

**Category:** Student  
**Project:** Lucky Island

**What was the challenge?**

Outside of our visible spectrum of light there is a very big area of electromagnetic radiation. Scientifically it is light as well, as it consists of photons. The most dangerous part for the human being: gamma rays. They are characterised by a very small wave length and permeate almost all materials on earth. We cannot see them and generally only notice them when they are linked to radioactivity; when we deal with the consequences of atomic bombs and nuclear power plants. But how can we understand them when we never put measurements in relation?

When you think of Japan you also think of what happened on 11th March 2011 at the Fukushima Daiichi nuclear power plant — the latest nuclear accident that shocked the world. But how are things there now? What can sensors monitoring radioactivity in Japan tell us today? And how can I bring this data from far away in Japan into awareness and put it in relation to radioactivity detected around the world?

**What was the solution?**

In this project I try not to value the consequences of the exposure to radiation but I want to build relations to get a better sense of their occurrence. Therefore, I use the principle of sonification in order to make live measurements of monitoring stations in Japan “audible”.

Ten stations in all over Japan deliver measurements of radioactivity in their environment.\* Everytime there is a new value coming in, the according bell in my installation rings. With an AR-app you can read the latest values of each sensor and get interesting reference values for better understanding.

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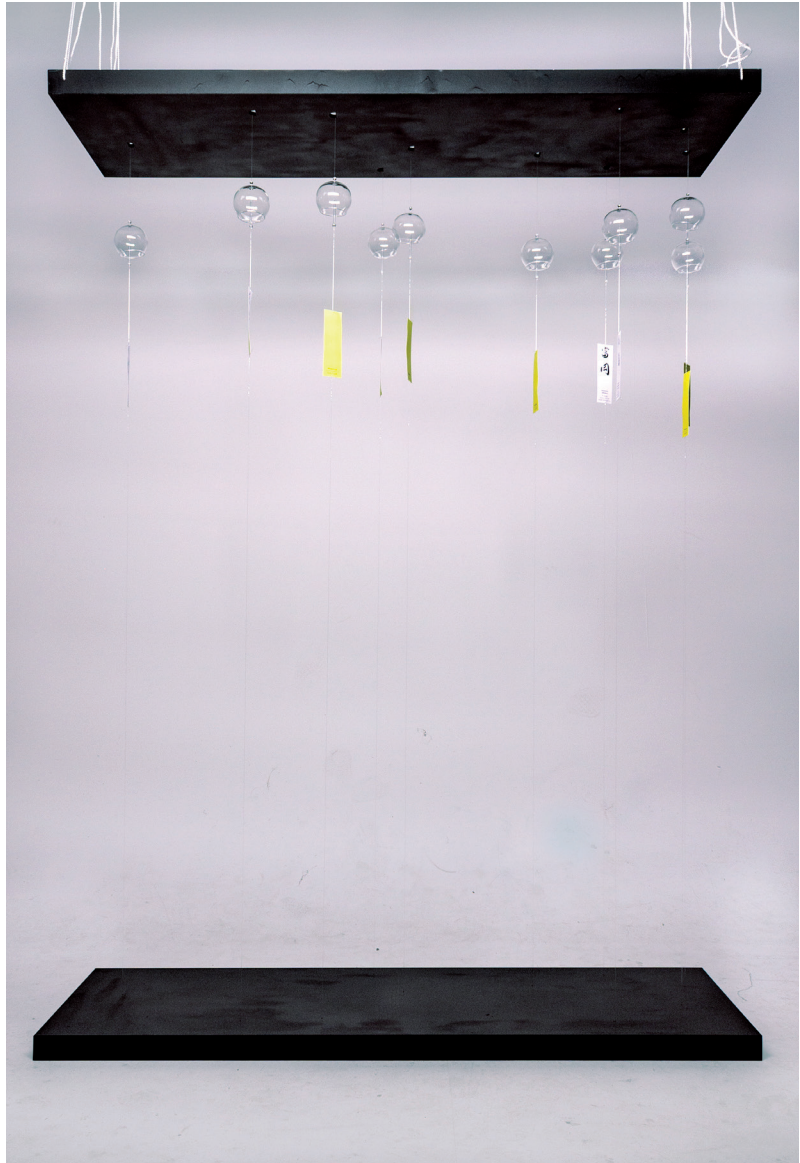


Fig. 1: complete installation

Ten glass bells are connected to motors via nylon threads and are arranged geographically. The motors are controlled by a micro controller board that is communicating with a mini computer. I wrote a programme that reads the data from sensors stationed in Japan and updates its request once a minute. When a new value is detected, the bell that represents the associated sensor rings for some seconds. The fine glass chimes create an alarm like piercing ringing.



Fig. 2: AR app on tablet, showing additional information, the latest measurement and a simplified map of Japan



Fig. 3: detail of location labels



Fig. 4: detail of glass chimes

Each one has a tag (see Fig. 3) with information about the specific sensor and its location in Japanese characters that also works as a marker. With an AR app on a tablet (see Fig. 2) you can read the marker and get augmented information: the latest value of the station, reference values such as the average radiation level in Germany per year and a map that shows the sensor's position inside Japan.

To create the highest possible tension between the layer of information you get when reviewing the measurements and the poetic installation itself and for cultural reference, I used traditional Japanese wind chimes – named "furin" (see Fig. 4). They make the installation appear fragile and subtle, while bringing the sound into the analog and thus making the data more tangible and present for the viewer.

### What was the effect?

In several exhibitions I could already experience people engaging with the installation. It was very interesting to see people being astonished by the values in Japan in comparison to Germany's – be it positively or negatively. It also sparked many discussions about nuclear power, natural radiation, the lack of knowledge in these fields as well as the general power of data visualisation respectively sonification or physicalisation.

I realised that we (designers) need to "translate" specific data into intelligible and tangible constructs in order to give non-professionals access to the information coming from it. To make interesting and enjoyable data visualisations/sonifications/physicalisations for people to let them engage with environmental data in a captivating way and thus spark new thoughts, ideas and discussions about it.

\* Sensor data in the installation by: safecast.org, an online platform that collects and provides environmental data from sensors all over the world