
TURNING THE ODDS WITH TEAM STRENGTH – THE EXPERIENCE OF TEAM AWESOME SAUCE

Acknowledgements

This case history was researched and drafted by Lim Teck Heng for the Institute for Engineering Leadership, NUS. It is based on the reflections of the Awesome Sauce team who took part in IEL's InnoVenture competition. The members are Benjamin Tse, Sajjad Ali Qadri, Toh Ding Chao, & Amelia Ho.



This case study is meant for classroom discussion and sharing only. We would like to thank the awesome team for their time and openness in sharing their journey with us.

Turning the Odds with Team Strength

Ali, Amelia, Benjamin, and Ding Chao – all of them Year 2 Engineering undergraduates – joined forces to tackle a problem statement issued by NUH in the 2017 edition of InnoVenture, an annual technopreneurship competition organised by the Institute for Engineering Leadership at NUS.

Their team, Team Awesome Sauce (TAS), had to devise a cost-effective and ergonomically designed solution to allow a single nurse to turn and reposition a patient independently, while also minimising the impact on the patient's body during the turning and repositioning. Triturn, a two-component solution consisting of a slide sheet and a smart stand, was what they came up with.

At their first meeting, the team made sure everyone was on the same page.

“Ding Chao: We actually set the tone at the very first meeting. We sat down and asked ourselves what we want to get out of this competition. And we said that it's not just for the 4 MCs. At the start there was a bit of differences. Like Ali wanted this to potentially grow into a company. And some of us maybe just want to get some experience out of this. But we all have the similar goal of winning this thing. So that aligned us and made all of us commit to this project.”

The members of TAS were not assigned pre-defined roles. Instead, the process of matching person to role was an organic one: everyone gravitated to the role that best accentuated their strengths. Ding Chao grew into the role of Team Leader because of his prior experience working in start-ups, where he had developed an acute awareness of what it takes to develop a product and how to deliver what the customer wants. Ali was both competent in and passionate about the design software AutoCAD, so he naturally opted to take charge of Product Design. Amelia found her business sense and grounded nature a good match for the role of the Business Lead. Benjamin was an effective communicator adept in liaising with external vendors, so he felt right at home as the Manufacture Lead.

While AutoCAD was very much Ali's territory, the rest of the team members got a say too in how the design of the prototype panned out, relying on a collaborative method called C-sketching. Each one of them would sketch out an idea, which would then be passed around for the other team members to build on. Eventually, they would come together to rank the four ideas generated based on pre-defined rubrics and adopt the idea with the highest score. Such a process meant that everyone's input was valued and prevented a situation where anyone could dominate the discussion and impose their ideas on the team.

Even when it came to leadership, Ding Chao was not the only one driving the team's progress. Everyone took the initiative to make things happen. Leadership was shared, and contributions were recognised.

“Amelia: I think definitely all of us will take charge in what we need to do. Because this isn't something we were forced into. This was something we actively chose to take part in.

Ali: For Amelia, her strength is to keep me focused. Whenever I have an idea, she will be the one who says like 'I don't think this one will work', 'Have you thought of that?'. She's keeping me in check. I need that because sometimes my ideas are way far out.”

This team dynamics helped them through the many challenges in the competition.

Unlike many other teams participating in InnoVenture, TAS had the valuable opportunity to meet up with their clients, NUH, to test their prototypes in an operational setting. The feedback that they solicited from nurses, who had worked on the ground day in, day out with the patients, contextualised the operational concerns that the hospital faced better than any written problem statement could. Whenever they were lulled into a false sense of satisfaction, the trial results and nurses' comments would always bring them back to reality – that there were some aspects of the Triturn that could be made more user-friendly.

“Benjamin: On paper, it's supposed to work wonderfully. We created the prototype and then we tested it once. But we had different test conditions compared to the operation environment. Like we tested on a bed that was much smoother compared to the kind of more squishy feeling with hospital beds. So, the idea actually works. It's just that when we brought it to the working environment, we encountered some issues over there.”

TAS had come a long way since their first prototype for the slide sheet. Their original design was a rudimentary patchwork cobbled together from old clothing lying around at home. A process of trial-and-error ensued to find the most suitable material. Eventually, after seeking advice from their mentors, and feeling the texture for themselves, they settled on a specific variant of nylon as their base material.

There were junctures during the course where TAS found themselves frustrated with the stringent and exacting standards laid down by NUH. NUH drew up a laundry list of demands that they wanted the team to deliver on: NUH wanted a solution that was cheap, noiseless, cleanable, portable, space-saving, and able to turn the patient in less than five minutes, among many other demands. Still, TAS saw the rationale behind NUH's many protocols.

So, they did their best to incorporate the nurses' suggestions into the Triturn, which translated into several user-centric improvements such as a symmetrical design to allow for easy operation from both sides of the bed. They also designed Triturn with the aim of easing the physical toll that patient turning exacted on nurses' back, even though that was not one of the criteria outlined in the problem statement.

They also saw the importance of adopting systems thinking and seeing how everything fitted together rather than being caught up in their own narrow field of work.

“Ali: I am working on another start-up type of idea right now. So that's the experience I learned from this project: how to bring an idea from CAD, and to actually see not just mechanical CAD, because as the person who did the design, I just did the design and then that was it. I didn't actually know how this would affect different stuff. But after going through I know that there are certain things like creep fracture, how long you are going to take, how much time it takes to manufacture something, how long is it going to last, who I am designing for, and other skills along the way. I picked up electrical stuff. I also picked up more coding on the Internet-of-Things (IOT) side. So, I am applying that to my project.”

Regrettably, after InnoVenture concluded, NUH had decided not to follow up on TAS's idea, but TAS is still hopeful that the Triturn will find a home someday. What is unfeasible in NUH could well work in another hospital with more spacious wards. TAS could also set their sights overseas where patients are heavier and an external source of strength like the one in Triturn would be necessary. They remain positive about their prospects.