

MANUFACTURING STATUS AND THE FUTURE OF INDUSTRIAL ENGINEERING

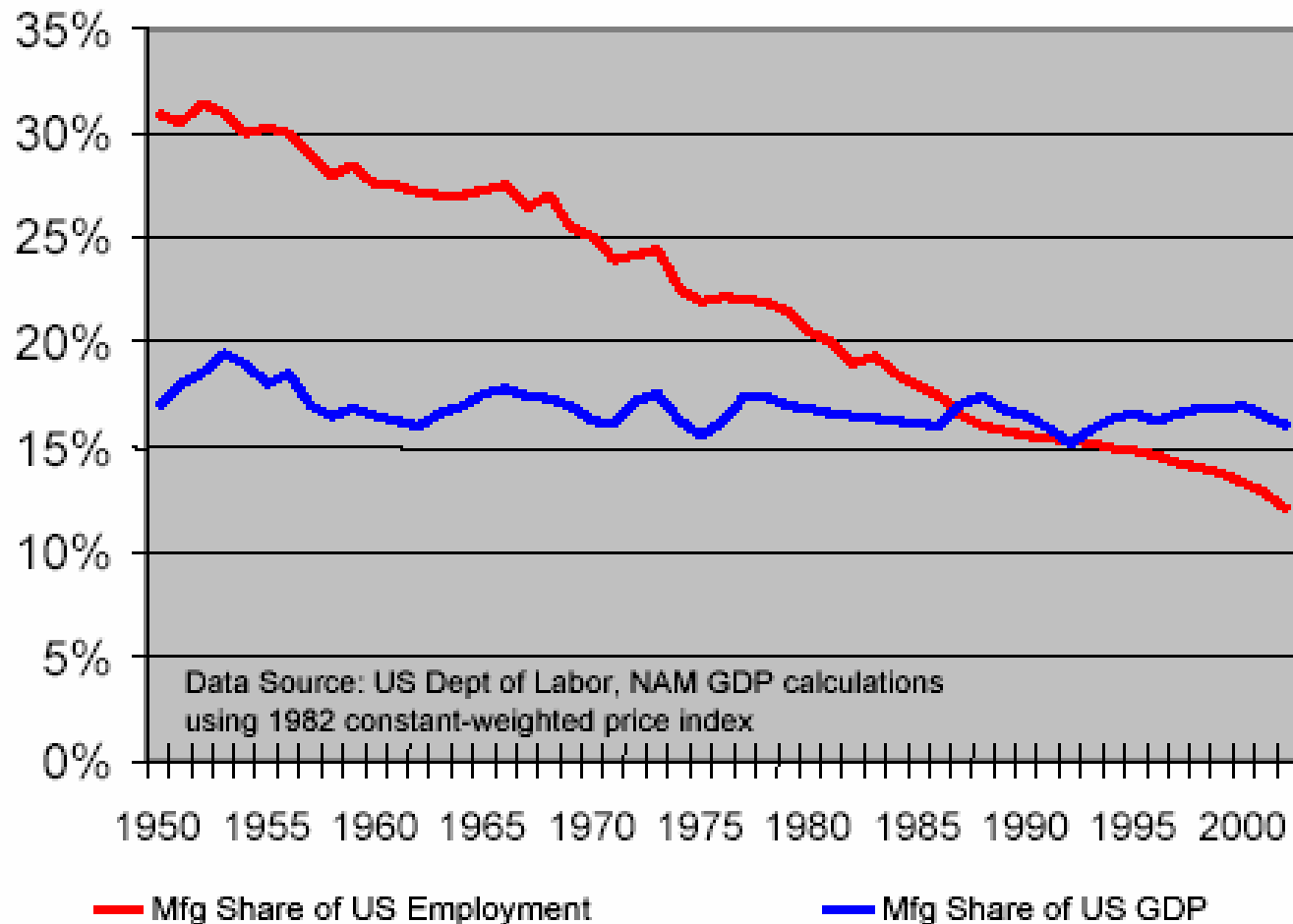
From a Presentation by

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Manufacturing Enterprise Systems
Design, Manufacture and Innovation
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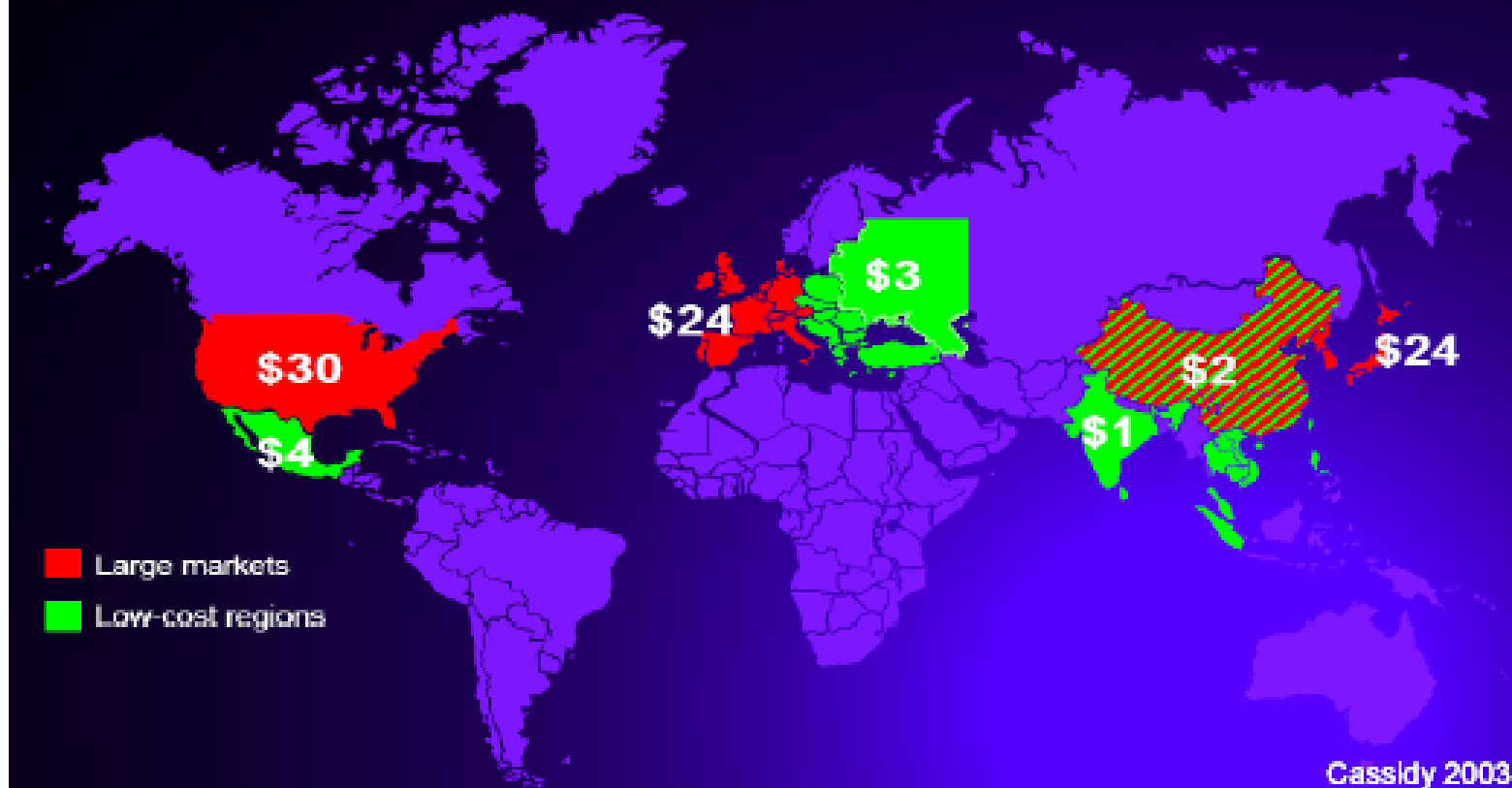
Manufacturing: GDP and Employment





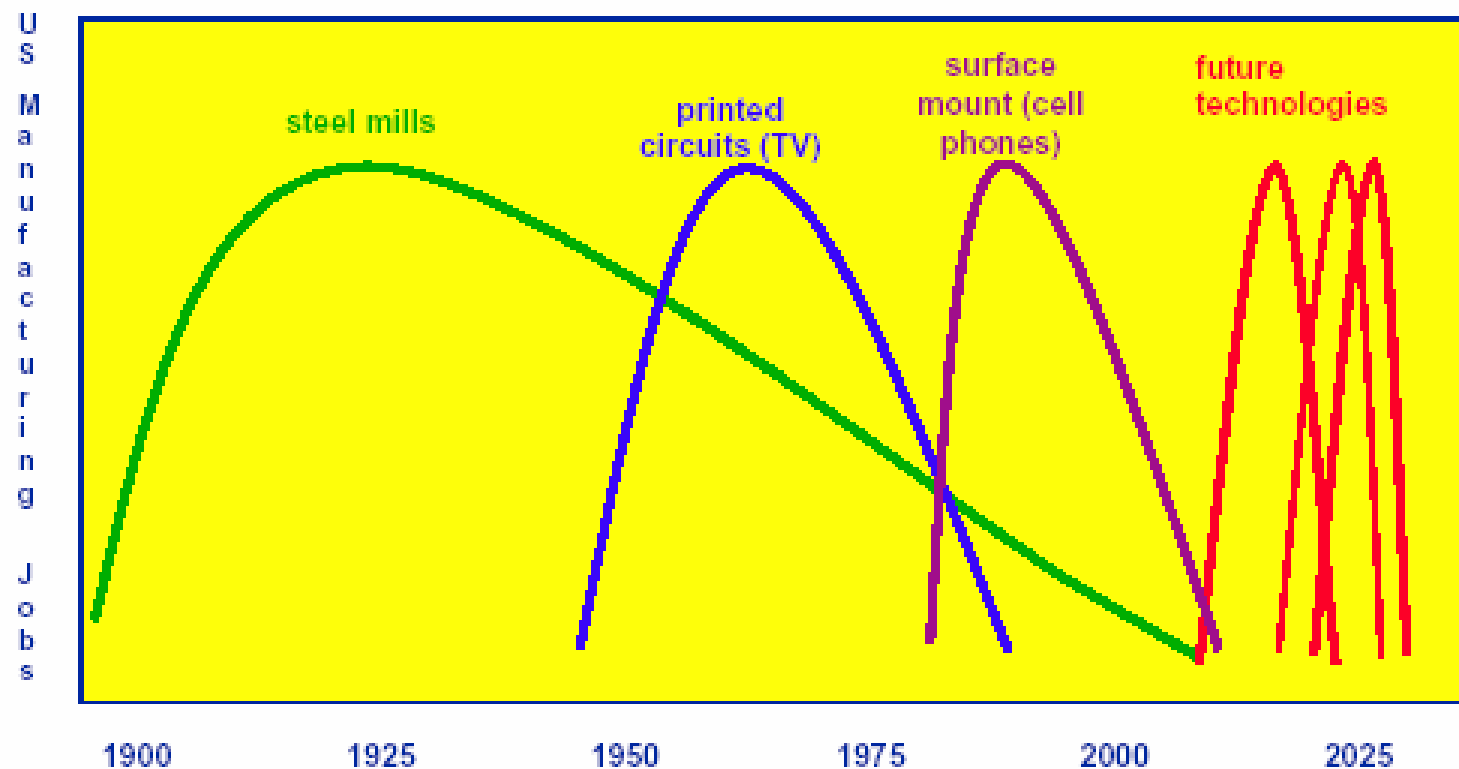
Global Labor Market

MANUFACTURING DIRECT LABOR COST (\$ / HR)





Technology Maturation and US Jobs



- As technologies mature, jobs move to areas of lower direct labor costs
- The rate at which new technologies mature is accelerating



A Wakeup Call

- **Productivity change from 1977-2002** (DoC Report '04)
 - Overall economy: 53%
 - Manufacturing: 109%
- **Manufacturing job market** (US Bureau of Labor Statistics)
 - 2 M jobs lost to overseas competition since 2001
 - Job loss rate: 12,000 - 15,000 /month
- **Service sector job market** (Forrester Research)
 - 400,000 jobs lost to off-shoring since 2000
 - 3.3M jobs predicted to be lost by 2015

Those who do not learn from history are doomed to repeat it
- George Santayana



Unifying Theme

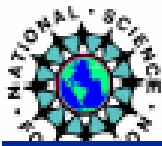
- Low cost of hardware → large-scale systems
- Increased connectivity → more interacting components → complex systems
- Complex systems → difficult to manage
- Managing complex systems → requires more information, different models
- More information, complex systems →

**New ways of designing and managing
ENGINEERED DECISION SYSTEMS**



Looking Back at IE





A Second Glance

Tools

Gather Information

Process Information

Use Information

Better Decisions

Manufacturing

Service Sector

Management

Applications



Information Engineering

IE develops revolutionary approaches to design, deploy and operate complex, distributed, dynamically evolving engineered decision systems

