Lean innovation process
and
rapid product development

INNOVATION IS ABOUT EXECUTION OF SO MANY CREATIVE IDEAS

Case IKEA (1950s): dismantiling the legs when the table did not fit in the car.
The creative guy was not Einstein, but a person working in a warehouse, who was trying to upload the table into a small car…

Somebody listened to him and (they) **executed** the idea.

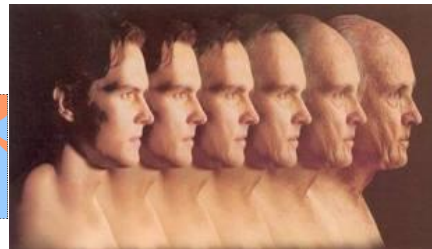**Is it so simple? How to motivate creativity, see, select and execute the RIGHT ideas?**

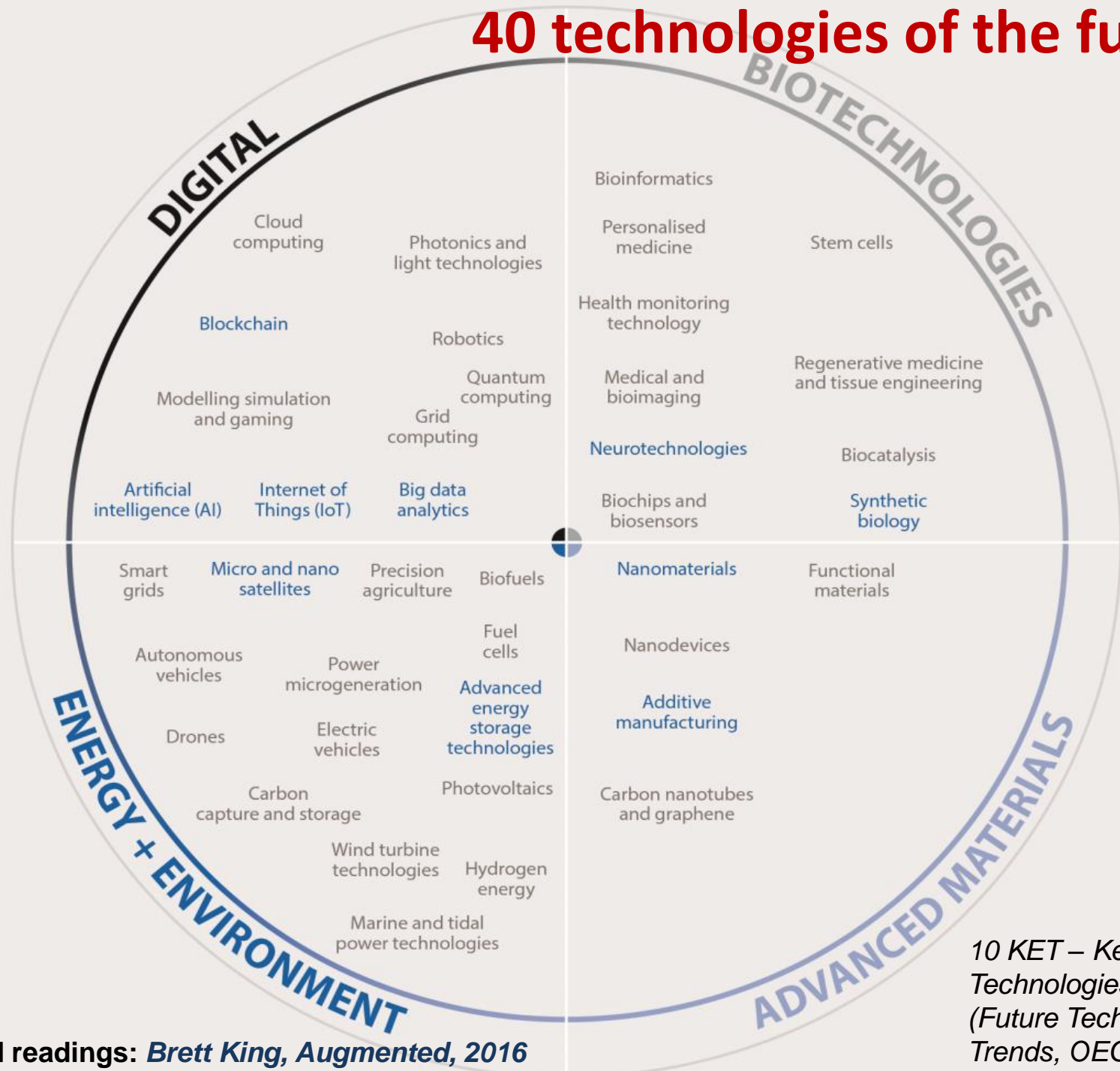# WE ARE LIVING IN TURBULENT, RISKY TIMES; BUT LOTS OF OPPORTUNITIES

Being in the middle of the 3rd and at the beginning of the 4th industrial revolution

40 technologies of the future

DIGITAL

Cloud computing
Photonics and light technologies
Blockchain
Robotics
Modelling simulation and gaming
Quantum computing
Grid computing
Artificial intelligence (AI)
Internet of Things (IoT)
Big data analytics

BIOTECHNOLOGIES

Bioinformatics
Personalised medicine
Stem cells
Health monitoring technology
Regenerative medicine and tissue engineering
Medical and bioimaging
Neurotechnologies
Biocatalysis
Biochips and biosensors
Synthetic biology

ENERGY + ENVIRONMENT

Smart grids
Micro and nano satellites
Precision agriculture
Biofuels
Autonomous vehicles
Power microgeneration
Fuel cells
Advanced energy storage technologies
Drones
Electric vehicles
Carbon capture and storage
Photovoltaics
Wind turbine technologies
Hydrogen energy
Marine and tidal power technologies

ADVANCED MATERIALS

Nanomaterials
Functional materials
Nanodevices
Additive manufacturing
Carbon nanotubes and graphene

10 KET – Key Enabling Technologies (Future Technology Trends, OECD, 2016)

Suggested readings: *Brett King, Augmented, 2016*

Nine Technologies Are Transforming Industrial Production

Autonomous robots

Simulation

Big data and analytics

Horizontal and vertical system integration

Industry 4.0

Augmented reality

The Industrial Internet of Things

Additive manufacturing

The cloud

Cybersecurity

Industry 4.0 is the vision of the industrial production of the future

DIGITAL TRANSFORMATION
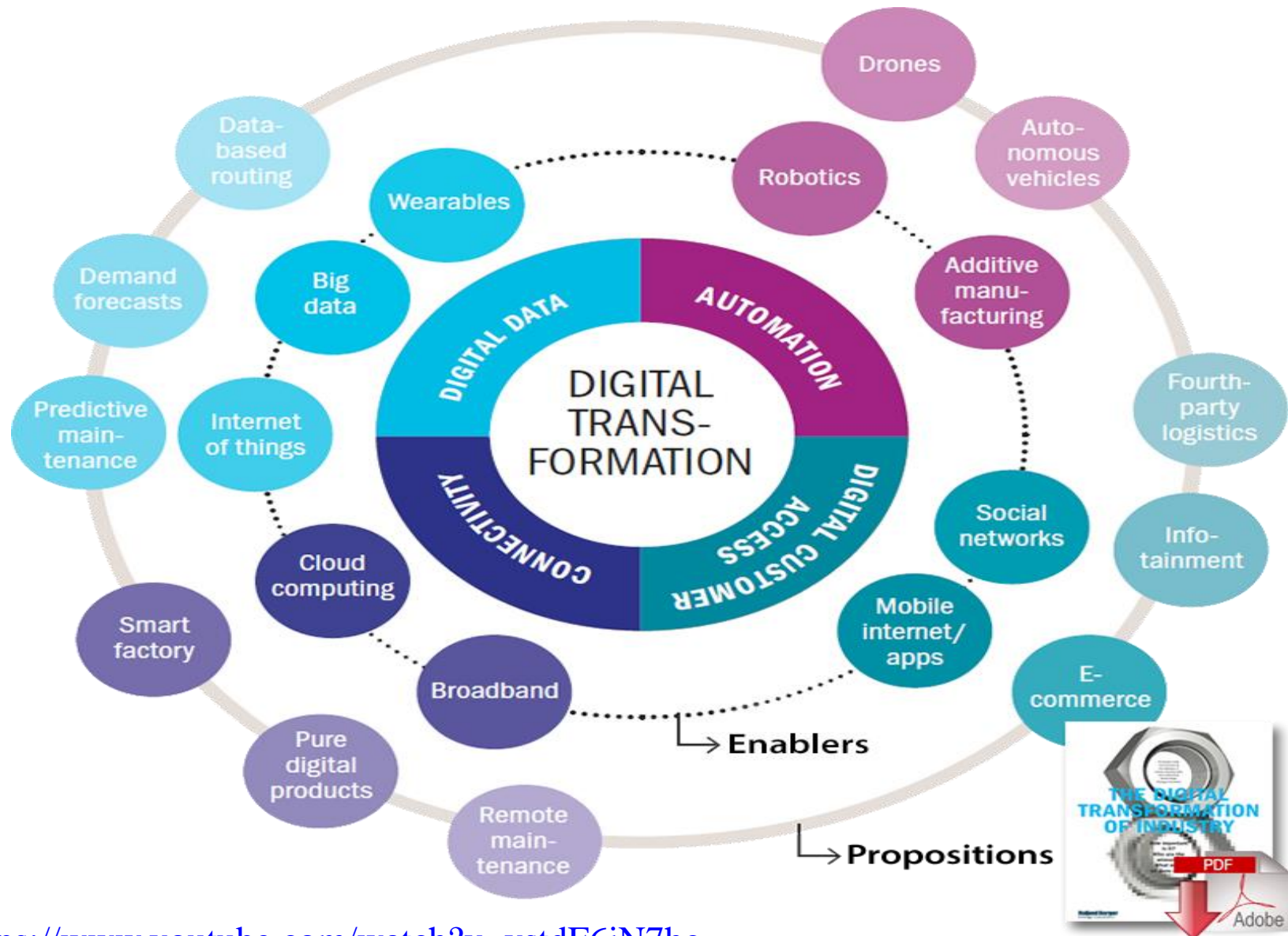
INNOVATION - from idea to market

Technology readiness levels (TRL) (Horizon 2020):

TRL1: Basic principles observed

TRL2: Technology concept formulated

TRL3: Experimental proof of concept

TRL4: Technology validated in lab

TRL5: Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL6: Technology demostrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL7: System prototype demonstration in operational environment

TRL8: System complete and qualified

TRL9: Actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies)
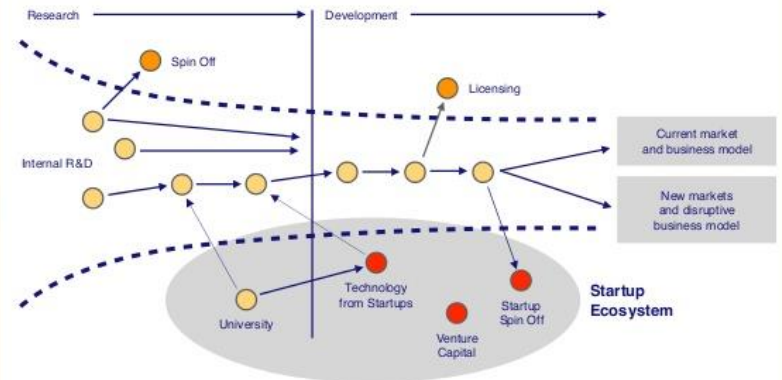
„The Bridging Problem"
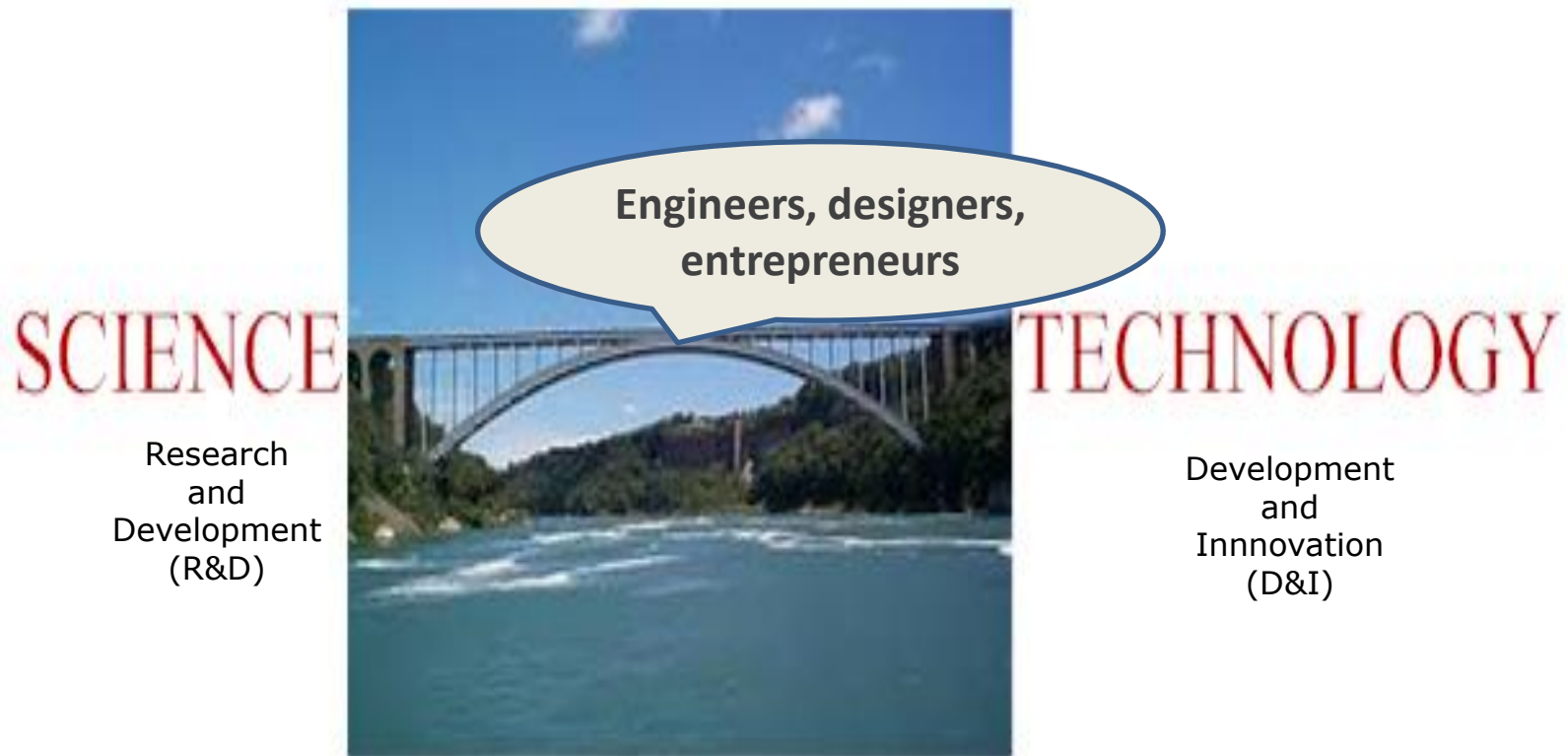
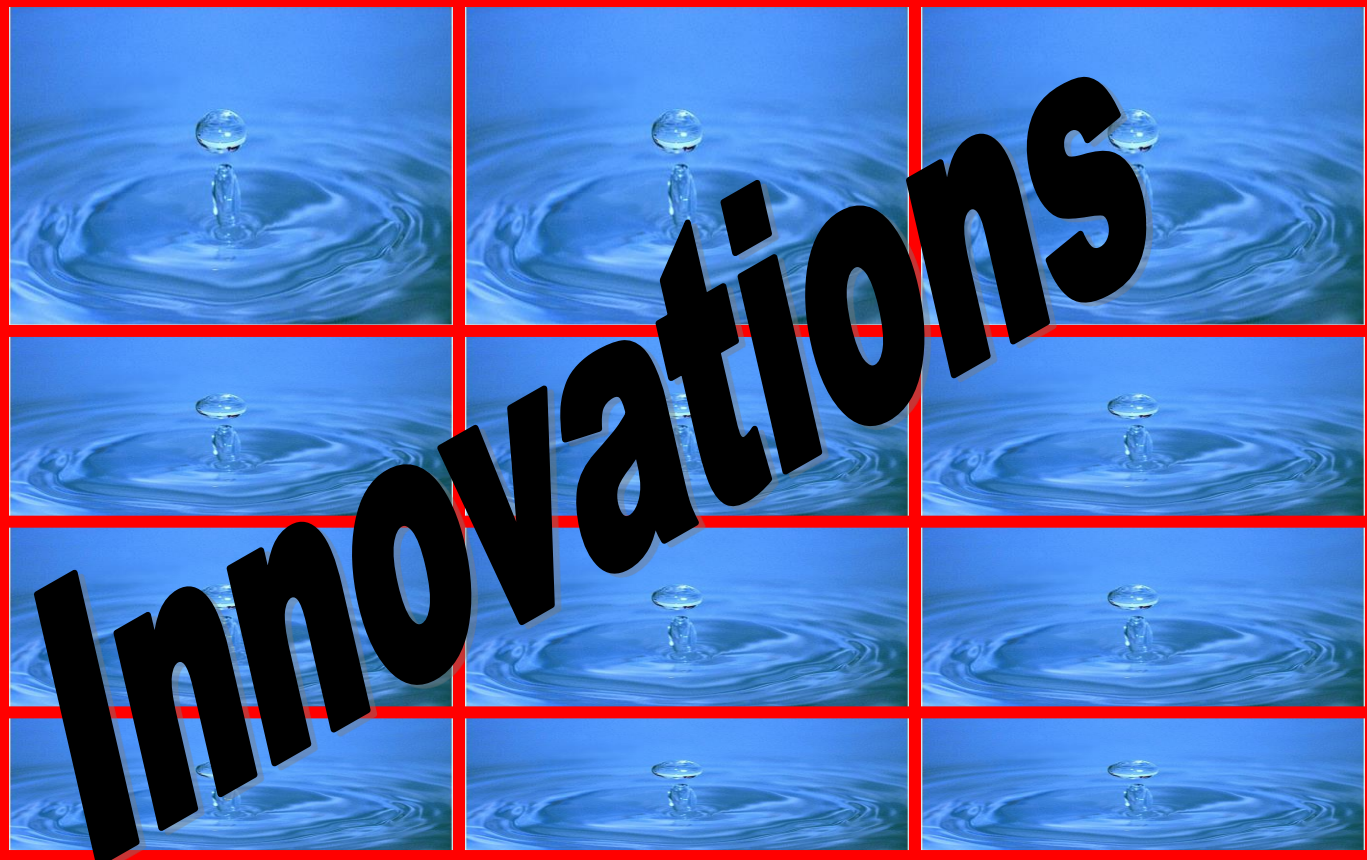# The world has changed the way it innovates

Closed Innovation
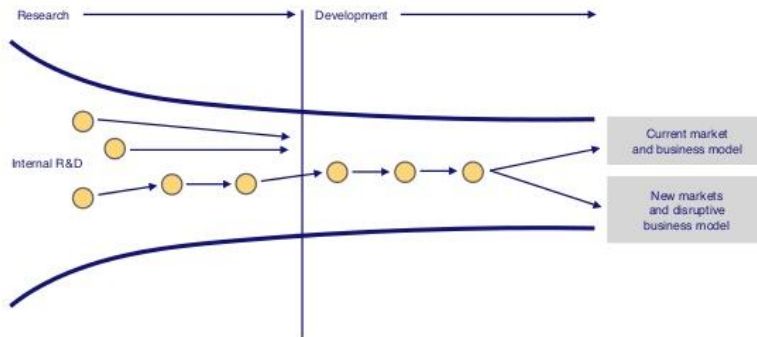
Innovation Ecosystem

Large corporations today are developing their own corporate innovation ecosystems – not always successfully !

Field of technological and non-technological innovation in <u>OPEN INNOVATION SYSTEMS</u>

	Product	Service	Experience
Reserach and other supporting institutions			
Customers			
Suppliers			
Company			

How to be successfull in turbulent times?

Mature companies are better designed for implementation (execution)
than for **innovation**.

Focusing on processes and indicators (KPIs),
mature companies can work efficiently,
but currently growing ROA will not save them from
disruptive *innovations*
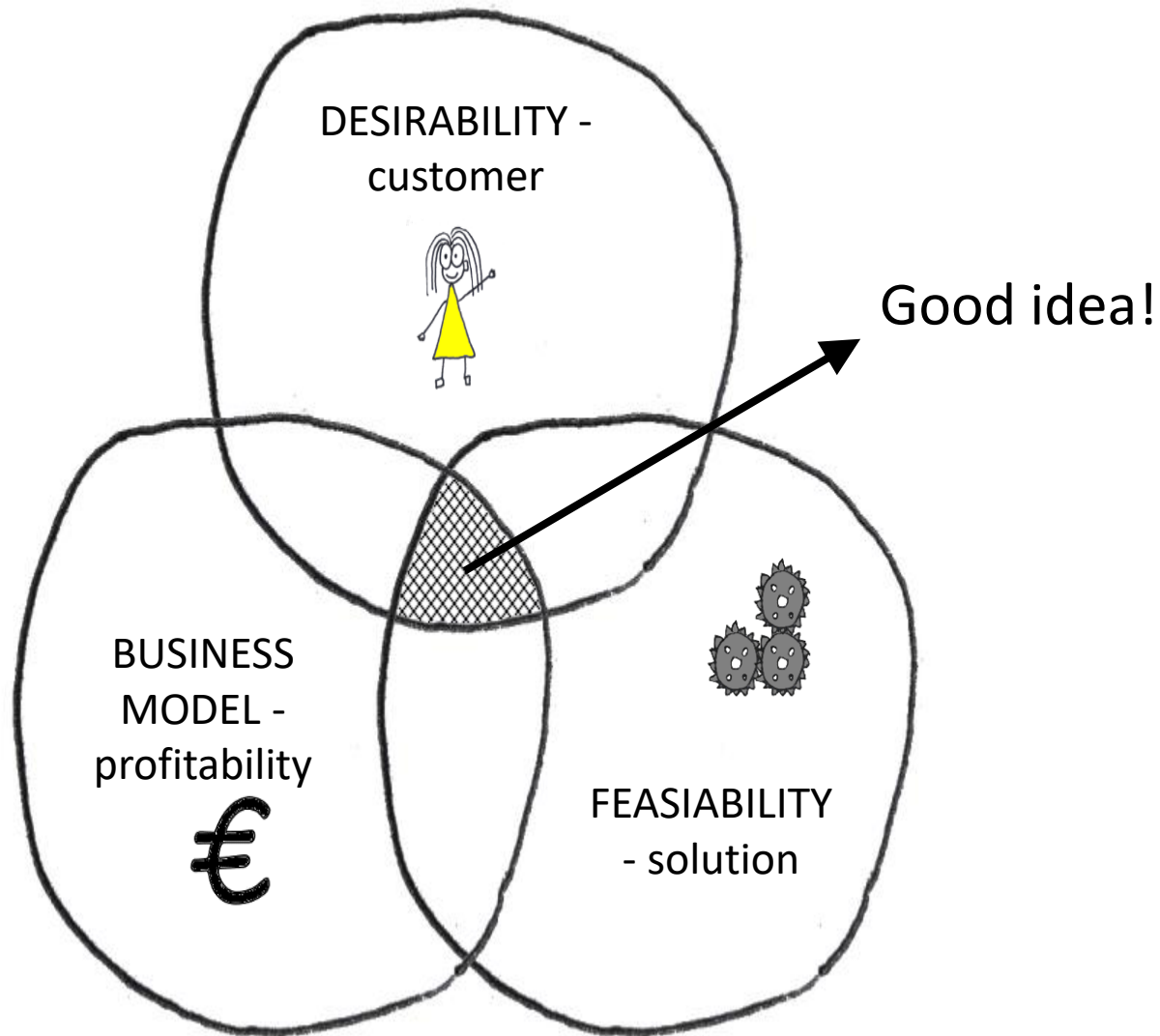(*examples of Nokia vs Apple, Amazon vs traditional bookstores, iTunes vs CDs, ...*).

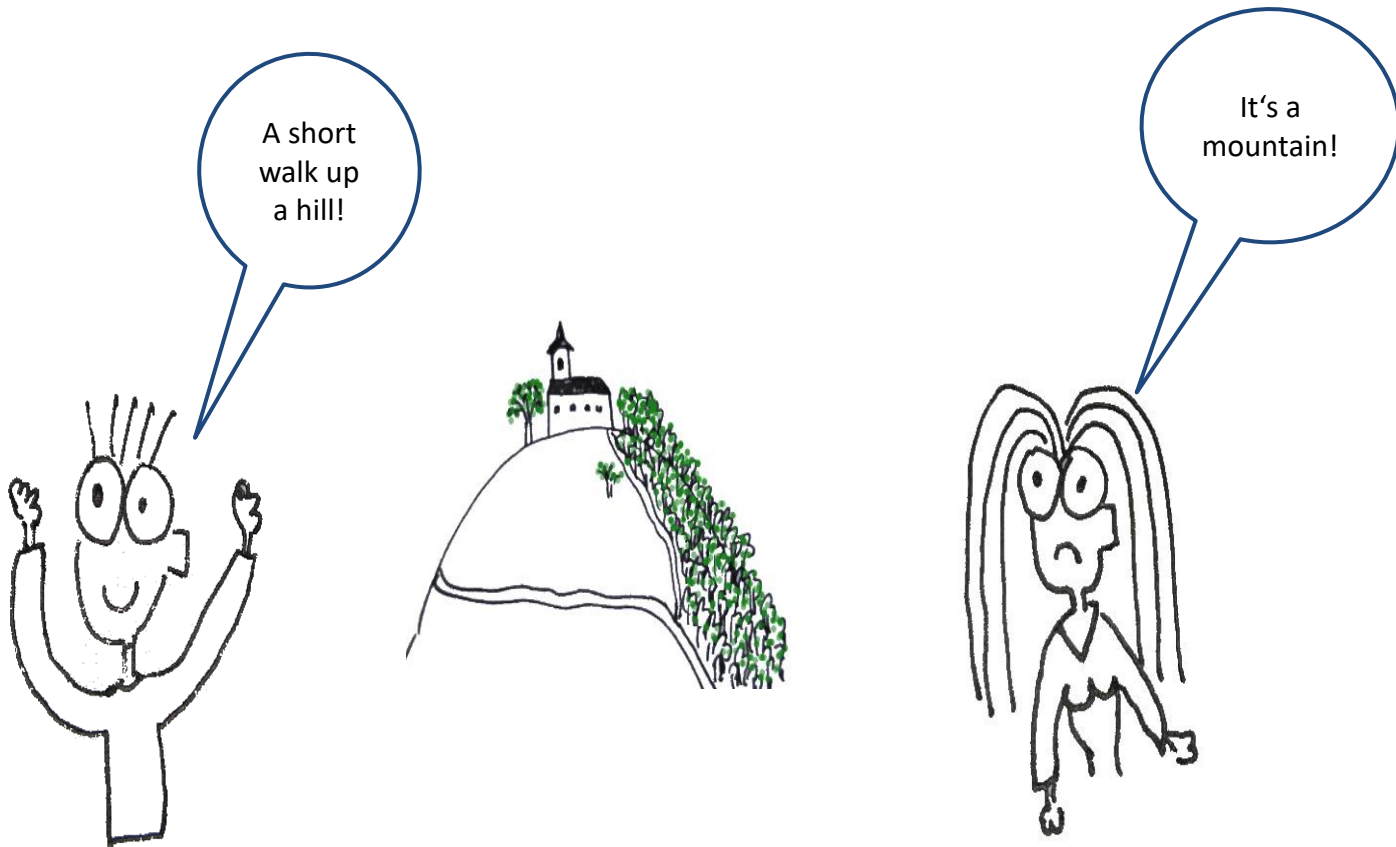# Can You Create an Organization that Executes **and** Innovates?

What is a good business idea?

What is a good business idea?

DESIRABILITY - customer

Good idea!

BUSINESS MODEL - profitability

€

FEASIABILITY - solution
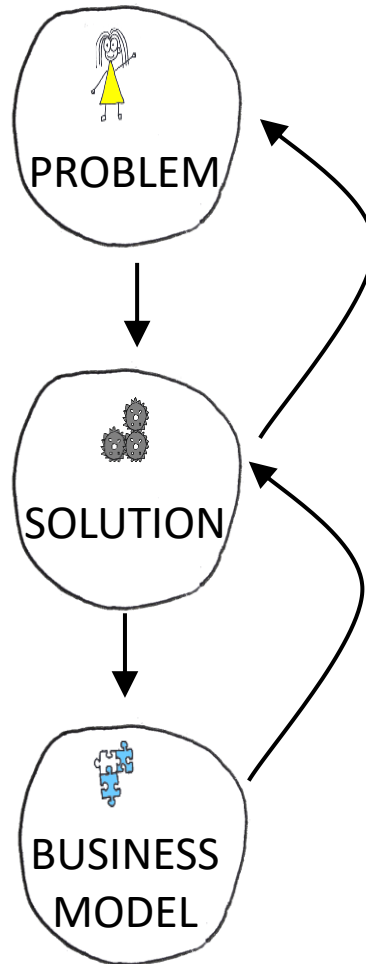
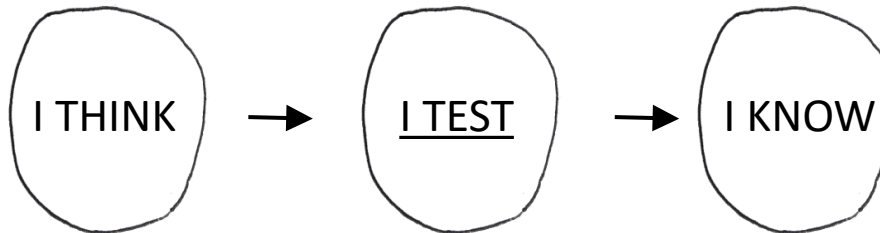# WHO ,EVALUATES' IF THE IDEA IS GOOD?

IDEA = non-tested HYPOTHESYS

HYPOTHESYS is the mother of all errors!

I KNOW THAT I DO NOT KNOW

Every non-tested hypothesis increases <u>risk</u> significantly.

SOCRATES

I THINK → I TEST → I KNOW

Case study

What happens when we assume
too much...

CT scanner

KEY HYPOTHESIS: CUSTOMER PAINS?

- How do we recognize customer pains?
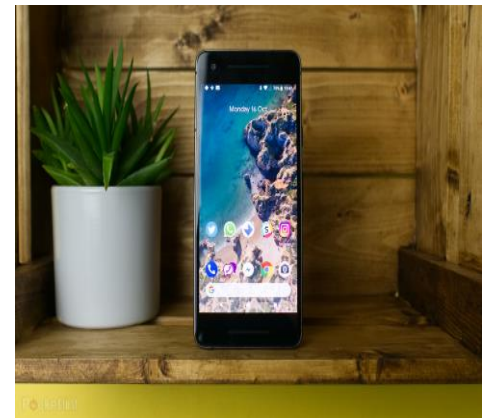
- Frame Hypotheses ➔ Business Model
- Test Hypotheses ➔ Customer Development
- Build the product (MVP) incrementally & Iteratively ➔ Agile Engineering (Scrum, Speeding,…)

The Minimum Viable Product (MVP)

- Smallest feature set that gets you the most …

    - learning, feedback, failure, orders, …

    - incremental and iterative

- It is not a prototype

- It is not a deployable version with the fewest features

- It is whatever enables us to validate/invalidate a stated hypothesis

- Early on it may be a drawing, a slide, a wireframe, clickable workflow, etc…

SOLD OUT

38.000 pre-orders; after one month; but tehnically the product was not completed, business model not clear (value proposition not clear, production?).
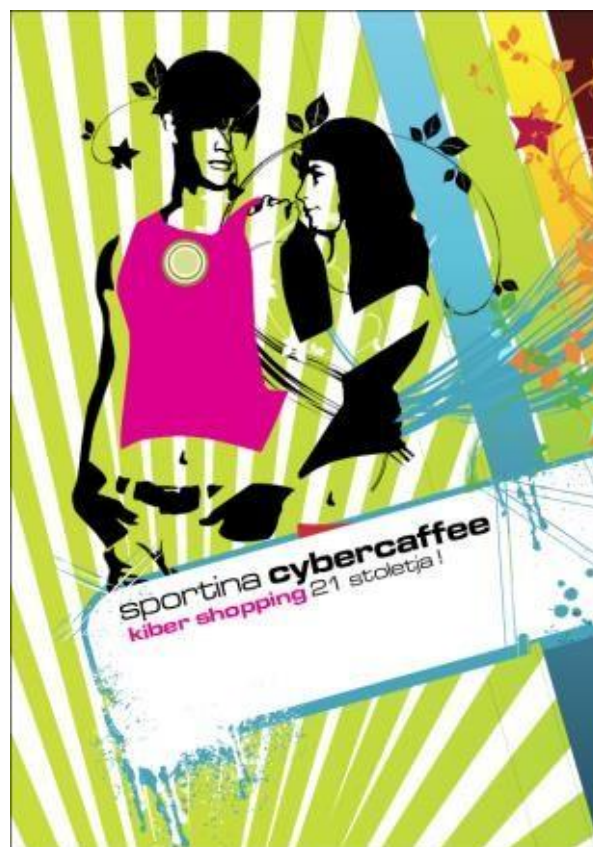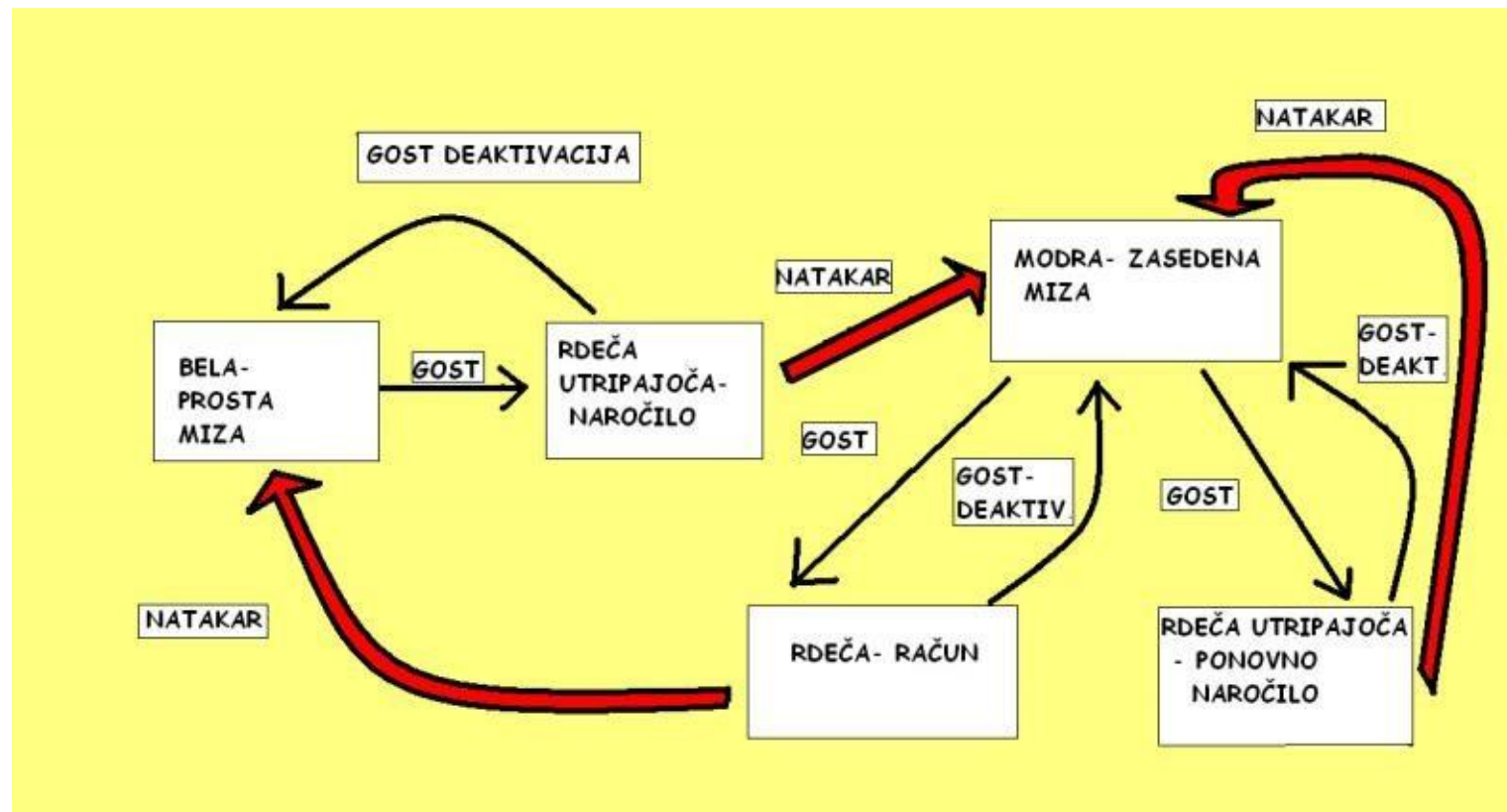
TESLA Model 3 500.000 pre-orders (1.000 USD reservation); announced 2016, production in 2017, new orders in 2017

https://www.youtube.com/watch?v=AiZj7LTMjzs

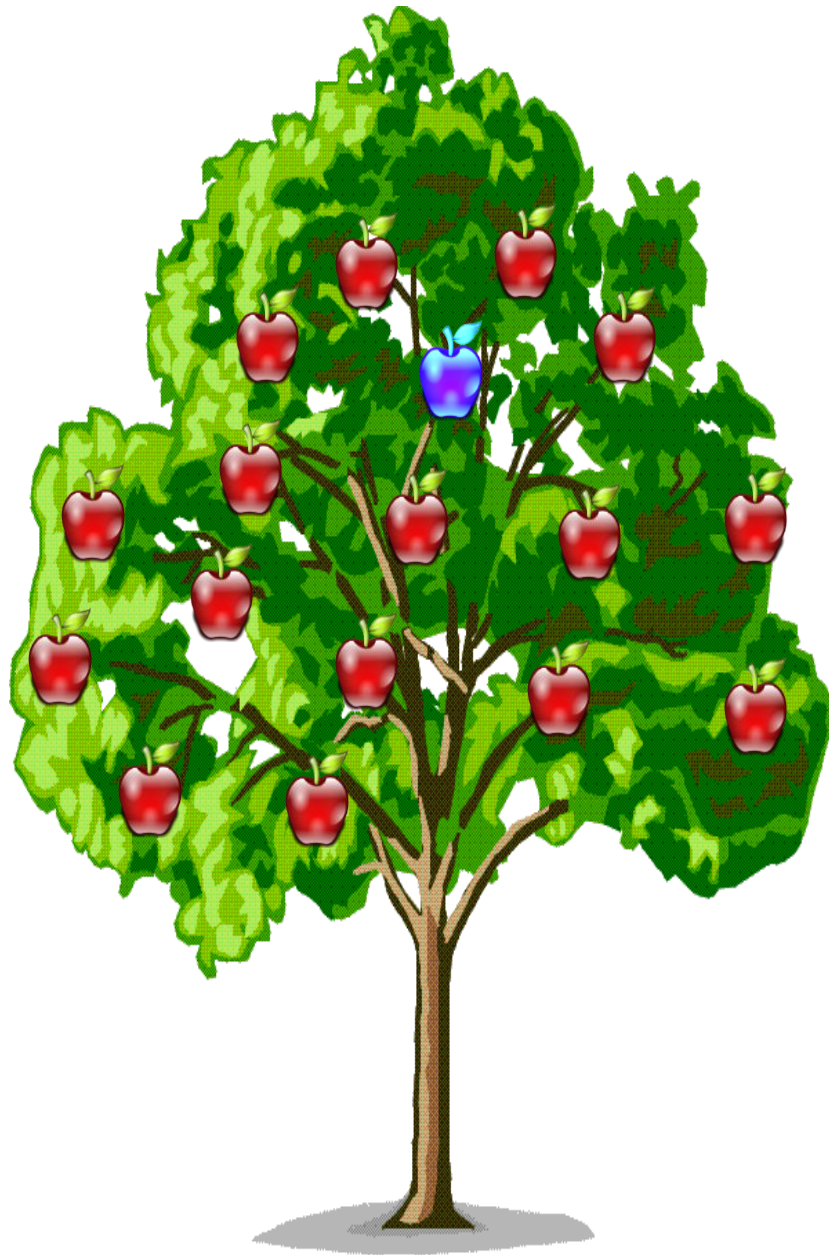# MARKETING MATERIALS

PROCESS DIAGRAM

GOALS OF UNDERSTANDING CUSTOMERS PAIN

Stated and hidden needs

Topics and blue apples

Identification of as many customers needs and segments – where can we create value for customers
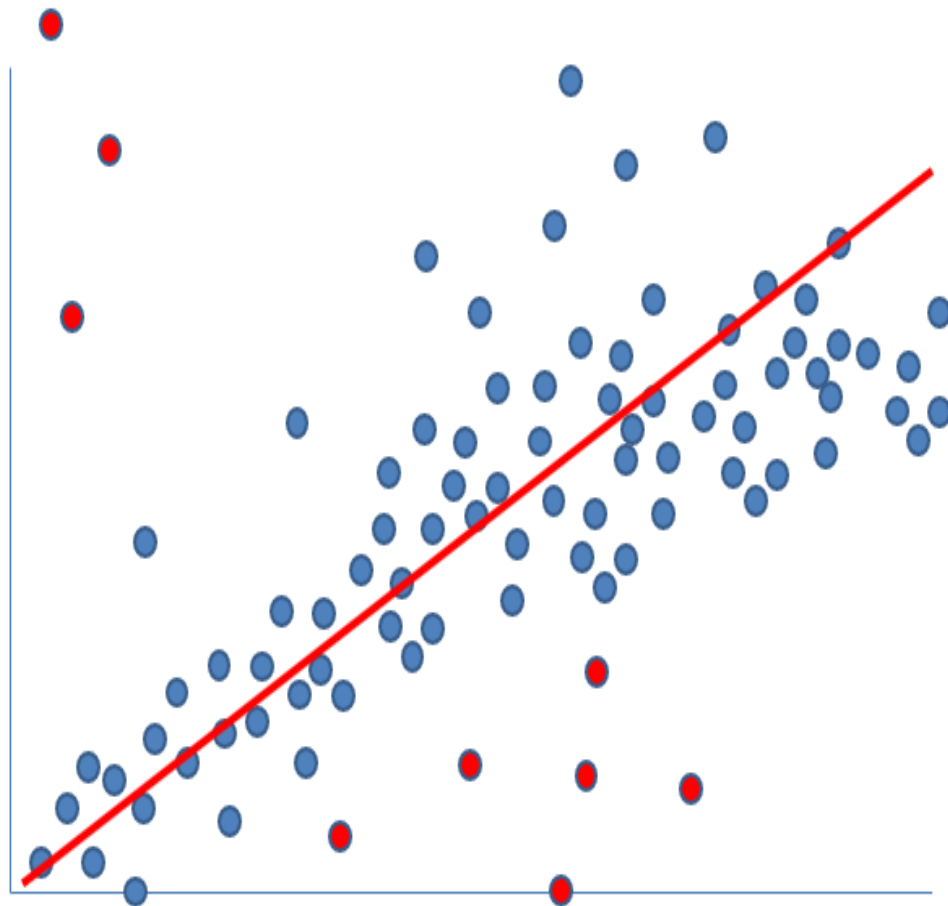
Why is one apple blue?

SURVEYS
FOCUS GROUPS
NETOGRAPHICS
FOTO-VIDEO DIARIES
SECONDARY DATA
ANALYSIS (DESK
RESEARCH)

BUT MOST IMPORTANT TOOL:
INTERVIEWS !

'The only true wisdom is in knowing you know nothing.,
SOCRATES

Interview hints

- IDEA = non-proven hypothesis !

- HYPOTHESIS is the mother of all mistakes !

- Every non-proven hypothesis is greatly increasing RISK.

I THINK ➝ I CHECK ➝ I KNOW

The key task is to **LOWER THE RISKS**

How to do so ?

Do the right things in a correct way:

- CHECK THE HYPOTHESIS

- RECOGNIZE THE CUSTOMERS NEEDS

- OPTIMIZATION OF PROCESS

CONVERSATION (AND OBSERVING) IS THE KEY METHOD FOR OBTAINING INFORMATION

Conversation

- Listen as a novice
- Don't interpret, research the unexpected

"In the beginner's mind there are many possibilities, in the expert's mind there are few."

—Shunryu Suzuki

- Listen more than talk
- The goal is to listen and get to know, not to sell, inform or convince anyone into anything.
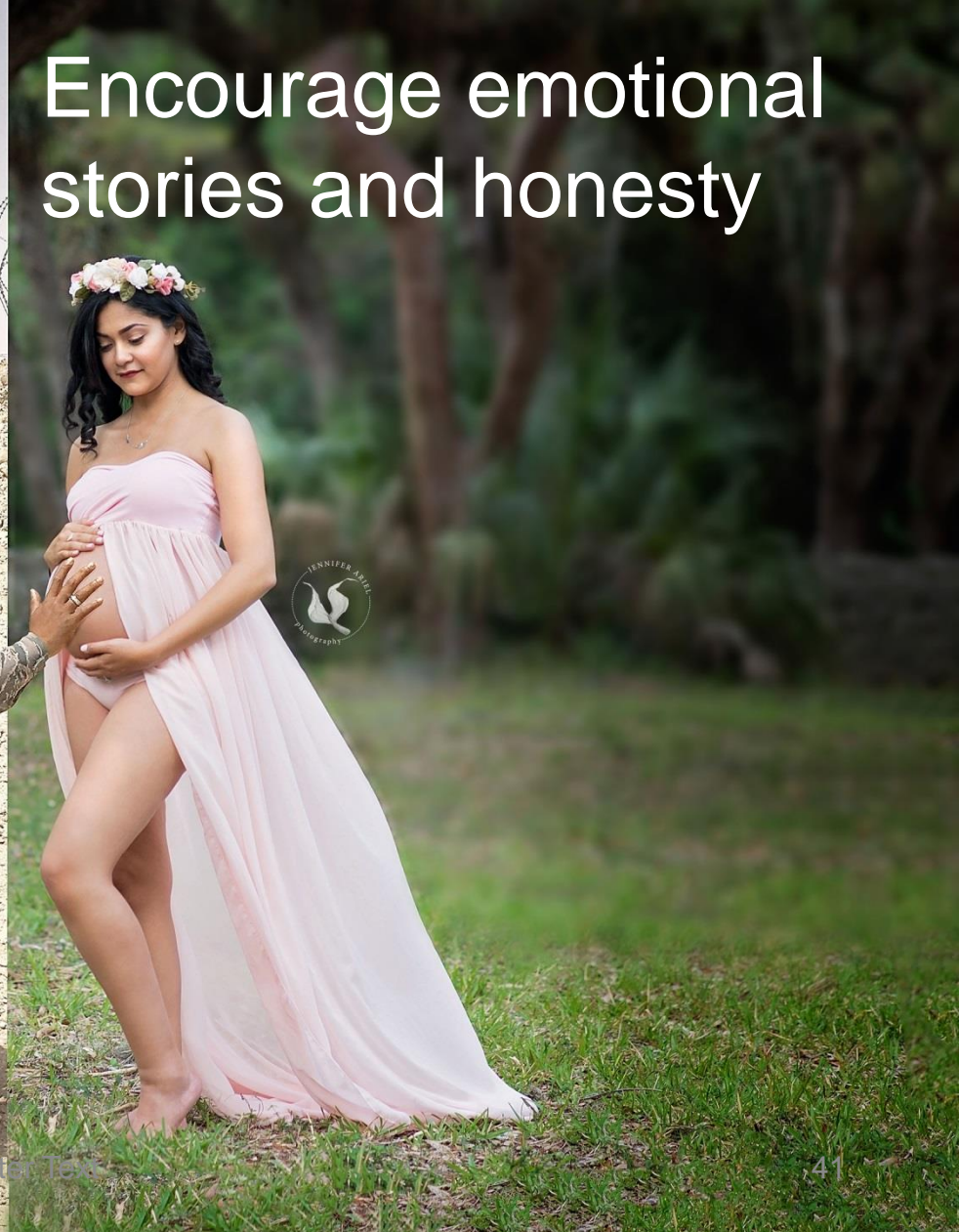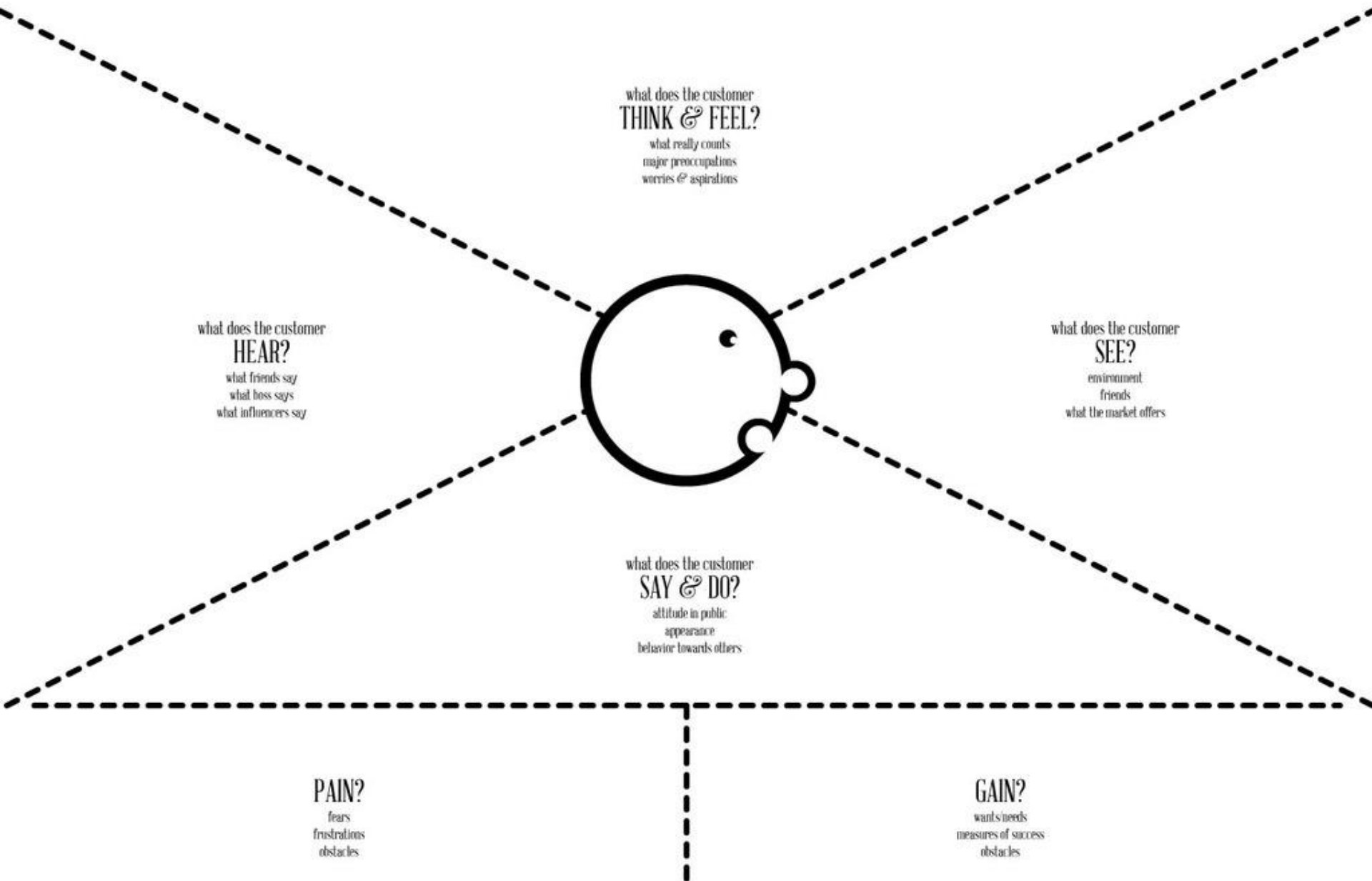- Do not explain your convictions !

Conversation

Seek stories and emotions !

Encourage emotional stories and honesty

Observe the non-verbal communication

what does the customer
THINK & FEEL?
what really counts
major preoccupations
worries & aspirations

what does the customer
HEAR?
what friends say
what boss says
what influencers say

what does the customer
SEE?
environment
friends
what the market offers

what does the customer
SAY & DO?
attitude in public
appearance
behavior towards others

PAIN?
fears
frustrations
obstacles

GAIN?
wants/needs
measures of success
obstacles

Take notes

- Record the answers
- But do it in non-intrusive manner

KEEP CALM AND Take Notes

Use the MVP

- Present the MVP and follow the reactions !
- Observe the reactions of

the first MVP users.

Follow-up

- Set-up the follow-up
- Arrange for another meeting or follow-up activity
- When possible, also ask for recommendation for other conversations:

,Who else would you recommend me to talk to ?'

Your goal: follow-up potential

- Your goal is to collect some sort of currency from the interviews.

- Currency can be an actual order or an email address for more information

Suggested readings

1. Eric Ries, The Startup Way, 2017 (forthcoming)
2. Jake Knapp, Sprint: Solving big problems and test new ideas in just 5 days, 2016
3. *N. Furr, J. Dyer. The Inovator's Method, 2014*
4. Michael E. Raynor, The Innovator's Manifesto, 2011
5. Vijay Govindarajan, Chris Trimble, The other side of innovation, 2010
6. Clayton M. Christensen, The Innovator's Prescription, 2009
7. Christian Terwiesch, Karl T. Ulrich, Innovation tournaments, 2009

Check-out...