

Australian Government

Department of Defence Defence Science and Technology Organisation

7 Lessons in Leadership and Innovaton

Dr Alex Zelinsky, Chief Defence Scientist



Reflecting on a career in innovation there are seven key lessons in Leadership and Innovation that can be shared.



Dr Zelinsky started his career as a computer science cadet at BHP and later completed a PhD in robotics at the University of Wollongong. He worked in Japan for three years with the National Institute of Advanced Industrial Science and Technology. On returning to Australia he joined the Australian National University working on robotics technology and later co-founded a hightechnology company, Seeing Machines, which is now listed on the London Stock Exchange.

Dr Zelinsky next joined CSIRO as Group Executive for Information Sciences. At CSIRO he had executive responsibility for the world's biggest proposed radio telescope, the Square Kilometre Array. In March 2012 Dr Zelinsky was appointed Chief Defence Scientist to lead the Defence Science and Technology Organisation.

In August 2013 Dr Zelinsky was awarded the prestigious Pearcey Medal for lifetime contribution to the ICT sector. He is the recipient of many other awards, including the ATSE Clunies-Ross National Science & Technology Award (2005).

The World Economic Forum named Dr Zelinsky a Technology Pioneer in 2003, 2004 and 2005. He has been included in Engineers Australia's list of the 100 most influential engineers since 2009.



Seeing Machines Driver State Sensor, world leading technology for monitoring driver fatigue and distraction. © Seeing Machines

One - create a big vision that has impact, focus and is achievable

People are attracted to work for organisations like CSIRO and DSTO, our national science agencies, because our focus is on addressing challenges of national significance in areas such as climate, water, environment, defence, national security and delivering great outcomes for our partners.

It is relatively easy to work in areas of national importance. However, it is much tougher to choose the right problems – which, if solved, will make a discernible difference.

It is also important to create a "buzz" - people enjoy working somewhere that is exciting and dynamic, where they feel they make a difference and can see their ideas blossom. Capture the imagination of your people and their hearts and minds will follow.

The key is to keep the problem grand while making the steps to the solution small. Researchers plodding towards a far-off goal may initially be well motivated by the big challenge but can quickly become discouraged by its distance unless smaller goals are met along the way.



Secondly, be resourced and organised for success

A great vision that is not matched by brilliant execution is of no value. It is important that projects have sufficient resources allocated to ensure success. There are always - and will always be resource constraints, coupled with other competing priorities. The ability to marshal resources and to prioritise is critical to success.

Another important requirement of delivering an outcome with impact is an understanding of all the steps that need to be taken along the way to the goal. The act of "starting with the end in mind", coupled with a discipline of regularly examining the "path to impact" must not be ignored.

The ability to objectively evaluate the progress of projects is vital. Even with excellent project management, doing something for the first time, particularly in R&D, it is difficult to judge the correct resourcing levels. Revisiting the resourcing issue must be done on a regular basis. In global R&D, where the competition is intense, there is rarely a prize for coming second. Projects that have fallen behind and can't be resourced to get to the front - must be dispassionately terminated. By doing this it allows us to support other worthwhile projects and ventures.

Thirdly, ask yourself: is it feasible, desirable and viable?

It is easy to become enamoured with the technology that we have created and ignoring the realities of the external world. Creating a world-leading technology that is best of breed and is fully operational, in other words - is feasible, is not sufficient. To be successful there must be a market for the technology. People must desire our innovative solutions.

The other critical factor is the viability of the new technology – are customers willing to pay? A common challenge in technology innovation is finding a way that brings down costs and meets the expectations of the market. Too often we get caught in the trap of pouring money on the problem and seeking economies of scale through mass production. While this is an acceptable approach, it is usually high risk and can often end in failure.

An alternative approach is to look at adjacent markets where the price point is higher. While the volumes may be smaller, such an approach can serve as an intermediate stepping stone for refining your technology offering and getting you ready for the big time! At Seeing Machines, instead of developing our driver products for the automotive market where the price point was \$150, we developed a product for the mining industry where the price point was \$15,000.







WiFi - Australian innovation now used in over 5 billion devices world-wide.



The fourth lesson is to have an unwavering commitment to talent

In the fields of science, technology and innovation there is a global war for talent. Smart people are highly mobile and are prepared to move around. Talent attracts talent. Get one outstanding individual on-board and other high achievers will flock to you, seeking the chance to work with the stars.

In reality it is a real challenge to hire an array of stars. For this reason we need to grow and nurture our "home grown" talent. This means organisations like DSTO should invest in skills training and development. We support placements of our talented staff with other leading institutions. We call it the "prodigal son" policy. When staff return they bring back with them better skills and new contacts.



The FLECK



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The popular management quote "people with the best people win" reflects the importance of talent dimension to success. These days it is generally recognised that teamwork amongst talented people is also essential. Perhaps the quote should be "people with the best teams win".

Today's science is increasingly becoming multi-disciplinary requiring collaboration between large teams that are geographically distributed, often over institutional and national boundaries. It is increasingly difficult for single "god scientists" to make the big breakthroughs. These days the big breakthroughs are coming from teams of professionals.

People who can successfully work in multi-disciplinary teams, have broad scientific interests and a thirst for knowledge are also required. Working with others is not always easy and it does come with overheads.

ICT has become the productivity and innovation enabler for almost all areas of science and business. Today ICT is not only at the heart and the glue for technology-based solutions to business and societal challenges, it has also become the engine for collaboration. Today ICT is driving collaboration between distributed teams through video conferencing, online collaboration tools for sharing ideas, data and knowledge.

To build first-class teams, organisations need to seek people who are more than just excellent technical specialists but also have superior communication skills and are comfortable working across boundaries - disciplinary, institutional and geographical.

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Lesson six is to live and breathe high performance

Science and technology is a global business that is highly competitive. The Australian public expects its national science agencies to be world-class. At DSTO we always seek to be the best. This requires us to continually seek constructive critiquing and feedback on how we can improve our science and innovation efforts. We also bring the concept of continual improvement to our project work and business processes, asking the question: how can things be done quicker, more efficiently and with better outcomes?

High performing organisations encourage their staff to provide constructive and direct feedback to colleagues on improving performance. The quest for excellence is handed down to individuals -- expectations are set and performance is monitored.

Complementing the drive for high performance is a culture of celebration and recognition of success and achievement. High performing organisations reward staff through awards, prizes and cash incentives. Building a high performance culture is something that I am passionate about and I seek to create this type of culture wherever I work.

And, finally, lesson number seven leadership does matter

The six lessons that I have described are in fact a leader's guide to innovation. Without good leadership it is almost impossible to achieve big things, particularly in innovation.

I have yet to see an ambitious project successfully delivered through poor leadership. When things are going off the rails,



Square Kilometre Array – world's largest telescope



Diggerworks – innovation for best soldier combat ensembles

having the courage to change leaders can be game changing. Of course it is possible that the situation could become worse if the next leader is not up to the challenge. Finding the right person to lead is the key.

I believe in the saying "hire slow and fire fast!". Too often we do things the other way around and mistakes are made. Taking the time to consider who should take the lead requires careful consideration.

Even with a good selection process, the global talent war means that it can be challenging to find the right person with all the necessary skills.

I am a firm believer that "leaders are made and not born". Therefore it is vital that organisations provide leadership development through training and career development opportunities. Senior leaders should take an interest in mentoring and coaching young leaders. I regard this to be part of my job. Providing an environment where our leaders can learn and grow is vital for any organisation that seeks to be world leading and wants to embrace and drive innovation.

As a leader you are responsible for your own personal development. Leadership development should be regarded as a lifelong journey of learning. This can be done through formal courses but also through reading the latest management books and journals, attending seminars and having your own network of mentors. Seeking feedback from your colleagues through 360 reviews can be daunting but highly rewarding if you act on this feedback!

To end, innovation is a highly competitive space, and as leaders we have an obligation to keep trying to find ways to improve our organisations and ourselves.

I hope that my reflections have given you some insight into innovation. Thank you again for the opportunity to share my ideas with you.



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