HPC4Manufacturing

Lawrence Livermore National Laboratory in partnership with DOE Laboratories and the U.S. Manufacturing sector

Ongoing Program

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Bringing HPC to U.S. Manufacturers

- Energy intensive processes and foreign competition threaten vitality of U.S. goods-production
- Manufacturing sector largely not yet enabled by advanced computing capabilities
- Opportunity to inform and de-risk the development of energy efficient processes and products

Energy Efficient Processes

Energy Efficient Products

U.S. Economic Competitiveness

National Lab capabilities

Manufacturing domain expertise

National mission and guidance

PURDUE UNIVERSITY CALUMET

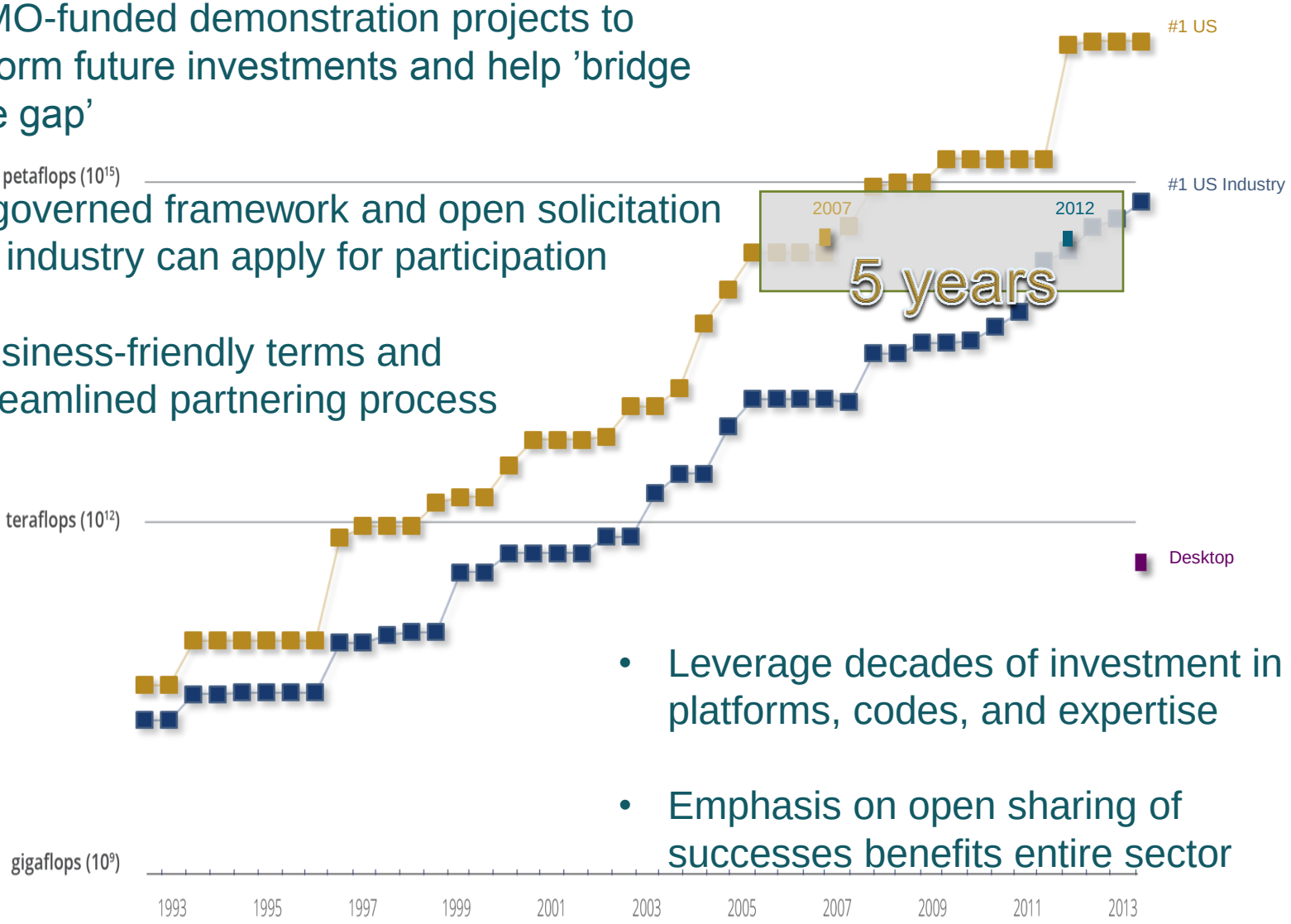
SORAA
Simply Perfect Light™

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy
ADVANCED MANUFACTURING OFFICE

HPC4Manufacturing will be a portfolio of National Lab-company partnerships applying modeling and simulation capabilities to manufacturing challenges

Key tenets of HPC4Manufacturing

- AMO-funded demonstration projects to inform future investments and help 'bridge the gap'
- A governed framework and open solicitation so industry can apply for participation
- Business-friendly terms and streamlined partnering process



- Leverage decades of investment in platforms, codes, and expertise
- Emphasis on open sharing of successes benefits entire sector

Realize short- and long-term success

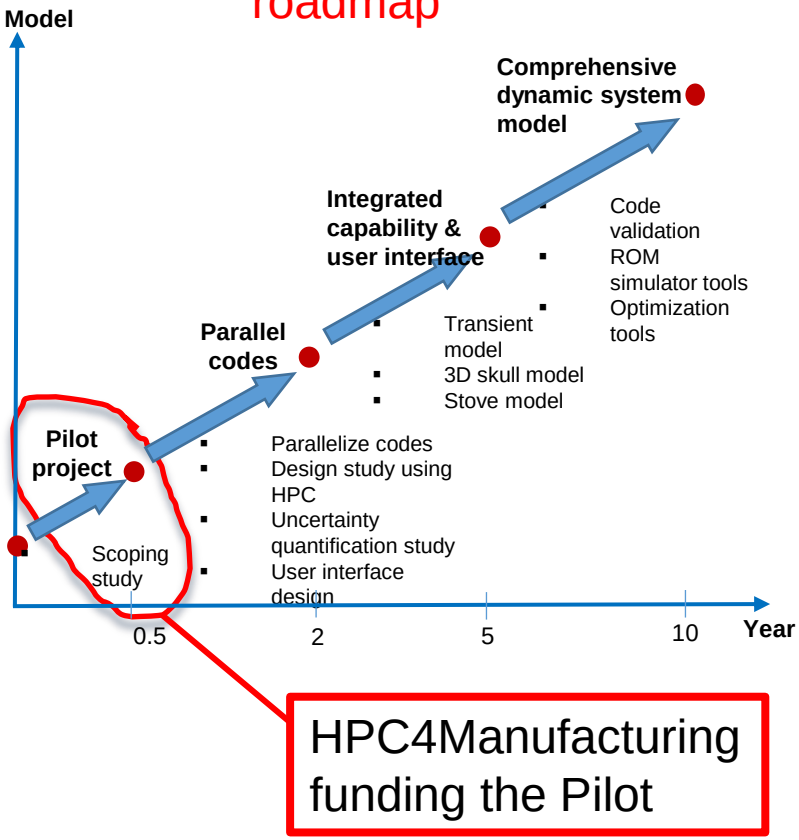
Short Term

- Industry can immediately make informed investments and develop approaches to improve energy efficiency
- Role and impact of HPC better understood as a result of pilot project
- Shared success stories and lessons learned inform broader sector

Longer Term

- Manufacturing sector increasingly turns to HPC modeling and simulation as a trusted tool
- HPC barrier to entry is greatly reduced resulting in a vital computing ecosystem for manufacturing
- Industries realize significant energy savings

The Virtual Blast Furnace: 10 year roadmap



LLNL-Purdue partnership will demonstrate the value of HPC to the VBF vision and will de-risk the long term steel industry investment needed to **save 21% ($900M) annually in energy costs**

Project Management & Budget

- FY15, $2.75M AMO, industry in-kind TBD
  - Launch initial set of 6-8 'pilot' projects– Q3-4
  - Develop governance structures with DOE Lab partners Q3
  - Develop project selection and partnership criteria- Q3-4
  - Develop business friendly contract mechanisms Q3-4
  - Develop open solicitation– Q4
- FY16, $TBD
  - Launch national program with ~3 DOE Lab partners 15-40 industry partners
  - Lab participation funded largely by AMO
  - Industry participation funded largely by in-kind contributions
  - Conclude 'pilot' projects and review Program successes
- FY17+, $TBD: Expand program to broader DOE Lab and increased industry participation