1 What is HPC

1.1 Scientific Paradigms

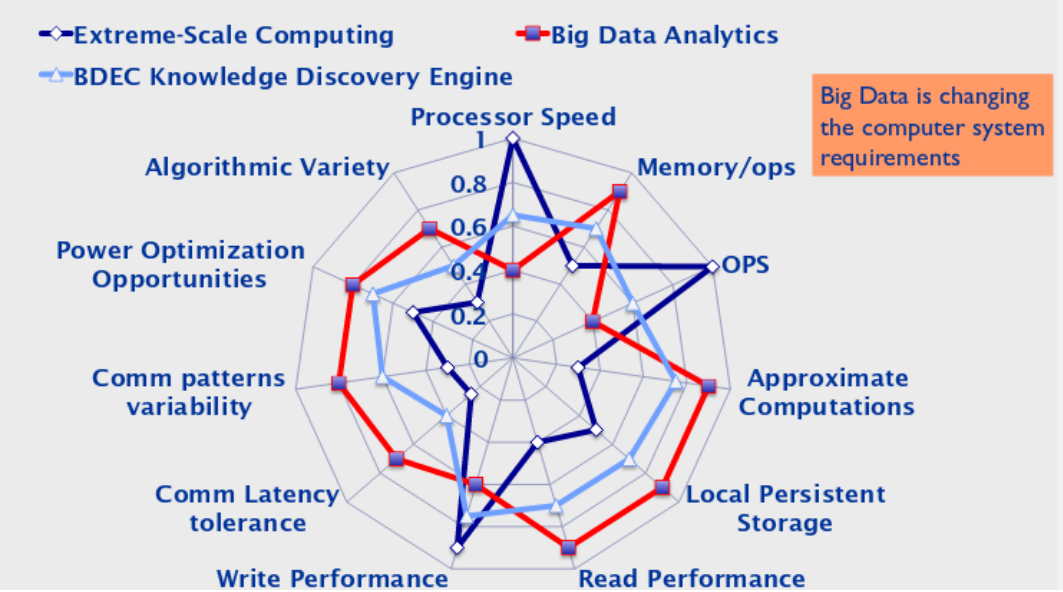
- use in science, which cannot be done without
- classical science with paper and pen, todays science with HPC
- easier, cheaper, faster, safer to test things in simulations than in real life
  → computational science

- no end to computational power needed (it can always be more accurate)

1.2 HPC examples

- weather & fluid dynamics
- car-crash simulation
- business-analytics
- movie rendering

Big Data is a new form of HPC. it is characterized by ither Huge amounts of data, fast generated data or a big variety of data. In this course Big Data will not be the main concern.



2 Developments in Technology

CPU	getting better faster than → write algorithms to use data longer → put more memory on CPU	Memory
Bandwidth	getting better faster than	Latency (speed of data retrieval after request)
CPU	not getting better since → give CPU more cores → new programing paradigmes → GPUs & FPAGs	2007