Helping autistic children through the help of robot interaction
Group 6

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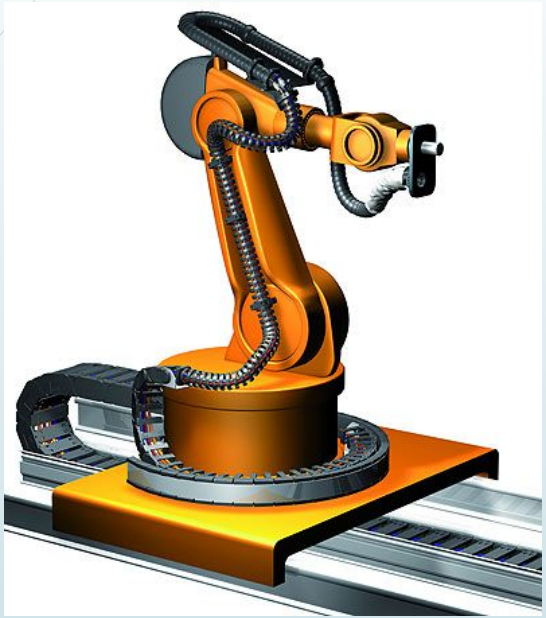
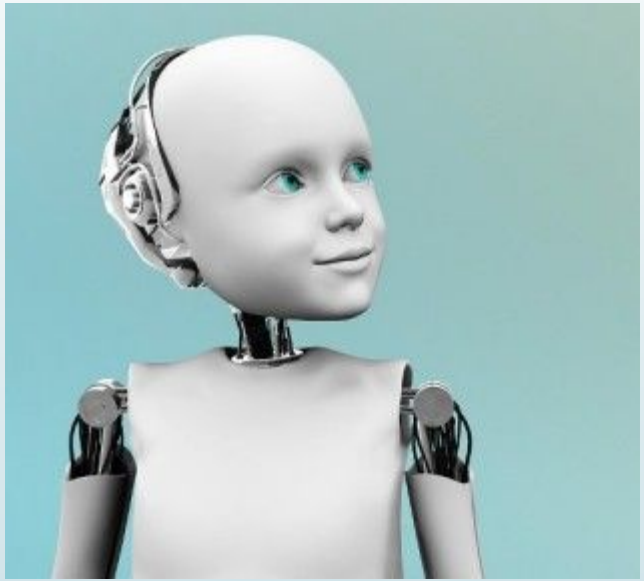




Problem description & research question

Problem: autistic children have (less developed social skills and) difficulty in working together

Solution: a robot

→ there are a lot of robots, but few implementations for in practice

Research question:

In what kind of game with Nao can collaboration skills in autistic children be improved?

Approach

Literature study

- State of the art
- Autism
- Collaboration

Contact with professionals → Barakova

Game ideas

Game development and testing

Requirements

- In the game, the players have to perform an action together. (1.1)
- In the game, the players have to share personal resources to achieve the common objective (1.2)
- In the game, the players have to elaborate on and perform a joint plan. (1.3)
- The game has to be age appropriate for autistic children of age 7 till 9. (1.4)
- The game has a clear goal, which is the same for all players. (1.5)

Preferences

- The game has several levels and can hence be adjusted to different intelligence levels of the children. (2.1)
- The game is played in real life and not online. (2.2)
- Nao has an active role during the game, but not necessarily as a player (2.3)
- Equal role of participants i.e. social interaction (2.4)

Constraints

- Nao can only speak, walk, point or make other simple movements.
- Nao cannot work autonomously.

Table comparing game ideas

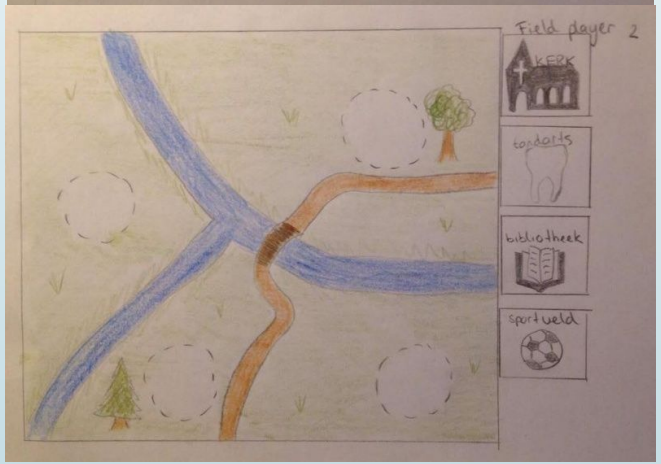
Requirement \ Game	City game	Logical puzzle - city	Virtual game 1	Virtual game 2	Virtual game 3	Lights Game	Board Game	Activity Scheme	Cooperative building	Creative Building
1.1	no	yes	yes	yes	yes	yes	yes	no	yes	yes
1.2.	yes	yes	no	no	yes	yes	yes	no	yes	no
1.3	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.4	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
1.5	yes	yes	yes	yes	yes	no	yes	yes	semi	no
2.1	yes	yes	semi	semi	no	yes	no	yes	no	no
2.2.	yes	yes	no	no	no	yes	yes	yes	yes	yes
2.3	semi	semi	no	no	no	yes	semi	semi	no	yes
2.4	yes	yes	yes	yes	yes	no	no	yes	yes	yes

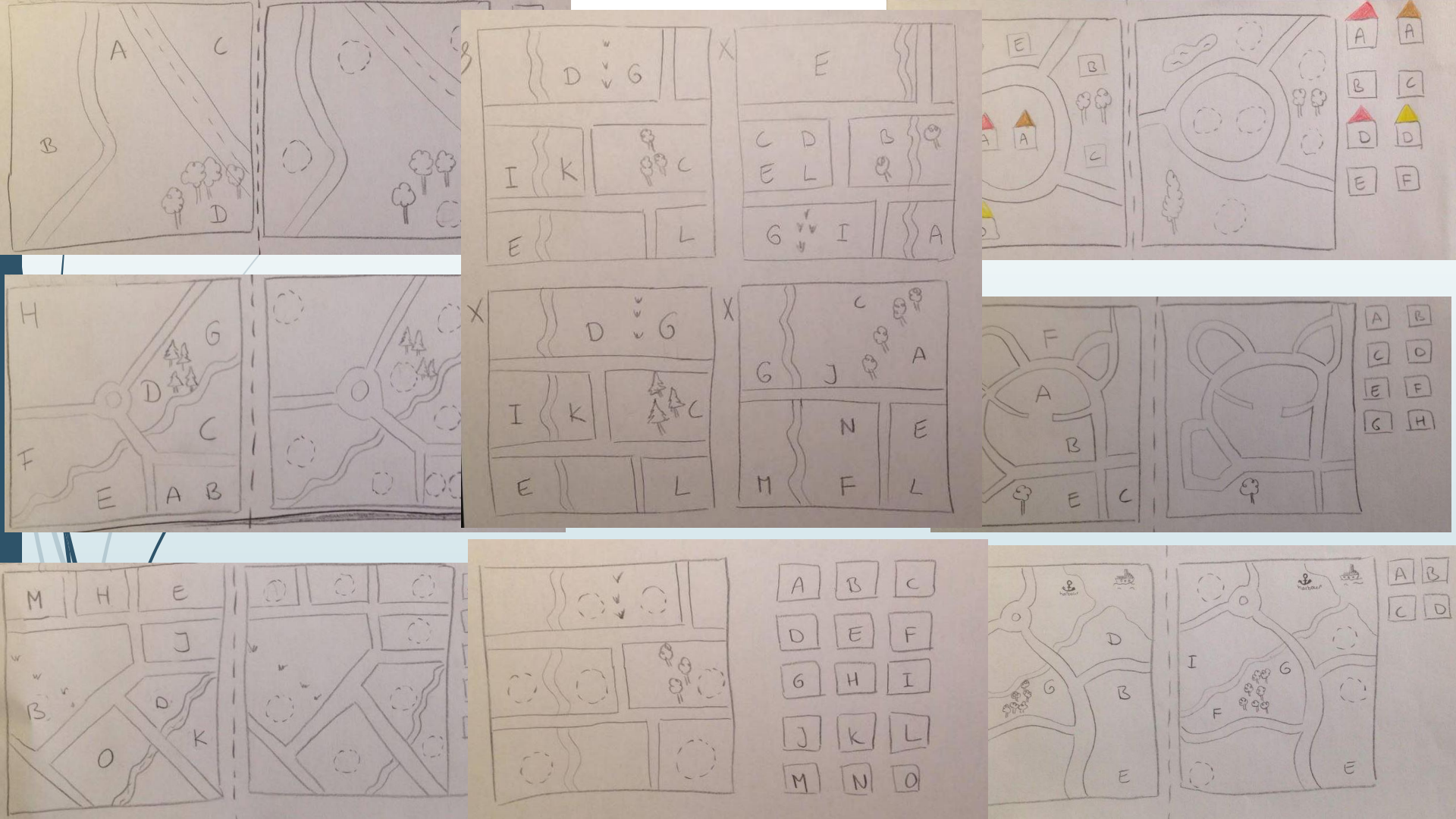
Game development

Sketches

Levels

Rules




A C B D
D G I K C E L
E C D E L B G I A
E B A A C
A A B C D D E F
H G D C F E A B
D G I K C E L
C G J A N E M F L
F A B E C
A B C D E F G H
M H E J B D K O
A B C D E F G H I J K L M N O
D G B E
I G F E
A B C D

Final game

Complete map

Incomplete map + pieces

Game try-out

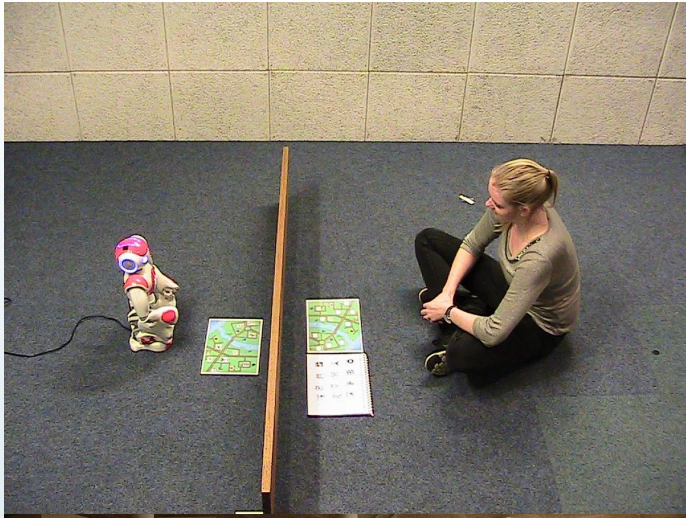
Children of the ages 7, 12 and 14

Students

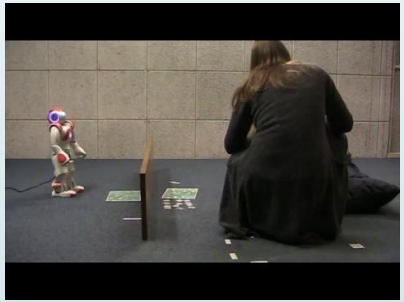
Small evaluation with participants

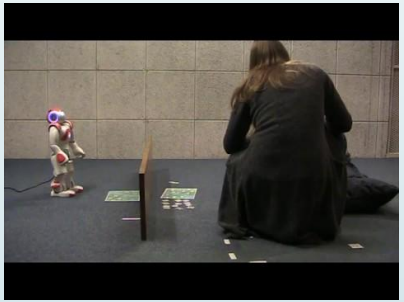
Video

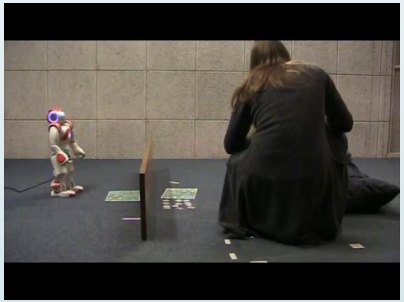
- quantitative
- qualitative



Video







Real world implementation & success

Talk with specialist

- Implementation of robot in practice
- Expensive to realise
- A lot more testing and developing and expanding of game levels

Conclusion & improvements

Deliverable: developed game targeted at children with autism to promote collaboration.

Tried out with normal developing children and students

We are not able to conclude anything about the success of the game considering collaboration. However, our try-out showed that the game was fun and understandable for our participants.

Improvements:

- Earlier involvement of users (primary, secondary)
- Game demanded several skills not necessarily needed for collaboration → increased the difficulty of the game

Questions?