Year of radical innovation in built environment

By Alta Schoultz

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Much of our modern life is rooted in the way we have designed our cities and infrastructure around us. Globalisation, increased competitiveness, sustainability issues and connectivity have forced us to look at innovative ways to sustain growth and development.

Despite strides already being made in the building and construction sector, we have to become even more efficient in terms of our use of raw materials and energy in our manufacturing processes and radically change the way in which we design our cities for the benefit of both humans and our planet.

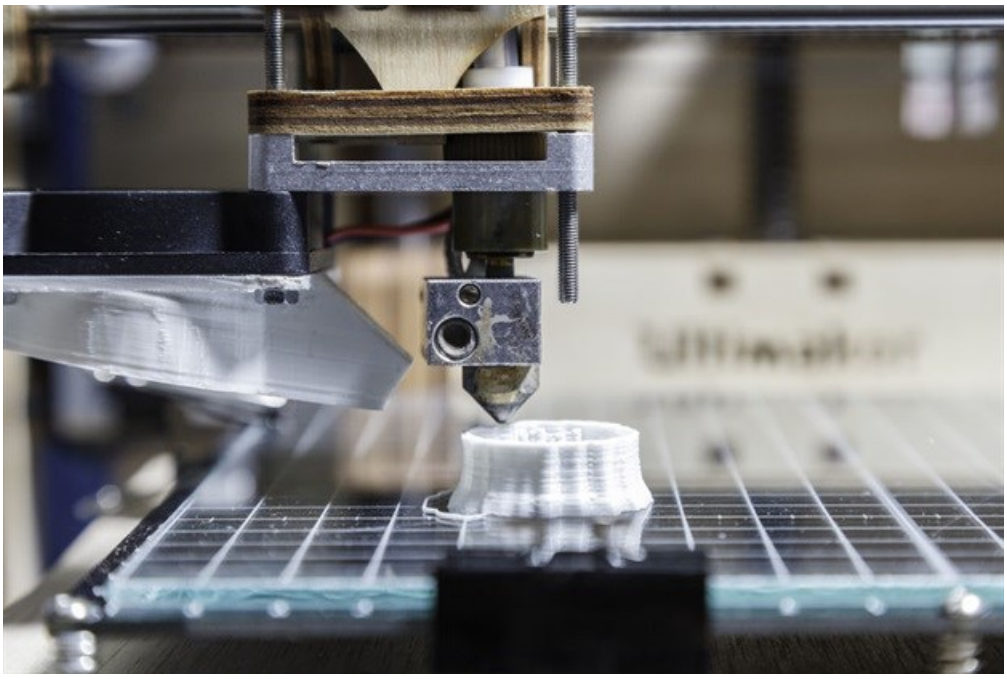
Innovation is usually associated with the adoption of technology. The rate at which countries and societies adopt technology has, over time, correlated directly with cycles of increase and contraction in global economic growth. Since the global financial crisis in 2008, we have seen an unprecedented acceleration of technology, driving growth sharply upwards. Our use of and engagement with technology has changed however. Technology is no longer being applied in isolation but is starting to serve a higher purpose of social conscience and sustainability.

While technology is often the point of entry for innovation, more and more people are realising that innovation is about much more than technology alone and will increasingly be democratised and seen in every facet of modern life. As such, every product and industry is subject to creative destruction because innovation can now be crowdsourced and crowdfunded by non-traditional players. We're talking open-source, open-platform and collaboration with technology hubs and incubators to drive innovation and entrepreneurship. In response to global climate change for example, societies will want to collaborate to solve the challenges in basic infrastructure and housing because of urbanisation. We will share knowledge and make education more accessible.

How will these trends drive innovation and the way we manufacture and market, design and build in 2016 and the future though? What can we look forward to?

Sustainable materials

Innovation is both driven by and supported by developing new fields in science. New fields in science are becoming increasingly specialised and interdisciplinary. Biomimetic engineering or "nature-inspired" solutions will point the way towards sustainable energy and new materials and technologies. The perfect example of this is 3D printing. Incredibly, we're already printing multi-level buildings complete with furniture in concrete. This could radically change the speed at which we can respond to urbanisation. By using self-healing, smog-eating and self-cleaning concrete, textile-concrete, carbon-negative cement and ultra-high-performance building materials coupled with alternative building technologies, we're changing the traditional functionality associated with buildings and infrastructure. Combining new materials, such as nano-reinforced concrete, with advanced engineering will enable us to push the boundaries of structures and potentially create architecture the likes of which we have never seen before.



Information and communications technology (ICT)

The big trends of 2015 - big data, the internet of things (IoT) and the cloud - will mature into an innovation ecosystem with over 40-billion interconnected devices connected to the internet by 2020. This will start the information of everything (IoE). Buildings of the future will respond to their inhabitants, using the latest technology and sensors to connect to wearable devices. Measuring everything and collecting data will enable us to design better buildings and cities.

In Africa, we have leapfrogged land networks with our mobile technology adoption, affordable mobile connectivity will influence the way we transact going forward. Mobile payments for goods and services have already gained traction and are enabling micro-enterprises to operate. Smart devices and sensors are already shaping customer experiences and will continue to do so.

Robotics

We will start seeing increased use of intelligent machines for routine tasks in mining and manufacturing processes. One of the most recent examples of this is the autonomous-driving car. Enterprise drone-management platforms will also start to change the game for logistics and products may be delivered differently. Drones can also be programmed to build intricate designs improving efficiency and driving economies of scale.

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Consumer activism

The rise of consumer activism will continue - driving innovative solutions for sustainable products and business models. Consumers' almost infinite choice and demand for transparency will carry on being fuelled by social networks and increasing connectivity. As traditional product-based competitive advantages seem to disappear, businesses will have to compete primarily on customer experience. Aspirational demands and connectivity will additionally drive innovative marketing models and mass customisation of products.

In times of exponential change, opportunities are great for those who are able to translate and create from the "chaos" around them. As such, 2016 promises to be a year of potential for many - and one that PPC will be watching and contributing to keenly.

ABOUT ALTA SCHOULTZ

Alta Schoultz has 25 years' experience in the cement and lime manufacturing industries. She is currently driving the innovation strategy as the head of Innovation at PPC and also heads the Technical Marketing team. This team is responsible for recent projects such as the PPC Imaginarium and the Cement & Concrete Cube, an industry web-based collaboration platform.

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