Opening PhD+ 2017

"*TO BE* USEFUL **AND** *TO HAVE* A MARKET"

Marco Bicocchi Pichi | Pisa,19th April 2017

@MBP1961

PRESENTATION 3Ps | PURPOSE PROCESS PRODUCT

- **PURPOSE :** Stimulate thought of the PHD+ class about creating a startup business and the reasons for his possible success or failure. Creating a startup in Italy.

- **PROCESS :** Slide presentation.

- **PRODUCT :** PHD+ class has reached awareness of the «*and*» challenges: *Vision & Execution; Technology & Market; Desirable & Profitable; etc.*

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Capturing opportunities

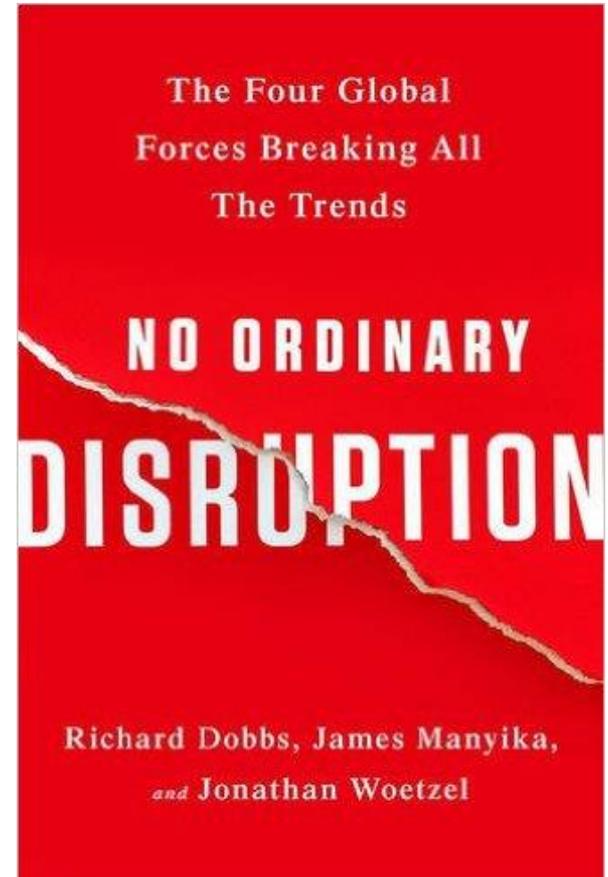**From 1990 to 2015 world GDP almost doubled**

INCREDIBLE OPPORTUNITIES

During the **25 years from 1990 to 2015**, the **total value of production of goods and services** (at constant 2005 prices) has almost **doubled**, from US $ 31.1 billion to an estimated US $ 59.7 billion. With a growth of 38% of the population over the same period, the average per capita production has **increased by over a third** (+ 39%) Source: UNCTAD stat. 2016

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No *ordinary* disruption

"**Compared with the *Industrial Revolution*,** we estimate that **this CHANGE is happening TEN TIMES FASTER** and **at 300 TIMES THE SCALE**, *or roughly* **3.000 TIMES THE IMPACT**".

'**Technology**–from the printing press to the steam engine and the Internet–has always been a great force in overturning the status quo. **The difference today** is the sheer **ubiquity of the technology** in our lives and the **speed of the change**.'
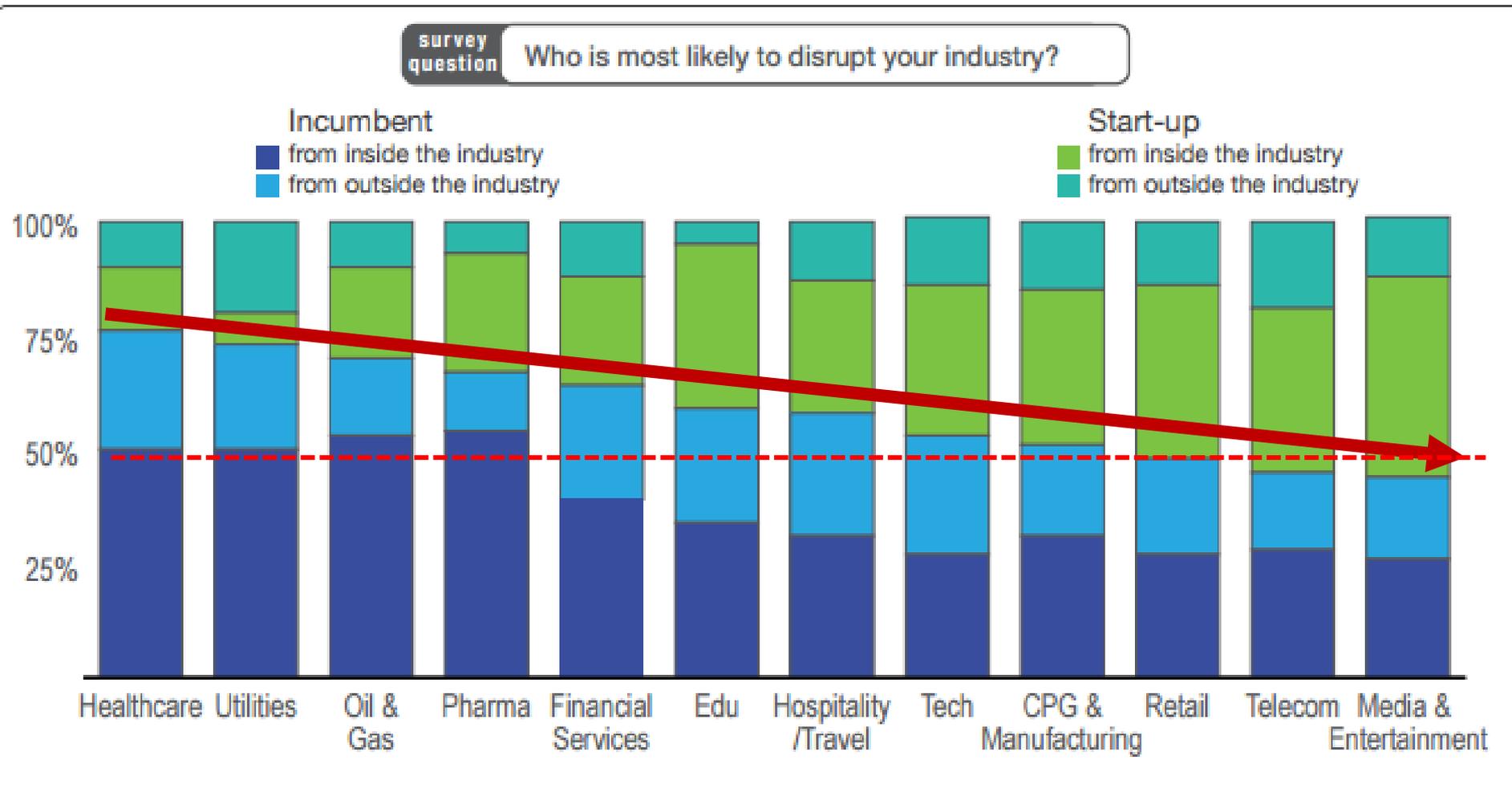
Source : McKinsey

The Four Global
Forces Breaking All
The Trends

NO ORDINARY
DISRUPTION

Richard Dobbs, James Manyika,
and Jonathan Woetzel

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"DIGITAL DISRUPTION" WILL KICK OUT OF THE GAME **40 %** OF THE "INCUMBENTS" **IN THE NEXT 5 YEARS**

**Source: Global Center for Digital Business Transformation (DBT Center) | 2015 |
Full report: http://www.imd.org/uupload/IMD.WebSite/DBT/Digital_Vortex_06182015.pdf**

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From 15% up to 50% of the cases it is a Startup that is expected to disrupt the industry

survey question Who is most likely to disrupt your industry?

Incumbent
- from inside the industry
- from outside the industry

Start-up
- from inside the industry
- from outside the industry

Categories: Healthcare, Utilities, Oil & Gas, Pharma, Financial Services, Edu, Hospitality/Travel, Tech, CPG & Manufacturing, Retail, Telecom, Media & Entertainment

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Thinking "and"

We are living a revolutionary time

«It was the **best of times**, it was the **worst of times**, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way … »

Charles Dickens, «A tale of two cities» (Publ. 1859, set in London and Paris before and during the French Revolution 1775-1792)

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"It is in Apple's DNA that **TECHNOLOGY ALONE IS NOT ENOUGH**—it's technology **married with liberal arts**, **married with the humanities**, that yields us the results that make our heart sing."

Steve Jobs

INTERSECTION OF TECHNOLOGY *AND* THE HUMANITIES
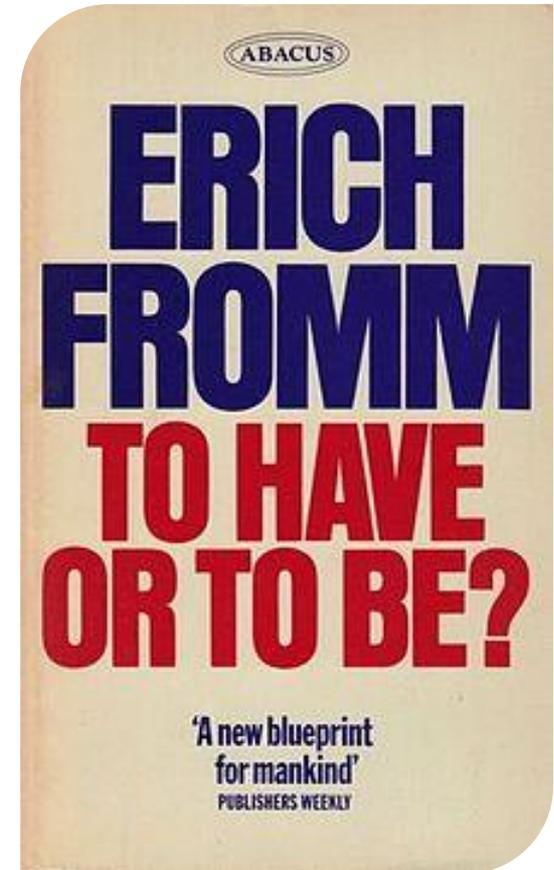
To Have **or** To Be

To Have or to Be? is a **1976** book by psychoanalyst Erich Fromm, in which he differentiates between having and being.

Fromm mentions how modern society has become materialistic and prefers "having" to "being".

1976 -> 1986 -> 1996 -> 2006 -> **2016 ->**

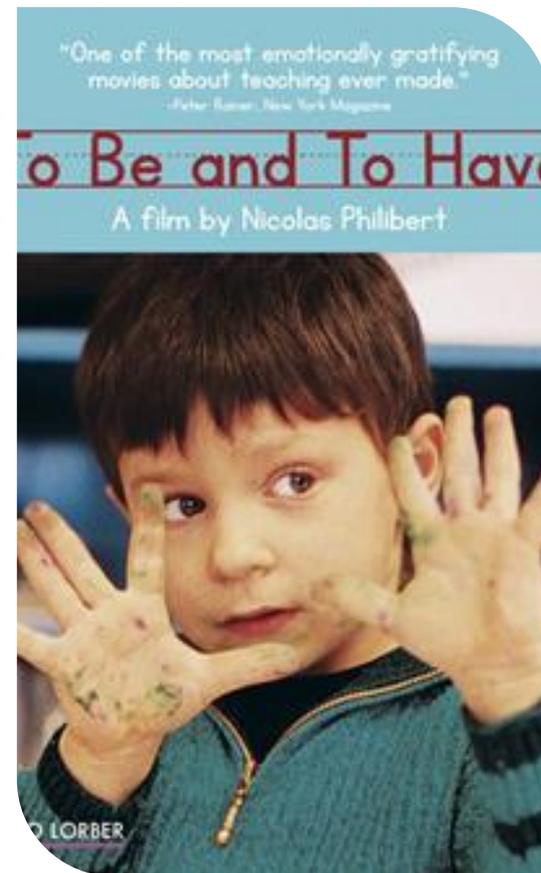**Things change and the world is more complex than "or" …**

To Be **and** To Have

To Be and To Have (Être et avoir) is a 2002 French documentary film directed by Nicolas Philibert about a small rural school. The school has one small class of mixed ages (from four to twelve years), with a dedicated teacher.

TO BE and TO HAVE are the first (auxiliary) verbs you learn at school. You need to learn both; to be and to have.

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Solving a problem

A clear distinction

A PROBLEM WITH A CLEAR NEED

RECEIVE A CURE FOR CANCER

LISTENING TO MUSIC WHILE JOGGING OUTDOOR

A PROBLEM ONE MAY NOT EVEN THINK HE HAS

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Problem / Solution ; *know what you know before you start doing*

Don't Know	*How can you know the solution if you don't know the problem?* *TECHNOLOGY IN SEARCH OF A PROBLEM*	**P**: Just an emerging need /change **S**: don't know the solution. **Lean Startup: DISCOVERY MATTERS**
PROBLEM	**P**: Customer tells you **S**: Customers / regulations / norms dictate it **Waterfall: EXECUTION MATTERS**	**P**: Market analysis **S**: non-obvious innovation confers competitive advantage **Agile/scrum: ITERATION MATTERS**
Know	**Know**	**Don't Know**

SOLUTION

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Have you the ambition to attack Big Problems ?

In 2015 **5.9 million children** die before the age of 5 **50%** attributable to **undernourishment**

UNICEF (2015)

9.7 billion people in 2050. This will require a **60% increase** in global food

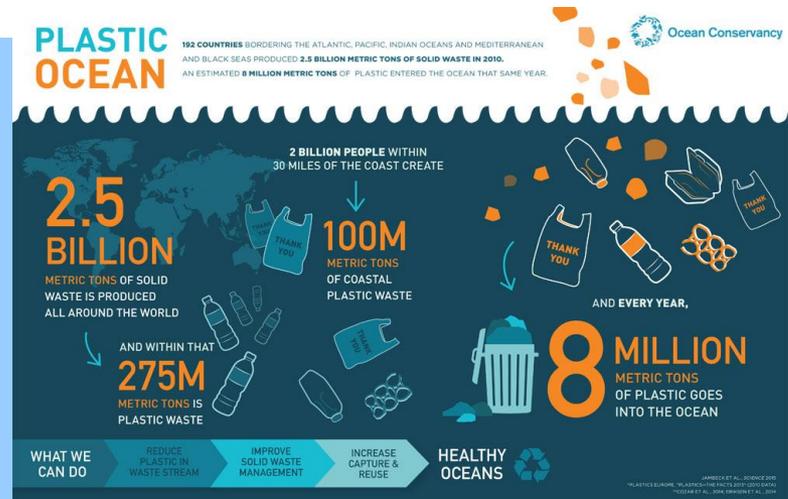**Developing countries** imported **US$112 billion** worth of medicines in 2014

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Solving **World** Big Problems (Capital **B** and capital **P)**

1. Energy
2. Water
3. Food
4. **Environment**
5. Poverty
6. Terrorism & war
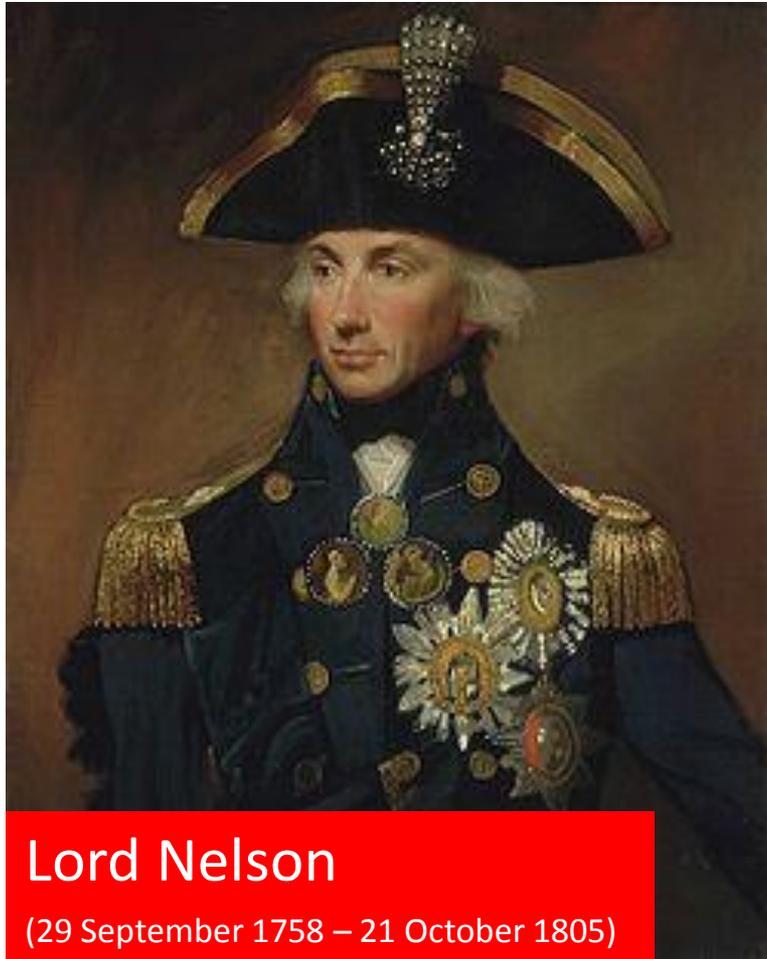7. Disease
8. Education
9. Democracy
10. Population

Top Ten List by Richard Smalley

EXAMPLE: PLASTIC IN THE OCEAN

https://www.theoceancleanup.com/

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How **OLD** must you be to try to solve **B**ig **P**roblems ?

➢ (Lord Nelson) **joined the navy** at the age of **12** years old

➢ **He was given his own ship and made a captain at 20 years old**

Lord Nelson was born in 1758 in Burnham Thopre, Norfolk, the sixth of 11 children. At the age of only 12, he joined the navy as an apprentice working in the lowest naval ranks. However, his aptitude and enthusiasm for the job, saw him rapidly rise through the ranks, until he was given his own ship and made a captain at only 20 years old.

This rapid advancement through the ranks occurred **despite suffering an acute form of sea-sickness** which dogged him throughout his life.

Lord Nelson

(29 September 1758 – 21 October 1805)

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Boyan Slat

Boyan Slat is a Dutch born inventor, entrepreneur and aerospace engineering student of Croatian origin. His father is an artist who currently resides in Istria County, Croatia. Wikipedia

Born: July 27, 1994 (age 22 years), Netherlands

Nationality: Dutch

Organization founded: The Ocean Cleanup

Boyan founded the Ocean Cleanup in 2013 before turning 20 years old

Profiles

Solving **people** big problems (small **b** and small **p**)

The **best inventions** are not **stimulated** by great technical skills or ambition, but **by frustration**

problems seeking solutions

The best inventions are not stimulated by great technical skills or ambition, but by frustration (see this essay entitled "*No User Parts Inside*" on the power of empowered customers). These eleven vexing challenges have frustrated millions of people- find a solution and the world will truly beat a path to your door. But think twice about the answers! Despite many false starts and pretender technologies, no cost effective, practical or acceptable solutions have entered the marketplace. They are extremely tough nuts to crack.
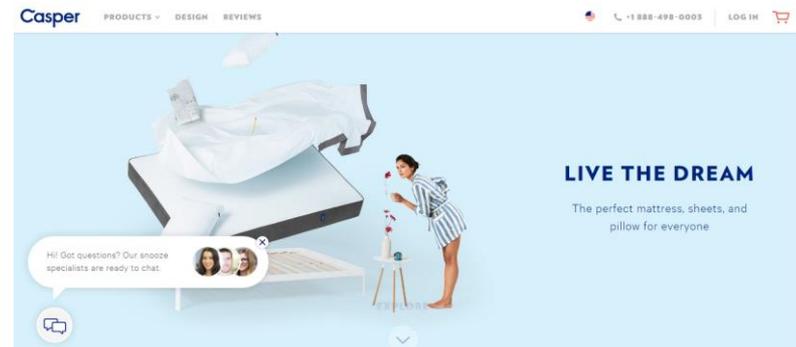
- Invisible Doors- In most homes and apartments, a surprisingly large fraction of each room is lost to a swinging door. The door blocks at least one wall, takes up at least a 3'x3', and never swings the "right" way. The door's path often completely dictates bathroom layouts, and pulling a door towards you, while walking forward, is an unnatural act. A better door could make dorms and apartments significantly more livable. Pocket doors save space, but require enough space in the wall cavity for storage, and some people find them hard to open. Accordion doors jam and frankly are an eyesore. A better door would operate smoothly, take up little space open, block sound when closed, and be aesthetically pleasing. It might even function like a "Dutch door", to hold in (or out) pets and children. Perhaps a minibind descending from the top jamb? Three panels sliding down from a pocket in the header? (Since posted, designboom held a contest on exactly this challenge).
- Improved car visor- Ever drive northwest near twilight? The sun is nearly blinding, and constantly shifts from the front windshield to the side window. Every time you flip the sunvisor, however, it bangs into your forehead or forces you to duck. Hardly a positive safety feature. A better solution might be a tiny set of curtains that can slide left or right, perhaps the same electrochromic material used to darken rear view mirrors, etc.
- Inexpensive, comfortable and durable mattress- Everyone hates mattress stores and mattress salesmen. The prices are stubbornly high for a heavy product which quickly sags and becomes contaminated with mites. Air mattresses are superior, in principle, but comfortable ones remain expensive. How can you rethink the mattress?

Inexpensive, comfortable and durable. The prices are stubbornly high for a heavy product which quickly sags and becomes contaminated with mites. **How can you rethink the MATTRESS?**

https://casper.com/

$55 Million Funding **Mattress** Business
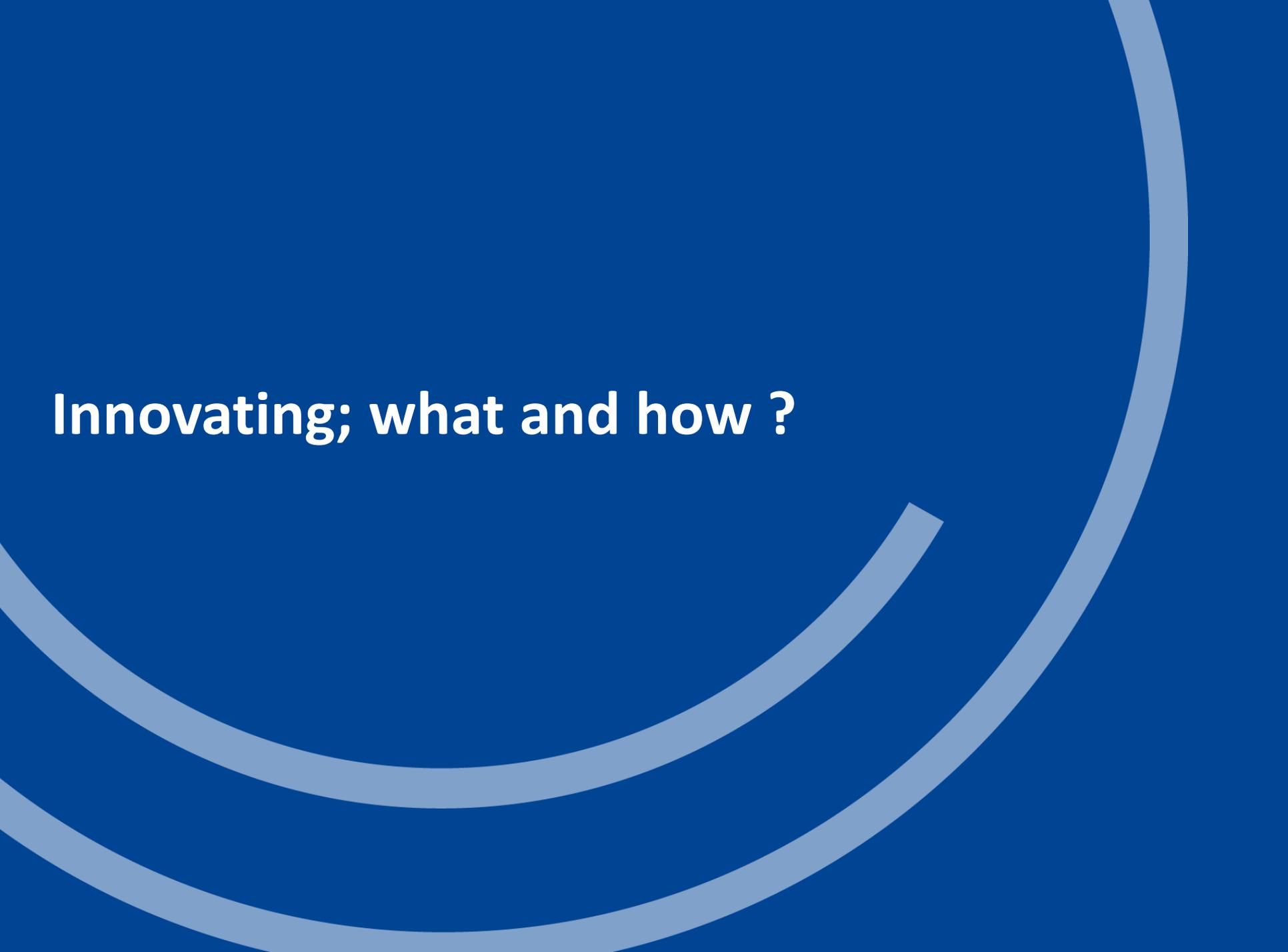
Source:
http://www.genuineideas.com/HallofInventions/problemstosolve.html

Innovating; what and how ?

Design, manufacture and sell … what ?
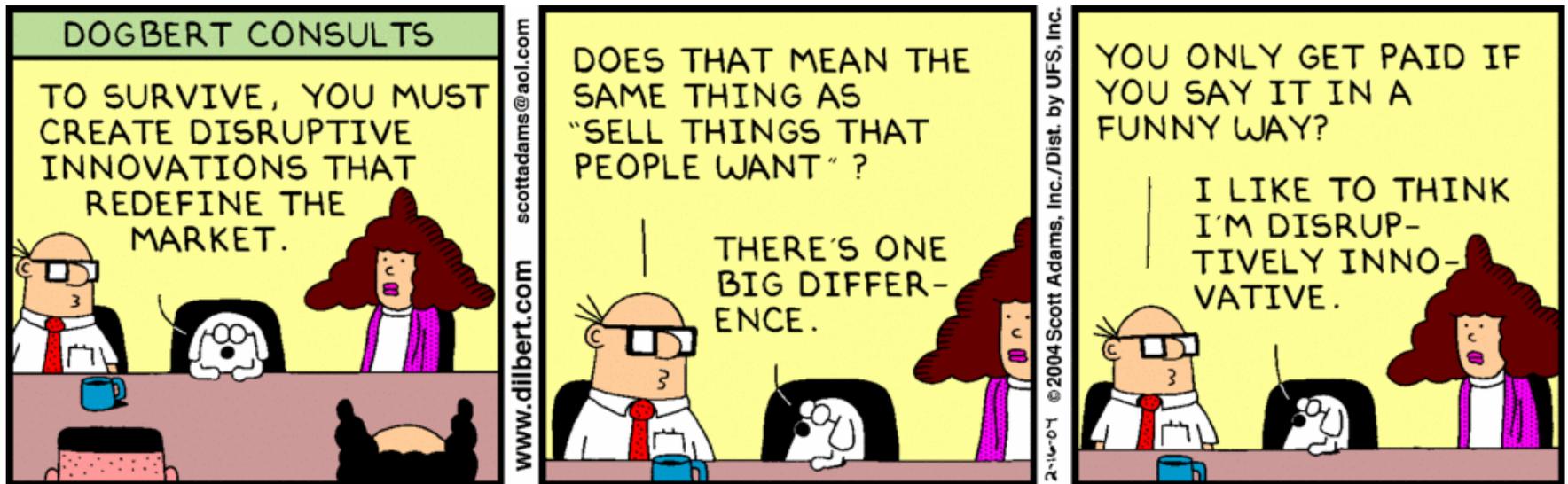
Thomas Edison approach to innovation

"I find out what the world needs. Then, I go ahead and invent it."

Products he developed included: the telegraph, phonograph, the first commercially practical incandescent electric light bulb, alkaline storage batteries, etc.
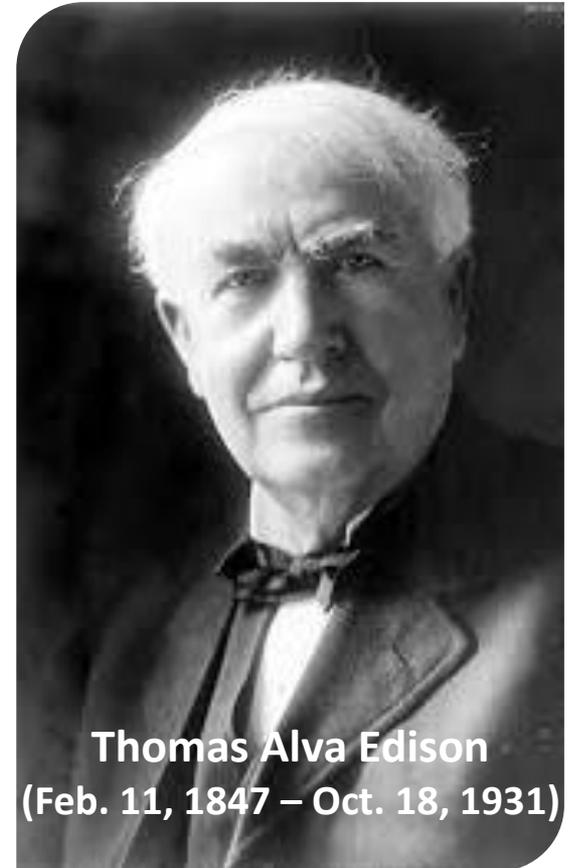
Thomas Alva Edison
(Feb. 11, 1847 – Oct. 18, 1931)

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Not all needs are equal or have similar solutions

A) Find a cure for paediatric cancer (Solution: a new drug by a Biotech company)

B) Find a date in simple, fun way (Solution: an App like Tinder)

Italia start up
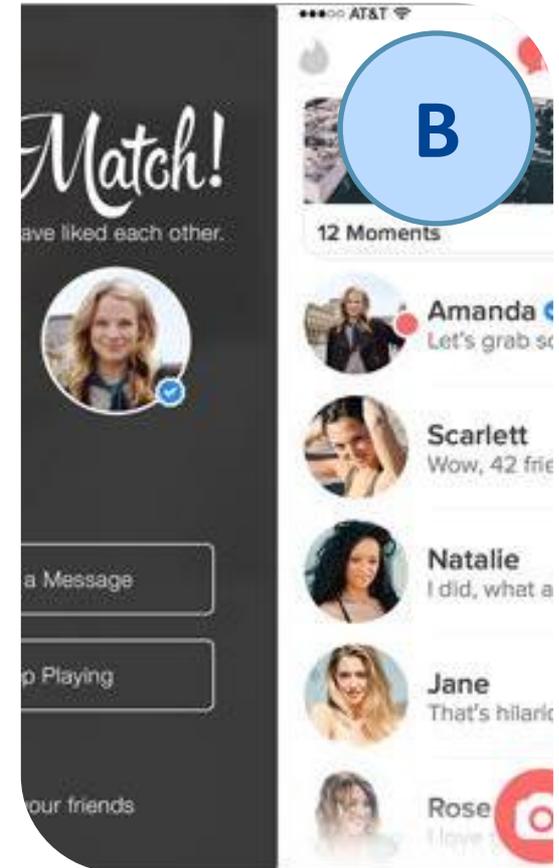
Professors Hamel & Prahalad point of view

«Some companies ask customers what they want.

Market leaders know what customers want before customers know it themselves.»

C.K. Prahalad & Gary Hamel

Listening to customers **is *not simply a question of asking*** them **what they want**.

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Henry Ford approach to customers

"If I had asked people what they wanted, **they would have said faster horses.**"

We have no evidence that Ford ever said those words. But, even if Ford didn't verbalize his thoughts on **customers' ostensible inability to communicate their unmet needs for innovative products** — history indicates that Henry Ford most certainly did think along those lines — and his tone-deafness to customers' needs (explicit or implicit), had a very costly and negative impact on the Ford Motor Company's investors, employees, and customers.

Read: https://hbr.org/2011/08/henry-ford-never-said-the-fast
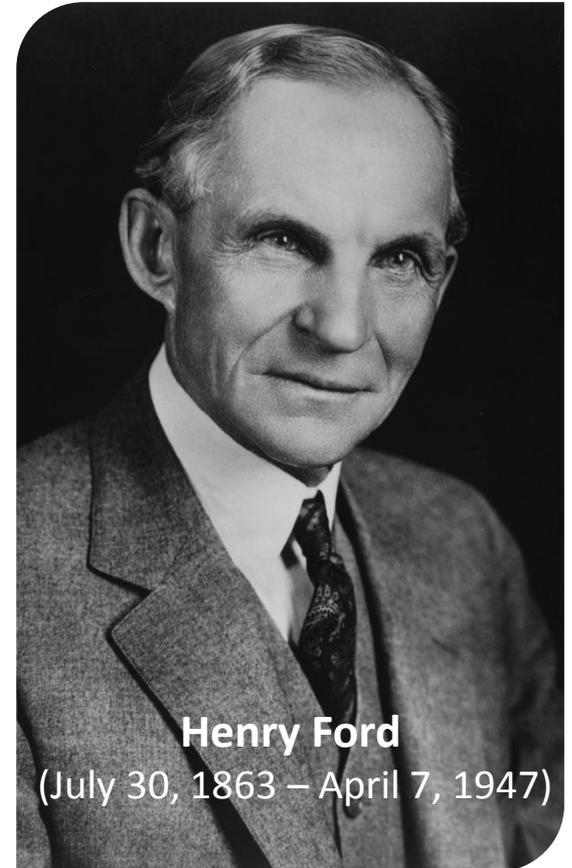
Henry Ford
(July 30, 1863 – April 7, 1947)

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Lessons from Henry Ford's experience

An innovator SHOULD HAVE UNDERSTANDING OF ONE'S CUSTOMERS AND THEIR PROBLEMS via

- ➢ empirical,
- ➢ observational,
- ➢ anecdotal methods
- ➢ or even intuition.

But he **SHOULD ALSO FEEL FREE TO IGNORE CUSTOMERS' INPUTS. (Note: it is "and" thinking again)**

Ford's adherence to his vision of the mass-market car and how to materialize that vision **was instrumental in both his early success** in growing Ford Motor Company **as well in his later failure** to respond in a timely and effective manner to rapid innovation in the marketplace.

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The innovators dilemma : sustaining vs. disrupting

Performance (y-axis)

Time (x-axis)

Incumbents usually win

Sustaining Innovations

Pace of innovation

Performance that marketplace can absorb

Disruptive Innovations

New competitors usually win

Source: Adapted from Clayton Christensen

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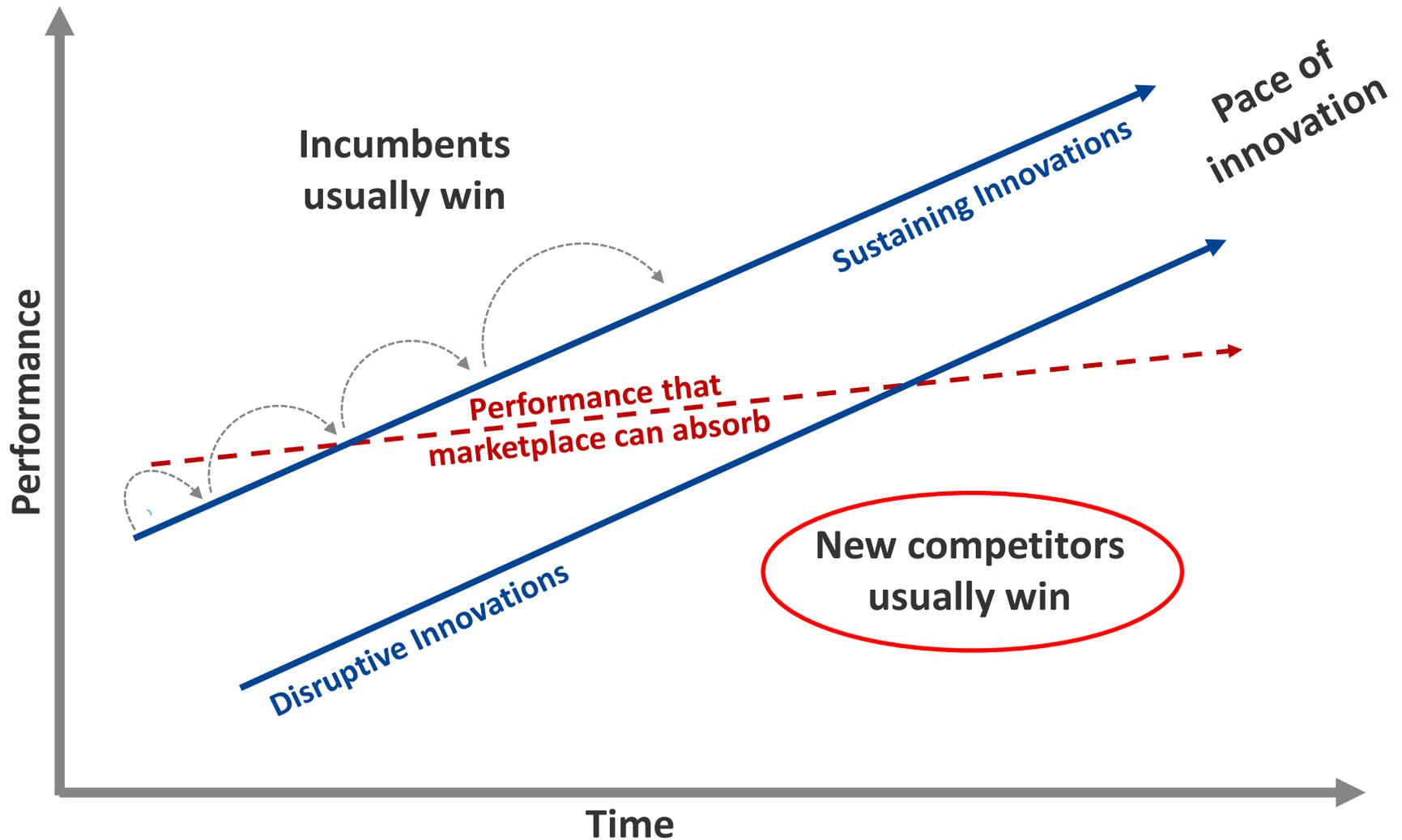
Established or new markets ?

Sustaining technology
Bringing a better product into an established market

low end distribution
addressing overserved customers with a low cost business model

new market disruption
compete against non consumption

Different measure of performance

Performance

most demanding customers

least demanding customers

non consumers

Time

Time

Source: Adapted from Clayton Christensen

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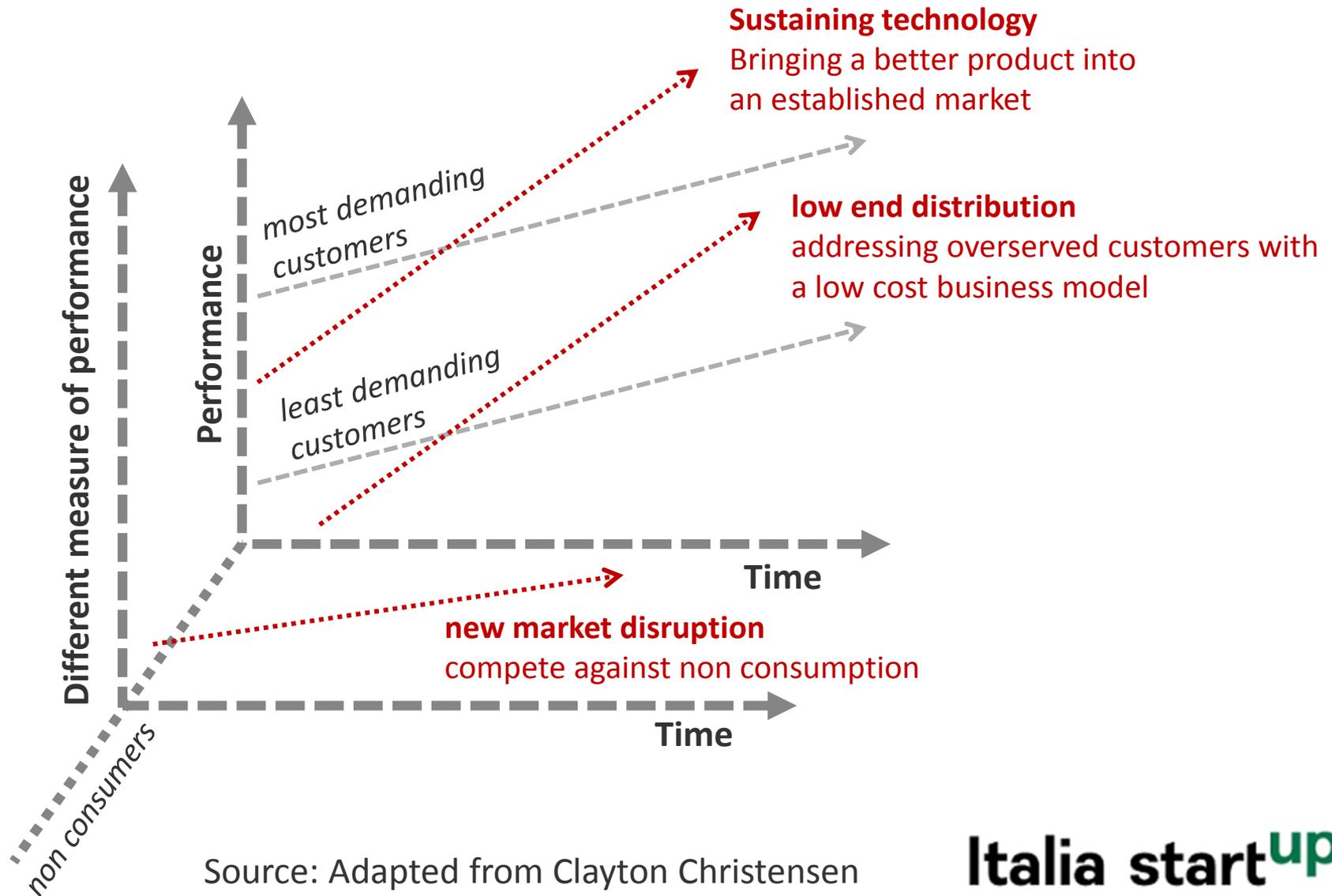
Two types of **disruptive innovations**

There are two distinct types of disruptive **innovations**.

- First type creates a **new market** by targeting **non consumers**,

- (the) second type competes in the **low end** of an **established market**.

Disruptive businesses either create new markets
or take the low end of an established market.

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The technology transition point: be aware of customer needs (and size of segment)

Italia start**up**
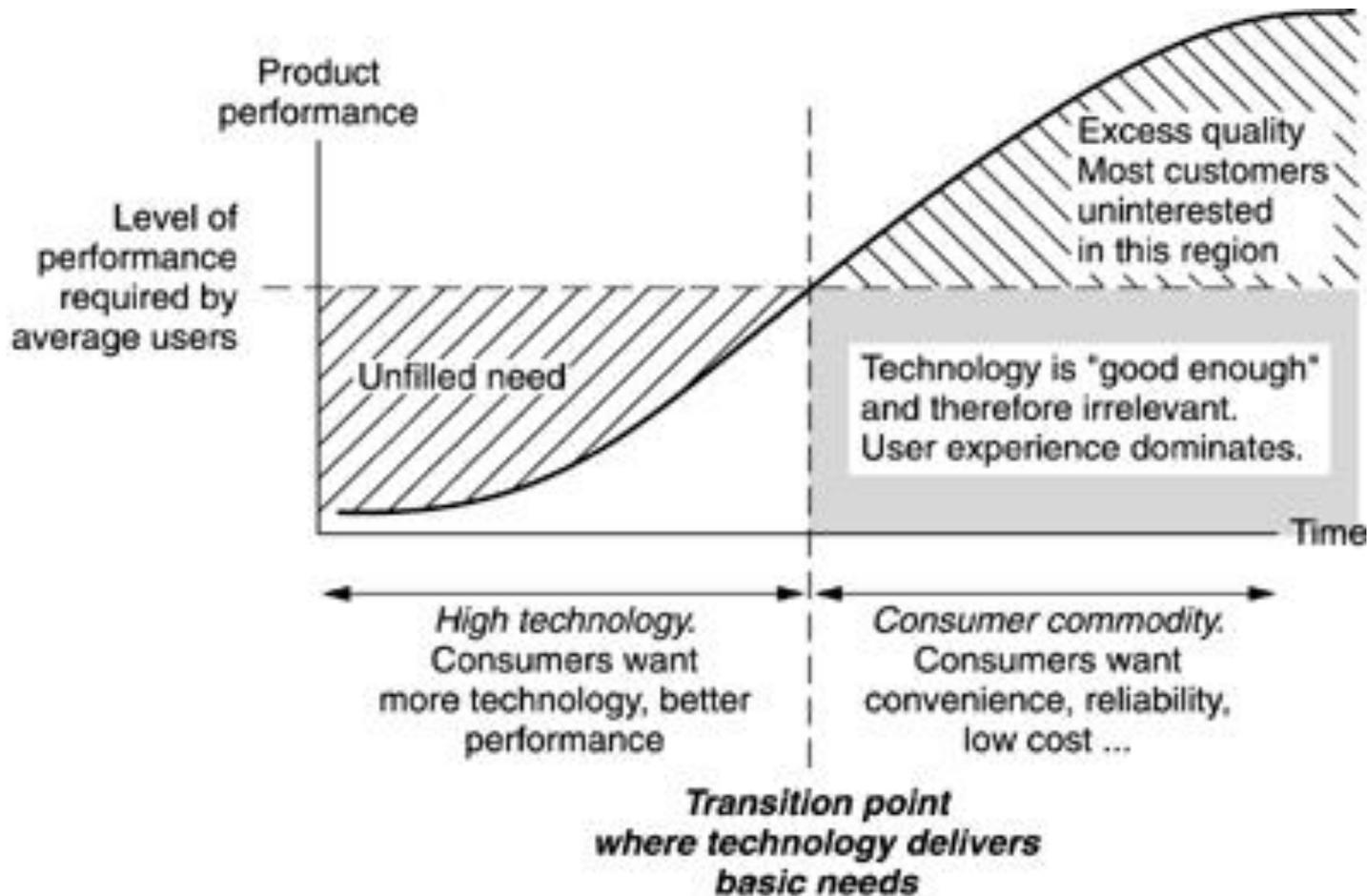
Example: Digital Cameras vs. Camera Phones

Image quality (vertical axis)

Time (horizontal axis)

Digital consumer cameras
The market value most:
High quality images

DIGITAL CAMERAS

old markets' supply curve

old markets' demand curve

new markets' supply curve

new markets' demand curve

At this point camera phones supply **sufficient quality images for the old market values AND also ultra high availability**

At first camera phones are **only good enough for the new market**

CAMERA PHONES

Camera phones:
The market value most:
Always at hand availability

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iPhone 2G
(2007)

iPhone 7
(2016)
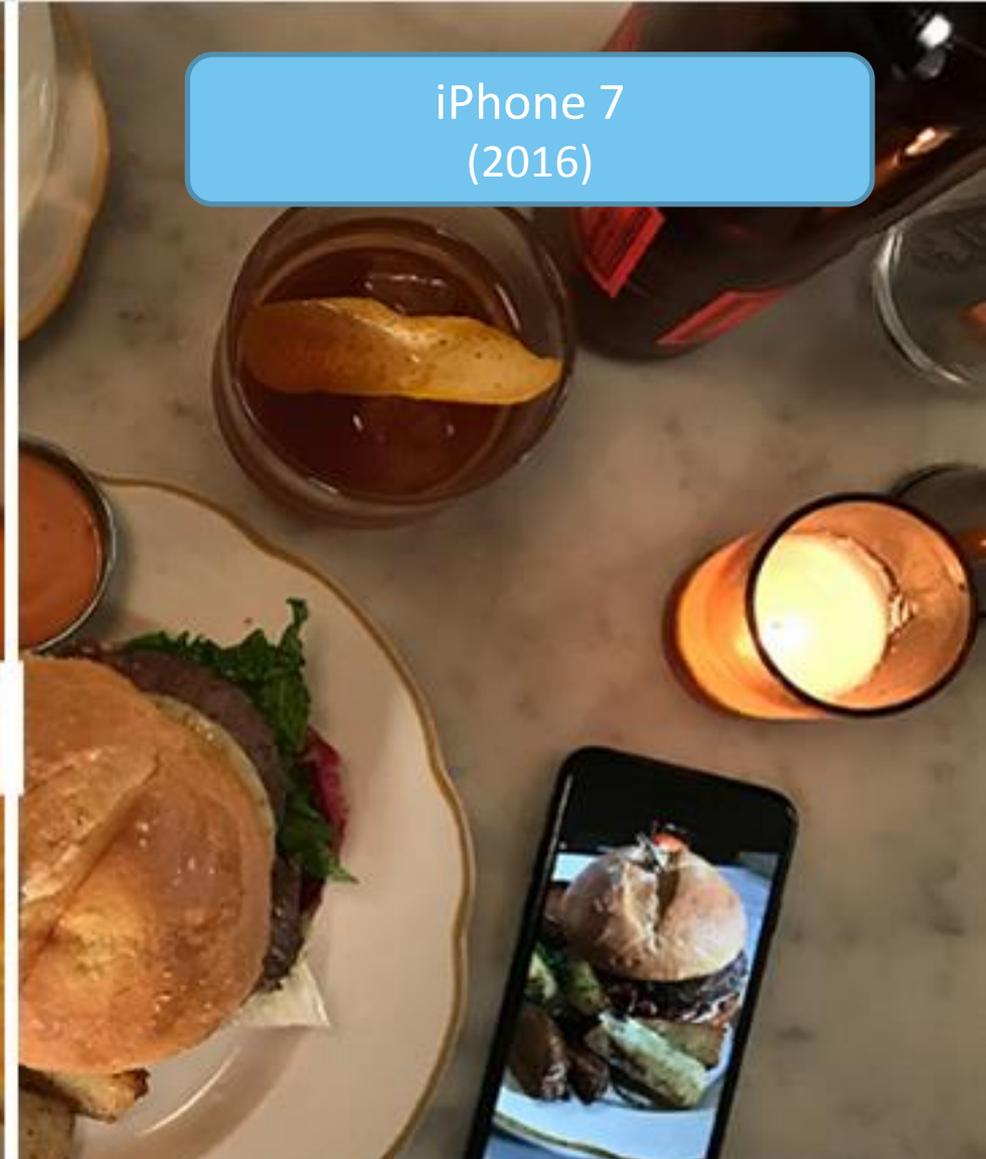
"The iPhone 2G was a revolutionary smartphone which also had a camera; the iPhone 7 is truly remarkable camera that you can also use to call your mother"
Source: http://www.theverge.com/tldr/2016/9/14/12917512/original-iphone-camera-vs-iphone-7-photo-comparison

iPhone 7

A58

▶ ▶| 🔊 1:07 / 3:29 ⚙ ▢ ⬜
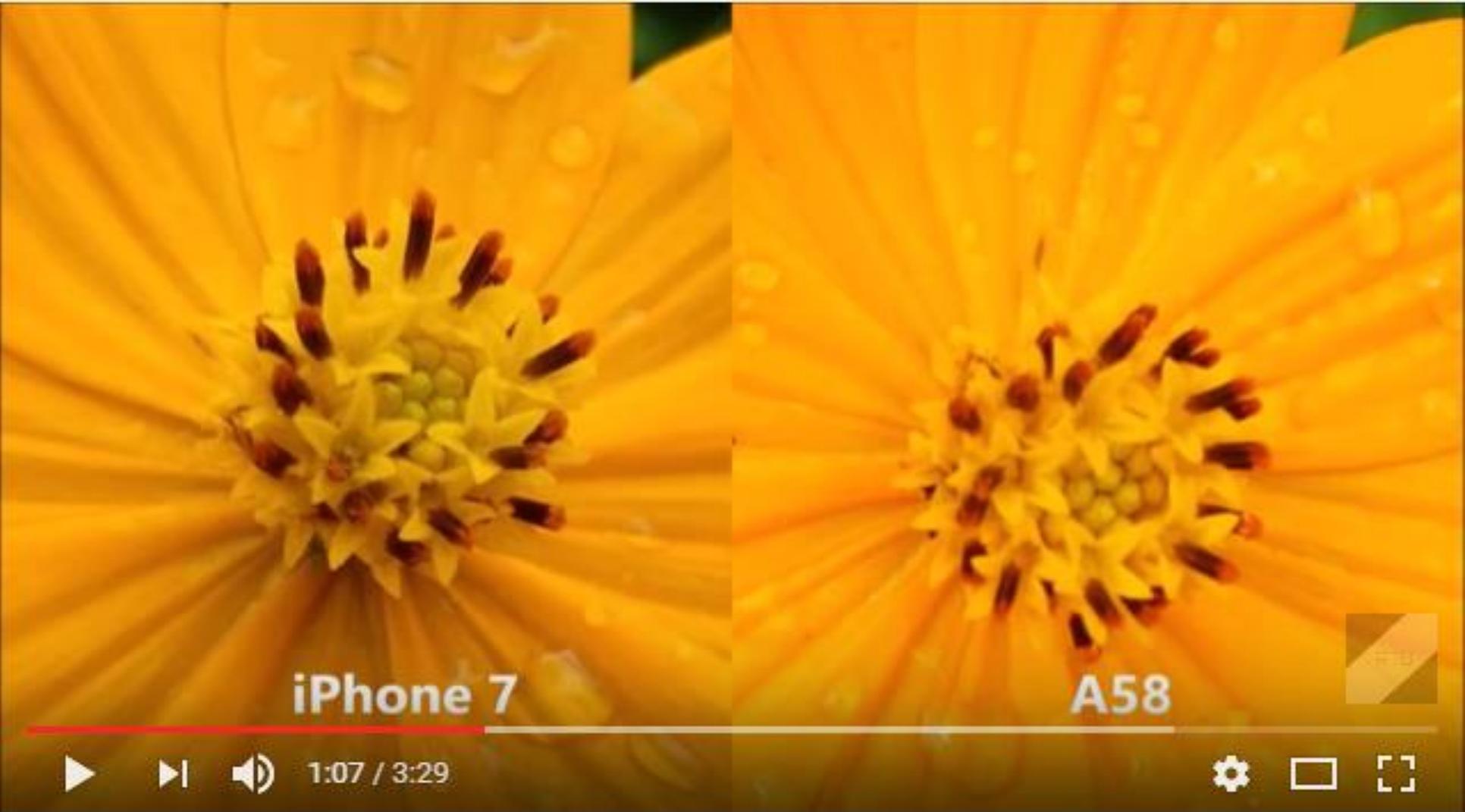
iPhone 7 Vs DSLR (Sony A58) Camera Comparison

RTS RealTechShow

▶ Iscriviti 6.821

10.947 visualizzazioni

Let the tasks people are trying to get done inform your design

A business plan predicated upon **asking customers to adopt new priorities and behave differently** from how they have in the past is an uphill **death march through knee-deep mud**.

Instead of designing products and services that **dictate consumers' behavior**, let the tasks people are trying to get done inform your design.

While projects inherently take into consideration a set of defined business objectives and technical requirements, they often fail to consider the user's needs.

· **Business Objectives** – e.g. What can be financially viable?

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Methodologies : DESIGN A BETTER BUSINESS

TOOLS

- **Customer Journey Canvas**
- **Value Proposition Canvas**
- **Context Canvas**
- **Business Model Canvas**

Source: http://designabetterbusiness.com/

Italia start^{up}
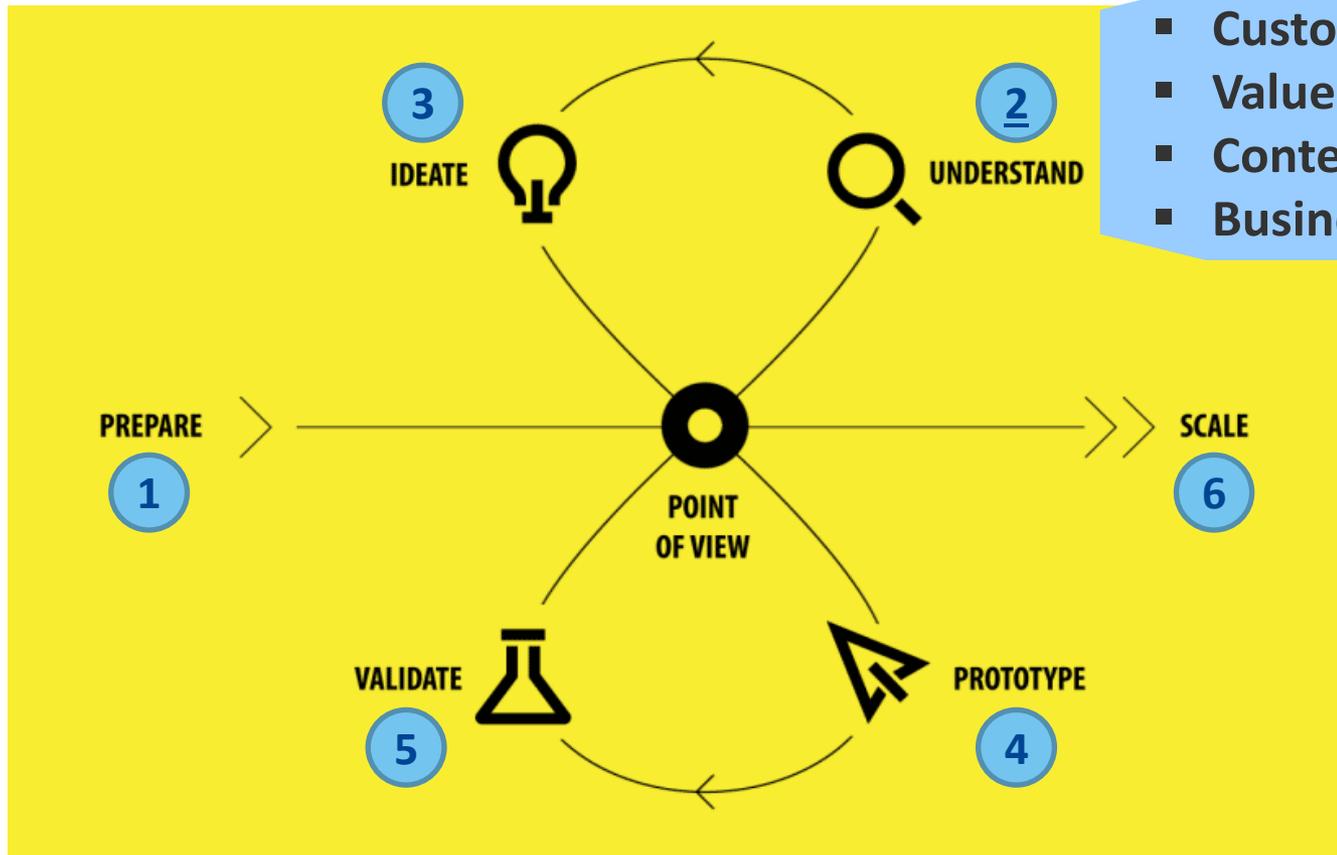
Tools : VALUE PROPOSITION CANVAS

Source: https://strategyzer.com/canvas/value-proposition-canvas

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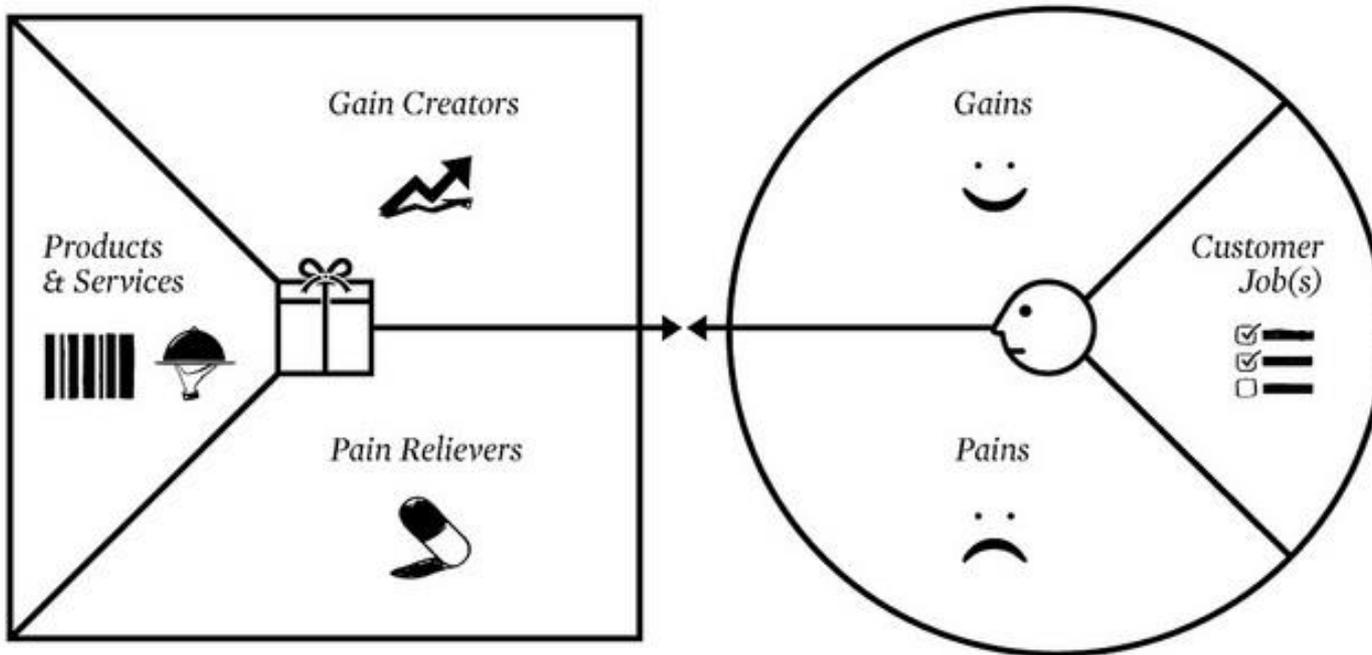
But only be aware there are other processes and time frames if you are developing a new drug …

Drug Discovery and Development Timeline
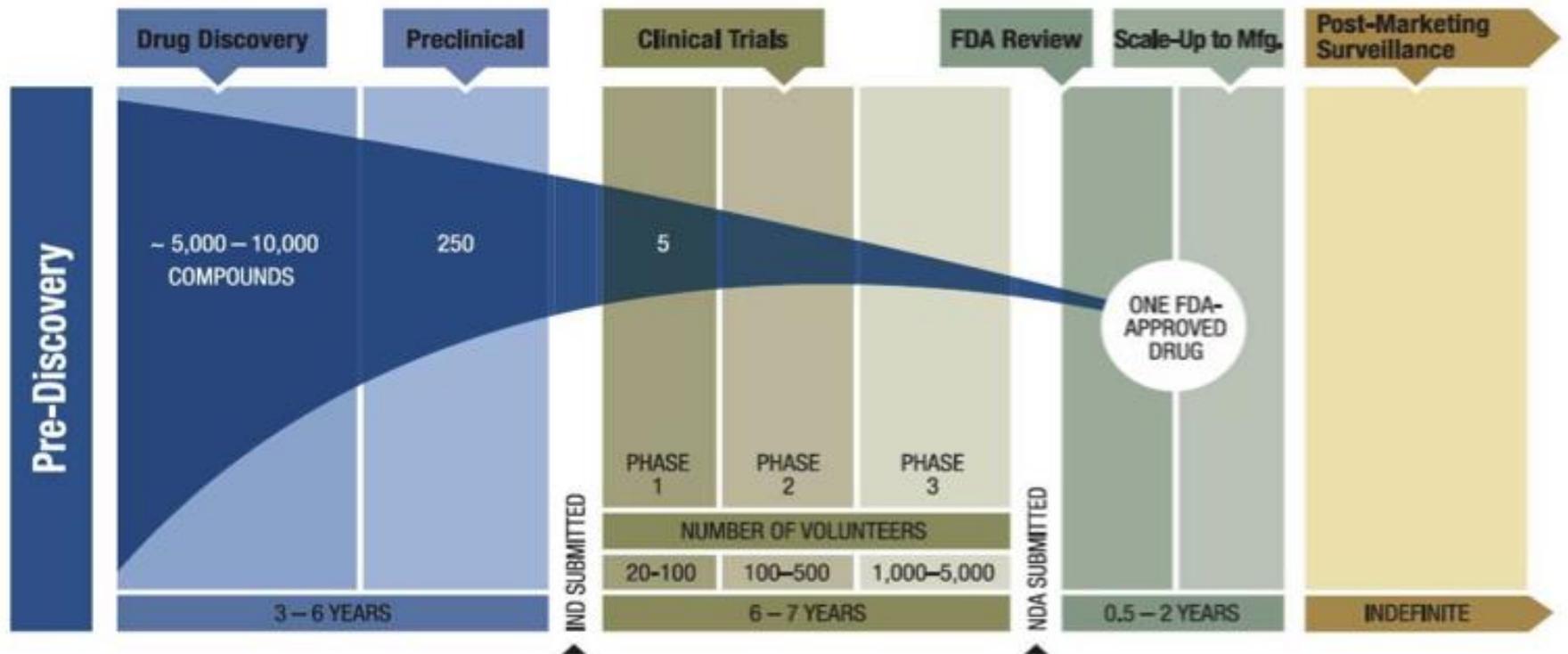
Drug Discovery	Preclinical	Clinical Trials			FDA Review	Scale-Up to Mfg.	Post-Marketing Surveillance
~ 5,000 – 10,000 COMPOUNDS	250	5				ONE FDA-APPROVED DRUG	
		PHASE 1	PHASE 2	PHASE 3			
		NUMBER OF VOLUNTEERS					
		20-100	100–500	1,000–5,000			
3 – 6 YEARS		6 – 7 YEARS			0.5 – 2 YEARS		INDEFINITE

Pre-Discovery

IND SUBMITTED

NDA SUBMITTED

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Succeeding or failing ?

#1 reason startups failed is business model not viable, they did run out of cash and had market issues.

STARTUP POST MORTEM STUDY*

Reasons founders cited for their startups' failure

Number of startups

Reason	Number
Business model not viable	51
Ran out of cash	46
Not enough traction	34
Lacked financing/investors	25
Technical/product issues	24
No market need	23
Outcompeted	19
Customer development issues	17
Lack of focus	17
Disharmony on team/investors	14
Bad timing	12
Pricing/cost issues	12
Inexperience/skills gap	11
Legal challenges	11
Failure to pivot	9
Hiring mistakes	9
Ignore customers	8
Poor marketing	7
Bad location	4
Lack of passion	4
Veered from original vision	3
Burn out	2
Fraud victims	2
Pivot gone wrong	2

△TLΛS | Data: Fractl

FUNDING
(Ran out of cash; lacked financing)

MARKET & MARKETING
(Not enough traction; No market need; Customer development issues; Pricing/cost issues; Ignore customers; Poor marketing)

Software company founders concluded their problems stemmed from **focusing too much on the technical aspects** of their products and **ignoring what customers actually wanted**.

Source: * https://qz.com/682517/after-analyzing-200-founders-postmortems-researchers-say-these-are-the-reasons-startups-fail/

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CB Insight study of 2014 had two top reasons for Startup failure: «no market need» and «run out of cash»

Top 20 Reasons Startups Fail
Based on an Analysis of 101 Startup Post-Mortems

| Reason	%
No Market Need	42%
Ran Out of Cash	29%
Not the Right Team	23%
Get Outcompeted	19%
Pricing/Cost Issues	18%
Poor Product	17%
Need/Lack Business Model	17%
Poor Marketing	14%
Ignore Customers	14%
Product Mis-Timed	13%
Lose Focus	13%
Disharmony on Team/Investors	13%
Pivot gone bad	10%
Lack Passion	9%
Bad Location	9%
No Financing/Investor Interest	8%
Legal Challenges	8%
Don't Use Network/Advisors	8%
Burn Out	8%
Failure to Pivot	7%

MARKET & MARKETING
(No market need; Pricing/cost issues; Poor marketing; Ignore customers;)

FUNDING
(Ran out of cash; lacked financing)

CB INSIGHTS

www.cbinsights.com

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To succeed you need to : a) solve a relevant problem; b) excel at execution; c) have a viable business model
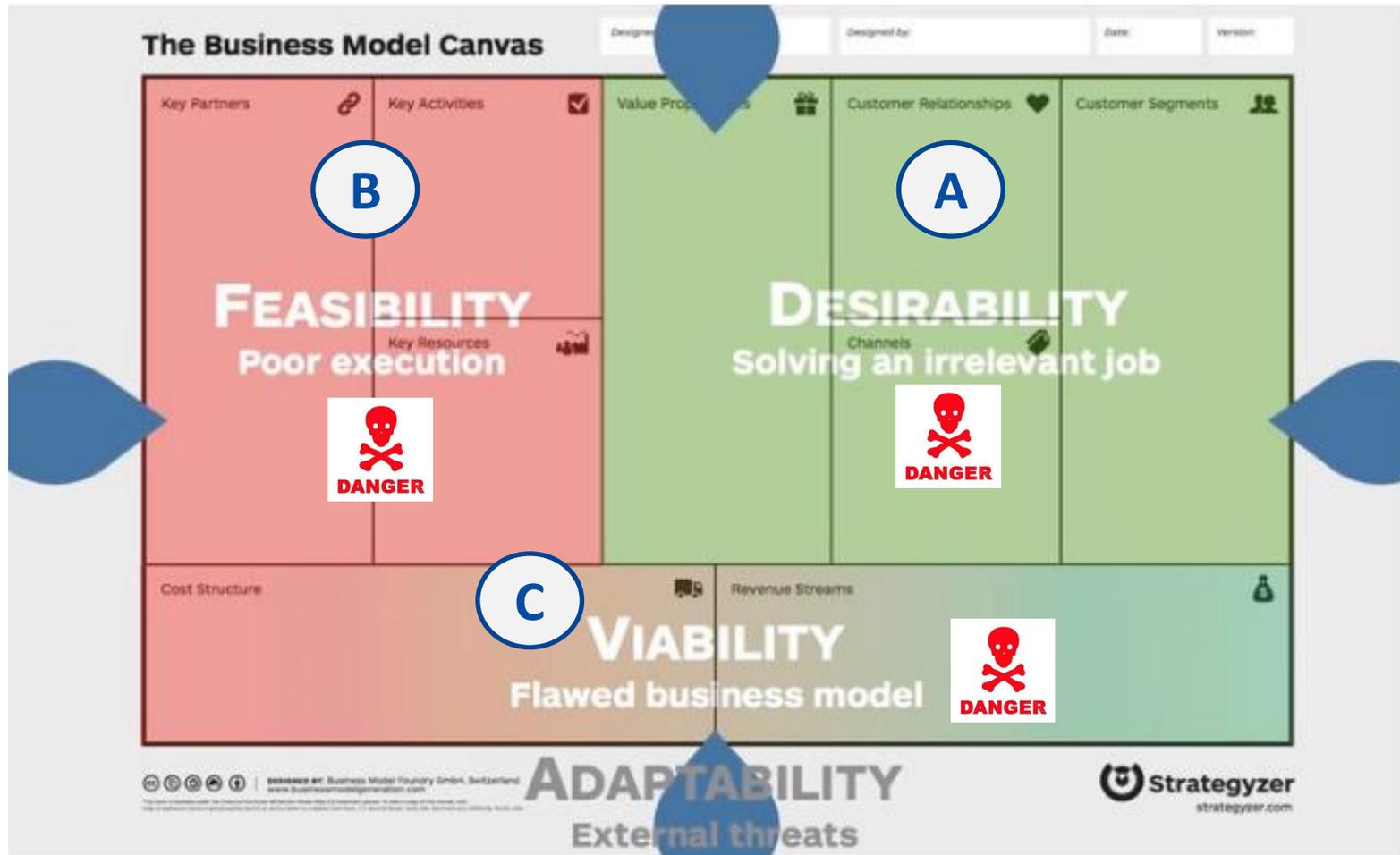
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Startup in the Italian context

PISA : the roots and the wings at the intersection

You are in the right place to work at the intersection of technology and liberal arts.

And Galileo Galilei was not the only *disruptor* made in Pisa.

Laboratorio di Ricerche Elettroniche Olivetti: ELEA 9003

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Entrepreneurs of the Italian economic "boom" are passing away; a new generation **must** replace them

The great Italian entrepreneurs of the past generation are passing away:

- Enzo Ferrari (1898-1988)
- Gianni Agnelli, Fiat (1921-2003)
- Leopoldo Pirelli; Pirelli (1925-2007)
- Peppino Fumagalli, Candy (1928-**2015**)
- Michele Ferrero, Ferrero (1925-**2015**)
- Giannantonio Brugola, Brugola (1942-**2015**)
- Vittorio Merloni, Ariston (1933-**2016**)

G. Brugola
(1942 – 2015)

V. Merloni
(1933- 2016)

M. Ferrero

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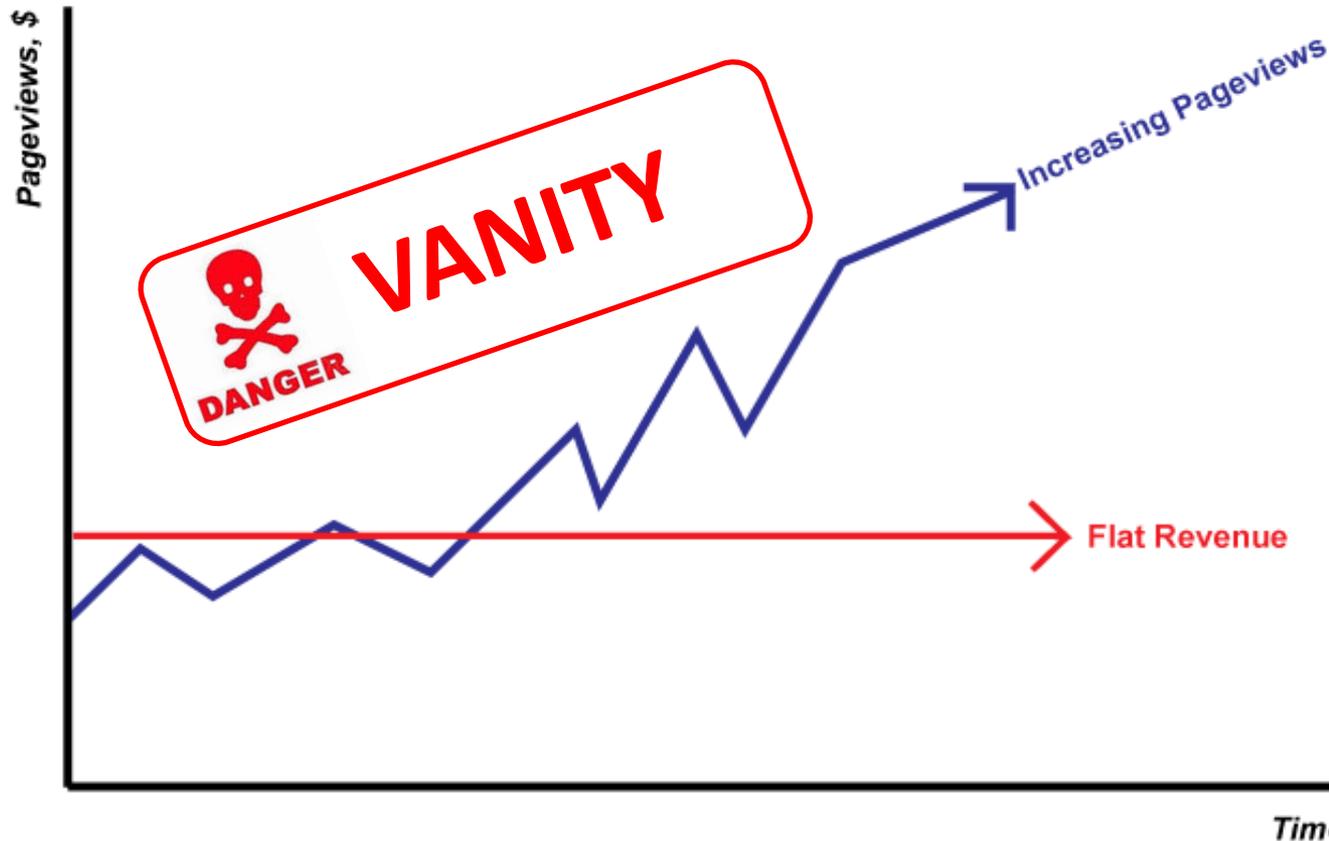HELP REJUVENATE ITALY !

The ecosystem is more (than you may be think)

www.italiastartup.it

One last **very serious warning** before you start

The Curse of Vanity Metrics
"Mirror, Mirror On The Wall, Why Does My Revenue Stall?"

VANITY
DANGER

Increasing Pageviews

Flat Revenue

Pageviews, $

Time

Business is NOT about startup competitions, awards, press coverage, RT.

Business is about CUSTOMERS, REVENUES, PROFITS.

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Thank you for your attention !

Italia startup

ITALIASTARTUP.IT

@MBP1961

If you liked the presentation,
Don't be shy and please say it in a tweet