



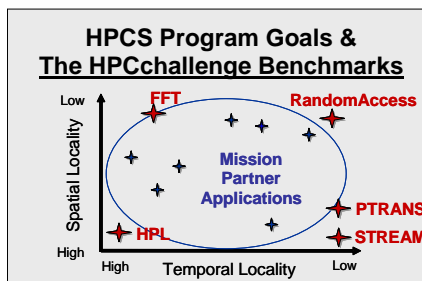
Implication of HPCchallenge



- Current focus of HPCS execution time people
- Work in progress
- Comments and feedback welcomed



- Near term goals:
 - Define the axes
 - Add the implied "z" axis
 - Locate HPC challenge
 - Locate DOD applications



Slide-1
SC2004
HPCS Workshop

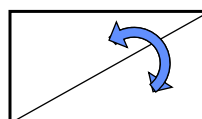
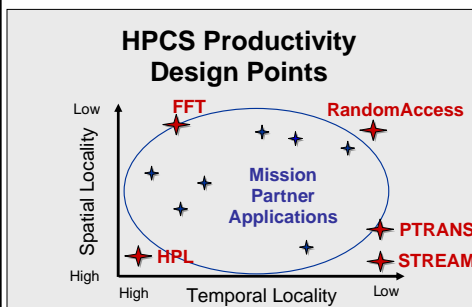
MITRE

MIT Lincoln Laboratory

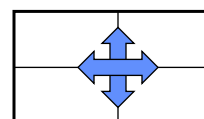
ISI



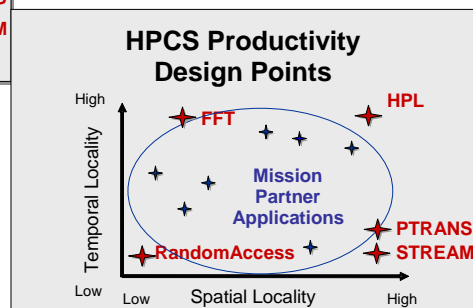
Changing the Axes



1. Switch Axes



2. Invert Ranges



Slide-2
SC2004
HPCS Workshop

MITRE

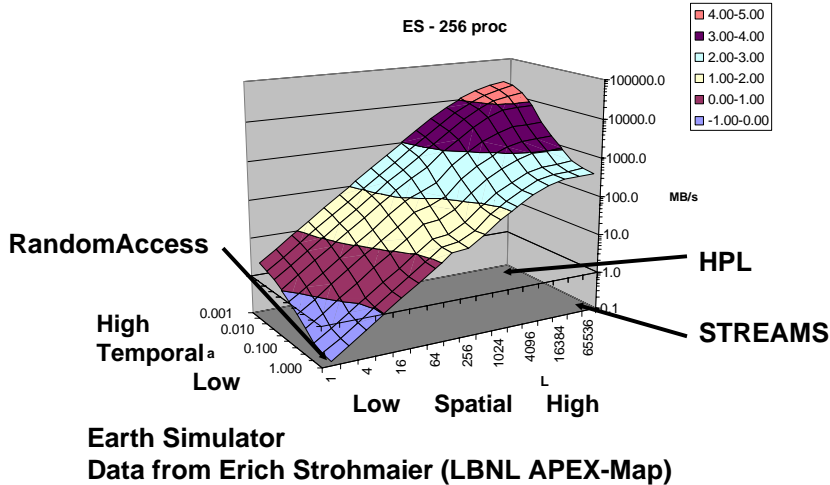
MIT Lincoln Laboratory

ISI



System B/W vs. spatial/temporal locality

HPCS



Slide-3
SC2004
HPCS Workshop

MITRE

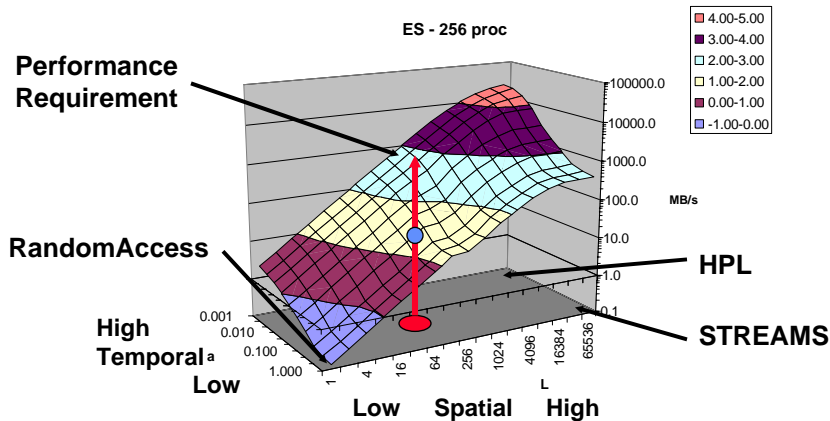
MIT Lincoln Laboratory

ISI



Where Are We Going With This?

HPCS



Slide-4
SC2004
HPCS Workshop

MITRE

MIT Lincoln Laboratory

ISI



Where Do You Plot Applications?

HPCS

It's harder than it looks!!!

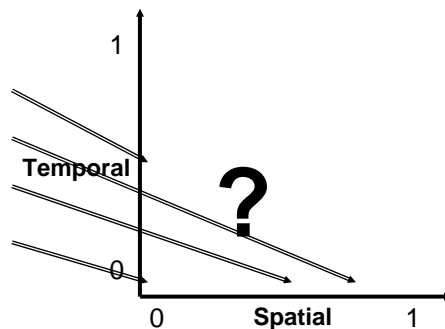
```
for ( i = 0; i < N; i++) {  
  add = random_number;  
  table[add] ^= random_number;  
}
```

Load + Store (temporal)

Two loads + Store

Load + Store (spatial)

Update (design goal)



Slide-5
SC2004
HPCS Workshop

MITRE

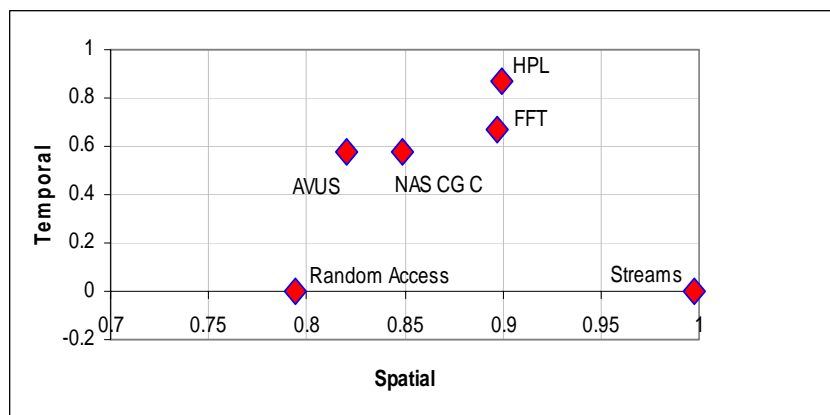
MIT Lincoln Laboratory

ISI



HPC Challenge Benchmarks on axes of spatial and temporal locality

HPCS



Data from Allan Snaveley (SDSC PMaC Project)

Slide-6
SC2004
HPCS Workshop

MITRE

MIT Lincoln Laboratory

ISI