

Meet the Walkers

Accelerating Index Traversals for In-Memory Databases

Onur Kocberber

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Index
Lookup



Index
Lookup

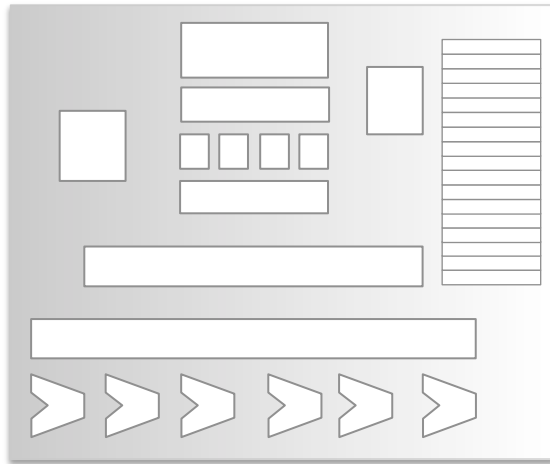


large data

pointer-
intensive



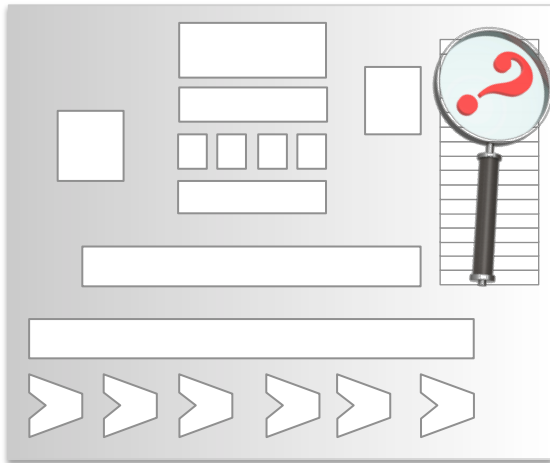
Index
Lookup



complex

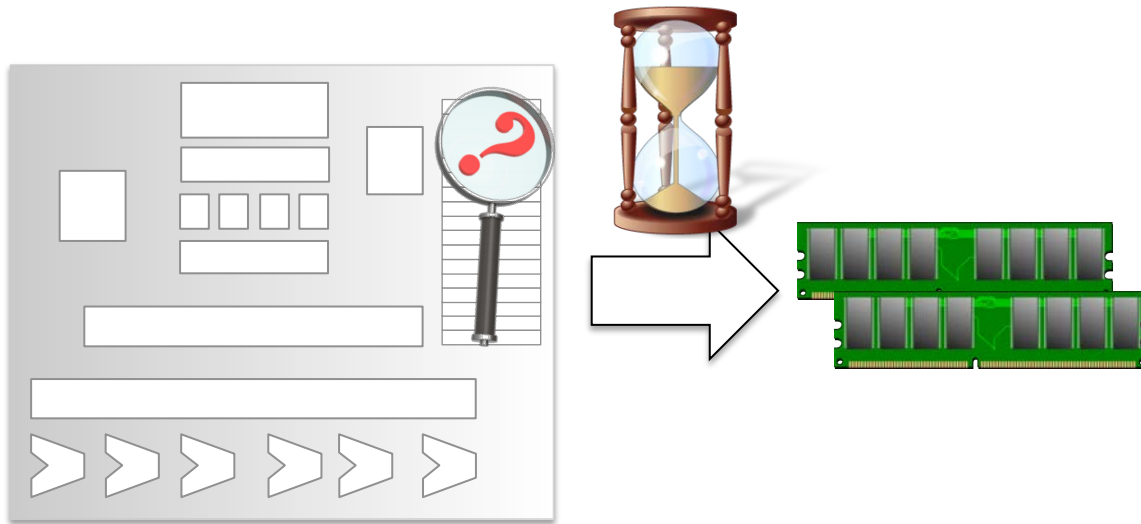
General-purpose
OoO

Index Lookups on General-Purpose OoO



Index
Lookup

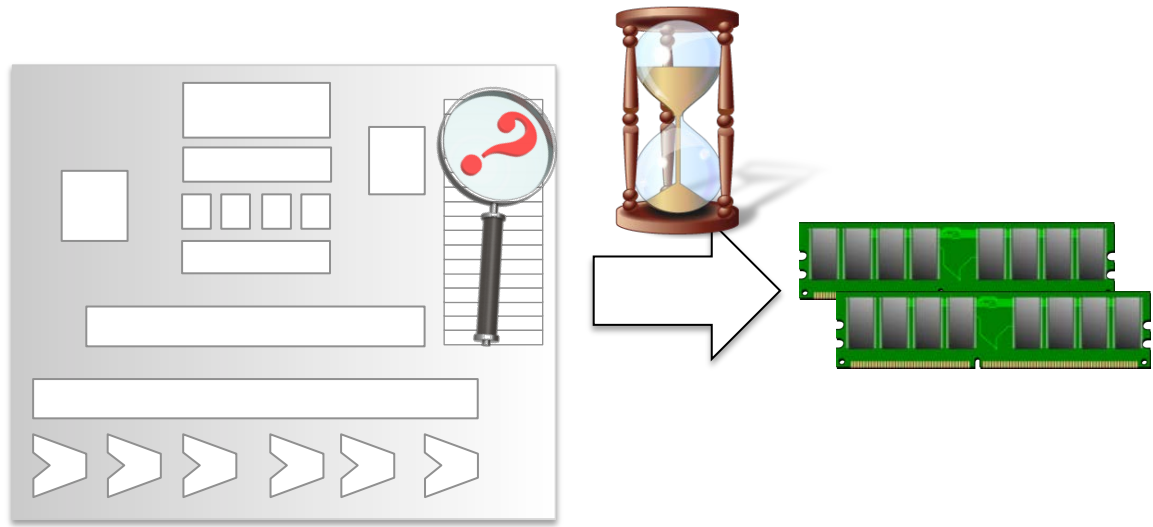
General-purpose
OoO



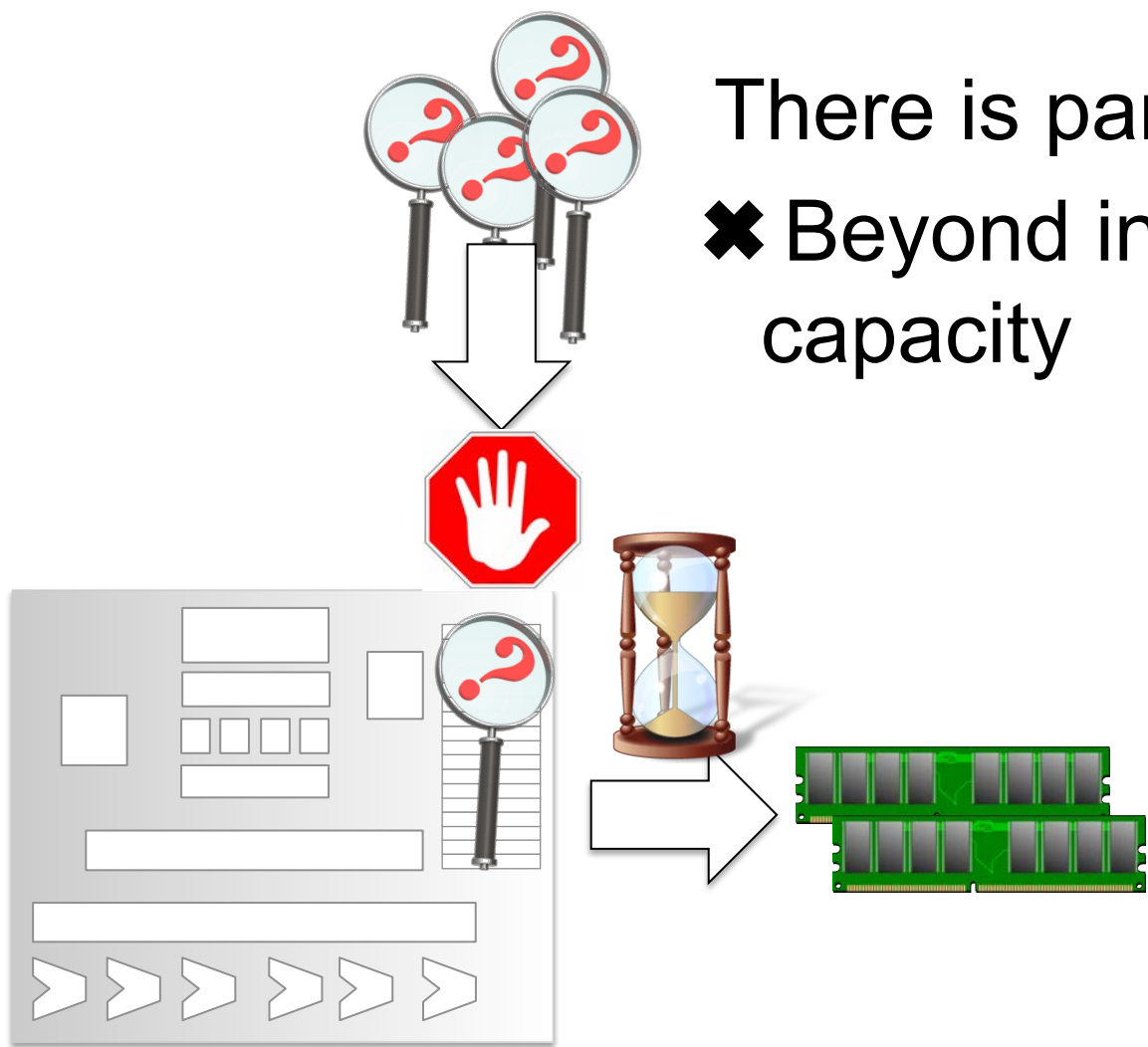
General-purpose
OoO



There is parallelism!



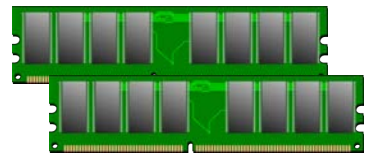
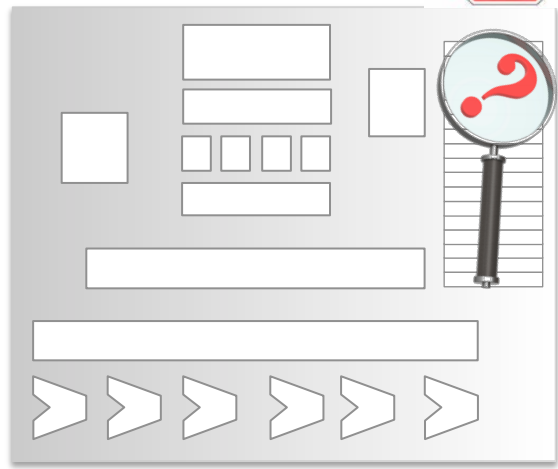
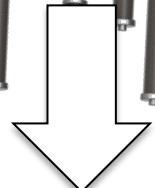
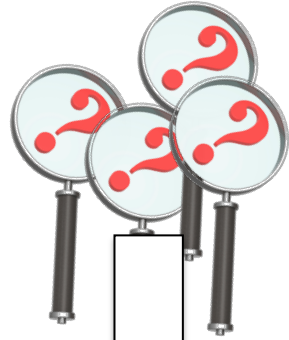
General-purpose
OoO



There is parallelism!
 ✘ Beyond inst. window capacity

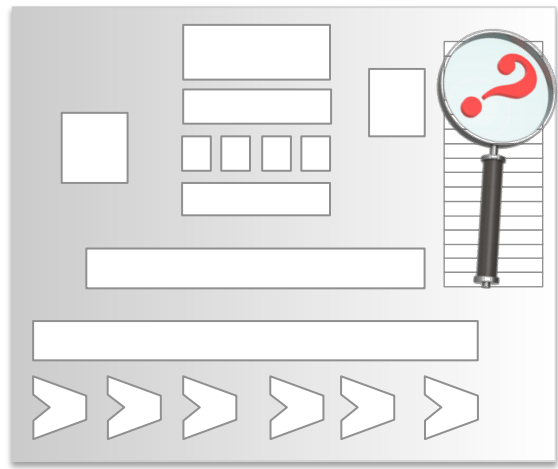
General-purpose
 OoO

Throughput

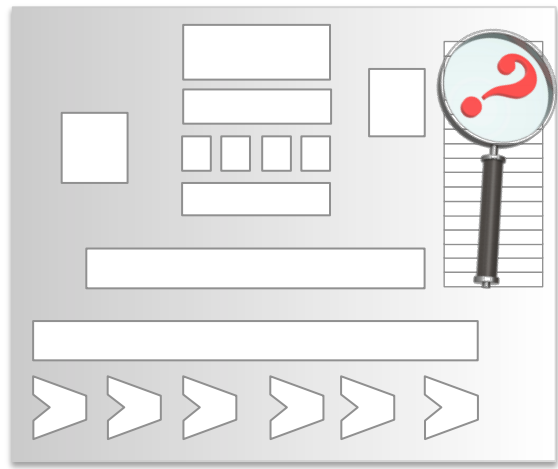


✘ Low throughput

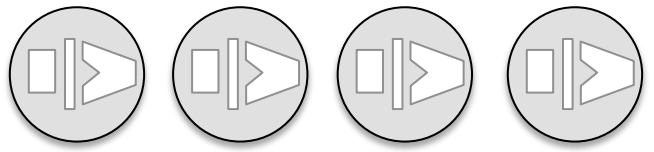
Throughput

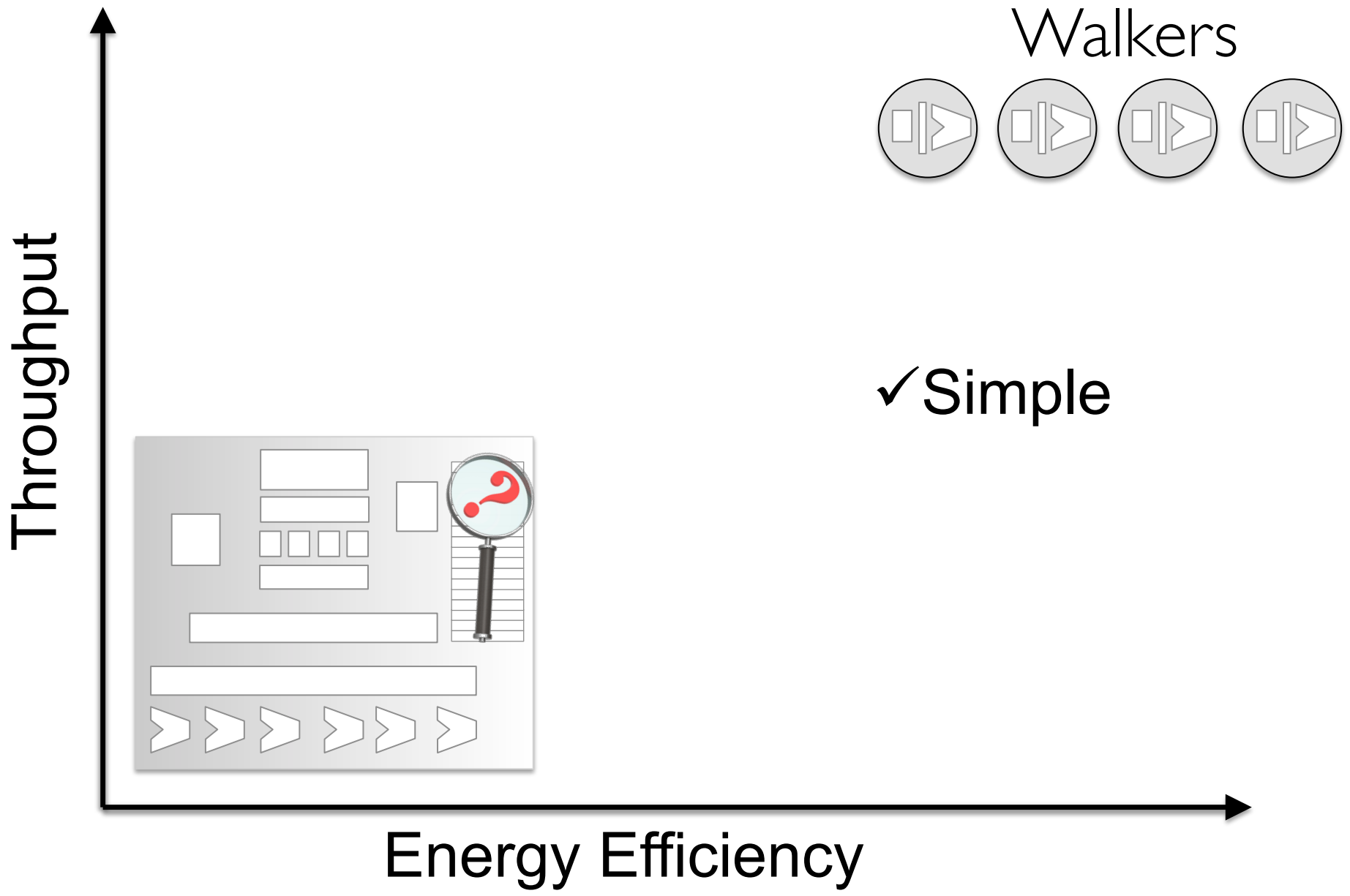


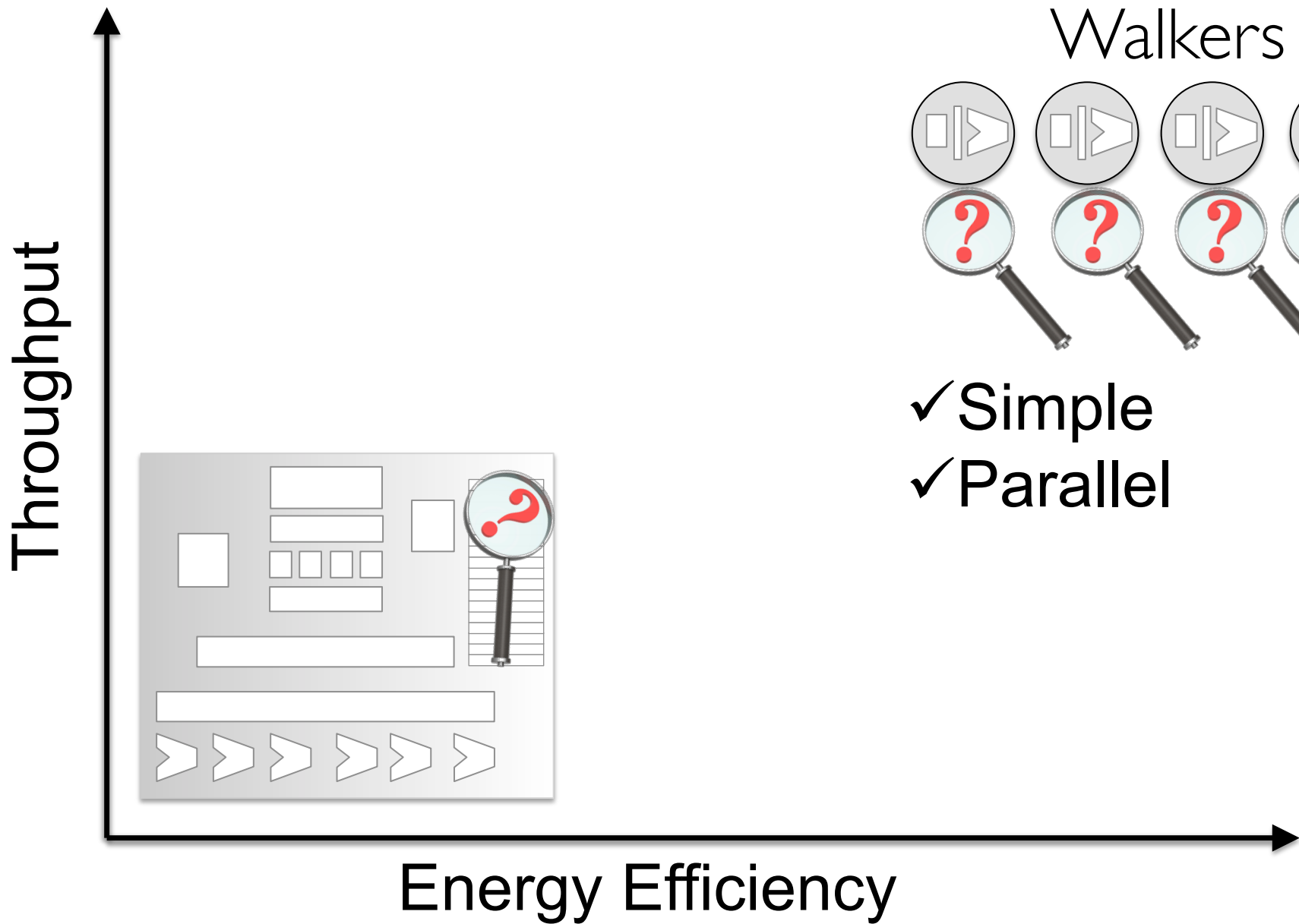
Throughput

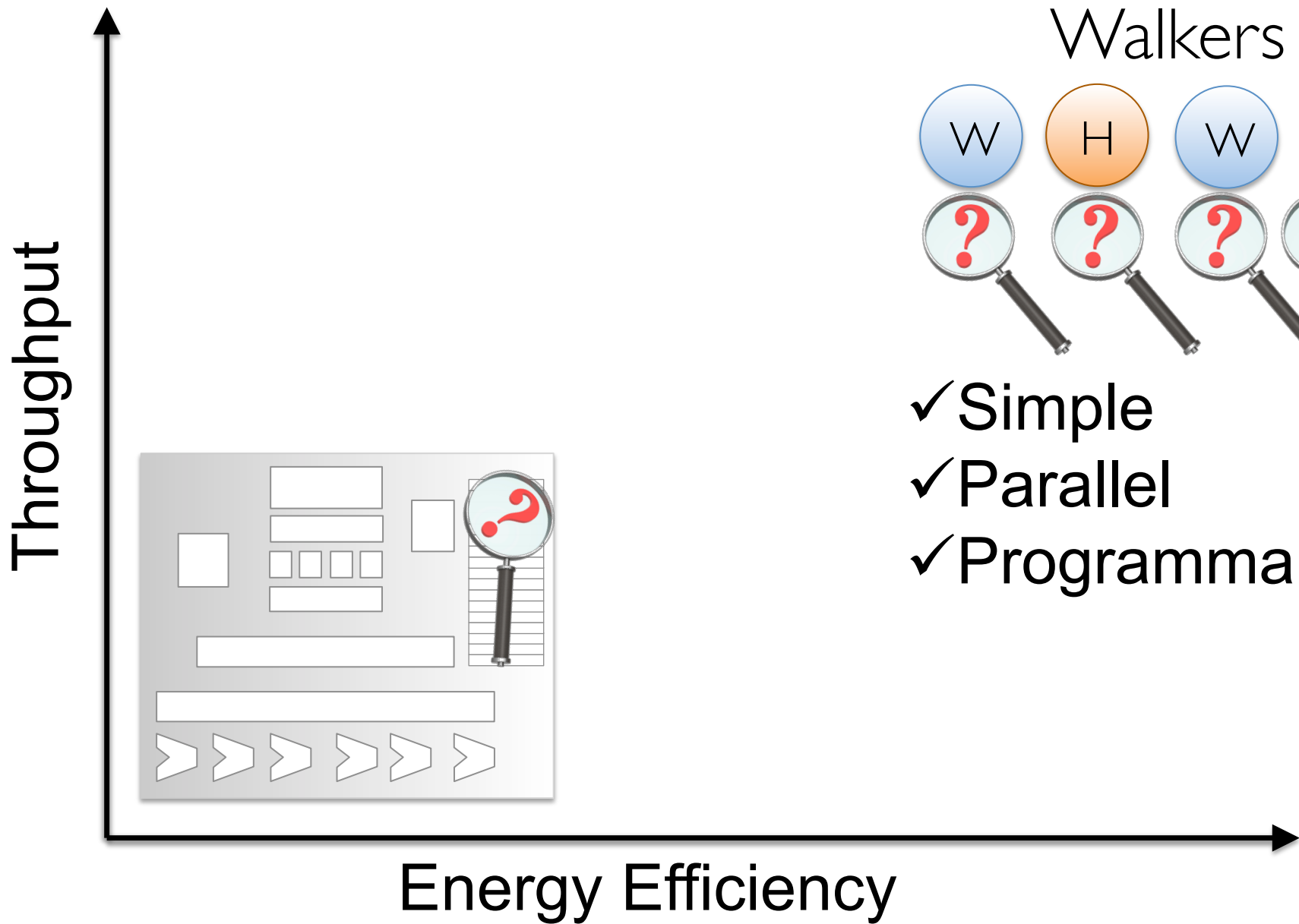


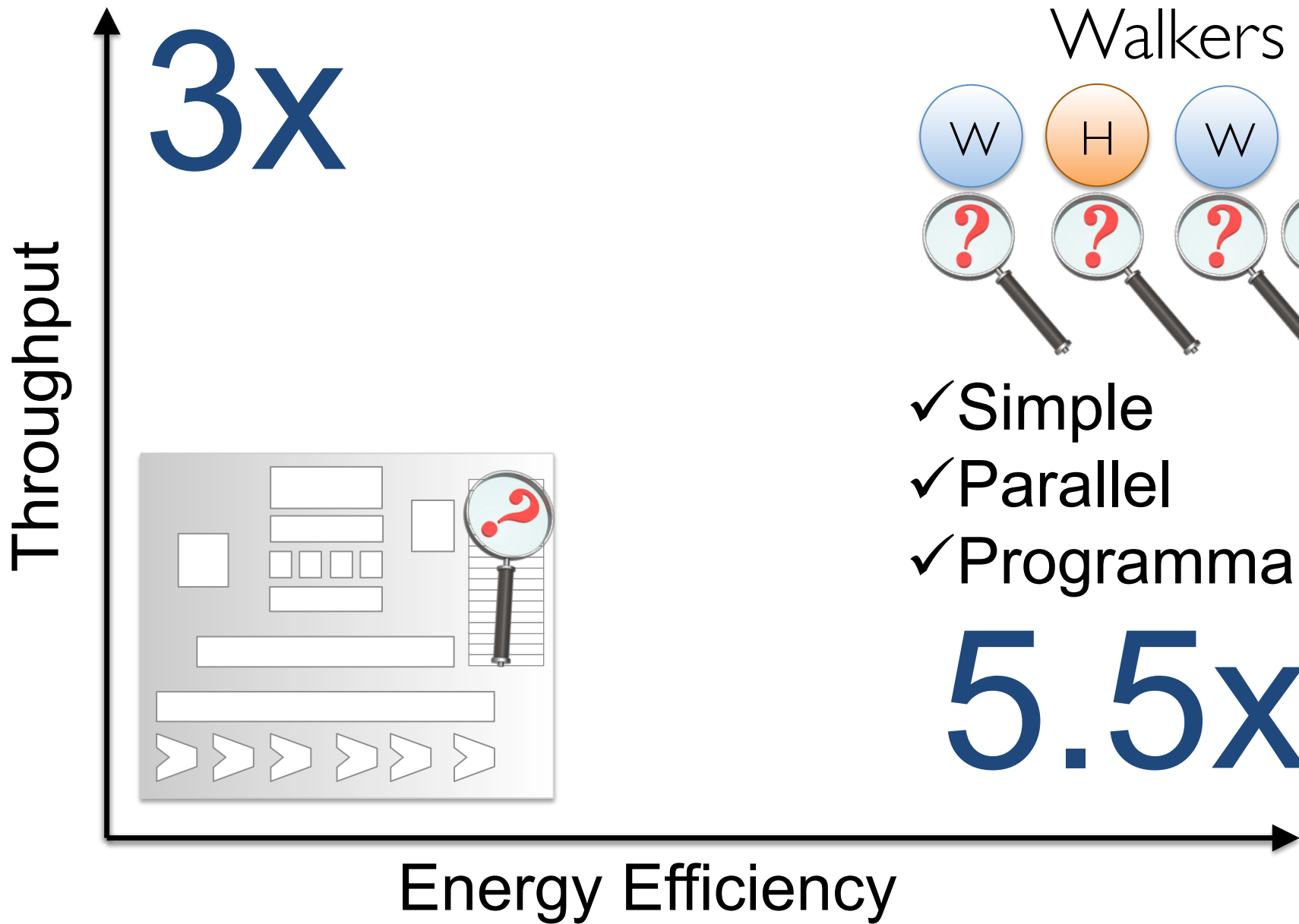
Walkers



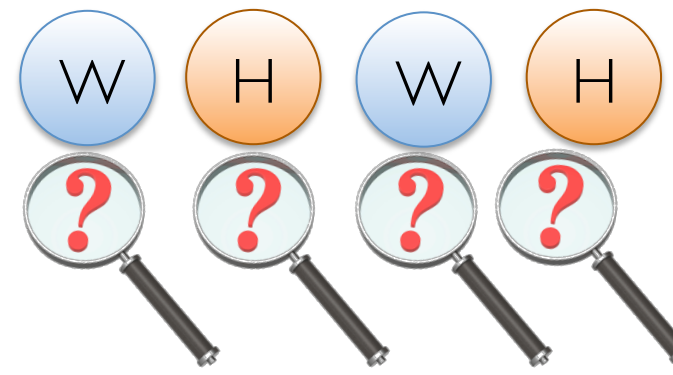








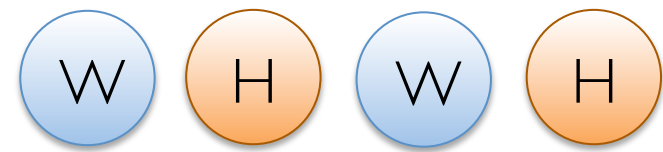
Walkers



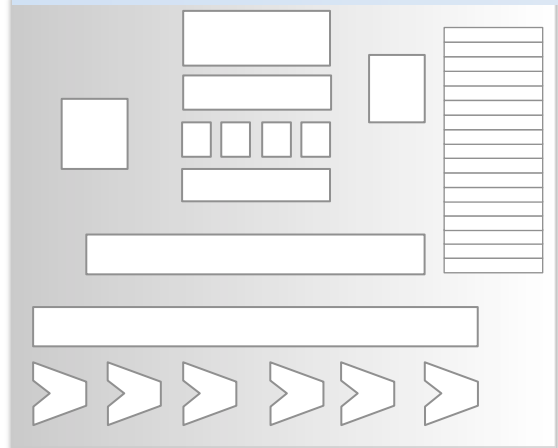
- ✓ Simple
- ✓ Parallel
- ✓ Programmable

3x

Walkers



LAST TALK of the conference
Wednesday, 12pm



5.5x

Throughput

Energy Efficiency