

Semitag - Requierements Document

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08/03/2011



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The goal of this project is to put in practice the User Centered Design method for designing interactive computer applications.

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1. Reason and Motivation

Grenoble has a really extensive and rather complex public transportation network, in which it is not always easy to find out how to get to a specific place.

The company running the network, SEMITAG, provides several online services that allow users to either check the time tables for all the lines, check the map of the network, or even to search for itineraries. The latter feature, even though very convenient, is plagued by many problems that make it quite frustrating to use.

We thought that it would be interesting to find a way to re-implement the existing system so as to improve it on an ergonomic as well as functional level, and hence make its use more efficient and enjoyable.

2. Analysis of the existing system:

Before going any further in the requirements analysis, it is necessary to first take a look at the existing system.

The itinerary function is available either from <http://www.semitag.fr> through the “Accéder à mes services en ligne” link on the main page and then “Calculateur d’itinéraires” on the ensuing screen; or directly from <http://www.sedeplacer-tag.fr/>, and then a click on “Calculateur d’itinéraires” from the top menu.

This leads to the start screen of the itinerary search function as can be seen on Figure 4.

The first thing that comes to mind is of course the fact that the colours used completely mismatch the colour palette of the rest of the website. Furthermore, the way the user interacts with this function is completely distinct from the way the rest of the website is operated. Additionally it is very poorly integrated, as it is a generic software package developed by a third party company.

When it comes to the function itself: in the top part of the page, the user can select the date of the itinerary, as well as either the departure or arrival times. Additionally on the bottom half of the page, the user has to select the start point for the itinerary. Three possibilities are offered to the user: From a stop, from an address, from a public place, or from a city.

If the user so wishes, it is also possible to select the start point from the map, however it looks somewhat unattractive, and is really quite behind in terms of usability in comparison to more modern map services such as Google maps for example, as can be observed in Figure 1.

Let us first look at the selection by Address: a click on the address button leads to the screen in Figure 2. This screen only contains a single text field for typing the address (without any indicator of correctness) and then a drop menu for all the available cities. If ever the user inputs an invalid or unknown address, the system simply lists all the possible stops in the city, which as shown in Figure 3, can be insanely long...

Now let us look at the search by Station. The screen (Figure 7) only contains a text field where the name of the stop has to be typed, and provides no indications or suggestions as to the correctness of the input. Would the user have the bad fortune to type a wrong name, the system simply returns an error message (Figure 8) after which it is impossible to even go back (postdata...) to the previous screen.

Then it is possible to select a town as a departure point, for which the screen can be seen in Figure 6. Whenever the user selects a town and presses ok, a list of all possible stations of the city pops out, which of course is absolutely appalling in terms of usability.

Lastly, it is possible to do an itinerary search starting from a Public place from the screen in Figure 9. There are two possibilities here; either directly typing the name of the public place or selecting a category of public place.

For the search by name, if the typed public place name is found (very simplistic match, does not take into account typos and other common error) then the departure place selection is complete, otherwise the system falls back on the selection by category (Figure 10). When the user selects a category, on the next screen, all the public places of the selected type are presented in a dropdown menu (Figure 11)...

For the search by category (Figure 12), once a category is selected, similarly to before, a list of all public places of that type is displayed on the next screen, where the user has to pick one.

Once the selection of the start location has been selected, the process is repeated once again for the selection of the destination location.

When both start and destination locations have been selected, the system displays the first available itinerary as can be seen in Figure 14. If there is no such itinerary, the system only displays an error message without any further indications (Figure 13).



Figure 1 : The map selection dialog

Figure 4 : The start screen of the itinerary search function



Figure 2 : Itinerary search by address

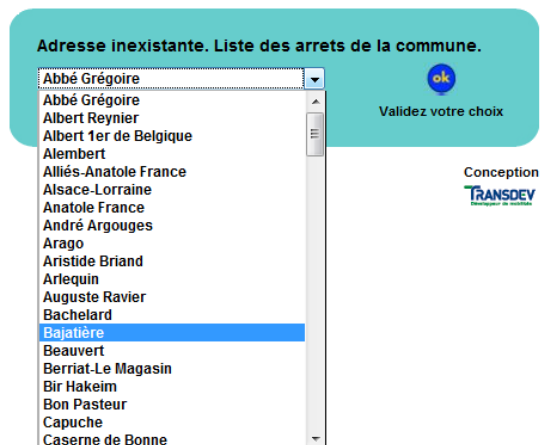


Figure 3 : Address search error

Recherche d' ITINÉRAIRE

DÉPART le 16 février
jour mois

☒ Heure de DÉPART souhaitée 14 28
heure minute

ou ☐ Heure d' ARRIVÉE souhaitée

Recherche par nom de L'ARRÊT

Saisissez un NOM D'ARRÊT :

Victor Hugo

ok

Validez votre choix

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Figure 7 : Itinerary search by station

Recherche d' ITINÉRAIRE

DÉPART le 16 février
jour mois

☒ Heure de DÉPART souhaitée 14 28
heure minute

ou ☐ Heure d' ARRIVÉE souhaitée

Arrêt inexistant.

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Figure 8: Station not found

Recherche d' ITINÉRAIRE

Vous avez demandé un Départ le mercredi 16 février 2011 à 14h28
Arrêt de départ : Victor Hugo GRENOBLE

Recherche par COMMUNE

Choisissez une NOM DE COMMUNE :

GRENOBLE
ÉCHIROLLES
EYBENS
FONTAINE
FONTANIL-CORNILLON
GIÈRES
GRENOBLE
LE GUA
LUMBIN
MEYLAN
MURIANETTE
NOYAREY
POISAT
LE PONT-DE-CLAIX
SAINT-ÉGRÈVE
SAINT-MARTIN-D'HÈRES
SAINT-MARTIN-LE-VINOUX
MONTBONNOT
SAINT-PAUL-DE-VARCES
SASSENAGE
SEYSSINET-PARISSET

ok

Validez votre choix

Conception
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Figure 6 : Itinerary search by town

Recherche d' ITINÉRAIRE

Vous avez demandé un Départ le mercredi 16 février 2011 à 14h28
Arrêt de départ : Victor Hugo GRENOBLE

Vous avez choisi la COMMUNE de :
GRENOBLE

Choisissez un NOM D'ARRÊT :

Abbé Grégoire
Abbé Grégoire
Albert Reynier
Albert 1er de Belgique
Alembert
Alliés-Anatole France
Alsace-Lorraine
Anatole France
André Argouges
Arago
Aristide Briand
Arlequin
Auguste Ravier
Bachelard
Bajatière
Beauvert
Berriat-Le Magasin
Bir Hakeim
Bon Pasteur
Capuche
Casernes de Bonne

ok

Validez votre choix

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Figure 5 : All the stops in the selected town

Recherche d' ITINÉRAIRE

DÉPART le 16 jour Février mois

☐ Heure de DÉPART souhaitée 14 heure 28 minute

ou

☐ Heure d' ARRIVÉE souhaitée

Saisissez un LIEU PUBLIC :

Victor

ok

Validez votre choix

OU

Recherchez un LIEU PUBLIC par rubrique :

enseignement administration culte déplacement enseignement entreprises santé sport et loisir

ok

Validez votre choix

Conception
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Figure 9 : Itinerary search by Public Place

Recherche d' ITINÉRAIRE

DÉPART le 16 jour Février mois

☐ Heure de DÉPART souhaitée 14 heure 28 minute

ou

☐ Heure d' ARRIVÉE souhaitée

Lieu public inexistant.
Recherchez un LIEU PUBLIC par rubrique :

administration

ok

Validez votre choix

Conception
TRANSDEV

Figure 10 : Public place not found

Recherche d' ITINÉRAIRE

DÉPART le 16 jour Février mois

☐ Heure de DÉPART souhaitée 14 heure 28 minute

ou

☐ Heure d' ARRIVÉE souhaitée

Recherche par un LIEU PUBLIC

Faites un choix par RUBRIQUE :

autres autres mairie police social

ok

Validez votre choix

Conception
TRANSDEV

Figure 12 : Public place search by category

Recherche d' ITINÉRAIRE

DÉPART le 16 jour Février mois

☐ Heure de DÉPART souhaitée 14 heure 28 minute

ou

☐ Heure d' ARRIVÉE souhaitée

Recherche par un LIEU PUBLIC

Plusieurs réponses possibles :

Mairie ANNEXE BERRIAT
Mairie ANNEXE GRENOBLE
Mairie ANNEXE GRENOBLE
Mairie DE BRESSON
Mairie DE CLAIX
Mairie DE CORENC
Mairie DE DOMÈNE
Mairie DE EYBENS
Mairie DE FONTAINE
Mairie DE FONTANIL-CORNILLON
Mairie DE GIÈRES
Mairie DE GRENOBLE
Mairie DE LA TRONCHE
Mairie DE MEYLAN
Mairie DE VARCES-ALLIÈRES-ET-RISSET
Mairie D'ÉCHIROLLES
Mairie MURIANETTE
Mairie NOYAREY
Mairie POISAT
Mairie PONT-DE-CLAIX
Mairie SAINT-ÉGRÈVE

ok

Validez votre choix

Conception
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Figure 11 : List of stations in a category

du lundi 13 décembre 2010 au dimanche 27 février 2011.

Horaires ne prenant pas en compte les éventuelles perturbations.

Votre ITINÉRAIRE imprimer

Vous partez de :
14 Rue DE BELLEDONNE GRENOBLE
le mercredi 16 février 2011 à : 14h16

Rendez-vous à l'arrêt :
Vallier-Jaurès Boulevard Joseph Vallier GRENOBLE

Montez à l'arrêt : VALLIER-JAURÈS 1
Boulevard Joseph Vallier GRENOBLE à : 14h22

Prenez la ligne : C GIERES Condillac-Universités / SEYSSINS Le Prisme
en direction de SAINT-MARTIN-D'HERES Condillac-Universités

Descendez à l'arrêt : CHAVANT 1 à : 14h27

Correspondance

Montez à l'arrêt : CHAVANT 1 à : 14h36

Prenez la ligne : A ÉCHIROLLES Denis Papin / FONTAINE La Poya
en direction de Denis Papin

Descendez à l'arrêt : MC2-MAISON DE LA CULTURE à : 14h40

Vous arrivez à :
Passage DU CONSERVATOIRE GRENOBLE autour de : 14h46
temps de trajet estimé à 18 mn

Visualisez votre itinéraire sur le PLAN

horaire précédent horaire suivant trajet retour changement date/heure autre recherche

Recherche d' ITINÉRAIRE

Vous avez demandé une Arrivée le lundi 14 mars 2011 à 05h30
Arrêt de départ : Grand'place GRENOBLE
Arrêt d'arrivée : Capuche GRENOBLE

Aucun itinéraire trouvé.

[Nouvelle recherche](#)

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Figure 13: No itinerary found

Figure 14 : A resulting itinerary

3. Targeted user-base

3.1. General description

Public transportation is used mostly by people who don't have a car or who live in town. To maximise the user-base cover, we decided to focus on 3 different personas.

The student is the most important user of the public transportation system. Indeed, students use the P.T.S. every day to commute back and forth to the university. Additionally, their knowledge of the city is close to nought when they first arrive. Our tool will provide them with a fast and easy way to find their way to any destination without prior knowledge of the P.T. network.

Another category of user would be the housewife, who knows the city well and who has appointments all over the place, but cannot be late so as to respect her planning. Our tool will provide her with the optimal path to go wherever she need to.

Finally, another category would be represented by the busy person (corporate man) who just found a job in town. Our tool will provide him/her with a way of planning his/her trip back home so as to maximise the time spend at work, while avoiding to miss the last busses.

3.2. Personas

3.2.1. The young girl Emma

Emma. K



Student in a Business school, she loves to travel and would like to build an international career after her studies.

Autonomous, she always tries to figure out a solution before to ask any help.

Studying in another city, she uses internet to talk to her parents and for academic researches.

Key Attribute

- Spontaneous, always motivated to go out and have fun.
- Doesn't have a lot of money.
- Autonomous.
- Doesn't like slow people.

3.2.2. The housewife Pascale

Pascale. L



Housewife, she raised 3 children well. Uses internet all the day when she is not cooking or cleaning the house.

Goes out occasionally to visit a friend, takes care of some administrative or medical paperwork. She is the spine of the family.

Key Attribute

- Hates to be late
- Has an accurate schedule
- Does things efficiently

3.2.3. The busy man Lucas

Lucas. T



After his studies, Lucas joined a small company located in town. Having worked as a director assistant for 3 years, he has a lot of work to get done.

Uses the internet for online shopping, banking or finding cheap flights for the holidays.

Key Attribute

- Motivated by his job
- Single
- Comfortable managing money

4. Functional Requirements

4.1. User input collection

We chose to do a qualitative survey of the users of the existing system. The questions are built and ordered so as to 'funnel' the interviewees from general to to-the-point questions. The first few questions are simple yes/no questions that allow us to categorize the interviewees. Progressively, the questions go towards asking about people's usage of the website, only to finish on more open-ended questions on the precise topic we're interested in: the itinerary search function. Here were selected 10 individuals who were interviewed over the telephone.

Please refer to the Annex page 13 for the list of the questions

4.2. Analysis

It came out of interviews that the itinerary search is only used on rare occasions (8/10), additionally to one person not being aware it exists at all. Most of them prefer to use the map in conjunction to the timetables instead. 6/10 people think that it is actually faster to use the map and timetables directly since the itinerary search function doesn't provide alternative possibilities, and it seems most of them are not aware of the possibility to look at the itinerary on a map.

One person likes the tool because it is complete, but regrets that it is very frustrating to go through so many screens only to get the answer to a simple question.

Two people complained about the fact that the itinerary search function's answers don't take into account potential perturbation of the network (strikes, snow, technical difficulties...). Another two people complained about how the system handles errors (E.g. all stations from the network are returned in to a drop list if the station cannot be found).

4.3. Use cases

From the analysis of the existing system and the user input, it is possible to identify four main use cases about the core functional aspects of the application. See the use case diagram below in Figure 15.

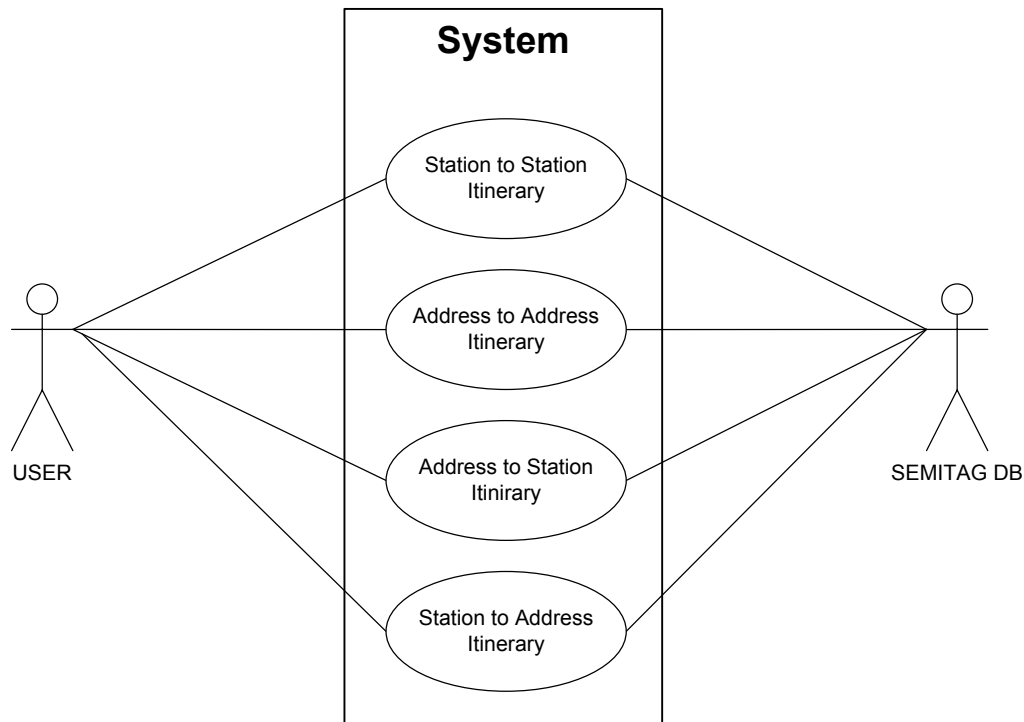


Figure 15 : Use case diagram of the functional aspect

4.4. Scenarios

4.4.1. Emma's scenario

One of Emma's friends just called her and invited her to attend a pillow party (as the parents are out of town). However, her friend's is a bit far, and Emma doesn't know that area of the city very well. Since she is already a bit late, she wants to go there as fast and soon as possible. She would like to know the earliest available public transportation itinerary to go from the bus station in front of her house, to her friend's address. As she doesn't really know where the station is situated in relation to the address, she would really love to be able to visualize the itinerary on a map of the city, as well as being able to zoom in at either end in order to view the details of the streets.

A little over 12 hours later, the party is over, and now Emma would like to go back home. Unfortunately, it turns out that for some reason she has trouble remembering at which station she had to take the bus, and the bus number as well for that matter! Hence she would like to do the opposite of what she did when she came to her friends'. Namely find the itinerary between her friend's address and the station in front of her house. Similarly she needs to take a gander at the map to refresh her hazy recollections of how to get to the closest station.

4.4.2. Lucas's scenario

Today was a day like any other at the end of January for Lucas. Daylight had long waned and the bone chilling wind was howling furiously under the full moon. He had worked hard all day on the multi-million contract on which the future of the company depended and was hopelessly tired: it was time to think of going back home. Were it up to him, he would have done so ages ago; however, he had some very urgent work to finish, which he estimated would take him about an hour. Usually not staying at work so late, he wanted to know how to get from the station next to his office to the station near his house as fast as possible in an hour time from now.

4.4.3. Pascale's scenario

Pascale has an appointment with her oncologist this afternoon. Usually she goes to the hospital on foot, but she has started feeling the weight of all her years and she is too tired to walk today. Since she does not own a car, she has the idea to take the bus. Unfortunately, she doesn't really know the network at all and she would like to know what itinerary she has to take between her address and the hospital's address. Since her meeting is at 15:00 she would really like to be able to specify that she wants to arrive at 14:50. Additionally, since it is a very important meeting for her, she doesn't want to be late, so she'd like to be able to be notified while searching for the itinerary about any perturbations of the network (strike, weather, etc...).

5. Quality requirements

From the analysis of the existing system, and the analysis of the survey, it is possible to express several quality requirements.

The most important, is certainly the dissatisfaction of the users by how the existing system handles error. Indeed whenever the user is typing something, there is no feedback whatsoever about the correctness of the input. Furthermore, whenever the input is incorrect, the system just output a list of everything. That's why in the re-factored system, it is of the utmost importance to always display relevant and limited feedback whenever the user is typing something. Additionally, whenever the user is searching for something that does not exist, we need to provide a few suggestions close to what the user is searching for.

Another exhibited quality problem that needs to be remedied is the number of screens the user has to go through before arriving at an answer, as well as the difficulty to go back and amend any errors the user could have potentially made. We shall try to limit the number of consecutive screens to at most two, and always offer a way to go back to correct any mistakes.

As for the map function, even though it is present and user really would like to use it, it is not preeminent enough on the page and most users simply do not notice it; and even then, it is outdated in terms of design and usability. Hence, the re-factored application must put more emphasis on the map, as well as use a more modern map technology so as to attract more users.

Additionally, a non-functional feature that users seem to want and that is not present is a notification system that warns users of possible delays in case of perturbations on the network. Thus, the re-factored application needs to retrieve and offer the possibility to display this information.

Finally, another point that needs to be remedied is the fact that the colour palette of the itinerary search application does not match the one of the rest of the website. Therefore we must strive to better integrate the re-factored version into the SEMITAG website.

6. Annexes

6.1. Questionnaire

- General
 - In which context do you use the services provided by the SEMITAG?
Dans quel cadre utilisez-vous le service proposé par le réseau SEMITAG?
 - How frequently do you use their services?
A quelle fréquence utilisez-vous leurs services?
- Internet
 - Do you use the web site?
Est-ce que utilisez-vous le site internet?
 - Which of them do you use?
Quel service du site utilisez-vous?
 - Do you know about the itinerary search function?
Connaissez-vous la recherche d'itinéraire?
 - Are you satisfied by this feature?
Êtes-vous satisfait de cette fonction?
 - What do you dislike about it?
Qu'est ce qui ne vous plait pas?
 - What do you like about it?
Qu'est-ce que vous plait?
- Other
 - Do you want to add something?
Voulez-vous ajouter quelque chose?