Welcome
Andy Maas, Project Manager
University of Akron Research Foundation
Agenda

11:45 am       Lunch
12:00 pm – 12:05 pm  Welcome
12:05 pm – 12:15 pm  Follow-up on IP: Q&A Based on Week 1 Deliverable
12:15 pm – 12:35 pm  Technology Transfer: Patenting and Licensing
12:35 pm – 1:05 pm  Voice of the Customer
1:05 pm – 1:10 pm  Logistics
1:10 pm – 1:30 pm  Team Value Proposition Pitches
1:30 pm – 2:00 pm  Wrap-Up
Follow-up on Intellectual Property: Q&A Based on Week 1 Deliverable

Andy Maas, Project Manager
University of Akron Research Foundation
Technology Transfer: Patenting and Licensing

Andrew Maas, Project Manager
University of Akron Research Foundation
Mission of Research Universities

- Excellence in student education
- World-class research
- Create impactful societal benefit
  - Foster innovation and entrepreneurship
  - Engage in regional economic development
  - Leadership in technology commercialization

Technology commercialization should support the mission of a research university
Technology Commercialization

- Be a primary driver of economic competitiveness
  - Be recognized nationally for technology transfer and commercialization of research
  - Outperform national benchmarks for the number of startup companies
  - Partner with industry to advance research and technology transfer goals (create jobs, and increase business profitability)
  - Expand capacity to form strategic partnerships with industry, other educational institutions, and local government to support innovation and venture capital investment in the region
Benefits of Technology Commercialization

- Provides means for getting innovative products to the market for public benefit
- Commercial & public recognition of important technologies
- Attracts new R&D resources & partnerships for lab
- Obtains return on investment
- Stimulates economic development
Bayh-Dole Act (1980)

- Universities can own patents resulting from federally funded research
- Universities must protect and commercialize discoveries
- Preference to small businesses that demonstrate sufficient capability
- Must share proceeds with inventors
- US manufacture required for products sold in US
- Non-exclusive license to US government for its own use
- Ability to grant compulsory license in the public interest
What is University Technology Transfer?

- Technology Transfer is the movement of knowledge and discoveries to the general public
  - Publications
  - Educated students joining the workforce
  - Exchanges at conferences
  - Relationships with industry

- University technology transfer refers to
  - The formal licensing of technology to third parties
  - Under the guidance of professionals skilled in the process
  - A department of specialists in licensing, business development and legal matters
Research Considerations to Protect Intellectual Property

• Publications should be reviewed by the Tech Transfer Office
  ◦ Avoid premature disclosure of potentially patentable intellectual property
  ◦ Submit Innovation Disclosure before any public communication
  ◦ Inform Tech Transfer Office of any planned presentation, lecture, poster, website description, research proposal, thesis, or publication

• Sharing intellectual property with others will require Confidentiality Agreements

• Sponsored Research Agreements should specify the intellectual property rights of the sponsor in the agreement

• Consulting Agreements should be consistent with the University policies.
  ◦ Office of Tech Transfer will provide good advice
Technology Licensing

- To an established business that has interest in commercializing the technology; or
- To a startup company that has a credible entrepreneur/CEO/Management team
  - Identifying that “fundable CEO” is often the critical element in deciding when to form a startup company
License Agreements

- Owner of the IP grants permission to another party to exercise some or all of the owner’s rights
  - Exclusive or non-exclusive?
  - Specific geographic territory?
  - Limited Field of Use?
- Specific performance milestones that licensee must meet to maintain the license
- Financial terms:
  - Up front licensee fees or equity
  - Milestone payments
  - Running royalties
- Option agreements often used to evaluate technology prior to entering into a full license agreement
  - Better valuation of early stage technology at end of option period
  - Usually included in sponsored research agreements
Importance of Understanding Markets

- **In-bound marketing**
  - Inventors and the Tech Transfer office often understand the technology needs in the relevant marketplace
  - Market needs may lead to sponsored research even before the inventions are made

- **Out-bound marketing**
  - Inventors and the tech transfer office leverage their networks to identify potential licensees
  - Published papers, patent publications, presentations, market research, and industry trade shows are all excellent marketing tools
The Role of the Inventor

- Highly dependent on interests and skills of the inventor, the university culture, and the capabilities of the licensee
  - The inventor often identifies the potential licensee through prior collaboration or familiarity with the key market players
  - Most licensees request continuing support of the inventor through consulting agreements or sponsored research
  - For startup companies, the inventor often becomes the Chief Technology Officer of the company – the inventor rarely has the interest or skill set to become the CEO of a startup
Creating a Startup – Key Factors to Consider

- Development risk – innovation is often best suited to a startup company environment
- Development costs – does the business model provide a satisfactory return (10X minimum) for early stage investors
- Does the technology lead to a business platform and not just a single product or service
- Sufficiently large market opportunity to attract investors
Creating a Startup – Key Factors to Consider

- Access to early stage capital and later stage VC or strategic funding
- Strong intellectual property estate to provide sustainable competitive advantage
- Financial business model to support and grow company to successful exit in 5 to 7 years
- Identification of a strong, credible, passionate, business leader – “A fundable CEO”
Why Create a Startup?

- Assess the technology commercialization opportunity versus the university strategy/mission
  - Potential impact on regional economic development
  - Impact on innovation and entrepreneurship within the university ecosystem network
  - Ability to create high paying jobs regionally
  - Build university recognition within the technology commercialization community
Necessary Ingredients for a Tech Startup

- **Talent** - a strong “fundable CEO” and management team
- **Market** - potential to penetrate a large market opportunity
- **Capital** - access to capital from growth through to successful exit
- **Technology** - high impact and patent protected
UA Success Story –
Boston Scientific License

- Biocompatible block copolymer based coatings
- Licensed to coating company for controlled release drug delivery
- Coating company developed taxus controlled release to minimize inflammation and clogging of implants
- Company purchased by Boston Scientific for drug eluting cardiac stent coatings
- Significant royalties for UARF
UA Success Story – Akron Polymer Systems

- Patented technology – specialty thin films of polyimides
- UA Faculty Inventors
  - Stephen Cheng – Now Dean of UA College of Polymer Science and Polymer Engineering
  - Frank Harris – Now CEO of Akron Polymer Systems
- Value proposition to improve optics of liquid crystal displays
- Since 2002
  - Akron Polymer Systems has grown to 12 employees and $3M sales
  - Product portfolio expanded to other specialty polymer films
  - Providing mentorship to other UARF start ups
- UARF holds equity positions
UA Success Story – Nanofiber Technology Platforms

- UARF and German company formed a JV – SNS Nanofibers for healthcare applications
- Spin-out company Mempro for ceramic nanofiber catalytic engine filter – UARF equity position
- UARF licensed nanofiber technology to Fortune 500 companies for specific Fields of Agreement – UA royalties
- Spin-out company NGJ, LLC for carbon nanofibers – UARF equity position
Sharing Value Creation

- Each university has a policy on revenue sharing from licensing fees, royalties, and equity
  - Unreimbursed patenting expenses are recovered
  - At UA the net revenues are distributed
    - 40% to the inventors named on the licensed patent
    - 10% to a research account for the inventors
    - 10% to a research account for the inventors college/department
    - 40% to UARF for legal fees, marketing, administrative costs, and some continued research
Overall Value Creation

- Most licenses do not yield substantial revenues
  - Less than 1% of all licenses generate revenue over $1M
  - Returns often take years to materialize
  - As with venture capital investments, some licenses may fail, some will yield modest returns, and a few may be big winners

- Technology commercialization creates value far beyond financial considerations alone
  - Foster innovative and entrepreneurial culture
  - Engage in regional economic development
  - Create jobs
  - Improve U.S. competitiveness in global/knowledge based economy
Voice of the Customer

Elyse Ball, Assistant Counsel
University of Akron Research Foundation

Slides provided by Advanced Industrial Marketing
First, a story...
So, how did that happen?

- What is “Voice-of-Customer”?
- Why are customer “Outcomes” so important?
- How does this fit with the Lean Launchpad model?
What exactly is Voice-of-Customer?

A complete set of customer **wants, needs and desired outcomes** in the customer’s own words
What DON’T we mean by VOC?

- Surveys
- Focus groups
- Customer relationship management (CRM)

- Nothing wrong with this input … but it isn’t VOC
So how do I do VOC?

- Open-ended inquiry
- Better listening
- More effective questioning
- Actions-of-Customer (AOC)
  - Our Sandpaper example involved effective Discovery Interviews but also observation (ethnography)

- VOC is not an end...it is a **means to an end**:  
  - That end? Determining customers’ most desired outcomes
We want just the right kind of outcome to work on…

Importance

Low

High

Low

High

Satisfaction
Understanding outcomes help us decide to move forward with a project...or kill it...

- Scrub Resistance: 28%
- Crayon Removal: 27%
- Hiding Power: 18%
- 24-Hr Window Stick: 21%
- Brushmark Leveling: 12%
- Fading Resistance: 16%
- Sprayability: 13%
- Stain Resistance: 11%
- Brushability: 8%
- Factory Mix Time: 0%

High Market Eagerness

0% 10% 20% 30% 40%

© AIM
And that leads us to our next question…

- What is “Voice-of-Customer”?

- Why are customer “Outcomes” so important?

- How does this fit with the Lean Launchpad model?
What’s an “outcome” and why does it matter?

- When you ask customers what problems they have, they tend to give answers that fall into 3 main buckets:

  - **BACKGROUND**
  - **SOLUTION**
  - **OUTCOME**
What do we usually say or do when we hear these things?

**BACKGROUND**

“Interesting, thanks. Hey guys, we got some really good info on that VOC call.”

**SOLUTION**

“Fantastic! We’ll get right on that. Hey guys, I found out exactly what they want!”

**OUTCOME**

“We could accomplish that by modifying the calibration. How much would you pay then?”
When properly approached, desired outcomes can be identified...

- Early detection of diseases
- No patient side effects
- Rapid diagnosis
- Low equipment maintenance
- Good patient comfort
- No pre-test diet restrictions
- Rapid test procedure
- Limited operator training time
Why aren’t we all better at discovering outcomes?

Trained to Sell

Trained to Solve
We can all become hard-wired to instinctively seek outcomes...

**When you hear Background...**
Search for Outcomes...
See if current state is less than ideal.
Ex: “Any problems with this today?”

**When you hear Solutions...**
Search for Outcomes...
Look for purpose of their solution.
Ex: “What would that do for you?”

**When you hear an Outcome...**
Learn how to measure it...
Convert into Outcome Statement...
Verb... Unit of Measure... Object
Outcome statements are designed to set the stage for eventual solutions...

“Minimize time required to diagnose diseases”

Verb  Unit of Measure  Object

Verb

Minus or Maximize

Unit of Measure

Time, Number, or Likelihood

*Source: What Customers Want by Tony Ulwick
But, even when we THINK we understand the outcome, we might not...

1. Minimize time needed to clean food stains from painted wall.
2. Minimize number of foods that will stain a painted wall.
3. Maximize the number of cleaners that will remove stains.
4. Minimize the likelihood that foods will adhere to wall.
5. Minimize the color intensity of food stains on painted wall.
And, we have to be clear: does engineering understand what we mean?

No Solutions
Minimize drying time using chemical accelerators.

No Combinations
Minimize scratch and impact resistance of finish.

No Ambiguity
Attractive… Easy-to-use… Durable… Comfortable

Minimize surface defects…
Minimize haziness…
Maximize gloss level…
Minimize variation around a gloss meter target of 70.
And that leads us to our last question…

- What is “Voice-of-Customer”?
- Why are customer “Outcomes” so important?
- How does this fit with the Lean Launchpad model?
How does this fit with the Lean Launchpad model?

- Technology → Product
- Need to understand customer needs
  - Pains and gains
  - Day in the life
  - Habits
- Ultimately, we need to know
  - What will a customer pay for and how much?
  - What performance level will make a customer change his or her habits?
Same advice on Lean Start-Up, the newest approach to sweep the Fortune 500…

Should You Expand Your Build-Measure-Learn Cycle?

Best for most B2C products:
- BUILD
- MEASURE
- LEARN

Best for most B2B products:
- LEARN
- BUILD
- MEASURE
- LEARN
Valuable VOC can be found anywhere and everywhere in this value chain...
We’ll finish up with another story...
Week 2 Logistics
Andy Maas, Project Manager
University of Akron Research Foundation
Week 2 Deliverables

- Business Model Canvas hypotheses on value proposition and customer segments
- Proposed Project Budget, if not yet submitted
- Budget Form approved by I-Corps Sites administrator, if submitted

Remember:
- All forms are available at www.uakron.edu/icorps
- Complete forms digitally and submit via email to NSFICorpsSites@uakron.edu by 5:00 pm on Thursday
  - Email Subject Line must include team number (F13-0###)
Week 3 Deliverables

- Budget Form approved by I-Corps Sites administrator
- Customer Interview Form completed for 5 customer contacts

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Value Proposition Pitches
I-Corps Sites Entrepreneurial Leads
Team 16
Rapid Identification of Microbes in Soil

- Warren Dick — Academic Lead
- Aditi Sengupta — Entrepreneurial Lead
- Shauna Brummet — Mentor
Team 15
High-Throughput Microalgae Screening

- Peter Ling — Academic Lead
- Siam Racharaks — Entrepreneurial Lead
- Shauna Brummet — Mentor
Team 14
Hypoallergenic Natural Rubber Latex

• Katrina Cornish — Academic Lead
• Jessica Lauren Slutzky — Entrepreneurial Lead
• Allyson Dewell — Entrepreneurial Lead
• Bob Chalfant — Mentor
• Shauna Brummet — Mentor
Team 13
Real-Time Toxic Water Containment Sensor

- Chelsea Monty — Academic Lead
- Bradford Vielhaber — Entrepreneurial Lead
- Wil Hemker — Mentor
- Chris Miller — Mentor
Team 12
Permanent Magnet Assist
Synchronous Reluctance Motor

- Seungdeog Choi — Academic Lead
- Sai Sudheer Reddy Bonthu — Entrepreneurial Lead
- Garrett Dowd — Entrepreneurial Lead
- Howard Hubert — Mentor
Team II
Instructional App to Track Student Performance

- Douglas Hicks — Academic Lead
- Dhvanit Poduval — Entrepreneurial Lead
- Annal Vyas — Mentor
Team 9
Synthesis of Polymers from Plant-Based Oils

- Coleen Pugh — Academic Lead
- Brinda Mehta — Entrepreneurial Lead
- Clifton Young — Entrepreneurial Lead
- Paula Watt — Mentor
Team 8
Fluorescence Goggles for Medical Interventions

- Yang Liu — Academic Lead
- Christopher Mela — Entrepreneurial Lead
- Alex Naragon — Entrepreneurial Lead
- Elliot Reed — Mentor
Team 7
Singing Accuracy App

- Bryan Nichols — Academic Lead
- James Adams — Entrepreneurial Lead
- Patrick Hofford — Mentor
Team 6
Vorticity Confinement to Better Predict Aerodynamic Drag

- Alex Povitsky — Academic Lead
- Kristopher Pierson — Entrepreneurial Lead
- Van Duc Ngo — Entrepreneurial Lead
- Brent Hartman — Mentor
Team 5
OXAID: Oxygenated Hydrogels for Wound Healing

- Nic Leipzig — Academic Lead
- Pritam Patil — Entrepreneurial Lead
- Megan Jeffords — Entrepreneurial Lead
- Drew Barnholtz — Mentor
Team 4
Membrane Separator for Lithium Battery

- Mukerrem Cakmak — Academic Lead
- Fanhui Jiang — Entrepreneurial Lead
- Michael Adding — Entrepreneurial Lead
- Barry Rosenbaum — Mentor
Team 3
Glaucoma Detection System

- Rouzbeh Amini — Academic Lead
- Anup Dev Pant — Entrepreneurial Lead
- Fehmida Kapadia — Mentor
Team 2
Virtual Physical Examination for Health Care Providers

- Ajay Mahajan — Academic Lead
- James V. Cireddu — Entrepreneurial Lead
- Lorne Novick — Mentor
Team I
High Performance Transparent Electrode

- Yu Zhu — Academic Lead
- Tianda He — Entrepreneurial Lead
- Victoria Scarborough — Mentor
# Week 2 & 3 Deliverables

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<tr>
<th>Week 2</th>
<th>Class Discussion Topic</th>
<th>Deliverables for the Following Week (due by Thursday at 5:00 pm)</th>
<th>Videos to Watch Before Next Class</th>
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<tr>
<td>3/14</td>
<td>Q&amp;A on Week 1 Deliverable; Tech Transfer: Patenting &amp; Licensing; Voice of the Customer Methodology</td>
<td>Business Model Canvas Sections on Customer Segments and Value Propositions – submit a 2 to 3 sentence response via email</td>
<td>ALL Sections in Lesson 3 – “Customer Segments”</td>
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<tr>
<td>Week 3</td>
<td>Team Meetings</td>
<td>List of Potential Customer Contacts</td>
<td>ALL Sections in Lesson 2 – “Value Proposition”</td>
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