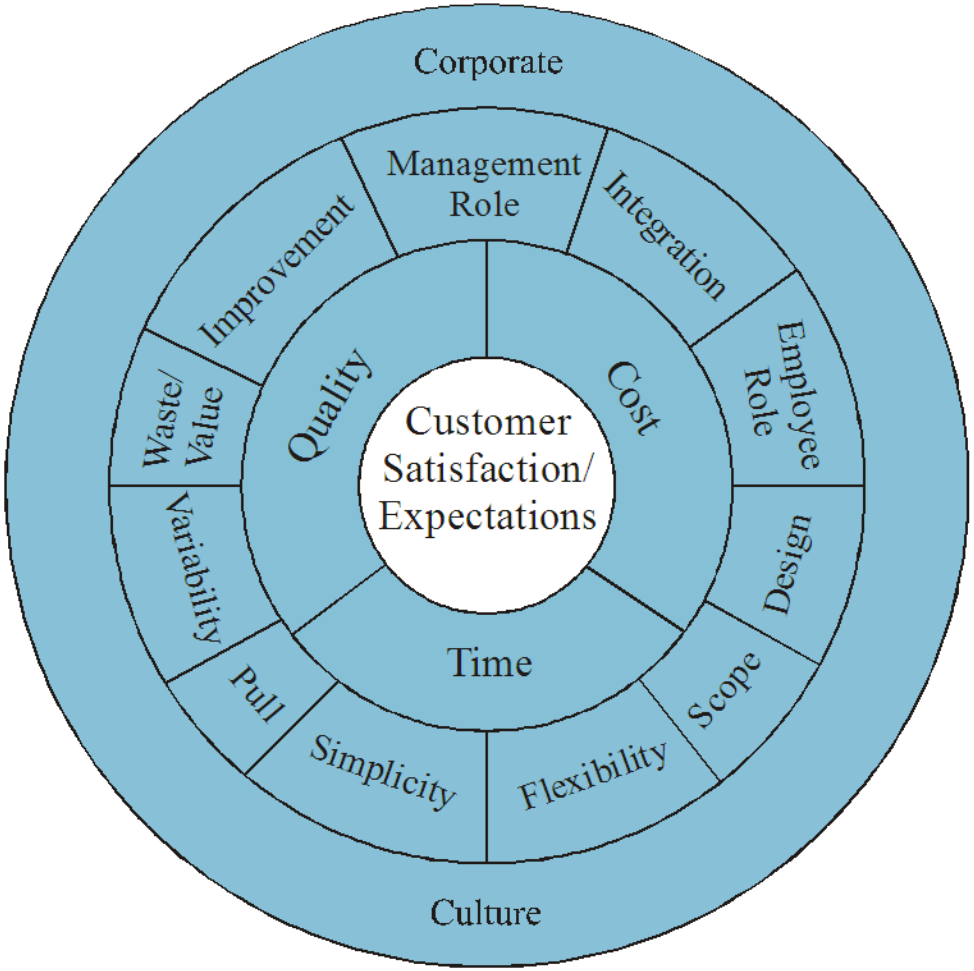
Chapter 2

Market Driven Systems

Market driven systems
The Wheel of Competitiveness



The Wheel of competitiveness

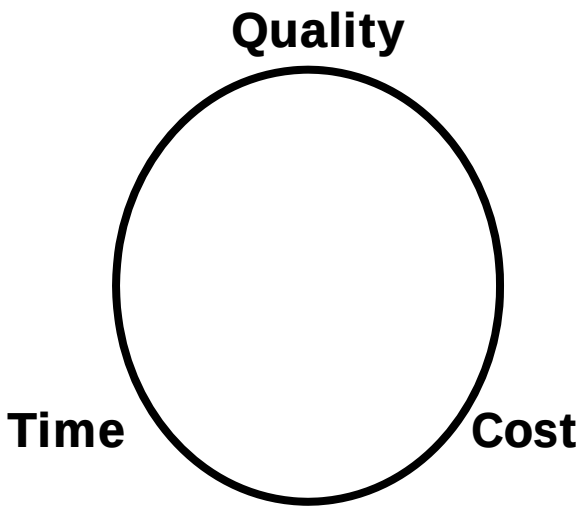
- **Hub: the customer**
  - individual rather than average customer
  - fast changing expectations
  - little loyalty
  - ‘internal customers’: any operation is the customer of the previous operation

The Wheel of competitiveness

- **The Delivery Cycle:**

Quality → **Time** → **Cost**

or

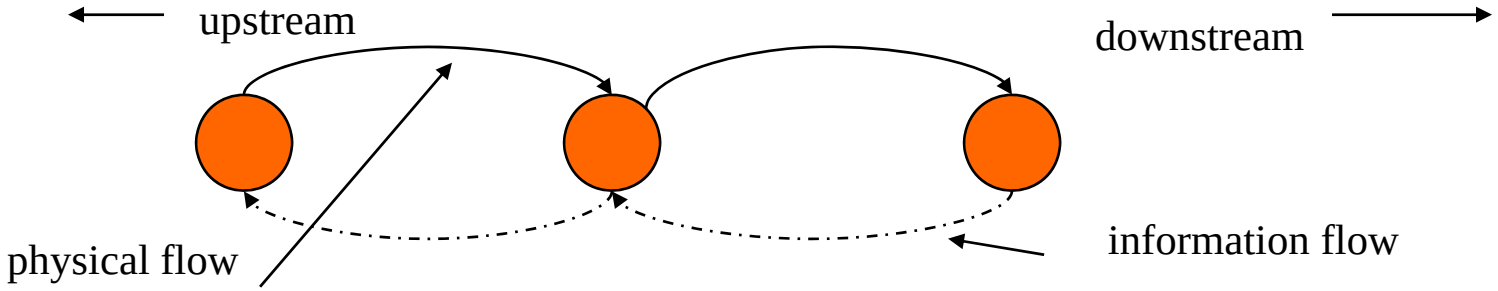


The Wheel of Competitiveness

- **The Support Circle**
  - Scope (Supplier - Producer - Relationship)
  - Integration
    - looking at the system rather than a component
    - product and process design
  - Flexibility
    - volume
    - process (setups)
  - Design
    - function, life, form and effective manufacture

The Wheel of Competitiveness

- **The Support Cycle:**
  - Simplicity (KISS)
  - Variability
    - deterministic manufacturing
    - Factory Physics (Hopp/Spearman)
  - Pull
    - physical flow
    - information flow
    - the essence of pull production is to do things upstream only when requested downstream



The Wheel of Competitiveness

- **The Support Cycle**
  - Waste/Value
    - “doing it right the first time”
    - value-adding activities
    - cost adding activities
  - Improvement
    - Integrated and Continues Improvement
    - Kaizen, ...
  - Management role
    - change process
    - commitment
    - participation
    - goals

The Wheel of Competitiveness

- **The Support Cycle**
  - Employee role
    - involvement
    - development

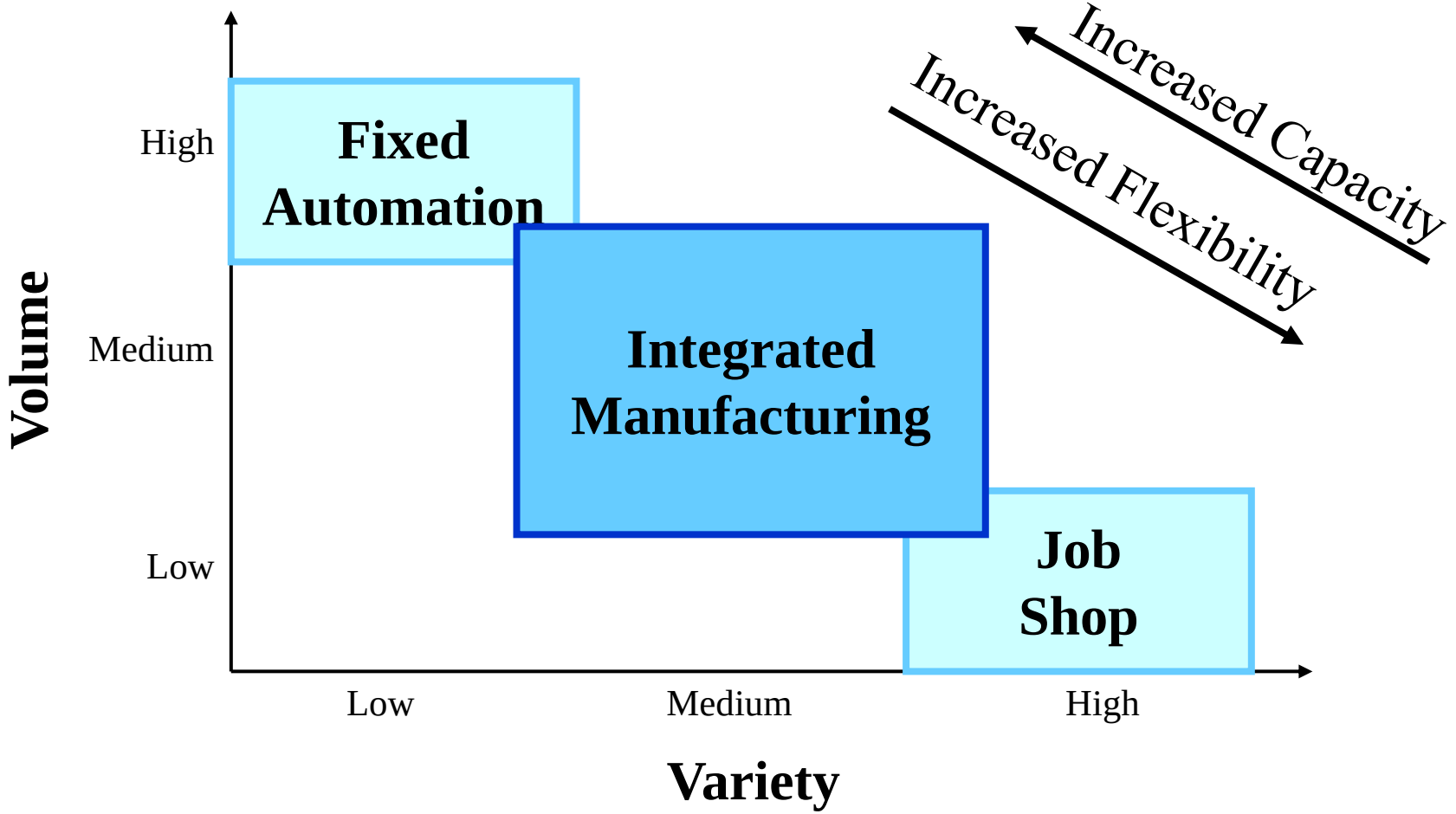
- **The impact circle**
  - Efficiency: make things right
    - local
    - ration of output to input
  - Effectiveness: requirements of the total system

Implementation

- **Integrated Production Systems**
  - best applied in the medium-variety, medium-volume range
  - information integration is key aspect

- **3 leading approaches**
  - Cellular Manufacturing Systems (CMS)
  - Flexible Manufacturing Systems (FMS)
  - Computer Integrated Manufacturing Systems (CIM)

Integrated Production Systems



Integrated Production Systems

- **Cellular Manufacturing Systems**
  - manned or unmanned cells
  - produce a family of parts that have similar processes
  - group technology (see Basic Course: OMA)
  - organized in a u-shaped layout in which multifunctional workers perform the required operations

Integrated Production Systems

- **Flexible Manufacturing Systems**
  - integration of
    - manufacturing or assembly processes
    - automated material flow systems
    - computer communication
    - control
  - computer control system does:
    - production control
    - scheduling
    - flow control
    - machine control
  - reaction to real time status data
  - automotive and electronics industry

Integrated Production Systems

- **Computer Integrated Manufacturing (CIM)**
  - broader scope than CMS
  - use information technology to coordinate business functions with product development, design and manufacturing
  - ‚bridges' between FMS islands

Market driven systems

- **Integration Process**
  - teamwork
  - concurrent engineering
    - life cycle engineering
    - product and process design are considered together
    - cross functional teams
  - TQM
  - World class manufacturing
  - Lean production(Toyota, production floor focus)
  - Agile manufacturing(enterprise view)