D4.6 A web platform for personalized goal setting, tips & tricks and social gamification.

Interview with Yves Vanrompay

In deliverable interview D4.5 we elaborated on the role of the i-DREAMS smartphone app in the post-trip coaching of drivers. We touched upon the functionalities that are provided via the app. In this D4.6 interview, we will again talk with Yves Vanrompay, but this time about the web-dashboard that was specifically developed for driver coaches and managers so that they are able to consult driver's safety performances and to manage and plan the gamification features to even further improve driving behaviour.

Hello Yves, thank you again for your time. We recently talked about the smartphone app, but this time I have some questions about the web-dashboard, which is the focus of D4.6. What exactly does this dashboard do?

Yves: *"I think I can best describe it as the tool for driver coaches to follow up on the evolution of how their drivers perform on the road. Remember how I explained in our previous interview that our i-DREAMS platform distinguishes input components, output components and processing/backend components. The app is both an input as well as an output component, since it both collects data, but also visualizes the results of the processed data. The web dashboard is different in that respect. This can only be considered as an output component that visualizes processed data and offers tools to set up gamification features for the drivers."*

What information does this dashboard visualize precisely?

Yves: *"I believe that the most interesting parts of the dashboard are the 'results' and the 'gamification' sections. The results that are shown in the dashboard, can be compared to what an individual driver sees on his/her app. The only difference is that the driver coach can see the results from each individual driver or the aggregated results from groups of drivers."*

Can you elaborate a bit more on what type of results are show exactly?

Yves: *"The coach can see a list of trips (Figure 1) and can click each trip for more detailed information such as the trace of the trip on a map, the risk events that occurred during that trip (Figure 2), and where available a video of dangerous situations. The coach can also check the scores per driver or per group of drivers at trip level, per performance objective or overall (Figure 3). He/she can filter scores based on a specific time interval, so from a specific date until a specific date, and the granularity of aggregation can be selected. This means that the scores can be shown per day, week, month… This is very helpful to visualise the evolution of performances. Coaches can even draw reports, in PDF, which can be helpful in conversations about safety performances with the drivers. Another way to compare driver performances is via the leaderboard. Here the drivers are ranked based on their overall safety score. This is an aggregated score, based on the underlying scores per trip and for the different performance objectives. A driver's change in ranking position over time is also visualized."*
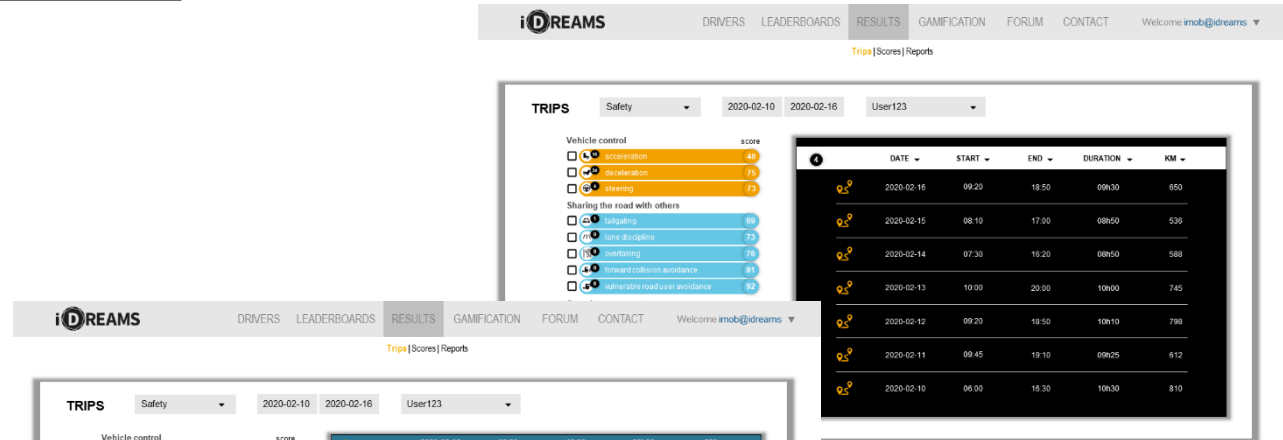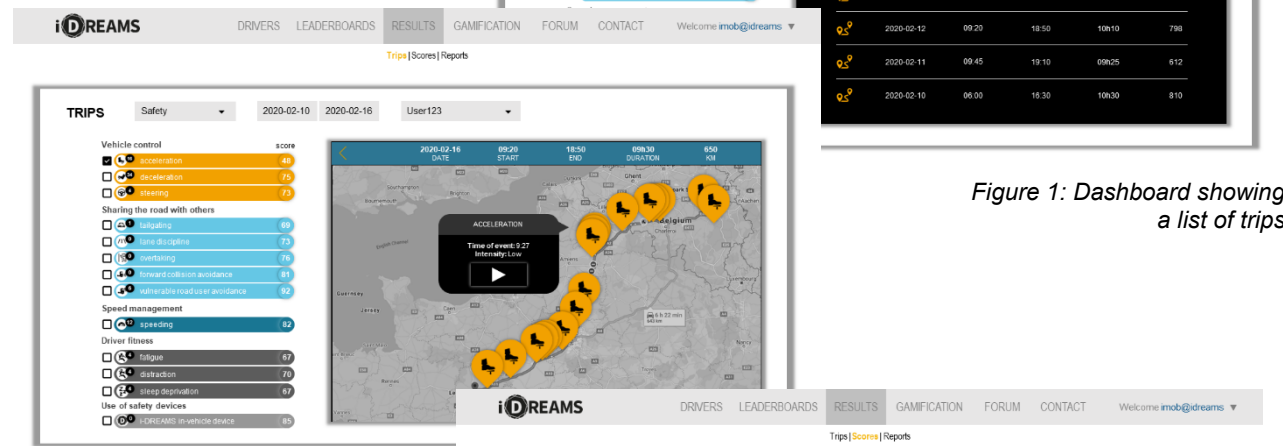

Figure 1: Dashboard showing a list of trips

Figure 2: Dashboard showing a trace of a trip on a map and the dangerous events on the trace

Figure 3: Dashboard showing scoress

And what about these gamification features? They were already mentioned when we talked about the app, but can you explain them in a bit more detail?

Yves: *"Of course. For me, the most interesting gamification features are: coping tips, pros & cons, goals and badges. First, there are the 'coping tips' and the 'pros & cons'. They can be considered as information units to help drivers understand why specific behaviours are desirable or not. The coping tips provide ideas and suggestions on how to handle specific situations, whereas the pros & cons describe advantages and disadvantages of attitudes and approaches related to specific performance objectives such as speeding, tailgating, lane discipline, fatigue…*

Then of course there are the goals and badges. A goal is formulated as a challenge where the driver aims to obtain a specific score (e.g. a score of 60/100) for a performance object (e.g. speeding) over a specific distance (e.g. 100 km) that can be covered in one trip or accumulated over more trips. After a goal is met, a new goal is offered that entails a bigger challenge (e.g. a higher score over a longer distance). When a set of three or four of such goals are realized, the driver earns a badge. We defined four different badges: a bronze, silver, gold and platinum one. These badges can be considered as virtual medals or rewards."
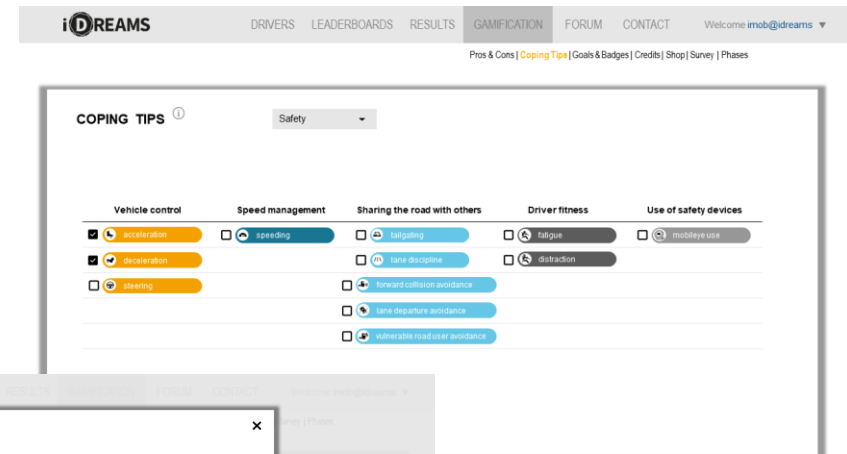

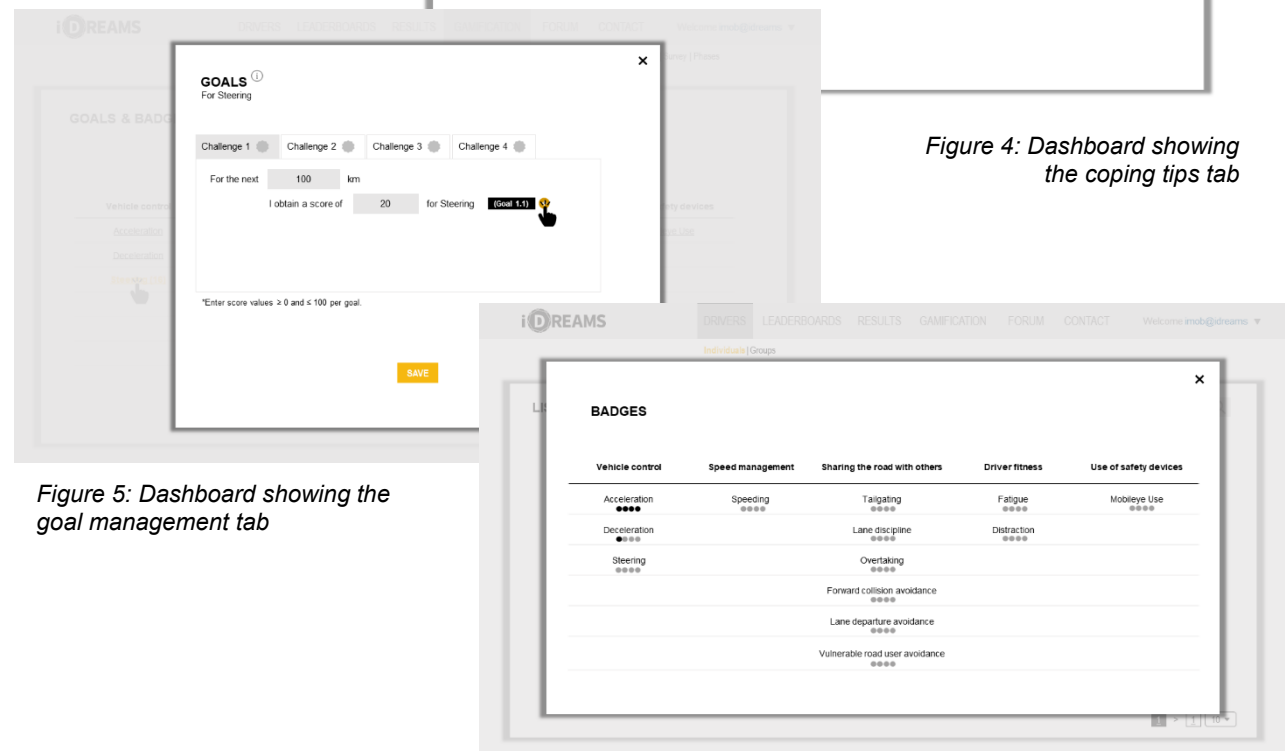*Figure 4: Dashboard showing the coping tips tab*

Figure 5: Dashboard showing the goal management tab

Figure 6: Dashboard showing the badges tab

All that gamification content, how does this end up in the dashboard? For example: where do these coping tips or the pros & cons come from? And who defines all the goals?

Yves: *"Everybody with administration rights can do this. Within the scope of i-DREAMS, specific people from our i-DREAMS team have such rights and of course also the driver coaches of our field trial participants. Our team <u>pre-defined most of the coping tips and pros and cons</u>, but the dashboard provides editing features so all the listed information units can be edited or removed and new ones can be created. As for the goals, there <u>our team also pre-defined goals</u>, based on the performances of the participating drivers throughout the course of their participation. But again, here all the features are there for the driver coaches to take this into their own hands."*

So, flexibility at its best so to speak. But when I hear you talk about these gamification features, I wonder how they are to be used in the correct way. What I mean is: can you launch all the gamification features at once or is it better to do this gradually?

Yves: *"That is very good question! Gamification features are made available in the i-DREAMS app of the individual driver according to which psychological profile or behavioural phase the driver is in. In i-DREAMS we distinguish five of those phases, which are called the stages of change. Firstly, the <u>'unaware'</u> phase that implies that the driver does not acknowledge his/her own unsafe behaviour, thus is not interested in improving anything. Secondly, the <u>'aware'</u> phase where the driver acknowledges that he/she has a problem, namely that his/her driving behaviour is not safe enough, but he/she is not yet ready to change or lacks the confidence to do so. Thirdly, the <u>'considering'</u> phase that reflects the fact that a driver is ready to change. Fourthly, the <u>'determined'</u> phase where the driver is actually changing his/her behaviour. And lastly, the <u>'consolidating'</u> phase where the challenge lies in maintaining the positive behaviour change. Based on the phase that a group of drivers is in, they will be exposed to specific gamification features, because that phase will determine if a feature might be able to make a difference."*

What do you mean with that?

Yves: *"Well, that is actually very simple. If you are not aware that your driving behaviour is dangerous and you don't feel the need to change, you will not be motivated for example to take up a goal that is launched via the app. You won't bother to make the effort. So, making goals available to drivers that are in the 'unaware' phase is useless. Therefore, it is important to take that psychological aspect into account. We foresaw in the web-dashboard that a driver coach can determine when he/she activates specific features or not. In the context of i-DREAMS, more specifically during the field trials, our researchers determined which features where activated and when."*

OK, so we thoroughly talked about coping tips, pros & cons, goals and badges. But are there any other gamification features besides those?

Yves: *"Yes, there are. We also provide the option to launch surveys that drivers can complete in the i-DREAMS app to increase their knowledge with respect to specific safety promoting goals (e.g. driver fitness) and performance objectives (e.g. fatigue, distraction). Survey management which implies that questions can be added, edited and removed, is possible in the survey screen (Figure 7). And there is also the option to make a digital shop available to the drivers via the app (Figure 8). In this shop the driver coach can add, edit and remove products that drivers can buy as a form of external motivation. By increasing their performances, drivers can earn credits, to be considered as virtual money, to buy these products. An example of such a product might be a gift certificate to use in a restaurant."*

Are there any other functionalities offered via the web dashboard that we haven't discussed yet?

Yves: *"Yes, there are. We also created a forum for coaches and drivers to stay into contact (Figure 9) and there are screens where the administration related to individual drivers and groups of drivers can be managed (Figure 10)."*
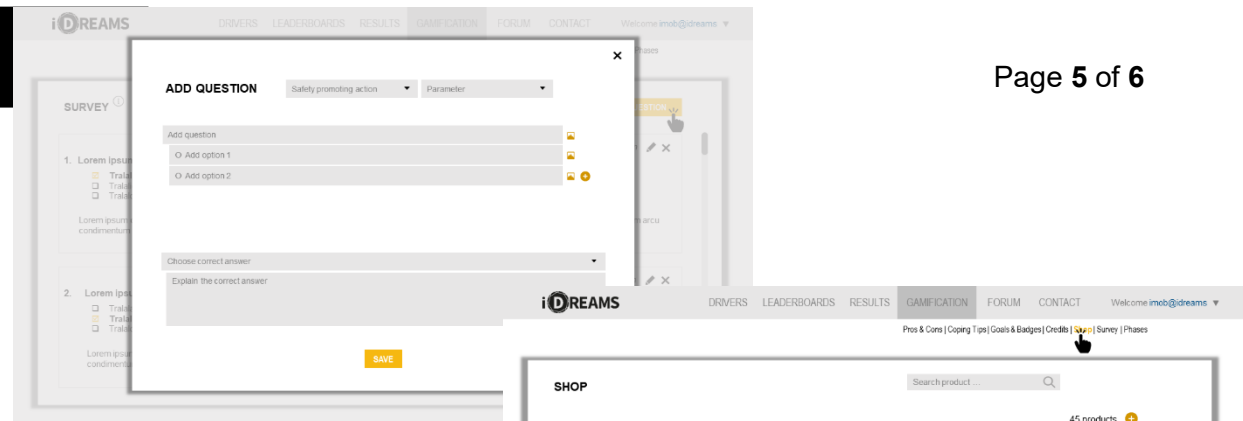

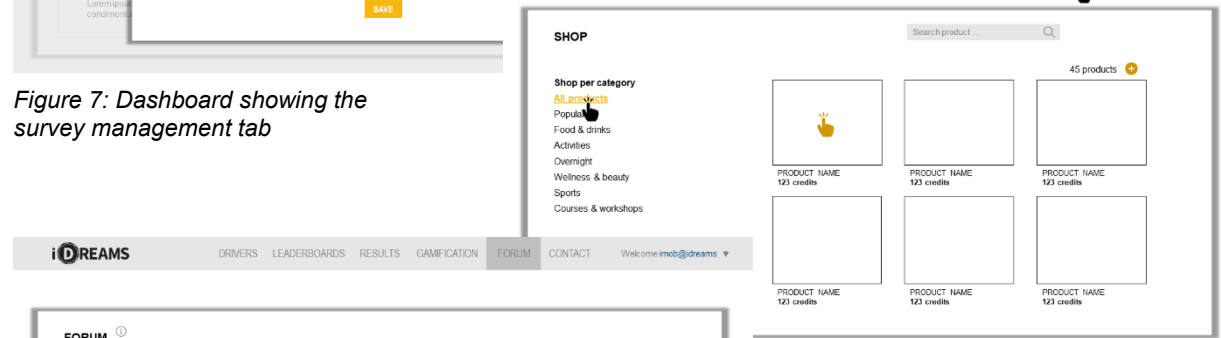Figure 7: Dashboard showing the survey management tab

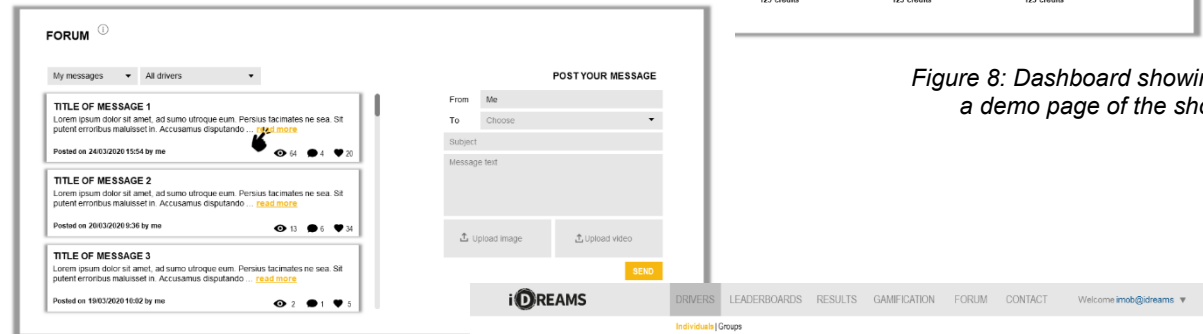Figure 8: Dashboard showing a demo page of the shop

Figure 9: Dashboard showing a demo page of the forum

Figure 10: Dashboard showing the driver admin management tab

Then my last question is about the technical development. Is there anything specific you would like to share about that?

Yves: *"I prefer not to go too deep into the technical details. But I can say that we again used an agile (Scrum) development methodology where functionalities were described in stories, that were selected and grouped in sprints of 2 weeks. Like with the app development, each sprint represented an iteration in the development process, to make it as efficient, flexible and traceable as possible. The i-DREAMS web dashboard was developed in Angular 9, which is one of the most commonly used state-of-the-art JavaScript technologies for developing web-based frontends. For communication with the backend, a REST API[1] is provided."*

OK Yves, again thanks a lot for making such a complex thing sound so simple and clear. Good luck on what is coming!

Edith Donders

i-DREAMS DisCom Manager

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[1]API = Mechanism that enables two software components to communicate with each other and exchange data using a set of definitions and protocols. REST = Uses http-methods to retrieve and post data between a client device and a server. The HTTP protocol allows REST APIs to let software on one device talk to software on another device (or on the same device), even if they use different operating systems and architectures.

Deliverable 4.6 is part of WP4:
Technical implementation
Download the rapport here

Researcher
in the spotlight
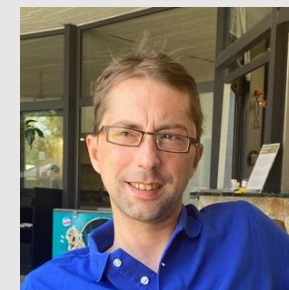
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