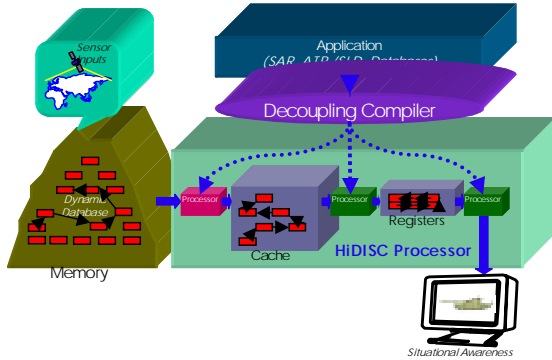


HiDISC

Hierarchical Decoupled Instruction Set Computer

University of Southern California

HiDISC for a DIS Application



Problem Statement: Logic and Memory Speeds Diverging

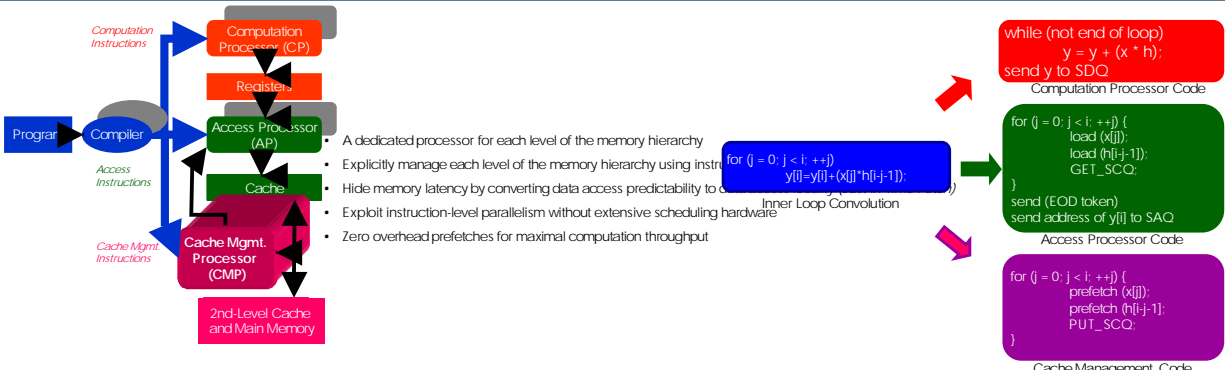
Observation:

- Software prefetching impacts compute performance
- PIMs and RAMBUS offer a high-bandwidth memory system - useful for speculative prefetching

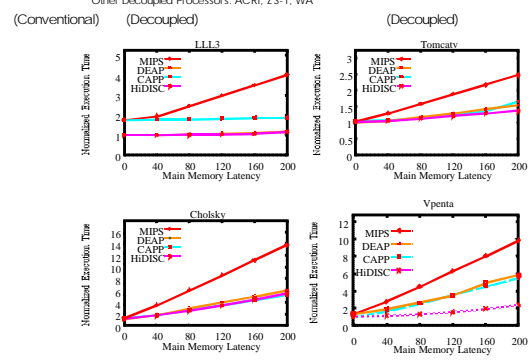
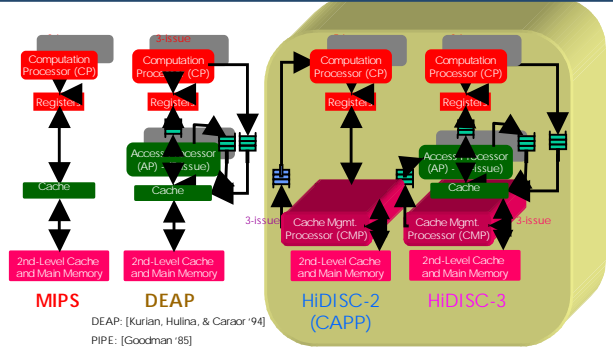
Approach:

- Add a processor to manage prefetching -> hide overhead
- Compiler explicitly manages the memory hierarchy
- Prefetch distance adapts to the program runtime behavior

Compiler Driven Memory Hierarchy Management



Evaluating HiDISC



McDISC System

