

Improvement Revolution

1721:

- John Lombe opens the first silk throwing factory in Great Britain in Derby
 - **The Great Northern War ends. (Britian)**
 - **Drummers War begins (Britian)**
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1733:

- John Kay invents a simple weaving machine called the Flying Shuttle
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1750:

- **1st Industrial Revolution begins (goods made by hand to goods made by machine)**
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1756:

- William Cullen designs a small refrigerator machine at the University of Glasgow
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1764:

- James Hargreaves invents the Spinning Jenny, which allows workers to produce multiple spools of thread at the same time
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1769:

- James Watt patents his revision of the steam engine, which features a separate condenser
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1775:

- **American Revolutionary War begins**
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1779:

- Samuel Crompton invents the spinning mule, which combines spinning and weaving into one machine
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1783:

- **American Revolutionary War ends**

1785:

- Edmund Cartwright invents the power loom, which replaces the flying shuttle
- Henry Cort invents iron refining techniques

1787:

- Beverly Cotton Manufactory, the first cotton mill in America, opens in Beverly Massachusetts and is powered by horses

1790:

- Samuel Slater opens his first textile mill in Rhode Island, which is the first American factory to successfully produce cotton yarn using water-powered machines

1792:

- **French Revolutionary War begins**

1793:

- Eli Whitney invents the cotton gin which greatly increases the production of cotton extending slavery in America

1798:

- Eli Whitney starts his armory with standardization of components his key to mass production

1799:

- Combination Acts makes it illegal in Great Britain for workers to unionize in order to bargain for higher pay or better working conditions

1801:

- Richard Trevithick test drives the world's first steam-powered locomotive, called the "Puffing Devil" or "Puffer" on the streets of Camborne, England

1802:

- Thomas Moore | American farmer invents the first wooden ice box
- **French Revolutionary War ends**

1803:

- **Napoleonic Wars begin**
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1805:

- Oliver Evans designs the first refrigeration machine that uses vapor instead of liquid for cooling, but never builds it
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1807:

- Robert Fulton opens the first public steamboat service in America on the Hudson River in New York
 - Embargo Act of 1807 in the United States cuts off imports from Great Britain, forcing American merchants to increase the amount of goods they manufacture
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1811:

- Luddite Rebellion begins in Great Britain. Luddites attack factories and smash machines in protest against the industry
 - Francis Cabot Lowell, tours textile mills in Great Britain and memorizes the designs of the power loom in order to improve textile manufacturing in United States
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1812:

- Parliament passes a law making it illegal by penalty of death to destroy industrial machines
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1813:

- On January 16, 1813, fourteen Luddites are hanged at York Castle in England for the murder of manufacturer William Horsfall
 - Francis Cabot Lowell and several partners start the Boston Manufacturing Company in the United States and introduce an improved version of the power loom
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1814:

- The Boston Manufacturing Company builds its first textile mill in Waltham, Massachusetts and introduces the Lowell System, in which every step of the manufacturing process is done under one roof and is performed by adult women instead of children
- George Stephenson patents a steam engine locomotive that runs on rails

1815:

- **Napoleonic Wars end**
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1822:

- The Boston Manufacturing Company starts the first large scale factory town in America and names it Lowell after company founder Francis Cabot Lowell, who died in 1817
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1824:

- Trade unions are legalized in Great Britain
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1825:

- George Stephenson commissions a 30-mile railway to be built from Liverpool to Manchester
 - The Erie canal is completed which opens a water route from the Great Lakes to New York City and the Atlantic Ocean
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1829:

- George Stephenson's Rocket wins a speed contest, the Rainhill Trials, on the newly built Liverpool-Manchester railroad
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1830:

- The Liverpool and Manchester railway opens to the public
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1831:

- Cyrus McCormick invents the mechanical reaper, a mechanical horse-drawn reaping machine
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1832:

- Sadler Committee investigates child labor in factories in Great Britain and issues a report to Parliament
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1833:

- The 1833 Factory Act in Great Britain provides first regulation of child labor in textile factories

1835:

- Jacob Perkins, now known as the “father of the refrigerator,” builds upon Oliver Evans refrigeration machine idea and patents the first vapor-compression refrigeration cycle

1837:

- John Deere invents the self-scouring steel plow

1840:

- **1st Industrial Revolution ends**

1844:

- Samuel Morse invents the telegraph, which allows people to communicate quickly over long distances
- Charles Goodyear patents vulcanized rubber

1846:

- Elias Howe invents the sewing machine
- On October 16, 1846, a Boston dentist named William Morton holds the first public demonstration of ether at Massachusetts General Hospital

1848:

- The British government establishes the General Board of Health to investigate sanitary conditions, setting up local boards to ensure safe water in cities

1849:

- 10,000 people die in three months in London from a Cholera epidemic caused by contaminated drinking water

1851:

- John Gorrie patents a mechanical refrigeration system machine

1853:

- Elisah Otis invents a safety brake for elevators. This paves the way for tall buildings and skyscrapers to be built
- **Crimean War begins**

1854:

- James Harrison builds the first commercial ice machine
- The first steam-powered cotton mill in Asia opens in Bombay, India

1856:

- Henry Bessemer develops the Bessemer Process for making steel, which allows for the mass production of inexpensive steel
- **Crimean War ends**

1861:

- Emancipation reform in Russia abolishes serfdom throughout the Russian empire, allowing serfs to seek employment

1863:

- On January 10, 1863, the first subway in the world opens in London, England
- **Shimonoseki campaign begins (Japan)**

1864:

- **Shimonoseki campaign ends. (Japan)**

1867:

- Restoration of Japanese Imperial Rule

• 1868:

- **Boshin war begins. (Japan)**

1869:

- On May 10, 1869, the Transcontinental Railroad is completed in the United States
 - **Boshin war ends, Shoguns defeated (Japan)**
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1870:

- **2nd Industrial Revolution begins (rapid scientific discovery, standardization, mass production, industrialization)**
- The Elementary Education Act of 1870, aka Foster's Education Act, in Great Britain makes school attendance mandatory for children between the ages of 5 and 10
- Large scale industrialization begins in Japan

1875:

- Public Health Act gives the British government responsibility to ensure public health for housing and sewage

1876:

- Alexander Graham Bell patents the telephone

1877:

- The Great Railroad strike occurs in the United States when railroad companies reduce wages
- Alexander Graham Bell publicly demonstrates the telephone for the first time at the Lyceum in Salem, Massachusetts by placing a phone call to the Boston Globe in Boston, Massachusetts

1879:

- Thomas Edison demonstrates the first practical incandescent light bulb by lighting up a street in Menlo Park, New Jersey

1880:

- Elementary Education Act of 1870 is extended in Great Britain

1882:

- The world's first coal-fired power station, the Holborn Viaduct power station, went into operation in London, England

1884:

- The Berlin Conference of 1884 paves the way for widespread colonization of Africa by European countries, such as Britain, France, Belgium, Spain, Portugal and Germany, who are in search of raw materials needed for industrialization and new captive markets to sell their goods to

1886:

- American Federation of labor is founded in Columbus, Ohio
- Karl Friedrich Benz of Germany obtains a patent on a three-wheeled automobile with gasoline engine

1890:

- Sakichi Toyoda completes The Toyoda Wooden Hand Loom and applies for a patent
- Daimler-Motoren-Gesellschaft (DMG) of Germany established

1891:

- Russia begins construction on the Trans-Siberian Railway, which eventually becomes the longest railway line in the world
- Walter Shewhart is born | Father of Statistical Control

1892:

- Sakichi Toyoda starts Toyoda Wooden Loom company
- Charles R. Allen releases his book - *Laboratory Exercises in Elementary Physics*

1894:

- Sakichi Toyoda invents a yarn winder and applies for a patent
- **1st Sino Japanese War begins**

1895:

- Alfred Sloan earns a BS degree in Electrical Engineering from MIT
- World's first motor show held in France
- **1st Sino Japanese War ends**

1896:

- Henry Ford manufactures a gasoline-powered automobile

1897:

- On September 1, 1897, the first subway in the United States opens in Boston, Massachusetts
- Olds Motor Vehicle Company established in America

1898:

- Sakichi Toyoda completes the Toyoda power loom
- An automobile lands in Japan for the first time (French vehicle, Panhard et Levassor)

1899:

- Renault established in France
- Fiat established in Italy
- **Boxer Rebellion begins (Japan)**

1900:

- W. Edwards Deming is born | Management Consultant

1901:

- The Factory Act in Great Britain raises the minimum work age to 12 years old
- Alfred Sloan becomes president (age 26) of Hyatt Roller Bearing Company of Newark NJ
- **Boxer Rebellion ends (Japan)**

1903:

- Wright Brothers make their first successful airplane flight in Kitty Hawk, North Carolina
- Ford established in America

1904:

- Joseph M. Juran is born | Management Consultant
- Russo-Japanese War breaks out
- Torao Yamaba completes Yamaba's Steam Car, Japan's first automobile
- **Russo-Japanese war begins**

1905:

- **Russo-Japanese war ends**
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1906:

- Douglas McGregor is born | Academic who developed the management theories of 'X' and 'Y'
- Rolls-Royce established in Britain
- First Grand Prix held at Le Mans in France
- Yoshida-shiki introduce the first gasoline-powered car, 'Takuri', to be made in Japan

1908:

- Ford begins production of the Model T automobile
- Hatsudoki Seizo Co., Ltd. (now Daihatsu Motor Co., Ltd.) established in Japan
- General Motors established in America

1909:

- Alex Osborn earns Bachelor of Philosophy (PhB) from Hamilton College
- Suzuki Loom Works (now Suzuki Motor Corporation) established
- Shigeo Shingo is born | Engineering Consultant

1910:

- Elton Mayo earns a BA in philosophy and psychology from the University of Adelaide
- A.L.F.A., predecessor of Alfa Romeo, established in Italy (Alfa Romeo formed in 1914)

1911:

- Sakichi Toyoda establishes Toyoda Automatic Loom Works, Ltd.
- Chevrolet established in America

1912:

- Sakichi Toyoda commences operations at Toyoda Automatic Weaving Factory
- Taiichi Ohon is born | Father of the Toyota Production System

1913:

- Fred Wolf invents the first commercially viable electric refrigerator, which he named "Domelre," short for Domestic Electric Refrigerator
- Ford adopts conveyor belt system for mass production lines.

1914

- **2nd Industrial Revolution ends**
 - Sakichi Toyoda establishes spinning plant alongside Toyoda Automatic Weaving Factory - becomes Toyoda Automatic Spinning and Weaving Plant.
 - Kaishinsha Motor Car Works completes an all-Japanese car called 'DAT car.'
 - Ford introduces the 'Five dollars day'.
 - **World War I begins.**
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1915:

- Kaoru Ishikawa is born | Professor University of Tokyo developer of improvement strategies.
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1916

- William Boeing builds his first airplane the *Bluebell*.
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1917:

- **Russian Civil war begins.**
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1918:

- In the Hammer v. Dagenhart, the United States Supreme Court rules that Congress has no power under the Commerce Clause to enact child labor laws.
 - Tokyo Gas and Electric Industry Co., Ltd. develops military support vehicle T.G.E.A Truck (later known as Chiyoda).
 - First gasoline station opened in Tokyo.
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World War I ends.

- **Siberian Intervention begins.**
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1919:

- The Child Labor Tax law is passed.
- Charles R. Allen releases his book - *The Instructor The Man and The Job*.
- Elton Mayo began teaching at the University of Queensland (Brisbane).
- Treaty of Versailles signed.
- Citroen founded in France

1920:

- Armand V. Feigenbaum | Born | Management Consultant known as the Father of Total Quality Control.
- Toyo Cork Kogyo Co., Ltd. (now Mazda Motor Corporation) established.

1921:

- Alex Osborn release his book - A Short Course in Advertising
- Alex Osborn earns a Masters of Philosophy (PhM) from Hamilton College.
- Kiichiro Toyoda leave to tour the spinning industry in Europe and the U.S.A.
- Ford Model T passes 5 million mark in the U.S.A.

1922:

- In *Bailey v Drexel Furniture Co*, the United States Supreme Court rules the 1919 Child Labor Tax Law unconstitutional.
- Charles R. Allen releases his book - *The Foreman and His Job*
- Soichiro Honda leaves school at 15 years old to apprentice with Art Shokai automobile and motorcycle repair.
- **Irish Civil War begins.**

1923:

- Alfred P. Sloan takes over as Chairman of General Motors
- Elton Mayo left teaching at University of Queensland (Brisbane) and began teaching at University of Pennsylvania (Philadelphia, PA).
- **Irish Civil War ends.**

1924:

- Congress proposes the Child Labor Amendment prohibiting child labor but the states never ratified it
- Elton Mayo begins experiments for the manual winding of coils at the Western Electric Hawthorne facility
- Kiichiro Toyoda applies for a patent on the shuttle-change automatic loom
- Ford Japan Ltd. established in Yokohama (assembly commenced in March 1925)
- Genichi Taguchi is born | Deming Prize recipient & developer of improvement strategies

1925:

- Toyoda completes first Non-Stop Shuttle Change Automatic Loom, model 'Type G.'
- Chrysler Corporation established in the U.S.A.

1926:

- Elton Mayo earns his MA and leaves the University of Pennsylvania (Philadelphia, PA) to begin working for Harvard Graduate School of Business Administration as a Professor of Industrial Research.
- Toyoda Automatic Loom Works, Ltd. becomes Toyota Industries Corporation.
- Daimler-Benz AG established in Germany.
- Philip Crosby is born | Management Consultant known for 'Zero Defects' & 'Quality is Free'

1927:

- Elton Mayo completes experiments for the manual winding of coils and begins experiments in the Relay Assembly room at the Western Electric Hawthorne facility.
- General Motors Japan Ltd. established in Osaka (assembly commenced in March).
- Toyo Kogyo Co., Ltd. (now Mazda Motor Corporation) established.

1928:

- Soichiro Honda completes his apprenticeship (age 21) and opened a branch of Art Shokai in Hamamatsu Japan.

1929:

- Bill Smith is born | Motorola Engineer and "Father of Six Sigma."
- Kiichiro Toyoda travels overseas to gather information on the U.S.A. and European automotive industries.
- Toyoda sells patent for Type-G Toyoda Automatic Loom to Platt Brothers & Co., Ltd. of Great Britain.
- Ford Japan and GM Japan establish a finance company and begin installment sales.

1930:

- Kiichiro Toyoda commences automotive surveys and research and builds a prototype small engine
- London Naval Conference on Disarmament held
- Masaaki Imai is born | Management Consultant

1931:

- Walter Shewhart releases his book - *Economic Control of Quality of Manufactured Product*

1932:

- Douglas McGregor earns a B.E. Mechanical from Rangoon Institute of Technology (Myanmar) & a BA from Wayne State University (Detroit, MI).
- Elton Mayo completes experiments in the Relay Assembly room at the Western Electric Hawthorne facility.
- Taiichi Ohno joins Toyoda Spinning Corporation.

1933:

- Kiichiro Toyoda starts Toyota Automotive as a department in Toyoda Power Loom Company.
- Toyota completes ten (10) prototype bike motors.
- Douglas McGregor earns a MA in Psychology from Harvard (Cambridge, MA).
- Elton Mayo releases his book - *The Human Problems on an Industrial Civilization*.
- Japan withdraws from the League of Nations

1934:

- Toyoda Automatic Loom Works enters the automobile industry.
- Toyoda Automatic Loom Works establishes its Steel Manufacturing Division.
- Toyoda A-type automobile engine completed.
- Mitsubishi Heavy Industries, Ltd. established.
- Automobile Manufacturing Co. renamed Nissan Motor Co., Ltd.

1935:

- Douglas McGregor earns a PhD in Psychology from Harvard (Cambridge, MA).
- Model A1 prototype passenger car completed.
- First Toyoda Model G1 Truck prototype completed.
- Nissan completes the first Datsun at its Yokohama Plant.
- Mitsubishi Heavy Industries Ltd. completes the first Japanese diesel bus.
- Five Main Principles of Toyoda established
 1. Always be faithful to your duties, thereby contributing to the company and to the overall good

2. Always be studious and creative, striving to stay ahead of the times
3. Always be practical and avoid frivolousness
4. Always strive to build a homelike atmosphere at work that is warm and friendly
5. Always have respect for spiritual matters, and remember to be grateful at all times

1936:

- Soichiro Honda and Shichiro Kato start Tokai Seiki Heavy Industry to build piston rings.
- Toyota logo established through a public suggestion process (Product name changed from 'Toyoda-go' to 'Toyota-go').
- Nissan purchases machining facilities from Graham-Paige Motors Corp. (of the U.S.) and begins selling the Nissan Model 70 in 1937.
- Japanese government restricts business operations of GM Japan and Ford Japan.
- The German-Japan Anticommunist Treaty signed.
- **Spanish Civil War begins.**

1937:

- Armand V. Feigenbaum starts his employment with General Electric
- Gesellschaft zur Vorbereitung des Deutschen Volkswagens mbH (predecessor to VW) established in Germany
- GM hourly workers start a violent sit-down strike in Flint, Mich., which shakes the company leading to United Auto Workers representation
- **2nd Sino - Japanese War begins**

1938:

- Congress passes the Fair Labor Standards Act, which establishes minimum wage, overtime pay, record keeping, and child labor standards in the private sector and in Federal, State and local governments.
- Toyota Department Store (predecessor to Toyota Consumers' Co-Operative) established, selling daily necessities to employees.
- Toyota Motor Co. Health Insurance Society (now Toyota Motor Health Insurance Society) established.
- Toyota Airplane research laboratory established inside the Koromo Plant.
- Toyota Kouka Seinen Gakko (children's school) opened (with apprentice education commencing in April 1939).

- VW debuts the Beetle.
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1939:

- Soichiro Honda joined Tokai Seiki as president
 - Ford Japan and GM Japan cease operations
 - Walter Shewhart releases his book - *Statistical Method From The Viewpoint of Quality Control*
 - **World War II begins**
 - **Spanish Civil War ends**
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1940:

- Alex Osborn releases his book - *Your Creative Power*
 - Tripartite Pact formed between Japan, Germany and Italy
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1941:

- Soichiro Honda develops equipment that allows unskilled workers to produce high quality piston rings for Toyota, the Navy and Nakajima aircraft.
 - Toyota splits off its Machine tool plant from its machine tools division creating Toyota Machine Works Co., Ltd. (now Jtekt Co.).
 - U.S.A. institutes a complete ban on petroleum exports to Japan.
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1942:

- Armand V. Feigenbaum earns his BA Engineering from Union College.
 - Toyota takes over 40% of their suppliers business, Honda.
 - Toyota Airplane Division established.
 - Toyota Hospital opened.
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1943:

- Toyota Inspection and Improvement Committee formed.
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1944:

- Toyota designated as a munitions company.
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1945:

- Elton Mayo releases his book - *The Social Problems of an Industrial Civilization*.

- Toyota Shibaura Plant destroyed by air raids (10th); Osaka Field Office burned down.
- Toyota Koromo casting plant and machinery plant damaged by bombs.
- **Atomic bombs dropped on Hiroshima and Nagasaki.**
- **2nd Sino - Japanese War ends.**
- **World War II ends.**
- **Greek Civil War begins.**
- Toyota Laboratory established - renamed Special Engineering Division in 1948, conversion to consumer goods production permitted.
- Toyota Consumer Mutual Aid Society (now Toyota Consumers' Co-Operative Society) established.
- GM workers strike for 113 days

1946:

- Armand V. Feigenbaum develops and introduces Total Quality Management while at General Electric (GE).
- Soichiro Honda founded the Honda Technical Research Institute to develop small gasoline engines for motorized bicycles.
- Toyota Motor Koromo Labor Union (now Toyota Motor Worker's Union) formed.

1947:

- Elton Mayo releases his book - *The Political Problem of Industrial Civilization* and he left Harvard.
- U.S.A. announces the European Restoration Plan (Marshall Plan).

1948:

- Kiichiro Toyota resigns from Toyota Motor Company
- Armand V. Feigenbaum earns a MA degree from MIT Sloan School of Management
- Soichiro Honda's business was incorporated as the Honda Motor Company.
- Toyota Inspection and Improvement Department and Management Research Department established.
- Berlin Blockade commenced.
- Porsche launched the rear-engine sports car '356.'
- U.S.A. government instructs Douglas MacArthur to implement the Nine Economy Stabilization Principles.

1949:

- **Greek Civil War ends.**
- Toyota introduction to Statistical Quality Control (SQC).
- Dodge Line announced.
- Diesel Automobile Industry Co., Ltd. renamed Isuzu Motors Ltd.
- Nissan Heavy Industries renamed Nissan Motor Co., Ltd.
- GHQ cancels the passenger car production restriction.

1950:

- W. Edwards Deming travels to Japan to aid in the training of engineers and managers.
- **3rd Industrial Revolution begins moving from mechanical and analog to digital, plc's and robotics.**
- Toyota labor dispute erupts surrounding layoffs; dispute resolved with the closing of the Kamata and Shibaura Plants.
- Toyota's President of motor sales, leaves for the U.S. to discuss partnership issues with Ford and to observe the automobile market.
- Toyota's Executive Managing Director, Eiji Toyoda, leaves for the U.S.A. to observe the automobile market (2 months).
- Toyota receives an order for 1,000 vehicles as part of the First Korean War Special Procurement boom.
- Toyota receives an order for 2,329 vehicles as part of the Third Korean War Special Procurement boom.
- **Korean War begins.**

1951:

- Armand V. Feigenbaum earns a PhD degree from MIT and released his book - *Quality Control*
- Joseph M. Juran releases his book *Juran's Quality Handbook*
- Joseph M. Juran releases his book *Quality Control Handbook*
- Toyota Creative Idea Suggestion System Committee launched.
- Toyota receives an order for 1,350 vehicles received as part of the Fourth Korean War Special Procurement boom.
- **Korean Cease Fire Conference commences.**

1952:

- Bill Smith graduates from the Naval Academy.
- Toyota introduces TWI as a program for educating supervisors.
- Nissan signs a technology licensing agreement with Austin Motor Co., Ltd. of the U.K. (knock-down production of Austin A40 commences in March 1953)

1953:

- Alex Osborn releases his book - *Applied Imagination*
- Nissan labor dispute erupts, resolved in September.
- **Korean War Armistice Agreement signed.**

1954:

- Suzuki Motor Co., Ltd. founded.

1955:

- Yamaha Motor Co., Ltd. established.

1956:

- Alfred P. Sloan retires from General Motors.
- **Suez War begins.**

1957:

- Eiji Toyoda becomes head of Toyoda Motor Company; Ford is producing 8,000 vehicles a day, Toyota 40 vehicles a day
- Douglas McGregor proposes the Theory X and Theory Y
- Soviet Union successfully launches the Sputnik 1 man-made satellite
- Philip Crosby implemented the concept of 'Zero Defects' at the Martins Company

1958:

- Armand V. Feigenbaum is promoted to *Company-wide Manager of Manufacturing Operations and Quality Control for General Electric* (New York City, NY)
- Toyota do Brasil S.A. established

1960:

- Douglas McGregor releases his book - *The Human Side of Enterprise*

- Nissan receives the Deming Application Prize for major advances in quality improvement
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1961:

- Armand V. Feigenbaum releases his book - *Total Quality Control*.
 - Soichiro Honda's motorcycle race team wins the Isle of Man TT race.
 - Toyota begins company-wide introduction of Total Quality Control (TQC) methodology.
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1962:

- Toyota performs first company-wide audit (name changed to operation check in May 1966).
 - Toyota introduces Value Analysis (VA).
 - Toyota launches QC Meetings (predecessor of the QC Circles).
 - **Cuban Missile Crisis.**
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1963:

- Alfred P. Sloan releases his book - *My Years with General Motors*.
 - Toyota implements their production control method using 'Kanban.'
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1964:

- Alex Osborn releases his book - *How To Become More Creative*
 - Joseph Juran releases his book - *Managerial Breakthrough*
 - Toyota QC Promotion Group established.
 - U.S. President Kennedy is assassinated.
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1965:

- Toyota awarded the Deming Prize for Major Advances in Quality Improvement.
 - **Bombing of North Vietnam by the United States Armed Forces commences.**
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1966:

- Armand V. Feigenbaum, Kaoru Ishikawa, and Walter E. Masing are founders of the International Academy for Quality (IAQ)
- Toyota holds first All-Toyota Total Quality Management Competition

1967:

- Douglas McGregor releases his book (posthumous) - *The Professional Manager*
- Toyota establishes All-Toyota Technical Council
- **Middle East War begins.**

1968:

- Armand V. Feigenbaum leaves General Electric to start *General Systems* with his brother Donald Feigenbaum
- Toyota launches Zero Defect Campaign

1969:

- Toyota establishes All-Toyota President Meeting
- Toyota conducts All-Toyota comprehensive quality check that includes suppliers
- Toyota Quality Management Prize established
- American Apollo 11 lands on the moon

1970:

- Toyota awarded the First Japan Quality Medal
- Masaaki Imai releases his book - *Kaizen*

1971:

- Rolls-Royce of Great Britain nationalized

1972:

- Kaoru Ishikawa releases his book - *Guide to Quality Control*
- Philip Crosby releases his book - *The Art of Getting Your Own Sweet Way*

1973:

- First Oil Crisis occurs

1974:

- United Auto Workers (UAW) asks Japan to voluntarily limit vehicle exports to the U.S.A.
- Watergate scandal occurs in the U.S.A.

1975:

- Toyota encourages Self-run QC Circle activities.
- Toyota establishes their Housing Department.
- Lead eliminated from regular gasoline.
- U.S. Treasury Department launches investigation into dumping of imported cars.

1978:

- China's drastic industrialization is the result of building millions of small-scale factories throughout the country, eventually becoming the second largest economy in the world.
- Toyota's operations become debt-free after redemption of corporate bonds.
- Japan reduces automobile import duties to 0%.

1979:

- Toyota implements Management skills program.
- Philip Crosby releases his book - *Quality is Free*
- Second Oil Crisis occurs.

1980:

- Toyota Executive Vice President Shoichiro Toyoda wins Deming Prize for Individuals
- UAW petitions the United States International Trade Commission (ITC) to restrict vehicle importation
- U.S.A. raises import duties on light duty truck cab chassis
- NBC airs documentary "*If Japan Can... Why Can't We?*"
- Philip Crosby releases his book - *Leading, The Art of Becoming an Executive*
- GM loses more than \$750 million as car and truck sales plunge 26 percent
- **Iran-Iraq War begins.**

1981:

- Toyota introduces TQC to their dealers
- Toyota Technological Institute established
- GM consolidates truck, bus and van operations while workers bash Japanese cars with sledge hammers
- Shigeo Shingo releases his book - *Study of Toyota Production System from Industrial Engineering Viewpoint*

1982:

- W. Edwards Deming releases his book *Out of the Crisis*
- Toyota Home launches the Oak home

1983:

- Toyota establishes their TQC Promotion Department
- Toyota conducts QC training for company officers
- Toyota Home Aspen launched
- Toyota & GM sign a memorandum on joint production

1984:

- Eliyahu Goldratt releases his book - *The Goal*
- Philip Crosby releases his book - *Quality Without Tears*
- NUMMI partnership between GM and Toyota begins producing cars
- Toyota Technological Institute establishes Graduate School (Master's program)
- GM overhauls North American organization; acquires Electronic Data Systems Corp.

1985:

- Toyota conducts Improvement circle activities
- Toyota Home Kodachi launched
- GM forms new Saturn Corp. subsidiary and acquires Hughes Aircraft Co.
- Kaoru Ishikawa releases his book - *What is Total Quality Control*
- Shigeo Shingo releases his book - *A Revolution in Manufacturing*

1986:

- Bill Smith pitches his “theory of Latent Defect” (which he coined Six Sigma) to the head of Motorola, Bob Gavin - Six Sigma is born
- GM announces plans to close 11 U.S. plants
- GM’s pays Ross Perot \$700 million to resign from board
- Toyota Home launches the Serrata, Elm and Cedar
- Eliyahu Goldratt releases his book - *The Race*
- Genichi Taguchi releases his book - *Introduction to Quality Engineering*

1987:

- GM and UAW reach contract prohibiting closure of a plant unless its product sales fall
- Toyota Nursing College opened
- Toyota Home Apartment, a housing complex, launched
- Toyota cumulative number of Homes sold reaches 10,000
- Toyota Memorial Hospital completed
- Shigeo Shingo releases his book - *The Sayings of Shigeo Shingo: Key Strategies for Plant Improvement*

1988:

- Toyota's Oak FORET line of high-end Western homes launched
- Joseph Juran releases his book - *Juran on Planning for Quality*
- Philip Crosby releases his books - *Running Things: The Art of Making Things Happen* and *The Eternally Successful Organization*
- Shigeo Shingo releases his book - *Non-Stock Production*
- Taiichi Ohno releases his book - *Just-in-Time for Today and Tomorrow* and *Toyota Production System: Beyond Large-Scale Production*
- **Ceasefire in Iran-Iraq War.**

1989:

- Toyota donates \$1 million to University of Kentucky in the U.S.
- Tiananmen Square incident in China
- GM complies with federal regulations and equips about 15 percent of fleet with driver's air bags, blames devices for boosting car price
- Kaoru Ishikawa releases his book - *Introduction to Quality Control*
- Kaoru Ishikawa dies | Professor University of Tokyo developer of improvement strategies
- Joseph Juran releases his book - *Juran on Leadership for Quality*
- Genichi Taguchi releases his book - *Quality Engineering in Production Systems*
- Berlin Wall comes down

1990:

- Eliyahu Goldratt releases his book - *The Haystack Syndrome*
- Taiichi Ohno dies | Father of the Toyota Production System

- Toyota donates 2 million dollars to Harvard University
 - GM takes \$2.1 billion charge for four plant closings
 - Shigeo Shingo releases his book - *Zero Quality Control*
 - **East and West Germany unified**
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1991:

- End of apartheid system (segregation) declared in South Africa
 - GM loses industry record \$4.45 billion and announces closure of 21 plants over the next few years and elimination of 9,000 salaried and 15,000 hourly jobs in 1992
 - Soviet Union ceases to exist
 - **Yugoslav War begins.**
 - **Gulf War begins.**
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1992:

- Bill imposing 25% tariff on minivans passed by U.S. Senate
 - Japan-U.S. summit meeting held; U.S. president calls for opening of automobile, automotive parts and semiconductor markets
 - U.S. Big Three express dissatisfaction with ITC ruling on Japanese minivans and file suit
 - Agreement reached on North American Free Trade Agreement (NAFTA) by U.S., Canada, and Mexico
 - GM announces closure or sale of nine additional plants in the U.S.
 - Joseph Juran releases his book - *Juran on Quality by Design*
 - Philip Crosby releases his book - *Completeness*
 - Genichi Taguchi releases his book - *Taguchi Methods: Research & Development*
 - Shigeo Shingo release his book - *Shingo Production Management System: Improving Process Functions*
-

1993:

- W. Edwards Deming releases his book *The New Economics*
- W. Edwards Deming died | Management Consultant
- Philip Crosby releases his book - *Let's Talk Quality*
- Genichi Taguchi releases his book - *Taguchi on Robust Technology Development and Taguchi Methods: Signal-to-Noise Ratio for Quality Evaluation*
- Toyota implements New QC Circle activities with each individual playing a role

- Toyota Institute establishes the Toyota Automotive Engineering College of Kobe
-

1994:

- Eiji Toyoda retires from Toyota Motor Company
 - Toyota Group Executive TQM Training Course conducted for new executives.
 - Toyota introduction of TQM announced in All-Toyota Total Quality Management Convention.
 - Eliyahu Goldratt releases his book - *It's Not Luck*
-

1995:

- Toyota starts "Science SQC" activities.
 - World Trade Organization (WTO) established.
 - Philip Crosby releases his book - *Reflections on Quality*
-

1996:

- Eliyahu Goldratt releases his book - *Project Management the TOC Way*
 - Philip Crosby releases his books - *Quality Is Still Free! The Absolutes of Leadership* and *7 Simple Things You Can Do for Your Career*
 - Toyota conducts company-wide Management skill enhancement program for division and section managers
 - GM spins off Electronic Data Systems as a separate company
-

1997:

- Eliyahu Goldratt releases his book - *Critical Chain*
 - Masaaki Imai releases his book - *Gemba Kaizen*
 - Hong Kong returned to China by the U.K.
 - GM sells defense electronics business of Hughes Electronics to Raytheon and merges Hughes' auto parts business with Delphi Automotive Systems
-

1998:

- GM strikes at two Michigan parts plants shut down almost all North American production
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1999:

- Toyota publishes Workplace Management Support Series of booklets for workplace management

- Toyota Biotechnology and Afforestation Laboratory established
 - GM spins off Delphi as a separate company and purchases rights to the Hummer brand from AM General
 - Philip Crosby releases his book - *Quality & Me*
 - Genichi Taguchi releases his book - *Robust Engineering*
 - EU single currency introduced.
-

2000:

- Eliyahu Goldratt releases his book - *Necessary But Not Sufficient*
 - Toyota global expansion and entrenchment of QC Circles promoted (South Africa and India used as models)
 - Toyota renews activities for understanding appropriate use of control charts, which is conducted internally and for suppliers
 - Toyota initiates Construction of Cost Competitiveness 21 (CCC21) total cost reduction campaign
 - Toyota achieves Zero landfill waste companywide
 - GM President Rick Wagoner cuts 10 percent of white-collar employment
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2001:

- Toyota's "The Toyota Way 2001" adopted
 - Toyota Institute establishes their global human resources development organization
 - Toyota Automatic Loom Works, Ltd. changes name to Toyota Industries Corporation
 - Philip Crosby dies | Management Consultant known for 'Zero Defects' & 'Quality is Free'
 - Masaaki Imai releases his book - *Strategic Kaizen*
 - **Yugoslav War ends**
-

2002:

- Genichi Taguchi releases his book - *The Mahalanobis-Taguchi System*
 - GM spends \$251 million on 42 percent stake in South Korea's bankrupt Daewoo Motor and names it GM Daewoo Auto & Technology Co.
-

2003:

- Toyota establishes a basic quality knowledge training program internally and for suppliers

- GM sells defense unit to General Dynamics Corp.
 - Joseph Juran releases his book - *The Architect of Quality*
 - Armand V. Feigenbaum releases his book - *The Power of Management Capital*
 - Genichi Taguchi releases his book - *The Mahalanobis-Taguchi Strategy*
 - **Iraq War begins.**
-

2004:

- Toyota Global QC Circle activities conducted
 - GM's last model year for Oldsmobile
 - Genichi Taguchi releases his book - *Computer Based Robust Engineering: Essentials for DFSS*
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2005:

- Genichi Taguchi releases his book - *Taguchi's Quality Engineering Handbook*
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2006:

- GM and Delphi hourly workers, approximately 47,600, take buyout or early retirement offers
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2007:

- Toyota BR Jikotei Kanketsu (defect-free process completion) Department established
 - GM loses \$38.7 billion, including \$39 billion third-quarter charge for unused tax credits, it's the largest annual loss in auto industry history
 - GM reaches historic contract with United Auto Workers that shifts billions in retiree health care expenses to union-administered trust and agrees to pay \$33.7 billion into trust
 - GM sells Allison Transmission to The Carlyle Group and Onex Corp.
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2008:

- Eliyahu Goldratt releases his book - *The Choice*
- Joseph M. Juran dies | Management Consultant
- Toyota globally adopts "G-QC Circle Guidelines"
- Toyota begins implementation of Jikotei Kanketsu to overseas facilities
- GM loses its status as the world's largest car company to Toyota

- Government issues emergency funds to rescue GM and Chrysler
 - GM truck sales plummet and announces plan to close four pickup and sport utility vehicle factories, plan sheds 8,350 jobs
 - GM announces new small car, plans for \$15 billion in savings, with \$10 billion in cost-cutting and \$5 billion from asset sales and borrowing
 - GM puts Hummer brand up for sale.
 - U.S.A. Gas prices hit \$4 per gallon
-

2009:

- Eliyahu Goldratt releases his book - *Isn't It Obvious?*
 - Toyota announces their housing operations to be integrated under TOYOTA HOUSING CORPORATION to strengthen business
 - GM files for bankruptcy with over \$100 billion in debt
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2010:

- NUMMI partnership between GM and Toyota shuts down.
-

2011:

- Eliyahu Goldratt dies | Physicist & Management Guru developed the *Theory of Constraints (TOC)*.
 - Toyota Global Vision announced.
 - Toyota provides support for the development of Partner Robots for use in nursing and healthcare.
 - **Iraq War ends.**
-

2012:

- Genichi Taguchi dies | Deming Prize recipient & developer of improvement strategies
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2014:

- Armand V. Feigenbaum dies | Management Consultant known as the Father of Total Quality Control.