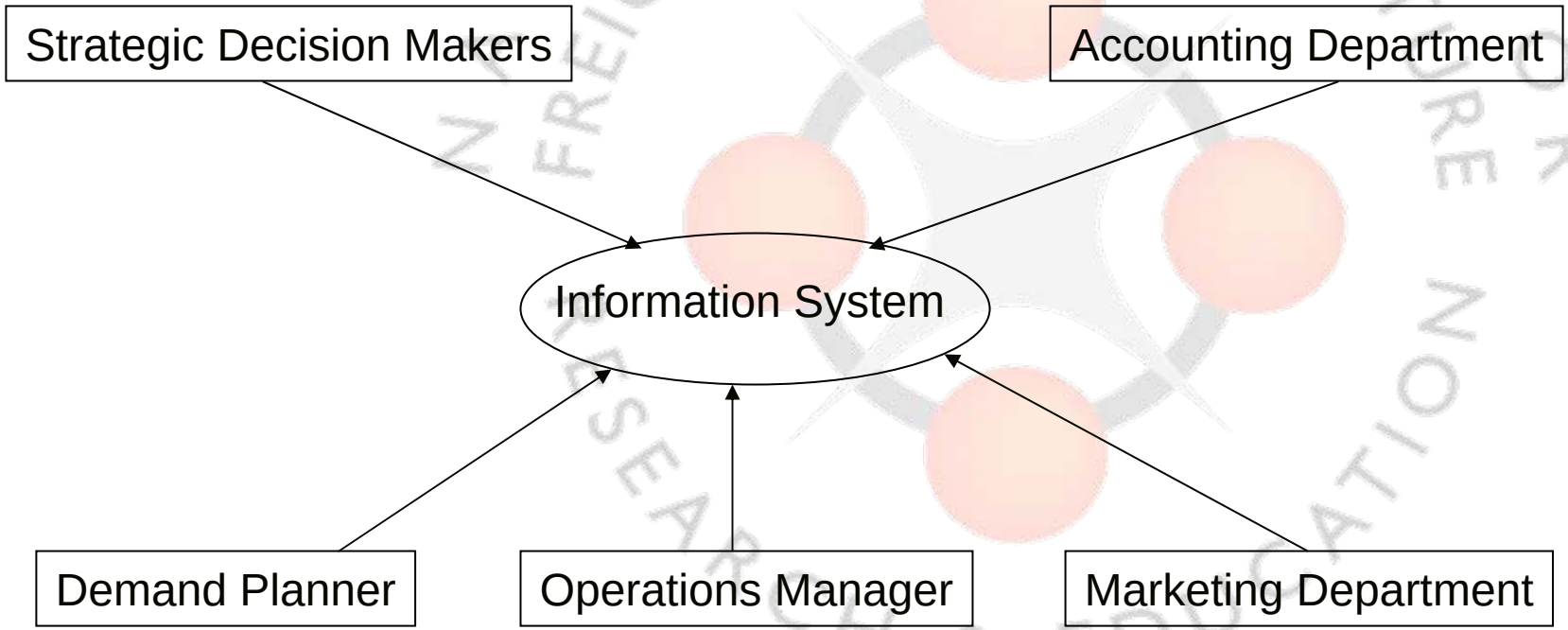
Module Eight

Information Technology and Logistics

Outline

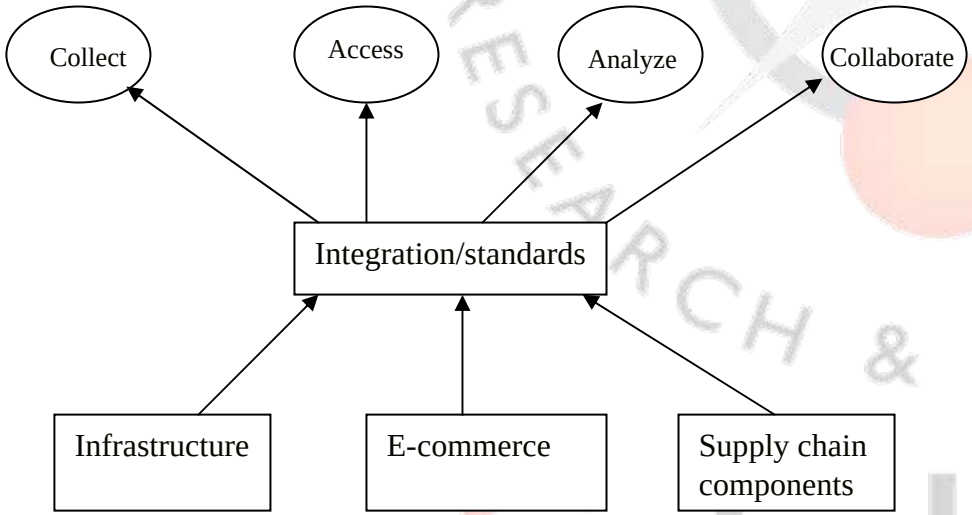
- The role of Information Technology in Supply Chain Management
- Example IT Applications

An Ideal IT System



Information Technology

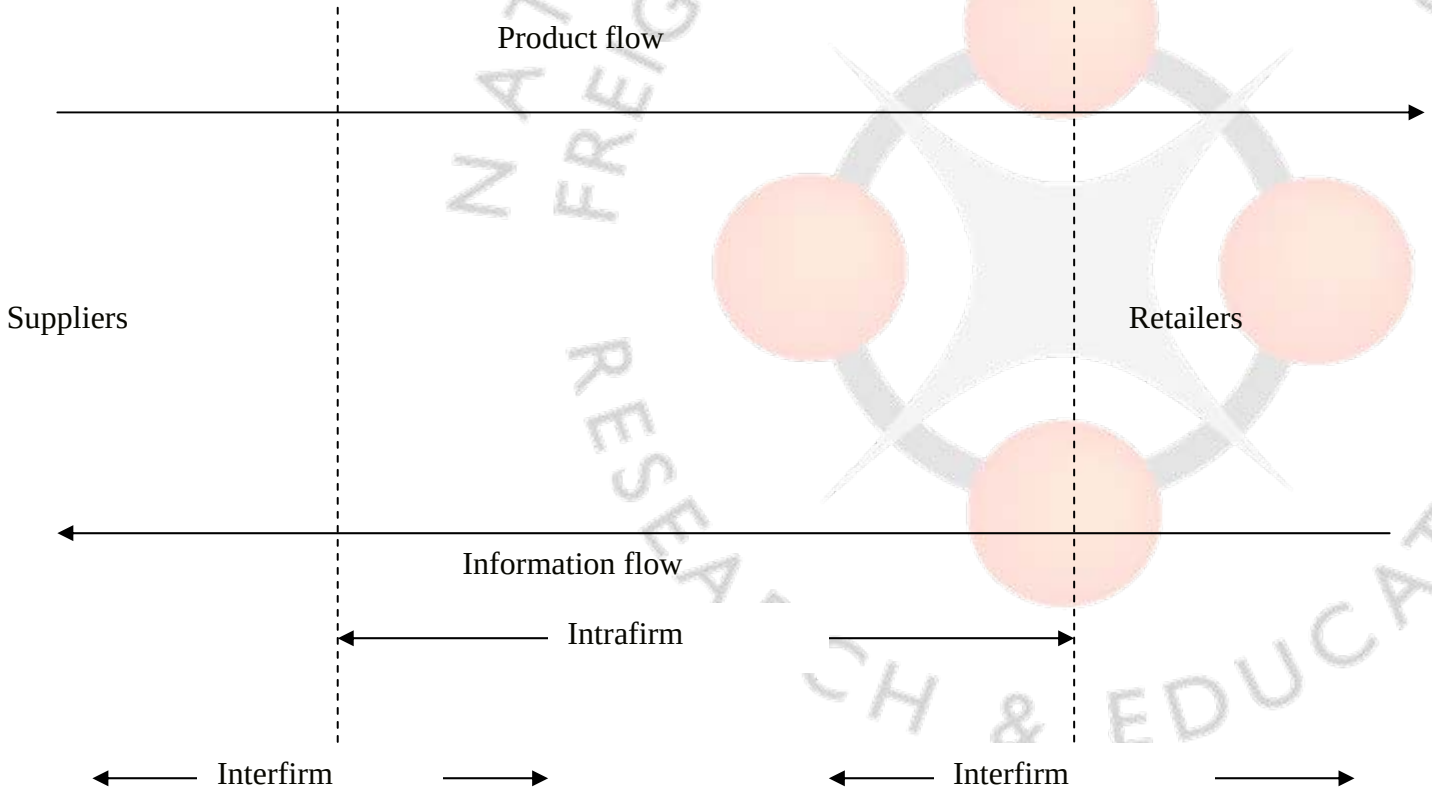
- Information must be *accurate, accessible in a timely manner and of the right kind* in order to be useful.



Critical Factors to Effective IT

- *Standardization* is critical to cost and feasibility of implementation. There are many issues to be considered in this process such as market forces, interconnectivity, new software models and economies of scale.
- *Information technology infrastructure* is critical in the success or failure of any system implementation. It includes interface devices such as PCs, voice mail, terminals, Internet devices, barcode scanners, RFID, etc., communications (e.g. EDI, LAN, mainframe, intranet, etc.), databases (legacy databases, relational databases, object databases, data warehouses, groupware databases, etc.), systems architecture (e.g. client/server computing system) and electronic commerce.

Information Flow on a SC



Major Applications of IT

- Strategic network design

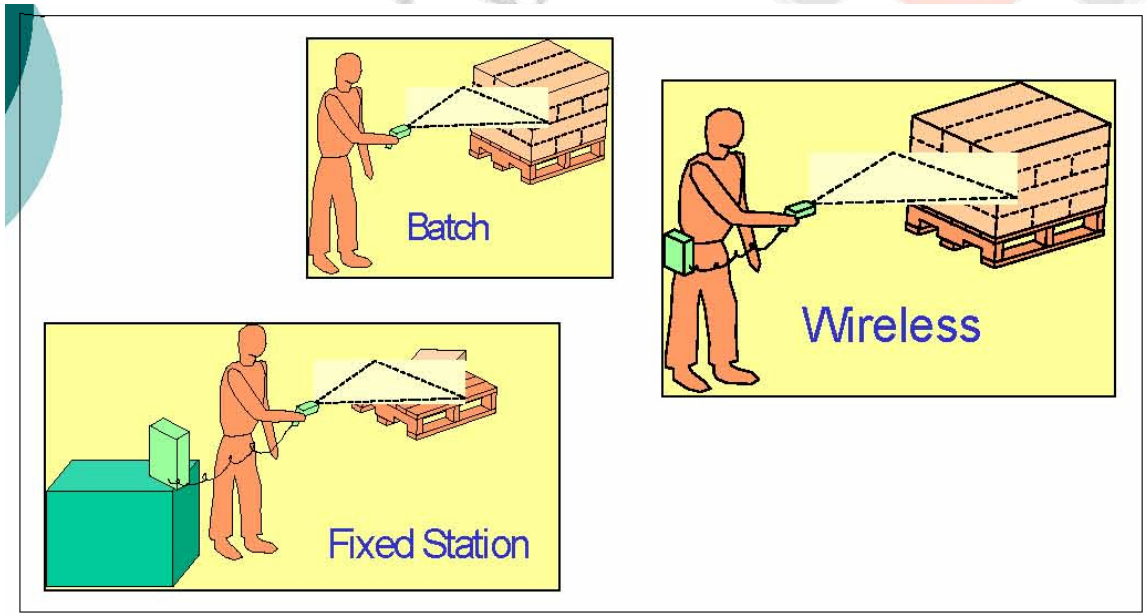
  Decisions regarding the optimal number of facilities (manufacturing plants, warehouses, distribution centers), their locations, outsourcing strategies and best distribution channel, etc. These decisions lay the ground for the general cost picture of operations.
- Supply chain master planning

  Decisions are made on a weekly to monthly schedule in order to coordinate production and distribution strategies, as well as storage requirements by efficiently allocating supply chain resources to maximize profit or minimize system wide cost.
- Operational planning

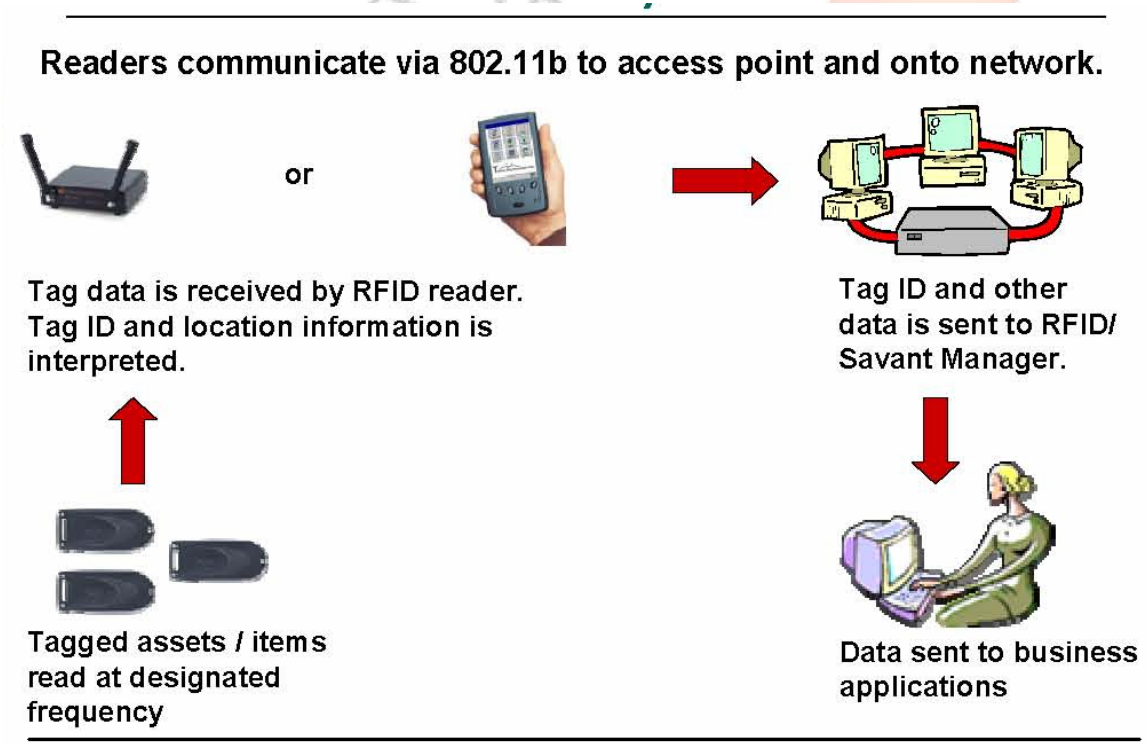
  IT applications at this level typically focus on: demand planning, production scheduling, inventory management, and transportation planning. The planning horizon is typically from daily to weekly.
- Operational execution

  At this level, IT systems generally provide the data, transaction processing, user access, and infrastructure for running a company. It includes five factors: enterprise resource planning, customer relationship management, supplier relationship management, supply chain management and transportation management.

IT Examples: RFID



Integrating RFID into the IT System



GPS

Source: www.howstuffworks.com

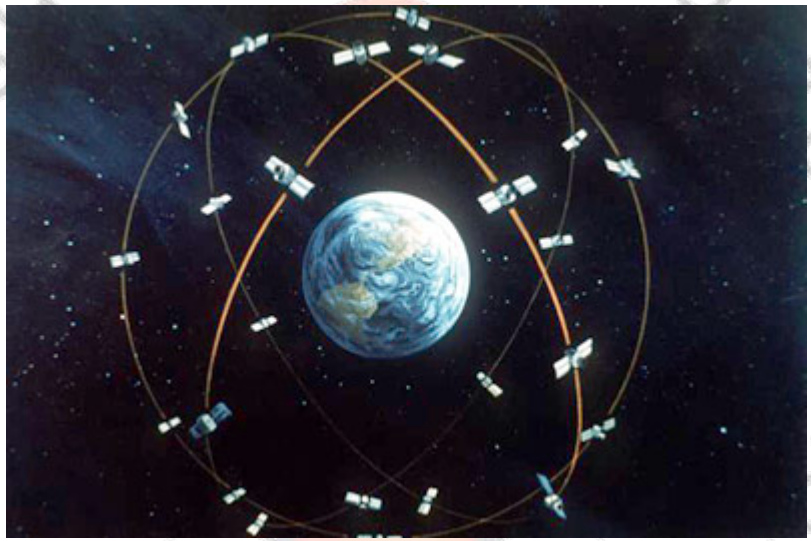


Photo courtesy U.S. Department of Defense

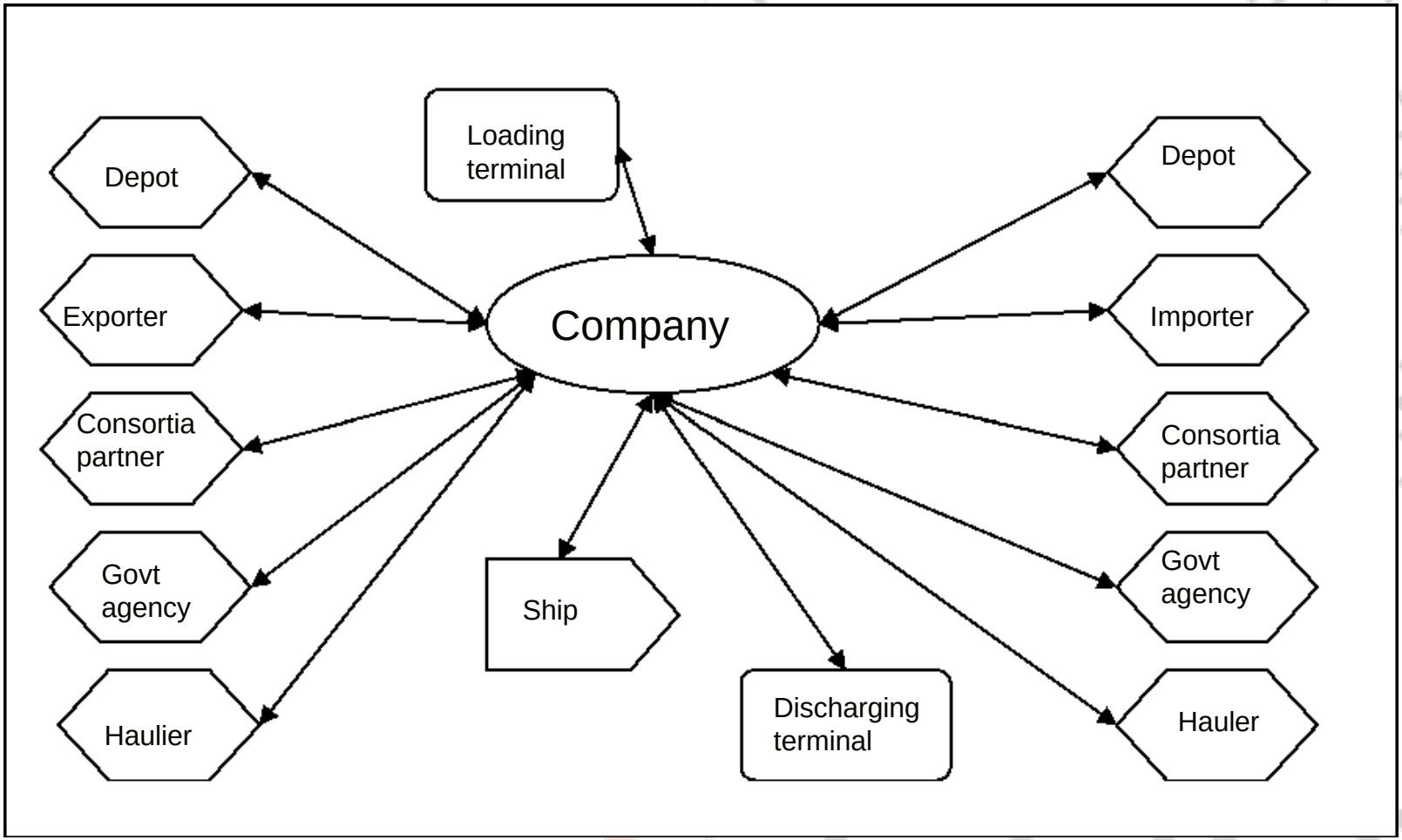
How GPS Works

A video clip: http://www.howstuffworks.com/gps.htm

http://www.fleettrackingonline.com/

http://www.geosoftusa.net/gtm-mapping-1/gtm-mapping-1.html

EDI



Liner shipping – EDI message scenario. Source MISC BERHAD.

Routing/Scheduling Software: An Example

- Automated Decision Support System
- Input
  - Available resources (vehicles, drivers, connectivity between locations, etc.)
  - Demand
  - Constraints: drivers working hours, weight limit, road restrictions, etc.
- Output
  - Work schedules (where to go, at what time and on which route)

Remarks

- Information technology is revolutionizing logistics management.
- There will be a need for the public sector to get performance information from the private sector to conduct planning and preventive operations management.
- There will likewise be a need for the public sector to share system performance information with the private sector.