Introduction

What do our clients want to know?

In this chapter

- CEOs ask: Are we getting digital right?
- Silicon Valley asks: Can we pull off our *dual disruption* agenda?
- IT professionals ask: What does our future look like?
- Individuals ask: What does technology mean for me and my career?
- Governments ask: What do these changes mean for our society?
- An increasingly intelligent digital *Matrix* underlies these questions
- This book helps you *see* the *triple transformation* – of industries, organizations, and careers

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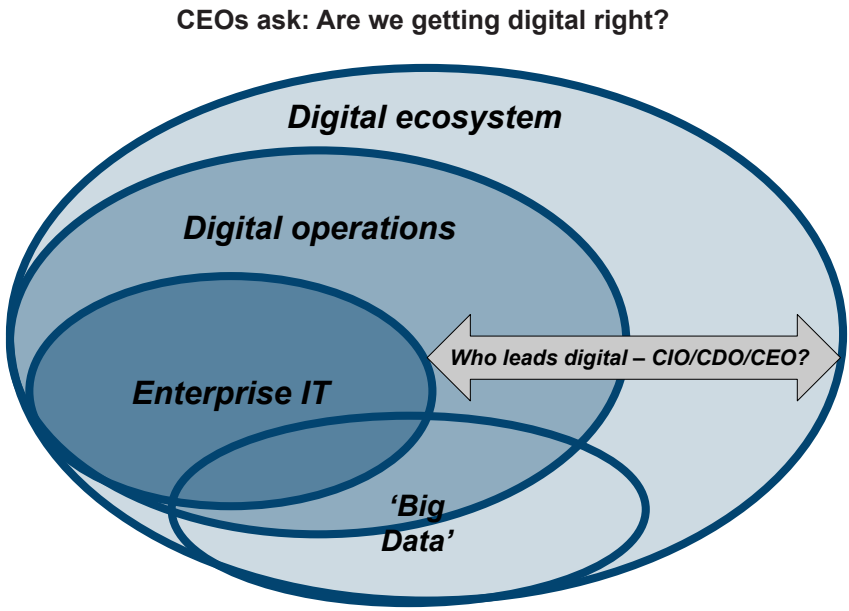
As a $25 billion global IT services provider, DXC Technology works with thousands of large businesses and government agencies all around the world, engaging with CEOs, COOs, CIOs, digital marketing teams, product innovation groups, IT and HR professionals, business strategists, technology suppliers, venture capitalists, government officials, and other digital enthusiasts.

While these groups have very different interests, most have one need in common: they want to better understand the digital future, but they have too much to read already. In recent years, DXC's thought leadership arm, Leading Edge Forum (LEF), has addressed this challenge by taking a highly visual approach. Our clients tell us that our use of pictures conveys ideas, concepts, and decision-making models more quickly and powerfully than the written word alone.

This book seeks to bring our visual approach to a much wider audience. Each of the following 200 or so pages presents a standalone framework, model, scenario, or other image, designed to be useful in its own right. But collectively, they address the questions, dynamics, and transformations listed above, and as briefly summarized in this introduction.

Because the thinking and advice that follows have been drawn from the ongoing work of the entire DXC/LEF research team, this book is written in the voice of *we*. We hope it helps you see the intelligent digital world that is now emerging, and become better prepared for the industries, organizations, and careers of the 2020s – and beyond.



The technology world is full of uncertainties, and the most important ones wind up on the CEO's desk. While most CEOs believe in an increasingly digital future, they often wonder if they're doing the right things and have the right teams and strategies in place. Many senior executives feel that their organizations must undergo a *digital transformation*, even if they aren't always sure what this means.

Not surprisingly, most CEOs look first to their Chief Information Officer (or equivalent) for digital leadership, and this works well in many organizations. But in many others, the CIO is seen as too internally focused, or simply too busy keeping Enterprise IT's house in order. In such cases, marketing executives, business unit owners, COOs, and others often seek to fill the digital leadership void.

But relying on the existing senior leadership team raises its own challenges. Is this group sufficiently tech-savvy? What happens if they have sharply different opinions about the digital future? Who is ultimately responsible for the technology-driven agenda of the firm? These questions often lead to political drama inside the C-suite when important decisions need to be made.

In recent years, many firms have appointed *Chief Digital Officers*. While CDOs are certainly no panacea, their emergence speaks to the perceived digital leadership need in many large companies and government agencies today. Chapters 4, 5, 6, 7, 8, and 10 can help firms address this challenge through a range of organizational, cultural, and team-based approaches.

Silicon Valley asks: Can we pull off our *dual disruption* agenda?

Technology disruptions

- Cloud, SaaS
- Mobility, apps
- Social, P2P
- Open source
- Big Data, analytics
- Sensors, wearables, IoT
- Speech, facial recognition
- AR/VR/3D/AI/machine intelligence

Industry-specific disruptions

- Cars – shared, electric, self-driving
- Banking – advice, lending, Bitcoin
- Health – self-service, diagnoses, IoT
- Insurance – personalized, algorithmic
- Manufacturing – robotics, 3D printing
- Retail – Amazon, no inventory, China
- Education – MOOCs, flipped classes
- Legal – smart contracts, digital truth

While CEOs ponder the firm's digital future, Silicon Valley (and its global rivals) are busy building it.

Of course, Silicon Valley has long been the capital of the IT world. It dominates the market for computer hardware, software, networking equipment, data storage, semiconductors, and internet services. 'The Valley' expects this dominance to continue through the *technology disruptions* listed on the left side of the figure.

Indeed, rightly or wrongly, this success is now largely taken for granted. The big question in the Valley today is whether its technology leadership can be extended to the *industry-specific disruptions* listed on the right side of the figure. This is what we mean when we say that Silicon Valley now has a *dual disruption* agenda. Whether the Valley can pull off this agenda will be the main focus of Chapters 1, 2, and 3.

But no matter how these issues ultimately play out, it's clear that the mission of Silicon Valley has expanded. The IT industry grew up as essentially an *arms merchant*, selling its products to anyone who wanted to buy them, but today it is also an *invading army*, often competing against the very companies it supplies.

While Silicon Valley – and especially Google, Apple, Facebook, Amazon, and Microsoft – look invincible today, history cautions otherwise. China, India, and more open, peer-to-peer models will likely challenge today's leaders, as we will discuss in Chapters 3 and 11.

IT professionals ask: What does our future look like?

Value through back-office IT provision		***Value through front-of-the-firm digital leadership***
• *Inside-out*		• *Outside-in*
• Cost efficiency		• Business impact
• Standard platforms		• New ways of working
• Service provider		• Agent of change
• IT budgets		• Digital business

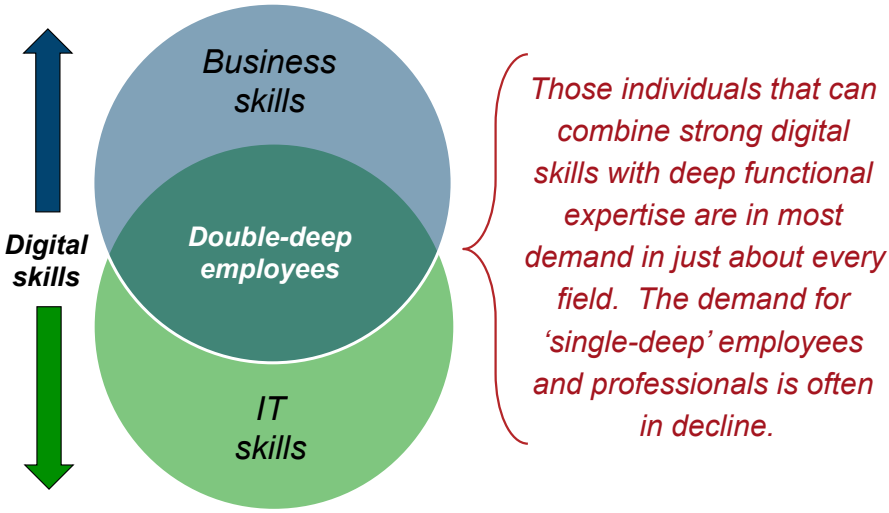
Enterprise IT professionals face a very different set of challenges than CEOs and Silicon Valley. On the one hand, they are asked to provide their organization's back-office IT infrastructure and technology processes, with the goal of assuring control, reliability, and efficiency. This requires an inward-looking and risk-averse culture.

But the wider IT industry is driven more by the exciting possibilities on the right side of the figure, and it is only natural that IT professionals would prefer to spend the bulk of their time in these front-of-the-firm digital business realms. However, these missions require an external outlook and a culture of risk-taking.

We use the metaphor of the ancient Roman God Janus to capture this two-headed dilemma. Janus was believed to be able to see equally clearly into the past and the future, and this is a good description of the challenge faced by IT professionals today.

Unfortunately, the demands on the left side of the Janus are often so intense that the right side doesn't get the attention it should, and this is a major source of frustration for many IT professionals. It also explains why *the future of the IT organization* is such a perennial technology industry topic. Chapters 4 through 8 will help firms cope with these internal and external challenges. We will see that moving to the right side of the Janus is a good working definition of what many people mean by *IT transformation*.

Individuals ask: What does technology mean for me and my career?

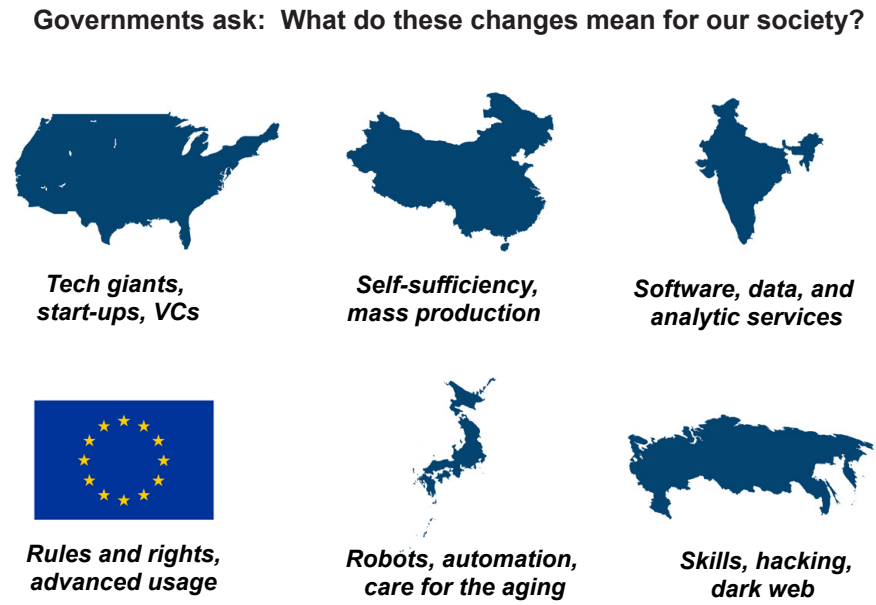


When you read, watch, or listen to the mainstream media today, you might think that all the traditional jobs are disappearing, and there is nothing you can do about it. But from a technology perspective, there is a lot you can do. Digital innovations are re-inventing just about every field, creating exciting opportunities for those with the right skills.

As shown in the figure, we emphasize the importance of *double-deep* learning. By 'double-deep' we mean that individuals need the traditional skills in their field – sales, customer service, engineering, accounting, and so on – but they also need the technology skills relevant to that field. They don't have to be data scientists or programmers; they just need to know how to use and apply modern technologies.

Marketing is a good example. For traditional *single-deep* marketing people (who know mostly about, for example, live focus groups, mail surveys, promotional collateral, and print-based advertising) job prospects can be tough. But for double-deep marketeers (who know about search engine optimization, social media campaigns, internet ad placement, and similar digital services) the opportunities are many.

We believe this double-deep pattern holds true in just about every field – including IT professionals, who need more business and application knowledge. To be promotable (and even to remain employable) these skills must be continually enhanced. The required learning and attitudes are the main topics of Chapter 9. We will see that some individuals are dealing with these challenges much more directly than others.



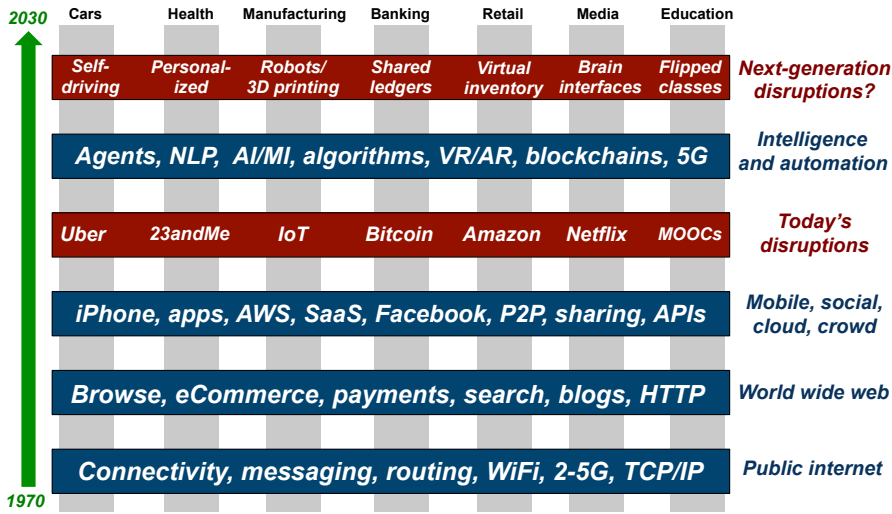
In recent years, many citizens around the world have become globalization skeptics. Workers in the West have seen wages stagnate and manufacturing move offshore, while many developing nations have seen their progress stall. Today's huge increases in economic inequality are undeniable.

The IT industry can't separate itself from these concerns, as technology has enabled globalization and has also been a major driver of inequality. This has left many governments in a quandary about how to best serve their people. Should they embrace global technology forces and the English-speaking internet, or should they resist these trends with more of a national sovereignty agenda?

Similarly, China, India, Russia, the European Union, Japan, and other nations have deep concerns about the long-running dominance of US IT firms. As suggested by the figure, the world's most powerful nations have different strengths and strategies, but they all want their share of the trillion-dollar technology marketplaces to come. In Chapter 11, we will assess this high-stakes global competition, with a particular focus on the inevitable battle between the US and China.

Chapter 11 will also show that smaller nations can have significant advantages in building advanced and cohesive digital societies. Israel, the Nordic/Baltic nations, Singapore, New Zealand, and others are demonstrating this in areas such as wireless bandwidth, citizen identity, online voting, digital currencies, smart grids, electronic healthcare and genealogical records, shared ledgers, and many others. The digital future won't just belong to the giants.

An increasingly intelligent digital 'Matrix' underlies these questions



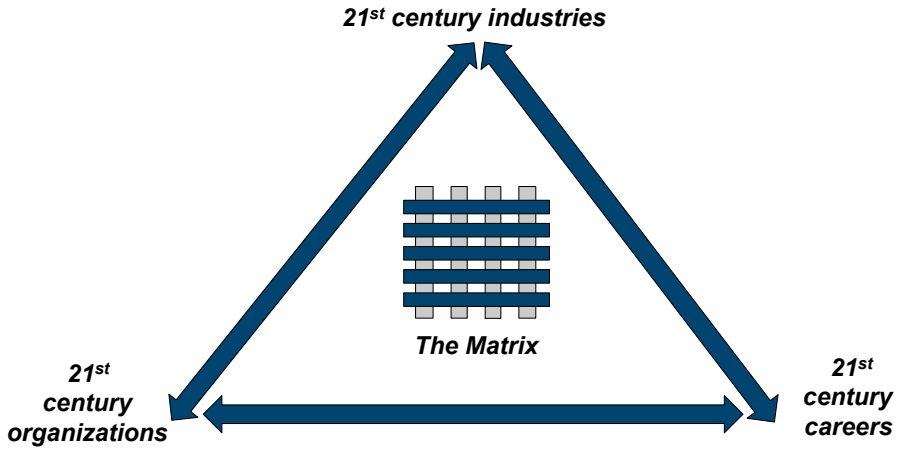
Underlying all five of these questions is the emergence of the increasingly intelligent societal infrastructure that we have labeled *the Matrix*. Why choose a new word? What's wrong with *the cloud*?

As we will see throughout this book, new terms emerge to capture new circumstances. The digital world that we envision is best described by words such as intelligent, autonomous, embedded, pervasive, aware, and self-healing. Does this sound like a cloud? Besides, IT language is always evolving – from an *internet* of computers, to a *web* of pages and links, to a *cloud* of computing services. Each of these terms lasted about a decade, before the industry center of innovation moved on, as it is doing today.

Of course, the word 'matrix' comes with many connotations – the 1999 movie, the rows-and-columns nature of matrix mathematics, and, as shown above in the internet, web, cloud, and intelligence/automation layers, the way powerful *horizontal* services now cut across traditional vertical industry *stacks*. As we will explore in Chapters 1 through 5, each of these references is relevant to the future we envision.

But whether the term 'the Matrix' catches on or not is not important. What matters is that the image above helps you see that much of what we know and do is being absorbed into a vast societal infrastructure. This book will assess what this emerging matrix of capabilities means to industries, organizations, and individuals, as we move into the *post-cloud* era of the 2020s.

This book helps you see the *triple transformation* – of industries, organizations, and careers



The figure above depicts the main focus of this book. How will industries, organizations, and careers be transformed in a Matrix-centric world? We will use a three-part structure:

In **Part 1**, we forecast the *post-cloud technology landscape*. Chapter 1 explains our concept of *the Matrix*, and how it is changing the way society innovates, operates, and competes. Chapter 2 explains why *machine intelligence* is advancing today, its current strengths and limitations, and why traditional firms are struggling to keep up.

Part 2 assesses the *triple transformation*. Chapter 3 describes the myths and realities of *industry disruption*. Chapter 4 discusses what firms mean when they say they want to become a *platform business*. Chapter 5 provides checklists to help firms leverage today's key *Matrix platforms*. Chapter 6 reviews the main risks associated with this more *outside-in* approach, with Chapter 7 arguing that *digital leadership* should be a team sport. Chapter 8 presents the important implications for the *Enterprise IT* function, while Chapter 9 summarizes the impact of these changes for individuals and careers, as innovation shifts to the *human platform*.

Part 3 examines the *strategic and global competitiveness* implications. Chapter 10 shows how companies can leverage *technology lifecycles* to better anticipate future market changes, while Chapter 11 examines *global IT industry* leadership, as the competition between the US and China intensifies.

We conclude with a reminder that *words matter*, and a summary of the key terminology we recommend for the 2020s.

Acknowledgements

Many LEF colleagues have contributed to this book, which is why it is written in the voice of 'we' (not that we always agree). However, any errors are entirely mine. Special thanks go to:

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