Innovating a Pathway to Economic Growth for NY State

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david.r.smith@infotonics.org

Framework of our conversation

1. Innovation from an ITC perspective
2. The many barriers to Innovation success
3. Breaking through . . . one barrier at a time
4. Innovation process issues yet to be resolved
5. Future directions of Innovation at ITC
New Idea . . . one small step in ITC’s Innovation Process

INNOVATION only begins with the new idea

Idea → Prototype
Prototype → Commercial Product
Commercial Product → Economic Value

INNOVATION at ITC is based on MEMS Applications

What is Innovation

“Research is turning money into knowledge.

Innovation is turning knowledge into money”

Source: SPIE 2007

“The value of an idea lies in the using of it”
Thomas Alva Edison

Inventor of Light Bulb?

“The rest of the story”

Many light bulbs preceded Edison’s. Edison himself purchased the light bulb patent from two ‘Canadian inventor’s’, Henry Woodrow and Matthew Evans. In the UK, JW Swan had patents predating any of Edison’s and the business successfully sued. The Edison Swan United Electric Company resulted, eventually becoming Thorn Lighting.
ITC is all about Economic Growth for NY State

- MEMS is an emerging technology of the 21st century
- ITC will seize economic growth from the MEMS industry
  - Develop new MEMS applications to help grow existing companies like Eastman Kodak Company
  - Prototyping and commercializing MEMS applications with new start-up companies in Upstate NY
  - Creating new spin-off companies from our internal innovation process

All new ideas must cope with similar Barriers to Commercialization Success

Validating the worthiness of the new idea upfront

Then, barriers include access to:
- Early seed funding to build a Prototype
- Prototyping resources & DFM expertise
- Commercialization support services/expertise
- Affordable business resources & physical infrastructure
- Venture capital investment
- Pilot production facilities
Any one barrier can become a **Showstopper**!

- Without Early Seed Funding, there is no Prototype
- Without a Prototype, there is no Venture Capital $
- No Venture Capital, No Commercialization
- No Commercialization, No value creation & no jobs

... *welcome to the ‘Valley of Death’*

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**Infotonics Technology Center**  
**NY State Center of Excellence in Microsystems**

**Bridging the “Valley of Death”**
Validating worthiness of the new idea upfront

**MARKET** *(start here)*
- Where are the Gaps in the Market of interest?
- Which Gaps can best be filled by a MEMS solution?
- What is the Market window of opportunity?

**TECHNOLOGY**
- Is there a MEMS solution that would be feasible?
- Can MEMS solution happen within window of opportunity?
- Can MEMS solution be leveraged to other Markets?

**BUSINESS**
- Does size of Market justify the investment to be made?
- Can MEMS solution be produced at a UMC that is profitable?
- What barriers exist from competing technologies & from IP?
How to fund the Prototype for a good IDEA

- Invest Federal funding sponsored by Congress to develop & prototype MEMS applications that lead to new spin-off companies
  - In collaboration with Army Research Labs
  - In technologies that improve national defense

- Apply for competitive grant funding for prototypes where Congressional sponsored funding does not apply
Additional perspectives on reducing the Barriers

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<thead>
<tr>
<th>Barriers to Commercialization also include access to:</th>
<th>ITC’s Counter Measures</th>
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<tbody>
<tr>
<td>Early seed funding</td>
<td>ITC significantly reduces the risk for early investors</td>
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<tr>
<td>Prototyping Resources &amp; Design for Mfg. Expertise</td>
<td>Our prototypes are designed to be manufacturable</td>
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<tr>
<td>Commercialization Support Services</td>
<td>ITC’s – Innovation &amp; Commercialization Center provides req’d support services</td>
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<tr>
<td>Affordable business resources and physical office/lab infrastructure</td>
<td>ITC’s - Innovation &amp; Commercialization Center provides affordable resources and physical infrastructure</td>
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<tr>
<td>Venture Capital Funding</td>
<td>Working, manufacturable device reduces venture investment risk</td>
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Innovation process issues yet to be resolved

- Easy access to IP from strategic University partners resulting from R&D funded there by ITC
- Pinpointing the right time and appropriate decision criteria for pulling the plug on an Innovation investment
- Eliminating the conflict of employees “wearing two hats,” ITC and Spin-off, simultaneously

Thermal Gradient . . . an early ITC success story about two guys “working out of a garage”

“IDEA” → Concept Sketch → Microsystem design → Prototype in 16 weeks

functional prototype & mfg. recipe → feasibility demo → problem solving

venture capital → grant awards → New Co

JOBS!!!!
ITC Summary

- ITC, a premier MEMS facility in the world
- ITC’s team is highly competent, highly motivated, highly committed
- ITC has demonstrated that every aspect of its INNOVATION model can work
- ITC is a catalyst for stellar economic growth in Upstate NY
- ITC & ICC transforms knowledge into jobs

ITC/ICC - we make innovations happen
DLP, … a technology in state-of-the-art HDTV