IT Demystified sample chapter - IT Basics

Compiled by: Ade McCormack – MD and Founder

www.auridian.com

Buy the book – Click here.

Introduction

This e-report comprises the first chapter of Ade McCormack's forthcoming book – IT Demystified, which is based on the very successful course of the same name (Please click here for more details).

It is the first chapter in the Fundamental Framework section of the book, which comprises the following chapters:

- IT Basics
- Hardware
- Operating systems
- Application software.

The other sections/chapters that make up IT Demystified – The book are as follows:

Section 2 - Application development

The importance of programming languages and databases

- Application Development

Section 3 - Architectures

How IT systems hang together

- Carbon dating the IT investment
- 21st Century Systems

Section 4 - Within the IT department

What do these IT people do?

- The IT Department
- How IT Systems are Built

Section 5 - New Technologies

What's hot today and what will be hot tomorrow

- Chapter 10 –What's hot today
- Chapter 11 –What's hot tomorrow

It is written with the non-technical reader in mind. I would be delighted for any feedback you have, good or bad, as we are continually endeavouring to improve our offerings.

Ade McCormack
MD and Founder
Auridian Consulting
ade@auridian.com
www.auridian.com

Chapter 1

IT Basics

Why read this? This chapter lays out the rationale behind IT systems in business and their main components.

Easy does it!

Let's start very gently. First I'll answer a few fundamental questions so that you can get some learning foundations in place.

What is the point of IT?

Sadly this question is often asked at Board level in many businesses. It perhaps reflects a technophobic attitude and/or a perception that the IT department is not delivering good value for money.

The first use of IT was to *automate* processes that were carried out manually or mechanically. Thus the original focus of IT was on automation. Examples include:

- Factory automation - picture the robotic arm lowering down onto the car factory production line
    - Good system – Pick up the car and paint it, pick up the car and paint it, pick up……
    - Bad system - Smash the car, paint the air, smash the car, paint the air…
    - Such systems need to be very finely tuned!
- Bank statement production

Less human involvement generally means less error.

Whilst using IT for automation is to some extent seen as 'old hat', the drive to automate business processes is spreading across the planet like a forest fire as companies race to drive costs (and often people) out of their business processes.

So initially computers were used to automate. A perhaps more valuable use of IT is to *informate*. Organisations have built up large repositories of data, relating to their internal activities and to what they know about the markets they operate in.

The challenge is to harness this data, which is usually spread almost randomly across the business, in such a manner that business users can make critical business decisions. Today such users are referred to as knowledge workers.

Thus IT is helping them to use the data they own to make smarter and perhaps quicker business decisions. Examples include:

- Retail stores deciding which customers to invite to their private shopping evening
- Whether the rate of decrease in the number of outstanding defects on a soon to be released product necessitates a delay in the launch.

Technology architectures (more of this in section 3) enable data generated by users to be shared within the organisation. This enhances the decision making process.

The informating aspects of IT are very much in vogue today, with a strong leaning towards customer/market-focused intelligence.

So in a nutshell IT exists to either automate or informate.

What is an IT system?

In essence it is a collection of technologies that enables an organisation to:

- Automate certain activities
  - For example letter writing
- Informate certain activities
  - For example detecting customer-buying patterns.

To answer this question in a more dry and technically focused manner, an IT system comprises a collection of hardware and software components that enable an organisation to carry out one or more business functions.

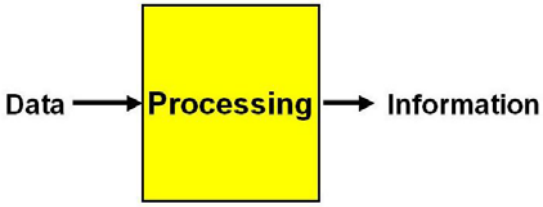
For a home user, their IT system may just be a PC running a word processor. For a multinational organisation, their IT system may comprise many computers linked together across the planet.

How do IT systems work?

It's really quite simple. If we think of an IT system as a 'black box', actually it could be a 'white box', the point is that you can't see inside it and aren't particularly interested in what is inside it. Think of this box as representing the IT system.

Essentially the role of this box is to convert data into information. That is to say:

- The data is put into the system (input)
- The box cleverly processes the data
- When the users need to access the system useful information comes out (output).



1.1 An IT system

So for example employee records are added to the IT system and at some point in the future a user wants to know how many people are due to retire this year. So it could be said that data, for example a stack of resumes, is not particularly useful, but information, ie. a specific query related to that data is of use. So one of the key roles of the computer is to convert data into information.

This begs the question so how does the transformation of data to information take place. Well that is where software comes into play. The role of (application) software is to primarily convert data into information. More generally software is the stuff that makes the hardware do things. Without software your computer would be merely an inefficient yet expensive room heater.

Administrative systems

The example I have given here is of what might be called an administrative or databased system. These systems usually take their input directly from a user or from another system. Information is obtained from the system as and when needed.

Real-time systems

The alternative type of system is known as a real-time system. Such systems respond instantly to an external stimulus. To fail to do so could have a catastrophic impact on the user/user's organisation. The IT systems embedded within modern cars are designed to operate in real-time. Consequently your brakes respond at the time you apply them, rather than at some point in the future. Typically real-time systems are always 'on guard' awaiting input, which can come from a user (applying the brakes) or an external stimulus (the temperature drops below 17^{o} centigrade, so causing the air conditioning heater to kick in).

Ten years ago the only people interested in real-time systems would have been the military or those involved in some form of process control (eg. car manufacturing). Today we all encounter real-time systems. Examples include:

- Mobile phones
- Cars
- Air conditioning
- Financial data feeds.

In summary IT systems use software, which runs on hardware to convert data into information. In some cases this information may give rise to an action, for example the application of the brakes to the wheels of your car.

What are the key elements of an IT system?

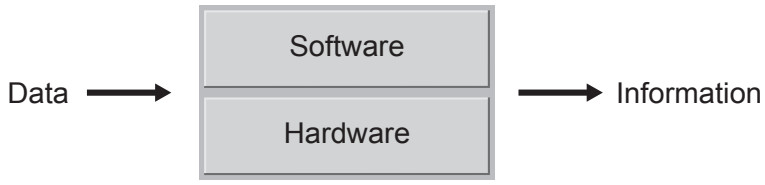
We have already mentioned that IT systems are made up of hardware and software. That's really it.

If the IT system is for a single user then the hardware will most likely be a PC or an Apple iMac, or even a Palm Pilot. However if the system is for multiple users then it is most likely that these user devices will be connected to larger computers that serve

up, or simply provide, access to shared resources such as email, files, databases and even the web.

Such computers are for this reason known as servers. User devices and servers are linked to each other using network technology, which in its simplest form is just metal cabling. However advances in networking technology have added wireless and fibre optic cabling to the options we have when linking computers together.

It is worth highlighting that the clever bit of IT is the software. Software turns your PC into a word processor, games console, web browser or even a radio. The hardware simply provides the medium to enable software to do what it does. Thus the smart technology companies are migrating their offerings away from hardware and into software. Technology companies that do not take this onboard are in varying stages of terminal decline.

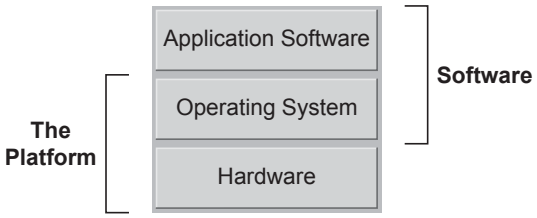


1.2 Elements of an IT system

The Fundamental Framework

We have mentioned hardware and software and their relation to each other. We will now explore these in a little more detail. Figure 1-3 reveals a number of interesting facts:

- Software is split into two layers, the operating system and application software.
- The operating system plus the hardware are often referred to as the platform.

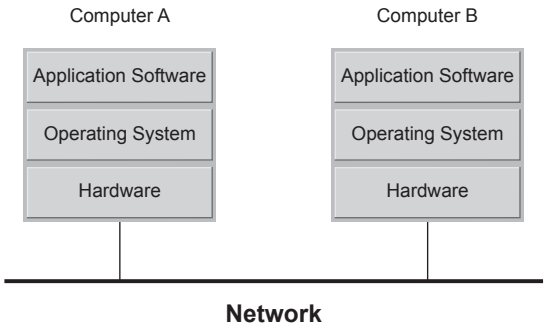


1-3 The Fundamental Framework

We will explore all of this in more detail in the remaining chapters in this section. But it is worth saying at this stage that operating system software makes the computer *usable*, but application software makes the computer *useful*. Consequently users only care about application software. This is the stuff that helps them do their work, quicker, better, more profitably. But application software needs a platform to run on, thus the IT department is focused on all three layers of the fundamental framework.

Please note that all computers have these three layers, from the tiniest palmtop to the largest super server. This diagram already applies to the very latest mobile phones. It will eventually apply to your television, fridge and bathroom cabinet. It is thus a diagram worth remembering.

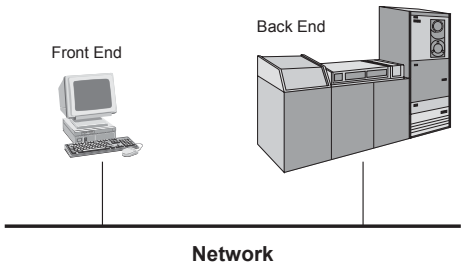
To complete the picture one really needs to take the networking side into account. Again the cleverness in networking actually resides in the computers and not the cable. This functionality is built into the operating system or resides in the card installed on the computer that connects it to the network.



1.4 Networked computers

Front and back-end

At this point it is also worth mentioning that IT systems can be subdivided into front-end and back-end. In short, front-end is the technology (both hardware and software) that the user directly uses and the backend is the technology that the user indirectly uses (via the front-end technology). Servers are an example of back-end technology. In a large organisation these will be housed within the perimeters of the IT department. In a smaller organisation it is possible to find the server hidden under cloths and dustpans in the broom cupboard. A whirring staircase is a dead giveaway.



1.5 Front-end and back-end

The remaining chapters in this section focus on the three layers of the fundamental framework.

In summary

- Businesses use IT systems to either automate processes and/or gain competitive advantage through using their data to anticipate trends.
- IT systems essentially convert data into information. Software makes this transformation possible
- Software needs hardware to function
- Software can be classified into operating system and application software

Test yourself?

1. Businesses use IT systems to:
    a. Impress clients
    b. Automate business processes
    c. Make key decisions
    d. Keep their IT staff employed.
2. A typical business user:
    a. Has very strong views on the choice of operating system
    b. Has relatively strong views on the colour of the hardware
    c. Only cares about the productivity enhancements delivered by the applications
    d. Are fascinated by the possibilities that may arise from the introduction of an integrated thin-client, utility based, heterogeneous web services architecture.
3. Software:
    a. Provides a platform from which to run the hardware
    b. Is just the aspects of hardware that are not hard, eg. the mouse pad
    c. Is where the real value of an IT system resides
    d. Is another name for a computer program.
4. The fundamental framework:
    a. Only relates to servers
    b. Is made up of hardware and software
    c. Requires the applications to be in place before the operating system will run
    d. Oracle is the number one fundamental framework supplier.

Buy the book – Click here.

Auridian Consulting Ltd.
PO Box 733
Great Missenden
Bucks HP16 9QJ UK

info@auridian.com
www.auridian.com

Copyright Auridian Consulting

Click here to find out more about the IT Demystified seminar