Why Industrie 4.0 Demands New Business Models

@masscustom (Frank T. Piller)

RWTH Aachen | School of Business and Economics | TIME Research Area
Massachusetts Institute of Technology | MIT Media Lab | Smart Customization Group

Note:

This slide set is for private use only.

**It is similar to the one
shown by Prof. Piller during the event.**

It lacks some slides and most pictures, but should provide you the opportunity to review the messages delivered during the presentation.

Short Introduction: Frank Piller

Today's positions

- Head of **RWTH Technology & Innovation Management Group** and full (tenured) professor of management at **TIME Research Area** at **RWTH Aachen University**
- **Academic Director of RWTH Executive MBA**, offered by RWTH Aachen & Fraunhofer Gesellschaft
- Co-Founder and **Co-Director of the MIT Smart Customization Group**, MIT Media Lab, Massachusetts Institute of Technology, Cambridge, MA

Past positions

- **Research Fellowship at the MIT Sloan School of Management**, Innovation Management Group, Mass. Institute of Technology, Cambridge, MA (2004-2007)
- **Assistant / Associate Professor in Management** and Habilitation on Customer Co-Creation at **TUM Business School**, Munich (1999-2004)
- **Ph.D. in Operations Management** with focus on Mass Customization, **University of Wuerzburg** (1995-1999)

Current Research Interests and Expertise

- **Strategies for Customer-Centric Value Creation**, like mass customization, innovation co-creation, additive manufacturing, managing the frontend of innovation
- **Open Innovation**, i.e. technology transfer, R&D partnership models, crowdsourcing
- Managing Disruptive **Business Model Innovation** and supporting organizational structures and cultures (especially facilitated by Industrie 4.0 and Digital Transformation)

Entrepreneurial Activities

- **Co-Founder, Investor, and/or Member of Board of Directors** of several companies, including **Competivation** (innovation consultancy) **ThinkConsult** (process management and concept testing), **MVM.com** (personalization and virtual models), **Hyve AG** (customer co-creation), **Dialego AG** (innovative online market research), **Corpus-e AG** (low-cost high-quality 3D body scanning and "best fit" solutions for eCommerce), **DOOB AG** (3D printing and 3D modelling)
- **Real life achievements:** Only German in "**Top50 Profs on Twitter**" list; **Kloutscore** >60; **Google Scholar Citations** >8500
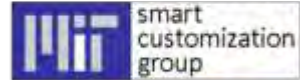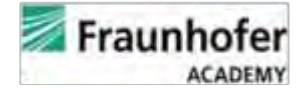
More info: frankpiller.com
Follow me on Twitter: @masscustom

"Digitization in manufacturing will have a disruptive effect every bit as big as in other industries that have gone digital, such as office equipment, telecoms, photography, music, publishing and films."

—The Economist, 4/21/12

What do these people have in common?

The Innovation manager of an **Investment Bank**

The head of sales at **Deutsche Bahn**

A business developer of **Yellow Strom**

The head of R&D of a **machine tool manufacturer**

A **consultant**

The head of service innovation of **BSH**

A business innovation manager at **Daimler**

The all gave the same response on a discussion question in an executive training offered by our department:

"Image your worst possible competitor. How would it look alike?"

These are platforms … and these want to become a platform

Platforms (business ecosystems) beat products every single time.

GSM — Zuverlässig

Die Gillette-Box ist über eine GSM Anbindung mit uns verbunden. Für die zuverlässige Anbindung haben wir mit der Deutschen Telekom einen starken Partner gefunden, der mit seinem ausgezeichneten Netz eine nahezu lückenlose Verbindung gewährleistet.

powered by **T** · ·

Langlebig

Die Box ist für minimalen Stromverbrauch ausgelegt. Sie schaltet sich nur auf Knopfdruck ein, sendet die Bestellung und schaltet sich wieder komplett ab. Kein unnötiger Stromverbrauch und minimale Sendestrahlung*.

*Das Gerät sendet nur auf Knopfdruck für wenige Sekunden, vergleichbar mit dem Senden einer SMS durch ein Mobiltelefon.

Sicher

Um versehentliche Bestellungen zu vermeiden, bekommst Du nach dem Bestellen eine Bestätigungsmail, in der Du Deinen Kauf noch einmal kurz bestätigen musst. Du kaufst nichts, was Du nicht willst.

02 - NUR EIN KNOPFDRUCK
für neue Klingen

Registriere Dein Gerät zunächst mit Lieferanschrift im Shop von Perfect Shave. Drücke den Order-Button, bis der blaue Ring um den Knopf anfängt langsam zu blinken. Der Knopf muss ca. drei Sekunden gedrückt werden.

https://youtu.be/NMacTuHPWFI

Why will one win and the other loose?

An integrated, isolated product

A service („App") as part of an existing platform

Platforms (business ecosystems) beat products every single time.

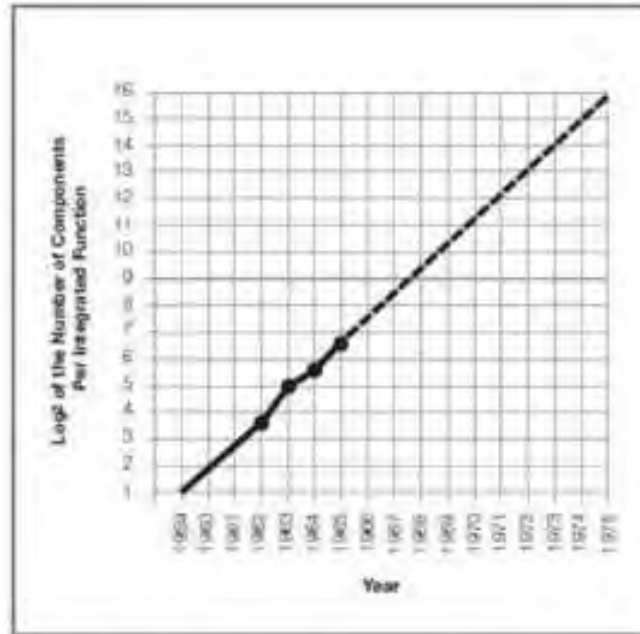# Exactly this development is challenging manufacturing companies today

"Digitalization"

"Digital Transformation"

"Industrie 4.0 (I40)"

"The (Industrial) Internet of Things (IoT)"

All this is based on a well-known effect

Digitalization etc. is still very much driven by Moore's Law

"**Reduced cost** is one of the big attractions of integrated electronics, and the cost advantage continues to increase as the technology evolves toward the production of larger and larger circuit functions on a single semiconductor substrate."
Electronics, Volume 38, Number 8, April 19, 1965

Brynjolfsson & McAffee: Moore's Law still is very much alive (in ist principle) – and driving competition and market dynamics

"**Idea of exponential growth** — in the computing power of machines, in the amount of digital information that is being created and in the number of relatively cheap devices that are continually talking to each other.

Moore's law

When these numbers doubled every year or two **in the early days of the computer revolution**, the results, while impressive, were still within our ability to imagine.

Power law

But **now** that the numbers are so staggeringly large, [so] that machines can **finally do things once considered possible only in the realm of science fiction**."

The 2nd half of the chessboard

THE SECOND MACHINE AGE

WORK, PROGRESS, AND PROSPERITY
IN A TIME OF
BRILLIANT TECHNOLOGIES

ERIK BRYNJOLFSSON
ANDREW McAFEE

And what do we do with all this capacity?

Pacif-i™ Smart Pacifier

WORLD'S FIRST BLUETOOTH™ SMART BABY PACIFIER

Blue Maestro are the inventors of the world's first Bluetooth™ Smart baby pacifier - Pacif-i™. Pacif-i™ is unique in that it records a baby's temperature and passes it to a parent's smartphone where it can be tracked and medication recorded. The ability to plot the effect medication has on temperature is particularly useful, no more scrambling for a pen and paper or trying to remember in your head. With useful reminders and alerts it becomes a peace of mind at stressful times. Comes with a range of other useful features, such as the ability to find the pacifier with your smartphone as well as a proximity feature that alerts your smartphone if the pacifier moves away from you.

From £25.00 / $39.00 / €30.00

What is the „job"
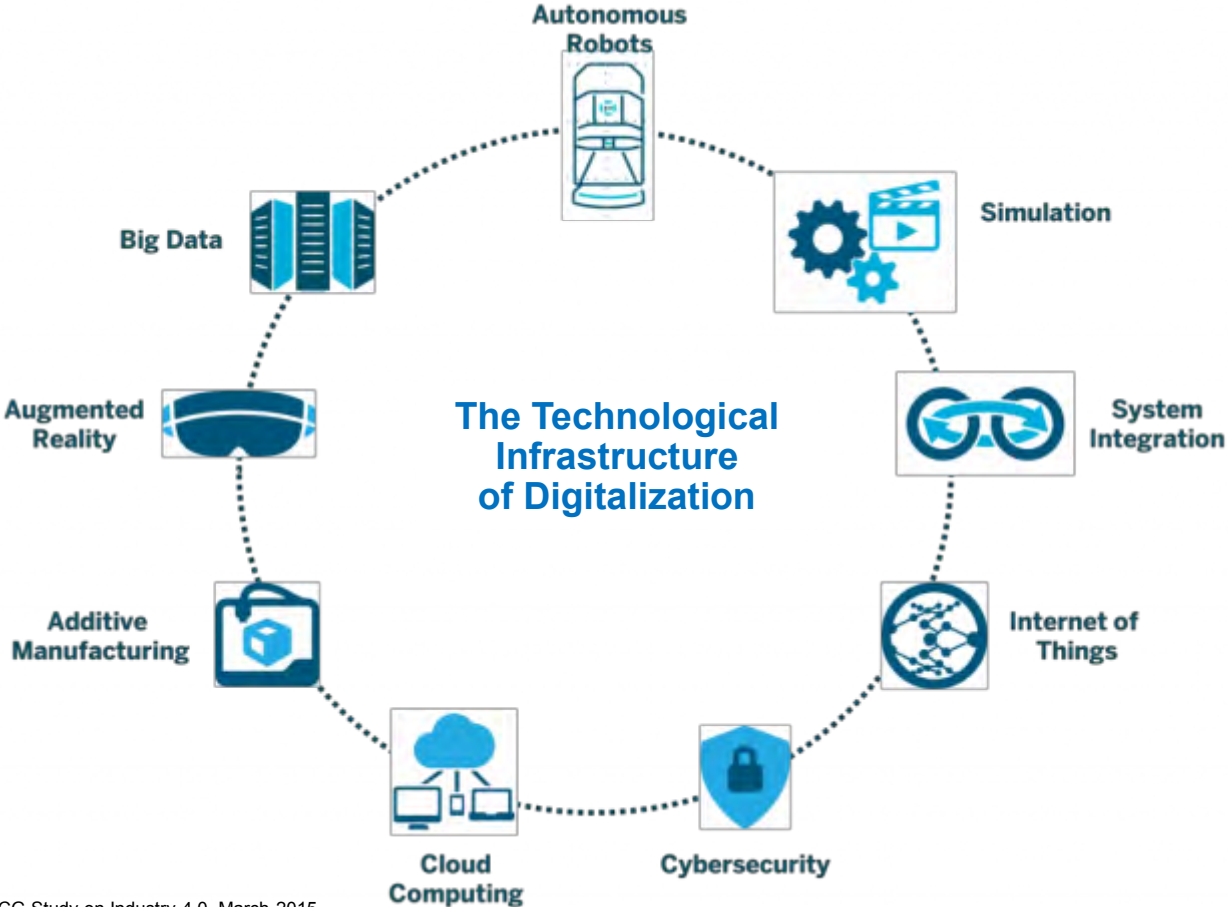# of this innovation?
(Do we really need this?)

At the same time, the pacifier becomes an open platform … expect 100s of baby apps!
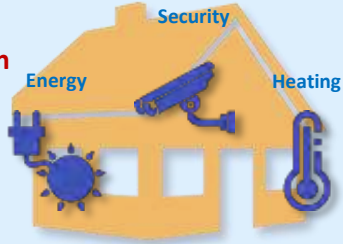
A framework to map Industrie 4.0

Different "technologies" are behind the current digital transformation of manufacturing. BCG, for example, differentiates these "nine pillars of technological advancement"
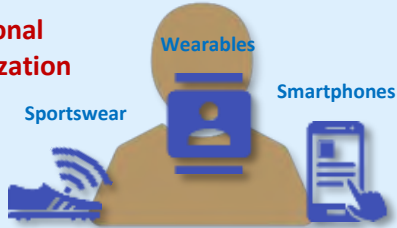

The Technological Infrastructure of Digitalization

- Autonomous Robots
- Simulation
- System Integration
- Internet of Things
- Cybersecurity
- Cloud Computing
- Additive Manufacturing
- Augmented Reality
- Big Data

Internet of Things
(Smart Solutions)

Home Automation
- Security
- Energy
- Heating

Personal Digitalization
- Wearables
- Smartphones
- Sportswear

Individual Mobility
- New Means of Transportation
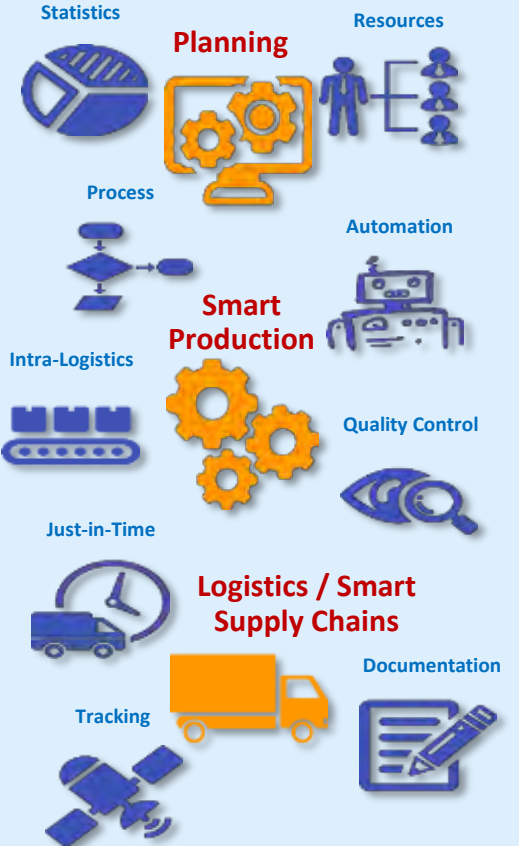- Optimized Wayfinding
- Connected Cars
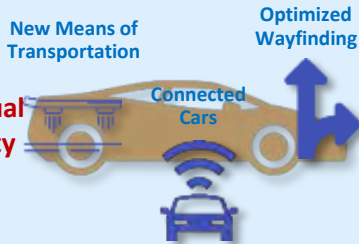
Digitalization
Technology and Process of Making „Things" Smart and Using their Data
(Enablers like Additive Manufacturing, Sensor Tech, Cloud, Analytics ,…)
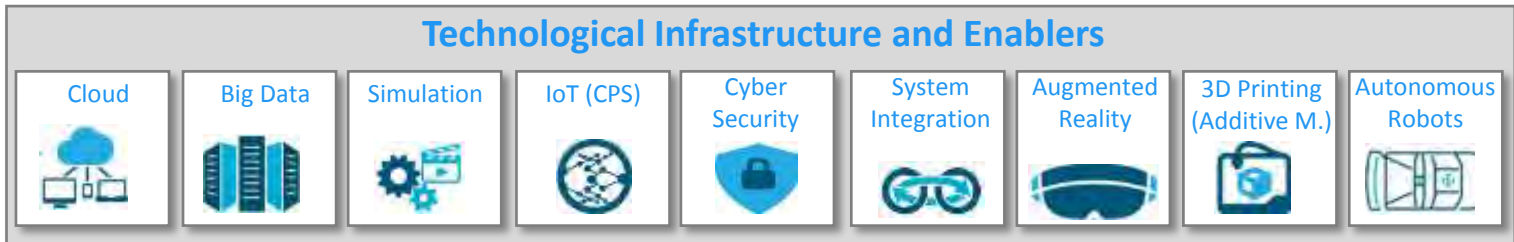
A Major IoT Application is …
Industry 4.0 consists of smart, connected „Things" and relies on their data

Industrie 4.0
(Industrial Internet of Things)

- Statistics
- Planning
- Resources
- Process
- Automation
- Smart Production
- Intra-Logistics
- Quality Control
- Just-in-Time
- Logistics / Smart Supply Chains
- Tracking
- Documentation

Source: RWTH TIME

(1) The technological infrastructure (Digitalization)

Technological Infrastructure and Enablers

Cloud	Big Data	Simulation	IoT (CPS)	Cyber Security	System Integration	Augmented Reality	3D Printing (Additive M.)	Autonomous Robots

(2) The Application Dimension: Smart Solutions in Form of Smart Products and Services

Smart Solutions

Smart Services

Smart Products

Technological Infrastructure and Enablers

Cloud	Big Data	Simulation	IoT (CPS)	Cyber Security	System Integration	Augmented Reality	3D Printing (Additive M.)	Autonomous Robots
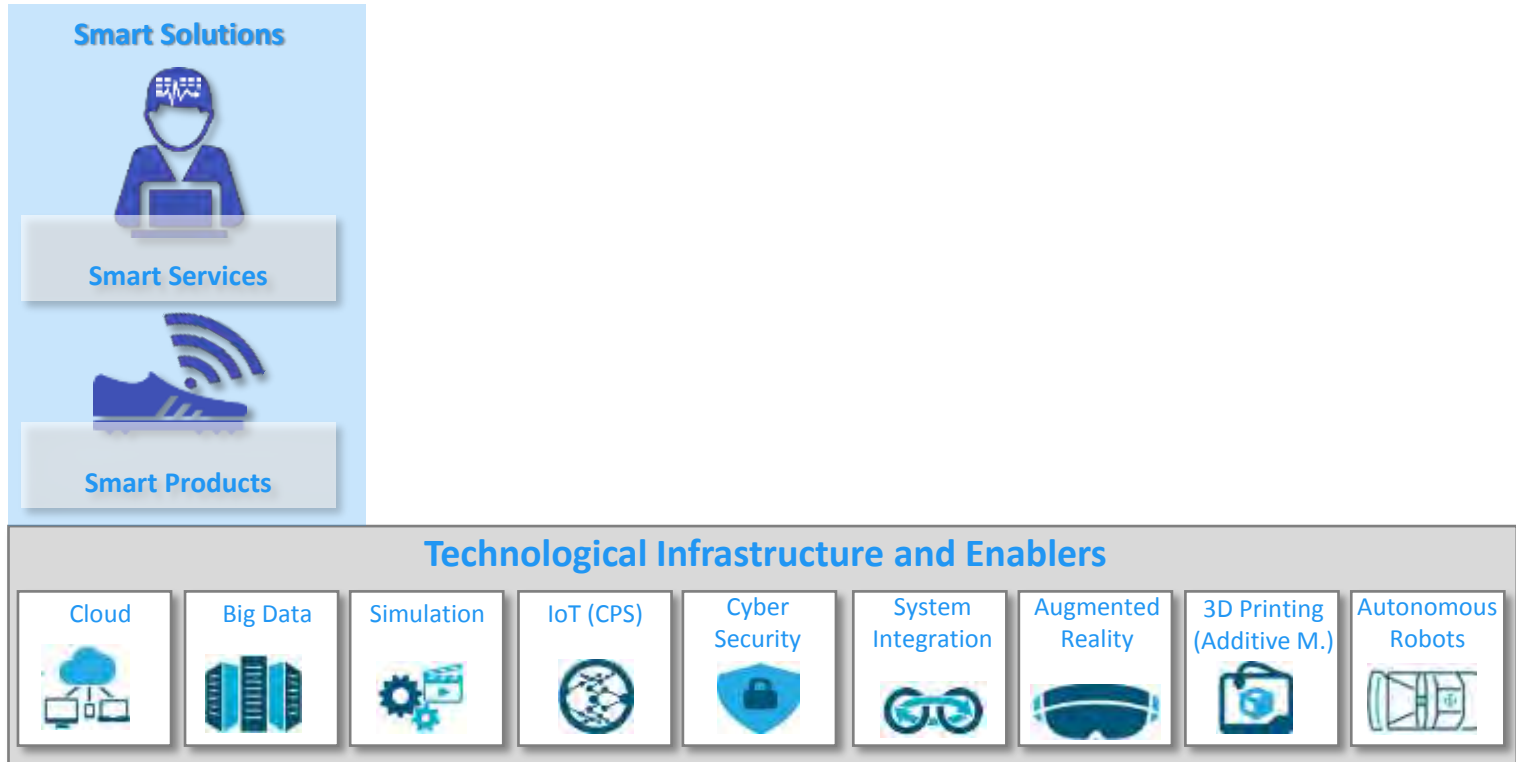
The Defining Characteristics of Smart Products

Aware
Smart Products are equipped with sensor technology giving **access to condition information** regarding the **product and its environment**

Connected
Smart Products are equipped with a M2M communication device that enables **interaction and data exchange with other cyber-physical systems**
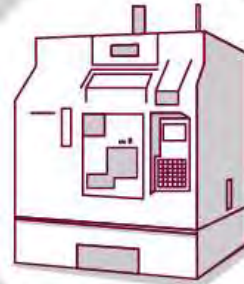
Intelligent
Smart Products are equipped with computing power that enables **autonomous decision-making** and **self-learning processes** based on defined algorithms
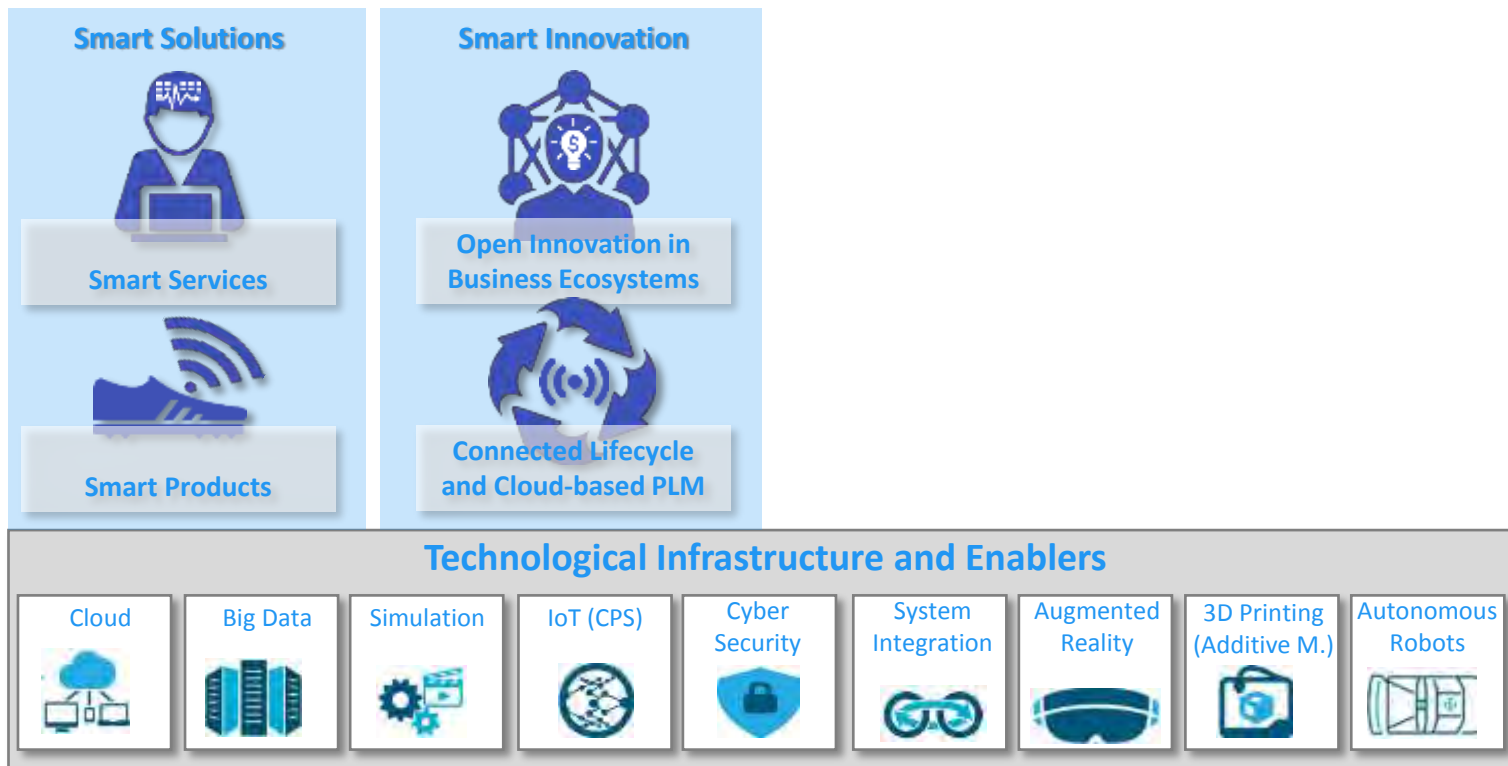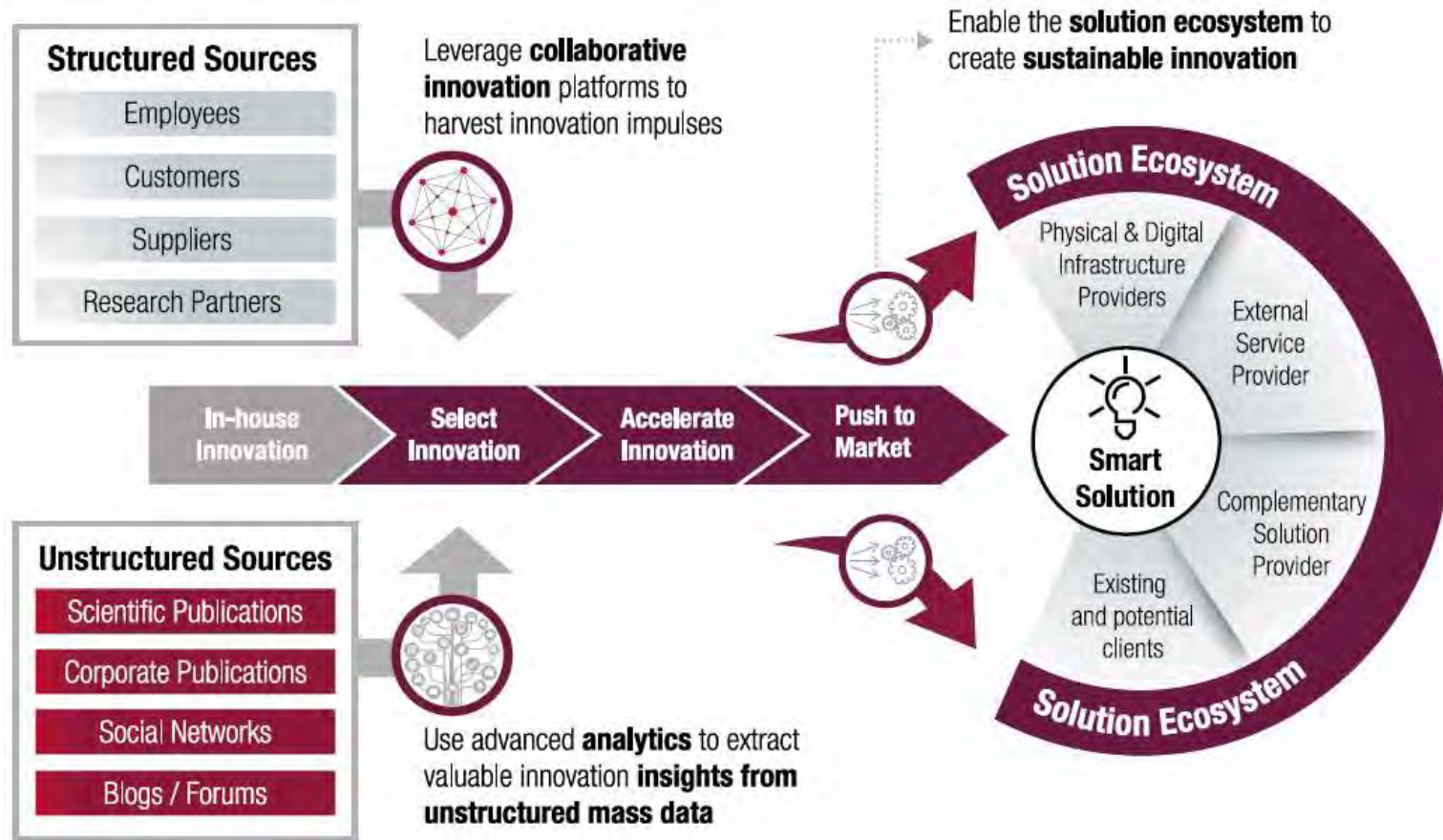
Responsive
Smart Products are equipped with control technology that enables **autonomous product adaption** based on **internal or external commands**

(3) The Innovation Dimension: Digitalization enables new dimensions of open innovation in business ecosystems along the entire lifecycle

Smart Solutions

Smart Services

Smart Products

Smart Innovation

Open Innovation in Business Ecosystems

Connected Lifecycle and Cloud-based PLM

Technological Infrastructure and Enablers

| Cloud | Big Data | Simulation | IoT (CPS) | Cyber Security | System Integration | Augmented Reality | 3D Printing (Additive M.) | Autonomous Robots |

Digitalization also enhances today's notion of "open innovation" into an extended innovation system in open ecosystems

Structured Sources
- Employees
- Customers
- Suppliers
- Research Partners

Leverage **collaborative innovation** platforms to harvest innovation impulses

Enable the **solution ecosystem** to create **sustainable innovation**

Solution Ecosystem

Physical & Digital Infrastructure Providers

External Service Provider

Smart Solution

Complementary Solution Provider

Existing and potential clients

Solution Ecosystem

In-house Innovation → Select Innovation → Accelerate Innovation → Push to Market

Unstructured Sources
- Scientific Publications
- Corporate Publications
- Social Networks
- Blogs / Forums

Use advanced **analytics** to extract valuable innovation **insights from unstructured mass data**

(4) The Smart Factory: Digitalization enables data-driven, resilient and decentralized factories, which become part of a connected supply chain

Smart Solutions
- Smart Services
- Smart Products

Smart Innovation
- Open Innovation in Business Ecosystems
- Connected Lifecycle and Cloud-based PLM

Smart Supply Chains
- Agile Networks for Collaboration
- Connected & Resilient Supply Chains

Smart Factory
- Decentralized Production Control
- Data-Driven Operational Excellence

Technological Infrastructure and Enablers

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(4) The Smart Factory: Digitalization enables data-driven, resilient and decentralized factories, which become part of a connected supply chain

N24

NACHRICHTEN | SPORT | WISSEN

Start > Nachrichten > Wirtschaft > Adidas will sich aus Asien verabschieden

POLITIK | PANORAMA | WIRTSCHAFT | NETZWELT | N24 BUZZ | WISSENSCHAFT

Speedfactory

Adidas will sich aus Asien verabschieden

+ merken

Adidas will Produktion "näher am Kunden"

(Foto: dpa/AFP/Archiv, dpa/AFP/Archiv)

Steigende Löhne und Handelshemmnisse in Asien bringen Adidas ins Grübeln. Die Produktion soll jetzt flexibel, lokal und auf kleinstem Raum umsetzbar sein.

Der Sportartikelhersteller Adidas erwägt angesichts steigender Löhne in China und wachsender Handelshemmnisse eine teilweise Abkehr aus Asien. "Wir werden näher an die heranrücken und die Ware dort fertigen, wo die Käufer dem "Handelsblatt". Ziel sei. "flexi

(5) While smart solutions drive market growths, the smart factory enables operational efficiency – but also mass customization and new business models


Industrial Efficiency Drivers
(Industrial Internet of Things, I4.0)

Growth Drivers
(Connected, „Smart" Everything, IoT)

Smart Solutions

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# The challenge of finding a new business model

A **business model is a management hypothesis** about what customers want, how they want it and how an enterprise can meet those needs and get paid for doing so.
(David Teece, UC Berkeley)
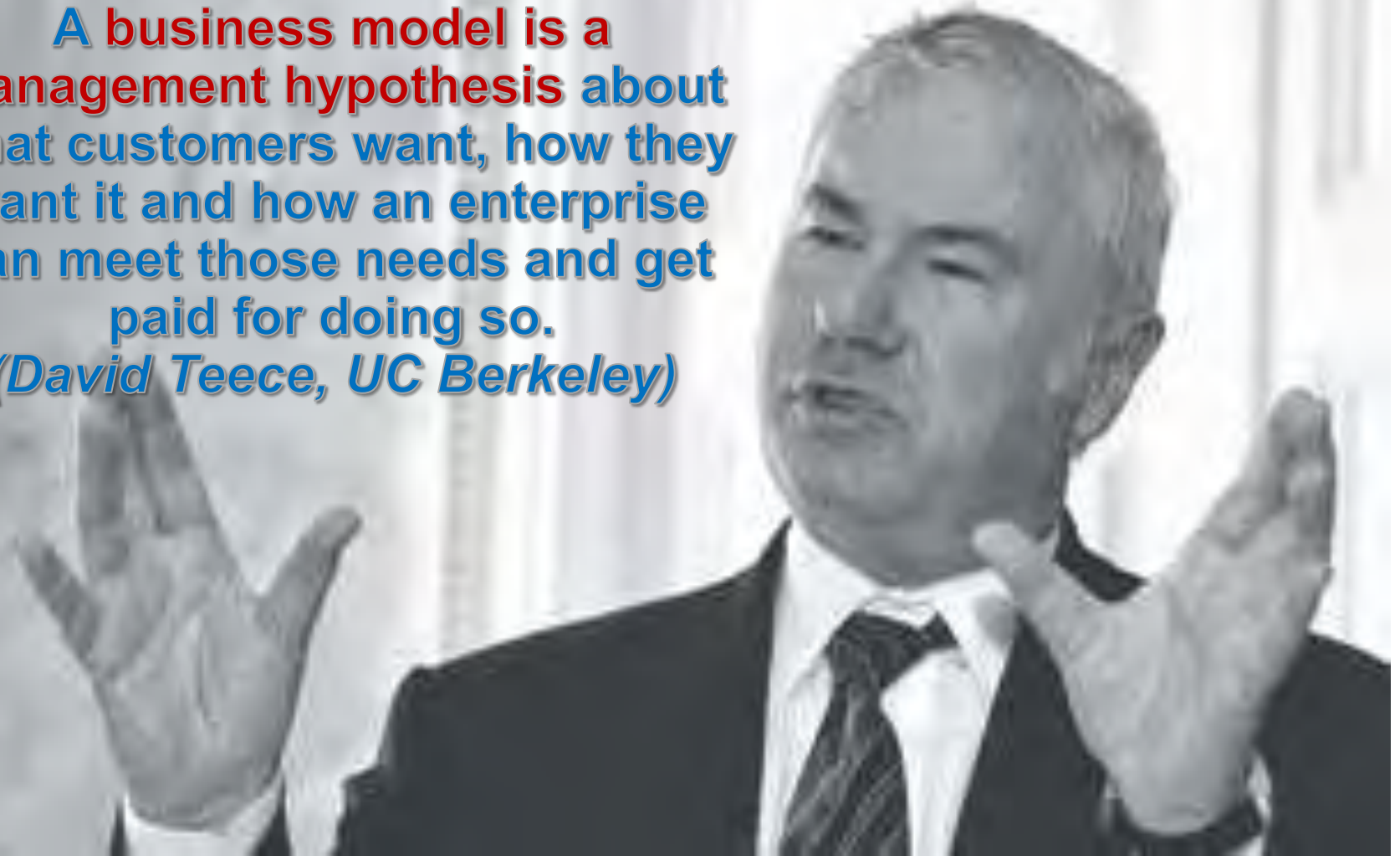
The challenge: Business model innovation demands to build and manage assumptions
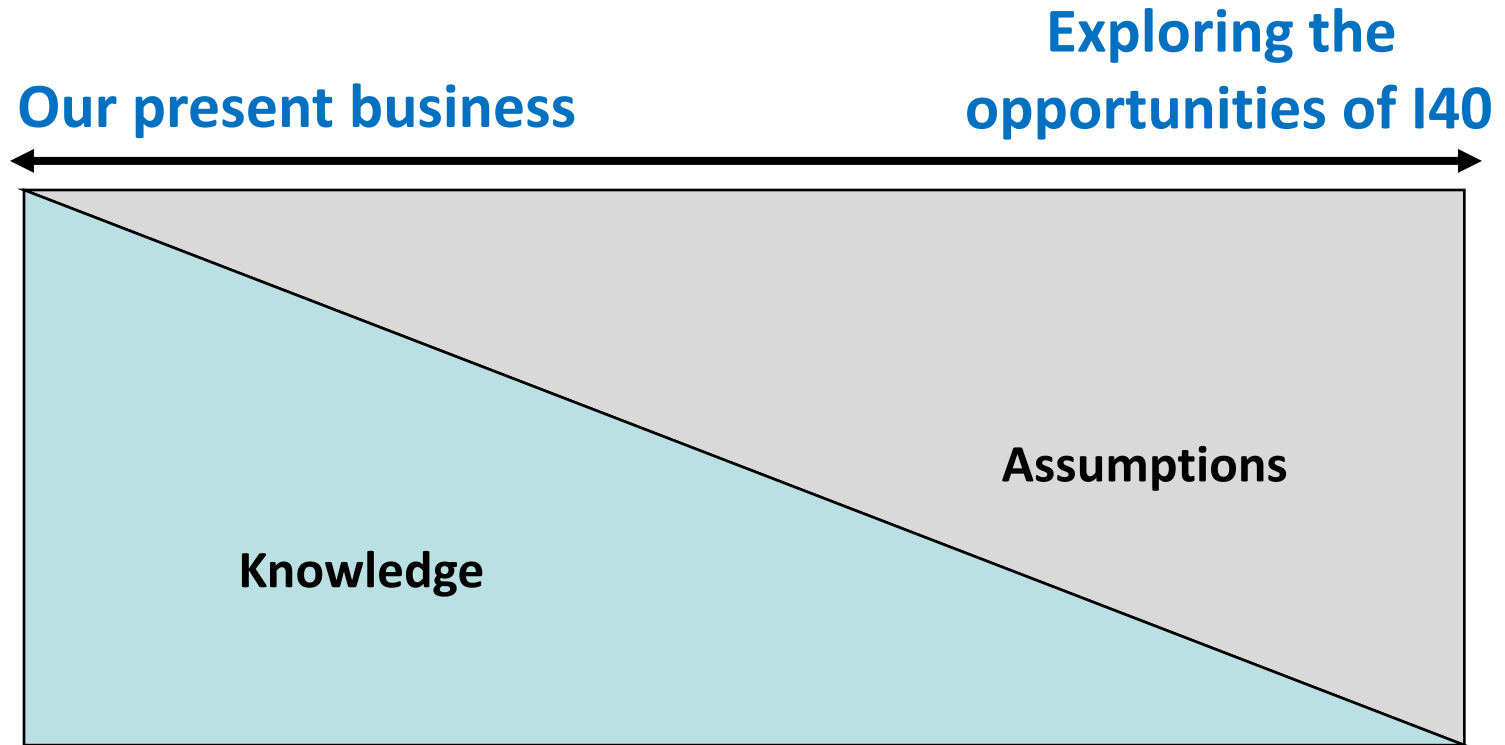
Our present business

Exploring the opportunities of I40

Knowledge

Assumptions

THE AACHEN BUSINESS MODEL INNOVATION (BMI) APPROACH*
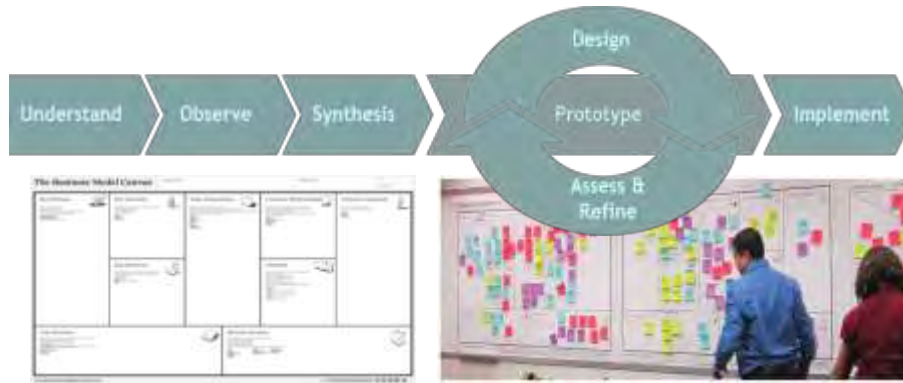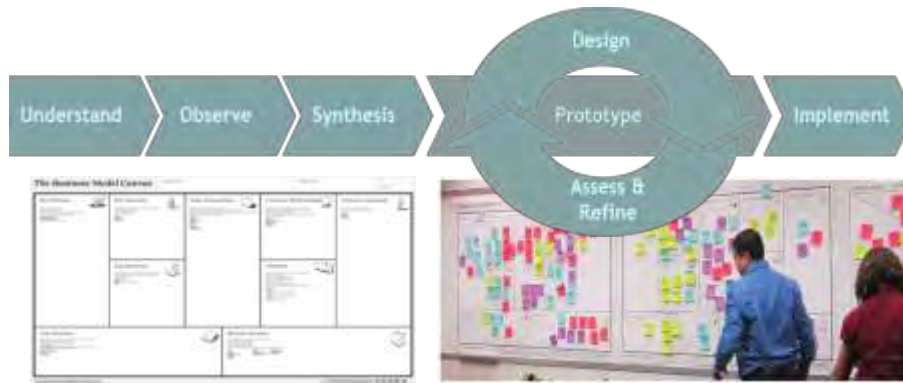

(1) Iterative „Design Thinking" approach:
- **Agile process** with continuous iterations and **strong user focus**
- **Open, collaborative task** in responsibility of every product manager
- Early use of many BM prototypes (**Primotypes**)
- **BM Canvas as a communication tool:** Ability to **map BM alternatives**
- **Intuitive approach**, at the same time systematically
- Today, often **company-specific canvas**

* more information: bmi.rwth-aachen.de

The Idea of the Business Model Canvas

- To analyze the status quo, clarify the processes underlying them,
- To overcome barriers (confusion and complexity) and to discover alternative business models, …
- which then allows us to run "experiments" considering alternate combinations of the processes.
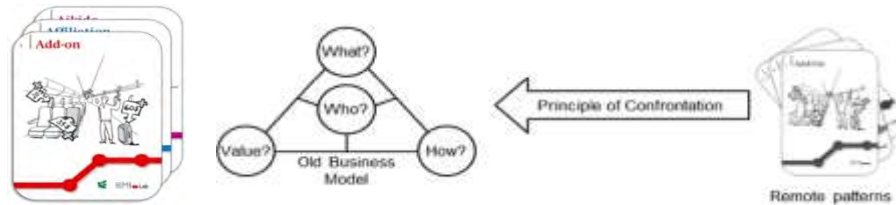- And this in an interactive process!

THE AACHEN BUSINESS MODEL INNOVATION (BMI) APPROACH*

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(2) BM patterns for systematic search for new BM:
- Successful BM are based on **recurring patterns**
- Derivation of general and company specific libraries of **BM patterns**
- Systematic problem solving based on **TRIZ approach**

BM PATTERNS – INSPIRATION TO RETHINK THE BUSINESS MODEL

In the world of business models, **there is not much that is actually new – but many powerful adaptions!**

Patterns of business models **can serve as an inspiration** when innovations of business models are considered.

E.g. *Solution Provider: Deliver carefree package of comprehensive solution of integrated product and service offerings*

E.g. *Experience Selling: Deliver emotional sensation apart from the functionality of the tangible product in saturated market*

→ **Recombine existing concepts** to break outside of the box and generate ideas for new business models

Building on: Gassmann & Frankenberger, Univ St Gallen, 2014

1970 Invention of nespresso system (coffee machine usable with coffee capsules)

1986 Market entry
(Razor and Blade)
(Lock-in)

1987 Nespresso almost failed due to nonperforming business model

1991 Jean-Paul Gaillard takes over activities of Nespresso
(Razor and Blade)
(Lock-in)
(Solution provider)
(Experience)
(Direct selling)
(Ultimate luxury)

Nestlé is catching up with severall new businesses like Babyness and Special T.

Nespresso business model **initially almost failed**. It only **became successful** when Jean-Paul Gaillard **adapted the business model** by additional „patterns".
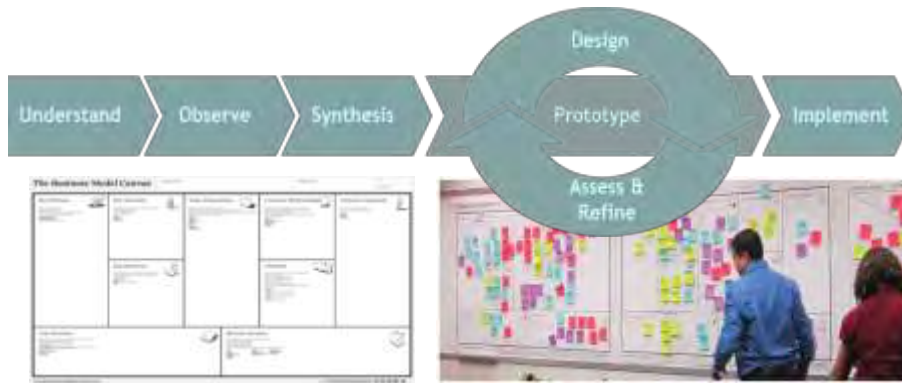
We can see this competition also differently:

An ambitious and brave business experiment (from prototype or perish to deploy or die)
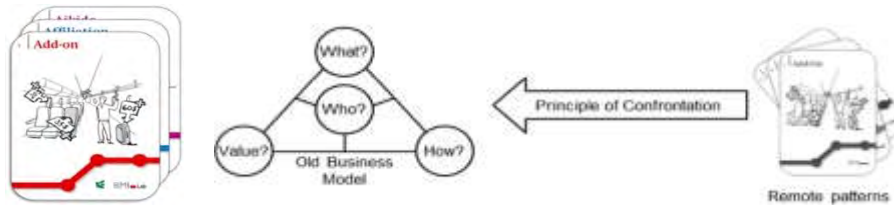
„Business as usual"

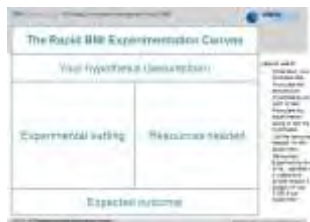# THE AACHEN BUSINESS MODEL INNOVATION (BMI) APPROACH*

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- Systematic problem solving based on **TRIZ approach**

(3) Rapid experimentation and validation in field
- BMI means to develop alternatives – and to test assumptions
- Ability to generate quick and cheap experiments (e.g., 5x5x5x5x5 logic by Schrage)
- Experimentation template

* more information: bmi.rwth-aachen.de

Digital Business Model
Value Propositions, Offerings, and Markets

Industrial Efficiency Drivers
(Industrial Internet of Things, I4.0)

Growth Drivers
(Connected, „Smart" Everything, IoT)

Digital Corporate Mindset
Skills, Leadership, and Culture

Digital Performance Structure
Governance, Processes, and Organizational Design

Smart Solutions

Smart Services

Smart Products

Smart Innovation

Open Innovation in Business Ecosystems

Connected Lifecycle and Cloud-based PLM
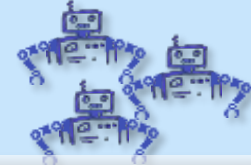
Smart Supply Chains

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Technological Infrastructure and Enablers

Cloud

Big Data

Simulation

IoT (CPS)

Cyber Security

System Integration

Augmented Reality

3D Printing (Additive M.)

Autonomous Robots

Source: Based on Bechtold et al., 2015 / CapGemini I40 Framework

"Success factors" for BMI

Culture
- Questioning attitude
- Rewards success and failure, punishes inaction
- Tolerates mistakes
- **Slack is welcomed**
- Supports risk taking and change
- Supports teamwork and collaboration

People
- **Diversity** (internal and external)
- Collaboration
- Educated in regard to the strategy and skills needed

Leadership
- Guide the process in a participative and fair way
- Clearly communicate reasons, and expectations
- Educate employees
- **Shield creative teams from distractions and pressure**
- Appreciate distinctiveness in people and their thinking
- **Welcome change**
- Ask itself what it does to promote or inhibit innovation and how to get rid of these obstacles.

The BMI organization

Systems
- **Support the process of strategic innovation**
- **Enable collaboration**
- Enable the use and creation of knowledge
- Reward risk taking and action
- Used to create relationships with customers
- Metrics & rewards support innovation

Processes
- **Fast and un-bureaucratic**
- Decentralized decision making
- Support idea generation, experimentation and execution

Structure
- **Fast and flat**
- Small units
- Encourages collaboration
- **Autonomous teams at the front line**

Building on Marc Sniukas 2011

But perhaps we don't need to build "supermodel companies" anyway – *as we don't need companies at all any longer …*

The other side of Industrie 4.0

Ronen Kadushin

http://www.ronen-kadushin.com/

OPEN DESIGN   WORK   NEWS   EDUCATION   CONSULTING   MEDIA   BIO

OPEN DESIGN

RECENT UPLOADS COLLECTION

FURNITURE

HARD COPIES COLLECTION

LIGHTING

ACCESSORIES

Open Design was developed as my MA thesis and became the core of my creative work. I first published Open Designs for download in 2005. This is from the Open Design Manifesto I wrote:
A revolution in product development, production and distribution is imminent due to the Internet's disruptive nature and the easy access to CNC machines. Open Design is a proposal to make this happen. It's aim is to shift Industrial Design to become relevant in a globally networked information society.
In Open Design a design is CAD information published online under a Creative Commons license to be downloaded, copied and modified, and is produced directly from file by CNC machines and without special tooling.

Thingiverse

Home   About   Blog   Upload   Newest   Featured   Popular   Tools   Parts

Welcome to the Thingiverse.

This is a place to share digital designs that can be made into real, physical objects. Let's create a better universe, together!

Newest Things   view more

Unicorn Logo
By: langfordw 2 hours ago

Maker Bot Sound Library
By: sepulchra 3 hours ago

Aluminum Mk4 Idler
By: colorbroken 5 hours ago

Featured Things   view more

Popular Tags

3D
makerbot
reprap
useful
makeentry
openscad
toy
experiment
model
lasercut
View All Tags

Popular Tools

3D Printer
Knife
Laser Cutter
Screwdriver
Soldering Iron
Scissors
Saw
Hex Keys
Wire Cutters
Hot Glue Gun
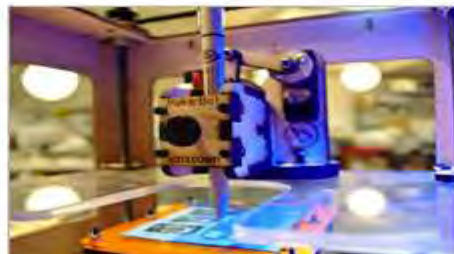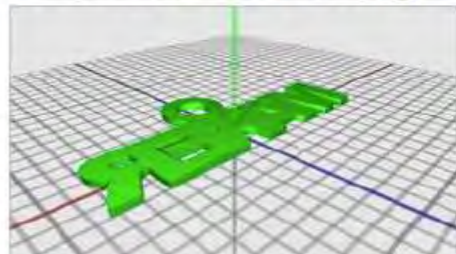
Thingiverse Blog

Recent Posts

Share and Share Alike

Marty's Thingiverse WordPress Plugin is

Change language: English

What is Google SketchUp 6?

Google SketchUp is a deceptively simple, amazingly powerful tool for creating, viewing, and modifying 3D ideas quickly and easily. Google SketchUp was developed to combine the elegance and spontaneity of pencil sketching with the speed and flexibility of today's digital media.

Download Google SketchUp 6

Developed for the concep[...] allows for quick and eas[...] dynamic, creative explor[...]

Google SketchUp comb[...] system that streamlines[...]

3D for Everyone

Design software has bee[...] something has been mis[...] hand-in-hand with the de[...] necessary for developing[...] design work.

Google SketchUp bridge[...] ourselves, we created G[...] our users.

We know you've heard it[...] piece of cake to use' or[...] have to take our word fo[...] fire it up and give it a sp[...]

But nevermind what we t[...] to them:

- Communication [...] tool
- Problem-solving [...] tool
- Productivity tool
- Creativity tool

eMachineShop.com
machine custom parts online

SEARCH

Create custom parts, products and prototypes through our **ONLINE** machine shop!

1 DOWNLOAD
Get our free easy-to-use CAD software

DOWNLOAD CAD SOFTWARE

2 DESIGN
Use our software to design your custom part

DEMONSTRATION »

3 ORDER
Get an instant price and click to order.

ORDER HELP »

DOWNLOA
FREE CAD SOFTW
Win 98, ME, 2000, N

LATEST V

ORDER STAT
E-MAIL
ORDER #

MACHINED EXAMPLES & PHOTO GALLERY
» VIEW ALL

TESTIMONIA
"Quite easy to use
about 10 minutes I
downloaded, insta
designed and price
with 32 teeth, 1 in
and 1/4 inch thick.
immediate."

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- Top View position
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eMachineShop is the remarkable new way to create the **custom**

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- Member Project Gallery

TechShop San Francisco

The TechShop San Francisco Building at 5th and Howard Streets (Signage ...

Manufacturing as a service

xaas*

xaasfaou*

*everything as a service for all of us

An industry already that already has been disrupted by a very similar development is the publishing industry

2D Digital Printing

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Digitalization enables
rapid innovation (in ecosystems)

Consider access to industrial-grade additive manufacturing (3D printing) for everyone via 3Dprinting platforms

i.materialise

> The result from a 3D model to a 3D print is stunning. The object fills the void in my living room like an alien artifact: wonderful and strange...

i materialise

koen

i.materialise is a 3D printing service for everybody with an eye for design and a head full of ideas.

We want you to focus on the creation of designs –made by you– that add value to people's lives, while we do the manufacturing.

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WHAT IS

3D PRINTING?

Creation corner

Design tools that allow

Digitalization mandates faster decision making

i.materialise

An anouncement for the Nokia Lumia 820

18 January 2013 Last updated at 08:22 ET

4.9K Share

Nokia backs 3D printing for mobile phone cases

Nokia is releasing design files that will let owners use 3D printers to make their own cases for its Lumia phones

Files containing mechanical drawings, case measurements and recommended materials have already been released by the phone maker.

Those using the files will be able to create a custom-designed case for the flagship Lumia 820 handset.

The project makes Nokia one of the first big electronics firms to seriously back 3D printing.

The design files will let people produce their own cases for their Lumia 820

In a blogpost, John Kneeland, one of Nokia's community managers, revealed the Finnish phone maker's decision to release the 3D drawings.

Related Stories

i.materialise

Fr

25 Jan

6 days from file (product) to product ecosystem

But digitalization of manufacturing not just enables *access as a service*, but also its continuous development by users

While being traditionally a field of large companies (EOS, 3D Systems …), AM hardware is one of the areas where user-generated hardware is becoming an alternative:

Consumerization of Manufacturing Hardware
(similar to present status quo in IT!)

Recent research by Joel West et al. (2014) identified more than 100 *commercial* iterations of the RepRap (open hardware) design

Deezmaker

- **Bukobot & Bukito,** $ 1499 / $ 899

- **Relation to Open Source:**
  - First owned printer: Prusa Mendel
  - „Whosawhatsis": RepRap Wallace
  - Kickstarter campaign
  - Bukobot & Bukito: Open Source license

- **Influence of Open Source:**
  - "The community is probably the best tech-support you can get"
  - New products tested and revised very quickly
 - Most Important: OS Community, Kickstarter, Crashspace

Cobot

- **Cobot, HFG printer**
- **Relation to Open Source:**
  - First printers: Printrbot
  - Members in community, rather passive
  - HFG: open license,
    Cobot: hardware closed, Firmware open

- **Influence of Open Source:**
  - HFG printer strongly "inspired" by RepRap (e.g. Mendel Lunda)
  - Small number of parts sourced for Cobot (e.g. Hotend, Endstops)
  - „without the availability of OS printers we most likely would not have started the project"

Kuehling & Kuehling

- **RepRap Industrial** $ 5938

- **Relation to Open Source:**
  - OSS background
  - First printer: RepStrap
  - Contribution to RepRap Mendel
  - Open License for 3D printed parts

- **Influence of Open Source:**
  - Cooperations & joint development
  - Knowledge through modification of RepRap designs
 - Use and purchase of RepRap electronics for current printer
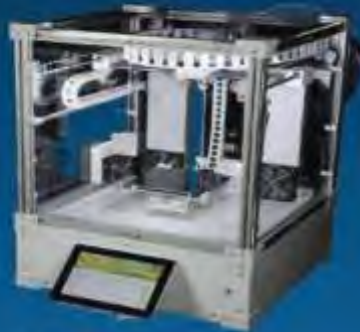
HypeCask

- **Delta Tower,** € 8,328
- **Relation to Open Source:**
  - First printer: Ultimaker
  - Contribution to Ultimaker evolution
  - DeltaTower influenced by RepRap Rostock
  - Hardware closed, open license

- **Influence of Open Source:**
  - No direct use of hardware designs
  - Very fast learning & access to networks
  - Electronics strongly based on or used from RepRap

This creates news challenges
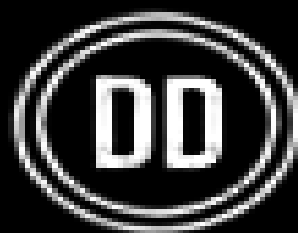
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Our world is structured in domination. The global governmental paradigm is emergency power and totalization. Defense Distributed (DD) is a non-profit software developer and publisher dedicated to striking the roots of all statist monopolism. DD broke unexpected ground in digital manufacturing with its gun files, and continues to develop other Internet and 3DP technologies while confronting cutting-edge issues in free speech, privacy, innovation, and intellectual property. Unlike a political lobby or an impotent think tank, DD champions the public interest through action and open-source innovation.

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👁 3652 ☁ 504 ☆ 0

Ghost Gunner Release

This demands new technology and IP policies on the government level …

… but especially **new business models** to capture value in a company

*(Think about it like this:
"What is the 'concert'
of a manufacturing company?")*

"Digitization in manufacturing will have a disruptive effect every bit as big as in other industries that have gone digital, such as office equipment, telecoms, photography, music, publishing and films."

—The Economist, 4/21/12

Plenty of things to discuss …

INC INVENTION CENTER

EXPERIENCE INNOVATION –
CREATE MARKETS

Das INVENTION CENTER (INC)

INVENTION CENTER - WARUM?

Das Technologie- und Innovationsmanagement (TIM) in Unternehmen steht vor großen Herausforderungen. Neben der kontinuierlichen Entwicklung, Verbesserung und Einführung neuer Technologien und Produkte entscheidet heute auch die Differenzierung über neue Geschäftsmodelle über den Markterfolg. Mit dem Invention Center (INC) schaffen wir einen Ort, an dem sich Industriepartner gemeinsam mit uns den Herausforderungen des TIM stellen können.

DIE VISION

- Den Nutzen neuer Ideen maximieren.
- Die Dauer der Produktentwicklung bis zur Platzierung des Produkts am Markt auf 25% reduzieren.
- Die Entwicklungskosten auf 10% reduzieren.
- Entwicklung eines Pionier- und Vorreiterverständnisses in Bezug auf anspruchsvolle Fragestellungen im TIM.
- Partizipieren an DER Meinungsführerschaft im Technologie- und Innovationsmanagement.
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Start des 13. Durchgangs im **Sept. 2016 | Studienleitung**: **Prof. Dr. Frank T. Piller**
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Open for interaction

Frank T. Piller, Prof. Dr.

RWTH Aachen University
TIME Research Area Technology, Innovation, Marketing & Entrepreneurship
Kackertstrasse 7 | 52072 Aachen | Germany

piller@time.rwth-aachen.de
@masscustom (Skype, Twitter, Facebook)
time.rwth-aachen.de/tim | frankpiller.com

Expertly assisted by: **Monika Heer**,
+49 (0)241 809-3577 | heer@time.rwth-aachen.de

Contact industry alliances: **Christian Gülpen**
+49 (0)241 809-6660 | guelpen@time.rwth-aachen.de