Management Information Systems MIS 310

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TECHNOLOGY IN MODERN ENTERPRISE

Information Systems Defined

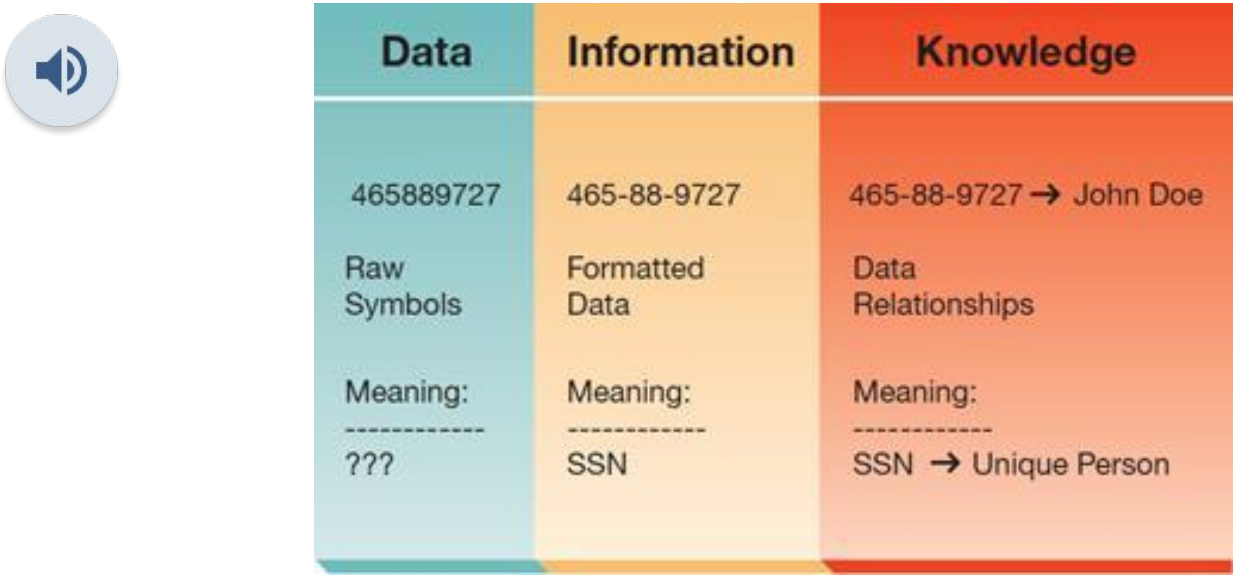
- “Information systems (IS) is the study of complementary networks of hardware and software that people and organizations use to collect, filter, process, create, and distribute data.” *
- “Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings.”**
- “Information systems are interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization.”***

*Wikipedia entry on "Information Systems," *Wikipedia: The Free Encyclopedia*. San Francisco: Wikimedia Foundation.
**Excerpted from *Information Systems Today - Managing in the Digital World*, fourth edition. Prentice-Hall, 2010.
***Excerpted from *Management Information Systems*, twelfth edition, Prentice-Hall, 2012

The Components Of MIS

- The Root and Purpose
  - Data
- The Technology Components
  - Hardware
  - Software
    - Telecommunications Networks
- The Users
  - People: The Builders, Managers, and Users
- The Context
  - Organizations/Processes

Data: The Root and Purpose of IS



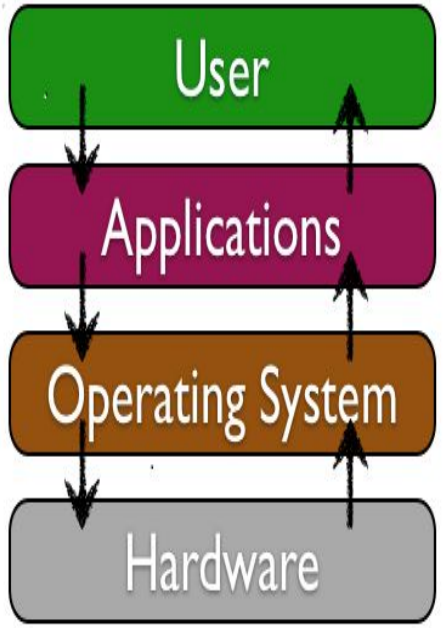
- Alone, raw data are not very useful
  - meaningless characters
- When processed, data transforms into information
- When information is understood and used for decisions, it becomes knowledge

Characteristics of Good Information

- Accurate
- Timely
- Relevant
- Just sufficient
- Worth its cost

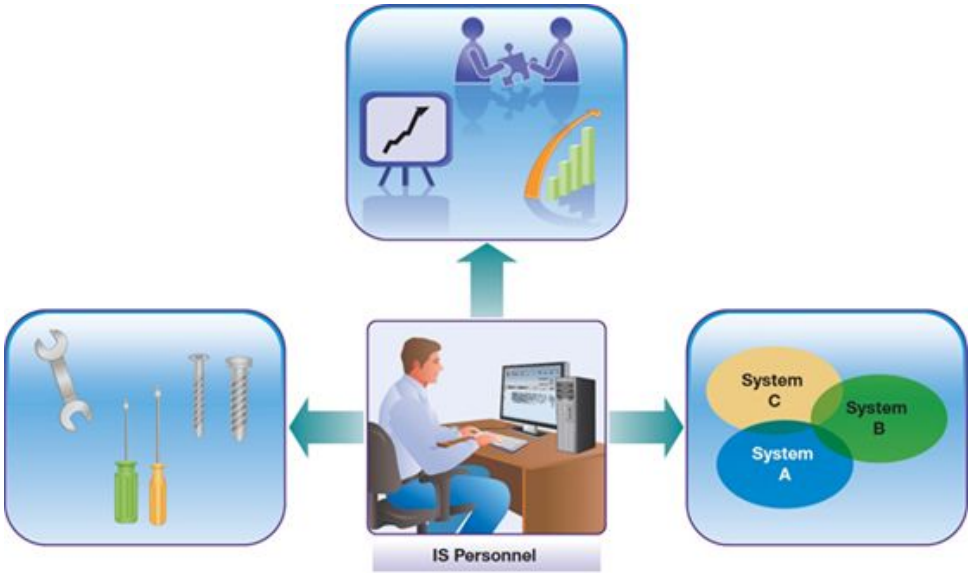
The Technology Components of IS

- Hardware
  - The physical components of the technology
    - Computers, keyboards, disk drives, iPads, and flash drives
- Software
  - A set of instructions that tells the hardware what to do
    - Operating-systems and applications
- Telecommunications Networks
  - Made up of hardware and software
  - A core feature of today's IS



People: The Builders, Managers, and Users of IS

- As the use of information systems grows, so does the need for dedicated IS professionals
- What Makes IS Personnel So Valuable?
  - A blend of skills
    - Technical competency
    - Business competency
    - Systems competency



Organizations & Processes: The Context of IS

- Information systems help organizations
  - Be more productive and profitable
  - Gain competitive advantage
  - Reach more customers
  - Improve customer service
  - Improve processes, both within a company and externally
- True for all types of organizations and industries
- Business models and strategies have rapidly changed based on new and evolving technology.

Categories of Information Systems

Categories	Categories
• Transaction processing system (TPS)	• Geographic information system (GPS)
• Management information system (MIS)	• Functional area information system
• Decision support system (DSS)	• Customer relation management (CRM system)
• Intelligent system	• Enterprise resource planning system (ERP)
• Business intelligence system	• Supply chain management system
• Office automation system	• Electronic commerce system
• Knowledge management system	• Mobile app
• Social software	blank

Review Questions

- What are the four components of the management information system?
- What is/are the difference/s between data and information?
- What are Telecommunications Networks made of?

Information Systems Today

- The Emergence of the Digital World
- Globalization and Societal Issues in the Digital World
- IT Megatrends That Shape the Digital World

The Emergence of the Digital World

- Mobile devices
  - Smart phones, tablets, and iPads are all around us
- New ways of working and socializing
- Boundaries between work and leisure time are blurring

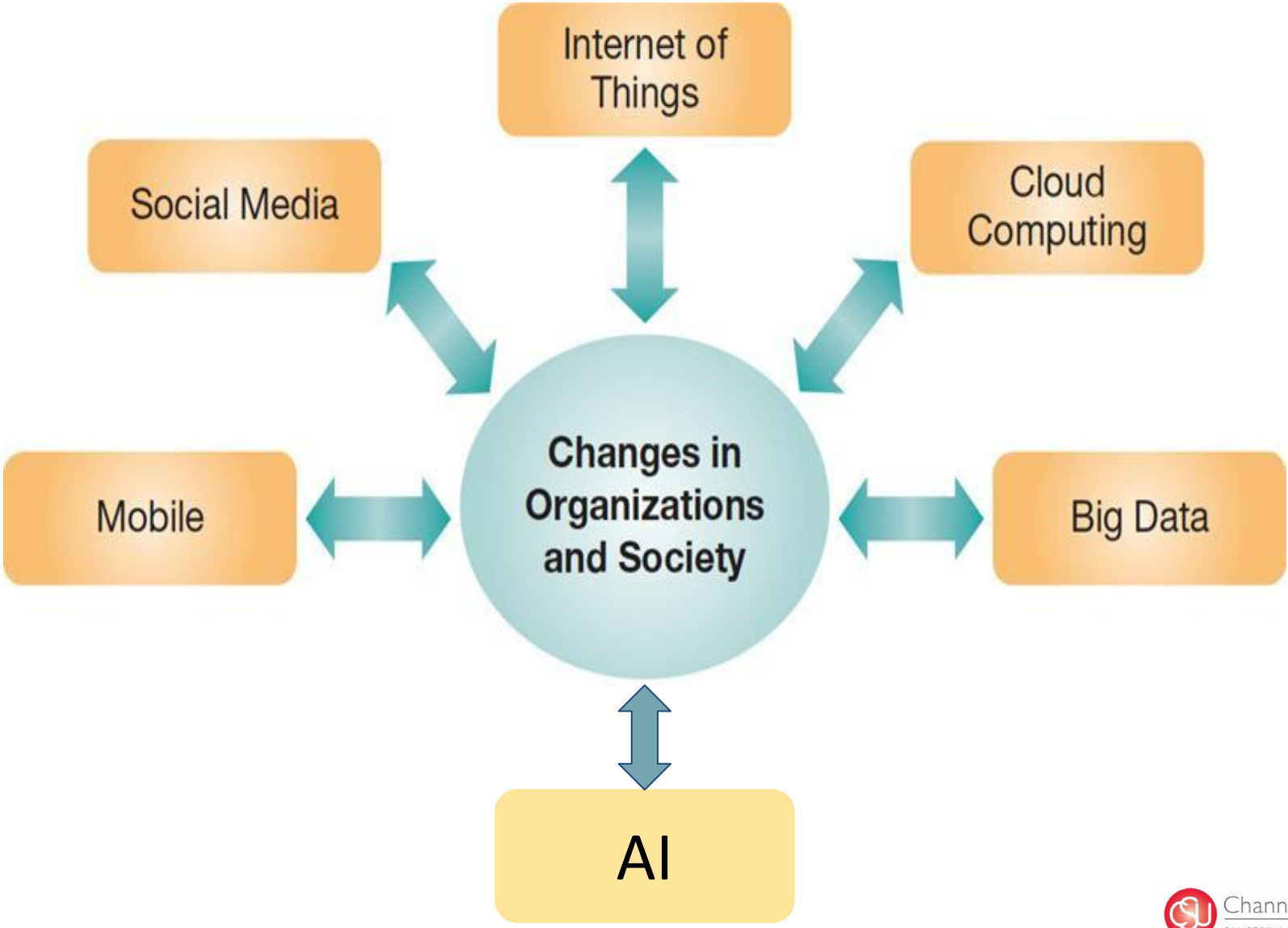
The Digital World: Challenges of Operating

- Government
  - Political instability
  - Regulatory: laws, standards, individual freedoms
- Geo-economic
  - Infrastructure differences
  - Demographics
  - Welfare
  - Workers' expertise
- Cultural
  - Language differences, beliefs, attitudes, religion, life focus

The Digital World: Globalization and Social Issues

- Rapid rise of a new middle class in developing countries
  - Millions of new customers
- Rapid urbanization
  - 50% of the world's population living in cities
- The global shift in economic power and climate change
- Tremendous decrease in communications costs
  - Increase in the use of outsourcing

IT Megatrends of the Digital World



Megatrends: Mobile Devices

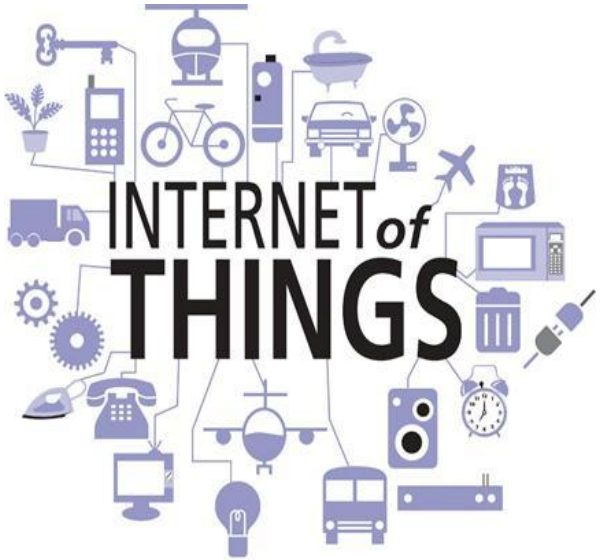
- Many believe that we're living in a post-PC era
- In the developing world mobile devices often leapfrog traditional PC's
- Implications:
  - Consumerization of IT
  - Bring Your Own Device (BYOD) to work is a major concern
  - Security concerns

Megatrends: Social Media

- Social Media are globally used communication tools
- Companies harness the power of the crowd by using social media to
  - To get people to participate in innovation and other activities
  - To encourage employee collaboration
- Social media has merged as a catalyst for social change

Megatrends: The Internet of Things

- A broad range of physical objects that can automatically share data over the Internet
    - The networked connection of people, process, data, and things.
- The Internet of **Everything**?



Megatrends: Cloud Computing

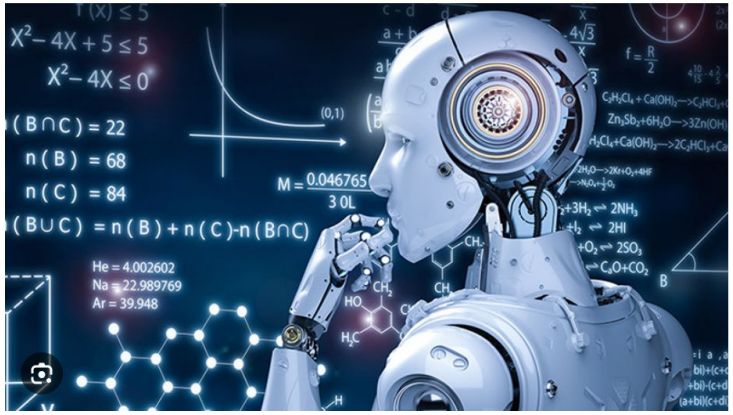
- Web technologies enable using the Internet as the platform for applications and data
- Applications that used to be installed on individual computers are increasingly kept in the cloud
  - e.g., Gmail, Google Docs, Google Calendar
- Can enabled advanced analytics of massive amounts of Big Data

Megatrends: Big Data

- Extremely large and complex datasets, which are characterized as being of high volume, variety, and velocity
- Total amount of data created, captured, copied and consumed globally
  - about 120 zettabytes in 2023
  - about 149 zettabytes in 2024
  - Forecasted to grow to 175 zettabytes (ZB) by 2025
    - *How much is Zettabyte?*
      - *10 to the 21th power bytes (1,000,000,000,000,000,000,000)*
      - *a billion terabytes or a trillion gigabytes*
- Increases the ability to detect meaningful relationships and other insights
  - Contributes to business success
  - The resources required to mine Big Data pose tremendous challenge

Megatrends: Artificial Intelligence (AI)

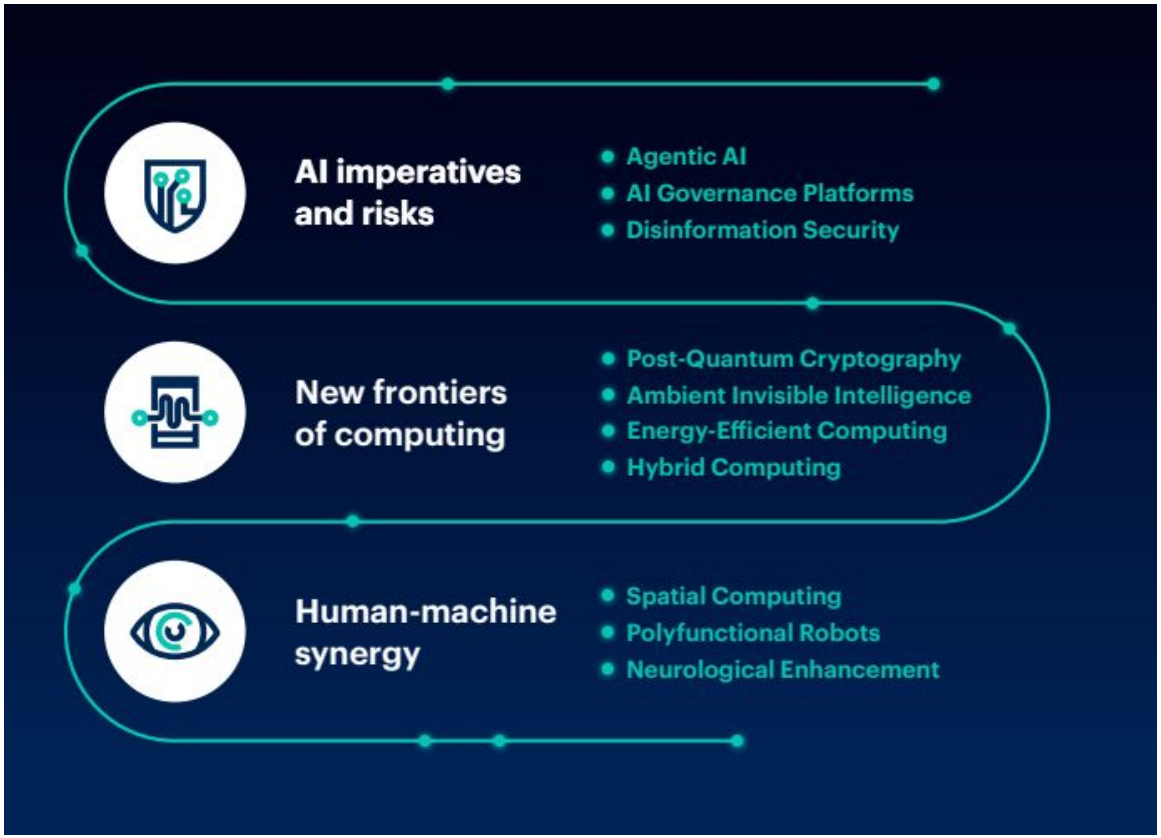
- Simulation of human intelligence processes by machines, especially computer systems.
    - Expert systems, natural language processing, speech recognition, machine vision.



- ChatGPT had 1 million users within the first five days of being available
- AI technology is one of the fastest-growing industries in the world.
- The global AI market size was valued at USD 233.46 billion in 2024
- AI market size is expected to reach $1.77 trillion by 2032, according to Fortune Business Insights

Top Strategic Technology Trends

- Shaping the future by driving innovation while upholding ethical responsibility and trust
  - Garner Top Strategic Technology Trends for 2025



Garner Top Strategic Technology Trends for 2025

Discussion Question

- What technology trend do you think will have the biggest impact on the society?
  - Choose one trend that will have the biggest impact by your opinion.
  - In your own words describe the trend and explain how it will impact the society
  - What are the benefits?
    - Give an example based on the video
  - What are the drawbacks and/or risks?
    - Give and example based on the video
  - Discuss at least one action to take mentioned in the video.

Technology: Growing Importance

- All modern managerial disciplines have been impacted by technology
- Tech knowledge has become a key differentiator for a job seeker.
- With computing getting cheaper and faster, it is being used everywhere.

Technology In Finance

- The rapid changes of the tech industry lead to the continual development of new businesses and rapid changes in the industry landscape.
- The roles of finance in tech include:
  - Working on IPO
  - Valuing M&A deals
  - Lending to tech firms
  - Evaluating the role of technology in firms in an investment portfolio
- The modern finance wouldn’t exist without tech.`

Technology In Accounting

- The reliability of any audit is tied to the reliability of the underlying technology.
- Increased regulation has strengthened the link between accounting and technology.
  - Sarbanes-Oxley Act: Raised the executive and board responsibilities and ties criminal penalties to certain accounting and financial violations.
- Major accounting firms have spawned tech-focused consulting practices.

Technology In Marketing

- Firms use online channels to track and monitor consumer activities
- Firms are shifting spending from traditional media to the Web because of its ability to:
  - Track customers
  - Analyze campaign results
  - Modify tactics
- Firms are using social media to:
  - Generate sales
  - Improve their reputations
  - Better serve customers

Technology In Marketing

- Search engine marketing (SEM)
- Search engine optimization (SEO)
- Customer relationship management (CRM)
- Personalization systems
- Managing the balance between gathering data and respecting consumer privacy

Technology In Human Resources

- Knowledge management systems are transforming into social media technologies.
  - Helps in organizing and leveraging teams of experts.
- Technology is used for employee training, screening, and evaluation.
- Recruiting has moved online.
  - Grounded in information systems that search databases for specific skill sets.
  - Job seekers write resumes with key words as the first cut can be made by a database search program.
- Professional social networks have put added pressure on employee satisfaction and retention.
- In many ways social media is “the new résumé.”

Technology In Law

- Activity has increased in the areas of intellectual property, patents, piracy, and privacy.
- Firms need legal teams with the skills to:
  - Determine whether a firm can legally do what it plans.
  - Help them protect proprietary methods and content.
  - Help enforce claims in the home country and abroad.

A Young People's Revolution

- Many of the world's most successful technology firms were created by young people.
  - Bill Gates: Undergraduate when he left college to found Microsoft
  - Michael Dell: Sophomore when he began building computers at the University of Texas
  - Steve Jobs: Twenty-one when he founded Apple
  - Mark Zuckerberg: Nineteen-year-old sophomore when he founded Facebook
  - Elon Musk: 24 years old when he co-founded his first significant business, Zip2.
    - He was in his early thirties when SpaceX was founded, and when he became involved with Tesla
  - Sam Altman: 37 years old when ChatGPT was released in 2022

Discussion Questions

- What kinds of skills do today's managers need that weren't required a decade ago?
- Which jobs that exist today likely won't exist at the start of the next decade?
- Based on your best guess on how technology will develop, can you think of jobs and skill sets that will likely emerge as critical five and ten years from now?

Top Strategic Technology Trends

[Garner Top Strategic technology Trends for 2019]

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