Overview of NDEMC and the ManufacturingHUB

Steve Shade

Managing Director, Institute for Competitive Manufacturing

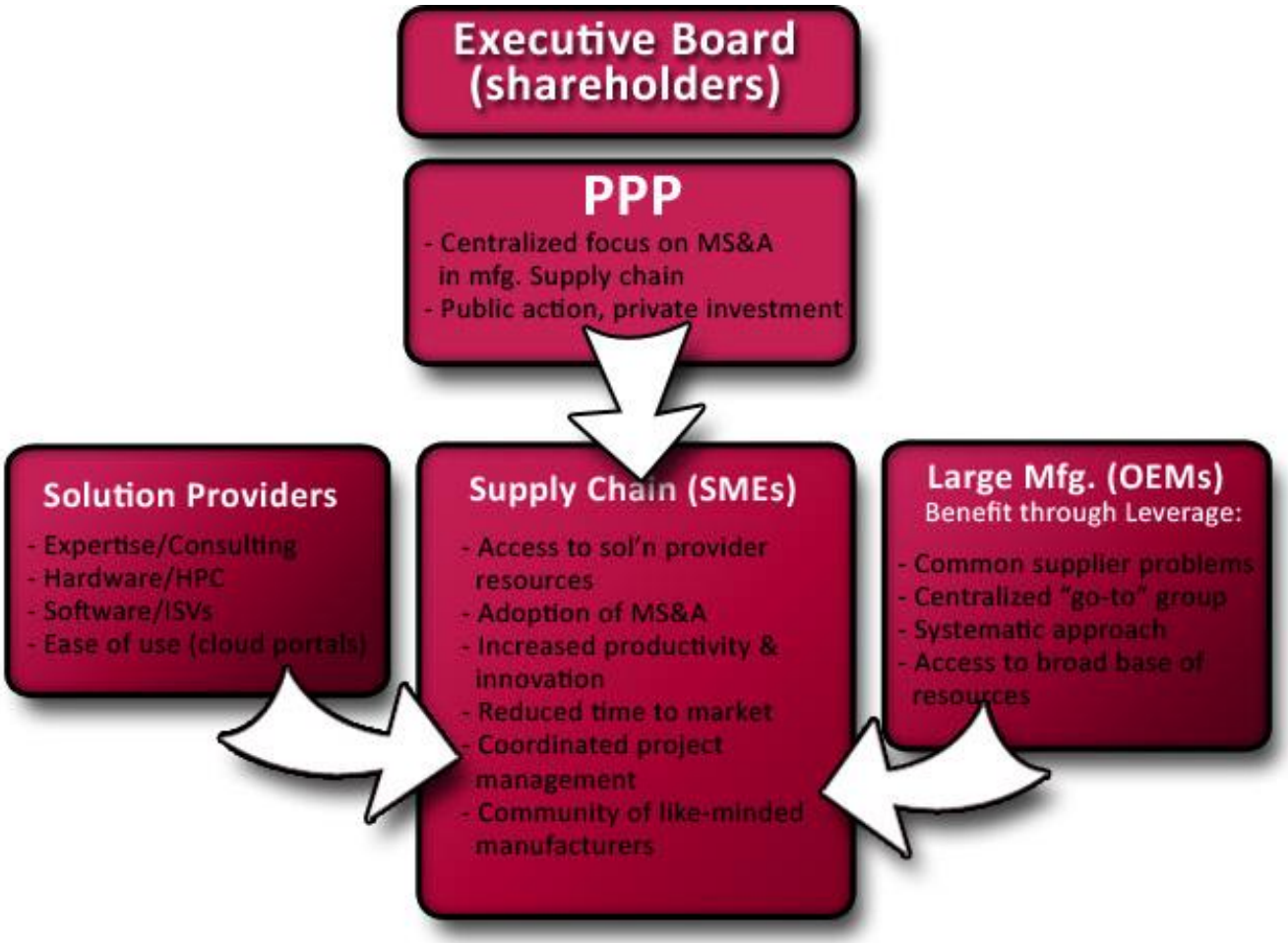
MANUFACTURINGHUB

PURDUE UNIVERSITY

NDEMC

- NDEMC – National Digital Engineering and Manufacturing Consortium
- Public, private, academic partnership to reduce barriers to small- and medium-sized enterprise (SME) use of simulation and high-performance computing
- Mar. 2, 2011 – NDEMC MOU signed at White House
  - NEC, OSTP, EDA, NIST, DoE, NASA, NSF
  - P&G, Lockheed Martin, Deere, GE
  - Ohio Board of Regents, Purdue University

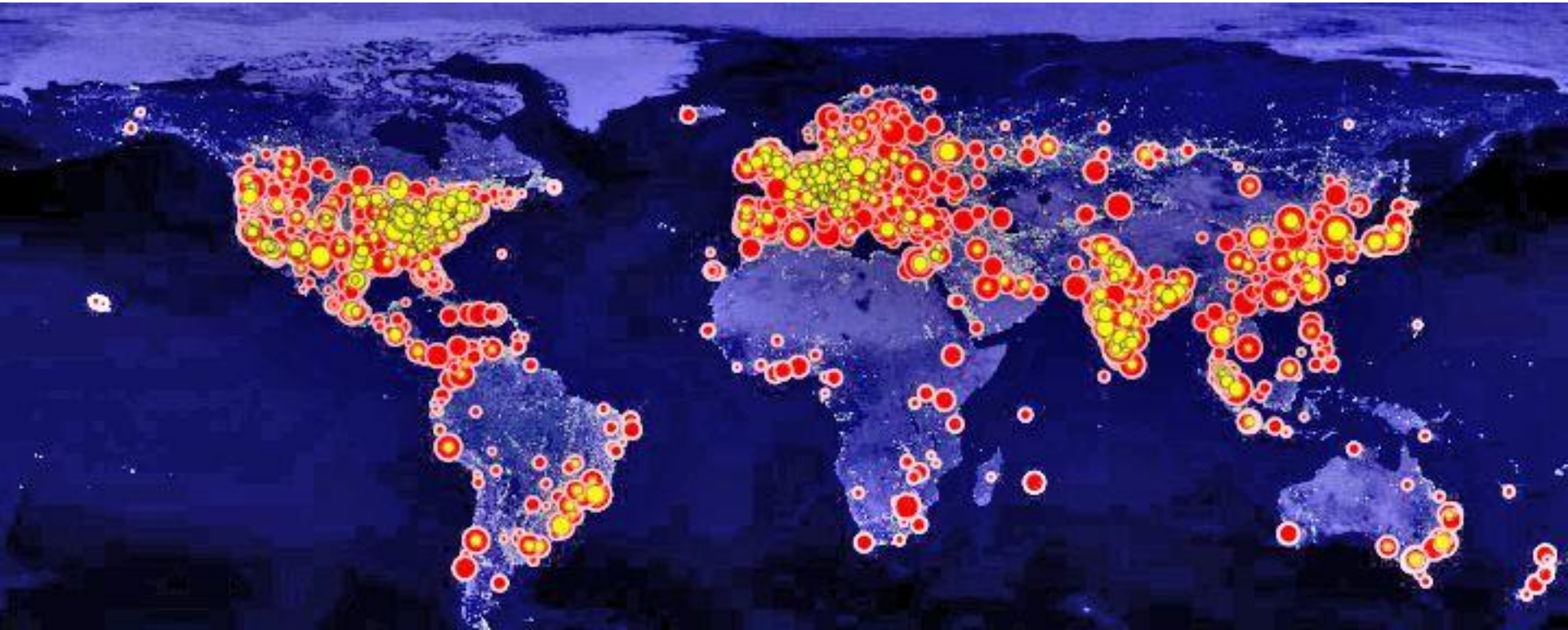
NDEMC



"Small manufacturers don't necessarily have small problems…"

ManufacturingHUB.org

- Spun out of Purdue nanoHUB.org at urging of White House Office of Science and Technology Policy



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Welcome

Creating jobs that will meet the competitive needs of our industries, our economy, and most importantly, our people. *The Midwest Project for SME – OEM Use of Modeling and Simulation* is the first large-scale public-private partnership of the United States Government, original equipment manufacturers, state and university computing centers, the State of Ohio, and other non-governmental organizations to provide education, training, and access to computing resources for the small and medium-size enterprises manufacturing workforce to develop modeling and simulation skills. Learn More ›

Announcements

OpenFOAM 1.7.1 now on ManufacturingHUB.org

Council for Competitiveness leads SME-OEM Midwest Initiative...

Memorandum of Understanding

Vision for Simulation

Flyer for the Midwest Initiative...

ManufacturingHUB.org will deliver simulation tools to use right in your browser with just one click! More ...

Collaborate, Work, & Share

User Groups
Start your own group or join existing ones

Wiki
Create a new page or access existing ones

Future Resources

Learning Modules

Courses

Workshops

Tools

Access to high-performance computing via Apps that run in the Browser

Example: OpenFOAM®, simply

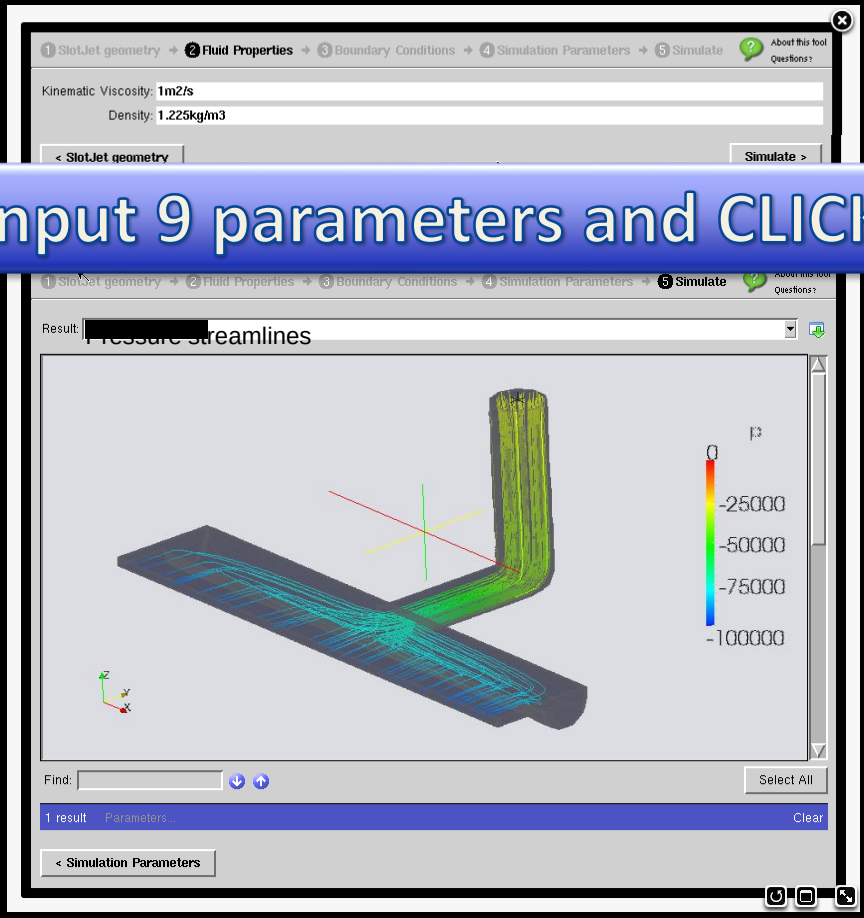
Manifold flow analysis using OpenFOAM before ManufacturingHUB.org

1. Place the STL file in the constant/triSurface directory within the parent directory where simulation must be run.
2. Determine bounding box vertices for the manifold geometry and enter this information into blockmeshDict in /constant/polymesh/

•••

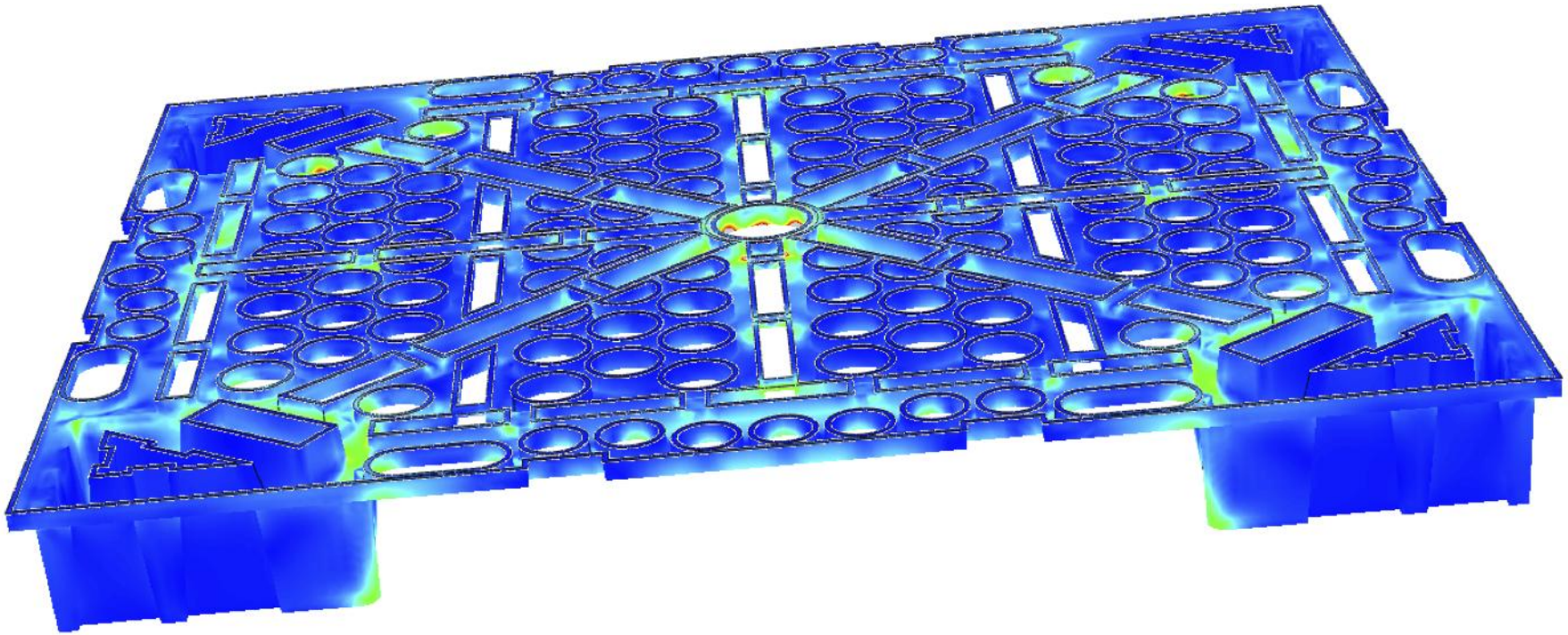
24. Follow guidelines in the HELP menu for Particle Tracking.
25. Select where particles will be released into the flow.
26. Decide the number of particles and mass, rebound, and other effects.

Manifold Flow Predictor **App** based on OpenFOAM



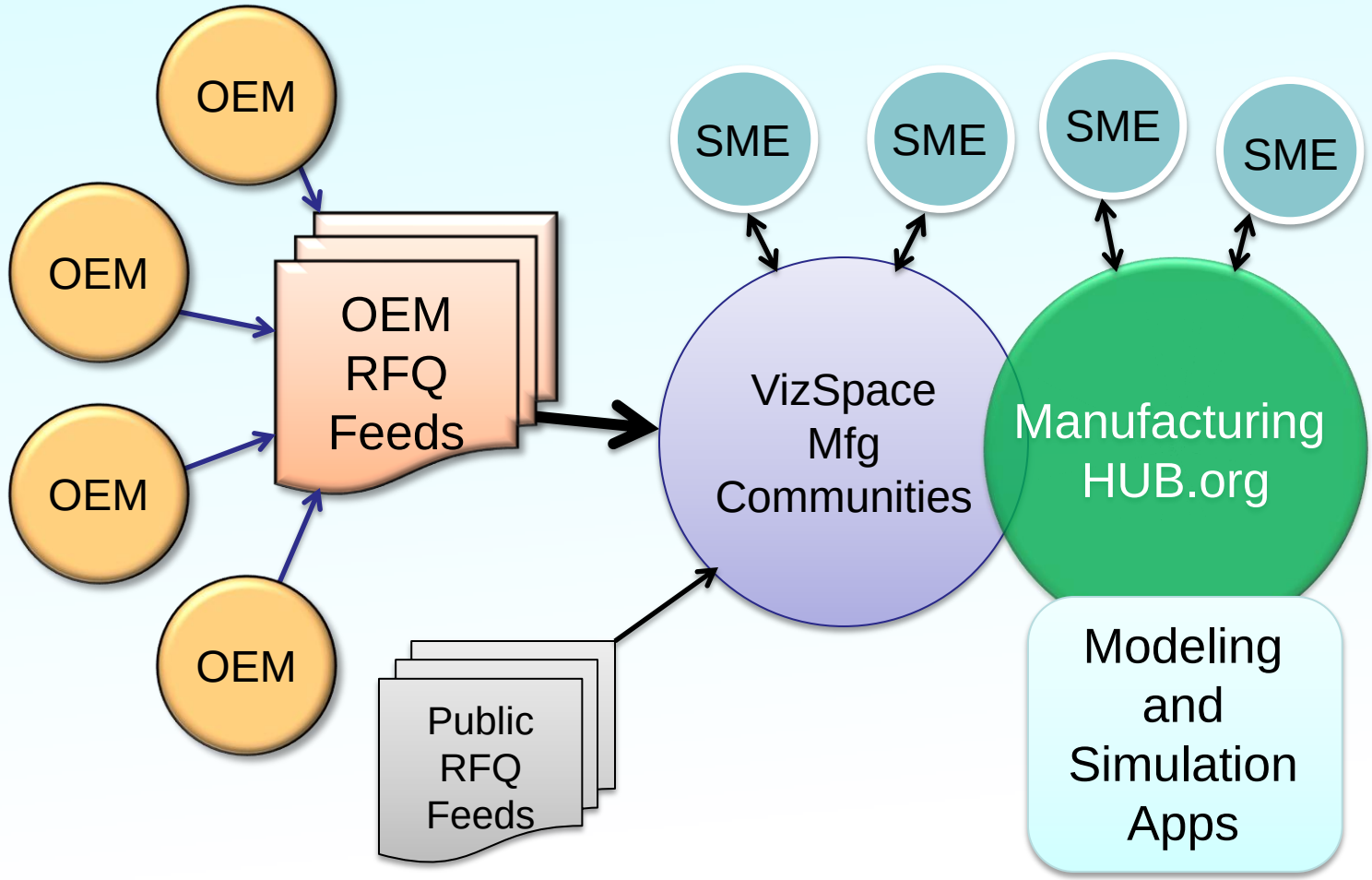
Purdue NDEMC Projects

- Collaborators
  - Technical Assistance Program and MEP



Leveraging VizSpace for rapid impact

VizSpace:	Business opportunities automatically matched to SME capabilities



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Assessments

- NDEMC
  - Successful, and needed by SMEs, but…
  - Need to define success metrics and time horizons
- ManufacturingHUB
  - “App” deployment is promising
  - Use will center around technology and industry focused communities

Data Uses

- Interface Standards
  - Electronic information and data standards
  - Communication and semantic standards
- Measurement Standards
  - Process efficiency, energy efficiency, manufacturing efficiency, waste detection, emission detection
- Process Standards
  - Design, manufacturing, business process
- Other Standards
  - Safety, materials, product and component

Data Consumers

- Regulatory Agencies
  - Do current processes capture and archive required information?
- Supply Base Interoperability
  - Are suppliers, or downstream customers, capable of using your product and/or process data?

Acknowledgements

George Adams – Director, ManufacturingHUB.org

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