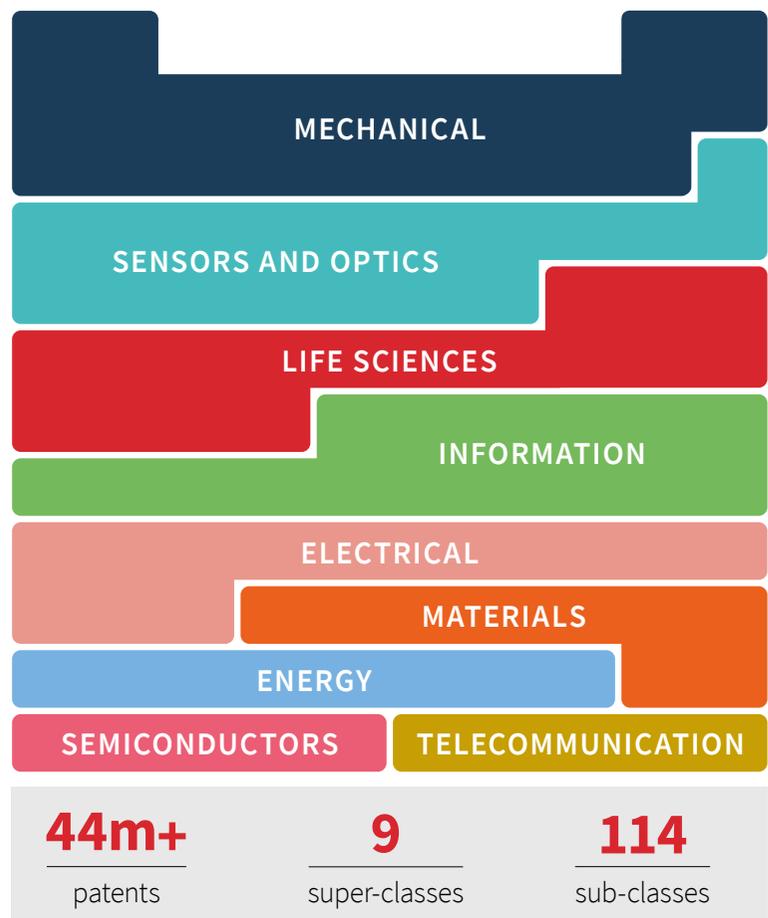


Universal Technology Taxonomy

The first taxonomy to provide consistent and objective analysis of patented technologies owned by all companies globally.



- Airbags
- Bearings
- Clutches and brakes
- Conveyors
- Cutting tools
- Doors
- Drills
- Fasteners
- Furniture
- Haptics
- Heat exchangers
- Hinges
- Locks
- Molding
- Munitions
- Pipes
- Pumps
- Robotics
- Steering
- Suspension
- Transmissions
- Valves
- Wheels and tires

- Biometric sensors
- Fluid sensors
- Gaze sensors
- Image sensors
- Infrared sensors
- Lasers
- Lenses
- Lidar
- Magnetic sensors
- Motion sensors
- Pressure sensors
- Projection
- Radar sensors
- Radiographic sensors
- Spectrometry sensors
- Temperature sensors
- Touch sensors
- Ultrasound sensors

- Absorbent materials
- Biological assays
- Cleaning
- Cosmetics
- Drug administration
- Food and drink
- Immunogenics
- Industrial microbiology
- Infection and disease therapy
- Molecular oncology
- Pest control
- Plant breeding
- Stem cells
- Surgical catheters
- Surgical implants
- Surgical robotics
- Tobacco

- 3D printing
- AR and VR
- Blockchain
- Engineering software
- Gaming
- Image processing
- Machine learning
- Printing
- Scanning
- Security
- Social media
- Speech recognition
- Storage
- Streaming
- UI
- eCommerce

- ADC and DAC
- Amplifiers
- Audio transducers
- Cables
- Capacitors
- Connections
- Displays
- Inductors
- Lighting
- Motors
- PCBs
- Resistors
- Switches

- Chemicals
- Coatings
- Fabrics
- Gases
- Glass
- Insulation
- Liquid processing
- Packaging
- Polymers

- Batteries
- Fuel cells
- Gas turbines
- Hydroelectric
- Nuclear
- Photovoltaics
- Piston engines
- Wind turbines

- Lithography
- Memory
- Processors
- Substrates
- Transistors

- Antennae
- Location and satellite
- Optical networks
- Wired networks
- Wireless networks

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Superclass | MECHANICAL

Subclass	Scope
Pumps	Mechanical devices used to force a fluid (liquid or a gas) to move inside a pipeline or hose, or to produce pressure by the creation of a suction (partial vacuum) which causes a fluid to rise to a higher altitude. This class also includes compressors.
Robotics	Engineering or operation of machines with the ability to autonomously or semi-autonomously perform physical tasks on behalf of a human.
Steering	Structures of mechanical linkages and other components that direct vehicles to follow a desired path.
Suspension	Systems of components which allow a machine to move smoothly across an uneven surface with reduced shock.
Transmissions	Devices interposed between a source of power and a specific application for the purpose of adapting one to the other, often functioning as rotary speed changers.
Wheels & tires	Circular objects that revolve on an axle and fixed below a vehicle or other object to enable it to move easily over ground. Included are ring-shaped components which surround the wheel, constructed from a rubber compound or other material and may be pneumatically inflated structures.
Hinges	Mechanical bearings which connect two solid objects and typically allowing only a limited angle of rotation, usually comprising flexible material or moving components.
Pipes	Hollow-bodied structures designed for the conveyance of liquids, gases or finely divided solids. Includes pipes employed in structural applications.
Doors	Movable, usually solid, barriers for opening and closing an entranceway, cupboard, cabinet or other spaces and turning on hinges or sliding in grooves.
Locks	Devices for securing doors, gates, lids, drawers and other devices in position, usually when closed and using bolts or system of bolts propelled and withdrawn by a mechanism operated by a key, dial, or other apparatus.
Valves	Mechanical devices for controlling the flow of fluids (liquids, gases or slurries) in a pipe or other enclosure and controlled by means of movable elements that open, shut, or partially obstruct an opening in a passageway.
Munitions	Materials used in war and other military or security situations, which include weapons and ammunition.

Subclass	Scope
Molding	Fixed frame or hollow cavity receptacles into which malleable raw materials are poured to create a particular shape or structure. Raw materials may include liquid plastic, metal, ceramic or glass.
Furniture	Movable objects intended to support various human activities such as seating tables, beds and also to hold objects at a convenient height for work. This class also includes medical furniture.
Drills	Devices, methods and apparatus for to create holes, usually made by hammering a drill bit into the hole with quickly repeated short movements. The hammering action can be performed from outside of the hole (top-hammer drill) or within the hole (down-the-hole drill, DTH). Includes drifter drills used for horizontal drilling.
Cutting tools	Tools employed to remove material from a work piece by means of shear deformation. This class includes grinding, milling and cutting tools.
Conveyors	Mechanical handling equipment which moves goods and materials from one location to another.
Clutches & brakes	Devices and apparatus for engaging and disengaging power transmissions by mechanically connecting and disconnecting two rotating shafts. Included are devices and apparatus for slowing or stopping a vehicle or other moving mechanism by the absorption or transfer of the energy of momentum.
Bearings	Mechanical assemblies consisting of rolling elements, usually with inner and outer races used for rotating or linear shaft applications.
Airbags	Inflatable safety devices providing cushioning by automatically inflating in the event of collision.
Fasteners	Mechanical devices that join or affix two or more objects together, to create non-permanent joints that can be removed or dismantled without damaging the joining components.
Haptics	Technologies which stimulate the senses of touch and motion, especially used in remote operation or computer simulation environments to reproduce the sensations that would be experienced by a user interacting directly with physical objects.
Heat exchangers	Energy transfer devices which facilitate the transmission of heat from one medium to another, including liquids, gases or metals. Includes all HVAC, Heat pumps (which transfer thermal energy from a cooler to warmer areas using the refrigeration principle), refrigeration processes and heat sinks.

Superclass | SENSORS & OPTICS

Subclass	Scope
Touch sensors	An element of a touch screen or other device which takes an input from the display screen and translates it into a suitable output action, layered on top of electronic visual displays and allow direct interaction with the information displayed. Includes capacitive touch sensors and resistive touch sensors but excludes piezoelectric sensors which are covered by their own class.
Biometric sensors	Sensors devised to collect measurable biological characteristics (biometric signals) from a human being, which can be used in conjunction with biometric recognition algorithms to perform automated person identification. Includes gait, facial and iris recognition sensors.
Gaze sensors	Sensor technology that enables a computer or other device to detect where an individual is looking and may detect the presence, attention and focus of the user.
Temperature sensors	Sensors which measure the amount of heat energy generated by an object or system, detecting any physical change to that temperature and producing either an analogue or digital output. Includes heat flow sensors.
Fluid sensors	Devices to monitor Liquids and gases. This class also includes flow meters.
Ultrasound sensors	Sensors and devices operating at frequencies around 20 kHz, used to detect objects and measure distances with applications in ultrasound imaging or sonography for medicine and the non-destructive testing of products and structures to detect invisible flaws. Includes Ultrasound Identification (USID), Real-Time Locating Systems (RTLs) and Indoor Positioning System (IPS) technology, used to automatically track and identify the location of objects in real time.
Infrared sensors	Electronic devices used to sense certain environmental characteristics by either emitting or detecting infrared radiation and also measuring the heat being emitted by an object and detecting motion.
Image sensors	Electronic devices that convert optical images into electronic signals.
Spectrometry sensors	Sensors used to measure light intensity in the ultraviolet (UV), visible (VIS), near-infrared (NIR) and infrared (IR) range of the electromagnetic spectrum.
Radiographic sensors	Devices used to measure the flux, spatial distribution, spectrum, and/or other properties of X-rays.

Subclass	Scope
Radar sensors	Sensors which convert microwave echo signals into electrical signals and interpreting the position, shape and motion characteristics of an object.
Projection	Devices, processes or apparatus which recreates an image onto a surface by directing rays of light.
Pressure sensors	Devices consisting of a pressure sensitive element to determine the actual pressure applied to the sensor together with components to convert this information into an output signal. This class includes piezoelectric pressure sensor devices such as accelerometers.
Motion sensors	Devices that can detect physical movement on an object or within an environment. Includes passive infrared sensors (PIRs).
Magnetic sensors	Sensors which detect the magnitude of magnetism and geomagnetism generated by the proximity of a magnet or current. This class Includes magnetic field sensors, Hall effect sensors, magnetometers, magnetic position and distance sensors, magnetic proximity switches, magnetic force and torque sensors, magnetic flowmeters and current sensors.
Lidar	Optical technology used to sense the shape, motion and makeup of objects in the environment by pulsing laser signals using all light ranges (ultraviolet, visible, infrared) and amplifying the light that is scattered back through an optical telescope and photomultiplier tube.
Lenses	Structures of glass or other transparent material with curved sides or modified surfaces for concentrating or dispersing light rays.
Lasers	Devices that emit a beam of coherent light through an optical amplification process. Includes gas, fiber, solid state, dye, diode and excimer lasers.

Subclass	Scope
Molecular oncology	Treatment, diagnosis and therapies relating to cancer. Imaging based diagnosis (e.g. CT scan, X-ray) is not included.
Infection & disease therapy	Includes any solutions for treating, diagnosing or in other ways managing any type of infection or disease.
Surgical implants	Implants and implantable devices, including implantable prosthetics, dental implants, implantable sensors, neurostimulators and implantable hearing aids, as well as other types of implants.
Industrial microbiology	Includes microorganisms (e.g. yeast or bacteria) for use in the production of compounds or materials, or other industrial purposes as well as associated inventions such as culture mediums.
Drug administration	Methods and devices for administering medicament, fluids, drugs or similar. These include syringes, infusion pumps and injection devices.
Biological assays	Includes a wide range of assays important in biological sciences such as polymerase chain reaction (PCR), enzyme-linked immunosorbent assay (ELISA), western blot, among others. No specific applications or use cases are excluded.
Absorbent materials	Materials or a mixture of materials which are insoluble in nature and are used to absorb liquids by soaking up and hold them within the material.
Pest control	Pesticides and other crop/plant pest control products which prevents or treat infection of e.g. fungi, bacteria, nematode, viral or other types of infections on crops or plants. Includes both compositions as well as associated equipment.
Food & drink	Proteins, carbohydrates, fats, and other nutrients used in the body of an organism to sustain growth and vital processes and to furnish energy. Includes liquids that can be swallowed as refreshment or nourishment.
Surgical catheters	Thin tubes made from medical grade materials and serve a broad range of functions, which can be inserted in the body to treat diseases or perform surgical procedures. Includes cardiovascular, urological, gastrointestinal, neurovascular and ophthalmic applications.
Cleaning	Removal of foreign matter from objects and materials. This class includes all technologies relevant to cleaning processes.
Stem cells	Technologies relating to undifferentiated or partially differentiated cells.

Subclass	Scope
Cosmetics	Substances or mixtures intended to be placed in contact with the various external parts of the human body with the intention to clean, perfume or change appearance, alter body odours, protect them or keep them in good condition.
Tobacco	All technologies relating to the manufacture of products and processes in the tobacco industry, including reduced-risk tobacco products.
Plant breeding	The purposeful manipulation of plant species in order to create desired genotypes and phenotypes for specific purposes. This manipulation involves either controlled pollination, genetic engineering, or both, followed by artificial selection of progeny. Plant breeding often, but not always, leads to plant domestication.
Immunogenics	Immunogenic compositions and regimens (e.g. vaccines and anti-inflammatory immunogenics).
Surgical robotics	Types of surgical procedures that are performed using robotic systems to overcome the limitations of pre-existing minimally-invasive surgical procedures and to enhance the capabilities of surgeons performing open surgery.

Superclass | INFORMATION

Subclass	Scope
Printing	Apparatus and processes to transfer text and images onto a paper or other similar mediums by utilising dedicated hardware devices.
UI	User interfaces (UI), where a human user interacts with a computer, website or application.
AR & VR	Computer-generated simulations in which a person can interact within an artificial three-dimensional environment or Virtual reality (VR) using electronic devices, such as special goggles with a screen or gloves fitted with sensors. Included are enhanced real world environments or Augmented Reality (AR), with graphical overlays and which do not create a fully immersive experience.
Streaming	Processes for delivering media content in a continuous transfer of compressed data over the Internet for immediate display.
Storage	Magnetic, optical or mechanical media that records and preserves digital information for ongoing or future operations. This class includes both local and remote storage locations.
Speech recognition	Systems and methods which enable a program to process human speech into a written format or machine commands.
Social media	Computer-based technology that facilitates the sharing of ideas, thoughts, and information through the building of virtual networks and communities.
Scanning	Optical processes performed by dedicated hardware to capture images, printed text, handwriting or an object as a digital facsimile of the original.
Machine learning	The use of data and algorithms to imitate the way that humans learn, by gradually improving its accuracy.
Image processing	Method and operations performed on a visual image, by enhancing the image or distilling information from it.
eCommerce	Buying and selling of goods or services using the internet and the transfer of money and data to execute these transactions.
Gaming	Games played on computers and laptops, handheld devices, game consoles, phones and tablets. Also includes gaming controllers, card, board, gambling games and all toys.

Subclass	Scope
3D printing	Additive processes for 3D printed objects. Includes Sintering (the process of fusing particles) and DMLS (Direct Metal Laser Sintering) and SLM (Selective Laser Melting).
Engineering software	Purpose-built computer code to design and document a product. This class includes electronic design automation (EDA, ECAD) for semiconductor design, Logic simulation, In circuit emulation (ICE), Software compilers and Computational fluid dynamics (CFD).
Blockchain	Shared, immutable ledgers facilitating the process of recording transactions and tracking assets in a business network.
Security	Processes for safeguarding and defending computers, servers, mobile devices, electronic systems, networks and data.

Superclass | ELECTRICAL

Subclass	Scope
Switches	Devices used to interrupt the flow of electrons in a circuit. This class also includes relays.
Motors	Devices which convert electricity into mechanical energy using the principles of electromagnetism.
Lighting	Devices that produce visible light from electric power. Includes incandescent, halogen, fluorescent, LED and carbon arc devices.
Inductors	Passive electrical components which oppose sudden changes in current, also known as coils or chokes, used for choking, blocking, attenuating, or filtering high frequency noise in electrical circuits, storing and transferring energy in power converters, creating tuned oscillators and Impedance matching. Also included are transformers made of two or more inductors.
Displays	Display devices for the transitory presentation of images, text or video transmitted electronically.
Connections	Electromechanical devices used to join electrical conductors and create an electrical circuit. Fuses are also included in this class.
Capacitors	Passive two-terminal electrical components used to store energy electrostatically in an electric field. Also includes super capacitors (SC) or ultra capacitors, which have a capacitance value much higher than other capacitors but with lower voltage limits. These bridge the gap between electrolytic capacitors and rechargeable batteries.
Cables	Core of metal wire offering good conductivity such as copper or aluminium, along with other material layers including insulation, tapes, screens, armouring for mechanical protection, and sheathing.
PCBs	Electronic circuits used in devices to provide mechanical support and a pathway for electronic components, generally constructed by combining different sheets of non-conductive material, such as fibreglass, plastic or other types of material, onto which the copper connecting circuitry is attached.

Subclass	Scope
Resistors	Components employed within a circuit specifically designed to restrict the flow of electric current when a potential difference is manifest across it. Included are all forms of resistors and associated technologies together with their manufacture.
ADC & DAC	Analog-to-digital converters (ADC), taking an analog wave as an input and converting it to a digitally represented output form and digital-to-analog converters (DAC) performing the reverse, converting a digital representation into an analog form. Included are Flash (direct conversion), Pipeline, Delta-sigma and Successive approximation register (SAR) devices
Amplifiers	Electronic devices which increase the voltage, current or power of a signal as employed in wireless communications, broadcasting and in audio equipment of all kinds. This class excludes operation amplifiers (op-amps) and integrated circuit amplifiers.
Audio transducers	Includes both input sensors which convert sound into an electrical signal (e.g. microphones) and output actuators that convert the electrical signals back into sound (e.g. loudspeakers).

Superclass | MATERIALS

Subclass	Scope
Packaging	Products made of any materials to be used for the containment, protection, handling, delivery and presentation of goods. This class includes luggage, baggage and suitcases.
Liquid processing	Processes or processing of all liquids including gas, oil, beverages and water.
Insulation	Materials or substances used to insulate from either thermal or acoustic conduction. This class excludes pipes and electrical cables.
Glass	Materials made by fusing sand with soda and lime and cooling rapidly.
Chemicals	Compounds of one or more pure substances. Includes artificial chemicals and acids but excludes gases which are covered by their own class.
Gases	Suspensions of matter that conform to the shape of a container in which they are held and acquire a uniform density within the container, even in the presence of gravity and regardless of the amount of substance in the container.
Fabrics	Materials made through weaving, knitting, spreading, felting, stitching, crocheting or bonding that may be used in the production of further products, such as clothing and upholstery.
Coatings	Mixtures of film-forming materials with pigments, solvents and other additives, which when applied to a surface and cured or dried, yields a thin film that is functional and often decorative. Includes paints, platings, drying oils and varnishes, synthetic clear coatings, and other products whose primary function is to protect the surface of an object from the environment.
Polymers	Substances which have a molecular structure built up mostly or completely from a large number of similar units bonded together Includes many synthetic organic materials used as plastics and resins.

Superclass | ENERGY

Subclass	Scope
Hydroelectric	Technologies harnessing of the kinetic energy of flowing water where turbines and generators convert this energy into electricity.
Batteries	Energy sources consisting of one or more electrochemical cells, which transform their chemical energy into electrical energy.
Fuel cells	Devices which create electricity by creating a chemical reaction between a fuel and an oxidant. Fuels include hydrogen, methane, propane, methanol, diesel fuel or gasoline.
Gas turbines	Internal-combustion engines consisting of an air compressor, combustion chamber, and turbine wheel that is turned by the expanding products of combustion.
Nuclear	Technologies used to create electricity using nuclear fission to split atoms to release this nuclear energy.
Piston engines	Engines constructed from one or more cylinders, in which close fitting pistons can move up and down and deriving their power from the burning of a compressed air-fuel mixture in each of the cylinders in succession.
Wind turbines	Power generating devices that are driven by the kinetic energy of the wind. Includes Horizontal axis wind turbines (HAWTs) and Vertical axis wind turbines (VAWTs).
Photovoltaics	Materials and devices manufactured from semiconductors which convert sunlight into electrical energy. Includes photodiodes photo detectors and light sensors.

Superclass | SEMICONDUCTORS

Subclass	Scope
Lithography	Processes to enable highly complex circuit patterns to be drawn onto large glass plate photo masks, including reduction processes using ultra-high-performance lenses to expose silicon substrate wafers.
Transistors	Three-terminal semiconductor electronic devices used as switches or amplifiers. Also included are TFT transistor arrays (used in displays) and spin transistors.
Memory	Devices or systems used to store information for use in a computer or related computer hardware and digital electronic devices.
Substrates	Solid, usually planar substance or wafer onto which a layer of another substance is applied and to which that second substance adheres. Fabricated from silicon, silicon dioxide, aluminium oxide, sapphire, germanium, gallium arsenide (GaAs), silicon and germanium alloy or indium phosphide (InP) and serve as the foundation upon which electronic devices such as transistors, diodes, and especially integrated circuits (ICs) are deposited. This class also includes etching.
Processors	Logical circuits on a chip which respond and process basic instructions to drive a particular computer or computing function including fetching, decoding, executing, and writing back operations of an instruction.

Superclass | TELECOMMUNICATION

Subclass	Scope
Optical networks	Data communication networks built with optical fiber technology utilising optical fiber cables as the primary communication medium.
Wireless networks	Networks employing radio systems to connect devices to other devices and networks.
Location & satellite	Technologies related to satellite communication, geocentric orbit type satellites, remote sensing satellites and global positioning satellite (GPSS) and terrestrial based location technologies.
Wired networks	Networks employing physical copper or other metal cables to connect devices to other devices and networks.
Antennae	Devices and apparatus made of conductive metal that send and/or receive electromagnetic radio waves.

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Universal Technology Taxonomy

Introducing the world's first Universal Technology Taxonomy.

This article sheds light on why Cipher launched the world's first universal technology to classify patents and example analysis using UTT.

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