

The “Missing Middle”

*...Are we asking the right questions?
and
Are we focused on the right issues?*

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Intel Corporation
9-18-2012

Intel Confidential

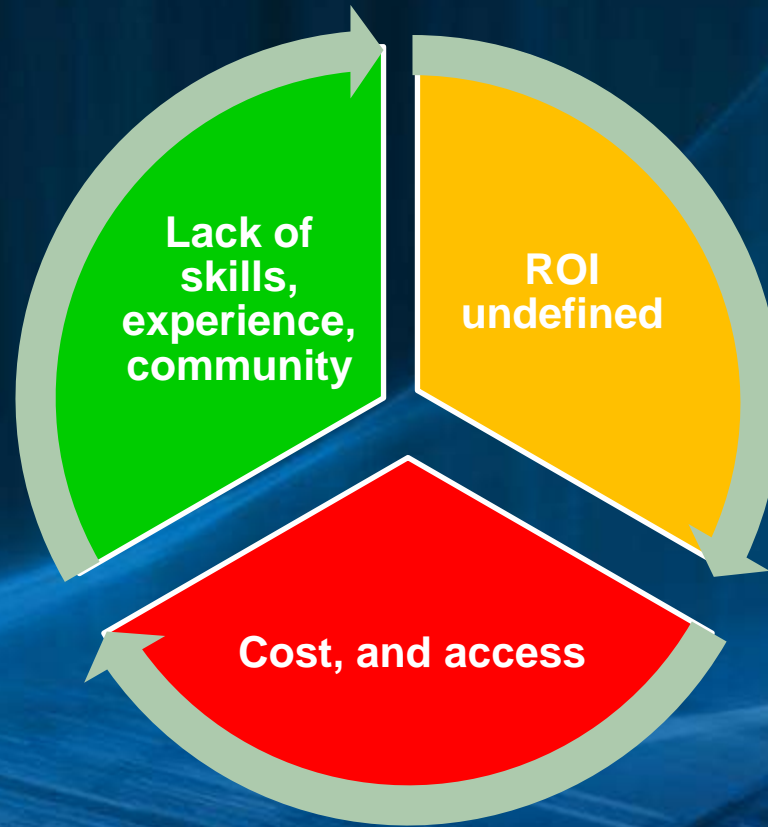


Talking Points

- Assumptions revisited
- Wheeling Initiative
- Focus on the “missing” piece
- Where do we go from here?

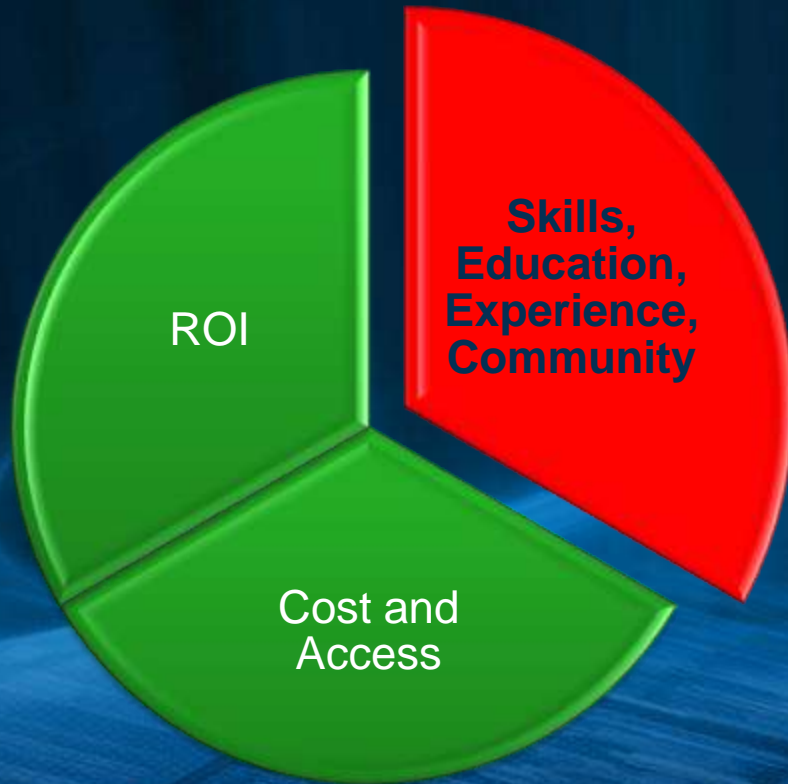


Big Assumptions



We assumed if we solved the cost and access issue we solved the problem....not the case!

Assumptions are Upside-down



- Infrastructure is the easy piece
- Solving the skill gap; creating a pipeline of students, workers...that is the hard part
- Re-tooling the workforce – it's hard
- Community matters...ALOT

Intel-HP Wheeling Innovation Initiative

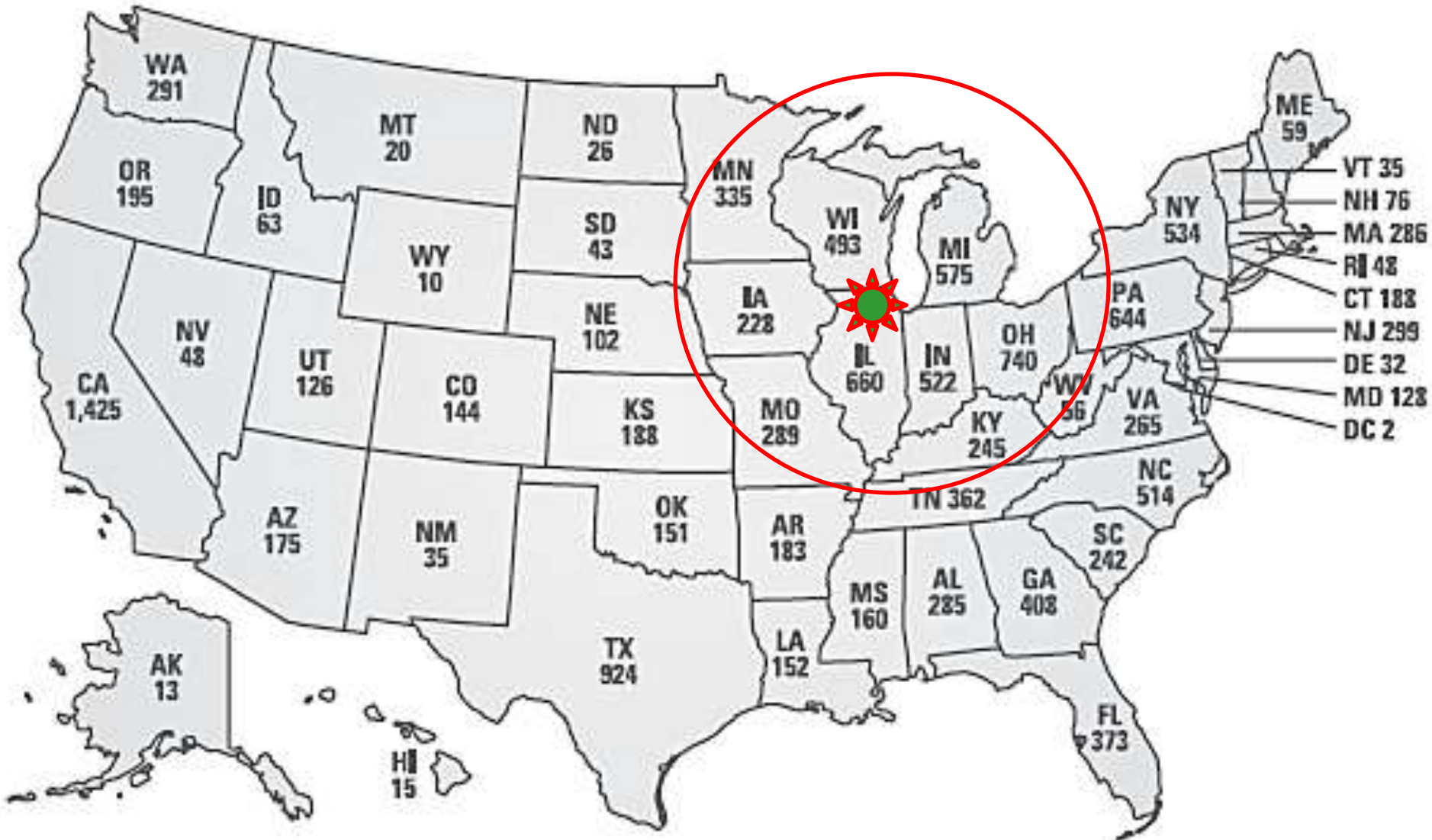
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Why Wheeling?

- **Demographics:** mfg. density, STEM HS, strong local government, engaged industrial community
- **Location:** heartland of manufacturing
- **Demonstrated success:** experience in driving innovative concepts to fruition. Strong leadership
- **Strong ecosystem:** Broad capabilities across Universities, Community Colleges, National Labs, STEM HS, ISVs, Tier 1 OEMs, State/Local government

Manufacturing Jobs (1000's of workers)



Source: U.S. Bureau of Labor Statistics, 2008

How do you facilitate a transformation?



Intel-HP Wheeling Innovation Initiative

Advance the adoption of digital manufacturing for small and medium-size businesses thru targeted programs providing access to high performance computing (HPC) resources and tools, training, and outreach

Three key pillars

- *Community outreach*
- *Student competition*
- *Local industry enablement*



Intel-HP Wheeling Innovation Initiative



Outreach	Student competition	Industry enablement
<p>Tell the story, build the community, raise awareness</p>	<p>Launch competition to accelerate student skill development, expertise, and excitement to be part of digital manufacturing through hands-on HPC/ engineering competition</p>	<p>Stimulate direct engagement with small/medium mfgs. to assist them in utilizing advanced computing technologies for design, engineering and process manufacturing</p>

Where are we today?

Phase One

- Micro-pilot with Angiotech very successful
- Student Challenge phenomenal experience
- We learned a lot
 - Planning matters
 - IP concerns are real
 - Students crave the challenge
 - Community wants in

SHOWCASE EVENT
Midwest Research Competition
April 13, 2012
8:45am-10:45am
Wheeling High Performance Computing Challenge
Sponsored by Intel



Positive Impact Project: Optimization of a surgical biopsy needle

Through the cooperation of Angiotech and ANSYS engineers, students are developing 3D models of the BioPince instrumentation and utilizing ANSYS simulation environments to test the instrument's performance. This simulation process involves the remote use of supercomputers provided by Intel, where students will utilize high performance computing to optimize the design of the biopsy system. Students will report on the findings and process of their simulation-based optimization for consideration by Angiotech engineers and executives.

The project engages seven different student design teams, consisting of 19 students from Wheeling High School, who will work to optimize the design of Angiotech's BioPince Full Core Biopsy Instrument. The BioPince instrument is a disposable automatic instrument that is used to obtain multiple core samples from soft tissue such as the liver, kidney, and abdominal masses for use in cancer and other medical screenings.

This project is a collaboration between Wheeling High School in partnership with Angiotech Pharmaceuticals, Intel Corporation, and ANSYS Inc.

Angiotech is a global specialty pharmaceutical and medical devices company that discovers, develops, and markets innovative technologies and medical products primarily for local diseases or for complications associated with medical device implants, surgical interventions and acute injury. Angiotech is a global engineering and manufacturing company with facilities in Wheeling.

ANSYS Inc. is company that designs industry standard engineering simulation software. The software utilizes finite element analysis, a numerical technique in mathematical approximations that describes the physics within a complex physical system.

Where are we today?

Phase Two

- Scale Student Challenge
 - PLTW / STEM
- Broaden community support
- Expand Pilot engagements
- Enable the ecosystem
 - ISVs, engineering services organizations, HPC providers, Universities etc.



OFFICE OF GOVERNOR PAT QUINN

NEWS

FOR IMMEDIATE RELEASE:
Friday, September 14, 2012

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Illinois launches new 'STEM' learning exchanges to prepare students for 21st Century workforce

\$10.3 million public-private partnership to boost careers in Science, Technology, Engineering and Math (STEM)

CHICAGO – September 14, 2012. Governor Pat Quinn today unveiled a unique \$10.3 million public-private partnership that will better prepare thousands of Illinois students for careers in Science, Technology, Engineering and Math (STEM) fields. Joined by Illinois business, high-tech and education leaders at the innovative "1871" digital start-up center in Chicago's Merchandise Mart, Governor Quinn announced that eight organizations will be awarded contracts to develop "STEM Learning Exchanges" that link educational opportunities with business resources to prepare students to compete in the global economy. The partnership is part the governor's commitment to improve education in Illinois.

"Our mission is to prepare our students for the 21st Century workforce," Governor Quinn said. "These new Learning Exchanges will provide students with real-world experience and advanced educational opportunities to ensure they are ready to compete for the jobs of tomorrow."

The funding package is comprised of \$2.3 million in federal Race to the Top (RTTT) funds, which leveraged another \$8 million in business resources. The eight STEM Learning Exchanges, coordinated through multiple state agencies in partnership with the Illinois Business Roundtable, will be established through contracts with the Illinois State Board of Education. Applicants were required to commit cash or in-kind donations, bringing more than \$10.3 million of business resources and cash to this unique public-private partnership.

The eight learning exchange organizations were selected by an expert review committee that considered each applicant's plan and experience in coordinating statewide public-private partnerships, and the matching or in-kind matching contribution. These statewide Learning Exchanges will work together with regional, educational and business networks to aggregate curricular resources, assessment tools, professional development systems, work-based learning opportunities and problem-based learning challenges. They will support performance evaluation across the P-20 education and workforce system, and result in better prepared students for a 21st century workforce. For the complete list, see attached document.

"This exemplifies a great public-private partnership as education and business forces work together to pave the way for a brighter future in Illinois," said State Superintendent of Education Christopher A. Koch. "Giving students access to professionals and showing them how knowledge can be applied on the job is a proven strategy for keeping students engaged in high school and mindful of their future."

-MORE-



The “Missing” Piece



- Create the fabric to drive a transformation through partnerships with national and regional technical institutes, community colleges, non-profits, policy organizations
 - DeVry Institute
 - Manufacturing Institute/NAM
 - AACC
 - SME
 - PLTW
- Build the community and ecosystem: connect people to each other

Big Thoughts

- **2012 has been all about discovery**
 - **Drill some wells and learn: built a little, test a little**
- **2013 will be all about applying what we have learned and scaling the stuff that works**
- **Fundamental belief: listen, learn, adapt and ALWAYS plant A LOT of seeds**

Closing thoughts

...where do we go from here?

- **Ignite the right sparks**
- **Keep telling the story – to everyone who will listen**
- **Connect the dots – think broadly!!**
- **Enlist partners who are in it for the long haul**
- **Scale globally**