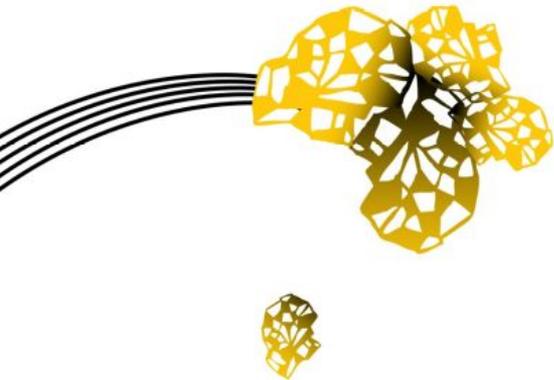
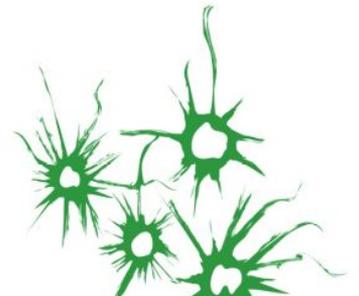


Artifact to represent the PIRATE at Vopak's innovation lab



Jasmijn de Vries
Creative Technology
Supervisor:
Edwin Dertien



Contents

Context

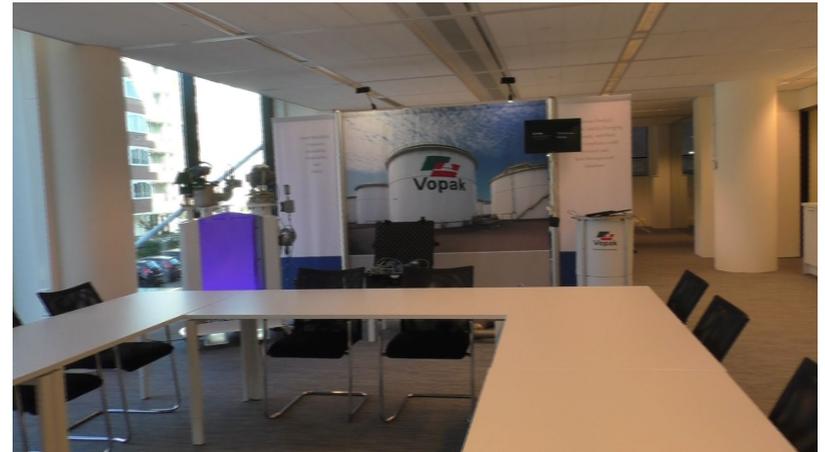
- Challenge
- Research Question
- Background
- Research
- State of the Art

Process of creating the artifact

- Ideation
- Specification
- Realisation
- Evaluation
- Conclusion
- Future work
- Acknowledgements

Challenge

- Explain PIRATE
- Representing RaM and UT
- Get people excited and interested
- Grab attention
- Meeting room and office



Research question

How should an informative, promotional, interactive artifact for Vopak about the RaM team, the University of Twente, and the PIRATE be designed?

Background

PIRATE

Pipe Inspection Robot for AuTonomous Exploration



- RaM
- Inspects pipes for damage and deformations
- Multiple pipe diameters
- 90° bends



Vopak

- Biggest company in their field
- Store and transport: liquid, gas, chemical, and oil products
- Many pipes
- Want something to represent their future using the PIRATE



Research

When does visual media, asking for attention, become an annoyance?

Documentary: There are no bad vegetables

- Should look like effort was put into it
- Destroy
- Disrupt
- Devalue
- Morals



What are the suitable kinds of interactivity to get a passerby to notice an informative installation?

Literature review

Definition interactivity

Interactivity is the level to which the user has the **perception** of their ability to **influence**, with **effort**, an artifact through their **choice**, **participation** and **control**. This perception is influenced by how the artifact **responds**, **monitors**, **communicates**, creates a **sense of place**, and is in **real-time**.

Get a passerby to notice an installation

- Change blindness



State of the Art

State of the Art

Desk research, literature research, and observations NEMO

- Attention grabbing installations
- Informative installations
- Advertising installations



State of the Art

Grabbing attention:

- Light
- Movement

Keep attention:

- Competition
- Multiple outcomes
- Not annoying
- Provokes curiosity
- Wanting to finish a task

Figure out installation:

- Easy interface

Get message across:

- Relate back to the product
- Play
- Text
- Pictures
- Video
- Physical models

State of the Art

Grabbing attention:

- Light
- Movement

Keep attention:

- Competition
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Figure out installation:

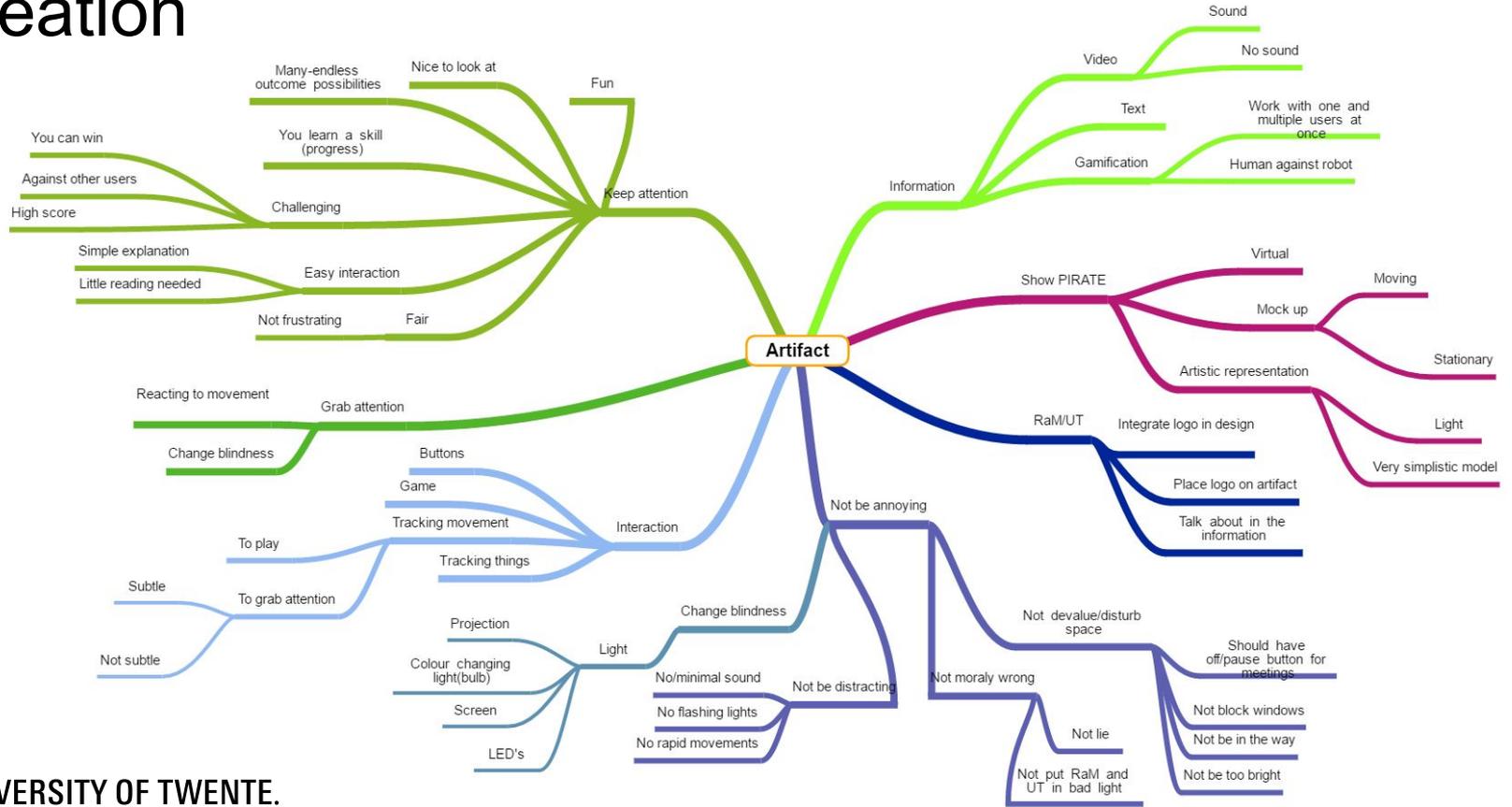
- Easy interface

Get message across:

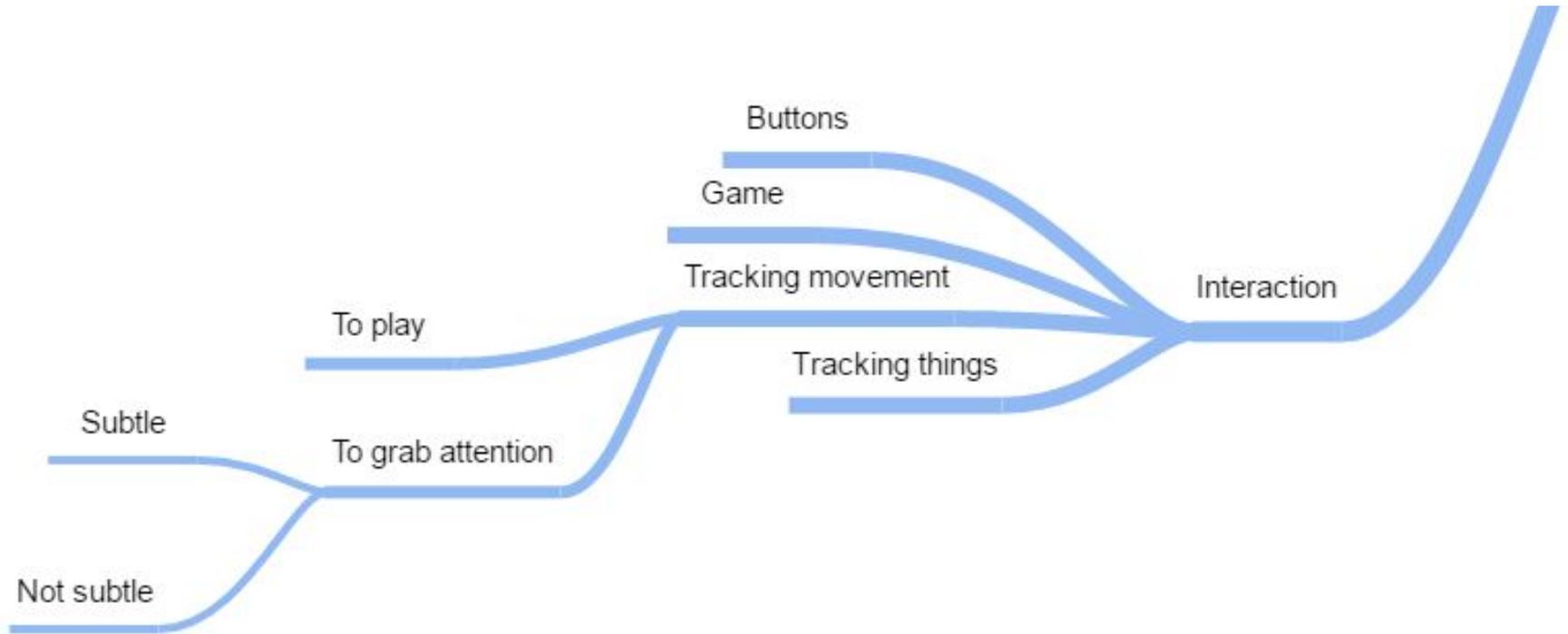
- Relate back to the product
- Play
- Text
- Pictures
- Video
- Physical models

Ideation

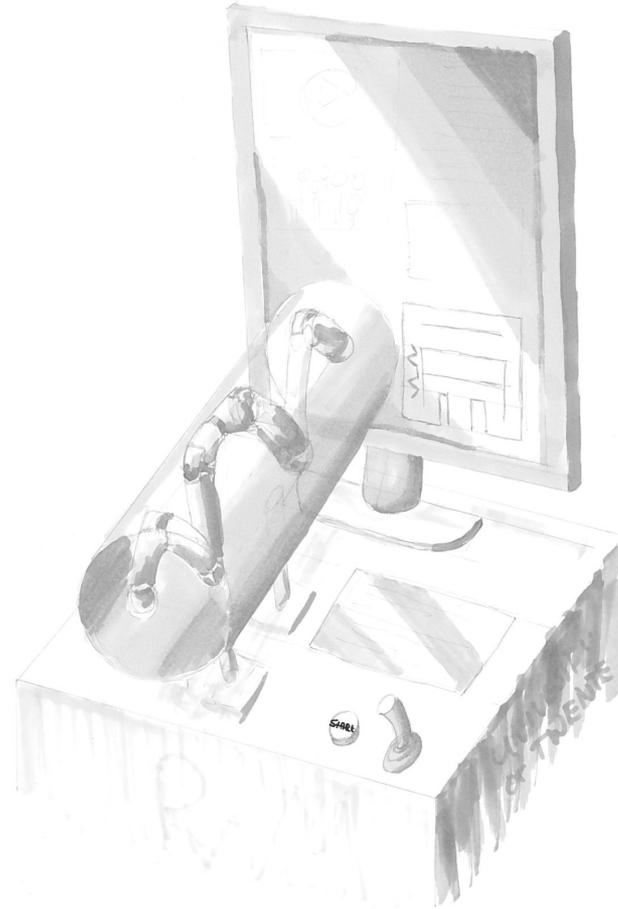
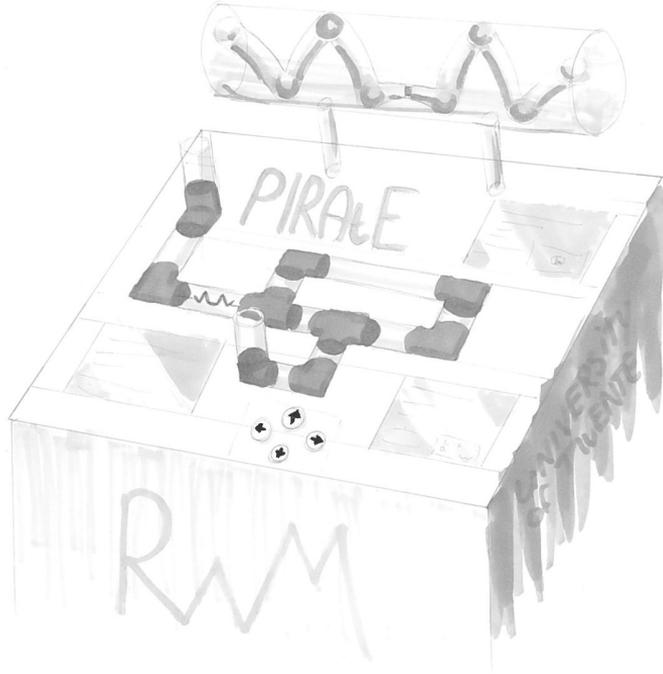
Ideation



Ideation

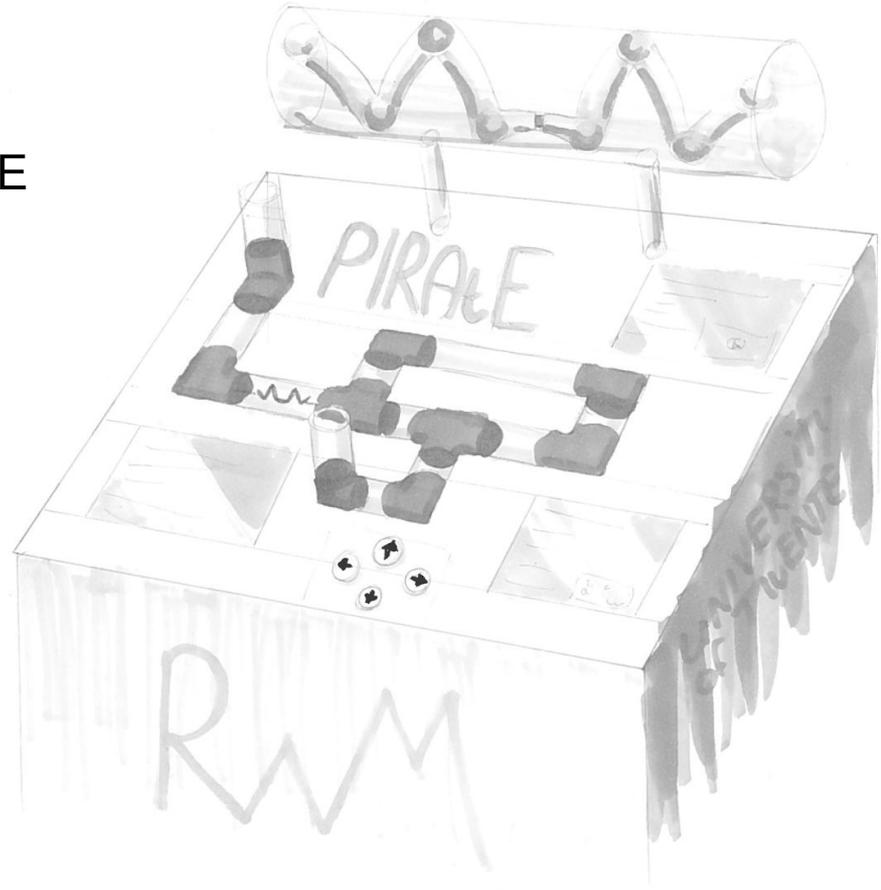


Ideation



Ideation

- Pipe maze with miniature PIRATE
- 1:1 model for size reference
- Screens for information
- User can navigate



Specification

Specification

Structure

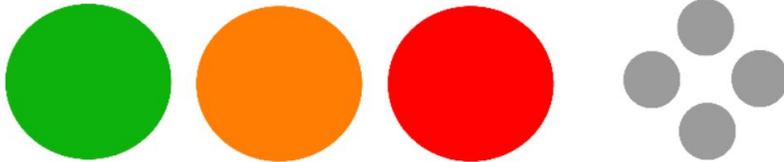
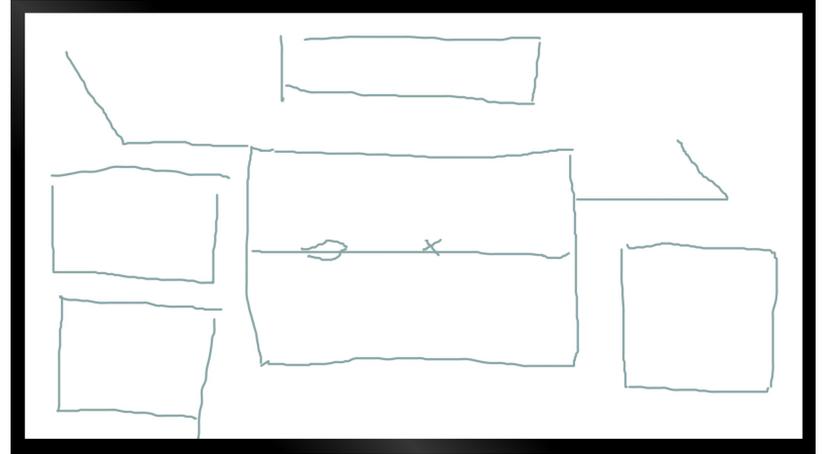
- Durable and sturdy
- Everything will be shown on one big screen
- Miniature PIRATE will be virtual inside real world pipes
- Easy to take apart



Specification

Interface

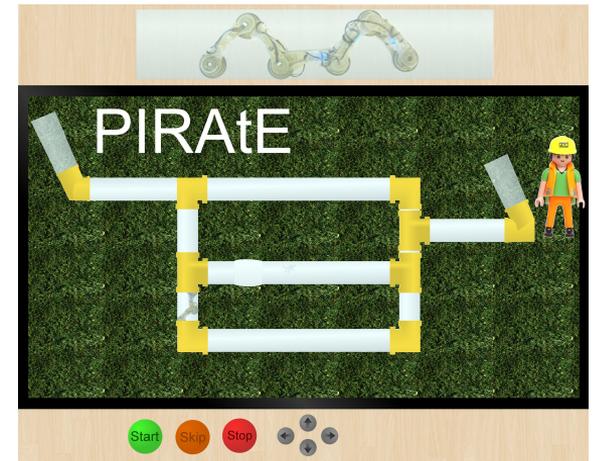
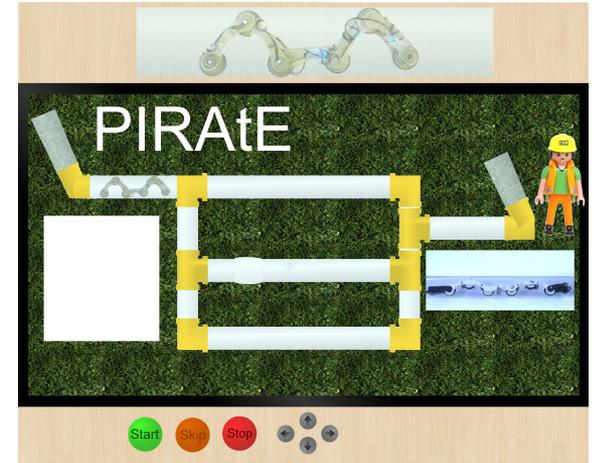
- Information layout
 - Introduction
 - How it moves
 - How it sees
 - The inventors
 - Implementation Vopak
- Indicators
- Buttons



Specification

Paper Prototype Testing

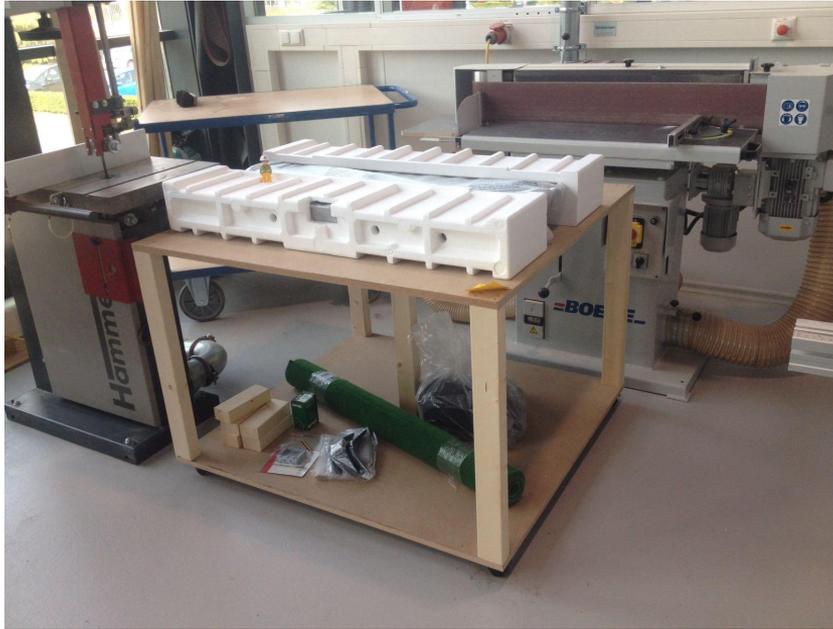
- No animations
- No indicators
- 10 participants
- Overall positive
- No skip button



Realisation

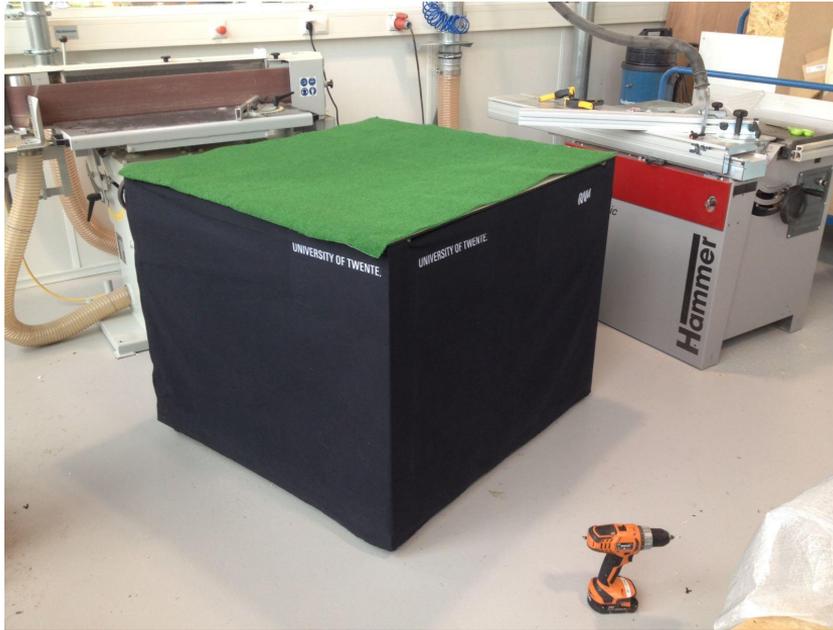
Realisation

Building the table



Realisation

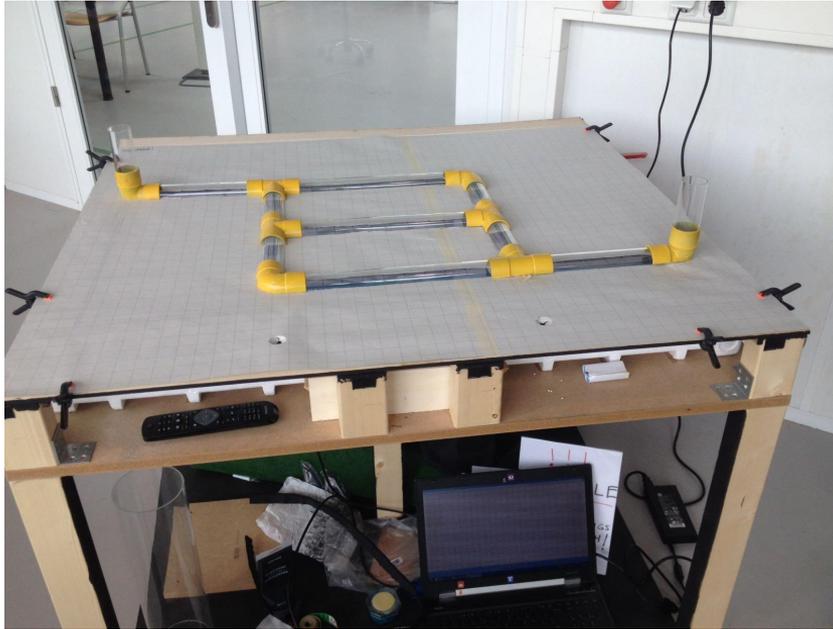
Building the table



UNIVERSITY OF TWENTE.

Realisation

Building the table



Realisation

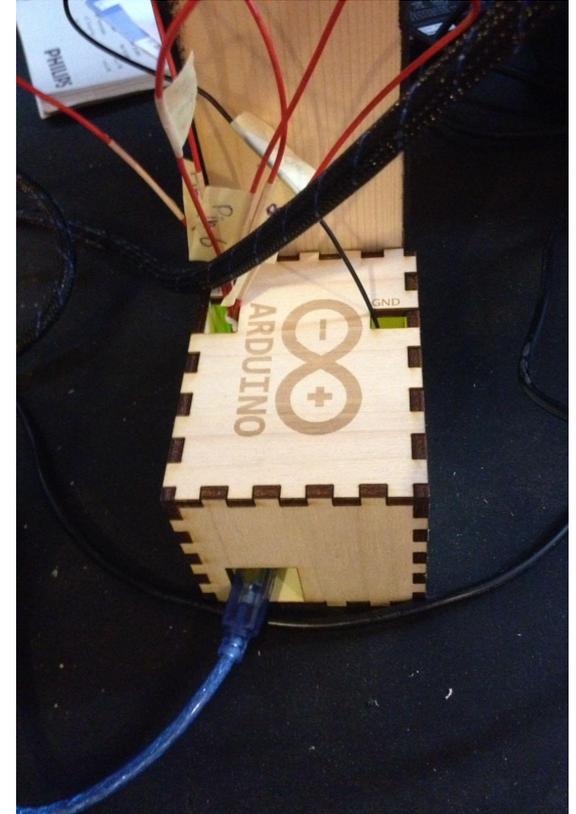
Building the table



Realisation

Hardware

- Screen
- Computer
- Arduino
- Buttons



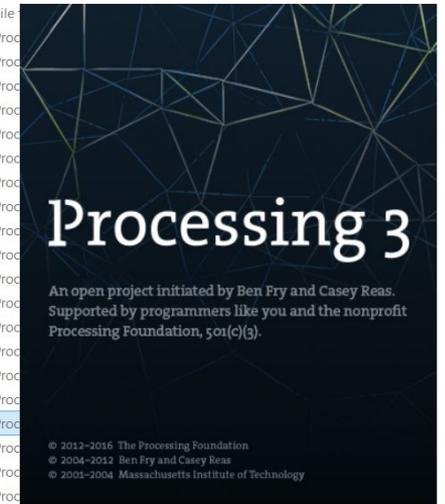
Realisation

Software

- Arduino code
 - Reads buttons
- Processing
 - Moves PIRATE
 - Imports information
 - Shows information



data	29/06/2017 00:35	File
Begin_Case	24/06/2017 21:46	Proc
Changeblindness_Case	27/06/2017 19:03	Proc
ConvertInput	26/06/2017 00:21	Proc
Corner1_Case	25/06/2017 03:29	Proc
Corner2_Case	24/06/2017 18:04	Proc
Corner3_Case	24/06/2017 18:04	Proc
Corner4_Case	24/06/2017 18:04	Proc
Corner5_Case	24/06/2017 18:04	Proc
Corner6_Case	24/06/2017 18:04	Proc
Debug	24/06/2017 21:46	Proc
destinations	20/06/2017 16:17	Proc
Display	29/06/2017 00:50	Proc
End_Case	24/06/2017 18:04	Proc
Gotostart_Case	29/06/2017 00:50	Proc
Information	29/06/2017 00:50	Proc
Intro_Case	24/06/2017 18:04	Proc
JasmijnAfstudeertafel	29/06/2017 00:52	Proc
Made_Case	25/06/2017 04:00	Proc
Move_Case	24/06/2017 18:04	Proc
Pirate	26/06/2017 00:21	Proc
readSerial	25/06/2017 18:22	Processing Source ... 1 KB
See_Case	25/06/2017 04:00	Processing Source ... 2 KB
StateHandling	26/06/2017 00:21	Processing Source ... 2 KB
Vopak_Case	25/06/2017 04:00	Processing Source ... 2 KB



Realisation

Design choices

- Portability and replacing parts
 - Wheels
 - Fabric can be tucked away
 - Top tier removable
 - Connectors buttons
 - Mesh not attached
 - 1:1 casing not attached
 - Screen and computer removable
- Easily interchangeable information
 - 1:1 itself can be taken out
 - Signs not attached
 - Picture, video and text information can be changed without touching code

Evaluation

Evaluation

- Informative
 - Keep attention
 - Easy to use

 - Get attention
 - Not annoying
- Qualitative user test: part 1 and part 2
 - Assignments
 - Questionnaire
 - Observations

 - Expert Evaluation - in the future

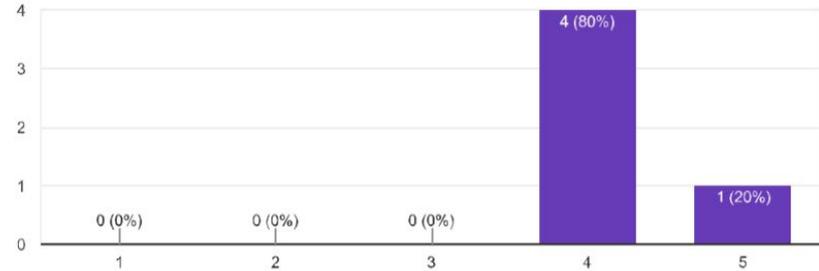
Evaluation

User test Part 1

- 5 participants
- Overall positive
- Change Start & assignment 2

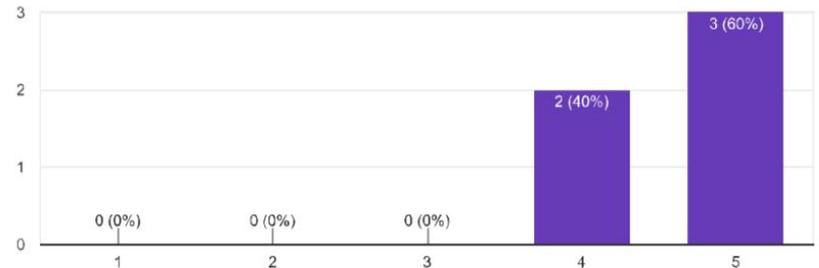
The artifact felt well designed

5 responses



The interface was easy to understand

5 responses



Evaluation

User test Part 2

- 20 participants
- Interface easy to understand
- Artifact aesthetically pleasing
- Placement information logical
- Subject was clear
- Noticed by passersby



Conclusion

How should an informative, promotional, interactive artifact for Vopak about the RaM team, the University of Twente, and the PIRATE be designed?

- Informative
- Keep attention
- Easy to use
- Get attention
- Not annoying

Promising!

Future work

- Implementation at innovation lab
 - Attention grabbing
 - Distracting
- Minor change to interface
- RaM provide content

Acknowledgements

- Edwin Dertien
- Mathijs Kossen
- Erik Analbers
- Daniel van Pel
- (Jelle van Dijk)
- User test participants



Thank you

