



MSc Information Systems

Introduction

Module SITS code: COIY059H7
Dr Brian Gannon

Introduction: Participants

me	Dr Brian Gannon
career	Computer Engineer, Academic
you	?

Timetable – Autumn Term

Week	Date	Lecture	Comment
1	5/6 Oct	Introduction	Overview of module; lecture schedule; definition of IS
2	12/13 Oct	Information Systems in everyday life	Context of Information Systems; why they go wrong so often
3	19/20 Oct	Structured Programming and the Systems Development Life Cycle (SDLC)	Definition, rationale & history of SDLC; Object Oriented Design
4	26/27 Oct	NO LECTURE	Double FoC lecture
5	2/3 Nov	Agile Development	Context; Benefits; DSDM; SCRUM; Techniques; Limitations
6	9/10 Nov	Project Management (P1)	Project Identification and selection; Project Management
	9/10 Nov	User Requirements (P2)	Requirements Analysis
7	16/17 Nov	Business Process Modelling (A1)	Unified Process, Use Cases and Activity Diagrams
8	23/24 Nov	Structural Modelling (A2)	Class Diagrams & Object Diagrams
9	30 Nov/1 Dec	Behavioural Modelling (A3)	Sequence and Communication Diagrams; State Machines
10	7/8 Dec	Case Study - DoubleVision	Use Case Exercise & Solution
11	14/15 Dec	In-class Test	

Timetable – Spring Term

Week	Date	Lecture	Comment
1	11/12 Jan	Case Study – Campus Rentals	Class Model Exercise & Solution
2	18/19 Jan	Design Fundamentals	Moving from Analysis to Design
3	25/26 Jan	Class, Method & Data Layer Design (D1)	Class & Method and Data Layer design
4	1/2 Feb	Human Computer Interface Design (D2)	UI design
5	8/9 Feb	Architecture (I1)	Architecture
6	15/16 Feb	Reading Week	No Lecture
7	22/23 Feb	Construction (I2)	Construction
8	1/2 Mar	Installation (I3)	Installation; Change Management; Post-implementation
9	8/9 Mar	Professional Issues in Computing I	Contracts & Intellectual Property
10	15/16 Mar	Professional Issues in Computing II	Information Surveillance & Computer Misuse
11	22/23 Mar	Professional Issues in Computing III	Data Protection & Freedom of Information

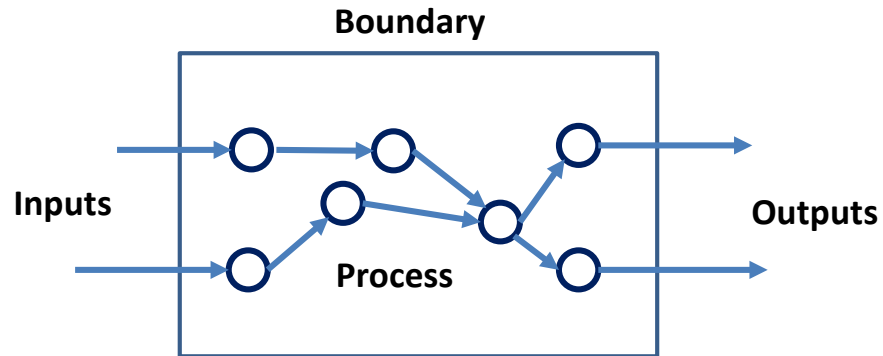
Assessment

- Exam (80%)
 - Two hours
 - Series of short essays
 - Modelling exercises
- In-Class Test (20%)
 - 1 hour essay
 - Topic related to lectures
- Past Exam Papers are in the Birkbeck Library at <http://www.bbk.ac.uk/lib/elib/exam>

What Is A System?

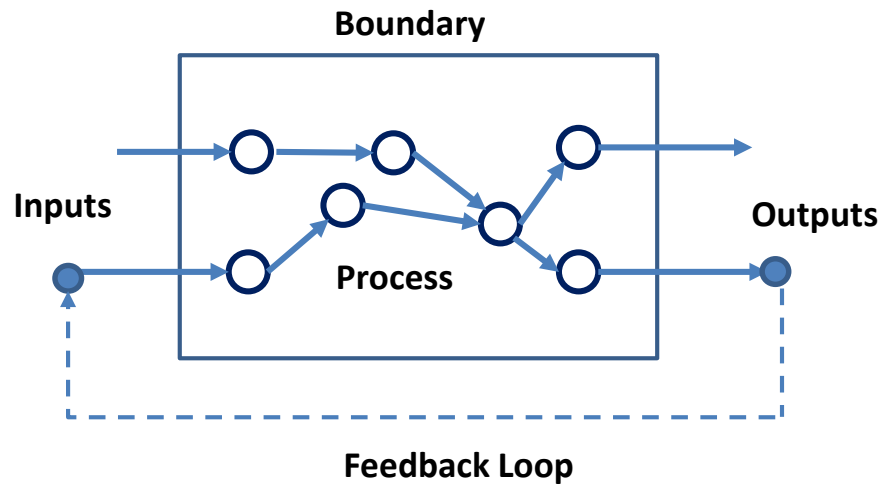
- a set of things working together as parts of a mechanism or an interconnecting network; an assembly of parts or components existing together in an organised way.
- a complex whole: for example, *the railway system*
- a set of principles or procedures according to which something is done
- general systems theory developed first by *von Bertalanfy (1968)*; significant developments by Churchman, Beer, Ackoff and Checkland

What Is A System?

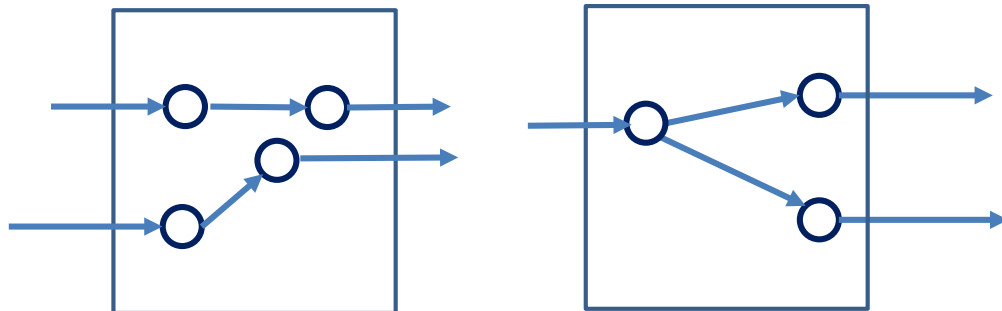


- Systems generally have **INPUTS, OUTPUTS, PROCESSES, BOUNDARIES**
- There are many different types of system (Open/Closed; Deterministic/Stochastic; Tangible/Abstract; Evolved/Designed/ Biological/Mechanical/ etc.)

What Is A System?



- systems can be very complex, and can be made up of many **sub-systems**
- sub-systems can be loosely or tightly coupled
- outputs from one or more sub-systems can provide inputs to other systems



What Is Information?

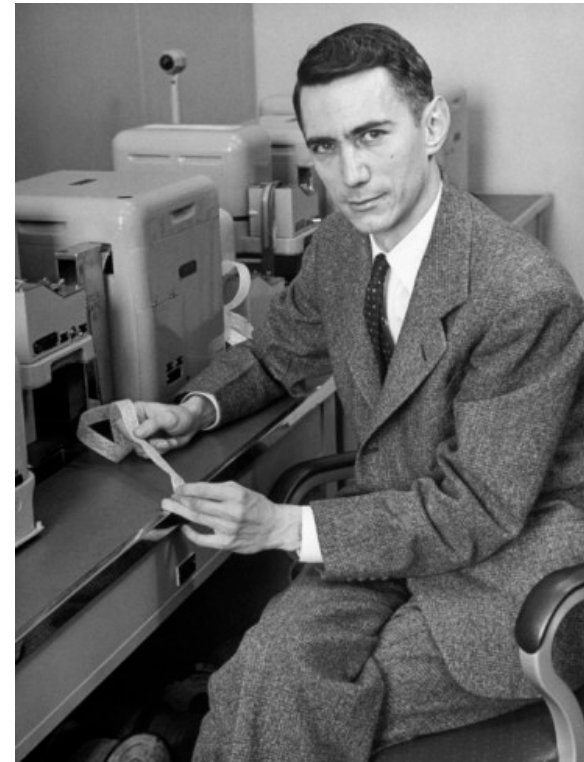
1. facts provided or learned about something or someone

alt: details, particulars, facts, figures, statistics, data; knowledge, intelligence; instruction, advice, guidance, direction, counsel, enlightenment; news, notice, word; material, documentation, documents; the low-down, the dope, the inside story, the latest, bumf, deets, gen

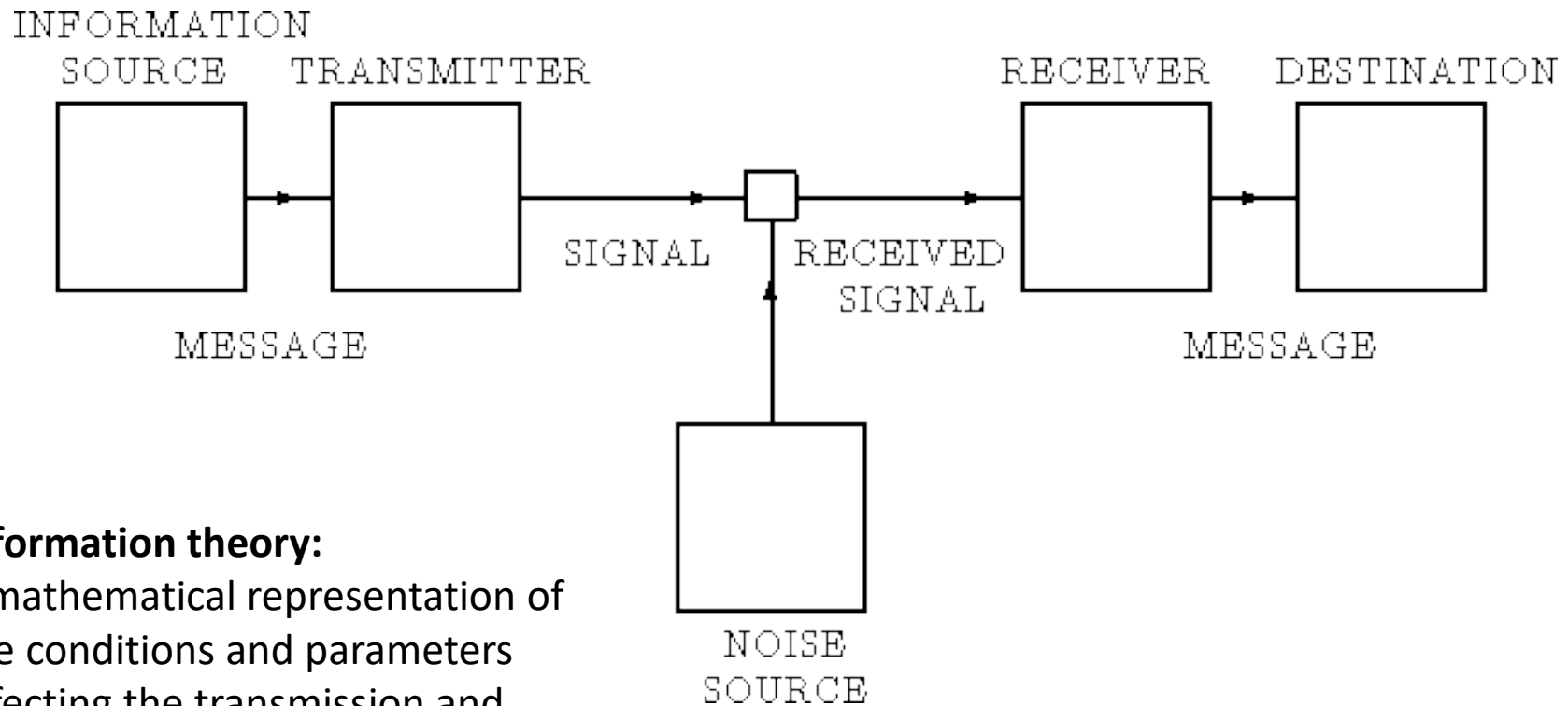
2. what is conveyed or represented by a particular arrangement or sequence of things (e.g. genetically transmitted information)
3. data processed, stored, or transmitted by a computer
4. (*in information theory*) a mathematical quantity expressing the probability of occurrence of a particular sequence of symbols, impulses, etc., as against that of alternative sequences.

Claude Shannon (1916 – 2001)

- American mathematical engineer, founding father of electronic communications age
- Formulated theory explaining the communication of information (concerning efficient transmission of information)
- Laid the groundwork for computer industry and modern telecommunications



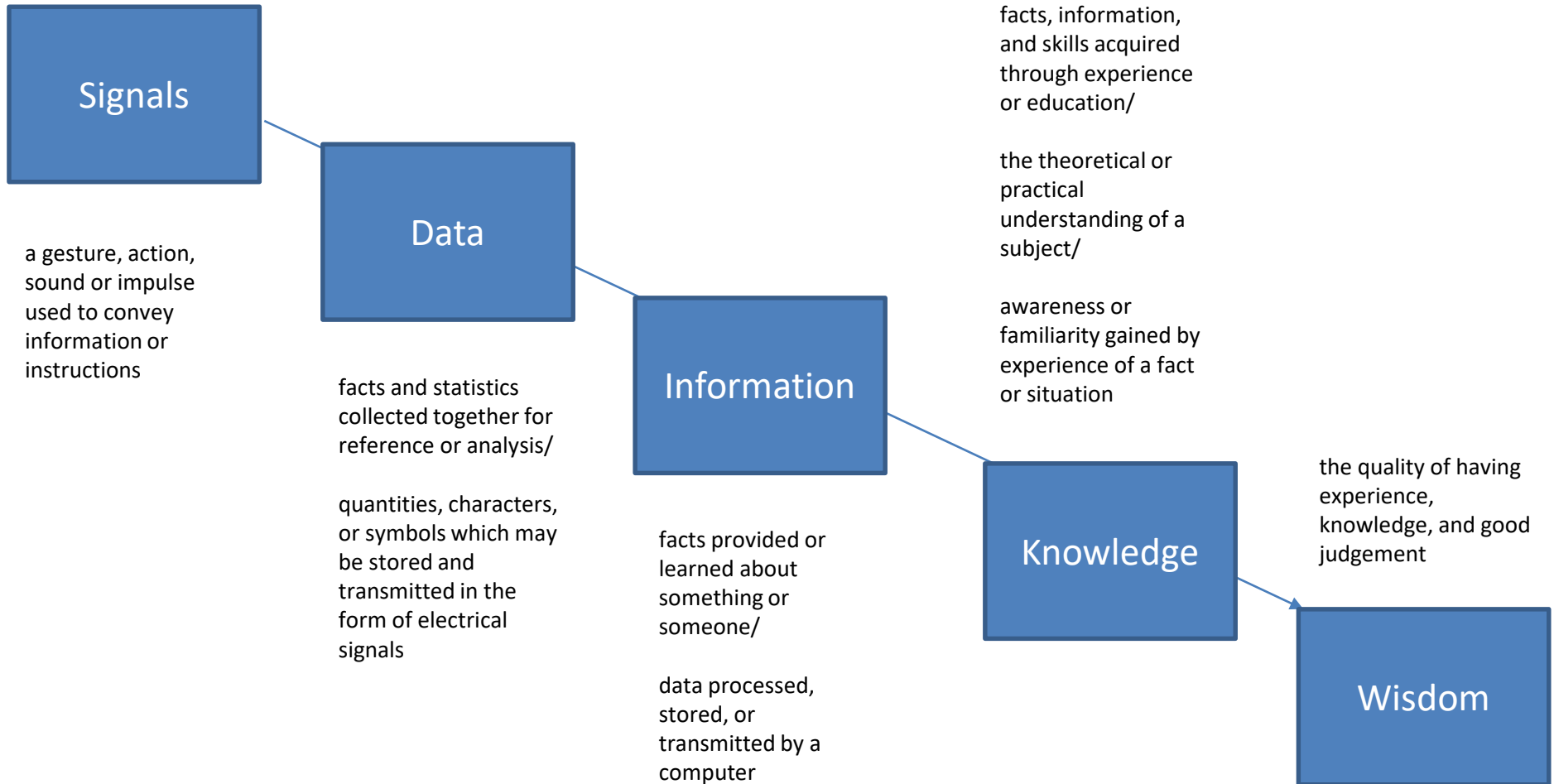
Basic Model Of Communication



Information theory:

a mathematical representation of the conditions and parameters affecting the transmission and processing of information

What is Information?



Information system:

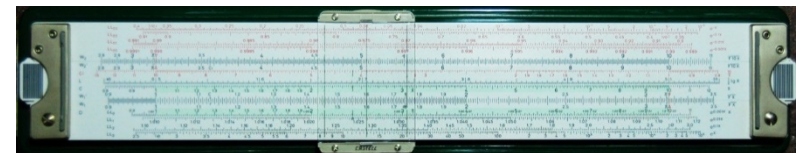
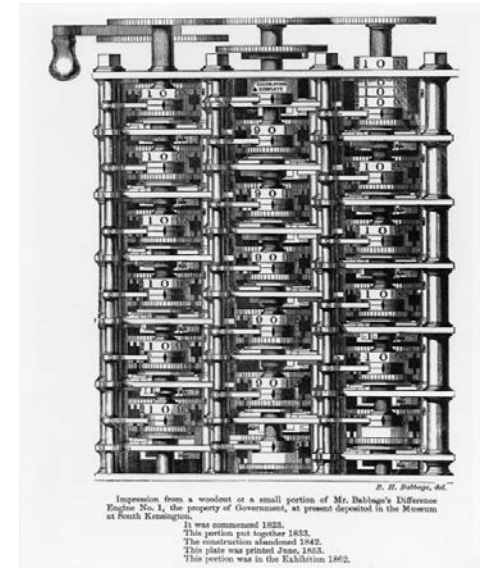
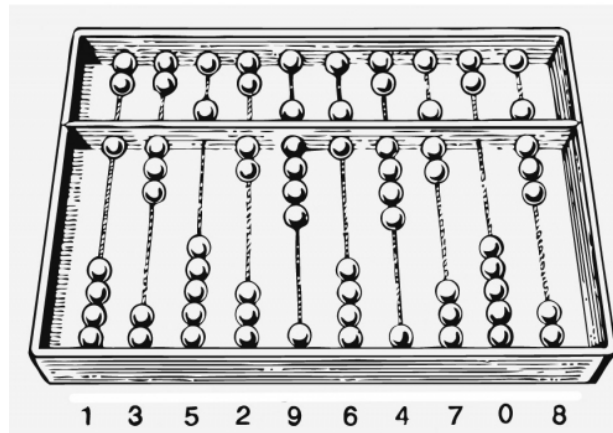
an integrated set of components for collecting, storing, and processing data and for providing information and knowledge



Early Information Systems

Information system:

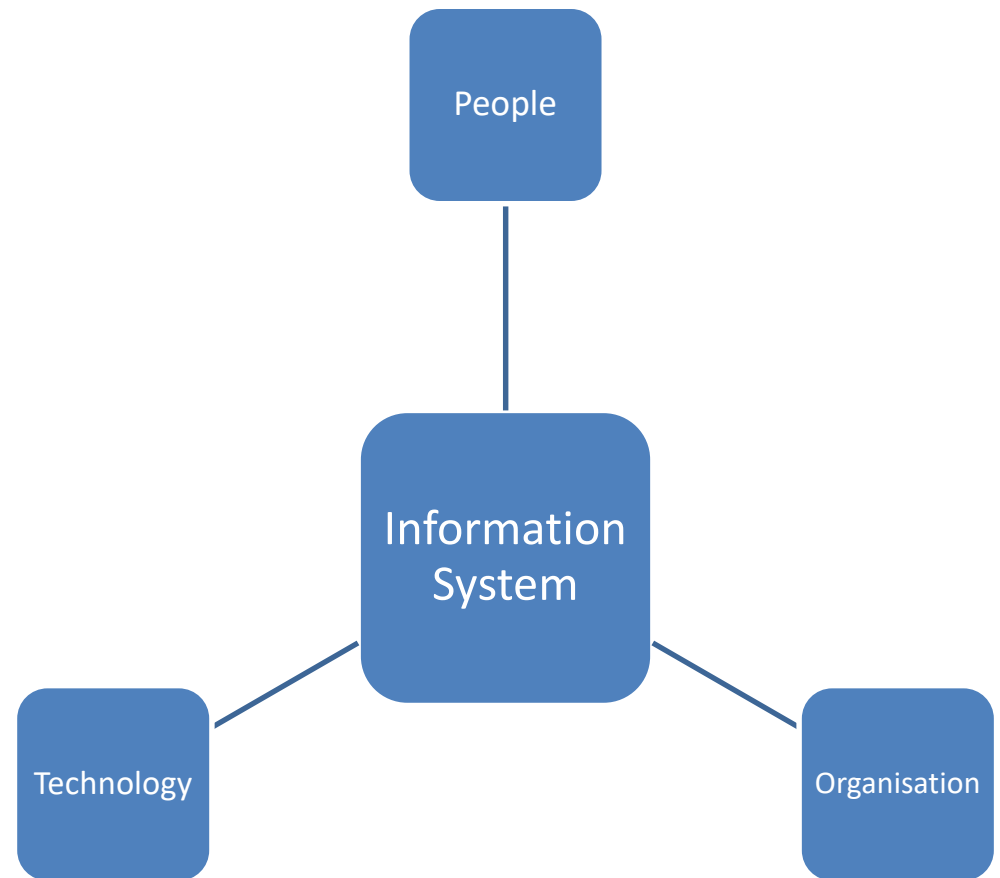
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Socio-technical Information Systems

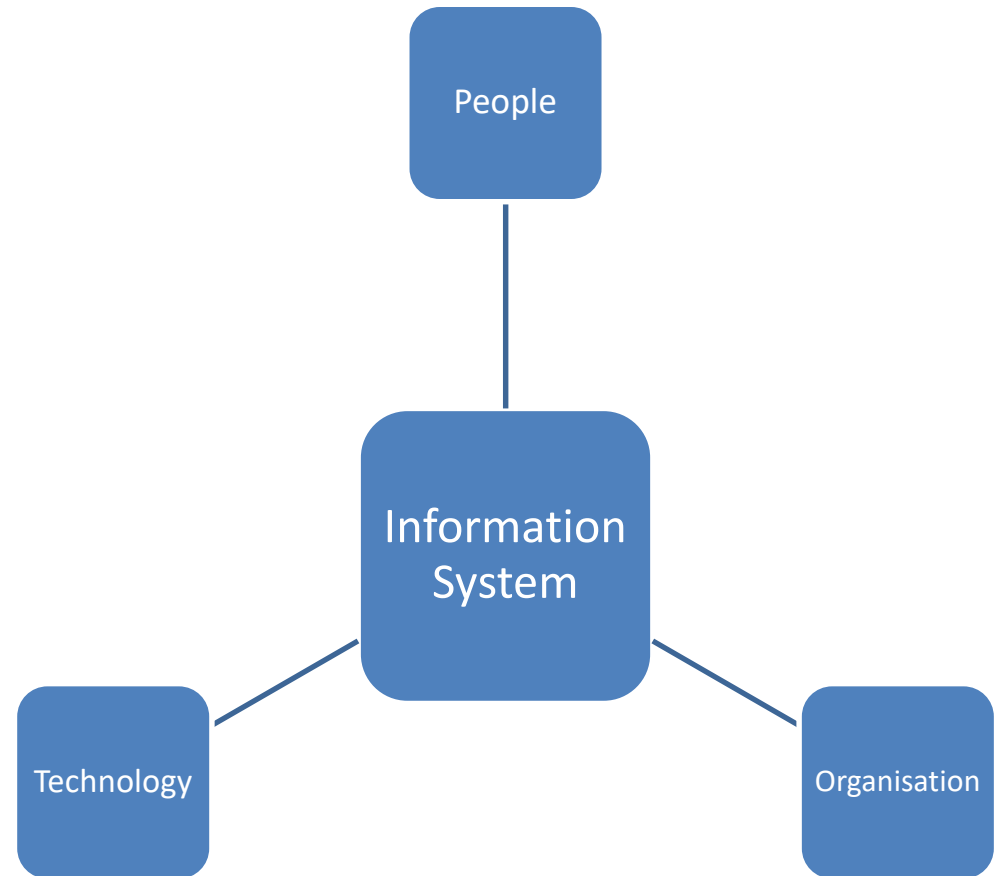
Socio-technical systems are those which consider human, social and organisational factors, as well as technical factors in design.

<http://iw.oxfordjournals.org/content/23/1/4.full>



Enterprise Information Systems

- Enterprise Information Systems are those which support work processes workflows and interactions in organisations.
- Most IS in organisations are sociotechnical.
- EIS can be package/SaaS (such as SAP or Oracle) or tailored application systems



System Modelling

- System Modelling is a technique that creates an abstract representation of existing or new physical systems
- These techniques are used to help plan, design, build the real system
- System models are used to describe all aspects of the socio-technical systems, including human interactions, processes and so on
- We start all IS design & build activity by creating system models
- These models then form the basis of the design of the computer-based system

System Modelling - Advantages

- it allows us to understand and describe complex situations using intuitive notions of input, process and output
- it usually involves decomposition of processes – and is a useful method of analysing complex processes
- it helps identify elements of a process or system that are missing or ineffective
- it can be used as a tool for communication between stakeholders and developers

“Systems Analysis and Design with UML”, Tegarden, Dennis, & Wixom, 5th Edition, Wiley (ISBN : 978-1-119-03026-3)

“Professional Issues in Information Technology”, Frank Bott, 2nd edition, BCS, 2014

“A History of Modern Computing”, Ceruzzi, Paul, MIT Press (ISBN: 0-262-03255-4)

“The Information: A History. A Theory. A Flood.”, Gleick, James, Pantheon Books

Paper: Computers, People and the Real World Professor Martyn Thomas

Dr. BRIAN GANNON

E: b.gannon@bbk.ac.uk
E: b.gannon@kainos.com
M: 07870 153855
LI: <http://lnkd.in/ODXaH6>
Tw: @bjgann