The PDMA Glossary for New Product Development

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Accidental Discovery: New designs, ideas, and developments resulting from unexpected insight, which can be obtained either internal or external to the organization.

Adoption Curve: The phases through which consumers or a market proceed in deciding to adopt a new product or technology. At the individual level, each consumer must move from a cognitive state (becoming aware of and knowledgeable about), to an emotional state (liking and then preferring the product) and into a conative, or behavioral state (deciding and then purchasing the product). At the market level, the new product is first purchased by the innovators in the marketplace, which are generally thought to constitute about 2.5% of the market. Early adopters (13.5% of the market) are the next to purchase, followed by the early majority (34%), late majority (34%) and finally, the laggards (16%).

Affinity Charting: A "bottom-up" technique for discovering connections between pieces of data. An individual or group starts with one piece of data (say, a customer need). They then look through the rest of the data they have (say, statements of other customer needs) to find other data (needs) similar to the first, and place it in the same group. As they come across pieces of data that differ from those in the first group, they create a new category. The end result is a set of groups where the data contained within a category is similar, and the groups all differ in some way. See also Qualitative Cluster Analysis.

Alliance: Formal arrangement with a separate company for purposes of development, and involving exchange of information, hardware, intellectual property, or enabling technology. Alliances involve shared risk and reward (e.g., co-development projects). (See also Chapter 11 of The PDMA HandBook 2nd Edition).

Alpha Test: Pre-production product testing to find and eliminate the most obvious design defects or deficiencies, usually in a laboratory setting or in some part of the developing firm's regular operations, although in some cases it may be done in controlled settings with lead customers. See also beta test and gamma test.
**Alpha Testing:** A crucial “first look” at the initial design, usually done in-house. The results of the Alpha test either confirm that the product performs according to its specifications or uncovers areas where the product is deficient. The testing environment should try to simulate the conditions under which the product will actually be used as closely as possible. The Alpha test should not be performed by the same people who are doing the development work. Since this is the first “flight” for the new product, basic questions of fit and function should be evaluated. Any suggested modifications or revisions to the specifications should be solicited from all parties involved in the evaluation and considered for inclusion. Since the testing is done in-house, special care must be taken to remain as objective as possible.

**Analytical Hierarchy Process (AHP):** A decision-making tool for complex, multi-criteria problems where both qualitative and quantitative aspects of a problem need to be incorporated. AHP clusters decision elements according to their common characteristics into a hierarchical structure similar to a family tree or affinity chart. The AHP process was designed by T.L. Saaty.

**Analyzer:** A firm that follows an imitative innovation strategy, where the goal is to get to market with an equivalent or slightly better product very quickly once someone else opens up the market, rather than to be first to market with new products or technologies. Sometimes called an imitator or a "fast follower."

**Anticipatory Failure Determination (AFD):** A failure analysis method. In this process, developers start from a particular failure of interest as the intended consequence and try to devise ways to assure that the failure always happens reliably. Then the developers use that information to develop ways to better identify steps to avoid the failure.

**Applications Development:** The iterative process through which software is designed and written to meet the needs and requirements of the user base or the process of enhancing or developing new products.

**Architecture:** See "product architecture."

**As-Is-Map:** A version of a process map depicting how an existing process actually operates. This may differ substantially from documented guidelines.

**Asynchronous Groupware:** Software used to help people work as groups, but not requiring those people to work at the same time.

**Attribute Testing:** A quantitative market research technique in which respondents are asked to rate a detailed list of product or category attributes on one or more types of scales such as relative importance, current performance, current satisfaction with a particular product or service, for the purpose of ascertaining customer preferences for some attributes over others, to help guide the design and development process. Great care and rigor should be taken in the development of the list of attributes, and it must be neither too long for the respondent to answer comfortably or too short such that it lumps too many ideas together at too high a level.
**Audit:** When applied to new product development, an audit is an appraisal of the effectiveness of the processes by which the new product was developed and brought to market. (see Chapter 14 of *The PDMA ToolBook 1*)

**Augmented Product:** The Core Product, plus all other sources of product benefits, such as service, warranty, and image.

**Autonomous Team:** A completely self-sufficient project team with very little, if any, link to the funding organization. Frequently used as an organizational model to bring a radical innovation to the marketplace. Sometimes called a "tiger" team.

**Awareness:** A measure of the percent of target customers who are aware that the new product exists. Awareness is variously defined, including recall of brand, recognition of brand, recall of key features or positioning.

**Back-up:** A project that moves forward, either in synchrony or with a moderate time-lag, and for the same marketplace, as the lead project to provide an alternative asset should the lead project fail in development. A back-up has essentially the same mechanism of action performance as the lead project. Normally a company would not advance both the lead and the back-up project through to the marketplace, since they would compete directly with each other.

**Balanced Scorecard:** A comprehensive performance measurement technique that balances four performance dimensions: 1. Customer perceptions of how we are performing; 2. Internal perceptions of how we are doing at what we must excel at; 3. Innovation and learning performance; 4. Financial performance.

**Baton-Passing Process:** See Relay-Race Process.

**Benchmarking:** A process of collecting process performance data, generally in a confidential, blinded fashion, from a number of organizations to allow them to assess their performance individually and as a whole.

**Benefit:** A product attribute expressed in terms of what the user gets from the product rather than its physical characteristics or features. Benefits are often paired with specific features, but they need not be.

**Best Practice:** Methods, tools or techniques that are associated with improved performance. In new product development, no one tool or technique assures success; however a number of them are associated with higher probabilities of achieving success. Best practices likely are at least somewhat context specific. Sometimes called "effective practice."

**Beta Test**: An external test of pre-production products. The purpose is to test the product for all functions in a breadth of field situations to find those system faults that are more likely to show in actual use than in the firmís more controlled in-house tests before sale to the general market. See also field test.

**Beta Testing**: A more extensive test than the Alpha, performed by real users and customers. The purpose of Beta testing is to determine how the product performs in an actual user environment. It is critical that real customers perform this evaluation, not the firm developing the product or a contracted testing company. As with the Alpha test, results of the Beta Test should be carefully evaluated with an eye toward any needed modifications or corrections.

**Bill of Materials (BOM)**: A listing of all subassemblies, intermediate parts, and raw materials that go into a parent assembly, showing the quantity of each required to make an assembly.

**Bowling Alley - An early growth stage strategy which emphasizes focusing on specific niche markets, building a strong position in those markets by delivering clearly differentiated "whole products" and using that niche market strength as leverage point for conquering conceptually neighboring niche markets. Success in the Bowling alley is predicated on building product leadership via customer intimacy.**

**Brainstorming**: A group method of creative problem-solving frequently used in product concept generation. There are many modifications in format, each variation with its own name. The basis of all of these methods uses a group of people to creatively generate a list of ideas related to a particular topic. As many ideas as possible are listed before any critical evaluation is performed. (See Chapters 16 and 17 in *The PDMA Handbook 2nd Edition*.)

**Brand**: A name, term, design, symbol, or any other feature that identifies one sellerís good or service as distinct from those of other sellers. The legal term for brand is trademark. A brand may identify one item, a family of items, or all items of that seller.

**Brand Development Index (BDI)**: A measure of the relative strength of a brandís sales in a geographic area. Computationally, BDI is the percent of total national brand sales that occur in an area divided by the percent of U.S. households that reside in that area.

**Breadboard**: A proof-of-concept modeling technique that represents how a product will work, but not how a product will look.

**Break-even Point**: The point in the commercial life of a product when cumulative development costs are recovered through accrued profits from sales.

**Business Analysis**: An analysis of the business situation surrounding a proposed project. Usually includes financial forecasts in terms of discounted cash flows, net present values or internal rates of returns.
Business Case: The results of the market, technical and financial analyses, or up-front homework. Ideally defined just prior to the "go to development" decision (gate), the case defines the product and project, including the project justification and the action or business plan. (See Chapter 21 of The PDMA Handbook 2nd Edition).

Business Management Team: Top functional managers and business unit head who work together throughout the design of the decision-flow component of a stage-gate process.

Business-to-Business: Transactions with non-consumer purchasers such as manufacturers, resellers (distributors, wholesalers, jobbers and retailers, for example) institutional, professional and governmental organizations. Frequently referred to as "industrial" businesses in the past.

Buyer: The purchaser of a product, whether or not he or she will be the ultimate user. Especially in business-to-business markets, a purchasing agent may contract for the actual purchase of a good or service, yet never benefit from the function(s) purchased.

Buyer Concentration: The degree to which purchasing power is held by a relatively small percentage of the total number of buyers in the market.

Cannibalization: That portion of the demand for a new product that comes from the erosion of the demand for (sales of) a current product the firm markets. (See Chapter 34 in The PDMA Handbook 2nd Edition).

Capacity Planning: A forward-looking activity that monitors the skill sets and effective resource capacity of the organization. For product development, the objective is to manage the flow of projects through development such that none of the functions (skill sets) creates a bottleneck to timely completion. Necessary in optimizing the project portfolio.

Category Development Index (CDI): A measure of the relative strength of a category's sales in a geographic area. Computationally, it is the percent of total national category sales that occur in an area divided by the percent of U.S. households in that area.

Centers of Excellence: A geographic or organizational group with an acknowledged technical, business, or competitive competency.

Certification: A process for formally acknowledging that someone has mastered a body of knowledge on a subject. In new product development, the PDMA has created and manages a certification process to become a New Product Development Professional (NPDP).

Champion: A person who takes a passionate interest in seeing that a particular process or product is fully developed and marketed. This informal role varies from situations calling for little more than stimulating awareness of the opportunity to extreme cases where the champion tries to force a project past the strongly entrenched internal resistance of company policy or that of objecting parties. (see Chapter 5 in The PDMA ToolBook 1st Edition.)
**Change Equilibrium:** A balance of organizational forces that either drives or impedes change.

**Charter:** A project team document defining the context, specific details, and plans of a project. It includes the initial business case, problem and goal statements, constraints and assumptions, and preliminary plan and scope. Periodic reviews with the sponsor ensure alignment with business strategies. (see also Product Innovation Charter)

**Checklist:** A list of items used to remind an analyst to think of all relevant aspects. It finds frequent use as a tool of creativity in concept generation, as a factor consideration list in concept screening, and to ensure that all appropriate tasks have been completed in any stage of the product development process.

**Chunks:** The building blocks of product architecture. They are made up of inseparable physical elements. Other terms for chunks may be modules or major subassemblies.

**Classification:** A systematic arrangement into groups or classes based on natural relationships.

**Clockspeed:** The evolution rate of different industries. High clockspeed industries, like electronics, see multiple generations of products within short time periods, perhaps even within 12 months. In low clockspeed industries, like the chemical industry, a generation of products may last as long as 5 or even 10 years. It is believed that high clockspeed industries can be used to understand the dynamics of change that will in the long run affect all industries, much like fruit flies are used to understand the dynamics of genetic change in a speeded-up genetic environment, due to their short life spans.

**Cognitive Modeling:** A method for producing a computational model for how individuals solve problems and perform tasks, which is based on psychological principles. The modeling process outlines the steps a person goes through in solving a particular problem or completing a task, which allows one to predict the time it will take or the types of errors an individual may make. Cognitive models are frequently used to determine ways to improve a user interface to minimize interaction errors or time by anticipating user behavior.

**Cognitive Walkthrough:** Once a model of the steps or tasks a person must go through to complete a task is constructed, an expert can role play the part of a user to cognitively "walk through" the user's expected experience. Results from this walk-through can help make human-product interfaces more intuitive and increase product usability.

**Collaborative Product Development:** When two firms work together to develop and commercialize a specialized product. The smaller firm may contribute technical or creative expertise, while the larger firm may be more likely to contribute capital, marketing, and distribution capabilities. When two firms of more equal size collaborate, they may each bring some specialized technology capability to the table in developing some highly complex product or system requiring expertise in both technologies. Collaborative product development has several variations. In customer collaboration, a supplier reaches out and partners with a key or lead customer. In supplier collaboration, a company partners with the provider(s) of technologies, components, or services to create an integrated solution. In collaborative contract manufacturing, a company contracts with a manufacturing partner to produce the intended product. Collaborative development (also known as co-development) differs from simple outsourcing in its levels of
depth of partnership in that the collaborative firms are linked in the process of delivering the final solution to the intended customer.

**Co-location**: Physically locating project personnel in one area, enabling more rapid and frequent decision-making and communication among them.

**Commercialization**: The process of taking a new product from development to market. It generally includes production launch and ramp-up, marketing materials and program development, supply chain development, sales channel development, training development, training, and service and support development. (See Chapter 30 of *The PDMA HandBook 2nd Edition*).

**Competitive Intelligence**: Methods and activities for transforming disaggregated public competitor information into relevant and strategic knowledge about competitorsí position, size, efforts and trends. The term refers to the broad practice of collecting, analyzing, and communicating the best available information on competitive trends occurring outside oneís own company.

**Computer-Aided Engineering (CAE)**: Using computers in designing, analyzing and manufacturing a product or process. Sometimes refers more narrowly to using computers just at the engineering analysis stage.

**Computer-Aided Design (CAD)**: A technology that allows designers and engineers to use computers for their design work. Early programs enabled 2-dimensional (2-D) design. Current programs allow designers to work in 3-D (3 dimensions), and in either wire or solid models.

**Computer-Enhanced Creativity**: Using specially-designed computer software that aids in the process of recording, recalling and reconstructing ideas to speed up the new product development process.

**Concept**: A clearly written and possibly visual description of the new product idea that includes its primary features and consumer benefits, combined with a broad understanding of the technology needed.

**Concept Generation**: The processes by which new concepts, or product ideas, are generated. Sometimes also called idea generation or ideation. (See Chapters 15 and 17 in *The PDMA HandBook 2nd Edition*.)

**Concept Optimization**: A research approach that evaluates how specific product benefits or features contribute to a conceptís overall appeal to consumers. Results are used to select from the options investigated to construct the most appealing concept from the consumerís perspective.

**Concept Screening**: The evaluation of potential new product concepts during the discovery phase of a product development project. Potential concepts are evaluated for their fit with business strategy, technical feasibility, manufacturability, and potential for financial success.

**Concept Statement**: A verbal or pictorial statement of a concept that is prepared for presentation to consumers to get their reaction prior to development.
**Concept Study Activity:** The set of product development tasks in which a concept is given enough examination to determine if there are substantial unknowns about the market, technology or production process.

**Concept Testing:** The process by which a concept statement is presented to consumers for their reactions. These reactions can either be used to permit the developer to estimate the sales value of the concept or to make changes to the concept to enhance its potential sales value. (See Chapter 6 in *The PDMA Handbook 2nd Edition*).

**Concurrency:** Carrying out separate activities of the product development process at the same time rather than sequentially.

**Concurrent Engineering (CE):** When product design and manufacturing process development occur concurrently in an integrated fashion, using a cross-functional team, rather than sequentially by separate functions. CE is intended to cause the development team to consider all elements of the product life cycle from conception through disposal, including quality, cost, and maintenance, from the project's outset. Also called simultaneous engineering. (See Chapter 30 of *The PDMA Handbook 1st Edition*.)

**Conjoint Analysis:** Conjoint analysis is a market research technique in which respondents are systematically presented with a rotating set of product descriptions, each of which contains a rotating set of attributes and levels of those attributes. By asking respondents to choose their preferred product and/or to indicate their degree of preference from within each set of options, conjoint analysis can determine the relative contribution to overall preference of each variable and each level. The two key advantages of conjoint analysis over other methods of determining importance are: 1) the variables and levels can be either continuous (e.g. weight) or discreet (e.g. color), and 2) it is just about the only valid market research method for evaluating the role of price, i.e. how much someone would pay for a given feature (See Chapter 18 of *The PDMA Handbook 2nd Edition*).

**Consumer:** The most generic and all-encompassing term for a firm's targets. The term is used in either the business-to-business or household context and may refer to the firm's current customers, competitors' customers, or current non-purchasers with similar needs or demographic characteristics. The term does not differentiate between whether the person is a buyer or a user target. Only a fraction of consumers will become customers.

**Consumer Market:** The purchasing of goods and services by individuals and for household use (rather than for use in business settings). Consumer purchases are generally made by individual decision-makers, either for themselves or others in the family.

**Consumer Need:** A problem the consumer would like to have solved. What a consumer would like a product to do for them.

**Consumer Panels:** Specially recruited groups of consumers whose longitudinal category purchases are recorded via the scanner systems at stores.
**Contextual Inquiry:** A structured qualitative market research method that uses a combination of techniques from anthropology and journalism. Contextual inquiry is a customer needs discovery process that observes and interviews users of products in their actual environment.

**Contingency Plan:** A plan to cope with events whose occurrence, timing and severity cannot be predicted.

**Continuous Improvement:** The review, analysis and rework directed at incrementally improving practices and processes. Also called Kaizen.

**Continuous Innovation:** A product alteration that allows improved performance and benefits without changing either consumption patterns or behavior. The product’s general appearance and basic performance do not functionally change. Examples include fluoride toothpaste and higher computer speeds.

**Continuous Learning Activity:** The set of activities involving an objective examination of how a product development project is progressing or how it was carried out to permit process changes to simplify its remaining steps or improve the product being developed or its schedule. (see also Learning Organization)

**Contract Developer:** An external provider of product development services.

**Controlled Store Testing:** A method of test marketing where specialized companies are employed to handle product distribution and auditing rather than using the company’s normal sales force.

**Convergent Thinking:** A technique generally performed late in the initial phase of idea generation to help funnel the high volume of ideas created through divergent thinking into a small group or single idea on which more effort and analysis will be focused.

**Cooperation (Team Cooperation):** The extent to which team members actively work together in reaching team level objectives.

**Coordination Matrix:** A summary chart that identifies the key stages of a development project, the goals, and key activities within each stage, and who (what function) is responsible for each.

**Core Benefit Proposition (CBP):** The central benefit or purpose for which a consumer buys a product. The CBP may come either from the physical good or service, or it may come from augmented dimensions of the product. (see also Value Proposition) (See Chapter 3 of The PDMA ToolBook 1st Edition.)

**Core Competence:** That capability at which a company does better than other firms, which provides them with a distinctive competitive advantage and contributes to acquiring and retaining customers. Something that a firm does better than other firms. The purest definition adds "and is also the lowest cost provider."

**Corporate Culture:** The "feel" of an organization. Culture arises from the belief system through which an organization operates. Corporate cultures are variously described as being authoritative, bureaucratic, and entrepreneurial. The firm’s culture frequently impacts the organizational appropriateness for getting things done.
Cost of Goods Sold (COGS or CGS): The direct costs (labor and materials) associated with producing a product and delivering it to the marketplace.

Creativity: "An arbitrary harmony, an expected astonishment, a habitual revelation, a familiar surprise, a generous selfishness, an unexpected certainty, a formable stubbornness, a vital triviality, a disciplined freedom, an intoxicating steadiness, a repeated initiation, a difficult delight, a predictable gamble, an ephemeral solidity, a unifying difference, a demanding satisfier, a miraculous expectation, and accustomed amazement." (George M. Prince, The Practice of Creativity, 1970) Creativity is the ability to produce work that is both novel and appropriate.

Criteria: Statements of standards used by decision-makers at decision gates. The dimensions of performance necessary to achieve or surpass for product development projects to continue in development. In the aggregate, these criteria reflect a business unitís new product strategy. (See Chapters 21 and 29 of The PDMA ToolBook 2nd Edition.)

Critical Assumption: An explicit or implicit assumption in the new product business case that, if wrong, could undermine the viability of the opportunity.

Critical Path: The set of interrelated activities that must be completed for the project to be finished successfully can be mapped into a chart showing how long each task takes, and which tasks cannot be started before which other tasks are completed. The critical path is the set of linkages through the chart that is the longest. It determines how long a project will take.

Critical Path Scheduling: A project management technique, frequently incorporated into various software programs, which puts all important steps of a given new product project into a sequential network based on task interdependencies.

Critical Success Factors: Those critical few factors that are necessary for, but donít guarantee, commercial success. (See Chapter 1 of The PDMA HandBook 2nd Edition).

Cross-Functional Team: A team consisting of representatives from the various functions involved in product development, usually including members from all key functions required to deliver a successful product, typically including marketing, engineering, manufacturing/operations, finance, purchasing, customer support, and quality. The team is empowered by the departments to represent each functionís perspective in the development process. (See Chapters 9 and 10 in The PDMA HandBook 2nd Edition and Chapter 6 in The PDMA ToolBook 1.)

Cross Sections: An explanation of a part that is referenced by slicing through the area that needs to be explained.

Crossing the Chasm: Making the transition to a mainstream market from an early market dominated by a few visionary customers (sometimes also called innovators or lead adopters). This concept typically applies to the adoption of new, market creating technology-based products and services.

Customer: One who purchases or uses your firmís products or services.
**Customer-based Success:** The extent to which a new product is accepted by customers and the trade.

**Customer Needs:** Problems to be solved. These needs, either expressed or yet-to-be articulated, provide new product development opportunities for the firm. (See Chapter 14 in *The PDMA HandBook 2nd Edition*.)

**Customer Perceived Value (CPV):** The result of the customer's evaluation of all the benefits and all the costs of an offering as compared to that customer's perceived alternative. It is the basis on which customers decide to buy things. (See Chapter 4 of *The PDMA ToolBook*.)

**Customer Site Visits:** A qualitative market research technique for uncovering customer needs. The method involves going to a customer's work site, watching as a person performs functions associated with the customer needs your firm wants to solve, and then debriefing that person about what they did, why they did those things, the problems encountered as they were trying to perform the function, and what worked well. (See Chapters 15 and 16 of *The PDMA HandBook 2nd Edition*.)

**Customer Value Added Ratio:** The ratio of WWPF (worth what paid for) for your products to WWPF for your competitors' products. A ratio above 1 indicates superior value compared to your competitors.

**Cycle Time:** The length of time for any operation, from start to completion. In the new product development sense, it is the length of time to develop a new product from an early initial idea for a new product to initial market sales. Precise definitions of the start and end point vary from one company to another, and may vary from one project to another within the company. (See Chapter 12 of *The PDMA HandBook 2nd Edition*.)

**Dashboard:** A typically colored graphical presentation of a project's status or a portfolio's status by project resembling a vehicle's dashboard. Typically, red is used to flag urgent problems, yellow to flag impending problems, and green to signal on projects on track.

**Data:** Measurements taken at the source of a business process.

**Database:** An electronic gathering of information organized in some way to make it easy to search, discover, analyze, and manipulate.

**Decision Screens:** Sets of criteria that are applied as checklists or screens at new product decision points. The criteria may vary by stage in the process. (See Chapter 7 in *The PDMA ToolBook 1* and Chapter 21 of *The PDMA HandBook 2nd Edition*.)

**Decision Tree:** A diagram used for making decisions in business or computer programming. The "branches" of the tree diagram represent choices with associated risks, costs, results, and outcome probabilities. By calculating outcomes (profits) for each of the branches, the best decision for the firm can be determined.
Decline Stage: The fourth and last stage of the product life cycle. Entry into this stage is generally caused by technology advancements, consumer or user preference changes, global competition or environmental or regulatory changes. (See Chapter 34 of *The PDMA Handbook 2nd Edition*).

Defenders: Firms that stake out a product turf and protect it by whatever means, not necessarily through developing new products.

Deliverable: The output (such as test reports, regulatory approvals, working prototypes or marketing research reports) that shows a project has achieved a result. Deliverables may be specified for the commercial launch of the product or at the end of a development stage.

Delphi Processes: A technique that uses iterative rounds of consensus development across a group of experts to arrive at a forecast of the most probable outcome for some future state.

Demographic: The statistical description of a human population. Characteristics included in the description may include gender, age, education level, and marital status, as well as various behavioral and psychological characteristics.

Derivative Product: A new product based on changes to an existing product that modifies, refines, or improves some product features without affecting the basic product architecture or platform.

Design for the Environment (DFE): The systematic consideration of environmental safety and health issues over the product’s projected life cycle in the design and development process.

Design for Excellence (DFX): The systematic consideration of all relevant life cycle factors, such as manufacturability, reliability, maintainability, affordability, testability, etc., in the design and development process.

Design for Maintainability (DFM): The systematic consideration of maintainability issues over the product’s projected life cycle in the design and development process.

Design for Manufacturability (DFM): The systematic consideration of manufacturing issues in the design and development process, facilitating the fabrication of the product’s components and their assembly into the overall product.

Design of Experiments (DOE): A statistical method for evaluating multiple product and process design parameters simultaneously rather than one parameter at a time.

Design to Cost: A development methodology that treats costs as an independent design parameter, rather than an outcome. Cost objectives are established based on customer affordability and competitive constraints.

Design Validation: Product tests to ensure that the product or service conforms to defined user needs and requirements. These may be performed on working prototypes or using computer simulations of the finished product.
**Development**: The functional part of the organization responsible for converting product requirements into a working product. Also, a phrase in the overall concept to market cycle where the new product or service is developed for the first time.

**Development Change Order (DCO)**: A document used to implement changes during product development. It spells out the desired change, the reason for the change and the consequences to time to market, development cost, and to the cost of producing the final product. It gets attached to the project’s charter as an addendum.

**Development Teams**: teams formed to take one or more new products from concept through development, testing and launch.

**Digital Mock-Up**: An electronic model of the product created with a solids modeling program. Mock ups can be used to check for interface interferences and component incompatibilities. Using a digital mock-up can be less expensive than building physical prototypes.

**Discontinuous Innovation**: Previously unknown products that establish new consumption patterns and behavior changes. Examples include microwave ovens and the cellular phones.

**Discounted Cash-Flow (DCF) Analysis**: One method for providing an estimate of the current value of future incomes and expenses projected for a project. Future cash flows for a number of years are estimated for the project, and then discounted back to the present using forecast interest rates.

**Discrete Choice Experiment**: A quantitative market research tool used to model and predict customer buying decisions.

**Dispersed Teams**: Product development teams that have members working at different locations, across time zones, and perhaps even in different countries.

**Distribution**: The method and partners used to get the product (or service) from where it is produced to where the end user can buy it.

**Divergent Thinking**: Technique performed early in the initial phase of idea generation that expands thinking processes to generate, record and recall a high volume of new or interesting ideas.

**Dynamically Continuous Innovation**: A new product that changes behavior, but not necessarily consumption patterns. Examples include Palm Pilots, electric toothbrushes, and electric hair curlers.

**Early Adopters**: For new products, these are customers who, relying on their own intuition and vision, buy into new product concepts very early in the life cycle. For new processes, these are organizational entities that were willing to try out new processes rather than just maintaining the old.

**Economic Value Added (EVA)**: The value added to or subtracted from shareholder value during the life of a project.
**Empathic Design:** A 5-step method for uncovering customer needs and sparking ideas for new concepts. The method involves going to a customer’s work site, watching as he or she performs functions associated with the customer needs your firm wants to solve, and then debriefing the customer about what they did, why they did those things, the problems they encountered as they were trying to perform the function, and what worked well. By spending time with customers, the team develops empathy for the problems customers encounter trying to perform their daily tasks. See also Customer Site Visits.

**Engineering Design:** A function in the product creation process where a good or service is configured and specific form is decided.

**Engineering Model:** The combination of hardware and software intended to demonstrate the simulated functioning of the intended product as currently designed.

**Enhanced New Product:** A form of derivative product. Enhanced products include additional features not previously found on the base platform, which provide increased value to consumers.

**Entrance Requirement:** The document(s) and reviews required before any phase of a stages and gates development process can be started. (See Chapter 7 of *The PDMA ToolBook 1*.)

**Entrepreneur:** A person who initiates, organizes, operates, assumes the risk and reaps the potential reward for a new business venture.

**Ethnography:** A descriptive, qualitative market research methodology for studying the customer in relation to his or her environment. Researchers spend time in the field observing customers and their environment to acquire a deep understanding of the lifestyles or cultures as a basis for better understanding their needs and problems. (See Customer Site Visits and Chapter 15 in *The PDMA HandBook 2nd Edition.*)

**Event:** Marks the point in time when a task is completed.

**Event Map:** A chart showing important events in the future that is used to map out potential responses to probable or certain future events.

**Excursion:** An idea generation technique to force discontinuities into the idea set. Excursions consist of three generic steps: 1. Step away from the task; 2. Generate disconnected or irrelevant material; 3. Force a connection back to the task.

**Exit Requirement:** The document(s) and reviews required to complete a stage of a stages and gates development process. (See Chapter 7 of *The PDMA ToolBook 1* and Chapter 21 of *The PDMA HandBook 2nd Edition.*)

**Exit Strategy:** A pre-planned process for deleting a product or product line from the firm’s portfolio. At a minimum it includes plans for clearing inventory out of the supply chain pipeline at a minimum of losses, continuing to provide
for after-sales parts supply and maintenance support, and converting customers of the deleted product line to a different one. (See Chapter 34 of *The PDMA Handbook 2nd Edition*.)

**Explicit Customer Requirement:** What the customer asks for in a product.

Extrusion: A manufacturing process that utilizes a softened billet of material that is forced through a shape (or die) to allow for a continuous form, much like spaghetti.

**Factory Cost:** The cost of producing the product in the production location including materials, labor and overhead.

**Failure Mode Effects Analysis (FMEA):** A technique used at the development stage to determine the different ways in which a product may fail, and evaluating the consequences of each type of failure.

**Failure Rate:** The percentage of a firm's new products that make it to full market commercialization, but which fail to achieve the objectives set for them.

**Feasibility Activity:** The set of product development tasks in which major unknowns are examined to produce knowledge about how to resolve or overcome them or to clarify the nature of any limitations. Sometimes called exploratory investigations.

**Feasibility Determination:** The set of product development tasks in which major unknowns (technical or market) are examined to produce knowledge about how to resolve or overcome them or to clarify the nature of any limitations. Sometimes called exploratory investigation.

**Feature:** The solution to a consumer need or problem. Features provide benefits to consumers. The handle (feature) allows a laptop computer to be carried easily (benefit). Usually any one of several different features will be chosen to meet a customer need. For example, a carrying case with shoulder straps is another feature that allows a laptop computer to be carried easily.

**Feature Creep:** The tendency for designers or engineers to add more capability, functions and features to a product as development proceeds than were originally intended. These additions frequently cause schedule slip, development cost increases, and product cost increases.

**Feature Roadmap:** The evolution over time of the performance attributes associated with a product. Defines the specific features associated with each iteration/generation of a product over its lifetime, grouped into releases (sets of features that are commercialized). See also, "Product Life-Cycle Management" and "Cadence Plans".

**Field Testing:** Product use testing with users from the target market in the actual context in which the product will be used.

**Financial Success:** The extent to which a new product meets its profit, margin, and return on investment goals.
**Firefighting:** An unplanned diversion of scarce resources, and the reassignment of some of them to fix problems discovered late in a productís development cycle (See Repenning, *JPIM*, September 2001).

**Firm-Level Success:** The aggregate impact of the firmís proficiency at developing and commercializing new products. Several different specific measures may be used to estimate performance. (See Chapter 36 in *The PDMA HandBook 2nd Edition*).

**First-to-Market:** The first product to create a new product category or a substantial subdivision of a category.

**Flexible Gate:** A permissive or permeable gate in a Stage-Gate™ process that is less rigid than the traditional “go-stop-recycle” gate. Flexible gates are useful in shortening time-to-market. A permissive gate is one where the next stage is authorized although some work in the almost-completed stage has not yet been finished. A permeable gate is one where some work in a subsequent stage is authorized before a substantial amount of work in the prior stage is completed. (Robert G. Cooper, *JPIM*, 1994)

**Focus Groups:** A qualitative market research technique where 8 to 12 market participants are gathered in one room for a discussion under the leadership of a trained moderator. Discussion focuses on a consumer problem, product, or potential solution to a problem. The results of these discussions are not projectable to the general market.

**Forecast:** A prediction, over some defined time, of the success or failure of implementing a business planís decisions derived from an existing strategy. (See Chapter 23 of *The PDMA HandBook 2nd Edition*.)

**Function:** (1) An abstracted description of work that a product must perform to meet customer needs. A function is something the product or service must do. (2) Term describing an internal group within which resides a basic business capability such as engineering.

**Functional Elements:** The individual operations that a product performs. These elements are often used to describe a product schematically.

**Functional Pipeline Management:** Optimizing the flow of projects through all functional areas in the context of the companyís priorities.

**Functional Reviews:** A technical evaluation of the product and the development process from a functional perspective (such as mechanical engineering or manufacturing), in which a group of experts and peers review the product design in detail to identify weaknesses, incorporate lessons learned from past products, and make decisions about the direction of the design going forward. The technical community may perform a single review that evaluates the design from all perspectives, or individual functional departments may conduct independent reviews.

**Functional Schematic:** A schematic drawing that is made up of all of the functional elements in a product. It shows the productís functions as well as how material, energy, and signal flow through the product.
**Functional Testing:** Testing either an element of or the complete product to determine whether it will function as planned and as actually used when sold.

**Fuzzy Front End:** The messy “getting started” period of product development, when the product concept is still very fuzzy. Preceding the more formal product development process, it generally consists of three tasks: strategic planning, concept generation, and, especially, pre-technical evaluation. These activities are often chaotic, unpredictable, and unstructured. In comparison, the subsequent new product development process is typically structured, predictable, and formal, with prescribed sets of activities, questions to be answered, and decisions to be made. (See Chapter 6 of *The PDMA HandBook 2nd Edition.*)

**Fuzzy Gates:** Fuzzy gates are conditional or situational, rather than full “go” decisions. Their purpose is to try to balance timely decisions and risk management. Conditional go decisions are “go,” subject to a task being successfully completed by a future, but specified, date. Situational gates have some criteria that must be met for all projects, and others that are only required for some projects. For example, a new-to-the-world product may have distribution feasibility criteria that a line extension will not have. (R.G. Cooper, *JPIM*, 1994) (See also Flexible Gates)

**Gamma Test:** A product use test in which the developers measure the extent to which the item meets the needs of the target customers, solves the problem(s) targeted during development, and leaves the customer satisfied.

**Gamma / In-Market Testing:** Not to be confused with Test Marketing (which is an overall determination of marketability and financial viability), the In-Market Test is an evaluation of the product itself and its marketing plan through placement of the product in a field setting. Another way of thinking about this is to view it as an in-market test using a real distribution channel in a constrained geographic area or two, for a specific period of time, with advertising, promotion and all associated elements of the marketing plan working. In addition to an evaluation of the features and benefits of the product, the components of the marketing plan are tested in a real world environment to make sure they deliver the desired results. The key element being evaluated is the synergy of the product and the marketing plan, not the individual components. The Market test should deliver a more accurate forecast of dollar and unit sales volume, as opposed to the approximate range estimates produced earlier in the Discovery phase. It should also produce diagnostic information on any facet of the proposed launch that may need adjustment, be it product, communications, packaging, positioning, or any other element of the launch plan.

**Gantt Chart:** A horizontal bar chart used in project scheduling and management that shows the start date, end date and duration of tasks within the project.

**Gap Analysis:** The difference between projected outcomes and desired outcomes. In product development, the gap is frequently measured as the difference between expected and desired revenues or profits from currently planned new products if the corporation is to meet its objectives.

**Garage Bill Scheduling:** A scheduling tool that details every task, no matter how small, that must be completed to achieve a deliverable.
Gate: The point at which a management decision is made to allow the product development project to proceed to the next stage, to recycle back into the current stage to better complete some of the tasks, or to terminate. The number of gates varies by company. (See Chapter 21 in The PDMA HandBook 2nd Edition).

Gatekeepers: The group of managers who serve as advisors, decision-makers and investors in a Stage-Gate™ process. Using established business criteria, this multifunctional group reviews new product opportunities and project progress, and allocates resources accordingly at each gate. This group is also commonly called a Product Approval Committee or Portfolio Management Team.

Graceful Degradation: When a product, system or design slides into defective operation a little at a time, while providing ample opportunity to take corrective preventative action or protect against the worst consequences of failure before it happens. The opposite is catastrophic failure.

Gross Rating Points (GRPs): A measure of the overall media exposure of consumer households (reach times frequency).

Groupware: Software designed to facilitate group efforts such as communication, workflow coordination, and collaborative problem solving. The term generally refers to technologies relying on modern computer networks (external or internal).

Growth Stage: The second stage of the product life cycle. This stage is marked by a rapid surge in sales and market acceptance for the good or service. Products that reach the growth stage have successfully "crossed the chasm."

Heavyweight Team: An empowered project team with adequate resourcing to complete the project. Personnel report to the team leader and are co-located as practical.

Hunting for Hunting Grounds: A structured methodology for completing the Fuzzy Front End of new product development (see Chapter 2 of The PDMA ToolBook 1).

Hunting Ground: A discontinuity in technology or the market that opens up a new product development opportunity.

Hurdle Rate: The minimum return on investment or internal rate of return percentage a new product must meet or exceed as it goes through development.

Idea: The most embryonic form of a new product or service. It often consists of a high-level view of the envisioned solution needed to solve the problem identified by a person, team or firm.

Idea Generation (Ideation): All of those activities and processes that lead to creating broad sets of solutions to consumer problems. These techniques may be used in the early stages of product development to generate initial product concepts, in the intermediate stages for overcoming implementation issues, in the later stages for planning
launch and in the post-mortem stage to better understand success and failure in the marketplace. (See Chapter 17 in The PDMA HandBook 2nd Edition.)

**Idea Exchange:** A divergent thinking technique that provides a structure for building on different ideas in a quiet, non-judgmental setting that encourages reflection.

**Idea Merit Index:** An internal metric used to impartially rank new product ideas.

**Implementation Team:** A team that converts the concepts and good intentions of the "should-be" process into practical reality.

**Implicit Product Requirement:** What the customer expects in a product, but does not ask for, and may not even be able to articulate.

**Importance Surveys:** A particular type of attribute testing in which respondents are asked to evaluate how important each of the product attributes are in their choice of products or services.

**Incremental Improvement:** A small change made to an existing product that serves to keep the product fresh in the eyes of customers.

**Incremental Innovation:** An innovation that improves the conveyance of a currently delivered benefit, but produces neither a behavior change nor a change in consumption.

**Individual Depth Interviews (IDI's):** A qualitative market research technique in which a skilled moderator conducts an open-ended, in-depth, guided conversation with an individual respondent (as opposed to in a (focus) group format). Such an interview can be used to better understand the respondent's thought processes, motivations, current behaviors, preferences, opinions, and desires.

**Industrial Design (ID):** The professional service of creating and developing concepts and specifications that optimize the function, value, and appearance of products and systems for the mutual benefit of both user and manufacturer [Industrial Design Society of America]. (See Chapters 24 and 25 of The PDMA HandBook 2nd Edition.)

**Information:** Knowledge and insight, often gained by examining data.

**Information Acceleration:** A concept testing method employing virtual reality. In it, a virtual buying environment is created that simulates the information available (product, societal, political, and technological) in a real purchase situation at some time several years or more into the future.

**Informed Intuition:** Using the gathered experiences and knowledge of the team in a structured manner.

**Initial Screening:** The first decision to spend resources (time or money) on a project. The project is born at this point. Sometimes called "idea screening."
**Injection Molding:** A process that utilizes melted plastics injected into steel or aluminum molds which ultimately result in finished production parts.

**In-licensed:** The acquisition from external sources of novel product concepts or technologies for inclusion in the aggregate NPD portfolio.

**Innovation:** A new idea, method, or device. The act of creating a new product or process. The act includes invention as well as the work required to bring an idea or concept into final form.

**Innovation-Based Culture:** a corporate culture where senior management teams and employees work habitually to reinforce best practices that systematically and continuously churn out valued new products to customers.

**Innovation Engine:** The creative activities and people that actually think of new ideas. It represents the synthesis phase when someone first recognizes that customer and market opportunities can be translated into new product ideas.

**Innovation Steering Committee:** the senior management team or a subset of it responsible for gaining alignment on the strategic and financial goals for new product development, as well as setting expectations for Portfolio and Development Teams.

**Innovation Strategy:** The firmís positioning for developing new technologies and products. One categorization divides firms into Prospectors (those who lead in technology, product and market development, and commercialization, even though an individual product may not lead to profits), Analyzers (fast followers, or imitators, who let the prospectors lead, but have a product development process organized to imitate and commercialize quickly any new product a Prospector has put on the market), Defenders (those who stake out a product turf and protect it by whatever means, not necessarily through developing new products), and Reactors (those who have no coherent innovation strategy). (See Chapter 2 of *The PDMA HandBook 2nd Edition*.)

**Innovative Problem Solving:** Methods that combine rigorous problem definition, pattern-breaking generation of ideas, and action planning that results in new, unique, and unexpected solutions.

**Integrated Architecture:** A product architecture in which most or all of the functional elements map into a single or very small number of chunks. It is difficult to subdivide an integrally designed product into partially-functioning components.

**Integrated Product Development (IPD):** A philosophy that systematically employs an integrated team effort from multiple functional disciplines to develop effectively and efficiently new products that satisfy customer needs.

**Intellectual Property (IP):** Information, including proprietary knowledge, technical competencies, and design information, which provides commercially exploitable competitive benefit to an organization.
**Internal Rate of Return (IRR):** The discount rate at which the present value of the future cash flows of an investment equals the cost of the investment. The discount rate with a net present value of 0.

**Intrapreneur:** The large-firm equivalent of an entrepreneur. Someone who develops new enterprises within the confines of a large corporation.

**Introduction Stage:** The first stage of a product's commercial launch and the product life cycle. This stage is generally seen as the point of market entry, user trial, and product adoption.

**ISO-9000:** A set of 5 auditable standards of the International Organization for Standardization that establishes the role of a quality system in a company and which is used to assess whether the company can be certified as compliant to the standards. ISO-9001 deals specifically with new products.

**Issue:** A certainty that will affect the outcome of a project, either negatively or positively. Issues require investigation as to their potential impacts, and decisions about how to deal with them. Open issues are those for which the appropriate actions have not been resolved, while closed issues are ones that the team has dealt with successfully.

**Journal of Product Innovation Management:** The premier academic journal in the field of innovation, new product development and management of technology. The Journal, which is owned by the PDMA, is dedicated to the advancement of management practice in all of the functions involved in the total process of product innovation. Its purpose is to bring to managers and students of product innovation the theoretical structures and the practical techniques that will enable them to operate at the cutting edge of effective management practice. Web site: www.pdma.org/journal.

**Kaizen:** A Japanese term describing a process or philosophy of continuous, incremental improvement.

**Launch:** The process by which a new product is introduced into the market for initial sale. (See Chapter 30 of *The PDMA HandBook 2nd Edition*.)

**Lead Users:** Users for whom finding a solution to one of their consumer needs is so important that they have modified a current product or invented a new product to solve the need themselves because they have not found a supplier who can solve it for them. When these consumers' needs are portents of needs that the center of the market will have in the future, their solutions are new product opportunities.

**Learning Organization:** An organization that continuously tests and updates the experience of those in the organization, and transforms that experience into improved work processes and knowledge that is accessible to the whole organization and relevant to its core purpose. (see Continuous Learning Activity)

**Life Cycle Cost:** The total cost of acquiring, owning, and operating a product over its useful life. Associated costs may include: purchase price, training expenses, maintenance expenses, warrantee costs, support, disposal, and profit loss due to repair downtime.
**Lightweight Team:** New product team charged with successfully developing a product concept and delivering to the marketplace. Resources are, for the most part, not dedicated and the team depends on the technical functions for resources necessary to get the work accomplished.

**Line Extension:** A form of derivative product that adds or modifies features without significantly changing the product functionality.

**Long-term Success:** The new product’s performance in the long run or at some large fraction of the product’s life cycle.

**"M" Curve:** An illustration of the volume of ideas generated over a given amount of time. The illustration often looks like two arches from the letter M.

**Maintenance Activity:** That set of product development tasks aimed at solving initial market and user problems with the new product or service. (See Chapter 33 of *The PDMA HandBook 2nd Edition*).

**Mating Part:** A general reference to one of two parts that join together.

**Manufacturability:** The extent to which a new product can be easily and effectively manufactured at minimum cost and with maximum reliability.

**Manufacturing Assembly Procedure:** Procedural documents normally prepared by manufacturing personnel that describe how a component, subassembly, or system will be put together to create a final product.

**Manufacturing Design:** The process of determining the manufacturing process that will be used to make a new product. (See Chapter 23 of *The PDMA HandBook 1st Edition*.)

**Manufacturing Test Specification and Procedure:** Documents prepared by development and manufacturing personnel that describe the performance specifications of a component, subassembly, or system that will be met during the manufacturing process, and that describe the procedure by which the specifications will be assessed.

**Market Conditions:** The characteristics of the market into which a new product will be placed, including the number of competing products, level of competitiveness, and growth rate.

**Market Development:** Taking current products to new consumers or users. This effort may involve making some product modifications.

**Market-Driven:** Allowing the marketplace to direct a firmís product innovation efforts.

**Market Research:** Information about the firmís customers, competitors, or markets. Information may be from secondary sources (already published and publicly available) or primary sources (from customers themselves). Market research may be qualitative in nature, or quantitative (see entries for these two types of market research).
**Market Segmentation:** Market segmentation is defined as a framework by which to sub-divide a larger heterogeneous market into smaller, more homogeneous parts. These segments can be defined in many different ways: demographic (men vs. women, young vs. old, or richer vs. poorer), behavioral (those who buy on the phone vs. the internet vs. retail, or those who pay with cash vs. credit cards), or attitudinal (those who believe that store brands are just as good as national brands vs. those who don’t). There are many analytical techniques used to identify segments such as cluster analysis, factor analysis, or discriminate analysis. But the most common method is simply to hypothesize a potential segmentation definition and then to test whether any differences that are observed are statistically significant (See Chapter 13 of *The PDMA HandBook 2nd Edition*).

**Market Share:** A company’s sales in a product area as a percent of the total market sales in that area.

**Market Testing:** The product development stage when the new product and its marketing plan are tested together. A market test simulates the eventual marketing mix and takes many different forms, only one of which bears the name *test market*.

**Matrix Converger:** A convergent thinking tool that uses a matrix to help synthesize data into key concepts with numbered ratings.

**Maturity Stage:** The third stage of the product life cycle. This is the stage where sales begin to level off due to market saturation. It is a time when heavy competition, alternative product options, and (possibly) changing buyer or user preferences start to make it difficult to achieve profitability.

**Metrics:** A set of measurements to track product development and allow a firm to measure the impact of process improvements over time. These measures generally vary by firm but may include measures characterizing both aspects of the process, such as time to market, and duration of particular process stages, as well as outcomes from product development such as the number of products commercialized per year and percentage of sales due to new products.

**Modular Architecture:** A product architecture in which each functional element maps into its own physical chunk. Different chunks perform different functions, the interactions between the chunks are minimal, and they are generally well-defined.

**Monitoring Frequency:** The frequency with which performance indicators are measured.

**Morphological Analysis:** A matrix tool that breaks a product down by needs met and technology components, allowing for targeted analysis and idea creation.

**Multifunctional Team:** A group of individuals brought together from the different functional areas of a business to work on a problem or process that requires the knowledge, training and capabilities across the areas to successfully complete the work. (See Chapters 9 and 10 in *The PDMA HandBook 2nd Edition* and Chapter 6 in *The PDMA ToolBook 1.*) (See also “Cross-Functional Team”.)
**Needs Statement:** Summary of consumer needs and wants, described in customer terms, to be addressed by a new product. (See Chapter 14 of *The PDMA Handbook 2nd Edition*).

**Net Present Value (NPV):** Method to evaluate comparable investments in very dissimilar projects by discounting the current and projected future cash inflows and outflows back to the present value based on the discount rate, or cost of capital, of the firm.

**Network Diagram:** A graphical diagram with boxes connected by lines that shows the sequence of development activities and the interrelationship of each task with another. Often used in conjunction with a Gantt Chart.

**New Concept Development Model:** A theoretical construct that provides for a common terminology and vocabulary for the Fuzzy Front End. The model consists of three parts: the uncontrollable influencing factors, the controllable engine that drives the activities in the Fuzzy Front End and five activity elements: Opportunity Identification, Opportunity Analysis, Idea Generation and Enrichment, Idea Selection, and Concept Definition. (see Chapter 1 of *The PDMA ToolBook 1*.)

**New Product:** A term of many opinions and practices, but most generally defined as a product (either a good or service) new to the firm marketing it. Excludes products that are only changed in promotion.

**New Product Development (NPD):** The overall process of strategy, organization, concept generation, product and marketing plan creation and evaluation, and commercialization of a new product. Also frequently referred to just as "product development."

**New Product Introduction (NPI):** The launch or commercialization of a new product into the marketplace. Takes place at the end of a successful product development project. (See Chapter 30 of *The PDMA Handbook 2nd Edition*.)

**New Product Development Process (NPD Process):** A disciplined and defined set of tasks and steps that describe the normal means by which a company repetitively converts embryonic ideas into salable products or services. (See Chapters 4 and 5 of *The PDMA Handbook 2nd Edition*.)

**New Product Development Professional (NPDP):** A New Product Development Professional is certified by the PDMA as having mastered the body of knowledge in new product development, as proven by performance on the Certification test. To qualify for the NPDP certification examination, a candidate must hold a bachelor's or higher university degree (or an equivalent degree) from an accredited institution and have spent a minimum of two years working in the new product development field.

**New Product Idea:** A preliminary plan or purpose of action for formulating new products or services.

**New-to-the-World Product:** A good or service that has never before been available to either consumers or producers. The automobile was new-to-the-world when it was introduced, as were microwave ovens and pet rocks.
Nominal Group Process: A brainstorming process in which members of a group first write their ideas out individually, and then participate in group discussion about each idea.

Non-Destructive Test: A test of the product that retains the product's physical and operational integrity.

Non-Product Advantage: Elements of the marketing mix that create competitive advantage other than the product itself. These elements can include marketing communications, distribution, company reputation, technical support, and associated services.

Operational Strategy: Operational Strategy is an activity that determines the best way to develop a new product while minimizing costs, ensuring adherence to schedule, and delivering a quality product. For product development, the objective is to maximize the return on investment and deliver a high quality product in the optimal market window of opportunity. [can the portfolio implications of operational strategy be incorporated?]

Operations: A term that includes manufacturing but is much broader, usually including procurement, physical distribution, and, for services, management of the offices or other areas where the services are provided.

Operatorís Manual: The written instructions to the users of a product or process. These may be intended for the ultimate customer or for the use of the manufacturing operation.

Opportunity: A business or technology gap that a company or individual realizes, by design or accident, that exists between the current situation and an envisioned future in order to capture competitive advantage, respond to a threat, solve a problem or ameliorate a difficulty.

Outsourcing: The process of procuring a good or service from someone else, rather than the firm producing it themselves.

Outstanding Corporate Innovator Award: An annual PDMA award given to firms acknowledged through a formal vetting process as being outstanding innovators. The basic requirements for receiving this award, which is given yearly by the PDMA, are: 1. Sustained success in launching new products over a five-year time frame; 2. Significant company growth from new product success; 3. A defined new product development process, that can be described to others; 4. Distinctive innovative characteristics and intangibles.

Pareto Chart: A bar graph with the bars sorted in descending order used to identify the largest opportunity for improvement. Pareto charts distinguish the "vital few" from the "useful many."

Participatory Design: A democratic approach to design that does not simply make potential users the subjects of user testing, but empowers them to be a part of the design and decision-making process.

Payback: The time, usually in years, from some point in the development process until the commercialized product or service has recovered its costs of development and marketing. While some firms take the point of full-scale market introduction of a new product as the starting point, others begin the clock at the start of development expense.
**Payout**: The amount of profits and their timing expected from commercializing a new product.

**Perceptual Mapping**: A quantitative market research tool used to understand how customers think of current and future products. Perceptual maps are visual representations of the positions that sets of products hold in consumers’ minds.

**Performance Indicators**: Criteria on which the performance of a new product in the market are evaluated. (See Chapter 29 of *The PDMA Handbook 2nd Edition*).

**Performance Measurement System**: The system that enables the firm to monitor the relevant performance indicators of new products in the appropriate time frame.

**Performance/Satisfaction Surveys**: A particular type of market research tool in which respondents are asked to evaluate how well a particular product or service is performing and/or how satisfied they are with that product or service on a specific list of attributes. It is often useful to ask respondents to evaluate more than one product or service on these attributes in order to be able to compare them and to better understand what they like and dislike about one versus the other. In this way, this information can become a key input to the development process for next generation product modifications.

**PERT (Program Evaluation and Review Technique)**: An event-oriented network analysis technique used to estimate project duration when there is a high degree of uncertainty in estimates of duration times for individual activities.

**Phase Review Process**: A staged product development process in which first one function completes a set of tasks, then passes the information they generated sequentially to another function which in turn completes the next set of tasks and then passes everything along to the next function. Multifunctional teamwork is largely absent in these types of product development processes, which may also be called baton-passing processes. Most firms have moved from these processes to Stage-Gate™ processes using multifunctional teams.

**Physical Elements**: The components that make up a product. These can be both components (or individual parts) in addition to minor subassemblies of components.

**Pilot Gate Meeting**: A trial, informal gate meeting usually held at the launch of a Stage-Gate™ process to test the design of the process and familiarize participants with the Stage-Gate™ process.

**Pipeline (product pipeline)**: The scheduled stream of products in development for release to the market.

**Pipeline Alignment**: The balancing of project demand with resource supply. (See Chapter 5 in *The PDMA Handbook 1st Edition* and Chapter 3 in *The PDMA Handbook 2nd Edition*.)

**Pipeline Inventory**: Production of a new product that has not yet been sold to end consumers, but which exists within the distribution chain.
**Pipeline Loading:** The volume and time phasing of new products in various stages of development within an organization.

**Pipeline Management:** A process that integrates product strategy, project management, and functional management to continually optimize the cross-project management of all development-related activities. (See Chapter 5 in *The PDMA HandBook 1st Edition* and Chapter 3 in *The PDMA HandBook 2nd Edition*.)

**Pipeline Management Enabling Tools:** The decision-assistance and data-handling tools that aid managing the pipeline. The decision-assistance tools allow the pipeline team to systematically perform trade-offs without losing sight of priorities. The data-handling tools deal with the vast amount of information needed to analyze project priorities, understand resource and skillset loads, and perform pipeline analysis.

**Pipeline Management Process:** Consists of three elements; pipeline management teams, a structured methodology and enabling tools.

**Pipeline Management Teams:** The teams of people at the strategic, project and functional levels responsible for resolving pipeline issues.

**Platform Product:** The design and components that are shared by a set of products in a product family. From this platform, numerous derivative products can be designed. (See also product platform)

**Platform Roadmap:** A graphical representation of the current and planned evolution of products developed by the organization, showing the relationship between the architecture and features of different generations of products.

**Porter’s Five Forces:** Analysis framework developed by Michael Porter in which a company is evaluated based on its capabilities versus competitors, suppliers, customers, barriers to entry, and the threat of substitutes. (See Porter, Michael. 1998. *Competitive Strategy*. The Free Press)

**Portfolio:** Commonly referred to as a set of projects or products that a company is investing in and making strategic trade-offs against. (See also project portfolio and product portfolio)

**Portfolio Criteria:** The set of criteria against which the business judges both proposed and currently active product development projects to create a balanced and diverse mix of ongoing efforts.

**Portfolio Management:** A business process by which a business unit decides on the mix of active projects, staffing and dollar budget allocated to each project currently being undertaken. See also pipeline management. (See Chapter 13 of *The PDMA ToolBook 1st Edition* and Chapter 3 of *The PDMA HandBook 2nd Edition*.)

**Portfolio Map:** A chart or graph which graphically displays the relative scalar strength and weakness of a portfolio of products, or competitors in two orthogonal dimensions of customer value or other parameters. Typical portfolio maps include "Price vs. performance", Newness to company vs. newness to market; Risk vs. return.
**Portfolio Rollout Scenarios:** hypothetical illustrations of the number and magnitude of new products that would need to be launched over a certain time frame to reach the desired financial goals; accounts for success/failure rates and considers company and competitive benchmarks.

**Portfolio Team:** a short-term, cross-functional, high-powered team focused on shaping the concepts and business cases for a portfolio of new product concepts within a market, category, brand or business to be launched over a 2-5 year time period, depending on the pace of the industry.

**Pre-Production Unit:** A product that looks like and acts like the intended final product, but is made either by hand or in pilot facilities rather than by the final production process.

**Preliminary Bill of Materials (PBOM):** A forecasted listing of all the subassemblies, intermediate parts, raw materials, and engineering design, tool design, and customer inputs that are expected to go into a parent assembly showing the quantity of each required to make an assembly.

**Process Champion:** The person responsible for the daily promotion of and encouragement to use a formal business process throughout the organization. They are also responsible for the ongoing training, innovation input and continuous improvement of the process.

**Process Managers:** The operational managers responsible for ensuring the orderly and timely flow of ideas and projects through the process.

**Process Map:** A workflow diagram that uses an x-axis for process time and a y-axis that shows participants and tasks.

**Process Mapping:** The act of identifying and defining all of the steps, participants, inputs, outputs, and decisions associated with completing any particular process.

**Process Maturity Level:** The amount of movement of a reengineered process from the "as-is" map, which describes how the process operated initially, to the "should-be" map of the desired future state of the operation.

**Process Owner:** The executive manager responsible for the strategic results of the NPD process. This includes process throughput, quality of output, and participation within the organization. (See Section 3 of *The PDMA ToolBook* for 4 tools that process owners might find useful, and see Chapter 5 of *The PDMA HandBook*.)

**Process Re-engineering:** A discipline to measure and modify organizational effectiveness by documenting, analyzing, and comparing an existing process to "best-in-class" practice, and then implementing significant process improvements or installing a whole new process.

**Product:** Term used to describe all goods, services, and knowledge sold. Products are bundles of attributes (features, functions, benefits, and uses) and can be either tangible, as in the case of physical goods, or intangible, as in the case of those associated with service benefits, or can be a combination of the two.
**Product and Process Performance Success:** The extent to which a new product meets its technical performance and product development process performance criteria.

**Product Approval Committee (PAC):** The group of managers who serve as advisors, decision-makers and investors in a Stage-Gate™ process: a companyís NPD executive committee. Using established business criteria, this multifunctional group reviews new product opportunities and project progress, and allocates resources accordingly at each gate. (See Chapter 7 of *The PDMA ToolBook 1* and Chapters 21 and 22 of *The PDMA Handbook 2nd Edition*).

**Product Architecture:** The way in which the functional elements are assigned to the physical chunks of a product and the way in which those physical chunks interact to perform the overall function of the product. (See Chapter 16 of *The PDMA Handbook 1st Edition*.)

**Project Decision Making & Reviews:** A series of Go/No-Go decisions about the viability of a project that ensure the completion of the project provides a product that meets the marketing and financial objectives of the company. This includes a systematic review of the viability of a project as it moves through the various phase stage gates in the development process. These periodic checks validate that the project is still close enough to the original plan to deliver against the business case (See Chapters 21 and 22 of *The PDMA Handbook 2nd Edition*).

**Product Definition:** Defines the product, including the target market, product concept, benefits to be delivered, positioning strategy, price point, and even product requirements and design specifications.

**Product Development:** The overall process of strategy, organization, concept generation, product and marketing plan creation and evaluation, and commercialization of a new product. (See Chapters 19 - 22 of *The PDMA Handbook 1st Edition*.)


**Product Development Check List:** A pre-determined list of activities and disciplines responsible for completing those activities used as a guideline to ensure that all the tasks of product development are considered prior to commercialization. (See Ray Riek, *JPIM*, 2001)

**Product Development Engine:** The systematic set of corporate competencies, principles, processes, practices, tools, methods and skills which combine to define the "how" of an organization's ability to drive high value products to the market in a competitive timely manner.
**Product Development Portfolio:** The collection of new product concepts and projects that are within the firm's ability to develop, are most attractive to the firm's customers and deliver short- and long-term corporate objectives, spreading risk and diversifying investments. (See Chapter 13 in *The PDMA ToolBook 1st Edition* and Chapter 3 of Chapters 21 and 22 of *The PDMA HandBook 2nd Edition*.)

**Product Development Process:** A disciplined and defined set of tasks, steps, and phases that describe the normal means by which a company repetitively converts embryonic ideas into salable products or services. (See Chapters 4 and 5 of *The PDMA HandBook 2nd Edition*.)

**Product Development Strategy:** The strategy that guides the product innovation program.

**Product Development Team:** A multifunctional group of individuals chartered to plan and execute a new product development project.

**Product Discontinuation:** A product or service that is withdrawn or removed from the market because it no longer provides an economic, strategic, or competitive advantage in the firm's portfolio of offerings. (See Chapter 28 of *The PDMA HandBook 1st Edition*.)

**Product Discontinuation Timeline:** The process and timeframe in which a product is carefully withdrawn from the marketplace. The product may be discontinued immediately after the decision is made, or it may take a year or more to implement the discontinuation timeline, depending on the nature and conditions of the market and product.

**Product Failure:** A product development project that does not meet the objective of its charter or marketplace.

**Product Family:** The set of products that have been derived from a common product platform. Members of a product family normally have many common parts and assemblies.

**Product Innovation Charter (PIC):** A critical strategic document, the Product Innovation Charter (PIC) is the heart of any organized effort to commercialize a new product. It contains the reasons the project has been started, the goals, objectives, guidelines, and boundaries of the project. It is the "who, what, where, when, and why" of the product development project. In the Discovery phase, the charter may contain assumptions about market preferences, customer needs, and sales and profit potential. As the project enters the Development phase, these assumptions are challenged through prototype development and in-market testing. While business needs and market conditions can and will change as the project progresses, one must resist the strong tendency for projects to wander off as the development work takes place. The PIC must be constantly referenced during the Development phase to make sure it is still valid, that the project is still within the defined arena, and that the opportunity envisioned in the Discovery phase still exists.

**Product Interfaces:** Internal and external interfaces impacting the product development effort, including the nature of the interface, action required, and timing.
**Product Life Cycle:** The four stages that a new product is thought to go through from birth to death: introduction, growth, maturity, and decline. Controversy surrounds whether products go through this cycle in any predictable way.

**Product Life-Cycle Management:** Changing the features and benefits of the product, elements of the marketing mix, and manufacturing operations over time to maximize the profits obtainable from the product over its lifecycle. (See Chapter 33 of *The PDMA HandBook 2nd Edition*).

**Product Line:** A group of products marketed by an organization to one general market. The products have some characteristics, customers, and uses in common and may also share technologies, distribution channels, prices, services, and other elements of the marketing mix.

**Product Management:** Ensuring over time that a product or service profitably meets the needs of customers by continually monitoring and modifying the elements of the marketing mix, including: the product and its features, the communications strategy, distribution channels and price.

**Product Manager:** The person assigned responsibility for overseeing all of the various activities that concern a particular product. Sometimes called a brand manager in consumer packaged goods firms.

**Product Plan:** Detailed summary of all the key elements involved in a new product development effort such as product description, schedule, resources, financial estimations and interface management plan.

**Product Platforms:** Underlying structures or basic architectures that are common across a group of products or that will be the basis of a series of products commercialized over a number of years.

**Product Portfolio:** The set of products and product lines the firm has placed in the market. (See Chapter 13 of *The PDMA ToolBook 1.*).

**Product Positioning:** how a product will be marketed to customers. The product positioning refers to the set of features and value that is valued by (and therefore defined by) the target customer audience, relative to competing products.

**Product Rejuvenation:** The process by which a mature or declining product is altered, updated, repackaged or redesigned to lengthen the product life cycle and in turn extend sales demand.

**Product Requirements Document:** The contract between, at a minimum, marketing and development, describing completely and unambiguously the necessary attributes (functional performance requirements) of the product to be developed, as well as information about how achievement of the attributes will be verified (i.e. through testing).

**Product Superiority:** Differentiation of a firm’s products from those of competitors, achieved by providing consumers with greater benefits and value. This is one of the critical success factors in commercializing new products.
**Program Manager:** The organizational leader charged with responsibility of executing a portfolio of NPD projects. (See Section 4 of *The PDMA ToolBook 1* for 4 product development tools a program manager may find helpful.)

**Project Leader:** The person responsible for managing an individual new product development project through to completion. He or she is responsible for ensuring that milestones and deliverables are achieved and that resources are utilized effectively. See also Team Leader. (See Sections 1 and 2 of *The PDMA ToolBook 1* for 8 product development tools for project leaders)

**Project Management:** The set of people, tools, techniques, and processes used to define the project’s goal, plan all the work necessary to reach that goal, lead the project and support teams, monitor progress, and ensure that the project is completed in a satisfactory way.

**Project Pipeline Management:** Fine-tuning resource deployment smoothly for projects during ramp-up, ramp-down, and mid-course adjustments.

**Project Plan:** A formal, approved document used to guide both project execution and control. Documents planning assumptions and decisions, facilitates communication among stakeholders, and documents approved scope, cost, and schedule deadlines.

**Project Portfolio:** The set of projects in development at any point in time. These will vary in the extent of newness or innovativeness. (See Chapter 13 in *The PDMA ToolBook 1* and Chapter 3 of *The PDMA HandBook 2nd Edition*.)

**Project Resource Estimation:** This activity provides one of the major contributions to the project cost calculation. Turning functional requirements into a realistic cost estimate is a key factor in the success of a product delivering against the business plan.

**Project Sponsor:** The authorization and funding source of the project. The person who defines the project goals and to whom the final results are presented. Typically a senior manager.

**Project Strategy:** The goals and objectives for an individual product development project. It includes how that project fits into the firm’s product portfolio, who the target market is, and what problems the product will solve for those customers. (See Chapter 2 in *The PDMA HandBook 2nd Edition*.)

**Project Team:** A multifunctional group of individuals chartered to plan and execute a new product development project.

**Prospectors:** Firms that lead in technology, product and market development and commercialization, even though an individual product may not lead to profits. Their general goal is to be first to market with any particular innovation.
**Protocol:** A statement of the attributes (mainly benefits; features only when required) that a new product is expected to have. A protocol is prepared prior to assigning the project to the technical development team. The benefits statement is agreed to by all parties involved in the project.

**Prototype:** A physical model of the new product concept. Depending upon the purpose, prototypes may be non-working, functionally working, or both functionally and aesthetically complete.

**Psychographics:** Characteristics of consumers that, rather than being purely demographic, measure their attitudes, interests, opinions, and lifestyles.

**Pull-Through:** The revenue created when a new product or service positively impacts the sales of other, existing products or services (the obverse of cannibalization).

**Q-Sorts:** A process for sorting and ranking complex issues.

**Qualitative Cluster Analysis:** An individual- or group-based process using Informed Intuition for clustering and connecting data points.

**Qualitative Marketing Research:** Research conducted with a very small number of respondents, either in groups or individually, to gain an impression of their beliefs, motivations, perceptions and opinions. Frequently used to gather initial consumer needs and obtain initial reactions to ideas and concepts. Results are not representative of the market in general or projectable. Qualitative marketing research is used to show why people buy a particular product, whereas quantitative marketing research reveals how many people buy it. (See Chapters 14-16 of The PDMA HandBook 2nd Edition.)

**Quality:** The collection of attributes, which when present in a product, means a product has conformed to or exceeded customer expectations.

Quality Assurance/Compliance: Function responsible for monitoring and evaluating development policies and practices, to ensure they meet company and applicable regulatory standards.

**Quality-by-Design:** The process used to design quality into the product, service, or process from the inception of product development.

**Quality Control Specification and Procedure:** Documents that describe the specifications and the procedures by which they will be measured which a finished subassembly or system must meet before judged ready for shipment.

**Quality Function Deployment (QFD):** A structured method employing matrix analysis for linking what the market requires to how it will be accomplished in the development effort. This method is most frequently used during the stage of development when a multifunctional team agrees on how customer needs relate to product specifications and the features that deliver those needs. By explicitly linking these aspects of product design, QFD minimizes the possibility of omitting important design characteristics or interactions across design characteristics. QFD is also an
important mechanism in promoting multifunctional teamwork. Developed and introduced by Japanese auto manufacturers, QFD is widely used in the automotive industry.

**Quantitative Market Research:** Consumer research, often surveys, conducted with a large enough sample of consumers to produce statistically reliable results that can be used to project outcomes to the general consumer population. Used to determine importance levels of different customer needs, performance ratings of and satisfaction with current products, probability of trial, repurchase rate, and product preferences. These techniques are used to reduce the uncertainty associated with many other aspects of product development. (See Chapter 18 of *The PDMA Handbook 2nd Edition*.)

**Radical Innovation:** A new product, generally containing new technologies, that significantly changes behaviors and consumption patterns in the marketplace.

**Rapid Prototyping:** Any of a variety of processes that avoid tooling time in producing prototypes or prototype parts and therefore allow (generally non-functioning) prototypes to be produced within hours or days rather than weeks. These prototypes are frequently used to test quickly the product product’s technical feasibility or consumer interest.

**Reactors:** Firms that have no coherent innovation strategy. They only develop new products when absolutely forced to by the competitive situation.

**Realization Gap:** The time between first perception of a need and the launch of a product that fills that need.

**Relay-Race Process:** A staged product development process in which first one function completes a set of tasks, then passes the information they generates sequentially to another function, which in turn completes the next set of tasks and then passes everything along to the next function. Multifunctional teamwork is largely absent in these types of product development processes, which may also be called phase review or baton-passing processes.

**Render:** Process that industrial designers use to visualize their ideas by putting their thoughts on paper with any number of combinations of color markers, pencils and highlighters, or computer visualization software.

**Reposition:** To change the position of the product in the minds of customers, either on failure of the original positioning or to react to changes in the marketplace. Most frequently accomplished through changing the marketing mix rather than redeveloping the product.

**Resource Matrix:** An array that shows the percentage of each non-managerial personís time that is to be devoted to each of the current projects in the firmís portfolio.

**Resource Plan:** Detailed summary of all forms of resources required to complete a product development project, including personnel, equipment, time, and finances.

**Responsibility Matrix:** This matrix indicates the specific involvement of each functional department or individual in each task or activity in each stage.
**Return on Ideas:** Reflects the potential value of an idea.

**Return on Investment (ROI):** A standard measure of project profitability, this is the discounted profits over the life of the project expressed as a percentage of initial investment.

**Rigid Gate:** A review point in a Stage-Gate™ process at which all the prior stage’s work and deliverables must be complete before work in the next stage can commence.

**Risk:** An event or condition that may or may not occur, but if it does occur will impact the ability to achieve a project’s objectives. In new product development, risks may take the form of market, technical, or organizational issues. For more on managing product development risks, see Chapters 8 and 15 in the *PDMA ToolBook 1* and Chapter 28 in *The PDMA HandBook 2nd Edition*.

**Risk Acceptance:** An uncertain event or condition for which the project team has decided not to change the project plan. A team may be forced to accept an identified risk when they are unable to identify any other suitable response to the risk.

**Risk Avoidance:** Changing the project plan to eliminate a risk or to protect the project objectives from any potential impact due to the risk.

**Risk Management:** The process of identifying, measuring, and mitigating the business risk in a product development project.

**Risk Mitigation:** Actions taken to reduce the probability and/or impact of a risk to below some threshold of acceptability.

**Risk Tolerance:** The level of risk that a project stakeholder is willing to accept. Tolerance levels are context specific. That is, stakeholders may be willing to accept different levels of risk for different types of risk, such as risks of project delay, price realization, and technical potential.

**Risk Transference:** Actions taken to shift the impact of a risk and the ownership of the risk response actions to a third party.

**Roadmapping:** A graphical multi-step process to forecast future market and/or technology changes, and then plan the products to address these changes.

**Robust Design:** The design of products to be less sensitive to variations, including manufacturing variation and misuse, increasing the probability that they will perform as intended.

"Rugby" Process: A product development process in which stages are partially or heavily overlapped rather than sequential with crisp demarcations between one stage and its successor.
**S-Curve (Technology S-Curve):** Technology performance improvements tend to progress over time in the form of an "S" curve. When first invented, technology performance improves slowly and incrementally. Then, as experience with a new technology accrues, the rate of performance increase grows and technology performance increases by leaps and bounds. Finally, some of the performance limits of a new technology start to be reached and performance growth slows. At some point, the limits of the technology may be reached and further improvements are not made. Frequently, the technology then becomes vulnerable to a substitute technology that is capable of making additional performance improvements. The substitute technology is usually on the lower, slower portion of its own "S" curve and quickly overtakes the original technology when performance accelerates during the middle (vertical) portion of the "S".

**Scanner Test Markets:** Special test markets that provide retail point-of-sale scanner data from panels of consumers to help assess the product's performance. First widely applied in the supermarket industry.

**Scenario Analysis:** A tool for envisioning alternate futures so that a strategy can be formulated to respond to future opportunities and challenges. (See Chapter 16 of the *PDMA ToolBook 1*.)

**Screening:** The process of evaluating and selecting new ideas or concepts to put into the project portfolio. Most firms now use a formal screening process with evaluation criteria that span customer, strategy, market, profitability and feasibility dimensions.

**Segmentation:** The process of dividing a large and heterogeneous market into more homogeneous subgroups. Each subgroup, or segment, holds similar views about the product, and values, purchases, and uses the product in similar ways. (See Chapter 13 of *The PDMA HandBook 2nd Edition.*)

**Senior Management:** That level of executive or operational management above the product development team that has approval authority or controls resources important to the development effort.

**Sensitivity Analysis:** A calculation of the impact that an uncertainty might have on the new product business case. It is conducted by setting upper and lower ranges on the assumptions involved and calculating the expected outcomes. (See Chapter 16 of *The PDMA ToolBook 1.*)

**Services:** Products, such as an airline flight or insurance policy, which are intangible or at least substantially so. If totally intangible, they are exchanged directly from producer to user, cannot be transported or stored and are instantly perishable. Service delivery usually involves customer participation in some important way. Services cannot be sold in the sense of ownership transfer, and they have no title of ownership.

**Short-Term Success:** The new product's performance shortly after launch, well within the first year of commercial sales.

**Should-Be Map:** A version of a process map depicting how a process will work in the future. A revised "as-is" process map. The result of the team's re-engineering work.
**Simulated Test Market:** A form of quantitative market research and pre-test marketing in which consumers are exposed to new products and to their claims in a staged advertising and purchase situation. Output of the test is an early forecast of expected sales or market share, based on mathematical forecasting models, management assumptions, and input of specific measurements from the simulation.

**Six Sigma:** A level of process performance that produces only 3.4 defects for every one million operations.

**Slip Rate:** Measures the accuracy of the planned project schedule according to the formula: Slip Rate = ([actual schedule/planned schedule] -1) * 100%.

**Specification:** A detailed description of the features and performance characteristics of a product. For example, a laptop computer’s specification may read as a 90 megahertz Pentium, with 16 megabytes of RAM and 720 megabytes of hard disk space, 3.5 hours of battery life, weight of 4.5 pounds, with an active matrix 256 color screen.

**Speed to Market:** The length of time it takes to develop a new product from an early initial idea for a new product to initial market sales. Precise definitions of the start and end point vary from one company to another, and may vary from one project to another within a company. (See Chapter 12 of *The PDMA Handbook 2nd Edition*.)

**Sponsor:** An informal role in a product development project, usually performed by a higher-ranking person in the firm who is not directly involved in the project, but who is ready to extend a helping hand if needed, or provide a barrier to interference by others.

**Stage:** One group of concurrently accomplished tasks, with specified outcomes and deliverables, of the overall product development process.

**Stage-Gate™ Process:** A widely employed product development process that divides the effort into distinct time-sequenced stages separated by management decision gates. Multifunctional teams must successfully complete a prescribed set of related cross-functional tasks in each stage prior to obtaining management approval to proceed to the next stage of product development. The framework of the Stage-Gate™ process includes work-flow and decision-flow paths and defines the supporting systems and practices necessary to ensure the process’ ongoing smooth operation.

**Staged Product Development Activity:** The set of product development tasks commencing when it is believed there are no major unknowns and that result in initial production of salable product, carried out in stages.

**Standard Cost:** See Factory Cost.

**Stop-light Voting:** A convergent thinking technique by which participants vote their idea preferences using colored adhesive dots. Also called preference voting.
**Strategic Balance**: Balancing the portfolio of development projects along one or more of many dimensions such as focus versus diversification, short versus long term, high versus low risk, extending platforms versus development of new platforms.

**Strategic New Product Development (SNPD)**: The process that ties new product strategy to new product portfolio planning. (See Chapter 2 of both Editions of *The PDMA HandBook*.)

**Strategic Partnering**: An alliance or partnership between two firms (frequently one large corporation and one smaller, entrepreneurial firm) to create a specialized new product. Typically, the large firm supplies capital, and the necessary product development, marketing, manufacturing, and distribution capabilities, while the small firm supplies specialized technical or creative expertise.

**Strategic Pipeline Management**: Strategic balancing, which entails setting priorities among the numerous opportunities and adjusting the organizationís skill sets to deliver products.

**Strategic Plan**: Establishes the vision, mission, values, objectives, goals, and strategies of the organizationís future state.

**Strategy**: The organizationís vision, mission, and values. One subset of the firmís overall strategy is its Innovation Strategy.

**Subassembly**: A collection of components that can be put together as a single assembly to be inserted into a larger assembly or final product. Often the subassembly is tested for its ability to meet some set of explicit specifications before inclusion in the larger product.

**Success**: A product that meetís its goals and performance expectations. Product development success has four dimensions. At the project level, there are three dimensions: financial, customer-based, and product technical performance. The fourth dimension is new product contribution to overall firm success. (See Chapters 1, 29, 32, 35 and 36 of *The PDMA HandBook 2nd Edition*.)

**Success Dimensions**: Product development success has four dimensions. At the project level, there are three dimensions: financial, customer-based, and product and process performance. The fourth dimension of product development success is measured at the firm level.

**Support Service**: Any organizational function whose primary purpose is not product development but whose input is necessary to the successful completion of product development projects.

**SWOT Analysis**: "Strengths, Weaknesses, Opportunities, and Threats" Analysis. A SWOT analysis evaluates a company in terms of its advantages and disadvantages versus competitors, customer requirements, and market/economic environmental conditions.
**System Hierarchy Diagram:** The diagram used to represent product architectures. This diagram illustrates how the product is broken into its chunks.

**Systems and Practices:** Established methods, procedures, and activities that either drive or hinder product development. These may relate to the firm’s day-to-day business or may be specific to product development.

**Systems and Practices Team:** Senior managers representing all functions who work together to identify and change those systems and practices hindering product development and who establish new tools, systems, and practices for improving product development.

**Task:** The smallest describable unit of accomplishment in completing a deliverable.

**Target Cost:** A cost objective established for a new product based on consideration of customer affordability. Target cost is treated as an independent variable that must be satisfied along with other customer requirements.

**Target Market:** The group of consumers or potential customers selected for marketing. This market segment is most likely to buy the products within a given category. These are sometimes called "prime prospects."

**Team:** That group of persons who participate in the product development project. Frequently each team member represents a function, department, or specialty. Together they represent the full set of capabilities needed to complete the project. (See Chapter 9 in *The PDMA HandBook 2nd Edition* and Chapter 6 in *The PDMA ToolBook 1*.)

**Team Leader:** The person leading the new product team. Responsible for ensuring that milestones and deliverables are achieved, but may not have any authority over project participants. (See Sections 1 and 2 of *The PDMA ToolBook* for 8 product development tools for Team Leaders.)

**Team Spotterís Guide:** A questionnaire used by a team leader (or team members) to diagnose the quality of the teamís functioning (see Chapter 6 in the *PDMA ToolBook 1*.)

**Technology-Driven:** A new product or new product strategy based on the strength of a technical capability. Sometimes called "solutions in search of problems."

**Technology Road Map:** A graphic representation of technology evolution or technology plans mapped against time. It is used to guide new technology development for or technology selection in developing new products.

**Technology Stage Gate (TSG):** A process for managing the technology development efforts when there is high uncertainty and risk. The process brings a structured methodology for managing new technology development without thwarting the creativity needed in this early stage of product development. It is specifically intended to manage high-risk technology development projects when there is uncertainty and risk that the technology discovery may never occur and therefore the ultimate desired product characteristics might never be achieved. (See Chapter 11 in *The PDMA ToolBook 1*.)
**Technology Transfer:** The process of converting scientific findings from research laboratories into useful products by the commercial sector. May also be referred to as the process of transferring technology between alliance partners.

**Test Markets:** The launching of a new product into one or more limited geographic regions in a very controlled manner, and measuring consumer response to the product and its launch. When multiple geographies are used in the test, different advertising or pricing policies may be tested and the results compared.

**Think Links:** Stimuli used in divergent thinking to help participants make new connections using seemingly unrelated concepts from a list of people, places, or things.

**Think-Tank:** Environments, frequently isolated from normal organizational activities, created by management to generate new ideas or approaches to solving organizational problems.

**Thought Organizers:** Tools that help categorize information associated with ideas such that the ideas can be placed into groups that can be more easily compared or evaluated.

**Three Rís:** The fundamental steps of Record, Recall, and Reconstruct which most creative minds go through when generating new product ideas.

**Threshold Criteria:** The minimum acceptable performance targets for any proposed product development project.

**Thumbnail:** The most minimal form of sketching, usually using pencils, to represent a product idea.

**Time to Market:** The length of time it takes to develop a new product from an early initial idea for a new product to initial market sales. Precise definitions of the start and end point vary from one company to another, and may vary from one project to another within the company.

**Tone:** The feeling, emotion, or attitude most associated with using a product. The appropriate tone is important to include in consumer new product concepts and advertising.

**Tornado:** A mid to late growth stage strategy that follows the "bowling alley" and which describes an often frenzied period of rapid growth and acceptance for a product category. Activities of the tornado phase include commoditization of a product to become an industry standard, competitive pricing to maximize share and low cost volume distribution channels. Success in the tornado is related to maintaining previously established product leadership and complementing it with operational excellence in a variety of strategic areas.

**Total Quality Management (TQM):** A business improvement philosophy that comprehensively and continuously involves all of an organization's functions in improvement activities.

**Tracking Studies:** Surveys of consumers (usually conducted by telephone) following the product's launch to measure consumer awareness, attitudes, trial, adoption and repurchase rates.
**TRIZ:** The acronym for the Theory of Inventive Problem Solving, which is a Russian, systematic method of solving problems and creating multiple-alternative solutions. It is based on an analysis and codification of technology solutions from millions of patents. The method enhances creativity by getting individuals to think beyond their own experience and to reach across disciplines to solve problems using solutions from other areas of science.

**Uncertainty Range:** The spread between the high (best case) and low (worst case) values in a business assumption.

**User:** Any person who uses a product or service to solve a problem or obtain a benefit, whether or not they purchase it. Users may consume a product, as in the case of a person using shampoo to clean their hair or eating a potato chip to assuage hunger between meals. Users may not directly consume a product, but may interact with it over a longer period of time, like a family owning a car, with multiple family members using it for many purposes over a number of years. Products also are employed in the production of other products or services, where the users may be the manufacturing personnel who operate the equipment.

**Utilities:** The weights derived from conjoint analysis that measure how much a product feature contributes to purchase interest or preference.

**Value:** Any principle to which a person or company adheres with some degree of emotion. It is one of the elements that enter into formulating a strategy.

**Value-added:** The act or process by which tangible product features or intangible service attributes are bundled, combined or packaged with other features and attributes to create a competitive advantage, reposition a product or increase sales.

**Value Analysis:** A technique for analyzing systems and designs. Its purpose is to help develop a design that satisfies users by providing the needed user requirements in sufficient quality at an optimum (minimum) cost.

**Value Chain:** As a product moves from raw material to finished good delivered to the customer, value is added at each step in the manufacturing and delivery process. The value chain indicates the relative amount of value added at each of these steps.

**Value Proposition:** A short, clear, and simple statement of how and on what dimensions a product concept will deliver value to prospective customers. The essence of "value" is embedded in the tradeoff between the benefits a customer receives from a new product and the price a customer pays for it. (see Chapter 3 of the *PDMA ToolBook 1*).

**Vertical Integration:** A firmís operation across multiple levels of the value chain. In the early 1900ís, Ford Motor Company was extremely vertically integrated, as it owned forests and operated logging and wood finishing and glass-making businesses. They made all of the components that went into automobiles, as well as most of the raw materials used in those components.
**Virtual Customer:** A set of web-based market research methods for gathering voice-of-the-customer data in all phases of product development (See Dahan and Hauser, *JPIM*, July 2002).

**Virtual Product Development:** Paperless product development. All design and analysis is computer-based.

**Virtual Reality:** Technology that enables a designer or user to "enter" and navigate a computer-generated 3-D environment. Users can change their viewpoint and interact with the objects in the scene in a way that simulates real-world experiences.

**Virtual Team:** Dispersed teams that communicate and work primarily electronically may be called virtual teams.

**Vision:** An act of imagining, guided by both foresight and informed discernment, that reveals the possibilities as well as the practical limits in new product development. It depicts the most desirable, future state of a product or organization.

**Visionary Companies:** Leading innovators in their industries, they rank first or second in market share, profitability, growth, and shareholder performance. A substantial portion (e.g., 30% or more) of their sales are from products introduced in the last three years. Many firms want to benchmark these firms.

**Visions:** The new product development practitioner-oriented magazine of the PDMA.

**Voice of the Customer (VOC):** A process for eliciting needs from consumers that uses structured in-depth interviews to lead interviewees through a series of situations in which they have experienced and found solutions to the set of problems being investigated. Needs are obtained through indirect questioning by coming to understand how the consumers found ways to meet their needs, and, more important, why they chose the particular solutions they found. (See Chapter 11 of *The PDMA ToolBook I.*

**Waste:** Any activity that utilizes equipment, materials, parts, space, employee time, or other corporate resource beyond minimum amount required for value-added operations to ensure manufacturability. These activities could include waiting, accumulating semi-processed parts, reloading, passing materials from one hand to the other, and other nonproductive processes. The seven basic categories of waste that a business should strive to eliminate: overproduction, waiting for machines, transportation time, process time, excess inventory, excess motion, and defects.

**Whole Product:** A product definition concept that emphasizes delivering all aspects of a product which are required for it to deliver its full value. This would include training materials, support systems, cables, how to recipes, additional hardware/software, standards and procedures, implementation, applications consulting - any constitutive elements necessary to assure the customer will have a successful experience and achieve at least minimum required value from the product. Often elements of the whole product are provided via alliances with others. This term is most often used in the context of planning high technology products.
**Workflow Design Team:** Functional contributors who work together to create and execute the work-flow component of a Stage-Gate™ system. They decide how the firmís Stage-Gate™ process will be structured, what tasks it will include, what decision points will be included, and who is involved at all points.

**Workplan:** Detailed plan for executing the project, identifying each phase of the project, the major steps associated with them, and the specific tasks to be performed along the way. Best practice workplans identify the specific functional resources assigned to each task, the planned task duration, and the dependencies between tasks. See also, "Gantt chart."

**Worth What Paid For (WWPF):** The quantitative evaluation by a person in your customer segment of the question: "Considering the products and services that your vendor offers, are they worth what you paid for them?"