

Information Management in the Age of the Internet

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Some definitions

Trying to define anything as slippery as information is a notoriously difficult thing to do. Indeed, at this seminar series we have heard how some traditional peoples have hundreds of alternative words for what we call information. Imagine then, the problems in specifying the concepts associated with information in a language like English.

Nevertheless, it is perhaps useful to attempt to map part of the terrain and present some terms that will be used (hopefully consistently) throughout this paper.

First let us start with data. This can be defined as a series of disconnected facts and observations. An example might be a rainfall reading taken at a particular location and at a certain date and time. On its own, this data point is of little use.

Information, in contrast, is data that has been transformed into something useful for a particular need. The key words in this sentence are 'transformed' and 'useful'. The transformation process can be entirely automated (as in the operation of a

computer program) or entirely manual or somewhere in between. The resulting information is useful in the sense that someone can use it to inform their thinking or to base decisions on. For instance, someone might take all the rainfall readings for a particular location (such as Port Moresby) over a year and turn them into a graph of rainfall variation overtime.

Just as information builds on data, knowledge builds on information. In fact, knowledge can be defined as an organised body of information, where patterns of information form the basis of insights and judgments. To extend the weather analogy, someone might look at the rainfall and pressure over the Eastern Pacific (the so-called El Niño phenomenon). Particular fields of human endeavour build up over time such bodies of information, which continually evolve and change as new information becomes available.

I have not discussed wisdom, because I am not sufficiently experienced to be regarded as wise. I will simply point out that the wisdom of the elders is one of the prized possessions of most traditional cultures – something that many developed cultures have regrettably lost.

An Information Ecology

Let me now turn to the context within which information is created and consumed. In a very real sense, all of us are ‘information workers’, as we interact with the information that surrounds us every day. I would like to suggest one useful way of looking at this information, that of an Information Ecology. Such an ecology consists of providers, seekers and managers, all operating in a particular information environment.

Information providers

Information providers are the ones who create the information in the first place. They are (obviously) central to any information ecology. Providers can create information in two ways. The first (as already discussed) is to turn existing data into information. Examples might be those who create weather charts, radio ratings, or enrollment statistics for a university. The second type of providers are those who create new information from nothing. Writers, producers of mass media like radio or television and advertisers are all examples of this.

Information seekers

We are all information seekers at one stage or another. We need information to do our jobs (or part of their jobs). This information may be in many forms: print, audio, video, on-disc, on-line, or even inside someone else's head. Information seekers may know what exactly they want but not know where to find it. Or they may have a more general information need and be prepared to accept a range of possible answers. In either case, they rely on information providers to have produced the necessary information in the first place.

Information managers

Information managers are those who work with the information. They help both information providers and seekers to find each other in some virtual sense. Information providers need to get their information to those who are interested in it (and may pay for it). Information seekers may need assistance to locate exactly the information they require. Information managers fit in between and help both sides. Possible tasks include organising information, classifying information, indexing information, storing information, searching for information, or retrieving information.

It is important to point out that the above roles are not mutually exclusive. An individual may fill all of the above roles at various points, depending on what they are doing.

Information environment

The above roles have existed as long as we have been a species capable of communication. In the past, the environment within which these roles have been played out changed relatively slowly. Since the middle of this century, the information environment has been changing with ever-increasing speed. The predominant trends during the last decade have been increasing access to communication, media convergence and the rise of the Internet.

A whole range of new communications technologies have become available in the last fifty years: satellite, fax machines, television, mobile phones. In the developed world, the telephone is essentially ubiquitous. The ability to communicate with people over longer distances than face-to-face is becoming both more common and cheaper over time. We are not yet all living in McLuhan's global village, but we are getting there. However, to inject an air of reality, more than half the world's population lives more than 2 hours walk from the nearest telephone.

The second notable trend is the convergence of telecommunications, mass media technologies, and computing. The boundaries between these is blurring as computers are used increasingly to create and manage the content. Televisions can now be connected to the Internet via WebTV technology. Microsoft has started a cable TV channel, MSNBC, in conjunction with with an existing TV station. More and more information is being created digitally in the first place and then repurposed for differing media.

The third, and perhaps most important trend is the increasingly ubiquitous Internet. This 'network of networks' grew out of the

scientific and research community but has been taken up by the business world with astonishing pace. It is already being used for delivery of telephony (InternetPhone), radio (via technologies like RealAudio), video (webcasting'), text, and images. Some of these technologies are still in their infancy but they will improve. Electronic email is becoming a key tool for global communication, and the use of the Web to deliver information and interact with customers is reengineering commerce.

Implications

So what are the implications of this ecology model and the changes in the information environment for PNG?

The first trend is that information will become increasingly important to both developed and developing countries. More than 50% of all Australians are information/knowledge workers now and this percentage is increasing. This is a trend that PNG will follow also, but delayed at some stage. More importantly, 'information is power'. And PNG needs to retain control over its own information resources. Tribal information about which rainforest plants can be used to cure disease is a good example of this.

Secondly, not only are things continuing to change, but the rate of change is increasing – things are changing faster. Scott McNealy, the CEO of Sun Microsystems (a computer company which provides many of the servers for the Internet) likes to say that "Internet years are like dog years". In other words, a year on the Internet is like seven years in any other technology. Entire generations of Internet technology can come and go in a year or two.

Because of this change, training is essential. Anyone working with information needs to learn how to work more efficiently by

acquiring new skills. They also need to keep current with new developments, and have the knowledge to plan ahead.

Recommendations

Let me conclude by recommending some possible courses of action. I should start with the disclaimer that these are my ideas only – I did not discuss them with anyone at UPNG first, but they grow out of my experiences while visiting UPNG over the last six years.

1. PNG should seek to make best use of trailing-edge information technology

Leading-edge technologies are those that have just been developed. 250 MHz MMX chips from Intel are an example of the leading-edge at the time of writing. Trailing-edge technologies are those which were leading-edge a couple of years ago (in the computer field anyway). They are typically:

- Much cheaper (because their development costs have been paid for)
- Easier to get (because the initial production bottleneck for anything new has passed)
- And more robust (because all the bugs have been worked out already).

2. Short courses in information skills should be mandatory throughout the PNG Public Service.

The government bureaucracy needs to make effective use of its limited resources. One way of doing this is to effectively use information. Targeted short courses are an excellent way of skilling-up people with general information skills. SPCenCIID would be an excellent agency to undertake the running of such courses.

3. UPNG should promote its major in information management that can be taken as part of other degrees

Information skills are not just important to LIS students – students in all disciplines can benefit from learning to work with information more effectively.

4. UPNG should improve the allocation of resources to SPCenCIID and Computing.

This is an area where the country greatly needs more skilled graduates. UPNG has a chance to facilitate this.

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Andrew Treloar, 11/10/97.