

# **Expert review of 9292 by Dungeon Crawler**

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## **Introduction**

This report consists of an expert review of the Dutch 9292 android application, made by the corporation REISinformatiegroep BV. The application is used for planning trips with the Dutch public transport, as well as providing information on times of departure, possible delays and changes in a particular route of the public transport.

The goal of this report is to find possible usability problems that this particular application is subject to and which could hinder the user experience. To reach this goal, this report is constructed as follows: First of all, personas for the different user types are created. These personas are based on the underlying target audience of this application and are provided with a thorough persona profile description.

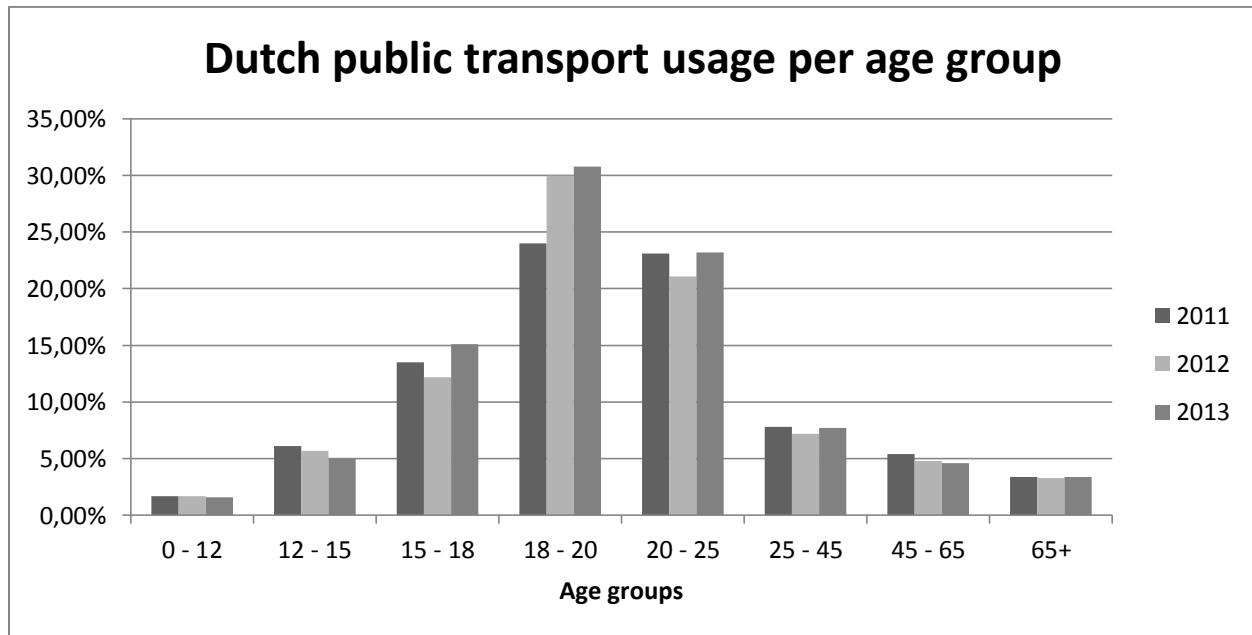
Secondly, a heuristic evaluation is conducted as described by Nielsen (1994b & 1995a). This evaluation is done by having a couple evaluators inspecting the interface twice, with respect to the determined scenarios as explained in the heuristic evaluation paragraph.

Lastly, while keeping the personas in mind the problems are classified by their severity and summarized in aggregate findings, from which a conclusion with respect to the usability of the 9292 application is drawn and suggestions on how to improve the app's usability are made.

## **Personas**

In this section, personas for the different user types are constructed. To construct these, insight in the usage of the Dutch public transport might be useful. The Dutch Central Bureau of Statistics provides data on the percentage of public transport users per age group (CBS – StatLine, 2015). The following graph presents the public transport usage per age group in The Netherlands:

Graph 1: Dutch public transport usage per age group, based on CBS – Statline (2015) data



From this graph the following conclusions can be drawn: First of all, it seems that there is a relatively low usage of public transport for people aged between 0 and 12. These people are also too young to travel on their own and therefore won't make use of this application. This means that no persona needs to be created for this group.

Secondly, the relative usage of public transport seems to rise between the ages of 12 and 18. This rise can probably be attributed to the group of high school students that have to travel with public transport to reach their schools. This group might also use public transport to travel to particular events. Furthermore, a relatively high share of high-school students has a smartphone with internet connectivity of their own. They are in general competent with technology and particularly phones, and are probably more focused on production quality and eye candy, which makes this group a probable user of the 9292-app and a persona to account for.

Also, there seems to be a relatively high usage between the ages of 18 and 25. The reason for this can probably be found in the free public transport that tertiary education students can enjoy from the age of 18 for a period of 5 years. The fact that this is free provides an incentive to make excessive use of public transport, which can be seen in the graph. It should also be noted that these tertiary education students are in general tech savvy enough to understand the basics of a particular android application like the 9292 public transport app, and it is expected that there is

a relatively high usage of this app in this age group. They most probably want an application that is functional and looks probably don't matter as much, as long as the app works well and does what is supposed to do in an intuitive matter.

From the age of 25 to 65 the usage of public transport seems to decline. This group mostly consists of people with a (full-time) job, who may have children, and who probably have a car. Since these people most commonly use their car to travel to known and nearby destinations, they often use public transport to travel to less known locations, which are further away. Another reason for this group to use public transport is to travel to locations that are subject to congestion problems. The 9292-application might provide help in looking up details on their route. Besides, this group is still known for a relatively high usage of smart phones, although in general less tech savvy than the 18-25 age group.

The last group consists of people with an age of 65 and older. The usage of public transport is relatively low in this group, but it is still used by for example elderly couples to go sightseeing for a day. They'll need to plan out their trip in advance in order to arrive at their destination in time, and might opt to use the 9292-application for that. It should be noted however that not every person in this age group has a smart phone and if they do, they don't often use applications. However, there still are people of this age group that do use applications like the 9292-app and we therefore have to account for this group. This group would probably use the 9292-app to plan their trip in advance and check the exact departure times. Readability, a combination of contrast and font, is probably an important factor for the usability of this application for this group, as well as easy access to transportation information.

To summarize, the usability of this application will be tested for the following personas: the high-school student, the tertiary education student, the working adult, and the elder. This will be done by heuristic evaluation as described on the next pages.

## Heuristic Evaluation

For conducting this heuristic evaluation a few scenarios are determined that the evaluators will be reporting on. These are:

1. Create a 9292 profile and log in. Check that you receive an e-mail from 9292. (N.B.: No need to confirm your e-mail, clicking the link in the e-mail will deactivate your account.)
2. Change the language of the app.
3. Plan a trip from your current location, to bus stop Huygensgebouw, Nijmegen. Pick the first departure time that you can still make, at this time. Look up how many intermediate stops there are on the last bus you take.
4. Plan a trip from Nijmegen to Alkmaar and back. Plan a stop at train station Ede-Wageningen on your way to Alkmaar. On your way home you can take the train to Nijmegen directly. The departure date should be on Ascension Day (May 14). Take the first train from Nijmegen after 9:00 AM and arrive back at Nijmegen before 10:00 PM. Save these two journeys to your 9292 account.
5. Check which unplanned disturbances and which planned disturbances are currently occurring. Take note of the disturbance at the top of each list, if any.

A group of five evaluators have reported on these scenarios, while keeping the personas in mind and while comparing the various elements in the interface with the usability principles, as recognized by Nielsen (1994a), these are: visibility of system status; match between system and the real world; user control and freedom; consistency and standards; error prevention; recognition rather than recall; flexibility and efficiency of use; aesthetic and minimalist design; help users recognize, diagnose, and recover from errors; help and documentation.

The following problems have been found:

- The settings are hard to find and there is no indication that there is a settings option at all. Also it seems that the settings option consists of 3 little dark blue blocks on a lighter blue background. This makes it especially hard to find for the visually disabled, like the elderly. (1)
- The settings option also doesn't seem to be available on every page. This results in inconsistency problems. (2)

- There is no clue of the availability of a login option in the app. This option seems to be hidden in the settings. (3)
- Some text is hard to read for the visually disabled, like the elderly. Examples are the show extra options button and the information on transfers and travel time. (4)
- There is no help or documentation to indicate the availability of the diverse options of the application. (5)
- Creating an account, while having chosen English as language, sends a Dutch confirmation e-mail. A person who hasn't mastered Dutch would have no clue on what he should do. (6)
- The language of the application is based on the language of the device. It is impossible to change the language, while having English as the device's language, but this do seem to be possible while having Dutch as the device's language. (7)
- There is no information given on the availability of more travel information after clicking on the selected departure time. This should be more advertised, since the less tech savvy users like the elderly people would have no clue that such an option exists. (8)
- The option for showing the intermediate stops is at the bottom of the page and thus hard to find. This should be moved to the top of the page, which makes this option more clearly visible for users of this application. (9)
- The option for saving the journey advice is hidden in the settings menu. (10)
- Sometimes the journey doesn't get saved properly without giving a warning message. (11)

These problems can be rated on severity. This is done by using Nielsen's (1995b) severity rating scale for usability problems. The following presents Nielsen's scale:

- 0** = I don't agree that this is a usability problem at all
- 1** = Cosmetic problem only: need not be fixed unless extra time is available on project
- 2** = Minor usability problem: fixing this should be given low priority
- 3** = Major usability problem: important to fix, so should be given high priority
- 4** = Usability catastrophe: imperative to fix this before product can be released

The following are the severity ratings that the different personas would give:

<b>Problem</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>High-school student</i>	2	1	2	1	0	1	1	1	2	2	3
<i>Tertiary Educ. Student</i>	2	1	2	1	0	1	1	1	2	2	3
<i>Working adult</i>	3	3	3	2	1	1	1	3	3	3	3
<i>Elder</i>	3	3	3	3	1	1	1	3	3	3	3

## **Conclusion and recommendations**

All in all the 9292-application is fairly well designed, but it has still quite some usability problems. The most pronounced are the visibility of some of the app's features. In its current state, the app does what it's supposed to do. Planning a trip goes well and the app has yet to give us faulty information. That being said, there is still room for improvement. In particular, this means the placement of the settings window. In our opinion, things like creating a user account and logging in should belong on the "my 9292" page, as opposed to hidden away in the options menu. Also, an option for improved readability like a higher contrast and a larger font would be welcome for people with troubled eyesight. Lastly, the bug which prohibits a person from changing the language of the app if the system's language is other than Dutch should be fixed to give a more pleasant user experience for people who have English as their system language, but who prefer to have this particular app in Dutch. These are our recommendations for improving this app's usability.

## Literature

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## **Appendix – Individual findings**

*Luuk van Blitterswijk*

Where can I find this login option? Less technologically savvy people will have a hard time trying to find this option, especially the elderly. It is hidden behind a settings option that isn't visible enough and which isn't behind the 9292 icon, where I would expect it. Besides, the letters of the app are too small to be read for people with a visual impairment.

It would be useful if there is help and documentation that give information on the various options and possibilities of this application that are available.

I created an account while having selected English as my language, but I get a confirmation e-mail in Dutch. This would be incomprehensible for someone who doesn't speak the Dutch language.

The language of the application can't be changed to Dutch, while having English as my system language, but this problem doesn't seem to arise when having Dutch as my system language.

The amount of transfers and the information on travel time is hard to read, especially for the elderly.

It is nowhere to be seen that you can click on travel times to get further information on that particular journey. The availability of this option should be disclosed to the user. The option for showing the intermediate stops is also hard to find and seems to be at the bottom of the page. It would be better if this stood at the top of the page.

The option for saving a journey in the 'my 9292' account is hidden in a settings menu, that is shown in some screens but not in others. This settings menu is also poorly visible, since 3 dark blue squares are used on top of a lighter blue background. This means that there is a consistency and visibility problem with respect to the settings menu.

Sometimes the journey doesn't get saved properly without giving a warning message.



*Martijn Heitkönig*

The interface looks uncluttered and modern. The page that you land on when opening the app is the "Plan journey" page, which is probably the most used page of the app. Solid choice there.

Tapping on the "from" or "to" locations gives you your current location option, and your most used train stations and bus stops. Those are usually the ones that you need, but in case you want to start somewhere else, entering the name of the place you want to go offers instant search suggestions. This ensures that the correct stop or train station from the database is chosen, and that you don't have to match the exact name of the train station or bus stop in order to find it (you can just tap on the suggestion, and it fills in correctly).

Departure offers two large buttons to switch back and forth between your arrival and departure time, and the default time is the current time. Selecting a specific date and time is pretty easy as it consists of three scrolling bars: Date, hours, and minutes. Overall, it looks clean and does exactly what it's supposed to do.

Disturbances are equally clean looking, the unplanned ones show up by default, the planned ones after pressing the "planned" button, which speaks for itself.

The interface does exactly what it's supposed to do. On the primary screen in the app the hardware back button closes the app, on deeper levels of the interface (settings menu, time/date selection) it goes back to the primary screen. The hardware settings button opens up a small menu which takes you to the "settings" screen, as does the three-dotted line in the right upper corner, as is common in most apps. Still, the settings button is a bit hidden away at first sight and can be hard to reach if you're not directly looking for it.

I personally would've preferred the use of material design in this app to make it more in sync with my phone, but the style the creators opted for is clean as well (even though it looks like iOS4), so it's not really a big deal and more of a difference in preference.