



CAM

Ankush Gaurav
Assistant Professor

Mechanical Engineering Discipline

Uma Nath Singh Institute of Engineering & Technology
Veer Bahadur Singh Purvanchal University, Jaunpur, India

ankushgaurav.vbsp@gmail.com



History and Future trend in Automation Product Cycle

Historical development and future trends

- *Wheel around 3200 B.C.*



- Lever winch around 600 B.C.
- Screw and Gear around 1405 A.D.
- Waterwheel and Windmills around 650 A.D.

- ***Steam Engine 1765***

- Flour mills(Around 85 B.C.),Weaving Machines(1733),boring mill(1775),steam boat(1787) and railroad locomotives(1803)





Fly ball governor (1785)



Jacquard loom around 1800

Around 1800 the basic element of automated systems:

- Power
- Control
- Programmable machines

Were developed which are primitive in nature after that many year required for refinement

- Important improvement:

- Interchangeable parts around 1800
- Electrification 1881
- Moving assembly line 1913
- A mathematical Theory of control system after 1930
- **MARK I Computer at Harvard University 1944**

Note: These invention and development had gained important by the end of World War II

- **First Numerical control machine is demonstrated at MIT 1952**
- **First Commercial Personal Computer 1978 by Apple Computer**





- Computer Technology development is possible by advances in electronics
 - Transistor 1948
 - Hard disk for computer memory 1956
 - Integrated Circuits 1960
 - Microprocessor 1971
 - RAM 1984
 - Pentium Microprocessor 1993

On software side

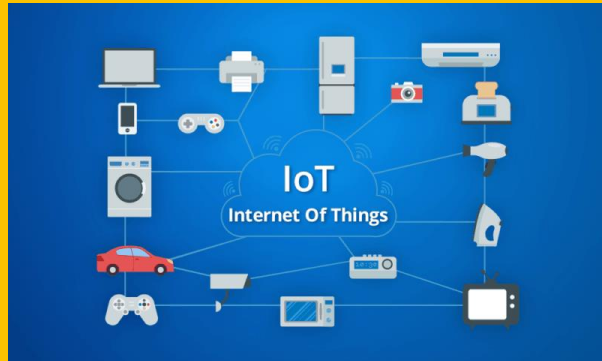
- FORTRAN Computer programming language 1955
- APT Programming Language for Numerical Control(NC) 1961
- UNIX operating system 1969
- VAL language for robot Programming 1979
- Microsoft window 1985
- JAVA Programming language 1995

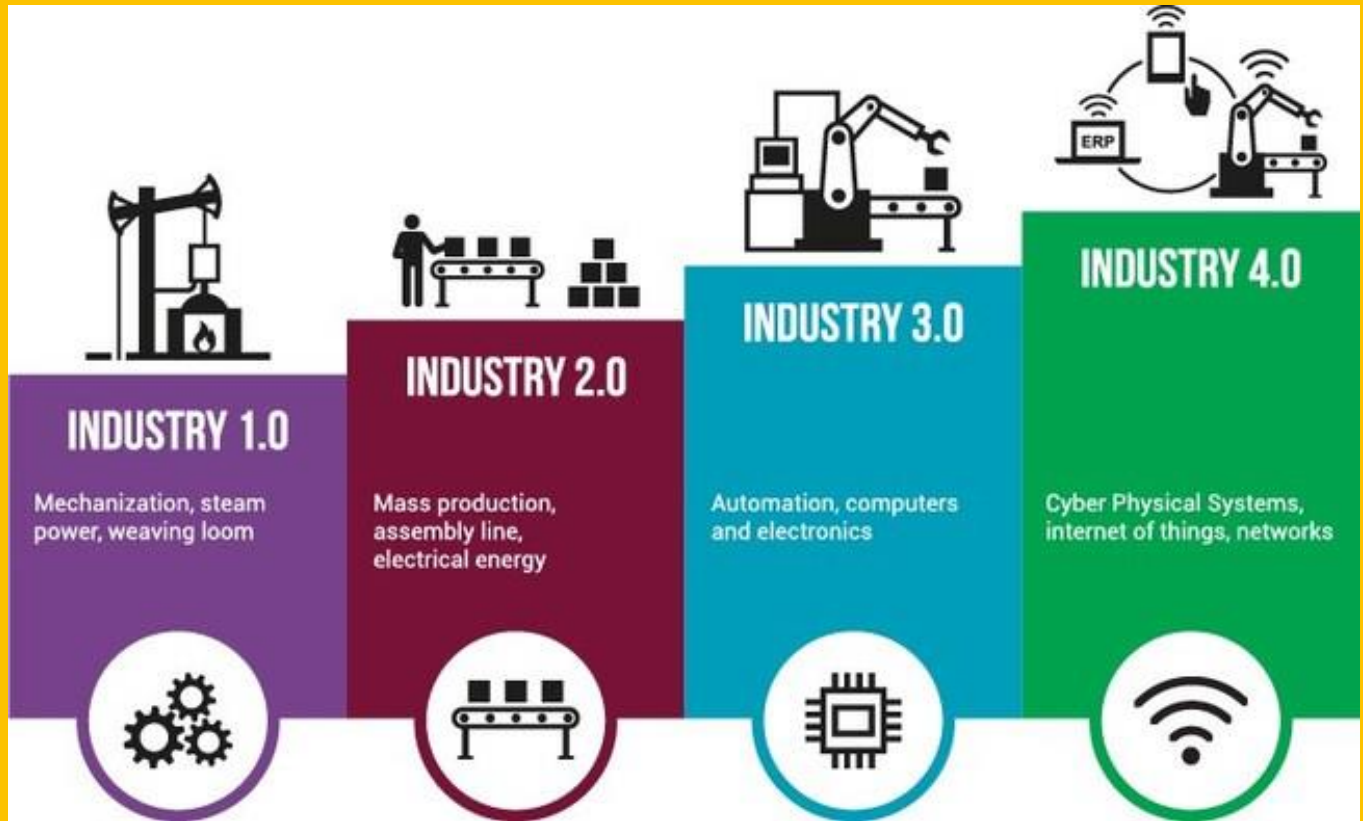


Robotics

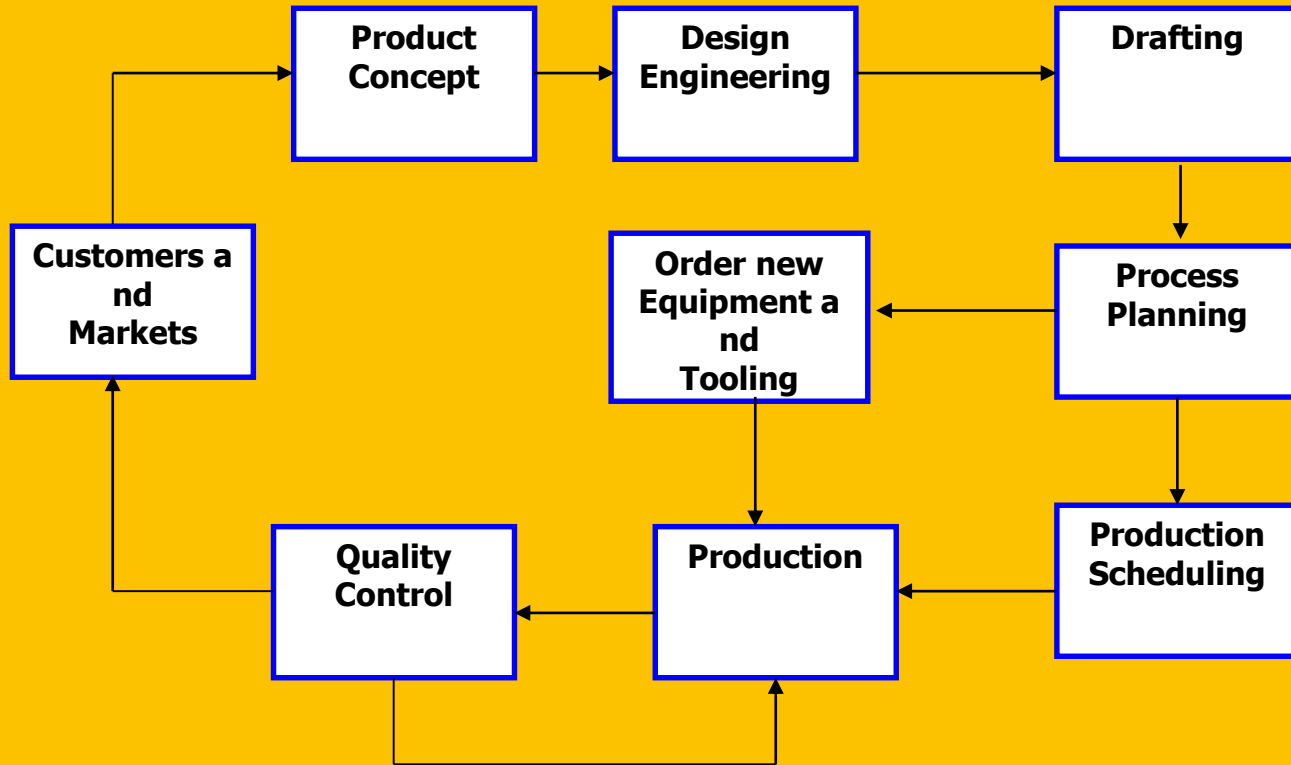


Internet of Things

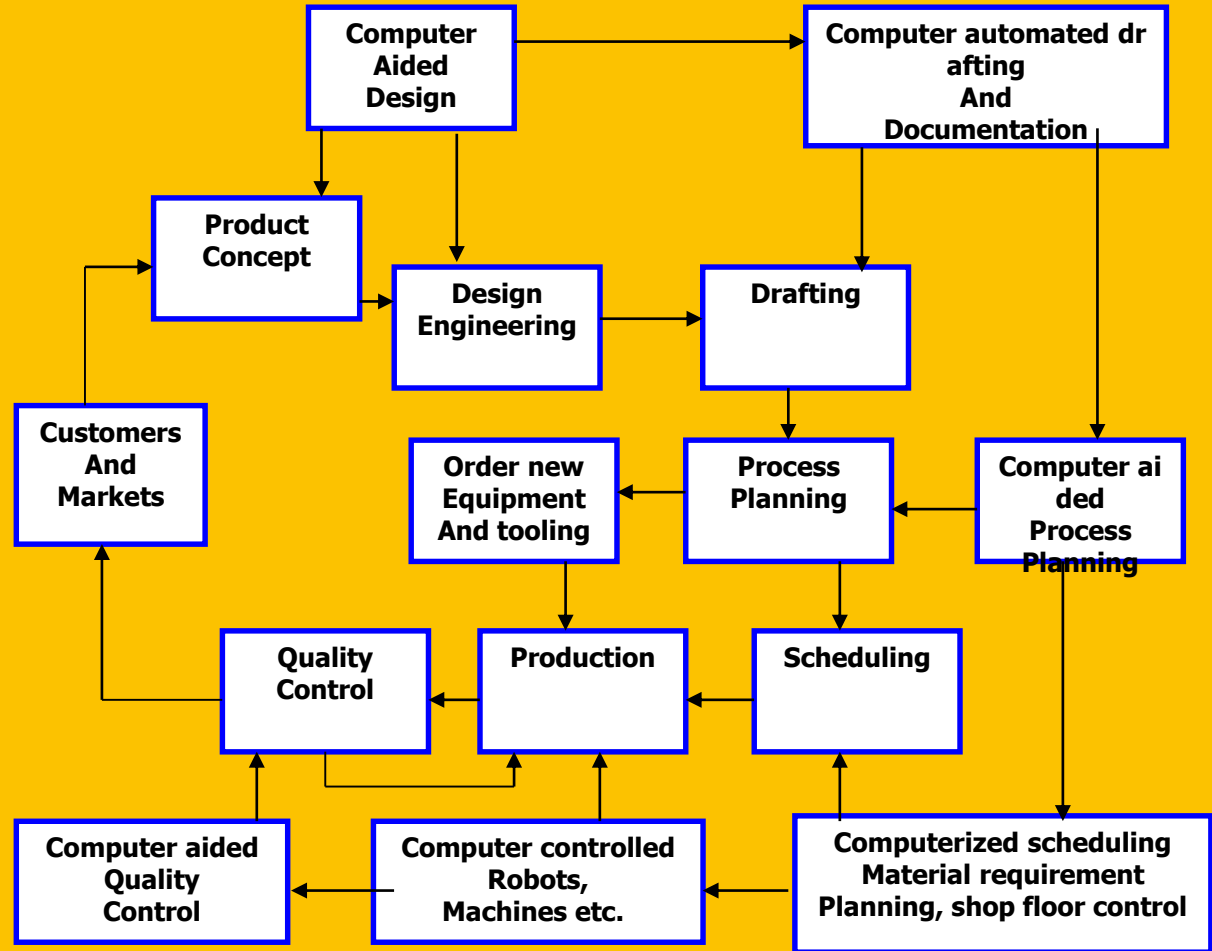


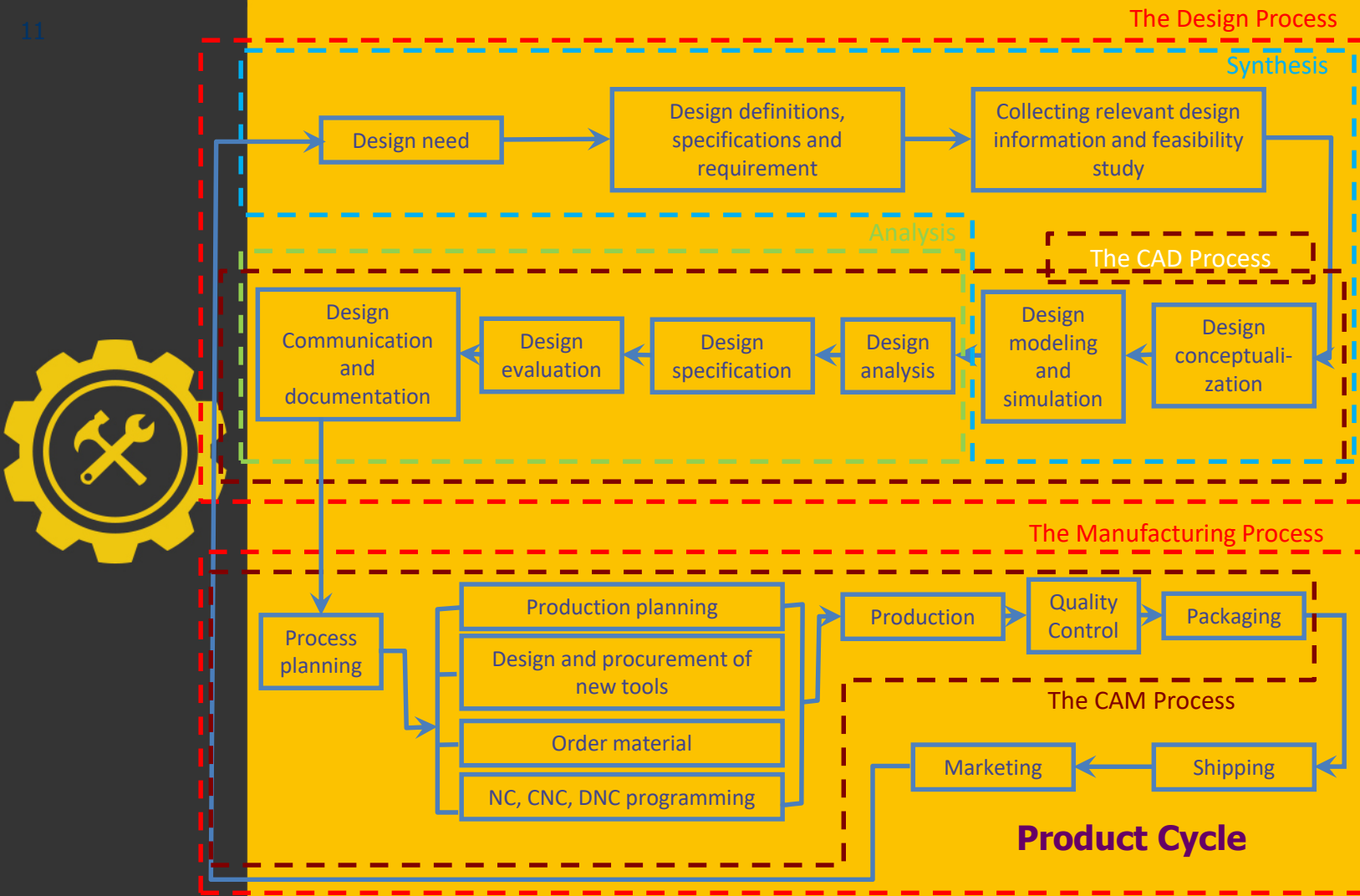


Product Cycle



Product cycle revised with CAD/CAM overlaid







References

- Mikell P. Groover-Automation, Production Systems, and Computer-Integrated Manufacturing-Prentice Hall
- <https://www.idesign.wiki/the-wheel/>
- Computer Aided Manufacturing by J.S.Narang
- <https://www.britannica.com/technology/Harvard-Mark-I>
- CAD/CAM by Groover
- <https://www.prnewswire.com/news-releases/simios-8-reasons-to-adopt-industry-4-0--300629039.html>
- Ibharim Zeid-Mastering CAD CAM-McGraw Hill (1991)
- https://en.wikipedia.org/wiki/Steam_engine
- <https://www.youtube.com/watch?v=SiYEtnlZLSs>

Thank You

