Interview with Grey and Ashprit, TinyMOS Founders, May 2016 – Full Transcript

1. Tell us about yourself. A detailed idea of your background, inspiration

Grey: I'm from Singapore. As a child of a former air force engineer, I grew up tinkering a lot with electronics. I would disassemble my toys and telephones as a kid but I was never able to reassemble them. Slowly I'd watch my father put the things I took a part back together with great fascination. I think he was curious as a child like I was. I remember stories of him accidentally dissolving my grandfather's gold chain with mercury he brought home from school back in Malaysia.

My curiosity in tinkering brought me to participate in Tan Kah Kee Inventors Award back in River Valley High School, where I met our co-founder Lih Wei. Together we invented an odorless dustbin for food waste back when we were 14. We were proud of it, but really embarrassed when we had to present our invention in front of the school as an awardee.

In River Valley High School I also joined the Boys Scouts group. With them we hiked to many places. One of them was to a local island, Pulau Ubin. We camped at the eastern corner of the island and I remember seeing a sky full of stars. It was a very memorable experience for an urban kid growing up in Singapore.

A similar experience happened when I was in the National University of Singapore. We travelled to Mersing, Malaysia as part of the school's astronomy elective. I saw for the first time the Milky Way. As luck had it, the sky was clear in every direction and the Milky Way spanned horizon to horizon. I had my professional Nikon DSLR with me then as I was working as a photographer, but I couldn't capture any images without significant help from my experienced astronomy friends.

Ashprit: I grew up in Mumbai; I studied Engineering in Singapore and I'm now working in Singapore. Starting and running TinyMOS has been my first job after graduation. I completed International Baccalaureate Diploma at Podar International School in Mumbai, and got admission to the prestigious National University of Singapore for Mechanical Engineering.

During summer, I started interning at Sustainable Living Lab, a semi-outdoor community lab and prototyping facility. I spent majority of my time in the workshop, building and breaking things, while also organizing programmes, events and roadshows for the company. That was my first experience in a startup, I liked how the founders of SL2 trusted me (a college student with no work experience and new to Singapore) with important decisions and tasks in the company.

Back in school, I led an Engineering student society, where we organized various workshops, industry talks and visits. In my final year, I pitched an independent research project and got it approved. My two other classmates and I built a prototype to solve water distribution and purification challenges in off-grid villages in India. It was a super interesting and fulfilling experience.

2. How did you all come up with the idea and what was the Eureka moment?

Grey: That trip was when I realized that as a professional photographer, armed with the best photography equipment available, I was clueless what I needed to do to capture the images of the Milky Way. I heard similar stories by fellow students, those who went on geography field studies in Thailand, social work in Fiji and exchange programme students to Norway.

I had to do something about it so that others can image the memorable moments of seeing these sights. Which is why we are making TinyMOS - allowing the everyday person to be able to capture these precious moments.

We looked at what was in the market and realized that existing astronomy equipment is expensive, bulky and complicated. The user interface of existing equipment was reminiscent of Windows 95. With current technology, the bulk of the complications could be removed with automation, presets and just better user interface. For example calling M42 by its common name “Great Orion Nebula” already helps greatly compared to the Messier Object list’s “M42” designation makes much more sense to the average person.

Ashprit: As we did more research we realized that there a lot of space and astronomy enthusiasts out there, but the steep learning curve and high costs of astronomy equipment deters them from owning their own equipment to do observations and imaging. It is common to see 10-20 people queuing behind a telescope at a stargazing party. While it's great for the community to share, we want people to get the freedom to observe and image at their own convenience as well.

Our product and business idea would change almost every week during early days at TinyMOS. At one point it was a time lapse camera, or a security device, or a travel companion. One investor even told us, you should forget about astronomy and focus on getting pictures in nightclubs.

Eventually, I think we have stayed quite true to our initial product idea and inspiration. Once, Grey pitched the astronomy camera idea, it was just improving, testing and re-iterating every day and we do this even now.

3. How did you build the core team (co-founders and initial employees) - How did you meet and how did everyone align to the idea? Investors?

Ashprit: Both Grey and I, while passionate about building the business and prototyping, did not have the technical expertise to see through the development of a new product. That’s where our third co-founder Lih Wei came in. An expert at both software and hardware engineering, he put together our first working prototype over a weekend. He has been instrumental in making TinyMOS possible, and leads our product development now.

Convincing investors that astrophotography is something they should be putting their money in has been an uphill task. Most of the investors we have met have rejected us because it was too niche a market for them. But we were lucky to finally find investors who believed that we could find success in the niche and then grow from there, and more importantly believed in the capabilities and drive of the team

4. What are the key challenges you’ve faced till date, explain them in detail and how did you overcome them

Ashprit: One of the most challenging times in our journey has been in September - October last year when we were initially planning to do our product launch. Our plan was to present at TechCrunch Disrupt conference, and simultaneously launch a crowdfunding campaign, to introduce Tiny1 to the world.

But just weeks before our trip to SF, we were informed by our development team, that they would not be able to support manual capture control on the camera. Without this feature, we would lose our USP and have a camera with features no better than a smartphone camera. The problem could not be solved easily and required using another chipset and doing the majority of our development

again from scratch. Our launch plans were derailed, and we had nearly exhausted our operational funds.

It was a testing time for all three of us, one that had majority of the arguments and disagreements. We were desperately looking for a quick way out of the mess, whether with new funds or an alternate development plan. But there was none. Finally, we swallowed the bitter pill, re-started the development with the new chipset and delayed the launch by more than 6 months. Good news with technology is that the chipset performed better at a lower cost. Which allowed us to pass the cost savings to our backers.

These 6 months gave us the time get a lot more feedback on our product, and I think we are much more prepared to launch now.

5. Where do you see TinyMOS n 100 days? 1 year? 5 years?

Ashprit: After delaying our launch numerous times, I think in the next 100 days, I see TinyMOS having launched successfully on Indiegogo. And we'll be on our way finalizing the production plan for the first batch of cameras.

In one year, TinyMOS would be a successful hardware startup, a feat achieved by only a handful in Singapore. I define successful as selling a product people want to buy, having a plan to scale further, and developing new products and accessories. In fact we have started brainstorming new ideas and developing new prototypes already.

In 5 years, I see TinyMOS becoming or on its way to become as big as GoPRO. GoPRO started with the niche group of surfers who wanted to capture their adventures. Now it is used by various adventure enthusiasts and even everyday people to record their journeys. Astronomy is a bigger hobby than surfing in terms of followers. We aim to start with astronomy, allow and encourage more people to experience it. Down the road, our technology and next generation of cameras can be used for various other applications that require high efficiency in low-light and a compact form factor.

6. Pros & Cons of Singapore

Ashprit: The biggest advantage of being in Singapore is the support you can get from the government. From what I know, I don't think any other government has as many schemes and programmes for startups and SMEs as Singapore. We are beneficiaries of the Spring Singapore's Technology Enterprise Commercialisation Scheme that helps cover majority of our development costs, and we are housed at a free co-working space and prototyping lab run by IDA, another government body.

Another major advantage of being in Singapore is the growing community of entrepreneurs. Although the community is not as big and vibrant as Silicon Valley, but it's evolving. Startups and more experienced people are willing to help you along the way, there plenty of opportunities to grow your network and find new partners if you're willing to go out and do it.

One issue with being in Singapore that we have experienced is the lack of engineering expertise. We have moved a lot of our development work overseas because we still lack skilled hardware engineers whether you're looking to hire or contract a company. This is compounded by the fact that major technology companies only have their sales office locally, without any technical support. This is likely to change as the ecosystem grows further.

7. What's special about this camera vs your competitors.

Ashprit: The Tiny1 is the World's Smallest, Smartest and most Social Astronomy Camera. Smallest because it is extremely portable and lightweight; it's the size of your iPhone just slightly thicker. Smartest because of its integrated Augmented Reality Star Map that helps you search for and locate stars and planets, and Capture Presets that automatically chose the right settings for capturing night images. Finally, Social because it allows direct sharing to your favourite Social Media. Additionally, it also helps you find and organise star parties and astronomy meetups to meet fellow Astro buffs.

There are existing astronomy cameras in the market which are usually used by researchers and hobbyists. More often than not, they have to be connected to the PC via USB and are mounted behind telescopes. The software used to capture and process images is complex and the equipment is not easy to set-up. In comparison, the Tiny1 is designed so that anyone and everyone can start taking pictures of the night sky, even with no or limited knowledge about astronomy or photography.

Professional DSLR's can also be used to capture astronomy and night images. However, they are much more expensive and bulkier than the Tiny1.

8. Why crowdfunding?

Ashprit: Going for crowdfunding was a conscious decision from the very beginning. Our aim is to build a community around Tiny1 and astronomy imaging. Crowdfunding brings us closer to our end users. We get product and design feedback in early stages, while users get updates on every development stage. More than anything, our backers get a chance to contribute in bringing Tiny1 to the market. And that is something to be proud of for both the backers and us.

The global reach of crowdfunding is also appealing. Our backers can be from anywhere in the world, united by the love for astronomy imaging. If we were to use traditional marketing and distribution channels, we would be geographically limited.