Digital Transformation and sustainable business models

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Lena Bauer Pre-Sales & Solutioning Consultant Technology Services, NTT DATA

Introduction Juergen Hecht

- **Vice President, Technology Services – Banking, Insurance & Public**
  NTT DATA Deutschland (Stuttgart)
- **Manager, Applications Services Banking & Capital Market (NCE)**
  DXC Technology (Boeblingen)
- **Managing Consultant Financial Services Industry**
  HPE Enterprise Services (Boeblingen)
- **Client Principle Banking & Insurance**
  EDS (Hamburg)
- **Head of Advisory for Business Processes FSI**
  DSGV (Berlin)
- **Leader Cash Management Systems**
  European Payment Council (Brüssel)
- **Head of Banking technique**
  DSV (Stuttgart)

- Saving Bank Economist
- Author (Cash-Processing in Credit Institutions)
- Bitkom Member (Insurance and Advanced Analytics)

Introduction Lena Bauer

- **Pre-Sales & Solutioning Consultant Technology Services**
  NTT DATA Deutschland (Frankfurt)
- **Business Consultant Banking**
  DXC Technology (Bad Homburg)
- **Corporate Master Student – Advisory & Consulting Financial Services Industry**
  M.Sc. Consulting & Business Analytics, ESB Reutlingen
  DXC Technology (Bad Homburg)
- **Corporate Bachelor Student – various departments**
  B.Sc. International Management for Business and IT, DHBW Mannheim
  Hewlett Packard Enterprise Bad Homburg

Work Focus

- Solutioning on Agile, Cloud, DevOps & Software Development topics
- Sustainability & IT
- Banking & Insurance Industry

Wir haben die **Emojis** erfunden

Wir wickeln **~40% des weltweiten Internet Datenverkehrs** ab und bauen darauf sichere Informationsnetzwerke auf

One NTT Group

Wir haben Europas **größte fusionsgetriebene IT-Integration** im Telko Sektor durchgeführt

Wir haben die **weltweit führende Smart City** für die Olympischen Spiele 2021 in Tokio gebaut

NTT Gruppe
Werttreiber für unsere Kunden

INNOVATION

310.000
Mitarbeiter

$ 109 Mrd.
Umsatz

NACHHALTIGKEIT

120+ Jahre
Tradition

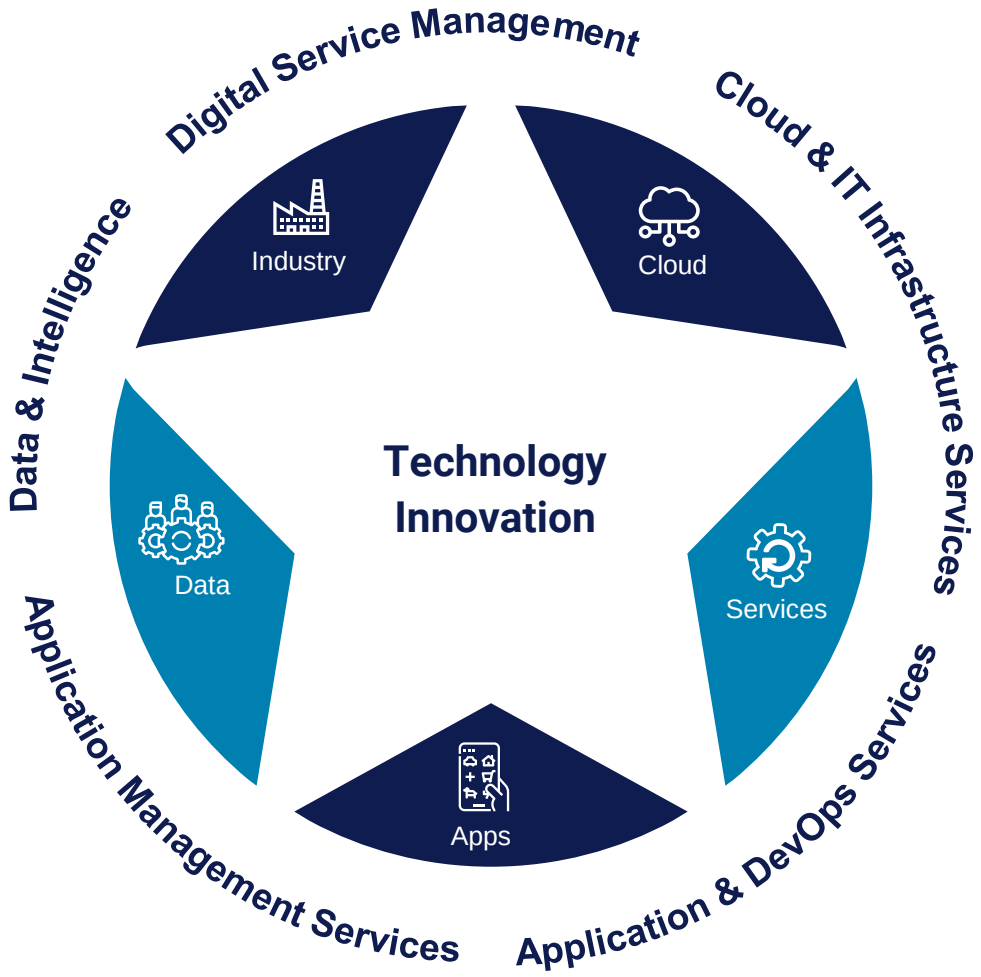
Vertreten in **88**
Ländern

ZUKUNFTS-TECHNOLOGIE

$ 3.6 Mrd.
Investiert in **F&E**

85% der Fortune 100
sind unsere Kunden

What we do in our service line – Technology Services



Application & DevOps Services

Optimize, Integrate and Develop innovative applications that materialize cloud benefits using state of the art technologies and methodologies.

Application Management Services

Improve application maintenance and management through enhanced, automated and self-serviced application operation in a right-sized and right shored approach – decreasing clients' run costs while increasing efficiency.

Cloud & IT Infrastructure Services

Advice, design, transform and manage cloud platforms considering private and public cloud solutions as well as hybrid cloud scenarios enabled through state-of-the-art technologies and technology partner (i.e. AWS, Azure, GCP).

Data & Intelligence

Accelerating Data into Value - Based on profound expertise in using technology and methodology, client's data will be turned into relevant information, gaining new insights which lead to real business value.

Digital Service Management

Empowering digital services, products and workflows by using the mature ingredients of service management way beyond traditional IT mixed with modern concepts. All enabled and automated with our technology partners ServiceNow and BMC.

Freitag (ganztags) 20.10.2023 Freitag (ganztags) 27.10.2023	Freitag (ganztags) 03.11.2023 Freitag (ganztags) 10.11.2023	Freitag (ganztags) 17.11.2023 Freitag (ganztags) 24.11.2023	Freitag (ganztags) 24.11.2023	Freitag (ganztags) 15.12.2023
CHAPTER 1 „New sustainable business models“	**CHAPTER 2** „Enablement of Business Models through technologies“	**CHAPTER 3** „Enablement of Business Models through technologies“	**CHAPTER 4** Execution of business models by people and processes“	**EXAM** „New business model marketplace“
▪ Overview & Administrative Things ▪ Digital Transformation ▪ Business Model Canvas & Value Proposition Canvas ▪ Exam Introduction ▪ Sustainability & Technology	▪ Recap ▪ Cloud Computing ▪ Persona Creation & Design Thinking ▪ Analytics & Big Data ▪ Customer Journey Method	▪ Recap ▪ Artificial Intelligence & Machine Learning ▪ Internet of Things ▪ Ecosystems & Platforms ▪ Digital Twin Concept	▪ Recap ▪ Agile Development ▪ Management of Change ▪ Mindset & Culture ▪ Digital Talent	Exam – presentation of each group work (business model created) with active discussion among all students

Content & learning outcomes of the course

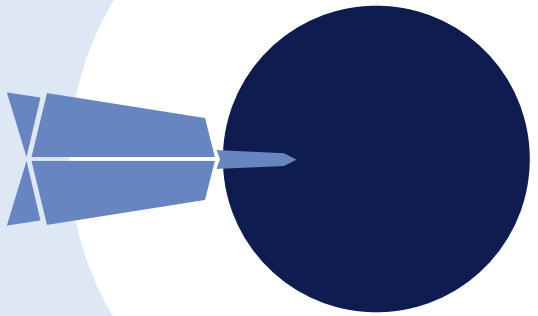
Content

- Digital Transformation (Organization, People, Processes)
- Sustainable IT
- Key Technologies
- Methods
- Value Proposition and new Business Models

→ Exam = Group Presentation within the marketplace on last day

Targeted learning outcomes

- Present the basics of digital transformations
- Identify essential new key technologies
- Classify the aspect of sustainability in the course of digitalization
- Describe differences between digital business concepts
- Classifying the opportunities and risks of digitization
- Create digital sustainable business models by using a framework



Let us consider the following rules

- Aktive Teilnahme und Diskussion wünschenswert–
  → Fragen, Kommentare, Anmerkungen, Idee – jeder Beitrag ist willkommen!
- Wir können uns gegenseitig gerne duzen ☺
- Slides in Englisch (i.d.R.); Vorlesungssprache deutsch
- Uhrzeit : 9 – 17 Uhr (inkl. Mittagspause)
  → Pausen können wir flexibel handhaben und bei Bedarf machen
- Raum: Geb. 1, Raum 235
- Teilnahme am Examen, wenn Teilnahme an den Blöcken inkl. Gruppenarbeiten erfolgt ist
- Verbindliche Anmeldung zum Kurs entsprechend der verbindlichen Anmeldefrist (tbd)
- Praxisnahes Wahlpflichtfach mit Gruppenarbeiten → Examen: ebenfalls eine Gruppenarbeit/-präsentation
- Upload der Vorlesungsunterlagen in campUAS

Introduction of yourself

- What is your name?
- What do you associate with the term „Digital Transformation“?
- Did you already have an idea for a business model before?
- What do you associate with the term „Sustainability“?

New Business Models

CHAPTER 1

Digital Transformation

Digitalization enables new possibilities and changes roles and approaches

Source: Gorodenkoff / shutterstock.com

Digitalization merges industries and enables new business models

Source: Syda Productions/Shutterstock

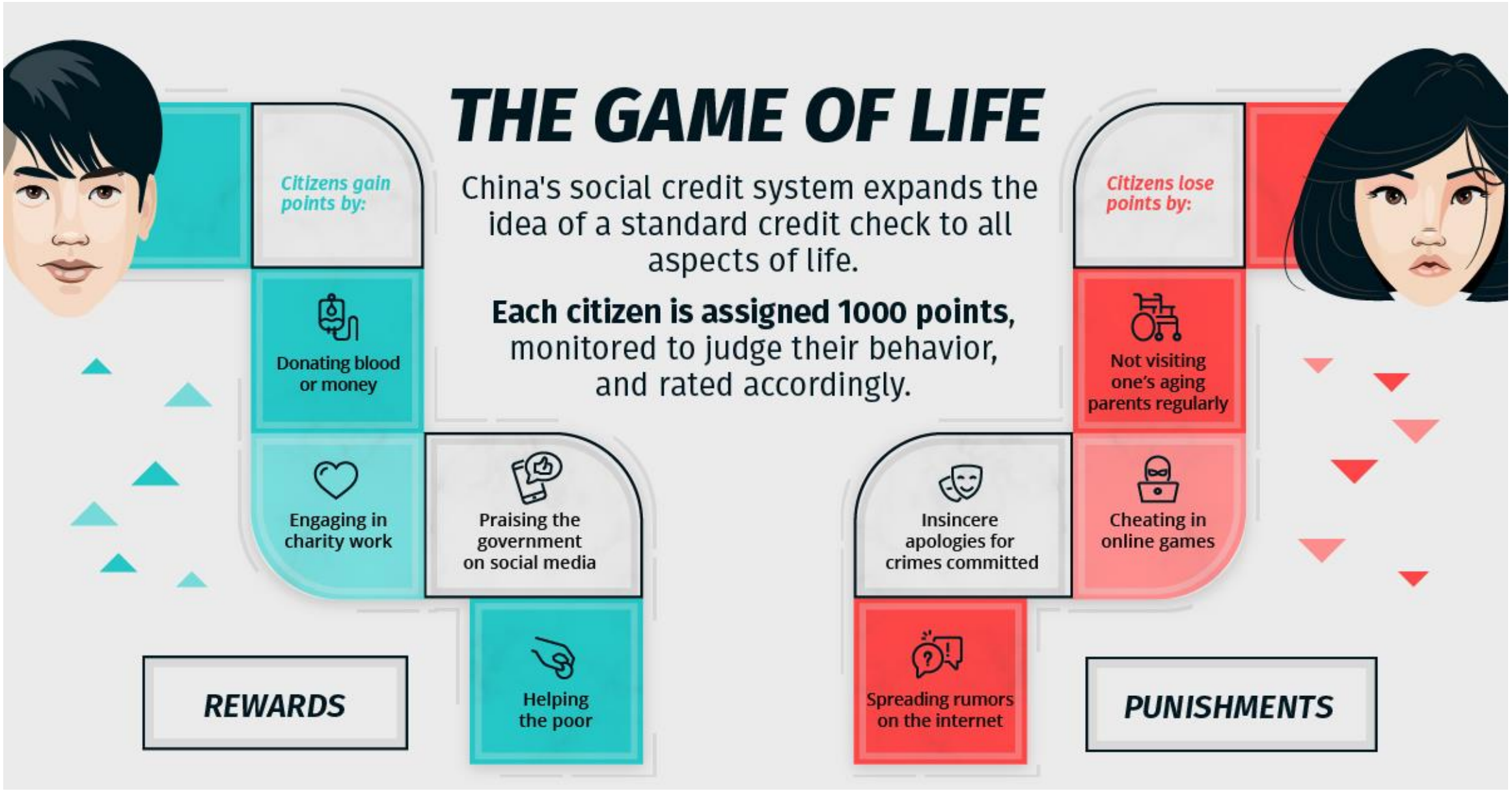
Digitalization creates also unnecessary things

Source: Syda Productions/Shutterstock

Digitalization turns products into solutions

Source: Share Now Website

Digitalization can be (mis-) used for monitoring and control



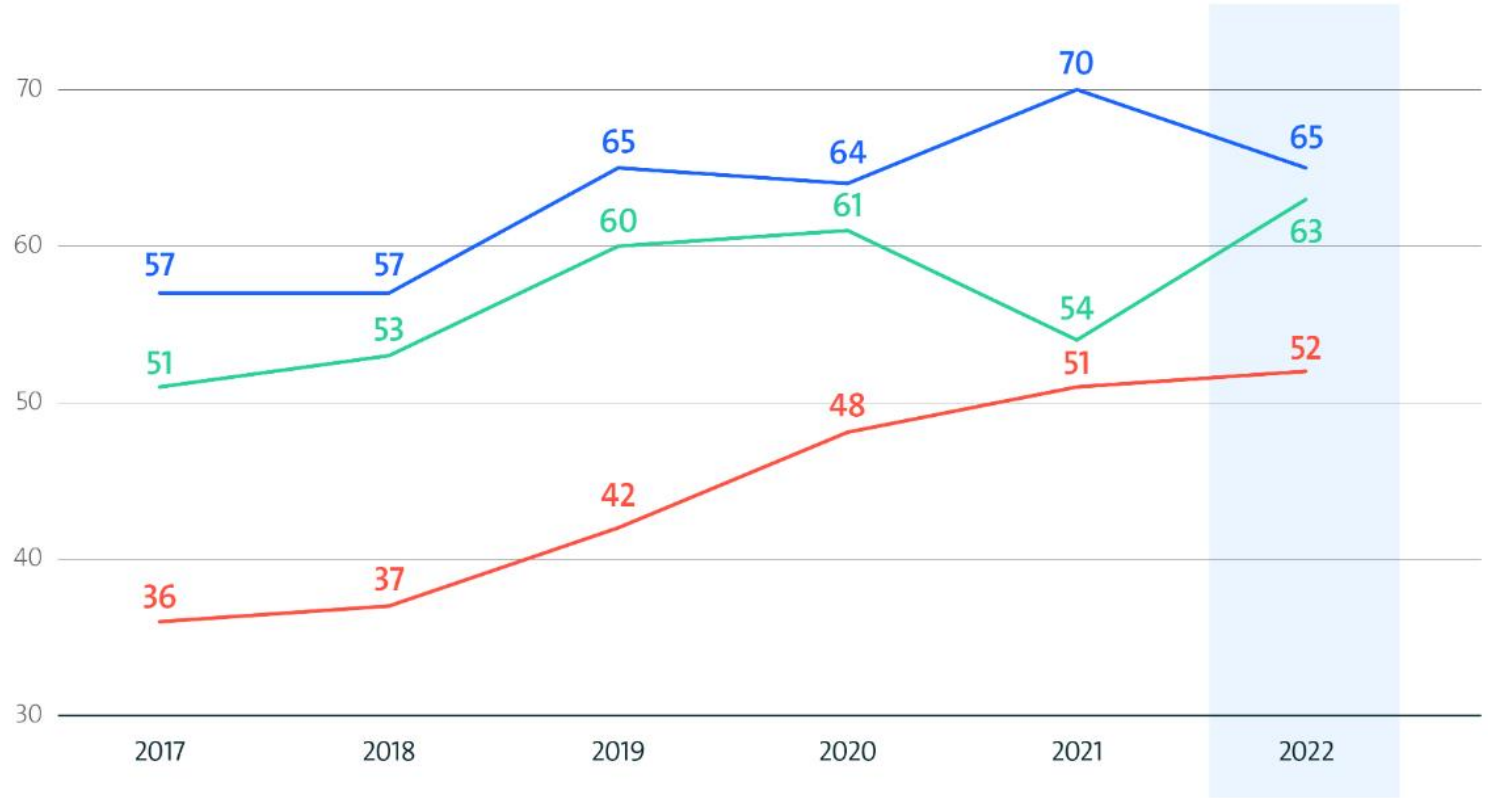
Source: https://www.visualcapitalist.com/the-game-of-life-visualizing-chinas-social-credit-system/ (Bertelsmann Stiftung)

Digital Transformation & Competitive Pressure

Digitalisierung erhöht den Wettbewerbsdruck

Welche Aussagen zur Digitalisierung treffen auf Ihr Unternehmen zu?

„Die Digitalisierung verschärft den Wettbewerbsdruck, sie eröffnet aber jedem Unternehmen die Chance, effizienter zu wirtschaften und selbst neue Märkte zu erschließen“, sagt Bitkom-Präsident Achim Berg.



Wettbewerber aus der Internet- bzw. IT-Branche drängen in unseren Markt

Durch die Digitalisierung drängen Wettbewerber aus anderen Branchen jenseits der Internet- und IT-Branche in unseren Markt

Wettbewerber aus unserer Branche, die frühzeitig auf die Digitalisierung gesetzt haben, sind uns voraus

in Prozent

Basis: Alle Unternehmen (n=604) | Prozentwerte für »Trifft voll und ganz zu« und »Trifft eher zu« | Quelle: Bitkom Research 2022

bitkom

Source: https://www.bitkom.org/Presse/Presseinformation/Unternehmen-spueren-digitalen-Wettbewerb

What does digitalization & digital transformation mean? – A definition

Digitalization in a narrow sense

Conversion of information and documents from analogue to digital formats

Digitalization in a broader sense

Integration of digital technologies into existing business processes & to change a business model

Digital Transformation

A fundamental rethink of customer experiences, business models and operational processes. Finding new ways to create business value, generate revenue and increase efficiency. Constant development and adaption to market and technology changes by making use of digital technologies

- Transformation of Business Processes
- Transformation of Business models
- Organizational & cultural transformation

Source: https://www.sap.com/germany/insights/what-is-digital-transformation.html & https://www.gartner.com/en/information-technology/glossary/digitalization

Digitalization: Explanation attempt

1. Degree of use of analog or digital methods
2. Degree of networking
3. Communication between product and user
4. Utilization of digital possibilities in processes
5. Degree to which business models depends on digital possibilities

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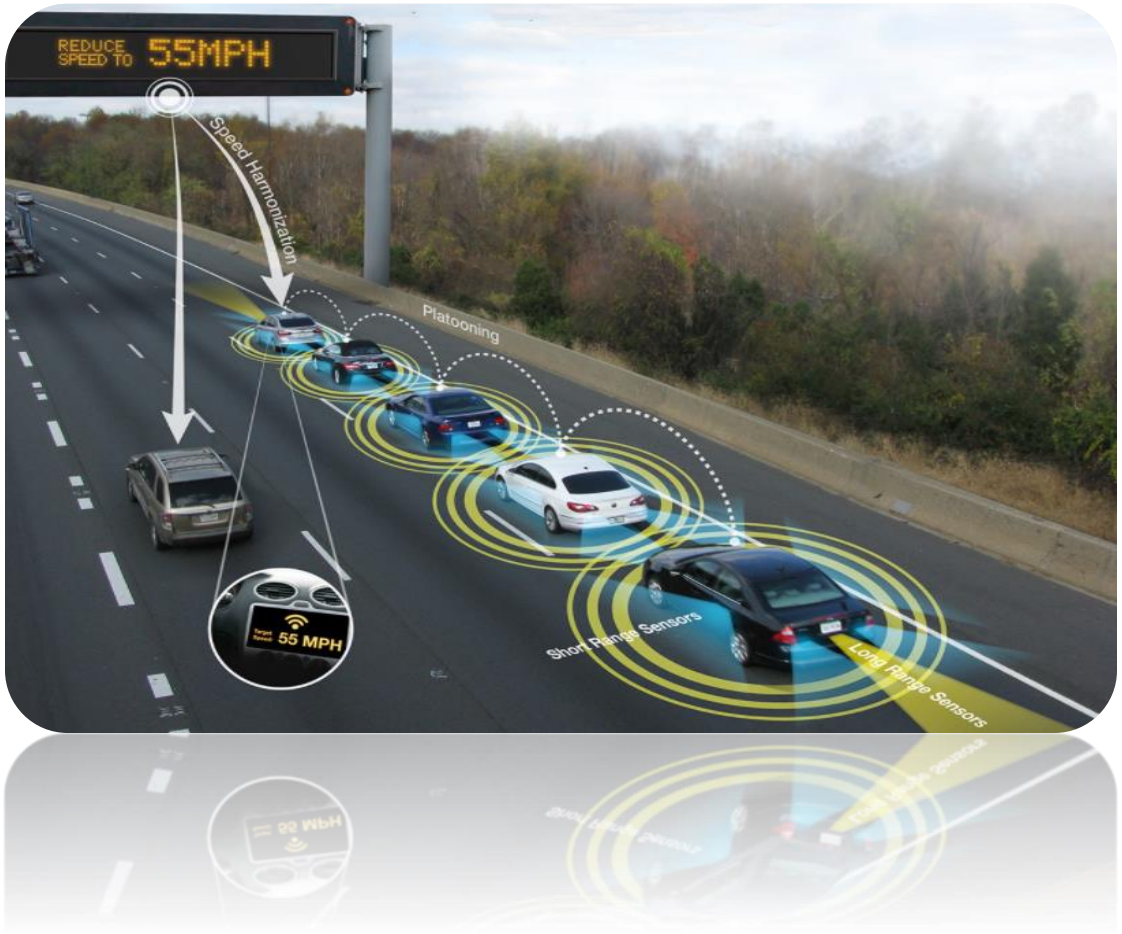

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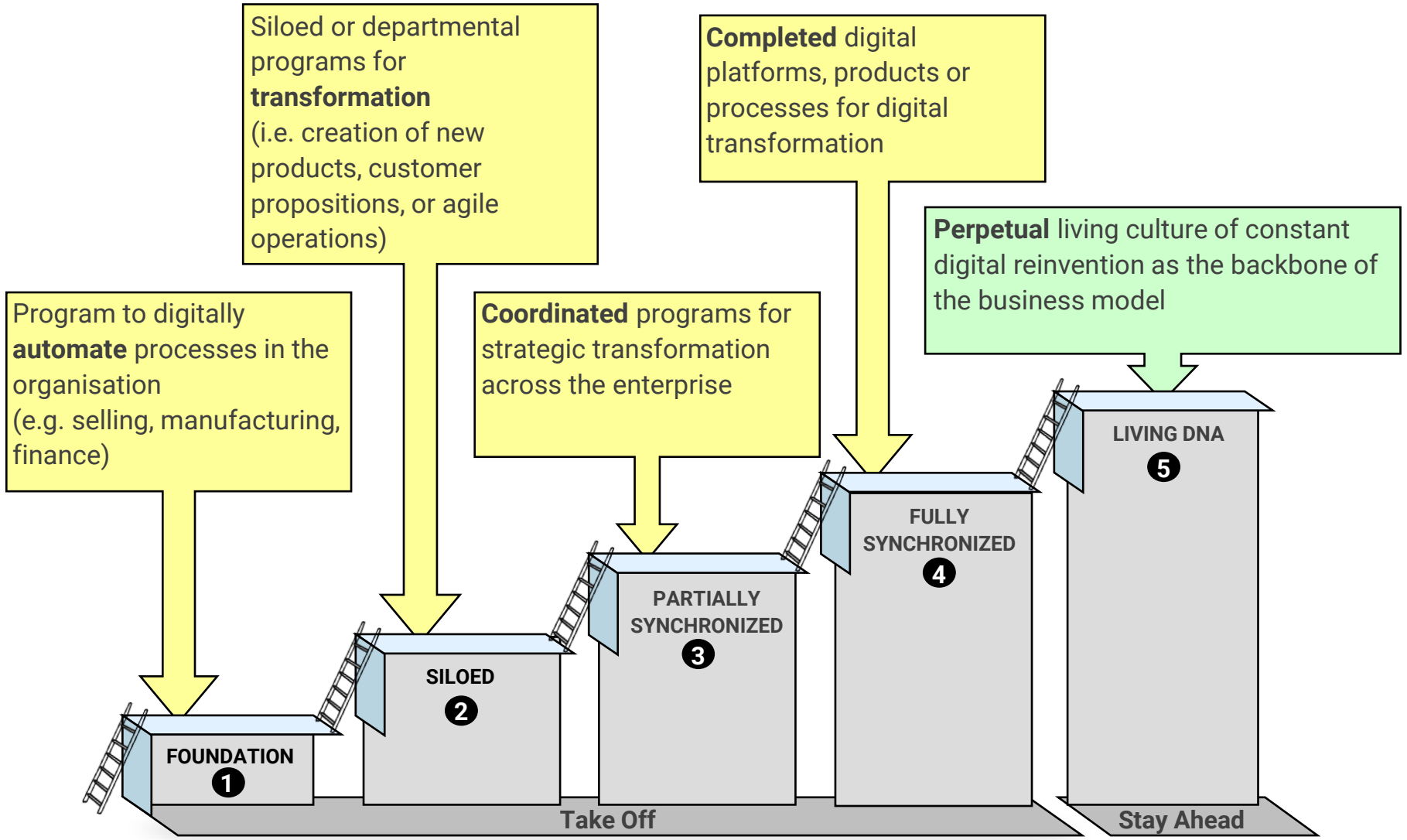
The Five-Stage Digital Transformation Model



Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

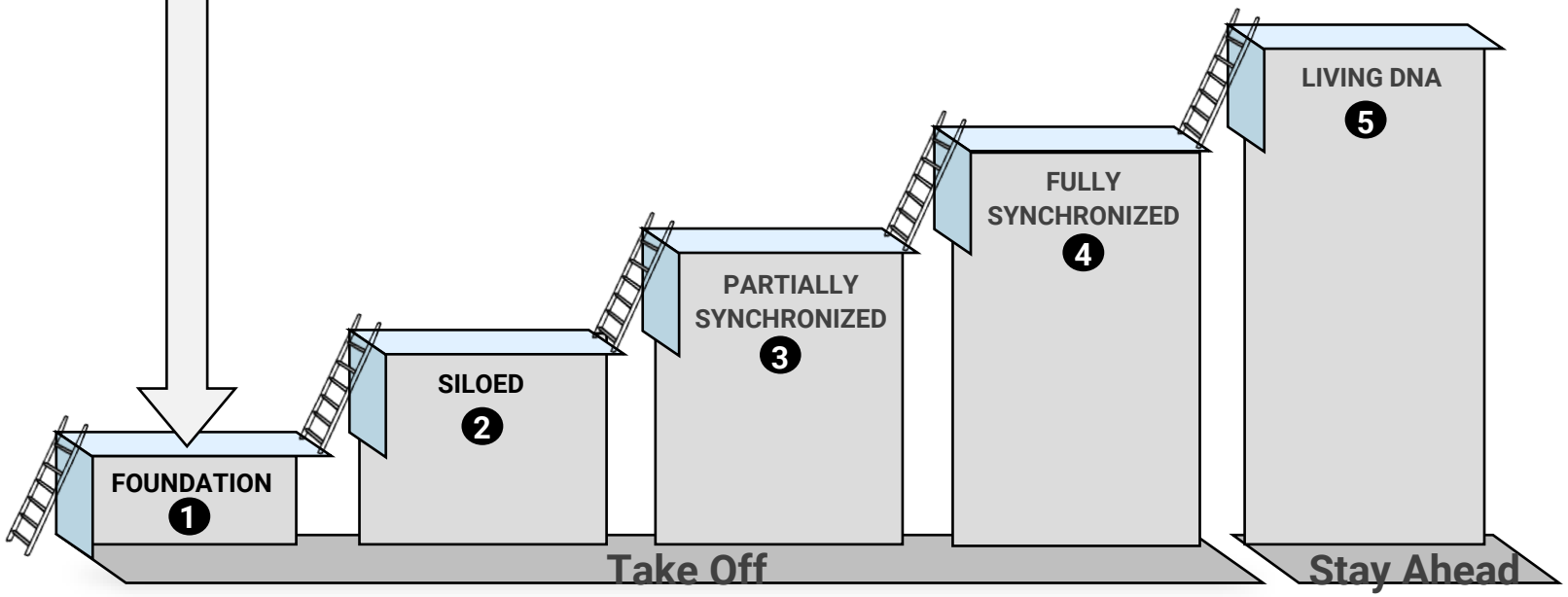
The Five-Stage Digital Transformation Model

What are you **doing**?

You're upgrading your technology to the latest digital platforms, including cloud, AI, etc.
You're "digitalizing" your operations. And seeing huge "scale" benefits.

What are you **not doing**?

You're not "transforming."
You have no digitally disruptive products, customer relations, or operations.



Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

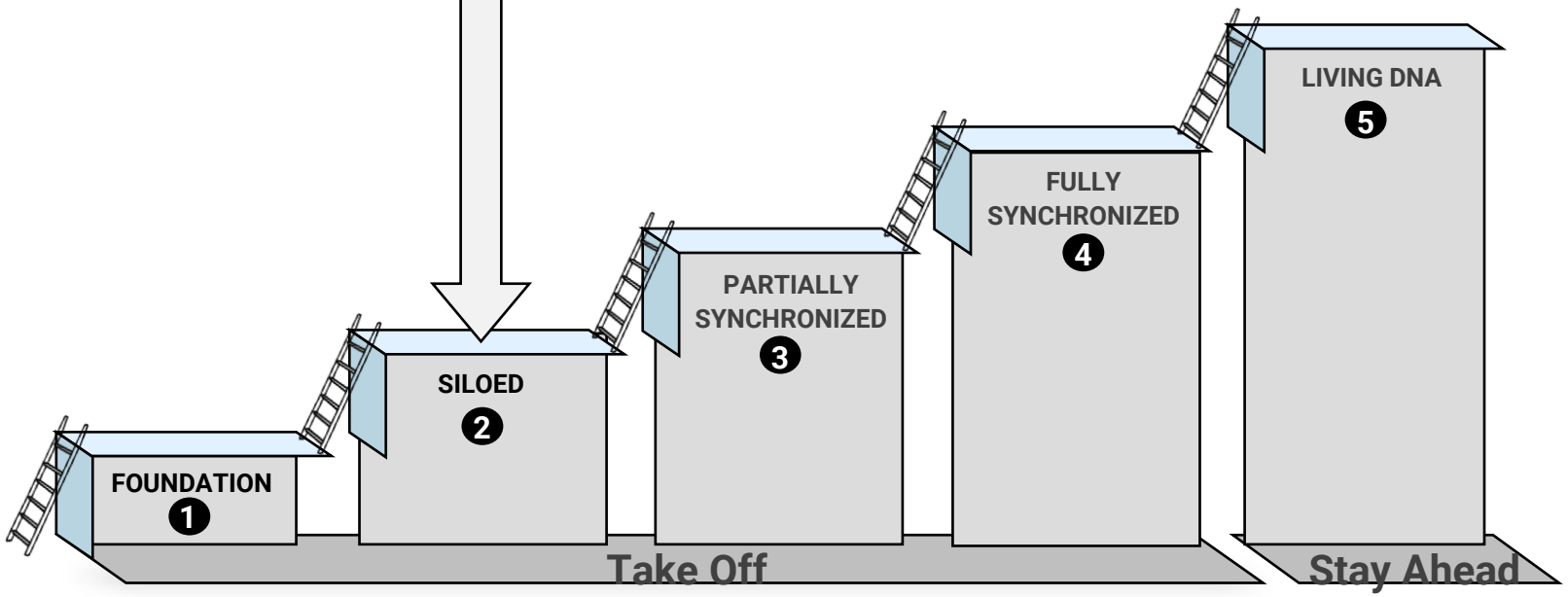
The Five-Stage Digital Transformation Model

What are you **doing**?

Parts of your organization are experimenting with transformational business models and products. This is on top of the scaled automation of Stage 1.

What are you **not doing**?

There is no enterprise-wide strategy to completely transform your business model itself.



Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

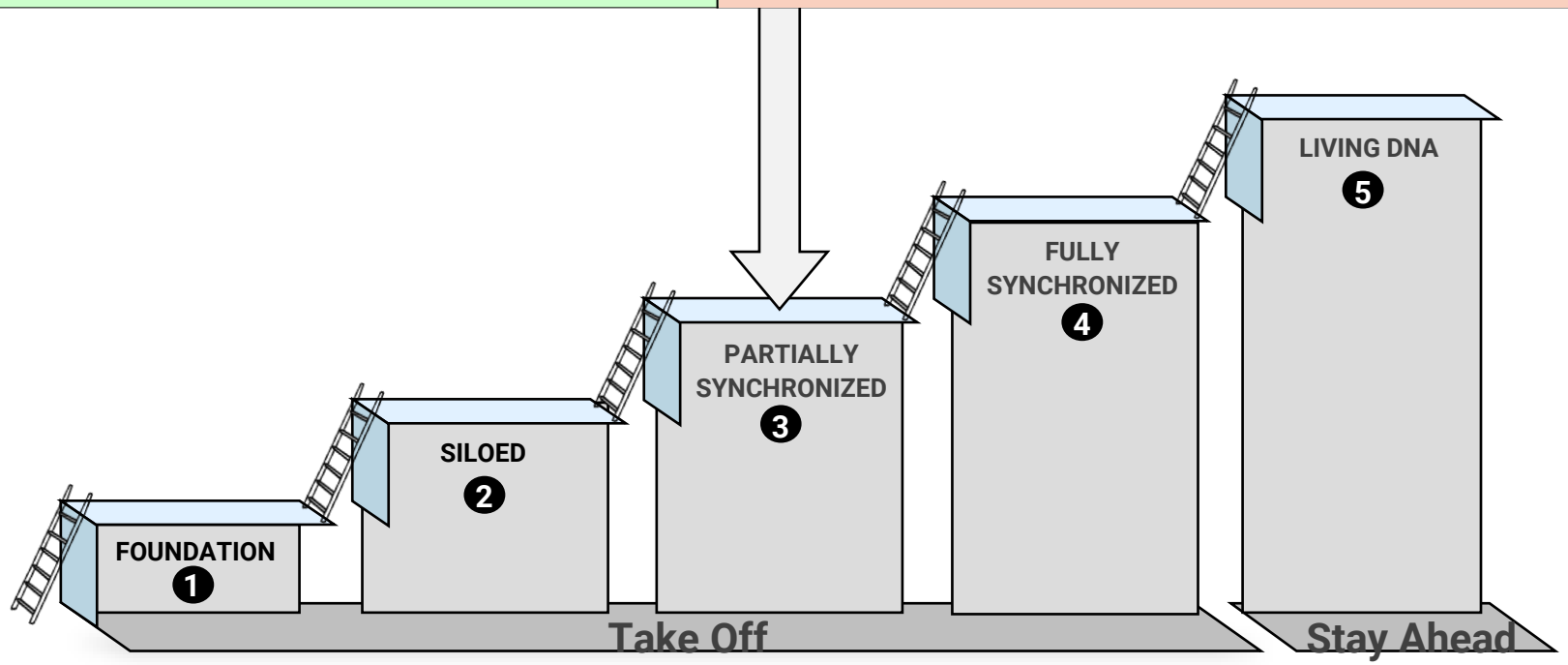
The Five-Stage Digital Transformation Model

What are you **doing**?

Your enterprise has a mix of old and new digital business models, processes, and products. All are following a corporate-wide strategy.

What are you **not doing**?

You are not fully invested in a full transformation or capable of fending off nimble “digitally native” competition.



Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

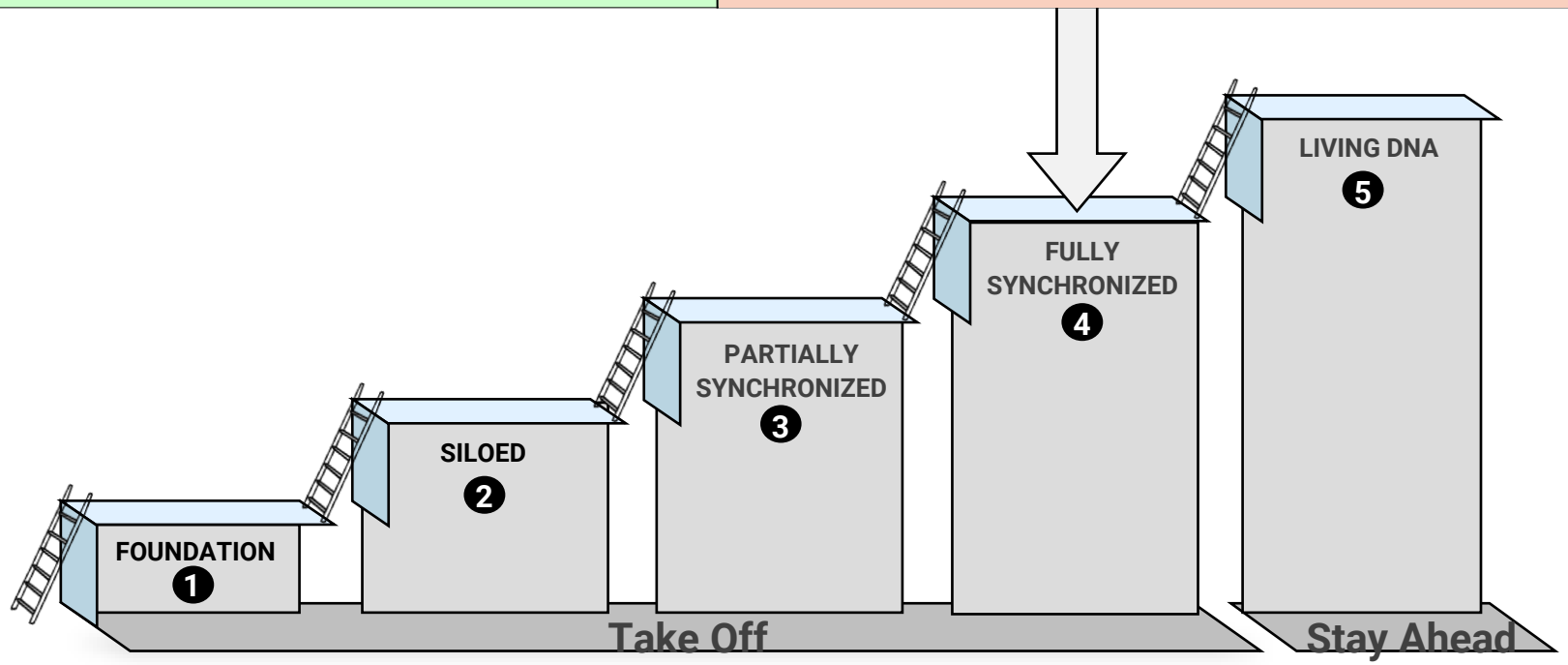
The Five-Stage Digital Transformation Model

What are you **doing**?

You're delivering industry-leading customer results, innovative digital products, and best-in-class operational efficiency.

What are you **not doing**?

You're not winning perpetually. You're digitally optimized for the moment. But you are one technology, product, or process change away from being disrupted again.



Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

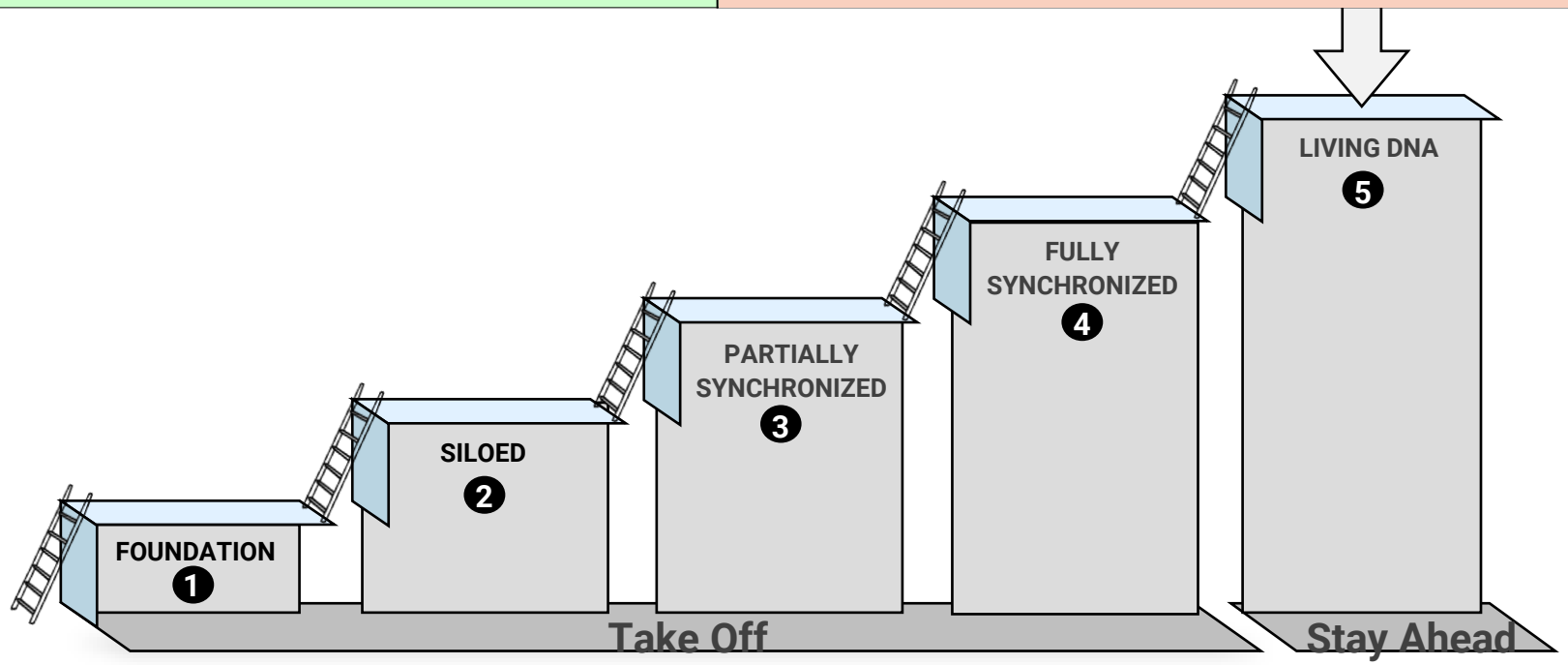
The Five-Stage Digital Transformation Model

What are you **doing**?

You operate fully digitally. Your workforce is digitally savvy. You provide hugely personalized creative value to customers. You have an innovative business model. Your transformation is fully synchronized and ongoing.

What are you **not doing**?

You're not static. Your enterprise morphs constantly to stay ahead of competition and works on new business opportunities.

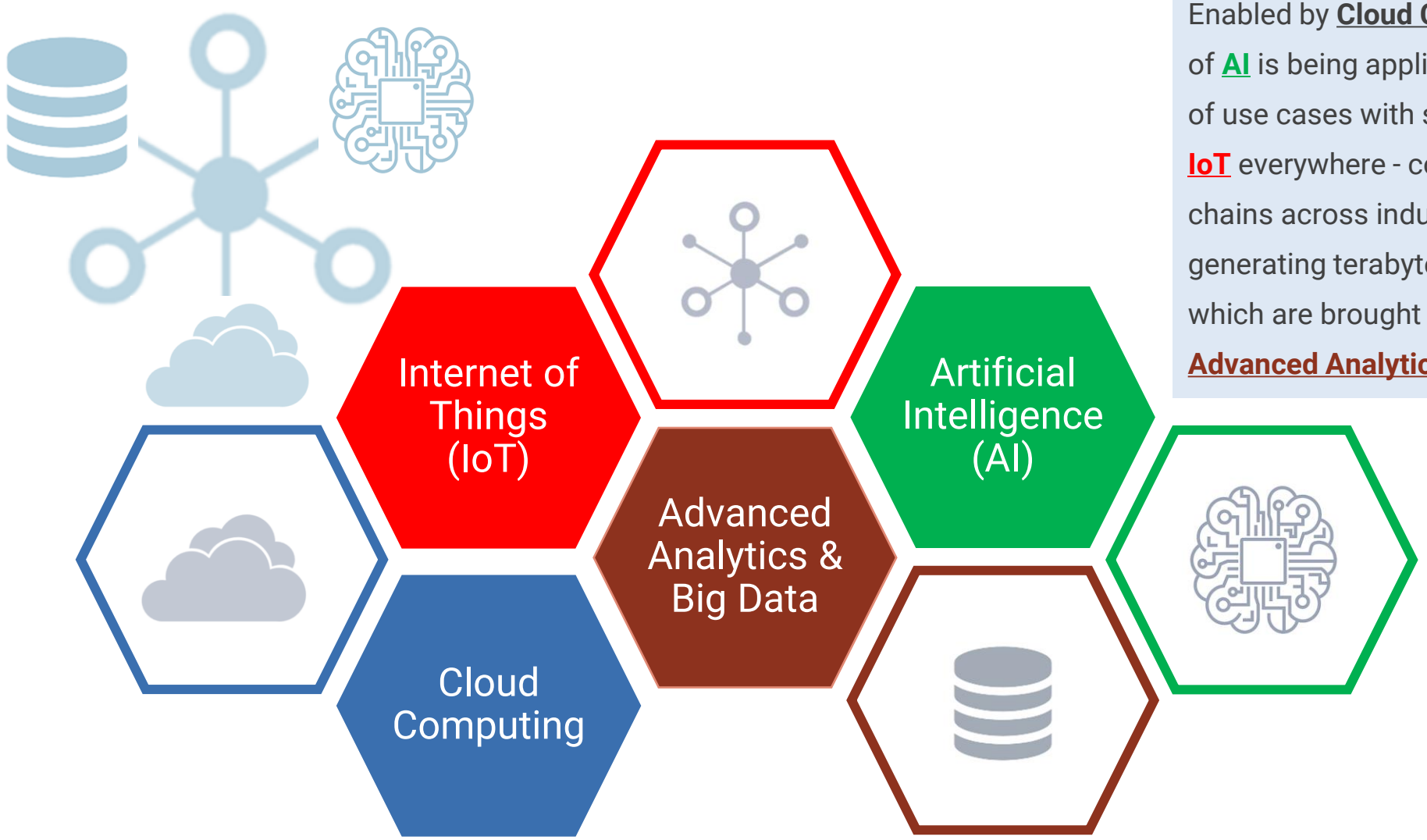


Source: Siebel T. – Digital Transformation – Survive and Thrive in an Era of Mass Extinction

The Advantages of Digital Transformation

- ✓ **1. Survive and thrive** in an increasingly competitive, technology and data-driven world.
- ✓ **2. Reduce business costs** by automating business processes, or becoming more efficient with the help of modern technology.
- ✓ **3. Become a more agile and resilient business** by phasing out outdated legacy systems, enabling you to be more nimble and adaptive.
- ✓ **4. Providing better customer experience** is the main aim of many digital transformations. It is achieved in various ways thanks to transforming and employing modern tech.
- ✓ **5. Consolidate customer experience** by integrating and unifying systems to create a universal experience, however customers choose to interact with you.
- ✓ **6. Improved analytics** thanks to the integrated systems.
- ✓ **7. Meet and exceed customer expectations** for personalised content and connectivity.
- ✓ **8. Drive revenue** through increased and improved customer interactions.

Digital Transformation: Confluence of profoundly disruptive Technologies



Enabled by **Cloud Computing**, a new generation of **AI** is being applied in an increasing number of use cases with stunning results. And we see **IoT** everywhere - connecting devices in value chains across industries and infrastructures. generating terabytes of **Big Data** every day which are brought into insights and value by **Advanced Analytics.**

New Sustainable Business Model

Business Model types (Selection) (1/2)

Business Model	Short description	Type of Services/Products and Implications	Examples
Auctions	Biding option to buy a product/service	model is flexible and scalable, suitable for own and other companies' products	Ebay, real estate
Cash machine	Based on cash conversion cycle – how quickly a company converts cash to goods/services and again to cash	Companies making low-profit margin but surviving by having a disruptive position and an extensive customer based. Cash is generated by selling inventory to end customer before paying its suppliers	Amazon
Direct Sales	Products directly sold to end customer	One-on-one conversation, sales person get share of sale	Tupperware, Thermomix
Franchise	Ready-made business is licensed by company to franchisor	Already tested processes, techniques, value proposition are applied	McDonalds, Subway
Freemium	Free basis version, new/extended features have to be paid for	For products with low marginal costs (add. Costs per add. Customer) or customer information higher value than operating costs	Spotify, LinkedIn, Xing, Dropbox, Google Drive
Hidden Revenue	Users get service for free, revenue from other sources (advertising, leverage of customer data)		Google, Facebook, Instagram, Youtube
Lock-in	High Switching costs lead to loyalty of customers	Binding customers longterm, e.g. HW & SW only compatible with same system	Apple, Android
Marketplace/ Two-sided market	A platform/digital marketplace for economic exchange between two distinct user groups that provide each other with the benefits of a large network. All platforms are two-sided market business models.	The more users there are on one side of the marketplace, the greater the value of the services they receive from the other side, and vice versa. Money is generated via brokerage fees, commissions, fixed transaction costs, membership fees	Amazon, eBay, Uber, ImmoScout

Business Model types (Selection) (2/2)

Business Model	Short description	Type of Services/Products	Examples
Open Source	Many developers from different organizations jointly work on a product and is accessible for everyone		GitHub, Wordpress
Pay per Use	Users only pay what they use/consume, no long-term commitments	Given price for every unit of usage	AWS, Azure
Peer to peer	Decentralized model where two individuals interact to buy or sell goods and services directly with each other, with a company acting as middleman	Money for middleman is generated via commissions	Airbnb, ebay, Uber
Performance based contracting	Customers only pay when outcome is successful	Price not based upon physical value but on outcome it delivers; often economies of scale used for lower production and maintenance costs of product;	Google Advertising Platform AdSense BASF, Car manufacturers no longer pay per liter of paint, but per finished paint car
Razor and blade business model	One item is sold a low price while associated item sold at premium price. Latter one often needed multiple times.	Constant revenue flow as second item needed more often. Some sort of lock-in situation created.	Printers, Nespresso/Senseo,
Sharing Economy	Access-over-Ownership Model; good/service made available for a defined period of time	Applied to all products in private/business life, real estate, intangible assets	Airbnb, ShareNow, couchsurfing,
Subscription	Monthly payment (subscription fee) instead of fix price	Bind customer in long term, customer benefits from improvements & extensions of service; steady/predictable revenue flow	Netflix, Internet Provider

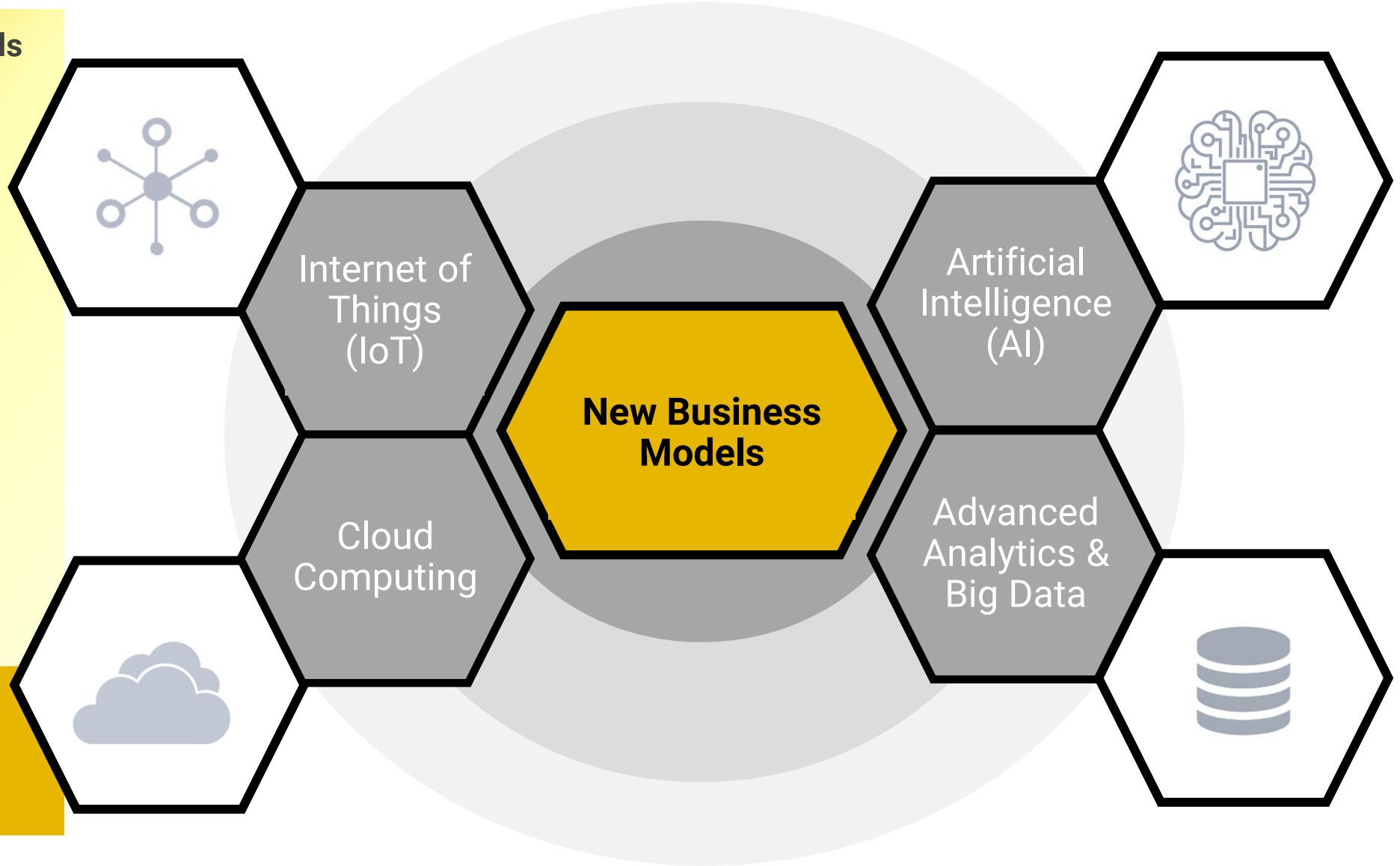
Digital Technologies enables new Business Models

Benefiting Business Models

1. Cash Machine
2. Freemium
3. Hidden Revenue
4. Lock-in
5. Marketplace
6. Pay per Use
7. Peer to Peer
8. Sharing Economy
9. Subscription

If you are not paying for the product,

then you are the product.



‘Disruption’ means Replacement through something New

Disruptive Technology	Replacement of …
Internet of Things	individual evaluation of sensor data
Cloud Computing	local storage of data
Big Data	separate analysis of existing data
Artificial Intelligence	decisions taken by humans

Disruptive business models based on disruptive technologies

the world's largest retailer has no physical products

the largest accommodation provider has no real estate

the largest taxi company in the world has no vehicles

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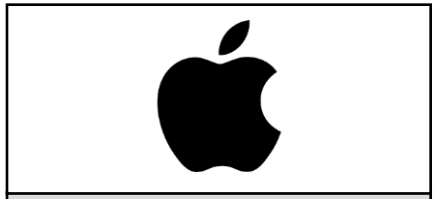
Disruptive business models based on disruptive technologies

the world‘s largest movie house owns no cinemas

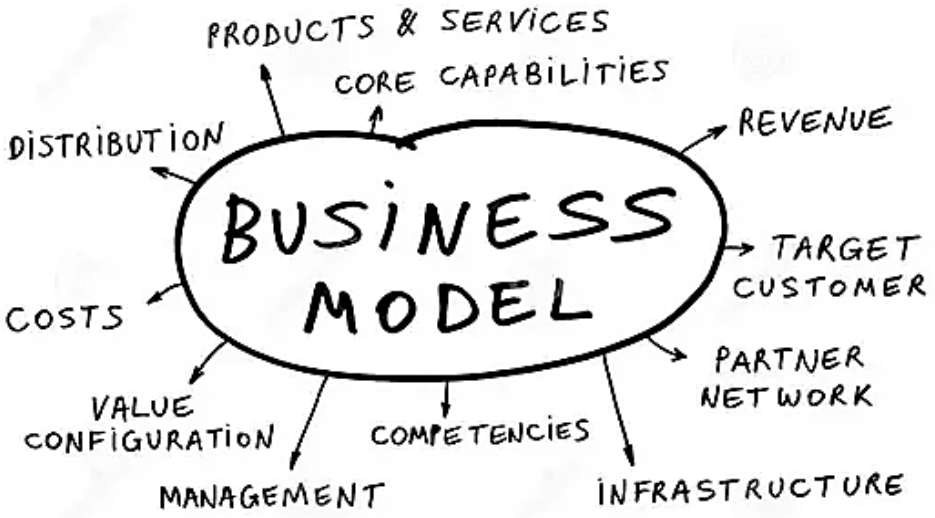


largest software vendors don‘t write the apps

the largest media company does not create content

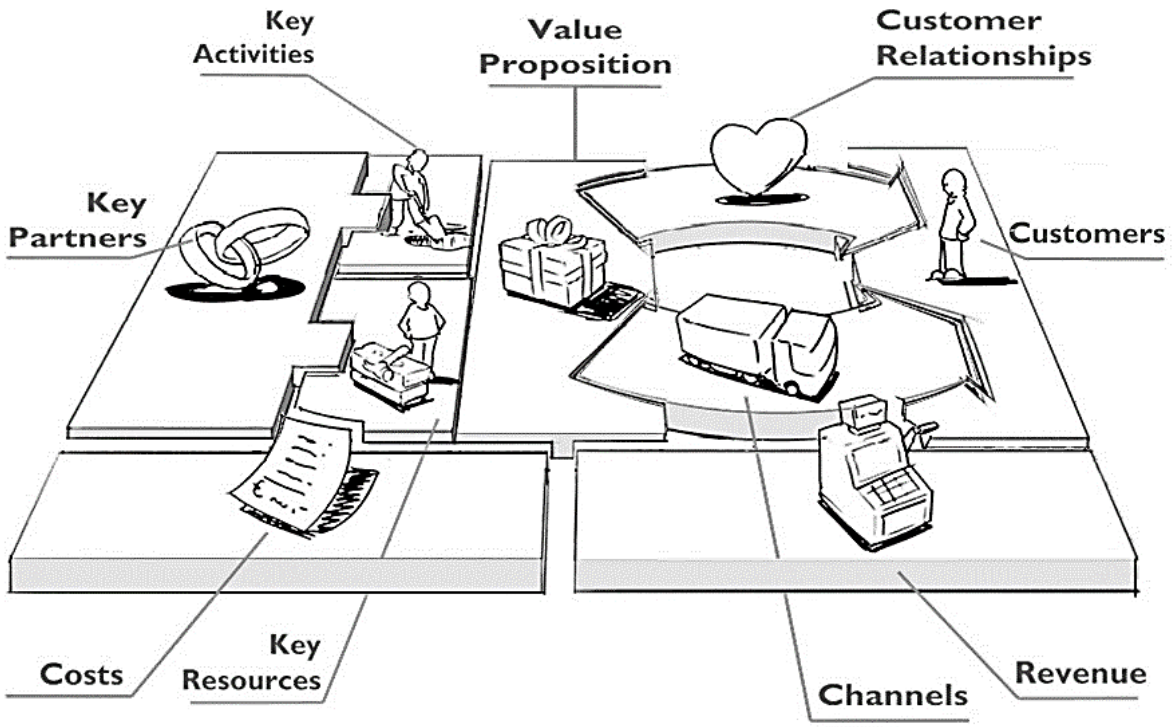
New Business Model Development

„A business model describes the rationale of how an organization creates, delivers, and captures value" and it "shows the logical relationships of a company's business activity to create this value) (Osterwalder/Pigneur 2010; Gablers Wirtschaftslexikon)



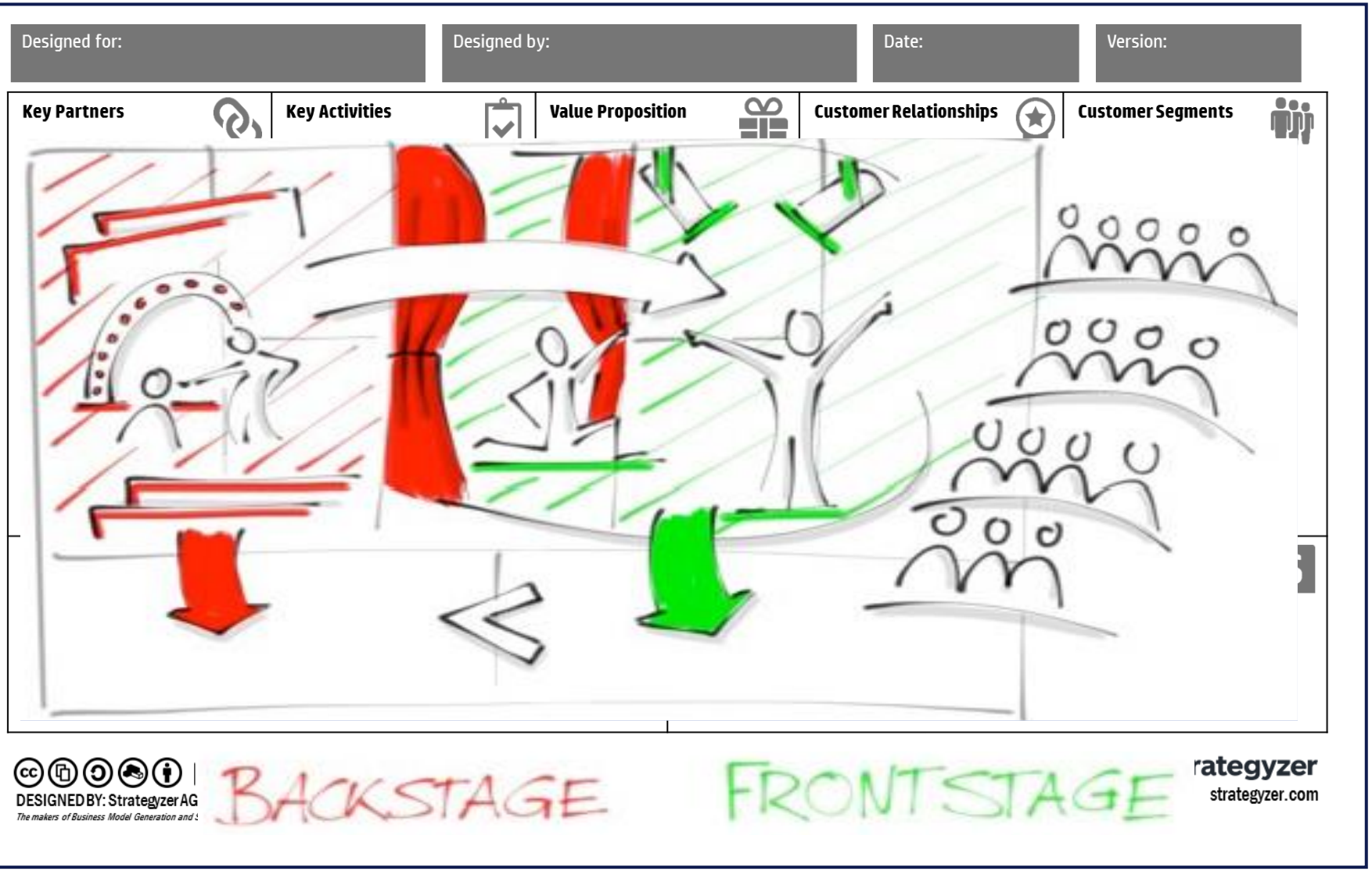
The most important thing of a business model is it's **value proposition**. It is in the center of all business activities.

Creating new business models with the business model canvas



https://www.youtube.com/watch?v=QoAOzMTLP5s

Business Model Canvas



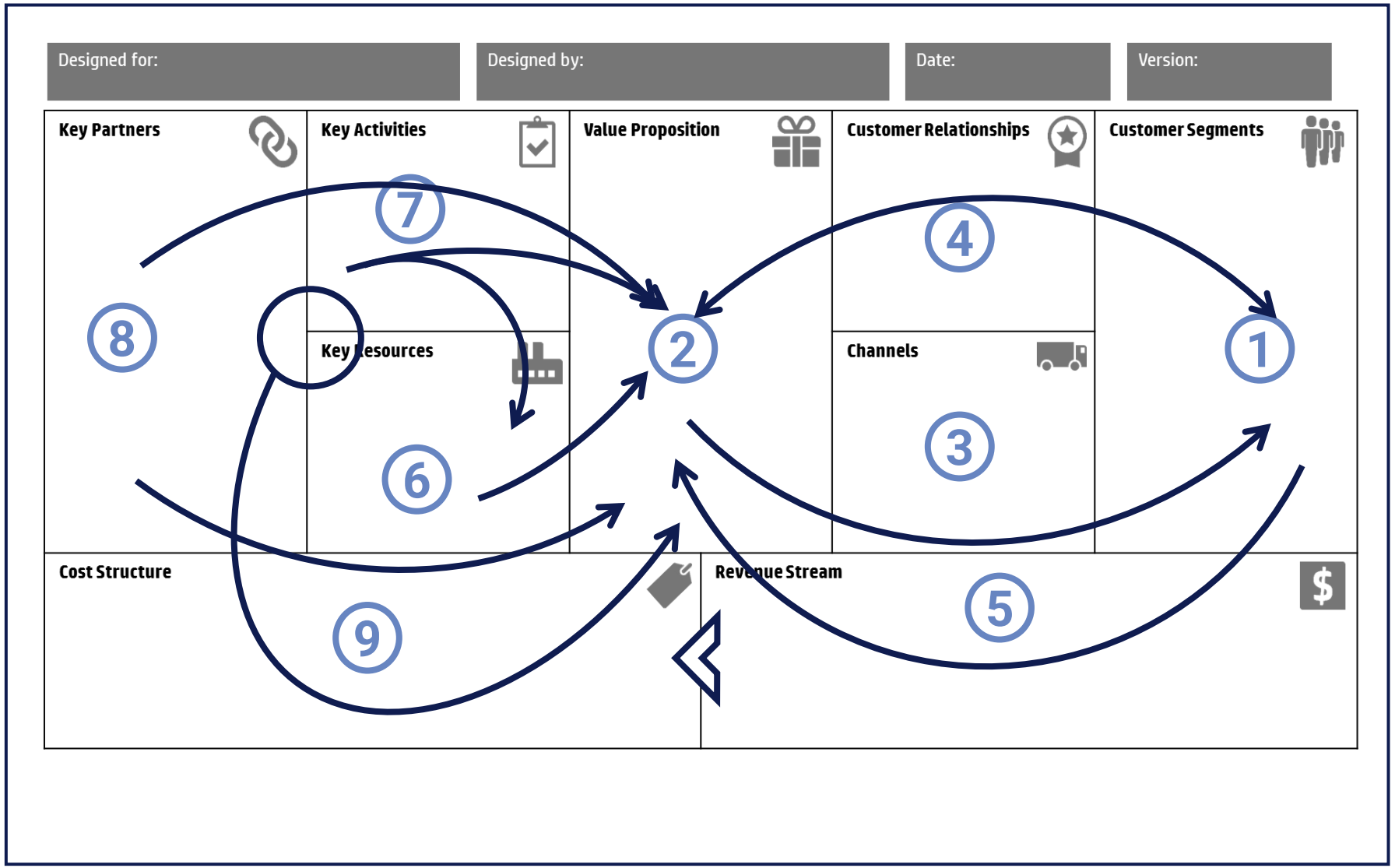
WHAT?

- Value Proposition
  Customer Segments
  Customer Relationship
  Channels
- Key Activities
  Key resources
  Key Teilners
- Revenue Streams
  Cost Structure

WHY?

*"The Business Model Canvas, is a **strategic management** and **entrepreneurial tool**. It allows you to describe, design, challenge, invent, and pivot **your business model**."*

Business Model Canvas



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Value Proposition
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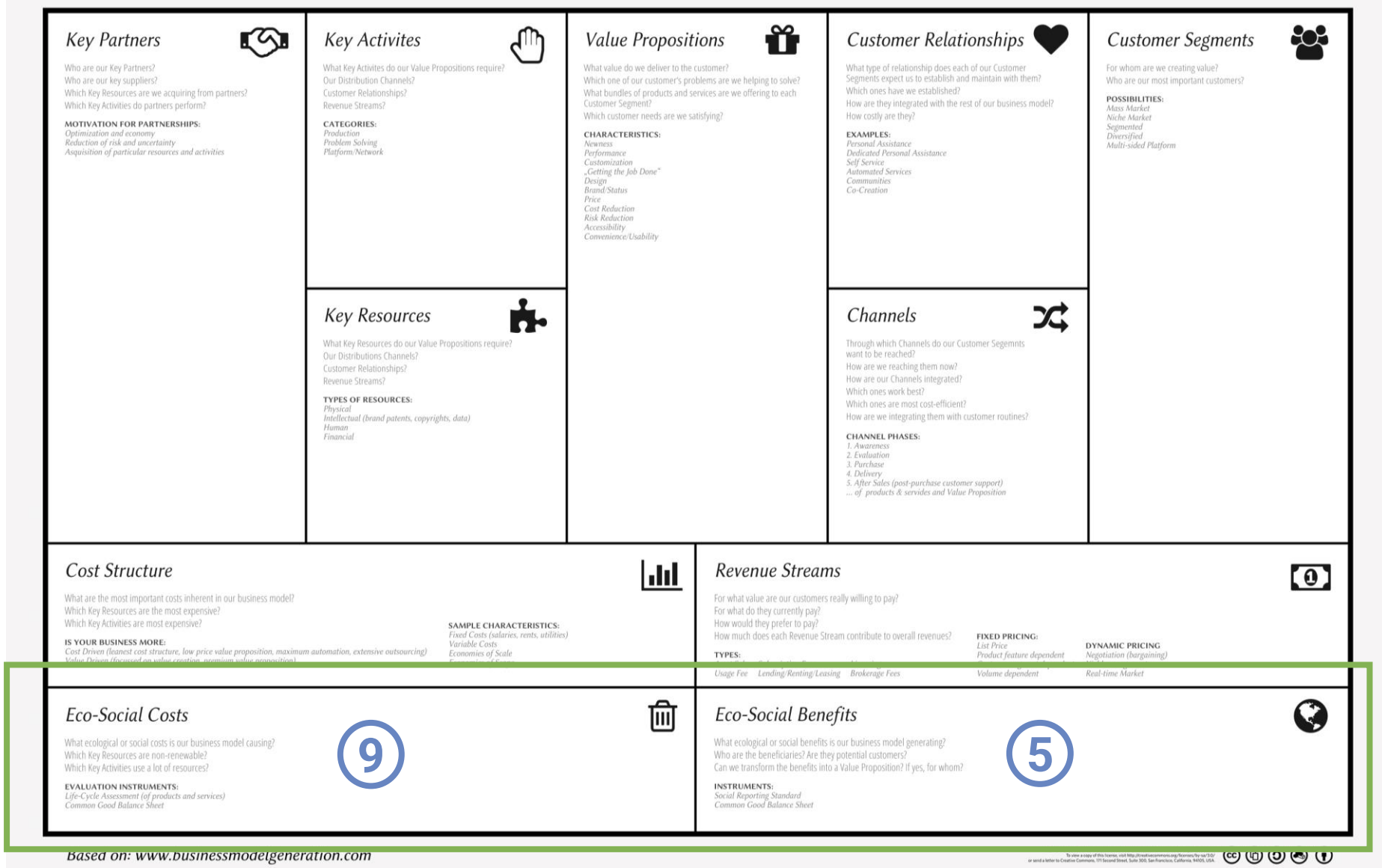
The Sustainable Business Model Canvas



Business Model Canvas is extended by 2 categories: The Eco-Social Costs and the Eco-Social Benefits of your product & services should be described:

What **ecological and social costs** is our business model causing?

What **ecological and social benefits** is our model generating?

Tesla Business Model Canvas

Key Partners

- Battery Manufacturer
- Charging Places
- Car Rental
- Leasing Companies

Key Activities

- SW Development
- Manufacturing
- Design
- R&D

Key Resources

- Elon Musk?
- Factories
- Battery Technologies

Value Proposition

- Sustainable Driving
- Autonomous Driving
- Status Symbol/ Premium Car
- „Most innovative & sustainable car available at market with highest kilometer reach“

Customer Relationships

- Direct to Customer
- In-Vehicle Self-Service
- Rather long-term?

Channels

- Own Website
- Own Showrooms

Customer Segments

- People with higher income
- Luxury Sports Cars Buyer
- Environment-caring people
- Environment-caring people

Cost Structure

- Cost of Production (material, labor)
- Cost of Selling (Advertisement, sales people, showrooms, stores etc.)
- R&D
- SW Development

Revenue Stream

- Sales of Cars
- Leasing
- Fees from rental
- Maintenance

Eco-Social Costs

- Energy-heavy production
- Limited Affordability
- Rare metals needed for production

Eco-Social Benefits

- Less Co2 emissions while using car

Key Partners

Motivation für Partnerschaften:

Optimierung & Wirtschaftlichkeit

Geringeres Risiko + Ungewissheit

Erwerb von bestimmten Ressourcen und Aktivitäten

Key Activities

Produktionsaufgaben, netzbezogene Aufgaben, SW-Entwicklung, Werbung

Key Resources

Beispiele: Fertigkeiten, Mitarbeiter, Produktionsanlagen, IP, Finanzen

Value Proposition

Neuheit, Leistung, Anpassung, Design, Marke/Status, Preis, Kostensenkung, Risikominderung

Customer Relationships

Beispiele: Langfristig, Mitgestaltung, automatisierte Dienste, Self-service, Personal Assistance, Communities

Channels

Arten von Kanälen:

Eigene Direkte (eigener Außendienst, Website, eigene Einzelhandelsgeschäfte)

Partner indirekt (Großhandel, Einzelhandel, eigene Website)

Customer Segments

Beispiele: Masse, Nische, segmentiert, diversifiziert, lokal

Cost Structure

Beispiele: Fixkosten (Gehälter, Mieten, Versorgungsleistungen), variable Kosten, Größenvorteile, Verbundvorteile

Revenue Stream

Beispiel: Verkauf von Vermögenswerten, Nutzungsgebühr, Abonnementgebühr, Verleih/Vermietung/Leasing, Lizenzierung, Werbung

Eco-Social Costs

z.B. negative Auswirkungen, die durch Partner, Ressourcen und anderem entstehen

Eco-Social Benefits

z.B. Verringerung der CO2-Emissionen, Verbesserung der Wasserqualität, Verringerung der Umweltverschmutzung, Verbesserung der globalen Gesundheit

Products

Listen Sie alle Produkte und Dienstleistungen auf, auf denen Ihr Wertversprechen (value proposition) beruhen.
Welche Produkte und Dienstleistungen bieten Sie an, die Ihrem Kunden helfen, entweder eine funktionale, soziale oder emotionale Aufgabe zu erfüllen, oder die ihm helfen, grundlegende Bedürfnisse zu befriedigen?

Gain Creators

Bietet Ihr Produkt Einsparungen, mit denen Ihr Kunde zufrieden ist? Zeit, Geld, Aufwand
Gewährleistet es die Ergebnisse, die der Kunde erwartet? Qualitätsniveau, mehr von etwas.
Vereinfacht es die Arbeit oder das Leben des Kunden? Geringere Lernkurve, bessere Benutzerfreundlichkeit, integrierte Dienste
Bietet sie etwas, das Ihr Kunde haben möchte? Gutes Design, bessere Funktionalitäten
Spiegelt Ihr Produkt/Ihre Dienstleistung einige der Träume Ihres Kunden wider? Hilfe beim Erreichen von Zielen
Liefert es positive Ergebnisse, die den Kriterien für Erfolg und Misserfolg des Kunden entsprechen?
Erleichtert es die Akzeptanz?

Pain Relievers

Bietet Ihr Produkt/Ihre Dienstleistung Einsparungen? (In Bezug auf Zeit, Geld, Aufwand usw.)
Verbessert es den emotionalen Zustand Ihres Kunden (Verringerung von Ärger, Irritationen, Dingen, die Kopfschmerzen bereiten)?
Behebt es die Mängel der bestehenden Lösungen?
Beseitigt es die Schwierigkeiten oder Probleme, die Ihr Kunde hat?
Schließt Ihr Produkt/Ihre Dienstleistung die negativen sozialen Folgen aus, die Ihre Kunden erleben oder fürchten?
Verringert es die Risiken, vor denen sich Ihre Kunden fürchten?
Hilft es Ihren Kunden, nachts besser zu schlafen?
Begrenzt oder beseitigt sie häufige Fehler, die sich Kunden erlauben?
Beseitigt sie Hindernisse, die Ihre Kunden von der Umsetzung der spezifischen Lösung abhalten?

Gains

Was macht Ihren Kunden glücklich (Zeit, Geld, Aufwand, etc.)?
Welche Ergebnisse erwartet Ihr Kunde, und was kann diese Erwartungen übertreffen? Qualitätsniveau, Gewinne und Gewinne, Einsparungen und Verbesserungen)
Was würde die Arbeit oder das Leben Ihres Kunden vereinfachen? (Mehr Dienstleistungen, niedrigere Kosten, neue Funktionen usw.)
Welche positiven sozialen Auswirkungen möchte Ihr Kunde erreichen? Machtstatus, Zufriedenheit, Motivation)
Wonach suchen sie? (Ein intelligentes Design, Garantien, besondere Merkmale usw.)
Wie misst der Kunde Erfolg und Misserfolg? Kosteneffizienz, Geschwindigkeit, Qualität, Schönheit, wie auf SM)
Was würde die Wahrscheinlichkeit erhöhen, dass mein Kunde die Lösung annimmt? Geringere Investition, längere Garantie, bessere Leistung, Qualität)

Pains

Was findet Ihr Kunde zu kostspielig (etwas, das viel Zeit in Anspruch nimmt, zu viel Geld kostet, einen hohen Aufwand erfordert usw.)?
Wodurch fühlt er/sie sich schlecht? Enttäuschung, körperlicher Schmerz
Welche aktuellen Lösungen passen nicht zu Ihren Kunden?
Welches sind die größten Herausforderungen und Probleme, mit denen Ihr Kunde konfrontiert ist? (Mangelndes Verständnis der Funktionsweise, Schwierigkeiten bei der Umsetzung usw.) Intellektuelle, emotionale Einschränkungen, etwas zu tun
Mit welchen negativen sozialen Folgen ist der Kunde konfrontiert oder befürchtet diese? (Verlust von Ansehen, Glaubwürdigkeit, Vertrauen, sozialem Status)
Welche Risiken fürchtet Ihr Kunde? (finanziell, sozial, technisch, usw.)
Was hält meinen Kunden davon ab, Lösungen anzunehmen?

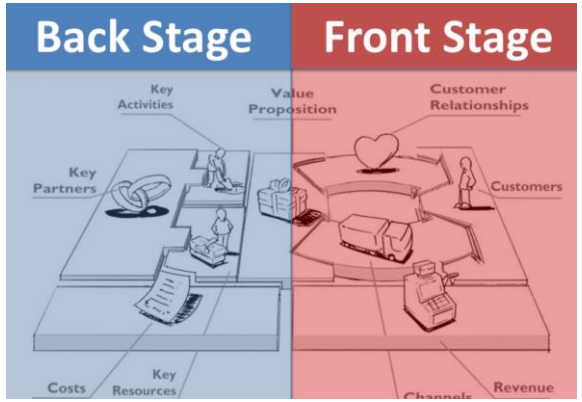
Customer Jobs

Welche Aufgaben versucht Ihr Kunde zu erfüllen? (z. B. ein bestimmtes Problem ausführen, ein bestimmtes Problem lösen usw.), alltägliche Aufgaben, Probleme bei der Arbeit
Welche sozialen Ziele versucht Ihr Kunde zu erreichen? Beförderung, Statusgewinn, ein Netzwerk
Was sind die emotionalen Ziele Ihres Kunden? In Form kommen, sich gut fühlen, motiviert sein
Mit welchen Tätigkeiten sind sie zufrieden?
Wie wollen Ihre Kunden von anderen wahrgenommen werden?
Was können sie tun, um dies zu erreichen?
Wie möchte sich Ihr Kunde fühlen?
Was muss er/sie tun, um das zu erreichen?
Verfolgen Sie die Interaktion des Kunden mit Ihrem Produkt während des gesamten Konsumzyklus. Was sollte der Kunde in dieser Zeit tun?

Group Work – Fill the Business Model Canvas

1. Find together in a group of max 5 students
2. Describe the business model of the following companies using the "Business Model Canvas" method
3. Fill in the BMC template

→ You have 50 minutes for steps 2+3



4. Be ready to present the BMC to the other students afterwards

Group 1 — ZARA

Group 2 — NETFLIX

Group 3 — facebook

Group 4 — Google

Group 5 — UBER

Introduction to exam - Overview

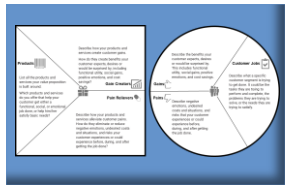
Introduction to exam - Overview

- **Goal/Expectation: Create a business model for a new business idea in a context of a case story**
  - **Description of a new offering and outline of technical solution and related challenges**
- **Examination** will be done by a **Group Project** (Group of ~3-4 students)
- **Documentation** [e.g. MS Powerpoint] **(uploaded by 13.12.2023)** and verbal **Presentation of ~45 minutes (15.12.2023)**
- Presentations will be done within the **marketplace on 15th December 2023**
- Each group will **present their business idea to the other students.** All ideas will be discussed and challenged in the round.
- To successfully create and hold the exam presentation, the **attendance in the previous lectures is needed and expected** as all needed topics for the exam will be elaborated within the lectures.

Introduction to exam - expected content

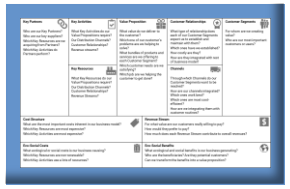
1. Case Story (Company, Market, Business Idea)

→ Chapter 2



2. Value Proposition Canvas

→ Chapter 1-4



3. Business Model Canvas

→ Chapter 1-4

4. IT-Implementation Options and Technical Challenges

→ Chapter 2 & 3 &4

5. Sustainability aspects of business model

→ Chapter 1-4

We expect…

- That these 5 topics on the left will be covered by your presentation
- That Value Proposition Canvas and Business Model Canvas are used

→ The other templates for case story, IT-implementation and sustainability aspects can be used but you are also free in being creative and create other/more slides for these topics to demonstrate and explain your business model

→ Max. 20 Content Slides

Homework: Think about a business idea

1. What kind of area do you want to re-innovate?
2. Which existing problem/challenge do you want to solve? Think about your every-day life, what would improve your life etc.
3. Which industry does your idea belong to?
4. Which product/service do you want to offer?
5. Be creative ☺

→ Just make some notes, we need these ideas in the next lecture

Sustainable IT & Digital Transformation

The groundings: the strategic resources and their effects

ELECTRICITY to CO_2

- **3% of the global electricity supply** (+2% of total GHG emissions) is generated by Big Data and Cloud Computing alone
- Training a single model of AI injects into the atmosphere more CO_2 than five cars during their entire life-cycle

WATER

- A medium-sized data center (~15 megawatts) uses roughly **the same amount of water as three medium-sized hospitals** (130 gallons, roughly 492 million liters)

NATURAL MINERALS

- Effects of the extraction of rare metals required to produce smartphones and hard drives are hardly quantifiable but macroscopic, since that process is directly responsible for an increase in air and soil pollution, as well as the production of wastewater rich in radioactive waste

Source: https://www.iea.org/reports/world-energy-outlook-2019

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Development Electricity demand of information & communications technology

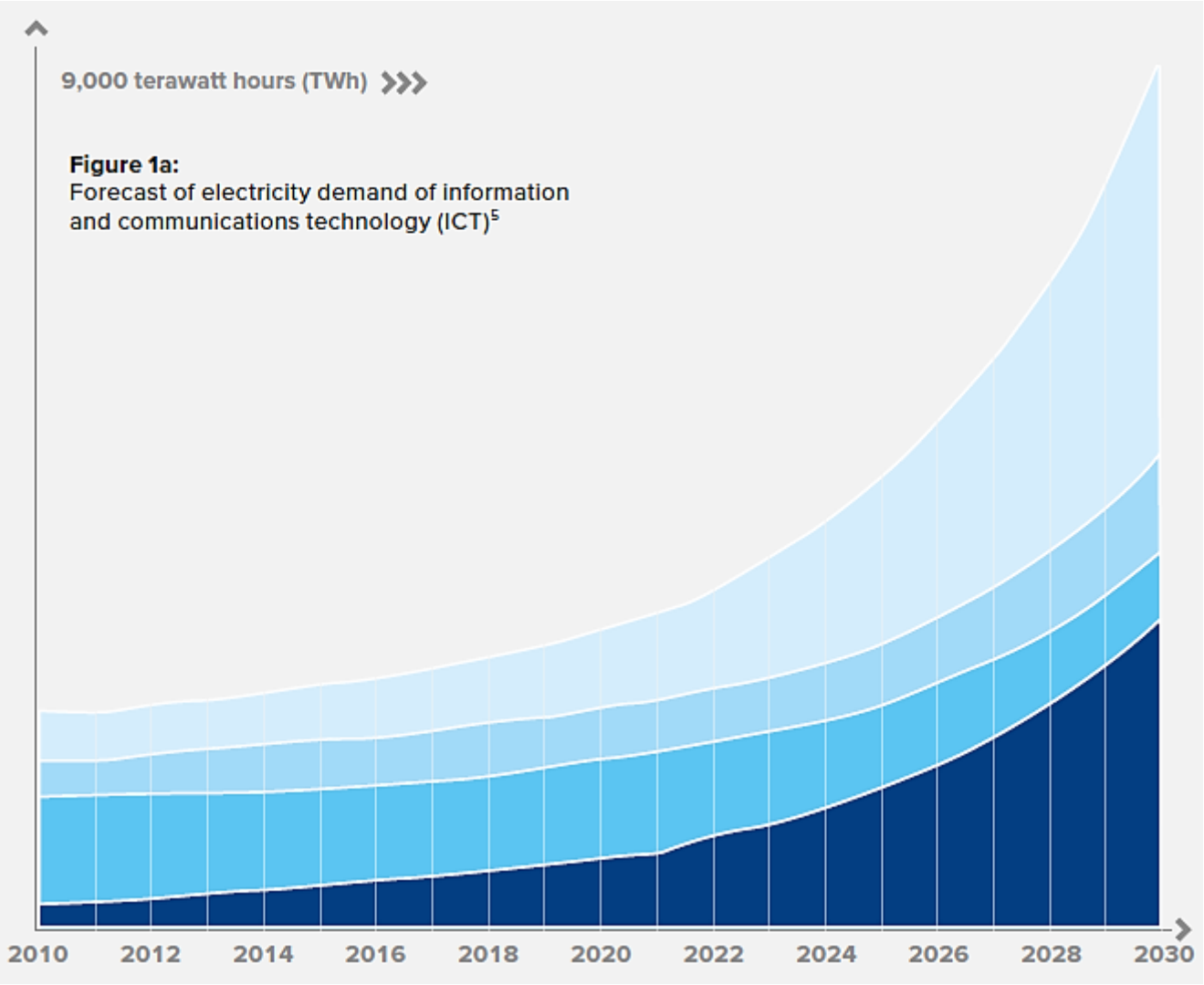


Figure 1a:
Forecast of electricity demand of information and communications technology (ICT)[5]

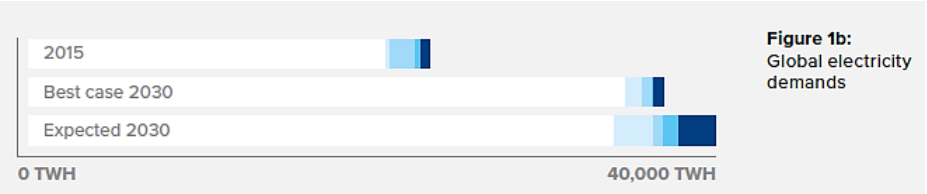


Figure 1b:
Global electricity demands

- Networks (wireless and wired)
- Production of ICT
- Consumer devices (televisions, computers, mobile phones)
- Data centres
- others

Source: Whitepaper by GFT on Green Coding

Digitalization and Sustainability influence each other

Digitalization with negative side effects on society and corporates

- Threatened customer and user privacy due to extensive data collections
- Algorithm based decisions might discriminate certain groups

→ Trustworthy AI

Digitalization as challenge for a fair and eco-friendly development

- Increasing energy demands and CO2 emissions due to
  - Digitalization projects and their demands on hardware
  - Resource intensive technologies (e.g. BlockChain, KI)
- Linear product cyles for hardware and devices result in social and ecological challenges in production and disposal

Digitalization fosters Sustainability

- Digitalization endeavors create profound data basis, which enables
  - making more fact-based and sustainable decisions
  - Better prognosis to achieve sustainability goals
- Creates transparency and trust among all stakeholder groups
- Drives resource efficiency and savings through digitalized processes

Environmental motivations – “it’s about time”

Energy consumption is increasing by rising need for computing services & data centers …

- **Energy consumption of DCs** in Europe expected to increase from 2018 to 2025 **by 21%.** Share of Cloud DCs expected to increase from 35%to 60%[1]
- Amount of Energy used by DCs **doubles every four years**[2]
- **ICT industry** is expected to **account for 8% of total electricity** demand by 2030 (Worst case scenario expects 20,9%)[3]

…but cloud services can also be a far more sustainable than traditional on-premises DCs & IT services

- **Shifting** from on-premise DCs **to the public cloud** can reduce an enterprise’s **energy usage by almost 80%** and cut **carbon emissions of workloads by up to 96%**[4]
- According to a recent report by International Data Center (IDC), **cloud computing** can **possibly eliminate 1 billion metric ton of CO2 emission** from 2021 to 2024. This is equivalent to the total emission of 218 million cars over an entire year![5]
- Studies by Hyperscalers show that Cloud services are much more efficient concerning energy consumption & carbon emission compared to on-premise equivalents

Overall energy consumption of ICT industry is rising going along with the broader usage of cloud services. At the same time, **cloud services** can be much more **energy-efficient** than their on-premises equivalents, supporting a more sustainable way of computing. Additionally, cloud services can be the **accelerator for new innovative sustainable use cases**. The key is to **design cloud services** as **environmental-friendly** as possible.

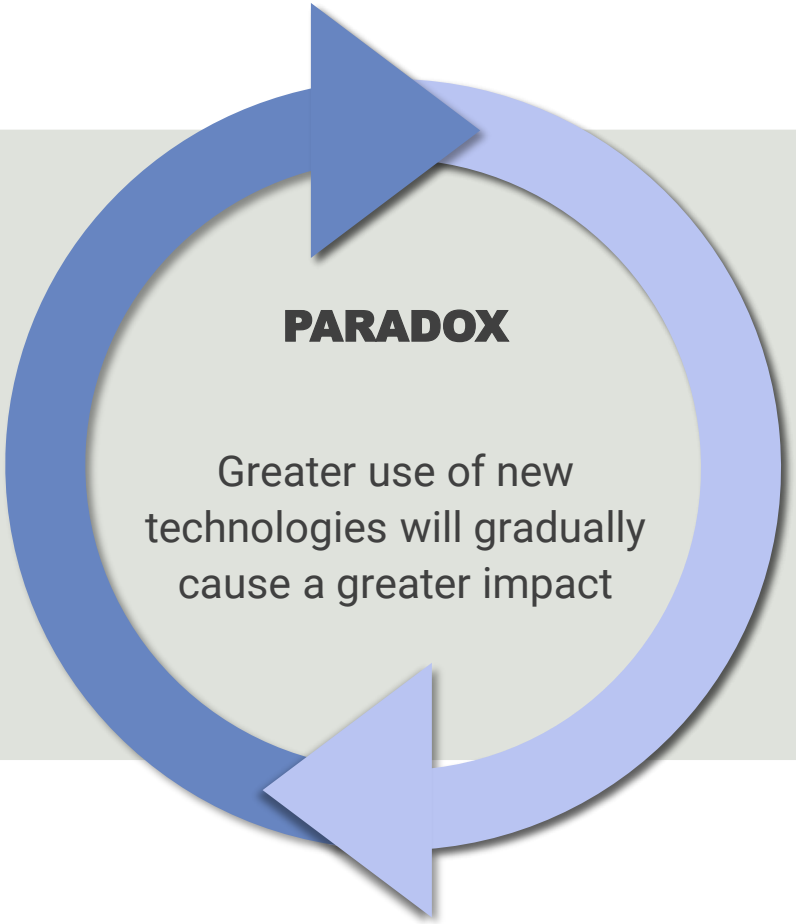
We can help you with this!

[1] EU report: Energy-efficient Cloud Computing…
[2] https://www.datacenterknowledge.com/industry-perspectives/data-center-dilemma-our-data-destroying-environment
[3] https://www.nature.com/articles/d41586-018-06610-y
[4] https://www.aboutamazon.eu/news/aws/eu-businesses-that-move-to-aws-cloud-can-improve-energy-efficiency-and-reduce-carbon-emissions
[5] https://www.capgemini.com/no-no/2021/04/cloud-sustainability-the-case-for-carbon-accounting-in-it/

The Role of «Green IT» - the paradox

IT emissions already amount to 3% of all CO2 emissions, by 2030 that figure is destined to triple due to the exponential diffusion of digital technology

The **role of the IT factor** in the path towards NetZero is very often considerably **underestimated**



Digital companies are guided and supported by IT capabilities, but at the same time are also among the major contributors to emissions that hinder the achievement of sustainability objectives

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Using digital twin concept to manage buildings efficiently

VASAKRONAN

Brookfield
Properties

Using Azure Digital Twin to combine data from 30 different sources into one model of entire building and all systems within it

If performance of an asset starts to slip, operators proactively change or service the equipment before energy is wasted or it affects the tenant experience.

Analysis of data over time improves performance and shapes future asset strategies, resulting in further operational and economical savings

Energy savings >20%

Source: https://agentestudio.com/blog/why-digital-twins-are-important-for-commercial-real-estate

Using IoT to charge electrical vehicle with sustainable energy

Clever

Leading Mobility Service Provider

Optimize consumption of energy generated from wind turbines **at night** (~40% more sustainable energy in power mix) to power Electrical Vehicles by day; **users can see when demand on energy is lowest**

Smart Grid technology → predictably charge to balance energy consumptions

Azure: Connect IoT sensors to charging station to deliver data insight for SW deployments, storage & retrieval charging-point data for reporting, reimbursements, charging transaction

Source: https://www.electrive.com/wp-content/uploads/2021/07/compleo-ladestation-charging-station-clever-daenemark-denmark-2021-02-min.png