

Venture Investing in Small Things

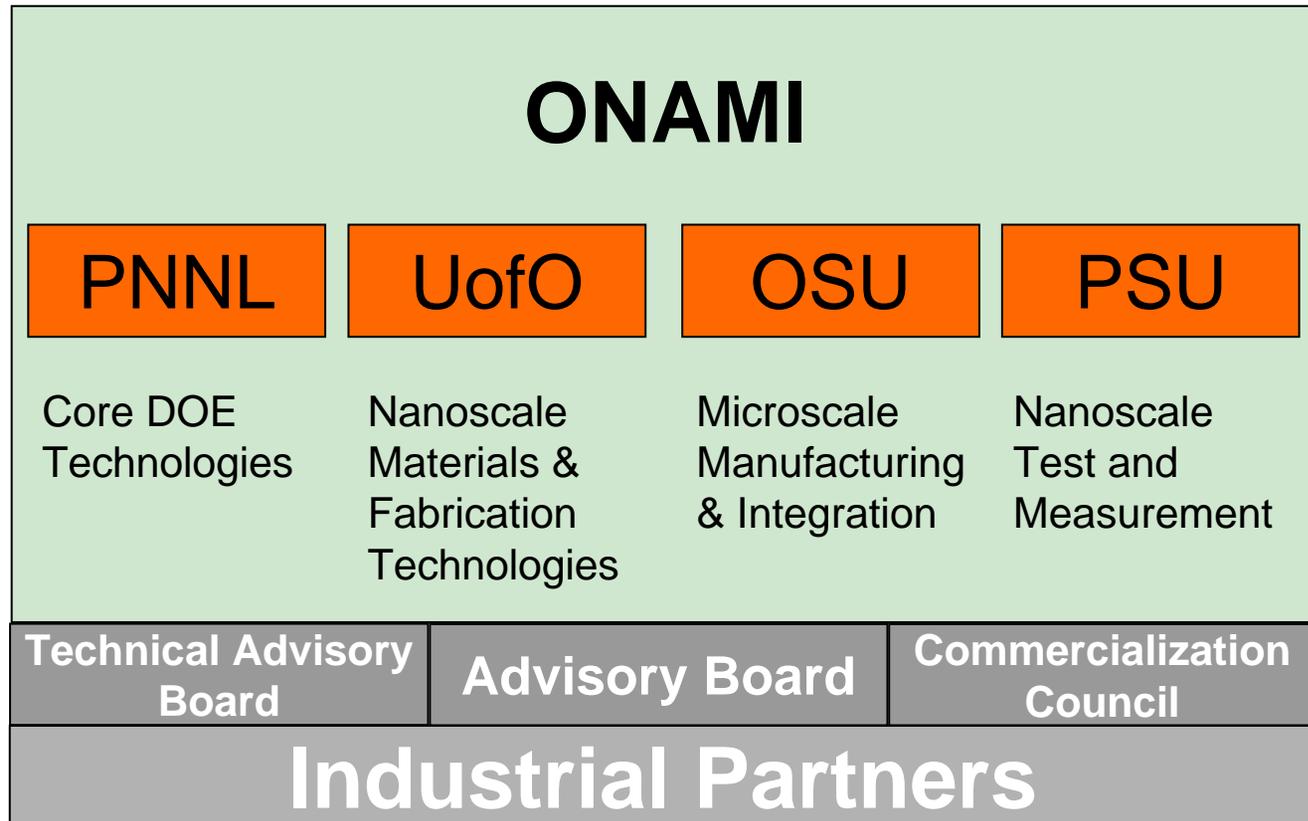
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- > ONAMI Strategy: Nanotechnology delivered in microsystems
- > Leverage winning MECS (DARPA, DOD, DOE) and Nanomaterials (NSF) efforts:
 - *Nano-engineered surfaces, materials analysis*
 - *Nanomaterials and microreaction science*
 - *Novel semiconductor devices*
 - *Micropower supplies, miniature thermal systems*
 - *Nano-enabled cytosensors*
- > Leverage collaboration across disciplines
- > Leverage regional industrial strengths
- > Short and long-term commercialization

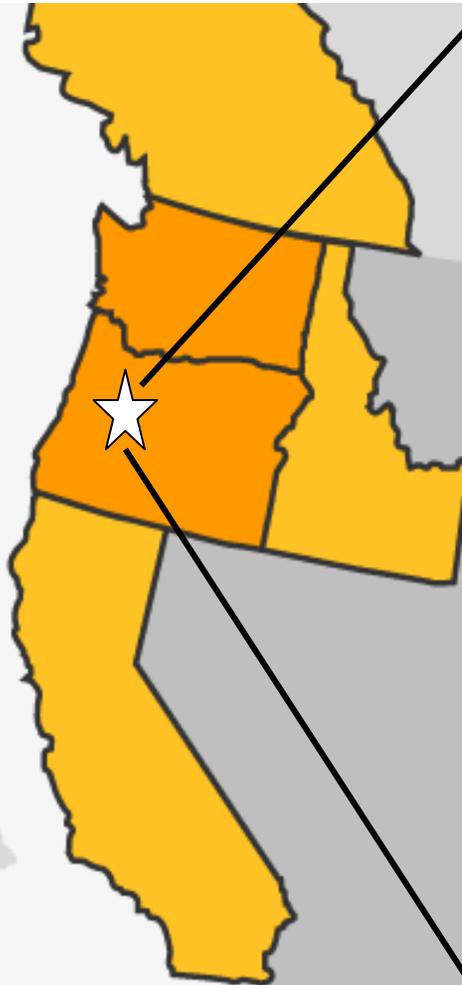
ONAMI – Success Through Collaboration

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Oregon's Industrial Nano Assets

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INTEL

- 16,000 Employees In Oregon
- HQ Semiconductor Process Engr. (90 nm fab and future processes)

HP

- HP Ink Jet HQ (MEMs & nanometer technology)
- Largest HP site – 4500 people.
- 25% of all HP patents here

FEI, ESI, etc

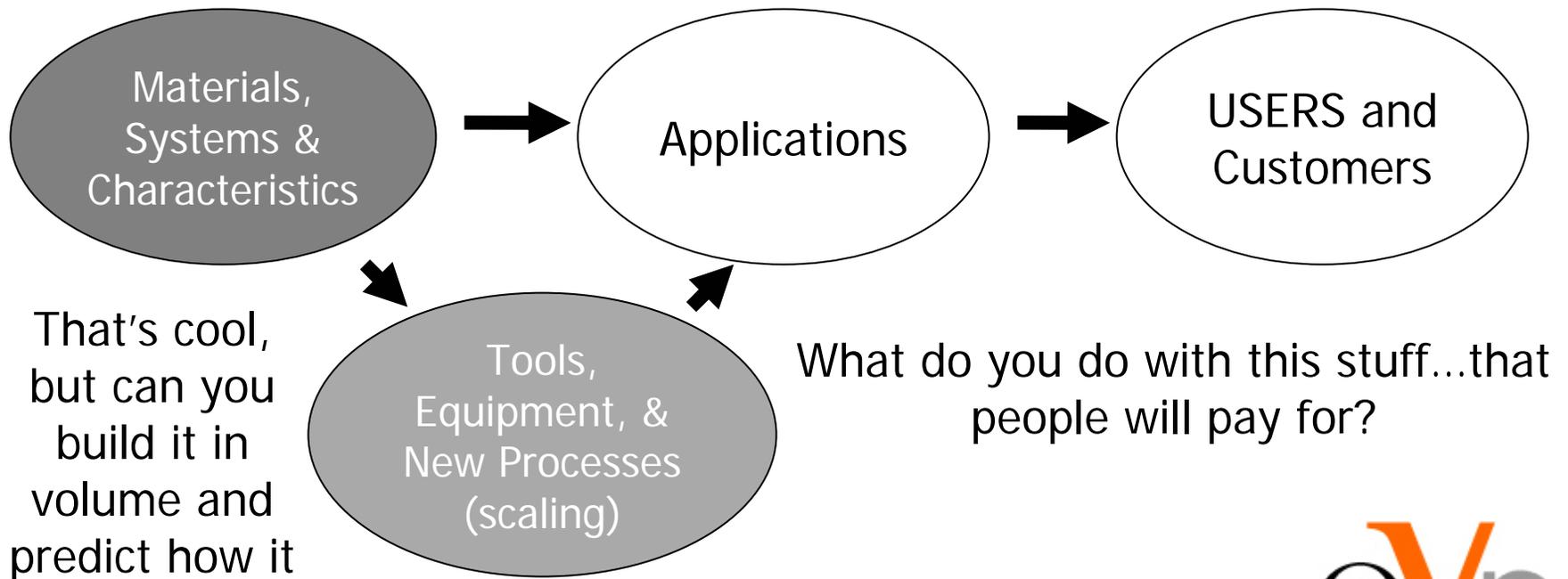
**OREGON NANOSCIENCE AND
MICROTECHNOLOGIES INSTITUTE
(ONAMI)**



Venture Investing in Nano

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- > Hi Tech venture investing horizon – 7 years to exit, but mostly in company building, not industry forming
- > Nano technology is in the early stages of an industry – still defining foundational technology, applications and infrastructure
 - Not a negative view on opportunity – just a statement on stage



That's cool,
but can you
build it in
volume and
predict how it
acts?

What do you do with this stuff...that
people will pay for?

Venture Issues In Nano

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- > It's a new set of core technologies
 - Electronics & math → Optics → Fluids, Molecules, Energy, Light in Quanta, & Value in the property shifts
 - "components" supplier or systems?
- > Revolution in results, implementation, or usage?...implications for adoption cycle and challenges
- > New non-VC markets: energy, materials; as well as more familiar ones: computing and life sciences
- > Could be closer to bio-tech investing model
 - Longer cycles to market and exits
 - Big capital projects
 - Truncated business models & Corporate partnerships critical
 - Specialized investment area & very technical
 - Bio-tech mortality rates
- > Where is the right place for start ups?



- > All dressed up and nowhere to go ?
- > It's early...
 - The domain of university and agency research
 - Lots of work and patents inside the corporate walls
 - Progress is often a function of dollars invested and hours spent
 - Good News: Shift and ramp in the last year
- > Short cutting the road to commercialization:
 - Get folks with problems closer to the folks with technologies
 - Focus on hybrid systems
 - Military and government applications
 - Joint ventures

Economic Development Implication

- > Nano investment has significant regional implications
 - ONAMI wins research dollars resulting in building out of plant, facility, and people
 - ONAMI is a magnet for training and attracting nano-students & workforce
 - Builds regions higher education syetem
 - Corporate research and product development departments driving a nano agenda, locate close to the nano-workforce and nano-technology “water cooler”
- > Resulting in a sustainable regional nano-ecosystem
 - Builds region’s IP and patent portfolio
 - “nano-swirl” generates start ups with support system