Reasoning behind design decisions

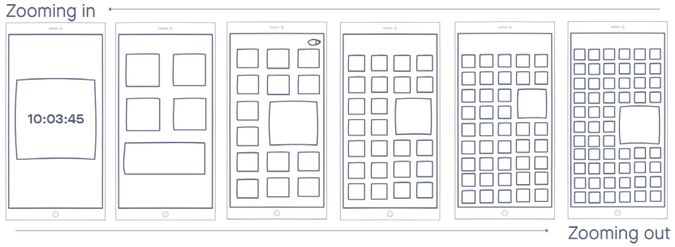
Initial Concepts

REASONING
initial concepts

INITIAL CONCEPTS
lo-fi protoypes

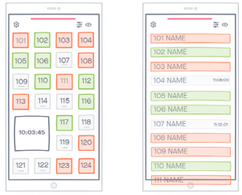
Flexible Layout

To make the interfaces suit different preferences of different timekeepers, we made it easy to customize the interface. For example, users can easily change the size of buttons by pinching with 2 fingers.
The digital timing button can be easily moved to different places on the screen as users wish.



Color Code 1.0

We used different colors to indicate different states of the participants: orange indicating the participant has already passed the last split point and is approaching, green indicates the participant hasn't passed the last split point, and grey indicates those timed participants.



Sorting Ways

The feature of sorting by the approaching states is aimed to cluster those approaching participants to help timekeepers to reduce their cognitive load (screen 1). This sorting way can be quickly switched into sorting by the order of numbers (screen 2), which helps timekeepers to find a number quickly.
The 'hide/show the timed participants' helps them to focus more on the unregistered participants (screen 3).

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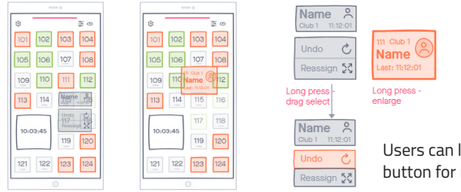
UXAD 2021 | Phase two

REASONING
initial concepts

INITIAL CONCEPTS
lo-fi protoypes

Gesture Design

We used gestures like 'long press' to trigger the expansion of the drop list of more actions. In this way, we make the main interface simple and only contain the necessary elements related to timekeeping.

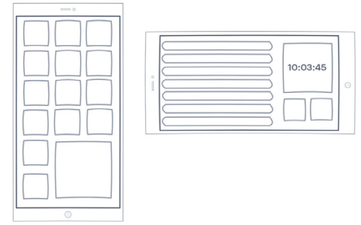


Users can long press the button for more operations.

Users can swipe left or right for more operations.

2 Directions

Because we found that some timekeepers like to use RaceClocker in a landscape direction, we decided to design for both directions, including the landscape and portrait direction.



PEER TESTING
with students

Peer testing

Together with another UXAD student group we tested and discussed the interfaces presented above.

Iteration 1

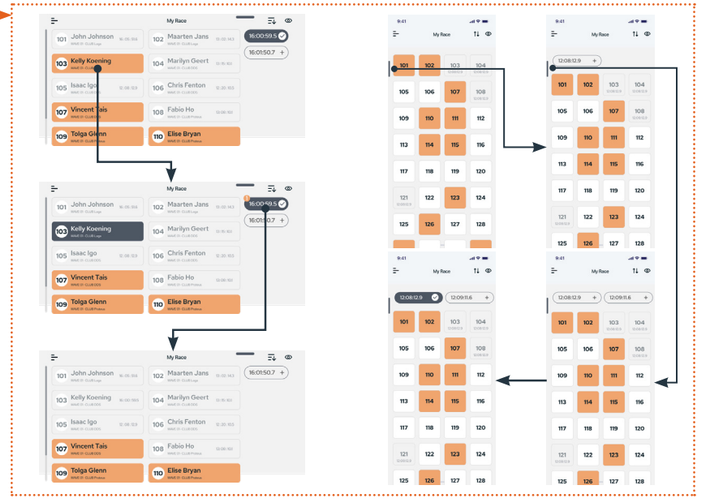
REASONING
iteration 1

INTERIM DESIGN
hi-fi protoype

Fixed Layout

Revised

Based on the feedback we got from the peer test, we decided to abandon the flexibility in layout to avoid inconsistency which might cause confusion.
We also separated the one-click mode with two-step mode (first record the time then assign the time to racers) and decided to mainly focus on the two-step mode since it was regarded as the most logical way of timekeeping.
We remained the 2 directions and designed both list and grid layout for two-step mode.



UI Guidelines

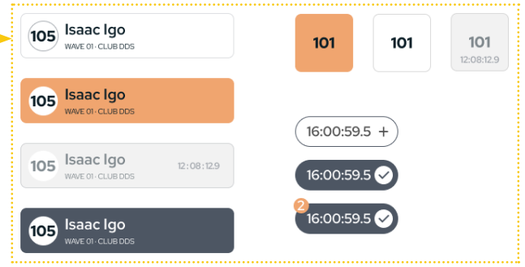
New

We generated a set of UI guidelines to make sure the visual language in the product is clear and coherent.

Color Code 2.0

Revised

We changed the color code into a more intuitive one. We abandoned the color of green and used dark blue for selected racers, grey for timed ones, orange for soon approaching ones and white for deselected ones.



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racer

REASONING
iteration 1

INTERIM DESIGN
hi-fi protoype

Remove the Digital Timing button
Revised

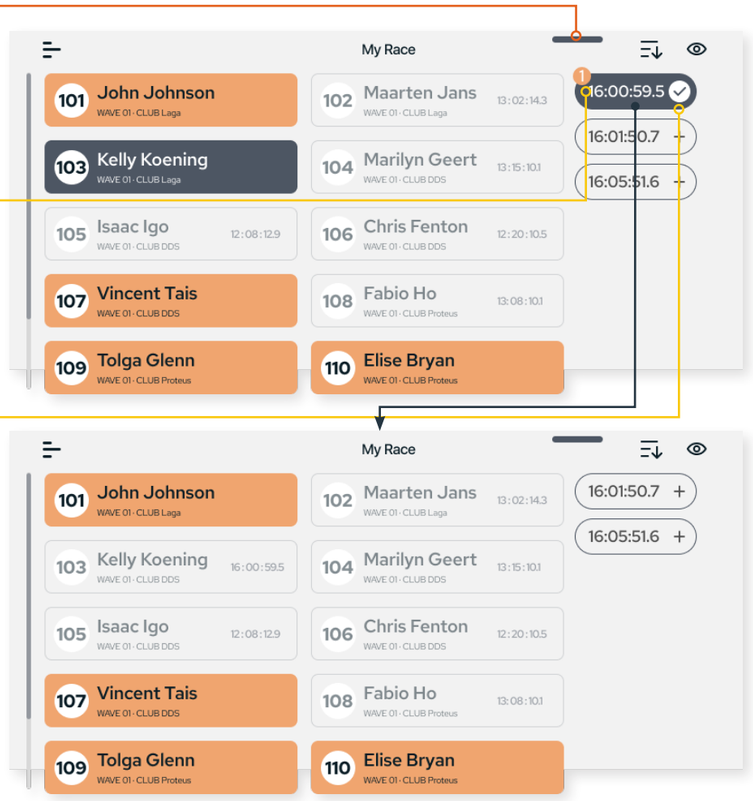
We removed the digital timing button. A timekeeper can assign a time by pressing the volume button only, to avoid confusion.

Add Indicators of the Number of Assigned to a Certain Time
New

We added a number in the timing button to indicate the number of racers that have been assigned to this time to provide more feedback.

Confirmation of Assigning
New

We also added a confirmation step for assigning. After finishing assigning, the user can click the time button again to confirm and the time will disappear.



PRE-PILOT TEST
with coaches

Pre-pilot test
A pre pilot test was executed in order to find final aspects to be revised before executing our final tests.

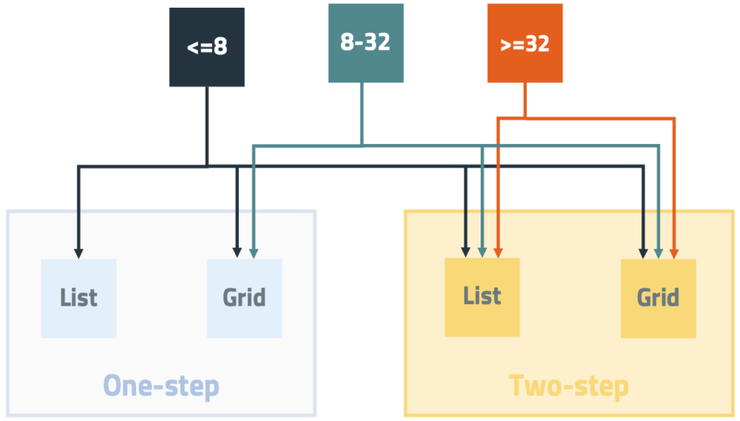
Iteration 2

REASONING *iteration 2*	FINAL DESIGN *hi-fi protoype*

Recommendation on choosing the timing mode

New

Findings from the (pre)-pilot test showed that users do not have time to think about which is the best mode to use in a stressful situation. They will do what they are used to. Therefore, we decided to make one-step timing and two-step timing separate from each other. The system will recommend the user the best mode for the timekeeper based on the number of racers and the user can only use the chosen mode of timing during the race.



With one-step timing mode the user can time the racers efficiently. The one-step list timing mode is recommended to use in a race with less than nine racers, because one screen can fit eight racers maximum. For the same reason, the one-step grid mode can be best used for races with less than 33 racers.

With two-step timing mode the user can time the racers accurately. They are suggested to be used in the race with more than 32 racers, because there will be a bigger chance to have the situations in which multiple racers are passing by at the same time or closely to each other.

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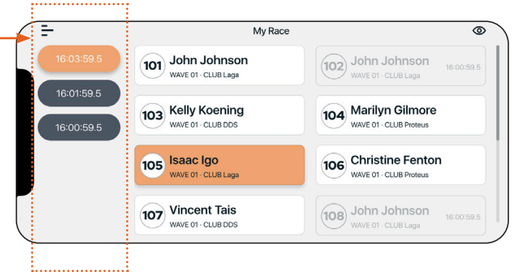
REASONING *iteration 2*	FINAL DESIGN *hi-fi protoype*

Time area on the left

Revised

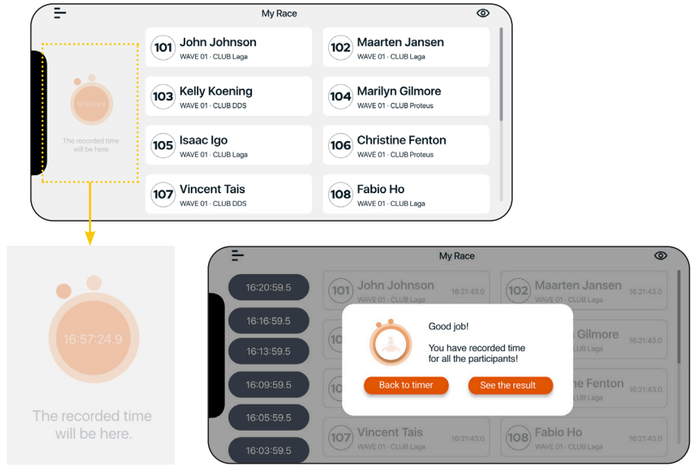
The area showing recorded times and the area of racers are swapped, because it is more logical to see which time has been assigned with which racers in this way.



Hints for the user

New

When the user is navigated to the timer dashboard, the actual time will first show in the empty time area. There will also be a hint for the timekeeper that the registered times will be shown here.
Instead of having a navigation button to the result page collected in more options, we decided to have a pop-out window which invites the user to the result page after all the racers are timed.



REASONING
iteration 2

FINAL DESIGN
hi-fi protoype

Color code

Revised

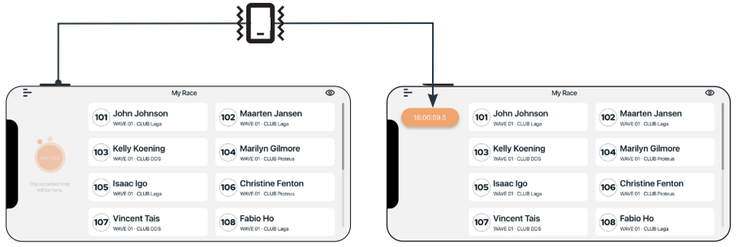
The color changes for the approaching racers can cause confusion for the user. In order to make the interface more simple, we decided to leave out the color indicators for approaching racers. There are only three states for racers now. White is the default color, orange means being assigned, and gray means timed.

The color code for the time box is also changed in a way that makes the system more consistent. The time boxes have a dark blue color as the default color, so that the times and racers can be easily distinguished from each other. The selected time box and the selected racers are highlighted in orange. In this way, there is a stronger connection between the time and corresponding racers.

Vibration feedback

New

In a stressful situation the user will not have time to look down at the phone to check if the time is successfully registered. Therefore, haptic feedback after pressing the volume button enables the user to register time with no need to look at the screen. In our hi-fidelity prototype, there will be a default vibration every time the volume button is pressed.



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REASONING
iteration 2

FINAL DESIGN
hi-fi protoype

4-step to 3-step

Revised

The intended two-step timing has now four steps to do. The confirmation step is removed to shorten and simplify the timing process. In order to make it easier to reassign, the time boxes will not disappear after assigning the racers. In this way, the user can easily go back to a specific time box and check if the racers are assigned correctly or reassign the time to another racer.

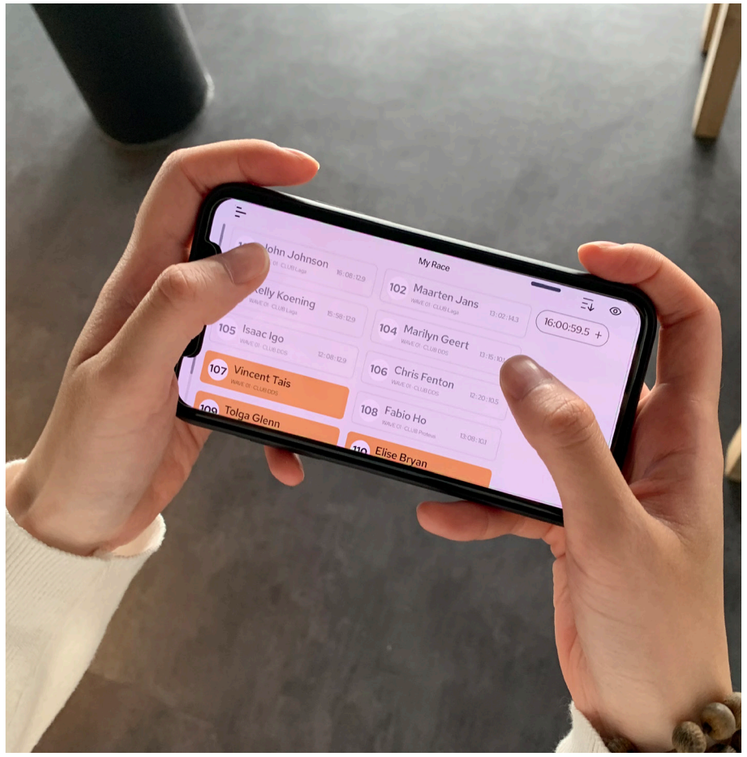
Undo/reasssign

There are no undo and reassign buttons anymore, because it is more logical to deselect and select racers for undoing and reassigning racers. Deselecting participants needs a double-tap to prevent wrong presses.

USABILITY INSPECTION

Usability inspection

A usability inspection was executed by ourselves in which we tested the final setup before the user test.



Iteration 3

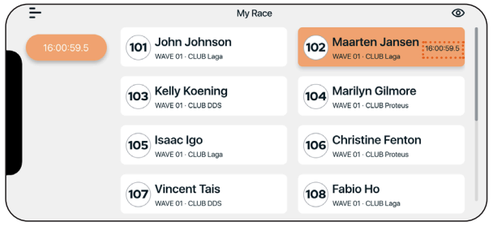
REASONING
iteration 3

FINAL DESIGN
hi-fi protoype

Show assigned time next to the name

Revised

During the usage inspection we found out that the connection between the time and its corresponding racer is not clear enough. To quickly fix this problem, we added the assigned time next to the name of the racer when the racers is selected.



3-step to 2-step

Revised

In order to make the timing process shorter, we decided to make the last recorded time to be automatically selected. In this way, users can start assigning immediately after recording the time.

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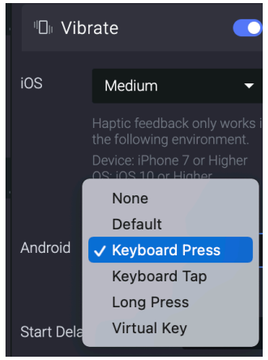
REASONING
iteration 3

FINAL DESIGN
hi-fi protoype

Vibration mode

Revised

After the pilot test we changed the vibration mode from default to tap on the Android phone, because the default vibration is too intense and too long which results in hindrance for quickly recording times after each other.



Undo

Revised

After the usage inspection we decided to change the double tap to one tap for deselecting the racer, because it is more logical to have the same operation for selecting and deselecting in conventional usage.

Next we exectued the user tests. An elaborated description of the final user tests can be read in chapter 4. FIrst we will explain the Final redesign in detail in the next chapter.