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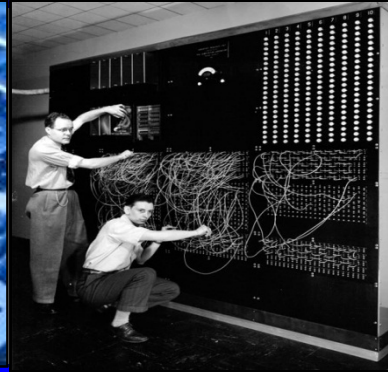
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Parallelism



Data Movement



Programmability



Resiliency

# X-Stack PI and Coordination Meeting

Sonia R. Sachs

May 28, 2014



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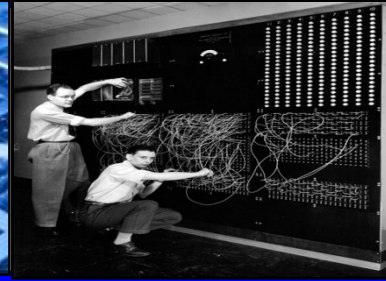
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- Meeting Organization
- Saman Amarasinghe

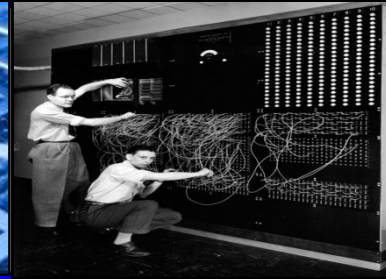
- Panels/Technology Marketplace Organizers
  - Andrew Chien and Mattan Erez
  - Armando Solar-Lezama
  - Marc Snir and Barney Maccabe
  - Martin Schulz
  - Mary Hall
  - Saman Amarasinghe and Daniel Quinlan
  - Shekhar Borkar and Wilfred Pinfold
  - Vivek Sarkar



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## Acknowledgements

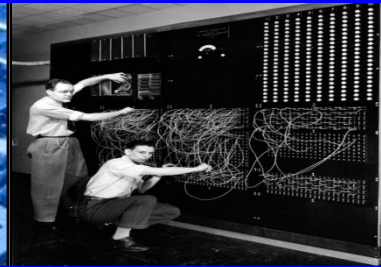
- MIT for hosting our meeting
  - Special thanks to Saman Amarasinghe
- MIT D-TEC support staff for meeting logistics
  - Special thanks to Mary McDavitt
- Panels/Technology Marketplace Session organizers
- X-Stack PIs for xstack wiki and meeting materials
- Intel/MIT team of scribes



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## Meeting Goals

- Review X-Stack Portfolio
  - Projects presentations
  - Discussions on current progress and expected results : components of the software stack
- Review X-Stack Coordination
  - Simulation Modeling projects: DMD(SST), CoDEX, and Blackcomb (Hardware Architecture Nexus)
  - Abstract Machine Model and Proxy Architectures: Computing Architecture Laboratory (CAL) project, Hardware Architecture Nexus
  - Operating Systems and Runtime software projects: ARGO, HOBBS, X-ARCC
  - Application use cases for DSLs and runtime systems approaches
  - Runtime Systems projects funded by other agencies
- Present the Modelado Foundation
  - Open source model for the software stack community
  - Collect community input on the model
- Review Vision for the Software Stack
  - Share Runtime Systems summit results , collect community input for a report
  - Share Programming Models vision, collect community input for a report

# Coordinating Projects

D-TEC: LLNL and MIT

Traleika Glacier: Intel

DEGAS: LBNL

XPRESS: Sandia

DynAX: ETI

X-Tune: U. Utah

GVR: U. Chicago

SLEEC: Purdue

CORVETTE: UCB

PIPER: LLNL

Co-Design Centers



CoDEX

DMD

Blackcomb

CAL

Fast  
Forward

Execution  
Models

BSM

Exascale MPI: ANL

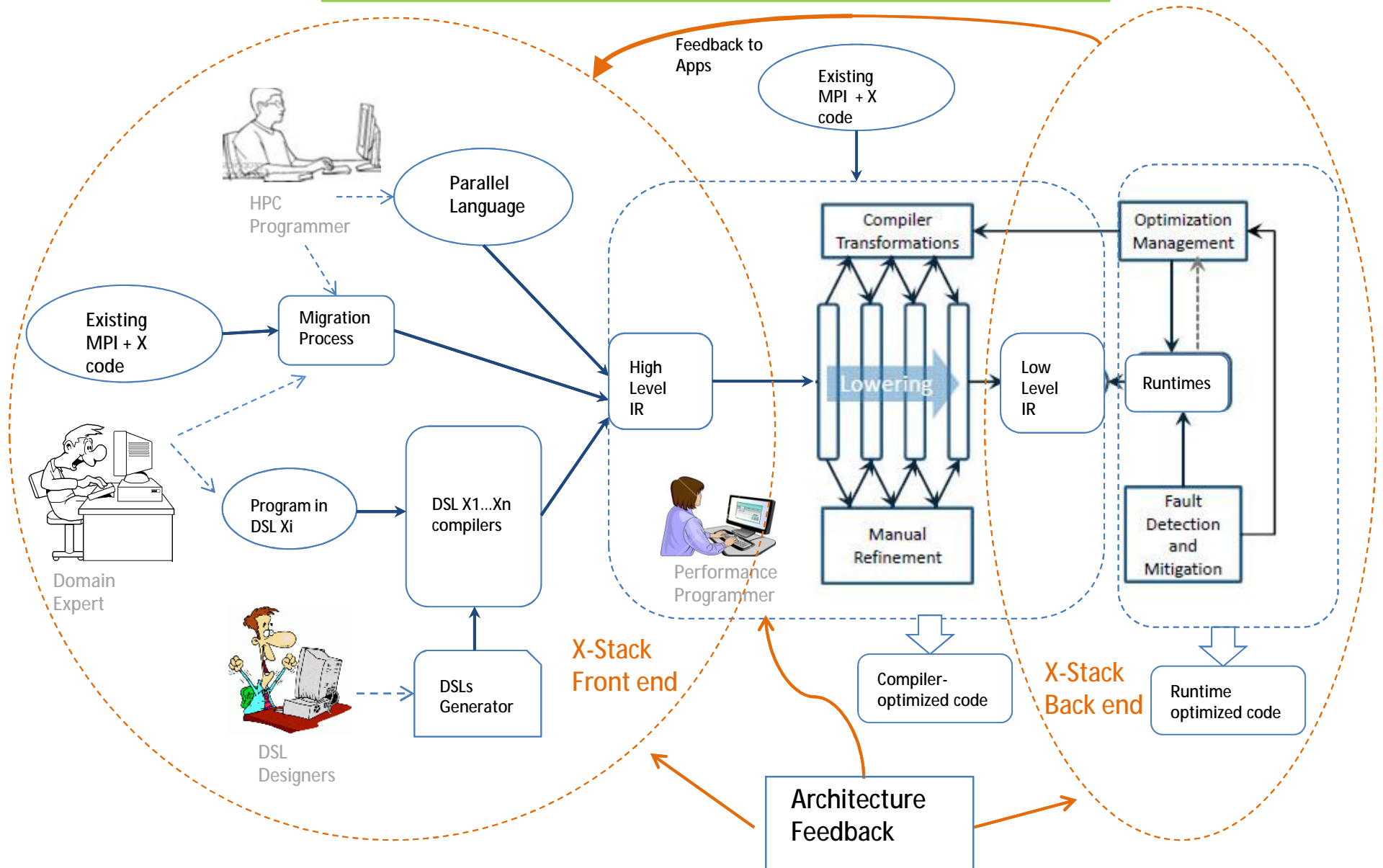
ARES: LANL, ORNL

Vancouver: ORNL

ECRP Projects

# Software Stack: Vision in March 2013

Energy Efficiency, Resilience, Programmability, Scalability,  
Performance Portability, Interoperability





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## Vision in Progress

- Programming Models Summit
- Runtime Systems Summit
- Collect community Input -> refine vision
  - Migration path
    - how do we take care of apps developed using current programming models (e.g. MPI+OpenMP)
  - Exascale Application Development
  - Beyond Exascale Application Development
- Map current research to the vision for these three paths
- Generate a Programming Models Report and a Runtime Systems Report by October 2014



# Exascale Application Development

