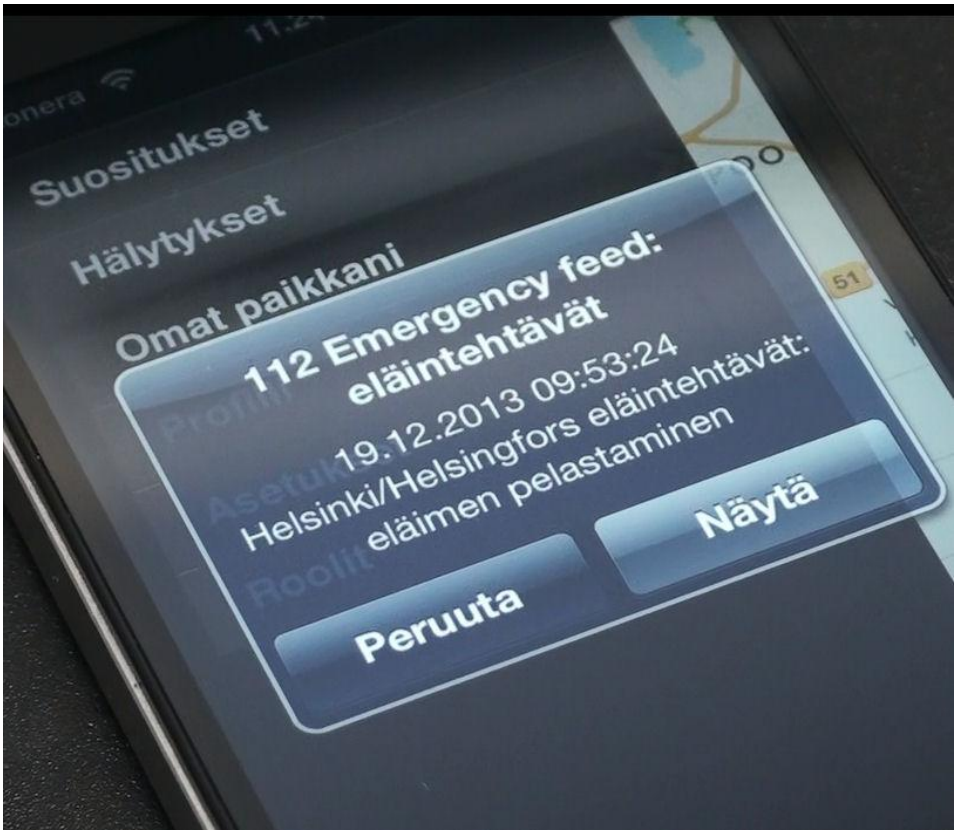

Personal Media Day: Semantic Portable Profiles Prototyping (SP3)

D2.2.2.2

Final prototype and report with user test - Mediatutka mobile application

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Confidentiality: Consortium (until 31.12.2013)

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Johdon yhteenveto

Semantic portable profile prototyping (SP3) – projektissa on kehitetty Mediatutka mobiilisovellus. Se tarjoaa sijaintiin perustuvia automaattisia muistutuksia, hyödyntää semanttisia käyttäjäprofiileja ja tuottaa eri sisältölähteistä yhdistettyjä personoituja suosituksia samaan sovellukseen. Mediatutkasta on tehty kaksi eri versiota. Ensimmäinen käyttäjätesti oli 2012 ja toinen vuoden 2013 lopussa.

Toiseen prototyyppiin kehitettiin uusi käyttöliittymä, lisättiin uutta toiminnallisuutta kuten käyttäjää kiinnostavien omien paikkojen lisääminen, karttanäkymä ja tuki Twitterin ja roolien hyödyntämiseen profiilin muodostamisessa. Metron paikallisuutiset ja 112-hälytykset lisättiin uutena sisältölähteinä aikaisempien sisältölähteiden – Stadi.TV videot, TV ohjelmatiedot skimm.tv palvelun kautta, uudet Helmet kirjaston videot – lisäksi. Tässä raportissa esitellään Mediatutkan toinen prototyyppi ja käyttäjätestin tulokset.

Käyttäjätestin yhteenvetoa:

- Käyttäjät pitivät automaattisista hälytyksistä, kunhan hälytykset ovat relevantteja ja käyttäjä pystyy kontrolloimaan minkä tyyppisiä hälytyksiä he saavat. Käyttäjät suosivat kriittisiä aikasidonnaisia ja relevantteja hälytyksiä, kuten liikenneonnettomuudet ja kodin läheltä tulevat 112-hälytykset.

- Sisältökombinaatio, joka oli tarjolla Mediatutkan käyttäjätesteissä, ei ollut riittävä, jotta se olisi tarjonnut käyttäjille riittävästi positiivisia yllätyksiä tai että se olisi auttanut käyttäjiä heidän jokapäiväisessä elämässään. Käyttäjät haluavat enemmän aika- ja paikkasidonnaista sisältöä.

- Suosituksia tulee parantaa lisäämällä suositusten vaihtelevuutta. Kun suositellaan samassa sovelluksessa sisältöjä useammasta eri sisältölähteestä, tulee kiinnittää erityistä huomiota siihen miten suositukset esitetään ja järjestetään.

- Käyttäjät pitivät roolipohjaisen profiilinmuodostuksen ideasta, mutta enemmän roolivaihtoehtoja pitäisi olla tarjolla. Käyttäjät odottavat suositusten reagoivan välittömästi käyttäjän tekemiin profiilimuutoksiin, roolin valintaan ja sisältöjen peukutuksiin.

Työkaluja ja menetelmiä kehitettiin perustuen visioon siirrettävistä profiileista ja sijaintiin perustuvista proaktiivisista palveluista. Kehitystyön painopiste oli teknologian ja toiminnallisuuksien kehittämisessä, mutta tulevaisuudessa enemmän huomiota tulee kiinnittää käyttökokemuksen parantamiseen ja käyttöliittymän kehittämiseen.

Executive Summary

In the Semantic portable profile prototyping (SP3) task, a mobile application, Mediatutka, was developed. It provides location sensitive push notifications, uses semantic user profiles and provides personalised recommendations with different types of content aggregated into one application. Two different versions of Mediatutka application have been tested in user tests, the first user test in 2012 and the second one at the end of 2013.

The second prototype had a new user interface, added functionalities such as places of interests, map view, support for Twitter, and role based profile creation. Metro local news and 112-alerts were added as new content sources in addition to previous ones – Stadi.TV videos, TV programs through skimm.tv, new videos from Helmet library service. This document presents the second prototype of Mediatutka and findings from the second user test.

Conclusions from the user test:

- Users liked the push notification feature when the alerts are relevant and the users can control the types of alerts they will receive. Critical time-sensitive notifications and relevant alerts, such as traffic accidents or 112-alerts near home, were preferred.

- The content combination available in the Mediatutka user tests was not enough for creating positive surprises or to be useful and helpful in the everyday life of the users. Users would have liked to have more time- and place-sensitive content.

- Recommendations should be improved by adding more variation. When integrating several different content sources into one application, special attention should be paid to how the recommendations are shown and arranged.

- Users liked the idea of role based profile creation, but more roles should be available. Users expected an immediate response in the recommendations after they had made changes in their profiles, selected roles or when they had given a thumb up or down to an item.

Tools and methods were developed building on the visionary approach of portable user-controlled profiles and location sensitive proactive services. The focus of the development work was in the development of the technology and functionality, but if the future, more emphasis needs to be put to improving the user experience and designing more appealing user interfaces.

Table of Contents

1 Table of Tables

2 Table of Figures

3 List of Acronyms and Abbreviations

SP3	Semantic portable profile prototyping
iOS	Mobile operating system developed by Apple Inc.
PhoneGap	Mobile development framework
Rabbit MQ	Asynchronous messaging server
UIID	Unique Installation Identifier

4 Introduction

The Semantic portable profile prototyping (SP3) task was based on two visions: the vision of accurate, value-added proactive services according to user specific needs, and the vision of portable, user-controllable profiles: the user is able to create and maintain his or her profile in one place and use it in multiple services and to control what to share from the profile. Rich user profiles and context models are the basis for creating accurate, proactive services.

In SP3 task, we have developed Mediatutka, a mobile application, which combines different content types and recommendation methods and provides location-sensitive alerts in near real-time.

The first Mediatutka prototype was developed in 2012. The user test results were reported in deliverable D2.3.2.3 “Results of the prototyping – Mediatutka application”.

The goal of the project in 2013 was to develop improved support for proactive services, to add new content sources and to develop semantic analysis methods for creating rich user profiles from social media sources such as Twitter. The second version of Mediatutka application was developed.

The user interface was recoded as native Apple implementation, because the earlier PhoneGap based implementation had Javascript engine inefficiencies. Following changes and new features that were made to the second version of Mediatutka application:

- Users are able to add their own places including the date and time when they will be in a specific place.
- Map view, showing items on the map based on their location.
- Metro local news and 112-alerts were added as new content sources in addition to previous ones – Stadi.TV videos, TV programs through skimm.tv, new videos from Helmet library service.
- Opportunity to add Twitter account, which was used for creating the user profile
- Defining the profile with the help of predefined roles: hipster, stay at home mom, biker, motorist and wannabe master chef.

In the first user test, users particularly liked the push notification feature. The main focus of the second version was in developing the location sensitive alerts.

In the first user test, we got also a lot of feedback relating to the user interface and how the presentation of the recommendations and content should be improved. Several mock-ups were developed for visualising recommendations combining content from various sources, but they were not implemented. We understood the importance of these features for creating a good user experience, but had no

resources to implement and test these new ideas for user interface. The mock-ups can be taken into account and utilised when developing a commercial service.

This deliverable describes the functionality of the final prototype and the results of the user tests.

5 Mediatutka mobile application

Mediatutka mobile application is targeted for iPhone devices with iOS version of 5.1 or higher, and it is optimized for iOS 7 devices. The application uses location services, social media, user-saved data and push notifications to offer meaningful content to the end user.

Mediatutka aggregates different types of content into one application. Current content sources are TV guide provided by skimm.tv, Stadi.TV videos, latest videos in Helmet library, news from Metro and 112-alerts.

Mediatutka has two central tasks. The first one is to harvest user-related data and deliver this information to the server software. The second task is to request calculated data from the server applications and show the received content to the end users.

The SP3 architecture contains technology building blocks such as location tracking, recommendation engines, profile creation, as well as management and content metadata enrichment from different companies and the research partner. These are integrated using an asynchronous RabbitMQ (http://www.rabbitmq.com/) messaging server, which is installed in the Amazon Cloud. The SP3 architecture and its components are explained more detailed in the deliverable D2.3.2.3 “Results of the prototyping”, which describes the results of the first prototype of the Mediatutka application.

The main page of Mediatutka and recommendation view can be seen in Figure 1. Recommendation examples of Stadi.TV and Helmet videos can be seen in Figure 2 and Figure 3.

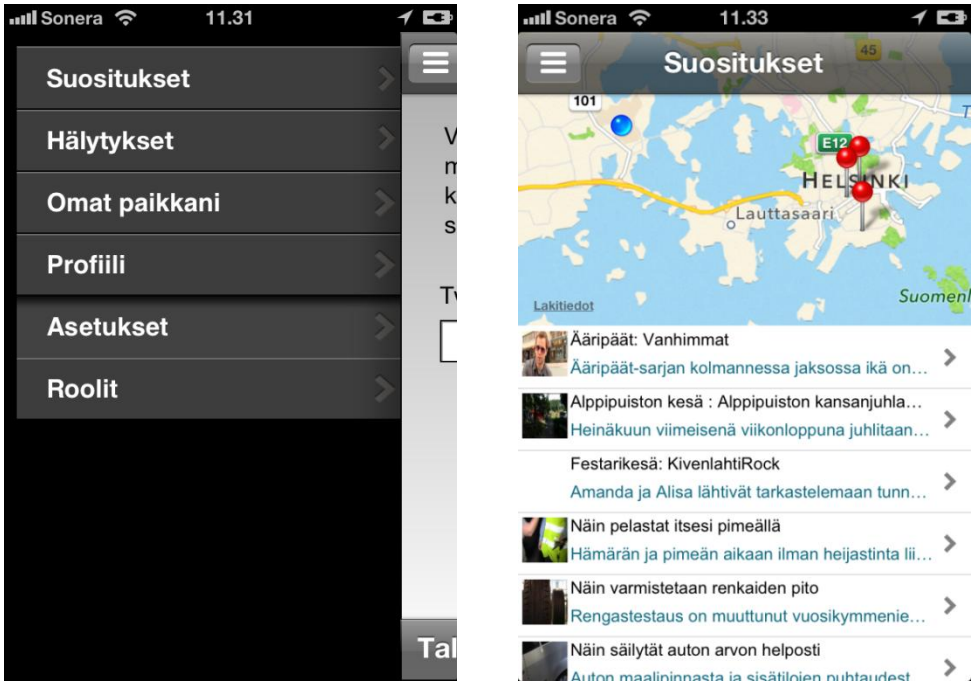


Figure 1 Mediatutka's main page includes functionalities such as Recommendations, Alerts, My places, Profile, Settings and Roles. The screen shot on the left shows the recommendation view. The recommended items are visualised on the map if location info is available.

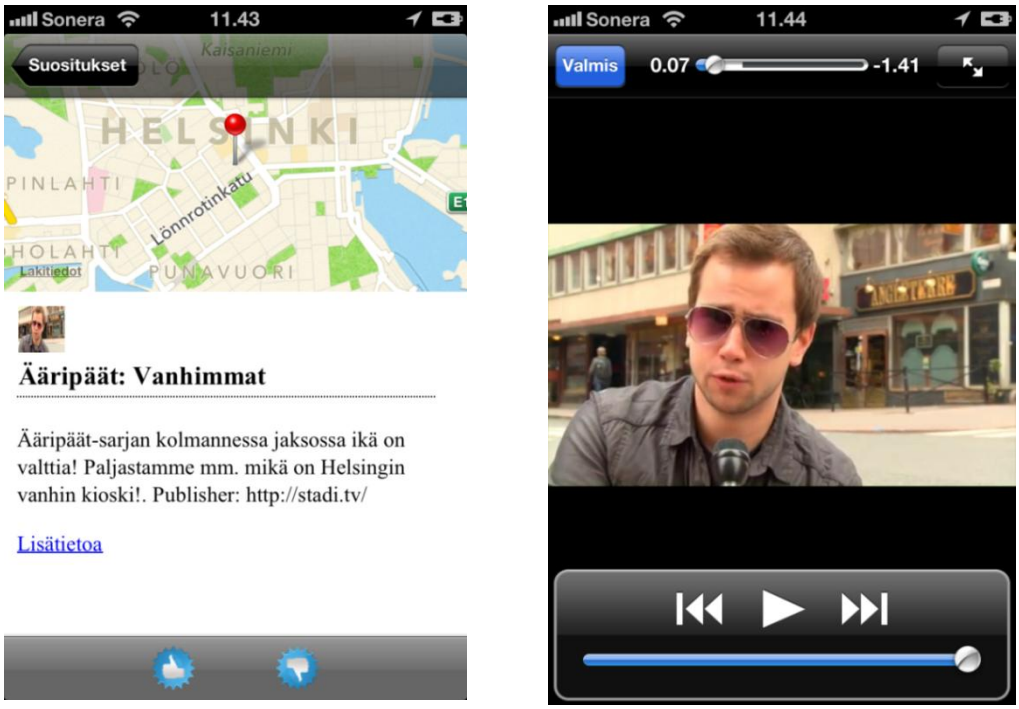


Figure 2 An example of a Stadi.TV video recommendation. The videos can be watched online in the mobile.

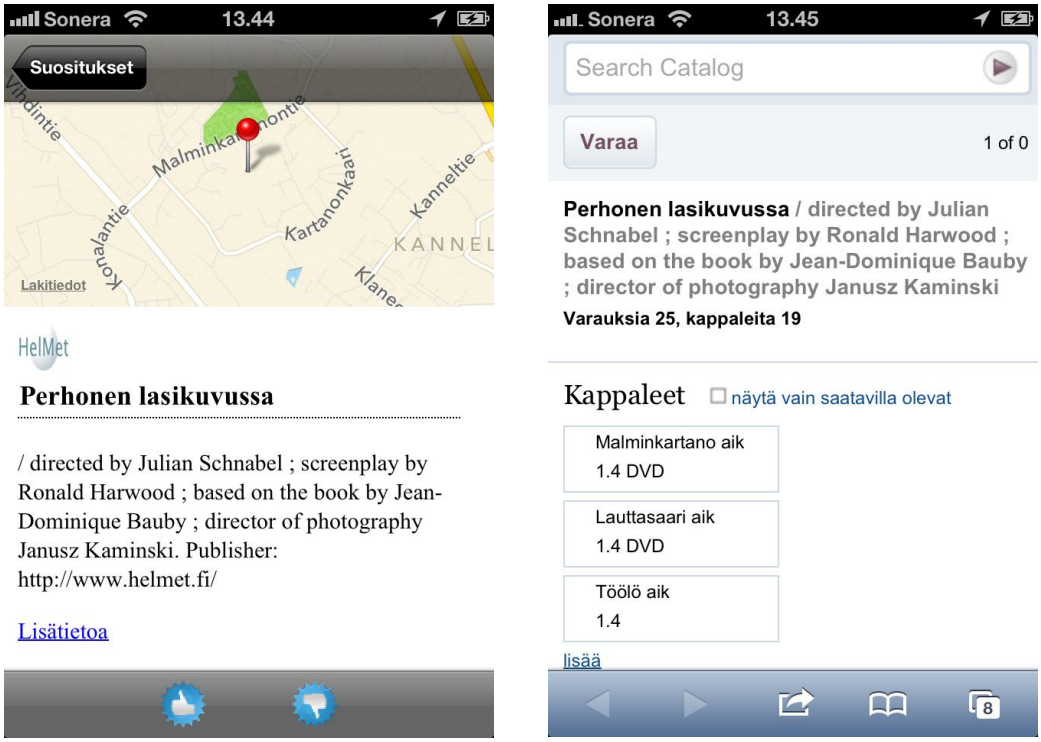


Figure 3 An example of a Helmet video recommendation. The location of the library from where the video can be borrowed, is shown on the map. The screen on the right shows detailed information of the availability of the video.

On the application startup, Mediatutka requires that the user logs in with his or her Facebook account and gives the application reading rights to the Facebook profile. Automatic semantic analysis is done to the user's interests, likes and other data and the result is shown on the profile page. There is also an option for saving a Twitter screen name and this information is used to enrich the user profiles. Twitter analysis analyses user's own profile description and those of the persons who the user is following and the results are added to the user profile. See example screenshots of the profile page and adding Twitter account information in Figure 4.

Content is recommended to the user based on the analysed Facebook interests and Twitter account information. If no personalised recommendations are available, some general recommendations are shown to the user. The mobile app is also able to show some recent content while waiting for the recommendation calculation to finish on the server. Another way to influence on the personalised recommendations and alerts is to add coordinates of places that are important to the user (See Figure 5).

Figure 4 The profile page includes interests analysed from the user's Facebook account and also from a Twitter account if the user has given a Twitter screen name.

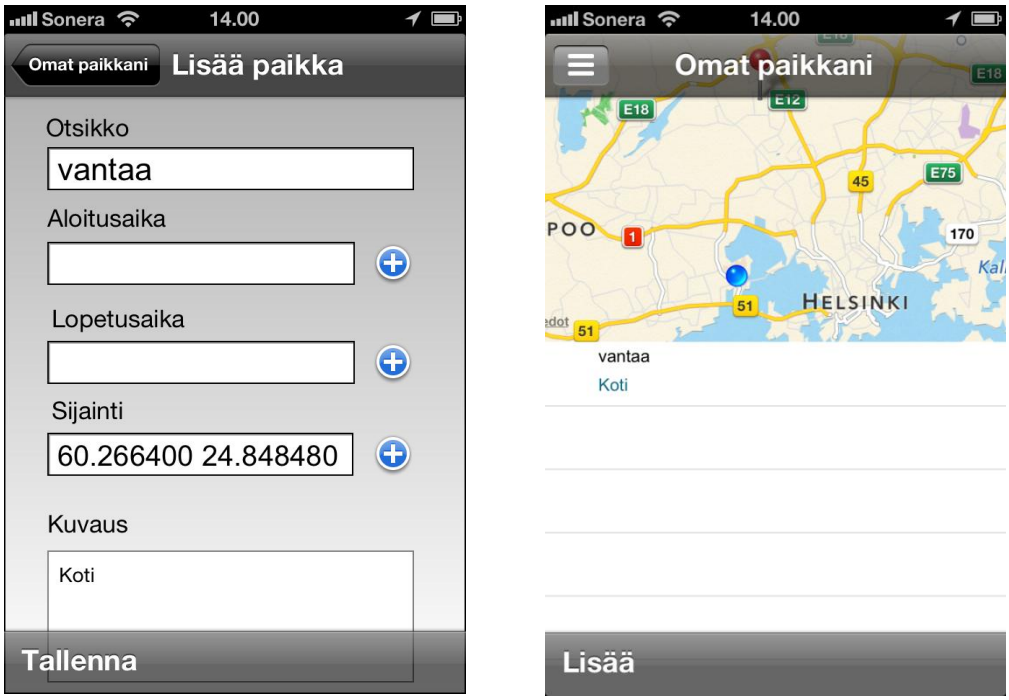


Figure 5 Adding places that are important to the user. The 'Add place view' includes title, starting and ending time, place coordinates and description fields. The added places are shown on the map on "My places" view.

End users can also activate different roles from a fixed list if they feel that the pre-made roles are relevant to them (See Figure 6). Related interests are semantically defined for each role and these definitions are used in generating recommendations once the user has activated one or several roles.

Pre-made roles to activate are:

1. Hipster
2. Stay at home mom
3. Biker
4. Motorist
5. Wannabe master chef

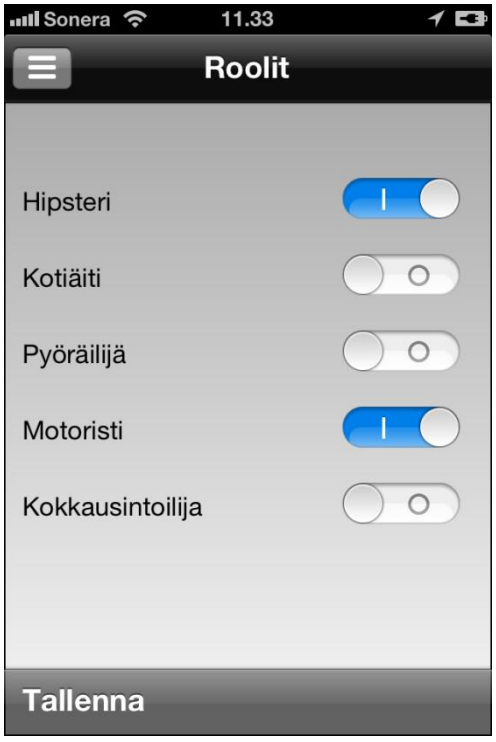


Figure 6 The user can activate different roles such as hipster, stay at home mom, biker, motorist, and wannabe master chef.

Location sending is an important part of Mediatutka's tasks for harvesting user-related data. The application keeps track of device location and it is on also when the application is in the passive state. Location sending switches off when the application is shut down.

Push notifications are used to show those very important pieces of data that the server system has identified for each user. Push notifications contain alerts and recommendations that might be relevant based on the user's current location or the saved locations. Mediatutka receives push notifications related to user location both when the application is in active and passive state. If the software is switched

off, push notifications based on the user saved places can still be received. An example of the alerts can be seen in Figure 7.

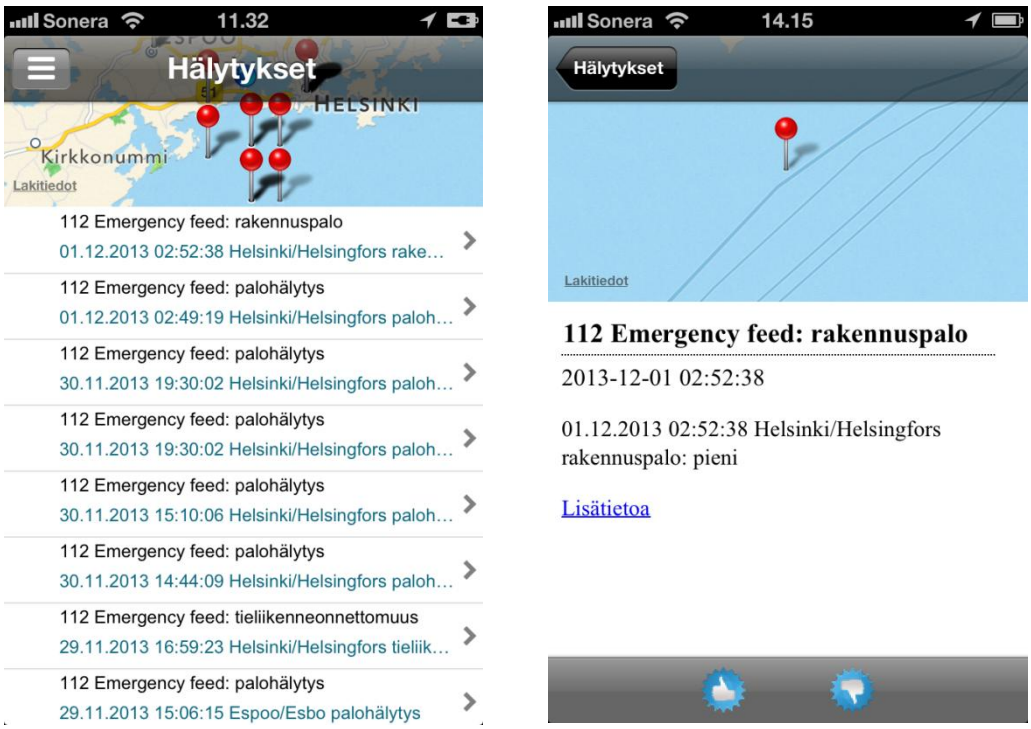


Figure 7 Alerts based on the user location.

6 User Testing

6.1.1 Methods

The user test period was 10 days long from 2.12.2013 until 12.12.2013.

The requirements for the participants were that they have an Apple iPhone device (4, 4S or 5), a Facebook account and that they live or work in the Helsinki Metropolitan area. Two movie tickets were promised to the testers after testing the application.

To find test users, a recruitment letter was published in Forum Virium Helsinki, Helmet, Stadi.TV, Hesarin devaajapooli, Kirjasto10 and VTT intranet sites. Also Facebook was used as a recruitment channel. 11 users signed on as test users. 9 of them downloaded the test application during the test period, and 4 gave feedback using the web questionnaire.

TestFlight (https://testflightapp.com/) was used to deliver the mobile Mediatutka application to the test users. This process required several steps. First users' email addresses were added to TestFlight. Then an invitation to install the TestFlight

application was sent to the test users. UIIDs of the users' phones needed to be collected and added to the Mediatutka ClientAPP. After that, a message was send to the test users asking them to install the Mediatutka ClientAPP. After the installation, they were finally able to start to use the application. Some of the test users had participated also in the first Mediatutka user test in 2012, and they only needed to install the latest version of the Mediatutka app before starting to use it.

Users got the instructions by email and more instructions were sent if we noticed that something had not become clear to the users. Also frequently asked questions with answers were sent to the users to ease the use of application. Users where asked to use the Mediatutka application at least three times, in at least three different locations and one whole day without switching it off before answering the final questionnaire. The test users were also asked to add their own places to the app, and to switch on one or some of the pre-made roles best matching their interests.

6.1.2 Results

The final step of the user test was to answer our questionnaire. Four test users completed the questionnaire. Since the number of the respondents to the questionnaire was small, the responses give us some information of what kind of experiences and ideas individual users got out of using the Mediatutka application, but we cannot make any statistical conclusions of the results. The user test feedback questions were to most part the same as in the first test.

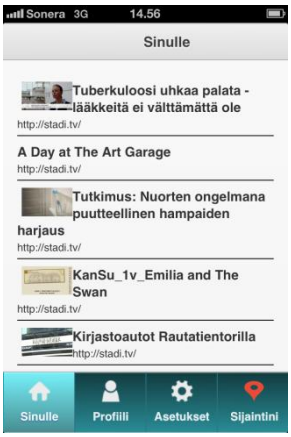
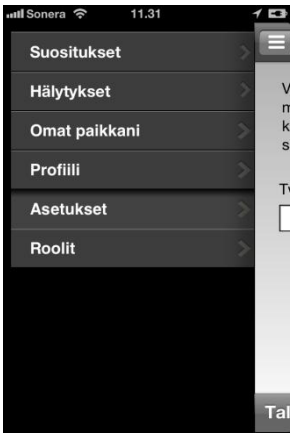
The first part of the questionnaire dealt with the test users' background information and their history and habits with iPhone. The four test users were all women, aged between 26 and 45 years. Three of them lived in Helsinki and the fourth one in Espoo. All test users had had an IPhone between one and two years. All test users use apps several times a day. The habits of closing the used apps varied: one user closes them every day, one once a week, one once a month and one seldom or never. The number of apps that users had in their phones varied between users: one user had 0-15 apps, one user 16-30 apps, and two had over 40 apps in their phone. All test users reported that less than half of their apps had required a payment. Three test users participated also the earlier Mediatutka user test.

The questionnaire consisted of claims that the users were asked to rate on a five step scale: totally agree (2), partly agree (1), do not agree or disagree (0), partly disagree (-1), totally disagree (-2). Additionally, the users were given the opportunity to give free text answers on questions relating to what they liked and did not like in the application, how they experienced the given alerts and recommendations, and what kind of content or features they would like to see in the application so that it would serve them better. We also asked them in what kind of situations or for what kind of users they would recommend the application, and which existing app is closest to this one in their opinion.

The claims relating to the user experience and the averages of the answers in the first and second user test can be seen in Table 1. Although the number of users in

the second test is low, it is clear that the user interface needs to be improved for an actual commercial service. When comparing the results of the first and second user tests we can see that the user ratings were not improved. Based on the free comments and discussions, we could see that there had been some problems with the app. One user had had problems with adding own places and defining roles. The lack of matching recommendations or recommending old items were other reasons for irritation mentioned in the questionnaire. In the second prototype, there was more functionality than in the first prototype. This may be the reason why some users had felt lost when using the app and reducing the ease of use when compared to the first prototype. Most respondents did not like the look of the app. The users' responds to the claim "The app was quick to use" had improved slightly from the first prototype. The main focus of the development work was in the development of the technology and functionality, so in the future, before taking the service to the market, more emphasis should be put for improving the user experience and for designing a more appealing user interface.

Table 1. The claims relating to the user experience and the averages of user given answers in the first and second user test.

The claim in the questionnaire scale (2,1, 0,-1-2)	Average in the first user test (N=17) 	Average in the second user test (N=4) 
The app was easy to use	0,24	-0,25
The app was quick to use	-0,75	-0,25
The app was useful to me	-1,06	-1,25
The app offer positive surprises	-0,18	-0,5
I felt lost when I used the app	-0,35	-1,00
It was easy to familiarise with the	0,18	-1,00

recommendations		
I could pay for the app	-1,65	-2,00
I liked how the app looked	-0,71	-1,25

Push notifications and recommendations

None of the test users felt that they got too many push notifications: three users felt that they were receiving proper amount of push notifications, whereas one user had not got any push notifications. One user was happy to receive automatic recommendations based on time, location and/or profile, two users were not and one user could not say.

Answers to the question what kind of alerts a user would prefer / not prefer to get were the following:

- Topics that I can choose myself.
- Really important alerts such as traffic accidents, not media content that is not time sensitive or relevant.
- I do not want automatic alerts, because it quickly empties the battery of the mobile phone. I have so many apps, that I want to choose myself when I browse the information.
- Not entertaining news such as news from Iltasanomat or Iltalehti. I could take domestic or city news. Also news from the neighbourhood could be interesting. Or alerts of event tickets: when they come to sale and information from where the tickets can be bought.

The end users were asked how they experienced the alerts and recommendations of different content types.

112 alerts were sometimes experienced even unpleasant or frightening. The need was to know more detailed information, what kind of alert it is, and how close it really is to the place that is important to the user.

”Ehkä jopa vähän epämiellyttävänä. En välttämättä halua tietää kaikkea mitä tapahtuu.”

”Hämmentävänä, sain vain otsikkotason tiedon (Tulipalo, Helsinki) tämä ei kerro juuri mitään- enemmänkin pelottaa- onko tulipalo rakennuksessani vai jossain päin helsinkiä :)”

However, 112-alerts were specially mentioned when users were asked to tell an example situation, where they could benefit from alerts. In these cases, alerts should be accurately defined and for specific situations such as traffic alerts.

”Jos 112 hälytykset olisivat tarkempia- esim. asuntopalo Kampissa-tällöin kiinnostus heräisi.”

”Jos olisin matkalla jonnekin ja jonkun 112-hälytyksen voisi olettaa aiheuttavan ongelmia liikenteessä matkan varrella.”

”Jos liikkuisin autolla ja pitäisi tietää onnettomuuksista / liikenne-esteistä jossain päin kaupunkia.”

In the case of Helmet videos alerts were made by evaluating user’s distance against the libraries where the recommended DVD is available. If a nearby library is found, the user is notified that the recommended item can be fetched from that specific library. This use case was not so clear to the users and they were a bit confused why some libraries were shown on the map and some were not.

”Haagassa mediatutka näyttää kartalla monta punaista nuppineulaa. Sain zoomata todella paljon, ennen kuin selvisi, että ne esittävät kirjastoja. Sitä en keksinyt, millä perusteella kirjastot karttaan valikoituivat. Esim. Pohjois-Haagan kirjastoa ei kartalla ollut lainkaan, vaikka se olisi ollut lähin – ei myöskään Etelä-Haagan tai Kannelmäen kirjastoa (Malminkartano kyllä).”

”Mediatutka näytti suosituksina vain kirjaston tuotteita - ja ainakin ensimmäiset niistä ovat teoksia, joista on tolkuttomasti varauksia (esim. 28 per 1 kpl) – En keksinyt, millä perusteella teoksia suositeltiin, ellei sitten varausmäärien perusteella. – Roolien muuttaminen ei muuttanut kirjaston tuotteiden suosituksia. - Mellunmäessä tuli kirjastosta sellaisiakin suosituksia, jotka olivat saatavana. En keksinyt, millä perusteella ne valikoituivat.”

Sometimes there were too many and too irrelevant Helmet alerts. One user liked the Helmet recommendations but would like to get recommendations also from books instead of videos.

”En kaipaa hälytyksiä aiheesta. Miksi minulle suositeltiin ihan älyttömästi venäläisiä elokuvia vai tuntuiko vaan siltä?”

”Niitä oli ainakin runsaasti. En kuitenkaan tämän kautta varannut / lainannut mitään teosta vielä. Mutta voisin kyllä harkita käyttäväni tätä, varsinkin kun sovellus näyttää samantien varaustilanteen ja sovelluksen kautta voi varata ko. aineiston. Tämä tuntui hyvältä vaihtoehdolta!”

”*Tosin videoita mieluummin ottaisin kirjasuosituksia ja mahdollisuuden varata kirjat suoraan sovelluksen kautta.*”

The users did not get any alerts from Stadi.TV or Metro content.

Stadi.TV recommendations were criticised for being too old, and watching the video requiring too many clicks. One user said that she rather looks images or listens to music than watch videos on an iPhone.

”Huonoina, koska kaikki suositukset olivat parin kolmen vuoden takaa. – Oli vähän vaivalloista hakea jutut kahden täppäyksen takaa (ensin laajempi näkymä, sitten linkistä nettiin) - Hälytyksiä en saanut ainuttakaan.”

”Katson ylipäänsä tosi harvoin iphonella videoita, koska en oikein jaksa nyt näyttö on niin pieni. Kuuntelen mieluummin musiikkia ja katson valokuvia. Joten en oikein jaksanut ikinä klikata videoita auki ja katsoa niitä loppuun.”

There were very few Metro and skimmtv recommendations. Stadi.TV and Helmet recommendations dominated the top 20 recommendations. This is the problem of showing all recommendations only in one list and not giving a user ability to view recommendations also based on content types or content sources. This needs to be taken well into account in further development and when integrating several content sources into one application.

Profile creation and recommendations

Users had different ways to affect their alerts and recommendations. They could indicate liking or not liking the recommended item by using the thumb up/down feature, they were able to select pre-made roles, such as hipster or wanna be master chef, they could add a Twitter account to be used as a source for the profile and they could add their own places. These features were not used much by the users: only two of them had used the thumb up / thumb down feature, only one user had added her places, and none had added a Twitter account. When asked whether they noticed any changes in recommendations after any of these interactions they did not notice any significant changes in recommendations or they could not say whether there were changes or not. However, the users’ interaction activity with the system was so low that their evaluation is not totally reliable.

Users liked the role based profile creation idea, and they experienced it as a fun way to create a profile. However, there should be more roles available and the effect of roles for recommendations and alerts should be clearer. Users wished roles relating to exercise, culture and music.

”Olisi ihan ok, jos sillä olisi joku havaittava vaikutus. Mä en huomannut sellaista.”

”Ideana hyvä, jos toimisi.”

”Ihan hauska tapa. Rooleja pitäisi saada vain muokata itse vielä enemmän. En kokenut meneväni mihinkään kategoriaan.”

Feedback about the Mediatutka

Users were asked what they liked about the application, and in what kind of situations the application was the most useful to them, or what delighted most about the app. The users felt that application was too incomplete to delight or benefit them at this development stage. Technical difficulties, too small size of the map, too many Helmet recommendations, too old Stadi.TV recommendations and the app draining the battery quickly were the things that irritated users.

When asked how the app should be changed or what content should be added so that it would serve them better, the users hoped more event and news content, and

less content that is not related to time and place. One user would have liked to get book recommendations.

”Lisää esim. tapahtumatietoa. Kirjat ja videot ei henk. koht tasolla motivoi-toki joillekin varmasti toimivat.”

”Enemmän uutissisältöä, vähemmän epärelevanttia aika- ja paikkariippumatonta matskua.”

”*Sovelluksesta pitäisi tehdä toimiva ja sen pitäisi tarjota ajankohtaista tietoa.*”

”*Itse toivoisin kirjasuosituksia ja ajankohtaisempaa tietoa.*”

The type of content is very central in this kind of an app, which is reflected in the users’ answers to the question of who they recommend this service to: they would recommend it to people who use a lot of library services and for people who watch a lot of videos. The primary situation where to use this app was public transportation. Tässä.fi and sanom.at are the existing services that were mentioned to be closest to the Mediatutka. Recommendations and alerts did not match well to the users’ needs and none of the users would be willing to pay for the app in its current state.

7 Conclusions

In SP3, a state-of-the art Mediatutka service was developed. It provides location sensitive proactive services, uses semantic user profiles and provides personalised recommendations with different types of content aggregated in one application. Two different versions of Mediatutka application have been tested in user tests, first one in 2012 and the second one at the end of 2013. In this conclusions section, we combine the results of the two user tests to give comprehensive guidance to future development.

Users liked the push notification feature when the alerts are relevant and the users can control what type of alerts they will receive. Location sensitivity of push notifications is based on near real time location tracking of the user, as well as on the user defined important places such as home, summer cottage and the school of the children. Alerts are sent inside 2 km radius of a user’s location and also time and user’s interests are taken account. Critical time-sensitive notifications and relevant alerts, such as traffic accidents or 112-alerts near home, were preferred. These alerts should contain enough information about the type of the alert. Location sensitive push notifications drains the battery of the phone fairly quickly affecting the usability and this should be taken account in further development.

In the second user test, new content sources, 112 alerts and Metro news, were added in addition to the previous ones, Stadi.TV videos, videos from Helmet library and TV program information. This content combination was not enough for creating positive surprises or to be useful and helpful to the users. Users would have liked to have more time and place sensitive content. For example alerts from tickets of events and when they come to sale was considered useful. Content suggestions from users included also events, exhibitions, music, close-by services,

news articles, local history, local sights, literature, art, weather, offers and route information. Test users in both tests mentioned the use in public transport as the primarily situation where to use this app.

In both Mediatutka prototypes, recommendations and alerts were shown as a single list showing the top 20 recommendations. Map based visualisation for alerts and recommendations were implemented to the second prototype. When integrating several different content sources to one application, special attention should be paid to how the recommendations are shown and arranged. With this limited view, and depending of the user profile, some content source may dominate the recommendation list, and users were never able to see other type of content recommendations. Recommendations should be improved by adding more variation. It would be good to give users the ability to browse recommendations also based on content types or content sources. This needs to be taken account better in future development.

Different ways of creating the profile were tested. Facebook information was used as basis for profile creation. In the first user, test users were able to manually insert and modify their interests. In the second user test, they were able to select pre-made roles, such as hipster and wannabe master chef, and to add Twitter screen name to be used in the profile creation. Users liked the idea of role based profile creation, but more roles should be available. Users expect an immediate response in the recommendations after they have made changes in their profiles, selected roles or when they have given a thumb up or down to an item. This is important to keep in mind in further development.

Recommendations accuracy should be improved. There are several things affecting to the accuracy of recommendations with the opportunity for improvement: the quality and availability of the profile and content metadata, the quality of the automatic enrichment of this metadata and the functionality of the recommendation algorithms for selecting the items to be recommended. In these tests, it was also likely that there was not enough content that would have matched the interests of the users. In the first user test, users also wanted to know why some items were recommended just for them, and how their profile influenced the recommendations. Recommendations were regarded beneficial when a lot of digital content is available.

The focus of the development work has so far been more in the development of the technology and functionality, but when the concept will be developed further more emphasis needs to be put for improving the user experience and for designing more appealing user interfaces.

Tools and methods were developed building on the visionary approach of portable user-controlled profiles and location sensitive proactive services. The goal is to develop user-centric personalized services that help users in their everyday life. The goal is to move from information searching to ”information finds me” approach and to create value-added, problem solving proactive services from which consumers are willing to pay.