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# TEERING UP THE ENTREPRENEURIAL SPIRIT

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From aerospace to air-conditioning, Dr Isakov Dmitry's research forges new frontiers with applications that can help develop value to both industries and individuals. After eight years at A\*STAR's Singapore Institute of Manufacturing Technology (SIMTech), the Principal Investigator with the Precision Measurement Group developed an entrepreneurial streak and decided to find new challenges in the world of business.

"What made me consider an entrepreneurial adventure was the clear vision that I could help others through more efficient products and stay profitable while doing that."

The urge to step out for a breather away from regular

lab work prompted Isakov to sign up for his first secondment under A\*STAR's T-Up programme. Its Growing Enterprises through Technology Upgrade (GET-Up) programme's expert secondment scheme, designed to help SMEs through A\*STAR's research community, effectively connected Isakov with a Singapore-based company that designs, fabricates and distributes optical components and systems.

"The goal was to help them grow their business and explore possibilities in system development through scientific expertise," he explains. "On a personal level, I was very interested in understanding the new infrared detection technology which they were introducing into the market."



His one year stint in 2014 saw him delve into high speed uncooled mid-infrared detectors – a device that the company was distributing – and convert them into a system that they could sell under the company's brand. With Isakov on board, the team set about exploring different applications and eventually focused on laser welding monitoring. As the device can detect high temperatures, it is able to monitor the welding process with millisecond precision and stop it if something is going wrong.

Although his secondment is long over now, Isakov still maintains contact with the company. "We have built a strong relationship. Sometimes

they will consult me if they encounter issues with other projects and I consult them on which solutions are available in addressing similar issues."

Beyond expanding his expertise in infrared detection technology, the secondment into industry also pushed him in the right direction to fulfil his entrepreneurial dream. Upon his return to A\*STAR in 2015, he focused on advancing aerospace technologies for the aerospace industry which he researched earlier, and this led to patent applications filed that same year. Today, he has brought the Technology Relevance Levels of his inventions to standards high enough for industry adoption.





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Both techniques are currently under evaluation by a global aerospace manufacturer and a local company focused on aerospace maintenance, repair and overhaul (MRO). One of these technologies, called Vacuum Assisted Thermography, also received SIMTech's Best Research Achievement Award in 2015.

As inspection technologies require high levels of customisation and are demanded in low volumes by customers, these drawbacks make them less viable as a business. Recognising this, Isakov switched gears and focused attention on other areas of research. One of these endeavours is looking at more effective methods

of cooling down buildings. To this end, Isakov has received a grant to research his ground-breaking air-conditioning idea.

Today, Isakov is several steps closer to launching his own business. "Depending on how the R&D goes, I'm looking to start my own company as this same technology can be used over multiple platforms. I aim to finish the research in two years," he says hopefully. "It may be ambitious, but it's good to set a target so that I have a goal to focus on."



## IDEAS FOR SCIENTISTS PURSUING ENTREPRENEURSHIP

**For scientists who recognise that their innovations have the potential to be commercialised, Isakov shares his plans on how he would bridge the gap between science and entrepreneurship:**

1.



Identify how much profit your technology can potentially bring to a potential customer. If your solution in the foreseeable future does not lead to a profit equivalent to 10 times of your technology cost, it is not a viable solution.

2.



Talk to potential customers to test your assumptions.

3.



Learn how to sell your vision – focus on conveying your idea in an easy to understand manner for potential customers, partners, future employees and investors.

4.



Connect the dots of opportunity that don't yet exist into a scalable business. You will never know where it may lead you.