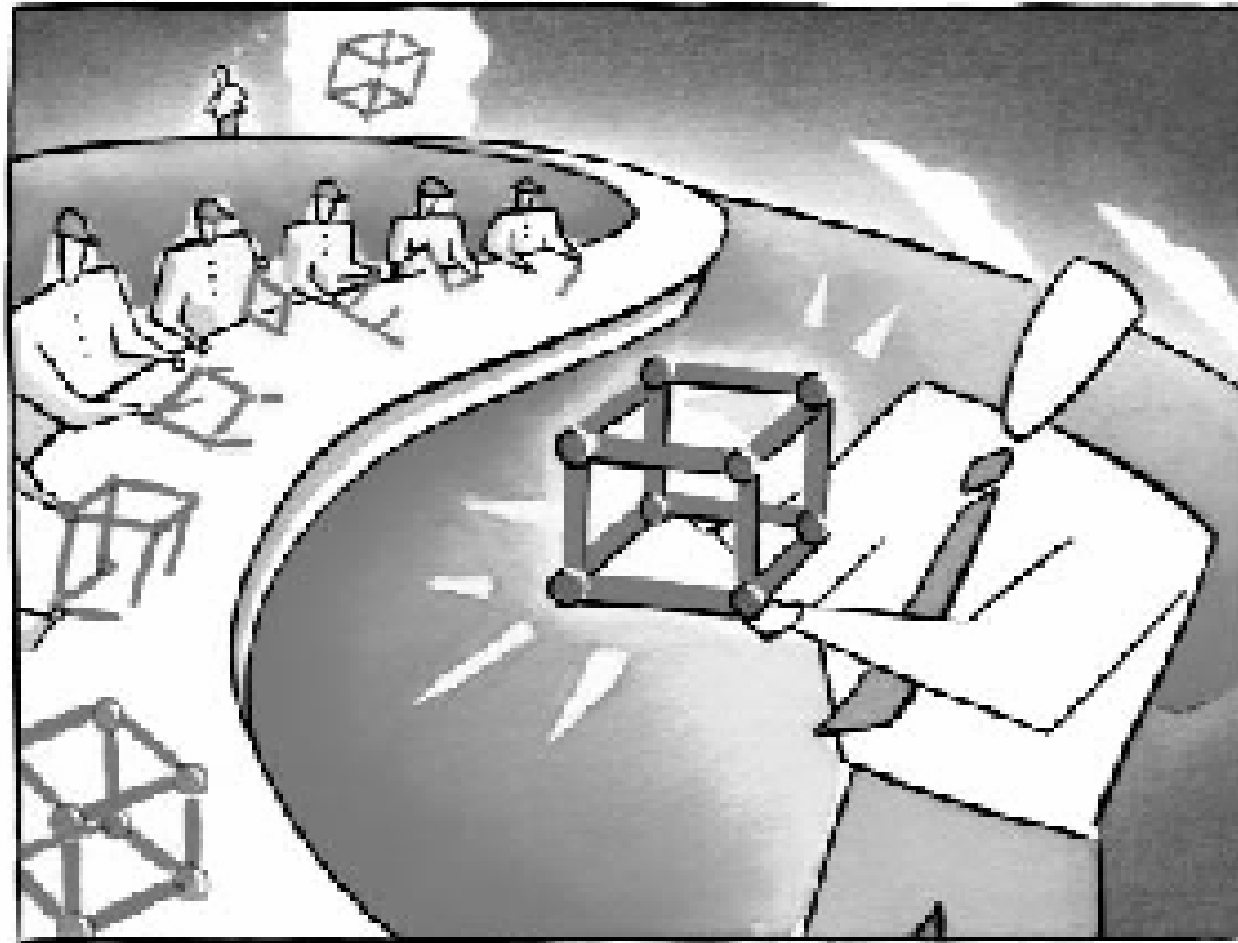
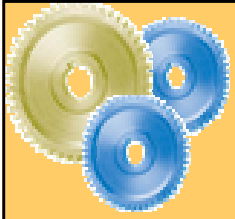


# تکوین محصول جدید

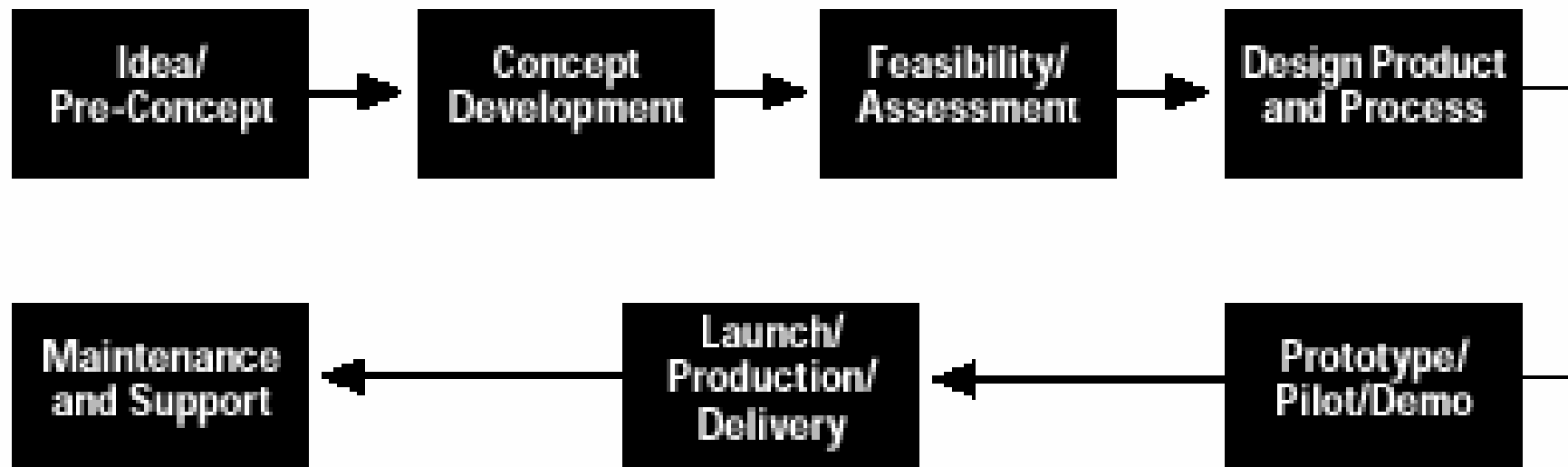
## New Product Development

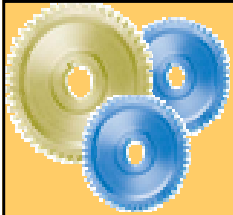




# فرآیند تکوین محصول

## Generic NPD Process





# فعالیت‌های توسعه محصول جدید

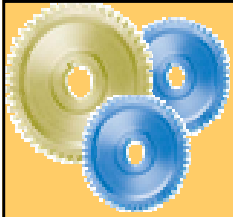
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## THE NEW PRODUCT DEVELOPMENT PROCESS

No new product development process is exactly the same as another. Two processes may have similar steps, but the underlying function of the process is controlled by the specific company culture.

The information gathered during this study indicates that the NPD process can be broken down into four general categories:

1. Idea generation,
2. Concept development,
3. Product and process design, and
4. Production and delivery.

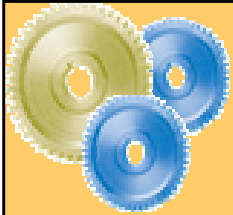


# أيجاد أیده توسعه محصول

## Idea Generation

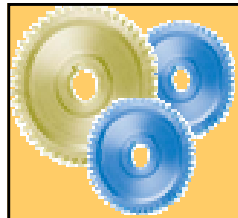
Every organization must come up with new products and/or improvement ideas for an existing line, and developing and using all sources for potential ideas is vital. The study identified specific sources that tend to be good idea generators, including:

- market research,
- focus groups,
- third-party/inventor input,
- sales,
- technical service,
- competitive intelligence,
- brainstorming,
- suggestion boxes,
- specific company laboratory/research group, and
- management.



# روشهای ایجاد ایده

FIRM	SOURCE OF IDEAS	HOW IDEAS ARE FUNNELED	UNUSED IDEAS	EXIT CRITERIA
<b>A</b>	<ul style="list-style-type: none"> <li>• Secondary Research</li> <li>• Competitor Visits</li> <li>• Field Survey</li> <li>• Customer Survey</li> </ul>	Once-a-year planning/brainstorming session using a matrix diagram to identify high impact, low impact, and medium impact. The diagram is used to prioritize those ideas that will make the greatest difference with customers.	Discarded	Take ideas to Executive Committee and explain, "Here is what we hear and here is what we think is important; we would like to start work on this."
<b>B</b>	<ul style="list-style-type: none"> <li>• Laboratory</li> <li>• Marketing</li> <li>• Sales</li> <li>• Technical Services</li> <li>• Outside Sources (Stockholders)</li> </ul>	Corporate program that allows seed money or grants for people who have ideas that need to be developed. Employees are encouraged to devote a portion of their time to developing ideas. Ideas are reviewed with a basic set of product prioritization criteria. These criteria are usually weighted to represent strategies of the specific business units. Once a review is passed, the project is allocated resources and sent into the development process.	None discarded. Excess ideas are stored in a database and revisited each year.	Each business unit has different hurdles. They look at the program and decide if they have the resources to make it through the next stage: "Should we do it in lieu of something else?"

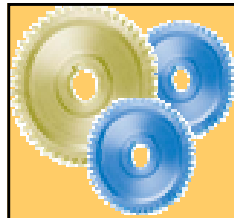


# روشهای ایجاد ایده - ادامه

FIRM	SOURCE OF IDEAS	HOW IDEAS ARE FUNNELED	UNUSED IDEAS	EXIT CRITERIA
<b>C</b>	<ul style="list-style-type: none"> <li>• Customer Input</li> <li>• Market Research</li> <li>• Third-Party Input (GrowthNet)</li> </ul>	Starts with defining the market and developing a strategy for that market through a Product Business Plan that includes business opportunities and goals. This serves as the master plan for specific new product development and allocation of resources. The five-year plan includes product recommendations, financial analysis, and general resources required.		Document and review lessons learned. Factory management commitment to provide support and resources to proceed to the next phase.
<b>D</b>	<ul style="list-style-type: none"> <li>• Customers</li> <li>• Internal Employees</li> <li>• Brainstorming</li> </ul>	Technical leader and staff perform day-to-day technology development as well as research. A specific Research & Development organization conducts pure research and develops manufacturing capabilities. A corporatewide program enables anyone in the corporation who has an idea, whether it fits a strategy or not, to receive \$25,000 to conduct additional research on the idea.		Market plan approval. Includes initial product concept, target customer base, market analysis, revenue/profit criteria, competitive alternatives, second source requirements, preliminary specifications, risk assessment, and marketing plan sign-off.

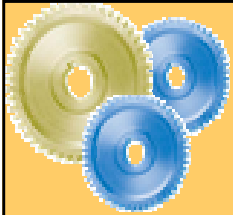
# روشهای ایجاد ایده - ادامه

FIRM	SOURCE OF IDEAS	HOW IDEAS ARE FUNNELED	UNUSED IDEAS	EXIT CRITERIA
E	<ul style="list-style-type: none"> <li>Market Research</li> <li>Outside Sources</li> <li>Customers</li> <li>Focus Groups</li> <li>Internal Employees</li> </ul>	<p>Start with a Brand Direction Outline, which is a strategic document used to look at a specific category. It includes a situation analysis of where the company thinks it will go and where it sees the opportunities in the market-place. It gives product slots to design toward. It is up to the preliminary designers to develop ideas to fit into product slots. Upon examination, viable ideas are sent to formal design with a Brand Candidate Order, which is like a work order that contains the design for a specific product. It includes schedule and cost parameters. These ideas are judged using focus groups. The executive committee approves ideas that proceed through the system.</p>	Up to discretion of individual designers	Completed Brand Direction Outline and a Brand Candidate Order
F	<ul style="list-style-type: none"> <li>Focus Groups</li> <li>Interviews</li> <li>Blind Research</li> <li>Sales Group</li> <li>False Storefronts</li> </ul>	<p>Initial step is the Basis of Interest. It outlines the best thinking on the current market size for the product, estimated project return, estimated capital requirements, and competitive issues. It is then necessary to determine what the customer wants in this supposed product. R&amp;D and/or teams begin to develop concepts to fill that product.</p>		Basis of Interest outline



# روشهای ایجاد ایده - ادامه

FIRM	SOURCE OF IDEAS	HOW IDEAS ARE FUNNELED	UNUSED IDEAS	EXIT CRITERIA
G	<ul style="list-style-type: none"> <li>Internal Ideation (group of 10 people sitting in a room and brainstorming)</li> <li>External Ideation</li> <li>Focus Groups</li> <li>Agencies</li> <li>Market Research</li> </ul>	First is identification of market needs and integration into strategy. Then, the company develops a multitude of ideas to fit strategy. A team is responsible for prioritization of ideas. It looks at potential, feasibility, timing, and need and recommends which ones to proceed with. Once determined, the ideas are taken to the consumer for feedback.	Stored	Once ideas are narrowed down, the accepted ideas are evaluated. These evaluations can vary from purely judgment and experience to formal testing.
H	<ul style="list-style-type: none"> <li>Competitive Intelligence</li> <li>Customer Comments</li> <li>Employee Suggestion Box</li> <li>Focus Groups</li> <li>Segmentation Framework</li> <li>External Vendors</li> <li>Core Business Group</li> </ul>	Executive team develops strategy for products and services. It operates on an 18-month rolling strategy. Through brainstorming, the initial mass of ideas is narrowed down to approximately 20 to 30. Qualitative Focus Groups help weed out the 20 to 30 ideas. The company ends up with three or four that move into process.	Recycled	Bring in different functional groups to review potential product to help determine if the idea is feasible. This is an initial high-level review that looks at some of the how-tos and financial feasibility. The decision to continue is then left to the discretion of the director of NPD.



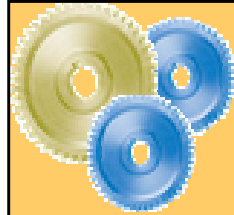
# توسعه مفهومی

## Concept Development

Once the viable ideas are selected, they must be further developed, examined, and prioritized before the select few concepts proceed to full design. This phase requires a more formal review and planning process that ensures the concepts are technically feasible, will make a sustainable product, and will—with conservative estimates—allow the organization to make a profit.

Feasibility assessment can be considered a subset of this phase. It usually is performed, however, on a regular basis throughout the front end of the NPD process (idea generation to design).

This phase typically includes development of a formal business plan with actual forecasts, product description and initial specifications, preliminary marketing strategy, and project schedule and resource requirements. At that point, an executive review generally approves the product for design and additional resource allocation.



# طراحی فرآیند و محصول

## Product and Process Design

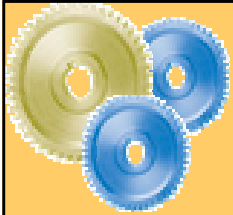
This stage involves turning the concept into a tangible product design and transforming that design into a working model, be it a prototype or a pilot. Along with designing the product, it is essential to design the process that will produce the product.

The main areas addressed include:

- identifying, monitoring, and implementing changes to specifications;
- design freeze; and
- verifying product designs through pilots.

To change the original product specification, some form of approval is required. This can range from upper management review to individual functional area review to team consensus. Changes usually are monitored to determine if the quality of the product has been increased or if the design meets customer requirements to a greater extent.

At a number of organizations, the design is frozen when the product specifications are developed and set. Minor changes, refinements, and tuning of the product can occur only to a certain extent. Other organizations never completely freeze the design and are open to change even after the product has gone to production. If a change is determined to be necessary and vital to fulfilling customer needs and expectations, the organization will make the change.



# تولید و تحویل

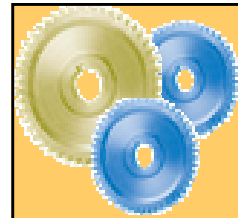
## **Production and Delivery**

Once the final design is verified and approved, the product is launched into production. A scale-up period normally is required before full production can begin. Individuals from numerous functional areas are needed to ensure a smooth transition between design and manufacturing.

Several items normally are required before production can begin. They include:

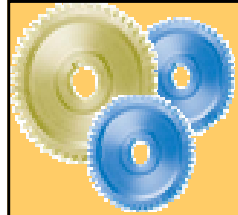
- a formal manufacturing/production plan including all product requirements,
- a detailed service plan,
- a quality plan to ensure all products conform to specifications/customer needs,
- a marketing plan, and
- a continuous improvement effort for the process.

For one best-practice organization, installing common process equipment at its plants around the world help cut down on the inconsistency among products produced at various plants. It is almost impossible to create exactly the same products, however, because of the differences in the plants' locations, employees, and facilities. A quality assurance group within each business unit is responsible for verifying that the product and each manufacturing site producing the product meet the required criteria.



# طراحی محصول با خدمت ابزارهای تکوین محصول

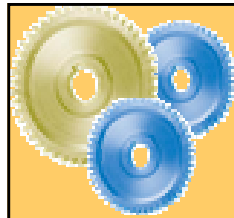
TOOL	USE	REQUIRED	FREQUENCY
Secondary Market Research	83%	22%	Often: 33% Some: 50% Never: 17%
Primary Market Research	89%	44%	Often: 67% Some: 22% Never: 11%
Customer Focus Groups	94%	17%	Often: 39% Some: 56% Never: 6%
Sales Forecasts	94%	72%	Often: 88% Some: 6% Never: 6%
Product Description	100%	94%	Often: 100% Some: 0% Never: 0%
Strategic Assessment	94%	61%	Often: 44% Some: 50% Never: 6%
Financial Projections	100%	89%	Often: 100% Some: 0% Never: 0%
Technology Assessment	94%	67%	Often: 44% Some: 50% Never: 6%
Competitive Analysis	94%	61%	Often: 78% Some: 16% Never: 6%



# معیارهای اندازه گیری

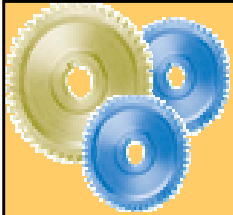
Table 3

CATEGORY	USE*	SPECIFIC MEASURE
Risk	61%	Degree of fit with technological capabilities Qualitative assessment based on screening criteria Scenario testing of products Financial analysis Situational analysis Dilution Risk assessment Consistent with image and reputation Return on assets Cost and risk avoidance/reduction Market share
Corporate	67%	Fits defined core competency/corporate vision, mission, and strategic direction Analysis of cross-elasticity Procedure adoption Market share Profitability Critical success factors/goals Image impact



# معیارهای اندازه گیری - ادامه

CATEGORY	USE*	SPECIFIC MEASURE
Market	89%	Market share/revenue potential Potential superiority/difference Consumer acceptance scores (purchasing interest) Demand forecasts Customer satisfaction
Technology	67%	Estimated likelihood of success Fit with existing network Capability Capacity System flexibility Cycle time to develop Cost to develop Protectable (patent best) Technical feasibility assessment
Production	83%	Capacity Manufacturability Unit costs of production Service/product quality indicators Production cycle time Line rejects Feasibility
Financial	89%	Profitability (profit/loss estimates) Net Present Value analysis Revenue Expenses Development cost Cash flow analysis Return on net assets Return on investment



# معیارهای اندازه گیری - ادامه

CATEGORY	USE*	SPECIFIC MEASURE
Cost	78%	Net Present Value Project/product costs Contract cost (actual vs. projected) Cost of development Labor costs Cost of rework
Time	83%	Schedule compliance (meet start ship date) Capability Priorities Normalized product development cycle time (time to market) Planning time vs. implementation time
Other	61%	Regulatory environment impact Company manpower utilization Quality (field failure in first 12 months after shipment)