

# Exponentials



## Artificial intelligence

Artificial Intelligence (AI) is about simulating reasoning, developing knowledge, and allowing computers to set and achieve goals through a wide range of techniques such as machine learning, deep learning, probabilistic inference, neural network simulation, pattern analysis, decision trees, and random forests. And while today's leading AI approaches represent supervised learning with narrow focus, it appears the goal is to push, for general purpose, intelligence that can be self-taught and self-learning.



## Additive manufacturing

3D printing is democratizing the manufacturing process and changing what we can physically create. The simplicity of the support tools means that companies can digitize existing objects, tailor open-source designs, or create new designs based on structural and industrial engineering know-how. Advances in materials science are unlocking the potential for new manufacturing techniques, including the printing of electrical circuits, composite structures, and biological matter.



## Industrial biology

Information technology is fueling a seismic shift in medical science. Life sciences are becoming digitized, allowing for genetic engineering: manipulation of DNA, gene splicing, and digital control of genomes. And, ultimately, to genetic mapping—understanding and creating custom solutions designed for an individual's specific genome, targeting a specific ailment (or propensity for an ailment).



## Robotics

Robotics is fundamentally changing the nature of work and virtually every job could be affected—it's just a matter of when. The next robotics frontier is machines which can perform tasks that involve gathering and interpreting data in real time. From multi-purpose manufacturing automation, to remote surgical equipment, to drones, to self-driving vehicles—the rules of how work gets done may be rewritten in the next decade.



## Quantum computing

Advances in raw computing power and connectivity have guided us through the Internet revolution and are enabling investments in areas such as the Internet of Things and industrial biology. Quantum computing raises the stakes even further through the potential expansion of what is computationally possible.

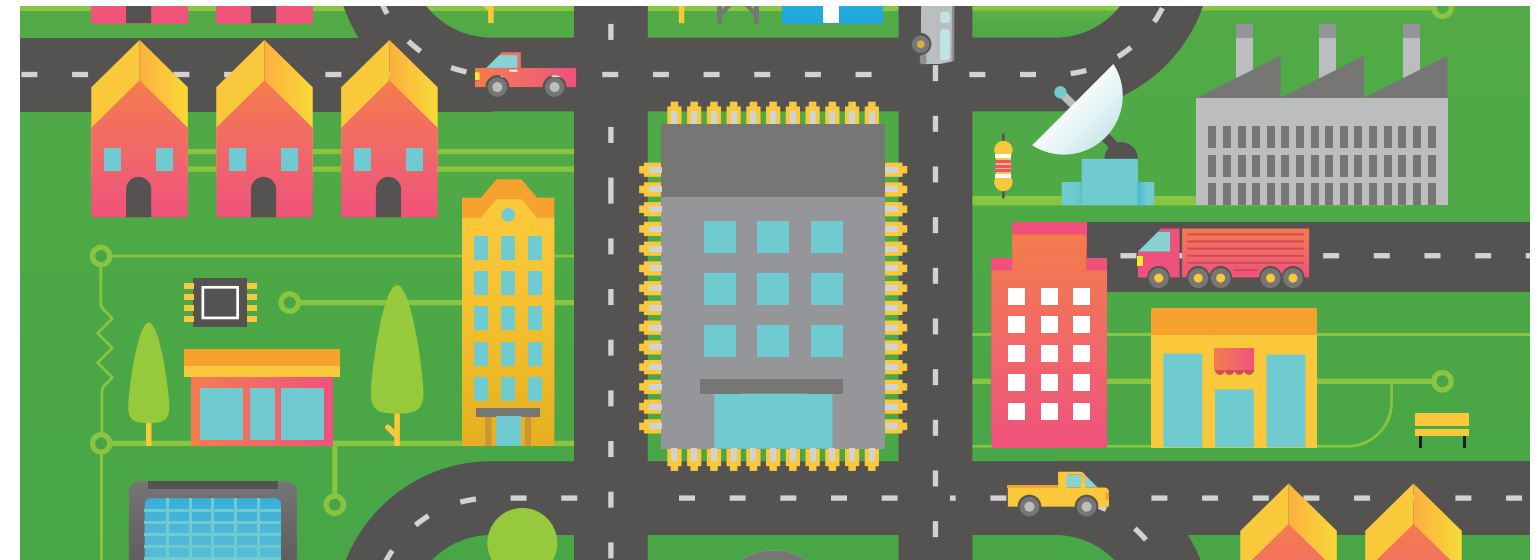


## Cyber security

Companies should be prepared to survive in an environment where threats by cyber criminals are commonplace. They should focus on building resilience: the ability to handle critical incidents, quickly return to normal operations, and repair damage.

# Tech Trends 2015

## The fusion of business and IT



### What is it?

Deloitte's annual Technology Trends report examines the ever-evolving technology landscape put to business use. Once again, we've selected a set of topics that have the opportunity to impact businesses across industries, geographies, and size within the next 18 to 24 months.

This year's report examines trends such as the Internet of Things, software-defined everything, and the IT worker of the future. These trends have the potential to disrupt and reshape organizations, business models, and even industries.

Today's disruptive technologies can challenge CIOs to anticipate the impacts that these forces may have on their organization. And while the realities of today's demands are by no means trivial, these trends offer CIOs the opportunity to shape tomorrow—to inspire, to create, and to transform “business as usual.”

### How were the trends selected?

Developing the list of trends is an ongoing process of primary and secondary research.

The process includes:

- Feedback from client executives on current and future priorities
- Input from Deloitte industry and practice leaders
- Perspectives from industry and academic luminaries
- Research from technology alliances, industry analysts, and competitor positioning
- Crowdsourced ideas and examples from our global network of practitioners

The topics are compiled to reflect how the evolving technology landscape and volatile market forces are affecting the complex nature of our clients' business problems.

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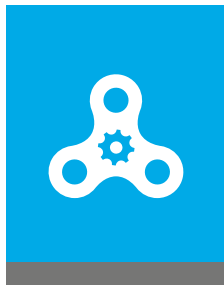
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# A brief look at Tech Trends 2015



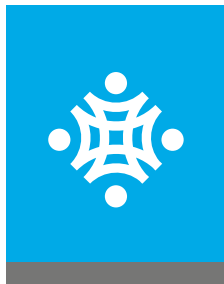
## CIO as Chief Integration Officer

As technology transforms existing business models and gives rise to new ones, the role of the CIO is evolving rapidly, with integration at the core of its mission. Increasingly, CIOs need to harness emerging disruptive technologies for the business while balancing future needs with today's operational realities. They should view their responsibilities through an enterprise-wide lens to help ensure critical domains like digital, analytics, and cloud aren't spurring redundant, conflicting, or compromised investments within departmental or functional silos. In this shifting landscape of opportunities and challenges, CIOs can be not only the connective tissue but the driving force for intersecting, IT-heavy initiatives.



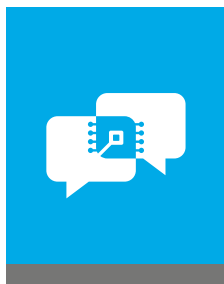
## API economy

Application programming interfaces (APIs) have been elevated from a development technique to a business model driver and boardroom consideration. An organization's core assets can be reused, shared, and monetized through APIs that can extend the reach of existing services or provide new revenue streams. APIs should be managed like a product—one built on top of a potentially complex technical footprint that includes legacy and third-party systems and data.



## Ambient computing

Possibilities abound from the tremendous growth of embedded sensors and connected devices—in the home, the enterprise, and the world at large. Translating these possibilities into business impact requires focus—purposefully bringing smarter “things” together with analytics, security, data, and integration platforms to make the disparate parts work seamlessly with each other. Ambient computing is the backdrop of sensors, devices, intelligence, and agents that can put the Internet of Things to work.



## Dimensional marketing

Marketing has evolved significantly in the last half-decade. The evolution of digitally connected customers lies at the core, reflecting the dramatic change in the dynamic between relationships and transactions. A new vision for marketing is being formed as CMOs and CIOs invest in technology for marketing automation, next-generation omnichannel approaches, content development, customer analytics, and commerce initiatives. This modern era for marketing is likely to bring new challenges in the dimensions of customer engagement, connectivity, data, and insight.



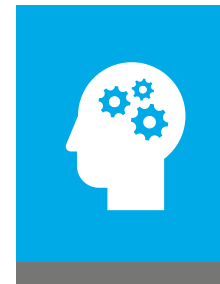
## Software-defined everything

Amid the fervor surrounding digital, analytics, and cloud, it is easy to overlook advances currently being made in infrastructure and operations. The entire operating environment—server, storage, and network—can now be virtualized and automated. The data center of the future represents the potential for not only lowering costs, but also dramatically improving speeds and reducing the complexity of provisioning, deploying, and maintaining technology footprints. Software-defined everything can elevate infrastructure investments, from costly plumbing to competitive differentiators.



## Core renaissance

Organizations have significant investments in their core systems, both built and bought. Beyond running the heart of the business, these assets can form the foundation for growth and new service development—building upon standardized data and automated business processes. To this end, many organizations are modernizing systems to pay down technical debt, replatforming solutions to remove barriers to scale and performance, and extending their legacy infrastructures to fuel innovative new services and offerings.



## Amplified intelligence

Analytics techniques are growing in complexity, and companies are applying machine learning and predictive modeling to increasingly massive and complex data sets. Artificial intelligence is now a reality. Its more promising application, however, is not replacing workers but augmenting their capabilities. When built to enhance an individual's knowledge and deployed seamlessly at the point of business impact, advanced analytics can help amplify our intelligence for more effective decision making.



## IT worker of the future

Scarcity of technical talent is a significant concern across many industries, with some organizations facing talent gaps along multiple fronts. The legacy-skilled workforce is retiring, and organizations are scrambling for needed skills in the latest emerging disruptive technologies. To tackle these challenges, companies will likely need to cultivate a new species—the IT worker of the future—with habits, incentives, and skills that are inherently different from those in play today.