

Case #3

Sunmapper

Big data ideas creating
transformative change
within cities

START DATE	2014
LOCATION	Lyngby-Taarbæk Municipality, Denmark
THEME	Urban Transitions
LEAD CONTACT	Lars Hotels Bonde, CEO, Picodat
STAKEHOLDERS	Civil Society & Public



Case Study Overview

A Hackathon is a 48-hour brainstorm and discussion where multi-disciplinary teams aim to develop innovative sustainable solutions. In 2014, a Hackathon was facilitated by IBM and developed by DTU Compute in collaboration with DTU Skylab, Lyngby-Taarbæk Vidensby and Lyngby-Taarbæk Municipality. Danske Bank was the main sponsor of the Hackathon; it distributed a total prize of DKK 45,000 for the three best solutions. Climate KIC Nordic also sponsored a special award of DKK 10,000 for a project with a particular focus on climate solutions^[1]. The Hackathon was initiated to bring students together in order to source and co-develop technological solutions that could address the municipality's sustainability challenges and help them meet their climate targets.

At the event, a panel of industry experts and decision-makers judged the best ideas – a team of students who developed a product called 'Sunmapper' were the winners. 'Sunmapper' is an online platform for residents interested in purchasing solar power. The platform enables

The partners wanted to use the hackathon as an Open Innovation format in order to bring people with different backgrounds together and initiate a joint development process

residents to take control of their own domestic solar energy needs; it presents all relevant information needed to determine whether making an investment in solar panels is a sound

[1] Vidensby website, translate.google.co.uk/translate?hl=en&sl=da&u=vidensby.dk/arrangement/big-data-hackathon-2/&prev=search – Accessed December 2017

option for their particular property. The web platform also supports the municipality with its own climate targets – to increase the uptake of solar power within the city. Following the Hackathon, the student team decided to develop their business called Picodat, as a way to sell the 'Sunmapper' product and apply the skills and training from the Hackathon. Within a short period of time, the team of students had transitioned from Hackathon participants to lead the development of an innovative tech start-up.

Obtaining: 48-hour brainstorm for Big Data solutions

The Hackathon focus on 'Big Data' challenges stakeholders to provide innovative technical solutions for decision-makers that have to manage and store vast quantities of complex data within the city. In partnership with corporates and utility companies, the Lyngby-Taarbæk Municipality utilised the Open Innovation process facilitating an event that brought together talented stakeholders from different disciplines to source and co-develop sustainable solutions.

One of the teams at the Hackathon comprised of students with computing, mathematics and business skills who co-developed the 'Sunmapper' platform. The team used the heat-release maps of municipal buildings and data regarding energy consumption and roof pitches provided by the Hackathon partners. The solution stood out from other ideas at the event as it enabled users to identify whether their building was suitable for solar PV. Following the co-development

stage, the judges assessed the teams product on its user-friendliness, ability to scale up and commercial potential. They awarded Sunmapper the top prize at the event.

Integrating: Transitioning from idea to Big Data business start-up

The winners at the Hackathon event received support from event partners in assessing whether the technology could be developed yet further. Support included collaboration opportunities with Lyngby-Taarbæk Municipality and the opportunity to pitch the solution to local decision-makers and a wide selection of Danish businesses willing to potentially fund the solution; hands-on experience with IBM Bluemix, the latest Big Data tools; financial support (1st prize DKK 25,000, 2nd prize 15,000 DKK and 3rd prize 5,000 DKK as well as a special prize from Climate-KIC Nordic for products that focus on climate solutions); and, a potential place on the Climate-KIC Accelerator programme^[2].

A few years later, following this support and after researching the idea further, the Sunmapper team decided to formally create a start-up company, called Picodat. The new start-up could enable them to access other business support available and develop their ideas. When refining their business model, the Picodat team identified that the 'Sunmapper' platform was best suited for municipalities who could offer the service to local residents who, in turn, could explore the potential of installation of solar PV on their homes. The platform was seen to bridge the gap between local residents and municipal climate targets, as the technology encouraged residents to consider renewable energy installation. Picodat CEO Lars Holtse Bonde elaborates:

[2] DTU Hackaton, translate.google.co.uk/translate?hl=en&sl=da&u=www.compute.dtu.dk/forside_historier/hackathon&prev=search – Accessed December 2017

'With Sunmapper we're trying to show the potential of solar panels in the easiest way possible, in order to encourage homeowners to reduce CO2 emissions as well as benefitting economically. By providing Sunmapper, municipalities can offer an extra service to their citizens and come closer to realising their climate targets.'

The uptake of renewable energy is key if Lyngby-Taarbæk Municipality is to meet their climate targets. On average, every household that installs a solar PV can save the equivalent of 300 pine trees of CO2 emissions – thus 'Sunmapper' could significantly help the municipality.

Implementing: Upscaling and replicating solutions

Picodat was registered in 2016 and was accepted into the Climate-KIC Nordic Accelerator (Stage 1) Programme. The Accelerator Programme is a six month training programme that offers: equity-free grant funding (e.g., for prototyping and Research & Development); one-to-one meetings with mentors; monthly workshops, and, networking opportunities. The Climate-KIC Nordic programme provided support so that 'Sunmapper' could make their idea commercially viable. The team continued to work with Lyngby-Taarbæk Municipality and other Hackathon partners during the development and launch of the product. In the weeks following 'Sunmapper's' launch, the platform attracted over 200 unique visitors (roughly 0.5% of the entire population of Lyngby-Taarbæk)^[3]. This was encouraging for Picodat; it now has long-term plans to roll out the 'Sunmapper' platform across Denmark.

[3] Organicity EU, organicity.eu/inspiration-from-hackathon-to-data-driven-start-up/ – Accessed December 2017

Case Study Summary

Picodat is now a fully-fledged start-up offering a free web platform that enables homeowners to enter their address and see the potential for rooftop solar PV. Support from Lyngby-Taarbæk Municipality and Climate-KIC Nordic has enabled Picodat to refine their product, 'Sunmapper' calculates the pitch, orientation, shadows, recommended placement and size of potential panels. The technology enables local residents to get a breakdown of the potential costs and savings associated with solar PV, as well as an option to receive quotes from relevant solar PV installers in their area.

Even though Picodat has established that there is a market for 'Sunmapper', the team continue to research the right business model and market for their product and are scoping all options. The

web platform has been revised many times and the team have identified that there is no 'one size fits all' solution for 'Sunmapper' – it has to be tailored for each municipality due to differences in cities climate targets and strategies.

Challenges

During the development of the 'Sunmapper' platform, Picodat faced several challenges. To begin with, none of the student team initially intended to develop a start-up as they had no experience of running a business (e.g., turning a technical solution into a commercially viable product). Although winning the Hackathon was a confidence boost for the student team, it quickly became apparent that they did not have

all the skills necessary to develop their product. Support from Lyngby-Taarbæk Municipality and Climate-KIC Nordic through the Accelerator (Stage 1) programme was vital in the team's decision to develop the 'Sunmapper' product further and actually start a business.

Climate-KIC Nordic played a pivotal role in bringing together the start-up business and the Lyngby-Taarbæk Municipality – both at the Hackathon event and during the Accelerator programme. However, facilitating partnerships and collaborations takes a long time for the Open Innovation process to be effective. This can be challenging for start-up businesses like Picodat who often work on shorter timescales as they need to generate income quickly in order to develop the business further.

Crucially, start-up businesses often require much more time to develop their products and services than initially thought. The Picodat team acknowledged that when they started out, they

neither understood how to progress appropriately with a successful idea, nor how much work was required to see the full potential of the product realised. By providing appropriate support, start-ups can be helped to speed up the development of their business.

Results

- Student team won the 'Big Data' Hackathon in 2014
- The launch of the 'Sunmapper' platform attracted over 200 unique visitors (roughly 0.5% of the entire population of Lyngby-Taarbæk)
- Registered the start-up as Picodat in 2016
- Start-up successfully admitted on to Climate-KIC's Accelerator (Stage 1) programme

