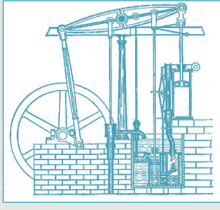


Siemens PLM Software Industry 4.0

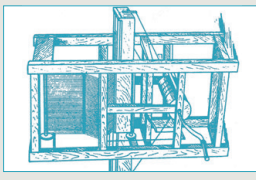
Today's industrial revolution is digitally transforming manufacturing. This Fourth Industrial Revolution will use electronics and information technology (IT) to further automate production. Take a look at the significant events driving industrial progress over time!

1760-1840: The First Industrial Revolution

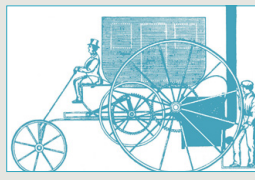
Water power, steam power, mechanical tools, the birth of factories



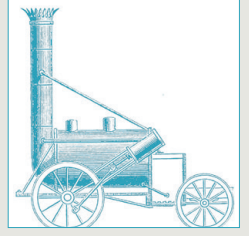
1775:
James Watt and Matthew Boulton patent the **Watt steam engine**, the first global technology to increase productivity.



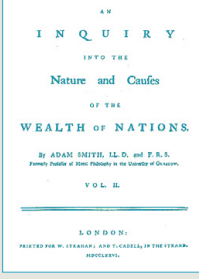
1785:
Edmund Cartwright patents the **power loom**, industrializing textile manufacturing.



1801:
Richard Trevithick begins building the first **steam locomotive**, leading to the first locomotive-powered railway.

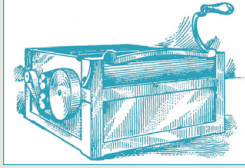


1830:
George Stephenson builds the first public **intercity railway**, the Liverpool and Manchester line.



1776:
Adam Smith publishes **The Wealth of Nations**, encouraging businesses to improve productivity by reinvesting profits into equipment and labor.

1794:
Eli Whitney patents the **cotton gin** in the United States, sparking explosive growth in the cotton industry.



1828:
James Beaumont Neilson patents the **hot-blast process for iron furnaces**, improving fuel efficiency and furnace capacity.



1840-1914: The Second Industrial Revolution

Mass production, assembly lines, division of labor, electrification



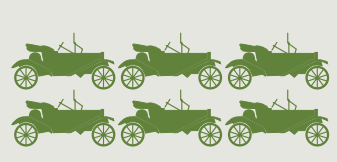
1837:
Samuel Morse patents the **telegraph and develops Morse code**; sends the country's first telegram one year later.



1867:
Chicago's meatpacking district, the Union Stock Yards, begins using the world's **first moving assembly line**.



1881:
Siemens & Halske build the **first electric tramway**.

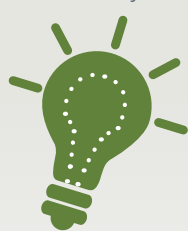


1913:
Henry Ford begins operating his **moving assembly line** at Ford Motor Company, reducing assembly time by almost 90%.

1866:
Werner Von Siemens discovers the dynamo-electric principle and invents the DC electric motor in Germany.



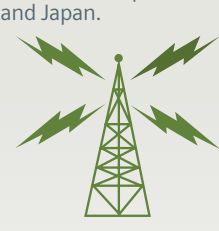
1879:
Thomas Edison holds the first public demonstration of the **incandescent light bulb**; he patents a system for electricity distribution one year later.



1886:
Karl Benz patents the **first automobile**.



1929:
The Yosami Radio Transmitting Station establishes the **first wireless communications system** between Europe and Japan.

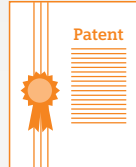


1947-2010: The Third Industrial Revolution, the Digital Revolution

Digital technology overtakes analog and mechanical technology, IT systems



1947:
Physicists John Bardeen, Walter Houser Brattain and William Shockley invent the **transistor** in AT&T's Bell Labs.



1958:
Siemens receives the patent for SIMATIC, marking the beginning of automated production.



1969:
United Computing releases **UNIAPT**, one of the first end-user computer-aided manufacturing (CAM) programs.



1973:
Martin Cooper places the **first cellular mobile phone call**; digital mobile phones follow in the 1990s.

1957:
The Soviet Union launches the first artificial satellite, **Sputnik 1**, into orbit, intensifying the Space Race between the United States and the Soviet Union.



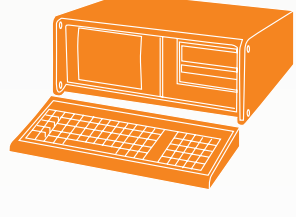
1964:
The Mount Fuji **Radar System** is completed in Japan, making extensive advances in weather radar technology and complex, remote-control electronic systems.



1969:
The United States Department of Defense establishes the **ARPANET** network, the first to use Transmission Control Protocol/Internet Protocol (TCP/IP) technologies, the foundation for the Internet.



1973:
IBM develops the first **portable computer** prototype; the first mass-marketed personal computer (PC) follows four years later.



1989:
Tim Berners-Lee invents the **World Wide Web** while working at CERN in Switzerland; it becomes available to the public two years later.



1996:
Siemens launches totally integrated automation, enabling interaction of all automation components.



1999:
General Motors completes the worldwide upgrade of its corporate computer-aided design and manufacturing (CAD/CAM) and product data management (PDM) systems with software from Unigraphics. The company changes its name to UGS Corporation two years later.

1994:
IBM and BellSouth create Simon, the first **smartphone**, with a touch screen display, apps, phone, email and fax capabilities.



1999:
Kevin Ashton invents the term **"Internet of Things" (IoT)** at MIT's Auto-ID Center. Auto-ID Labs begins designing the architecture for IoT.



2007:
Siemens acquires UGS, laying the foundation for the Siemens Industry Automation division's strategic business unit and leading to the creation of **Siemens PLM Software**.

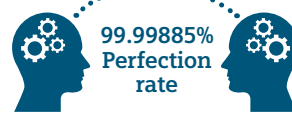


2010-present: The Fourth Industrial Revolution – Industry 4.0

Automated production, smart factories, the Internet of Things, cyber-physical systems



2011:
The German government launches **Industry 4.0**, an initiative to apply digital technologies to manufacturing processes; features include smart data, flexible factories, highly efficient production, mass customization and merging of virtual and physical worlds.



2015:
German Chancellor Angela Merkel visits the **Siemens Amberg digital enterprise factory**, which has a 99.99885 percent perfection rate and produces one product per second and 15 million SIMATIC products per year. Products control their own assembly and communicate requirements and production steps to the machines.

2012:
NASA's **Curiosity Rover** lands on Mars. NASA uses Siemens PLM Software to simulate the landing in a digital environment thousands of times before building a prototype.

