

COMP1787 Requirements Management

Lecture 1: Systems Failures



Dr. Aditi Rawal

Introduction to the Module

This module will introduce you to key issues associated with management of requirements. Quality Information systems are critical to the success of today's organisations. Underpinning the development of such quality systems is the successful management of the requirements engineering cycle.





Learning Outcomes



Analyse and compare current approaches to requirements management within a development environment



Assess the impact of stakeholders and organisational culture on the development of effective requirements and system development



Relate issues associated with risk, quality, and Legal/Social/Ethical/Professional (LSEPI) to a practical scenario



Assessment



Report - 100% weighting (3000 words). A case study-based report that uses requirements management tool and techniques learnt.



The coursework submission deadline is Tuesday 11 April 2023.



The overall pass mark for this module is 40%.



Teaching Schedule

- COMP1787/Tutorial/01-01 – QM168, 14:00-15:00
TUTORIAL Dr. Nageena Frost
- COMP1787/Tutorial/01-02 – QM245, 14:00-15:00
TUTORIAL Dr. Irfan Chishti
- COMP1787/Tutorial/01-03 – QM068, 14:00-15:00
TUTORIAL Dr Aditi Rawal
- You are expected to attend only ONE tutorial
allocated to you.

The timetabling for these tutorial sessions will come through, so don't worry for the first week.

Background to Systems Development



- In order for a system to be considered *successful* it needs to essentially do two things:
 1. Meet the users expectations (Quality target)
 2. Be delivered on time and to budget (Productivity target)



Quality Targets

The system meets the requirements specification (i.e., it serves the purpose for which it was originally intended)



these targets relate to

an understanding
of the business
area

the user
requirements

the organisational
constraints

other
environmental
factors

Quality issues resulting in unsuccessful systems





Productivity targets



The system is delivered **on time** and **within budget**.



These targets relate to:

- successful management of the project,
- from inception to implementation

Productivity issues resulting in unsuccessful systems



- Users change their minds
- External events may occur that change the requirements
- Implementation may not be feasible

Another general cause for an unsuccessful system may be poor project control.



Systems Failures (1)

- Unsuccessful systems are not new.
- The complexity of a system does not necessarily relate to its chances of success or failure.
- Central criticism of information systems has been (and still is) that:
 - *many systems do not do what their users require and thus fall into disuse.*



Systems failures (2)

- Early problems of quality and productivity discussed in the Garmisch conference (1968)
 - getting requirements right,
 - designing adequate architectures,
 - doing implementation effectively and correctly,
 - verifying the quality of the result, and
 - maintaining software systems with targeted functionality and high code quality over long time periods and to further develop them.



Systems failures (3)

- Department of Trade and Industry (DTI) report (1983) showed that:
in the UK of 15 organisations, only a half found job reductions after computer systems were introduced. In some cases, many jobs were created.
- DTI report (1985) found that:
time-scale overruns occurred in 66% of projects. 55% were over budget.



Systems failures (5)

- KPMG (1990) quoted:

Runaway systems concerned over 30% of all major projects.

Major effects of these systems were:

- *Loss of time*
- *reduction in staff morale*
- *loss of money*
- *customer satisfaction*
- *a negative market image*

Systems failures (6)



More failures:

- KPMG report for the 2019 survey:
 - 19% Of organisations deliver successful projects, at least most of the time
 - 35% of organisations are likely to deliver projects that are on budget

(Source: <https://www.ipma.world/assets/PM-Survey-FullReport-2019-FINAL.pdf>)



Systems failures (6)

- Many high-profile failures published in the 1990s.
 - Many of these systems in the public sector
 - Social security payments system (Pathway)
 - *blighted from the outset*
 - *cost £1billion taxpayers money (written off in the end) according to National Audit Office.*
 - *Should have been delivered in 1997*
 - *Finally scrapped*



Systems failures (6)

- More system failures thru the 1990s
 - London Ambulance system
 - Classic example of poor analysis and design
 - Complete misunderstanding of the environment and *Human Activity Systems*
 - Loss of lives and £7.5 million
 - Housing benefit systems
 - Millions wasted before realisation that integration of different procedures between different councils required understanding of the business processes



Systems failures (7)

- The Millennium has also seen many system failures
- Child Support Act (CSA) system
 - Went live in March 2003
 - Was two years late and didn't work properly
 - Thousands of parents still waiting for files to be moved to new system
 - After awarding the system to EDS the CSA dept gave them over 2,500 changes to the system design



Systems failures (8)

- Libra magistrates court system
 - Cost £390 million
 - Supposed to deliver *a unified case management system to Magistrates courts in England & Wales*
 - Started in 1992. In September 2004 decided that *it is unfit for purpose*



System failures (9)

- **NHS UK's National Programme for IT (NPfIT)**
 - 12.4 billion programme
 - Plagued with problems from outset
 - Systems didn't do what the users wanted it to do (little consultation)
 - Emphasis was placed infrastructure and not on users needs
 - Too many contractors (making money for themselves)
 - 22nd September 2011
 - The Cabinet Office's Major Projects Authority reported that " it has not and cannot deliver to its original intent".



Systems failures (10)

- National Offender Management Information System (NOMIS) 2009
 - Joint project by Home Office, the Ministry of Justice
 - Developed by EDS
 - Purpose to provide a single database of offenders, to help with their management, from court appearances to release, and sometimes beyond that
 - Loss of £690 million taxpayers money and later abandoned

Cont...



- But the National Audit Office (2009) found:
 - there was so little control of C-Nomis that the government spent £161m on systems without anyone knowing how or exactly on what.
 - The system development was guilty of ‘basic’ project management failures



System failures (11)

- FireControl

- 20th September 2011: “The doomed attempt to streamline fire control services in England is one of the worst cases of project failure’ the Public Accounts Committee has seen” its chair said today.
- A minimum of £469 million spent on it since 2004 and has now been wasted.

Cont



- Main reasons for its failure:
 - the project was launched too quickly
 - decisions taken before a business case or procurement strategy had been developed and tested.
 - There was an over-reliance on external consultants
 - A high turnover of senior managers, none of whom have been held accountable for Fire Control's failure.



Systems Failure (12)

- COVID Test and Trace (2020)
 - A total of £10bn was allocated by the government to spend on a national test and trace system, with private contractor Serco handed a leading role.
 - GPs and primary care teams should have played a key role in the UK's efforts to test, track and trace coronavirus, according to a leading global health expert who has labelled the current system 'a disaster and a national shame'.
 - Primary care had been 'bypassed totally' in the government's strategy to tackle the virus



Should systems still fail?

- We have highly educated development staff.....
- We have IT literate users
- We have many different methodologies to support the life cycle across a wide range of different applications
- We have tried and tested technologies and development platforms

So, Why Do Systems Still Fail?



Any development framework/method, can only be used as a guide.

Each organisation is unique with its own needs and problems.

Each set of end-users is unique with its own aspirations and concerns.

Developers still often focus too much upon the software development and not upon the requirements analysis

Human Factors in Systems Development



Role of end-user is significant in successful development of an information system.



Modern methodologies stress technological development but ignore human factors.



Role of analyst is not only to elicit information system requirements but also to analyse the human environment to be supported by the system

Organisational Factors



Situational
factors: Top-
down “Vanity”
projects

Stakeholder
Engagement

Organisational
Issues:
Balancing Risk
and Reward

Development
methods
currently used

Checks and
Balances:
Course
Correction



In conclusion...

- A successful system meets two targets:
 - Quality target
 - Productivity target
- Many systems still fail
- Focus tends to be on technology and software development and not on end users and their requirements