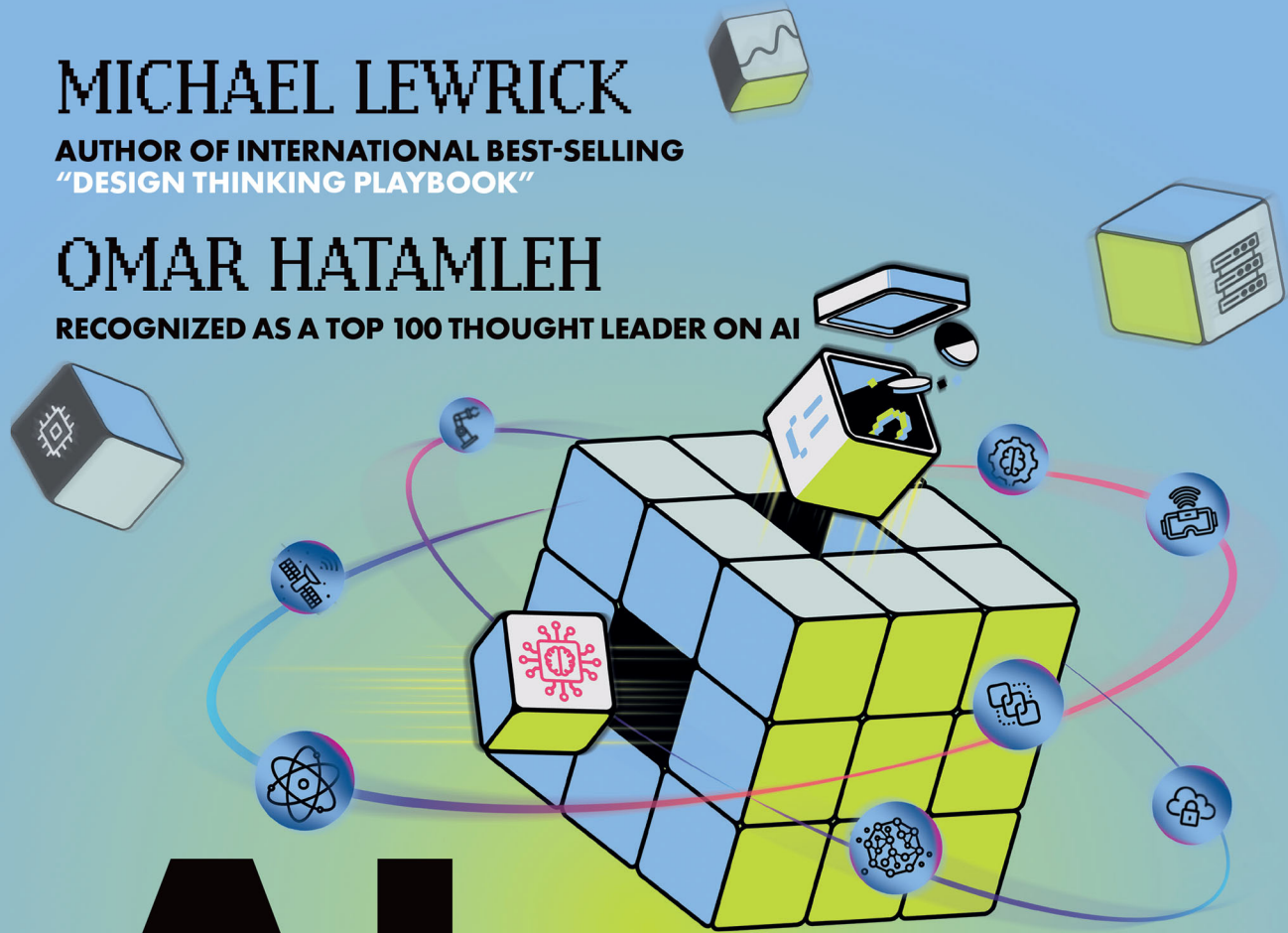


**MICHAEL LEWRICK**

**AUTHOR OF INTERNATIONAL BEST-SELLING  
"DESIGN THINKING PLAYBOOK"**

**OMAR HATAMLEH**

**RECOGNIZED AS A TOP 100 THOUGHT LEADER ON AI**



# **AI AND INNOVATION**

**HOW TO TRANSFORM YOUR BUSINESS  
AND OUTPACE THE COMPETITION WITH  
GENERATIVE AI**

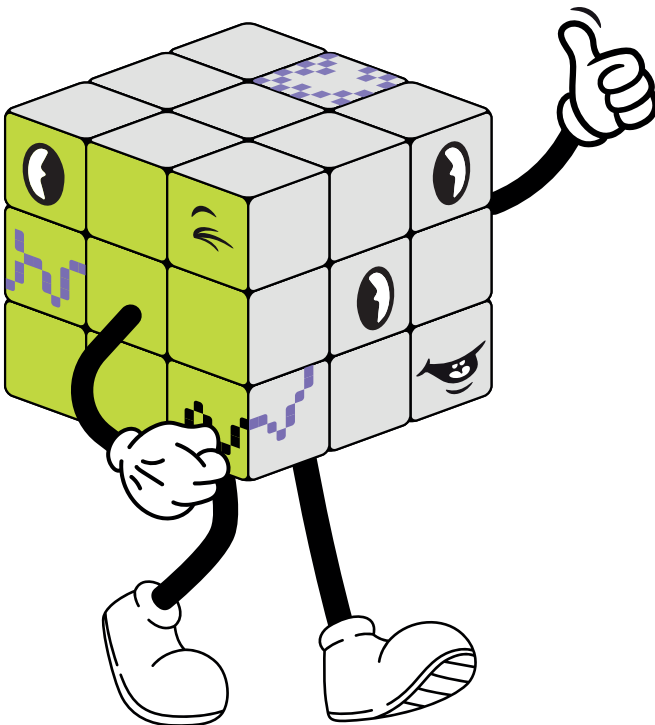
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**THE EXPONENTIAL CHANGE  
BOOK SERIES**



**WILEY**

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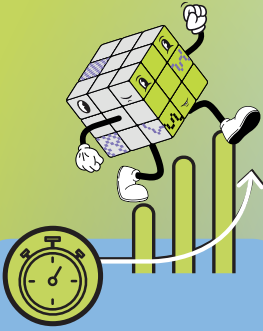
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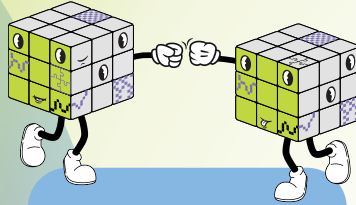
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# THE EXPONENTIAL CHANGE PARADIGM



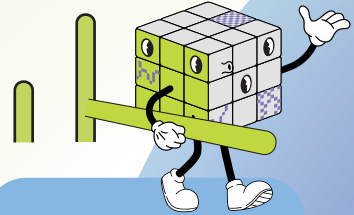
## GET READY FOR EVEN BIGGER AND FASTER CHANGES

- Exponential change is inevitable, so it is imperative to forge needed capabilities to succeed in the new landscapes.
- Plan how the organization should adapt to change to remain relevant and competitive.
- Be aware of the mindset, tools, and methods needed to quickly identify and take advantage of new opportunities.



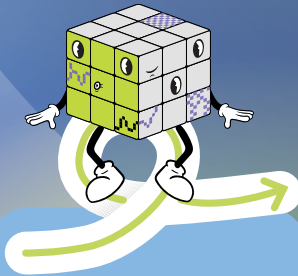
## ENGAGE IN COLLABORATION TO FOSTER CREATIVITY, INNOVATION, AND CROSS-SKILLING

- Exponential change requires collaboration between different teams and departments.
- Apply the Team of Teams concept for effective collaboration and sharing of information and resources.



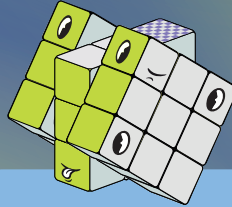
## ACCEPT THAT EXISTING OFFERINGS ARE DISRUPTED FREQUENTLY BY EXPONENTIAL TECHNOLOGIES

- Become aware of the latest exponential technologies and invest to fully understand them.
- Adapt your business model, seek new ways to collaborate, and be prepared to fail while applying them in an early stage of maturity.



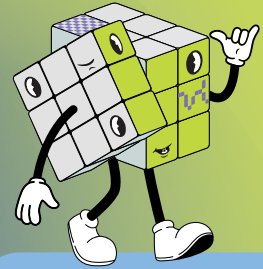
**BECOME AGILE  
AND LEARN FROM  
MISTAKES TO  
BE SUCCESSFUL**

- Embrace agility and future-proof success in a world of exponential change.
- Learn to adapt quickly to new situations and have skills that allow you to be interactive and experimental in responding to them.
- Create a strong sense of purpose that drives all related actions.



**ACCEPT NEW  
DESIGN CHALLENGES  
AND EMBRACE  
NEW IDEAS**

- Exponential change often brings new ideas and market opportunities.
- Abandon concepts and mindsets from the past and prepare the entire organization for new mindshifts.



**BE AWARE THAT  
THE ABILITY TO  
CONSTANTLY ADAPT  
WILL BE ESSENTIAL  
TO PARTICIPATE IN  
ECOSYSTEMS**

- Adaptability becomes the new constant in realizing exponential growth.
- Apply business ecosystems design methodology for creating a clear understanding about where to play, how to win, and how to configure.
- Enhanceability of all systems becomes key to unlock progress.

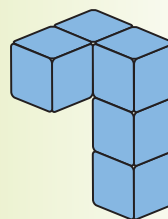
**PURPOSE DRIVEN.  
CONSTANTLY EVOLVING.  
DISRUPTIVE.**

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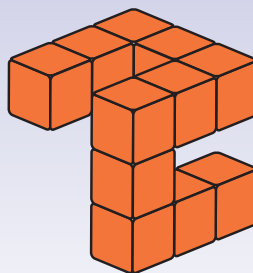
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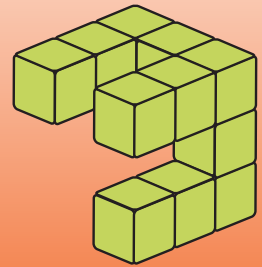
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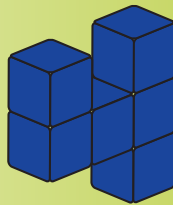


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# **ABOUT THE AUTHORS**

In this age of exponential change and ever-evolving technologies, Michael and Omar's collaboration on their book presents a unique opportunity. Michael brings a wealth of experience in the field of innovation management, design thinking, and ecosystems design. Omar, on the other hand, possesses deep subject matter expertise within the field of AI. Together, they combine strategic vision with cutting-edge knowledge, creating a powerful synergy that ensures their book remains relevant and insightful in a rapidly changing world. This dynamic duo positions their work to be a valuable resource for anyone seeking to understand and leverage the transformative potential of new technologies.

**AI IS GOOD FOR DESCRIBING THE WORLD  
AS IT IS TODAY, WITH ALL ITS BIASES, BUT WHAT WE  
NEED ARE THE APPROPRIATE MINDSET,  
TOOLS, AND METHODS TO UNLOCK THE POWER  
OF INNOVATION WITH IT.**



## Michael Lewrick (PhD)



is a bestselling author, award-winning design thinking and ecosystem design thought leader, business entrepreneur, and visiting professor at various universities globally. His ideas, books, and company, Lewrick and Company, help mobilize people around the world to better lead innovation and digital transformation in an era of increasingly rapid change. He values the power of human–AI collaboration for solving complex problems.



[www.linkedin.com/in/michael-lewrick/](http://www.linkedin.com/in/michael-lewrick/)

## Omar Hatamleh (PhD)



is a global thought leader on AI (top 100 world leader in AI by Thinkers360) and book author about emerging technologies. He holds the position of Chief AI Advisor at NASA, and he is an invited keynote speaker to multiple international events, including major innovation conferences at G20, United National, Google, IBM, and many others. Omar holds four engineering degrees, speaks four languages and has received numerous prestigious awards.



[www.linkedin.com/in/hatamleh](http://www.linkedin.com/in/hatamleh)

### OTHER BOOKS BY MICHAEL LEWRICK:



Book designed by

**Heike Hansen** is a Swiss-based art director with a passion for human-centered design, storytelling, and emerging technologies. The deep immersion in the topic as well as working in teams are some of her most vital strengths in the field of art, design, and technology. [www.studiohansen.ch](http://www.studiohansen.ch)

# PREFACE



## Llewellyn King

→ Executive Producer and Host of *White House Chronicle* on PBS; columnist, *InsideSources Syndicate*; contributor, *Forbes*; *Energy central commentator*, SiriusXM RadioMobile

Leon Trotsky said, “You may not be interested in the dialectic, but the dialectic is interested in you.” So it is with generative artificial intelligence: you may not be interested in it, but it is interested in you. It is interested in how we live, work, play, and even think. There will be going forward, if you will, no hiding place. This book at its core says, “Don’t hide from AI, embrace it.” But to do that, individuals and institutions need to embrace exponential thinking. Linear thinking — which is the normal human default setting — will fail individuals and institutions because AI is exponential.

An apocryphal and oft-trotted-out Henry Ford quotation: “If I had asked people what they wanted, they would have said faster horses.” That is linear thinking. AI is different things to different groups of people. To one group, it is something to be wildly feared: a new plague, a glance at the beginning of the end of humanity. To another, it is here and now and frightening but not so frightening that it can’t be harnessed — managed and regulated with legislation, providing so-called guardrails.

These guardrails, they believe, will keep AI from becoming something that could upend society, throwing millions out of work worldwide; taking away privacy; spreading disinformation; interfering in the political process in democracies; and spreading bias in data, codifying it as a truth. Yet a group of computer aficionados, a group of elite thinkers, see generative AI as a benefit to humanity.

But it is one for which individuals and institutions must be ready – ready with new ideas and new tools to use AI to sweep in a new age, where the thorniest of human problems can be solved with alacrity, producing huge and unimagined benefits. For example, a life expectancy of 120 years for children born today.

Front and center of this cohort are the authors of this book, Michael Lewrick and Omar Hatamleh, the first in a series to help us get to the glittering future promised by AI: a future where AI solves problems that have plagued humanity for millennia. The first among these is research that can accelerate the finding of cures or therapies for pervasive and even intractable and rare diseases.

The authors' central point in this volume is that AI is exponential, so individuals and institutions must shirk their traditional linear thinking and realign themselves to thinking exponentially. Thinking exponentially demands new structures, paradigms, and management concepts that will free the exponential thinkers in an organization to shape it and get the value from AI.

The message for corporations is loud and clear: adapt or lose. Jack Welch, former CEO of General Electric, said, "If the rate of change externally isn't greater than the rate of change internally, then the end is known." Welch wasn't talking about AI, but he might as well have been. What he said then can be taken as an exhortation to institutions to embrace exponential thinking to use AI, or the end is known. That is the vital message of Hatamleh and Lewrick: if we don't change our thinking, the end is known. If we do, a new age of human progress is at hand, ready to unfold.

I wish you exciting insights with this book.

Llewellyn King

# **MOTIVATION FOR THE TOPIC**

The blend of past innovations that have shaped human progress and advanced technologies like artificial intelligence (AI) makes for an incredibly exciting topic. This combination promises to drive change in ways we can hardly imagine.

As a team of authors, we are deeply interested in exponential change because we believe it is one of the most important and impactful forces shaping our world today. Exponential change is happening at an unprecedented pace, and it is having a profound impact on everything from the way we innovate to the way we work. We believe that it is important to understand exponential change and to use the appropriate frameworks in order to be prepared for the challenges and opportunities that it will bring. A key question is how do we move from our usual linear way of thinking to thinking in terms of rapid growth and change? Filling the gap between both elements will ensure humanity and biological intelligence will remain relevant now and into the future. We believe that thinking in terms of rapid growth can help solve some of the world's toughest problems. New technologies like AI and quantum computing could transform healthcare, education, and environmental efforts. Embracing an exponential mindset will create a better future for everyone. Creating a synergy between radical innovation and new and evolving technologies can disrupt traditional industries and give birth to new business models, platforms, products, and services. These tools will orchestrate a new paradigm shift in rewriting the conventional rules of the game for future innovations.

In this book, we share and reflect on our work with the world's most innovative companies that have made significant advancements with exponential technologies. These companies have

achieved this through a changed mindset, utilizing new tools and methods, and developing a deep understanding of the problems to be solved.

The tools and methods shared in this important book are flexible and meant to inspire innovation during rapid changes. They should be tailored to fit each unique situation.

We bring our eminence and decades of experience to the presented content and frameworks with the objective of creating awareness of exponential change, finding a common language, and removing the fear associated with ongoing and dynamic transformation. We are cognizant of the fact that AI is a complex and novel concept that brings uncertainty in its wake. These fears are inherent to our human nature. However, it is important to remember that AI is a tool created by humans, for humans, and if we can successfully embrace exponential change, there will be immense opportunities for positive impact. Early adopters who take measured risks and proactive action will possess a huge strategic advantage over those who continue along the conventional and reactive path.

We must also highlight that at the current technology level, AI does not possess consciousness or emotions; AI merely mimics our cognitive processes based on algorithms and available data. As a result, AI may generate mistakes and experience “hallucinations” due to its inability to understand context nuances in ways that humans do.

However, with the introduction of the next level of artificial general intelligence (AGI) systems, AI will be able to do everything that a human brain can do and more. Such impressive capabilities will take us beyond existing boundaries. Generative AI offers a glimpse into a future where the possibilities seem endless, and the need to master the appropriate skills, tools, and methods to better deal with them becomes ever more pressing.

***AI IS THE KEY TO UNLOCKING A BRIGHTER FUTURE FOR HUMANITY. BY HARNESSING ITS POWER RESPONSIBLY, WE CAN SOLVE GLOBAL CHALLENGES, IMPROVE LIVES, AND CREATE A MORE PROSPEROUS WORLD FOR ALL.***

A comprehensive understanding of AI is crucial to allay fears about sentient AI. Promoting and creating a healthy partnership and collaboration between AI and humans will springboard new waves of innovation that would otherwise be unattainable. The collective creativity and intelligence that AI and humans bring will propel us into a fertile future of opportunities.

We are confident that the best AI solutions can help solve humanity's greatest problems, especially when AI and humans work harmoniously as a team and build upon their respective strengths regarding fact aggregation and processing speed. To make the most of AI and all the other remarkable technologies, we must guard against the risks and leverage all benefits to create better and more sustainable products, services, and experiences.

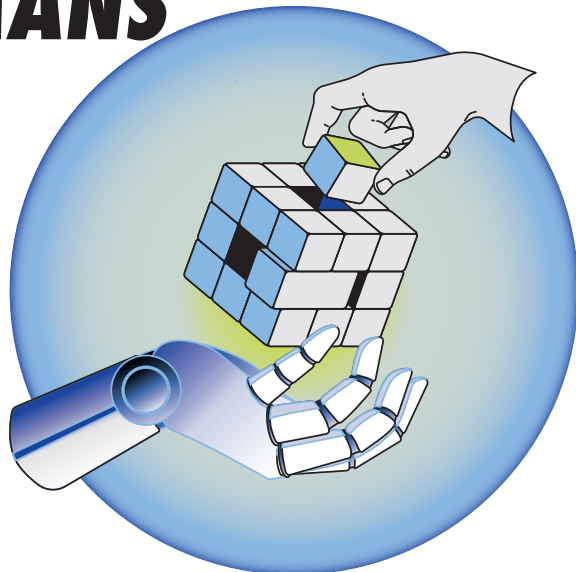
We are looking forward to constructive exchanges, exciting discussions at conferences, and our work to implement the tools and methods shared in this book at companies and organizations worldwide.

Your team of authors,

Michael Lewrick

Omar Hatamleh

# **AI AND HUMANS AS A TEAM**





**ORGANIZATIONS THAT LEARN AND APPLY  
NEW MINDSETS AND ORGANIZATIONAL  
TECHNIQUES ARE BETTER POSITIONED  
TO ACHIEVE DISPROPORTIONATELY HIGH  
IMPACT (OR OUTPUT) – AT LEAST  
**10x** HIGHER – COMPARED  
TO THEIR PEERS.**

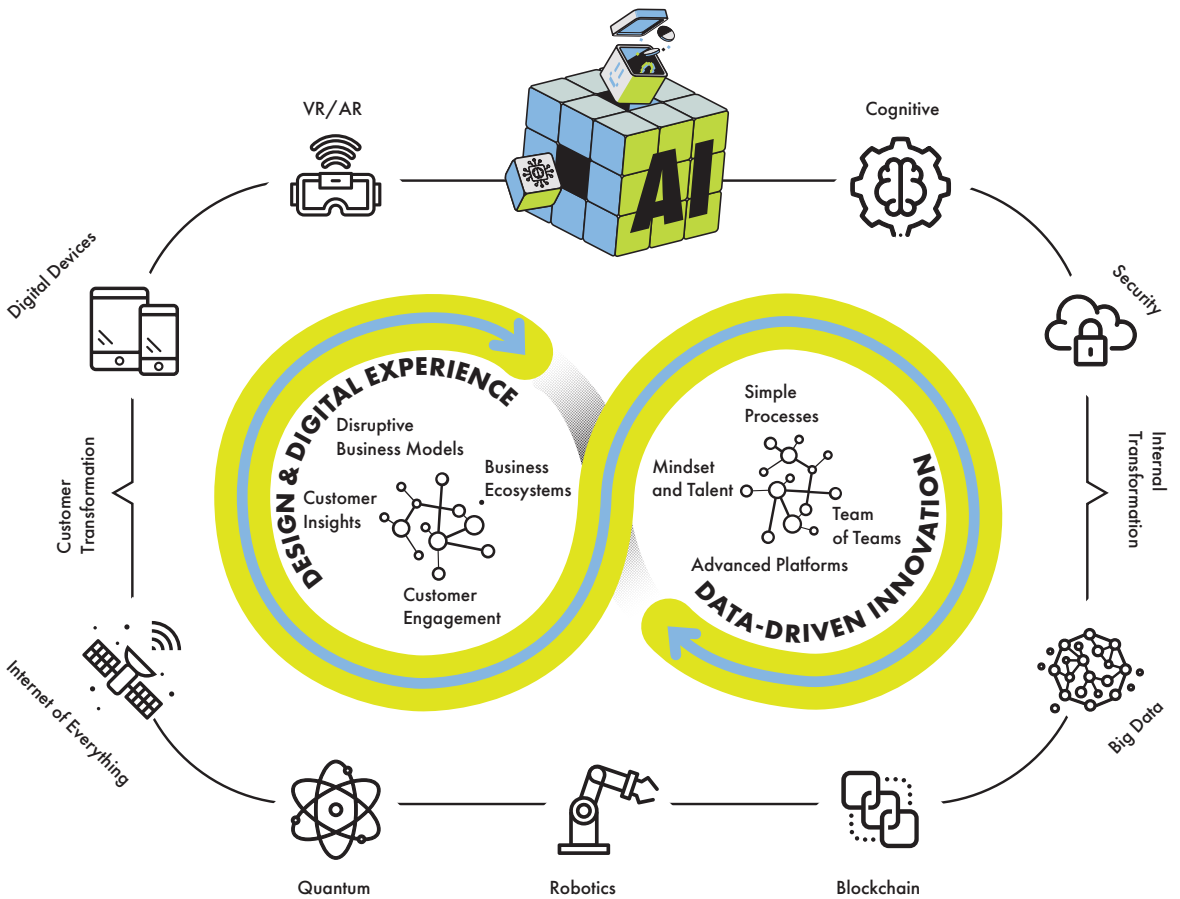
# **INTRODUCTION TO EXPONENTIAL CHANGE**

This book from the *Exponential Change* book series offers methods and frameworks that help to better deal with exponential change. The change is exponential because so many technological advancements — whether in AI, quantum computing, AR/VR, biotech, robotics, or cognition — are occurring simultaneously and rapidly and building on one another across every sector and industry imaginable. Something is not classified as exponential until it breaks the integer barrier. As a result, growth begins to be measured in whole numbers and multiplies from there.

Many factors, such as regulations, technological dependencies, and economic forces, are beyond the control of decision-makers, product owners, and innovation teams. Therefore, the intent of this book series is not to present technology tools but to address the impact of exponential change on future business models, evolving workforce dynamics, strategic considerations, and capabilities and future skills to be built. Each book in this series is dedicated to a key topic. This book has a strong focus on AI and innovation: it reflects best practices and tools to transform industries, create new market opportunities, and solve some of the world's most significant challenges between AI and humankind. Although not the main focus of this book, we will also touch on the myriad challenges that AI brings, from its potential to perpetuate bias to its capacity to undermine security and privacy. Different perspectives from industry experts will be presented throughout each chapter to enrich our discussions.

***THE AI REALITY IS HERE, AND DECISION-MAKERS ARE SEEING THE REAL CHALLENGES OF AI INSTEAD OF WHAT THEY ASSUMED THEY WOULD BE. THIS BOOK SERIES WILL HELP ORGANIZATIONS ADDRESS THE PRAGMATIC SIDE OF EXPONENTIAL TECHNOLOGIES.***

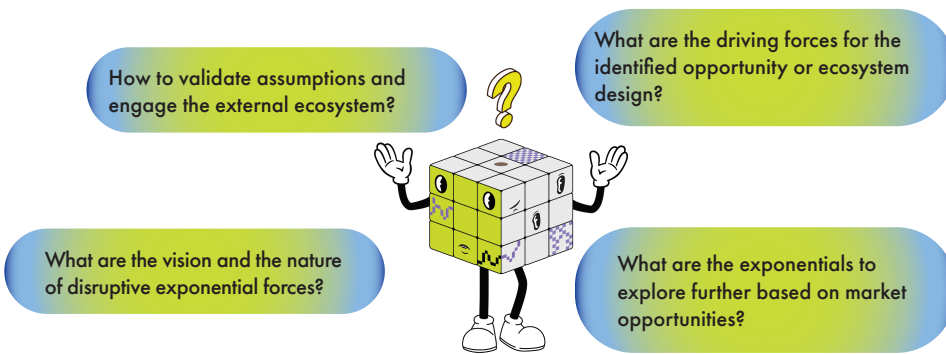
It is no coincidence that the first book in this series is about AI and innovation, as there is a strong belief that AI will influence everything we design, implement, and scale. With the concepts and frameworks in this book, teams and decision-makers will be equipped with the appropriate toolkit to excel in the age of AI.



The impact that exponential technology will have on each and every one of us is tremendous, as it is possible to imagine a scenario in which machines would do most of the work, and employees would only be responsible for higher-level decision-making and the control and programming of robots and machines.

There is a consensus among technology experts that exponential change is beneficial to society in general, as technology can solve many of society's problems and act as an empowering force. However, this also requires social and corporate responsibility on how to deal with technologies such as AI. Governments can no longer continue their slow and bureaucratic processes, where it takes years for changes to become visible. In fact, the process of exponential change will soon leave behind those who cannot keep up with the changes and proactively shape the future. At the same time, companies must also transform in an environment without clear guidelines because the strategies, processes, and approaches of the past no longer serve them.

This series of books aims to help decision-makers and managers adapt to an increasingly dynamic and disruptive business environment. This means that digital transformation approaches and AI frameworks must be applied to support this continuous and ongoing transformation process. However, it is important to distinguish which parts contribute to the longer-term goals and strategy and what needs to be adapted quickly and flexibly to realize and monetize the corresponding market opportunities. In addition to the impact of emerging technologies, organizational cultures will also require a phase of evolution and transformation to create the most efficient and enabling business landscapes for future success.



Many decision-makers are aware of the pace of change, but a lingering question remains: how must we approach it? As a first step, it is important to understand and leverage the power of new disruptive technologies and business models. The first steps often refer to the transformation toward agile and adaptive organizations. In this way, organizations can be ready for the exponential leaps that come next to achieve exponential results. The path of exponential transformation is an iterative process that goes through the phases of imagining, exploring, prototyping, testing, adapting, and scaling. The important factor here is to start actively transforming; simply being aware of exponential technologies does not lead to transformation.

In the context of this book, exponential change is best holistically addressed and embedded in a broader innovation and strategy framework. Often, the bulk of the value from innovation lies outside of the products, services, or experiences offered – whether in a profit/business model or at the customer engagement level. As such, we encourage expanding the utilization of exponential technologies (and other resources) for purposes beyond mere products and processes.

Corporate practice shows that companies are most successful when leadership teams have the courage to embrace change, allocate resources, invest in new technologies, and take risks. Proactive decision-makers provide the resources for technology development and implementation – as well as the timeline to address obstacles, both large and small – and clearly articulate the design principles and mission for adoption to ensure cultural fit. In the current technological era, there is no room for reactive cultures. Only proactive cultures will survive. Here, the focus of empowerment is on the individual and team members so that each can reach their full potential. This implies that developing an exponential mindset requires bold, engaged, and thoughtful leadership. By understanding the characteristics of the exponential change paradigm, organizations can better prepare themselves for the challenges and opportunities of the future.

#### **BE AWARE OF SOME KEY CHARACTERISTICS ASSOCIATED WITH THE EXPONENTIAL CHANGE PARADIGM:**

- **Change is accelerating.** The pace of change is increasing at an exponential rate. This is due to numerous factors, including technological advances, globalization, and the increasing complexity of the world.
- **Small changes can have a big impact.** Small changes can have a disproportionately large impact over time. This is because exponential growth is multiplicative, not additive.
- **The future is uncertain.** The future is more uncertain than ever before. This is because the pace of change is so rapid that it is difficult to predict what the future will hold.
- **Adaptive culture is at the forefront.** Without a properly enabled and empowered culture, technology transformation will not succeed. Ensure a proper alignment to achieve best results.
- **Start to prepare for change.** It will be of paramount importance to think creatively and innovatively, and the entire organization should be able to adapt to new situations.

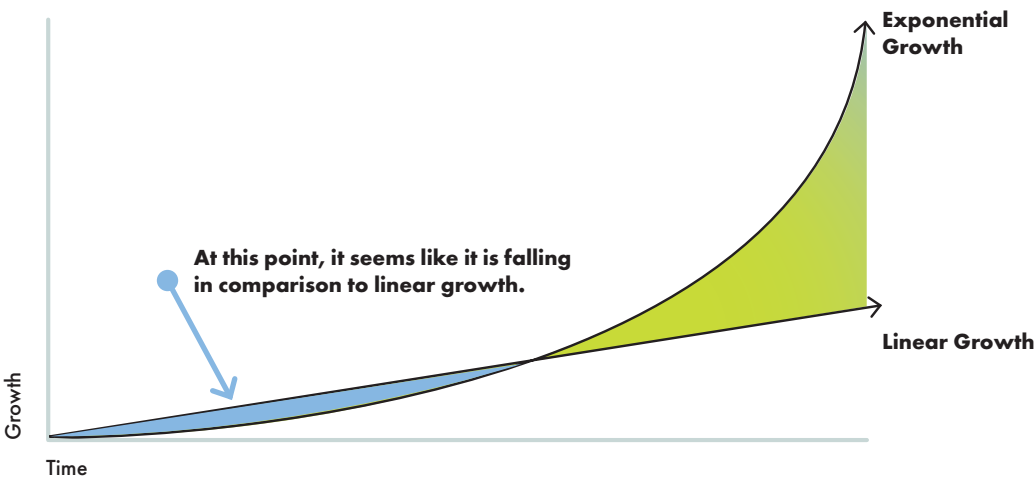
→ The Exponential Change Paradigm implies a new way of thinking about how we collaborate and realize new market opportunities.

## LINEAR GROWTH VS. EXPONENTIAL GROWTH

Humans have evolved to think in linear terms; we were hunters, farmers, and crafters, and our environments changed very slowly. We must embrace a new exponential way of thinking to remain relevant in this new exponential landscape.

The Exponential Change Paradigm is a way of thinking about the world that recognizes that change is not linear but exponential; this means that small changes can have a disproportionately large impact over time. For example, if a technology doubles in power every year, then in 10 years, it will be 1,024 times as powerful as it was to begin with.

The illustration below depicts how technology trends and growth are deceptively slow at first and appear to be decimal progress, just a dot on the horizon that no one really cares about. For example, generative AI became exponential by 2018 and accelerated in 2022 with broader use cases related to language processing. → see page 33



→ The following outline of examples will help you to understand how exponential change is impacting the world today. As this paradigm continues to unfold, it is important to be prepared for the challenges and opportunities that it will bring.

## A LOOK IN THE REARVIEW MIRROR REVEALS EXPONENTIAL CHANGES IN TODAY'S WORLD

**The growth of the internet.** The internet has grown exponentially since its inception in the 1960s. In 1993, there were only 1 million websites. In 2024, there were already over 1.7 billion websites.



**The growth of gene editing.** Gene editing is a technology that is capable of rewriting DNA. This technology is still in its early stages, but it has the potential to revolutionize medicine.



**The growth of artificial intelligence.** AI is another area that is experiencing exponential growth. In 2012, there were only 16 billion AI parameters. In 2022 there were already over 175 billion AI parameters.



In the utilization of market opportunities and the way we will shape them together, we need to discuss new developments, ideas, and technologies and decide how to shape the future. One of the most important dimensions is the fact that AI will surpass human intellect in every domain at a certain point, which will transform all societies and economies globally.

At the same time, each technological advancement will fuel further innovation, creating a cycle of exponential growth that speeds up the rate of progress. Technologies of high relevance include AI, quantum, nanotechnologies, additive manufacturing, and many others. All of them will transform traditional economic constraints and provide the opportunity to shape new business ecosystems and communities of a post-scarcity society.

With this book about AI and innovation and the entire book series, we would like to contribute to the perception of exponential change and reach a point beyond uncertainty where the pace of change exceeds our capacities to foresee and understand future developments. However, we are aware of the risks of these technologies. Our ambition must be that the changes positively contribute to humanity in all possible aspects. Notably, integrating advanced technologies with human biological systems could easily redefine humanity based on migrating minds and beyond.



## **ADDITIONAL TYPES OF THINKING NEEDED**

To successfully manage exponential change, organizations must master two other crucial mindsets besides exponential thinking: design thinking and systems thinking. Both require an effort to fundamentally rethink the existing mindset and work attitude. These mindsets shift how employees and managers look at problems and solutions, allowing them to reimagine how they create, deliver, and capture value – not just to survive but thrive and meet proactively the transformative challenges of the coming decades.

Building capabilities in all three domains is part of the minimum skillset needed to actively shape the future, explore it in a structured way, and anticipate new developments. The different approaches have proven to be very useful in identifying and exploring challenges that arise from the multiple signals and drivers of change that shape the future. Many of the world's most innovative companies use the three mindsets to develop strategic options in a context full of unknowns. In this way, new market opportunities, business segments, or entire business ecosystems emerge that are new to the customer and unique to the market.

This mindset includes active scouting and monitoring of trends and megatrends. Methods from the foresight toolbox help identify signals, patterns, and paradigm shifts. The associated tools and methods help organizations build future capability through exploration, orientation, visioning, strategy, and innovation. The application of scenario planning is compelling in outlining different possible futures and creating easy-to-understand stories to educate decision-makers and other relevant stakeholders.

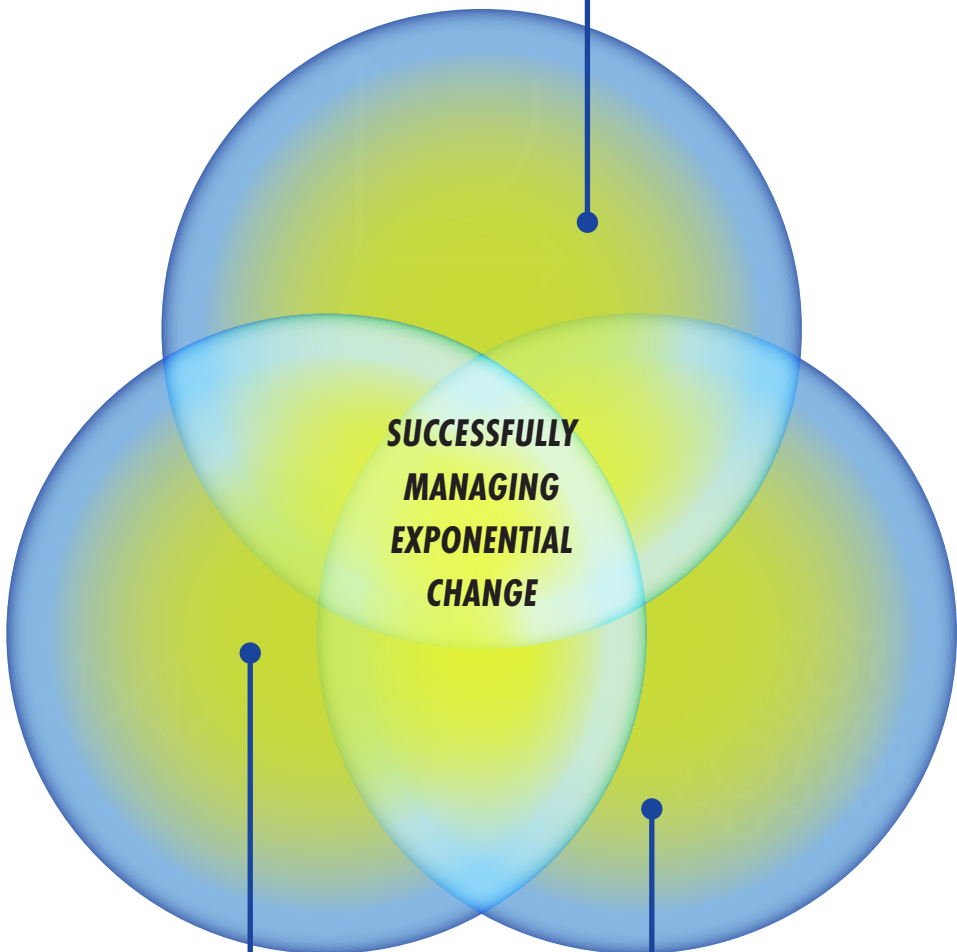
These methods and tools also help sharpen the common understanding and dialogue between all stakeholders, assist them in philosophizing about the future, and help them understand what they can do here and now.

In addition, decision-makers should not neglect the ecological component associated with how behavior can be changed alongside customer needs, the long-term view of systems, and the use of exponential technologies. This view heralds a shift from human-centered design to design thinking for humanity.

**THE FUTURE OF BUSINESS MUST WORK BEYOND THE FAMILIAR BOXES. THE CLEVER COMBINATION OF NEW TECHNOLOGIES AND HUMAN THINKING LEADS TO BETTER RESULTS.**

**EXPONENTIAL THINKING**

The ability to fully comprehend that new technologies that seem to be very marginal or small today could become very prominent and impactful very quickly.



**SUCCESSFULLY  
MANAGING  
EXPONENTIAL  
CHANGE**

**DESIGN THINKING**

The ability to understand the problem as well as current and future customer/user needs, embrace uncertainty, and think about and perceive alternative solutions for the future.

**SYSTEMS THINKING**

The ability to accept complexity and to explore the bigger picture and to analyze the system with all elements, actors, and value streams that contribute to a possible solution.

# SUMMARY OF MINDSET REQUIREMENTS

Some mindset requirements have been proven to be the most effective for thriving in a world of exponential change.

**2. LEVERAGE THE POWER OF NETWORKED ORGANIZATIONS:** *Assign small teams to explore the problem space and lead innovation. Provide a flexible organizational structure, for example, based on the Team of Teams approach. Give teams the autonomy and the means to fail fast and fail better – until they succeed – while protecting them from corporate rigidity.*

**1. START TO EXPLORE THE PROBLEM SPACE FIRST:** *Introduce advanced technologies based on an existing and well-thought-out business problem and/or customer needs in conjunction with a clear action plan. Start with small prototypes and iterations addressing unmet internal or customer needs and collect wins demonstrating ROI over time as larger implementations ramp up.*

**3. EMBRACE AN ADAPTIVE, INCLUSIVE, AND OPEN ORGANIZATIONAL CULTURE:** *Adopt a culture that embraces change, takes measured risks, and challenges the status quo to ensure success in an exponential landscape.*

**MINDSET**

**TEAMS**

**CULTURE**

**5. FOSTER A TECHNOLOGICAL MINDSET WITH THE APPROPRIATE TOOLS:**  
*Embrace no-code and lowcode tools that cater to specific needs, which allows teams to become nimble change agents. These tools empower to experiment, iterate, and adapt quickly while harnessing the power of technology and riding the wave of disruption.*

**6. EXPAND YOUR STRATEGIC HORIZONS BEYOND THE CONSTRAINTS OF TODAY'S TECHNOLOGIES:**  
*Embrace an evolving view of the trajectory of emerging technologies and adapt future strategies accordingly. Technology is constantly evolving, so our strategic thinking should do the same.*

**4. ACTIVELY SHAPE THE BUSINESS ECOSYSTEM:**  
*Be open to exploring a broader business ecosystem to attract or leverage talent, skills, or solutions. Co-create with other potential actors and customers to develop a common language for new value propositions or partner with technology startups, universities, and national labs to access expertise and talent.*

**TOOLS**

**TECHNOLOGIES**

**ECOSYSTEM**