
Glossary

Adopters: Actors finding an innovation factually (not only potentially) useful (see “adoption”), and therefore have decided to buy or use an innovation.

Adopters (early/late): Types of adopters in a population of adopters which make their adoption decisions early and late respectively in a diffusion process.

Adoption: An innovation found factually useful, not only potentially, to an actor (see “adopters”).

Anti-commons problem: Problem with too many fragmented physical and/or intellectual property rights (IPRs) in a field.

Appeal: A review of the decision of an inferior court by a higher court. In European civil law tradition, the reviewing court may review all matters, both matters of fact and matters of law. In the Anglo-American common-law tradition, a court of review is generally limited to reviewing only matters of law.

Application: (Legal notion) A patent application consists of a description with optional drawings (the specification), claims and abstract. The claims define the scope of the legal protection of an invention.

Appropriation: An agent’s collecting or capturing (actively or passively) of economic returns (value) or other benefits derived or derivable from the investment efforts of that agent and/or from investment efforts of others.

Asset: A propertized and capitalized investment or resource entitlement that can typically be bought and sold on a market.

Assignee: A private or legal person to whom an assignment is made; grantee.

Autonomous entrepreneurship: Entrepreneurship performed by independent individuals and start-up companies.

Basic patent: A generic or seminal patent in a technological area. A patent that forms the basis for a new technology application (e.g. for a core technology) and subsequent patenting. See also “priority patent”.

Blanketing strategy: Efforts made to turn an area into a jungle or a minefield of patents, e.g. “mining” or “prepping” every step in a manufacturing process with patents, more or less systematically. The strategy is used in emerging technologies when uncertainty is high regarding which R&D directions are fruitful or in situations with uncertainty about the economic importance of the scope of patent or to deter or to acquire bargaining power.

Buyer diffusion: See “diffusion”.

Cannibalization: The reduction of sales of a firm’s old products due to the firm’s introduction of new products.

Capitalize: The activities of creating a capital item in an accounting context from a resource.

Claim: The “metes and bounds” or the scope of protection of a patent are set forth by its claim(s). Each claim is required to be a one-sentence description of the invention. Claims may be directed to an apparatus, a chemical compound, a method of manufacture, the use of a device, etc.

Commercial success: An invention starts to become a commercial success when it becomes economically useful or sold to someone, i.e. when the invention becomes an innovation in the case it is new to the world.

Complement: Two or more resources, products, processes or services are complements if their joint value (joint costs) is larger (smaller) than the sum of their individual values (costs). For example, two products are complements if a marginal price increase of one decreases the demand of the other, and vice versa. If this is the case for all price levels, the products are complements globally (the distinction between local and global complementarities are often not used). In formal terms this means that $\Delta p_1/\Delta q_2 < 0$ and $\Delta p_2/\Delta q_1 < 0$, where q_i and p_i for $i = 1, 2$ are demand and price for two products. If $\Delta p_1/\Delta q_2 > 0$, product 1 is a substitute for product 2. Complements and substitutes could be expressed in terms of cross-elasticities of demand instead, i.e. $(\Delta q_1/\Delta p_2)/(q_1/p_2)$. See also “substitute”.

Compulsory license: A license granted by a court or other public authority to a party having applied for it, allowing the party to use a copyright or patent without the explicit permission of the owner. Compulsory licenses usually require the payment of a specified fee to the intellectual property right holder. Provisions for the grant of compulsory licenses are found in most national IP laws, the USA being the most notable exception. Conditions of their grant are, however, very much restricted in the IP laws of the major trading nations.

Copylefting: A form of licensing practice in which a copyright holder, the licensor, licenses out on the condition that the licensee can sub-license freely only on the same license terms. This practice prohibits derivative works from being copyrighted.

Copyright: An intangible, incorporeal right granted by statute to the author or originator of certain literary or artistic materials, such as plays, movies, and books. The copyright generally lasts for a specified period, with the sole and exclusive privilege of publishing and selling the work to lie with the right holder during this specified period. Most of the major trading nations specify a term constituting the life of the author plus either 50 or 75 years (as of 2017). Thus, the exact date of the expiration of many copyrights cannot be precisely determined.

Core technology: A technology that is key (having significant impact on customer utility), generic (being widely applicable), and being difficult to imitate.

Corporate entrepreneurship: Carrying out of innovations within existing firms. Also referred to as intrapreneurship.

Corporate governance: The structure and processes by which corporations (large and small) are managed from the top, typically involving owners, board of directors and top management.

Counterfeit: To forge, copy or imitate without authority or right.

Counterpart patents (or subsequent patents): Patents in different countries besides the original one (the priority patent) for the same original invention. The corresponding subsequent patent applications are referred to as counterpart filings or subsequent filings. See “priority patent”.

Creative destruction: The process by which the introduction of new (“creative”) technologies, innovations and/or firms substitute (“destroy”) old ones.

Deadweight loss: Loosely speaking the loss of economic efficiency due to e.g. monopolistic pricing. The deadweight loss is then the aggregate loss of consumer surplus (= the

customer value above marginal cost) for those customers with customer value below a given price.

Defendant: A person or party against whom relief or recovery is sought.

Design (patent): A design patent protects the appearance of articles of manufacture. The term of a design patent is 15 years from the date of grant in the USA (as of early 2018).

Diconvergence: A process with an interaction of mutually reinforcing converging and diverging forces, producing partial convergence and partial divergence.

Diffusion: The spread of an innovation through a population of potential users (i.e. buyer diffusion) or producers (i.e. seller diffusion), with or without modification. Usual distinctions are national/international, inter-firm/intra-firm.

Diminishing returns: Decreasing marginal product, i.e. the second derivative of an output with respect to an input (other outputs and inputs being held constant) is negative.

Discovery: (Legal notion) A pre-trial procedure which allows litigants to obtain information from each other prior to trial. Discovery is limited in most civil law jurisdictions. Discovery practice in the USA is generally considered the broadest in the industrial world.

Diversification: The process by which the diversity of a certain type of activity area of an agent (e.g. a company) is increased. The activity areas may relate to businesses, markets, products, resources, technologies, etc.

Early/late mover advantages: Types of advantages that accrue to early and late movers respectively in a process.

Economic growth: Increase in physical volume of sales (e.g. number of new products sold) or to monetary variables (e.g. revenues of the producer, innovator or entrepreneur). This might occur in terms of increases in GDP, sales and value creations, and ultimately and hopefully to welfare in terms of quality of life and happiness. An important component of economic growth is growth of R&D, new knowledge, including new technologies, and innovations, which in turn lead to growth of intellectual capital.

Economic success: An innovation becomes an economic success when it achieves a positive rate of return on its total investments, using a proper discount rate.

Economies of scale: Economic benefits gained from doing the same thing in larger quantities or repeatedly. In production cost terms, economies of scale are present when the average cost per unit produced decreases when quantities or number of products produced are increased.

Economies of scope: Economic benefits gained from doing different things jointly instead of separately. In production cost terms, economies of scope are present when the cost of producing several products jointly is less than the aggregate cost of producing them separately (e.g. in separate plants or firms).

Economies of space: Economic benefits gained from doing something in particular locations.

Economies of speed: Economic benefits gained from doing something faster or earlier in time.

Elasticity: A dimensionless measure of the sensitivity of one variable to changes in another variable. The x-elasticity of $y = f(x)$ is defined as $(dy/dx)/(y/x)$ or the relative or percentage change of y , i.e. dy/y , divided by the relative or percentage change of x , i.e. dx/x .

Emerging technology: New young technologies that appear to evolve new functionalities and/or extended performance levels.

Enabling technology: A technology solving a bottleneck problem and thereby allowing a new functionality or substantially extending the performance limits of other technologies.

Entrepreneur: An actor combining resources, including new ideas, for launching of products, processes or services that are new to a local market, an organization, or a society, but not necessarily new to the global market or to the world, an undertaking that is typically associated with uncertainties, risks and obstacles.

Entrepreneurial financing: Providing and/or obtaining funds or capital for entrepreneurial activities, typically launching a firm, a project or a venture with high uncertainties and risks involved and often long lead times to pay-offs.

Entrepreneurial government: A government that directly and pro-actively promotes and performs entrepreneurial activities, i.e. exercises state entrepreneurship.

Entrepreneurship: Entrepreneurial activities or processes for the development and launching of new ideas, products, processes, services, businesses and organizations. Entrepreneurship is often classified according to the organization or context in which the entrepreneurial activities take place, e.g. autonomous, corporate, state, university, military, social, etc.

EPO: The European Patent Office, based in Munich. The EPO was created by the European Patent Convention (EPC) and began operations in 1978. The EPO can grant a valid patent for all EPC signatory states.

Espionage: An attempt to obtain information without the knowledge and consent of its possessor. Usually considered illegal and/or immoral.

Essential patent: Roughly synonymous with “strategic patent” (see this term). Sometimes used in a weaker sense of being a patent in a core technology.

Evergreening: Extending the effective protection of an innovation by various managerial, technological and legal means, such as IPRs (then also referred to as IP-based evergreening).

Expiration: All intellectual property rights except trademarks (trade names) and indications of origin are valid only for some limited term. Thereafter the goods or service etc. may be freely used by anyone without permission of the former holder of the right.

Externality: An externality is a non-market link between two or more agents with interdependent decisions. If the decision of one agent affects the other positively or negatively without any transaction between the two taking part, the externality is respectively positive or negative. If the decision is a consumption decision we have a consumption externality, and if it is a production decision we have a production externality.

Extra-legal: Privately ordered regulations not governed by law, i.e. outside the law without being illegal.

Fencing strategy: A situation where a series of patents, ordered in some way, block certain lines or directions of R&D. This strategy is typically used for a range of possibly quite different technical solutions for achieving a similar functional result.

Financing: Providing and/or obtaining funds or capital, typically for an investment.

First mover advantages: Advantages drawn from being first with something, e.g. being first to file a patent application for an invention gives the opportunity to get patent protection of that invention.

First-to-file/first-to-invent: An inventor can be defined as either the first person to con-

ceive of an invention or the first person to file a patent application on the invention. All major nations follow a first-to-file patent system (as of 2018).

Generic technologies: Broad scientific and technological areas from which a cascade of applications emerges (e.g. microelectronics, based on silicon semi-conductor technology and containing applications in various hardware).

Global innovation spiral: An innovation spiral in a global context, e.g. a global innovation system.

Global innovation system: An innovation system of some type with a set of actors, activities, resources and institutions that is globally composed and governed and is addressing global problems and challenges for global benefit.

Global-for-global innovation: Innovative work performed globally for global use. (Cf. local-for-local innovation as being performed locally for local use etc.)

Governance: An umbrella term for rule-based institutions coordinating economic and social activities, with management hierarchies and competitive markets as two main polar types of institution.

Governance cost: The general costs associated with governing or coordinating economic activities. If these activities are organized within a firm or organization they are called management costs. If they are performed as transactions between actors in a market they are called transaction costs.

Governance failure: An umbrella term for market, governmental and management failures.

Governmental failure: Inadequate or inefficient government measures for designing, regulating or enhancing markets and other economic institutions as well as for correcting market failures and institutional shortcomings.

Grace period: Some countries (e.g. the USA) allow patentees a grace period between disclosure of a patentable invention by the inventor and the filing of a patent application. In many other jurisdictions public disclosure prior to filing destroys patentability.

Growth: The concept of growth (or development more generally) could refer to a positive change in any variable, but is here taken as economic growth, i.e. a positive change in a measureable economic variable.

Growth appropriation: The appropriation of economic growth effects (such as employment and externalities rather than only returns) from investments, e.g. in a firm or in a nation, generated by public and/or private investments in R&D and innovations.

Growth axes: Special arcs or routes along which growth takes place in a network of some kind, connecting different regions or nodes in general.

Idea: (Legal notion) In the Anglo-American legal system, the law of undeveloped ideas is an accumulation of common-law opinions addressing a claimed right to compensation for a defendant's unauthorized use of the plaintiff's idea. All of these opinions require that the plaintiff's idea be novel and concrete.

Imitation: A close reproduction or near duplication of ideas, practices or objects that were once perceived as inventions (or innovations). Imitations are sometimes true copies (as with piracy goods) but typically involve modifications and often also improvements of the innovation.

Imitator: An actor that has been involved in the development of an imitation of an innovation.

Increasing return: A form of positive feedback, in the loose sense of increasing gains on

the margin due to increasing number of repetitions of an activity. The opposite of diminishing returns, taken in a broad sense. Special cases are increasing return to scale and increasing returns to adoption, the latter meaning that the returns (benefits) to the next adopter of an innovation are increased with the number of previous adoptions of the same innovation.

Incumbent: See “new entrant”.

Industrial network thinning: A thinning of the industrial networks connecting various actors such as users, producers, researchers, innovators, entrepreneurs, etc.

Information paradox: The difficulty or impossibility of selling information without risking having it stolen when disclosed for buyer inspection.

Infringement: The unauthorized making, using, offering, etc. of an invention other than for non-commercial use and concurrently covered by at least one valid claim of a patent during the life of the patent.

Injunction: A court order prohibiting someone from proceeding with some specified act or commanding someone to undo some wrong or injury. In patent litigation, the patentee may be granted an injunction against further unauthorized use etc. of the patented product or process by the defendant. To lift (annul) an injunction is termed injunctive relief.

Injunctive relief: See “injunction”.

Innovation: Anything new and useful, where “new” is “new to the world”, i.e. new to everyone and “useful” is “useful to someone”. For example, an invention that has found a useful and commercially viable application. Usual distinctions are radical/incremental; product/process; major/minor; technical/managerial/organizational/financial/social, etc.

Innovation and entrepreneurship: A concatenation of the two terms “innovation” and “entrepreneurship” (see these terms) to accentuate their close relationship. Sometimes abbreviated I&E. (Cf. R&D for research and development.)

Innovation eco-system: A set of actors, activities, resources, and institutions, and the relations between them, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors. In this definition “resources” could be tangible and intangible, technological and non-technological, and include system inputs and outputs, such as artefacts in the form of products and services. An innovation ecosystem could in other words be seen as including an actor system with collaborative (complementary) and competitive (substitute) relations with or without a focal firm, and possibly a technological system with complementary and substitute relations.

Innovation races: A broad term for describing different kinds of races in introducing an innovation to the market and its early adopters and lead users.

Innovation spiral: A simple model of the innovation process at some level of aggregation in which an essential feature is the feedback structure among the variables or factors R&D, patents/IP, innovations, economic growth and value creation, in turn feeding resources into further R&D, generating more patents/IP, innovations, etc. By focusing on certain variables the model could be compressed into e.g. an innovation/growth spiral or a patent/growth spiral. The model could also be expanded by adding certain variables like entrepreneurship and diffusion.

Innovation system: In a loose sense a system that involves the provision of innovations.

These systems usually comprise actors, artifacts, knowledge and institutions, usually with economic functions and performance criteria. They can be defined at various levels – national, regional, sectoral, corporate, etc., and can be hierarchical or non-hierarchical (as in some nations and commonly at sector level). Many definitions and types exist. See also “national innovation system”.

Innovator: An actor that has been involved in the development of an innovation up to and including its launching on a market or initiating its use in some application.

Intangible assets: Non-tangible assets, such as IPRs, knowledge and human capital.

Intellectual capital: Non-physical, non-financial and non-tangible capital, or capitalized intellectual resources or assets.

Intellectual capitalism: An economic system with basic capitalist institutions in which intellectual capital plays a major, if not dominant, role in some sense.

Intellectual property (IP): Certain creations of the human mind are given the legal aspects of a property right. Intellectual property is an all-encompassing term, which includes patents, copyrights, trademarks, trade secrets, right to fair competition, and moral rights. In other terms, intellectual property can be defined as a propertized intellectual resource, capital or asset.

Intellectual property (IP) rights: The legally recognized ownership or usage right to an intellectual property.

Intellectual rights: Rights in intangible or intellectual resources and creations, propertized or not. IPRs, being property-like rights, are sub-rights to intellectual rights.

Invalidation: Only a valid patent may be enforced. Thus, defendants in patent infringement litigation normally attempt to have the patent invalidated, thus making the suit moot. Defendants may attempt to show e.g. that the patent holder committed some type of fraud towards the patent office or that a patent should not have been granted due to prior art not having been interpreted properly or not having been disclosed properly during prosecution.

Invent around: Competitors will often attempt to avoid literal infringement of a patent by designing their invention in such a way as to avoid reading on the patent claims. However, the laws of most of the major trading nations recognize that the scope of an invention may be larger than the literal wording of its claims.

Invention (patentable): Most patent systems require patentable inventions to be such works of the mind that are novel, non-obvious, and industrially applicable. An invention must be novel, i.e. distinguished from what came before it, and must not be obvious to a person skilled in the relevant field (technological area) of the invention.

Invention (technical): The first idea, sketch or contrivance of a new-to-the-world product, process or system, which may or may not be patented (Freeman et al. (1982), p. 201).

IP: See “intellectual property”.

IP assembly problem: The problem of collecting (assembling) the necessary IPRs for a product.

IP disassembly: Separating and disintegrating (disentangling) intellectual properties of two or more firms/business units/individuals/resource sets that previously have been integrated in some way.

IP regime: A type of IP-based governance, oriented around particular IPR-types and their associated legislation and enforcement. Thus, one talks about strong and weak

IP regimes (referring to strength of legislation and enforcement) and patent vs trade secret regimes (referring to the particular dominant IPR type).

IP volunteering: Waiving of IP-related rights without any claims for direct monetary compensation that in principle could have been justified.

Key patent: The most technically or economically important patent(s) for a specific product or process. Many times a key patent is an enabling patent.

Key technology: Technologies which directly influence those product performance and quality parameters that target customers are willing or prepared to pay a premium price for. Key technologies are also those (process) technologies that allow for major cost reduction if they are applied in the production process.

Level of inventiveness (“non-obviousness”; “technical progress”; “technical step”): In order to be patentable, an invention must be novel and non-obvious beyond what would be readily apparent to a person skilled in the relevant field. The novelty requirement for copyrighted works is very low. In some cases, the mere selection and arrangement of information is protectable by copyright.

License: A permission granted by an IPR holder, the licensor, to another legal entity (person or company), the licensee, to make use of, sell or otherwise benefit from the underlying intellectual property under certain restrictive conditions. To license (as a verb) means granting such permissions, more precisely referred to as licensing out. Licensing in refers to acquiring licenses. Licensing is distinct from directly selling or transferring the property right itself. Licenses could be granted for any type of IPR, i.e. for patents, trade secrets, trademarks, copyrights, designs, etc. There are many possible contractual variations of license agreements. Common types of licenses include exclusive license (for a single user), sole license (for only one user besides the licensor), sub-license (the licensee permit to another licensee in turn), compulsory license (a license which has to be offered), grant-back license (the licensee has granted the licensor licenses on improvements made by the licensee), cross-license (licenses are swapped between licensor and licensee) and block-license (license for a bundle of IPR, e.g. a package of patents).

License broker: Actor acting as a middleman in trading licenses without owning the license (in contrast to a license dealer who can take ownership).

Litigation: A contest in a court of law for the purpose of enforcing a right or seeking a remedy; a judicial contest.

M-form: A special form of corporate organization in which several decentralized business divisions integrating industrial functions like R&D, production, marketing and purchasing often oriented around products or areas, enabling them to operate on an accountable profit/loss basis, under the strategic guidance of a corporate headquarters. This form is distinctively different from the functional form of corporate organization (the U-form) in which main industrial functions are disintegrated at the highest level of organization.

Management cost: See “governance costs”.

Management failure: When the term is used to correspond to market failure (or market inefficiency) it refers to a situation in which management or some mechanisms fail to provide products or services or allocate resources in an efficient or satisfactory way seen from a societal point of view.

Market failure: A situation in which a market or some market mechanisms fail to provide

products or services or allocate resources in an efficient or satisfactory way seen from a societal point of view.

Market lead time: The time difference between a leading (innovating) company's market launch and the next market launch of a following (imitating) competing company. Timing of other imitators entering the market is also relevant, so the complete sequence of market entries and corresponding market lead times can also be incorporated into the concept.

Market segment: A cluster of customers having similar purchasing behavior.

Micro-legal analysis: Applied to property rights, this means the analysis of a particular right seen as composed of a bundle of sub-rights and related to neighboring rights ("side-rights") and overarching rights ("super-rights") regarding the design, origin, structuring and implications of the rights.

Moral rights: The rights of the creator of a work of intellectual property regardless of who owns the work. Not all legal systems recognize these rights. Moral rights applicable to authors of copyrighted works include the right to claim authorship, the right to prevent use of one's name for works which one did not author, the right to prevent the use of one's name on works which have been distorted or mutilated, the right to prevent intentional distortion or mutilation, and the right to prevent change or destruction of a work of recognized stature.

Multi-bilingual world: A world where people in general speak (at least) two languages of which one is shared globally as a common international language (e.g. English) and one serves as a local language (e.g. Swedish, Dutch, Japanese).

Multi-generation patent: Patent that reads on several generations of a product or process (e.g. patents that read on both 3G and 4G in mobile communications).

Multi-generation technology: Technology that supports several generations of a product or process.

Multi-standard patent: Patent that reads on several standards (e.g. competing standards in mobile communications).

Multi-technology corporation: A corporation operating in several technologies (as a result of technology diversification).

National entrepreneurial system: Set of distinct institutions which jointly and individually contribute to the development and diffusion of new firms and businesses and which provide the framework within which governments form and implement policies to influence the entrepreneurship in its various forms (autonomous, corporate, state, etc.). (Aligned with the definition of National Innovation Systems in Metcalfe (1995, p. 82).)

National innovation system: "Set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process." (Metcalfe (1995, p. 82))

New entrant: A company is a new entrant on a market if it is new on that market in the relevant period considered. If it is not, i.e. if it operated in the market also in the previous period, the company is an incumbent.

Non-producing (non-practicing) entity: An entity (individual, organizational) that asserts and exploits patents and patent portfolios, typically with a business model to extract license fees, royalties and damages and/or leverage equity in the shadow of litigation,

without actually using them in industrial practice, e.g. in production. A wide variety of entities fall in this category and are referred to by various labels, e.g. patent assertion entities, patent monetizers, patent trolls and patent extortionists.

Non-obviousness requirement: An invention is not patentable if, at any time it was made, a person with ordinary skill in the relevant field (technical area) and knowledge of all relevant prior technical information (prior art) would have been able to make the invention, for instance by combining the information contained in prior art documents.

Patent: The term is originally short for “letters patent” (see e.g. David (1993) for the origin of the term). As a short term a patent may refer to a patented invention, to some patent documentation or to the limited-term exclusive right provided by the state on certain conditions to inventors/applicants who file a patent application. All patents are published so that the general public will know of the invention and be informed of how it works. See also “patent right”.

Patent auctions: Auctions of patent rights, constituting a market for technology trade.

Patent awareness: The sustained consciousness about the existence of patenting possibilities.

Patent family: A set of patents granted in different countries for the same original invention. Constituted by a priority patent and its corresponding counterpart or subsequent patents.

Patent flooding: A patent strategy aimed at flooding an area with patents in order to more or less cover it or achieve a control position in it. Cf. blanketing strategy.

Patent/growth spiral: A compressed version of the innovation spiral model, focusing only on the patent and growth variables.

Patent insight: The firsthand experience of having utilized patenting possibilities.

Patent power: The bargaining power and deterring power associated with the patent portfolio of an actor.

Patent right: An exclusive temporary (normally for at most 20 years) transferable right to exclude others from commercializing or trading what is patented (usually a technical or industrial invention). (Note that a patent right is not the same as the right to exploit a patented invention.) See also “intellectual property right”.

Patent troll: Non-producing or non-practicing entity (NPE) with a primary business model of collecting damages or licensing royalties in the shadow of patent litigation.

Patent understanding: The ability (capability) to evaluate patenting possibilities.

Patenting frequency: The number of patents obtained through granting per time unit (usually per year) for a practicing entity (such as an inventor, a company or institute, or a university).

Patenting propensity: The propensity (or probability) of a practicing entity (such as an inventor, a company or institute, or a university) to apply for a patent, given a patentable invention.

PCT: Patent Cooperation Treaty. This treaty permits a single patent application to be filed in multiple countries. The patent’s international filing date is the date on which it was filed in the first signatory country. PCT applications receive their patent search in the first country in which they are filed and can be based on an up to 12 months old priority patent application. The subsequent search report is provided to all the national patent offices which subsequently review the application. This treaty is the closest agreement presently in force which amounts to an international patent.

- Pending:** The term “patent pending” means a patent has been applied for but not yet been granted.
- Piracy:** See “counterfeit”.
- Plaintiff:** A person who seeks remedial action for an injury to rights in a court of law.
- Policy:** Prescription *ex ante* of principles, guidelines, conditions and preferred courses of action for achieving certain goals or objectives of an organization, a nation or some other decision-making entity.
- Policy convergence:** Increases in similarity of types and characteristics of policies in a certain field, between different nations or other entities.
- Price differentiation (discrimination):** A pricing strategy that charges different customers or groups (segments) of customers different prices for essentially the same products or services with the objective to exploit the differences in the customers’ willingness to pay.
- Priority (patent) application:** The original patent application filed at some patent office in the world for a particular invention. This application then gives the applicant priority to the invention for a certain amount of time for filing patent applications at other patent offices for the same invention.
- Priority date:** In first-to-file systems for patent applications, the priority date is the same as the filing date. In first-to-invent systems, the priority date is effectively the earliest date upon which the invention was conceived.
- Priority patent:** Patent on a specific original invention. Filings or applications for these patents are referred to as “first filings”, “priority filings” or “priority applications”. See also “counterpart patent”.
- Privateering:** The secret engagement by some IPR holder of a third party (the “privateer”) to enforce or threaten to enforce IPRs in the interests of the IPR holder.
- Process innovations:** Innovations related to processes such as manufacturing methods, typically generating savings through cost reductions at the producer end and thereby potentially generating profits and/or sales growth and/or customer values through price reductions.
- Product differentiation:** A product development strategy or phenomenon that results in several products with the same function and appearance at large but with minor differences that make them distinguishable.
- Product diversification:** The expansion of the range of product areas of a company, in other words, the process by which new product areas are entered by a company.
- Product innovation:** An innovation that generates new or improved functionalities and performance levels in use which generates additional user or customer value. This might in turn generate growth of sales and profits for a company or an actor launching an innovation through the diffusion or market penetration of the innovation in question.
- Propertize:** The actions of creating a property from a resource, e.g. obtaining a patent on technology.
- Proprietary vs open standards:** A proprietary standard is a standard controlled by private parties and not possible to access and use without authorization. An open standard is a standard that is possible to access and use without authorization.
- Research and development (R&D):** A shorthand definitions is: Searching and researching for new knowledge, solutions, explanations and ideas that can be useful in developing

new things, soft or hard. Elaborate definitions for accounting purposes may be found in manuals like OECD's *Frascati Manual* (OECD (2015b, p.44)): "Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and how to devise new applications of available knowledge."

(Industrial) R&D divergence: The process in which the R&D directions or technology bases of certain entities performing (industrial) R&D are becoming increasingly apart from each other, e.g. the R&D directions of small R&D firms and large firms in a national innovation system or the R&D directions of a university and large firms in a regional innovation system.

Return on investment (RoI): The difference between economic benefits or amounts received from an investment and the amount invested. The RoI may be calculated for different actors or entities involved in and benefiting from the investment. A common distinction is between private RoI, pertaining to private actors, and social RoI, pertaining to a society or community.

Rate of return on investment: Return on investment divided by the amount invested.

Reverse engineering: An engineering process by which a product or a production process is disassembled and analysed with the purpose of learning its design and function.

Revocation: A process by which a patent is declared invalid. This can occur either in a court of law or by action of the patent office.

Risk: A measure of the magnitude and likelihood of negative consequences of an event or a decision. Various measures of risk exist. A common one is based on the variance or standard deviation of a random variable.

Royalty stacking: The result of a product or service requiring IP assembly of a series of licenses with royalty demands by various IP holders, which altogether add up to a significant amount in relation to a reasonable price of the product.

Seller diffusion: See "diffusion".

Seminal patent: A patent that gives rise to several follow-up patents.

Settlement: The concluding of a dispute between parties prior to a full courtroom battle. Since litigation is expensive and time-consuming, the parties often benefit therefrom. Settlements can be reached in a variety of ways, including arbitration, negotiation, and mediation. Settlements do not generally require the approval of the court.

Spill-over: An information externality, i.e. some pieces of information that are not subject to exchange on a market. A common type is R&D spill-overs.

Spin-off: An invention, project or company disintegrated from a mother organization (typically through sales).

Strategic patent: A patent that is necessary for doing business in an area, i.e. a patent with practically insurmountable R&D costs to invent around. See also "essential patent".

Strategic patenting: Strategic patenting is loosely defined as working towards maximizing the asset value of an invention or a set of related inventions. This relates not only to when the patent is allowed to be issued, but also to which part of the technology is protected. It also entails monitoring competitors' products and proactively reviewing the scope of patent claims to ensure that, on issue, the patent is likely to cover those competing products. If correctly managed, strategic patenting can result in a patent portfolio of significant commercial value.

Sub-technology: A specialized knowledge part of a technology. In a classification of

technologies, a certain technology at some level of classification is disaggregated into sub-technologies at lower levels.

Submarine patent: In the USA, patent applications were previously kept in secret until a patent was granted, i.e. there was no pre-grant publication system. Because patent applications may take years, in some cases many years, before being patents, an invention might mature into a patent long after others have started using the invention. This time lag allowed a company to create a so-called submarine patent, which essentially forced those using the underlying technology to purchase a license on the patent or face a lawsuit for patent infringement when the patent was finally granted and published. In those patent systems which routinely publish all patent applications within a specified time after filing (e.g. 18 months) this is a minor problem.

Substitute: Two products (or resources, e.g. technologies) are substitutes if their prices and demand (supply) are interdependent but the products (resources, technologies) are not complements. If the products or resources are technically and economically interchangeable, they are strong substitutes. In formal terms regarding products, product 1 is a substitute for product 2 if $\Delta q_1/\Delta p_2 > 0$, that is if marginal price increase in one product increases the demand for the other. Since the sign of this ratio may depend on the price levels, it means that being a substitute is a local property. If the sign does not change, product 1 is a global substitute. Complements and substitutes could be expressed in terms of cross-elasticities of demand instead, i.e. $(\Delta q_1/\Delta p_2)/(q_1/p_2)$. See also “complements”.

Speed to market: Term often used instead of time to market or to describe how fast certain operations leading up to market introduction have been completed.

Sui generis: A unique legal solution which does not fit into any pre-existing legal category.

Switching cost: The (additional) cost for a buyer to switch to another seller, provider or standard for the same functionality.

System: A set of components, related (connected) to each other in some way. Usually a system is functional in some sense with respect to some associated performance criteria. Moreover a system has boundaries across which it interacts with its environment through inputs and outputs; it has internal structures and processes, with feedbacks as an especially important type; it could be hierarchical or not and is decomposable into sub-systems. The components of systems could be almost anything – ideas, artifacts, humans, organizations.

Technical bottleneck: A technical condition or problem that severely constrains the achievable technical performance of a product, process or system.

Technical knowledge: See “technology”.

Technical performance dimension (variable, parameter): Attribute (characteristic) of a product or process that is physically measurable and related to its engineering design and possible to relate to functionality or utility. Typical examples are weight, size, speed, smoothness, durability, energy efficiency, and material consumption.

Technical success: An invention (or design of a new product/process) becomes a technical success when its intended functions or objectives are accomplished, or some technical specifications are met.

Technological convergence/fusion/confluence: A process by which two or more technologies are combined more and more frequently and possibly merge into a new kind of technology (e.g. mechanics and electronics merging into mechatronics).

Technological innovation: Innovations that are technological in nature, i.e. being based on new technical knowledge.

Technological lock-in (lock-out): A technology which becomes dominant (marginalized) through a sequence of adoption decisions by actors or agents, creating a selection pressure (bias) through increasing returns.

Technological substitution/competition/complementation: Cases when two technologies coexist and one grows on behalf of the other/both compete, perhaps “back and forth”/ both grow synergistically together.

Technology: A body of knowledge about techniques and technical relationships, typically regarding ways to transform or arrange material matter to achieve more desirable physical effects. The body of knowledge referred to may be more or less specialized and classified at various levels (see “sub-technology”).

Technology base: Essentially the same as a technology system, which can be seen as a set of interrelated technologies. The technologies may be interrelated conceptually or causally, and in the latter case they are interdependent. A technology system is to be distinguished from a technical system, which essentially is a set of physical parts or products or artifacts, i.e. a “hard” system. A technology base differs somewhat from a technology system, since any interdependencies that may or may not be present are not explicitly referred to in the case of the technology base. Usually a technology base is considered pertinent to a product (or service) or an actor who is in possession or in some sort of control of the technologies in question.

Technology diversification: The process by which a company (or more generally an economic entity, such as a nation, region, organization, individual) extends its activities into technologies new to the company, thereby extending its range of technologies.

Technology push vs demand pull: Two models, types or phases of innovation processes characterized by exploitation of technological opportunities or market needs respectively.

Technology system: A set of interrelated technologies. The technologies may be interrelated conceptually or causally, and in the latter case they are interdependent. A technology system is moreover to be distinguished from a technical system, which essentially is a set of physical parts or products or artifacts, i.e. a “hard” system. (See further “technology base”).

Technology trade: Trade with patents, technology licenses, technical know-how and technology intensive firms (typically small, young tech-based start-ups).

Time to market: The time it takes for a company from their start of relevant R&D to the launching of a resulting new product or process on a market.

Trade secret: Information e.g. in the form of a pattern, formula, device, or compilation of information which is valuable to a given business and not publicly known. The owners of trade secrets are protected against the theft of their secrets by outsiders. The owner of a trade secret must usually make efforts to keep it secret in order to obtain any legal protection through trade secret rights.

Trademark: A distinctive mark (word or figure) through which products, processes or services of particular manufacturers or providers may be distinguished from those of others. Most of the world’s major trading nations maintain offices in which trademarks may be registered.

Transaction cost: The cost for conducting a transaction in a market, in addition to the cost or paid price for the product or service transacted.

Utility: Measure of the subjective benefit or satisfaction an agent (typically a consumer) attaches to the possession of products (commodities) of various quantities and qualities (performance, attributes).

Venture capital (VC): Funds or capital provided for risky undertakings or projects or entrepreneurial activities under risky conditions, typically on an equity basis. Depending upon the source of VC one can distinguish between autonomous (independent, angel), corporate and state VC.

Welfare: Societal value (to be distinguished from social welfare subsidies). Wide term describing, e.g. health, happiness, qualities of life or general well-being. Often measured with different welfare indicators such as the Quality of Life Index (by *The Economist*) and the Human Development Index (by United Nations Development Programme (UNDP)).

Willful infringement: Infringement by intent. For instance, counterfeiting, whereby the infringer knowingly or willfully copies a protected work.

