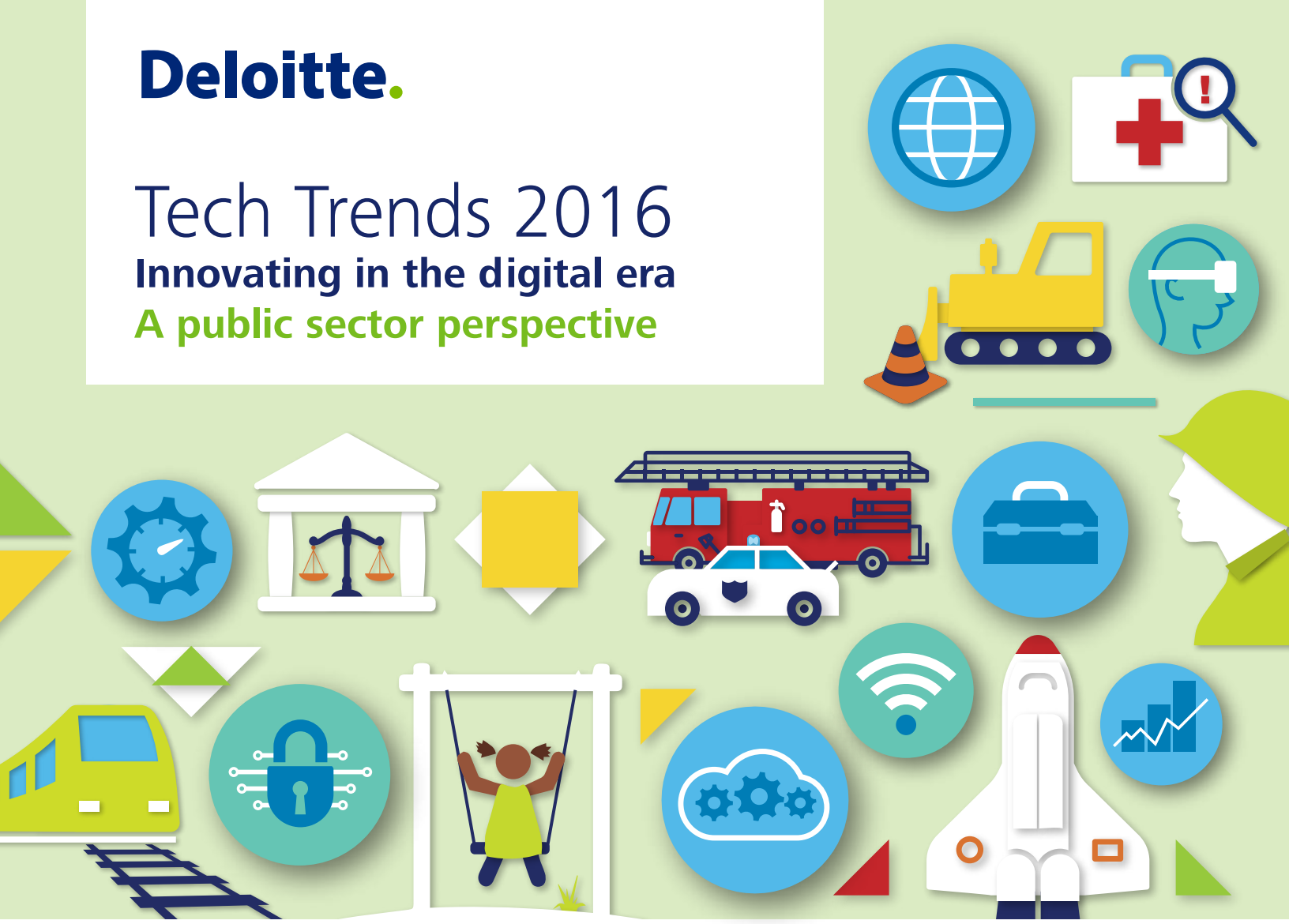
Deloitte.

Tech Trends 2016

Innovating in the digital era

A public sector perspective



Mobile, social, cloud, analytics, the Business of IT—these macro forces are behind many of the digital technologies that are fueling innovation today. As these technologies advance, so do expectations around user experience, process transparency, and instantaneous access to information. In addition, technologies such as augmented reality and the Internet of Things to exponential technologies like robotics and quantum computing are reshaping every corner of organizations by transforming "business as usual" to the art of the possible.

This report provides a public sector perspective on Deloitte Consulting's 2016 *Technology Trends* report and theme *innovating in a digital era*. Over the next 18-24 months, each of these eight trends has the potential to disrupt the way that public sector organizations think about operating and delivery models across functions and domains. As in the past, we seek to shed light on the anticipated level of public sector relevance and readiness for each trend. We acknowledge that public sector organizations are different, broad, and complex, and our scoring of organizational readiness and trend relevance is designed to represent overall trends. We incorporate real-world examples and some tips and key considerations to help organizations get started, so that leaders look for practical ways not only to do familiar things differently but also to do fundamentally different things.

As with each edition of our annual *Tech Trends* report, this is part of an ongoing discussion in an ever-evolving field. We hope that the ideas contained herein help to inform and guide your thinking as you explore opportunities to harness these technology trends to refocus, revitalize, and reimagine the future of government.

Right-speed IT

There is an inherent tension between stability and agility in IT. Organizations are evolving different delivery models to span the continuum from high-torque enterprise IT and high-speed innovation. Balancing can no longer be "one size fits all" across the enterprise. As public sector CIOs seek to distribute innovation, agile, and DevOps experience across teams, they may face procurement, budget, and talent hurdles.

Getting started

- Build a coalition of the willing. Understand people's motivations, and recruit them to your cause.
- Be flexible. Sometimes it takes one step back to unlock another forward.
- Start small. Celebrate every win until the new behavior becomes the norm.

Trends in action
State MMIS and child welfare systems around the country are taking modular approaches to IT development. They are transitioning from large, long-term contracts to shorter acquisition cycles and rapid, incremental development methodologies. California is incrementally revamping child welfare services one at a time using phased RFPs.

Autonomic platforms

Leveraging virtualization, containers, and the cloud, autonomic platforms transform infrastructure to be more intelligent, automated, predictable, repeatable, and scalable. IT delivery is more effectively managed and automated so that employees can focus on higher-value tasks, and large, complex public sector entities can focus more energy on their core missions.

Getting started

- Phase it in. Autonomic platforms need to evolve and mature.
- Invest in tools. Explore tools to isolate systems from infrastructure, allowing horizontal scalability.
- Consider DevOps. DevOps can be a good start to better managing workflow and workforce.

Trends in action
Autonomic platforms are making inroads across the public sector, including data center, server, network, and storage virtualization. For example, Defense Information Systems Agency (DISA) network virtualization efforts promote automation, network visibility, and performance, helping warfighters better detect and remediate threats.

The Internet of Things: From sensing to doing

From "smart cities" to the military, government is capitalizing on the ever-expanding universe of connected "things." Indeed, the Internet of Things has myriad applications to the public sector and has already proven to be transformative. But the real potential is unlocked when data are actionable and new approaches to data management and mission delivery models are considered.

Getting started

- Start small and iterate. Iterative pilot projects let you experiment, measure, and refine.
- Use what you have. Previous solutions may find new life and save steps.
- Consider implications. Think about connectivity, safety, security, and privacy.

Trends in action
Idaho and Pennsylvania use sensors and cameras built into roads, towers, and even snowplows to monitor traffic and weather. Friction levels on pavement are fed directly to crews, who can then monitor salt and sand usage rates and adjust application levels in real time.

Blockchain: Democratized trust

Developed as part of Bitcoin, blockchain uses cryptography to store and verify information in a secure shared ledger without a governing central authority. As a potential alternative to centralized governance, blockchain may rewrite notions of transaction, licensing, identity, and contract management. Adoption is nascent; however, regulators should be vigilant, and agencies should recognize that use cases exist that could drastically improve efficiency, costs, and reliability.

Getting started

- Get smart. Blockchain takes time to understand. Education can reveal the most valuable use cases.
- Role play. The public sector can play a role in developing standards or regulation.
- Keep up. ERP and financial systems are investigating use of blockchain principles that could better meet mission needs.

Trends in action
Honduras started a pilot to move its public land registry onto a distributed ledger in an effort to prevent illegal record tampering. Records were digitized, encoded with an immutable fingerprint, and then stored on the blockchain. Users can track histories of land titles instantly but cannot alter anything in the system.

Augmented and virtual reality go to work

Augmented and virtual reality are no longer science fiction. AR and VR, technology that delivers context and immersion, have tremendous potential to retool training environments, improve communication, redefine the role of field service workers, and reshape government business processes. The military, law enforcement, and national security agencies have been early adopters.

Getting started

- Pick powerful pilots. Start with a use case that will create value and tremendous impact.
- Be the beta. Vendors may be willing to team up and lower prices to improve products.
- Educate. Understanding these tools and their value is essential to adoption.

Trends in action
NASA is using AR and VR to train astronauts to do jobs in space—like repairing the exterior of the International Space Station. The agency is also experimenting with wearable glasses that allow users to interact with holograms, enhancing communication between astronauts and ground teams.

Industrialized analytics

The public sector has long harnessed data to inform decisions, enhance performance, and reduce costs. Today, data availability, better talent, and better technologies represent a tremendous opportunity. However, new approaches that consider innovative delivery models, new technical platforms, and novel governance tactics will be required to unlock this opportunity. "One-off" pilots offer insight in dribs and drabs—but larger-scale data efforts can allow results that are repeatable, scalable, and truly transformative.

Getting started

- Start with the question, not the answer. What information would help you achieve your mission?
- Walk before you run. Introduce analytics gradually. Embrace failure, and fail fast.

Trends in action
Chicago is using advanced analytics to combat foodborne illnesses. Hundreds of datasets including 311 complaint calls, sanitation inspections, and even weather help health inspectors forecast violations and focus on food establishments most likely to require attention. Violations are now being discovered an average of seven days earlier.

Reimagining core systems

Decades-old legacy and ERP systems are at the heart of mission and back office government office processes. But taxpayer expectations for ease of use, transparency, and efficiency have risen dramatically in the internet age. Cloud, sensors, and virtual reality are changing missions and businesses. As those changes progress, CIOs face enormous pressure to maintain core systems while also investing in emerging digital technologies. But what if those same legacy systems have the potential to become the foundation for driving innovation? This calls for nuance, not monolithic thinking.

Getting started

- Mounting debt? Aging workforce? Develop a clear business case.
- Plan it out. Incrementally innovate while respecting core systems.
- Modernize in place. Automated mainframe code conversion has matured dramatically.

Trends in action
To enhance customer experience, Amtrak is modernizing its 40-year-old pricing, scheduling, and ticketing system with new mobile and digital capabilities. Rather than a wholesale "rip-and-replace," Amtrak is meeting these changing demands through a transformation of its existing core platforms.

Social impact of exponential technologies

Exponential technologies such as augmented reality, virtual reality, and robotics have demonstrated the ability to do work better, cheaper, and faster. Beyond efficiencies, exponentials can drive positive social impact, and the public sector has the opportunity to take the lead in developing public-private consortiums to take on the world's toughest challenges using these technologies.

Getting started

- Team up. Work with the private and philanthropic sectors to help kick-start efforts.
- Convene. The public sector is a powerful coordinator and convener. Host competitions around social problem-solving.
- Consider ethical impacts. Coordinate efforts to consider and understand the ethical and moral implications of exponential technologies.

Trends in action
In the wake of the 2014 Washington state Oso mudslide, the public, private, and philanthropic sectors collaborated to fly drones with advanced sensors over the disaster zone. Drones were able to map the entire area in seven hours, an activity that would have normally taken two to three days, and they kept responders safe in the process.

Relevancy
How impactful would it be if the public sector adopted the trend?

Readiness
How ready is the public sector to adopt the trend?

Learn more

Follow

@DeloitteGov

#PSTechTrends2016

View the full report
www.deloitte.com/us/pstechtrends

Download the Tech Trends 2016 iPad app

www.deloitte.com/us/techtrends2016_app

Explore Deloitte's other trends reports

- **Tech Trends 2016: Innovating in the digital era**
  www.deloitte.com/us/techtrends
- **Analytics Trends 2016: The next evolution**
  www.deloitte.com/us/analyticstrends
- **Global Human Capital Trends 2016: The new organization: Different by design**
  www.deloitte.com/us/hctrends

Authors, contributors, and thanks

Authors

Kristin Russell, Scott Buchholz, Roy Mathew, Christian Doolin, Mark White, Van Hitch, Phong Huynh, Blair Nicodemus, Marlin Metzger, and Sanjay Shah

Special thanks

The authors of *Tech Trends 2016: A public sector perspective* would like to recognize the exceptional work of the following individuals for their roles as sponsors, project managers, editors, researchers, designers, and contributors: Missy Hyatt, Rick Pfeister, Holly Wilmot, Annette Evans, Suzanne Love Beck, Chad Clay, Veronica Kwok, Emily Hurst, Tommy Carolin, Priya Patel, Binta Cisse, Jim Doughty, Chris Haslup, Paul Fitzgerald, Mark Price, Jenni Marple, Kathryn Conlin, Zulaikha Majeed, and Mackenzie Odom.

Contact us

For questions regarding *Tech Trends 2016: A public sector perspective*, please contact:

Kristin Russell
Digital Government Strategy Leader
Deloitte Consulting LLP
@KristinDRussell

Scott Buchholz
Director
Deloitte Consulting LLP
sbuchholz@deloitte.com