Emerging Trends in IT – II

Session 6

Lecture by Dr. Brinda Sampat
Internet-of-Things (IoT)
Big Data and IoT Drive Precision Agriculture

- Identify technologies
- Identify decisions for improvement

- Collect agricultural data
- Revise farm production process

- Wireless sensors
- Wireless networks
- Supercomputer
- BI analytic software
- Computerized planting/spraying machines
- Mobile Devices

Business Challenges

- Explosive population growth
- Opportunities from new technology

Information System

- Precision Agriculture Systems
- Determine optimal water/fertilizer/seed amounts
- Adjust planting patterns

Business Solutions

- Increase crop yield
- Reduce costs

Management

Organization

Technology

Source: Management Information Systems: Managing The Digital Firm, 16/E, By Laudon Kenneth C.
VIDEO: WHAT IS INTERNET OF THINGS (IOT)

Link: What is IoT (Intel)? [https://www.youtube.com/watch?v=Q3ur8wzzhBU](https://www.youtube.com/watch?v=Q3ur8wzzhBU)
Research firm Gartner predicts IoT will generate $300 billion in revenue by 2020, with estimates of how many connected devices ranging from 25 billion to more than 200 billion.
Impact of IoT on the Business Landscape

- Minimum Downtime
- Targeted Marketing
- Improved Business Intelligence
- New Service Oriented Approach
- Enhanced Customer Experience
- Creation of New Demands
Tour De France wins with Wireless Technology

- Select race technology
- Revise race tracking process
- Obtain external data
  - Tracking sensors
  - Mobile app
  - Cloud computing service
  - Data analytics
  - Social media
- Business Challenges
  - Vast topographically challenging location
  - Opportunities from new technology
- Management
- Organization
- Information System
- Technology
- Business Solutions
  - Increase fan involvement
  - Expand fan bases
  - Wireless race Tracking System
  - Predict race outcomes
  - Generate rider profiles
  - Generate real-time race statistics

Source: Management Information Systems: Managing The Digital Firm, 16/E, By Laudon Kenneth C.
VIDEO: IOT IN RETAIL

Link: IoT in retail:
1. https://www.youtube.com/watch?v=n-ouKu9tNPM
2. https://www.youtube.com/watch?v=PXZc2Iu2hrE
Industrial Internet at GE

• GE has added digital sensors to its machines, connecting them to a common, cloud-based software platform, investing in modern software development capabilities, building advanced analytics capabilities, and embracing crowdsourced product development.

• The revenue from its jet engines, for example, is tied not to a simple sales transaction but to performance improvements: less downtime and more miles flown over the course of a year.

• Digitally enabled outcomes-based approaches helped GE generate more revenue.

• A sensor on a GE jet engine can transmit useful data predicting maintenance over long distances at zero incremental cost; this data can in turn be communicated to GE’s maintenance organization and third-party spare parts manufacturers. Thus these three fundamental properties drive the transformation enabled by ubiquitous digital technology.
VIDEO: GE PREDIX

Video GE Predix Software: GE's Platform for the Industrial Internet of Things
Top IoT companies

- IBM
- GE
- Cisco
- Google
- Intel
- Axeda
- Phillips
- Microsoft
- AT&T
- Oracle
- Salesforce
- Amazon Web Services
- SAP
- Vodafone
How will IoT impact Manufacturing

- 63% of manufacturing companies permit BYOD
- Help manufacturing businesses achieve fundamental objectives of:
  - Supply Chain Agility
  - Continuous Innovation
  - Operational Excellence
- 17% of manufacturing enterprises have a formal BYOD strategy with clear goals and objectives - according to 2012 Manufacturing Executive Survey
- Smart phones and tablets can allow users to:
  - Manage equipment remotely
  - Observing processes while employees are on the move
  - Observe processes working in another part of the factory

Industry 4.0 in Manufacturing: https://www.youtube.com/watch?v=eY2dCHBrh3g
VIDEO: IOT IN MANUFACTURING

Link 1: IBM Watson – Manufacturing: https://www.youtube.com/watch?v=R5RfSQ3Nxzg
Applications of IoT in Supply Chain

- Optimizing the various processes in the chain.
- Improve the collaboration in the chain, may it be with the suppliers or the customers
- Improve material tracking, factory workflow, optimize distribution and thereby increasing revenues.
- IoT in supply chain management may utilize Radio Frequency Identification Devices (RFID) tags on the product which provide us a whole lot of information like production date, warranty period, expiry date, sales and after sales data, etc. which would definitely help us to automatically manage the supply chain efficiently.
How will IoT impact SCM?

- Improved Inventory Management
- Increased Logistics Transparency
- Real-Time SCM
- Improved Warehouse Management

- Industry 4.0: Exploring the world of connected enterprises | Deloitte University Press: https://www.youtube.com/watch?v=ktcRXyE8SaY
- The Industry 4.0 with Siemens: https://www.youtube.com/watch?v=5bVkpYtW3uo
- Industrie 4.0 - The Fourth Industrial Revolution: https://www.youtube.com/watch?v=HPRURtORnis
Applications of IoT in Environmental Monitoring

- Better Weather Prediction
- Water monitoring for agriculture
- Indicate Air quality, radiations, hazardous chemicals, water quality etc.
“Dental Insurance redefined” – A new Connected Approach towards dental insurance by Beam Dental

Founder: Alex Curry & Alex Xavier
Headquarter: Columbus, Ohio
Product: Smart Toothbrush “Beama Brush”

Beam Technologies, a Columbus, Ohio startup that introduced a connected toothbrush, is trying to become that kind of insurance company. It hopes to transform the dental insurance market by creating an insurance plan that includes giving its brush to customers to get better data and help keep premiums reasonable.
“Dental Insurance redefined” – A new Connected Approach towards dental insurance by Beam Dental
JCB India’s IoT Initiative

- LiveLink:
- The customers can keep in touch with their machines
- Send data in real time and keep customers informed
- Retrieve data by using sensors – location, performance
- Helped in areas of the business:
  1. Service
  2. Operation
  3. Security
Security breaches in IoT

- In IoT, the devices communicate over a network by transferring information among themselves. The network or devices can be hacked to steal the information or to take control of them.

Hacking into Homes: https://www.youtube.com/watch?time_continue=137&v=lwm6nvC9Xhc
VIDEO: CAN YOUR TV SPY ON YOU? CAN SIRI, ALEXA AND GOOGLE ASSISTANT SPY ON YOU

Video: Is your TV watching you: https://www.youtube.com/watch?v=NSHOlyAa1n4
Smart Cities
What is a Smart City: https://www.youtube.com/watch?v=Br5aJa6MkBc
Tech Today Video Series Episode 3: Smart City | Intel: https://www.youtube.com/watch?v=lfPXXMK6dJ8
Smart Cities USA: San Jose, CA | Intel: https://www.youtube.com/watch?v=1Pxuk_SLUdl
Smart cities in 101 seconds: https://www.youtube.com/watch?v=gXuPXqNdCLw
Smart cities Singapore: https://www.youtube.com/watch?v=XNtdnPjRpzI
Features of Smart City

➢ These pillars cut across various verticals – urban planning, public works, governance, waste management, transportation, utilities, safety & security and disaster management.

The various factors that must be taken into consideration for a smart city project are:

1. Infrastructure
2. Economy
3. Mobility
4. Environment
5. People
6. Living
7. Governance
Thank You!