X10

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STATE OF THE UNION

„Java and C# made concurrent and distributed programming accessible to application developers.“

PROBLEM

present	frequency	time
future	parallelism	space

PROMISE

By 2010, the project aims to deliver new adaptable, scalable systems that will provide a 10x improvement in development productivity for parallel applications.

DESIGN RATIONALE

- safety ✔

- analyzability ✔

- flexibility ✔

- scalability

CONCEPTS

- partitioned global address space

- places

- activities

- array sub-language

WHAT I KNOW

| X10 concept	GCD concept
async	dispatch_async
finish async	dispatch_sync
foreach	dispatch_apply
clocks	dispatch_barrier_sync/async
atomic blocks	serial queues
array regions	(dispatch_data_t) it's more like C++AMP's array_view
places	—

PLACES

Each mutable location and each activity is associated with exactly one place, and places do not overlap.

Thus a place serves as a coherence boundary.
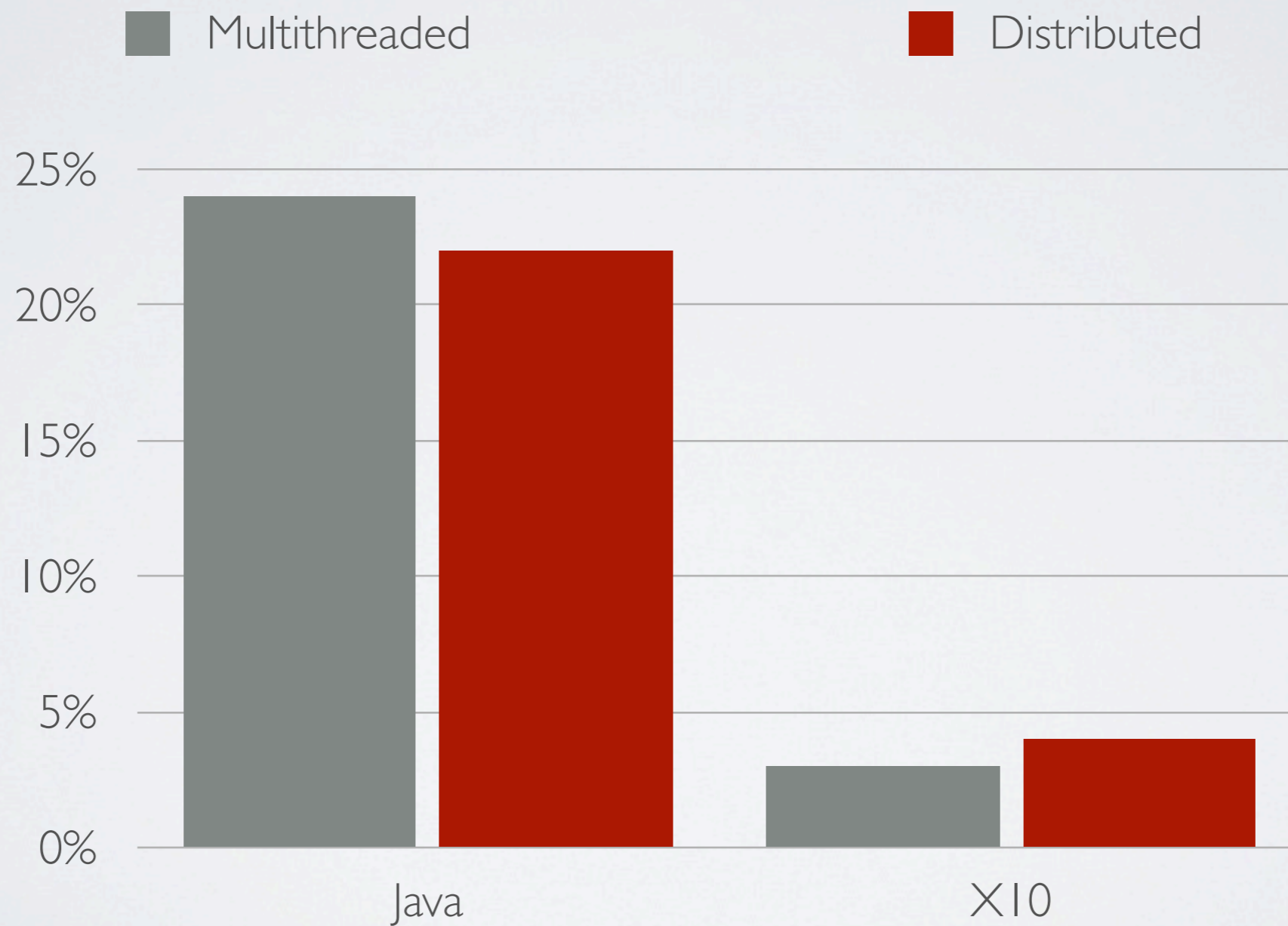
DISCUSSION

- unintuitive `finish`-semantics
  (see also recursive definition of global termination)

- I did not get the thing with `final`.

- exceptions are a pain with parallel execution
  (hence GCD ignores them)

- other than activities, places are pretty rigid;
  How do you program hardware-independent?