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# Tower2Power: A Real-Time Strategy Game You Cannot Win from behind Your Desk

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**Abstract**

Real-time strategy games are mostly known for the PC platform and tend to be very sedentary. Our game uses classic RTS elements as a base but has its focus shifted to teamwork and fun new mechanics by the implementation of gesture recognition. Tower2Power will provide players a fun and active outdoors experience that can be played with friends and family.

**Author Keywords**

Choose 2-3 keywords here.

**CSS Concepts**

- Software and its engineering~Interactive games

**Introduction**

Throughout the years people have transitioned into a more sedentary lifestyle. The use of video games has been linked to a decrease in activity and even obesity [1]. While smartphones, tablets and computers make access to games so simple, they keep our activity at a bare minimum. A game can be played by only using some finger taps or some small movements with the wrist to move your mouse. Playing on the newer game consoles such as the Nintendo Wii does increase energy expenditure, however, they still fail to reach the energy

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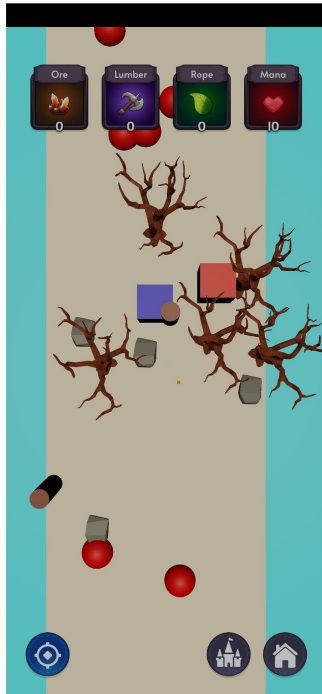


Figure 1. Map view with all resources (mana, wood, ore, rope) and the two bases (red and blue)

level of actual sports and do not contribute enough to the required daily activity for children [2].

Real-time-strategy (RTS) games are the ideal solution to tackle the passivity that is associated with gaming. Games such as Starcraft II or Age of Empires are nowadays classics but are not that easily translated from a computer platform into a mobile setup. Yet, we believe that this game style and its elements can be transformed into a fun, social and active mobile game by going back to the basics.

### Background

The RTS genre is a somewhat older genre that is ideally played on the PC platform because of the amount of controls needed. Despite of its lack of success on other consoles, Truman et al. do believe that there is a big potential in the genre when redesigning it for virtual reality (VR) [4].

### Design and Implementation of Tower2Power

The Tower2Power game (T2P) is a multiplayer real-time strategy game that is played on a certain location and is developed for android. The device itself holds the user interface and is also used as a controller.

### Gameplay

Much like all other classic RTS games, T2P is based on the gathering of resources. The players will have to walk around on the map to discover resources and gather mana (figure 1). While mana is picked up automatically, resources aren't. Once a player discovers a resource, he will have to interact with it when close enough, by clicking on it. Three distinct resources can be found: Wood, ore and rope. After clicking on them in

the world map, the player will be sent into gather mode, where he will be able to gather the resource by performing a specific gesture. When a team has gathered enough resources, they can walk to their base and deposit their resources so that their tower can be upgraded (Figure 2). This is done similarly to the gathering and is done by performing different movements (Figure 3).

### Goal of the game

To win the game, players will have to work together, discover resources, and gather as many of them as fast as possible. After collecting the resources, they can be used to upgrade the player's tower and increase its level. The first team to fully upgrade their tower, wins the game.

### Team competition

T2P is a multiplayer game that can be played by between two and ten players. The players are able to create and/or join a game room at the start of each game. The players in the game room are then split into two different teams, one red team and one blue team. The game makes use of a team competition interaction pattern where two teams compete against each other. The teams are chosen either by the players themselves or randomly. Between the two teams there exists competition, but inside of a team, there exists collaboration. Players are encouraged to play together and get an advantage for doing so. When multiple players from the same team are gathering a resource, they get an additional bonus compared to when the two players would gather the resource individually.



Figure 2. Tower upgrade UI where the player can deposit resources to upgrade the tower

### ***Tangible play***

The game can be played with a single smartphone. The player will be able to navigate through the different scenes of the game by tapping a button on the screen of the device. Inside of the game, panning, rotating or zooming can help the player to get a better view of all the available resources on the map.

Throughout the game, the player will have to perform unique movements in order to gather resources or perform tower upgrades. Three different gestures are recognised while gathering resources: mining ore, making rope and chopping wood. Two gestures are recognised while upgrading a tower: hammering and sawing. The gestures are performed using the smartphone itself as a controller by using its available sensors such as the gyroscope and the accelerometer. The user has to hold a thumb on the screen in order for the gesture to be detected.

### ***Location based***

T2P is specifically designed to be played at the Park Belle-View in Leuven but can easily be adjusted to be played at other parks or other big, open spaces.

### **Expected Experience**

The storyline ensures that the player can empathise with the game world. The medieval theme around two kingdoms is consistently maintained throughout the game. For example, the tools used with the associated movements for mining resources also belong to the same zeitgeist.

We expect every player to feel challenged to be the first to complete their tower and win the game. This feeling is created by the fact that it is graphically visible how many resources one still needs to reach the next level and is reinforced with the help of the team spirit. The player should also feel connected to the team. Since mining resources such as wood requires the same effort from each player and gives the same rewards, therefore each player's input is equally important to win the game. In order to use an optimal strategy, it is important that the team communicates well about who gets what task or what still needs to be mined.

Furthermore, the player feels connected to the team through certain notifications. An example of this notification is that when a certain player levels his own tower, every player of that team hears a sound through the mobile phone speakers.

The fact that the enemy's tower and its resources are visible gives a competitive feeling and is an extra motivator to try to be better than the other team. It provides a kind of reference where one can compare his own progress to that of the other team and measure the size of his lead or lag.

It also pays off to have played the game before and therefore have more experience with the game. From experience one can learn how the movements work when mining resources and therefore mine faster than inexperienced players. This keeps the game interesting if you have played it already.

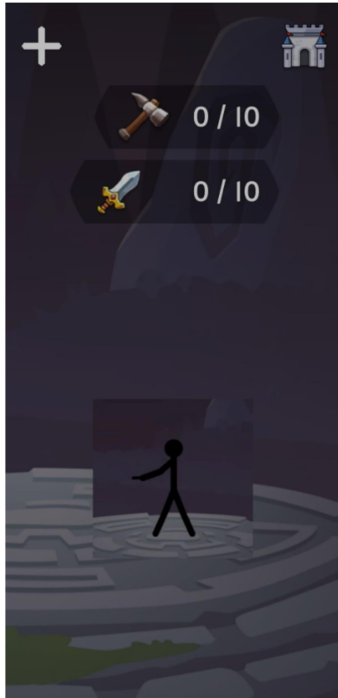


Figure 3. Tower upgrade mode. The player will have to perform a certain amount of specific gestures in order to level up the tower.

### Limitations and Future Work

The game needs some extra attention regarding the distance at which a resource can be consulted and the amount of resources there are in a particular mine. Teamwork should also be rewarded extra, we are thinking of making mining faster when this happens in a team. This also benefits a positive team spirit.

The game currently lacks a manual on how to play the game and how to perform the movements for inexperienced players. We will also add a small documentation about the possibilities and what can be done with an amount of resources at the start of the game.

One idea for further design is to make gameplay possible for anyone and anywhere in the world. Currently the game can only be played in park Belle-Vue Leuven and can therefore only be played by people who can move to this place.

### Conclusion

First of all, we are happy to conclude that our game meets our initial requirements and expectations. We have developed a real-time strategy game which one cannot win from behind a desk. The game requires collaboration, strategy and physical effort. Also, once

we manage to balance the game variables, we believe that Tower2Power will be very appealing to a wide range of players.

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