Performance Portability through Abstraction

Separating of Concerns for Future Systems…

Kokkos

Data Structures

Memory Spaces ("Where")

- Multiple-Levels
- Logical Space (think UVM vs explicit)

Memory Layouts ("How")

- Architecture dependent index-maps
- Also needed for subviews

Memory Traits

- Access Intent: *Stream*, Random, …
- Access Behavior: Atomic
- Enables special load paths: i.e. texture

Parallel Execution

Execution Spaces ("Where")

- N-Level
- Support Heterogeneous Execution

Execution Patterns ("How")

- parallel_for/reduce/scan, *task spawn*
- Enable nesting

Execution Policies

- Range, Team, *Task-Dag*
- Dynamic / Static Scheduling
- Support non-persistent scratch-pads