

**CASE:**

## SmartCap: Fatigue monitoring with wearable technology

## The Innovation

Life by SmartCap is a wearable device for mining operators and vehicle drivers to monitor fatigue levels. The LifeBand can be worn as a headband or it can be integrated into headwear such as helmets. The device uses EEG technology to measure brain activity which is then analysed to determine levels of alertness. The SmartCap device observes fatigue in real-time and sends early warnings. The development of the technology was led by the research organisation Mining3 with support from industry partners and then commercialised by the spin-off SmartCap Technologies.

### How to manage the ecosystem to increase the uptake of technology and overcome resistance?

#### **A Understand the real needs of customers**

When development commenced, Mining3 was confident that a market would exist. A survey of hundreds of mining companies had identified operator fatigue as a common concern. This informed the evaluation of market needs. Throughout development and implementation, a learning process occurred during which the developers identified specific customer expectations of the technology. SmartCap developed an understanding that a wearable fatigue monitoring technology was not an off-the-shelf product but required training and change management on site, while still ensuring ease of implementation.

#### **B Differentiate from existing offerings**

SmartCap entered the market for fatigue monitoring technologies by differentiating its solution from competitors: (1) the technology uses brainwaves and a proprietary algorithm to determine fatigue levels, validated by independent research organisations, (2) the device is wearable and not fixed to a machine, (3) it has the ability to be predictive, (4) it facilitates 'user ownership' raising awareness and self-responsibility among operators.

#### **C Find partners for collaboration**

Partnering with industry, external researchers and potential customers in the early development phase helped to better understand the needs of different stakeholders and to implement their requirements. However, the journey was not always smooth. Throughout the development process, different partners withdrew from the project due to changing priorities and difficulties with resistance among the workforce. SmartCap was able to achieve buy-in from new partners and potential customers. Successful test cases had important signalling effects to demonstrate that the technology works and can be implemented successfully.



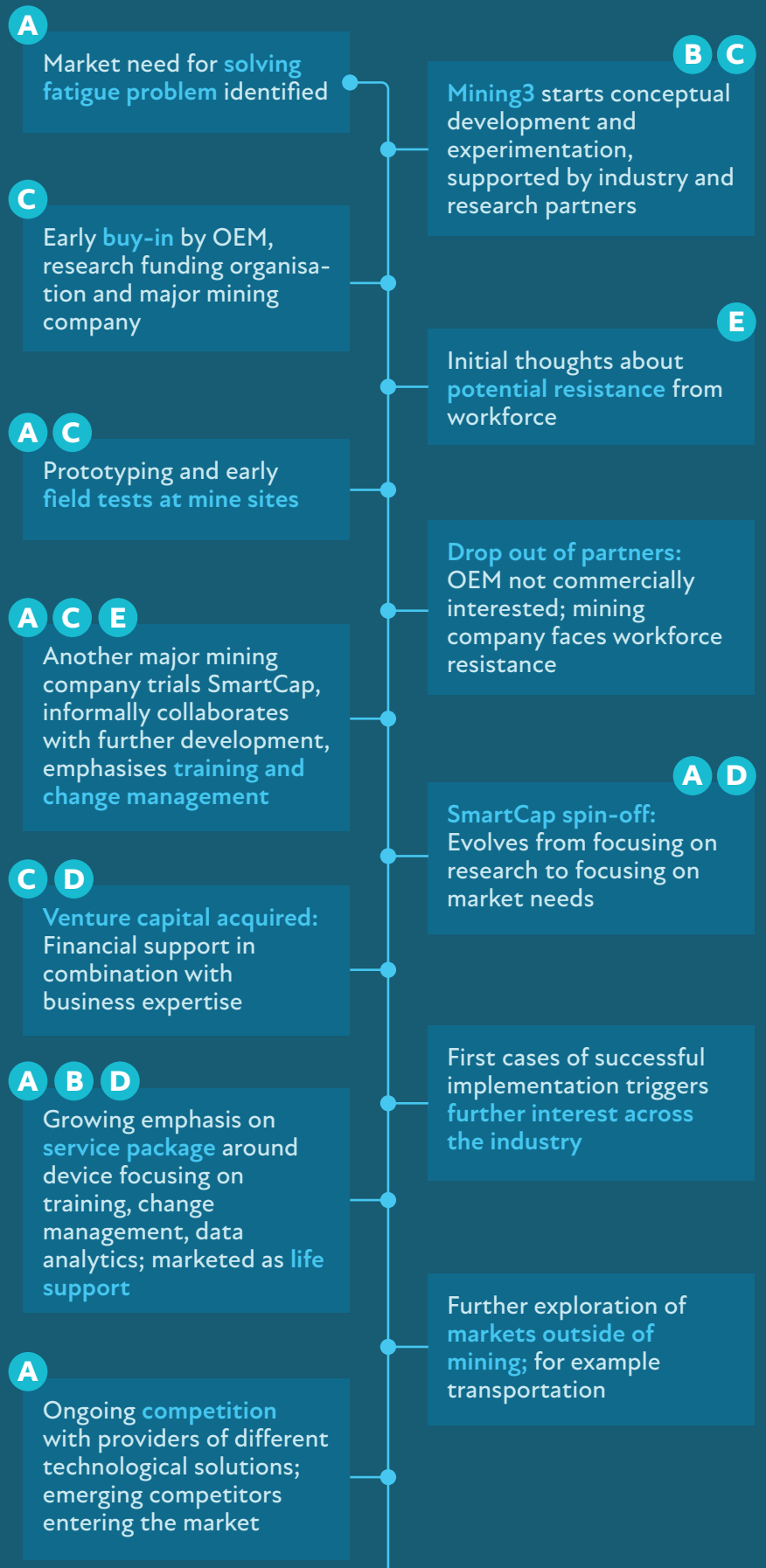
**D Transfer from research to market focus**

Naturally, the first stages of technological development are research-intensive. While the developers were aware of the market demand, a learning process had to occur to shift from a research to a market focus. Initially, the spin-off to commercialise the product was too research-intensive. The acquisition of business expertise partially supplied by an investor helped to overcome this shortcoming. The start-up also learned more about the needs of the market by collaborating with potential customers. This helped them to focus on delivering customer value and to learn that not only the technology itself but change management processes are crucial for the success of the device. This led to a shift from a product to a service offering which includes comprehensive fatigue management advice and insights into fatigue patterns gathered from the growing dataset of SmartCap users.

**E Counteract resistance to change**

Test cases and customers' attempts to implement the technology have demonstrated that workforce resistance is a central challenge for SmartCap. Mining operators may perceive the device as being invasive, supervisors and managers may worry about change management processes, and HR departments may think about how to handle cases of workers who are frequently fatigued. SmartCap had to learn that the technology cannot simply be worn and implemented overnight but has to be accompanied by training and change management processes that address the fears of the workforce and support supervisors and decision makers with developing appropriate policies and health support for employees.

# SmartCap Milestones



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