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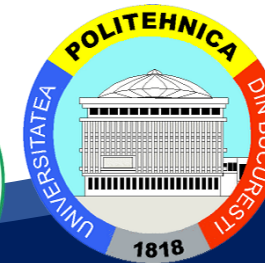
# Course 15. Enterprise Management in Digital Economy

Module 2: Sustainable and digital: new patterns for strategies and business models

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with

Andrei Szuder (UPB), Uttapol Smutkupt (CMU), Jorge Cunha (Uminho)



Curriculum Development  
of Master's Degree Program in  
Industrial Engineering for Thailand Sustainable Smart Industry



## Module 2: Sustainable and digital: new patterns for strategies and business models

### List of topics

- A. Strategy or business models? Different approaches to lead your business
- B. Sustainable or digital: Emerging business models and its components
- C. Following technical innovations with sustainable business models
- D. Defining unique value proposition and designing customer relationships
- E. Collaboration and competition in the age of networking





## Module 2: Sustainable and digital: new patterns for strategies and business models

List of workshop sessions

Different approaches to lead your business

Emerging business models and its components

Sustainable business models

Defining unique value proposition and designing customer relationships

Collaboration and competition in the age of networking





## M2: Different challenges in digital era

Digital Ecosystems (DE)

Digital Innovation Constraints (DIC)

Digital Product Innovation (DPI)

Digital Business Model Innovation (DBMI)

Digital Knowledge Integration (DKI)

IT Transformation (ITT)

Digital Agility (DAG)

Digital Ambidexterity (DAM)

Piccinini et al., 2015





## M2: Digital Era Challenges

### Digital Ecosystems

- Competing with an expanding range of new rivals and non-industry rivals and entrants (e.g., Google, Apple)
- Working toward the convergence of physical infrastructures (transportation) and digital infrastructures (connectivity) and identifying new cross-industry structures
- Building complementary partnerships among different ecosystem players (business and IT) to design new business models
- Bridging gaps between previously separated business units and ecosystem players to create new digital value
- Improving information flows and exchange between business ecosystem partners to enable a seamless customer experience





## M2: Digital Era Challenges

### Digital Innovation Constraints

- Ensuring IT security in the adoption and implementation of digital technologies
- Dealing with regulatory uncertainty and regional restrictions concerning digital innovation
- Resolving legal/regulatory issues around automatized activities and eliminating concerns (e.g., security, safety)





## M2: Digital Era Challenges

### Digital Product Innovation

- Embedding the kinds of experiences people have with digital technologies in products
- Designing human-to-machine interfaces that enable a seamless consumer experience.
- Embedding digital content and services into products while considering cost efficiency, but without compromising safety and security
- Developing industry-wide technology standards that enable integrated customer services and a seamless experience to be provided
- Achieving breakthroughs in the development and deployment of key (generative) digital technologies
- Creating and capturing new value for customers from mobile sensors and real-time data streams (“big data”)





## M2: Digital Era Challenges

### Digital Business Model Innovation

- Rethinking the incumbent's role and resource composition (e.g., from automotive manufacturer to mobility services provider)
- Designing new business models with valuable propositions through digital innovation
- Transforming the value creation structure to achieve greater agility for digital innovation
- Creating valuable new digital products and services that customers are willing to pay for, despite ongoing profitability of old model (selling cars)
- Building an integrated (end-to-end) platform for mobility services and other unforeseen opportunities







## M2: Digital Era Challenges

### Digital Knowledge Integration

- Understanding and catering to quickly changing consumer needs and expectations that are shaped by digital technologies
- Acquiring and integrating critical know-how and patenting innovations
- Attracting new talent that is able to integrate digital technology expertise with business know-how
- Integrating IT know-how and creative problem solving into research and development activities





## M2: Digital Era Challenges IT Transformation

- Designing new governance and incentive structures to exploit new digital technologies in order to innovate consumer experience
- Encouraging employees to develop a digital mindset in order to increase the acceptance and use of digital technologies in everyday work and processes
- Leveraging new affordances of digital technologies to improve internal communication and coordination - Rethinking the role of IT inside the organization from providing services to the business toward creating value for heterogeneous customer demands
- Redesigning the relationship between IT and the business as IT becomes an integral part of the business model (new leadership roles, changed responsibilities)
- Transforming legacy enterprise architecture into a modular, loosely coupled architecture that can be seamlessly connected with new digital technologies





## M2: Digital Era Challenges

### Digital Agility

- -Switching to agile methodology in projects.
- - Implementing a start-up mentality (e.g., fail often, fail early, trial and error) in a large organization that exhibits resistance to innovation.





## M2: Digital Era Challenges

### Digital Ambidexterity

- Balancing agility—to accommodate the short lifecycle of digital technology innovation—with stability—to accommodate the long lifecycle of traditional product innovation (e.g., the car).
- Aligning new, significant short-term digital technology investments with long-term strategic business planning and digital capability development in times of high uncertainty.
- Balancing customized digital services that provide added value by leveraging customers' personal data with data security and privacy.
- Combining digital innovation philosophy (experimental, market learning) with manufacturing philosophy (planned, finished at time of market introduction).



# M2: New business imperatives

## Business path to digital economy





## M2: New business imperatives

### Dominating business models

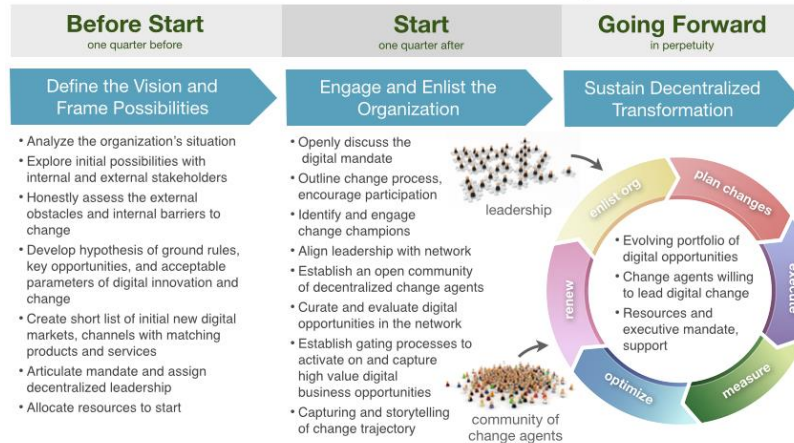
- The Crowd Economy
- The Free/Data Economy
- The Smartness Economy
- Closed-Loop Economies
- Decentralized Autonomous Organizations (DAOs)
- Multiple World Models
- Transformation Economy



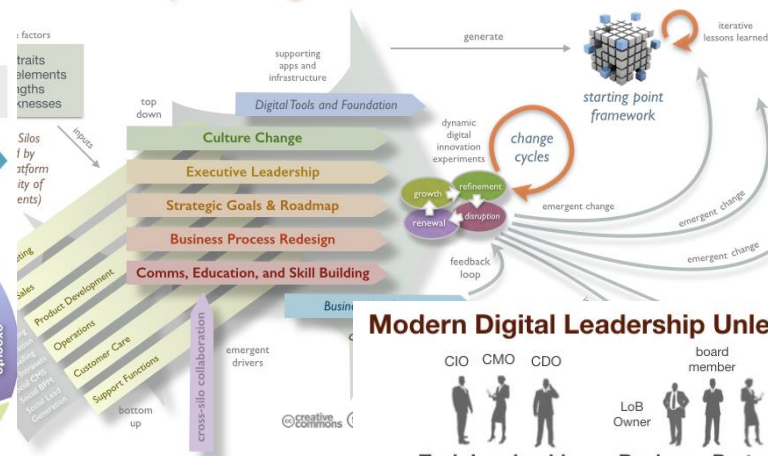
## M2: New business imperatives Digital transformation proces – different ways

### Initiating Digital Transformation: The Journey

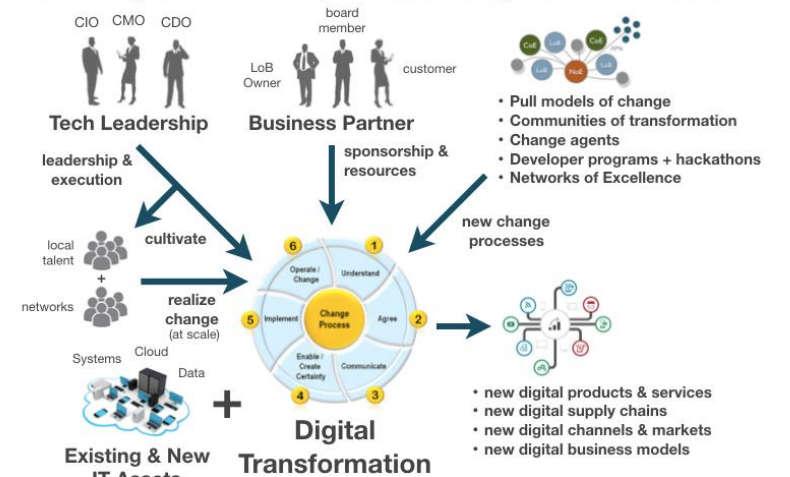
A Roadmap for the Board of Directors, CEO, COO, CFO, CIO, CMO, and CDO and the Communities that Will Realize and Sustain the Change and Adaptation



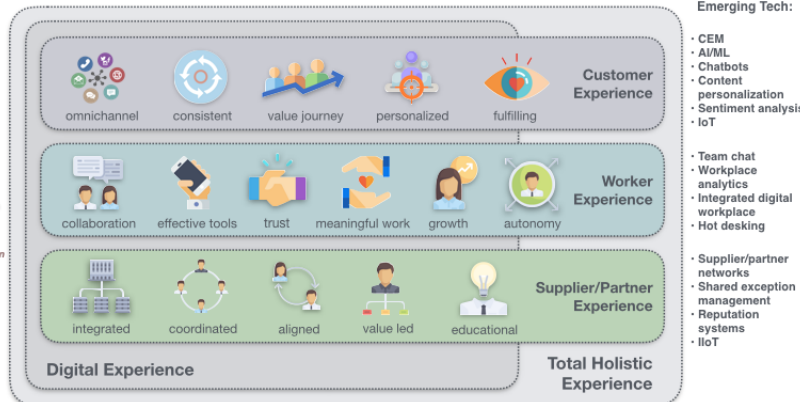
### An Adaptable Digital Transformation Framework



### Modern Digital Leadership Unleashed by Network Effects



### Digitally Transforming an Organization into Today's Three Main Experiences

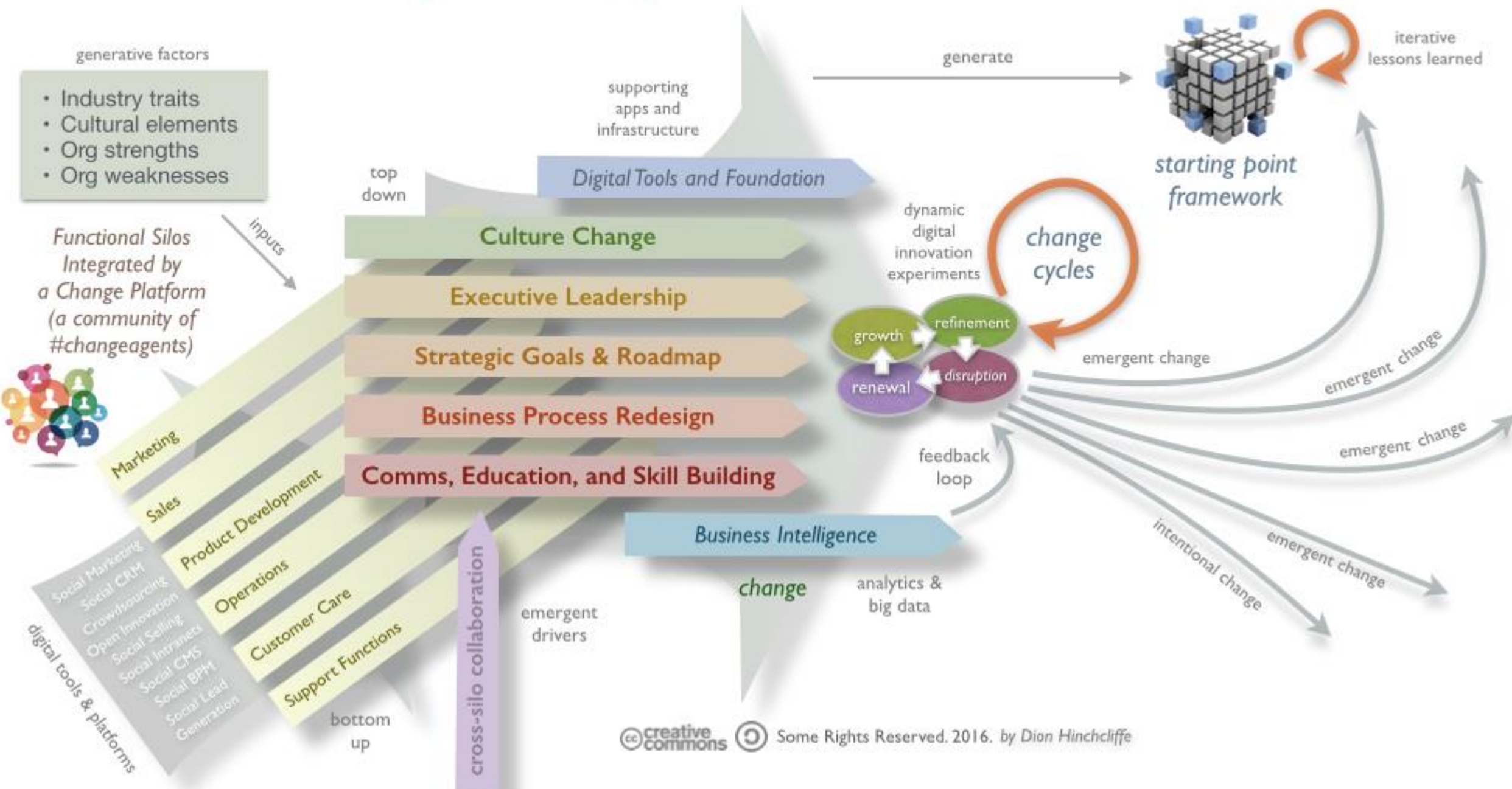


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(Hinchcliffe, 2018)

# An Adaptable Digital Transformation Framework





# Initiating Digital Transformation: The Journey

A Roadmap for the Board of Directors, CEO, COO, CFO, CIO, CMO, and CDO and the Communities that Will Realize and Sustain the Change and Adaptation

## Before Start

one quarter before

## Start

one quarter after

## Going Forward

in perpetuity

### Define the Vision and Frame Possibilities

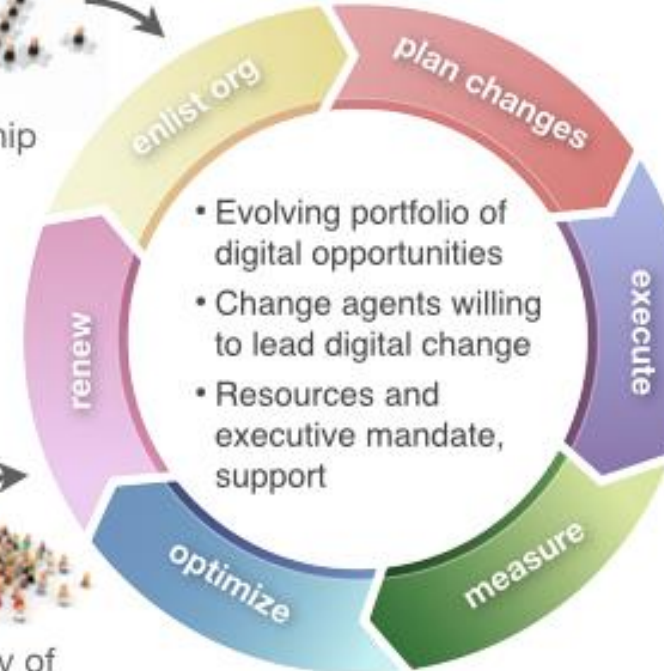
- Analyze the organization's situation
- Explore initial possibilities with internal and external stakeholders
- Honestly assess the external obstacles and internal barriers to change
- Develop hypothesis of ground rules, key opportunities, and acceptable parameters of digital innovation and change
- Create short list of initial new digital markets, channels with matching products and services
- Articulate mandate and assign decentralized leadership
- Allocate resources to start

### Engage and Enlist the Organization

- Openly discuss the digital mandate
- Outline change process, encourage participation
- Identify and engage change champions
- Align leadership with network
- Establish an open community of decentralized change agents
- Curate and evaluate digital opportunities in the network
- Establish gating processes to activate on and capture high value digital business opportunities
- Capturing and storytelling of change trajectory

### Sustain Decentralized Transformation

- Evolving portfolio of digital opportunities
- Change agents willing to lead digital change
- Resources and executive mandate, support



ive earned



### Released by Network Effects



new change processes



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ffe, 2018)



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# Modern Digital Leadership Unleashed by Network Effects



## Initiati

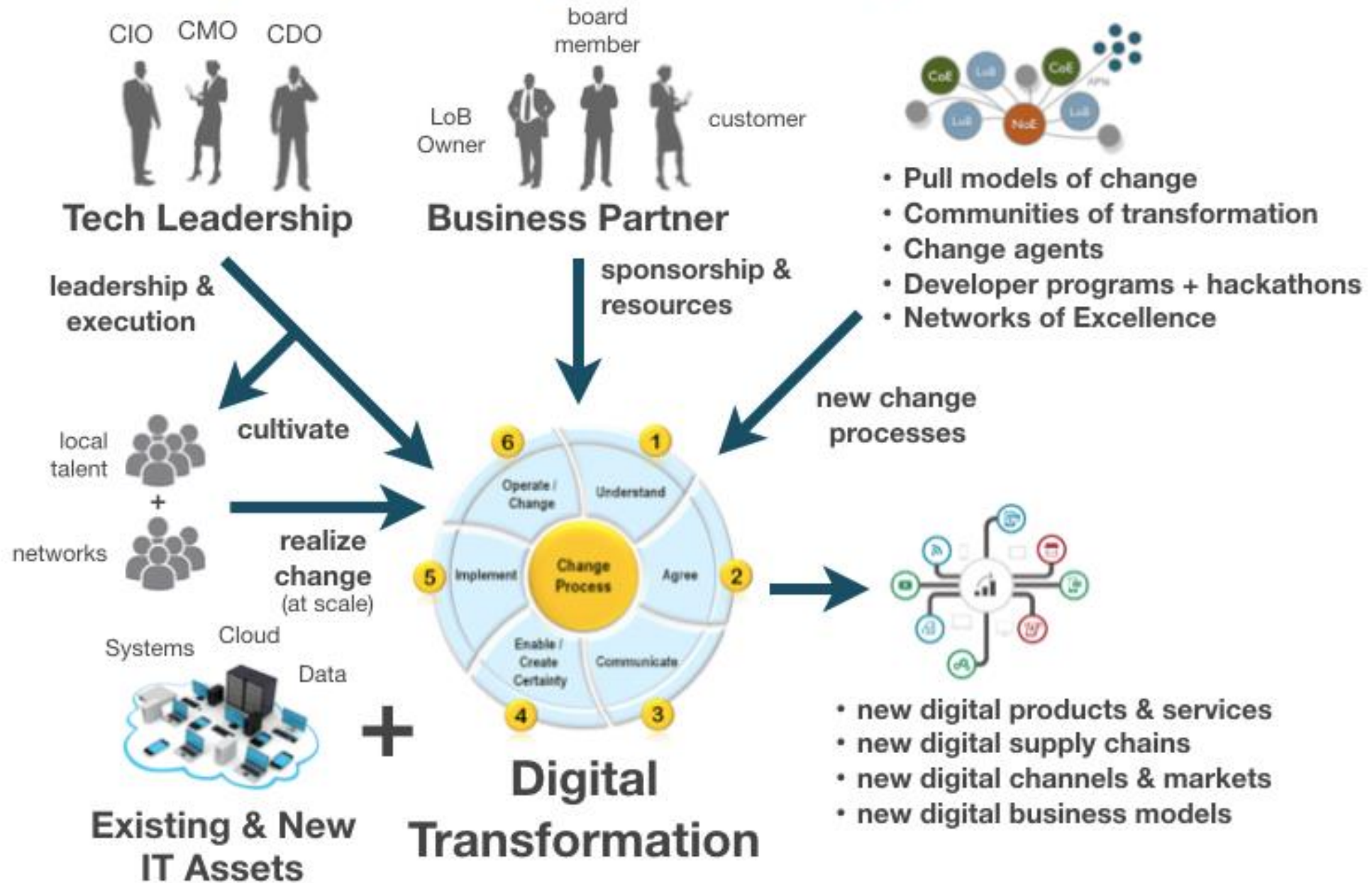
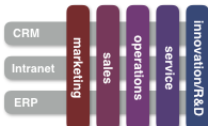
A Roadmap and the C

Before  
one quarter

Define the Vi  
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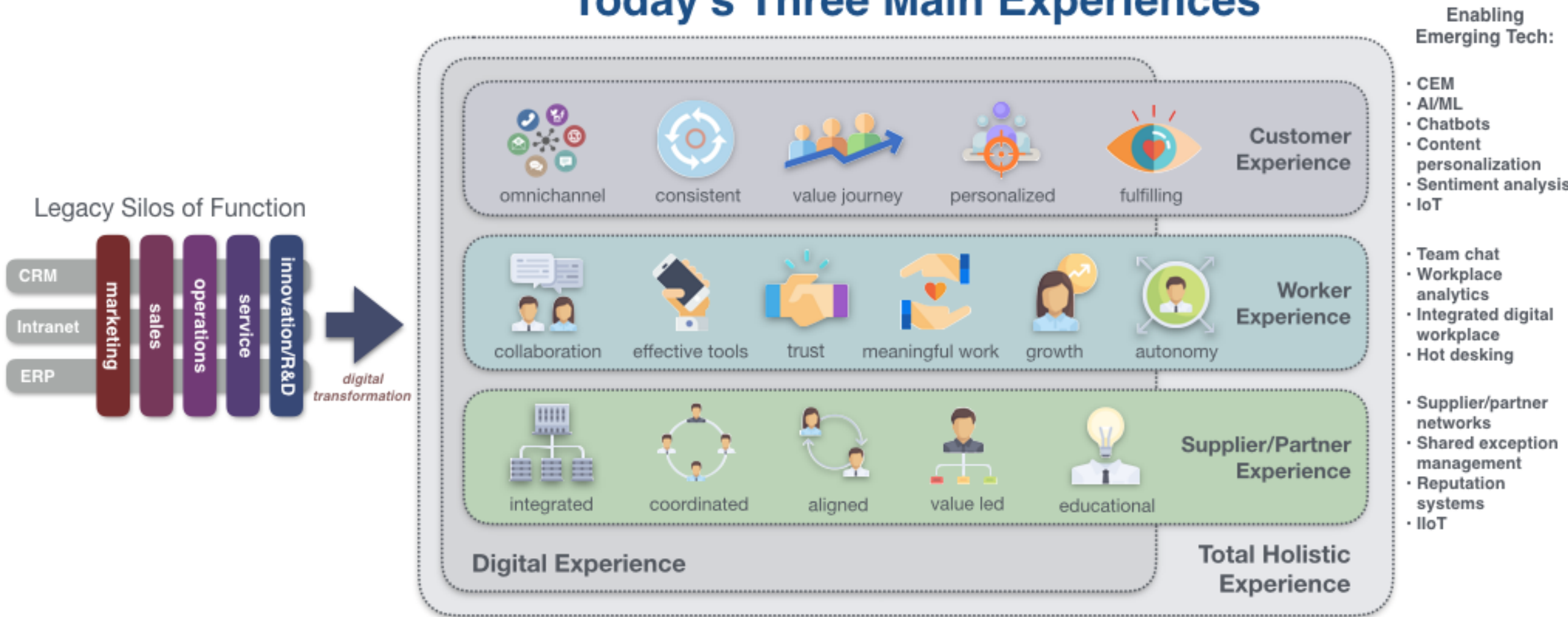
Legacy Silos of Function



- Pull models of change
- Communities of transformation
- Change agents
- Developer programs + hackathons
- Networks of Excellence

- new digital products & services
- new digital supply chains
- new digital channels & markets
- new digital business models

# Digitally Transforming an Organization into Today's Three Main Experiences



From <http://zdnet.com/blog/hinchcliffe> on  by Dion Hinchcliffe

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## M2: Emergining business models

### General classification of business models innovation

| Key feature                     | Description   |
|---------------------------------|---|
| <b>cost obsession</b>           | The idea is to get rid of frills and make use of economies of scale, scope, utilization, experience and other factors for the benefit of consumers. Anything that does not create value for the consumer is stripped out.   |
| <b>platform</b>                 | This term refers to a business model that supports two or more markets at the same time. A conventional market attracts buyers by providing a venue that supports the presence of sellers, and attracts sellers by the promise of the presence of buyers, all for a specific domain of goods or services. |
| <b>global business</b>          | International growth is crucial to achieving economies of scale and attaining the mass that would enable the firm to develop and manage its production and logistics efficiently. Swift globalization is a key.   |
| <b>seeking excellence</b>       | These companies focus on innovation, surprise their customers with new features, and satisfy needs which weren't even there when the product comes out.   |
| <b>distinctive/<br/>adapted</b> | drastically lowered transaction costs enable sellers to approach tiny market segments—sometimes comprising a single buyer—almost as efficiently as wide swathes of the market   |





## M2: Structures for digital era

### Organizational approaches towards digital transformation

| Type                                    | Objective   |
|---|---|
| <b>Special Projects Team</b>            | <i>Define the digital transformation mission</i>          |
| <b>Office of Digital Transformation</b> | <i>Establishing the digital priorities for enterprise</i> |
| <b>Embedded Digital Business</b>        | <i>Implement digital transformation across enterprise</i> |
| <b>Digital Business Unit</b>            | <i>Create a disruptive business</i>                       |





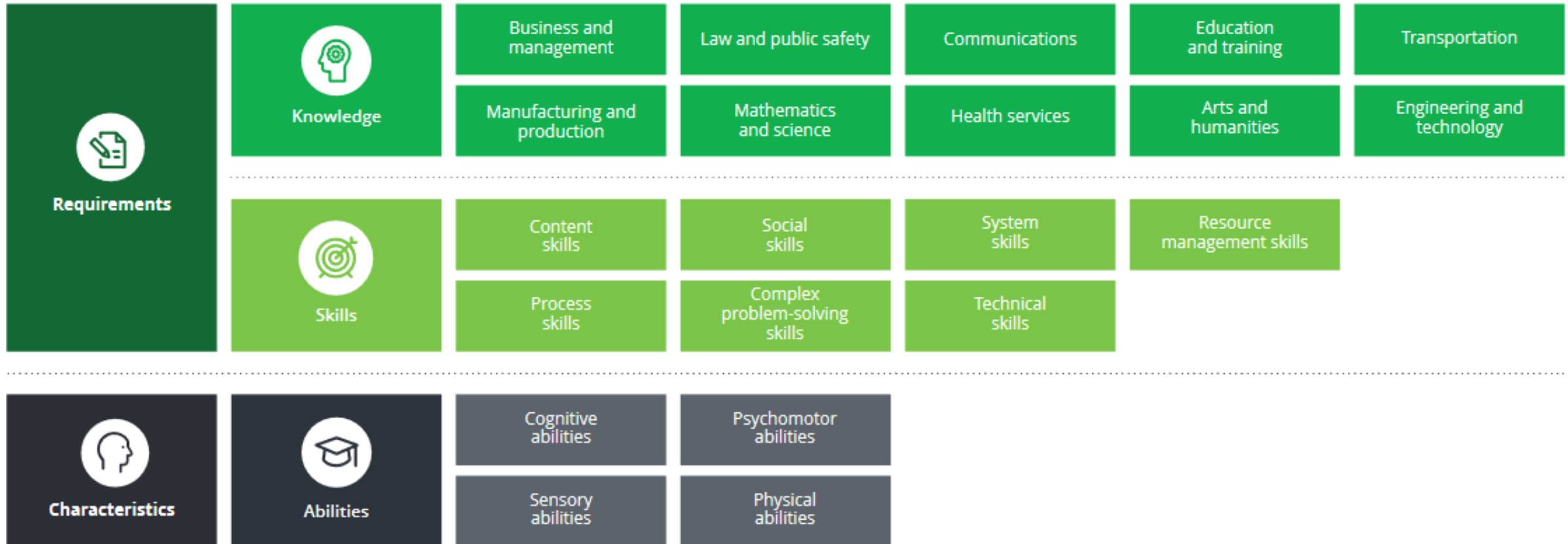
## M2: Resources for digital era Resource management principles

- Smart and sustainable
- Resilience
- Power of data
- Lean principle





# M2: Competences for digital era Personal competencies framework



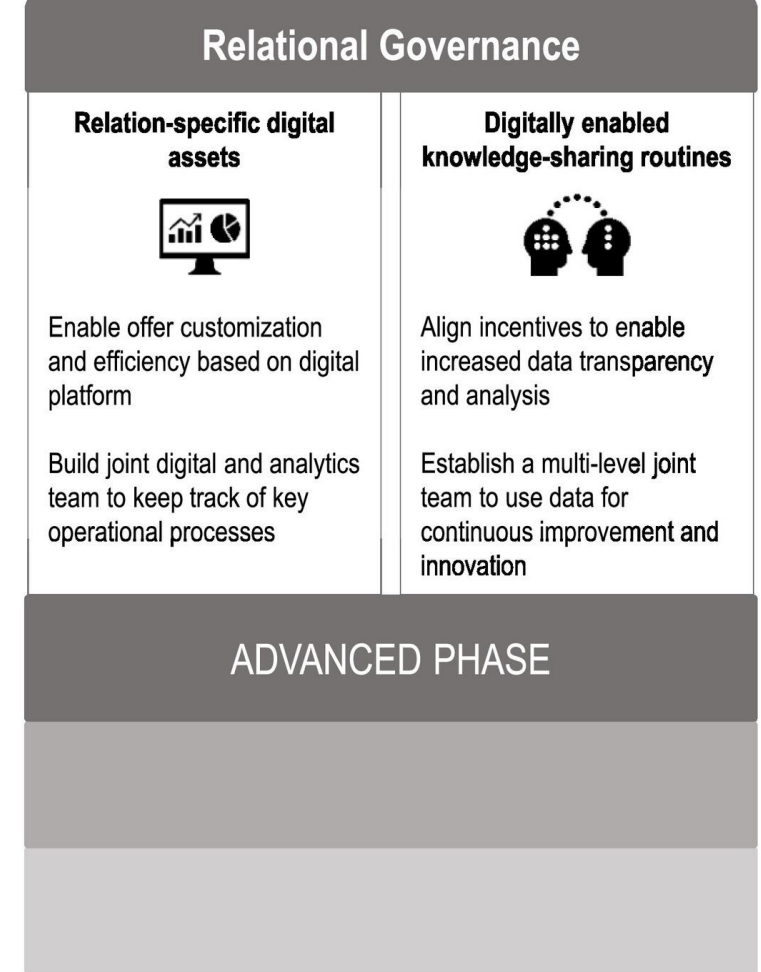
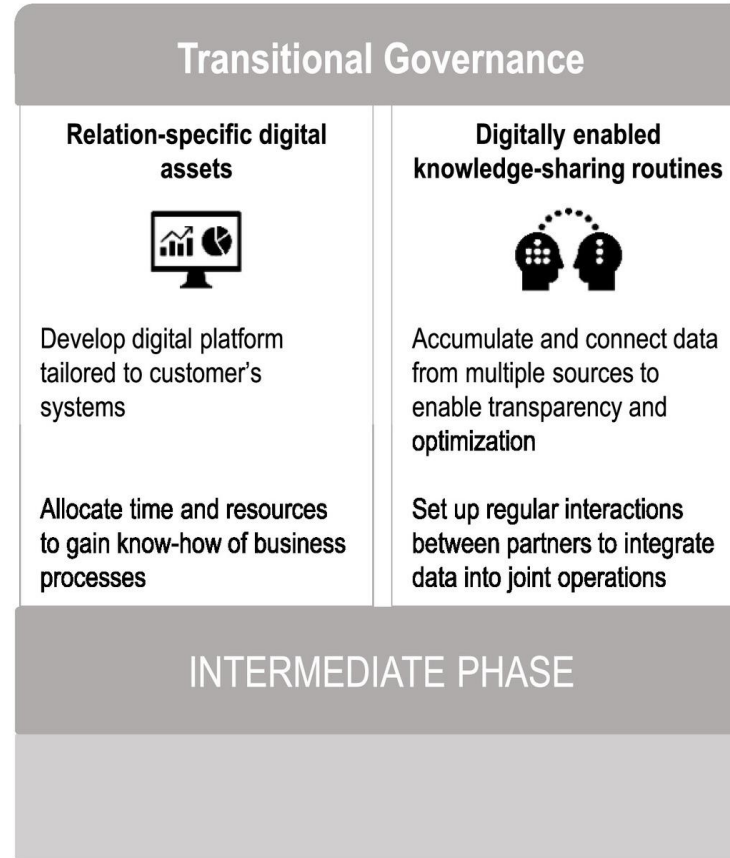
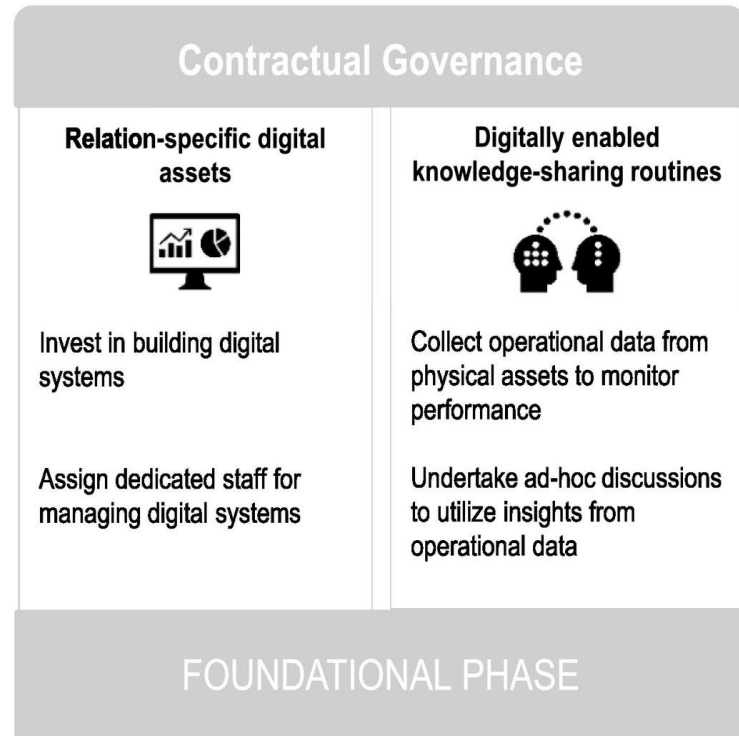
Source: O\*NET

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# M2: Competences for digital era

## Relational transformation framework



### Complementary digitalization capabilities

Evaluate benefits of combining provider's expertise and customer's business knowledge

Monitor partner's capability evolution and reassess complementarity

### Phases of Digital Servitization Relationships

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## M2: Structures, resources and competences and relations for digital era

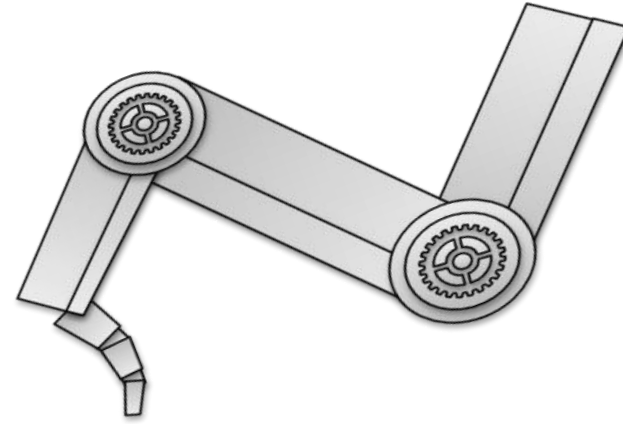
### Digital Competencies of Organizations

1. Constituency Engagement
2. Hyper Awareness
3. Complex Problem Solving
4. Creative Digital Design
5. Anticipatory Decision Making
6. Innovative Productivity
7. Operations Agility

(Sinur, 2016)



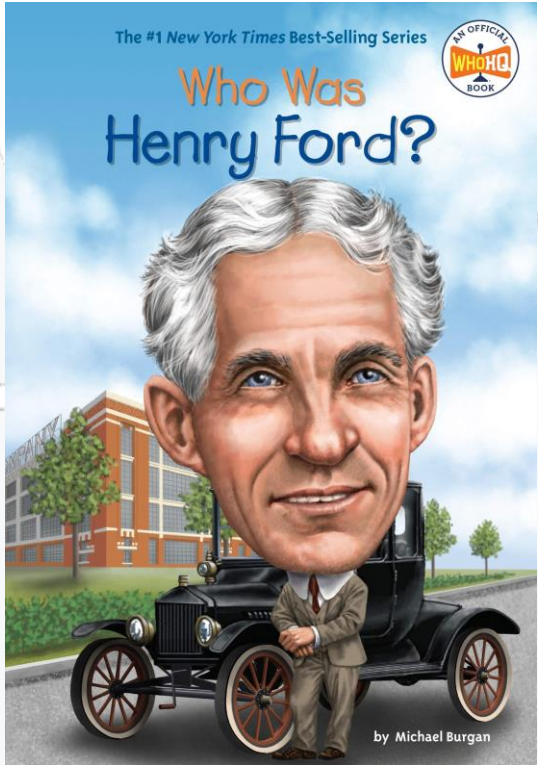
## M2: Business models for digital economy



**1. Business Model Canvas**

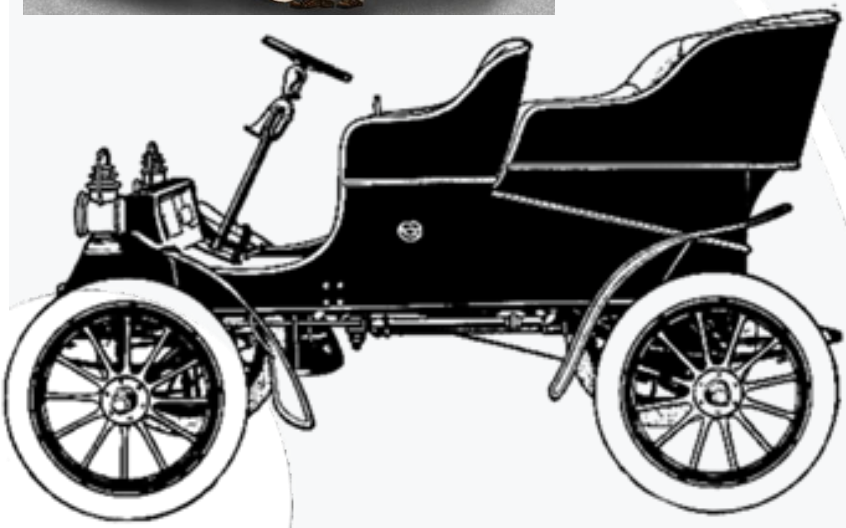
**2. THE LEAN CANVAS**

**3. The Lean Startup**

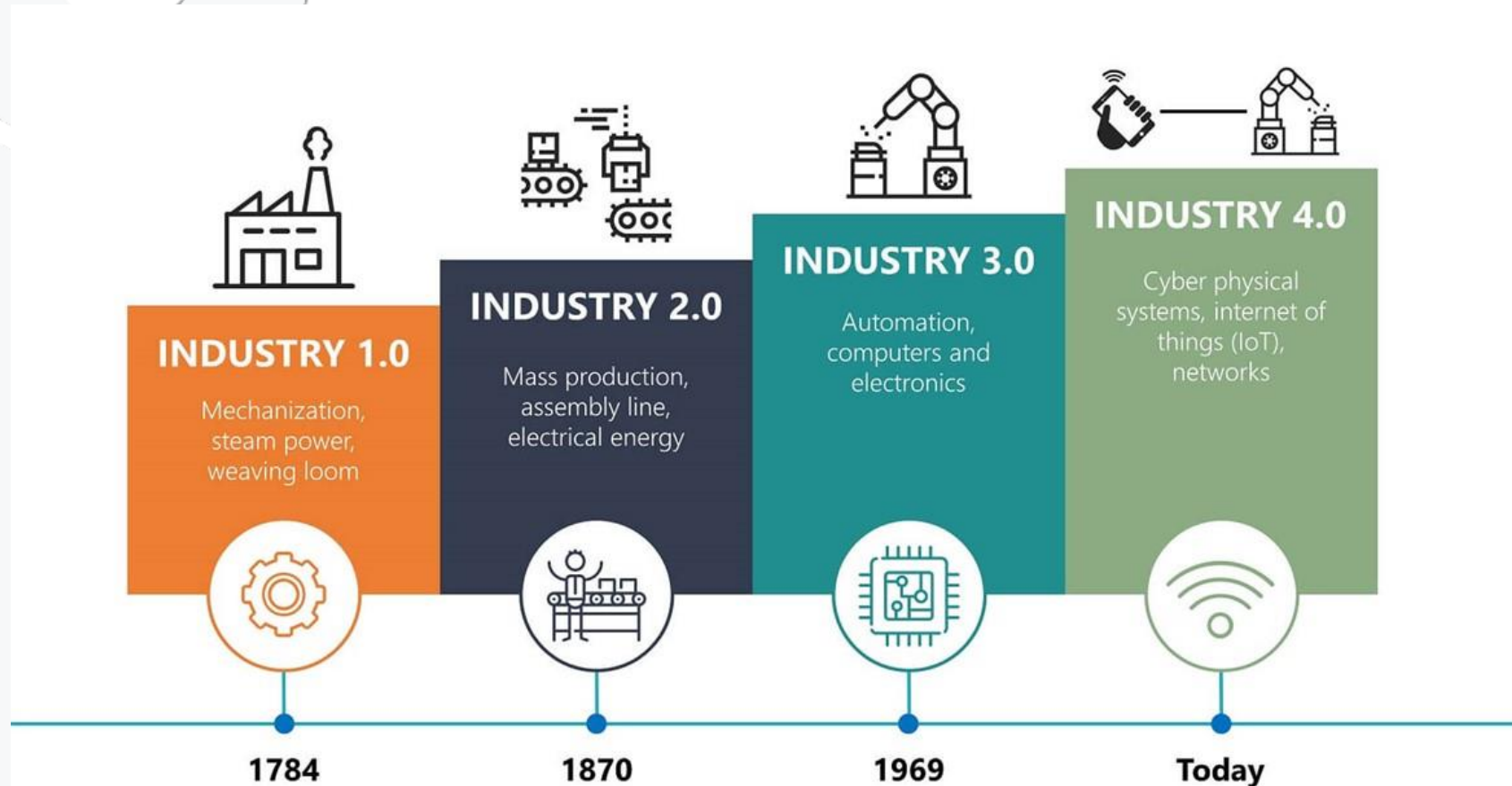


Henry Ford's slogan may be a symbol of **OLD business model** and a period in economic history: *"Any customer can have a car painted any color that he wants so long as it is black."*

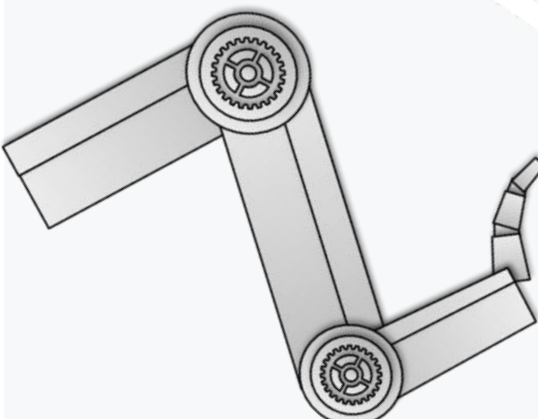
The era of **mass production** basically continues to this day. Mass production is fueled by international trade associated with economic globalization and the unification of consumer habits.



The most groundbreaking change in production systems and business is the fourth industrial revolution called Industry 4.0: a generalized term for the integration of intelligent machines, systems and manufacturing processes.



The term business model became popular in the late 90s, which, is related to the rapid erosion of prices in the IT and telecom industry.



A business model is nothing else than a representation of how an organization makes (or intends to make) money.





# 1. Business Model Canvas



# 1. Business Model Canvas

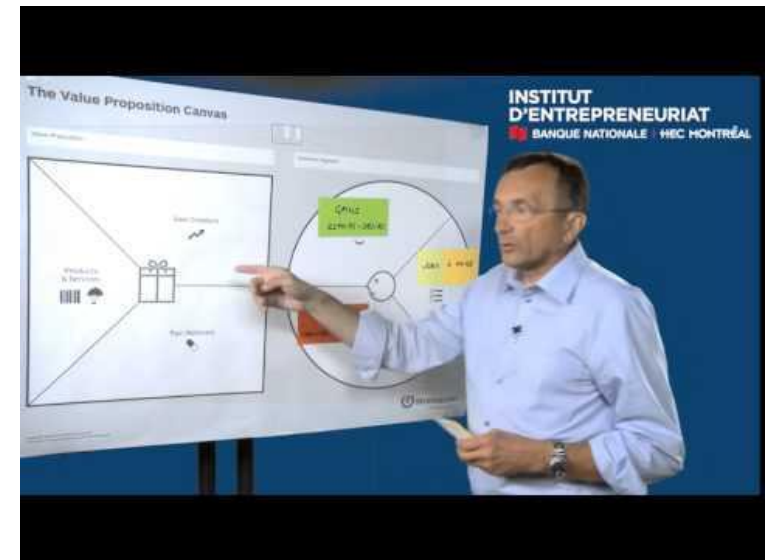
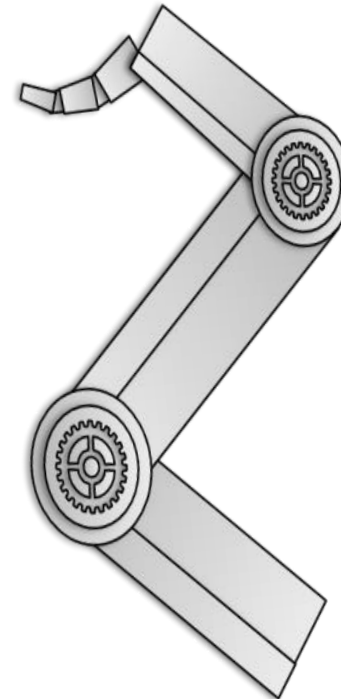
Years ago, a simple tool was developed that revolutionized the approach to the business model: - a Business Model Canvas (BMC)



TALK WITH

**Dr. Alexander Osterwalder**

Co-Founder of Strategyzer AG

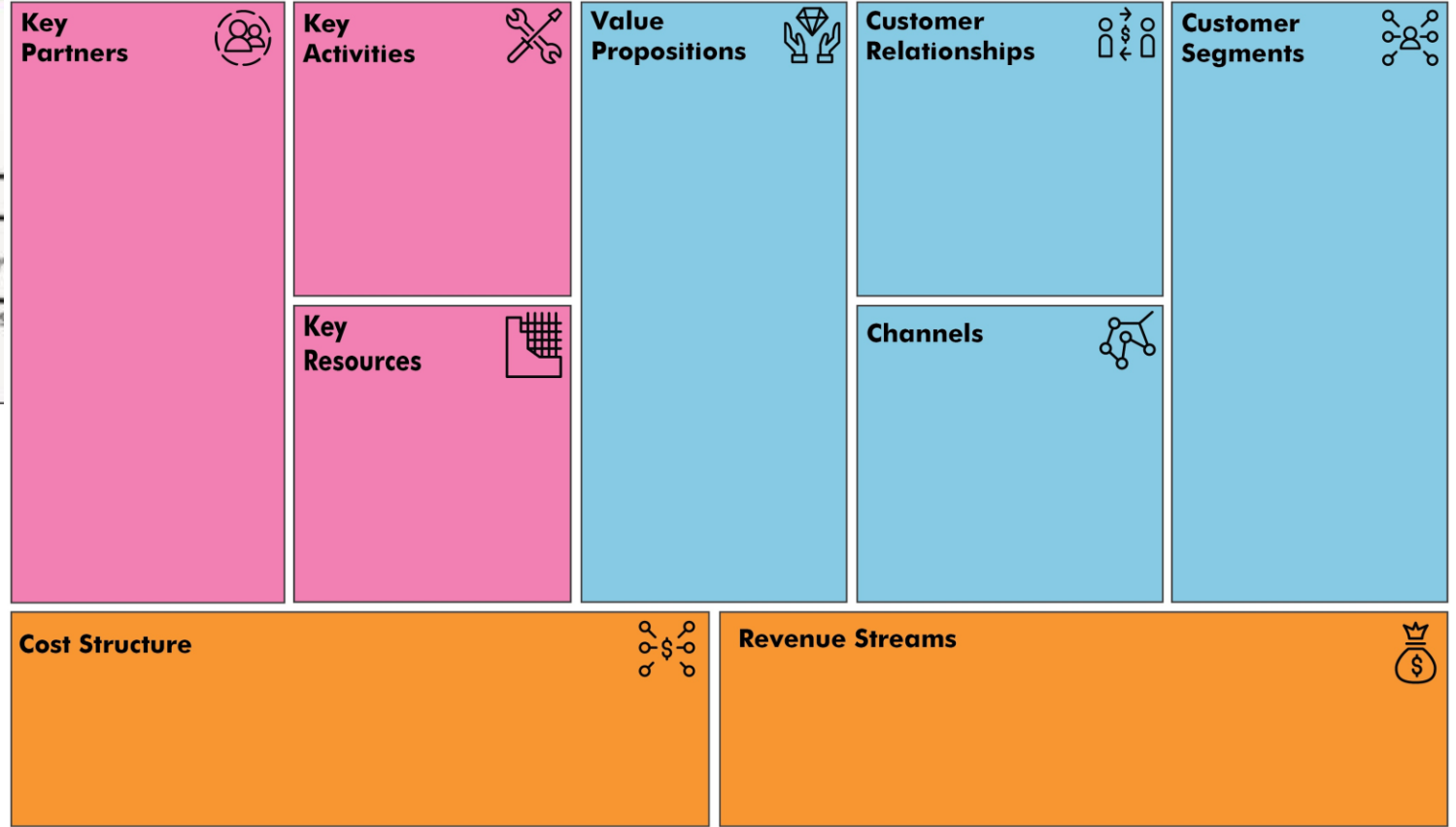
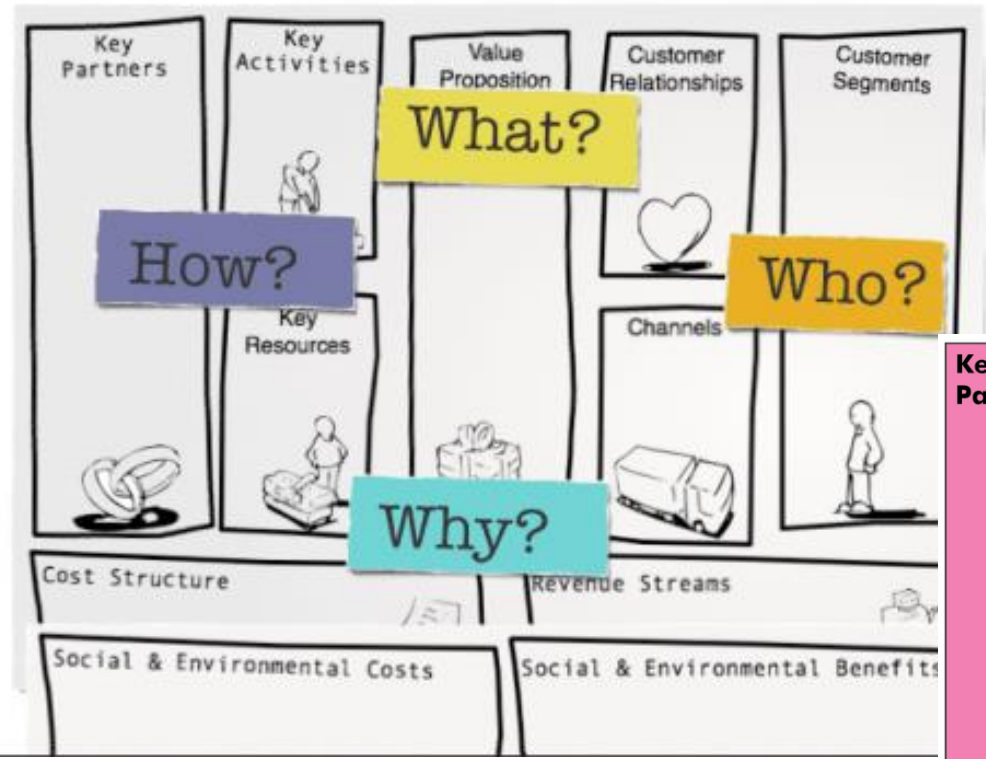


| Business areas        | Elements of the model business | Description of the element of the business model  |
|-----------------------|--------------------------------|---|
| <b>Offer</b>          | Value proposition              | Describes a set of products and services generating value for a specific customer segment.  |
| <b>Customers</b>      | Customer segments              | Identifies groups of people and organisations to which the company tries to reach out and which it wants to serve.  |
|                       | Distribution channels          | Indicates how the company communicates with particular segments of its customers and how it communicates with its customers. the way it communicates its value proposition to them. |
|                       | Relations with customers       | Includes the characteristics of the relations between the company and its clients. with representatives of a specific customer segment  |
| <b>Infrastructure</b> | Key Resources                  | Indicates the most important resources necessary for the proper functioning of the business model.  |
|                       | Key actions                    | It presents the most important actions that a company must to make her model work well.   |
|                       | Key Partners                   | Describes the network of suppliers and co-workers, from who care about the smooth running of the company.   |

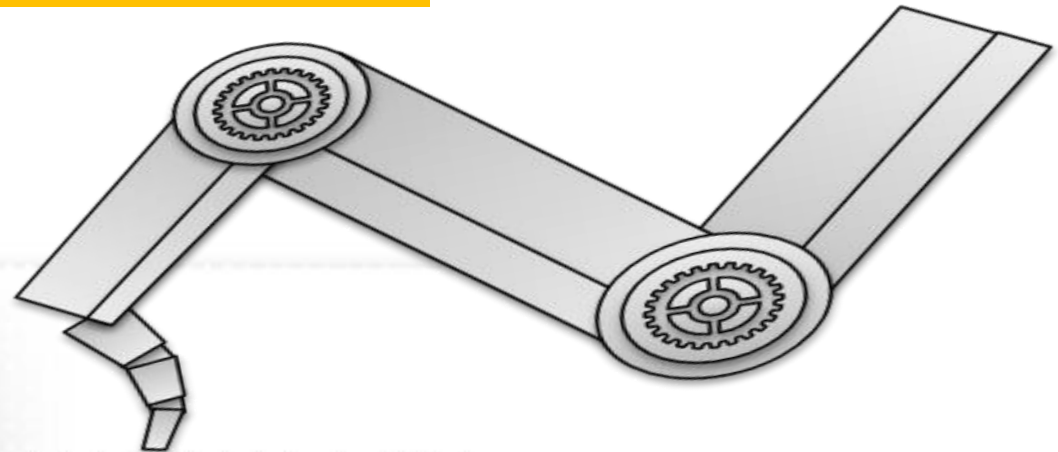
|                            |                        |   |
|----------------------------|------------------------|---|
| <b>Financial situation</b> | <b>Revenue streams</b> | Symbolizes the amount of funds generated by the company in relation to the service of each of the segments. |
|                            | <b>Cost structure</b>  | Includes all expenses incurred in connection with the use of a specific business model.                     |







## 2. THE LEAN CANVAS

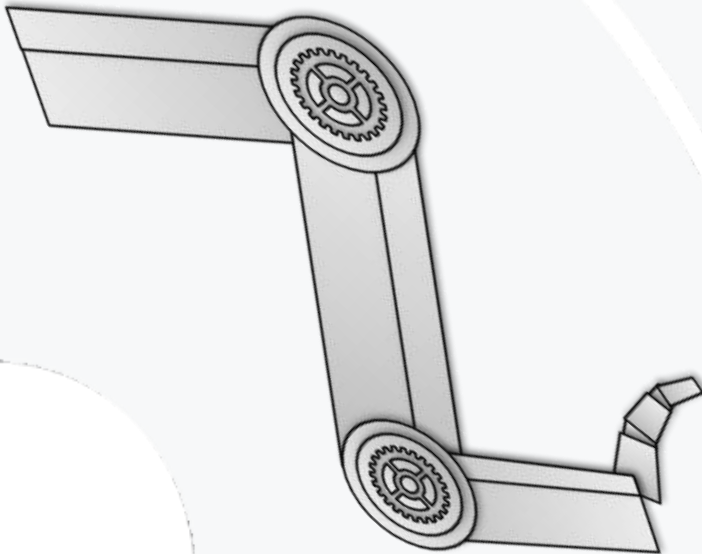


**LOVE THE PROBLEM**

**ASH MAURYA**  
FOUNDER OF LEANSTACK  
CREATOR OF LEAN CANVAS

## 2. THE LEAN CANVAS

This model is dedicated to innovative business, such as 3D printing. Its author is Ash Maurya, who was inspired by the Business Model Canvas tool.



|  |  |   |   |  |
|--|--|---|---|--|
| <b>Problem</b><br>Top 3 problems   | <b>Solution</b><br>Top 3 features                | <b>Unique Value Proposition</b><br>Single, clear, compelling message that states why you are different and worth buying | <b>Unfair Advantage</b><br>Can't be easily copied or bought | <b>Customer Segments</b><br>Target customers |
|  | <b>Key Metrics</b><br>Key activities you measure |   | <b>Channels</b><br>Path to customers                        |  |
| <b>Cost Structure</b><br>Customer Acquisition Costs<br>Distribution Costs<br>Hosting<br>People, etc. |  | <b>Revenue Streams</b><br>Revenue Model<br>Life Time Value<br>Revenue<br>Gross Margin                                   |   |  |
| PRODUCT  |  | MARKET  |   |  |



Without a **problem** to solve, you don't have a product/service to offer.

Finding a **solution** to the problem is the golden egg!

### **Key Metrics**

Every business, no matter what industry or size, will have some key metrics that are used to monitor performance.

**Unfair advantage** can be insider information, a dream team, getting expert endorsements, existing customers etc.



# SUMMARY



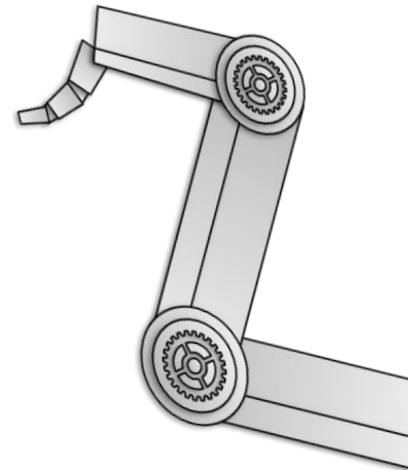
## THE LEAN STARTUP

HOW TODAY'S **ENTREPRENEURS** USE  
CONTINUOUS INNOVATION TO CREATE  
RADICALLY **SUCCESSFUL** BUSINESSES

By:

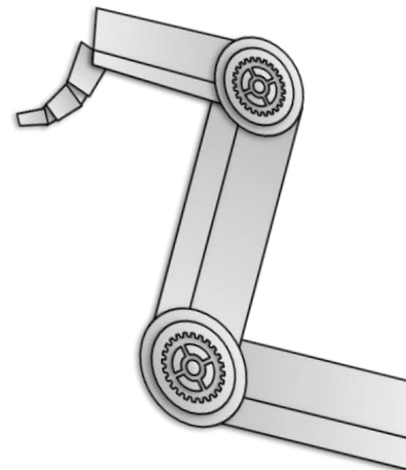
**ERIC RIES**

### 3. The Lean Startup



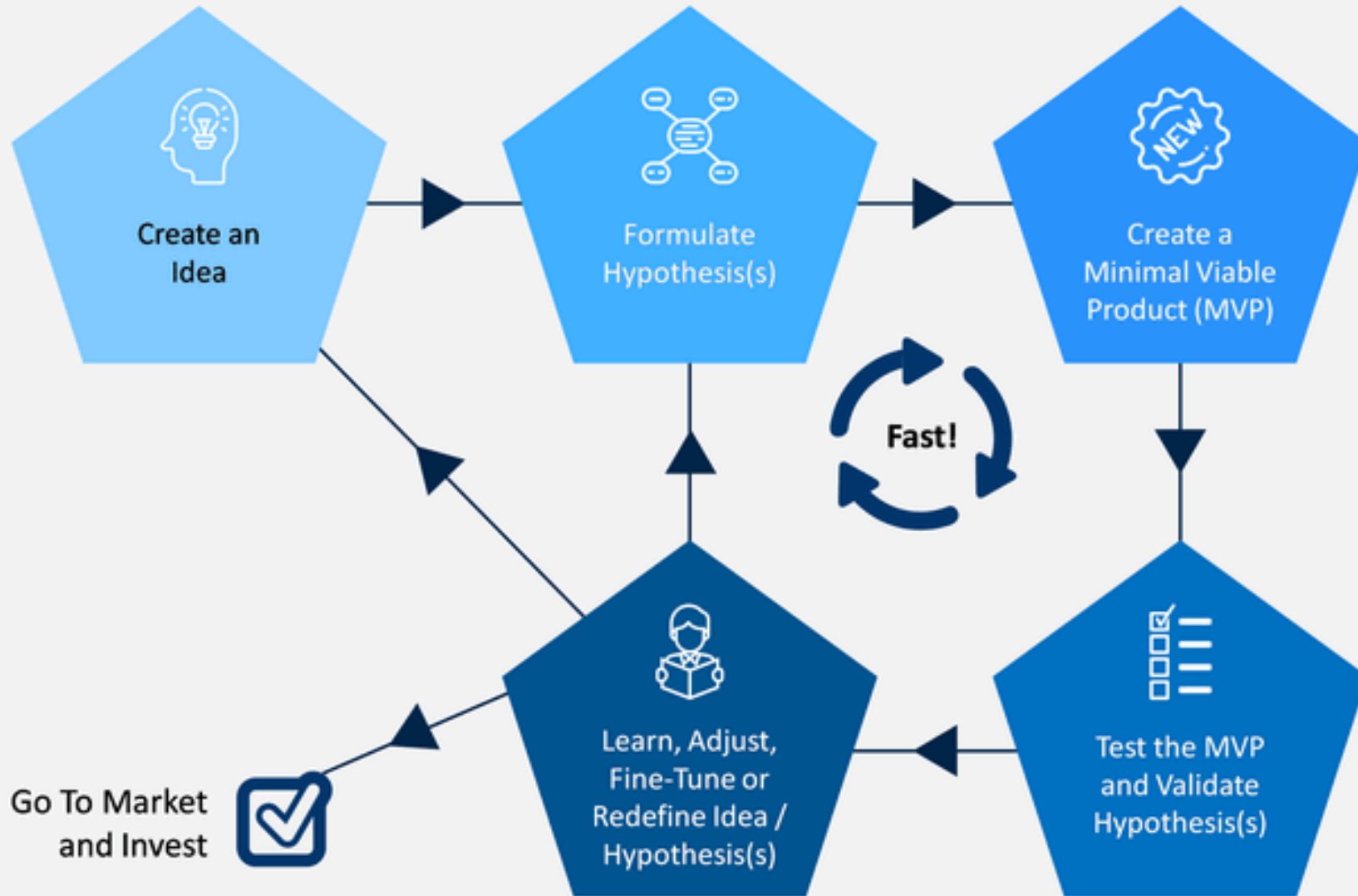
### 3. The Lean Startup

One of the major causes to startup failure is premature scaling. Premature scaling means that the startup starts to spend money on growth (e.g. hiring sales persons, leasing offices, expensive marketing etc.) before finding the ***Product and Market*** fit.



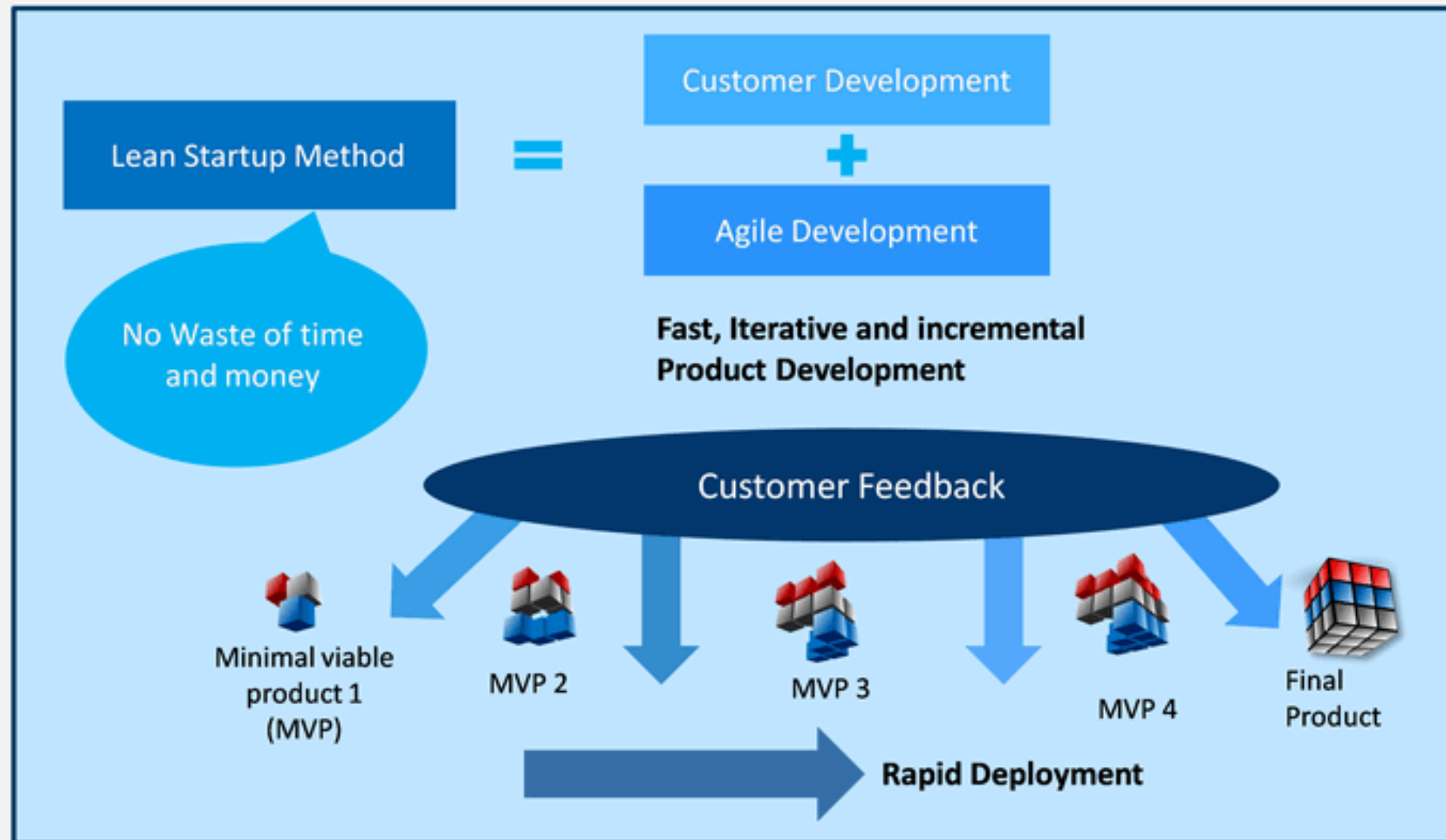
# LEAN STARTUP

## Lean Startup Methodology



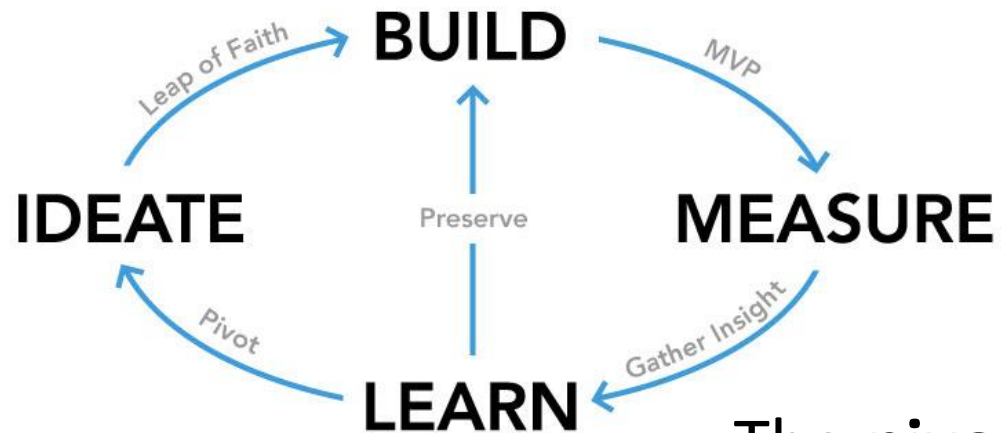
# LEAN STARTUP

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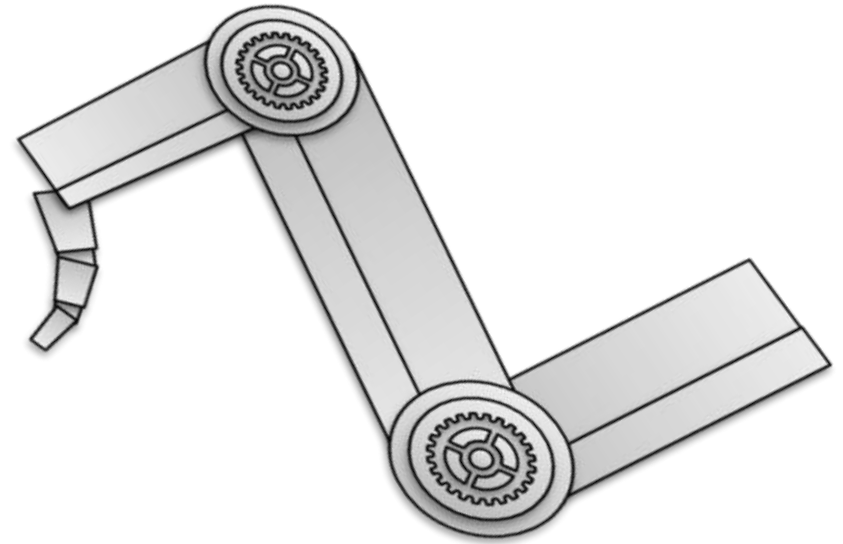
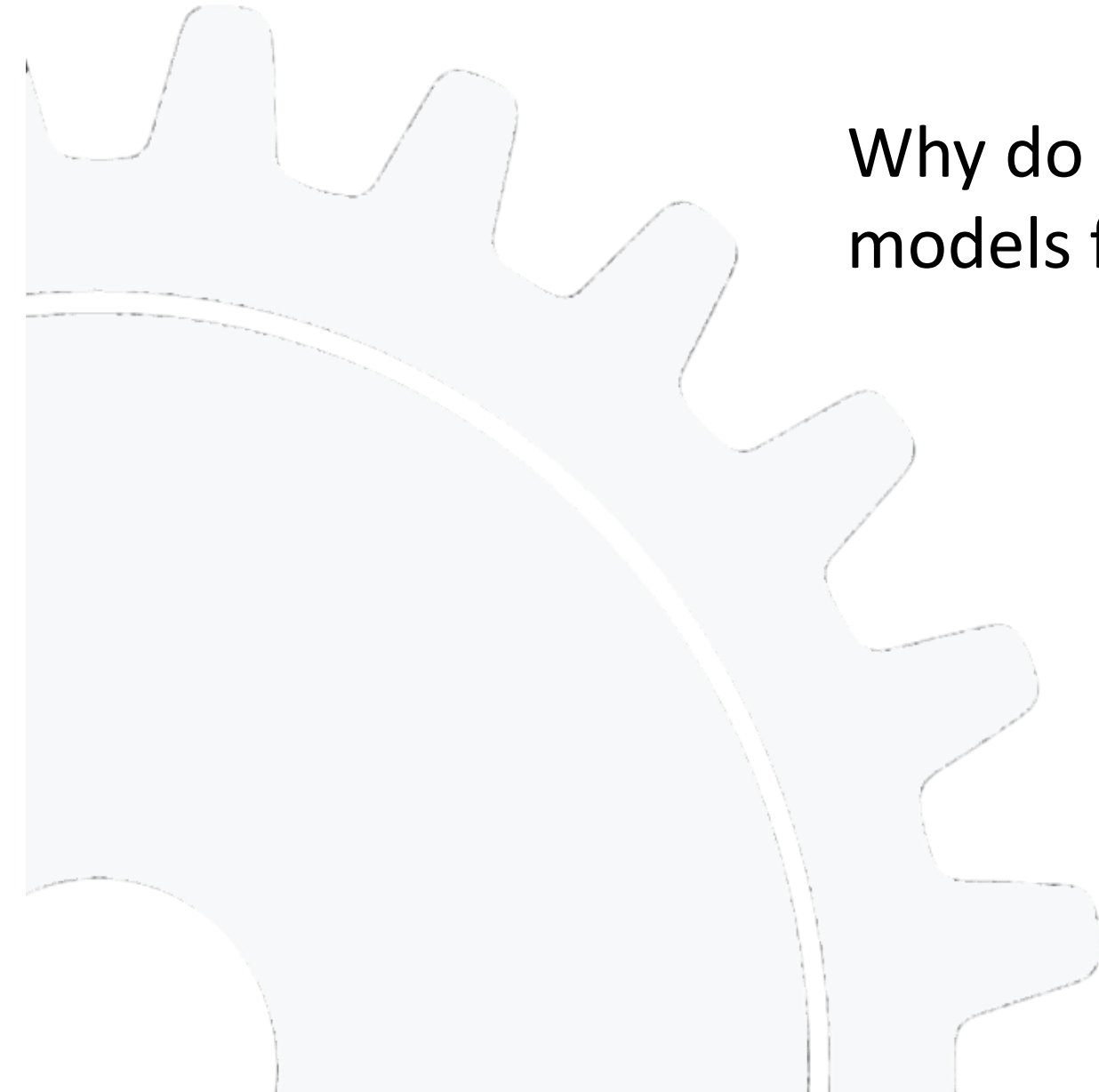
A business model of a new venture is filled with assumptions and hypotheses since little is known at start. **Entrepreneurs should interact with customers as early as possible.**

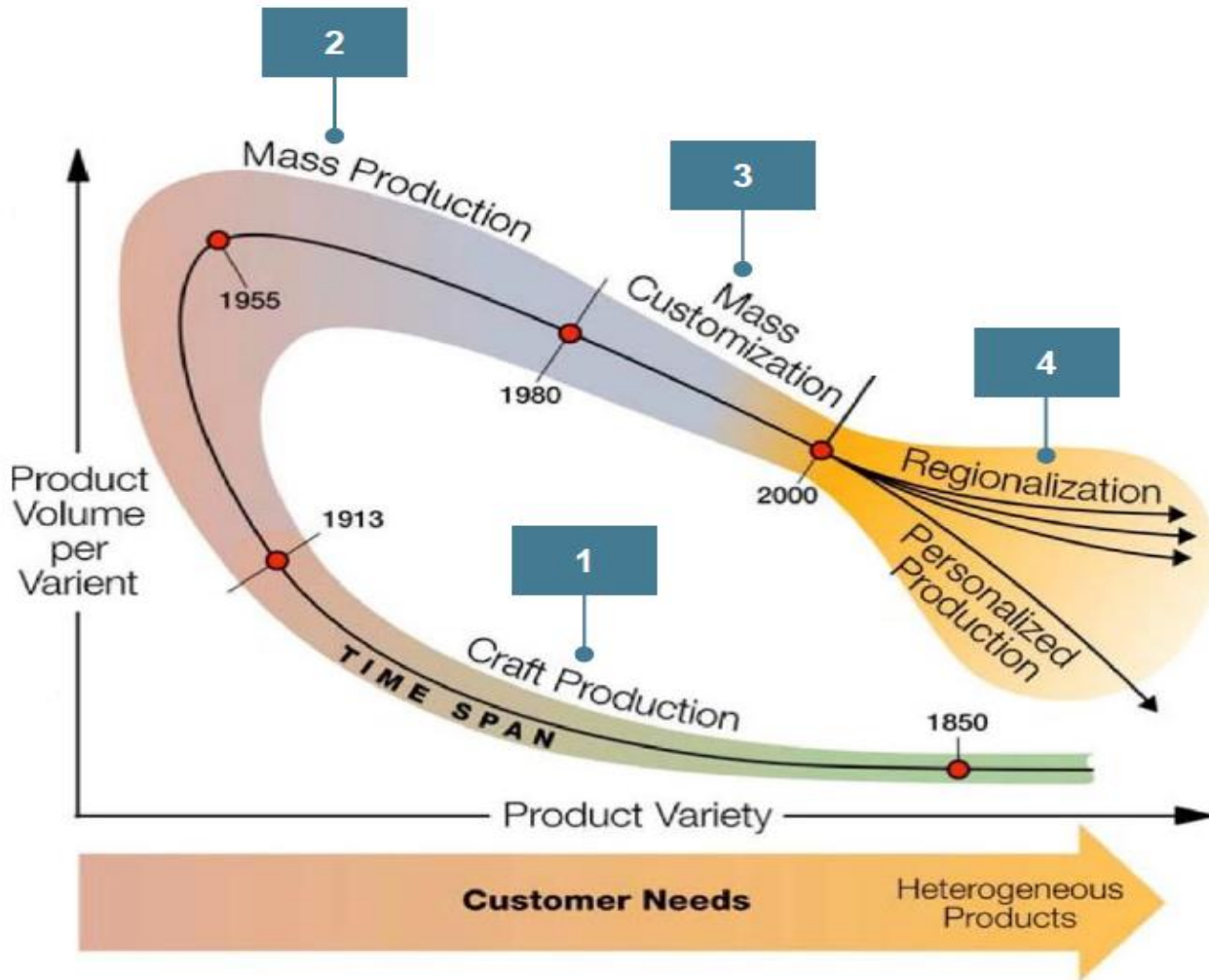


If the entrepreneur's assumptions of the startup's business model turn out to be incorrect after interaction with customers should the entrepreneur consider a **major change – a pivot.**

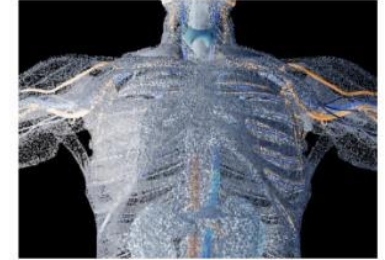
The **pivot** is a decision to change some or several parts of the hypotheses concerning the startup's business model based on **learning** from customers.

Why do we need good business models for digital economy?





# Manufacturing as a Service



Opportunities for Additive Manufacturing in Personalized Surgery 2017 – Medical Modeling and Surgical Guides

AN OPPORTUNITY ANALYSIS AND TEN-YEAR FORECAST

PUBLISHED SEPTEMBER 2017

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Additive Manufacturing for Personalized Knee Systems

Driving better outcomes for patients as well as healthcare providers