievement and eased UX (Wikipedia 2017d). User interface is generally the face of the product and its visual representation – it can create a certain appeal, emotions, impressions and learning curve. Mobile user interfaces are built with certain principles – despite UI being everywhere in physical or digital systems, mobile world contains specific set of rules due to some limitations; for example, the size of device screen, native gestures, common architecture, familiar to tech savvy people inside the product and many other.

According to Stephen Griffiths (2015), mobile application is set to attract users as much as possible into its content, so that they can fully emerge with the substance and clarify the value of the product. UI is the conductor of the future experience – therefore it is important to make a good first impression to the users. Stephen adds that typical mobile UI should avoid any kind of heavy and unnecessary element overload and be particularly task-oriented and logical, supporting the main idea of the product (Griffiths, 2015).

Following these rules of simplicity, I applied this logic to the color scheme of the future app prototype as well. I intended to avoid too many unnecessary colors, which could possibly distract users from key actions, and create a modern yet constructed look. For this purpose, I defined three main colors as the following:

![HEX color codes and filled shapes](Potapkina 2017)

The shapes above (figure 8) represent the color scheme of the UI – the choice was made so that for one active color, there would be 2 neutral and calm colors, to balance the look. The active color turned out to be bright purple. Since it is a combination of blue and red, purple combines the energy and calmness of the both, while on itself being unique in the real world and often associated with wisdom and luxury (Color Wheel Pro 2015).
In web and software design, purple is a common choice of many companies. It brings certain brightness and playfulness to the design, while being strict and solid. This color is often used in digital rather than in print from my personal observation – that is why I decided to go for it and avoid the cliché blue but not to go too far with other colors.

Moving on to details, I had to decide how I would arrange my navigation bar and other elements, starting from the header. Apple Developer (2017) provides useful notes for those who aim to build products for iOS, and they summed up this issue:

**Avoid crowding a navigation bar with too many controls.** In general, a navigation bar should contain no more than the view’s current title, a back button, and one control that manages the view’s contents. If you use a segmented control in the navigation bar, the bar shouldn’t include a title or any controls other than the segmented control. (Apple Developer 2017).

Following the advice, I concentrated on keeping navigation bar free from any side functions, rather than the hamburger button. My inspiration took influence from applications like Wolt, Instagram, Snapchat and such. However, since the application was meant to be open for any other corrections or re-building, I decided to keep the name of the project in the middle of the navigation bar, and the test name turned out to be “citytour”.

PICTURE 25. iPhone 6 map mockup, Potapkina 2017
Avoiding overstocking the screen, I included 3 key buttons at the footer, comfortable for the thumb control. From the mockup above (picture 25), we can see the application user interface, including a map, a made tour and necessary buttons within. This mockup demonstrates the app in action, captured as a navigation guide outdoors in a crowded city. The choice of the photo mockup was to be close to a real-life scenario.

![App mockup](image)

**PICTURE 26. iPhone 7 home page mockup, Potapkina 2017**

While thinking about home page, the decision was set to use pre-made tours suggestions as the starting point (picture 26). It takes the best out of AirBnB concept, while focusing specifically on tours. The home page also includes location selection and a custom tour making button at the bottom – the only call-to-action highlighted item.

Since traveling is a bright and colorful experience, often accompanied by photos and videos, adding thumbnails with pictures from destinations was my choice to add to the home page for a few reasons: it will certainly create more appeal to the home page, since there are no other complex and graphical illustration, and more informative reasons, so that users can easily recognize a place or get attracted to it from the image look (appendix 4).
The image with 3 iPhone mockups (picture 27) demonstrates the slider menu on the left, the tour description screen and filtering screen for creating tours. The menu is kept as simple as possible – the background color is set to main purple with the font Lato as the key typography family for the visual design. From the screenshot, we can recognize Helsinki skyline with the Senate Square cathedral and a short description below the image.

The concept of the tour description screen is to fill it in with certain information, such as the length of the trip, destinations names, icons of the place category and a few pictures. This screen is dedicated to pre-made tours – an option available to the users, when they do not wish to create a tour on their own. The only functionality available at this point is to display tour on the map, browse photos or browse destinations from the list and read some information about each.

The icons are designed to create a specific visual atmosphere and spice up the interface with extra graphical elements. Since 2 gray colors from the primary scheme can be boring, they are used for either small / non-clickable elements, or negative actions such as delete. The purple stays primary color and the color of highlighted selection.
The main feature of the application was thought out to have tapping technology involved – the multiple destination planning. Tapping is a common way on mobile to select or interact with elements on the screen – the system designed for out fingertips. A few key technological interactions can be mention with touch screens:

- Tapping
- Tap & hold
- Drag & drop
- Swipe (left, right, up, down)

These are the key gestures commonly used on mobile. Generally, there are no other actions created just yet for the use of mobile, since the previously mentioned ways are native and extremely natural to smartphone users.

The multiple destination planning tool involved tapping and swiping as primary actions. With further development, secondary functions can be added, with certain assignment. Primarily, multiple destination planning involves tapping a place on the map and adding it to the future tour path. Swiping up or down to the filters button, showing a magic wand, will expand the filtering icons for tapping selection as well (picture 25).

This interaction pattern was specifically chosen due to its familiarity to the users – for now, creating some new interactive UIs with complex selection would create extra hassle and require going through a learning curve before emerging into the application. Our goal is to make multiple destination planning easy and flexible, rather than long.

In conclusion, the limited color choice and structured placement of the elements inside the app, without covering the content page, allowed me to create the UI consistent enough.

The full prototype can be tested via Adobe Experience design link (appendix 3). One problem encountered is the unavailability of selecting any buttons on the screen – however, the app includes hints, when users miss to select the right option available. The hint will highlight selectable areas in blue and users can continue their experience.
6 SELECTION TOOL USABILITY

6.1 User tests

After completing my first prototype, I created an interactive clickable version and conducted a test with several questions. 4 people, familiar with smartphone technology, took part in it. The purpose of the test was to measure how understandable the multiple destination tool was and what felt unnatural to the interviewees.

I set specific goals to the participants and ask to implement a task with the app. While the test takers were going through the process, I took notes of their gesture behaviour with the application. The following was the common outcome:

- Wants to swipe down through the pre-made tour (option unavailable)
- Wants to select other places on the map (not assigned inside prototype)
- Wants to zoom on photos (option unavailable)

These are minor limitations due to the restricted gestures in Adobe Experience design. They did not prevent users, however, from understanding the flow and the guide, and most importantly, the task completion went as presented below, where easy stands for approx. 3 sec interaction and hard goes for over 10 second length interaction (table 3):

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Interviewee 1</th>
<th>Interviewee 2</th>
<th>Interviewee 3</th>
<th>Interviewee 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find a custom tour button</td>
<td>easy</td>
<td>easy</td>
<td>easy</td>
<td>moderate</td>
</tr>
<tr>
<td>Create tour on the map</td>
<td>moderate</td>
<td>easy</td>
<td>moderate</td>
<td>moderate</td>
</tr>
<tr>
<td>Adjust tour</td>
<td>hard</td>
<td>moderate</td>
<td>easy</td>
<td>hard</td>
</tr>
</tbody>
</table>

Another interesting flaw spotted by users is misunderstanding of the tour description below photos (appendix 4). Users did not understand what the hour duration and places count stand for. This was a good observation – time is often insufficient if a traveller is running late. Apart from that, generally users did not have big troubles with the app tool.
7 DISCUSSION

After compiling the theoretical investigation and practical implementation, it is now safe to conclude that the multiple destination tool concept is complete. This thesis shows that careful understanding of human needs, mobile trends and interaction design, combined with simplistic UI, is a useful study for creative production of possible digital products.

The research demonstrated that finding a specific need and turning it into a testable version is necessary for mobile improvement in travel, since this field is very demanding and its target audience is very wide. Conducted benchmarking and user tests proved that people are effectively learning new platforms and this tool was enthusiastically met by many participants, which showed interest and positive emotional following.

The last usability test suggests there are some elements which can be improved and this work provides good updates and feedback for further development. Users feelings and evaluation is an important tool in UX research and prototype implementation, therefore it can always be utilized again, while adding new elements and structures along with the changing mobile market and design trends.

Overall, the prototype produced positive feedback for the simplistic user interface and core idea of multiple destination tour planning. The result supports the research and it satisfies personal achievement in application design and user needs understanding.

7.1 Video tutorial

At the end of the research, I produced a 25-min video explanation with the demonstration of the available prototype functions, its use in action and meaning. The video is set for the whole UX flow, UI of the app and the breakdown of each step made (appendix 3).

To produce this tutorial, I used in-build image capture by Adobe Experience Design to record the UX flow and an iPad Air2, specifically Garage Band, to record the commentary and voiceover. The post-production was completed with Adobe Premiere Pro.
7.2 Market potential

According to the feedback received from the Finnish residents (appendix 1), the study suggests that accurately made product could have potential at least in the local area. The problems have stayed unsolved and users seemed cheered and encouraged by the concept. The Google form survey (appendix 2) shows that people need an efficient tool, since at least half of the 46 participants experienced not being able to make a day trip quickly.

To be competitive in the market, deeper development should be made, involving bigger production and research team. In this thesis, I experimented with creating a potential application model, but to be successful in the market, some formalities must take place, such as brand strategy, investments, networking, team building, sales plan and such.

7.3 Possible difficulties

Possible difficulties that might be encountered are a few big giants (such as Google, for example), which basically own the market and have biggest connections and funding. Such corporations can simply suck in different projects and the last will not receive any publicity. It is also a common procedure to purchase the authority rights of the technological advantage, or simply hire the team instead.

Apart from that, which is an advanced measure, possible only for extremely big and successful projects, simple lack of funding and good team is a big prevention to successful implementation of such tool. Further work would require great professionals from different fields, and it is hard to attract employees to a non-funded design idea.

The last obstacle is high presence of similar applications on the market. Once again, Google Trips – a great example of the same idea from a much bigger corporation. There are many existing apps, serving the same purpose, and it’s extremely hard to make your product stand out among others and market it well to future customers.

Nevertheless – despite many difficulties on the way, there is still hope that a creative project will find its way to get out there and help people in making life easier and fun.
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PICTURES & FIGURES


APPENDICES

Appendix 1. Demola project: prototype tests report

Käytettävyystestituloksia
(kts. UI-testitehtävät: Tammertie)

Ongelman vakavuusasteikko:
levä [1 2 3 4 5] vakava

Yleistä palautetta:

- “Kyllähän tuommoista tarvisi! Ihan vaan muillekin kuin tamperelaisille.”
- “Voisin heti ottaa käyttöön jo tuollaisena, koska tuo on miljoona kertaa parempi kuin paperikartat.”
- “Tosi hienon näköinen! Ympyrän painikkeita on kiva painella.”

Käytettävyystesteissä havaittuja ongelmia:

Aloitusnäkymä
- “Take a tour” on harhaanjohtava nimitys (yleiskatsaus Tampereen paikoistako?) [5]
- “Suosikit” ovat liian piilossa (helppo eksyä) [4]

Teemareitit
- Reittien tietoa ja sisältöä kuvaavat ikonit näyttävät liian painettavilta [2]
- Reittien otsikot ovat liian huomaamattomia [5]
- Kuvat ovat harhaanjohtavasti ylikorostettuja, informaatio jää kuvien varjoon (selänko kuvia reiteistä vai paikoista?) [3]

Hae paikkoja -filteri
- Filterin selaustoiminnallisuus vaikea huomata aluksi, mutta selviää melko nopeasti [2]
- Ikäkategoriat hieman hänmentäviä (mitä eroa “toddlers” ja “children” välillä)? [3]
- “Adults”-ikoni harhaanjohtava (näyttää painikkeelta, joka tarjoaa ruokapaikkoja aikuisille) [4]
- Keskusnappi ei ole riittävän painettavan näköinen (vaikea muistaa painaa sitä) [3]

Kartta
- Paikkojen filteröinti ja haku puuttuvat oikeasta yläkulmasta [5]
- Paikkojen filteröintikriteerit ovat liian huomaamattomasti esillä [2]
Appendix 2. Google Forms user survey

**Do you travel often? (abroad and / or locally)**

- Yes (2 or more times a year): 65.2%
- Not so often (once a year): 26.1%
- No (once in 2-3 years): 8.7%

**Do you often use your smartphone during traveling?**

- Yes: 80.4%
- Occasionally, when in need: 15.2%
- No: 4.4%
What services do you use on your phone while traveling?

- Web search: 32 (69.6%)
- Social media: 29 (63%)
- City guides: 18 (39.1%)
- Maps and navigation: 33 (71.7%)
- Online payment: 13 (28.3%)
- Booking & c.: 20 (43.5%)
- All of the above: 14 (30.4%)
- Other: 5 (10.9%)

What do you use to get information about a place you want to visit?

- Web search: 43 (93.5%)
- TripAdvisor: -22 (47.8%)
- Other apps: 9 (19.6%)
- Friend's advice: 34 (73.9%)
- Other: 4 (8.7%)

Have you ever had no time to check what to visit in a city?

- Yes: 32.6%
- No: 67.4%
Have you ever wasted time deciding what to visit / where to go?
46 responses

- Yes: 54.3%
- No: 45.7%

How do you plan your day trips during traveling?
46 responses

- In advance (search places on the internet, negotiate etc.): 71.7%
- On the go (more spontaneous, decide while traveling): 17.4%
- Sometimes both: 8.7%
- Other: 2.6%

Do you like visiting several places during a travel day? (museums, cafes etc.)
46 responses

- Yes: 56.5%
- No: 37%
- Depends how much time I have / what the weather is: 4.3%
Have you ever planned your day trips on your smartphone?

- Yes: 63%
- No: 37%

Which places would be included to your ideal travel day?

- Sightseeing: 34 (73.9%)
- Food places: 39 (84.8%)
- Nature / parks: 34 (73.9%)
- Entertainment: 15 (32.6%)
- Bars / clubs: 17 (37%)
- Souvenir / gift: 10 (21.7%)
- All of the above: 5 (10.9%)
- Other: 5 (10.9%)

Is having a lunch / food break important to you in your travel day trip?

- Yes, food is life: 5 (10.9%)
- No, I can have snacks with me: 21.7%
- No, I'm on a diet: 5 (10.9%)
- Depends if I'm hungry / it's too hot so I'm just thirsty: 65.2%
- Other: 5 (10.9%)
Would you explore places based on type, budget, time etc.?
46 responses

How do you find directions to multiple places during your travel day?
46 responses

On a scale from not necessary (1) and necessary (5), how important to you is to easily reach every place during your day trip?
46 responses
Appendix 3. Application prototype & video tutorial

PICTURE 25: Interactive prototype link, Potapkina 2017

PICTURE 26: Video tutorial link, Potapkina 2017
Appendix 4. UI design screens
1. Your location
   Square market

2. Fafa’s club
   Oriental food

3. Gösta museum
   Fine arts museum

4. Kluuvi mall
   Shopping center

Museon kartano-osan valmistui vuorineuvos
Gösta Serlachiusen edustuskodiksi vuonna

4. Liberty or Death
   Bar & club

Create name

20.4.17

Amazing tour Helsinki

2 km 15 mins

1. Your location
   Square market

2. Fafa’s club
   Oriental food

3. Gösta museum
   Fine arts museum

4. Kluuvi mall
   Shopping center

5. Liberty or Death
   Bar & club

Tour saved!

You can find it in the menu on
the left “Saved tours”.

24 25 26 27 28 29 30

April

1 2

3 4 5 6 7 8 9

10 11 12 13 14 15 16

17 18 19 20 21 22 23

back  save
Paris, France’s capital, is a major European city and a global center for art, fashion, gastronomy and culture. Its 19th-century cityscape is crisscrossed by wide boulevards and the River Seine. Beyond such landmarks as the Eiffel Tower and the 12th-century, Gothic Notre-Dame cathedral, the city is known for its cafe culture and designer boutiques along the Rue du Faubourg Saint-Honoré.

**DAY 1**

1. **Musée des Beaux Arts**
   Fine collection of paintings
   ![Map](map.png)

**Editor’s pick**

1. **Musée des Beaux Arts**
   Fine collection of paintings
   ![Map](map.png)

2. **Halles St Francis**
   The old marketplace
   ![Map](map.png)