

**NAPCS Product List for NAICS 5417: Research and Development Services**

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Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	1					Production services for basic research	<p>Providing contract basic research services that may result in the creation of intellectual property. Includes contracts for the creation of original works that can be implicitly or explicitly protected by copyright and industrial property laws. The contract specifies the disposition of any intellectual property arising from the worked performed under the contract. Includes basic research services which are defined as conducting original systematic investigation using experiment, theory and analysis, for the purpose of acquiring new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Basic research usually results in discoveries of new theories or laws.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• services provided in fulfillment of legal contracts as well as those performed under terms of dedicated grants and gifts.</li> </ul>	541711 541712 541720
5417	1.1					Basic research in natural and exact sciences, except biological sciences	<p>Providing basic research services focused on the scientific study of quantities, magnitudes, and forms; inanimate objects; processes of matter and energy; biotechnology; information, computing, and communications sciences; and associated phenomena.</p>	541711 541712
5417	1.1.1	X				Basic research in mathematical sciences	<p>Providing basic research services focused on the scientific study of quantities, magnitudes, forms, and their relationships, using symbolic logic and language.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of mathematics (algebra and number theory, analysis and functional analysis, geometry, topology and foundations, etc.), mathematical statistics and probability, systems theory and control, operations research, and other mathematical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• providing basic research in mathematics associated with computer science is in product 1.1.7, Basic research in information, computing, and communication science.</li> </ul>	541712
5417	1.1.2					Basic research in physical sciences	<p>Providing basic research services focused on disciplines such as condensed matter physics; atomic and molecular physics; nuclear and particle physics; plasma physics; optical physics; and classical physics (such as acoustics, fluid physics, electrostatics, and thermodynamics).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• technological aspects of physics such as remote sensing and antenna technology,</li> <li>• physics associated with another discipline such as astrophysics, geophysics, and biophysics.</li> </ul>	541712

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5417	1.1.2.1	X				Basic research in acoustics and optics	Providing basic research services focused on the scientific study of sound and the properties and behavior of acoustic wave phenomena under different conditions (acoustics), and on the scientific study of light energy, including its structure, properties and behavior under different conditions (optics).	541712
5417	1.1.2.9	X				Basic research in physical sciences, nec.	Providing basic research services focused on physical sciences, not elsewhere specified.	541712
5417	1.1.3	X				Basic research in astronomy and astrophysics	Providing basic research services focused on the scientific study of objects and matter outside the earth's atmosphere; planetary, galactic, and stellar phenomena; and related physical and chemical interactions.  Includes: • research in the areas of astronomy, astrophysics, planetary science, and other astronomical sciences.	541712
5417	1.1.4	X				Basic research in chemical sciences	Providing basic research services focused on the scientific study of the composition and behavior of matter, including its micro- and macro-structure and the processes of chemical change, and the theoretical description and laboratory simulation of these phenomena.  Includes: • research in the areas of analytical chemistry, inorganic chemistry, organic chemistry, physical and theoretical chemistry, polymer chemistry, chemical physics, and other chemical sciences.	541712
5417	1.1.5	X				Basic research in geosciences and atmospheric sciences	Providing basic research services focused on the scientific study of the earth; the forces acting upon it; and the behavior of the solids, liquids, and gases comprising it (geosciences), and on the scientific study of the composition and behavior of the atmospheric envelopes surrounding the earth, the effect of earth's atmosphere on terrestrial weather, and related problems of environment and climate (atmospheric sciences).	541712

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5417	1.1.5.1				X	Basic research in atmospheric sciences	Providing basic research services focused on the atmospheric sciences.  Includes: • research in the areas of atmospheric chemistry and climatology, atmospheric physics and dynamics, meteorology, and other atmospheric sciences.	541712
5417	1.1.5.2				X	Basic research in geosciences	Providing basic research services focused on the geosciences.  Includes: • research in the areas of geology, geochemistry, petrology, geophysics and seismology, paleontology, hydrology and water resources science, chemical and physical oceanography, and other geosciences.	541712
5417	1.1.6	X				Basic research in biotechnology	Providing basic research services focused on genetic engineering and other biotechnology.  Includes: • research in the areas of industrial biotechnology; diagnostic applications; genetic engineering and enzyme technology; genetic technologies; transformation, site-directed autogenesis; process biotechnology; transgenesis; and other biotechnology fields.	541711
5417	1.1.7	X				Basic research in information, computing, and communication science	Providing basic research services focused on the sub-disciplines of artificial intelligence and signal and image processing; computation theory and mathematics associated with computer science; computer software; data format; information systems; and information, computing, and communications sciences, not elsewhere classified.	541712
5417	1.1.9	X				Basic research in other natural and exact sciences, except biological sciences	Providing basic research services focused on natural and exact sciences, not elsewhere specified, except biological sciences.	541712

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5417	1.2					Basic research in engineering and technology	<p>Providing basic research services focused on the application of various combinations of mathematical and scientific principles to goods, services, and processes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of aerospace, aeronautical and astronautically engineering, agricultural and forestry engineering, architectural engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical, electronics, and communications engineering, environmental engineering, forest engineering, geomantic engineering, manufacturing engineering, materials engineering, mechanical engineering, metallurgical engineering, and mining, mineral and petroleum engineering, etc.</li> </ul>	541712
5417	1.2.1	X				Basic research in architecture, urban environment, and building	<p>Providing basic research services focused on disciplines concerned primarily with materials, systems, and methods used to construct and equip buildings, urban complexes, and related systems.</p>	541712
5417	1.2.1.1			X	X	Basic research in architecture and urban environment	<p>Providing basic research services focused on the study of the art, science, and techniques of building. It encompasses both utilitarian ends--such as the soundness of the structure and the functional and economic efficiency of the building--and aesthetic considerations.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of urban environment such as urban planning and architectural landscaping.</li> </ul>	541712
5417	1.2.1.2			X	X	Basic research in building	<p>Providing basic research services focused on the science, technology, and techniques of assembling, erecting, and maintaining public, commercial, industrial, and residential structures, and their fittings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of building and building materials science and building engineering.</li> </ul>	541712
5417	1.2.2	X				Basic research in chemical engineering	<p>Providing basic research services focused on engineering concerned primarily with systems employing chemical processes, such as chemical reactors, kinetic systems, electrochemical systems, energy conservation processes, heat and mass transfer systems, and separation processes.</p>	541712

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5417	1.2.3	X				Basic research in civil engineering	<p>Providing basic research services focused on engineering concerned primarily with structural, load-bearing, material moving, transportation, water resource, and material control systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of construction engineering, geotechnical engineering, structural engineering, and other civil engineering fields.</li> </ul>	541712
5417	1.2.3.1				X	Basic research in construction engineering	<p>Providing basic research services focused on engineering concerned primarily with the application of scientific, mathematical, and management principles to the planning and building of facilities and structures.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of civil engineering, structural principles, site analysis, computer-assisted design, geology, evaluation and testing, materials, contracting, project management, graphic communications, and applicable laws and regulations.</li> </ul>	541712
5417	1.2.3.9				X	Basic research in civil engineering, nec.	<p>Providing basic research services focused on civil engineering disciplines, not elsewhere classified.</p> <p>ncludes:</p> <ul style="list-style-type: none"> <li>• research in the areas of architectural engineering, geotechnical engineering, transportation infrastructure engineering (such as roads, highways and bridges), and water drainage and sanitary engineering.</li> </ul>	541712

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5417	1.2.4	X				Basic research in computer and communications technologies	<p>Providing basic research services focused on engineering concerned primarily with computer hardware and software systems and related equipment and facilities, including the physical components for personal computer, mainframe, and accessory computer equipment.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on technologies for circuit boards and hardware assemblies of computing devices, multiplexers, printers, scanners, artificial intelligence, computer graphics tools, artificial intelligence and robotics, and interactive and multimedia technologies.</li> <li>• research on technologies supporting communications and communications systems such as communication networks, communications and broadcasting systems, digital systems, optical and photonic systems or any other communication system, antenna technology (including that used in remote sensing and satellite technology), and microwave and millimetrewave technology.</li> </ul> <p>Excludes</p> <ul style="list-style-type: none"> <li>• basic research in information, computing, and communications sciences is in product 1.1.7, Basic research in information, computing, and communication science.</li> </ul>	541712
5417	1.2.4.1				X	Basic research in computer technologies	<p>Providing basic research services focused on engineering concerned primarily with computer technologies, including the physical components for personal computer, mainframe, and accessory computer equipment.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on technologies for circuit boards and hardware assemblies of computing devices, multiplexers, printers, scanners or any accessory related to computers.</li> </ul>	541712
5417	1.2.4.2				X	Basic research in communications technologies	<p>Providing basic research services focused on engineering concerned primarily with technologies supporting communications and communications systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on technologies for communication networks, communications and broadcasting systems, digital systems, optical and photonic systems or any other communication system, antenna technology (including that used in remote sensing and satellite technology), and microwave and millimetrewave technology.</li> </ul>	541712

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5417	1.2.5	X				Basic research in electrical and electronic engineering	<p>Providing basic research services focused on engineering concerned primarily with the electrical, electronic, and related communications systems and their components, including electrical power generation systems, superconductor, wave propagation, energy storage and retrieval, and reception and amplification.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on communication networks; communication and broadcasting systems; laser processes and systems; digital systems; optical and photonic systems or any other communication system; antenna technology; and microwave and millimetrewave technology.</li> </ul>	541712
5417	1.2.6	X				Basic research in materials engineering	<p>Providing basic research services focused on engineering concerned primarily with materials and related processes used in manufacturing in a wide variety of settings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of materials engineering covering the synthesis of new industrial materials, including marrying and bonding composites.</li> <li>• research in the areas of ceramics engineering covering inorganic non-metallic materials, such as porcelains, cements, industrial ceramics, ceramic superconductors, abrasive, and related materials and systems.</li> <li>• research in the areas of polymer/plastics engineering covering synthesized macromolecular compounds and their application to specific engineering uses, including the development of industrial materials with tailored properties; the design of lightweight structural components; the use of liquid or solid polymers; and the analysis and control of polymerization processes.</li> <li>• research in the areas of textile engineering covering new and improved fibers, textiles and their uses; systems to test and manufacture fibers and fiber products, both synthetic and natural.</li> <li>• research in the areas of metallurgical engineering covering metal components of structural, load-bearing, power, transmission, and moving systems.</li> </ul>	541712
5417	1.2.7	X				Basic research in mechanical and industrial engineering	<p>Providing basic research services focused on engineering concerned primarily with the physical systems used in manufacturing and end-product systems for specific purposes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems.</li> </ul>	541712

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5417	1.2.7.1			X	X	Basic research in mechanical engineering	<p>Providing basic research services focused on engineering concerned primarily with physical systems used in manufacturing and end product systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on machine tools, jigs and other manufacturing equipment; self-propelled vehicles; hydraulic and electric systems for controlling movement; industrial laser processes and systems; robots, robotic systems and mechatronics; flexible manufacturing systems; CAD/CAM systems; welding technology; textile manufacturing process and technologies; and printing technology.</li> </ul>	541712
5417	1.2.7.2			X	X	Basic research in industrial engineering	<p>Providing basic research services focused on engineering primarily concerned with the improvement and installation of integrated systems of people, material, information, and energy. Involves the application of mathematics, physical sciences, social sciences, engineering analysis, systems design, computer applications, and forecasting and evaluation methodology.</p>	541712
5417	1.2.8	X				Basic research in mining, mineral, and petroleum engineering	<p>Providing basic research services focused on engineering that is primarily concerned with mineral extraction.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of mining and mineral engineering (open pit and shaft mines) covering processing and refining systems; prospecting and site analysis equipment and instruments; environmental and safety systems; mine equipment and facilities; mineral processing and refining methods and systems; and logistics and communications systems.</li> <li>• research in the areas of petroleum engineering covering systems for locating, extracting, processing, and refining crude petroleum and natural gas, including prospecting instruments and equipment, mining and drilling systems; processing and refining systems and facilities; storage facilities; transportation systems; and related environmental and safety systems.</li> </ul>	541712
5417	1.2.9					Basic research in other engineering	<p>Providing basic research services focused on other engineering and technology, such as aerospace engineering, automotive engineering, biomedical engineering, environmental engineering, and manufacturing engineering, etc.</p>	541712

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5417	1.2.9.1	X				Basic research in transportation equipment and systems engineering	Providing basic research services focused on engineering concerned primarily with transportation equipment and associated systems used on, above, or below the earth, including water based transportation equipment and systems.	541712
5417	1.2.9.1.1				X	Basic research in aerospace engineering	Providing basic research services focused on engineering concerned primarily with vehicles operating in the Earth's atmosphere or in outer space.  Includes: • research on aircraft and spacecraft as well as their launching, guiding and controlling systems.	541712
5417	1.2.9.1.2				X	Basic research in automotive engineering	Providing basic research services focused on engineering concerned primarily with land based automotive equipment technologies, including amphibious vehicles.	541712
5417	1.2.9.1.3				X	Basic research in maritime engineering	Providing basic research services focused on engineering concerned primarily with self-propelled, stationary, or towed vessels operating on or under the water, including inland, coastal, and ocean environments.	541712
5417	1.2.9.2	X				Basic research in environmental engineering	Providing basic research services focused on engineering concerned primarily with systems for controlling contained living environments and for monitoring and controlling factors in the external natural environment.  Includes: • research on pollution control, waste and hazardous material disposal, health and safety protection, conservation, and life support systems.	541712

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5417	1.2.9.3	X				Basic research in manufacturing engineering	Providing basic research services focused on engineering concerned primarily with manufacturing systems, including control systems, virtual manufacturing systems, intelligent production systems, logistics, and safety and quality control systems.	541712
5417	1.2.9.4	X				Basic research in geomantic engineering	Providing basic research services focused on engineering concerned primarily with geodesy surveying and mapping, such as photogrammetry and cartography; spatial information systems; navigation and positioning systems; and radar and optical remote sensing.	541712
5417	1.2.9.5	X				Basic research in biomedical engineering	Providing basic research services focused on engineering concerned primarily with biological, medical, and health products and systems.  Includes: • research on drugs and pharmaceutical products, natural products, animal pharmaceutical products, integrated biological systems, instrumentation and medical information systems, artificial organs and prostheses, and health management and care delivery systems (e.g., testing of human heart and circulatory system health, and administering of treatment therapies).	541712
5417	1.2.9.6	X				Basic research in agricultural and forestry engineering	Providing basic research services focused on engineering concerned primarily with systems, equipment, and facilities, used to produce, process, package, store and distribute agricultural products or to improve the productivity of agricultural processing methods. Forestry engineering is concerned primarily with mechanical devices and processes for efficient forest management, timber production, and related forest logistics systems.	541712
5417	1.2.9.7	X				Basic research in food engineering	Providing basic research services focused on engineering concerned primarily with the systems, equipment, and facilities used to produce, process, package, store, and distribute food products, including the improvement of productivity of food processing methods and the development of improved biological systems.	541712

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5417	1.2.9.8	X				Basic research in nuclear engineering	Providing basic research services focused on engineering concerned primarily with the systems for controlling and manipulating nuclear energy, including power plants, fission reactors, fusion reactors, reactor control and safety systems, power transfer systems, and containment vessels and structures.	541712
5417	1.2.9.9	X				Basic research in engineering and technology, nec.	Providing basic research services focused on engineering and technologies, not elsewhere classified.	541712
5417	1.3					Basic research in biological sciences	<p>Providing basic research services focused on the scientific study of the structure, function, reproduction, growth, heredity, evolution, behavior, and distribution of living organisms (plants, animals, humans, microbes, etc.) and on their relation to the natural environment (biological sciences), and on the scientific study of biological issues related to health and medicine (biomedical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of botany; animal and human biological and biomedical sciences; microbiology; ecology and evolutionary biology (including epidemiology); biomathematics and bioinformatics; and other biological and biomedical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• basic research in biotechnology is in product 1.1.6, Basic research in biotechnology.</li> </ul>	541712
5417	1.3.1	X				Basic research in botany	<p>Providing basic research services focused on the scientific study of plants, including their structure, function, reproduction, growth, and pathology.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of plant biology, plant molecular biology, plant biochemistry, plant biophysics, plant genetics, plant pathology, and plant physiology.</li> </ul>	541712
5417	1.3.2	X				Basic research in animal biological sciences	Providing basic research services focused on the biological scientific study of animals, including their structure, function, reproduction, growth, and behavior.	541712

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5417	1.3.3	X				Basic research in human biological sciences	Providing basic research services focused on the biological scientific study of human beings, including their structure, function, reproduction, growth, and behavior.  Includes: • research in the areas of biochemistry, biophysics, molecular biology, cellular biology, anatomical sciences, genetics, and physiology, etc.	541712
5417	1.3.4	X				Basic research in microbiology	Providing basic research services focused on the scientific study of organisms such as pathogenic bacteria, viruses, parasites and fungi, and their ecological interactions with human beings and other life.  Includes: • research in the areas of bacteriology, virology, parasitology, mycology, and microbial genetics.	541712
5417	1.3.5	X				Basic research in ecology and evolution	Providing basic research services focused on the scientific study of ecosystems, populations, and their behavior, as well as their changes and dynamics across evolutionary and geologic time.  Includes: • research in the areas of ecology, marine biology and biological oceanography, evolutionary biology, wildlife biology, aquatic biology (or limnology), environmental biology, population biology, conservation biology, systematic biology, and epidemiology.	541712
5417	1.3.9	X				Basic research in other biological sciences	Providing basic research services focused on biological sciences, not elsewhere classified.	541712
5417	1.4					Basic research in medical and health sciences	Providing basic research services focused on fields such as clinical sciences, immunology, neurosciences, pharmacology, and public health, etc.  Excludes: • basic research in biotechnology is in product 1.1.6, Basic research in biotechnology.	541712

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5417	1.4.1	X				Basic research in clinical sciences	<p>Providing basic research services focused on the scientific study, for human beings, of the diagnosis, treatment and management of illnesses, injuries, and other disorders of the human body.</p> <p>Includes</p> <ul style="list-style-type: none"> <li>• research in fields such as cardiology, dentistry, hematology, obstetrics and gynecology, pediatrics, oncology, carcinogenesis, radiology, radiotherapy, rheumatology, arthritis, and others.</li> </ul>	541712
5417	1.4.1.1				X	Basic research in cardiology	Providing basic research services focused on the causes, diagnosis, treatment, and management of heart disease and other heart disorders in humans, as well as related medical technologies.	541712
5417	1.4.1.2				X	Basic research in dentistry	Providing basic research services focused on the care, causes, diagnosis, treatment, and management of problems of the mouth, teeth, and gums, as well as related medical technologies.	541712
5417	1.4.1.3				X	Basic research in hematology	Providing basic research services focused on the causes, diagnosis, treatment, and management of blood diseases and of blood-forming organs, as well as related medical technologies.	541712
5417	1.4.1.4				X	Basic research in obstetrics and gynecology	Providing basic research services focused on the care, causes, diagnosis, treatment, and management of problems arising in giving birth, as well as related medical technologies.	541712
5417	1.4.1.5				X	Basic research in pediatrics	Providing basic research services focused on the care, causes, diagnosis, treatment, and management of medical and health problems of children, as well as related medical technologies.	541712
5417	1.4.1.6				X	Basic research in oncology and carcinogenesis	Providing basic research services focused on the causes, diagnosis, treatment, and management of cancer in humans; the study of cancer causing substances as in carcinogenesis; and on related medical technologies.	541712
5417	1.4.1.7				X	Basic research in radiology and radiotherapy	Providing basic research services focused on the treatment and management of maladies and disorders with radiology and radiotherapy.	541712

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5417	1.4.1.8				X	Basic research in rheumatology and arthritis	Providing basic research services focused on the causes, diagnosis, treatment, and management of rheumatism and arthritis, as well as related medical technologies.	541712
5417	1.4.1.9				X	Basic research in clinical sciences, nec.	Providing basic research services focused on clinical sciences and clinical medicine, not elsewhere classified.	541712
5417	1.4.2	X				Basic research in immunology	Providing basic research services focused on the scientific study of the human biological mechanisms involved in the pathogenesis of disease, host-pathogen interactions, and host response to disease.	541712
5417	1.4.3	X				Basic research in neuroscience	Providing basic research services focused on the causes, diagnosis, treatment, and management of human nervous system disorders, including neuromuscular diseases, as well as related medical technologies.	541712
5417	1.4.4	X				Basic research in pharmacology and pharmaceutical sciences	<p>Providing basic research services focused on (1) the scientific study of drug interactions on biological systems and organisms; the sources, chemical properties, biological effects, and therapeutic uses of drugs; and poisons and other biohazards, including their interactions with the human organism and its food and respiratory systems and their prevention, management, and counteraction and (2) the application of chemistry to the study of biologically and clinically active substances, biological and pharmacological interactions, and the development of associated research methods, techniques, and clinical trial procedures (Pharmaceutical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research in the areas of pharmacology, molecular pharmacology, neuropharmacology, toxicology, molecular toxicology, and environmental toxicology.</li> </ul>	541712

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5417	1.4.5	X				Basic research in public health services	Providing basic research services focused on the scientific study of the protection and improvement of health and of the prevention and management of disease for human beings.  Includes: • research in the areas of dietetics and nutrition, hygiene, nursing, mental and social health (substance abuse, psychiatric health, marriage and family therapy, psychoanalysis and psychotherapy); public health (environmental health, occupational health and industrial hygiene, community health and preventive medicine, maternal and child health); rehabilitation therapies (art, dance and movement, music therapies, hypnotherapy, kinesiotherapy); and human health sciences, not elsewhere classified.	541712
5417	1.4.6	X				Basic research in human alternative and complementary medicine	Providing basic research services focused on the scientific study of "non-mainstream" health care and healing systems for human beings, such as chiropractic, acupuncture and traditional chinese/oriental medicine, naturopathy, homeopathy, ayurvedic medicine, and herbal medicine, etc.  Includes: • reasearch in the areas of aromatherapy, massage therapy, reiki, oriental bodywork therapy, and other alternative and complementary medicines.	541712
5417	1.4.9	X				Basic research in other medical and health sciences	Providing basic research services focused on medical and health sciences, not elsewhere classified.	541712
5417	1.5					Basic research in agricultural, veterinary, and environmental sciences	Providing basic research services focused on the scientific study of plant and animal production; the diagnosis, treatment, and health care management of animals; and natural resource conservation and environmental management and rehabilitation; etc.  Excludes: • basic research in biotechnology is in product 1.1.6, Basic research in biotechnology.	541712

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5417	1.5.1	X				Basic research in plant production sciences	<p>Providing basic research services focused on the sciences and technologies directed towards the production of plants, including vegetables, shrubs, vines, and herbs, as well as their flowers, fruits, grains, and nuts.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in areas such as plant nutrition, propagation and culture, breeding, protection (pests, diseases and weeds), and growth and development.</li> </ul>	541712
5417	1.5.1.1				X	Basic research in crops	Providing basic research services focused on agricultural crop production such as fruits, nuts, grains and vegetables.	541712
5417	1.5.1.2				X	Basic research in agri-forestry (silviculture)	Providing basic research services focused on agri-forestry and the cultivation and harvesting of forests and trees.	541712
5417	1.5.2	X				Basic research in animal production sciences	<p>Providing basic research services focused on the sciences and technologies that support the production of animals. It covers aspects such as nutrition, husbandry, growth and development, breeding and protection (pests and pathogens).</p> <p>Includes</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of livestock, fisheries and aquaculture, poultry and aviculture, bees and apiary culture, milk and dairy science, and other animal production sciences.</li> </ul>	541712
5417	1.5.2.1				X	Basic research in fisheries sciences	Providing basic research services focused on aquaculture, fisheries, and fish farming.	541712
5417	1.5.2.2				X	Basic research in livestock and poultry	Providing basic research services focused on livestock, poultry, and other herded animals.	541712
5417	1.5.2.9				X	Basic research in animal production sciences, nec.	Providing basic research services focused on animal production sciences, not elsewhere classified.	541712

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5417	1.5.3	X				Basic research in agriculture-related soil and water sciences	Providing basic research services focused on the scientific study of soil and water in an agricultural production perspective.  Includes: • reasearch in the areas of soil chemistry and physics, soil microbiology, land capability, soil degradation, as well as the agricultural applied aspects of water sciences such as drainage, flooding, irrigation, and quality.	541712
5417	1.5.4	X				Basic research in veterinary sciences	Providing basic research services focused on the scientific study of the diagnosis, treatment and health care management of animals and animal populations, and of the prevention and management of zoonosis, including alternative and complementary animal medicine.	541712
5417	1.5.5	X				Basic research in environmental sciences	Providing basic research services focused on the scientific study of the natural environment and its conservation, use, and improvement.  Includes: • reasearch in the areas of environmental science, fishing and fisheries sciences and management, forest sciences and management, wildlife and wildlands science and management. • research on subjects such as environmental factors affecting natural habitats and renewable and non-renewable natural resources; abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resources management.	541712
5417	1.5.5.1				X	Basic research in forest, fish, and wildlife management	Providing basic research services focused on forest, fish, wildlife and their habitat management.	541712
5417	1.5.5.9				X	Basic research in environmental sciences, nec.	Providing basic research services focused on natural resource management, environmental impact assessment, conservation and other environmental management and rehabilitation, not elsewhere classified.	541712

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5417	1.5.9	X				Basic research in other agricultural, veterinary, and environmental sciences	Providing basic research services focused on studies related to agricultural, veterinary, and environmental sciences, not elsewhere classified.	541712
5417	1.6					Basic research in social sciences and humanities	<p>Providing basic research services focused on the scientific study of social systems, social institutions, and social behavior and on the scientific study of the cultures of human societies, the analytical and critical methods of inquiry derived from an appreciation of human values, and the unique abilities of the human spirit to express itself.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of psychology; linguistics; economics, management and commerce; education; political science; sociology; cultural anthropology; law, justice, and criminology; library science and curatorial studies; and other social sciences.</li> <li>• reasearch in the areas of promotion and understanding of history and archeology; visual and performing arts; language, literature, communications, and media; philosophy and religion; and other humanities.</li> </ul>	541712
5417	1.6.1	X				Basic research in psychology	Providing basic research services focused on the scientific study of the behavior of individuals, independently or collectively, and the physical and environmental bases of mental, emotional, and neurological activity.	541712
5417	1.6.2	X				Basic research in education	<p>Providing basic research services focused on the scientific study of the processes, methods, and tools of teaching.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of curriculum studies; counseling; teacher education; community college education; adult education and lifelong learning; bilingual, multilingual, and multicultural education and teaching; educational leadership; special education; and other education disciplines.</li> </ul>	541712

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5417	1.6.3	X				Basic research in studies in human society	<p>Providing basic research services focused on the scientific study of society, social institutions, and social relationships, including the systematic study of the development, structure, interaction, and collective behavior of organized groups of human beings, and of a social institution as a functioning whole and as it relates to the rest of society.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of anthropology, demography, human geography, social work, and sociology, etc.</li> </ul>	541712
5417	1.6.3.1				X	Basic research in demography	Providing basic research services focused on demography.	541712
5417	1.6.3.2				X	Basic research in human geography	Providing basic research services focused on human geography	541712
5417	1.6.3.3				X	Basic research in social work	<p>Providing basic research services focused on the professional practice of social welfare administration and counseling and on the study of organized means of providing basic support services for vulnerable individuals and groups.</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of social welfare policy; case work planning; social counseling and intervention strategies; administrative procedures and regulations; and specific applications in areas such as child welfare and family services, probation, employment services, and disability counseling.</li> </ul>	541712
5417	1.6.3.9				X	Basic research in studies in human society, nec.	Providing basic research services focused on studies in human society and related sciences, not elsewhere classified.	541712
5417	1.6.4	X				Basic research in linguistics	<p>Providing basic research services focused on the scientific study of language from a theoretical or applied approach, or from a diachronic (historical perspective) or sychronistic (as they are used at a given time) perspective.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of phonetics, phonology, morphology, syntax, and semantics, as well as computational linguistics, neurolinguistics, and sociolinguistics.</li> </ul>	541712

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5417	1.6.5	X				Basic research in political science	<p>Providing basic research services focused on the scientific study of political institutions, processes, and behavior, including the nature and functions of the state, government, government institutions, and politics.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of comparative politics; constitutional studies; international relations; political thought and theory; municipal and local government; public policy and administration; and other related topics.</li> </ul>	541712
5417	1.6.6	X				Basic research in economics	<p>Providing basic research services focused on the scientific study of the production, distribution, and consumption of goods and services and of wealth in human society, together with the organizational frameworks related to these processes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of economic theory, econometrics and quantitative economics, economic history and history of economic thought, applied economics (e.g., agricultural, resources, finance, health, labor, welfare, international development, urban and regional economics, etc.), and other related subjects.</li> </ul>	541712
5417	1.6.7	X				Basic research in management and commerce	<p>Providing basic research services focused on the scientific study of the planning, organizing, directing, and controlling of an organization's functions and processes, including all types of resources and covering both public and private sector organizations.</p>	541712
5417	1.6.8	X				Basic research in law and justice	<p>Providing basic research services focused on the scientific study of the rules of conduct by which societal relations are formally structured and adjudicated (law and legal studies); of the principles and procedures for conducting and supervising law enforcement, corrections, and security services (justice); and of crime as a social phenomenon, criminals, and penal treatment (criminology).</p>	541712
5417	1.6.9	X				Basic research in arts	<p>Providing basic research services focused on the scientific study of the creation and interpretation of works and performances that use auditory, kinesthetic, and visual phenomena to express ideas and emotions in various forms, subject to aesthetic criteria.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of fine arts; film/video and photographic arts; electronic arts and multimedia; music, drama, theatre and dance; visual arts and crafts; design and applied arts; and other visual and performing arts.</li> </ul>	541712

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5417	1.6.10	X				Basic research in history and archaeology	Providing basic research services focused on the scientific study of the past, including the gathering, recording, interpreting, and assessing of past events, whether by historiography or oral tradition (history), and the scientific study of physical remains and artifacts of past human lives and activities in order to increase understanding of the past (archaeology).	541712
5417	1.6.19					Basic research in other social sciences and humanities	Providing basic research services focused on other social sciences and humanities, such as philosophy, religion, theology, communications, journalism, media, curatorial sciences, library sciences, language, and literature, etc.	541712
5417	1.6.19.1	X				Basic research in philosophy and religion	Providing basic research services focused on the examination of fundamental, ethical, and religious beliefs and on inquiry into the intellectual history of civilizations.  Includes: • reasearch in the areas of philosophy and religion.	541712
5417	1.6.19.1.1		X		X	Basic research in philosophy	Providing basic research services focused on the critical examination of the grounds for fundamental beliefs and an analysis of the basic concepts employed in the expression of such beliefs.  Includes: • reasearch in the areas of the major systems of philosophy (eastern and western, jewish and christian, etc.) • reasearch in the areas of aesthetics, epistemology, ethics, ideology, logic, metaphysics, and other philosophical studies.	541712
5417	1.6.19.1.2		X		X	Basic research in religion	Providing basic research services focused on the scientific study of religion, religious traditions, specific religious and quasi-religious systems, as well as of religious beliefs, doctrines, and practices from the intramural standpoint of a particular faith.  Includes: • reasearch in the areas of buddhist, christian, islamic, jewish, and other religion and religious traditions studies.	541712

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5417	1.6.19.2	X				Basic research in communication, journalism, and media	Providing basic research services focused on the methods and techniques used in the creation, transmission, and evaluation of messages in various media, within and across different contexts, channels, and cultures.  Includes: • reasearch in the areas of advertising, mass communications, radio and television broadcasting, and digital communications (e.g., internet), etc.	541712
5417	1.6.19.3	X				Basic research in library science and curatorial studies	Providing basic research services focused on the scientific study of the principles and practices of library care and administration.  including • reasearch on the collection, organization, and retrieval of information (library sciences). • research on the procurement, care, preservation, and display of important artifacts, works of art, and other cultural objects (curatorial studies).	541712
5417	1.6.19.4	X				Basic research in language and literature	Providing basic research services focused on modern, classical, and dead languages, classical and modern literatures, and cultural studies.	541712
5417	1.6.19.9	X				Basic research in social sciences and humanities, nec.	Providing basic research services focused on social sciences and humanities, not elsewhere classified.	541712

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5417	2					Production services for applied research	<p>Providing contract applied research services that may result in the creation of intellectual property. Includes contracts for the creation of original works that can be implicitly or explicitly protected by copyright and industrial property laws. The contract specifies the disposition of any intellectual property arising from the worked performed under the contract. Includes applied research services which are defined as conducting original systematic investigation using experiment, theory and analysis, undertaken for the purpose of acquiring new knowledge of the underlying foundations of phenomena and observable facts, but with a specific application or use in view. Applied research usually results in the determination of possible uses for the findings of basic research, or of new methods or ways of achieving specific objectives.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research services provided in fulfillment of legal contracts as well as those performed under terms of dedicated grants and gifts.</li> </ul>	541712
5417	2.1					Applied research in natural and exact sciences, except biological sciences	<p>Providing applied research services focused on the scientific study of quantities, magnitudes, and forms; inanimate objects; processes of matter and energy; biotechnology; information, computing, and communications sciences; and associated phenomena.</p>	541712
5417	2.1.1	X				Applied research in mathematical sciences	<p>Providing applied research services focused on the scientific study of quantities, magnitudes, forms, and their relationships, using symbolic logic and language.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of mathematics (algebra and number theory, analysis and functional analysis, geometry, topology and foundations, etc.), mathematical statistics and probability, systems theory and control, operations research, and other mathematical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• providing applied research in mathematics associated with computer science is in product 2.1.7, Applied research in information, computing, and communication science.</li> </ul>	541712

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5417	2.1.2					Applied research in physical sciences	<p>Providing applied research services focused on disciplines such as condensed matter physics; atomic and molecular physics; nuclear and particle physics; plasma physics; optical physics; and classical physics (such as acoustics, fluid physics, electrostatics, and thermodynamics).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• technological aspects of physics such as remote sensing and antenna technology,</li> <li>• physics associated with another discipline such as astrophysics, geophysics, and biophysics.</li> </ul>	541712
5417	2.1.2.1	X				Applied research in acoustics and optics	<p>Providing applied research services focused on the scientific study of sound and the properties and behavior of acoustic wave phenomena under different conditions (acoustics), and on the scientific study of light energy, including its structure, properties and behavior under different conditions (optics).</p>	541712
5417	2.1.2.9	X				Applied research in physical sciences, nec.	<p>Providing applied research services focused on physical sciences, not elsewhere specified.</p>	541712
5417	2.1.3	X				Applied research in astronomy and astrophysics	<p>Providing applied research services focused on the scientific study of objects and matter outside the earth's atmosphere; planetary, galactic, and stellar phenomena; and related physical and chemical interactions.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of astronomy, astrophysics, planetary science, and other astronomical sciences.</li> </ul>	541712
5417	2.1.4	X				Applied research in chemical sciences	<p>Providing applied research services focused on the scientific study of the composition and behavior of matter, including its micro- and macro-structure and the processes of chemical change, and the theoretical description and laboratory simulation of these phenomena.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of analytical chemistry, inorganic chemistry, organic chemistry, physical and theoretical chemistry, polymer chemistry, chemical physics, and other chemical sciences.</li> </ul>	541712

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5417	2.1.5	X				Applied research in geosciences and atmospheric sciences	Providing applied research services focused on the scientific study of the earth; the forces acting upon it; and the behavior of the solids, liquids, and gases comprising it (geosciences), and on the scientific study of the composition and behavior of the atmospheric envelopes surrounding the earth, the effect of earth's atmosphere on terrestrial weather, and related problems of environment and climate (atmospheric sciences).	541712
5417	2.1.5.1				X	Applied research in atmospheric sciences	Providing applied research services focused on the atmospheric sciences.  Includes: • research in the areas of atmospheric chemistry and climatology, atmospheric physics and dynamics, meteorology, and other atmospheric sciences.	541712
5417	2.1.5.2				X	Applied research in geosciences	Providing applied research services focused on the geosciences.  Includes: • research in the areas of geology, geochemistry, petrology, geophysics and seismology, paleontology, hydrology and water resources science, chemical and physical oceanography, and other geosciences.	541712
5417	2.1.6	X				Applied research in biotechnology	Providing applied research services focused on genetic engineering and other biotechnology.  Includes: • research in the areas of industrial biotechnology; diagnostic applications; genetic engineering and enzyme technology; genetic technologies; transformation, site-directed autogenesis; process biotechnology; transgenesis; and other biotechnology fields.	541711
5417	2.1.7	X				Applied research in information, computing, and communications sciences	Providing applied research services focused on the sub-disciplines of artificial intelligence and signal and image processing; computation theory and mathematics associated with computer science; computer software; data format; information systems; and information, computing, and communications sciences, not elsewhere classified.	541712

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5417	2.1.9	X				Applied research in other natural and exact sciences, except biological sciences	Providing applied research services focused on natural and exact sciences, not elsewhere specified, except biological sciences.	541712
5417	2.2					Applied research in engineering and technology	Providing applied research services focused on the application of various combinations of mathematical and scientific principles to goods, services, and processes.  Includes: • research in the areas of aerospace, aeronautical and astronautically engineering, agricultural and forestry engineering, architectural engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical, electronics, and communications engineering, environmental engineering, forest engineering, geomantic engineering, manufacturing engineering, materials engineering, mechanical engineering, metallurgical engineering, and mining, mineral and petroleum engineering, etc.	541712
5417	2.2.1	X				Applied research in architecture, urban environment, and building	Providing applied research services focused on disciplines concerned primarily with materials, systems, and methods used to construct and equip buildings, urban complexes, and related systems.	541712
5417	2.2.1.1			X	X	Applied research in architecture and urban environment	Providing applied research services focused on the study of the art, science, and techniques of building. It encompasses both utilitarian ends--such as the soundness of the structure and the functional and economic efficiency of the building--and aesthetic considerations.  Includes: • research in the areas of urban environment such as urban planning and architectural landscaping.	541712

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5417	2.2.1.2			X	X	Applied research in building	Providing applied research services focused on the science, technology, and techniques of assembling, erecting, and maintaining public, commercial, industrial, and residential structures, and their fittings.  Includes: • research in the areas of building and building materials science and building engineering.	541712
5417	2.2.2	X				Applied research in chemical engineering	Providing applied research services focused on engineering concerned primarily with systems employing chemical processes, such as chemical reactors, kinetic systems, electrochemical systems, energy conservation processes, heat and mass transfer systems, and separation processes.	541712
5417	2.2.3	X				Applied research in civil engineering	Providing applied research services focused on engineering concerned primarily with structural, load-bearing, material moving, transportation, water resource, and material control systems.  Includes: • research in the areas of construction engineering, geotechnical engineering, structural engineering, and other civil engineering fields.	541712
5417	2.2.3.1				X	Applied research in construction engineering	Providing applied research services focused on engineering concerned primarily with the application of scientific, mathematical, and management principles to the planning and building of facilities and structures.  Includes: • research in the areas of civil engineering, structural principles, site analysis, computer-assisted design, geology, evaluation and testing, materials, contracting, project management, graphic communications, and applicable laws and regulations.	541712

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5417	2.2.3.9				X	Applied research in civil engineering, nec.	<p>Providing applied research services focused on civil engineering disciplines, not elsewhere classified.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research in the areas of architectural engineering, geotechnical engineering, transportation infrastructure engineering (such as roads, highways and bridges), and water drainage and sanitary engineering.</li> </ul>	541712
5417	2.2.4	X				Applied research in computer and communications technologies	<p>Providing applied research services focused on engineering concerned primarily with computer hardware and software systems and related equipment and facilities, including the physical components for personal computer, mainframe, and accessory computer equipment.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research on technologies for circuit boards and hardware assemblies of computing devices, multiplexers, printers, scanners, artificial intelligence, computer graphics tools, artificial intelligence and robotics, and interactive and multimedia technologies.</li> <li>research on technologies supporting communications and communications systems such as communication networks, communications and broadcasting systems, digital systems, optical and photonic systems or any other communication system, antenna technology (including that used in remote sensing and satellite technology), and microwave and millimetrewave technology.</li> </ul> <p>Excludes</p> <ul style="list-style-type: none"> <li>basic research in information, computing, and communications sciences is in product 2.1.7, Applied research in information, computing, and communication science.</li> </ul>	541712
5417	2.2.4.1				X	Applied research in computer technologies	<p>Providing applied research services focused on engineering concerned primarily with computer technologies, including the physical components for personal computer, mainframe, and accessory computer equipment.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research on technologies for circuit boards and hardware assemblies of computing devices, multiplexers, printers, scanners or any accessory related to computers.</li> </ul>	541712

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5417	2.2.4.2				X	Applied research in communications technologies	<p>Providing applied research services focused on engineering concerned primarily with technologies supporting communications and communications systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research on technologies for communication networks, communications and broadcasting systems, digital systems, optical and photonic systems or any other communication system, antenna technology (including that used in remote sensing and satellite technology), and microwave and millimetrewave technology.</li> </ul>	541712
5417	2.2.5	X				Applied research in electrical and electronic engineering	<p>Providing applied research services focused on engineering concerned primarily with the electrical, electronic, and related communications systems and their components, including electrical power generation systems, superconductor, wave propagation, energy storage and retrieval, and reception and amplification.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research on communication networks; communication and broadcasting systems; laser processes and systems; digital systems; optical and photonic systems or any other communication system; antenna technology; and microwave and millimetrewave technology.</li> </ul>	541712

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5417	2.2.6	X				Applied research in materials engineering	<p>Providing applied research services focused on engineering concerned primarily with materials and related processes used in manufacturing in a wide variety of settings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of materials engineering covering the synthesis of new industrial materials, including marrying and bonding composites.</li> <li>• research in the areas of ceramics engineering covering inorganic non-metallic materials, such as porcelains, cements, industrial ceramics, ceramic superconductors, abrasive, and related materials and systems.</li> <li>• research in the areas of polymer/plastics engineering covering synthesized macromolecular compounds and their application to specific engineering uses, including the development of industrial materials with tailored properties; the design of lightweight structural components; the use of liquid or solid polymers; and the analysis and control of polymerization processes.</li> <li>• research in the areas of textile engineering covering new and improved fibers, textiles and their uses; systems to test and manufacture fibers and fiber products, both synthetic and natural.</li> <li>• research in the areas of metallurgical engineering covering metal components of structural, load-bearing, power, transmission, and moving systems.</li> </ul>	541712
5417	2.2.7	X				Applied research in mechanical and industrial engineering	<p>Providing applied research services focused on engineering concerned primarily with the physical systems used in manufacturing and end-product systems for specific purposes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems.</li> </ul>	541712

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5417	2.2.7.1			X	X	Applied research in mechanical engineering	<p>Providing applied research services focused on engineering concerned primarily with physical systems used in manufacturing and end product systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research on machine tools, jigs and other manufacturing equipment; self-propelled vehicles; hydraulic and electric systems for controlling movement; industrial laser processes and systems; robots, robotic systems and mechatronics; flexible manufacturing systems; CAD/CAM systems; welding technology; textile manufacturing process and technologies; and printing technology.</li> </ul>	541712
5417	2.2.7.2			X	X	Applied research in industrial engineering	<p>Providing applied research services focused on engineering primarily concerned with the improvement and installation of integrated systems of people, material, information, and energy. Involves the application of mathematics, physical sciences, social sciences, engineering analysis, systems design, computer applications, and forecasting and evaluation methodology.</p>	541712
5417	2.2.8	X				Applied research in mining, mineral, and petroleum engineering	<p>Providing applied research services focused on engineering that is primarily concerned with mineral extraction.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of mining and mineral engineering (open pit and shaft mines) covering processing and refining systems; prospecting and site analysis equipment and instruments; environmental and safety systems; mine equipment and facilities; mineral processing and refining methods and systems; and logistics and communications systems.</li> <li>• research in the areas of petroleum engineering covering systems for locating, extracting, processing, and refining crude petroleum and natural gas, including prospecting instruments and equipment, mining and drilling systems; processing and refining systems and facilities; storage facilities; transportation systems; and related environmental and safety systems.</li> </ul>	541712
5417	2.2.9					Applied research in other engineering	<p>Providing applied research services focused on other engineering and technology, such as aerospace engineering, automotive engineering, biomedical engineering, environmental engineering, and manufacturing engineering, etc.</p>	541712

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5417	2.2.9.1	X				Applied research in transportation equipment and systems engineering	Providing applied research services focused on engineering concerned primarily with transportation equipment and associated systems used on, above, or below the earth, including water based transportation equipment and systems.	541712
5417	2.2.9.1.1				X	Applied research in aerospace engineering	Providing applied research services focused on engineering concerned primarily with vehicles operating in the Earth's atmosphere or in outer space.  Includes: • research on aircraft and spacecraft as well as their launching, guiding and controlling systems.	541712
5417	2.2.9.1.2				X	Applied research in automotive engineering	Providing applied research services focused on engineering concerned primarily with land based automotive equipment technologies, including amphibious vehicles.	541712
5417	2.2.9.1.3				X	Applied research in maritime engineering	Providing applied research services focused on engineering concerned primarily with self-propelled, stationary, or towed vessels operating on or under the water, including inland, coastal, and ocean environments.	541712
5417	2.2.9.2	X				Applied research in environmental engineering	Providing applied research services focused on engineering concerned primarily with systems for controlling contained living environments and for monitoring and controlling factors in the external natural environment.  Includes: • research on pollution control, waste and hazardous material disposal, health and safety protection, conservation, and life support systems.	541712
5417	2.2.9.3	X				Applied research in manufacturing engineering	Providing applied research services focused on engineering concerned primarily with manufacturing systems, including control systems, virtual manufacturing systems, intelligent production systems, logistics, and safety and quality control systems.	541712

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5417	2.2.9.4	X				Applied research in geomatic engineering	Providing applied research services focused on engineering concerned primarily with geodesy surveying and mapping, such as photogrammetry and cartography; spatial information systems; navigation and positioning systems; and radar and optical remote sensing.	541712
5417	2.2.9.5	X				Applied research in biomedical engineering	Providing applied research services focused on engineering concerned primarily with biological, medical, and health products and systems.  Includes: • research on drugs and pharmaceutical products, natural products, animal pharmaceutical products, integrated biological systems, instrumentation and medical information systems, artificial organs and prostheses, and health management and care delivery systems (e.g., testing of human heart and circulatory system health, and administering of treatment therapies).	541712
5417	2.2.9.6	X				Applied research in agricultural and forestry engineering	Providing applied research services focused on engineering concerned primarily with systems, equipment, and facilities, used to produce, process, package, store and distribute agricultural products or to improve the productivity of agricultural processing methods. Forestry engineering is concerned primarily with mechanical devices and processes for efficient forest management, timber production, and related forest logistics systems.	541712
5417	2.2.9.7	X				Applied research in food engineering	Providing applied research services focused on engineering concerned primarily with the systems, equipment, and facilities used to produce, process, package, store, and distribute food products, including the improvement of productivity of food processing methods and the development of improved biological systems.	541712

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5417	2.2.9.8	X				Applied research in nuclear engineering	Providing applied research services focused on engineering concerned primarily with the systems for controlling and manipulating nuclear energy, including power plants, fission reactors, fusion reactors, reactor control and safety systems, power transfer systems, and containment vessels and structures.	541712
5417	2.2.9.9	X				Applied research in engineering and technology, nec.	Providing applied research services focused on engineering and technologies, not elsewhere classified.	541712
5417	2.3					Applied research in biological sciences	<p>Providing applied research services focused on the scientific study of the structure, function, reproduction, growth, heredity, evolution, behavior, and distribution of living organisms (plants, animals, humans, microbes, etc.) and on their relation to the natural environment (biological sciences), and on the scientific study of biological issues related to health and medicine (biomedical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research in the areas of botany; animal and human biological and biomedical sciences; microbiology; ecology and evolutionary biology (including epidemiology); biomathematics and bioinformatics; and other biological and biomedical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>applied research in biotechnology is in product 2.1.6, Applied research in biotechnology.</li> </ul>	541712
5417	2.3.1	X				Applied research in botany	<p>Providing applied research services focused on the scientific study of plants, including their structure, function, reproduction, growth, and pathology.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>research in the areas of plant biology, plant molecular biology, plant biochemistry, plant biophysics, plant genetics, plant pathology, and plant physiology.</li> </ul>	541712
5417	2.3.2	X				Applied research in animal biological sciences	Providing applied research services focused on the biological scientific study of animals, including their structure, function, reproduction, growth, and behavior.	541712

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5417	2.3.3	X				Applied research in human biological sciences	Providing applied research services focused on the biological scientific study of human beings, including their structure, function, reproduction, growth, and behavior.  Includes: • research in the areas of biochemistry, biophysics, molecular biology, cellular biology, anatomical sciences, genetics, and physiology, etc.	541712
5417	2.3.4	X				Applied research in microbiology	Providing applied research services focused on the scientific study of organisms such as pathogenic bacteria, viruses, parasites and fungi, and their ecological interactions with human beings and other life.  Includes: • research in the areas of bacteriology, virology, parasitology, mycology, and microbial genetics.	541712
5417	2.3.5	X				Applied research in ecology and evolution	Providing applied research services focused on the scientific study of ecosystems, populations, and their behavior, as well as their changes and dynamics across evolutionary and geologic time.  Includes: • research in the areas of ecology, marine biology and biological oceanography, evolutionary biology, wildlife biology, aquatic biology (or limnology), environmental biology, population biology, conservation biology, systematic biology, and epidemiology.	541712
5417	2.3.9	X				Applied research in other biological sciences	Providing applied research services focused on biological sciences, not elsewhere classified.	541712

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5417	2.4					Applied research in medical and health sciences	Providing applied research services focused on fields such as clinical sciences, immunology, neurosciences, pharmacology, and public health, etc.  Excludes: • applied research in biotechnology is in product 2.1.6, Applied research in biotechnology.	541712
5417	2.4.1	X				Applied research in clinical sciences	Providing applied research services focused on the scientific study, for human beings, of the diagnosis, treatment and management of illnesses, injuries, and other disorders of the human body.  Includes • research in fields such as cardiology, dentistry, hematology, obstetrics and gynecology, pediatrics, oncology, carcinogenesis, radiology, radiotherapy, rheumatology, arthritis, and others.	541712
5417	2.4.1.1				X	Applied research in cardiology	Providing applied research services focused on the causes, diagnosis, treatment, and management of heart disease and other heart disorders in humans, as well as related medical technologies.	541712
5417	2.4.1.2				X	Applied research in dentistry	Providing applied research services focused on the care, causes, diagnosis, treatment, and management of problems of the mouth, teeth, and gums, as well as related medical technologies.	541712
5417	2.4.1.3				X	Applied research in hematology	Providing applied research services focused on the causes, diagnosis, treatment, and management of blood diseases and of blood-forming organs, as well as related medical technologies.	541712

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5417	2.4.1.4				X	Applied research in obstetrics and gynecology	Providing applied research services focused on the care, causes, diagnosis, treatment, and management of problems arising in giving birth, as well as related medical technologies.	541712
5417	2.4.1.5				X	Applied research in pediatrics	Providing applied research services focused on the care, causes, diagnosis, treatment, and management of medical and health problems of children, as well as related medical technologies.	541712
5417	2.4.1.6				X	Applied research in oncology and carcinogenesis	Providing applied research services focused on the causes, diagnosis, treatment, and management of cancer in humans; the study of cancer causing substances as in carcinogenesis; and on related medical technologies.	541712
5417	2.4.1.7				X	Applied research in radiology and radiotherapy	Providing applied research services focused on the treatment and management of maladies and disorders with radiology and radiotherapy.	541712
5417	2.4.1.8				X	Applied research in rheumatology and arthritis	Providing applied research services focused on the causes, diagnosis, treatment, and management of rheumatism and arthritis, as well as related medical technologies.	541712
5417	2.4.1.9				X	Applied research in clinical sciences, nec.	Providing applied research services focused on clinical sciences and clinical medicine, not elsewhere classified.	541712
5417	2.4.2	X				Applied research in immunology	Providing applied research services focused on the scientific study of the human biological mechanisms involved in the pathogenesis of disease, host-pathogen interactions, and host response to disease.	541712

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5417	2.4.3	X				Applied research in neuroscience	Providing applied research services focused on the causes, diagnosis, treatment, and management of human nervous system disorders, including neuromuscular diseases, as well as related medical technologies.	541712
5417	2.4.4	X				Applied research in pharmacology and pharmaceutical sciences	<p>Providing applied research services focused on (1) the scientific study of drug interactions on biological systems and organisms; the sources, chemical properties, biological effects, and therapeutic uses of drugs; and poisons and other biohazards, including their interactions with the human organism and its food and respiratory systems and their prevention, management, and counteraction and (2) the application of chemistry to the study of biologically and clinically active substances, biological and pharmacological interactions, and the development of associated research methods, techniques, and clinical trial procedures (Pharmaceutical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of pharmacology, molecular pharmacology, neuropharmacology, toxicology, molecular toxicology, and environmental toxicology.</li> </ul>	541712
5417	2.4.5	X				Applied research in public health services	<p>Providing applied research services focused on the scientific study of the protection and improvement of health and of the prevention and management of disease for human beings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• research in the areas of dietetics and nutrition, hygiene, nursing, mental and social health (substance abuse, psychiatric health, marriage and family therapy, psychoanalysis and psychotherapy); public health (environmental health, occupational health and industrial hygiene, community health and preventive medicine, maternal and child health); rehabilitation therapies (art, dance and movement, music therapies, hypnotherapy, kinesiotherapy); and human health sciences, not elsewhere classified.</li> </ul>	541712

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5417	2.4.6	X				Applied research in human alternative and complementary medicine	Providing applied research services focused on the scientific study of "non-mainstream" health care and healing systems for human beings, such as chiropractic, acupuncture and traditional chinese/oriental medicine, naturopathy, homeopathy, ayurvedic medicine, and herbal medicine, etc.  Includes: • reasearch in the areas of aromatherapy, massage therapy, reiki, oriental bodywork therapy, and other alternative and complementary medicines.	541712
5417	2.4.9	X				Applied research in other medical and health sciences	Providing applied research services focused on medical and health sciences, not elsewhere classified.	541712
5417	2.5					Applied research in agricultural, veterinary, and environmental sciences	Providing applied research services focused on the scientific study of plant and animal production; the diagnosis, treatment, and health care management of animals; and natural resource conservation and environmental management and rehabilitation; etc.  Excludes: • applied research in biotechnology is in product 2.1.6, Applied research in biotechnology.	541712
5417	2.5.1	X				Applied research in plant production sciences	Providing applied research services focused on the sciences and technologies directed towards the production of plants, including vegetables, shrubs, vines, and herbs, as well as their flowers, fruits, grains, and nuts.  Includes: • research in areas such as plant nutrition, propagation and culture, breeding, protection (pests, diseases and weeds), and growth and development.	541712
5417	2.5.1.1				X	Applied research in crops	Providing applied research services focused on agricultural crop production such as fruits, nuts, grains and vegetables.	541712

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5417	2.5.1.2				X	Applied research in agri-forestry (silviculture)	Providing applied research services focused on agri-forestry and the cultivation and harvesting of forests and trees.	541712
5417	2.5.2	X				Applied research in animal production sciences	<p>Providing applied research services focused on the sciences and technologies that support the production of animals. It covers aspects such as nutrition, husbandry, growth and development, breeding and protection (pests and pathogens).</p> <p>Includes</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of livestock, fisheries and aquaculture, poultry and aviculture, bees and apiary culture, milk and dairy science, and other animal production sciences.</li> </ul>	541712
5417	2.5.2.1				X	Applied research in fisheries sciences	Providing applied research services focused on aquaculture, fisheries, and fish farming.	541712
5417	2.5.2.2				X	Applied research in livestock and poultry	Providing applied research services focused on livestock, poultry, and other herded animals.	541712
5417	2.5.2.9				X	Applied research in animal production sciences, nec.	Providing applied research services focused on animal production sciences, not elsewhere classified.	541712
5417	2.5.3	X				Applied research in agriculture-related soil and water sciences	<p>Providing applied research services focused on the scientific study of soil and water in an agricultural production perspective.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of soil chemistry and physics, soil microbiology, land capability, soil degradation, as well as the agricultural applied aspects of water sciences such as drainage, flooding, irrigation, and quality.</li> </ul>	541712

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5417	2.5.4	X				Applied research in veterinary sciences	Providing applied research services focused on the scientific study of the diagnosis, treatment and health care management of animals and animal populations, and of the prevention and management of zoonosis, including alternative and complementary animal medicine.	541712
5417	2.5.5	X				Applied research in environmental sciences	Providing applied research services focused on the scientific study of the natural environment and its conservation, use, and improvement.  Includes: <ul style="list-style-type: none"> <li>• reasearch in the areas of environmental science, fishing and fisheries sciences and management, forest sciences and management, wildlife and wildlands science and management.</li> <li>• research on subjects such as environmental factors affecting natural habitats and renewable and non-renewable natural resources; abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resources management.</li> </ul>	541712
5417	2.5.5.1				X	Applied research in forest, fish, and wildlife management	Providing applied research services focused on forest, fish, wildlife and their habitat management.	541712
5417	2.5.5.9				X	Applied research in environmental sciences, nec.	Providing applied research services focused on natural resource management, environmental impact assessment, conservation and other environmental management and rehabilitation, not elsewhere classified.	541712
5417	2.5.9	X				Applied research in other agricultural, veterinary, and environmental sciences	Providing applied research services focused on studies related to agricultural, veterinary, and environmental sciences, not elsewhere classified.	541712

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5417	2.6					Applied research in social sciences and humanities	<p>Providing applied research services focused on the scientific study of social systems, social institutions, and social behavior and on the scientific study of the cultures of human societies, the analytical and critical methods of inquiry derived from an appreciation of human values, and the unique abilities of the human spirit to express itself.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of psychology; linguistics; economics, management and commerce; education; political science; sociology; cultural anthropology; law, justice, and criminology; library science and curatorial studies; and other social sciences.</li> <li>• reasearch in the areas of promotion and understanding of history and archeology; visual and performing arts; language, literature, communications, and media; philosophy and religion; and other humanities.</li> </ul>	541712
5417	2.6.1	X				Applied research in psychology	<p>Providing applied research services focused on the scientific study of the behavior of individuals, independently or collectively, and the physical and environmental bases of mental, emotional, and neurological activity.</p>	541712
5417	2.6.2	X				Applied research in education	<p>Providing applied research services focused on the scientific study of the processes, methods, and tools of teaching.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of curriculum studies; counseling; teacher education; community college education; adult education and lifelong learning; bilingual, multilingual, and multicultural education and teaching; educational leadership; special education; and other education disciplines.</li> </ul>	541712
5417	2.6.3	X				Applied research in studies in human society	<p>Providing applied research services focused on the scientific study of society, social institutions, and social relationships, including the systematic study of the development, structure, interaction, and collective behavior of organized groups of human beings, and of a social institution as a functioning whole and as it relates to the rest of society.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of anthropology, demography, human geography, social work, and sociology, etc.</li> </ul>	541712

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5417	2.6.3.1				X	Applied research in demography	Providing applied research services focused on demography.	541712
5417	2.6.3.2				X	Applied research in human geography	Providing applied research services focused on human geography	541712
5417	2.6.3.3				X	Applied research in social work	<p>Providing applied research services focused on the professional practice of social welfare administration and counseling and on the study of organized means of providing basic support services for vulnerable individuals and groups.</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of social welfare policy; case work planning; social counseling and intervention strategies; administrative procedures and regulations; and specific applications in areas such as child welfare and family services, probation, employment services, and disability counseling.</li> </ul>	541712
5417	2.6.3.9				X	Applied research in studies in human society, nec.	Providing applied research services focused on studies in human society and related sciences, not elsewhere classified.	541712
5417	2.6.4	X				Applied research in linguistics	<p>Providing applied research services focused on the scientific study of language from a theoretical or applied approach, or from a diachronic (historical perspective) or sychronistic (as they are used at a given time) perspective.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of phonetics, phonology, morphology, syntax, and semantics, as well as computational linguistics, neurolinguistics, and sociolinguistics.</li> </ul>	541712

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5417	2.6.5	X				Applied research in political science	<p>Providing applied research services focused on the scientific study of political institutions, processes, and behavior, including the nature and functions of the state, government, government institutions, and politics.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of comparative politics; constitutional studies; international relations; political thought and theory; municipal and local government; public policy and administration; and other related topics.</li> </ul>	541712
5417	2.6.6	X				Applied research in economics	<p>Providing applied research services focused on the scientific study of the production, distribution, and consumption of goods and services and of wealth in human society, together with the organizational frameworks related to these processes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of economic theory, econometrics and quantitative economics, economic history and history of economic thought, applied economics (e.g., agricultural, resources, finance, health, labor, welfare, international development, urban and regional economics, etc.), and other related subjects.</li> </ul>	541712
5417	2.6.7	X				Applied research in management and commerce	<p>Providing applied research services focused on the scientific study of the planning, organizing, directing, and controlling of an organization's functions and processes, including all types of resources and covering both public and private sector organizations.</p>	541712
5417	2.6.8	X				Applied research in law and justice	<p>Providing applied research services focused on the scientific study of the rules of conduct by which societal relations are formally structured and adjudicated (law and legal studies); of the principles and procedures for conducting and supervising law enforcement, corrections, and security services (justice); and of crime as a social phenomenon, criminals, and penal treatment (criminology).</p>	541712

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5417	2.6.9	X				Applied research in arts	<p>Providing applied research services focused on the scientific study of the creation and interpretation of works and performances that use auditory, kinesthetic, and visual phenomena to express ideas and emotions in various forms, subject to aesthetic criteria.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of fine arts; film/video and photographic arts; electronic arts and multimedia; music, drama, theatre and dance; visual arts and crafts; design and applied arts; and other visual and performing arts.</li> </ul>	541712
5417	2.6.10	X				Applied research in history and archaeology	<p>Providing applied research services focused on the scientific study of the past, including the gathering, recording, interpreting, and assessing of past events, whether by historiography or oral tradition (history), and the scientific study of physical remains and artifacts of past human lives and activities in order to increase understanding of the past (archaeology).</p>	541712
5417	2.6.19					Applied research in other social sciences and humanities	<p>Providing applied research services focused on other social sciences and humanities, such as philosophy, religion, theology, communications, journalism, media, curatorial sciences, library sciences, language, and literature, etc.</p>	541712
5417	2.6.19.1	X				Applied research in philosophy and religion	<p>Providing applied research services focused on the examination of fundamental, ethical, and religious beliefs and on inquiry into the intellectual history of civilizations.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of philosophy and religion.</li> </ul>	541712
5417	2.6.19.1.1		X		X	Applied research in philosophy	<p>Providing applied research services focused on the critical examination of the grounds for fundamental beliefs and an analysis of the basic concepts employed in the expression of such beliefs.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of the major systems of philosophy (eastern and western, jewish and christian, etc.)</li> <li>• reasearch in the areas of aesthetics, epistemology, ethics, ideology, logic, metaphysics, and other philosophical studies.</li> </ul>	541712

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5417	2.6.19.1.2		X		X	Applied research in religion	<p>Providing applied research services focused on the scientific study of religion, religious traditions, specific religious and quasi-religious systems, as well as of religious beliefs, doctrines, and practices from the intramural standpoint of a particular faith.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of buddhist, christian, islamic, jewish, and other religion and religious traditions studies.</li> </ul>	541712
5417	2.6.19.2	X				Applied research in communication, journalism, and media	<p>Providing applied research services focused on the methods and techniques used in the creation, transmission, and evaluation of messages in various media, within and across different contexts, channels, and cultures.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• reasearch in the areas of advertising, mass communications, radio and television broadcasting, and digital communications (e.g., internet), etc.</li> </ul>	541712
5417	2.6.19.3	X				Applied research in library science and curatorial studies	<p>Providing applied research services focused on the scientific study of the principles and practices of library care and administration.</p> <p>including</p> <ul style="list-style-type: none"> <li>• reasearch on the collection, organization, and retrieval of information (library sciences).</li> <li>• research on the procurement, care, preservation, and display of important artifacts, works of art, and other cultural objects (curatorial studies).</li> </ul>	541712
5417	2.6.19.4	X				Applied research in language and literature	<p>Providing applied research services focused on modern, classical, and dead languages, classical and modern literatures, and cultural studies.</p>	541712
5417	2.6.19.9	X				Applied research in social sciences and humanities, nec.	<p>Providing applied research services focused on social sciences and humanities, not elsewhere classified.</p>	541712

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5417	3	X				Production services for product development	<p>Providing contract product development services that may result in the creation of intellectual property. Includes contracts for the creation of original works that can be implicitly or explicitly protected by copyright and industrial property laws. The contract specifies the disposition of any intellectual property arising from the worked performed under the contract. Includes development services which are defined as systematic work, drawing on research findings or other scientific knowledge or practical experience, for the purpose of creating new or significantly improved goods, services, systems, methods or processes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services provided in fulfillment of legal contracts as well as those performed under terms of dedicated grants and gifts.</li> </ul>	541712
5417	3.1					Development services by field-of science related categories	This product group covers all of the development services by "field-of-science-related" product categories.	541712
5417	3.1.1					Development services in natural and exact sciences, except biological sciences	Providing development services focused on the scientific study of quantities, magnitudes, and forms; inanimate objects, processes of matter and energy; biotechnology; information, computing and communications sciences; and associated phenomena.	541712
5417	3.1.1.1					Development services in mathematical sciences	<p>Providing development services focused on the scientific study of quantities, magnitudes, forms, and their relationships, using symbolic logic and language.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of mathematics (algebra and number theory, analysis and functional analysis, geometry, topology and foundations, etc.), mathematical statistics and probability, systems theory and control, operations research, and other mathematical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>development services in mathematics associated with computer science are in product 3.1.1.7, Development services in information, computing and communications sciences.</li> </ul>	541712

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5417	3.1.1.2					Development services in physical sciences	<p>Providing development services focused on disciplines such as condensed matter physics; atomic and molecular physics; nuclear and particle physics; plasma physics; optical physics; and classical physics (such as acoustics, fluid physics, electrostatics, and thermodynamics).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• development services in the technological aspects of physics such as remote sensing and antenna technology,</li> <li>• development services in the physics associated with another discipline such as astrophysics, geophysics, and biophysics.</li> </ul>	541712
5417	3.1.1.3					Development services in astronomy and astrophysics	<p>Providing development services focused on the scientific study of objects and matter outside the earth's atmosphere; planetary, galactic, and stellar phenomena; and related physical and chemical interactions.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of astronomy, astrophysics, planetary science, and other astronomical sciences.</li> </ul>	541712
5417	3.1.1.4					Development services in chemical sciences	<p>Providing development services focused on the scientific study of the composition and behavior of matter, including its micro- and macro-structure and the processes of chemical change, and the theoretical description and laboratory simulation of these phenomena.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of analytical chemistry, inorganic chemistry, organic chemistry, physical and theoretical chemistry, polymer chemistry, chemical physics, and other chemical sciences.</li> </ul>	541712
5417	3.1.1.5					Development services in geosciences and atmospheric sciences	<p>Providing development services focused on the scientific study of the earth; the forces acting upon it; and the behavior of the solids, liquids, and gases comprising it (geosciences), and on the scientific study of the composition and behavior of the atmospheric envelopes surrounding the earth, the effect of earth's atmosphere on terrestrial weather, and related problems of environment and climate (atmospheric sciences).</p>	541712

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5417	3.1.1.6					Development services in biotechnology	Providing development services focused on genetic engineering and other biotechnology.  Includes: • development services in the areas of industrial biotechnology; diagnostic applications; genetic engineering and enzyme technology; genetic technologies; transformation, site-directed autogenesis; process biotechnology; transgenesis; and other biotechnology fields.	541711
5417	3.1.1.7					Development services in information, computing, and communications sciences	Providing development services focused on the sub-disciplines of artificial intelligence and signal and image processing; computation theory and mathematics associated with computer science; computer software; data format; information systems; and information, computing, and communications sciences, not elsewhere classified.	541712
5417	3.1.1.9					Development services in other natural and exact sciences, except biological sciences	Providing development services focused on natural and exact sciences, not elsewhere specified, except biological sciences.	541712
5417	3.1.2					Development services in engineering and technology	Providing development services focused on the application of various combinations of mathematical and scientific principles to goods, services, and processes.  Includes: • development services in the areas of aerospace, aeronautical and astronautically engineering, agricultural and forestry engineering, architectural engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical, electronics, and communications engineering, environmental engineering, forest engineering, geomantic engineering, manufacturing engineering, materials engineering, mechanical engineering, metallurgical engineering, and mining, mineral and petroleum engineering, etc.	541712

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5417	3.1.2.1					Development services in architecture, urban environment, and building	Providing development services focused on disciplines concerned primarily with the design and development of materials, systems, and methods used to construct and equip buildings, urban complexes, and related systems.	541712
5417	3.1.2.2					Development services in chemical engineering	Providing development services focused on engineering concerned primarily with the design and development of systems employing chemical processes, such as chemical reactors, kinetic systems, electrochemical systems, energy conservation processes, heat and mass transfer systems, and separation processes.	541712
5417	3.1.2.3					Development services in civil engineering	Providing development services focused on engineering concerned primarily with the design and development of structural, load-bearing, material moving, transportation, water resource, and material control systems.  Includes: • development services in the areas of construction engineering, geotechnical engineering, structural engineering, and other civil engineering fields.	541712

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5417	3.1.2.4					Development services in computer and communications technologies	<p>Providing development services focused on engineering concerned primarily with the design and development of computer hardware and software systems and related equipment and facilities, including the physical components for personal computer, mainframe, and accessory computer equipment.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services on technologies for circuit boards and hardware assemblies of computing devices, multiplexers, printers, scanners, artificial intelligence, computer graphics tools, artificial intelligence and robotics, and interactive and multimedia technologies.</li> <li>development services on technologies supporting communications and communications systems such as communication networks, communications and broadcasting systems, digital systems, optical and photonic systems or any other communication system, antenna technology (including that used in remote sensing and satellite technology), and microwave and millimetrewave technology.</li> </ul> <p>Excludes</p> <ul style="list-style-type: none"> <li>development services in information, computing, and communications sciences are in product 3.1.1.7, Development services in information, computing, and communication science.</li> </ul>	541712
5417	3.1.2.5					Development services in electrical and electronic engineering	<p>Providing development services focused on engineering concerned primarily with the design and development of electrical, electronic, and related communications systems and their components, including electrical power generation systems, superconductor, wave propagation, energy storage and retrieval, and reception and amplification.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services on communication networks; communication and broadcasting systems; laser processes and systems; digital systems; optical and photonic systems or any other communication system; antenna technology; and microwave and millimetrewave technology.</li> </ul>	541712

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5417	3.1.2.6					Development services in materials engineering	<p>Providing development services focused on engineering concerned primarily with the design and development of materials and related processes used in manufacturing in a wide variety of settings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of materials engineering covering the synthesis of new industrial materials, including marrying and bonding composites.</li> <li>• development services in the areas of ceramics engineering covering inorganic non-metallic materials, such as porcelains, cements, industrial ceramics, ceramic superconductors, abrasive, and related materials and systems.</li> <li>• development services in the areas of polymer/plastics engineering covering synthesized macromolecular compounds and their application to specific engineering uses, including the development of industrial materials with tailored properties; the design of lightweight structural components; the use of liquid or solid polymers; and the analysis and control of polymerization processes.</li> <li>• development services in the areas of textile engineering covering new and improved fibers, textiles and their uses; systems to test and manufacture fibers and fiber products, both synthetic and natural.</li> <li>• development services in the areas of metallurgical engineering covering metal components of structural, load-bearing, power, transmission, and moving systems.</li> </ul>	541712
5417	3.1.2.7					Development services in mechanical and industrial engineering	<p>Providing development services focused on engineering concerned primarily the design and development of physical systems used in manufacturing and end-product systems for specific purposes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services on machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems.</li> </ul>	541712

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5417	3.1.2.8					Development services in mining, mineral and petroleum engineering	Providing development services focused on engineering concerned primarily with mineral extraction.  Includes: • development services in the areas of mining and mineral engineering (open pit and shaft mines) covering processing and refining systems; prospecting and site analysis equipment and instruments; environmental and safety systems; mine equipment and facilities; mineral processing and refining methods and systems; and logistics and communications systems. • development services in the areas of petroleum engineering covering systems for locating, extracting, processing, and refining crude petroleum and natural gas, including prospecting instruments and equipment, mining and drilling systems; processing and refining systems and facilities; storage facilities; transportation systems; and related environmental and safety systems.	541712
5417	3.1.2.9					Development services in other engineering	Providing development services focused on other engineering and technology, such as aerospace engineering, automotive engineering, biomedical engineering, environmental engineering, and manufacturing engineering, etc.	541712
5417	3.1.2.9.1					Development services in transportation equipment and systems engineering	Providing development services focused on engineering concerned primarily with the design and development of transportation equipment and associated systems used on, above, or below the earth, including water based transportation equipment and systems.	541712
5417	3.1.2.9.2					Development services in environmental engineering	Providing development services focused on engineering concerned primarily with the design and development of systems for controlling contained living environments and for monitoring and controlling factors in the external natural environment.  Includes: • development services on pollution control, waste and hazardous material disposal, health and safety protection, conservation, and life support systems.	541712

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5417	3.1.2.9.3					Development services in manufacturing engineering	Providing development services focused on engineering concerned primarily with the design and development of manufacturing systems, including control systems, virtual manufacturing systems, intelligent production systems, logistics, and safety and quality control systems.	541712
5417	3.1.2.9.4					Development services in geomatic engineering	Providing development services focused on engineering concerned primarily with geodesy surveying and mapping, such as photogrammetry and cartography; spatial information systems; navigation and positioning systems; and radar and optical remote sensing.	541712
5417	3.1.2.9.5					Development services in biomedical engineering	Providing development services focused on engineering concerned primarily with biological, medical, and health products and systems.  Includes: • development services on drugs and pharmaceutical products, natural products, animal pharmaceutical products, integrated biological systems, instrumentation and medical information systems, artificial organs and prostheses, and health management and care delivery systems (e.g., testing of human heart and circulatory system health, and administering of treatment therapies).	541712
5417	3.1.2.9.6					Development services in agricultural and forestry engineering	Providing development services focused on engineering concerned primarily with systems, equipment, and facilities, used to produce, process, package, store and distribute agricultural products or to improve the productivity of agricultural processing methods. Forestry engineering is concerned primarily with mechanical devices and processes for efficient forest management, timber production, and related forest logistics systems.	541712

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5417	3.1.2.9.7					Development services in food engineering	Providing development services focused on engineering concerned primarily with the systems, equipment, and facilities used to produce, process, package, store, and distribute food products, including the improvement of productivity of food processing methods and the development of improved biological systems.	541712
5417	3.1.2.9.8					Development services in nuclear engineering	Providing development services focused on engineering concerned primarily with the systems for controlling and manipulating nuclear energy, including power plants, fission reactors, fusion reactors, reactor control and safety systems, power transfer systems, and containment vessels and structures.	541712
5417	3.1.2.9.9					Development services in engineering and technology, nec.	Providing development services focused on engineering and technologies, not elsewhere classified.	541712
5417	3.1.3					Development services in biological sciences	<p>Providing development services focused on the scientific study of the structure, function, reproduction, growth, heredity, evolution, behavior, and distribution of living organisms (plants, animals, humans, microbes, etc.) and on their relation to the natural environment (biological sciences), and on the scientific study of biological issues related to health and medicine (biomedical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of botany; animal and human biological and biomedical sciences; microbiology; ecology and evolutionary biology (including epidemiology); biomathematics and bioinformatics; and other biological and biomedical sciences.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• development services in biotechnology are in product 3.1.1.6, Development services in biotechnology.</li> </ul>	541712

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5417	3.1.3.1					Development services in botany	Providing development services focused on the scientific study of plants, including their structure, function, reproduction, growth, and pathology.  Includes: • development services in the areas of plant biology, plant molecular biology, plant biochemistry, plant biophysics, plant genetics, plant pathology, and plant physiology.	541712
5417	3.1.3.2					Development services in animal biological sciences	Providing development services focused on the biological scientific study of animals, including their structure, function, reproduction, growth, and behavior.	541712
5417	3.1.3.3					Development services in human biological sciences	Providing development services focused on the biological scientific study of human beings, including their structure, function, reproduction, growth, and behavior.  Includes: • development services in the areas of biochemistry, biophysics, molecular biology, cellular biology, anatomical sciences, genetics, and physiology, etc.	541712
5417	3.1.3.4					Development services in microbiology	Providing development services focused on the scientific study of organisms such as pathogenic bacteria, viruses, parasites and fungi, and their ecological interactions with human beings and other life.  Includes: • development services in the areas of bacteriology, virology, parasitology, mycology, and microbial genetics.	541712
5417	3.1.3.5					Development services in ecology and evolution	Providing development services focused on the scientific study of ecosystems, populations, and their behavior, as well as their changes and dynamics across evolutionary and geologic time.  Includes: • development services in the areas of ecology, marine biology and biological oceanography, evolutionary biology, wildlife biology, aquatic biology (or limnology), environmental biology, population biology, conservation biology, systematic biology, and epidemiology.	541712

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5417	3.1.3.9					Development services in other biological sciences	Providing development services focused on biological sciences, not elsewhere classified.	541712
5417	3.1.4					Development services in medical and health sciences	Providing development services focused on fields such as clinical sciences, immunology, neurosciences, pharmacology, and public health, etc.  Excludes: • development services in biotechnology are in product 3.1.1.6, Development services in biotechnology.	541712
5417	3.1.4.1					Development services in clinical sciences	Providing development services focused on fields such as cardiology, dentistry, hematology, obstetrics and gynecology, pediatrics, oncology, carcinogenesis, radiology, radiotherapy, rheumatology, arthritis, and others.	541712
5417	3.1.4.2					Development services in immunology	Providing development services focused on the scientific study of the human biological mechanisms involved in the pathogenesis of disease, host-pathogen interactions, and host response to disease.	541712
5417	3.1.4.3					Development services in neuroscience	Providing development services focused on the causes, diagnosis, treatment, and management of human nervous system disorders, including neuromuscular diseases, as well as related medical technologies.	541712

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5417	3.1.4.4					Development services in pharmacology and pharmaceutical sciences	<p>Providing development services focused on (1) the scientific study of drug interactions on biological systems and organisms; the sources, chemical properties, biological effects, and therapeutic uses of drugs; and poisons and other biohazards, including their interactions with the human organism and its food and respiratory systems and their prevention, management, and counteraction and (2) the application of chemistry to the study of biologically and clinically active substances, biological and pharmacological interactions, and the development of associated research methods, techniques, and clinical trial procedures (Pharmaceutical sciences).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of pharmacology, molecular pharmacology, neuropharmacology, toxicology, molecular toxicology, and environmental toxicology.</li> </ul>	541712
5417	3.1.4.5					Development services in public health services	<p>Providing development services focused on the scientific study of the protection and improvement of health and of the prevention and management of disease for human beings.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of dietetics and nutrition, hygiene, nursing, mental and social health (substance abuse, psychiatric health, marriage and family therapy, psychoanalysis and psychotherapy); public health (environmental health, occupational health and industrial hygiene, community health and preventive medicine, maternal and child health); rehabilitation therapies (art, dance and movement, music therapies, hypnotherapy, kinesiotherapy); and human health sciences, not elsewhere classified.</li> </ul>	541712

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5417	3.1.4.6					Development services in human alternative and complementary medicine	<p>Providing development services focused on the scientific study of "non-mainstream" health care and healing systems for human beings, such as chiropractic, acupuncture and traditional chinese/oriental medicine, naturopathy, homeopathy, ayurvedic medicine, and herbal medicine, etc.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of aromatherapy, massage therapy, reiki, oriental bodywork therapy, and other alternative and complementary medicines.</li> </ul>	541712
5417	3.1.4.9					Development services in other medical and health sciences	Providing development services focused on medical and health sciences, not elsewhere classified.	541712
5417	3.1.5					Development services in agricultural, veterinary, and environmental sciences	<p>Providing development services focused on the scientific study of plant and animal production; the diagnosis, treatment, and health care management of animals; and natural resource conservation and environmental management and rehabilitation; etc.</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>development services in biotechnology are in product 3.1.6, Development services in biotechnology.</li> </ul>	541712
5417	3.1.5.1					Development services in plant production sciences	<p>Providing development services focused on the sciences and technologies directed towards the production of plants, including vegetables, shrubs, vines, and herbs, as well as their flowers, fruits, grains, and nuts.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in areas such as plant nutrition, propagation and culture, breeding, protection (pests, diseases and weeds), and growth and development.</li> </ul>	541712

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5417	3.1.5.2					Development services in animal production sciences	<p>Providing development services focused on the sciences and technologies that support the production of animals. It covers aspects such as nutrition, husbandry, growth and development, breeding and protection (pests and pathogens).</p> <p>Includes</p> <ul style="list-style-type: none"> <li>development services in the areas of livestock, fisheries and aquaculture, poultry and aviculture, bees and apiary culture, milk and dairy science, and other animal production sciences.</li> </ul>	541712
5417	3.1.5.3					Development services in agriculture-related soil and water sciences	<p>Providing development services focused on the scientific study of soil and water in an agricultural production perspective.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of soil chemistry and physics, soil microbiology, land capability, soil degradation, as well as the agricultural applied aspects of water sciences such as drainage, flooding, irrigation, and quality.</li> </ul>	541712
5417	3.1.5.4					Development services in veterinary sciences	<p>Providing development services focused on the scientific study of the diagnosis, treatment and health care management of animals and animal populations, and of the prevention and management of zoonosis, including alternative and complementary animal medicine.</p>	541712
5417	3.1.5.5					Development services in environmental sciences	<p>Providing development services focused on the scientific study of the natural environment and its conservation, use, and improvement.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of environmental science, fishing and fisheries sciences and management, forest sciences and management, wildlife and wildlands science and management.</li> <li>development services on subjects such as environmental factors affecting natural habitats and renewable and non-renewable natural resources; abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resources management.</li> </ul>	541712

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5417	3.1.5.9					Development services in other agricultural, veterinary, and environmental sciences	Providing development services focused on other studies related to agricultural, veterinary, and environmental sciences, not elsewhere classified.	541712
5417	3.1.6					Development services in social sciences and humanities	<p>Providing development services focused on the scientific study of social systems, social institutions, and social behavior and on the scientific study of the cultures of human societies, the analytical and critical methods of inquiry derived from an appreciation of human values, and the unique abilities of the human spirit to express itself.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of psychology; linguistics; economics, management and commerce; education; political science; sociology; cultural anthropology; law, justice, and criminology; library science and curatorial studies; and other social sciences.</li> <li>• development services in the areas of promotion and understanding of history and archeology; visual and performing arts; language, literature, communications, and media; philosophy and religion; and other humanities.</li> </ul>	541712
5417	3.1.6.1					Development services in psychology	Providing development services focused on the scientific study of the behavior of individuals, independently or collectively, and the physical and environmental bases of mental, emotional, and neurological activity.	541712
5417	3.1.6.2					Development services in education	<p>Providing development services focused on the scientific study of the processes, methods, and tools of teaching.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services in the areas of curriculum studies; counseling; teacher education; community college education; adult education and lifelong learning; bilingual, multilingual, and multicultural education and teaching; educational leadership; special education; and other education disciplines.</li> </ul>	541712

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5417	3.1.6.3					Development services in studies in human society	<p>Providing development services focused on the scientific study of society, social institutions, and social relationships, including the systematic study of the development, structure, interaction, and collective behavior of organized groups of human beings, and of a social institution as a functioning whole and as it relates to the rest of society.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of anthropology, demography, human geography, social work, and sociology, etc.</li> </ul>	541712
5417	3.1.6.4					Development services in linguistics	<p>Providing development services focused on the scientific study of language from a theoretical or applied approach, or from a diachronic (historical perspective) or synchronistic (as they are used at a given time) perspective.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of phonetics, phonology, morphology, syntax, and semantics, as well as computational linguistics, neurolinguistics, and sociolinguistics.</li> </ul>	541712
5417	3.1.6.5					Development services in political science	<p>Providing development services focused on the scientific study of political institutions, processes, and behavior, including the nature and functions of the state, government, government institutions, and politics.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of comparative politics; constitutional studies; international relations; political thought and theory; municipal and local government; public policy and administration; and other related topics.</li> </ul>	541712

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			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	3.1.6.6					Development services in economics	<p>Providing development services focused on the scientific study of the production, distribution, and consumption of goods and services and of wealth in human society, together with the organizational frameworks related to these processes.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of economic theory, econometrics and quantitative economics, economic history and history of economic thought, applied economics (e.g., agricultural, resources, finance, health, labor, welfare, international development, urban and regional economics, etc.), and other related subjects.</li> </ul>	541712
5417	3.1.6.7					Development services in management and commerce	<p>Providing development services focused on the scientific study of the planning, organizing, directing, and controlling of an organization's functions and processes, including all types of resources and covering both public and private sector organizations.</p>	541712
5417	3.1.6.8					Development services in law and justice	<p>Providing development services focused on the scientific study of the rules of conduct by which societal relations are formally structured and adjudicated (law and legal studies); of the principles and procedures for conducting and supervising law enforcement, corrections, and security services (justice); and of crime as a social phenomenon, criminals, and penal treatment (criminology).</p>	541712
5417	3.1.6.9					Development services in arts	<p>Providing development services focused on the scientific study of the creation and interpretation of works and performances that use auditory, kinesthetic, and visual phenomena to express ideas and emotions in various forms, subject to aesthetic criteria.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of fine arts; film/video and photographic arts; electronic arts and multimedia; music, drama, theatre and dance; visual arts and crafts; design and applied arts; and other visual and performing arts.</li> </ul>	541712

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5417	3.1.6.10					Development services in history and archaeology	Providing development services focused on the scientific study of the past, including the gathering, recording, interpreting, and assessing of past events, whether by historiography or oral tradition (history), and the scientific study of physical remains and artifacts of past human lives and activities in order to increase understanding of the past (archaeology).	541712
5417	3.1.6.19					Development services in other social sciences and humanities	Providing development services focused on other social sciences and humanities, such as philosophy, religion, theology, communications, journalism, media, curatorial sciences, library sciences, language, and literature, etc.	541712
5417	3.1.6.19.1	-				Development services in philosophy and religion	Providing development services focused on the examination of fundamental, ethical, and religious beliefs and on inquiry into the intellectual history of civilizations.  Includes: • development services in the areas of philosophy and religion.	541712
5417	3.1.6.19.1.1					Development services in philosophy	Providing development services focused on the critical examination of the grounds for fundamental beliefs and an analysis of the basic concepts employed in the expression of such beliefs.  Includes: • development services in the areas of the major systems of philosophy (eastern and western, jewish and christian, etc.) • development services in the areas of aesthetics, epistemology, ethics, ideology, logic, metaphysics, and other philosophical studies.	541712

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			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	3.1.6.19.1.2					Development services in religion	<p>Providing development services focused on the scientific study of religion, religious traditions, specific religious and quasi-religious systems, as well as of religious beliefs, doctrines, and practices from the intramural standpoint of a particular faith.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of buddhist, christian, islamic, jewish, and other religion and religious traditions studies.</li> </ul>	541712
5417	3.1.6.19.2	-				Development services in communication, journalism and media	<p>Providing development services focused on the methods and techniques used in the creation, transmission, and evaluation of messages in various media, within and across different contexts, channels, and cultures.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services in the areas of advertising, mass communications, radio and television broadcasting, and digital communications (e.g., internet), etc.</li> </ul>	541712
5417	3.1.6.19.3	-				Development services in library science and curatorial studies	<p>Providing development services focused on the scientific study of the principles and practices of library care and administration.</p> <p>including</p> <ul style="list-style-type: none"> <li>development services in the areas of collection, organization, and retrieval of information (library sciences).</li> <li>development services in the areas of procurement, care, preservation, and display of important artifacts, works of art, and other cultural objects (curatorial studies).</li> </ul>	541712
5417	3.1.6.19.4	-				Development services in language and literature	<p>Providing development services focused on modern, classical, and dead languages, classical and modern literatures, and cultural studies.</p>	541712
5417	3.1.6.19.9					Development services in social sciences and humanities, nec.	<p>Providing development services focused on social sciences and humanities, not elsewhere classified.</p>	541712

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5417	3.2				X	Development services for products	Providing development services categorized by product- and industry-related categories.	541711 541712 541720
5417	3.2.1				X	Development services for goods	Providing development services for goods.	541711 541712
5417	3.2.1.1				X	Goods development services for food, beverage, and tobacco products	<p>Providing development services for goods that include human subsistence items of foods and beverages for human consumption and certain related products such as vegetable and animal fats and oils, and prepared feeds for animals and fowls.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services for products of agriculture, horticulture and market gardening; live animals and animal products; and fish and other fishing products.</li> <li>development services for manufactured and non-manufactured tobacco products.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>development services for petroleum-based fertilizers are in product 3.2.1.4, Goods development services for refined petroleum, coal, and coke products.</li> <li>development services for agricultural supplies such as chemicals and fertilizers, except petroleum-based, are in product 3.2.1.5.9, Goods development services for other chemical products.</li> </ul>	541711 541712
5417	3.2.1.2				X	Goods development services for textiles, clothing, and leather products	<p>Providing development services for goods that include textiles, leather, furs, apparel, vinyl and leather footwear, tarpaulins, canvas, tents, flags, linens, tablecloths and soft goods, clothing, individual equipment, and insignia, etc.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services for fibers such as yarn, thread, and twine, etc.</li> </ul>	541712

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5417	3.2.1.3				X	Goods development services for wood and paper products	<p>Providing development services for goods that include wood and paper household and office furniture and furnishings, office, home and school supplies, wood and paper containers, packaging and packing supplies, paper-based books, maps, other publications, training aids (easels), and devices (posters), pictures and picture frames, crafts made from wood or paper.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services for bulk timber, lumber, pulpwood, plywood, veneers, and firewood products.</li> <li>development services for raw forestry and logging products and other forestry products.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>development services for natural rubbers, gums and resins are in product 3.2.1.6, Goods development services for rubber and plastics products.</li> </ul>	541712
5417	3.2.1.4				X	Goods development services for refined petroleum, coal, and coke products	<p>Providing development services for goods that include fuels, lubricants, oils and oil-based waxes, petroleum and coal- and coke-based products, except plastics.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>development services for coke, coal, and charcoal products and for petroleum-based fertilizers.</li> </ul>	541712
5417	3.2.1.5				X	Goods development services for chemical products	<p>Providing development services for goods that include chemicals and chemical products (except metals, minerals, and rubber).</p>	541712
5417	3.2.1.5.1				X	Goods development services for pharmaceutical, drug, medicine, and herbal products	<p>Providing development services for goods that include pharmaceutical, drug, herbal and medicine products.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>medicinal chemical, biological and botanical products.</li> </ul>	541711 541712

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5417	3.2.1.5.9				X	Goods development services for other chemical products	<p>Providing development services for goods that include alkalis, chlorine, industrial gases, inorganic pigments, and other industrial chemicals.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services for cleaning and disinfectant supplies, preserving and removing agents, paints, sealers and adhesives, soaps and detergents, toiletries, cosmetics and skin care products, natural non-oil-based waxes and polishes.</li> <li>• development services for pesticides and fertilizers not based on petroleum.</li> <li>• development services for explosives, explosive powders, and chemicals used in fission and fusion reactions.</li> </ul>	541712
5417	3.2.1.6				X	Goods development services for rubber and plastics products	<p>Providing development services for goods that include fabricated rubber and plastic products such as plastic and rubber tires and tubes, plastic and rubber furniture, plastic and rubber tools, toys, containers and packages, rubber and plastic clothing, footwear and accessories, etc. as well as natural and synthetic rubbers, resins and gums, including cellulosic and noncellulosic fibers.</p>	541712
5417	3.2.1.7				X	Goods development services for stone, clay, glass, concrete, and other non-metallic mineral products	<p>Providing development services for goods that include ceramics, glass, and clay products; abrasives and asbestos products, cement, stone and concrete products, and other non-metallic semi-finished and finished mineral products.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services for products of unprocessed coal, lignite, peat, crude (unrefined) petroleum, natural gas, uranium and thorium ores, and other non-metallic minerals.</li> </ul>	541712
5417	3.2.1.8				X	Goods development services for metal products	<p>Providing development services for goods that include products made primarily from metals, except machinery, equipment and transportation equipment components.</p>	541712

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			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	3.2.1.8.1				X	Goods development services for iron, steel, and other alloy products	Providing development services for goods that include products of blast furnaces, steel works, rolling and finishing mills, iron and steel castings and forgings.  Includes: • development services for both crude and semi-finished products from iron, steel, and other alloy products. • development services for partially fabricated reactor fuel materials and control rods.	541712
5417	3.2.1.8.2				X	Goods development services for other metal products	Providing development services for goods that include products made primarily from primary and secondary smelting and refining of nonferrous metals that have been rolled, drawn, and extruded into castings and forgings.  Includes: • development services for crude and semi-finished products from precious metals, metal ores, and all other metal materials.	541712
5417	3.2.1.8.3				X	Goods development services for fabricated metal products	Providing development services for goods that include hand tools, measuring tools, hardware, abrasives, prefabricated metal structures and scaffolding, metal construction and metal building materials, metal rope, cable, chains, and fittings, pipes, wires, tubing, metal hoses, valves and fittings, etc.	541712
5417	3.2.1.9				X	Goods development services for office machinery, computers, and peripheral products	Providing development services for goods that include office machinery, such as calculators, accounting machines, typewriters, and dictaphones; and electronic computers, computer peripheral equipment and computer hardware products.  Excludes: • development services for laboratory scales and balances, and detecting, measuring or optical equipment are in product 3.2.1.13, Goods development services for navigational, measuring, detecting, optical, medical, and electro-medical products. • development services for semiconductors and other electronic components are in product 3.2.1.12, Goods development services in semiconductor and other electronic component products.	541712

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5417	3.2.1.10				X	Goods development services for radio, television, and communications equipment and apparatus	Providing development services for goods that include radio and radio transmitting equipment, television and television transmitting equipment, and communications and communications equipment and apparatus.  Includes: • development services for radio and television receiving equipment, home recorders, CD players, and hi-fi equipment, etc.	541712
5417	3.2.1.11				X	Goods development services for household and commercial appliance products, except medical	Providing development services for goods that include household and commercial appliances and food preparation and servicing equipment.  Excludes: • development services for radio, television, and recording equipment are in product 3.2.1.10, Goods development services for radio, television, and communications equipment and apparatus..	541712
5417	3.2.1.12				X	Goods development services for semiconductor and other electronic component products	Providing development services for goods that include semiconductors, computer logic modules, computer chips, solid state electronic devices, integrated circuits, rheostats, capacitors, resistors, transistors, transformers, circuit breakers, and all other electronic component parts.	541712
5417	3.2.1.13				X	Goods development services for navigational, measuring, detecting, optical, medical, and electro-medical products	Providing development services for goods that include navigational, measuring, detecting, optical, and electro-medical instrument products.  Includes: • development services for engineering, laboratory, and scientific and research instruments and associated equipment. • development services for optical, surgical, and medical instruments and apparatus.	541712

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5417	3.2.1.14				X	Goods development services for electrical and electronic machinery and apparatus	<p>Providing development services for goods that include electric motors and generators; motor starters and controls; electrical equipment and components; fiber optics materials, components, assemblies, and accessories; electric wire, power, and distribution equipment; lighting fixtures and lamps; alarm signal, and security detection systems; pumps and compressors; and refrigeration, air conditioning, and air circulating equipment.</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• development services for radio, television, and communications equipment are in product 3.2.1.10, Goods development services for radio, television, and communications equipment and apparatus.</li> <li>• development services for computers and computer equipment are in product 3.2.1.9, Goods development services for office machinery, computers, and peripheral products.</li> <li>• development services for appliances are in product 3.2.1.11, Goods development services for household and commercial appliance products, except medical.</li> <li>• development services for measuring and detecting instruments and equipment and electronic components are in product 3.2.1.13, Goods development services for navigational, measuring, detecting, optical, medical, and electro-medical products.</li> </ul>	541712
5417	3.2.1.15				X	Goods development services for machinery and equipment products	<p>Providing development services for goods that include engines and turbines (except for transportation); woodworking and metalworking machinery and equipment; service and trade equipment; special industry machinery; agricultural machinery and equipment; construction, mining, excavating, and highway maintenance equipment; and materials handling equipment; etc.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• development services for ordnance, including motorized combat vehicles.</li> </ul>	541712

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5417	3.2.1.16				X	Goods development services for transportation equipment products	Providing development services for goods that include aircraft and airframe structural components; aircraft components and accessories; aircraft launching, landing and ground handling equipment; space vehicles and associated systems; ships, small craft, pontoons, floating docks, and ship and marine equipment; railway equipment; ground effect vehicles; motor vehicles, trailers, cycles, and vehicular equipment components; engines, turbines and components, and engine accessories; mechanical power transmission equipment; and bearings.  Excludes: • development services for ordnance and related equipment are in product 3.2.1.15, Goods development services for machinery and equipment products.	541712
5417	3.2.1.16.1				X	Goods development services for aircraft and spacecraft products	Providing development services for goods that include aircraft and airframe structural components; aircraft components and accessories; aircraft launching, landing, and ground handling equipment; and missiles, space vehicles, and associated systems.  Excludes: • development services for electronic guidance control and radar systems are in product 3.2.1.13, Goods development services for navigational, measuring, detecting, optical, medical, and electro-medical products.	541712
5417	3.2.1.16.2				X	Goods development services for automotive and other landcraft products	Providing development services for goods that include ground effect vehicles, motor vehicles, trailers, and motorcycles; vehicular equipment components; engines, turbines and components, and engine accessories; mechanical power transmission equipment; and bearings.	541712
5417	3.2.1.16.3				X	Goods development services for ships and other watercraft products	Providing development services for goods that include ships, boats, small watercraft, pontoons, floating docks, ship and marine equipment.	541712

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5417	3.2.1.16.9				X	Goods development services for other transportation equipment products	Providing development services for goods that include transportation systems and equipment, not elsewhere classified, such as locomotives, railway cars and equipment, rolling stock, tramway and cable operated transportation systems, bicycles, and parts, etc.	541712
5417	3.2.1.19				X	Goods development services for furniture, jewelry, musical instruments, sports goods, games, toys, and miscellaneous manufactured products	Providing development services for goods that include furniture, jewelry, musical instruments, sporting goods, games, toys, and miscellaneous manufactured products, not elsewhere classified.  Excludes: • development services for artillery are in product 3.2.1.15, Goods development services for machinery and equipment products. • development services for bombs are in product 3.2.1.5.9, Goods development services for other chemical products.	541712
5417	3.2.2				X	Development services for service products, processes, systems, or methods	Providing development services for service products, processes, systems, or methods.	541711 541712 541720
5417	3.2.2.1				X	Development services for processes, systems, or methods used in manufacturing	Providing development services for processes, systems, or methods used in manufacturing industries (NAICS 31-33).	541711 541712
5417	3.2.2.2				X	Development services for processes, systems, or methods used in agriculture, forestry, fishing and hunting	Providing development services for processes, systems, or methods used in agriculture, forestry, fishing, and hunting industries (NAICS 11).	541711 541712

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5417	3.2.2.3				X	Development services for processes, systems, or methods used in mining and minerals	Providing development services for processes, systems, or methods used in mining and mineral extraction industries (NAICS 21).	541712
5417	3.2.2.4				X	Development services for products, processes, systems, or methods used in wholesale and retail trade	Providing development services for products, processes, systems, or methods used in wholesale and retail trade industries (NAICS 42 and 44-45).	541712
5417	3.2.2.5				X	Development services for products, processes, systems, or methods used in professional, scientific, and technical services	Providing development services for products, processes, systems, or methods used in professional, scientific, and technical services industries (NAICS 54).	541711 541712 541720
5417	3.2.2.6				X	Development services for products, processes, systems, or methods used in information services	Providing development services for products, processes, systems, or methods used in information services industries (NAICS 51).	541712 541720
5417	3.2.2.6.1				X	Development services for products, processes, systems, or methods used in software publishing	Providing development services for products, processes, systems, or methods used in software publishing industries (NAICS 5112).	541712 541720

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5417	3.2.2.6.2				X	Development services for products, processes, systems, or methods used in broadcasting (except internet) and telecommunications	Providing development services for products, processes, systems, or methods used in broadcasting (except internet) and telecommunications industries (NAICS 515 and 517).	541712 541720
5417	3.2.2.6.3				X	Development of products, processes, systems or methods used in internet publishing and broadcasting and internet service providing	Providing development services for products, processes, systems, or methods used in internet publishing and broadcasting and internet service provider industries (NAICS 516110 and 518111).	541712 541720
5417	3.2.2.6.9				X	Development services for products, processes, systems, or methods used in other information services	Providing development services for products, processes, systems, or methods used in information services industries, not elsewhere classified (balance of NAICS 51).	541712 541720
5417	3.2.2.7				X	Development services for products, processes, systems, or methods in used construction services	Providing development services for products, processes, systems, or methods used in construction industries (NAICS 23)	541712
5417	3.2.2.8				X	Development services for products, processes, systems, or methods used in health care services	Providing development services for products, processes, systems, or methods used in health care and social assistance industries (NAICS Sector 62).	541711 541712

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5417	3.2.2.9				X	Development services for products, processes, systems, or methods in transportation and warehousing services	Providing development services for products, processes, systems, or methods used in transportation and warehousing industries (NAICS 48-49).	541712
5417	3.2.2.19				X	Development services for products, processes, systems, or methods used in service industries, nec..	Providing development services for products, processes, systems, or methods used in service industries, not elsewhere classified (NAICS Sectors 22, 52, 53, 55, 56, 61, 71, 72, 81, and 92).	541712 541720
5417	4					Licensing of rights to use intellectual property	<p>Granting permission to use intellectual property owned or controlled by the licensor. Includes licensing of intellectual property implicitly or explicitly protected by copyright laws (e.g., computer software, book, screen, film, and stage play manuscripts, choreographic and musical compositions, image effect designs, performing arts productions, architectural drawings, and photographic and fine art) and industrial property laws (e.g., inventions, industrial designs, integrated circuit topography, trade secrets, and trademarks).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>licensing the right to broadcast, publish, reproduce, record, modify, incorporate, distribute, or rent intellectual property for an agreed period of time, manner, and place, such as the right to reproduce in or adapt to another format, medium, language or territory.</li> <li>temporary transfers of rights through licensing.</li> <li>permanent transfers of individual intellectual property rights through sale (e.g., only broadcast or book or film rights).</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>permanent transfers of all rights granted through outright sale of intellectual property is included in 5, Intellectual property.</li> </ul>	541711 541712 541720

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5417	4.1	X				Licensing of rights to use Intellectual property protected by copyright	<p>Granting permission to use intellectual property that is implicitly or explicitly protected by copyright owned or controlled by the licensor. Includes licenses to use property such as computer software, book, screen, film, and stage play manuscripts; choreographic, musical, and audiovisual works; image effect designs; performing arts productions; architectural drawings; and photographic and fine art.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>licensing the right to broadcast, publish, reproduce, record, modify, incorporate, distribute, or rent copyrighted property for an agreed period of time, manner, and place, such as the right to reproduce in or adapt to another format, medium, language or territory.</li> <li>temporary transfers of rights through licensing.</li> <li>permanent transfer of individual or some rights (e.g., only book and/or film rights) through sale of such rights.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>permanent transfers of rights granted through outright sale of intellectual property is included in 5.1, Intellectual property protected by copyright.</li> <li>granting the right to broadcast sports events.</li> </ul>	541711 541712 541720

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5417	4.2	X				Licensing of rights to use intellectual property protected as industrial property	<p>Granting permission to use industrial intellectual property owned or controlled by the licensor. Includes licenses to use property that is implicitly or explicitly protected by industrial property laws (patents, industrial designs, integrated circuit topography, trade secrets, and trademarks).</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>licensing the right to publish, reproduce, record, modify, incorporate, or distribute industrial intellectual property for an agreed period of time, manner, and place, such as the right to reproduce in or adapt to another format, medium, language or territory.</li> <li>temporary transfers of rights through licensing.</li> <li>permanent transfer of individual rights through sale.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>permanent transfers of rights granted through outright sale of intellectual property is included in 5.2, Intellectual property protected as industrial property.</li> </ul> <p>Same as product 1 on 533 list.</p>	541711 541712 541720

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Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	5					Intellectual property works	<p>Intellectual property produced without contract for outright sale (i.e., with all-attendant property rights). Includes intellectual properties for sale that are implicitly or explicitly protected by copyright laws (e.g., computer software, book, screen, film, and stage play manuscripts, choreographic and musical compositions, image effect designs, performing arts productions, architectural drawings, and photographic and fine art works) and by industrial property laws (e.g., inventions, industrial designs, integrated circuit topography, trade secrets, and trademarks).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• permanent transfer of only some intellectual property rights through sale is included in 4, Licensing of rights to use intellectual property.</li> <li>• intellectual property produced under contract for others is included under products under 1, 2, and 3, depending on whether the contract involves basic research, applied research, or development production services.</li> <li>• intellectual property produced for own-account.</li> <li>• original works (blueprints, designs, paintings, manuscripts, etc.) sold with conventional end-use licenses.</li> <li>• intellectual property previously sold, licensed, or used on own account.</li> </ul>	541711 541712 541720

NAPCS Product List for NAICS 5417: Research and Development Services

1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	5.1	X				Intellectual property works protected by copyright	<p>Copyrighted Intellectual property produced without contract for outright sale (i.e., with all-attendant property rights). Includes intellectual properties for sale that are implicitly or explicitly protected by copyright (e.g., computer software, book, screen, film, and stage play manuscripts, choreographic and musical compositions, image effect designs, performing arts productions, architectural drawings, and photographic and fine art).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• permanent transfer of only some intellectual property rights through sale is included in 4.1, Licensing of rights to use intellectual property protected by copyright.</li> <li>• intellectual property produced under contract for others is included in products under 1, 2, and 3, depending on whether the contract involves basic research, applied research, or development production services.</li> <li>• intellectual property produced for own-account.</li> <li>• original works, except fine arts, (blueprints, designs, manuscripts, etc.) sold with conventional end-use licenses.</li> <li>• original fine arts works (paintings, sculptures, etc.) produced for sale with conventional end-use licenses are in product 13, Paintings, sculptures, and other fine arts.</li> <li>• intellectual property previously sold, licensed, or used on own-account.</li> </ul> <p>Same as product 7 on 711 list.</p>	541711 541712 541720

NAPCS Product List for NAICS 5417: Research and Development Services

1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	5.2	X				Intellectual property protected as industrial property	<p>Industrial intellectual property produced without contract for outright sale (i.e., with all-attendant property rights). Includes intellectual properties for sale that are implicitly or explicitly protected by industrial property laws (e.g., inventions, industrial designs, integrated circuit topography, trade secrets, and trademarks).</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• permanent transfer of only some intellectual property rights through sale is included in 4.2, Licensing of rights to use intellectual property protected as industrial property.</li> <li>• intellectual property produced under contract for other is included under product 1, 2, and 3, depending on whether the contract involves basic research, applied research, or development production services..</li> <li>• computer software property is included in 5.1, Intellectual property protected by copyright.</li> <li>• intellectual property produced for own-account.</li> <li>• original works (blueprints, designs, etc.) sold with conventional end-use licenses.</li> <li>• intellectual property previously sold, licensed, or used on own-account.</li> </ul>	541711 541712 541720
5417	6			X	X	Options agreements	Granting a potential licensee of intellectual property a time period during which it may evaluate the technology and negotiate the terms of a license agreement.	541711 541712 541720
5417	7	X				Related products	Other important products provided by establishments classified in NAICS 5417.	541711 541712 541720 others

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1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	7.1			X		Improvement services for goods	Providing assistance in the improvement of goods.	541711 541712 541720
5417	7.2			X		Improvement services for service products, processes, systems or methods	Providing assistance in the improvement of service products, processes, systems or methods.	541711 541712 541720
5417	7.3			X	X	R&D consulting services	Providing advice or expertise to clients concerning research and development principles, methods or activities, when performed independently of a research and development project.	541711 541712 541720 611310
5417	7.4			X	X	Engineering services	<p>Applying physical laws and principles in the design, development, and utilization of machines, materials, instruments, structures, processes, and systems.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• providing designs, plans, and studies and other engineering consulting services related to engineering projects, whether offered separately or as bundle of services under a single contract.</li> <li>• subcontracted engineering design services for a design-build project.</li> <li>• engineering consulting services not related to a specific project.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• design-build contract services, in which the contractor takes on the construction risk as well as the engineering design risk.</li> <li>• non-engineering services related to building projects, provided on a stand-alone basis (e.g., construction management services, architectural services, and drafting services, etc.).</li> </ul> <p>Same as product 1 on 54133 list.</p>	541711 541712 541720 541310 541320 541330

NAPCS Product List for NAICS 5417: Research and Development Services

1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	7.5				X	Industrial design services	<p>Providing design services that optimize the use, value, functionality, and appearance of products; and designing and fabricating models. May include the determination of the materials, construction, mechanisms, shape, color, and surface finishes of the product, taking into consideration human needs, safety, market appeal, and efficiency in production, distribution, use, and maintenance.</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>• clothing, footwear and jewellery design services.</li> <li>• application of engineering principles to the design, development and utilization of goods, and to the processes used in the production of goods.</li> </ul> <p>Same as product 1 on 54142 list.</p>	541711 541712 541720 541420 541430
5417	7.6				X	Drafting services	<p>Producing detailed layouts, plans, drawings, illustrations, graphics or models based on engineering or architectural specifications, for use in the design, manufacture, installation, construction, repair or maintenance of buildings, structures, systems or components.</p> <p>Same as product 1 on 54134 list.</p>	541711 541712 541310 541320 541330 541340
5417	7.7			X	X	Surveying and mapping services, except geophysical	<p>Providing surveying and mapping services (except geophysical).</p> <p>Same as product 2.7 on 54133 list.</p>	541711 541712 541370

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1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	7.8			X	X	Product certification services	<p>Providing third-party assurance, either at a point in time or on a continuous basis, that a product conforms to an established standard or specification. Includes the issuance of a conformity certificate and/or certification marks.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>initial product certification, recurring product certification, and one-time product certification services.</li> </ul> <p>Excludes:</p> <ul style="list-style-type: none"> <li>consulting services in testing and related fields sold separately.</li> </ul> <p>Same as product 1.3 on 54138 list.</p>	541711 541712
5417	7.9			X	X	Testing laboratory services	<p>Providing various conformity assessment services such as testing, instrument calibration, product certification, management system registration and commercial inspection services, and related consulting services.</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>medical testing services.</li> <li>veterinary testing services.</li> <li>auto emissions testing services.</li> </ul> <p>Same as product 1 on 54138 list.</p>	541711 541712 541380
5417	7.10			X	X	IT technical support services	<p>Providing technical expertise to solve problems for the client in using software, hardware, or entire computer system.</p> <p>Excludes:</p> <ul style="list-style-type: none"> <li>technical support bundled with maintenance and repair services for computer hardware.</li> </ul> <p>Same as product 1.5 on 5112 et al list.</p>	541711 541712 541720 54151

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1	2	3	4	5	6	7	8	9
Industry Subject Area	Working Group Code	Tri-lateral Detail	National Product Detail			United States		
			Can	Mex	US	Title	Definition	NAICS Industries Producing the Product
5417	7.19			X	X	Other related products	Other related products provided by establishments classified in NAICS 5417.	541711 541712 541720 others
5417	7.19.1				X	Graduate education services	Programs and courses of study of higher education that involve a teaching and learning process leading to a graduate level award, degree or equivalent.  Includes products 1.3.2.4, 1.3.2.5, and 1.3.3 on 61 list.	541711 541712 611310
5417	7.19.9				X	Other related products, nec.	Other related products, not elsewhere classified, provided by establishments classified in NAICS 5417.	541711 541712 541720 others