

Missouri

REGIONAL LIFE SCIENCES  SUMMIT

Jump Starting and Moving New Technologies to Marketplace

An open discussion of the needs of business leaders and academic researchers
as they work together to transition technologies to market.

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Michael F. Nichols

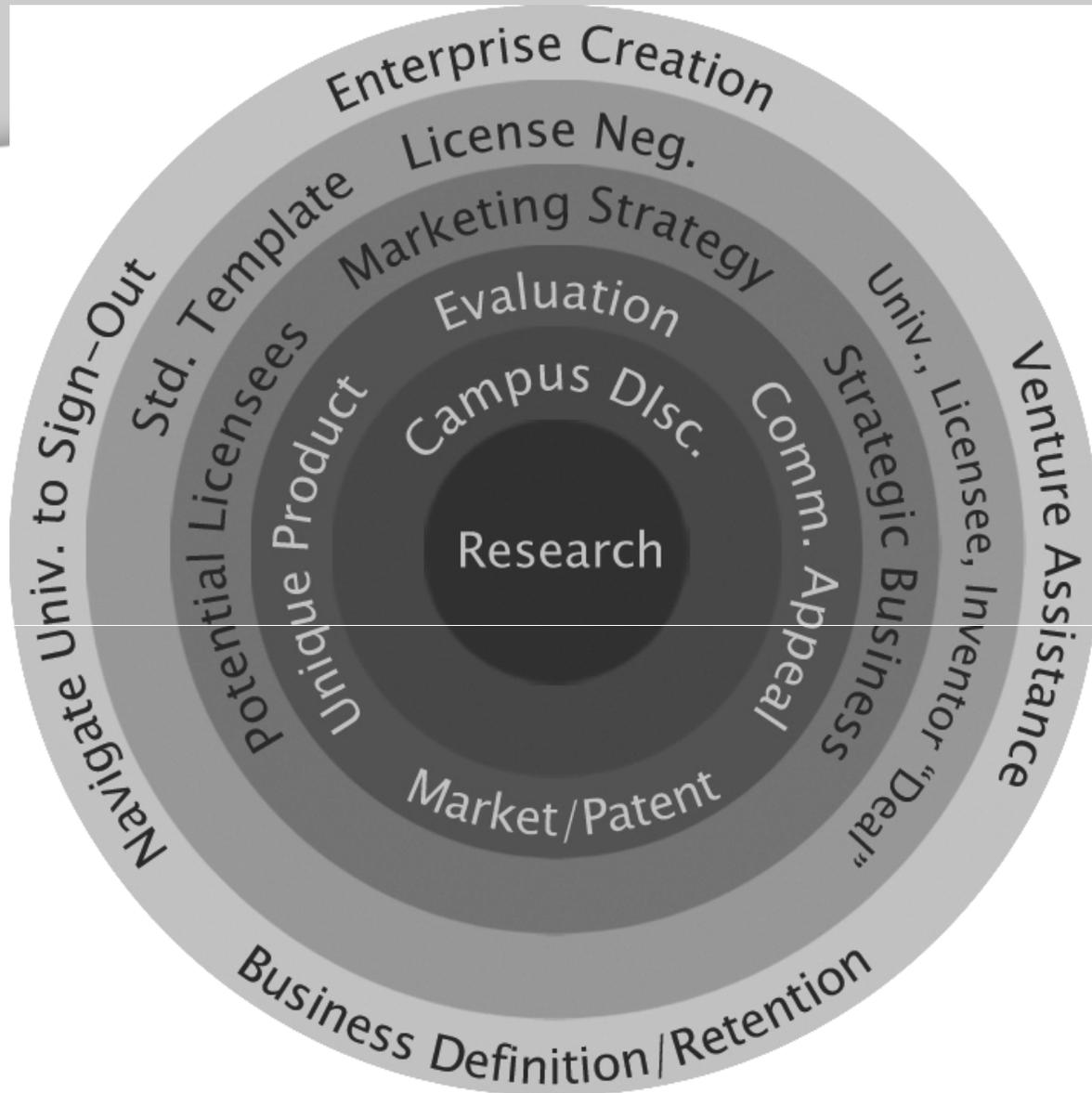
Vice President

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Steve Wyatt
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Keith Strassner

Director

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Missouri University of Science and Technology

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NGA Best Practices

- Integrate Entrepreneurship into State Economic Development Efforts
- Use the Education System to Nurture and Encourage Future Entrepreneurs
- Incubate Entrepreneurial Companies
- Invest in Diverse Sources of Risk Capital for the State's Entrepreneurs and Growth Companies
- “Get out of the Way” through Regulatory and Reform and Streamlining

Where is the Innovation?

- High-tech small business generate five times more patents per R&D dollar than large businesses.¹
- SBIR-funded companies are about 20 times more productive than universities in generating patents per federal dollar.²
- Small businesses with less than 20 employees have generated more than 80 percent of all net new jobs during the past 14 years.³

[1] Source: Ann Eskesen, President, IDI, <http://www.innovation.com/>, from her invited presentation at the Tibbetts Awards, Sept 2006, Washington, DC. Original source: *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Kevin G. Rivette and David Kline, Harvard Business School Press 2000.

[2] Source: Ann Eskesen, President, IDI, from her proprietary SBIR database, the most extensive in the world. The IDI database shows consistency in the SBIR vs university patent productivity over the history of the SBIR program.

[3] Source: Office of Advocacy, U.S. Small Business Administration, from data provided by the U.S. Bureau of the Census, Statistics of U.S. Business

Technology Company Current Resource Needs

Sales and Marketing	4.9	5.0
General management	4.4	5.0
Innovation	4.4	5.0
Strategic planning	4.3	5.0
Financial planning/acquiring funds	4.2	4.0
Accounting & financial control	4.1	4.0
Information technology	4.0	4.0
Research & development	4.0	4.0
Personnel & HR management	4.0	4.0
Legal Issues	3.6	4.0
Production and plant management	3.6	4.0
Managing distribution and inventory	3.5	3.0

Rating Scale: 0 = Not at all 7 = Very

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Source: *BRIDG Learning Experiences and Preferences Survey Data, March 2003*

Innovation Players

- Universities & Tech Transfer Offices
- Corporations, R & D Efforts
- Small Business Innovators
- Investors & Capital Formation
- Intellectual Property & Legal

**Connection
Challenge**

Innovation/Discovery Connectors

- Finger Tip Resources:
 - Missouri Technology Corporation
 - Research Alliance of Missouri – RAM
 - Small Business and Technology Development Centers (SBTDC)
 - SBTDC MO Fast Initiative
 - Innovation Centers
 - Missouri Enterprise
 - Procurement Assistance Centers

Innovation-Led Business

Long-term high growth potential

Business Service Providers

SBTDC, MOPTAC
Missouri Enterprise

SBTDC
Innovation Centers
Missouri Enterprise

SBTDC
Innovation Centers
MoFAST

University Research Centers
University Tech Transfer
Innovation Centers

New Venture Growth

Ongoing Venture
Implementation
of commercial
business practices;
QC, HR, Legal,
Finance

Commercialization

Access to Venture Capital
Commercialization Assistance
Growth Space
Professional Management Team
Access to markets
Venture capital

Early Stage

Access to management teams

- Proof of concept funding
- Phase 0 & SBIR Funding
 - Angel investment
 - Bridge loans

Innovation
Discovery
Technology and
market assessment

Incubator Space
Start-up assistance

Business Needs

Training and Counseling provided throughout the life of the business

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Second Stage Business

Expanding businesses create jobs

Business Service Providers

SBTDC
Missouri Enterprise

SBTDC
Banks
Revolving Loan Funds
Equity Investors

SBTDC
Missouri Enterprise
Missouri PTAC
Management Consultants

SBTDC
Missouri Enterprise
Economic Development
Corporations



Financing

Competitive Challenges

Changes in the environment

Strategic Planning

Securing Bank Loans
Securing Financing

Competitive Research

Access to new markets
Product design and development
Cost reductions
Quality improvements
Finding Talent

Competitive Benchmarking
Facility Expansion
Impact of new regulations
Implementing new Technology
Green/Sustainability issues
Export Support
Global Engagement

Improved management practices
Succession plans
Leadership Training

Business Needs



Missouri Technology Corporation Research Alliance of Missouri

- To improve the well-being of Missourians through increased research productivity and technology innovation within Missouri universities.
- To promote economic development through increased collaborative efforts between the academic and business sectors.
- To provide greater access of Missouri businesses to university derived technologies.
- <http://www.missouritechnology.org/>



MoFAST 

Technical assistance for high-technology and high-growth companies; SBIR/STTR assistance.

- **Marketing and financing assistance**
- **Agency identification and evaluation**
- **Proposal preparation and support**
- **Commercialization planning**
- **Strategic and business planning**

www.MissouriBusiness.Net/fast

(573) 884-1555



MoFAST 

Innovation Tools

- **Phase 0** = MO TIP Assistance \$5,000 - MTC
- **Phase 1** = Concept Development \$75K - \$150K
Federal SBIR/STTR
- **Phase 2** = Prototype Development \$750,000 -
\$1.5 Million – Federal
- **Phase 3** = Commercialization – Debt, Angel,
Venture Capital

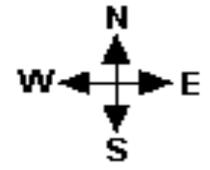
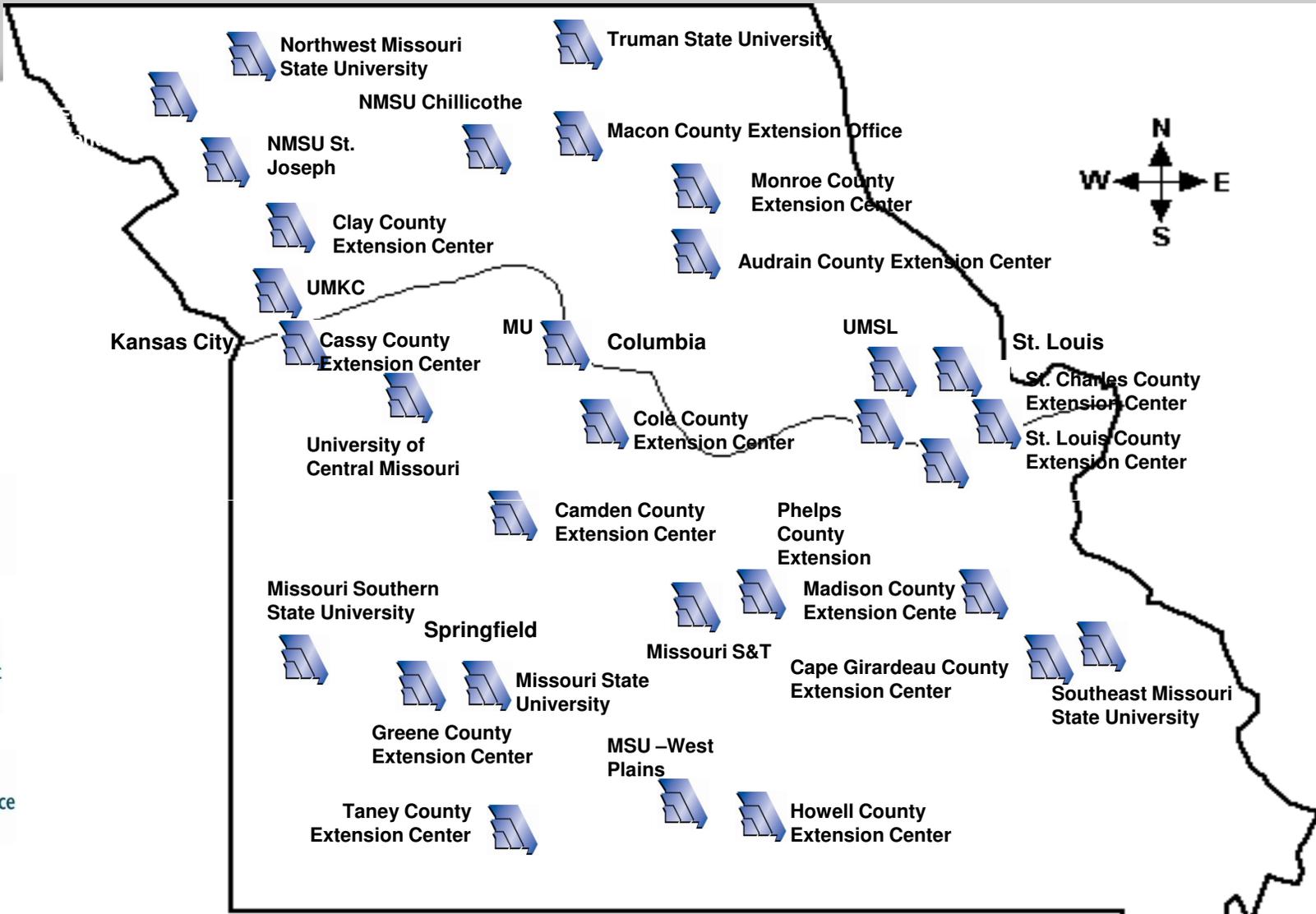
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**Business technical
assistance in management,
marketing and finance.**

- **Business Start-up Assistance**
- **Business Growth and Expansion**
- **Deliver through Training, Education and Counseling in management, marketing, finance, Commercialization, and Human Resources**

Missouri Business Net



MISSOURI!

Innovation Centers

- Offer a wide range of management and technical assistance to businesses
- Knowledgeable on up-to-date innovations to help businesses increase profits
- Assist entrepreneurs with developing business models, financing, space, marketing, networking and research



**Helping sell to federal,
state, and local
government agencies.**

- **Research and find bidding opportunities.**
- **Help evaluate the opportunity.**
- **Assist with bidder registrations and certifications.**
- **Help in bid preparation and submission.**
- **Help with execution of contract.**

www.MissouriBusiness.Net/PTAC

(573) 882-8058



Missouri Enterprise

Core Capabilities

- Continuous Manufacturing Process Improvement
- Quality Management Systems
- Product Design and New Product Launches
- Business Strategies, Marketing and Management
- Human Resource Management
- Information Technology
- Environmental and Energy Assessments and Improvements
- Technology Commercialization
- Supply Chain Management

Offices in Cape Girardeau, Kansas
City, Park Hills, Rolla, Springfield
and St. Louis

MISSOURISUMMITS.COM

Contact information:

Missouri Enterprise

(800) 956-2682

info@missourienterprise.org

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Brian Clevinger

Managing Director

Prolog Ventures

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Angel & Venture Funding

- Angel Funding
 - Arch Angels
 - Centennial Investors
 - Mid-America Angels
- Venture Capital
 - Prolog
 - Rivervest
 - Oakwood

Andrea F. Sellers

Partner

Stinson Morrison Hecker LLP,
Kansas City, MO

Innovation and Intellectual Property

- To obtain meaningful protection at a reasonable cost:
 - Develop an IP strategy
 - Revisit the strategy regularly
 - Revise the strategy when needed

Commercialization of University Innovations

- Understand the technology
 - Stage of development
 - Opportunities for further development
 - Patent position
- Assess competitors' patent positions

Developing an IP Strategy

- Assess the value of patent protection
 - Market position
 - Basis for funding
 - Source of licensing revenue
- Decide what to protect, how and where
 - Patent filings and maintenance
 - Trade secret protection/defensive publications
 - Strategic foreign markets

Paul Dale

Chief of Surgical Oncology
University of Missouri-Columbia
School of Medicine and Ellis
Fischel Cancer Center

MU Biodesign and Innovation Collaboration is the Key

Program Sponsors:

Department of Surgery

Co-director: Paul Dale, MD

College of Engineering

Co-director: Gregg Scheller

Missouri Technology Corporation

Program Coordinator:

Megan Jahnsen

Administrative Assistant

Whitney Hays

Website

www.MUBIODESIGN.com

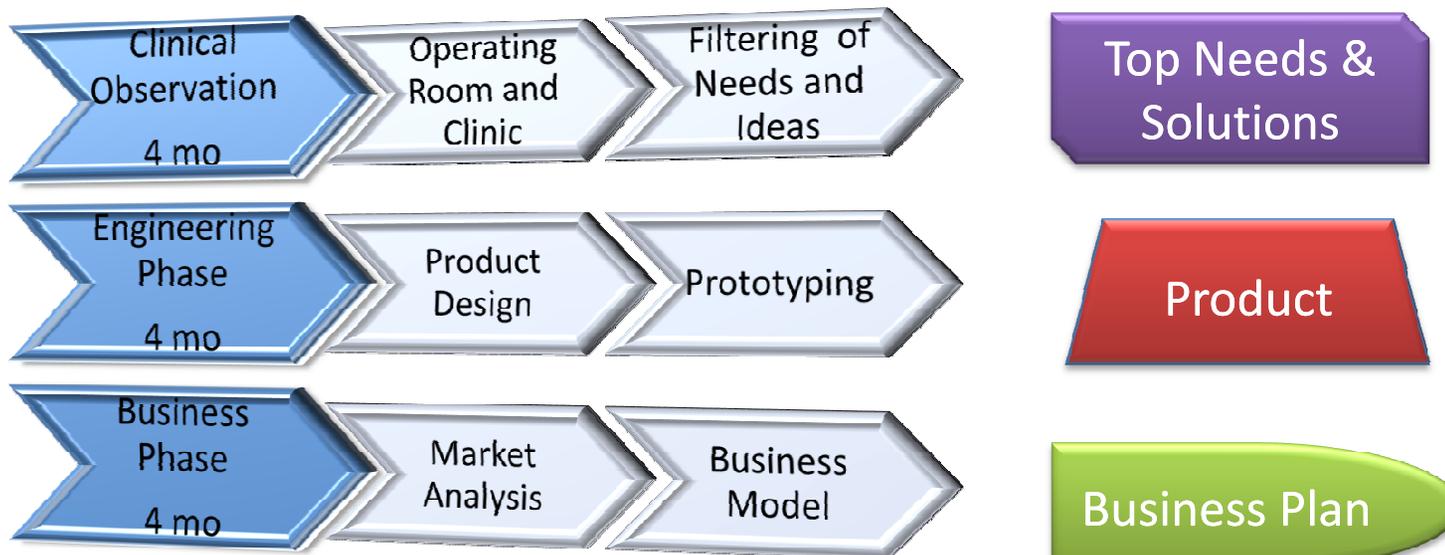


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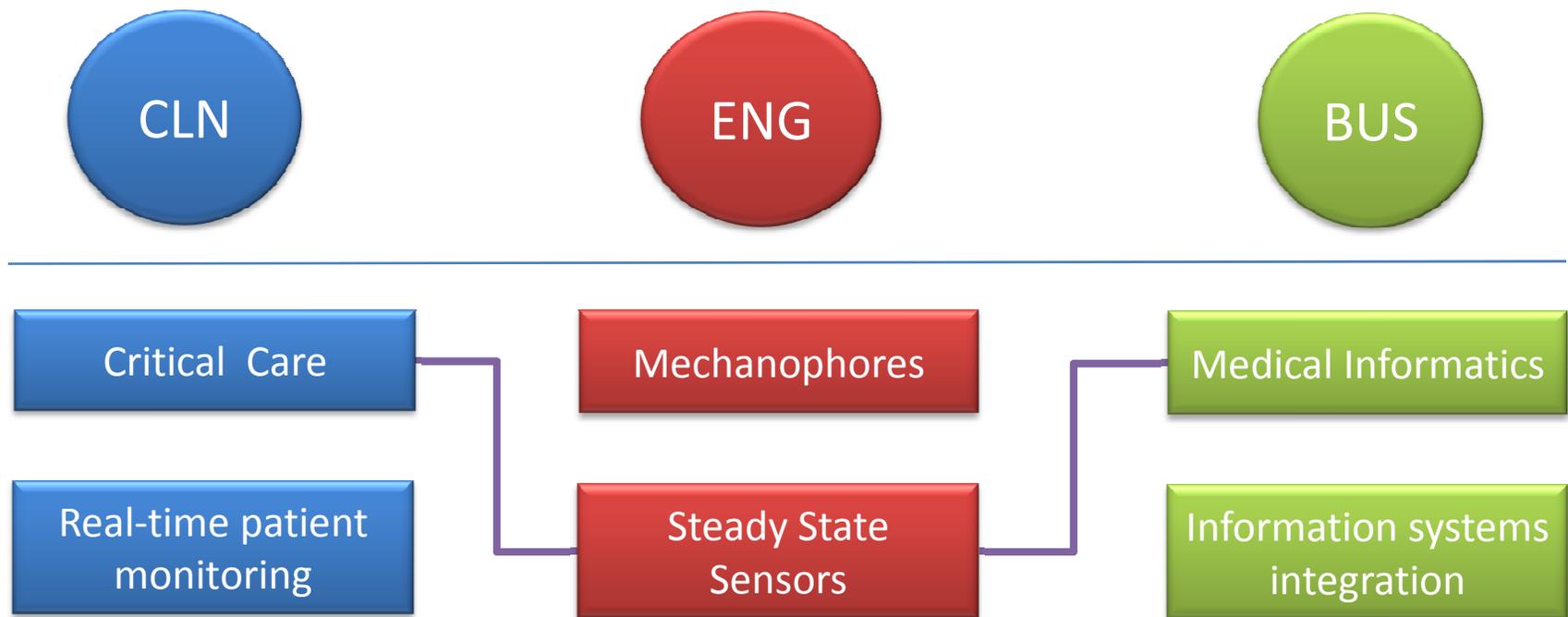
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MU Biodesign and Innovation Fellowship

- Education of Idea to Market
- First group of fellows 2007
- 3 Person Fellowship Team Selection Process
 - Physician-Surgical Resident, Medical Resident
 - Engineer-M.S. or higher
 - Business Professional-MBA



Facilitate Open Sharing of Ideas



Output of MUBIP Fellowship

- >400 CLINICAL NEEDS IDENTIFIED
- 18 Invention Disclosures
 - 1/8 of all FY09 Columbia campus disclosures
- 2 Provisional Patents Filed
- Prototype Animal Testing
- Founding of Limited Liability Company
 - SBIR application submitted
- Potential License to Industry
 - Laparoscopic Suction Device
- Sponsored Research Agreement
 - Discussion with A Medical Device Company

MUBIP STRENGTHS AND CHALLENGES

- Fosters Interdisciplinary Research at Faculty Level
 - Screening of Circulating Cancer Cells
- Proximity Promotes Collaboration
 - Schools of Medicine, Engineering, Business, Law and Veterinary Medicine and large tertiary hospital all on 1 campus
- Assists in Undergraduate Capstone Course
 - Mechanical and Biological Engineering
- “Super” Second Year Fellow
 - Focused on Commercialization and Product Development
- Challenges
 - Sustainable Funding
 - “Valley of Death” for Early Stage Projects

Kevin Sweeney

Chair, Life Sciences Practice Unit

Polsinelli Shughart P.C.

“Begin With The End In Mind”

Proactive Strategic Planning for Successful Life Science Commercialization Ventures

- Habit # 2 of the Seven Habits of Highly Effective People, by Stephen R. Covey

Key Challenge

- Scientists: In love with their technology, but don't have a clue how to make a product out of it.
- Product Development Experts: Understand the market opportunity, but don't understand the hurdles in scaling from lab to volume production models
- VC's: Understand the financial model but have misconceptions about the research variables that may impact milestone achievement
- Lawyers: Well

Solution?

- “Begin with the End in Mind” from Day 1
- Identify Goals of Each Party in the Partnership
- Evaluate key drivers of value
- Evaluate key obstacles to success
- Proactive Strategic Planning - Elements

Proactive Strategic Plan – Business Model

- Identify the Core Science
- Identify the Product/Service Opportunity
- Define the Product Development Process
- Plan the Marketing and Product Launch
- Develop the Management Plan
- Identify the Exit Plan

Proactive Strategic Plan

- IP and Tech Transfer Plan
- Regulatory Process
- Risk Management
- Public Policy Issues
- Facilities and Real Estate
- Employment Issues
- Tax and Capital Structure
- Host and Strategic Relations

Proactive Strategic Plan – Expect the Unexpected

- “You Don’t Know What You Don’t Know”
- Avoid:
 - Pitfalls (unanticipated external issues)
 - Pratfalls (unanticipated internal issues)
 - The “Head in the Sand” Syndrome:
 - Avoid Talking About the Inevitable and It May Go Away

Examples Of Interactive Dependence

- Timing of Exit (pre-clinical, during clinical, post revenue, etc) may depend on:
 - Length of regulatory approval process
 - Availability and cost of capital
- Need for Strategic Partnerships may depend on:
 - Availability of Internal Expertise
 - Limited Number of Possible Strategic Purchasers
- VC “Pre-Money” Valuation may depend on:
 - Strength of IP Portfolio
 - Timing of Anticipated Exit

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