

Commodity computer systems

Chapter 1 1946—2003: Serial. Clock frequency: $\sim a^{y-1945}$

Chapter 2 2004--: Parallel. #”cores”: $\sim d^{y-2003}$ Clock freq: flat.

Programmer’s IQ? Flat..

Need A general-purpose parallel computer framework that:

- (i) is **easy to program**;
- (ii) gives good performance with **any amount of parallelism** provided by the algorithm; namely, up- and down-scalability including **backwards compatibility** on **serial** code;
- (iii) supports application programming (VHDL/Verilog, OpenGL, MATLAB) and performance programming; and
- (iv) fits **current** chip **technology** and **scales** with it.

PRAM-On-Chip@UMD is addressing (i)-(iv).

Rep speed-up [Gu-V, JEC 12/06]: 100x for VHDL benchmark.