METS challenges and successes:
Diffusion and adoption of technology across the mining sector

CASE:
GlassTerra: Live terrain models to monitor compliance and safety of mining earthworks

The Innovation
Tech start-up GlassTerra offers real-time geospatial Internet-of-Things (IoT) solutions for the mining sector. Live terrain models of a mine site enable the monitoring of compliance and safety of mining earthworks. Data for the terrain models come from different sources such as radars, drone and satellite images, and fleet systems. The technology allows for easy access of models from computers and smartphones including those in remote locations with limited bandwidth. Four-dimensional data makes it possible to inspect properties of the mine site historically at any point in time.

The diffusion and adoption process

What is the background of the new technology?
GlassTerra started with the premise to focus on spatial issues in combination with IoT applications. The idea for the actual product evolved gradually during a phase of exploration, experimentation and feedback from potential customers. The first steps towards the final product were undertaken during assignments with government clients, after which a subcontracting agreement facilitated access to a mine site and further shaped the product to meet the needs of mining customers. The product is now commercially available and the start-up is in the early stages of expanding its customer base. A range of conditions and factors are expected to drive the adoption of the solution:

- Safety, mine design compliance, and social license to operate are important factors for mining operations. Utilising live terrain models can help reduce compliance risks while at the same time increase productivity due to avoidance of defects which would need to be rectified.
- The application is easy to implement and easy to use. Even in remote areas with low bandwidths, a smartphone is sufficient to access terrain models stored in the cloud to monitor mining earthworks.
- A large potential market exists. The start-up estimates that approximately one thousand open-cut mines worldwide would benefit from utilising the application.

“I hear a lot of people say that the mining industry is risk averse; and that’s why they don’t adopt technology. But that’s not my experience. My experience is that miners are risk takers. They are willing to have a punt. But they often can’t agree on what they should have a punt on. So it’s all of these internal frictions that stop things happening; not any risk aversion. In fact, I would claim that the mining industry is much more acceptable of risk than other industries. Look at what we do; we go into a dangerous work environment every day; and we build these colossal structures in the middle of nowhere and somehow hope that that turns into cash somehow. So, no, we are an industry of risk takers.”

Christian Larsen, GlassTerra CEO
What challenges need to be addressed during diffusion and adoption processes?

**Challenge 1**
During the early phases of the start-up – when the product idea was still largely conceptual – it proved to be difficult to attract the attention of the mining industry. Most start-ups are resource-constrained; creating additional barriers to enter a prospective market.

**Strategy:**
GlassTerra became active in a different market with a similar emphasis on geo-spatial data by approaching state governments to design spatial apps for them. This pushed forward the technological development and helped the business gain more experience.

A subcontracting agreement enabled access to a mine site. While the contractor was responsible for project management and B2B activities, GlassTerra could focus on the technological advancement of their solution in the mining context.

**Challenge 2**
Positioning and focus of marketing efforts and value proposition are challenging to frame due to the nature of the mining industry and the nature of the product. Generally, METS start-ups have to overcome the hurdle to stand out from the mass and to be recognised by big mining corporations. In addition, the product and its value proposition span across different business functions and departments within a mining company. Acceptance and commitment from a range of decision makers is required. This also prolongs the sales cycle.

**Strategy:**
In addition to mining companies, GlassTerra puts a large emphasis on approaching contractors. These are usually easier to access with leaner structures. The value proposition focuses on saving costs by reducing defects which would need to be rectified – for example, earth movements to a non-compliant location.

Streamlining the value proposition and targeting issues related to social license to operate (SLO). For miners this can mean they can meet SLO obligations while increasing productivity.

Investing time and effort to understand the daily problems of operators related to monitoring earth movements. Conversations and visits to mine sites can demonstrate how the product can support daily activities and has the potential to win operators as site champions lobbying for the use of the technology.

**Challenge 3**
The mining industry and individual mine sites have distinct organisational cultures with different ‘languages’ spoken at different levels of the organisational hierarchy, posing challenges for communicating the value proposition.

**Strategy:**
GlassTerra adapts its communication strategy to the context and the individual in order to be sensitive about norms and issues, and to actively listen to problems and challenges of operators and managers.

GlassTerra tries to simplify the value proposition and targets the user level to highlight how the technology can support operators with their everyday activities.

“Selling our product requires coordination between departments, you need ‘ten yeses’. What typically happens is, you go in there and say: ‘Hey, are you interested in this? Will that be a big benefit to you?’ – ‘Oh, man, this is really cool! Really great! But we have to consult with Joe, Jim, Sarah, and Naan.’ Then you go and talk to each one of them and you have to get them enthused. And they in turn say: ‘Oh, yeah, but we won’t get this up unless Jimmy, Jake and Sue are all in it.’ And by the time you have gotten through all of that, they have turned over staff.”

Christian Larsen, GlassTerra CEO

“It’s so hard to get to the mine site to talk to the operators that you want to blurt everything about your product out as quickly as possible. My view is, you should schedule at least two visits to the mine site. On the first one, shut up and listen. So myself and my technical co-founder would just spend the day with a function; just hanging out with them, watching what they do and just pottering around, attending every meeting they attend. Because understanding how that operator works, it became so critical.”

Christian Larsen, GlassTerra CEO

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