Innovating Innovation

Best Practices for Improving Your Return on Innovation
We help tech professionals become innovation leaders who translate tech ideas and IP into customer solutions that generate economic and social value.
Our graduates become strategic innovation leaders who learn to explore and exploit technologies to generate profitable growth in both the short and long-term.

Our graduates learn to anticipate, effectively manage and understand the challenges of the complex, highly regulated global medical device industry as they lead innovation projects from idea to commercial impact within the healthcare ecosystem.

Our graduates gain the skills to anticipate, prevent and manage a broad spectrum of security risks, including aging infrastructure, cybersecurity, natural disasters, critical networks and systems, and threats of terrorism, disease, food safety and crime.

For more info: tli.umn.edu
Question 1

How confident are you that your current innovation practices will enable continued success over the next 5+ years?

A. Very confident
B. Confident
C. Cautiously optimistic
D. Concerned—what got us here won’t get us there.
Are we unique?

A 2014 PwC/Booz survey of 500 innovation leaders from small and large companies around the world found:

- 76% of respondents say their companies are better/much better innovators today than they were a decade ago

  AND

- Only 27% feel they have mastered the elements they will need for innovation success over the next 10 years.

How important is an increase in R&D spending to your future success?

A. Critical  
B. Important  
C. Somewhat important  
D. Not our issue
More spending is not necessarily better.

More than a decade of research (PwC/Booz Global Innovation 1000 study) and 10,000 statistical analyses show no statistically significant relationship between R&D spending and sustained financial performance, either in terms of total R&D dollars or R&D as a percentage of revenue.

The only exception is when companies’ R&D spending falls into the bottom decile compared with peers’ spending, which does compromise performance.

Sustained financial performance in terms of sales growth, gross profit, market cap or shareholder return.

If R&D spending is not the answer, what is?

What matters is coherence and organization capabilities: the particular combination of talent, knowledge, team structures, tools, & processes that successful companies develop and deploy to enable their innovation efforts.

Top quartile performers achieve coherence and competitive advantage by:

- Closely aligning innovation strategy with business strategy
- Focusing primarily on one of three key innovation strategies
- Mastering a set of core capabilities to execute their chosen strategy


www.strategyand.pwc.com
Technology drivers leverage their technology to drive both breakthrough and incremental change, often seeking to solve unarticulated needs of customers via new technology.

Need seekers actively and directly engage current and potential customers to shape new products and services based on superior end-user understanding and strive to be first to market.

Market readers watch their customers and competitors carefully, focusing largely on creating value through incremental change and capitalizing on proven market trends.

What are key capabilities for each strategy?


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What are core capabilities across all strategies?

Top quartile performers across all three strategies share a set of critical innovation capabilities:

- Understanding emerging technologies
- Broad customer and consumer insights to inform ideation
- Engagement with customers during development
- Product platform management
- Pilot-user selection and controlled roll outs


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3 key practices for mastering these capabilities

- Understanding emerging technologies
- Broad customer and consumer insights to inform ideation
- Engagement with customers during development
- Product platform management
- Pilot-user selection and controlled roll outs
Let’s learn from some best practice leaders.

First up:

Dr. Andrew Ouderkirk
Corporate Scientist at 3M
Member, U.S. National Academy of Engineering (2005)
Sr. Fellow, TLI

10 mins presentation + 5 mins Q&A
Generating $B Businesses
Through
People – Ideas – Process

Andrew Ouderkirk
3M Company – Corporate Scientist
University of Minnesota – Senior Fellow
Idea

Not Done
Blue Ocean
Disruptive Innovation
Architectural Innovation
Breakthrough Innovation
Incremental Innovation
Exploratory Innovation
Sustaining Innovation
Efficiency Innovation

Existing
Emerging

Articulated
Unarticulated

Market (need)

Already Done

Technology (solution)
Ideas

- Open Platform
- Closed Platform
- Hidden Sustaining
- Hyped Sustaining

Market (need)

Unarticulated

Articulated

Existing

Emerging

Technology (solution)
Ideas

- Unarticulated
  - Market (need)
  - Articulated
  - Technology (solution)

- Open Platform
- Closed Platform
- Hidden Sustaining
- Hyped Sustaining

- Value of Innovation $1B+/yr.
- Innovation Management Complex
  - $ Small
  - Simple

Technological Leadership Institute
### Core Characteristics

<table>
<thead>
<tr>
<th>T-Shaped Professionals</th>
<th>Attributes</th>
<th>Attitudes</th>
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</tr>
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<tbody>
<tr>
<td>Learning</td>
<td>Depth</td>
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<td>Synthesis</td>
<td>Critical Thinking</td>
<td>Abstract Thinking</td>
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<td>Outcome Orientation</td>
<td>Personal</td>
<td>Organizational</td>
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</tbody>
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Analysis of 20 top-patent filing tech company's inventor’s innovativeness

Credits: Kelly Ingham, Rob Kieschke, Kirk Froggatt, Rachel A., Andy Ouderkirk
Architecting a Platform

<table>
<thead>
<tr>
<th>Articles</th>
<th>Processes</th>
<th>Customer Insights</th>
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<tbody>
<tr>
<td>Moats and Opportunities</td>
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<td>System Thinking</td>
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</table>

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<thead>
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<th>New Business Architecting</th>
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<tr>
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<td>Processes</td>
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<th>Market Platform Product Platform (MPPP)</th>
<th>Channels</th>
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<td>Core Processes</td>
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<td>Market Platform</td>
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<th>Product Platform</th>
<th>Product Sub Group</th>
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<th>Mid Term (2-3 yr)</th>
<th>Long Term (3-5 yr)</th>
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Developing the Multilayer Optical Film Platform

3 Candidates for an Open Platform → 15% time → Tech Forum → 2 Genesis Grants
Let’s learn from some best practice leaders.

Next up:

Danny Gelfman
Principal Solutions Designer, Healthcare Innovation Team at Medtronic

• 14 years experience in medical product & device design
• Formerly at redgroup Design and Beyond Design

10 mins presentation + 5 mins Q&A
“Design thinking is a **HUMAN-CENTERED** approach to innovation that draws from the designer's toolkit to integrate the needs of **PEOPLE,** with the possibilities of **TECHNOLOGY,** and the requirements for **BUSINESS SUCCESS.**”

—Tim Brown, President and CEO of IDEO
Design Thinking

“Design thinking is a HUMAN-CENTERED approach to innovation that draws from the designer's toolkit to integrate the needs of PEOPLE, with the possibilities of TECHNOLOGY, and the requirements for BUSINESS SUCCESS.”

— Tim Brown, President and CEO of IDEO

Design DOING

- Empathize
- Define
- Ideate
- Prototype
- Test
Design DOING

Empathize
- Widen your perspective
  - Observe
  - Talk to people
  - Document

Define
- Define a problem or need
  - Bundle Observations
  - Make Inferences
  - Delineate a clear POV

Ideate
- Broadly explore conceptual solution
  - Brainstorm
  - Be Visual
  - Create a Framework

Prototype
- Generate tools to communicate your idea
  - Do not wait
  - Build to learn
  - Focus on communication

Test
- Understand impact
  - Be Objective
  - Assess the Experience
  - Learn and make decisions

Understanding Options & Making Decisions

TRUST THE PROCESS
Design thinking: Case study

Current StO2 monitor and sensor

• $150 disposable sensor
• 3-day use
• Single patient
• Continuous monitor

Spot Check Hypotheses

• Lower Cost per patient
• At least partially Reusable
• Quick measurements
• Single Measurements
**Preliminary field ethnography**

**Research goals**

Begin to understand the needs of the ED Triage in a StO₂ Spot Check Device to serve as a barometer for what would be acceptable practice for further research.

**Research methodology**

- Visited 2 local hospitals for a total of 6 end users.
- Video recorded for documentation when available.
- Written and audio notes when needed
- Observation worksheet captured notes and diagrams
- Discussion worksheet covered important topics

**Areas Of Observation**

- ED environment
- Triage process
- Patient Interaction
- Similar Products
- 650
- StO₂ spot check
Concept generation

A. Monitor & Sensor w/ removable clip
B. Monitor and Sensor clip
C. All in one Wand w/ detachable pad
D. All in one Cuff
E. Sensor unit and Base
Research Goals
• Further insight of user needs of spot check
• continuous vs. spot check
• environment of use
• Desirable features
• End user description

Area of Observation
• Form
• User Interface
• Handling
• Personnel
• Locations

Field observations & discussions

- Detroit  5 users
- New York  5 users
- Atlanta  11 users
Concept refinement

PDA with clip

All-in-one Wand

A

B
Boardroom testing

- **Questionnaires** were reviewed and all the quantitative data compiled.
- **Video** of the directed discussion was compiled based on category.
- Information was used to generate **recommendations and down-select** to a single concept moving forward.

“I need to look at the number for at least 30 before I trust it”

“The wand is so simple and quick”
Final configuration
Lessons learned

• Prototyping is used to investigate problems, not always to posit solutions

• Understanding your customer/user needs requires never-ending investigation

• Making sense of customer/user interactions is your responsibility and requires a leap of faith.
Guides

dschool.stanford.edu/use-our-methods/

www.ideo.com/work/human-centered-design-toolkit/

BOOKS

Innovation Process-
The Art of Innovation, by Tom Kelley
Change by Design, Tim Brown
Design Thinking, by Nigel Cross

Design In Your Company-
The Designful Company, by Marty Neumeier
The Design of Business by Roger Martin

Managing Innovation- Weird Ideas That Work, by Robert Sutton

Empathy- Wired to Care, by Dev Patnaik

Sketching- Rapid Viz, by Kurt Hanks and Larry Belliston

Space- Make Space by Scott Witthoft and Scott Doorley
Let’s learn from some best practice leaders.

Next up:

Kunjorn Chambundabongse ("KC")
VP Innovation and R&D at Optum/UnitedHealth Group

• Formerly Solutions Engineer and Director, Ingenix Consulting at UHC
• Technology Director at Outsell LLC

Architecting  Design Thinking  Lean Startup

10 mins presentation + 5 mins Q&A
UnitedHealth Group: Long-Standing Business Model

- UnitedHealthcare
- Complementary but Distinct Business Platforms
- OPTUM

Health Benefits

Health Services

Foundational Competencies

- Clinical Insight
- Technology
- Data & Information

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Revenue growth

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<th>Year</th>
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<tr>
<td>2011</td>
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<tr>
<td>2012</td>
<td>$111</td>
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<td>2014</td>
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<td>2015</td>
<td>$157</td>
</tr>
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<td>2016</td>
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3 horizons of growth

- **Horizon 1**: Extend and defend core businesses
  - **Execution Matters**: Scale and efficiency

- **Horizon 2**: Build emerging businesses
  - **Speed Matters**: Positional advantage

- **Horizon 3**: Create viable options
  - **Discovery Matters**: Creating optionality

Now - 1-2 Years
3-5 Years
Lean startup
High organizational cost

Biz Functions
- Marketing
- Sales
- Legal
- Finance
- Engineering
- Design
- Operations
- Human Capital
- Clinical

Not designed for Search
Low organizational cost

**Small Team**
- Marketing
- Sales
- Engineering
- Design
- Operations
- Clinical

**Framework**

**Small Team**
- Marketing
- Sales
- Engineering
- Design
- Operations
- Clinical

**Framework**

**Biz Functions**
- Marketing
- Sales
- Legal
- Finance
- Engineering
- Design
- Operations
- Human Capital
- Clinical

Search

Execution
Portfolio Management

Small Team
- Marketing
- Sales
- Engineering
- Design
- Operations
- Clinical

Small Team
- Marketing
- Sales
- Engineering
- Design
- Operations
- Clinical

Frameworks
- Structure
- Metrics
- Shared Resources

Tools
- Training
- Documentation

Coaching

Structure + governance
What resonates for you?

7 minute “insight-to-action” table groups discussions

• What are 1-2 ideas or insights that seem especially relevant for you?
• Where/how might you put these ideas into practice to improve your own ROI?
• What questions do you have for our best practice leaders?
Thank you for joining us tonight!

Let the informal networking continue....

For more info: tli.umn.edu

To comment on tonight’s event: #UMNTLI or #techspeaking

Special Thanks!