

GARTNER TOP 10 STRATEGIC TECHNOLOGY TRENDS FOR 2018

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INTRODUCTION

The growth of artificial intelligence (AI), cloud to the edge, immersive experiences, blockchain, intelligent apps, and analytics are all a part of the technology developments growing in this digital age. In October 2017, [Gartner, a research and advisory company](#), released their [“Top 10 Strategic Technology Trends of 2018,”](#) calling out what they’ve dubbed “The Intelligent Digital Mesh.” This terminology refers to the “entwining of people, devices, content, and services. It’s enabled by digital models, business platforms, and a rich, intelligent set of services to support digital business.” In this Tech Insight, we’re exploring the “Intelligent Digital Mesh” of technologies that we’ll most likely be seeing more of as we move into 2018 and discussing how these services or products can be beneficial to the Department of Veterans Affairs (VA).

INTELLIGENT TECHNOLOGIES

Gartner defines “intelligent” as how AI is intertwined into virtually every technology, allowing for more dynamic, flexible, and autonomous systems. They predict that in the new year, (1) AI, intelligent apps and analytics, and intelligent things, will be the first intelligent technology trend we see most. [AI](#) is defined as the theory and development of computer systems able to perform tasks that normally require human intelligence. For example, AI is found in speech recognition (think of Google Home or Siri), decision-making, and translation between languages. AI provides the ability to enhance decision making and customer experiences. Gartner predicts AI will “drive the payoff for digital initiatives through 2025.” The company found that interest is growing, as a recent survey showed that 59 percent of organizations are still gathering information on AI strategies, while the other 41 percent have already made progress through pilot programs or adopting AI solutions.

Gartner mentions that the current focus is on [“narrow AI,”](#) or highly scoped machine-learning solutions. Narrow AI targets a specific task with specific algorithms to perform those tasks, for example, driving cars in a controlled environment. David Cearley, Vice President and Gartner Fellow, says, “Enterprises should focus on business results enabled by applications that exploit narrow AI technologies and leave general AI to the researchers and science fiction writers.”

The second intelligent trend Gartner discusses involves (2) **intelligent apps and analytics**, believing that over the next few years, every application or service will incorporate AI in some way. “Challenge your packaged software and service providers to outline how they’ll be using AI to add business value in new versions in the form of advanced analytics, intelligent processes and advanced user experiences,” mentions Cearley. Intelligent apps have the potential to transform the nature of work and structure of the workplace. This is often seen in companies who use virtual customer assistants. Intelligent or [augmented analytics](#) are particularly growing, through machine learning for automating data and insight discovery and sharing for many business users, operational workers, and citizen data scientists.

Lastly, Gartner finds (3) **intelligent things** to be a growing force as AI and machine learning technologies are utilized in more intelligent ways with people and the environment. “Some intelligent things wouldn’t exist without AI, but others are existing things (i.e., a camera) that AI makes intelligent (i.e., a smart camera).” As technologies develop, AI will be used more and more in everyday objects. Some of you may already be using intelligent things – such as self-driving cars, smart refrigerators, the new iPhone X’s facial recognition abilities, robot vacuums, and more. Garner sees a future shift from stand-alone intelligent things to a more collaborative “swarm” of intelligent things, working together. Currently, this area is being used by the military as they study drone swarms to attack or defend targets.

DIGITAL TECHNOLOGIES

Let’s talk about the top four digital trends. Digital is defined by Gartner as “blending the virtual and real worlds to create an immersive digitally enhanced and connected environment.” Gartner mentions the (4) **digital twin**, “a digital representation of a real-world entity or system.” [Digital twins](#) are part of the [internet of things](#) (IoT) technology, as they’re linked to real objects and offer information regarding counterparts, respond to changes, and improve operations. “With an estimated 21 billion connected sensors and endpoints by 2020, digital twins will exist for billions of things in the near future,” mentions Cearley. Basically, digital twins help asset management, but eventually, will provide operational efficiency and insights, showing how products are used and how they can be improved upon.

Next up is (5) **cloud to the edge** technology. [Edge](#) is defined as “pushing the frontier of computing applications, data, and services away from centralized nodes to the logical extremes of a network.” According to [General Electric \(GE\)](#), edge computing to date has mainly been used to ingest, store, filter, and send data to cloud systems. Gartner is urging enterprises to begin using edge design patterns in their infrastructure architectures, especially those related to IoT. Some may think cloud computing and edge computing are competing approaches, but that isn’t necessarily the case. Gartner explains that edge computing places content, computing, and

processing closer to the user/thing or “edge” of networking, whereas [cloud computing](#) is a system where services are delivered using internet technologies. When implemented together, cloud creates the service-oriented model and edge computing offers a delivery style that allows for execution of disconnected aspects of cloud service.

(6) **Conversational platforms**, the next digital trend, are predicted to drive a shift from user to computer when it comes to translation. These types of platforms can include anything from making reservations online for a restaurant to checking the weather. Systems or platforms will begin to evolve into having the ability to complete complex actions. The current challenge for conversational platforms is that users need to communicate in a structured way and that can be frustrating. Gartner says, “A primary differentiator among conversational platforms will be the robustness of their conversational models and the application programming interface (API) and event models used to access, invoke and orchestrate third-party services to deliver complex outcomes.”

The last digital trend discussed is (7) **immersive experience**. These experiences include AI, virtual reality (VR), augmented reality (AR), or mixed reality, which are absolutely changing how people interact with digital technologies. In collaboration with conversational platforms, there will be a shift in user experience to an invisible and immersive experience. Gartner predicts that the next five years will focus heavily on [mixed reality](#) – currently the most popular [immersive experience](#) – where users interact with digital and real-world objects, while remaining present in their physical world. According to the article, “Mixed reality exists along a spectrum and includes head-mounted displays (HMD) for AR or VR, as well as smartphone- and tablet-based AR. Given the ubiquity of mobile devices, Apple’s release of ARkit and iPhone X, Google’s Tango and ARCore, and the availability of cross-platform AR software development kits such as Wikitude, we expect the battles for smartphone-based AR and MR to heat up in 2018.”

MESH TECHNOLOGIES

Lastly, let’s break down “mesh” technologies, which Garner describes as “the connections between an expanding set of people, business, devices, content, and services to deliver digital outcomes.” First up? (8) **Blockchain**, which has been a major technology trend changing industries, especially those related to government, healthcare, supply chain, and more. [Blockchain](#) is defined as a digital register in which transactions made in [bitcoin](#) or another cryptocurrency are recorded chronologically and publicly. It removes business friction by being independent of individual applications or participants – meaning it allows untrusted parties to exchange commercial transactions, which in turn means many blockchain technologies are unregulated. Gartner suggests, “Before embarking on a distributed-ledger project, ensure your team has the cryptographic skills to understand what is and isn’t possible. Identify the

integration points with existing infrastructures, and monitor the platform evolution and maturation.”

The next trend discussed in mesh is (9) **event-driven** technology using messaging platforms that support connected devices. With AI, IoT, and similar technologies on the rise, business events can be detected and analyzed in greater ways than ever before. Business events “reflect the discovery of notable states or state changes, such as completion of a purchase order.” Some events constitute “business moments,” which are detected situations calling for specific business action. According to Gartner, the most consequential business moments are those that have implications for multiple parties, such as separate applications, lines of business (LOBs), or partners. “Event thinking” is a term and action that the company believes enterprises should be embracing. They predict that by 2020, “event-sourced, real-time situational awareness will be a required characteristic for 80 percent of digital business solutions, and 80 percent of new business ecosystems will require support for event processing.”

The final trend Gartner highlights as part of the mesh is (10) **continuous adaptive risk and trust**. With refined tools and smart technologies increasing in digital business, the level of threats increases as well. [Continuous adaptive risk and trust assessment](#) (CARTA) allows for real-time, risk, and trust-based decision making with adaptive responses to security-enable digital business. Digital business creates a complex, evolving security environment. The use of increasingly sophisticated tools increases the threat potential. A CARTA approach allows enterprises to make decisions based on risk and trust and is transforming all areas of information security. “This requires embracing people-centric security and empowering developers to take responsibility for security measures. Integrating security into your Development Operations (DevOps) efforts to deliver a continuous “DevSecOps” process and exploring deception technologies (e.g., adaptive honeypots) to catch bad guys that have penetrated your network are two of the new techniques that should be explored to make CARTA a reality,” says Gartner.

CONCLUSION AND THE BENEFIT TO VA

Strategic Technology is loosely defined as the set of technologies that, when proven to provide business value, enable the achievement of VA’s information technology (IT) strategic objectives. Currently, enterprise IT Vision based on this strategy is captured in the Office of Information and Technology’s (OIT) [Enterprise Technology Strategic Plan](#) (ETSP). OIT formally examines Gartner’s Top 10 Strategic Technology Trends and establishes a set of key technologies that may have an impact on the future IT environment and investment portfolio. The latest version of the ETSP includes an analysis of the 2017 trends, and a future update of the ETSP will include

analyses from the 2018 trends, which can lead to recommendations for new enterprise services in VA's IT investment planning and budgeting activities.

We look forward to seeing more information on these trends in the coming year and to see how they will impact the VA environment. If you'd like to read more about some of these topics, please check out some of our most recent Tech Insights on [Virtual Reality in Healthcare](#), [AI in the Workforce](#) and [Blockchain](#). Additionally, TS has also delivered an Enterprise Design Pattern (EDP) on the [Impact of Internet of Things](#) and has several EDPs developed around [cloud computing](#).

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