Taking Inventions to Market
Innovation and Entrepreneurship

Ted Selker, PhD.

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Taking Inventions to Market
Innovation and Entrepreneurship

• Invention
  – Long-felt, un-met need
  – Creating a process ...
    • from processes known in the art

• Innovation
  – Contextually responsible solutions

• Entrepreneurship
  – Creating a new solution and way of delivering it?
  – Technology, Market, Team, Finance
TrackPoint
Towards a Behavioral Motor Match

differentiator - adding to something people wanted

- Placement
- Eye Tracking
- Wiggly Fingers
- Going Fast
- Movement Feedback
- Gripiness
- Mouse Lockout

Select and Type

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Invention:
things are made from other things by us

- Invention
  - Things are made of other things by us
  - Imagine it exist
  - Make skit with props
    - Savor the problems
  - Replace props with solution
  - Gradually make the props more sophisticated
even real products have props

- Sizing and valuing solutions
  - New or enlarged market?
  - Route to market?
Invention is a performance

*Personal credo*

- Inventing is like an action movie
  - Grab for a branch, it brakes, land in the water and swim...
  - The way it doesn’t moves you forward
- Audition Stories and roles
  - The way it doesn’t moves you forward
    - Think of many possible ways out ... keep thinking about it
- All the world is a stage.
  - Slowly replace pantomime for real sets and actors
- Have things & ideas compete, not people
- Pretend things are the way you want them
- Create it from anything
  - All tools are made of other tools
  - Prototype here and now
Adventure Movies

• Have a problem
  • Your ambition
  • Someone or things intrusion on your space

• Have a bunch of possible ways out
  • keep thinking about it

• Try the best one –or- set up many possible solutions (parallel and serial)
  • Each time you try you see something else
  • The way it doesn’t work sometimes tells you so much
Physical change

Robotic clothes folder???

• Because Don Norman told me to?
• 21 Axis robot when folding is easy?
  – Before the loader
• $800 robot for homes?
Pill compounding machine

- New product
  - Customized pill
- Hundreds of parts
- Why?
  - A friend asked me to
Some steps in creating a product

- Problem identified
- Invention
- Design
- White papers
- Mock-ups
- User testing
- Users
- Prototyping
- Manufacturing
- Splash
- Differentiability
- Sales
- Returns
- Market acceptance
- Market size
- Warranty problems
- Recall problems
- Profitability
- Extensibility
- Follow-ons
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1 axis robot that creates tomographic ultrasonic limb images

- No expertise scans can be performed by doctors and even coaches on field
  - Varicose veins, Achilles, plantar fasciitis, epicondylitis, carpal tunnel
- Cheaper than MRI, CT scan, Xray
PeepAlert
Positive pressure assurance supporting Helmet respiratory support

- A bag over head: what could go wrong?
- Dr Patel & Dr Kress: 30+ % fewer uses of Ventilators for COPD
- Motivated by money from Philanthropist & ready customers
  - team to shelved their data acquisition product

- EMC, Health Canada, Drs, companies, funders, ...
  - Design, mechanicals hardware, firmware, sensors, effectors, tooling, testing...
- Next: EUA, shipping, support, follow-ons

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Entrepreneurial Training: What is enough

- Engineering and business training?
- New Business problem definition
- New technology business definition
- New technology business evaluation

- Design libraries,
- Staging capability,
- Parallel creation,
- Prototype now,
- Aesthetics,
- Function,
- Evaluation,
- Team creation
- Deal making
- Partner building, management
- Financial negotiation/accounting
- Logistics
- Supply chain management
- Follow-ons
- Spotting disruptions
- ...
Liquidity

Customers

Technology

Prototypes

Plan

Techniques

Vision

Noncompetitive
Bad size or timing
Bad team fit
...

People
Evaluation
Mentoring

$
Typical early stage investment alternatives...

- Personal or family investment
  - Test? Relationship
- Consultancy
  - Test? Short term return
- Organic growth
  - Test? Contiguous short term success
- Angel investment
  - Test? “Comfort”
- Venture fund investment
  - Test? A turnkey company
- Competitions
  - Test? A completed success
- Funded university research
  - Test? Area of tenure for faculty
- Government investments in small businesses
  - Test? Well written in a popular area
- Internal company spinoff investment
  - Test? Last ditch for sunk cost
- Business development incubator
  - Test? Manageable project
## Technology investment models: implications for success

<table>
<thead>
<tr>
<th>Entrepreneurial path</th>
<th>differentiation factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment test</strong></td>
<td><strong>Tests market early</strong></td>
</tr>
<tr>
<td>Personal investment</td>
<td>Relationship</td>
</tr>
<tr>
<td>Angel Investment</td>
<td>Comfort</td>
</tr>
<tr>
<td>Venture capital investment</td>
<td>Turnkey business</td>
</tr>
<tr>
<td>Competitions</td>
<td>No funding</td>
</tr>
<tr>
<td>Government funding</td>
<td>Grant writing</td>
</tr>
<tr>
<td>Company spin-offs</td>
<td>Salvage sunk costs</td>
</tr>
<tr>
<td>Business incubator</td>
<td>Guru bandwidth</td>
</tr>
<tr>
<td>funded academic research</td>
<td>Tenure track</td>
</tr>
<tr>
<td>Organic growth</td>
<td>Continuous profit</td>
</tr>
<tr>
<td>Consultants</td>
<td>Short-term profit</td>
</tr>
<tr>
<td>The Generator Fund</td>
<td>Internal competition</td>
</tr>
</tbody>
</table>

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Generator Fund scenario for accelerated development

Liquidity!

↑

Competition 3
Business

↑

Competition 2
Deep analysis

↑

Competition 1
Market & Team

↑

Generate Prototypes
Market area & Feasibly

Wrong timed or sized:
- IP sale or license

Team wrong fit:
- Other competitions?
- Funder hires?

Non-competitive approaches

People

Mentoring

Evaluation

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Solution

Professional management of early stage technology business development

• World class inventors & entrepreneurs
  – Create many demonstrated solutions, four per year go to competitions:

• Series of financed and mentored competitions
  – $5k challenge 5-week, crowd-sourced (dozens of teams):
    – Qualified attendees of publicized talks at Stanford, etc. Sign contract
    – Weekly meetings with Generator to get $1000 with sufficient progress
    – 5th week presentations to move on to $50k challenge
    – Criteria: market & team testing
  – $50k challenge 3-month, ~8 teams of 1-month winners:
    – Criteria: feature set, schedule, channel, team proposals
  – <$500k challenge 12-month, ~3 teams of 3-month winners:
    – Criteria: beta, customer, complete company
  – One successful company:
    - Profitable, acquirable, VC fundable, or returns IP to Generator
Investors?

3 investors

• Large technology companies that perceive market threat
  – World class innovation/invention
  – Access to top deals
  – Access to top people
  – Handling innovators dilemma (need to change and frustrate)

Nortel, threatening to be lead investor, others asking for more information

• VCs want to reduce risk of investment
  – Funds that want better deals
  – Funds that want to be part of disruptive business changes
  – 300 million and above funds sweat spot

3 currently asking for more information
Technology will help Expectations

- Coordination?
- Planning?
- more control over Shared -VS- personal
- more control over Voyeur -VS- participant
Considerate Conference Calling System

http://www.c3.chat
Ted.Selker@gmail.com

- Intelligent Collaboration support: AI agents give awareness of demonstrated role and ways to improve it (patent pending)
  - Subtle turn taking & distraction reduction support
  - Viz important statements and of who spoke and
  - Messaging, shared screen, Recording of special moments
  - UX to start and manage with sophisticated meetings in minimum knowledge and steps
- Integrated meeting support with sophisticated simple control – typical action with 1/5 the clicks of Zoom
Eliminates many problems described in literature*

- Participants did not follow effective meeting behaviors
- People could not be heard
- Too much extraneous noise
- Difficulty to identify who was speaking
- Not everyone could view visual materials
- Could not tell who was in meeting and who left


* Demonstrated statistically in IRB reviewed studies in MIT and CMU theses
Research results incorporated into C3


Considerate Supervisor: An Audio-only Facilitator for Multiparty Conference Calls, Rahul Rajan, Cliff Chen, Ted Selker. CHI 2012 Works In Progress, Austin, TX, May 10, 2012


Prototypes and designs for more. Meeting style supported with no extra effort in meeting configuration. UX Focus on each other and content. Closed caption/ translation notes. Distinguishing participants. Venues & events
# New Way Of Viewing Online Collaboration

<table>
<thead>
<tr>
<th></th>
<th>C3</th>
<th>C³vOWEL</th>
<th>Zoom</th>
<th>Teams</th>
<th>Meet</th>
<th>GoToMeeting</th>
<th>BlueJeans</th>
<th>Connect</th>
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</thead>
<tbody>
<tr>
<td>AI awareness of your noise</td>
<td>Yes</td>
<td>No</td>
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<td>No</td>
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<tr>
<td>AI dominance awareness</td>
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<tr>
<td>AI Awareness of speaker</td>
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<tr>
<td>Timeline of contributions</td>
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<td>Dynamic schedule and vis</td>
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<tr>
<td>Emails of contributions</td>
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<tr>
<td>Collaboration focus</td>
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Research & Development: What is enough?

- Techniques create technologies through scenarios
- Technologies create products through dissemination
- Products create companies through remuneration
Make it happen

- Prototype
- IP management (Patent, Copywrite, Trademark, publication, relationships with others IP)
- Evaluation
- Webpage
- Analysis
- Kickstarter
- Business evaluation (customers, dissemination, procurement, valuation...)
- Product qualification
- Product refinement (features, quality, manufacturing, fulfillment, helpline, returns...)
- Business (C corp, insurance, real estate, personnel, management, legal, healthcare...)
- Doing it...
To make a company...

- Ideas, Structure, constraints, adjacencies, tradeoffs, parallel testing, iterative testing, fantasy, alternatives, competing ideas, areas of knowledge, moch-up, prototype, IP management (Patent, Copy write, Trademark, publication, relationships with others IP), Evaluation, webpage, Analysis, Kickstarter, Business evaluation (customers, dissemination, procurement, valuation...), Product qualification, Product refinement (features, quality, manufacturability, fulfillment needs, learnability, Business (Ccorp, insurance, real estate, personnel, management, legal, healthcare, Doing it, staging capability, Design Libraries, Aesthetics, Function, Evaluation, Team, Deal making Partner building, management, Logistics, supply chain, follow-ons, disruptions, whitepapers, getting experience, market acceptance, market size, impedance,
Tested scenario based design