

CENTER FOR INFORMATION INTEGRITY RESEARCH

INFORMATION INTEGRITY KNOWLEDGE & RESEARCH PROJECTS BANK

Project SL. No. (1). “An information system is a social system.”

Framework:

An information system (IS) exists in a real world that consists of objects (some concrete, such as machines, stocks and buildings; some abstract, such as budgets, accounts and sales forecasts), and of people (e. g., customers, suppliers, managers, clerks, etc.). Real world also consists of rules (embodied in legislation, established procedures, rulebooks, and codes of practice), norms (often representing deeply engrained ways of doing things and modes of thinking and practice), and commands (that could be in the form of computer programs, standing orders, call of lists, etc.).

A person, i.e. information user, has to perform some task in relation to the real world. The information user may be a manager taking a decision, perhaps a simple decision such as confirming an order for steel bars, or a complex one concerning some aspects of planning. Or the information user may be a clerk carrying out some task, perhaps recording details of orders received for customer processing. In a more extended definition of an information user, persons designing, developing, commissioning, and operating IS can also be viewed as information users in the sense they all use IS related information for carrying out the defined IS activity.

To carry out the task the person needs information about the real world. In situations this can be obtained from the real world directly. For example, the manager could walk into the steel store to check how many steel bars are left in the stock. Or the manager can use a formal, designed information system. It could consist of stock ledger card, or a computer stock control system. But the manager can also call up the stock room supervisor and ask how many steel bars are in stock, thus using an informal, undesigned information system.

For a given information use, most IS have these three major information sources: the real world itself (which can be inspected); the designed information system- an artifact (which is intended to provide an exact (?) image of the real world); and an informal information system. The informal information system sometimes substitutes for the designed system and is often used to provide qualitative and evaluative information about the real world.

How a person in the form of IS designer, or developer, or commissioner, operator or maintainer or in role of a direct user of information, uses information from these three major sources depends on a number of factors. Some of these are generic and some are

related to particular environment or situation (political, social, economic, or technological) in which information is received, represented, processed, and used. The most important generic factors are:

- The cognitive style and preference of the person receiving the information,
- The knowledge contained in the person's memory,
- Language,
- The range of channels used for conveying messages or signals to the user.

Note that language, cognitive style and memory operate interdependently. Their operation is often rooted in the individual's culture, education and experience. As regards to channels, they include visual channels such as those used to convey precisely coded language in the form of printed or written message, or quite differently, the more ambiguous message encoded in the form of body language, as also sound channels ranging from spoken language with all its subtleties of expression and 'voice', to precisely coded signals. All channels are capable of conveying both designed messages and mere 'noise'. The information user has to sift the one from the other.

In addition to the generic factors described above, there are a number of environmental and situational factors which influence the ways in which information users will respond to information and which type of information source they may prefer to use. Some of these factors are:

- the information users' understanding and trust in the designed system;
- the trust they place in the judgement of their peers and subordinates;
- the time available to respond or to take action;
- the pressures of work;
- the convenience or inconvenience of looking at the real world;
- the presence of 'noise' which may distort or attenuate intended message.

Finally, in practice, most information users operate as a part of one or more groups. IS designed to take care of group functioning needs different characteristics.

All this analysis indicates that an IS is a social system and in the process a holistic view of an IS model emerges as given in Figure (1.1). The extent to which information technology plays a part is increasing rapidly. But this does not prevent the overall system from being a social system characterized by human-IS interface at almost every phase of system planning, design & development, implementation and use. In fact the invention of the microprocessors in the early 1970s and now the availability of the on-line computers and of system integration technology along with computer capability of moment by moment optimization of processes and decision-making and the reality of Net has only accelerated this process. As a result, even the most rigidly designed IS is vulnerable to use by its users (at every stage) in ways which were neither planned for nor anticipated by its designers. These errors, stochastic in nature, due to the judgmental factors at the human-IS interface are in addition to deterministic errors in IS due to singular factors like software failure and due to stochastic errors from general causes like mechanistic failures, service disruptions, etc. and from systems factors (external and internal to IS) like merger, regulatory activity, legislative action, activity of a competitor, etc.

It is these errors in IS that are made but not corrected in spite of application controls introduced at design stage that make formal, designed IS undergo a process akin to

entropy, in turn putting IS out of control. This is the phenomenon of loss of integrity in IS and in information.

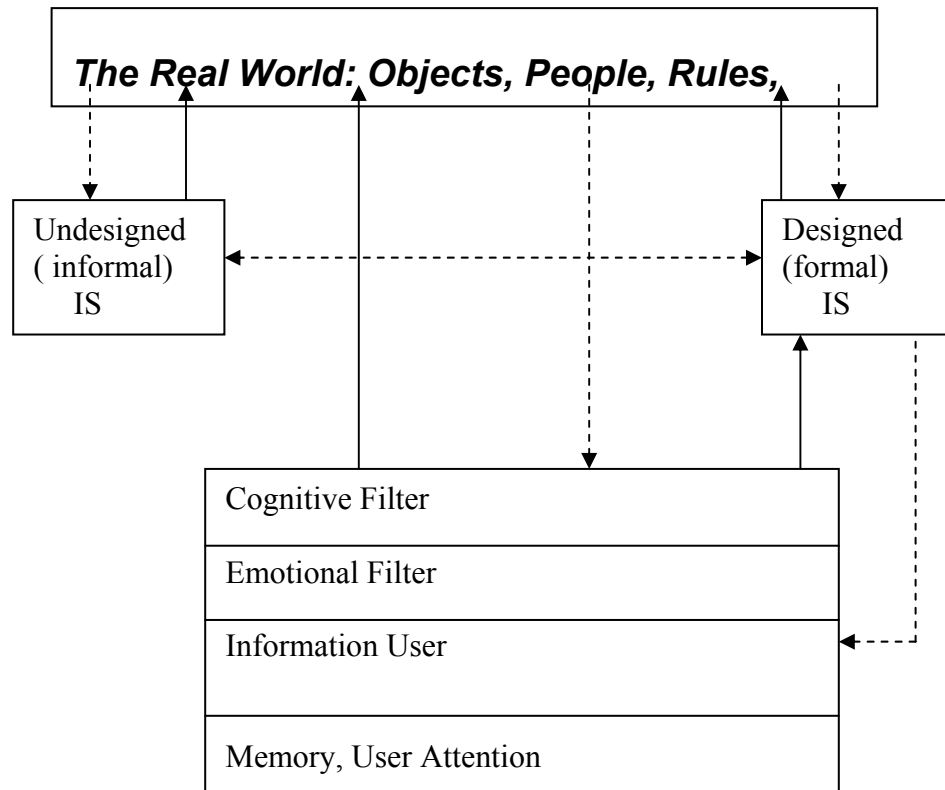


Figure (1.1): IS Model representing an information system as a social system

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