

IT Demystified

The IT Handbook for Digital Leaders

This document contains a sample of the content associated with this book.

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- Chapter 1: IT Basics (in full)
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Preface

What is a digital leader?

The term ‘digital’ is a much used, in vogue, and mostly misunderstood term. Misunderstood because it is somewhat context-sensitive. This vagueness is compounded when viewed in the context of leadership.

Depending on the organisation, a digital leader will:

- Preside over online marketing.
- Run the IT function.
- Be responsible for the digital strategy.
- Run the organisation.

The emerging role of Chief Digital Officer (CDO) suggests that digital is a role. The reality is that it is not a role, but a competence. A competence that all leaders in the digital age must have.

And for clarification, the digital age is not a ‘steroidal’ version of the early industrial era, it is much more profound than that. Monopolies, where they exist, are transient at best. Robots look set to make the workplace people-free. The world is hyper-connected, and thus hyper-volatile. Failure is a strategic objective. Disrupt or be disrupted. These are all characteristics of this post-industrial age.

But this book is not about digital, but Information Technology (IT). As we will see, IT, or new technology, underpins the digital age. Digital leaders need to understand IT, particularly its strengths and weaknesses, to be effective.

IT has an unusual relationship with the corporate world. Many business leaders struggle to correlate business value to IT spend. This makes for difficult conversations between the Chief Information Officer (CIO) and the business leaders. In the absence of value articulation, the conversation typically descends into a cost management scolding.

Traditionally the IT function has alienated itself from the business through the use of obfuscating terminology, help desk barriers, and a general indifference to the fortunes of the business. This has improved significantly in many organisations, not least because each IT function is competing against increasingly compelling cloud providers, who are happy to offer a ‘pay as you go’ service.

Many IT functions still operate as an internal technology supplier, rather than as a strategically important partner. The IT function, and thus the IT industry in general, has been tarnished in respect of its business-friendliness, and even strategic relevance.

This will change in a number of possible ways:

- The CIO wins back the trust of the business.
- The IT function is decommissioned.

Why read this book

Whether the IT services your organisation require resides inside or outside your organisation, it would be mal-governance for the business leaders not to manage the associated costs / investments in a competent manner. IT spend is typically a material percentage of revenue.

Keep in mind that corporate governance, or more specifically proof of the appropriate management controls, boils down to the quality of the IT service your organisation has access to. So, your corporate governance is only as good as your IT governance. Thus, IT governance is too important to be abdicated to the IT function.

At the very least, your IT function, or its equivalent, might also be known as the 'keep me out of prison' team.

Who is the book for?

This book is for enterprise leaders, whether they be large or small, private or public. There has been a growing trend towards CIOs who have boardroom gravitas, but not necessarily a sound IT background. For a long time, I was a supporter of such CIOs, as I felt this was a price worth paying to gain the trust of the leadership. However, as we gravitate to a world where data-driven business models, are the only viable business models, I am strongly tending towards the tech-savvy CIO.

For those CIOs who have not come up through the IT ranks, or via an IT provider, then this book will help you to at least understand the key terminology, and how it all fits together. It's not that your staff, or suppliers would necessarily take advantage of your blind spot, but why risk it?

Those interested in working more closely with the IT function, or at least making IT more strategically important to their function or role will find this book useful. To some extent, new-entrants into business, and even the IT function will find this book a quick start to understanding IT within the context of the enterprise.

IT is perhaps seen as the less glamorous cousin of digital; something to be largely hidden away from view (in a datacenter). We will see that this is not true. We will also see that IT has the power to transform business and society. It has been evolving steadily now for many decades, and in terms of exponential growth, we are only just reaching the sharp upturn on the graphical curve.

The history of this book

For a period from the mid-nineties to the global financial crash, much of my working life was spent demystifying IT for primarily business people in a classroom setting. Delegates ranged from new entrant graduates through to leaders of global business. Meeting the needs of this wide spectrum of delegates was a challenge. However, it had the effect of extending my technology capability into business leadership matters.

Since then, I moved much of the content online, though admittedly it has grown a little outdated in parts. I have written this book because I think we are entering a challenging phase in respect of business leadership. The certainties on which industrial era leadership was built are crumbling. Digital era leadership requires many new capabilities, one of which is a grasp of IT, along with what it can do for the organisation.

How to use the book

This book is not a novel, though there is a sequential order to the content. Absolute beginners in respect of IT are advised to start with chapter one and work their way through the book. Those with some background in IT can leapfrog the earlier chapters, and start with the first chapter that represents a probable gap in their knowledge.

In broad terms, the first four chapters represent what might be called IT fundamentals. You will likely be very familiar with the themes as a user, but these chapters will also cover the associated organisational implications that digital leaders should be aware of.

Chapters 5 and 6, covering The IT function and Architectures, might be considered 'strategic yet mundane' by many business leaders. They may represent topics by which their very mention triggers irritation, for reasons I will cover. Nonetheless, despite their back office / plumbing 'glitzlessness', they represent both your greatest sources of risk and opportunity.

Conversely, chapter 7, looks at the sexy ‘new’ new technologies advancing over the horizon. You ignore these at your organisational peril.

Chapter 8, Information security, focuses on the growing strategic importance of this digital age necessity. Poor information security has the power to instantly obliterate a carefully nurtured brand, send the share price into freefall, and bring the careers of senior executives to an unscheduled end.

Finally in chapter 9, we will explore IT strategy, and its relationship to business strategy, particularly one tuned for the digital age. Keep in mind that any disconnect between IT and business strategy represents a value-sucking void. One that might well consume the careers of those business leaders who oversaw the schism.

I, in part, apologise for largely focusing on the downsides of a poor grasp of IT from a leadership perspective in order to justify this book. The consequences, as stated, are real. However, IT-savvy leaders represent the new breed of post-industrial leadership. This book is primarily designed to both increase your strategic relevance, and the value your organisation creates. Again, such outcomes are underpinned by IT.

Ade McCormack, 2017

IT basics

Overview

In this chapter, we will cover:

- The role of IT in today's organisations.
- The fundamental building blocks of an IT system.

This is important because...

As a leader, you need to understand how IT delivers value to the organisation. You need to understand how the key elements of an IT system fit together, otherwise you will be at the mercy of those who might exploit your ignorance.

IT v digital

The terms IT and digital seem to vaguely occupy the same space in the world of business. There was a time not so long ago when they were synonyms.

IT, or information technology, is a reference to those technologies that are involved in the storage and processing of data. As we will see shortly, the reason for investing in IT is because it enables automation, and can deliver insight that supports the organisation's decision making.

IT hardware is built using digital technology, where both the data and the software are represented by ones and zeros. The predecessor to digital was analogue technology. So, you can see why IT and digital might be considered synonymous.

The Internet arrived, and soon IT became a channel through which businesses could market and sell their offerings. Originally, we talked about e-business and e-marketing, but this has given way to digital business and digital marketing. This marked the reinvention of the word digital, which now had connotations of Internet-based business.

Initially these businesses were just-industrial era models with an electronic channel to market. Over time new businesses arrived, which had the Internet at their core, rather than at the periphery. Businesses such as Google, Facebook and Amazon. Oddly these businesses were often described as technology companies, even though back then they weren't in the business of technology provision.

Today there is some confusion over the use of the term digital. For some it is digital marketing, for others it is the creation of business value through the use of new technologies. Increasingly it is a reference to a completely new way of doing business, where great emphasis is placed on experimentation, listening attentively to the market, and harnessing the power of social media.

In conclusion, digital is much more than IT. However, without IT, digital, as it is perceived today, would not exist. So, it might be said that IT is the foundation on which digital sits. Or one might say that digital is a superset of IT.

This book is written to help you gain a better understanding of IT. The absence of such knowledge will leave you very exposed as a business leader in this digital age.

What value does IT offer?

There are very few businesses that do not use IT in some capacity. The efficiencies associated with IT are just too compelling to ignore. The automation of business processes saves time and money. Having humans carry out work that could be automated makes no sense.

Humans make mistakes, have career aspirations and don't always turn up for work 'firing on all cylinders'. There is also a management overhead in using humans. This is, in theory at least, good news for people, as it frees them up to do more interesting work. That is, if they have the skills needed to do more interesting work.

Where humans make up a significant element of the organisation's value proposition, it makes sense to enjoy the associated 'network effects' by providing tools that facilitates collaboration. IT thus helps turn a collection of individuals into a collective consciousness / 'super brain'. One that increasingly extends beyond the traditional organisational boundary.

Turning data into insights is another valuable aspect of using IT. These insights seed the human decision making process. Good decisions lead to good outcomes for the organisation. Whereas traditionally the focus was on automation, more latterly it is on information.

As IT finds its way into traditionally non-intelligent devices, and even materials, the opportunity to sense what is happening in the wider world improves. The better our understanding of the market we operate in, the better we are equipped to capitalise on otherwise invisible opportunities, and to defend ourselves against otherwise invisible threats.

Through the use of augmented technologies, we will be able to experience the world in hyper reality. Firemen in a burning building will appreciate this. Virtual reality will enable us to experience a dangerous world from the comfort of our own desk. Trainee fireman will appreciate this.

3D printing will literally relocate many of the world's factories and food processing plants into the homes of the consumers.

We cannot imagine the value that IT will deliver, as these new technologies, and others, mature. IT is already moving from business infrastructure support to driver of business strategy.

Business leaders who don't understand the capabilities of IT will in effect be putting their organisations' sustainability in jeopardy.

What is an IT system?

Fundamentally an IT system is a collection of hardware and software integrated to fulfil a business need. Examples include:

- Payroll management.
- Customer relationship management.
- Building access management.

Traditionally the hardware element was recognisable as a computer, such as a laptop or desktop. Today more and more everyday devices are IT systems, or at least an element in an IT system.

Traditionally these IT systems were of an administrative nature. Store some data, maybe process it a bit, with a view to the data being retrieved at some point in the future, in the form of information or insight.

Increasingly IT systems are real-time in nature. They need to sense what is happening, consider a response, and respond now. There would be an issue if a nuclear power plant management system alerted users of issues solely via a weekly report.

But IT systems, old and new, have something in common. They all:

- Require the input of data in some form.
- Process that data, to some extent.
- Provide a mechanism to retrieve the processed data (aka information) at some point.

I am conscious that I am using unexplained concepts to explain concepts. Some I will explain as I go, others will be covered at a more appropriate stage of this book.

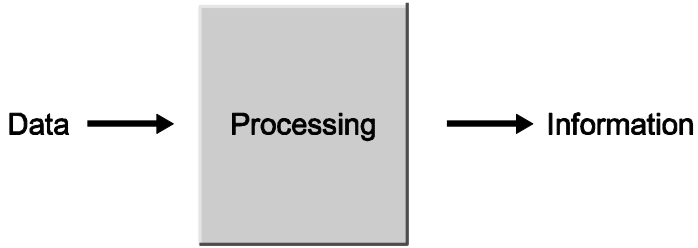


Figure 1 – An IT system

For now, data can be considered the raw material that IT systems consume. Information is what the IT system delivers / outputs. Information can be considered as contextualised data, or simply as something useful to the user. Some refer to this information as insight. But insight is somewhat subjective, so what I might think of as uninteresting information, you might regard as a business changing insight because of the different markets we occupy.

It is also worth saying at this stage that the processing I talk about is the responsibility of the software. Software can be thought of as the stuff that turns data into information. With the increasing use of IT for the purposes of sensing, it can also be thought of as the stuff that turns reality (eg. the current temperature) into data.

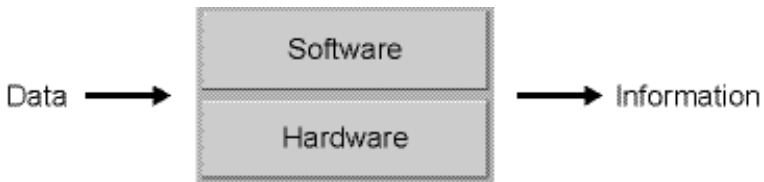


Figure 2 – An IT system – software and hardware

It is worth noting at this point, though we will revisit this in more detail, that software can be subdivided into applications, and operating systems. In short, operating systems make the hardware usable, applications make the hardware useful.

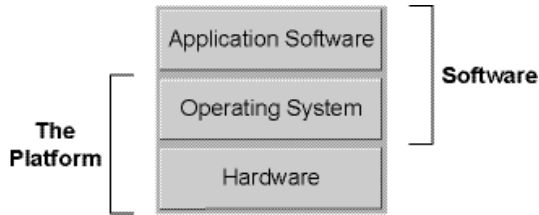


Figure 3 – An IT system – software and platform

One last point. An IT system can comprise one piece of hardware, or at the other extreme, a vast array of devices interconnected across the planet via a mesh of publicly and privately owned networks.

To summarise

- Today, digital and IT are not synonymous.
- IT is critical to the organisation's sustainability.
- Fundamentally, IT systems turn data into information. There is a strong correlation between being better informed and organisational success.
- IT will increasingly drive strategy.

Hardware

Overview

In this chapter, we will cover:

- The definition of hardware.
- Front-end v back-end.
- Tailored v off the shelf.
- Portables, wearables and embeddables.
 - Mobile devices.
- Things.
- Hardware considerations.
 - Energy management, usability, maintainability, full lifecycle cost. Vendor lock-in.

This is important because...

Hardware is a critical element of IT. It has a significant role to play in the user experience, and user productivity. But it also lurks in the background too. Thus, hardware decisions will have a direct impact on the value you gain from your people.

What is hardware?

Hardware is conceptually (and physically) easy to grasp. It is tangible and usually has some form of interface that enables users or operators to make use of it.

Laptops and smartphones are commonplace examples of hardware. Wearable devices, such as health wrist bands and virtual reality headsets will likely grow in popularity over time. Your TV and car are also examples of hardware, which, with each day, are morphing into computing devices.

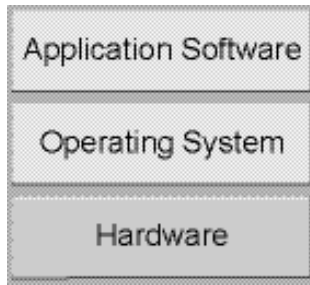


Figure 4 – Hardware

Strictly speaking, all of the aforementioned are IT systems, or elements of an IT system, in that they comprise hardware and software. The hardware is merely the physical aspect of the device.

Peripherals

Hardware is not restricted to computers. It also embraces peripherals, which are the bits one can attach directly or indirectly to your computer. Examples include printers, plotters, disk drives, scanners, joy sticks and even credit card readers. NB. Some of these peripherals have become so sophisticated that they can be added directly to the network and behave as if they are computers in their own right. Examples include network-attached printers and network-attached storage (often referred to as NAS).

Beyond computers

Anything that is solid and performs a function can be referred to as hardware, whether that be a fork, a rail of scaffolding, or a pair of shoes. Increasingly these inert items are being brought to life by the incorporation of IT. Previously ‘dumb’ supermarket trolleys can now collaborate with shelf stackers, stock controllers and checkout management systems to optimise the shopping experience for the consumer.

Everything from cutlery through to tablets has the potential to grow significantly in value thanks to the ability to this emerging capability to embed technology into otherwise inert devices. We will come back to this.

To be continued...

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1 Toys, threats and table stakes

Overview

In this chapter, we will cover why it is important to keep track of emerging technologies. We will look at emerging technologies that sit on both sides of the horizon.

This is important because...

The latest technologies are a source of competitive advantage. They have the power to change the rules of the arena in which your organisation competes.

T3

It would be no surprise to discover that those who work in the IT function are curious about new technologies. Not just those technologies that they engage with on a professional basis, but also those on and over the horizon. They represent a rich source of business value.

However, because of the trust issues between the IT function and the business, the enthusiastic requests to share their perspectives is ignored. Some CEOs would sooner take IT strategy advice from their iPhone wielding infant niece, than take heed of the guidance of their CIO.

Toys

In fact, some business leaders perceive upcoming new technologies as toys. They view these emerging technologies in the context of the existing business model, rather than an extension of it. They are not willing to take a short briefing to better understand how the technology could become a source of competitive advantage, and even a sector game changer. But, I don't want to lay this problem totally at the feet of the CEO.

It is difficult for them to entertain the strategic use of new technologies, and their IT function's pivotal role in their adoption, when the new payroll system keeps crashing. CIOs need to get their IT operational act together before they attempt to influence business strategy.

Threats

Having written off the emerging technology as an irrelevant toy, the business leaders start to see its use amongst their competitors. This raises concerns, but the board takes the view that it is smarter to let their rivals play at the 'bleeding edge' of new technology. If it really gains traction they can hop on board, without the painful learning curve.

Table stakes

But then one day, the sales director explains that the decline in sales is because your organisation does not offer a value proposition appropriate for the current market. It turns out that all your competitors have embraced this new technology, and customers expect it as a standard part of the offering.

Your organisation has now become locked-out of your own market. You might choose denial as an option, and simply embark on another knee-jerk austerity campaign. Or you might go all out to incorporate the new technology into your offering. But it's not a bolt-on.

It requires a reengineering of your product, which now needs to become a service, your pricing model, and the skillset of your sales staff. This will take time; time you do not have. Your colleagues in the boardroom will be in a state of shock, and will likely be resistant to the radical changes that need to be implemented. Embracing new technologies increasingly requires a business model overhaul, and that has a significant lead time.

You are now looking at the demise of your organisation. It won't survive long without the planned cash flow projection. But let us imagine you have a cash mountain to buffer you. You spend the next few months turning the organisation upside down, it causes stress for all concerned, and you soon lose good people. However, you prevail, and come to market with an enhanced offering that matches the table stakes required.

But those were the table stakes required when you realised you had taken your eyes off the road. Whilst your organisation was playing headless chickens, the table stakes were raised further because of yet another 'new' technology. You focused on reengineering the business to catch up with your competitors as they were back at the outset, as opposed to where they would be when this reengineering exercise was completed. And even that would have only got you into the game, never mind tilting the table in your favour.

In the digital age, not being finely attuned to technology developments, is like blithely listening to music via your headphones, at full blast, whilst strolling through a battle zone. There was only one way this was going to play out.

To be continued...

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About the Author

Ade McCormack is focused on helping organisations thrive in the post-industrial world through the optimal engagement of people and judicious application of new technology.

Clients engage Ade when they need a ‘zoom out’ view of how the world is changing, followed by ‘zoom in’ guidance on how they can capitalise on these changes. Ade has worked in over 30 countries, across many industries. Clients engage Ade in many ways including:

- Thought leader.
- Conference keynoter.
- Advisor and coach.

He is a former technologist, with a degree in Physics/Astrophysics.

Ade has written for several publications, including the Financial Times (circa 150 pieces). He has written several business books, including ‘Beyond Nine to Five: Your career guide for the digital age’. He has also lectured at MIT Sloan School of Management on digital leadership.

Ade is married with one son. He enjoys martial arts, dancing and running. Running being his most effective form of self defence, closely followed by dancing.

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