



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Traleika Glacier X-Stack Highlights

Period: Year 2 – Sep'13-Mar'14

April 1, 2014

Straw-man Exascale System Architecture Established for Evaluation

- **Problem**

- Need a platform to evaluate extreme-scale SW stack
- Programming and execution models for extreme parallelism, data locality and self-awareness, refactor apps

- **Solution**

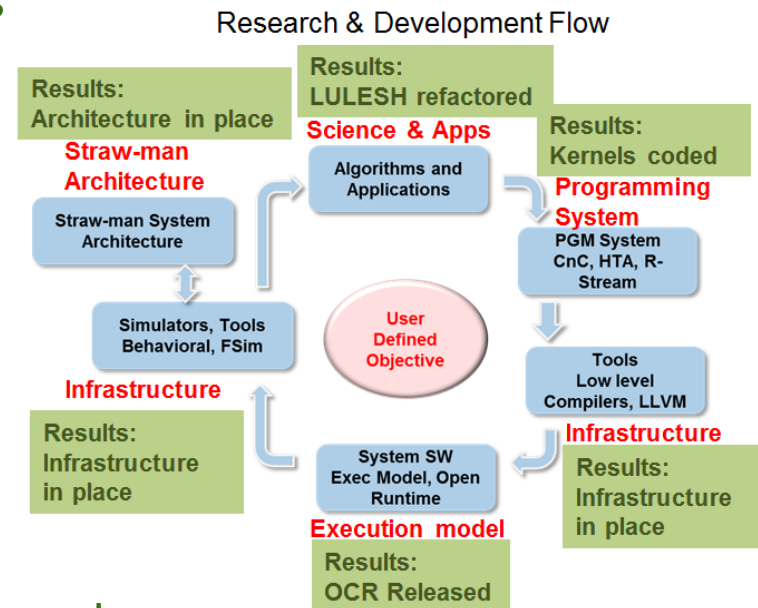
- Establish a straw-man architecture
- Capture the architecture in a simulator
- Evaluation flow for SW components
- Refactor and evaluate DOE apps

- **Recent Results**

- LULESH refactored, kernels coded
- Combustion, AMR, mini GMG, CoMD targeted

- **Impact**

- Increased confidence in our extreme-scale approach & the SW stack



OCR Released to the Community

- **Problem**

- Need a scalable research platform to research new execution models and system SW

- **Solution**

- Open Community Runtime
- “Playground” for system SW research
- Portable to any platform
- On x-86 workstations for quick evaluation
- On functional simulator for X-Stack research

- **Recent Results**

- OCR-x86 released (stable user-level API)
- Introspective system SW layer evaluated

- **Impact**

- Gained traction; community convergence

OCR vs OpenMP

