



Table of Contents

[Crossfunctional Teams](#)

[Concurrent Engineering](#)

[Design for Manufacturing](#)

[Design for Environment](#)

- [What is concurrent engineering?](#)
- [How to apply concurrent engineering?](#)
- [Basic principles of concurrent engineering](#)
- [When do companies use concurrent engineering?](#)
- [Why do companies use concurrent engineering?](#)
- [How does concurrent engineering benefit corporations?](#)



[What is concurrent engineering](#)

Definition

Concurrent engineering is a business strategy which replaces the traditional product development process with one in which tasks are done in parallel and there is an early consideration for every aspect of a product's development process. This strategy focuses on the optimization and distribution of a firm's resources in the design and development process to ensure effective and efficient product development process.

Need for Concurrent Engineering

In today's business world, corporations must be able to react to the changing market needs rapidly, effectively, and responsively. They must be able to reduce their time to market and adapt to the changing environments. Decisions must be made quickly and they must be done right the first time out. Corporations can no longer wait time repeating tasks, thereby prolonging the time it takes to bring new products to market. Therefore, concurrent engineering has emerged as a way of bringing rapid solutions to product design and development process.

Concurrent engineering is indisputably the wave of the future for new product development for all companies regardless of their size, sophistication, or product portfolio. In order to be competitive, corporations must alter their product and process development cycle to be able to complete diverse tasks concurrently. This new process will benefit

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the company, although it will require a large amount of refinement in its implementation. This is because, concurrent engineering is a process that must be reviewed and adjusted for continuous improvements of engineering and business operations.

The Concurrent Engineering Approach

Concurrent engineering is a **business strategy** which replaces the traditional product development process with one in which tasks are done in parallel and there is an early consideration for every aspect of a product's development process. This strategy focuses on the optimization and distribution of a firm's resources in the design and development process to ensure an effective and efficient product development process. It mandates major changes within the organizations and firms that use it, due to the people and process integration requirements. Collaboration is a must for individuals, groups, departments, and separate organizations within the firm. Therefore, it cannot be applied at leisure. A firm must be dedicated to the long term implementation, appraisal, and continuous revision of a concurrent engineering process.

Strategic Plan of Concurrent Engineering

Concurrent engineering is recognized as a strategic weapon that businesses must use for effective and efficient product development. It is not a trivial task, but a complex strategic plan that demands full corporate commitment, therefore strong leadership and teamwork go hand and hand with successful concurrent engineering programs.



How to apply concurrent engineering

Commitment, Planning, and Leadership

Concurrent engineering is not a trivial process to apply. If firms are going to commit to concurrent engineering then they must first devise a plan. This plan must create organizational change throughout the entire company or firm. There must be a strong commitment from the firm's leadership in order to mandate the required organizational changes from the top down. Concurrent engineering without leadership will have no clear direction or goal. On the other hand, concurrent engineering with leadership, management support, and proper planning will

bring success in today's challenging market place.

Continuous Improvement Process

Concurrent engineering is not a one size fits all solution to a firm's development processes. There are many different aspects of concurrent engineering which may or may not fit in a corporation's development process. Concurrent engineering is only a set of process objectives and goals that have a variety of implementation strategies. Therefore, concurrent engineering is an evolving process that requires continuous improvement and refinement. This continuous improvement cycle consists of planning, implementing, reviewing, and revising. The process must be updated and revised on a regular basis to optimize the effectiveness and benefits in the concurrent engineering development process.

Communication and Collaboration

The implementation of concurrent engineering begins by creating a corporate environment that facilitates communication and collaboration not just between individuals, but also between separate organizations and departments within the firm. This may entail major structural changes, re-education of the existing work-force, and/or restructuring of the development process.



Basic principles of concurrent engineering

- Get a strong commitment to from senior management.
- Establish unified project goals and a clear business mission.
- Develop a detailed plan early in the process.
- Continually review your progress and revise your plan.
- Develop project leaders that have an overall vision of the project and goals.
- Analyze your market and know your customers.
- Suppress individualism and foster a team concept.
- Establish and cultivate cross-functional integration and collaboration.
- Transfer technology between individuals and departments.
- Break project into its natural phases.
- Develop metrics.

- Set milestones throughout the development process.
- Collectively work on all parts of project.
- Reduce costs and time to market.
- Complete tasks in parallel.



When is concurrent engineering used

The majority of a product's costs are committed very early in the design and development process. Therefore, companies must apply concurrent engineering at the onset of a project. This makes concurrent engineering a powerful development tool that can be implemented early in the conceptual design phase where the majority of the product's costs are committed. There are several applications in which concurrent engineering may be used. Some primary applications include product research, design, development, re-engineering, manufacturing, and redesigning of existing and new products. In these applications, concurrent engineering is applied throughout the design and development process to enable the firm to reap the full benefits of this process.



Why do companies use concurrent engineering

Competitive Advantage

The reasons that companies choose to use concurrent engineering is for the clear cut benefits and competitive advantage that concurrent engineering can give them. Concurrent engineering can benefit companies of any size, large or small. While there are several obstacles to initially implementing concurrent engineering, these obstacles are minimal when compared to the long term benefits that concurrent engineering offers.

Increased Performance

Companies recognize that concurrent engineering is a key factor in improving the quality, development cycle, production cost, and delivery time of their products. It enables the early discovery of

design problems, thereby enabling them to be addressed up front rather than later in the development process. Concurrent engineering can eliminate multiple design revisions, prototypes, and re-engineering efforts and create an environment for designing right the first time.

Reduced Design and Development Times

Companies that use concurrent engineering are able to transfer technology to their markets and customers more effectively, rapidly and predictably. They will be able to respond to customer needs and desires, to produce quality products that meet or exceed the consumer's expectations. They will also be able to introduce more products and bring quicker upgrades to their existing products through concurrent engineering practices. Therefore companies use concurrent engineering to produce better quality products, developed in less time, at lower cost, that meets the customer's needs.



How concurrent engineering benefits companies

There are several benefits that concurrent engineering can bring, although it is difficult to quantify many of these benefits by using spreadsheets and numbers. These are not only benefits which the participating company will experience, but ultimately the end users or customers also will reap these benefits by having a quality product which fits their needs and in many cases, costs them less to purchase. Therefore, concurrent engineering produces a unified profitable corporation and a satisfied consumer.

Regardless of the type of application, there are significant benefits to the firms or organizations that use crossfunctional teams.

[List all the benefits...](#)





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