Start, Tumble and Succeed

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Entrepreneurship for Scientists and Engineers

ICTP, Trieste
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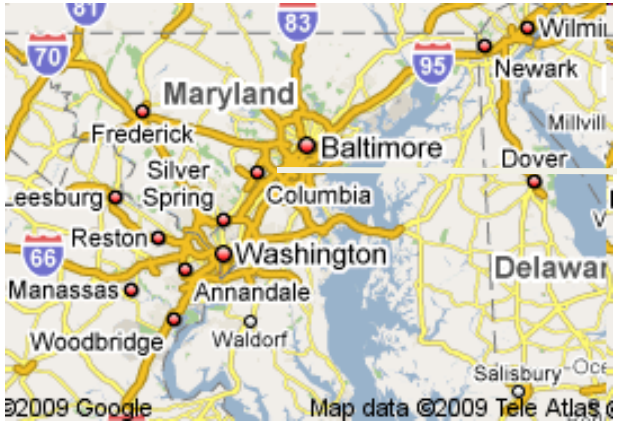


Outline

Getting Started

Major decisions to be made

Consequences of your decisions

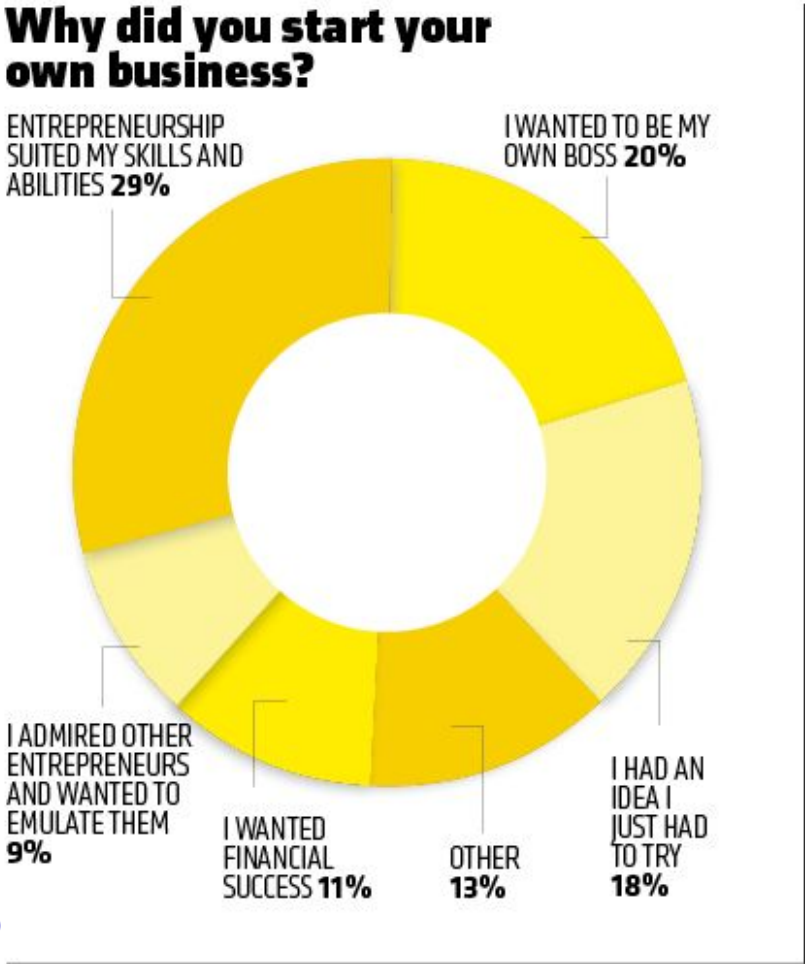
Embracing Failures

Examples of unsuccessful products

Lessons learned

Conclusions

Starting your business



(September 2013 issue of Inc. magazine)

Getting Started

Where do you start?

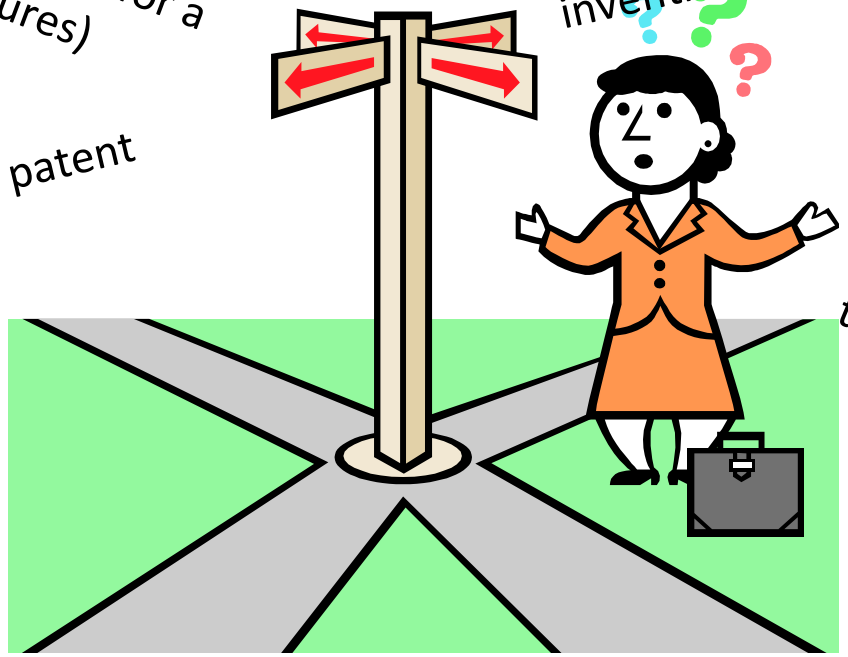
- **Do you have an invention (product idea) or is there an invention by someone else that you would like to commercialize (legally!)?**
- **Do you see an opportunity?**
- **Is entrepreneurship for me?**
  - **Willingness to wear different hats?**
- **Have you understood the risks (personal financial status and business financial status?**
- **Talk to a number of other entrepreneurs**

Other considerations?

Scenarios with an Invention

Institution looks for a potential buyer of technology before applying for a patent (Invention Disclosures)

Institution not interested in the invention



Institution applies for a patent

Institution gives the invention ownership to the inventor

Career Decisions

Take leave of absence and start the company

Quit the job and become a full time entrepreneur

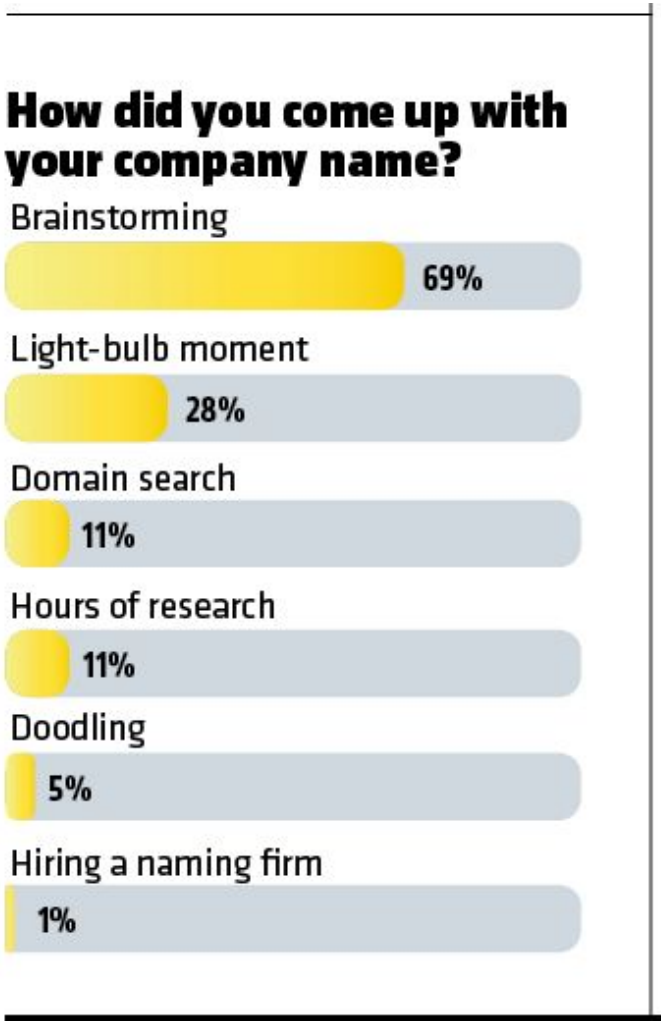
Be a technical advisor to the company that develops the product

Where to set up the company?

Renting an office near-by (University Incubator, Science Park)

Home office
(many famous companies started at homes and in garages)

Company Name



(September 2013 issue of Inc. magazine)

Starting Expenses

Common starting expenses for the first 90 days

- Advertising
- beginning inventory and equipment
- cash, deposits, separate bank account
- Office/lab fixtures and equipment, installation, telephone, utilities
- insurance payments
- rentals and lease
- licenses and permits
- professional fees
- remodeling, sign boards, office supplies, unanticipated expenses (10%)
- Salaries if you hire people

Other ideas of starting expenses?

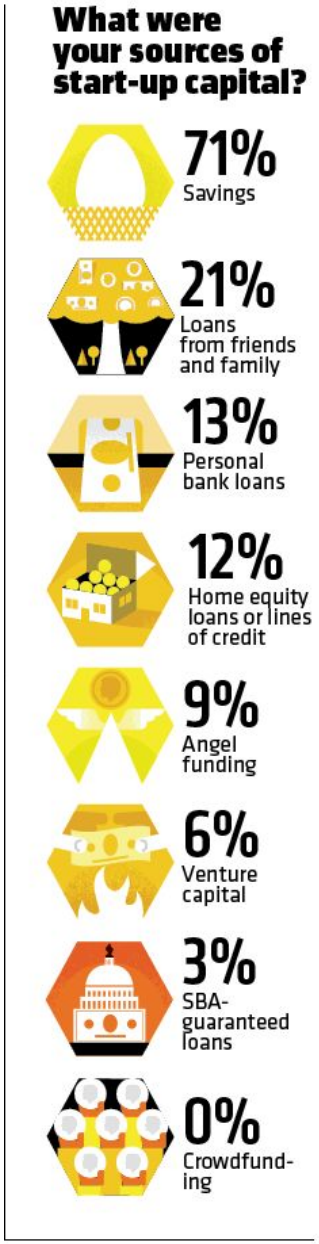
Start-up funds

Use personal funds and take the risk/benefits – quick method

Grants, Loans, Angel Investors
- slow, loss of equity

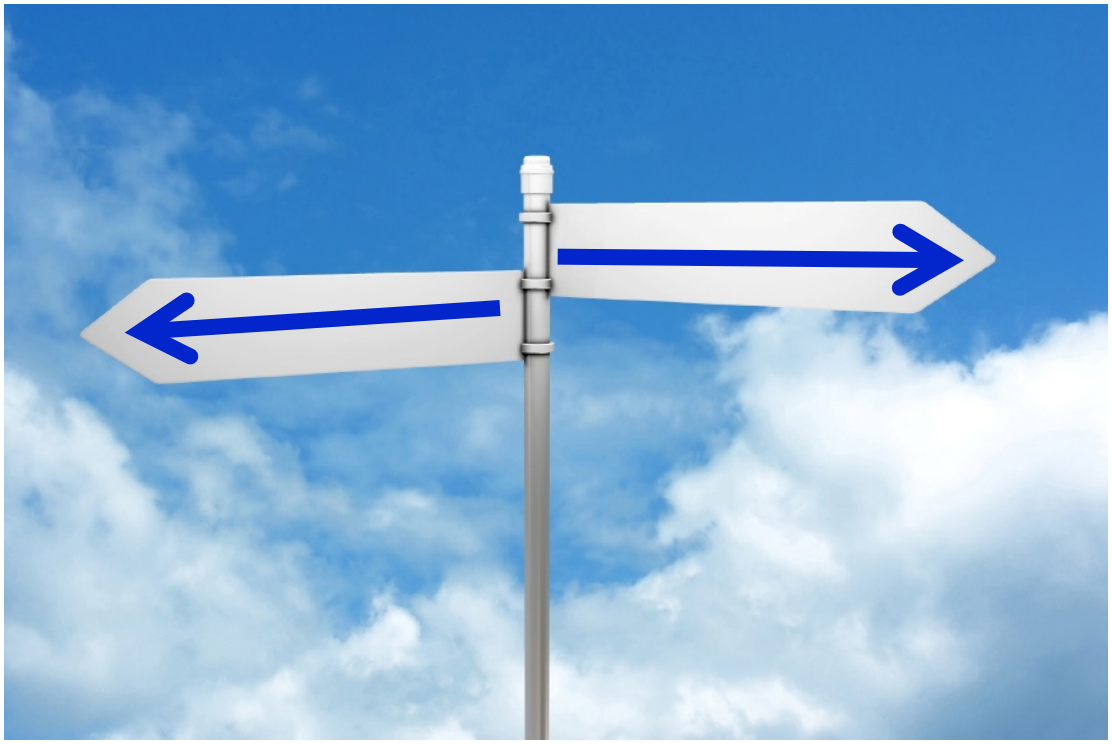
BIG ISSUE – you always need more money than you think!

(September 2013 issue of Inc. magazine)



Teaming decision

Develop product in-house



Outsource some work Or team up for joint development of a product

Getting Things Done

Do it all by yourself

Hire consultants to do the job

IP: To Patent or Not to Patent

Patent
- Involves time and money

No patent but keep the knowledge confidential (trade secret) - at least for a while until you have money to patent

Where do you manufacture?

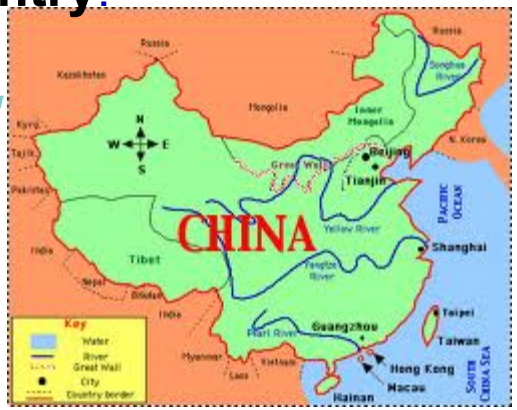
Local Manufacturing

- **Easy communication lines, quick changes in manufacturing designs, product volumes, etc.**
- **Retains and develops local skills, creates jobs for many.**

Other low-cost places/countries

- **Communication lines difficult, slow responses – good only for large volume manufacturing due to low cost**
- **IP protection difficult.**
- **Overall cost of travel and loss of time due to mistakes can be high and no longer cost effective.**
- **Manufacturing jobs moved to another country.**

Home country



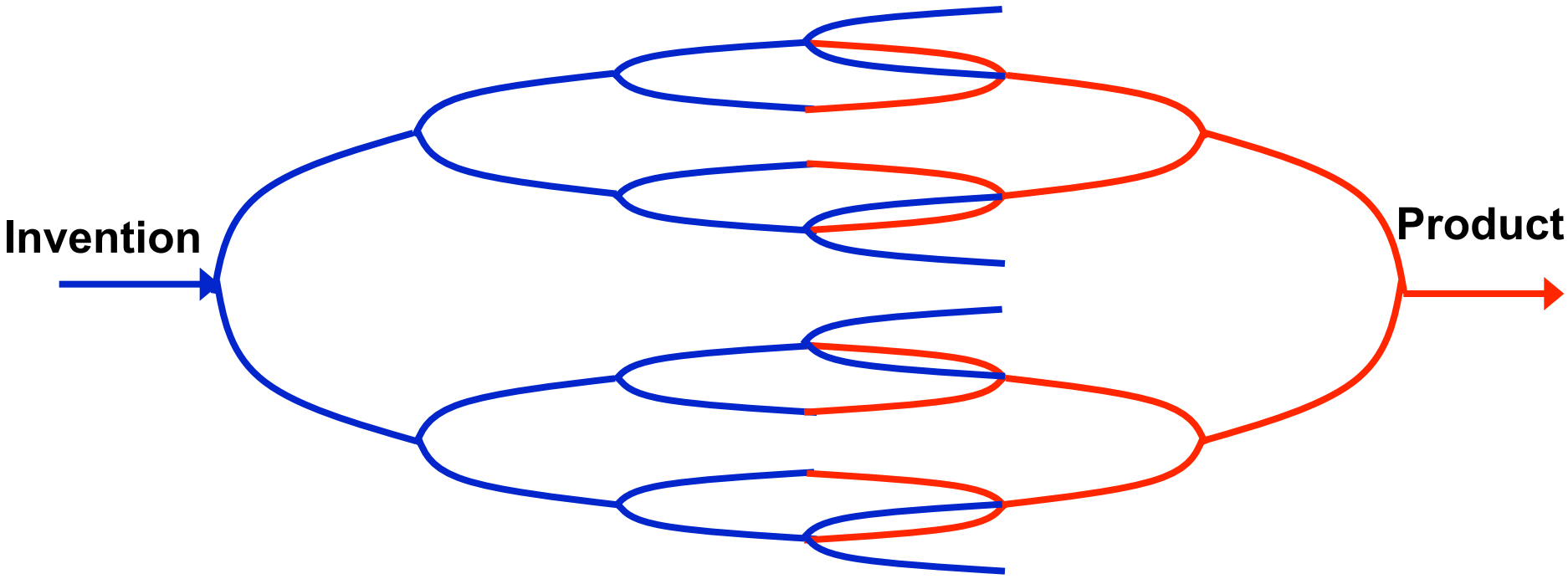
Exit Strategy

Sell off the company

- **Hold on**
- **expand**
- **go public**
- **pass it on to family!**

This is just a microcosm of the number of decisions that have to be made!

The convergence



Adaptable but focused on final product

The First Year

The ups of Year One ...

WE SNAGGED THE RIGHTS TO DR. SEUSS

"A former colleague helped me land a meeting with Audrey Geisel of Doctor Seuss Enterprises. I arrived with a fully functioning mobile version of *How the Grinch Stole Christmas*. When Geisel asked why a kid would like our app, I just slid my iPhone across the table. It was the pitch of my life."

MICHEL KRIPALANI
OCEANHOUSE MEDIA, *NO. 114*

OUR PERSISTENCE FINALLY PAID OFF

"We called Dick's Sporting Goods almost every day for a year until we got a voice on the other line. They took a chance and hired us to do a $6,000 marketing campaign. It cost us $18,000, so we lost a bunch of money, but it was the start of a great relationship."

CHRIS MASON, BRANDING BRAND, *NO. 332*

... and the downs

WE STRUGGLED TO GET EMPLOYEE VISAS

"Because we were a new firm with a limited financial track record, we had a hard time getting H-1B visa approvals for some employees. The U.S. consulates overseas didn't think our applications were genuine! Several of our software development projects were delayed as a result."

SURESH KUMAR, GREEN EARTH
NO. 319

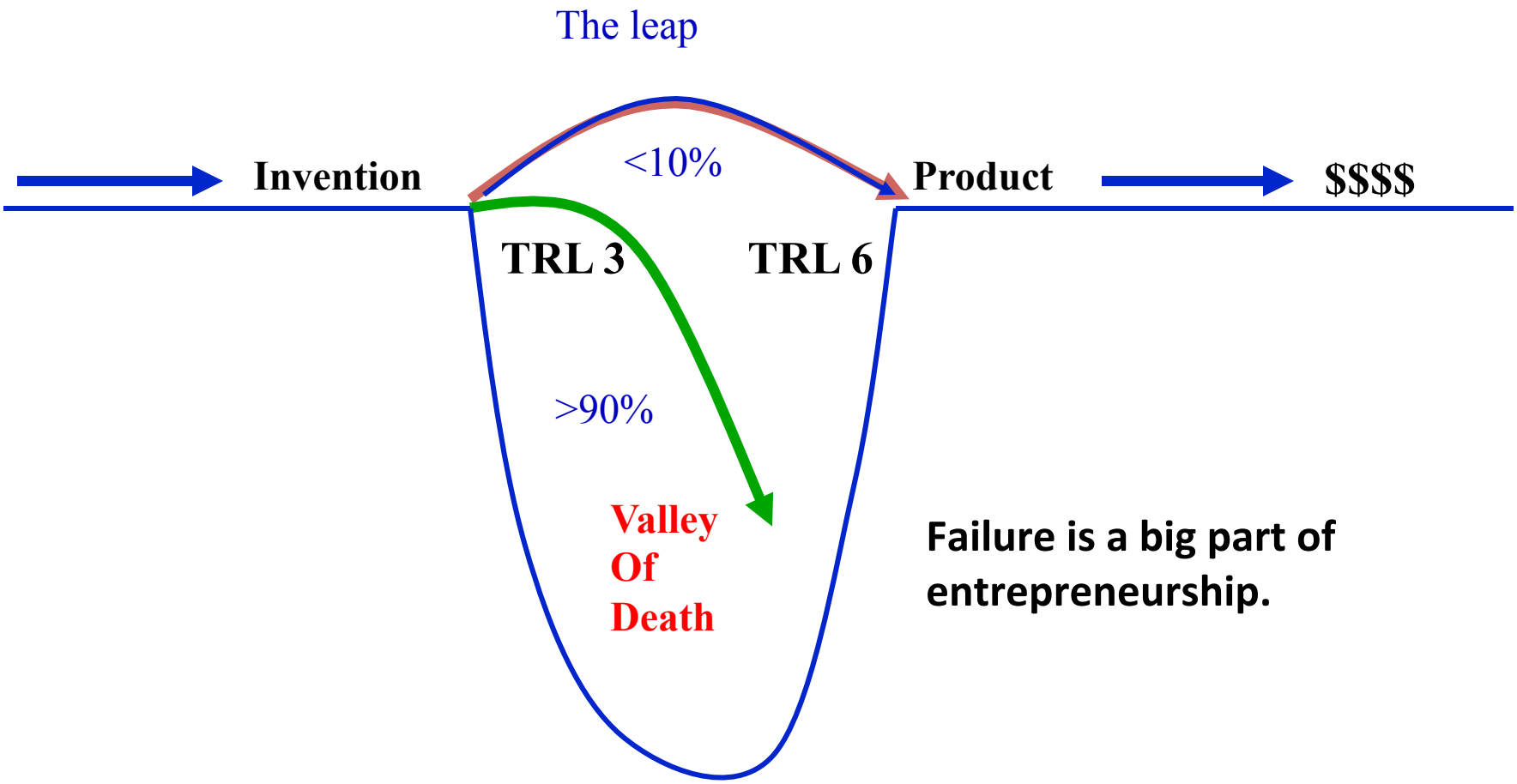
WE GOT SUED!

"Our biggest competitor asserted that they had invented selling wine over the phone and sued our company and eight of our employees. After two years, we finally settled out of court for $115,000, which I'm still paying off two years later. I think of it as the cost of doing business."

JEFF STEVENSON, VINOPRO
NO. 236

(September 2013 issue of Inc. magazine)

Embracing Failures



Failure is a big part of entrepreneurship.

Embracing Failures

Mistakes and failures: part of being an entrepreneur

"Many people dream of success. To me, success can only be achieved through repeated failure and introspection. In fact, success represents the 1 percent of your work, which results only from the 99 percent that is called failure"

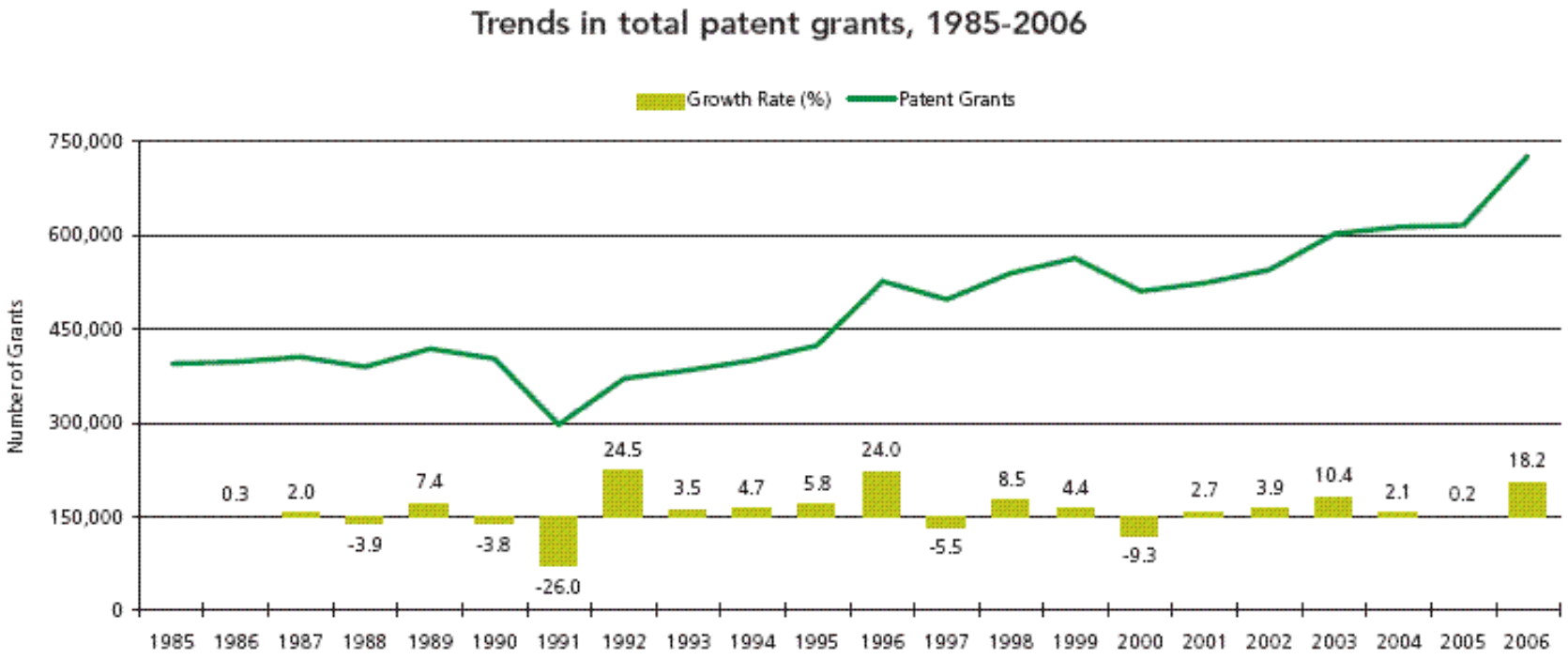
Soichiro Honda, Founder of Honda Motors

Success is fueled by failures!

No Risk – No Failure – No Entrepreneur!

Fail Fast to minimize financial losses

Some Interesting Numbers



www.wipo.org

Learning From Mistakes

Examples of unsuccessful ventures (long list!)

DNA Testing Device - too complex and long development time

Pipe corrosion sensor (Issues with IP)

Successful Products

www.electrawatch.com

http://www.deltafaucet.com/smarttechnology/h2okinetic-technology.html

http://www.bowlesfluidics.com/products/advanced/case-study-toro-irrigation-irrigation-nozzles-precision-spray-nozzles/

http://www.bowlesfluidics.com/products/advanced/case-study-evapco-cooling-nozzle-uniform-flow-distribution/

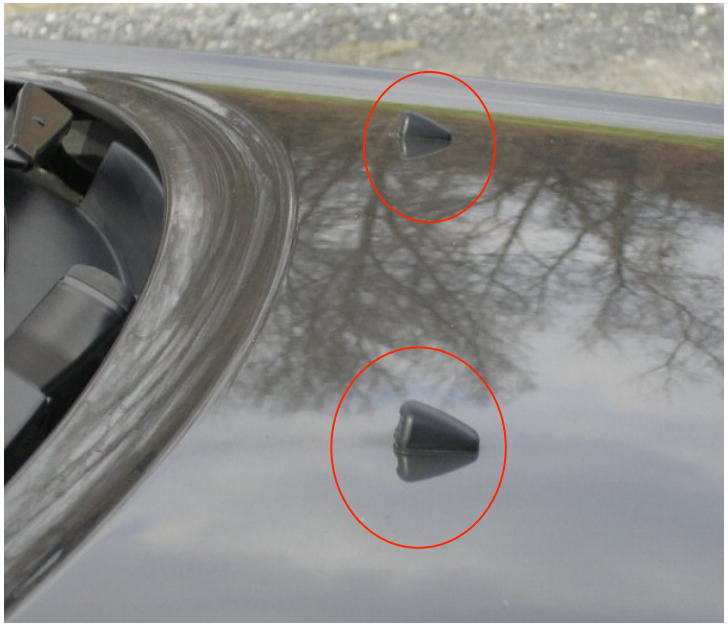
http://www.bowlesfluidics.com/products/advanced/case-study-sundance-spa-custom-spa-nozzles/

http://www.bowlesfluidics.com/products/advanced/system-integration/

Successful Product

Coating Health Monitor
http://www.electrawatch.com/

Successful Product



Windshield Washer Nozzle (Bowles Fluidics)

Hopefully Successful Product

Atrial Fibrillation Monitor – Melys AFSM Ltd

Lessons Learned

Congratulations!

•You learned something

• Earned something too!

Move on! You learned something for other opportunities

Hard Work and Rewards

(September 2013 issue of Inc. magazine)

Where are the Opportunities?

Everywhere - if we seek them!

Examples

https://www.engineeringforchange.org/topic/view/water

Some Interesting Numbers

(US Govt Report)

Intellectual property supports 40 million US jobs

35 percent of the GDP - more than $5 trillion -- comes from IP-intensive industries

IP-intensive industries account for about $775 billion worth of U.S. exports, or about 61 percent of total U.S. goods exports

Wages in IP-intensive industries are 42 percent higher on average than wages in other industries

Knowledge Economy

Summary

Getting Started

Major decisions with limited information

Mistakes are part of the process

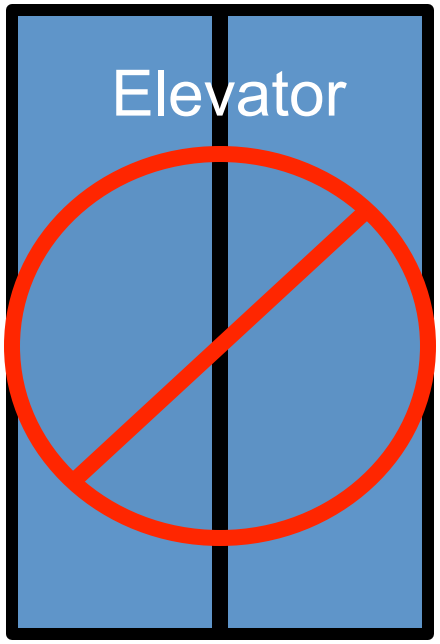
Embracing Failures – "Failure is not Fatal"

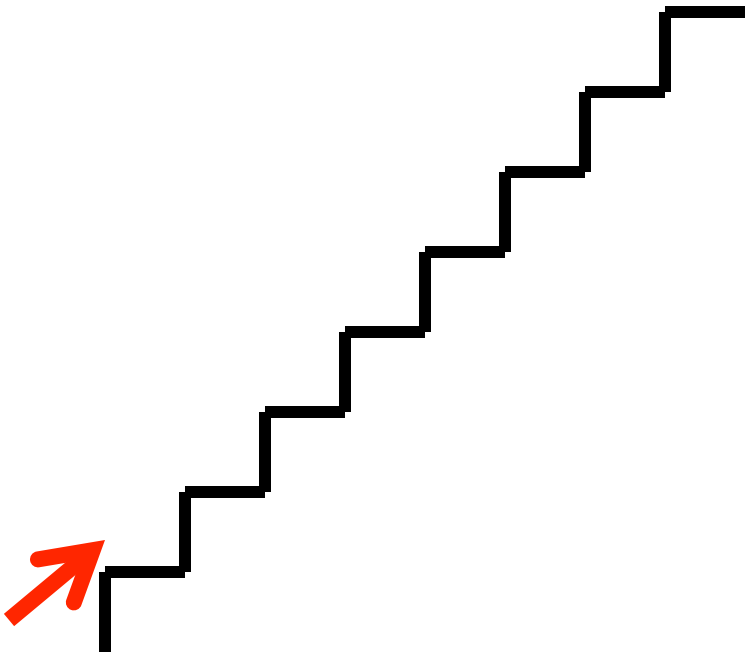
Examples of unsuccessful products

"No regrets but only lessons learned" – useful for next venture!

AND

The key to success





THANK YOU
and
GOODLUCK!

Some numbers to note

2 products are launched out of every 3,000 ideas.

1 out of 100 patented products make money. Why?

useless products - http://www.freepatentsonline.com/crazy.html

3 to 5 out of 100 inventions succeed commercially

3 out of 10 new products succeed.

Between 11% and 50% of entrepreneurs succeed in starting a firm

Entrepreneurship education and training workshops like the ones you are attending significantly increase the success rates.

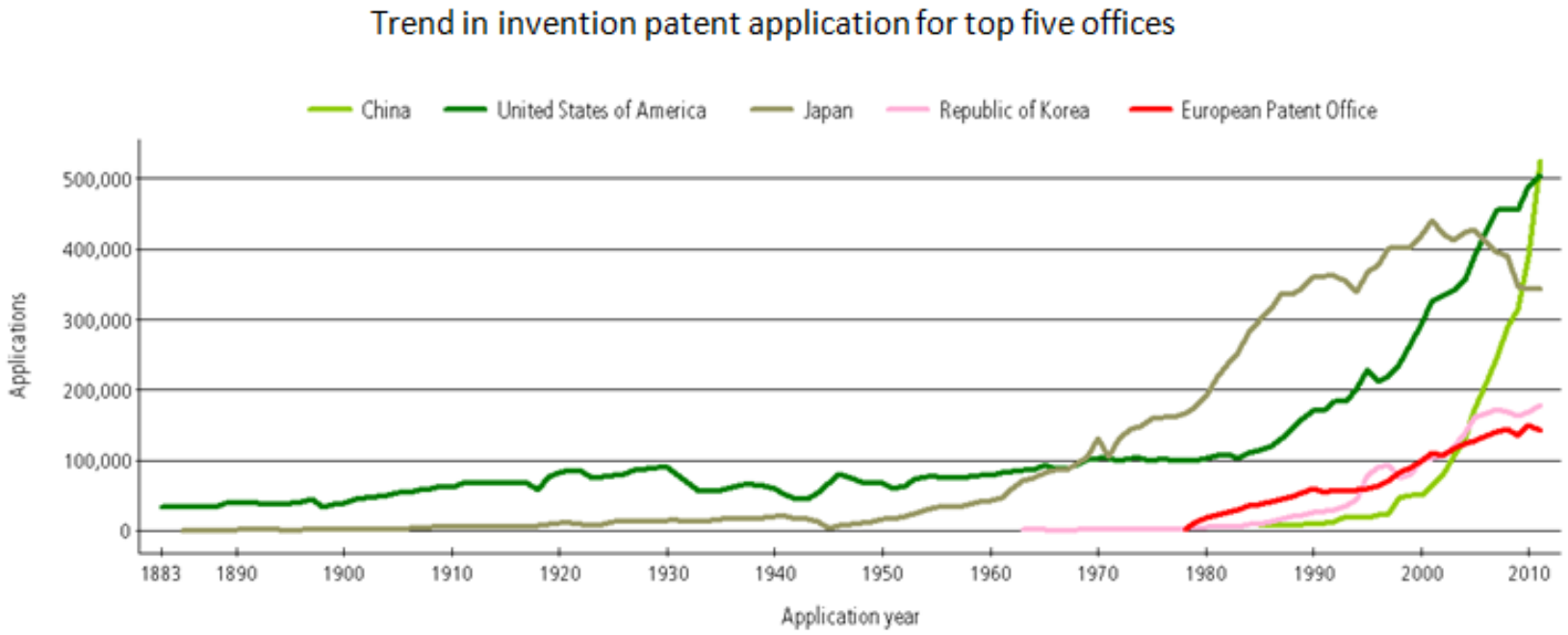
AND, It is OK to fail!

Opportunities

Grand Challenges (National Academy of Engineering, USA)
[http://www.engineeringchallenges.org]

- **Make solar energy economical**
- **Provide energy from fusion**
- **Develop carbon sequestration methods**
- **Manage the nitrogen cycle**
- **Provide access to clean water**
- **Restore and improve urban infrastructure**
- **Advance health informatics**
- **Engineer better medicines**
- **Reverse-engineer the brain**
- **Prevent nuclear terror**
- **Secure cyberspace**
- **Enhance virtual reality**
- **Advance personalized learning**
- **Engineer the tools of scientific discovery**

Trends in Patent Applications



Source: WIPO Statistics Database, October 2012