History of Scientific Innovation /Quality / Lean Journey ….

Timeline	What & Who	Need for change	Key Highlights
2000 BC-1500 AD	• Mathematical and Scientific Innovation by Aryabhata, Socrates, Bacon, Euclid	• Significant work the area on Mathematics and Science such algebra, trigonometry, development of a mathematical system based on the decimal notation system, value of pi, trigonometry helped to lay the foundations for modern calculus.	
400BC	• Arthashastra • Use of Inspection to ensure quality of goods	• Arthashastra, an ancient Indian text on statecraft and economics, describes the use of inspectors to ensure the quality of goods produced by craftsmen.	
1320	• Venetian Arsenal • Standardization, Quality	• The Arsenal had a highly organized system of labor and production, which allowed it to produce large numbers of ships and armaments in a short amount of time. This system was based on the concept of "mass production" way before ford concept	
1780	• Honorē Blanc, Interchangeable Parts	• Blanc set out to find a solution to this problem, and in 1801 he patented a system for the mass production of interchangeable gun parts. His system involved creating a set of standardized gauges and templates that could be used to ensure that each part was precisely machined to the correct dimensions.	
1867	• Meat Packing, (Dis)assembly Line	• One significant innovation in the meat packing industry was the development of the (dis)assembly line, which is a system of production where a product is broken down into individual components, with each worker responsible for a specific task	
1901	• Ransom Olds, 1st Auto Assembly Line	• Ransom Eli Olds was an American inventor and automotive pioneer who is credited with developing the first automobile assembly line.	
1911	• Frederick Taylor • Scientific Management	• Taylor's approach to management, known as scientific management, involved breaking down work processes into their component parts and optimizing each part to increase efficiency	
1913	• Ford, Highland Park Plant • Linked, Paced Assembly	• The Highland Park Plant, which opened in 1910, was designed to produce Ford's Model T automobile using a new production method known as paced assembly.	
1920	• Sakichi Toyoda, Taiiichi Ohno • JIT, Defect Prevention	• Sakichi Toyoda , as a boy learned carpentry from his father and eventually build wooden spinning machines, in 1894 made high quality manual looms that were cheaper also compared to existing looms and eventually through experimentation made Automatic Looms work ,the parent firm of Toyota group. Taiichi Ohno is credited with operationalizing TPS	
1940	• WWII • Takt Time, TWI	• Training within Industry : The program consists of four modules: Job Instruction, Job Methods, Job Relations, and Program Development	
1950	• Deming • PDCA, People, Quality	• He is best known for his work on quality management and his development of the Deming System of Profound Knowledge, which emphasizes the importance of understanding the interconnectedness and complexity of systems.	
1984	• Eliyahu Goldratt Constraints, Systems	• The creator of the Theory of Constraints (TOC), a methodology for identifying and improving the most critical constraints in any system, and for his business novel "The Goal," which explains the theory in a storytelling format.	
1991	• James Womack	• He co-authored the book "The Machine That Changed the World: The Story of Lean Production" with Daniel Jones and Daniel Roos in 1990. The book was a bestseller and introduced the concept of lean manufacturing	