MSc Information Systems

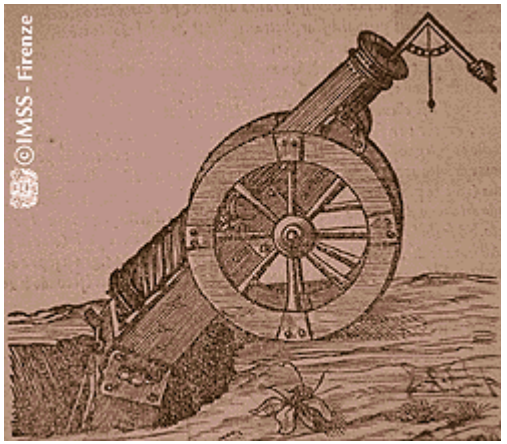
Information Systems in Everyday Life

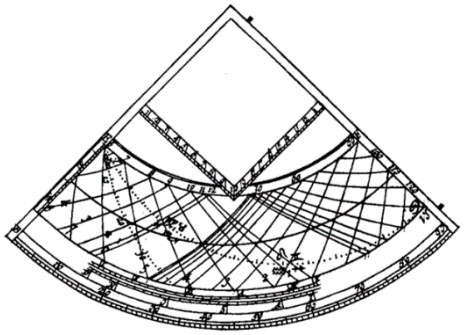
Module SITS code: COIY059H7

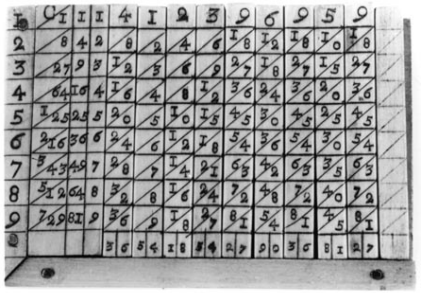
Dr Brian Gannon

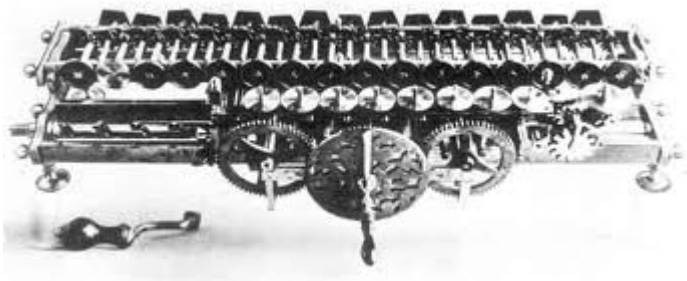
Early Information Systems

Early information systems evolved to help with basic arithmetical, commercial and military applications









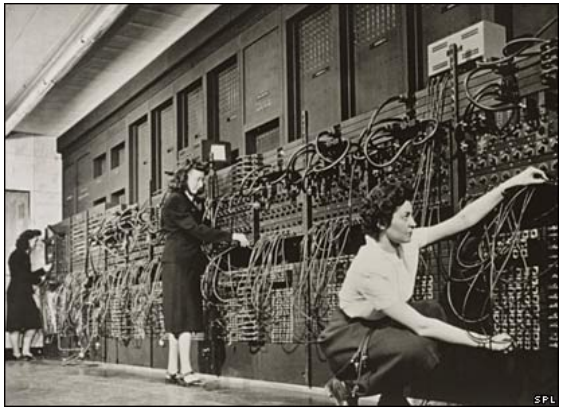
Electromechanical Information Systems

- In the last century, large electromechanical information systems were developed to perform increasingly complex mathematical, scientific and military applications
- WW2 spurred the development of the forerunners of modern electronic computers, such as the Colossus and the ENIAC
- In the latter part of the last century, the first large scale electronic computers for commercial customers became available

The Harvard Mark I

Harvard Mark 1 (c. 1940)

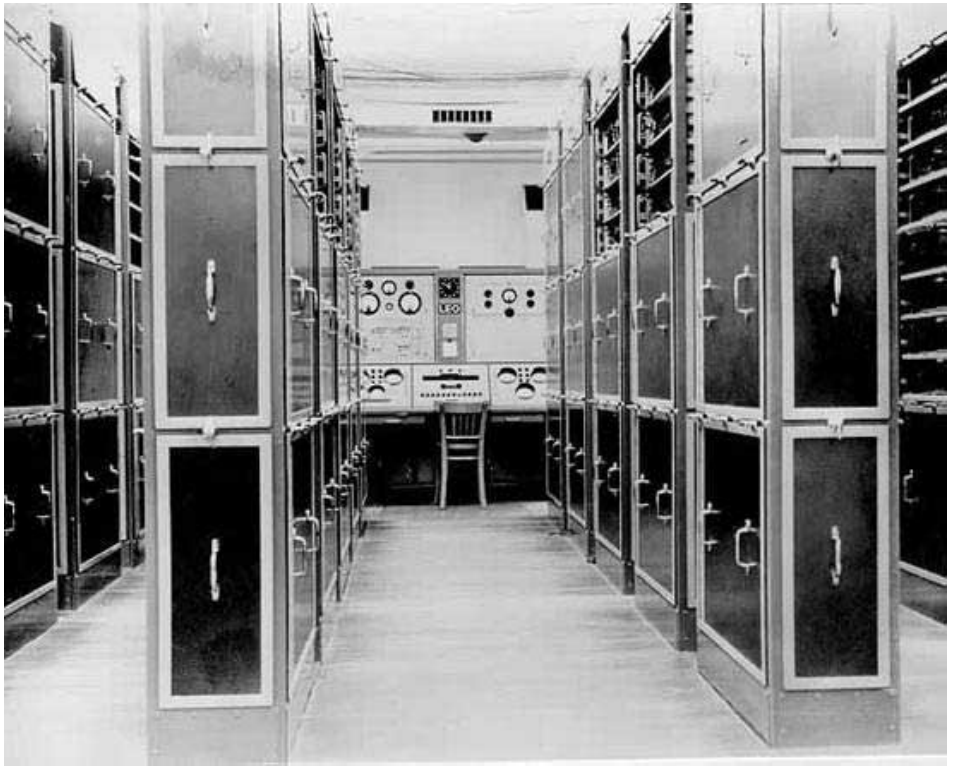
Colossus (1940 – 45)



IBM 360 Series (1964)

The First Enterprise Information System - LEO

- Commissioned in October 1947 by J. Lyons & Company (famous for Lyons teashops)
- Multiple i/o buffers to handle large volumes of input and output data
- Initially used for bakery valuation – the first ever commercial computer application – Nov 29 1951 – and later used for payroll, inventory and other applications
- Spun out from Lyons and eventually became part of ICL



Software in Corporations

- In the early days companies could write their own software themselves; get it from a manufacturer; or share programs with other companies.
- Corporate computing was rare & expensive. Corporations created ‘data processing’ departments staffed by computer programmers.
- Many firms used external specialists – ‘software contractors’ and ‘software houses’. These grew rapidly in the 1960s.
- Computer services companies developed ‘pre-packaged software’ to meet demand. This was sold or licensed to corporations – so a software product market was created.

BIZMAC electronic data-processing system installation, Camden, New Jersey

Minicomputers (c. 1960)

Minicomputers made computing accessible to non-specialist business workers, and were affordable for small businesses

DEC PDP/11

Personal Computers (c. 1980)

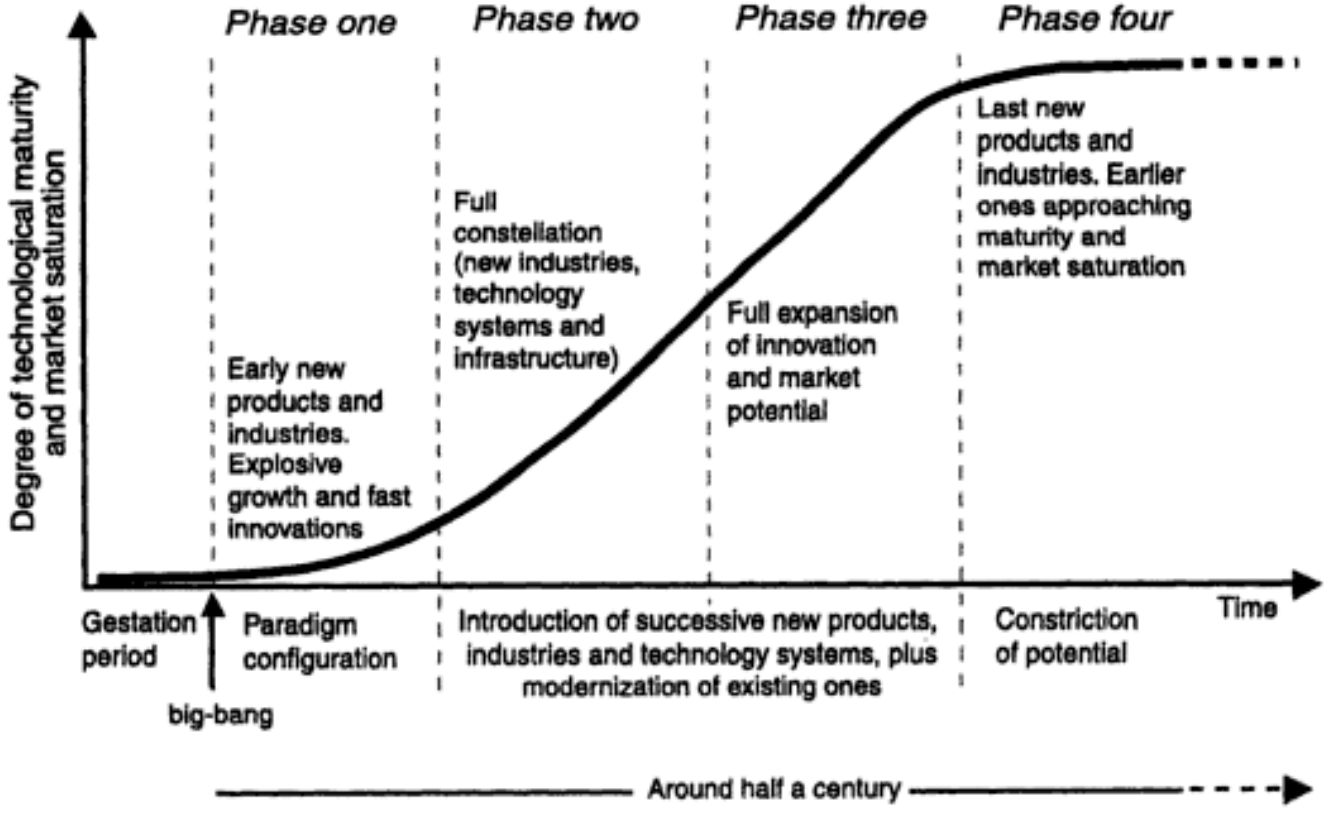
Personal computers introduced mass computing power to businesses and consumers

Compaq Portable III

IT Departments and IS Professionals Today

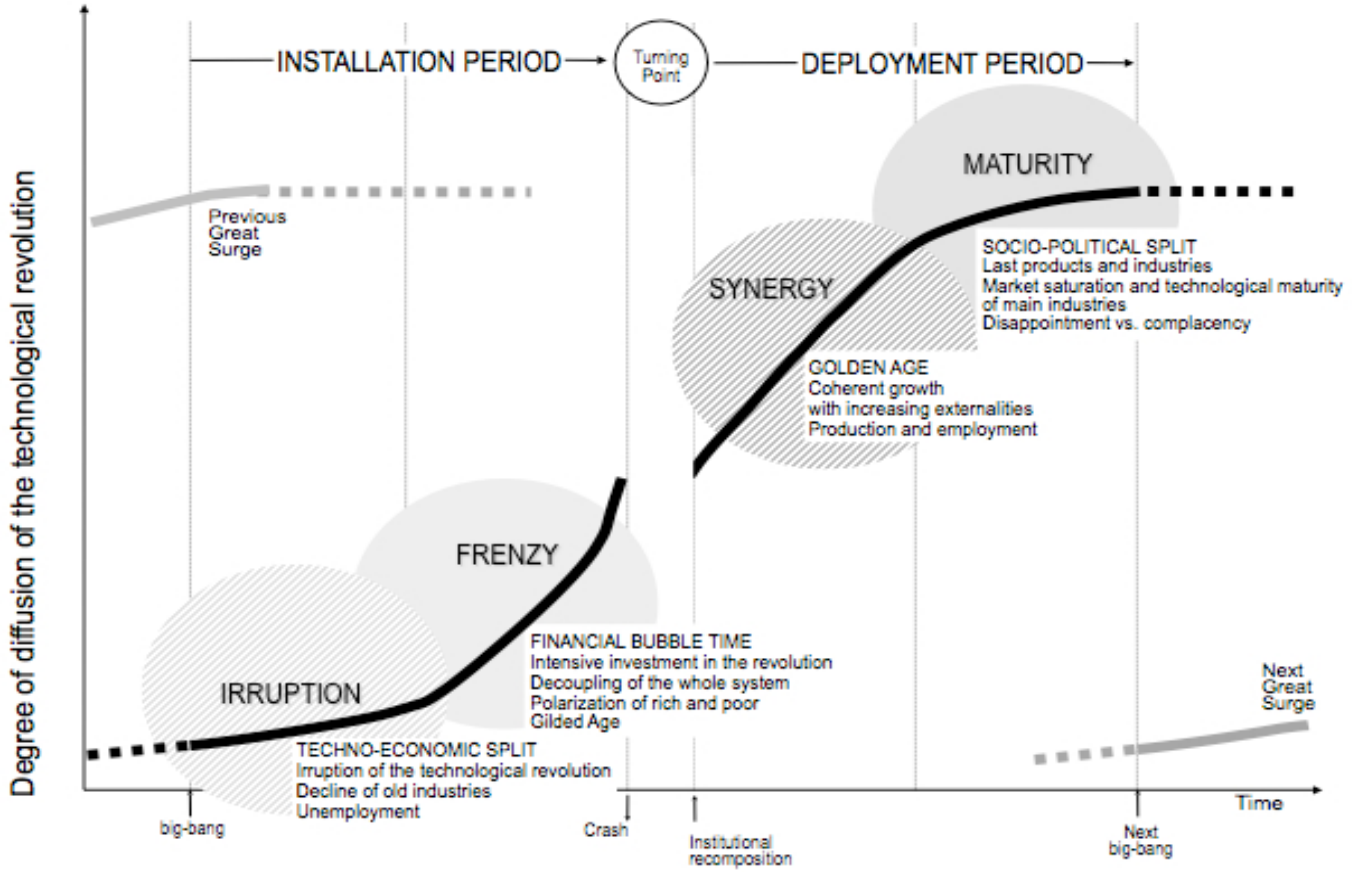
Context of Current IS – Technology Revolution and Financial Capital

Figure 3.1 The life cycle of a technological revolution



Context of Current IS – Technology Revolution and Financial Capital

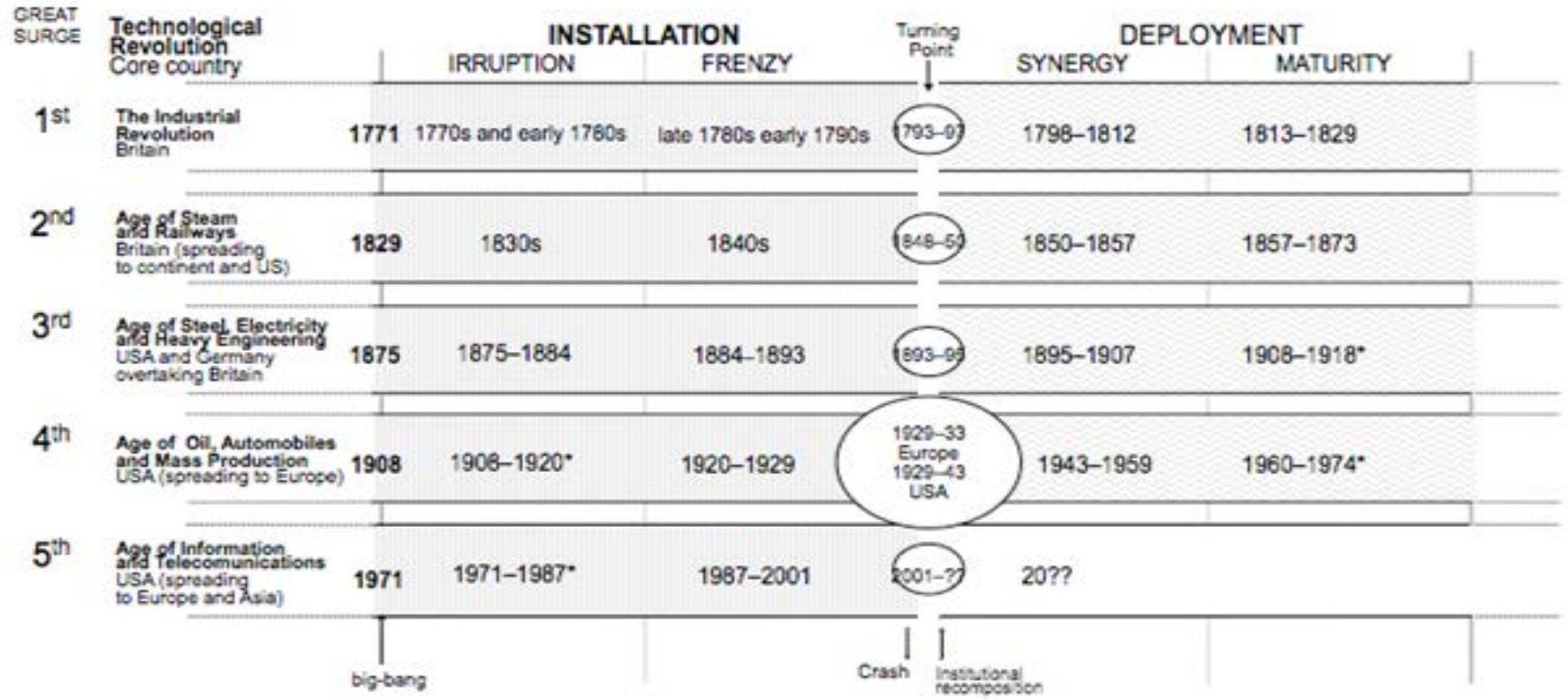
Figure 5.1 Recurring phases of each great surge in the core countries



Carlotta Perez – Technology Revolution and Financial Capital

Context of Current IS – Technology Revolution and Financial Capital

Figure 5.2 Approximate dates of the installation and deployment periods of each great surge of development



Note: * Observe phase overlaps between successive surges.

Carlotta Perez – Technology Revolution and Financial Capital

Information Systems Complexity

IS are hugely complex, new and fast-changing

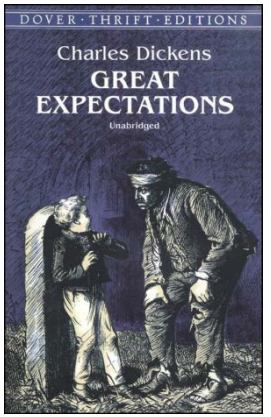
The central enemy of reliability is complexity.

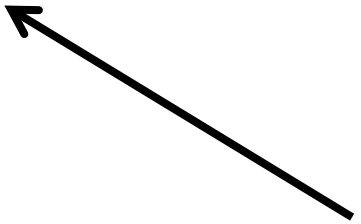
Geer *et al.*

Geer, D; Pfleeger, C.P., Schneier, B., Quarterman, J.S., Metzger, P., Bace, R., Gutmann, P. “Cyberinsecurity: The Cost Of Monopoly: How The Dominance Of Microsoft’s Products Poses A Risk To Security”, 2003, Computer & Communications Industry Association
http://cryptome.org/cyberinsecurity.htm

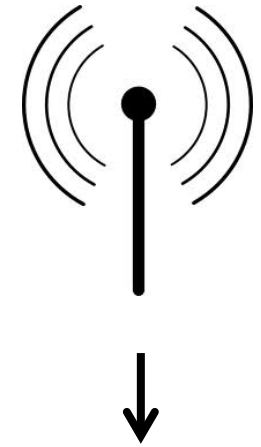
Information Systems Complexity

Buying a book on Amazon





Information Systems Complexity



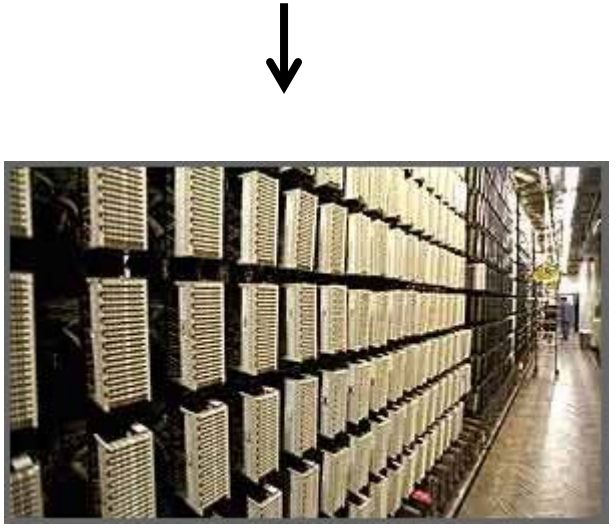
Laptop: >1,000 components, including CPU, display, memory, cooling, keyboard, controllers, network adapters, machine code…

Windows XP: >45 million Source Lines of Code (SLOC)

Firefox browser: >14 million SLOC; >30 different languages

Router: >300 components, networking software, interface ports, machine code…

Information Systems Complexity

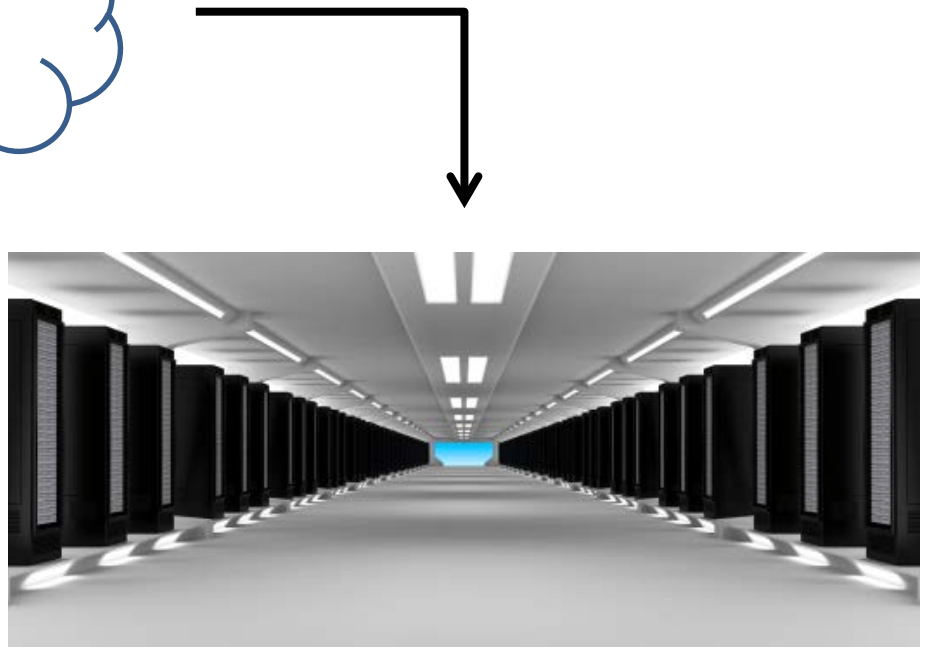


Local loop: several kilometres of copper wire, passing through several patch panels, switches…

Telephone exchange: sophisticated specialised computer: millions of lines of code, thousands of components….

Global Telecommunications Network

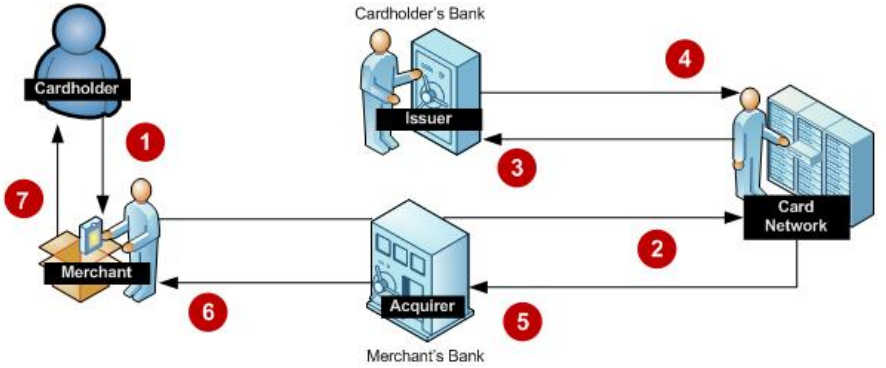
Information Systems Complexity



Global Telecommunications: hundreds of kilometres of copper/fibre; satellite /microwave links; routers/switches/computers…

Amazon Data Centre: thousands of servers, specialised application software; billions of lines of code, thousands of interfaces, state of the art (dark room complex)….

Information Systems Complexity



Payments Systems

International payments systems: hundreds of fault-tolerant computers; sophisticated rapid software; secure databases; validation and verification routines; retail banking systems…

Reconciliation/ Back Office Systems

Accounts/General ledger; Contract/legal; document management systems; CRM software; HCM software

Warehouse Systems

Dedicated application software for inventory management; stock control; robot management systems for pick-listing; pack and load systems; staff scheduling; goods in/out

Information Systems Complexity

Distribution Systems

International logistics; fleet management; load scheduling; order and dispatch; scheduling; Customs/Excise; Payments

Local Delivery Systems

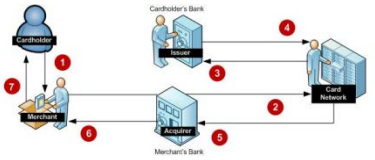
National logistics; fleet management; local delivery scheduling

Information Systems Complexity

amazon.com

Consumer Technology

Networks



Payments Systems

Warehouse Systems

Distribution Systems

Reconciliation Systems

Information Systems Failure

"31.1% of <IS> projects will be cancelled before they ever get completed."

"Further results indicate 52.7% of projects will cost 189% of their original estimates."

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NPfIT Dismantled: UK Government Announces End of its £12.7 Billion National Electronic Health Record Program

Thu, September 22, 2011

The London Daily Mail reported this morning (and which was officially confirmed this afternoon local time) that the UK's electronic health record [EHR] program called the National Programme for IT (NPfIT), aka Connecting for Health, was going to be "urgently" dismantled.
The NPfIT was once called by the National Health Service "the world's biggest civil information technology programme," and will at least for now, also hold the record for the largest failed IT program in the world

According to the Department of Health press release:

"The government today announced an acceleration of the dismantling of the National Programme for IT, following the conclusions of a new review by the Cabinet Office's Major Projects Authority (MPA). The programme was created in 2002 under the last government and the MPA has concluded that it is not fit to provide the modern IT services that the NHS needs."

Exactly how much has been spent on the NPfIT is not known. Estimates start at about £12.7 billion and go up from there. I doubt that the true cost will ever be known, especially the substantial developmental costs absorbed by the main suppliers and never billed for (often because they couldn't deliver what they promised).

http://spectrum.ieee.org/riskfactor/computing/it/npfit-dismantled-uk-government-announces-end-of-its-127-billion-national-electronic-health-record-program

Faulty Soviet Early Warning System, 1983

Lt Col Stanislav Petrov:

“… So what did you do?' she asked me.

'I did nothing."

http://en.wikipedia.org/wiki/Stanislav_Petrov

Information Systems Failure

Project Challenged Factors	% of Responses
Lack of User Input	12.8%
Incomplete Requirements & Specifications	12.3%
Changing requirements and specifications	11.8%
Lack of executive support	7.5%
Technology incompetence	7.0%
Lack of resources	6.4%
Unrealistic expectations	5.9%
Unclear objectives	5.3%
Unrealistic timeframes	4.3%
New technology	3.7%
Other	23.0%

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Information Systems Failure

"Our earlier research elaborated on the symptoms of information systems project failure in three specific areas: **frequent requests by users to change the system**; **insufficient communication between the different members of the team working on the project and the end users (stakeholders)**; and **no clear requirements definitions**.

Whilst communication between team and end users was still perceived as an issue within some projects; the top three issues from this study are: **business process alignment**; **requirements management**; and **overspends**."

A Study in Project Failure - Dr John McManus and Dr Trevor Wood-Harper (2008)

http://www.bcs.org/content/conwebdoc/19584

Questions

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