

Science and Technology
Entrepreneurship Program

CRDF Global

TECHNOLOGY COMMERCIALIZATION ECOSYSTEM

Iryna Lendel, PhD
Assistant Director
Center for Economic Development
Cleveland State University

April 5-6, 2012
Ivano-Frankivsk, Ukraine

What is Technology Commercialization?

- ◉ Tech commercialization process – inside the system
- ◉ Tech commercialization ecosystem – outside environment

Transformation of Knowledge into Market Product

Knowledge

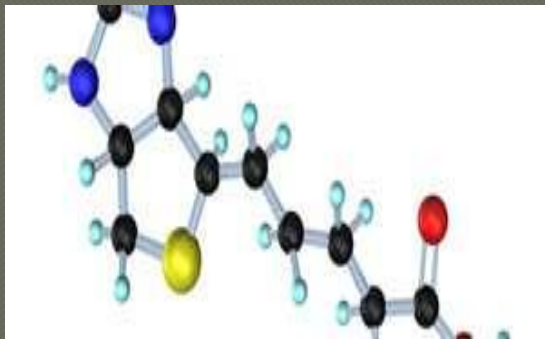
Research

Technology

Development

Market

Product



Business of Tech Commercialization

- Startups rarely fail for lack of technology
- Major reason of startup failure:
LACK OF CUSTOMERS
- Entrepreneurs do NOT take basic steps to learn about their customers

Eric Reis, creator of the Lean Startup Methodology

Commercialization

- Commercialization is NOT a TECHNOLOGY discussion
- This is a BUSINESS discussion:
 - Market needs
 - Getting product into the market
 - Potential customers
 - Business model

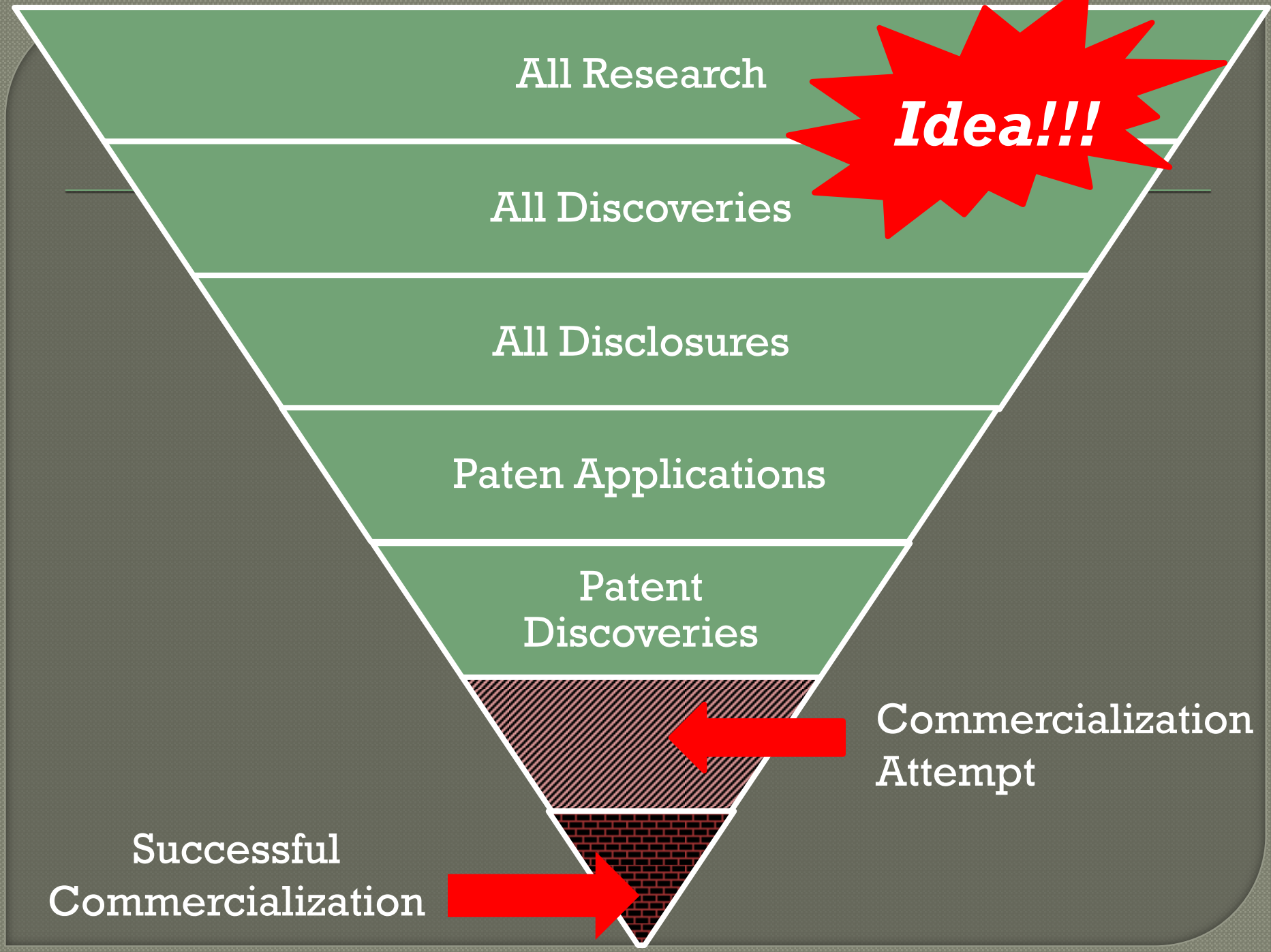
Why Commercialization is Important?

- Bulk of economic growth is based on technology advancements
- Technology improves life: quality, social conditions, convenience
- Leads to increase of productivity and wealth
- Does not resolve unemployment, but creates highly-skilled, highly-rewarded jobs

I have an
idea!!!!



It is not
enough...



Tech Commercialization Process

- ◉ Commercial Potential
 - Assess
 - Protect (patent)
- ◉ Business Development
 - SWAT Analysis
 - Business Plan
 - Business Model
- ◉ Value Established
 - License/Start-up

Tech Commercialization Process

◉ Commercial Potential

- Assess
- Protect (patent)

◉ Business Development

- SWAT Analysis
- Business Plan
- Business Model

◉ Value Established

- License/Start-up

Commercial Potential

- ◉ Technology Valuation
- ◉ IP protection

Tech Commercialization Process

- Commercial Potential
 - Assess
 - Protect (patent)
- Business Development
 - SWAT Analysis
 - Business Plan
 - Business Model
- Value Established
 - License/Start-up

Business Development

SWAT Analysis: **S**

○ Strength

- Advantages
- Capabilities
- Unique selling points
- Price
- Management

COMPETITIVE ADVANTAGE

Business Development

SWAT Analysis: **W**

○ Weaknesses

- Disadvantages
- Gaps in capabilities
- Lack of competitive strength
- Time scale

YOU HAVE CONTROL OVER:

YOU CAN CHANGE IT

Business Development

SWAT Analysis: ○

○ Opportunities

- New markets
- Technology innovation
- New partnerships
- Collaborations
- New business

RESULT OF YOUR STRATEGIC THINKING

Business Development

SWAT Analysis: **T**

⦿ Threats

- Political instability
- Corruption
- Legal
- Environmental
- Legislative

YOU DO NOT HAVE CONTROLE OVER:

YOU CANNOT CHANGE IT

TAKE IT INTO ACCOUNT AND MOVE ON

Business Development: Business Plan

- The market
- Competitive environment
- Business model
- Customers
- Financial model
- The team
- Funding
- The marketing
- Implementation strategy

Tech Commercialization Ecology

- Geography
- Factors
- Infrastructure
- Regulations
- Technology
- Sectors
- Networks

Commercialization Ecosystem

Geography: **Regions**

- ◉ Comparative analysis of success stories
- ◉ Sectoral clusters
- ◉ Innovation and manufacturing
- ◉ Collaboration with industry
- ◉ Universities as drivers of regional innovation
- ◉ Role of local capital
- ◉ State and local government policies

Inspiration: Regional and Global

- Evolutionary economics – proximity paradox (Brokel and Boschma, 2011; Boschma, 2005):
 - Geographical proximity
 - Cognitive proximity
 - Organizational proximity
 - Social proximity
 - Institutional proximity
- Lester (2005), Hill & Lendel (2005, 2007), Lendel (2010):
 - Product-centered approach
 - University products' alignment with regional needs
 - Regional innovation portfolio (Hill and Gammons, in process)

Ideal Collaboration

- Direct Response to Industry's needs
 - R&D Agreement
 - IP Clause
 - Technology Development
 - In University by Faculty
 - In company by Company Scientists
 - Either Place by Collaboration
 - Joint Ownership
 - First Right to Negotiate

Commercialization Ecosystem

Factors: **Capital**

- ◉ Early state/seed: angels, VC, government, other
- ◉ Research and development: VC, government, other firms, collaboration, international
- ◉ Growth phase: banks, capital markets
- ◉ Factors affecting capital: tax rates, tax credits, bankruptcy laws, cultural factors

Commercialization Ecosystem

Factors: **Labor**

- Scientists and engineers
- Technicians
- Science and math education
- “Thick” labor market in “thin” innovation niche
- Access to knowledge
- Tacit knowledge

Commercialization Ecosystem

Factors: **Entrepreneurs**

- A separate classification?
- Training for entrepreneurs
- Support for entrepreneurs
- The second chance culture
- Networking
- Social connections

Commercialization Ecosystem

Factors: **Technology**

- How to identify “critical” technologies
- Generating sufficient scale
- Maintaining competition within sectors while supporting key technologies
- Support for basic research
- Support for applied research and tech transfer



- Intensive assistance to Northeast Ohio entrepreneurs leading high potential companies
- Services are delivered by successful entrepreneurs who work one-on-one with entrepreneurs
- Help raising capital, generating revenues, testing the commercial viability of a product or service, and moving a product or service into the market



- Selectively invest in the highest potential companies positioned to excel in high opportunity markets, focusing on entrepreneurs with breakthrough, market-driven technologies





President Barack Obama visited Cleveland State University with several of his Cabinet members on Feb. 22, 2011 to convene a "Winning the Future" forum on small business in conjunction with the local business innovation groups **JumpStart** and **NorTech**.



- NorTech is a regional nonprofit technology-based economic development organization serving 21 counties in Northeast Ohio
- As a catalyst for growing Northeast Ohio's emerging technology industries, NorTech is leading efforts to develop regional innovation clusters that create jobs, attract capital and have a long term, positive economic impact

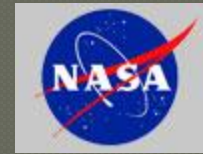
<http://www.nortech.org/>

NorTech: development of regional innovation clusters

- Attracting new members to the clusters by promoting Northeast Ohio's technology inside and outside the region
- Building relationships among cluster members for funding, research, and business opportunities
- Creating market-driven roadmaps with regional partners that define a vision and path to generate economic growth and jobs in multiple technology industry sectors
- Engaging with federal and state government and policy leaders to develop strategies that enhance cluster growth
- Collecting, reporting and utilizing data that creates and influences cluster growth

Currently, NorTech is focused on two industries in Northeast Ohio - advanced energy and flexible electronics.

Northeast Ohio Innovation Ecology Partners



Questions?

Iryna Lendel, PhD
Assistant Director
Center for Economic Development
Cleveland State University

i.lendel@csuohio.edu

http://urban.csuohio.edu/faculty_staff/staff/lendel.html

Iryna Lendel, Ph.D.

Assistant Director

Center for Economic Development

Email >> i.lendel@csuohio.edu



Maxine Goodman Levin College of Urban Affairs

Mail: 2121 Euclid Ave., UR355

Cleveland, Ohio 44115-2214

www.urban.csuohio.edu/economicdevelopment

P >> (216) 875-9967

F >> (216) 687-9277

Materials Used

- ◉ BusinessModelGeneration.com:
AlexOsterwalder.com@business_design
- ◉ StevenBlank.com/books.html
- ◉ SteveBlank.com@sgblank
- ◉ Alan Smith @thinksmith