

## Key enabling technologies – the focus of the World Manufacturing Forum

🕒 July 25, 2016  Features  Bruce Grey

*Over 550 manufacturing professionals gathered in Barcelona at the World Manufacturing Forum in May this year to consider Industry 4.0 strategies. Bruce Grey shares some observations.*



Industry 4.0 is basically about connected and automated machines that communicate with each other and also with the products that they process, including all kinds of components and resources, which are pre-produced and provisioned through the logistics chain.

Industry 4.0 goes hand in hand and depends on The Internet of Things, (IoT) which is the network of physical plant and equipment, vehicles, buildings, cameras and even components on a product in use such as an aircraft—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. This allows vendors to communicate with their own products while they are used by the customers and to provide new “digital” customer services such as predictive maintenance.

Other key enabling technologies discussed at Barcelona were Augmented Reality, Additive Manufacturing and Automation.

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An undisputed take away from the Forum was that the impact advanced key enabling technologies and data analysis is having on world industry is huge, and all companies, including Australian SMEs will need to change how they operate to remain competitive.

From the presentations and discussion it was clear that industry 4.0 had officially reached a critical implementation point across the globe.

The main drivers of Industry 4.0 and the take up of other key enabling technologies today were:

- The exponential increase in computing power and its decreasing cost. This means businesses have more power to gain additional insight.
- The rapid increase of data becoming available. Additionally, sensors, batteries, electronics and cameras continue to decrease in cost, are becoming more resilient and are able to be deployed in harsher environments. This means companies are using more hardware and collecting more data that can help drive business operations and decisions.
- More people are connected with personal technology than ever before. And, it's expected there will be 25 billion machines connected by 2020. Manufacturers can now look at their smartphone and see how their plants are operating and further how their products are performing in use by their customer.

The author participated in a discussion forum on the take up of these key enabling technologies. This group included Germans, British, French, Italians and Americans.

At one point the moderator asked the author: "We see that in Germany the government has a clear and defined strategy for the uptake of Industry 4.0 and associated technologies, while at the other end of the spectrum we have America where their approach could be classed as laissez-faire. Where is Australia on this spectrum?"

I replied that in many respects Australia was further along the spectrum than America in that our federal government now provides only minimal industry assistance and that such assistance must be industry led. That is that any take up of these key enabling technologies will only happen if industry drives it.

Australia had recently decided it was not good use of taxpayers' funds to continue to support the automotive industry and as a consequence all current motor vehicle manufacturers had announced their intention to exit manufacturing in Australia.

Compare this to the USA where there still exists a tariff of 25 per cent on the import of Sports Utility Vehicles. This has driven significant inward investment into the US by the Japanese and Germans.

Further, when the global financial crisis struck the US and Canadian governments invested billions of dollars in short term support for their local motor vehicle industry.

Whereas up until now in Australia it had been difficult to argue with this federal government approach as Australia was now in its 26<sup>th</sup> year of continuous economic expansion. Furthermore Australia had a GDP/capita higher than most European countries with a population over 20 million. This is a consequence of a very open economy responding quickly to global market signals. Furthermore the many free trade agreements that Australia had signed with fast growing Asian economies had continued the growth of exports where Australia had a strong comparative advantage.

However, with other major global economies becoming more protectionist and with the stalling of free trade negotiations such as TPP, the Australian government will have to become more fleet of foot in strategic decision making.

The first step has been the conclusion of the A\$50 billion agreement with DCNS to supply 12 submarines.

Two of the main attractions of this agreement to the Australian government were that France agreed to share and transfer its intellectual property and that all the submarines would be built in Australia.

Furthermore DCNS agreed to create five Centres of Excellence which will foster career opportunities in fields such as composite materials, hydrodynamics, hull material and welding, marine corrosion and energy optimisation.

Also, DCNS has committed to work with universities across Australia in research and development to ensure that more comprehensive naval engineering degrees include courses which specialise in submarine related subjects. Further DCNS's own University will develop industrial skills in Australia each year by offering 50 Australian graduate students the opportunity to undertake graduate programs or traineeships.

The last two points are particularly relevant as Australia has a very poor record in collaboration between companies and the publicly funded research sector including universities, CSIRO, ANSTO and the many medical research institutes.

The Cooperative Research Centre Program which has operated for over 25 years has not succeeded in rectifying this poor performance.

The current Innovative Manufacturing CRC is expected to work hand in hand with the Advanced Manufacturing Growth Centre and increase its focus on the defence and medical technology sectors.

The jury is still out to see if this will result in a faster uptake by Australian companies of the very critical key enabling technologies outlined above.

Bruce Grey was Managing Director of the Advanced Manufacturing Cooperative Research Centre, a position he held for four and a half years, until April 2014. Among other board positions, he is currently Chairman of Australian Stock Exchange-listed Advanced Braking Technology Limited and a Non-Executive Director of London Stock Exchange-listed CAP XX Limited. Bruce is also Patron Founder of [Manufacturing on the Move](#) – a Window on High-Value Manufacturing in and from Australia

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