

DESIGN FOR PEOPLE

The logo of Galgotias University is a stylized, circular emblem. It features a central blue shape that resembles a flame or a stylized 'G', surrounded by a larger, lighter blue and yellow circular border. The overall design is modern and abstract.

GALGOTIAS
UNIVERSITY

DESIGN FOR PEOPLE

- ❖ SUPPLY CHAIN-LOGISTICS, PACKAGING, SUPPLY CHAIN AND THE ENVIRONMENT
- ❖ ISO 14000/210
- ❖ DESIGN FOR PEOPLE – ERGONOMICS, REPAIRABILITY, MAINTAINABILITY, SAFETY AND PRODUCT LIABILITY
- ❖ TASK ANALYSIS
- ❖ FAILURE MODE ANALYSIS

IMPORTANT DEFINITIONS

SUPPLY CHAIN

Complete flow of the product and includes all of the companies with a collective interest in a product's success, from suppliers to manufacturers to distributors.

- It includes vendors, and their suppliers, manufacturing, sales, customers, repair, customer service, and disposal.
- It includes **all information flow, processes and transactions with vendors and customers.**
- Today's **business climate** is concerned more with developing equity relationships and forming **joint ventures** around the success of the entire supply chain rather than an individual company's gains or losses.
- A key to success is for everyone on the supply chain to have the **latest and best information from everyone else.**

LOGISTICS

Discipline that **reduces life cycle installation and support costs** by planning and controlling the flow and storage of material, parts, products, and information from conception to disposal.

ENVIRONMENTAL DESIGN

Goal is to **minimize a product's effect and cost on all aspects of the environment.**

➤ Design goals include **reuse, recycling, remanufacturability, disassembly, ease of disposal, use of recycled materials, using environmentally friendly manufacturing processes and selecting vendors** with good environmental histories.

➤ Short-term environmental discussions include compliance to regulations and laws; whereas long-term decisions include environmental liability and anticipation of global environmental concerns.

BEST PRACTICES FOR SUPPLY CHAIN, PACKAGING, AND ENVIRONMENT

(i) Supply chain and environmental considerations are **part of all trade-off analysis and incorporated early into the design** of the product, its manufacturing processes, packaging, vendor selection and other product related items.

(ii) **Design methods** include:

- Design For Supply Chain and Logistics
- Customer Service and Maintenance
- Design For Disassembly (DFD)
- Packaging Design
- Design For The Environment (DFE)
- ISO 14000

DESIGN FOR SUPPLY CHAIN AND LOGISTICS

The purpose of design for supply chain is to ensure that the product design is a **cost-effective, fully supportable system** throughout a product's life. This is accomplished by designing the supply chain system concurrently with the product. As defined by Byrne (1992), **quality in supply chain means meeting the company's cost goals and meeting customer requirements**. Customer requirements and expectations including the following logistic design parameters:

- ❖ **On time delivery**
- ❖ **Ease of inquiry, order placement and order transmission**
- ❖ **Timely communications about delivery**
- ❖ **Accurate, complete, undamaged orders and error-free paperwork**
- ❖ **Responsive post-sales support such as techcal information, repair and warranty**
- ❖ **Commitment to environmental concerns including packaging and disposal**

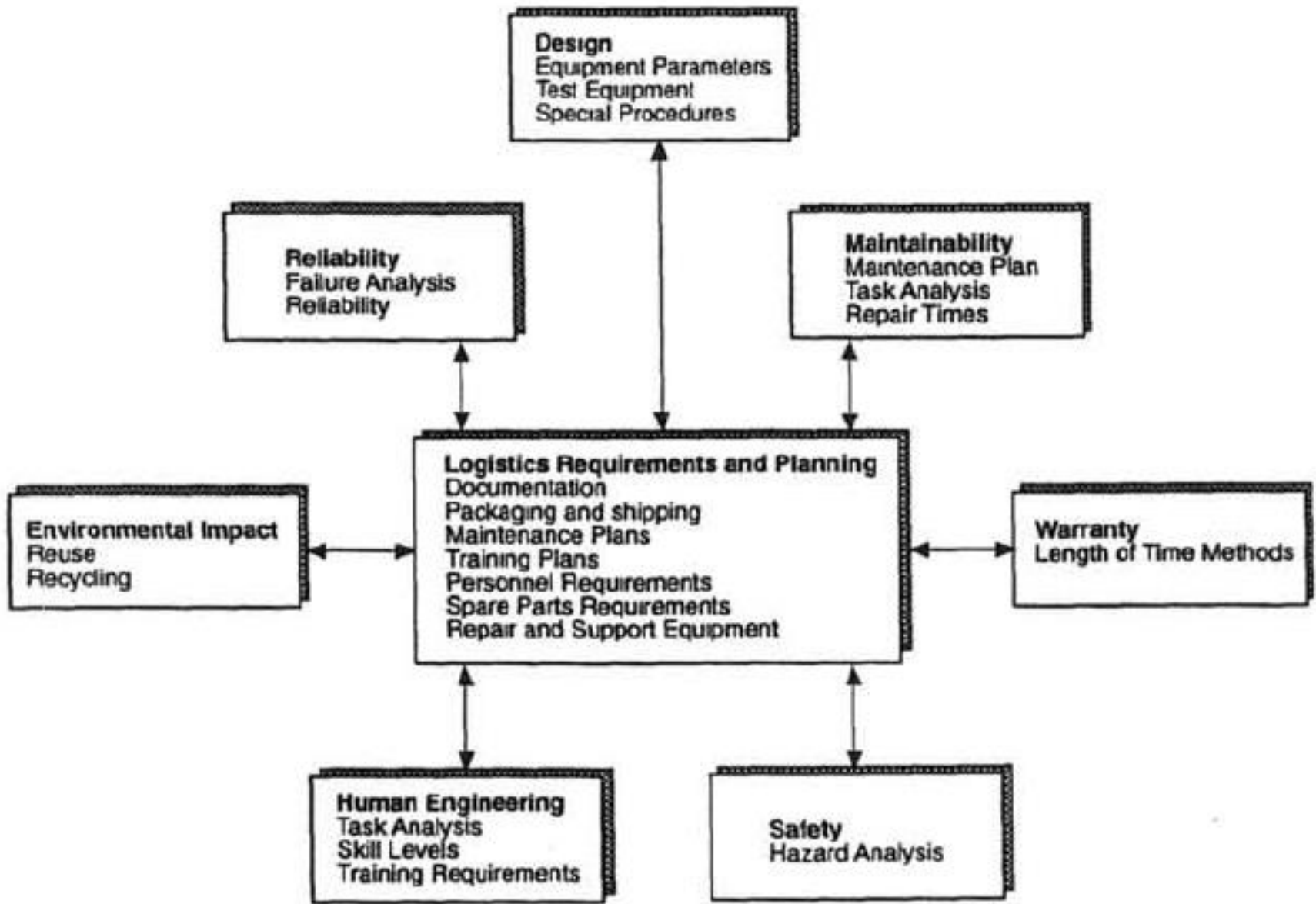
- The **world economy** depends on the traditional and complex science of supply chain.
- Parts and supplies must be shipped into manufacturing plants on time.
- Finished products must then be **distributed efficiently** to customers with needed support (i.e., repairs and warranty) and disposal of the product and manufacturing wastes when no longer in use.
- Until recently, most companies handled both incoming and outgoing logistics. “This is rapidly changing as **logistic costs become a larger portion of a product’s total cost**” (Bigness, 1995).
- A key design concern is to **ensure scalability of the supply chain process** in order to meet changing levels of demand.
- The **foundation** for the supply chain planning process is developed **from design, reliability, maintenance, vendor and environmental data**. One approach for analyzing this data is the logistics support analysis procedure.

➤ **Logistic support analysis** is a formalized technique used to include maintenance and supportability features into the design, identify quantitative and qualitative logistics resource requirements, and influence other design aspects such as requirements, packaging, and vendor selection. The **primary objective** of the process is to **identify logistic design constraints and support risks** and to ensure their consideration into the design. Additional objectives are the identification of required support resources and the coordination and integration of the efforts of the logistic disciplines in developing quantitative and qualitative logistic resource requirements. Like any design analysis, it is an iterative process to **optimize system support criteria during the design process.**

➤ **Logistics** is a systems analysis discipline that covers the entire life cycle of the product, i.e., cradle to grave.

➤ The **steps in logistics** are to:

1. **Identify customer, key supplier and shipping methods requirements and design/logistic capabilities.**
2. **Identify all viable design and support system alternatives and the risks associated with each.**
3. **Perform extensive trade-off analyses to identify the “best” combination of product design and logistics approach.**



LOGISTICS

ISO 14000

ISO 14000 is designed to **allow companies to identify vendors and other companies that are environmentally friendly.**

- The purpose is to **compliment** a country's current environment **laws and regulations.**
- The **goal** of the standard is to help a company **develop management or process standards** so a company can consistently meet their environmental obligations on all fronts: regulatory, customer, community, employee, and stockholder.
- The **original scope is not intended to duplicate or replace a country's regulatory system.**
- **ISO 14001** focuses on the **specification of systems and guidance for use**, which form the core of the ISO 14000 standards.
- The major elements of the proposed standards within this category include the **setting of environmental policy planning, implementation and operation, checking and corrective action, and management review.**



References

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4. Anoop Desai, Anil Mital and Anand Subramanian(2007), Product Development: A Structured Approach to Consumer Product Development, Design, and Manufacture, 1st Edition, Butterworth-Heinemann, ISBN: 978-0-750-68309-8.
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6. S. Jung, T. W. Simpson, New modularity indices for modularity and clustering of product architecture, Journal of Engineering (2017) 1–22. doi:10.1080/09544828.2016.1252835.

A large, faded logo of Galgotias University is centered in the background. It features a circular emblem with three curved, overlapping bands in shades of yellow, blue, and red, creating a sense of motion or a stylized 'G'.

Thank you

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