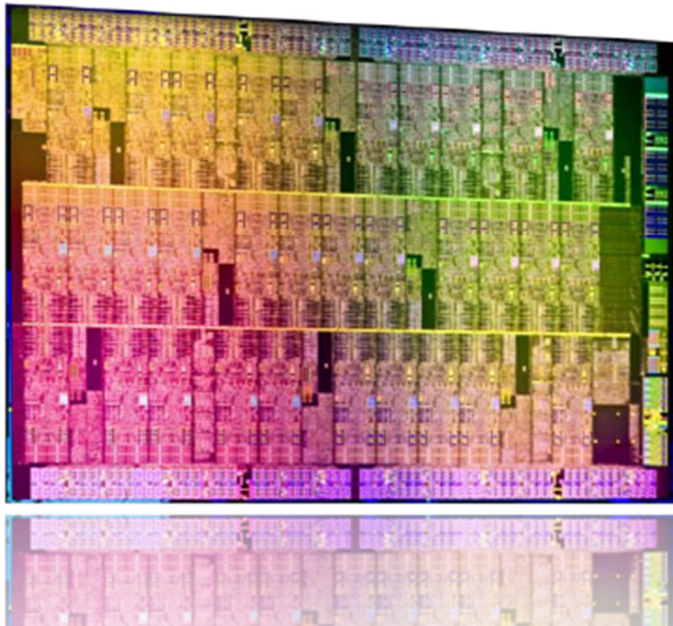


Multicore – Trends & Opportunities

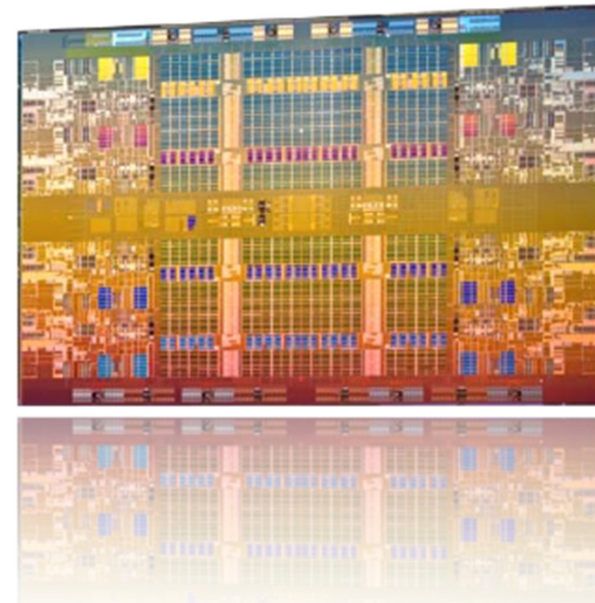
Suresh Srinivas
suresh.srinivas@intel.com
Principal Engineer
Software & Services

Hardware Diversity

**Intel® Many Integrated Core Architecture
(Intel® MIC Architecture)**

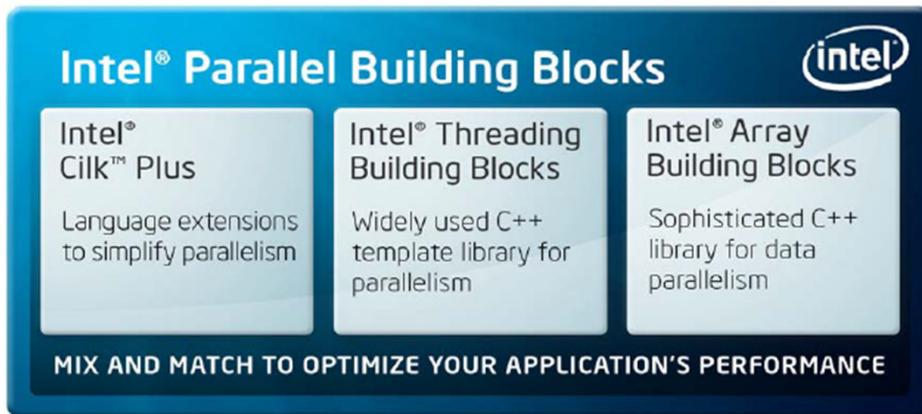



Multi-core Intel® Xeon® processor



Die Size not to scale

Software Diversity



Intel® Parallel Building Blocks 

Intel® Cilk™ Plus Language extensions to simplify parallelism	Intel® Threading Building Blocks Widely used C++ template library for parallelism	Intel® Array Building Blocks Sophisticated C++ library for data parallelism
---	---	---

MIX AND MATCH TO OPTIMIZE YOUR APPLICATION'S PERFORMANCE

```
#pragma omp parallel for  
for( i=0; i<N; i++ )  
    Foo( array[i] );
```

```
cilk_spawn qsort(begin, middle);  
qsort(middle + 1, end);  
cilk_sync;
```

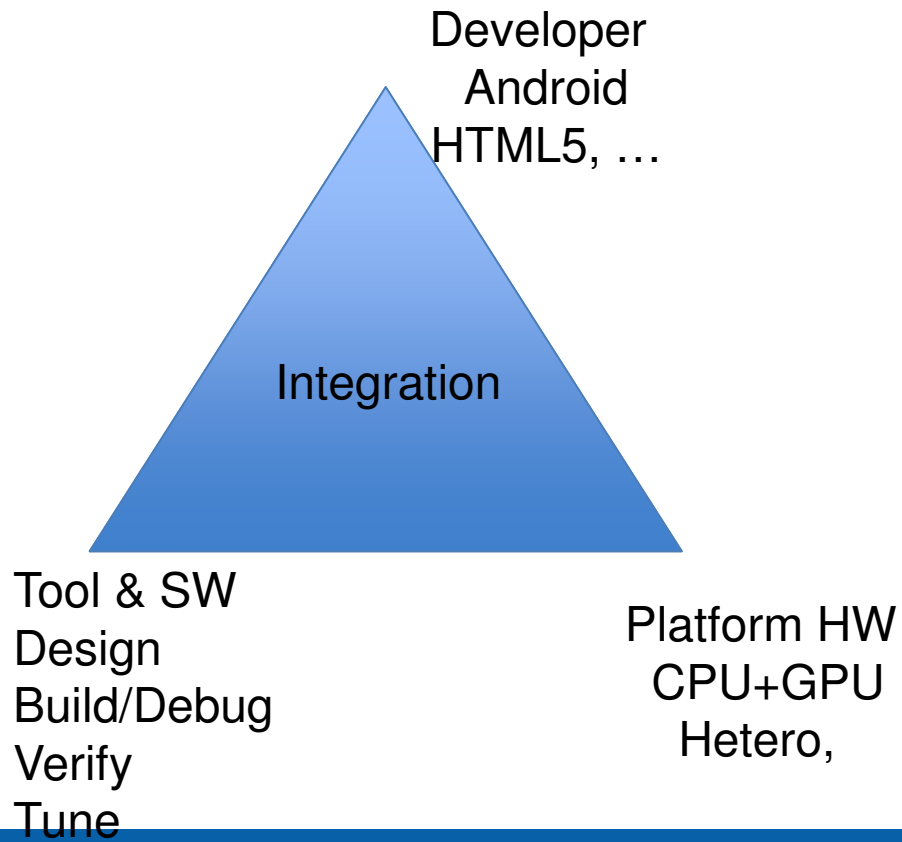
```
Parallel.For(x, y, lambda)  
Parallel.ForEach(IEnumerable, lambda)  
Parallel.Invoke(lambda, lambda)  
Task  
Task.Factory.StartNew(lambda)
```

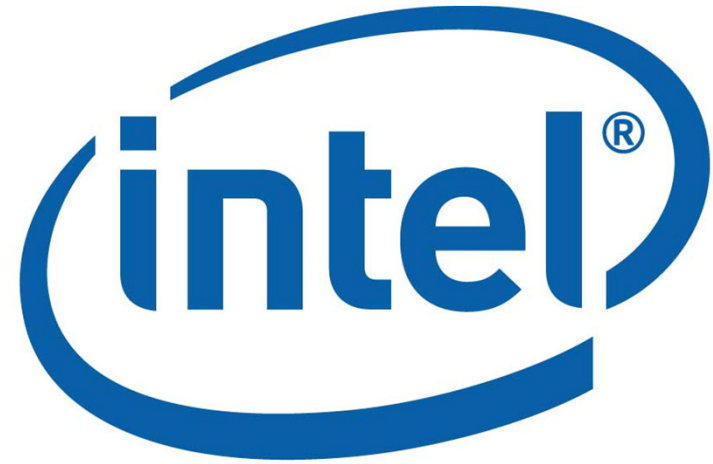
And More Standard Implementations:
OpenCL, OpenMP, Intel® SPMD Program Compiler (ISPC)

Parallel Pattern Library, Task Parallel Library (Managed)

Innovation: Concurrent Collections (CnC), RiverTrail (JavaScript extensions), MS LINQ

Opportunities





Software