

## Assignment 1 – Game synopsis earthquake game

### Introduction

The Science Centre Delft provides people with the opportunity to familiarize with technologies and innovations developed or under development at TU Delft. This is also the case of with earthquake engineering. At the Science Centre visitors can see first hand what the effect of different soil types and building materials has on the destructive effect of an earthquake.

With the development of the Virtual Home the Science Centre has broadened their reach to offer a similar experience on an online platform. In this light they commissioned the development of a game that complements the experience in the Science Centre.

### Existing games

In our research we found two games worth mentioning that fit the category of earthquake games:

- [Beat the quake](#): Point & click game where you can choose different ways to secure objects in a room against an earthquake. When the quake strikes you can see the result of your counter measures.
- Sim EarthQuake (Android): A very simplistic game in which the player shakes its phone to create an earthquake. The length and intensity of the shaking determines the force.

Neither game incorporates the required features of taking into account the building material or the soil type and their effect on the damage done by an earthquake.

### Game Concepts

In the initial discussion on what this game should offer the player we came up with four different concepts. These will be discussed below.

#### A. Engineering: Build an earthquake proof city

The player is presented with a 2D sliced through terrain on top of which they can choose where to place buildings. They can choose the building materials and the position. They are constrained by a budget and have a certain population size that needs accommodation. At a certain point an earthquake will hit and the player will see how successful their choices are.

#### B. Policy management: Manage a region hit by an earthquake

A simulation type of game that presents the player with a real life scenario of a region where an earthquake has happened. This can differ from poor to wealthy countries and between rural areas and cities. They act as the government and make choices about how to rebuild the country and protect areas against earthquakes. A balance needs to be found between spending money for protection and rebuilding. This offers much replay value to see how their choices affect the outcome and players can improve by trial and error.

#### C. Quiz game

The player is first presented with informational videos and text on earthquake damage and the effects of soils and building materials. This is followed by videos and photos of building types and earthquake devastated regions. The player is then asked to assess the damage on which the player has to answer questions on the earthquake characteristics in a quiz concept. A high score ranking keeps track of the best players. Could also be played in groups. The game has little to no replay value once you know the answers.

#### D. Be the Earthquake

In this concept the roles are turned around. The player is the earthquake and has to do as much damage as possible. From a 2D side view the player can see the soil build up and choose the place of

the epicentre and create the actual quake by hitting the spacebar for example. Then the player can see the effects of the earthquake on the buildings.

### Feedback from the commissioner

On November 17th we presented the concepts to Jules Dudok the representative of the Science Centre. We asked him to further specify their needs and priorities. He explained that the science centre attracts visitors of all ages and that we can freely choose a target audience for the game. He further emphasized that the focus should be on attractive gameplay and that the educational function should come second to that.

Concept C, the quiz game, was denounced, as this is not inline with the interactivity that the Science Centre stands for. Concept A and B demands a certain complexity which can be considered unrealistic within the scope of this project. That leaves Concept D, which is also considered the most appealing as it provides different insights when looking at the problem from the earthquake's perspective and doing as much damage as possible. Furthermore we discussed a multiplayer idea of combining concept D with a simple version of concept A. In which one player constructs a city as well as it can and the other player tries to destroy it by creating an earthquake. In further group discussion we decided however that this too demands a certain complexity that, at this point, we deem unrealistic for the scope of this project. Concept D will thus be the approved game concept that will be described in more detail in the game synopsis.

### Game synopsis

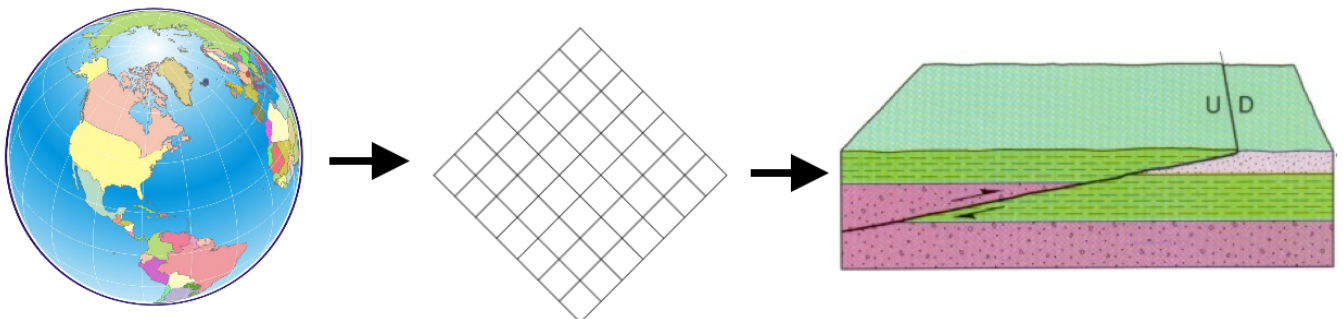
This synopsis will describe both the gameplay and why it fits the requirements that were set by the client.

#### Why it fits the requirements:

- It's FUN to destroy things (ex. angry birds)
- It can speak to a broad target audience as the complexity of the game is easily variable
- Serves educational purpose:
  - Geo locations and their relation to soil types
  - The effects of soil types on earthquakes and their destructive force
  - The resilience of certain building materials
- Online playable

### Gameplay

1. The player chooses a place on a globe that is prone to earthquakes. For example Los Angeles, Tokyo, Port-au-Prince, Kathmandu or Groningen. The location determines the layout of the soil and how the buildings look. Each location can have multiple levels.



2. All levels are presented in 2D with a good view on the soil and the buildings on top with a simulated 3D perspective.
3. The surface is divided into different soil/terrain types with properties that can increase the difficulty of the game. Each soil type has a different effect on the earthquake's vibrations.
4. The player chooses a place in the ground where the earthquake occurs. This has to be on or near a fault line. By hitting the space-button the player can induce the vibrations of the

earthquake. Its frequency and also its severity by holding it down, and could potentially be a rhythm mini-game.

5. It could be possible to add a power meter to guide the player to hit the space button at the right time to do the most damage.
6. The first vibration will send people from their buildings and panicking. So the player can choose the give a warning or an all out disaster.
7. The damage is recorded in euros and death count.
8. The game can provide information on the effect of different soil types but also on some building materials.

### Prototype description

The first prototype will consist of a single level. The player will be able to choose the epicentre of the earthquake and press a button to start the vibrations. The terrain will consist of at least two types of soil and a few buildings representing a city. The effect of the vibrations needs to show some damage to the buildings.

The definitive game will expand on the existing features. There should be more levels and types of soil, and the multiple types of earthquakes. The game should introduce the new features while progressing through the levels to make the game more challenging and interesting. The game should also explain these features or make them clear by the gameplay.

The type of earthquake (the way tectonic plates move or human induced) should have some impact on the gameplay like they would in real life.

In order to make the game attractive, every geographic location should have a fitting style. The vegetation and architecture of the buildings should change accordingly.

### Team plan

This plan shows the role distribution in the team.

Producer & Communication	Sander
Lead programmer	Andrea
Lead designer	Remi
Testing director	Fabian
Audio designer	Joris

### Action plan

The table below show the action plan. This is a more detailed description of the milestones, the tasks required to fulfil the milestones and the appointed responsible people for the tasks. It should be noted that future tasks may be different or the responsibilities might change.

**Table 1 - Action plan**

Week	Milestone	Deliverable	Deadline	Tasks	Task	Responsible
1	Kick-off	Game synopsis	18-nov	Write game synopsis	Literature research + make summary	All
				Why does the game fulfil requirements?	Make test plan	Fabian
				What does the prototype consist of?	Write out the game synopsis	Sander
				Make action plan (detailed phased approach, roles & responsibilities)	Make action plan	Sander
2	Game design	Game design document	25-nov	Elaborate draft game design document	Make a blueprint for the design document	Sander
					Familiarize with	Andrea

					unity/start working on the game	
					Start with first designs	Remi
					Prepare meetings/working sessions	Fabian
					Start with first audio	Joris
3			02-dec	Game development + working on report document	Start game development	Andrea & Remi
					Assist game development (graphics)	Joris
					Work on document	Fabian & Sander
4	First playable	Game prototype	09-dec	Game development + working on report document	Finish first prototype	Andrea & Remi
					Assist with prototype	Joris, Fabian & Sander
					Work on document	Fabian & Sander
					Prepare mid-term presentation	Fabian & Sander
5	Mid-term presentation		14-dec	Mid-term presentation: convincing your commissioner & gather feedback	Prepare/give presentation	Fabian & Sander
					Work on the second game prototype 30%	Remi & Andrea
6	Beta	Game prototype	23-dec	Game development	Develop game further 75%	Andrea & Remi
					Assist game developers	Joris, Fabian & Sander
					Keep design document up to date	Sander
7			13-jan	Game development	Develop game further (98% complete)	Andrea & Remi
					Assist game developers	Joris, Fabian & Sander
					Keep design document up to date	Sander
8	Release	Game prototype Project documentation	20-jan	Game development	Finish the game + make it beautiful 100%	All
9	Wrap-up	Final presentation	24-jan	Game release final presentation final documentation	If game is not finished yet, finish it	Andrea & Remi
					Finish game document	Fabian, Sander &

**Testing plan**

The game should be played by kids (age of 10 till 16). Fellow students can do the first tests with another background than game building. When the basic game is defined, kids can play the game to test it.

In this test sessions, a couple of assessments are made.

- See whether in the game goal and functions are understood
- Is the game fun and does it engage the player
- Are the goals of the game achieved and is the complete game clear enough.

These assessments will be documented per session, for feedback on the game development.