



**Computers in Manufacturing
Enterprises**
Lecture 3: July 30, 2015

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Role of IT in Manufacturing

- ▶ Increased efficiency
 - task can be done repeatedly
 - lower cost
 - reduced time
 - lower risk
- ▶ consistency -> better quality
- ▶ integration across systems / departments
- ▶ better planning of:
 - product design
 - resources
 - distribution / delivery

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Role of IT in Manufacturing

Discuss the paper :

*“The Changing Role of Information
Technology in Manufacturing”*

By

Krishnamurthy Srinivasan, Intel Corp
Sundaresan Jayaraman, Georgia Institute of
Technology

<http://www.cpe.ku.ac.th/~yuen/mis/r3042.pdf>

Role of IT in Manufacturing

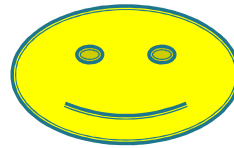
▶ **Background of paper**

- Initially : role in manufacturing has been more to support processes
- Now: IT has become very important for process and product change also
- case study: an apparel manufacturer used a modeling framework developed by Georgia Tech to implement multiple IT solutions
- able to rapidly shift production resources between two separate product lines

Role of IT in Manufacturing

- ▶ Why the need to improve?
 - a range of conflicting demands; smaller lot sizes, increased product flexibility, higher product quality, decreased delivery time, and smaller profit margins

- ▶ As a result: aim for the five R's—
 - produce the *right product*
 - with the *right quality*
 - *in the right quantity*
 - *at the right price*
 - *at right time*



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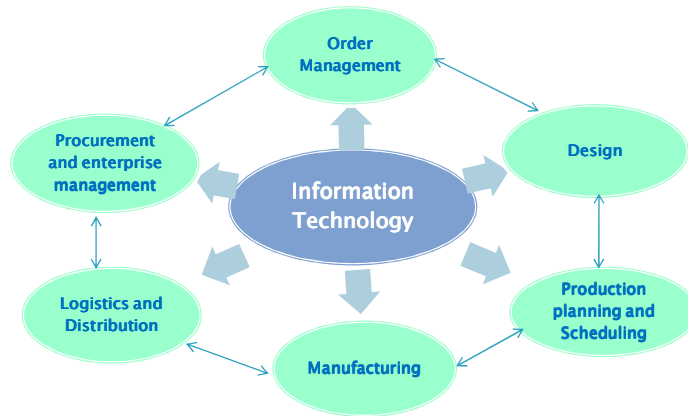
Role of IT in Manufacturing

- ▶ can be thought of as the great market equalizer:
 - it is available simultaneously to companies, irrespective of their size and (generally) their location BUT

the success of a manufacturing enterprise is determined by how effectively it selects and integrates an IT solution to its strategy

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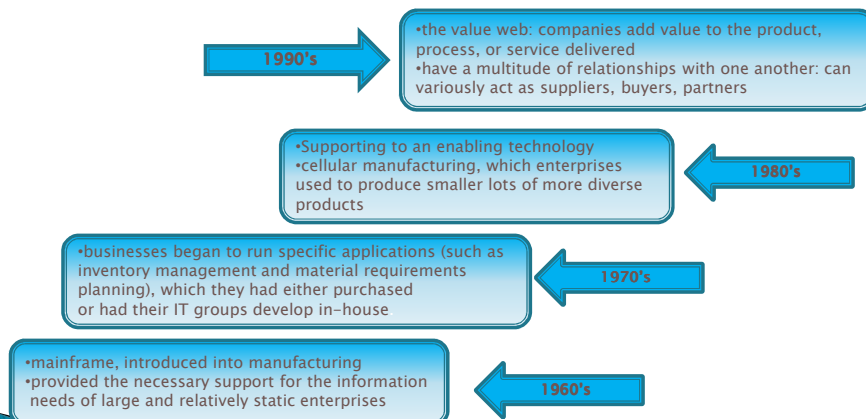
Role of IT in Manufacturing



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Role of IT in Manufacturing

Penetration of technology in manufacturing:



Role of IT in Manufacturing

key *business benefits* of technology in manufacturing:

❖ **Product and productivity innovation**

new products and manufacturing processes -> improved productivity in manufacturing including:

- better product design
- improvements in supporting activities
- opening up new markets by products being affordable
- reductions in labor requirements
- Contract manufacturing – a new class of companies that provide third-party manufacturing capability

http://www.thebusinessintelligenceguide.com/industry_solutions/Manufacturing/Business_Benefits_Of_Technology.php#innovation

Role of IT in Manufacturing

key *business benefits* of technology in Manufacturing:

▶ **Energy Sustainability**

- Manufacturing processes are amongst the most energy-intensive industrial systems
- developing and adopting more energy-efficient technologies, industry can boost its productivity and competitiveness while improving national energy sustainability
- improvements in combustion can also improve energy efficiency, reduce emissions, and enhance fuel flexibility
- applying best practices to manufacturing processes [motors, steam, and compressed air systems] can save up to 30 percent of energy used in a plant in a few years

http://www.thebusinessintelligenceguide.com/industry_solutions/Manufacturing/Business_Benefits_Of_Technology.php#innovation

Role of IT in Manufacturing

key *business benefits* of technology in Manufacturing:

- ▶ Collaboration
 - technology allows a group of companies to share the risks involved and facilitate the rapid adoption of a new technology
 - ability to communicate smoothly over distances
- ▶ Lean production and flexible specialization

http://www.thebusinessintelligenceguide.com/industry_solutions/Manufacturing/Business_Benefits_Of_Technology.php#innovation

Role of IT in Manufacturing

- ▶ Latest technologies!
 - Baxter is "a new kind of industrial robot"
 - can be trained just as a person
 - costs about half as much as the least expensive industrial robots currently on the market
 - with no coding, the robot can be taught, and afterwards it will use common sense—if it drops something, it will pick it up
 - let smaller manufacturers work more efficiently

<http://www.youtube.com/watch?v=cFKRSvM45GI&feature=share&list=PLe7Pue7SRXZGgTDaUWC2F0SuKXZKllrG>

<http://www.nebraskamanufacturing.com/2013/07/4-great-examples-of-american-manufacturing-technology/>

Next week!

- ▶ Regular Quizzes from next week
- ▶ based on the previous class or on the videos
- ▶ discussion on case studies on role of IT in manufacturing
- ▶ Lab will take place at 2:00 pm on Monday