Programming Languages and Environments

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  - dynamic reconfiguration
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  - deep integration across compilers, tools, and runtime systems
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• Robust reliable numerical and data-structure libraries
  - predictability and robustness of accuracy and performance
  - reproducibility, fault tolerance, and auditability
Programming Models

- Distributed Collection of Objects
  - message passing for communication
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- Problem-Solving Environment
  - packaged components
  - graphical or scripting language for glue
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- Decomposition of Shared-Memory Programs
  - language-based decomposition specification from programmer
  - parametrizable for reconfiguration
    - example: reconfigurable distributed arrays (DAGH)
  - implemented as distributed object collection
Compilation Architecture

- Challenge
  - *dynamic, changing nature of target, difficult to manage by hand*
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- Solution
  - A new program preparation architecture
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• Long-term
  - refinement of concept of configurable object program
  - refinement of performance contracts
  - tools for building and tuning reconfigurable programs