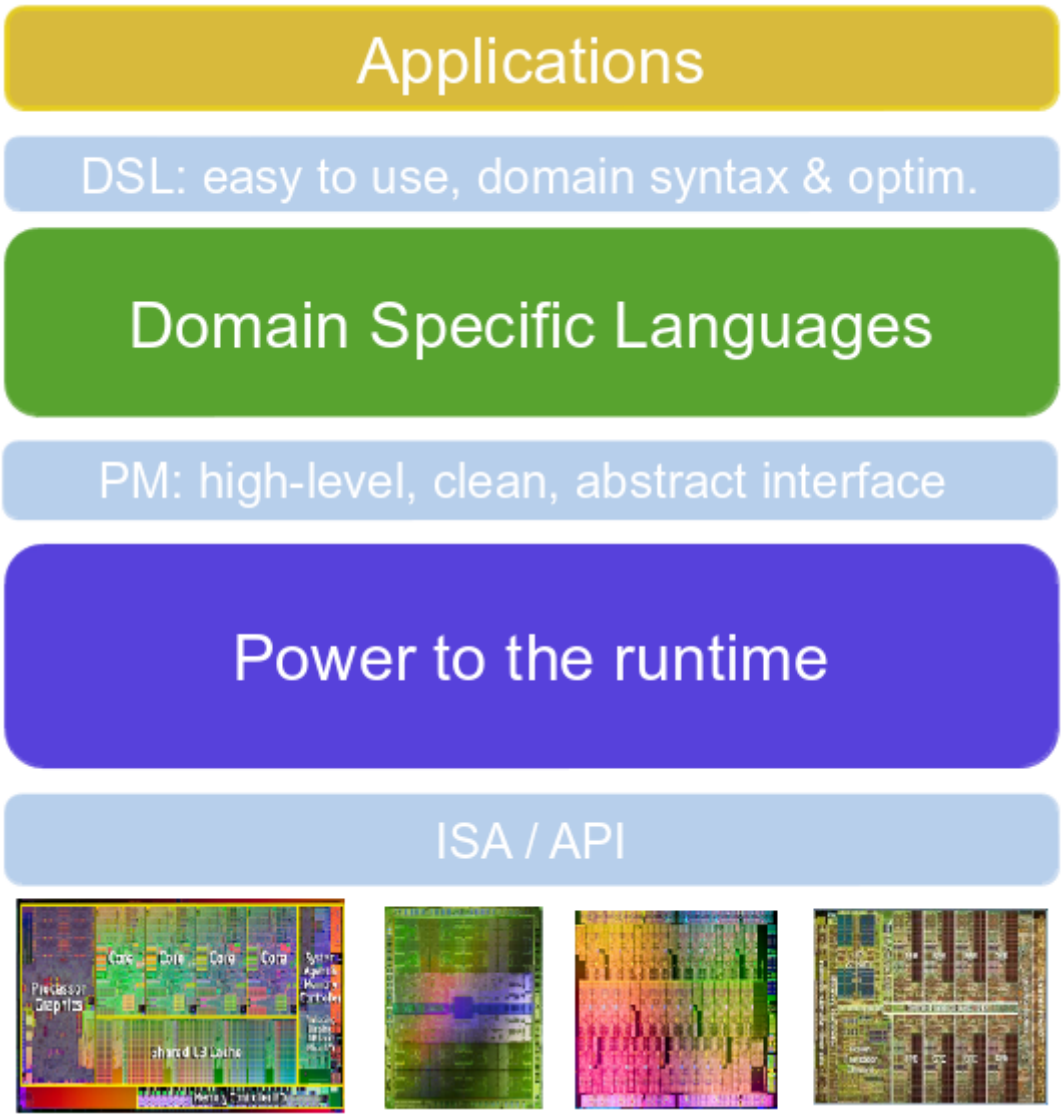
Domain Specific Languages

Domain Specific Languages (DSLs) are a promising approach to hide the complexity of HPC systems, apply domain specific optimizations and boost programmer's productivity. In this research line we investigate how to develop DSLs that can leverage well know HPC technologies such as MPI or OmpSs.

Summary

Developing complex scientific applications on High Performance Computing systems requires both domain knowledge and expertise in parallel and distributed programming models. Domain Specific Languages (DSLs) are a promising approach to hide the complexity of HPC systems, apply domain specific optimizations and boost programmer's productivity.

The following figure shows how we think that applications should be designed:



Our vision is that applications should be written using DSLs, which have a high-level syntax and domain optimizations. Internally, these DSLs should be implemented using programming models that hide the complexity related to the hardware where these applications will be executed.

Objectives

The main objectives of this researh line are:

- Experiment with DSL development platforms
- Develop new domain specific languages for different fields

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