Lesson Proper for Week 15

INTRODUCTION

Complex IT systems play an indispensable role in many diverse areas. For example:

- Air traffic control
- Hospitals
- Nuclear power stations
- Toxic chemical plants
- Spacecraft
- Missiles
- Ships
- Defense

IT systems are also deployed to maintain government services, financial systems, stock markets, and communication systems. On the basis of reports relating to IT systems, it is readily apparent that reliability is often poor; in the case of some systems, this can have life-threatening ramifications. In a study on the state of IT project management, Sauer and

Cuthbertson (2003) report that only 16% of IT projects were considered to be successful. The report of a working group from the Royal Academy of Engineering and the British Computer Society (2004) (hereinafter referred to as RAE/BCS) presents a review, which estimates 'a phenomenal US$150 billion per annum was attributable to wastage arising from IT project failures in the United States, with a further US$140 billion in the European Union'.

Besides the financial costs involved with failed IT projects there is a high human cost which relates to the increasing reliance and complexity of software in safety-critical, business-critical and medical systems.

DEFINITIONS OF FAILED IT PROJECTS

The RAE/BCS report uses the term 'failure' generically for projects which 'fail to deliver all the key features and benefits to time, target cost and specification'. In conducting a survey of the literature relating to IT projects, Lyytinen and Hirschheim (1987) identified four major theoretical categories of project failure:

- **Correspondence failure** (failure to deliver in accordance with the specification)
- **Process failure** (failure to deliver within specified time and cost)
- **Interaction failure** (failure to deliver any key benefits, which implies that the system is hardly used)
- **Expectation failure** (failure to deliver any key features and benefits to time, cost and specification).

Although the Lyytinen and Hirschheim publication is somewhat dated, these categories remain valid and suggest that any project that fails to deliver an IT solution in accordance with the specification and within time and cost constraints should be deemed a failed IT project.

Below we provide several examples of failed projects:

- **The Strategic Defense Initiative:** This 'Star Wars' project dates back to the 1980s and perhaps denotes the most colossal computer-center project to have failed to date. The then US president Ronald Regan was determined to protect the US from nuclear attack and perhaps on the basis of his extensive lack of knowledge of computer technologies believed that these ‘infallible’ machines could solve any problem. The defense system represented a formidable undertaking – computer systems being empowered to make decisions of a potentially cataclysmic nature. Often human input or mediation would not be possible – decisions would have to be made rapidly – there simply would not be time to include humans in the decision-making process. How such a system could be tested – perhaps this key aspect should have been considered from the outset! The project was a total failure – although it was partially revived by President Bush in 2001.
- **Rural Payments Agency's failed IT project:** *Computer World* (2007) reports: 'The UK government has responded to a devastating report by MPs on the failure of an IT project to implement a new payments plan for farmers by saying it is "confident" a new management team can deliver.' The article goes on to say: 'The Rural Payments Agency's failed IT project to implement the Single Payments Scheme – which consolidates 11 separate EU subsidies – left farmers out of pocket by a total of up to £22.5 million (US$44 million), while the cost to Defra [the Department for Farming and Rural Affairs] is estimated at up to £500 million. The MPs called for former

environment secretary Margaret Beckett – now foreign secretary – and Sir Brian Bender, the former permanent secretary at Defra who now occupies the equivalent post at the Department for Trade and Industry, to be held accountable for the debacle.'

· **The Generic Clearing System (GCS) Project:** Andy McCue (2006) writes: 'Clearing house LCH.Clearnet has written off ¤47.8m after scrapping a failed three-year project to build an integrated clearing IT platform for the company.' He goes on to add: 'A review of the GCS program last year had already written off ¤20.1m on part of the investment after it failed to deliver any of the benefits originally promised and LCH.Clearnet said a further review last month has now concluded any further development of the GCS system is "not economically or technically viable".'

· **The Iraq War:** Matt Rogers (2007) suggests that some of the strategies that have been employed in Iraq reflect a failure in IT planning and a gulf between expectations and reality. He writes: '...if we sidestep the political arguments for a minute and look at the systems underpinning the war, there is plenty of evidence of what retired US Army Colonel Andrew Bacevich calls "the assumption among forward thinkers that technology – above all, information technology – has rendered obsolete the conventions traditionally governing the preparation and conduct of war". Bacevich's comments appear in *Fiasco*, the account of the Iraq War's strategic shortcomings written by two-time Pulitzer Prizewinning journalist Thomas E Ricks. Ricks chronicles several mistakes made by the US and its allies in Iraq, but many of the most dire ones are a direct outgrowth of new military efficiencies driven (supposedly, at least) by IT. For example, the US Defense Department's belief that the war could be fought with a relatively small number of troops can, at least in part, be attributed to a misplaced confidence in IT-related advances in warfare, such as better battlefield communications, more precise global positioning, and superior command and control capabilities.'

· **The NHS Computer Initiative:** In a *Sunday Times* article, Simon Jenkins (2005) writes: 'As long ago as 1997 *Computer Weekly* estimated that some £5 billion had been lost by Whitehall on botched computer projects. Consultants had found selling computers to ministers was like giving sweets to children. Labor claimed it would stop all this, but it did the opposite. Ministers traded up from candy to cocaine and are now hooked. The money being wasted subsidizing the computer industry far outstrips what used to be wasted on nationalized cars, steel, coal and shipbuilding. Government computers are the new lame ducks.' He goes on to say: 'The NHS computer was supposed to list everyone in the country with their various ailments so any doctor or hospital could treat them "on screen". Nobody ever asked for this machine, which was supposed to start in 2004. It was a pure top-down sales pitch. The medical establishment pleaded naively that the cost not be met from other health spending. The price soared within a year to £2.3 billion and is now £6.2 billion, with no known delivery date.' Although this system was finally delivered, failure is implied by the massive cost overrun and non-conformance to the delivery date. Jenkins writes: 'These computer fiascos come on top of similar ones with the Child Support Agency, the Criminal Records Bureau, the Passport Agency, the benefits card, traffic control, the e-university and countless others. All suggest a government in thrall to fee-driven consultants and computer subcontractors.'

The ethical issues involved

The issue of project failure and its potentially disastrous consequences raises a number of questions, which have ethical, legal and professional aspects:

· Why can't we build computer systems with the same inherent reliability that we find in other designed artefacts such as bridges and buildings?

· Why software is not guaranteed in the same way that other purchased goods are?

· Why does so much poor-quality software exist and how can so much of it appear in important systems?

· Should we entrust responsibility for the conduct of military warfare, the control of massive energy sources and even (inter) national economies to computer systems that are less than totally reliable?

Since the late 1960s, issues relating to our inability to produce high quality software within an agreed time frame and at an acceptable price have been the subject of intensive research and debate and led to the establishment of the software engineering discipline. The RAE/BCS stress that difficulties encountered in IT projects often arise due to individuals in both the customer and supplier organizations failing to follow good practice. This is viewed as a 'general absence of collective professionalism in the IT industry'. The chances of a successful completion of a project are improved if all individuals, on both the customer and supplier sides, implement good practice. Many professional bodies, including the BCS and IEJ, advocate the importance of good practice in the development and

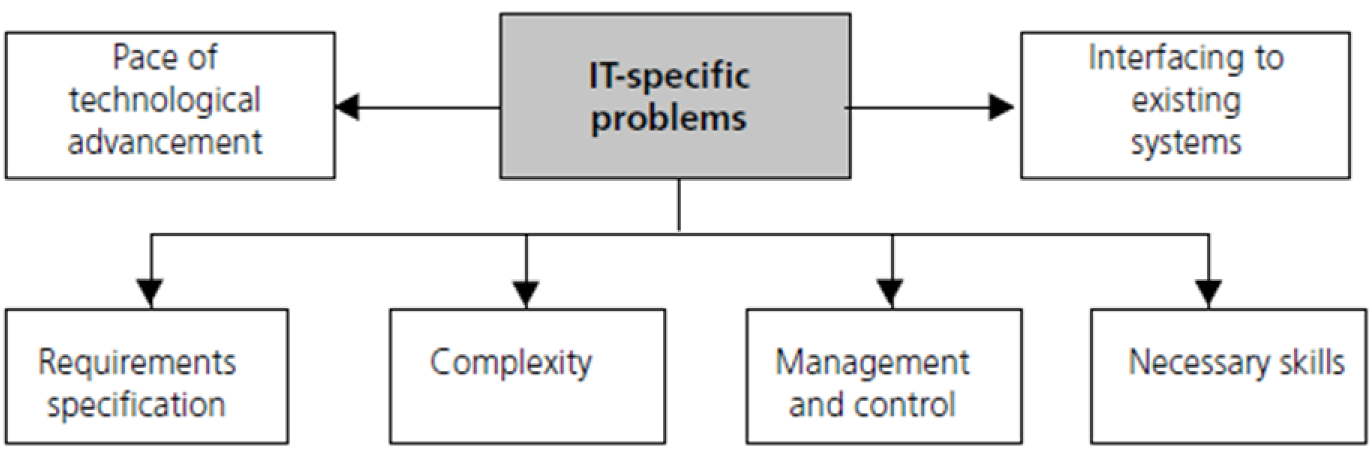

Figure 10.1: Some of the IT-related problems that (unless properly handled) are likely to negatively impact on an IT-center project

· **Rapidly advancing technology:** IT differs from other projects in that the technology used is developing rapidly. Three important implications to note are:

1. A supplier may oversell a technology to a customer by taking advantage of the lack of knowledge and experience the customer may have of the latest IT developments.

2. Due to rapid technological advances, a project may become obsolete before its deployment.

3. There is often a tendency, both on the customer and the supplier sides, to desire cutting-edge solutions. Such solutions will carry a greater risk when compared to the alternative of using tested commercial 'off the shelf' products.

· **Defining requirements:** explicitly stated, fixed and understandable user requirements increase the chances of success. Any changes to user requirements, however simple, may require a fundamental redesign of the system. This might have significant time and cost implications

· **Complexity:** large-scale IT projects can be extremely complex and may necessitate the production of millions of lines of software code. To predict all possible states, including error states, that such a system might take is infeasible

· **Oversight:** it is difficult for management (especially non-technical managers) to judge the quality and completeness of software as it is being developed. Providing oversight in the years between project initiation and implementation can be very difficult

· **Interoperability:** more often than not, an IT project may include interfacing to other systems. This can be very challenging

· **Limited skills:** the BCS suggests that a better-regulated computing profession may improve the competence and quality of those involved in the development of IT systems. Currently, many software developers do not have formal qualifications in the subject nor the necessary experience to be involved in IT development.

Common causes of project failures

A study, conducted by the National Audit Office and Office of Government Commerce, identified the eight most common causes of IT project failure as follows:

· Lack of a clear link between the project and the organization’s key strategic priorities, including agreed measures of success

· Lack of senior management ownership and leadership

· Lack of effective engagement with stakeholders

· Lack of skills and proven approach to project management and risk management

· Lack of understanding of, and contact with, the supply industry at senior levels in the organization

· Evaluation of proposals driven by initial price rather than long-term value for money (especially securing delivery of business benefits)

· Too little attention paid to breaking development and implementation into manageable steps

· Inadequate resources and skills to deliver the total portfolio.

HOW THE PROFESSION IS ADDRESSING THE PROBLEM OF IT FAILURE

Improving the chances of IT project success can be viewed at both the micro and macro levels. At the micro level, RAE/BCS suggest some measures that individual companies and project teams can take. At the macro level they advocate recommendations aimed at advancing key facets of the national IT project management capability.

Measures that individual companies and project teams can take Individual companies and project teams can improve their chances of delivering a successful IT project by considering the following factors:

- **Client/supplier relationship:** it is advisable that both money and time are invested in the supplier selection process. A supplier's capability must be assessed alongside cost
- **Contractual arrangements:** the terms of a contract between customer and supplier must reflect the uncertainty associated with development and deployment of IT systems and also apportion the risks appropriately
- **Evolutionary project management:** the consensus among IT practitioners is that projects should be managed by rapid learning cycles as opposed to sequential methods of project management
- **Requirements management:** both functional and performance requirements need to be explicitly stated. The requirements definition is one of the most critical and challenging phases of the project
- **Change management:** changes often occur in large-scale IT projects, and an appropriate contingency plan must be in place from the outset, which will define what will be done if alterations to the scope of the project are involved
- **Measuring progress:** a clear plan must exist at the outset of the project which defines objectively measurable milestones related to the overall project deliverables
- **Risk management:** it is vital that in successful project management, risks are identified and managed accordingly. Crucial elements of risk management include:
- Learning lessons from past projects and problems
- Taking account of organizational culture
- Limiting the degree of novelty to be introduced into a project
- Anticipating software upgrades
- Comprehensively planning testing activities
- **Technical issues:** the main technical issues that should be taken into consideration are:
- Requirements capture
- Systems architecture
- Integration
- Reuse
- Verification and validation.

Chartered IT professionals

The BCS defines what it means to be a chartered professional, as follows:

· They will take personal responsibility for their actions, which will be bound by the Code of Conduct

· They will normally be educated to a four-year degree (or equivalent level), where the course of study should be accredited by a professional body

· They will then be required to demonstrate their technical and managerial competences over four to five years, which must be peer-approved

· They are also required to maintain their professional competence throughout their active professional careers, for example via the CPD program.

To increase the likelihood of a successful IT implementation, IT professionals are required to be competent in a number of areas including:

· Project/program management

· Systems design, development and operation

· Relationship management

· Security and safety

· Change management

· Software engineering

· Systems maintenance

· Quality assurance and control.

Many of the computer-related professional bodies of other nations also provide certification programs which involve members in continual education and skills development.

Graduation Announcement

BESTLINK COLLEGE OF THE PHILIPPINES

ANNOUNCEMENT

Due to the insistent demand of BCP graduates and alumni and the IATF pronouncement of the low Alert Level Status, and in coordination with the DepEd and CHED, the BCP Administration is happy to announce that face-to-face graduation rites will proceed as scheduled.

Level	Date of Graduation	Venue	Graduation Fee	Downpayment
SHS	July 16, 2022	MV Campus	P 1,000.00	P 200.00
College	July 10, 2022	PICC	P 4,000.00	P 500.00

Balance must be paid two (2) weeks before the date of graduation.


BESTLINK COLLEGE
OF THE PHILIPPINES
SCHEDULE
GRADUATION PHOTOSHOOT
College Department Batch 2021-2022
(Main Campus)
May. 23 & 30 - CRIM
May. 24 & 31 - EDUC
May. 25 & Jun. 01 - BSBA/BSOA/BSAIS/ENTREP
May. 26 & Jun. 02 - BSIT/BLIS/BSP/BSCpE
May. 27 & Jun. 03 - BSHM/BSTM
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Activities

- Assignments
- Forums
- Quizzes
- Resources