Module 4:
An introduction to systems and the System LifeCycle (SLC)
Session 3 of 5

Rev. 3.4.2

Knowledge

- Lecture
  - ~~Overview and summary of readings~~
- Readings
  - None
- Exercise
  - 4-31 Supply chain exercise

Topics

- Nature of systems
- Basic system behaviour
- Emergence
- Hierarchies of systems
- Functional view of a system
- Template for a system
- **Supply chains**
- Ways of creating systems for managing complexity
- The system lifecycle

Seven *rights* of supply chain management*

Delivering

1. The *right* product or service
2. To the *right* customer
3. In the *right* place
4. At the *right* time
5. In the *right* condition
6. At the *right* quantity
7. For the *right* cost

* John M McKeller, Supply Chain Management DeMYSTiFiedD, McGraw Hill Education, 2014, page 14

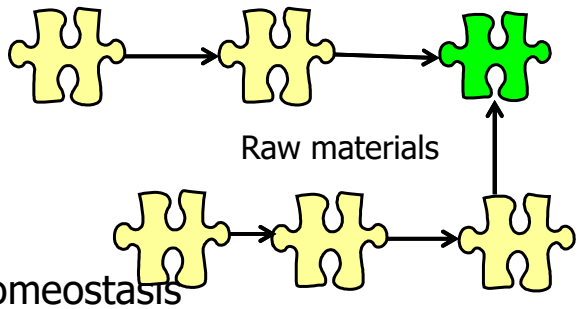
Characteristics of integrated supply management*

1. All internal supply chain management functions are integrated
2. Suppliers are chosen strategically
3. Common goals exist for both the buying organization and suppliers
4. Proper supplier relationships are in place
5. Integrative performance metrics are in place
6. Cost management tools are actively used
7. Suppliers are actively engaged in all product or services development
8. Redundant, inefficient processes are aggressively eliminated
9. Appropriate technological enablers are integrated
10. Supplier relationship management is ongoing

* John M McKeller, Supply Chain Management DeMYSTiFiedD, McGraw Hill Education, 2014, Page 68

Supply chains are adjacent support systems in the metasystem

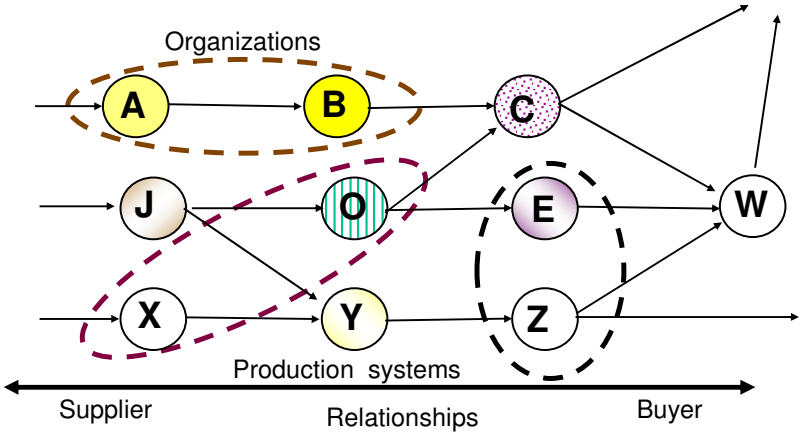
- Resources
  - Parts
    - Hardware
    - Software
  - People
  - Information
  - Equipment
    - Test
    - Jigs
- Scheduling for homeostasis
  - Delivering the seven rights



Functions of supply chain systems

- Producing materials
- Transporting
- Storing
  - Inventory management
- Informing
  - Ordering, inventory levels, rate of consumption, etc.
- Etc.

Functional decomposition - circles of influence/concern



Improving the supply chain

- Lean manufacturing or production
  - Driving out waste
- Six Sigma
  - (supposedly) Reduces variation in processes
- Common components
  - For identical functionality
- Modular approach
  - Basic platform reduces inventory
- Standardization
  - Same components/equipment across different products

Supply chain risks*

- **Types of risk**
  1. Operational
  2. Financial
  3. Reputational
- **Managing risks**
  1. Get some visibility and think long term
  2. Scenario plan failures
  3. Be realistic with customers
  4. Financial and credit assessment
  5. Have a plan
  6. Communicate

* Wendy L. Tate, The Definitive Guide to Supply Management and Procurement, Pearson Education, 2014, pages 30-34

Supply chain performance metrics*

- **S**pecific
- **M**easurable
- **A**chievable
- **R**ealistic
- **T**imely

- Supplier KPIs
  - Cost
    - Total cost
  - Delivery
    - On time
  - Quality
    - Conformance to specifications
      - Crosby, Quality is free, 1979

* Doran, George. T., "There's a S.M.A.R.T. way to write management's goals and objectives", Management Review, volume 70, Issue 11, pages 35–36, 1981.

Supply chain operations reference model*

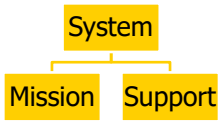
Attribute	Level-1 Metric
Reliability	Perfect Order Fulfillment
Responsiveness	Order Fulfillment Cycle Time
Agility	Upside Flexibility
	Upside Adaptability
	Downside Adaptability
	Overall Value-at-Risk
Cost	Total Cost to Serve
Asset Management Efficiency	Cash-to-Cash Cycle Time
	Return on Fixed Assets
	Return on Working Capital

Supply Chain Council recommends supply chain scorecards to contain at least one (1) metric for each performance attribute to ensure balanced decision making and governance.

* SCOR®, Supply Chain Operations Reference Model, Version 11.0, Supply Chain Council, 2012.

Exercise 4-31

1. Conceptualize at least four scenarios in the supply chain for the mission and support systems from exercise 4-21
2. Conceptualize at least 2 well-written text format requirements for 'ilities' for each element in the supply chain scenarios
3. Prepare a <5 minute presentation containing
   1. The formulated problem per COPS problem formulation template
   2. This slide and the lesson version number
   3. A representative sample of the requirements
   4. The conceptualized scenarios
   5. A compliance matrix for the exercise
   6. Lessons learned from exercise
4. Save as a PowerPoint file in format Exercise4-31-abcd.pptx
5. Post/email presentation as, when and where instructed



Any questions ?

1. Best
2. Worst
3. Missing

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