TOP 10 STRATEGIC TECHNOLOGY TRENDS

Intelligent

Artificial Intelligence and Advanced Machine Learning

Intelligent Apps

Intelligent Things

Digital

Virtual Reality and Augmented Reality

Digital Twins

Blockchains and Distributed Ledgers

Conversational Systems

Digital Technology Platforms

Mesh App and Service Architecture

Adaptive Security Architecture

Mesh

TOP 10 Trends 2015-2017

2015	2016	2017
Merging the Real World and Virtual World	**Digital Mesh**	**Intelligent**
Computing Everywhere	Device Mesh	Artificial Intelligence and Advanced Machine Learning
The Internet of Things	Continuous & Ambient UX	Intelligent Apps
3D Printing	3D Printing Materials	Intelligent Things
Intelligence Everywhere	**Smart Machines**	**Digital**
Advanced, Pervasive and Invisible Analytics	Information of Everything	Virtual Reality and Augmented Reality
Context-Rich Systems	Advanced Machine Learning	Digital Twins
Smart Machines	Autonomous Agents & Things	Blockchains and Distributed Ledgers
The New IT Reality Emerges	**New IT Reality**	**Mesh**
Cloud/Client Computing	Adaptive Security Architecture	Conversational Systems
Software-Defined Applications and Infrastructure	Advanced Systems Architecture	Digital Technology Platforms
Web-Scale IT	Mesh App & Service Architecture	Mesh App and Service Architecture
Risk-Based Security and Self-protection	IoT Architecture & Platforms	Adaptive Security Architecture

The Characteristics of Smart Machines
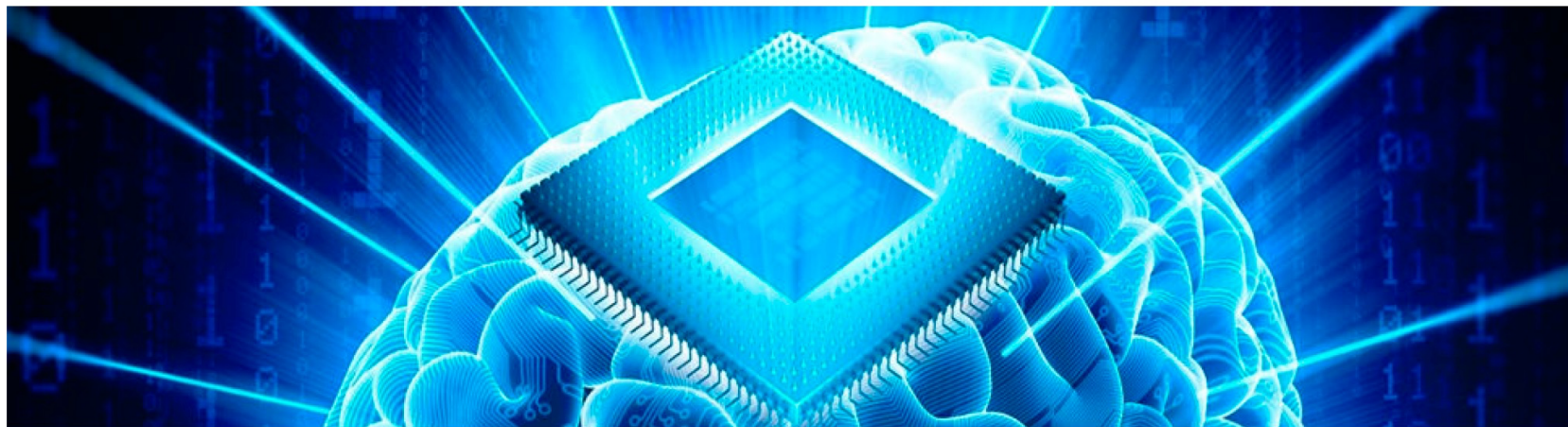
Well-Scoped Purpose	**Evolution of Data Science**
Deal With Complexity	**Model-Driven, Content as Code**
Understand, Learn, Predict, Adapt	**DNN and Inference Engines**
Act Autonomously	**Context- and Event-Driven**

DNN = deep neural network

Artificial Intelligence and Machine Learning Will Have Obvious and Inconspicuous Uses

Physical

Intelligent Sensors Smart Appliances Smart Tools (e.g., Digital Stethoscope)	Robots Drones Autonomous Vehicles
Operational Applications Smart Security and Operations Smart Enterprise Apps	Virtual Customer Assistants Virtual Personal Assistants Smart Advisors

Inconspicuous (left axis)   **Obvious** (right axis)

Virtual
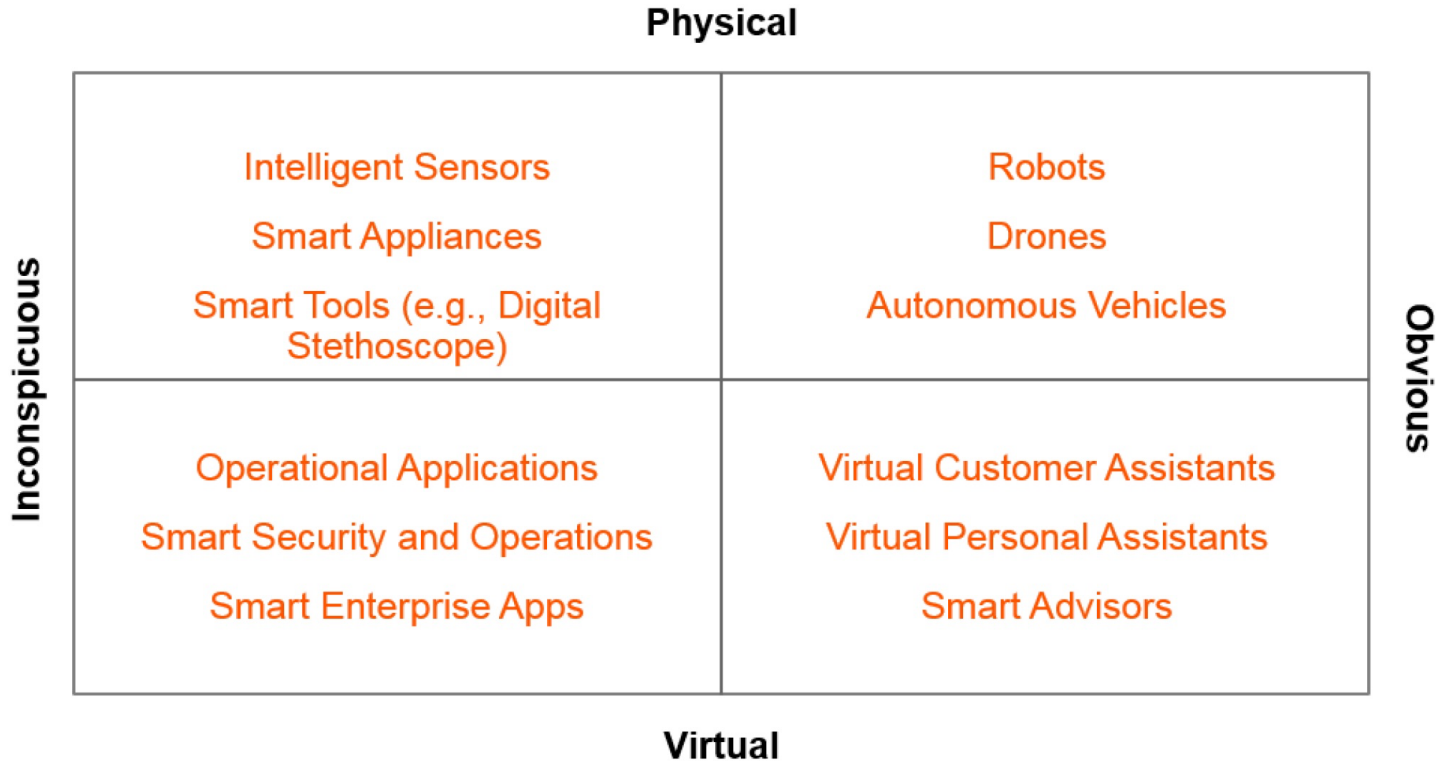
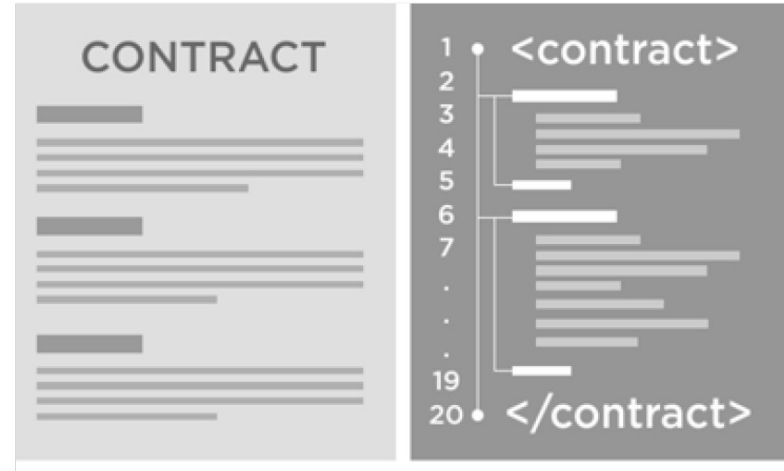# Forecast for Sales of Head-Mounted Displays, 2015-2020
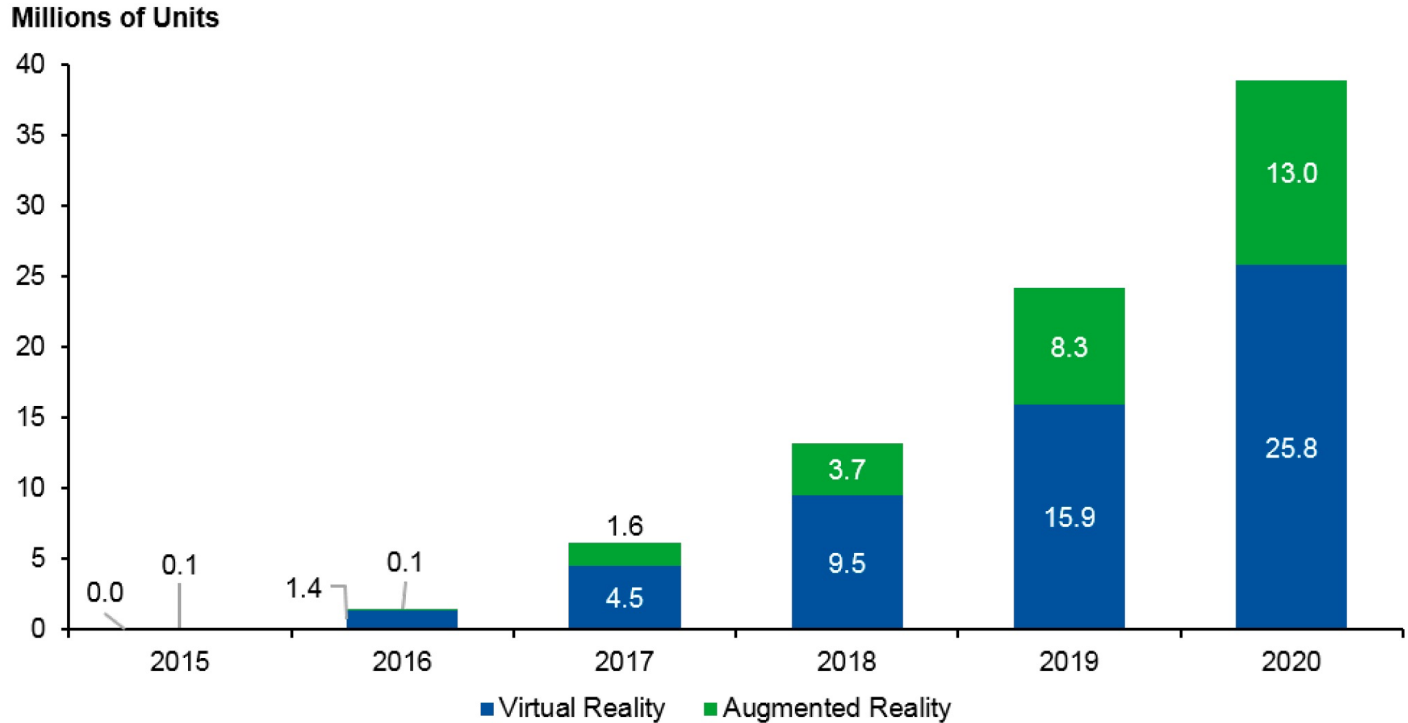
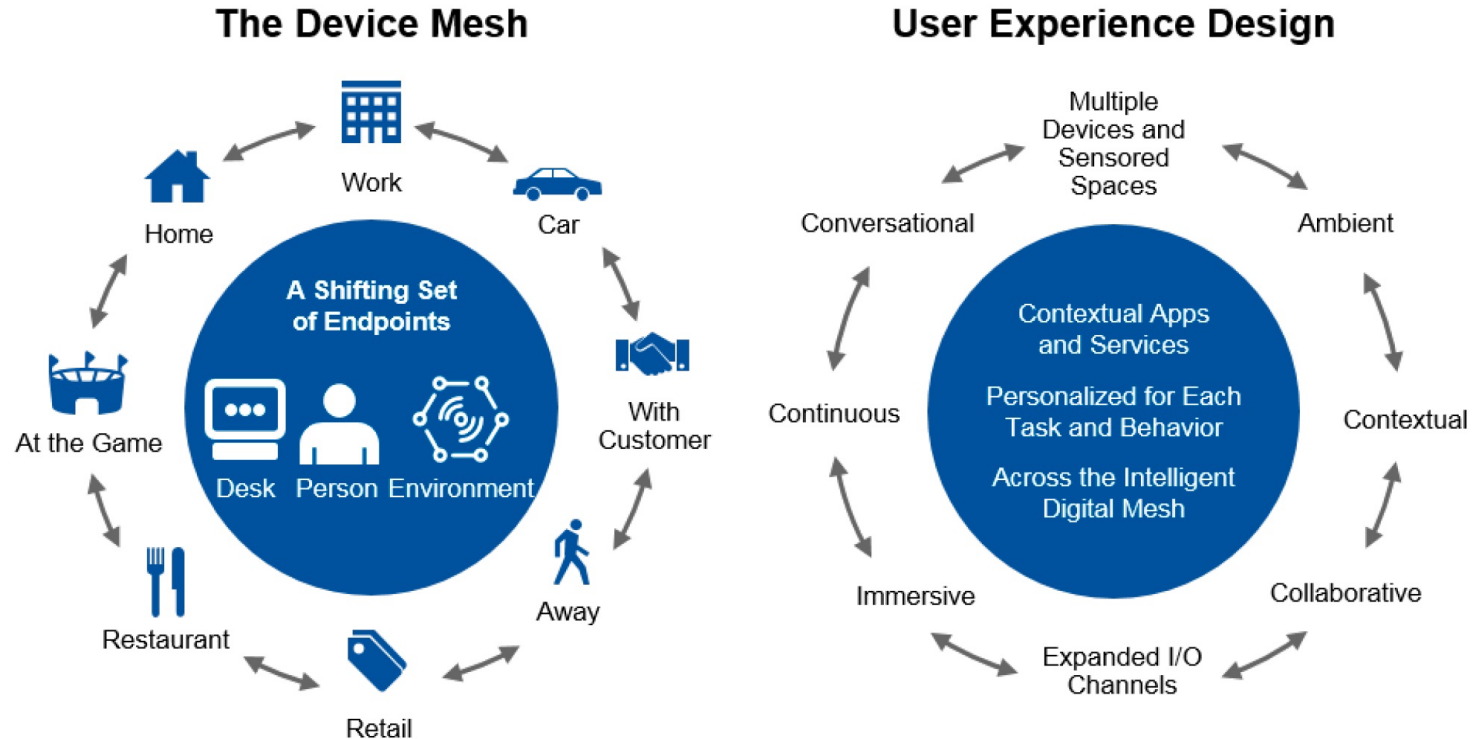# Digital-Twin Models Are Digital-Entity Models for Assets
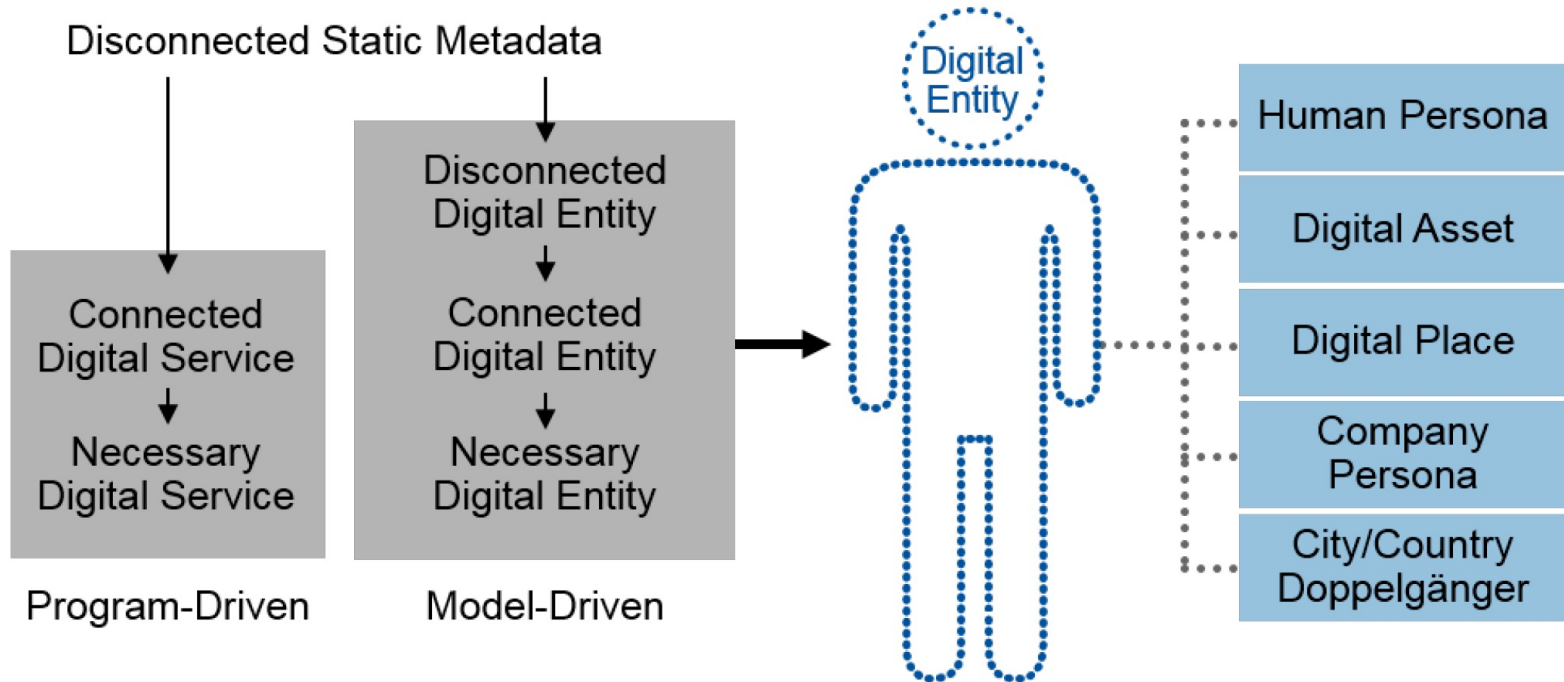
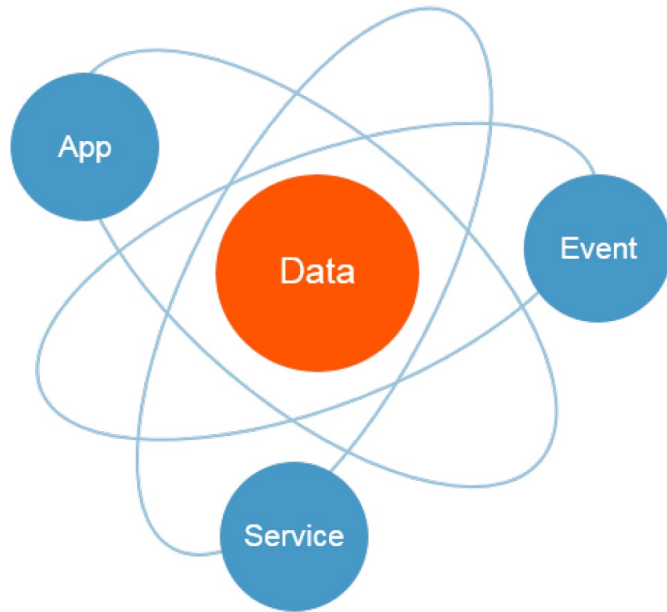# Key Elements of Blockchains and Distributed Ledgers

- Mechanism for adding trust in an untrusted environment

- An irrevocable record of significant data and events, such as monetary transactions, property records and other valued assets

- Not just a passive data record; can add dynamic programmed behavior to events

Conversational Systems Include New User Experience Design Elements

The Device Mesh

Work

Home

Car

At the Game

A Shifting Set of Endpoints

Desk   Person   Environment

With Customer

Restaurant

Away

Retail

User Experience Design

Multiple Devices and Sensored Spaces

Conversational

Ambient

Continuous

Contextual Apps and Services

Personalized for Each Task and Behavior

Across the Intelligent Digital Mesh

Contextual

Immersive

Collaborative

Expanded I/O Channels

I/O = input/output

The Shift to a Central Role for Event Processing in Digital Business

The source of truth is the data store.
First priority: Preserve data
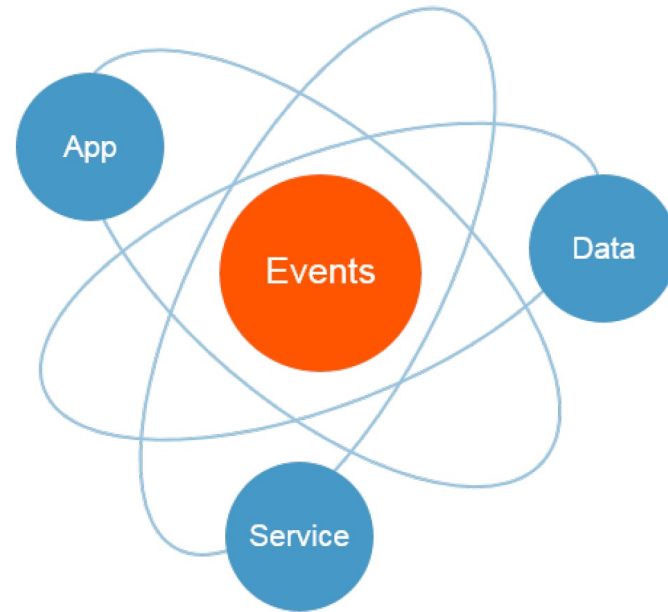
The source of truth is the log of events.
First priority: React to events

Abstract System Model for Conversational Artificial Intelligence Platform

Smart User Experience

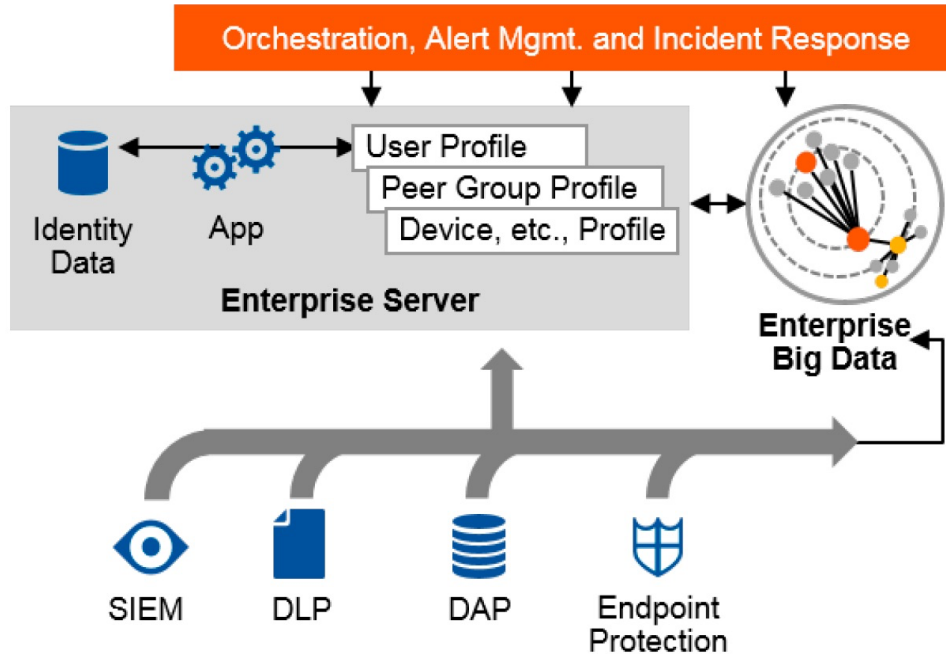Conversational user experience, bot control and more

Application Layer

Bots, apps and other applications

Smart General-Purpose Platform

Artificial intelligence services and other
(for example, Internet of Things and system of record)

User and Entity Behavior Analytics

DAP = database audit and protection; DLP = data loss prevention; SIEM = security information and event management

Key Findings

- An intelligent digital mesh is emerging to support the future of digital business and its underlying technology platforms and IT practices. The mesh focuses on people and the Internet of Things (IoT) endpoints, as well as the information and services that these endpoints access.

- Capabilities such as blockchains, distributed ledgers and digital twins will bring the physical and digital realms ever closer to supporting digital business initiatives.

- Artificial intelligence (AI) and machine learning are the means of injecting intelligence into new and existing apps and things to form the intelligent digital mesh.

- Relentless and ever-increasing security attacks require adaptive security architectures that emphasize security-aware solution design; AI-enabled user and entity behavior analytics; and new architecture, methods and tools to address IoT and intelligent digital mesh security.