Workshop on industrial usage of regional HPC centers: Where does the money come from? - A personal view

Ashok Krishnamurthy
Interim Co-Executive Director
ashok@osc.edu

April 8, 2011
Overview

• Role of OSC in state
• Current OSC budget
• Two classes of OSC industrial users
• Scaling SME outreach using industry consolidation points
• Role of public sector financing to help SMEs
• Discussion questions
Why industrial usage at OSC?

• The state of Ohio regards OSC as a Technology-Based Economic Development Program

• The recently submitted budget bill by Gov. Kasich includes the following language: “The Ohio Supercomputer Center Program (3062B) supports the statewide resource at The Ohio State University that provides advanced modeling, simulation and analysis (MSA) resources and expertise to Ohio’s academic and industrial researchers.”

• Increased expectation that universities will show immediate economic relevance makes OSC a leader in this area.
OSC budget and industrial usage trends

- Capital Budget
- Operational Budget
- Industrial usage
Two classes of industrial users at OSC

• Large companies
  – Have internal Modeling and Simulation (M&S) expertise
  – Have internal HPC systems (small cluster to mid-size clusters)
  – Have required ISV licenses
  – Can pay market rates for cycles and expertise

• Small and Medium companies (SMEs)
  – Little M&S expertise (use consulting engineering companies, as needed)
  – No access to HPC systems (maybe small cluster at consultant)
  – No ISV licenses
  – Very price sensitive
How does OSC support these two classes?

• Large companies
  – Charge companies directly
  – Market rate for HPC cycles and storage
  – Charge for staff time
  – Either migrate commercial licenses or charge commercial license costs

• SMEs
  – May sometimes be willing to pay as above, but ISV license costs/expertise are frequently the barrier
  – Ability to scale out using consolidation points is useful
  – Consolidation points – Industry specific technical groups
OSC relation with industry consolidation points

• Examples:
  – Edison Welding Institute (EWi)
  – PolymerOhio

• Goal: Portal/App based access to common M&S problems usable across a range of SMEs
  – EWI/OSC WeldPredictor
  – PolymerOhio/OSC Polymer Portal

• Benefits
  – Trusted source for SMEs
  – Scale out of M&S possible
  – Pay-as-you-go fits SME budgets
Possible business arrangement between HPC center and consolidation point

• Joint development of portal based solution
  – Jointly funded using IR&D funds
  – State and federal grants

• Marketing and Sales to industry handled by consolidation points
  – Need to set up a revenue sharing arrangement
  – How is end user support handled?
  – Maybe a new business model for consolidation point

• How to share the resulting IP?
State/federal funds & OSC outreach to industrial HPC use by SMEs

• State funds:
  – OSC IR&D funds used for portal creation
  – OSC staff time in advocacy for SME use of M&S
  – Cost share for external funds (federal and private)

• Federal funds:
  – NSF SADI
  – NSF CI-Team
  – NIST
  – EDA
Is public-private partnership for SME industrial use needed?

• SME adoption of M&S is essential for national economic competitiveness – Yes or No?

• Should federal and/or state funds be used to lower barriers for SME adoption of M&S – Yes or No?

• If “yes” to above two, how long do public funds have to be used to “seed” this market?

• Who is the private in the public-private partnership?
  – Original equipment manufacturers?
  – HPC system component vendors
  – ISVs?
  – Cloud providers?
Some more questions

• Are there other business models in use?

• Workforce development/Training is crucial
  – Is this a public sector responsibility?
  – What role does the private sector play?

• Are there other areas we can learn from?
  – Internet: DARPA/Internet, CERN/HTML, NCSA/Mosaic
  – Electronic Chips: DARPA/MOSIS
  – Manufacturing: Quality, Lean Manufacturing

• How do we engage with NIST MEPs and other manufacturing assistance centers to achieve scale out?
Questions?

ashok@osc.edu
(614) 292-9524