THE DAEMON MODULE

theWaveSystem

Dylan Mighell | Matthijs Willems | Koen Scheltenaar | Roel Smeets | Koert Mulders

What does the system do?

During the Daemon Module week, our task was to create an intelligent system. We eventually ended up creating a 'WavesSystem', after taking our first idea the 'SnoozeSystem' (or 'LoseYourSnooze' app) into another perspective. We would like to discuss them both briefly.

THE SNOOZE SYSTEM

The Snooze System was created with a specific goal in mind. Its purpose is to keep people accountable for their sleeping behaviour (excessive snoozing), by making people aware of it, and decreasing the amount of snoozes for an individual. It is based on the currency 'snooze-points'. The system was designed to be both friendly and hostile, depending on how individuals want to use it.

The system has a few aspects to it that should help people to improve their snoozing behaviour. There are 6 main components to the game, there are humans, digital roles, a leader board, snooze-points, an app (LoseYourSnooze), and a physical alarm clock.

The humans can form a clan with other people that use the system (for example, people in your Module group), and there's a certain hierarchy within this clan, based on snooze-points.

Snooze points can be earned by winning a wake up game against another player when you wake up. Snooze-points can be used to mess with each other within a clan, to make them aware that their behaviour should change.

Based on these snooze points, different digital roles within a clan are divided. There's a King (most snooze points gathered) of the clan and the rest of the people are either daywalkers (average snooze points gathered) or nightwalkers (least snooze points gathered).

The aim of the game is to gather as much snooze-points as possible with your clan, to rank up on the global leaderboard. The global leader board and the ability to mess with your clanmates, is accessible through the 'LoseYourSnooze' app.

The last component is a physical alarm clock, which allows users to play a game in the morning to earn snooze-points. This physical alarm clock can play sounds, can vibrate and can light the room, if the king chooses to activate these functions.

The king can use the snoozes to buy upgrades for the physical alarm system for his clanmates, making it vibrate heavily, shine bright light into the room, or make incredibly loud sounds. By doing this, the king can try to make the alarm of specific persons so horrific, that people will wake up immediately, using less 'snoozes'.

A full description of the different rules and components incorporated in the SnoozeSystem, can be found in Appendix A.

THE WAVE SYSTEM

When looking at the SnoozeSystem from another perspective and in another context, we came up with a very interesting idea. At first we thought of a 'reaction game' throughout the day, that would make sure that everyone stays concentrated throughout the day, as they have to react fast to an incoming 'attention spike'. This was based on the 'Meeting Context' that was proposed by our lecturer dr. M. Funk.

Thinking more system wide, we thought of a way to incorporate multiple devices and came up with the foundation of 'the Wave System'. The Wave System is initiated through a person with a device. This person can decide to send a message (message, video, photo, sound, or a bump) to the system. People and devices nearby will receive the message and can re-broadcast it to whoever is in their proximity, giving more strength to the original message. The system can activate different devices and can be used for multiple purposes.

The idea is that when someone sends a message, it will be broadcasted to a few people nearby. If they decide not to re-broadcast it, the message will be sent further by the system anyways but will have less strength (meaning that it will reach less people and a smaller range). Each time this happens, the message will lose strength and eventually die out.

However, if people decide to re-broadcast the message, the message will reach more people in a bigger range. The faster they re-broadcast, the bigger the wave. In this way, an interesting message (e.g. from an important influential person), may be broadcasted globally in only a matter of minutes.

Whereas the SnoozeSystem was more like a game, the WaveSystem seemed to offer more opportunities to be a real system, which allowed multiple devices to become part of the system. As this seemed much more interesting than the SnoozeSystem, we decided to explore the WaveSystem further for our prototype.

Why does it do so?

Our wave system is a form of mass communication via proximity to other users of the system, through Android, computers and items like an alarm clock. This form of mass communication is broadcasting a message, video, sound or simply a bump and transmitting it through these mediums to a the larger anonymous heterogeneous audience. These messages that are sent out can be used to inform, persuade or simply to entertain. If someone sees the message and likes it they simple re-broadcast it to whoever is in their proximity thus giving the original message more strength to carry it on.

Mass media through mass communication can broadcast a whole range of messages rather than just the news. It can be used for such things as advocacy such as advertising, marketing, propaganda, public relations and political communication. Also there is entertainment in all its different forms such as music, videos, images, video and computer games, sounds and television. Most importantly mass communication can be used for public service announcements and emergency alerts to broadcast an evacuation message to a lot of people all the at the same time.

In the same way that Facebook and Tumblr uses share pictures, videos, links and quotes amongst each other. Our system is like this but without the knowledge of whom you are sharing it to or who has seen it. On Facebook, one can see how many likes and how many shares you have or someone else has. Where as with Tumblr which is more of a blog site, people can re-blog links and the network of people eventually grows. The wave system is a mass media mass communication system of sharing across multiple locations with people who are like-minded.

There is a tendency among social groups and the culture the Internet has created, that sharing and liking things is considered peer pressure now, but on a larger scale. This peer pressure now extends to people caring how many likes and shares that they have. In this regard how system gets rid of that peer pressure so that you only have to care about how many times you have shared something that gives you points and a ranking system against the larger anonymous varied society we will create.

The technology enables interchangeable communication between different devices. Reactions of devices to the waves are not preprogrammed. In the demonstration three different devices were used to show this. One was an android mobile phone, the other a computer and the last one was a physical alarm clock.

For creating the wave system we based our program on processing and the communication protocol OOCSI. By using OOCSI we were able to connect multiple types of devices like android smartphones, computers and arduino together in a simple way. OOCSI is a communication protocol developed by Matthias Funk at the TU/e. It is an easy way of sending messages that can contain all kind of data from computer to computer.
OOCSI is however only system you can use for communicating. For the wave prototype we had to create our own implementation/communication protocol using OOCSI.
The final communication system of our wave prototype works as follows:

1. A computer wants to send a wave or just received a wave.
2. If a wave is received the computer waits for interaction by the user. If the user does not send on the wave the wave is send on automatically after 30 seconds if it still has enough strength. If the user sends on the wave the wave gains 25 strength, if the user does not send on the wave it loses 50 strength. Waves are initialised at 100 strength and die at 0 strength or below. Max wave strength is 150 strength.
3. If the wave will be send on the computer checks for active computers on the network by asking the whole ''networkPulse'' group on the OOCSI network for their name.
4. The responding and thus active computers are compared to a list of already visited computers that is created upon initialising a new wave or retrieved at the moment a wave arrives. Active computers that are already visited are removed from the list of potential target computers.
5. One computer is randomly picked from the list of potential target computers.
6. The computer ads his own name to the list of visited computers and sends this list to the randomly assigned target computer.
7. After sending the list of visited computers the wave data itself is send to the randomly assigned target computer.
8. The loop starts again at step 1.

Java is used as the programming language for processing as well as android, which makes incorporating android and processing in the prototyping setup an ideal subject for testing. For the prototype the android telephone could instigate waves to be propagated by the receivers of the wave. Some minor changes needed to be made to the OOCSI github library to make it work within the android environment. All network processes need to be run on a separate thread for example and the handling of OOCSI events deviated slightly from the way processing does it.

3
How does it work in terms of technology and conceptually?

The other device was an Arduino based alarm clock. This alarm clock could instigate waves but, more interestingly, reacted differently than the other devices in the network. If this device encountered the waves send out by one of the other components it would trigger the alarm. The waves can be used for triggering alarms in the vicinity of the wave starter, which could function as an alternative to the regular alarm clock. The alarm clock demonstrated used a computer with processing to be able to use the OOCSI protocol.

By incorporating the OOCSI system and communication protocol above the wave will be able to move trough the network even if computers fall out or don't react. In the future we would like the wave to be able to move location/proximity-based trough the network instead of randomly. We would also like the wave to be able to move directly peer to peer and thus eliminating the need of a central server that is currently necessary for the OOCSI system.

We envision the system to be developed as an app that will be broadly used to share information. The engaging nature of the system should result in a more conscious sharing behavior among its users. The quality and relevance of the information is therefore increased. Sharing every picture, video or quote that is deemed mildly interesting or funny is no longer appropriate or possible.

From a technical standpoint, additions can be made in terms of passing on the wave. In the current prototype the next device is randomly assigned. With changes in technology the wave could target nearby devices. In this way, instigating a wave is more location based. The resemblance with an actual wave propagating from a central point is better. This helps in the understanding of the system when you know that the information loses its strength and eventually "dies" as it travels further without being enforced.

The interaction with the system is free. It enables a new infrastructure, namely the waves, which can be used by anyone or anything. The way of instigating the waves is not tied to rules same as the interpretation of the wave and the information that is contained by the wave. This could mean a free interaction system. An alarm clock could receive a wave from a phone and react by going off. The user woken up by this alarm could than send a wave using his phone, showing his availability to other people. In this example three different components use the system to send and receive different information.

One other example is that people can use this system to send out meeting requests. Other people can reply to this request showing their interest and further propagate the message. During the meeting one of the participants could send a private wave to test the alertness of the other participants. Additionally, a wave could be used to shutdown certain devices. Any kind of information can be sent through any connected device and closed by and send on from there.

My reflection on The Daemon module is that it was the wrong module for me to pick. My skills as a programmer are non-existent past basic usability in processing. The other team members in our Wave System project quickly passed my level of knowledge in the first day and I was behind on what they were doing and why they were doing every step of the way. I learned during this module that programming is not for me as a designer and that my skills lie in designing and ideating not prototyping systems, if I ever go into this area.

The first system of *'LoseYourSnooze'* I excelled at the system design of the in-built game. I have previously studies games design and my current project is in persuasive interactions. The system was designed around a multiplayer game-involving group of friends battling each other in terms of sleeping in and pressing the snooze button on alarm clocks.

I feel that I have failed this module, the only things I can produce from this module is a report, a couple of graphics explaining the system and my presentation skills improving. When looking for modules in the future I will make sure that I read the description thoroughly and not base it off of what I have done in the past.

Dylan Mighell