TDE
DIGITAL CREATIVES IN SPORTS

# Design Validation

## Improving the Grand Prix experience for F1 viewers at home

S8 Graduation FHICT

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# Introduction

The design is almost finished. I tested the concept with some wireframes and looked into the corporate branding of RN365 by doing a visual audit. The results of both these researches are combined in a high fidelity prototype that now needs to be validated before development can start.

I decided to apply two research methods to validate the design. First I'll conduct a heuristic evaluation with heuristics defined by Jacob Nielsen because it's a quick and easy way to discover possible things I forgot to include in the design. Later, I'll usabilitytest the prototype to get high quality feedback from the target audience.

# Heuristic Evaluation

As explained above, the heuristic evaluation can quickly provide feedback for possible things I missed while working on the prototype. The prototype that's developed is the first iteration. By applying the 10 thumb rules by Jacob Nielsen, I hope to develop a second iteration that can be further tested in the usability test.

The heuristics I'll be using are the ten general heuristics defined by Jacob Nielsen. This set of heuristics originated from a factor analysis on 249 usability problems and derived as a set of heuristics with maximum explanatory power.

## Visibility of system status

The tool is relatively small. However, this heuristic is still present in the concept. When filters are applied, they show up on the screen. The applied filters are always visible, so the user is always aware that filters are applied and that not all information is visualized. Also, the tabs show which tab is currently selected so the user knows at what tab he's currently looking at. Something I added to better visualize system status is the timeline that shows the track status and the lap that applied to what message. This was now only visualized in the messages, but now a line visualizes what message is part of what lap and what the status was of that lap.

## Match between system and the real world

This heuristic often refers to icons. However, there aren't many icons present in the tool. Some icons were so complex that it would make more sense to just write down words, as suggested in the concept validation usertest. Only two icons are present in the design, these are the slider icon and the x icon. The sliders indicate that something can be changed when clicking on that button.

## User control and freedom

Users often need an emergency exit when they get themselves in a situation in the user interface where they don't want to be. Therefore, they need a quick escape. This primarily applies to the orbit controls of ThreeJS. These controls are provided with the ThreeJS library, however they are not as user friendly. They allow the user to zoom and rotate infinitely which could end up users not having anything of the simulation on their screen at all. The tool provides buttons to reset the view to visualize the entire track but also specific sectors of the track.

## Consistency and standards

Users shouldn't have to wonder whether words, situations and actions mean the same. Therefore consistency is key. No synonyms are used in different parts of the tool. A good example of consistency is the tab navigation that's used a lot in the tool.

## Error prevention

As far as I know, the user won't easily end up in errors while using the app. Else this will be discovered in the usability test.

## Recognition rather than recall

To minimize the user's memory load, the app shouldn't make the user have to memorize a lot of things. The track status timeline is a good example that let's users recognize the track status for each message, instead of memorizing if a change in track status has happened before.

## Flexibility and efficiency of use

The navigation of the app is already really efficient. However, during the concept validation users tried to close the filter pop-up by tapping outside of it. In the

wireframe usertest it was found that this function is necessary. Later this function was implemented.

## Aesthetic and minimalist design

Information that's irrelevant should not be displayed. Therefore the app has a function for the user that allows it to filter information that's being displayed in the eventfeed.

## Help users recognize, diagnose, and recover from errors

This embraces error codes that should be displayed in the user's language, not as error codes. This isn't applicable for my tool as the tool won't allow the user to make any errors.

## Help and documentation

The tool could potentially be quite overwhelming for new users. Therefore a small introduction walkthrough will be included for the user.

# Usability test

The design phase is almost finished and the prototype is ready for a final test. I conducted the lofi prototype test with some colleagues. This was a quick and easy way to get some feedback and their feedback was also really valuable. However, these candidates knew everything about my project, so to avoid biased test results, I want to test my prototype with people who don't know anything about my project, but still know a lot about Formula 1. Therefore, the editors of RN365 would be a great fit, as only Ruud from RN365 knows about my assignment.

## Test objectives

This is the final test of the prototype and the lofi version of the prototype has already been tested. Therefore, I don't expect to find any major errors in the design. This test is therefore conducted to get some final high quality feedback for the final touches to the design.

## Participants

As explained in the introduction, my plan is to find candidates for the test at RN365. These people don't know about the project, but still have a lot of knowledge about Formula 1.

# Test script

To test the entire functionality of the prototype, I came up with a few scenarios for the candidates. What the candidates do in these scenarios will tell if the prototype works well or not.

## Scenario 1

"You want to know what happened in lap 44 of the race, what do you do?"

The candidate should scroll the eventfeed to lap 44.

## Scenario 2

"What's Max Verstappen's laptime?"

The candidate should switch to the live timing tab to see Verstappen's lap time.

## Scenario 3

"What is happening in sector 3?"

The candidate should close the eventfeed and click on sector 3 to focus the 3D simulation on the third sector.

## Scenario 4

"You only want to see information about Max Verstappen, what do you do?"

The candidate should open the filter pop-up and select Max Verstappen in the driver filter and then close the filter by clicking on confirm.

## Scenario 5

"You want to turn off all filters, what do you do?''

The candidate should click on the clear all filters button. However, this can also be done with the filter pop-up and altering the filters manually, but this should indicate that the clear all filters button isn't clearly visible.

# Test introduction

As explained above, the candidates that will be testing the prototype don't know about my project. Therefore, they need a short explanation about the concept, how the prototype works and what I hope to achieve with the test. This includes telling the candidates that I'm not testing them, but the product and that I would appreciate it if they'd think aloud.

# Follow up questions

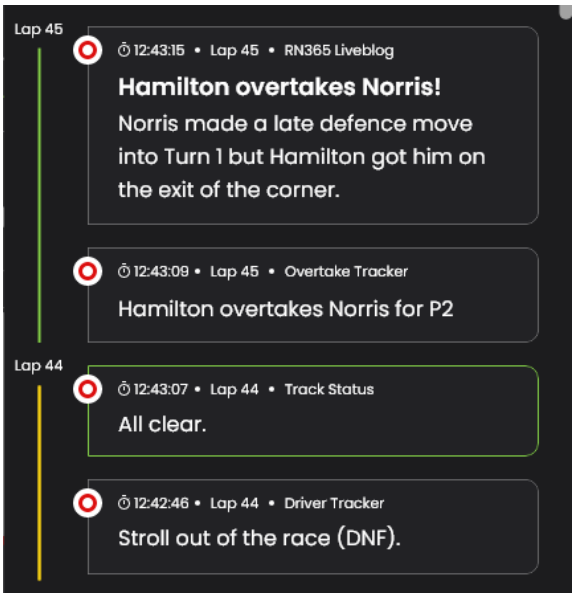
1. Were there any parts of the prototype that felt confusing?
2. What do you think about the eventfeed feature?
3. What do you think about the simulation feature?
4. Do you think the visuals of the app match the RN365 website?
5. Any more questions that pop into mind.

# Results, Feedback and adjustments

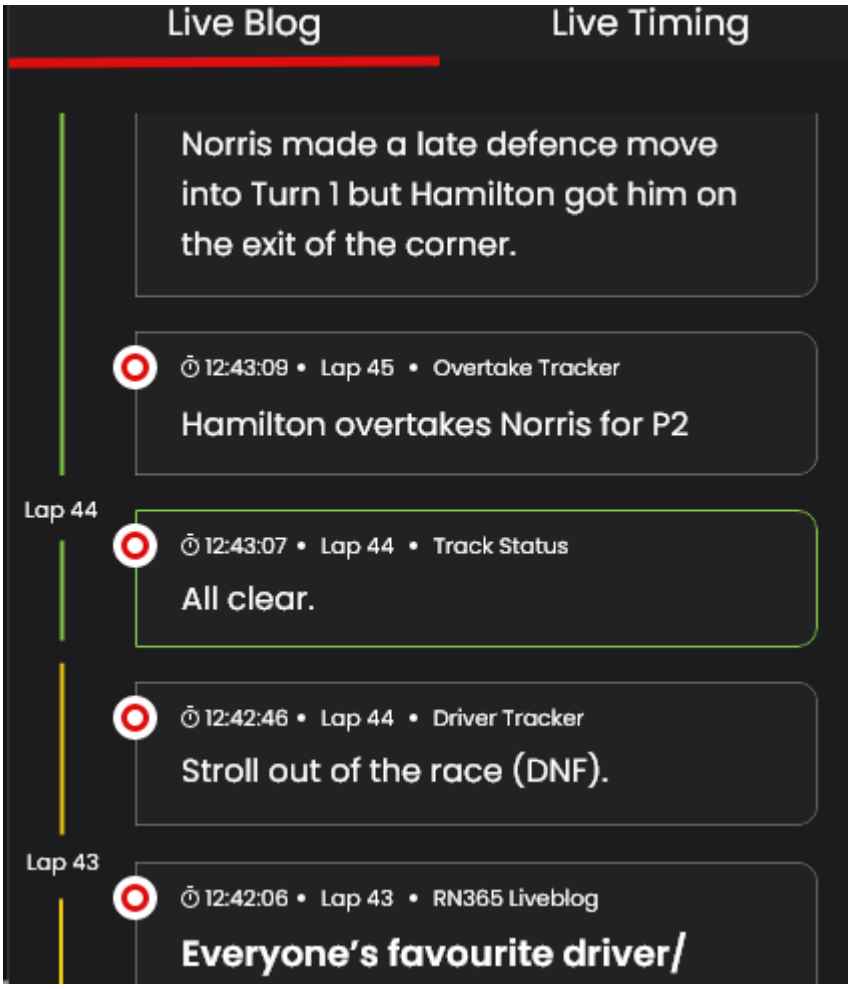
Before I conducted my usertest, I had a quick interview with Jan for some more feedback on the concept. Jan pointed out that it isn't possible to use exact position data in the app to visualize the car's position in the app, because it's too obvious that we're nicking FIA's precious data. Now we only use the position data to position an event that happened on the track. This means that scenario 3 is discarded from the test script.

I was able to test the remaining scenarios with Luuk and Thomas from RN365. Both participants were able to pinpoint some minor mistakes in the design, and had some valuable feedback on the concept.

Both of the participants had difficulties with scenario 1. This scenario tests the readability of the eventfeed and the track status bar. The lap is indicated by an interruption of this bar, followed by the lap number after which the bar continues in the following lap. However, it's not clear if this clap applies for the line above or under the lap number.




*Current design isn't clear what liveblog items are for which lap.*




I adjusted the design so there are always two lap indicators on screen. The top lap indicator will be sticky until the user scrolls past another lap. This way it will always be clear which liveblog items belong to which lap.

Also, the trackstatus indicator can now visualize multiple trackstatuses per lap, as seen in lap 44 in the design.

This was the only thing Luuk and Thomas struggled with and for the follow-up questions they gave only positive feedback, so no further adjustments are necessary based on this test.

## Search Engine Optimisation

Thomas pointed out however that it might be interesting to look into SEO for the tool. By implementing specific words in the headers and text for example, the liveblog page of RN365 might score higher in the search results. Thomas will send a list of popular keywords to implement in the tool.

# Conclusion

The design of the tool passes the 10 heuristics of the heuristic evaluation, so this didn't result in any improvements to the design. Later when the design was tested with users, I discovered a small error in the lap count visualization and the track status indicator and made improvements on the design to prevent these errors for the user. I also got some valuable feedback on the concept from the test candidates and I received a list with words users look for when searching for a Formula 1 liveblog on Google. These words can be implemented in the tool to improve SEO.

# Summary

The corporate branding is now applied to the wireframes, but to be sure the combination of the corporate branding and the wireframes works for the users, the design is validated. This is done with a Heuristic Evaluation, where the design is checked on the 10 usability heuristics defined by Jacob Nielsen. This is a quick and low effort test to check if I made any critical errors in the design. Later, I tested the design with a few employees at RN365. I considered these candidates perfect for testing as they don't yet know of my project and match the target audience of RN365.

The design of the tool passes the 10 heuristics of the heuristic evaluation, so this didn't result in any improvements to the design. Later when the design was tested with users, I discovered a small error in the lap count visualization and the track status indicator and made improvements on the design to prevent these errors for the user. I also got some valuable feedback on the concept from the test candidates and I received a list with words users look for when searching for a Formula 1 liveblog on Google. These words can be implemented in the tool to improve SEO.

# Learning Outcome Clarification

- Learning Outcome 1: Professional Duties
- Learning Outcome 2: Situation-Orientation
- Learning Outcome 3: Future-Oriented Organisation
- Learning Outcome 4: Investigative Problem Solving

This deliverable is a professional duty on a bachelor level in the activities of Analysis, Design and Realise, as I analyzed for errors in the design and designed and realized improvements for the high fidelity prototype. This is a professional product that is in line with the IT-area User Interaction. Therefore, Learning Outcome 1: Professional Duties applies.

This deliverable is relevant and valuable as it resulted in valuable improvements on the design. I also worked in a methodological and structured way. Therefore, Learning Outcome 2: Situation-Orientation applies.

This deliverable is an effective approach to improve and validate the design. I used a variety of research strategies, methods and activities to find problems with the prototype and came to solutions that were later validated with the relevant stakeholder. Therefore, Learning Outcome 4: Investigative Problem Solving applies.

I took the lead in my project for this deliverable as I independently planned meetings with employees of RN365 and executed the user tests. Therefore, Learning Outcome 5: Personal Leadership applies.

My communication has the right impact and execution as I communicated appropriately with RN365 and the test candidates. Therefore, Learning Outcome 6: Targeted Interaction applies.