

Designing Wayfinding Technology for Developmental Topographical Disorientation



What is DTD?

"Developmental topographical disorientation (DTD) refers to the lifelong inability to orient in extremely familiar surroundings despite the absence of any acquired brain damage or neurological disorder" (Iaria & Burles, 2016)

Design Goal

Bridging the gap between map-based perspectives (allocentric view) and real world experiences (egocentric view) by using engaging technology that stimulates spatial orientation skills and empowers users with weak navigational skills and possibly DTD so they don't depend on technology for daily navigation.

For people with DTD, and everyone who is not good at navigation, maps would be easier to remember if our GPS showed us the routes based on the places we already know.

It would also make it easier to learn new routes based on those landmarks that have already been previously learned.

Context

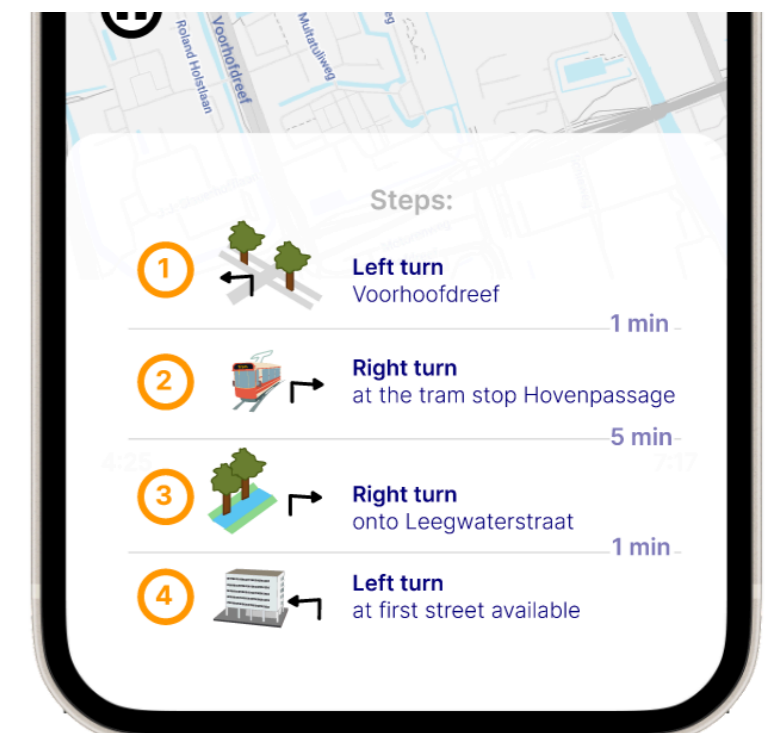


When you just moved to a new city or started a new job and you need to learn specific routes in your new physical environment by cycling.

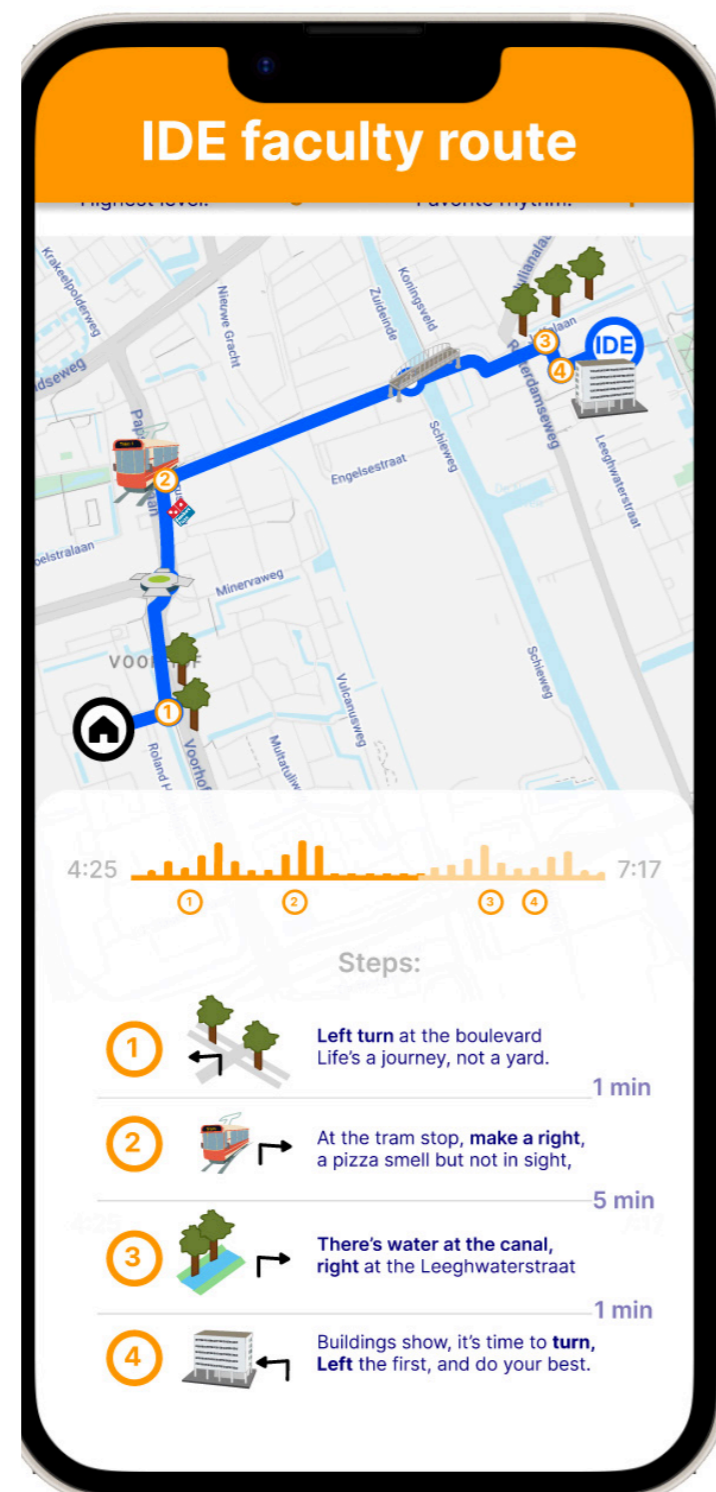
If the navigation instructions are turned into a song, are they easier to remember?



Version A (with directions as a song)



Version B (with normal directions)



Design Concept

The navigation system is a GPS that creates routes based on your most frequented places and landmarks that are easy to recognise.

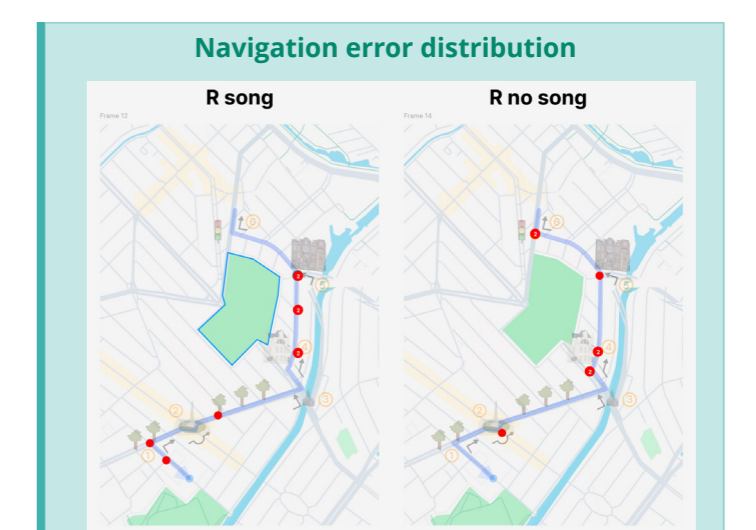
It helps you learn new routes by showing you a song with the directions that lasts precisely the length of the route so you can listen to it on the way. Songs can be your preferred music genre.

The steps are shown with a visual representation of a landmark that is an object easy to locate at the specific decision points of the route.

In an experiment done with students, who identify as not having good navigational skills, the following was observed:



5 In front stands all white and bright, Fancy house turn slightly right.



Turning directions into song lyrics does aid memory, but also leads to mistakes at other decision points.

Specific Visual Representations are enough to help memory, so adding lyrics is not necessary.

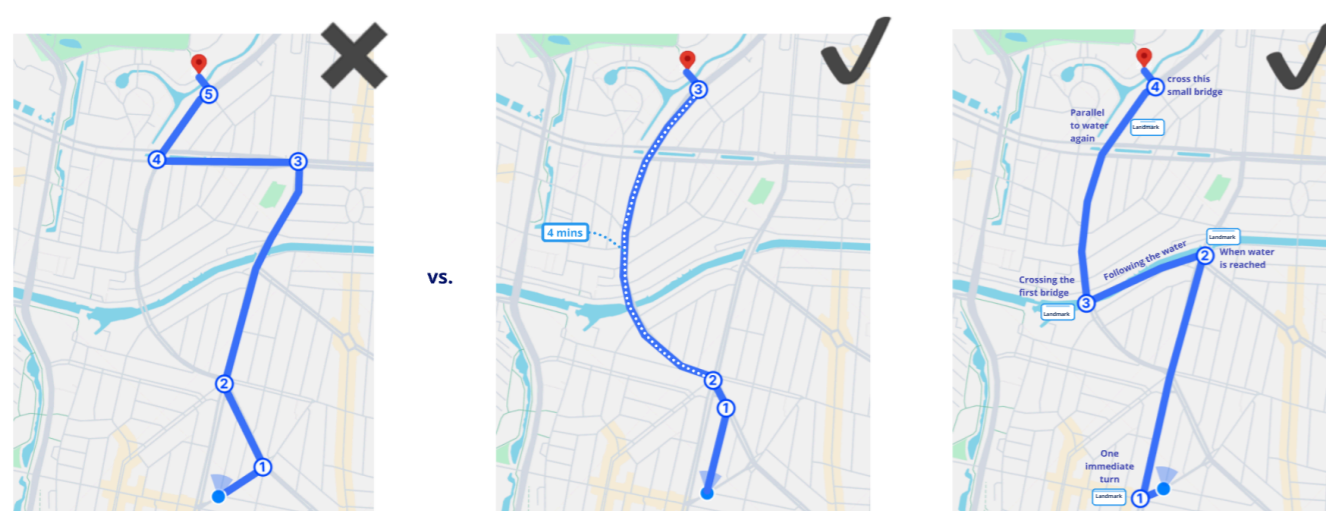
Participants did remember landmarks as decision points but often forget which direction to there.

Visual representations should focus on one object rather than the entire scene for clarity.

The navigation system aims to be entertaining, precise, and allows user autonomy. The user feels guided, informed and committed to learn the route.

How can we design wayfinding systems that are easy to remember?

1 Giving the option of the simplest route or one with most the memorable landmarks



Complicated route choice

- Additional steps than the necessary
- Decision points depend on street intersections
- Complicated street intersections with multiple directions
- Doesn't follow natural elements/landmarks

Simplified route choice

- The least amount of decision points possible
- Avoiding complicated street intersections
- Complex mental rotation tasks are avoided since general direction between the starting and end point doesn't change drastically
- Avoids unnecessary street crossings
- Provides alternative element to scale sections without close action points

Most memorable route choice

- Uses permanent elements as landmarks such as canals, bridges and big streets.
- Complex mental rotation tasks are accompanied by elements that can be followed such as a canal or wide streets.
- Provides clear instructions if navigation elements are repeated
- Landmarks don't have to be necessarily at the decision point but can also be before.

2 Choosing landmarks that are easy to recognize

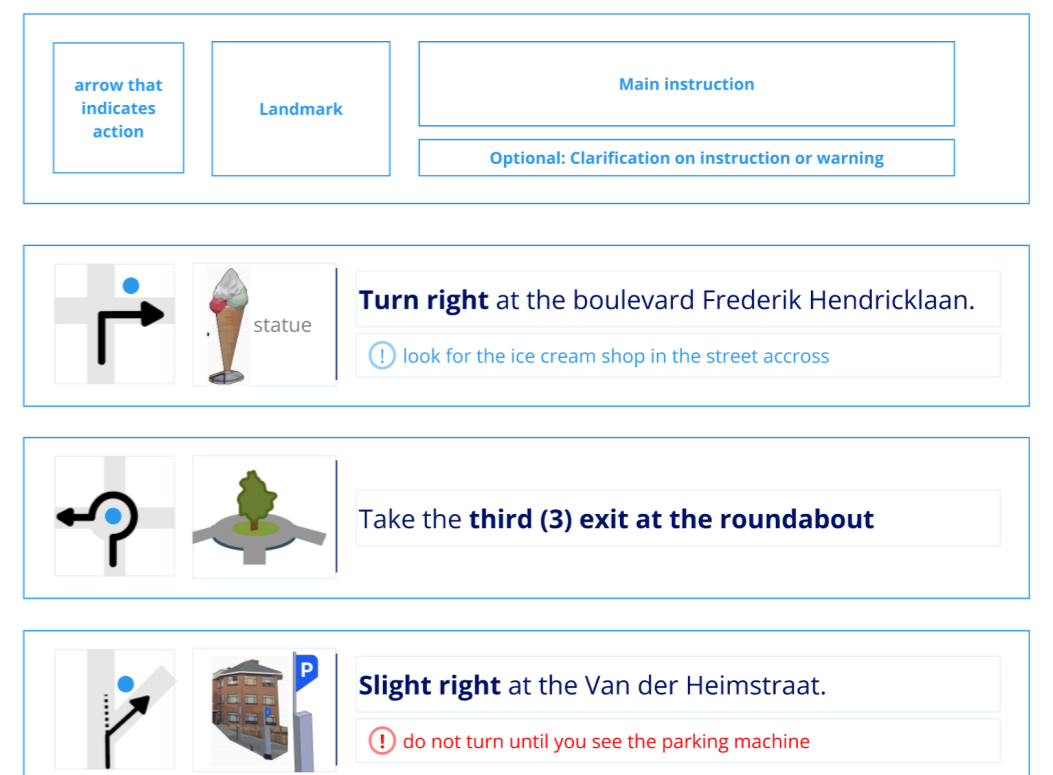


Bad landmark choice

Acceptable landmark choice

Ideal landmark choice

3 Showing instructions with visual elements



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