

FUTURE SKILLS

Nicholas D. Evans FBCS looks at the future IT skills that will be needed as the digital business era evolves. Organisations have to select from a palette of new technologies to enable their strategies for transforming business models, processes, products and services. IT skills in these areas will be vital.

The business world is currently in a state of widespread transformation due to the opportunities presented by digital business and the threat of digital disruption for those who fall behind. Today, for many organisations, IT is the business, whereas in prior years it was simply an enabler.

With all these opportunities and challenges across the business and IT landscape, and with organisations looking to IT for their next competitive edge in business, what IT skills will be needed in five years' time? Furthermore, how can an individual or organisation develop strategies for coping with the fact that we don't even know some of the jobs that will be needed in the years ahead?

Two ways to gain some further insight into this topic are firstly to look at the past and explore the generational shifts we've seen in the IT landscape, and then secondly to divide the skills discussion into tools and techniques.

Shifts in the landscape – the new platform ecosystem for digital business

Every fifteen years or so, the IT industry has witnessed new innovations in computing which have changed the way IT services are delivered to the business and end users. After the mainframe era, mini-computing era, personal computer and client-server era, and the web era, we're now in what many call the fifth wave of corporate IT. This fifth wave is characterised by a new master IT architecture comprised of social, mobile, analytics and cloud technologies collectively known as SMAC.

Based upon the longevity of the prior IT eras, this fifth wave of IT, which represents today's digital business era, is anticipated to last from 2010 until around 2025. With SMAC technologies at the heart of this new architecture, a sure bet is to continue to build skills in any one or more of these areas of social, mobile, analytics and cloud. These four areas will be a key part of the DNA of almost every application built in the

years ahead.

Now that we're five years into this fifth wave of IT, we're already seeing emerging technology enablers adding to these foundational building blocks to constitute a new platform ecosystem for digital business. The more recent enablers include personas and context, intelligent automation, 3D printing, the internet of things, as well as the perennial importance of cybersecurity. As organisations select from a palette of these technologies to enable their strategies for transforming business models, processes, products and services, IT skills in each of these newer areas will be vital.

One of the largest upcoming disruptors to business as usual may well be automation. The World Economic Forum states that 'over the next decade, no less than 47 per cent of all occupations could be affected by deepening automation, while by 2021 nearly two-thirds of all college graduates will hail from emerging economies.'

The impact of deepening automation and robotics isn't all bad news, however, as there are many areas where we're well underway in terms of instrumenting the human and socialising the machine to create new ways of performing work that combines the best of what humans and machines have to offer.

Rather than harsh boundaries between humans and machines, we're creating a converged future where work processes are being optimised in two converging directions: instrumentation of human processes and socialisation of machine processes, so the two can work in greater harmony together. This will be a prime area for IT skills not only to build the machine and automation components, but to design and implement solutions where work processes are reimagined in the context of mutual human-machine collaboration.

In terms of cybersecurity, as we think about a future world with over 25 billion connected 'things' in use by 2020, the cyber risk scenarios grow exponentially. Cybersecurity skills will be even more vital in the years ahead to pro-actively secure digital business solutions which incorporate a variety of emerging technologies such as the IoT, which is currently a



security 'wild west'.

When emerging technologies are not secure from the start, they create delays in realising their full business benefits as organisations struggle to implement appropriate security controls. The study 'Risk and Responsibility in a Hyperconnected World' by the World Economic Forum estimated delays addressing cyber risk ranged from 11 months for cloud, to five months for IoT and mobility, to three months for social computing. Clearly, a larger percentage

of cybersecurity skills in the years ahead need to be redirected here – on securing the new platform for digital business – versus traditional perimeter security.

Tools and techniques – service mastery

In addition to mastering the enabling technologies themselves, mastery of digital services is going to become a key competency for organisations to grow their business and build sustainable competitive advantage in the years ahead. It's no longer sufficient to have an innovative set of products or services, you have to be a master of how you design, develop, deploy,

agility and at high levels of sophistication and scale – is going to be a critical capability for organisations that wish to become, or even remain, digital leaders within their industries.

So while the familiar SMAC technologies provide the foundational building blocks, together with emerging building blocks such as the IoT, there is also a need for innovative service delivery techniques and approaches to keep pace with digital business.

You can think of this as the 'what' and the 'how'. Just as a magician has valuable props (the 'what') essential to his performance, he also needs to perfect his sleight of hand (the 'how').

Taking a life cycle perspective, in the digital services life cycle, the idea is to accelerate digital service development and deployment, make services agile, scalable and available on-demand, automate extensively, personalise and contextualise for the customer experience, and manage holistically.

Therefore, in addition to basic IT skills related to the software development life cycle, it will be important to build a new set of IT skills

across the life cycle that can operate at speed and at scale. Key skills and techniques will include agile, DevOps, as-a-service applications and infrastructure, intelligent automation, personas and context, and digital service management.

Summary

In conclusion, there are now a rich set of future skills in which to specialise for those entering, or already working in, the IT arena. Whether it's a focus on specific technology enablers such as robotics or the IoT, or a focus on specific techniques such as agile and DevOps, these skills will become more and more critical in the years ahead as organisations invest in scaling up their digital transformation initiatives. These organisations will look to IT professionals to provide compelling, differentiated solutions that enhance the digital customer experience, improve operations, and which can be designed and deployed in an agile manner.

Finally, since business and IT strategy will determine and drive these future

skill needs, capabilities in strategic planning, innovation management, enterprise architecture, program management, and change management will also be essential to pull everything together and execute on the overall transformation.

IT professionals will be able to choose whether to go deep in terms of specialising in a specific technology or capability, or whether to go wide in terms of specialising in the broader perspective of how all these elements come together from a strategy and execution standpoint to enable the next generation of digital business solutions.

Further reading

'Instrumenting the human and socializing the machine',
Aug 12, 2015, Computerworld
<http://bit.ly/1J49X6V>

'The wild, Wild West of IoT security',
Aug 3, 2015, Computerworld
<http://bit.ly/1OLYxom>

'Preparing for the digital disruption that's coming to your industry',
Apr 22, 2015, Computerworld
<http://bit.ly/1Debks3>

'Digital services mastery: A key competency for digital business',
Mar 9, 2015, Computerworld
<http://bit.ly/1FlK7ZN>

'SMAC and the evolution of IT',
Dec 9, 2013, Computerworld
<http://bit.ly/16l5FIG>

'Risk and Responsibility in a Hyperconnected World, Insight Report',
World Economic Forum
http://www3.weforum.org/docs/WEF_RiskResponsibility_HyperconnectedWorld_Report_2014.pdf

Global Agenda Council on the Future of Jobs, World Economic Forum
<http://www.weforum.org/content/global-agenda-council-future-jobs-0>

manage and continually evolve your digital services as well.

With digital business comes the expectation of intelligent, personalised and contextualised services that can be provided to customers and rapidly redesigned or enhanced as business needs dictate. In addition, the service itself may need to dynamically adjust based on the customer's context, environmental parameters, business exceptions, or other changing business conditions.

The upshot of all this is that the ability to design, develop, deploy and manage digital services – and do this with tremendous

