MOOC
Game mechanics

Game concept

- Tower defense
- River floods periodically, threatens to flood city
- Pumps are used to pump out extra water
- Pumps powered by wind turbines through transformers.

Game mechanics (1)

Turbine customization

- Number of blades
- Types of nacelle
- Types of powertrain
- Wind turbine height
- Rotor blade length

Could we obtain data physical information on how to address these different customization issues?

Game mechanics (2)

Wind turbine placement

- Height leads to increase in output and penalization in construction costs

Electricity transportation

- Power decrease with distance

Could we obtain data physical information on how to address these different customization issues?

Game mechanics (3)

Resources

- Currency: Turbine Coins (TC)

Quantitative scoring

- Scoring based on TC

Flooding system

- City sewer– a way not to loose too fast

Game mechanics (4)

Turbine maintenance

- Wears over time – durability level – can be repaired at any time for a fee – requires mandatory maintenance after a certain time

Environmental events

- Lightning, thunderstorm, earthquake, … - affect durability, speed of water, wind direction

Game mechanics (5)

Nacelle turbine orientation

- Possibility to rotate the wind turbine to face the wind (live active function)

Win/Fail

- Ends with a star scoring system (3* - 90% or above, 2* - 60% or above, 1* - 30% or above)
- Feedback given on: overall, placement, customization, wind orientation

Game mechanics (6)

Leaderboard

- Ranks players according to score

Chapters

The game is based on four chapters (for the proof of concept):

1. Tutorial for the tower defense game – minimal wind turbine aspects
2. Introduction to wind turbine placement
3. Introduction to wind turbine customization
4. Introduction to wind turbine orientation