

# HOW TO CREATE INNOVATION

50+ proven  
tools to go  
from whiteboard  
to reality

The Ultimate Guide to Proven Strategies and Business Models  
to Drive Innovation and Digital Transformation

Created by  
**Stefan F. Dieffenbacher, Caroline Hüttinger,  
Susanne M. Zaninelli, Douglas Lines, Andreas Rein**

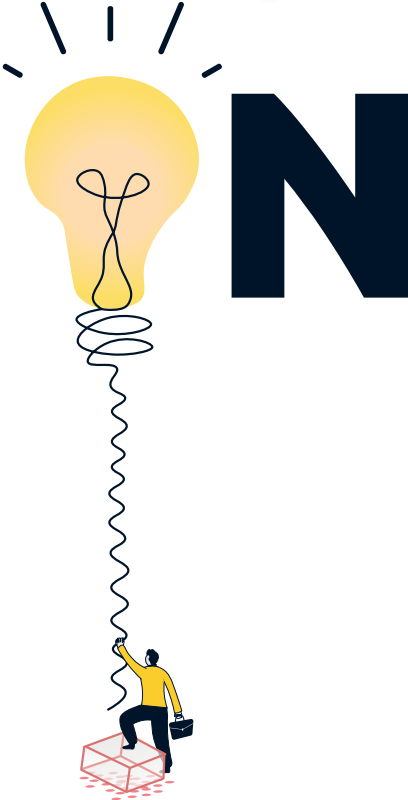


WILEY



# HOW TO CREATE INNOVATION

50+ proven tools  
to go from  
whiteboard to  
reality



The ultimate guide to prove strategies and #businessmodels for driving #innovation and #digitaltransformation!

*Created by*

**Stefan F. Dieffenbacher, Caroline Hüttinger,  
Susanne M. Zaninelli, Douglas Lines, Andreas Rein**

*Co-created by*

**60+ thought leaders from  
around the world**

**WILEY**

Copyright © 2024 by John Wiley & Sons, Inc. All rights reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

**Design by**

Caroline Hüttinger

Oqtay Quliyev

**Illustrations by**

Karim Farris – [www.karimfariss.be](http://www.karimfariss.be)

Eunho Lee – [www.en-ho.com](http://www.en-ho.com)

Oqtay Quliyev – [www.quliyevqotay.com](http://www.quliyevqotay.com)

**Editor and key contributor**

Tara Dankel – [www.practicecandor.com](http://www.practicecandor.com)

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 750-4470, or on the web at [www.copyright.com](http://www.copyright.com). Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permission>.

Trademarks: Wiley and the Wiley logo are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates in the United States and other countries and may not be used without written permission. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc. is not associated with any product or vendor mentioned in this book.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Further, readers should be aware that websites listed in this work may have changed or disappeared between when this work was written and when it is read. Neither the publisher nor authors shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic formats. For more information about Wiley products, visit our web site at [www.wiley.com](http://www.wiley.com).

***Library of Congress Cataloging-in-Publication Data is Available:***

ISBN: 9781394254262 (paperback)

ISBN: 9781394291120 (ePub)

ISBN: 9781394254286 (ePDF)

ISBN: 9781394291137 (Print Replica)

Cover Design and Illustrations: Digital Leadership AG

A book sponsored and published by



*Create innovation in a target-oriented way,  
leverage your strengths,  
create Blue Oceans, and overcome luck.*

*We have seen timelines shorten,  
budgets shrink,  
all while drastically improving the investment security.*

This book tells you how to get the job done.

# TABLE OF CONTENTS

1	<b>INTRODUCTION</b> Let's UNITE & create a world worth living in!	8
2	<b>UNDERSTANDING CONTEXT</b> A new understanding of growth and change	16
3	<b>LAYING THE FOUNDATION FOR INNOVATION</b> Creating the prerequisites for success	46
4	<b>THE UNITE INNOVATION FRAMEWORK</b> How organizations can create innovation in a target-oriented way, leverage their strengths, create blue oceans, and overcome luck	78
5	<b>ORGANIZATION &amp; GOVERNANCE</b> Designing an environment where your innovation ambitions can bloom	184
6	<b>UNLOCKING CULTURE</b> "Culture eats strategy for breakfast"	238
7	<b>BUSINESS MODEL INNOVATION</b> Taming the beast	306
8	<b>LEADING AN H2 DIGITAL TRANSFORMATION</b> A renewed understanding of digital transformation	360
9	<b>PUTTING IT INTO PRACTICE</b> Training requirements How to kick-start an innovation or transformation initiative in a large organization	384
10	<b>ABOUT</b> About Digital Leadership AG Get to know the lead authors & key contributors Acknowledgments	427
11	<b>INDEX</b>	442

## CO-CREATED BY 60+ AMAZING PEOPLE

Countless experts supported this effort. We want to introduce and call out the following contributors and early readers of *How to Create Innovation* who were quintessential in creating this book. They critiqued draft chapters; offered examples and insights; co-developed and reviewed frameworks, models, and approaches; and supported this book throughout production. Most spent days or even weeks on it.



Ahmed Hamdy



Alexander Bloß



Alexis Terrée



Dr. Andras Rung



Dr. Andreas Rein



Dr. Astrid Gollwitzer



Beat Walther



Caroline Hüttinger



Marc Degen



Christian Birthaelmer



Christoph Bockelmann



Claus Schmidt



Constanze Buchheim



Daniel Melter



Daniel Niederberger



Daniel Zutavern



Dieter Stefanowitz



Oana Buliga



Douglas Lines



Elisabetta Macaione



Ferdinand Grah



Firas Helaboui

Franziska-Juliette  
Klebön

Dr. Friederike Groeger



Dr. Gerald Kromer



Helge Tennø



Sascha Martini



Heinz Brasch



Irina Hagen



Julia von Winterfeldt



Julie Nathan



Dr. J. Aschenbrenner



Karim Farris



Laura Joseph



Dr. Leo Rannabauer



Prof. Dr. Markus Launer



# Authors, key contributors & contributors



Zhao Wang



Markus Frick



Martin König



Martin Permantier



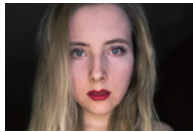
Michael Leibfried



Dr. Michael Liebmann



Michael Kron



Milana Tsyhanenko



Niccolò Mineo



Oqtay Quliyev



Ralf Weingärtner



Rami El Habashy



Robert Hirt



Dr. Robert Niemann



Roland Pecsénye



Ronnie Vuine



Sabine Pleva



Sabine Amend



Sander Kruitwagen



Shadi Younes



Shane McWhorter, PhD



Simon Marville



Simon Thiel



Stefan F. Dieffenbacher



Stefan Hövel



Stephane Leborgne



Susanne M. Zaninelli



Sylvia Väänänen



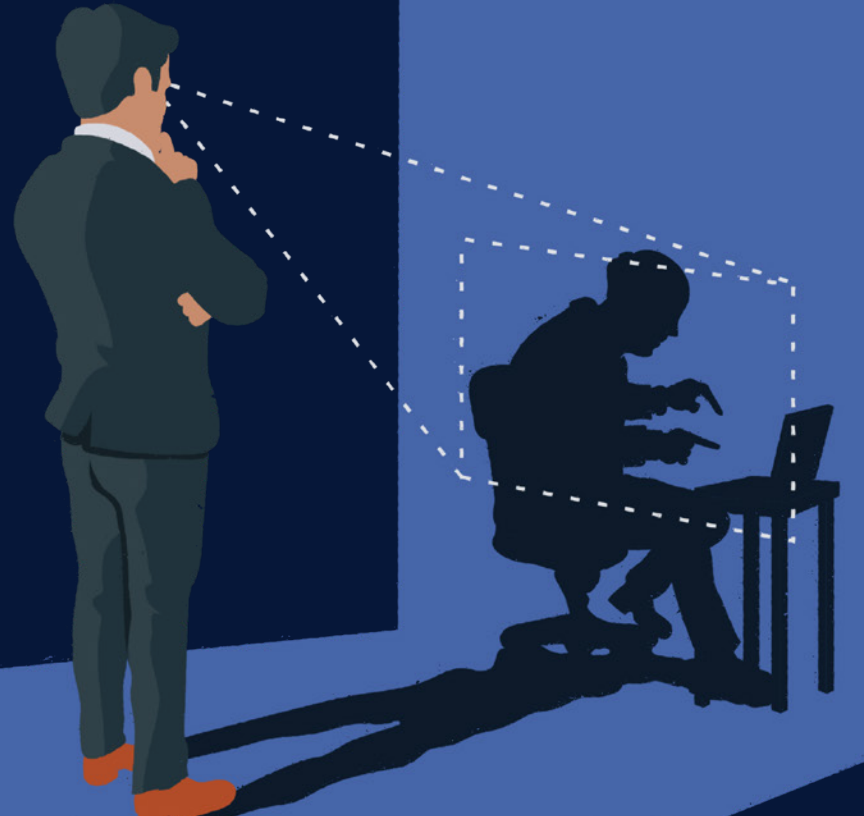
Tamas Grünzweig



Tara Dankel

CHAPTER 1

# Introduction



**Let's UNITE  
& create a world worth living in!**



We love the old, cobbled streets we find in the cities around our planet. We admire the splendor of historic buildings from centuries ago. And at the same time, our past achievements and our current way of living are anything but guaranteed. To develop ourselves and keep what we treasure from the past, we must prepare for the future; what we have ahead is the most fluid and tumultuous time in the history of humanity. Never before has there been so much change. The only way to move into a future worth living in is to innovate and transform our societies, our organizations, our departments and teams, and, last but not least, ourselves. Organizations, and even societies, that do not embrace the current pace of innovation and the changes in our world will fail and disappear from the landscape, putting their employees out of work and the people they care for at risk. So we need new ways of doing. And this book, uniquely, shows us how.

This book is essentially 20 books in one. It comes fully supported with all the tools, models, canvases, and approaches you need. You need to identify opportunities with near certainty and deliver on the solutions you imagine. It is tried and tested, holistic and end-to-end, covering everything you need. In short, we propose nothing less than a new and all-encompassing approach to innovation and transformation.

We wrote this book to create clarity on *How to Create Innovation*. At this point, the market is so saturated that it is hard to know who to trust. What practices should you use? How should you use them, and how does it all fit together? <sup>101</sup> Our main objective was to bring together established practices that work. As a result, you will certainly recognize many of the things you have learned and come to treasure in the past, but you will also discover new

concepts and strategies. Most importantly, you will, for the first time, see everything connected in one holistic framework.

Our team of over 60 authors and contributors has written this book to help you build a future worth living in. That is why we share many of the UNITE models and tools under a Creative Commons license that is OpenSource and free to use for non-commercial purposes, with the objective of empowering you and your organization to implement successful innovation and transformation initiatives.

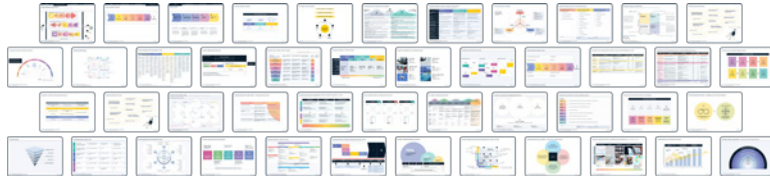
Background: a competitor started selling the UNITE models on his website and our attorney therefore suggests changing the license to numerous models where possible. That's why you will see that the license of some of the models in this book is changing.

Let's go out and create a world worth living in.

On behalf of all authors and contributors of *How to Create Innovation*, we wish you a great journey –

*Stefan F. Dieffenbacher, Caroline Hüttinger, Susanne M. Zaninelli, Douglas Lines, Andreas Rein*

## THE UNITE INNOVATION & TRANSFORMATION MODELS AND THE UNITE MOVEMENT



This book contains over 50 tools, models, canvases, approaches, and frameworks that cover the entire domain of innovation and transformation. You can download the models, including critical variations, usage instructions, examples, and print-ready versions for your workshops, on the website: [digitalleadership.com/UNITE](https://digitalleadership.com/UNITE)

All models are published under the *Understanding and Navigating Innovation and Transformation in Enterprises* (UNITE) umbrella—an umbrella that reminds us that when we UNITE, we are greater than the sum of our parts. What we really want to create under this umbrella is a **movement**. Let's UNITE and start rethinking how we deliver innovation and transformation. We keep updating the UNITE models and release new ones - so check back regularly.

We are also looking for new friends, contributors, and partners who want to support this Open source movement. So let's UNITE and share openly with the world at large the tools and models that we have come to love and that have been proven to work. Share your work here:

<https://digitalleadership.com/unite/shareyourwork/>

A board of innovation and transformation leaders will regularly review all relevant contribution and publication requests. As part of your publication request, you may introduce yourself and your organization.

## THE HELPFUL (END)NOTES

This book does not provide all the depth you may require to efficiently conduct each step in your innovation journey. After all, this work synthesizes a vast field and doesn't have the space to go deeply into each specific practice. As such, we will go quickly through the material, only digging deeply into the topics that seem to be less understood in the marketplace.

However, if you have more questions and want to go further into a particular topic, this book contains several hundred "helpful notes" to satisfy even the most diligent reader. These helpful notes (displayed as endnotes) provide additional information and background, and most of them suggest additional readings and references with which you can deepen your understanding.

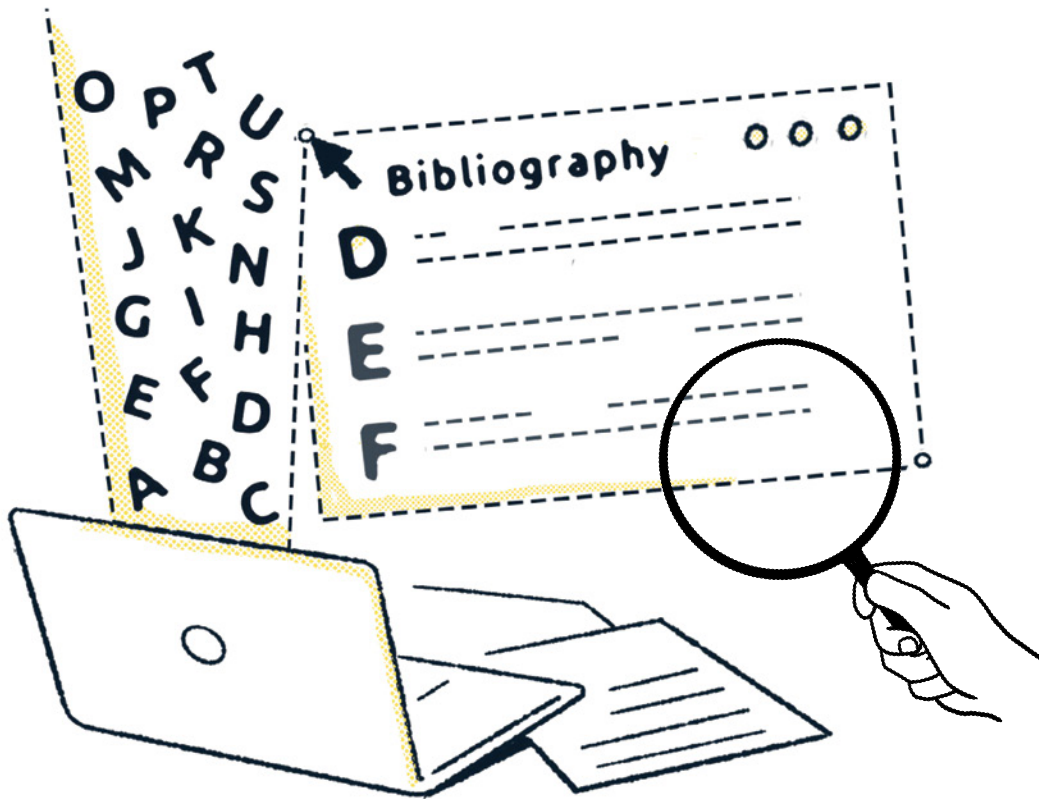
In the **digital version of the book**, simply click on the endnote, and you will be taken to a website containing the helpful note you are looking for.

For the physical version of the book, you can reach those helpful notes by searching for the endnote number you are interested in on the following website,

[digitalleadership.com/createinnovation/helpful-notes/](https://digitalleadership.com/createinnovation/helpful-notes/)

The bibliography of the book is available here:

[digitalleadership.com/createinnovation/bibliography](https://digitalleadership.com/createinnovation/bibliography)



# Play to win

*“If the rate of change outside  
exceeds the rate of change inside,  
the end is near.”*

— JACK WELCH

*long-term former CEO of General Electric who made the firm the world's most  
valuable company in 2000. Today GE is worth not even a quarter of this.*<sup>201</sup>



**Most people and organizations play to avoid losing.  
That's a sure way to fail.**

Innovation is first of all about having the right mindset. Are you playing to win? Or are you merely playing to avoid losing? Organizations playing to win take chances and seize opportunities. Organizations playing to avoid losing concentrate on staying safe, not making any errors, and avoiding risks. These organizations tend to focus on cost efficiency and cost cutting and work on getting more performance out of what they have. There is nothing wrong with that. But if you focus on that for long enough, you will eventually be swept away by the next wave of disruption.

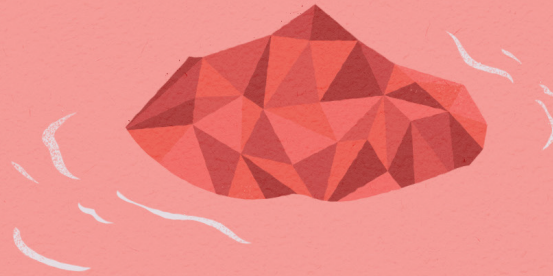
And what happens to the playing-to-win organization that takes chances and invests in opportunities in the meantime? They are most likely miles ahead. As the fabled management guru Peter Drucker put it more than half a century ago, “The business enterprise has two and only two basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs.”<sup>102</sup>

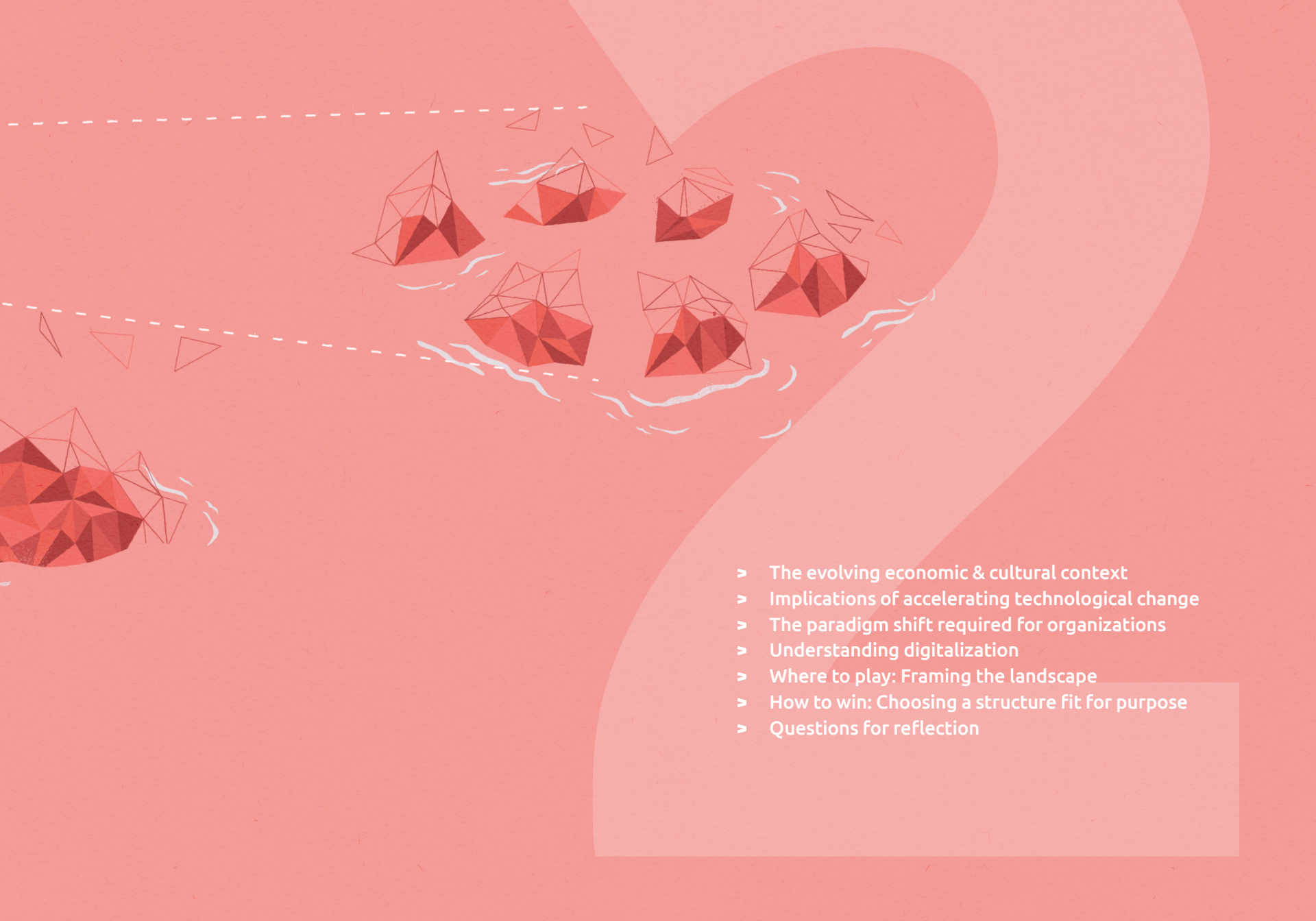




CHAPTER 2

# Understanding context





- The evolving economic & cultural context
- Implications of accelerating technological change
- The paradigm shift required for organizations
- Understanding digitalization
- Where to play: Framing the landscape
- How to win: Choosing a structure fit for purpose
- Questions for reflection

# The evolving economic & cultural context



To successfully create innovation, we first have to understand the context we are operating in; what we mean when we use buzzwords such as transformation, innovation, and digitalization; and what kind of structure it takes to stack the odds in your favor.

## THE FOUR WAVES OF ECONOMIC DEVELOPMENT

We are in the midst of a paradigmatic transition—a fundamental change in how we do business—from Industry 3.0 to Industry 4.0. This latest industrial revolution may perhaps better be termed an “information revolution,” since in the past 10 years, the global economy has swapped oil for data. No matter what sector you operate in, you can’t afford to ignore the presence and power of information. At the same time, as the service and data sectors grow, the traditional industrial sector has eroded to less than a quarter of global gross domestic product (GDP).<sup>202</sup>

This information revolution, and its rapidly changing economic and cultural context, requires us to adapt as organizations and individuals in significant ways. The seeds of this information revolution are not new, however. As can be seen in the following visualization, they go back to the mid-20th century.

One major change in our approach must be the embrace of creative destruction, a term used by the economist Joseph Schumpeter to describe a “*process of industrial mutation that continuously revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one.*”<sup>203</sup> In essence, creative destruction is when a new invention disrupts what came before it. And this is what we see happening with increas-

ing speed over the course of the waves of economic development described below; every new revolution arrives quicker than the one before, to the point that we are now accelerating at breakneck speed. This exponential growth can be seen in other related markers as well: for example, the exponential growth of the population over the last century, of global GDP, and of the accumulation of human knowledge.

If we don’t ride these waves, our businesses and organizations will end up being crushed by them. So it is a good idea to understand what is driving them.

# THE FOUR WAVES OF INDUSTRIAL REVOLUTION

	CRADLE OF HUMANITY	1ST WAVE AGRARIAN CULTURE	2ND WAVE INDUSTRIAL CULTURE	3RD WAVE INFORMATION CULTURE	4TH WAVE INTEGRATED (?)		
<b>Era</b>	Pre-agrarian period	Early societies	Industry 1.0 (1st industrial revolution)	Industry 2.0 (2nd industrial revolution)	Industry 3.0 (1st information revolution)	Industry 4.0 (2nd information revolution)	Information 3.0
<b>Innovation</b>	Appearance of <i>Homo sapiens</i>	Agriculture	Mechanization	Electrification	Automation & Globalization	Digitalization	Smartification (merging AI/balance between individualism and collectivism)
<b>Timescale</b>	Roughly 3.4 million years	8,000 BCE	From 1765	From 1870	From 1969	From 2011	From 202x - 203x
<b>Location of value creation</b>	Dispersed	Village & countryside	Mechanized towns and cities	Industrial regions	Global production networks	Global value chains	Dispersed (virtual & decentralized)
<b>Philosophical foundation</b>	Animism and a belief in a holistic merging of humans and nature	Belief in god, holistic circular worldview, possession of land and people and patriarchy	Belief in infinite growth. Rational, linear worldview			Belief in infinite growth and a rational, linear worldview leads to "Post Humanism" & "Singularity 2.0" theories	Belief in universal connectedness. Leads to holistic, systemic, circular worldview & to "Earth 5.0" theories
<b>Culture</b>	Nomadic culture of extended families and tribes	Sedentary culture of peasants with patriarchal, feudalistic exploitation hierarchies	Division of labor leads to exploitation of labor and capital by owners	National industrial culture with a focus on dominating global politics through industrial strength	Globalized industrial culture with a focus on economic growth & consumption	Information culture with a more decentralized focus on economic growth & consumption	Smart society, newly found focus on true sustainability
<b>Technological inventions</b>	The invention of tools, control of fire	Irrigation techniques, domestication of animals, the discovery of the number zero, enabling mathematical thinking	Steam power, water power, division of labor increases efficiency, mechanization leads to start of mass production	Electricity, telegraph, telephone, light bulb, internal combustion engine, railroads, assembly line, standardized mass production	Electronics, semiconductors, computers, telecommunications, automated production, mass customization, internet, connectivity	Digitalization, machine learning, robotics, Internet of Things (IoT), autonomous vehicles, 3D printing, virtual & augmented reality, wearables, nanotech, biotech, energy storage, digital	Expanding frontiers: quantum computing, increasing synergies among synthetic biology, nanotechnology, 3D&4D printing, robotics, cognitive systems & the advent of artificial intelligence, collective intelligence & yet-to-emerge technologies that accelerate the rate of acceleration itself
<b>Exemplary innovations or new capabilities</b>	<ul style="list-style-type: none"> <li>Upright walk</li> <li>Control of fire</li> <li>Flint blades</li> <li>Speech</li> </ul>	<ul style="list-style-type: none"> <li>Axe 6000 BCE</li> <li>Wheel 4000 BCE</li> <li>Writing 3300 BC</li> <li>Printing press 1440 CE</li> </ul>	<ul style="list-style-type: none"> <li>First mechanical loom 1784</li> <li>Large-scale production of chemicals</li> </ul>	<ul style="list-style-type: none"> <li>First assembly line 1870</li> <li>Ford Model T 1908</li> </ul>	<ul style="list-style-type: none"> <li>First programmable logic controller in manufacturing 1969</li> <li>First mobile phone 1979</li> </ul>	<ul style="list-style-type: none"> <li>Smart factory</li> <li>Cloud computing</li> <li>Bitcoin 2009</li> </ul>	Virtualization of all aspects of life, digital money, lights out business processes, highly automated manufacturing, self-managed supply chains, self-driving cars
<b>Transformational change</b>	Living in small tribes	Settling in villages & towns	Substitution of labor by capital, process stability & speed, industrially manufactured goods, start of the machine age	<ul style="list-style-type: none"> <li>Start of mass production</li> <li>Division of labor (Taylorism)</li> <li>Process flow and throughput</li> </ul>	<ul style="list-style-type: none"> <li>Start of mass customization</li> <li>Information distribution</li> <li>Business process reengineering</li> <li>process quality &amp; lean</li> </ul>	Access to education, global integration, digital industry, digital transformation, intangible goods	Deep, multilevel cooperation between humans & machines. Newfound consciousness on human level & artificial level (?) then Singularity 2.0
<b>Who leads?</b>	Tribal leaders	Religious leaders, aristocracy/monarchs, warlords	Entrepreneurs, tradesmen	Directors	Management	Leadership (non-hierarchical)	Collegial leadership with "growth hierarchies" not "exploitation hierarchies"
<b>Primary axis of improvement</b>	Surviving in nature	Dominating nature	Power	Speed	Memory	Interconnectedness	<ul style="list-style-type: none"> <li>Artificial Intelligence</li> <li>Operating in accordance with nature-systemic circular thinking</li> </ul>
<b>Ability</b>	<i>Physical capability</i>			<i>Mental capability</i>			
<b>Who is empowered?</b>	<i>People</i>		<i>Corporations</i>		<i>People</i>		<i>Balance between people &amp; nature?</i>
<b>Global population</b>	50,000	1 million	100 million	1 billion	3.5 billion	7.7 billion	
<b>Sustainability/waste share</b>	Permanent / no waste	Permanent / no waste	Long-term / 5%	Long-term / 10%	Mid-term / 25%	Short-term / 45%	(Hopefully) again long-term / 5% - circular economy
<b>Human focus</b>	Survival	Control	Efficiency	Scalability	Consumption	Digitalization	Human universal integration through smartification, purpose, sustainability

DOWNLOAD PACKAGE 



## THE DRIVERS OF ACCELERATING CHANGE

These waves of economic development are driven by invention, most of which is enabled by technological breakthroughs. So what technologies are creating the acceleration we currently see?

One of the dominant features of the economy over the past 50+ years has been a massive growth in computing power. To understand the exponential evolution of computing power we can look to Moore's law,<sup>204</sup> the idea that computing performance doubles every two years,<sup>205</sup> while costs remain the same. American inventor Ray Kurzweil calls this *The Law of Accelerating Returns* and shows that doubling patterns in computation extend all the way back to 1900, far earlier than Moore's pronouncement, which occurred in 1965.<sup>206</sup>

**Kurzweil also argues that Moore's law extends to more than just micro-chips. Please see the examples of exponentially accelerating change on the right ...**



### 3D printing

2007: \$10,000

2024: \$100

**100x price drop**



### Industrial robots

2007: \$500,000

2024: \$5,000

**100x price drop**



### Drones

2007: \$100,000

2024: \$25

**4,000x price drop**



### LIDAR sensors

2007: \$20,000

2024: \$50

**400x price drop**



### Solar

1987: \$30 per kWh

2024: \$0.07 per kWh

**3,000x price drop**



### Biotech (1 DNA profile)

2007: \$10,000,000

2024: \$50

**200,000x price drop**

**DOWNLOAD PACKAGE** 

## Overview of industrial & cultural revolutions (from their first appearance)

Source: Susanne M. Zaninelli & Stefan F. Dieffenbacher, Digital Leadership AG – [digitalleadership.com](https://digitalleadership.com).

## Examples of exponentially accelerating change

Declining costs & increasing capabilities across numerous industries

Source: Digital Leadership AG – [digitalleadership.com](https://digitalleadership.com)

Building on the work of the DI Institute and Singularity University.

As technology develops, this exponential growth will likely continue, driven by more specialized applications, further growth of GPUs, the development of specific chips for designated fields of application, and the advent of quantum computing. At the pace that technology is accelerating, there are likely innovations in our near future that we can't even imagine today.

Understanding the exponential evolution of technology<sup>207</sup> is what most industry experts generally get wrong. Despite seeing that past performance increased exponentially, future performance is generally assumed to be linear.<sup>208</sup> This makes sense. It's hard for human brains to conceptualize exponential growth. We look at our smart phone and we think, it costs the same as it did ten years ago; it even looks relatively the same. But we don't think about the fact that its computing power is 100 times greater!<sup>209</sup> To use an even more dramatic example, there is more computing power in today's pocket calculator than in the computers used to send humans to the moon!<sup>210</sup>

In order to be able to accurately judge when an industry will be changing linearly versus exponentially, you need a deep understanding of the boundary conditions in your domain. It is critical to understand which technologies have the potential of exponential growth and which are restricted in their growth or have already reached their limit. Technological progress won't necessarily affect all aspects of your business in the same way, but in order to ride the wave of innovation, you need to be able to assess what the areas of high impact will be.

As acceleration continues, you will need to envision where technology will be when you start a new initiative. Assuming a doubling pattern, computing power is projected to increase by 400% over a four-year time horizon. The average tech platform in a corporation is in place for eight years; eventually, eight years may represent total change in an industry. So you have to plan not for tomorrow, but for the day *after* tomorrow!<sup>211</sup>

### CONVERGENCE OF TECHNOLOGIES

The past fifteen years have shown that while some of Kurzweil's specific predictions may not have happened exactly as he predicted, the underlying idea of The Law of Accelerating Returns grows ever more relevant.

But as we look at the next fifteen years, there is another concept that is becoming more important. Essentially, as technological change accelerates, there is more potential for different technologies to converge and build on top of each other, creating exponential technology on exponential technology. This may lead to jumps in innovation beyond even the rate of exponential growth itself. This phenomenon is called *The Law of Accelerating Convergence*.

#### The Law of Accelerating Convergence

Quite simply, if you're a leader or entrepreneur ignoring the convergence points of exponential technology today, it's like ignoring the convergence of mobile phones with computing power fifteen years ago. The next wave of seemingly magical new inventions will be born when two or more technologies collide.



Kurzweil, who has studied this phenomenon for thirty years, makes four key observations:

- › First, The Law of Accelerating Returns states that the doubling pattern identified by Gordon Moore in integrated circuits applies to all information technologies.
- › Second, the driver fueling this phenomenon is information. Once any domain, discipline, technology, or industry becomes information-enabled and powered by information flows, its price/performance begins doubling approximately annually.
- › Third, once that doubling pattern starts, it doesn't stop. We use current computers to design faster computers, which then build faster computers, and so on.
- › Finally, several key technologies today are now information-enabled and follow the same trajectory. These technologies include Artificial Intelligence (AI), robotics, biotech and bioinformatics, medicine, neuroscience, data science, 3D printing, and nanotechnology.

Of course, just because industries as a whole will grow exponentially, doesn't mean that each business, or even each sector within an industry, will ride this wave of growth. Some will stagnate, and some will disappear altogether as creative destruction rebuilds systems from the inside out. It is the task of the innovator to figure out how to best harness the power of technology to fuel growth.

## IMPLICATIONS OF ACCELERATING TECHNOLOGICAL CHANGE

Technological advancements have led to the first and now second information revolution, which have drastically reshaped all aspects of human life. Information has become available at a level never before seen. More than four billion people (half of the global population) have access to the Internet,<sup>212</sup> and thus access to free education, knowledge, and often work opportunities in a global value chain. This has accelerated the global economy in turn and allowed more efficient distribution of work, lifting hundreds of millions of people out of poverty, particularly across Africa and Asia.<sup>213</sup> This has also led to a redistribution of global power dynamics; the categories of developed and developing countries begin to make less economic sense. Today, many erstwhile developing countries are beginning to lead the global economy. Even Silicon Valley, the cradle of the information revolution, is being overtaken by innovation ecosystems in China. Because of this, our current ways of organizing and producing value are being deeply challenged—regardless of which industry you consider.

Even our political structures are being revolutionized. After the end of the Cold War, democracies seemed to have won the race when it came to political systems. Now, however, they are in newfound competition with authoritarian technocracies, such as those in some Asian countries.

The role of the customer has also changed. Today the customer drives business growth and innovation because they benefit from global reach and access to information. Until just a few years ago, most people did not have more options than their closest (and possibly only) store. Because of that, the

power was with the producer. Henry Ford is famous for saying, “Any customer can have a car painted any color he wants so long as it’s black,” and it’s no surprise that half of all cars in America in the beginning of the 20th century ended up being black Model Ts from Ford Motor company!<sup>214</sup> Since then, we have gone from standardized mass-market production to personalized products that customers can purchase from anywhere in the world.

The increasing possibilities of personal expression promote a much more nuanced and differentiated demand on the part of customers. Today, most of the world is still going through the second industrial revolution or the first information revolution. We can only imagine what will emerge once the fruits of the second information revolution, including machine learning (ML), robotics, the Internet of Things (IoT), autonomous vehicles, 3D or 4D printing,<sup>215</sup> virtual and augmented reality, wearables, additive manufacturing, nanotechnology, biotechnology, energy storage, and quantum computing become fully integrated into our daily lives. In addition, consumers are increasingly becoming co-producers in customized goods. We can only assume that this trend will continue.

## IMPLICATIONS FROM A CULTURAL PERSPECTIVE

It takes a related *cultural revolution* to benefit from the new possibilities and technological breakthroughs of the continued *information revolution*. While the steam engine provided the increase in power needed for the first industrial revolution, it could not have produced the growth it did without the embrace of the division of labor. The division of labor allowed for the creation of standardized mass production and an entirely new way of producing goods, and it was this cultural innovation coupled with new forms of power that formed the foundation of the second industrial revolution, and “industrial culture” in general. At the same time, the efficiency produced by the division of labor needed to be controlled and refined, leading to the invention of process management, spawning many of the management processes we know today, including, as we will see later, the Lean Startup movement.

Similarly, digitalization is of no use if it cannot be managed. As the second information revolution leads to increasing complexity and therefore unpredictability, more agile approaches have been adopted. This increased complexity has led to business strategy changing from a “planning function” (made possible due to the relative stability of previous eras) to following an “emerging strategy” model, which acknowledges that fixed strategies won’t cut it in a hyperdynamic environment.<sup>216</sup>

Thus, strategy today is becoming an emergent phenomenon, typically conducted in small steps, with an agile approach that can be designed and adjusted by people at the frontline of the business. Increasingly, strategy is even being co-developed with the customer. This will lead from a classical pyramid-type of organizational chart to an inverted pyramid, in which it is

the role of management not to dictate to but to support customers and frontline workers as they determine the direction of the business.

The last decades of increasingly rapid change produced a world of Volatility, Uncertainty, Complexity and Ambiguity (VUCA).<sup>217</sup> But in our current moment of—among other things—political mayhem, climate disasters, and global pandemic, our environment is perhaps better understood and described as being **Brittle**, an environment where people are **Anxious**, in which there is **Nonlinear change**, and which is thus at least difficult to understand if not fully **Incomprehensible (BANI)**.<sup>218</sup>

Organizations thus need a more adapted response. In a complex environment, only an organization that is structured and functions like an adaptive organism can survive. Circular organizations are the structural expression of this need; the periphery now develops the strategy and commands the resources since these individuals are closest to the customer. The organization itself is often split into semi-autonomous cells. The periphery is supported by the center of the circle, and the top-level management thus becomes a service provider for the periphery. As a leader, you can no longer dictate what employees should do; you can only create the space in which problems are solved together. The leader thus becomes a support system, enabling those most affected by challenges and opportunities to make decisions about them.

To summarize, culture and structure need to go hand in hand. The latest innovation does not help if your organizational structure can’t handle it. The old hierarchical structures and cultural paradigms allowed humans to grow

from an agrarian society into an industrial one, but they are not suitable in the second information revolution and do not support innovation at speed and scale. If we want to change and innovate, we need to change both our structures and cultures, as well as our collective and individual mindsets.

### WHAT ACCELERATING CHANGE MEANS TO ORGANIZATIONS

*“We can’t solve our problems by using the same kind of thinking we used to create them.”*

- ALBERT EINSTEIN

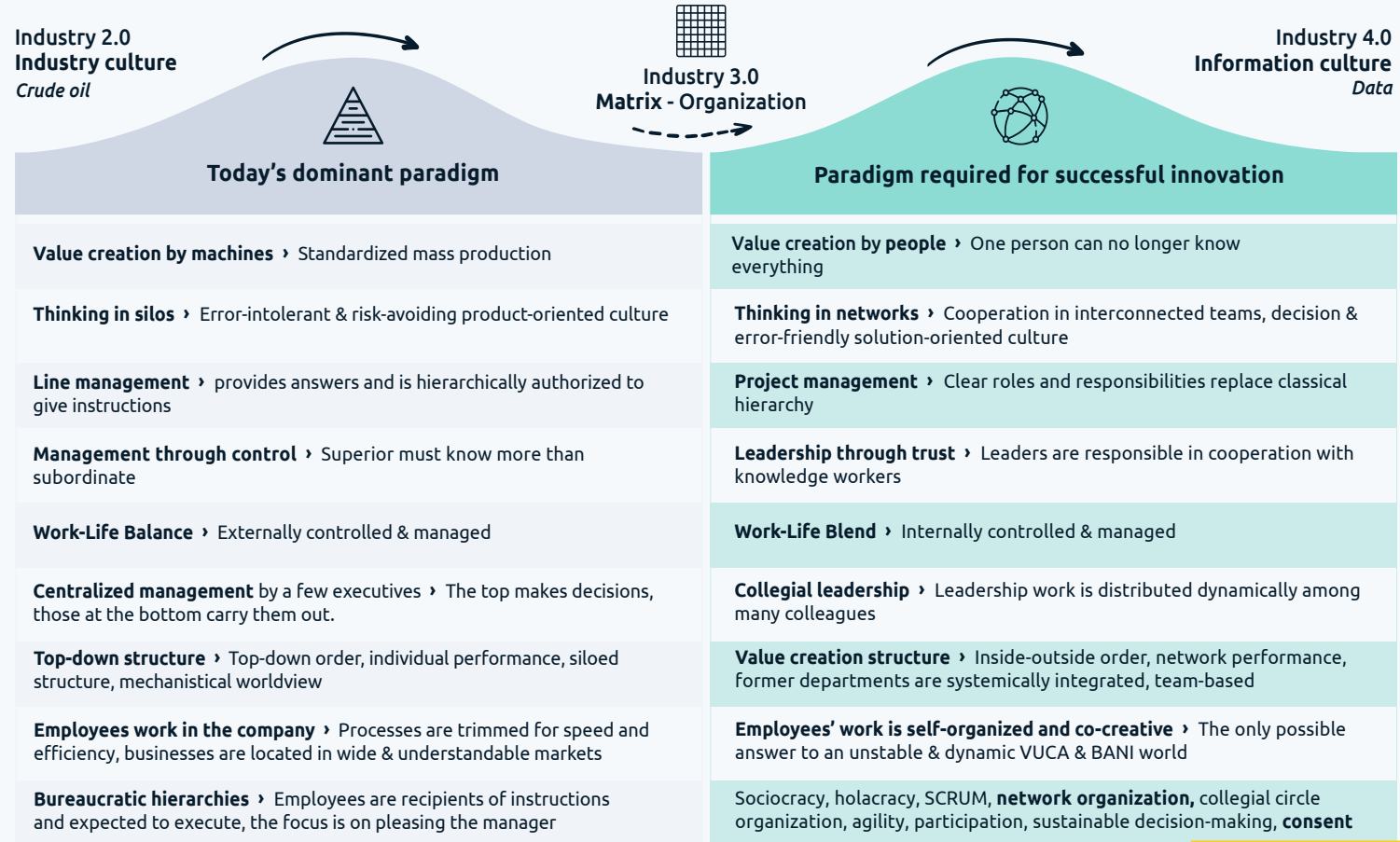
When paradigms shift, they do not necessarily affect all parts of a system at the same time. We can see in the world around us that all the stages of industrialization are present at the same time. Some societies, countries, industries, firms, and individuals may still be in the second stage of industrialization, while others are moving into the second stage of the information revolution. We even sometimes see this in the same environment—for example farmers in rural areas using steam to power a grinding mill while at

the same time looking up market prices on their smart phone. This tendency is exacerbated by the speed of technological change, where some parts move along an exponential path while others cannot keep up. This can lead to different paradigms operating concurrently, often even within the same organization! Exponential growth in technology means that we must be constantly responding to change, rather than conducting business as we always have.

And because technological innovations can only fuel growth when coupled with cultural and organizational innovations, the paradigm shift we need to make will cover all dimensions of our business: organization, leadership, skill sets, working methods, communication skills, culture, and mindset. The table on the next page provides an overview of the extent of the change we need to go through. What this will look like will be covered in depth in the culture chapter, which will show that cultural change is the tipping point of most innovation and transformation efforts.

**Now that we have explored the context of the world we find ourselves in, let’s talk a bit about innovation . . .**

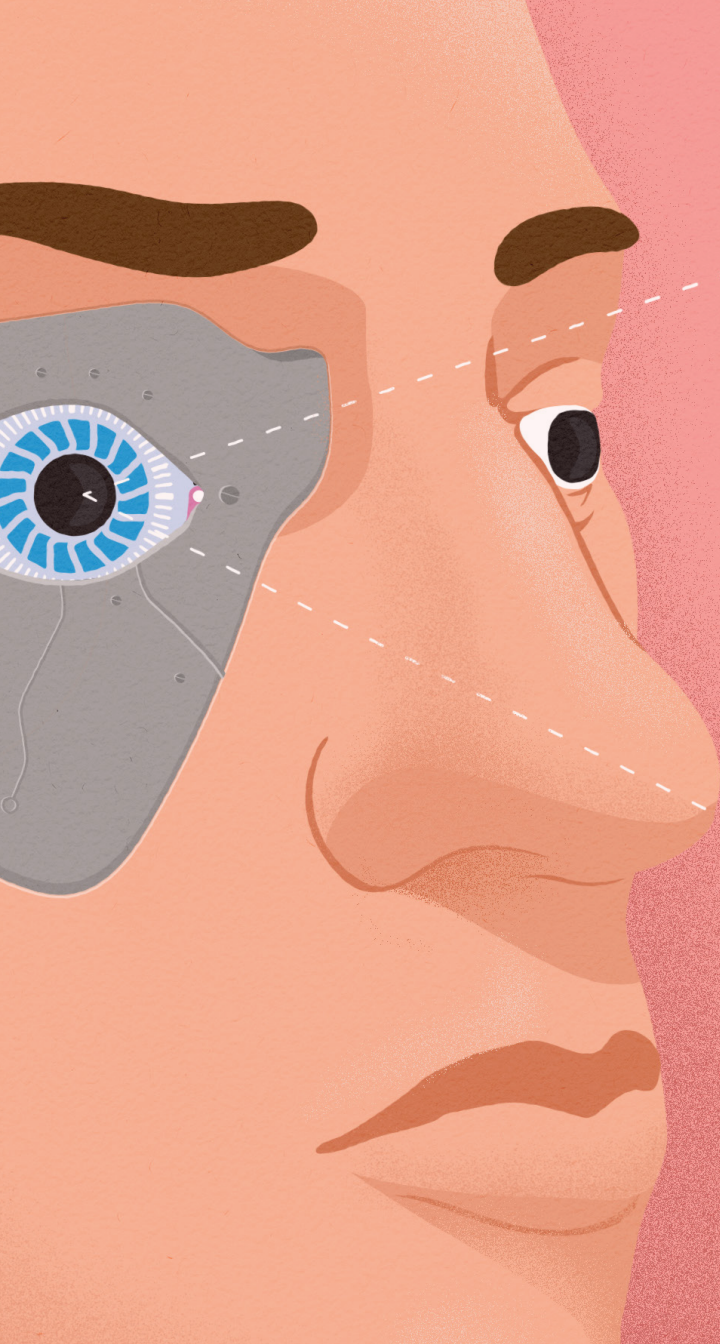
## THE PARADIGM SHIFT IN ORGANIZATION & LEADERSHIP



DOWNLOAD PACKAGE 

Overview of the required paradigm shift in organization & leadership

Source: By Susanne M. Zaninelli & Stefan F. Dieffenbacher – Digital Leadership AG – digitalleadership.com.



# Understanding innovation & digitalization