

DIGITAL | BUSINESS | ECOSYSTEMS

Digital Business Ecosystems
How to Create, Deliver and Capture Value in Business Networks

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cover design **borinka-and-shamrock.com**
cover illustration **Edilus (Shutterstock)**
design, layout and graphics **borinka-and-shamrock.com**
print **Pumbo**

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published by
TVE Press
contact@tvepress.nl
The Netherlands

ISBN / EAN: 978-90-828524-5-5

ROEL WIERINGA | JAAP GORDIJN



**DIGITAL
BUSINESS
ECOSYSTEMS**

**HOW TO CREATE, DELIVER AND CAPTURE
VALUE IN BUSINESS NETWORKS**

TVE PRESS

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PREFACE

The digital economy has evolved from a story of young entrepreneurs who use digital technology to make the world a better place to a story of monopolistic Big Tech corporations which extorts as much shareholder value as possible from a disenfranchised workforce and digitally addicted consumers. What happened?

The single truth behind both these stories is that digital technology is network technology. The digital economy is enabled by a digital network for global communication and coordination. The benefits of the innovations built on top of this network were felt by consumers worldwide. The young innovators who created these benefits received credits for it.

At the same time, the network economy created by these innovations contained some powerful stakeholders whose first responsibility is to their shareholders even though they can offer their value proposition only in collaboration with many other stakeholders to which they are connected in a digital network. Depending on the business model of these powerful tech companies, some network participants have a hard time surviving.

Disrupting existing business with new technology is a healthy phenomenon in a capitalist economy. But digital disruption is something special. Because digital technology is network technology, the disruptor uses a digitally enabled network to realize its innovative offer. This network must be commercially viable in the long run, and so we need a business model of the entire network, not just of one company. And we need tools to show that digitally enabled business networks allow all participants to survive and thrive.

A business model describes how value is created, how it is delivered to customers, and how companies capture revenue from this. With an economy transformed by digital technology, business models must describe value networks: the organizations, companies and people who collaborate and compete to create, deliver, and capture value.

In this book we show how to design networked business models in such a way that all economic actors involved in the network can generate positive revenue. Using our techniques is no guarantee for a fairer business model. But if you want a fair business model for all stakeholders, then our techniques will help you achieve that goal. We recommend using these tools in a collaborative design process with the stakeholders needed to produce a value proposition.

Who should read this book? This book is intended for business developers, CxOs, IS professionals, and innovators who care about the use of digital technology to generate value.

Why should you read this book? Digital technology offers great opportunities not only for you, but also for your competitors and for new entrants. The digital transformation is about how to create value and compete with others in a value network. It requires the creation of a business model for your entire value network in which you and your partners can survive and thrive. This book provides the tools and techniques to design and test such a business model.

The storyline. The idea of the book is straightforward. To create value in a digital economy, you need a network of partners who all must generate positive revenue in this network. The network delivers value to the customer by digital technology. Hence, our business models consist of four parts:

- A *value proposition*, which describes the offer, the customers to which it is targeted, and its unique selling points. The value proposition is leading in the business model design process.
- A *value model*, which describes how tasks are allocated to you and your partners in a value network, what each of you contributes to the offering, and where the competition is.
- A *revenue model*, which quantifies the model in terms of estimated market size, pricing, cash flows and other aspects of financial mechanics. It is the tool to assess financial sustainability and risk of the business model for all participating stakeholders. When innovating, you can use this to weed out unpromising business models and zoom in on promising ones fast.
- A *delivery model*, which describes the technology by which the offer is delivered to customers, how members of the value network coordinate, and by what technology revenue is generated.

We discuss the structure of digital business ecosystems and platforms in Part I of the book, followed by a more detailed explanation of business models, with many cases and examples.

In the next three parts of the book, we provide techniques and tactics for designing a network-centric business model. Part II treats the design of a value proposition and of the value network to create the proposition. Part III provides guidelines for revenue model design for a value network, and shows how to test the model by doing cash flow simulations of the network. Part IV is about delivery model design. All chapters contain case studies with real-world examples. The last part of the book provides longer case studies of the business models of Amazon, Facebook and the electricity grid.

The appendices give a quick introduction to design thinking, summarize our techniques for business modeling, and provide links to relevant software.

Design thinking. We take an engineering approach to business model design, which means that we separate problems from solutions, generate alternative solutions, and validate solutions before implementation. Validation of business models can take many forms, from software simulation to testing with early customers (“customer development”). In this book we present a software simulation approach, a fast and low-risk way of testing.

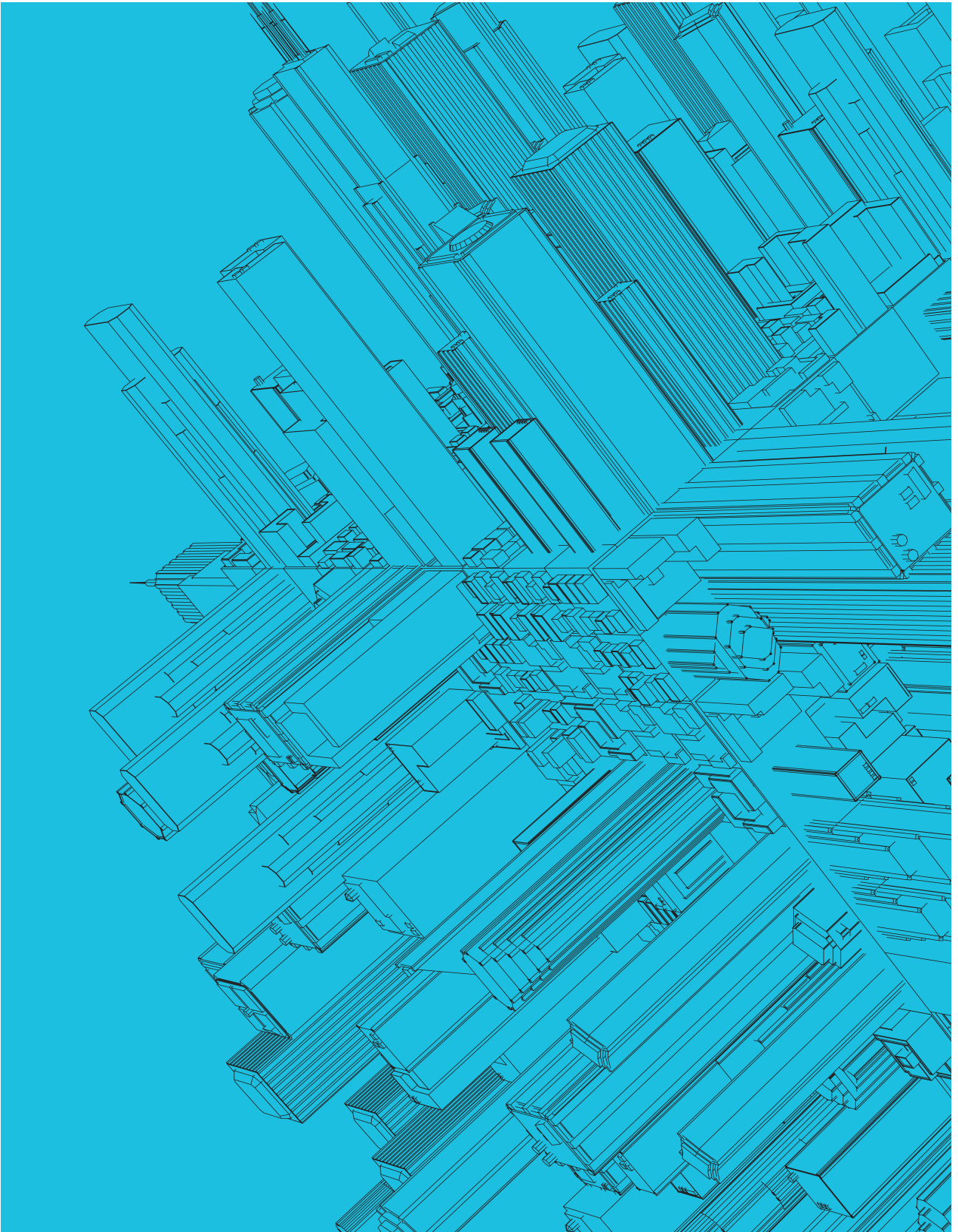
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Acknowledgments. This book benefited from reviews and comments by Ziv Baida, Niels Bakker, Nedo Bartels, Martin van den Berg, Stefan Biffel, Dion Bongaerts, Joris Dekker, Johan Eder, Wilco Engelsman, Michael Felderer, Ulrich Frank, Dennis van Goch, Ed Green, Eddy Groen, Ben Heideveld, Jennifer Horkhoff, Dan Ionita, Alcedo Koenen, Matt McLarty, Mark de Reuver, Jos Röling, Joost Schildwacht, Silvie Spreeuwenberg, Prince Singh, Sander Teekens, Linda Terlouw, Gerard Wijers, Fons Wijnhoven, and Markus Westner.

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Web pages
give background
information.





DIGITAL BUSINESS ECOSYSTEMS

1

INTRODUCTION



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Business model transformation is a change in the way a business creates value, delivers it to customers, and captures revenue from this. When is it time to transform your business model? What happens if you do not? How important is it to stay on top of your business model? What has technology got to do with it?

To get a feeling for this, let's look at the story of a famous failure in the old economy, the Blockbuster video rental chain.

Case: Blockbuster's Missed Opportunities

In the 1970s, video recording on magnetic tape entered home use, allowing people to record TV movies to watch them later. Small stores popped up offering movie cassettes of varying quality for rent. To discourage theft, tapes were kept in a backroom behind the counter. Borrowing a videotape was a laborious process in which the customer went to a rental shop, browsed empty cassettes, chose one, waited for an employee to find out if there was still a copy in the backroom, and manually checked it out.

In 1985, Blockbuster launched a video rental store in Dallas, Texas, stocked with all popular new releases of the major studios, which were on display in the store itself.¹ The store was spacious, had an attractive layout, and used a state-of-the-art computerized system and a barcode scanner to speed up the checkout process. Magnetic strips on the cassettes and sensors at the door discouraged theft.

The business was a success and Blockbuster opened a chain of stores and franchises, first nationally and then globally, following a formula similar to the way McDonalds has been rolled out since the 1960s.

In 1996, DVD technology entered the market, but Blockbuster continued rolling out shops and renting out movies on video cassettes until 2002. In the meantime, Amazon and Netflix had started online businesses to sell or rent DVDs online without owning any brick-and-mortar shop at all. When Blockbuster finally caught up with the online DVD rental economy in 2004, it had incurred so much debt that it could not refinance it. In 2010, amid a global financial crisis, it filed for bankruptcy.

Let's dive a bit deeper to understand what happened. We will look at the four parts of a business model that we define in this book: value proposition, value model, revenue model, delivery model. What these four parts consist of will become clear as we go along. Here is a first indication.

A *value proposition* describes an offering, its customers, and its unique selling points. Blockbuster's value proposition was that it stocked all popular titles of the major studios, had a spacious shop, was family-friendly (no porn), and had an easy checkout process.

A *value model* describes the network of economic actors that collaborate and compete to provide an offering to customers. Customers are part of the value network, as are competitors. Blockbuster's value network consisted

of its network of franchises, as well as the movie studios, the shopping malls where it occupied premium place, its customers, and its competitors, who worked hard to provide the same value proposition to the same market.

A *revenue model* describes the way economic actors generate revenue from delivering value. Blockbuster focused on popular movies because it bought each cassette for \$70 from the studios. This means it had to be rented out about 30 times before it generated profit.² So it had to be a popular movie.

In addition, because people could lose interest in a title a few weeks after its release, Blockbuster was interested in a speedy return of cassettes. They charged fees for late returns. Late fees became an important part of their revenue model. In 2000 this was reported to generate 16% of Blockbuster's revenue, or \$800 M. Customers hated it.

A *delivery model* describes by what delivery technology the value proposition is delivered to customers. Blockbuster and the other rental stores delivered movies on video cassette, which had to be collected by customers from the shop and had to be returned to the shop later, before the expiration date of the loan period.

The shopping malls where Blockbuster had its shops were also part of Blockbuster's value network. Customers had to travel twice to this location for one transaction: once to fetch the cassette, and once to return it. Shopping malls loved this traffic and Blockbuster could negotiate lower prices for a premium location in a shopping mall.

Business was going well, but in the early 90s, Blockbuster management worried about new technology such as Video on Demand and cable TV, which could make video cassette rental less attractive. It could not find an answer to these developments and management sold Blockbuster to Viacom, one of the world's largest entertainment companies. Under Viacom, Blockbuster diversified into clothes, books, magazines, music, toys, and candy. This was a disaster. The company's value fell by half.³ On top of this, Hollywood Video, started in 1988, had copied their business model and was growing fast.⁴

In 1997, the company hired John Antioco as new CEO. Antioco refocused the company on video rental and negotiated a revenue sharing deal with the movie studios to reduce cost and risk. Blockbuster would buy a cassette from the movie studios for \$1 and share 40% of rental revenue with the studios. This reduced cost and increased revenue, but the company continued to generate negative income.⁵

And then came the real disruptor: not Video on Demand, not cable, not Internet, but DVDs. Warner Bros. offered the same revenue sharing deal for DVDs to Blockbuster as they already had for cassettes, but Blockbuster declined. Warner Bros. then offered DVDs for sale at a price that could compete with rental. This changed the game.

Retail chains like Walmart, Best Buy and Target seized the opportunity and sold DVDs at the same price for which consumers could rent the movie cassette at Blockbuster. At the same time, Amazon, and Netflix, both e-commerce startups, quickly discovered that DVDs could be sent by mail without damaging them. They sold DVDs online and used the low-cost and reliable service of the US Post Office to deliver them at the customer's premises. Netflix also rented them out, using a personalized recommendation engine that led customers away from expensive top hits to niche movies they might also like.

Blockbuster could have transformed its business model in 1998 but did not see the potential of the new delivery technology, DVDs. And it missed the potential of mail order through online shops. Mail order had been a nineteenth century business started by Sears & Roebuck, when shops were far away from customers, but with its online front end it now became part of high-tech business. Blockbuster was also unaware of the potential of recommendation software such as used by Netflix.

At the same time, it was loaded with thousands of locations for which it had to pay rent, plus 25 000 employees that it had to pay salary. By contrast, the retail chains could sell DVDs at almost zero marginal cost to attract more people to shops that already existed. And the online shops had no retail locations at all.

Eventually, Blockbuster transformed its business model by renting out DVDs in 2002 and starting online rental in 2004.⁶ In 2007 it added a feature Netflix could not imitate: returning a DVD to a shop, where the customer would receive a new DVD for free. This turned around the slow downfall of the company, and it started hurting Netflix. The number of subscribers to Blockbuster's service grew and Netflix's growth was halted.⁷

However, the new business model required \$400 M investment, at a time when Blockbuster had accumulated losses since 1997, with a particularly bad loss in 2004 of \$1.4 bn.⁸ Viacom did not see a future for video rental and sold Blockbuster in 2004, forcing it to pay \$1 bn in dividend.⁹ The activist shareholder Carl Icahn thought the company was spending too much on online business and forced Antioco out.¹⁰ Jim Keyes, the next CEO, made online rentals more expensive and reintroduced late fees. When Blockbuster needed to refinance its debt in the middle of the financial crisis, it could not find any sponsors and it filed for bankruptcy in 2010.¹¹

The next year, satellite TV provider Dish Networks bought Blockbuster with the intention to use its assets to compete with Netflix, which had started streaming in 2007.¹² This failed, and Dish networks closed Blockbuster stores until only one remained: a franchise in Bend, Oregon, owned by Ken Tisher, who advertises with something that Netflix cannot offer: close integration with the local community and, in September 2020, the possibility to rent a room at the store through Airbnb.¹³

	Value offering	Value model	Revenue model	Delivery model	
The competition	Movies for home viewing, unattractive shops, laborious checkout	Studios, competitors, customers	Buy movie cassettes, rent to customers	Video cassette to be collected and returned at shop	Blockbuster realized too late that DVDs would succeed video tapes and online renting was more convenient than renting from a physical store. It failed even before it could take advantage of streaming technology.
1985	Popular movies for home viewing, easy checkout	Studios, network of Blockbuster shops, malls, customers, competing video shops	Buy movie cassettes, rent to customers, late fees, attractive rent of shopping center	Videotape cassette to be collected and returned at shop, computerized inventory & checkout	
1997			Revenue sharing with studios		
1998			Turn down DVD revenue sharing offer.		
The competition	Movies for home viewing, easy access in retail stores or online, personal recommendations (Netflix)	Blockbuster network extended with competitors: retail chains, online shops using internet for ordering, post office for delivery and return.	Buy movie DVD from studios, sell to customers, or rent without late fees. Netflix started subscription model in 1999.	DVDs sold at retail stores (Walmart, Best Buy, target) or ordered online with mail delivery (Amazon, Netflix)	
2004			Subscription, no late fees	Online mail order	
2007	Total Access: return DVD to shop and receive new one for free.				
The competition	Netflix started streaming	No further change	Subscription	Content delivery network	

TABLE 1.1 How Blockbuster joined the DVD revolution too late

Blockbuster's business model was profitable at the start due to superior delivery technology. But it became unprofitable when better technology emerged (DVDs). By clinging to an unprofitable business model for too long, Blockbuster had missed the opportunity to use a new delivery technology, improve its value proposition, reconfigure its value network, and make its revenue model more client-friendly by eliminating late fees.¹⁴

Greg Satell attributes Blockbuster's failure to its inability to develop or execute a network strategy. Greg Satell, "A Look Back at Why Blockbuster Really Failed and Why It Didn't Have to," *Forbes*, 6th September 2014. Our analysis makes clear what this strategy should have been.

Business Model Transformations

The Blockbuster case illustrates that developments in your ecosystem may force you to transform your business model. It also illustrates that changes in one part of a business model may require changes in other parts, leading to a transformation of the entire business model.

When Blockbuster changed its delivery model by adding online ordering of rental DVDs, it changed its value proposition too (no visit to a shop needed) as well as its value network (important role of the postal office in delivery by mail). If they would have continued to exist, then in the long run this would have reduced attractiveness of Blockbuster retail points for shopping malls, which would have motivated reduction of the number of Blockbuster retail points, another change in its value network. And this in turn could have paid for a change in its revenue model: dropping late fees. A change in its delivery model would have resulted in a complete overhaul of their business model.

Business model transformation requires radical new thinking about a business in relation to developments in its ecosystem. The developments that we are interested in are developments in digital technology.

Digital Transformations

A **digital transformation** of an organization is a transformation of its business model enabled by digital technology. When we talk about "the" digital transformation we mean the transformation of the economy by the accumulated effects of digital transformations of organizations. The digital transformation of the economy is the latest in a series of four transformations enabled by new technology for manufacturing, transport, and communication.

Figure 1.1 shows the major advances in digital hardware and software technology of the past decades that enable the digital transformation of the economy. The software advances were enabled by advances in hardware, and in turn enabled organizational innovations, shown at the top.

Since the 1990s there have been phenomenal advances in hardware storage, processing speed, networking, miniaturization, and devices for collecting and presenting data. These advances have often been called "exponential".



Web page: Four transformations of the economy

Let's run through the buzzwords of the organizational layer of Figure 1.1. Cloud technology and elastic computing enable *flexible scalability* of organizational IT infrastructure by networking with cloud providers. IoT technology enables connectivity between a physical component and its digital counterpart, called a *digital twin*. *Personalization* can be viewed as the consumer variant of this, in which behavioral data of users is used to construct user models to deliver personalized services.

Data-driven enterprises collect data from a network of sensors, analyze the data using machine learning techniques and optimize their decisions with the results. Advances in networking, machine learning, and intelligent devices have improved *production automation* and enable *autonomous warehouses*, where autonomous vehicles do order picking.

Servitization started out in the early 1990s as the addition of services to physical products and later evolved in the replacement of products by services using a subscription revenue model, in which products were not sold but their usage was paid for.¹⁵ Today, this has evolved further into *performance-based pricing*, in which not even a service is paid for, but an outcome, with a performance guarantee. For example, Rolls Royce does not sell jet engines but thrust. This requires a network with close integration of supplier and client so that the provider and customer can monitor delivered performance.



Web page:
Exponential growth

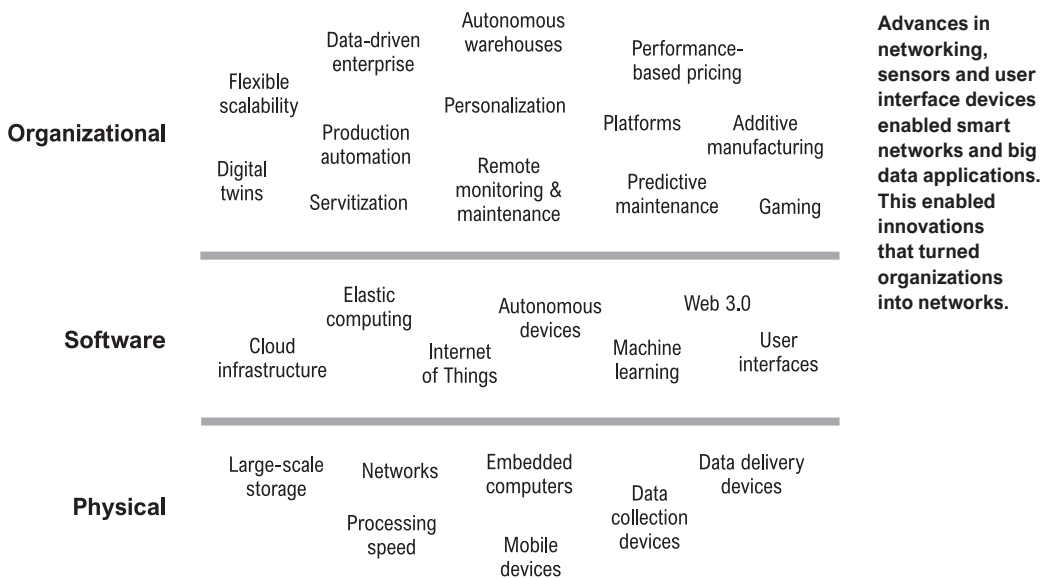


FIGURE 1.1 Advances in hardware and software enable organizational innovations.

Other services delivered over a network are *remote monitoring and maintenance*, and *predictive maintenance*, in which corrective maintenance is performed based on performance predictions. All these services are built on a network that connects suppliers with the devices they maintain.

3D printing allows *additive manufacturing*, where components are printed by adding material, instead manufactured from raw material by removing material. This allows remote manufacturing, and it is built on top of a network that connects designers with manufacturers.

Advances in connectivity, mobile computing and user interfaces enable *platforms* such as online marketplaces, social networks, ride hailing systems and more. We dive into the structure of platforms in Chapter 3.

Advances in user interface technology and data delivery technology have lifted *gaming* to near-movie quality but with interactivity and networking included.

In brief, the digital transformation is a network revolution in which people, organizations and devices are connected in a digital network. It follows that in a digital transformation, the value network should be an integral part of the business model.

Plan of the Book

If you design a networked business model, you need to ask four questions:

- What value proposition do you offer to which customers?
- Which network of stakeholders is needed to offer this proposition?
- How does each stakeholder capture revenue from this?
- How does the network deliver value to the customer?

This runs you through the four parts of a networked business model.

If you answer all four questions, you have described the value network of stakeholders that collaborate and compete to provide value to customers. Customers are part of this network, as are competitors.

We discuss value propositions and value networks in Part II of the book, revenue models in Part III, and delivery models in Part IV. But first, in Part I we look closer at business ecosystems and platforms in a digital economy.