Think of your last 24 hours. Chances are you've had several moments of continuous connection with information, apps, services, devices and other people. This "digital mesh" surrounds the individual and new, continuous and ambient experiences will emerge to exploit it.

Our lives are becoming increasingly connected to our devices, other people and a variety of things. Smart machines get smarter, and a new IT reality must evolve with technology architectures and platforms to support the advancement of a digitally connected world.

This year's top 10 strategic technology trends are grouped into these three complementary trends that are mutually reinforcing with amplified disruptive characteristics.

Trend No. 1: The Device Mesh

The device mesh moves beyond the traditional desktop computer and mobile devices (tablets and smartphones) to encompass the full range of endpoints with which humans might interact. As the device mesh evolves, Gartner expects connection models to expand and greater cooperative interaction between devices to emerge. We will see significant development in wearables and augmented reality, especially in virtual reality.

Trend No. 2: Ambient User Experience
All of our digital interactions can become synchronized into a continuous and ambient digital experience that preserves our experience across traditional boundaries of devices, time and space. The experience blends physical, virtual and electronic environments, and uses real-time contextual information as the ambient environment changes or as the user moves from one place to another.

Trend No. 3: 3D-Printing Materials

We'll see continued advances in 3D printing with a wide range of materials, including advanced nickel alloys, carbon fiber, glass, conductive ink, electronics, pharmaceuticals and biological materials for practical applications expanding into aerospace, medical, automotive, energy and the military.

Recent advances make it possible to mix multiple materials together with traditional 3D printing in one build. This could be useful for field operations or repairs when a specific tool is required and printed on demand. Biological 3D printing — such as the printing of skin and organs — is progressing from theory to reality; however, politicians and the public don't have a full understanding of the implications.

Trend No. 4: Information of Everything

Everything surrounding us in the digital mesh is producing, using and communicating with virtually unmeasurable amounts of information. Organizations must learn how to identify what information provides strategic value, how to access data from different sources, and explore how algorithms leverage Information of Everything to fuel new business designs.

Trend No. 5: Advanced Machine Learning

Advanced machine learning is what makes smart machines appear "intelligent" by enabling them to both understand concepts in the environment, and also to learn. Through machine learning a smart machine can change its future behavior. This area is evolving quickly, and organizations must assess how they can apply these technologies to gain competitive advantage.

Trend No. 6: Autonomous Agents and Things
Advanced machine learning gives rise to a spectrum of smart machine implementations — including robots, autonomous vehicles, virtual personal assistants (VPAs) and smart advisors — that act in an autonomous (or at least semiautonomous) manner. This feeds into the ambient user experience in which an autonomous agent becomes the main user interface. Instead of interacting with menus, forms and buttons on a smartphone, the user speaks to an app, which is really an intelligent agent.

Trend No. 7: Adaptive Security Architecture
The complexities of digital business and the algorithmic economy, combined with an emerging "hacker industry," significantly increase the threat surface for an organization. IT leaders must focus on detecting and responding to threats, as well as more traditional blocking and other measures to prevent attacks.

Trend No. 8: Advanced System Architecture

The digital mesh and smart machines require intense computing architecture demands to make them viable for organizations. They'll get this added boost from ultra-efficient-neuromorphic architectures. Systems built on graphics processing units (GPUs) and field-programmable gate-arrays (FPGAs) will function more like human brains that are particularly suited to be applied to deep learning and other pattern-matching algorithms that smart machines use. FPGA-based architecture will allow distribution with less power into the tiniest Internet of Things (IoT) endpoints, such as homes, cars, wristwatches and even human beings.

Trend No. 9: Mesh App and Service Architecture

The mesh app and service architecture are what enable delivery of apps and services to the flexible and dynamic environment of the digital mesh. This architecture will serve users' requirements as they vary over time. It brings together the many information sources, devices, apps, services and microservices into a flexible architecture in which apps extend across multiple endpoint devices and can coordinate with one another to produce a continuous digital experience.

Trend No. 10: Internet of Things Architecture and Platforms
IoT platforms exist behind the mesh app and service architecture. The technologies and standards in the IoT platform form a base set of capabilities for communicating, controlling, managing and securing endpoints in the IoT. The platforms aggregate data from endpoints behind the scenes from an architectural and a technology standpoint to make the IoT a reality.

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