SoilGolf: a mixed reality game for the World Soil Museum

Alterra Wageningen UR

Joske Houtkamp, Jandirk Bulens, Rik van de Kraats
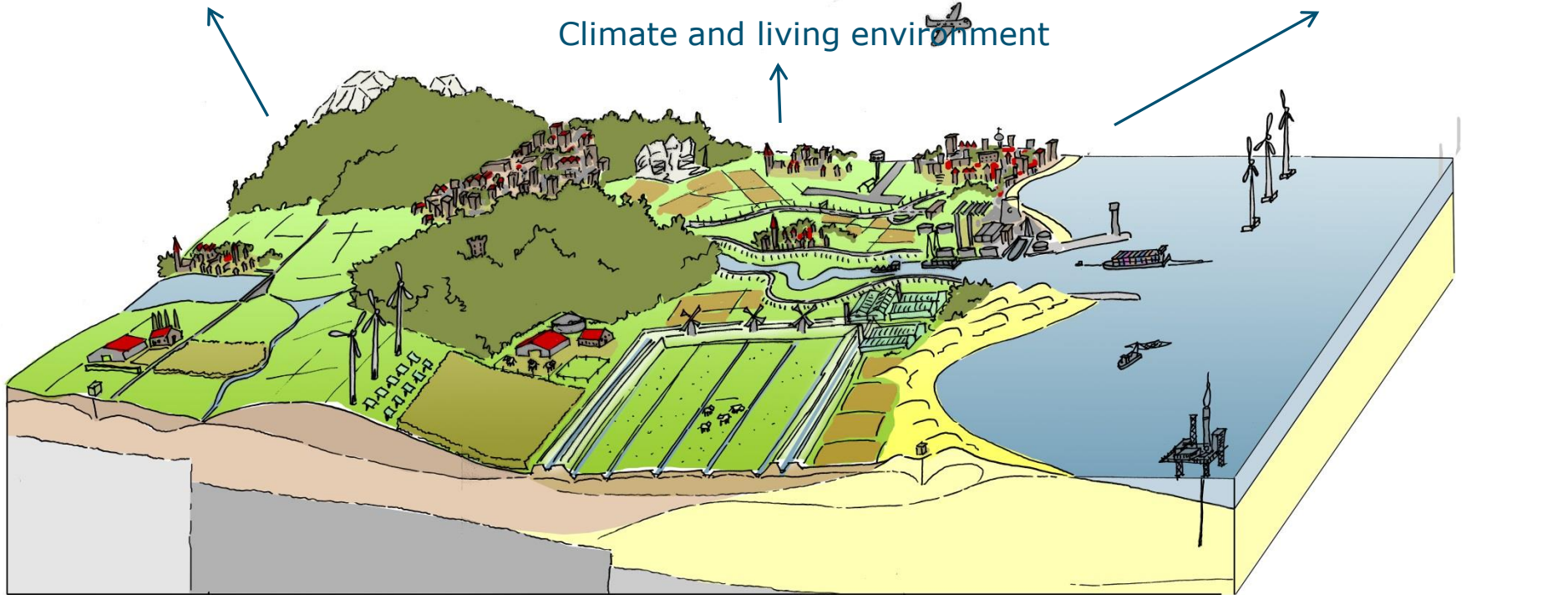
Alterra, Wageningen UR

Nature and biodiversity

Climate and living environment

Watermanagement & governance

Land use & planning

Sustainable soils

Spatial knowledge systems

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Spatial Knowledge Systems Group, Alterra Wageningen UR

Applied research projects, from regional – international

Development of tools for collecting, analyzing and presenting geo-information, also simulations

Interdisciplinary research projects

Background: ISRIC World Soil Museum

Redesign of the exhibition in 2013

Nucleus of the collection:

soil monoliths

Objective: explain the relevance of soil to modern-day global challenges

Interactive displays

Game requirements (museum)

- appeal to a young audience (1st year students)

- use new technology to continue the look and feel of the exhibition

- offer some physical activity, preferably outdoors

- highlight the monoliths as main elements of the museum collection

- extend the length of the experience at the museum

- make the visit more memorable;

Understand the users: Personas

Jesse, 17 years old

Agricultural Science student

Soccer, chilling with friends

Shooters, laser gaming

Daniëlle, 18 years old

Landscape Design student

Hanging out with friends, music

Social media

Representative of a typical, desired, user group

Support informed design decisions

Focus in development team

Interests of the target user group, and the types of mobile devices and smartphones they own.

Pruitt, J., & Grudin, J. (2003)

Design Idea: Mixed Reality – Soil Golf

- Use smartphone to hit a virtual golf ball

- Virtual golf course projected on the campus

- Holes give view of soil profiles

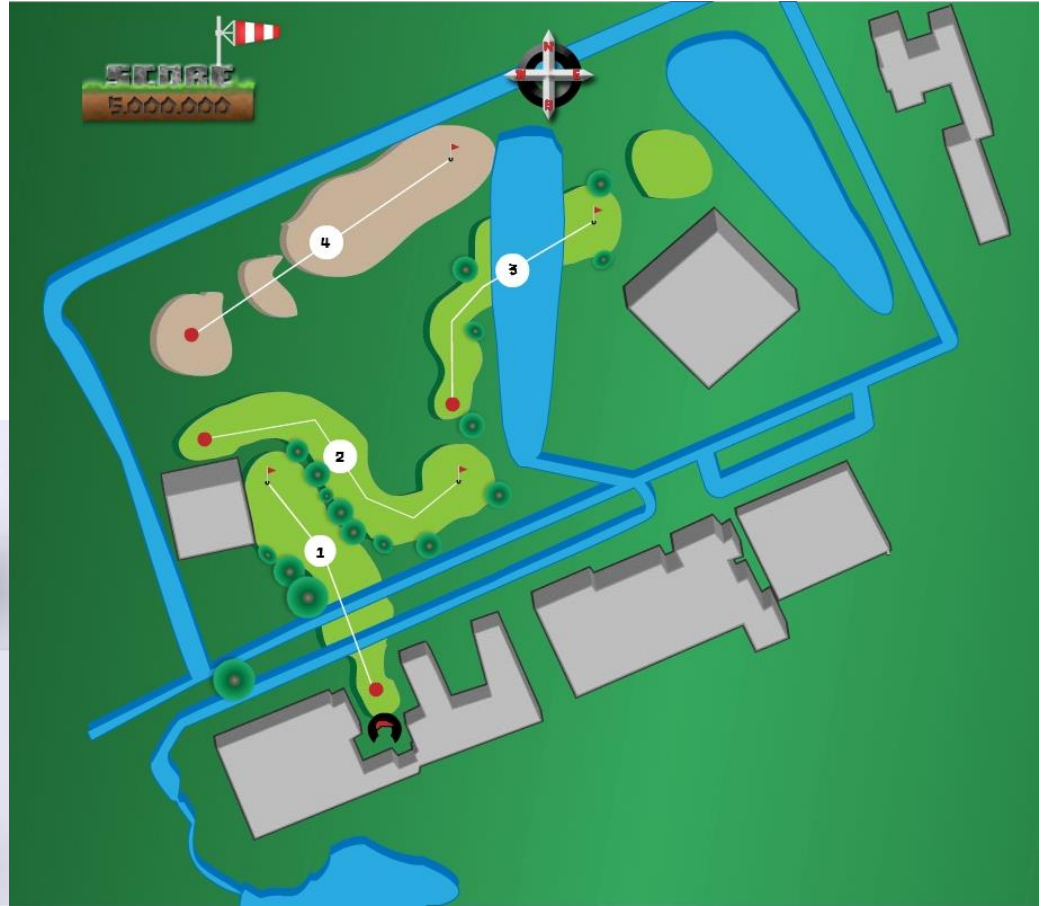- Points earned by strokes and questions

- Competitive

Soil Golf Course

Four holes:

distinctive geographic and geological features (in 3D)

distinctive soil profiles

Technical requirements

GPS receiver in smartphone detects the location and motion of the player

Accelerometer and gyroscope detect velocity and direction of stroke

First experiments reveal difficulties in implementation

➜ test design and gameplay.

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Interface design: think aloud method

Reveals mental models of users of an application or prototype

Participant verbalizes expectations and thoughts about the interface, mistakes, confusion, nice elements, etc.

Results: participants did not notice the animations, did not recognize some buttons and the starting point.
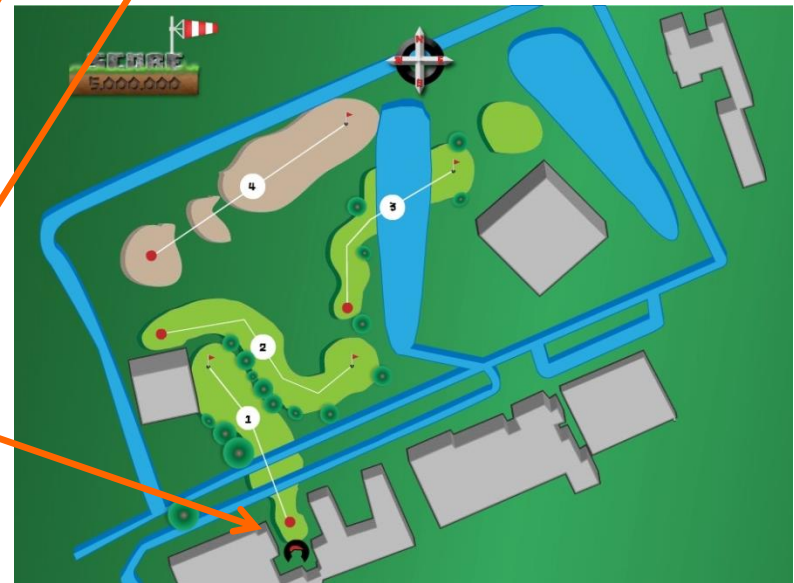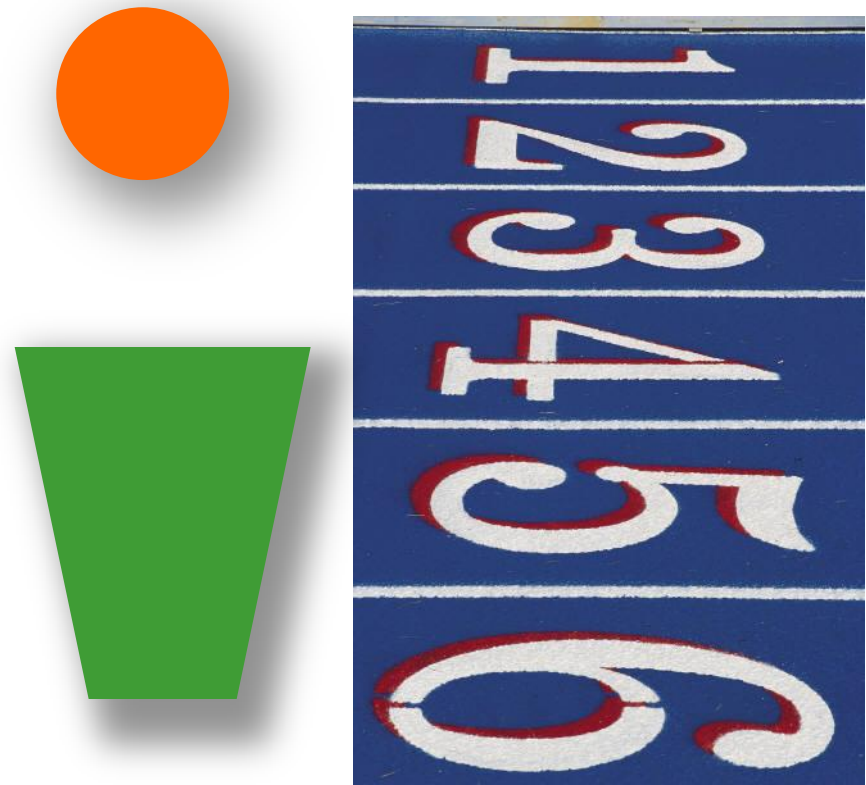
Gameplay: play testing

Are the core game mechanics fun, engaging, easy to understand?

Participants tested a physical prototype and thus a playable version of the core game mechanics

Results:

- participants did not like the negative scoring system, restart after 6 faulty strokes,

- succession of throwing and asking questions is fun and engaging.

Fullerton, T. (2008)

Conclusions

- Design of the game meets the requirements of the World Soil Museum

- Think aloud method and playtesting were easy to apply methods for evaluation in design stage

- Implementation of game as intended requires high budget, but gameplay may be simplified.
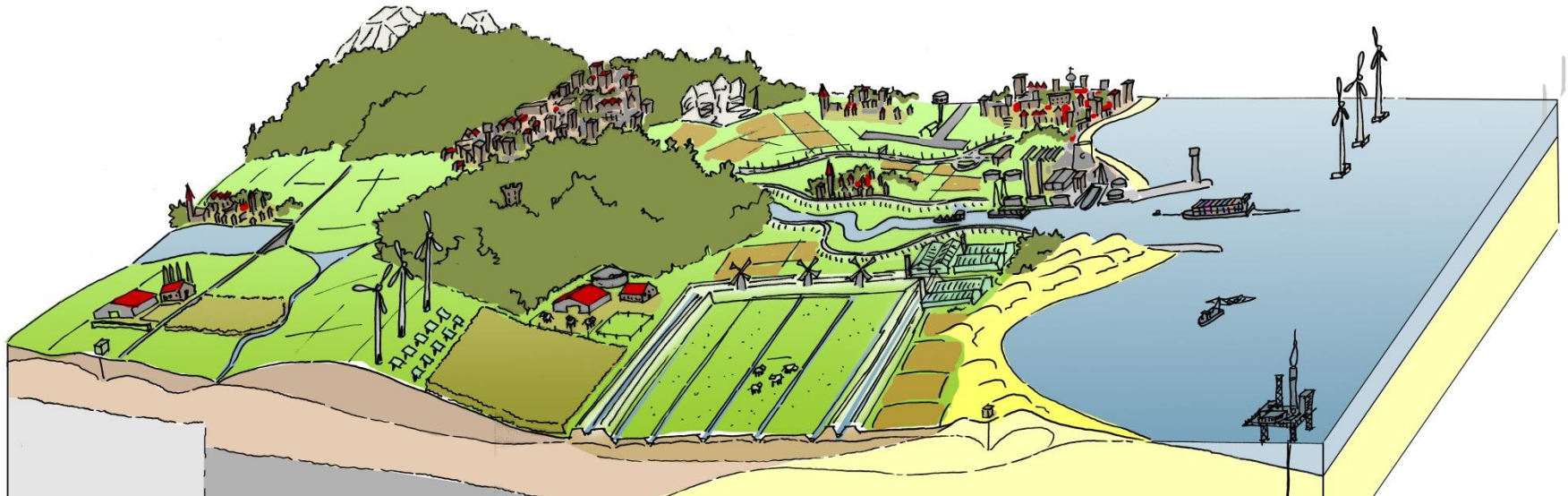
Geospatial Games in the Netherlands

New collaboration between:

Alterra, Wageningen UR: Geodata, application development, real world problems

Wageningen University: Geoinformation Science

Utrecht University, Computer Science: Game technology

➔ Serious games, training, simulation, especially domain of Wageningen UR (land use and planning, agriculture)

Questions?