

December 2001

# Managing Information Overload: Is Technology the Answer?

Sharm Manwani  
*Henley Management College*

Henning Bech  
*Henley Management College*

Jurgen Dahlhoff  
*Henley Management College*

Follow this and additional works at: <http://aisel.aisnet.org/amcis2001>

---

## Recommended Citation

Manwani, Sharm; Bech, Henning; and Dahlhoff, Jurgen, "Managing Information Overload: Is Technology the Answer?" (2001).  
*AMCIS 2001 Proceedings*. 7.  
<http://aisel.aisnet.org/amcis2001/7>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2001 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# MANAGING INFORMATION OVERLOAD: IS TECHNOLOGY THE ANSWER?

**Sharm Manwani**

Henley Management College  
SharmM@henleymc.ac.uk,

**Henning Bech**

Bech@post5.tele.dk

**Jurgen Dahlhoff**

Juergen.Dahlhoff@t-online.de

## Abstract

*Information Overload is an increasing concern to organisations and people. Does technology help or hinder the problem. The findings from this research are that it does both. Furthermore the real problem is not information overload but a combination of message overload and information underload. This paper proposes a conceptual model and reports on research conducted within the Knowledge Management Forum at Henley Management College leading to recommended coping strategies.*

## Introduction

Information is the lifeblood of an organisation, as acknowledged by Lew Platt, the CEO of Hewlett-Packard in the defining statement, 'If HP knew what HP knows, we would be three times as profitable'. Yet at the same time, information overload is a proliferating phenomenon that affects the productivity of the individual, the organisation, and society. Change and complexity lead to increasing demands for information and also information overload. And new technology – as is often the case – provides both new benefits and new problems.

Information overload is not a new phenomenon. Katz and Kahn (1978) defined information overload as “communication input greater than the organisation or certain of its components can handle”. Awareness of the problem grew in the 1990s when several studies (Reuters 1996, 1997, 1998 and Pitney Bowes in 1998) examined this problem and found it was a global one. A rising perception of information overload is not coincidental. The emergence of new technologies like e-mail and Internet has increased the volume of information a person has to process – and can produce! Technology has certainly fostered the rise of information (over)load with all its positive and negative aspects. Critics like Shenk, who coined the term “Data Smog” (1997) do not reject technology but recommend us to be realistic about its capabilities.

Prior academic and business research has acknowledged the problem of information overload linked to the role of technology and associated factors. Yet findings often move from symptoms to solutions without a guiding research question supported by a conceptual model. So our question is: What is the role of information technology in creating and/or solving Information Overload? Or more broadly: What are the factors resulting in “Information Load Imbalance” and what are the potential strategies to cope with this? Our goal is to create a model and to evaluate and refine it using research conducted within the Henley Knowledge Management Forum. This paper reports on the initial model and findings.

## Cause and Effect of Information Overload

Kerka (1997) does not believe that the problem is too much information but the multiplicity of information channels. These channels submit data or information but nothing is done on “transforming information into intelligence”. Puzanghera (1997) quotes Murray Gell-Mann, a Nobel price winner in physics, that the information flood contains masses of misinformation, badly organised information or irrelevant information. Others (McCafferty 1998, Van Winkle 1998, Foley 1995) hold new technologies responsible for the information overload. This is underlined by Nelson (2000) who perceives volume as the big information problem. Volume is technology which results in more data, more materials, more items and more detail.

Heylighen (1999) believes that permanent change and its acceleration necessitates an increase of information in order to keep up. Change and complexity lead to information overload. This causes psychological, physical and social problems. David Lewis of the International Stress Management Association labels the illness deriving from information overload “Information Fatigue Syndrome”. Heylighen describes many negative aspects of information overload including vandalism (→ aggression), apathy, and depression; he highlights anxiety as the most common neurosis caused by information overload. Kerka (1997) believes that people suffer from a perception problem since they wrongly believe that they have to keep up-to-date with available information.

## Guidelines for Addressing Information Overload

Many recommendations exist on how to cope with information overload. They range from simple practical solutions (check e-mails daily) to technological solutions such as the use of agent systems to extract knowledge from a mine of data and text. McCafferty (1998) recommends several approaches: to set priorities with e-mail, to manage communications (how, when and by what medium people send you information), to reduce own emissions. Gell-Mann suggests incentive systems need to be changed to reward people who are able to convert information into knowledge and understanding. Van Winkle (1998) gives behavioural guidelines at the office (be careful with your phone time, reduce paper, get organised, keep meetings short and focused), at home (kill your television, keep your phone number unlisted, prioritise your phone time), and on the Net (be careful with your e-mail address, use search machines, remember the library, use your printer).

### *The Role of Technology*

Foley (1995) examines the appearance of new technologies such as e-mail filtering mechanisms, software agents that explore databases, and search engines for the Web. He says: “*All these technologies have one thing in common. They’re designed to get the right information into the right hands and block out unnecessary data*”. Franz (1999) conducted doctoral research into how computer-mediated communication (CMC) affects information overload. She proposes an information policy on CMC distribution to help the problem, supported by employee training.

Pitney Bowes and the Institute for the Future (1998) consider the view that technology “replaces old tools with more efficient new ones” is a myth. According to their findings new technology tools are layered on top of older ones. In addition these new tools increase the messaging volume of the individual. Altogether, taking tools like phone, voice mail, email, fax, pager, postal and interoffice mail an average office worker processes 178 messages per day. The increase of volume is especially true for e-mail which has become popular over the last five years. E-mail has been addressed in the thesis from Bell (2000) who investigated “The Role of E-mail on Information Overload in Organisational Managers”. His definition of information overload is “a manager’s perception of having communication inputs that exceed his or her capacity to process that information for a sustained period”. Bell perceives information technologies as no genuine help for organisations if managers do not understand human behaviour which ranges from support of “high volume messengers” who manage 363 messages a day (Pitney Bowes study 2000) to “silent ways of sabotaging the system” (Pitney Bowes 1998). Information overload caused by technology may even lead to stress, anxiety and in worse cases to illnesses. Bell quotes several studies which examined these problems in detail and describe “technostress” or “technophobia” in detail. Interesting findings are that younger people are more adaptive to technology than older ones and that those individuals suffer from anxiety who have chosen not to work with a computer when given the opportunity.

### *Enterprise Information Portals*

Waddington (1998) consider that “technologies for managing information are often the problem, not the solution. They can create the M25 effect: more lanes just means more traffic”. Recently several suppliers have announced an Enterprise Information Portal (EIP) to address the issue of bringing the right knowledge to the right person at the right time.

*“Portals promise to take advantage of the inherent purpose and structure in corporate and professional information to empower employee desktops and finally deliver the anticipated returns on the immense current investment in information assets. The mission of a portal-based enterprise architecture is ultimately to build a personalized electronic work environment.”* Hadley Reynolds (2000)

As with many new technology solutions, the problem is to integrate with the existing set of legacy systems and databases. Hence EIPs are not yet the proven answer to the problem of Information Overload. In fact, it is clear that technology cannot be expected to solve all the multi-purpose requirements of individuals and organisation. It provides more capabilities but perhaps in doing so,

it also exposes those who are not ‘technologically experienced managers’. An illustrative story from the Henley KM Forum highlights the dual impact of technology.

*A Programme Office Manager in an Asset Improvement company reported on the problem created by the company’s open policy of letting every employee know what was going on regarding their public image and organisational change. This had the effect of creating daily multiple E-Mails copied to hundreds of staff in the organisation with only a very few actually directly related to an individual employee. The PO manager perceived the solution to this problem to be the creation of company wide intranet with a central “bulletin board” where people could register their interest in particular areas.*

## Research Model and Initial Evaluation

The model was generated from the following factors identified by Kirsh (2000), supplemented by factors emerging from the literature, and verified by initial research conducted with the member of the Henley Knowledge Management Forum.

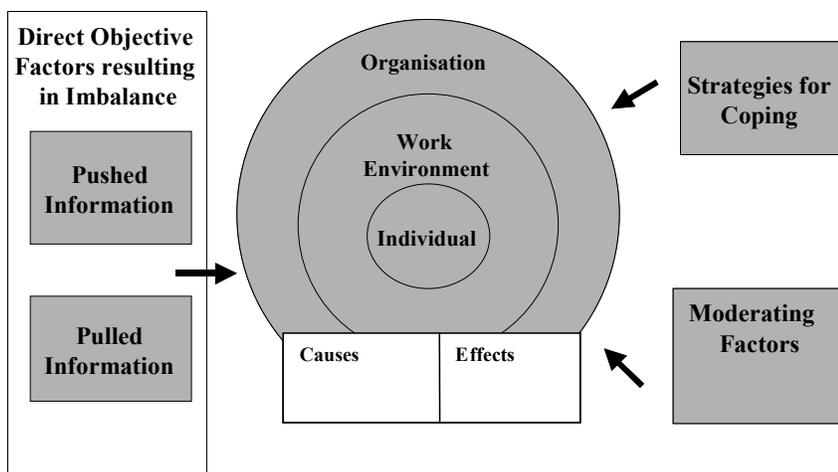
### Pushed Information

The first category of information overload is: Pushed Information Overload. Pushed – or supplied – information comes in categories of urgency, media, size, timeliness, complexity and value. To deal with it we constantly have to make decisions about how useful it is and whether it should be further communicated.

### Pulled Information

The second category of information overload is: Pulled Information Overload – it stems from wanting more and better focused information combined with a lingering belief that even more relevant information is available somewhere. Where before we turned to trusted information sources, such as refereed journals or quality magazines, we now do more of our information hunting ourselves. Yet no search engine seems to return hits with sufficient precision to save us from having to browse a large number of useless pages in our efforts to seek out the best data.

## INFORMATION OVERLOAD MODEL



### Moderating Factors (Aggravating or Relieving the Overload)

- Overload from the increased number of decisions knowledge workers must make.
- Overload from the increased frequency of interruptions that confront the knowledge workers.
- Overload from the increased need for time management in everyday activity
- Overload simply due to the fact that our tools and resources remain inadequate.
- Cognitive overload / frustrations stemming from perceived lack of directions from management

Figure 1. Information Overload Model

### ***Pilot Survey and Additional Constructs***

A pilot survey took place among the members of the Henley KM forum during late 2000, based on 10 collected case studies. Analysis of these first ten case studies supported the constructs identified by Kirsh (2000). Additional constructs were identified from the literature review and survey – causes, effects, and coping strategies. From this a model was developed.

A template was derived from the model and used for further analysis of external cases. Five core coping strategies were identified: Technology, Personal Training, Policies, Knowledge Management Structure, and Learning Curve. These strategies have been evaluated with further research using the template to collect more detailed case stories from the Henley Forum. A summary of the methodology describing the current and proposed steps is shown in section 3.

## **Methodology**

Traditionally the problem has been characterised as one of “trivial” information overload. Our initial research question focused on the factors resulting in information overload and on strategies for coping with this. An extensive literature review included academic research, reports, surveys, books, and journal articles. In parallel to this we analysed 10 case stories collected through the Henley KM Forum’s own members.

### ***Research Model***

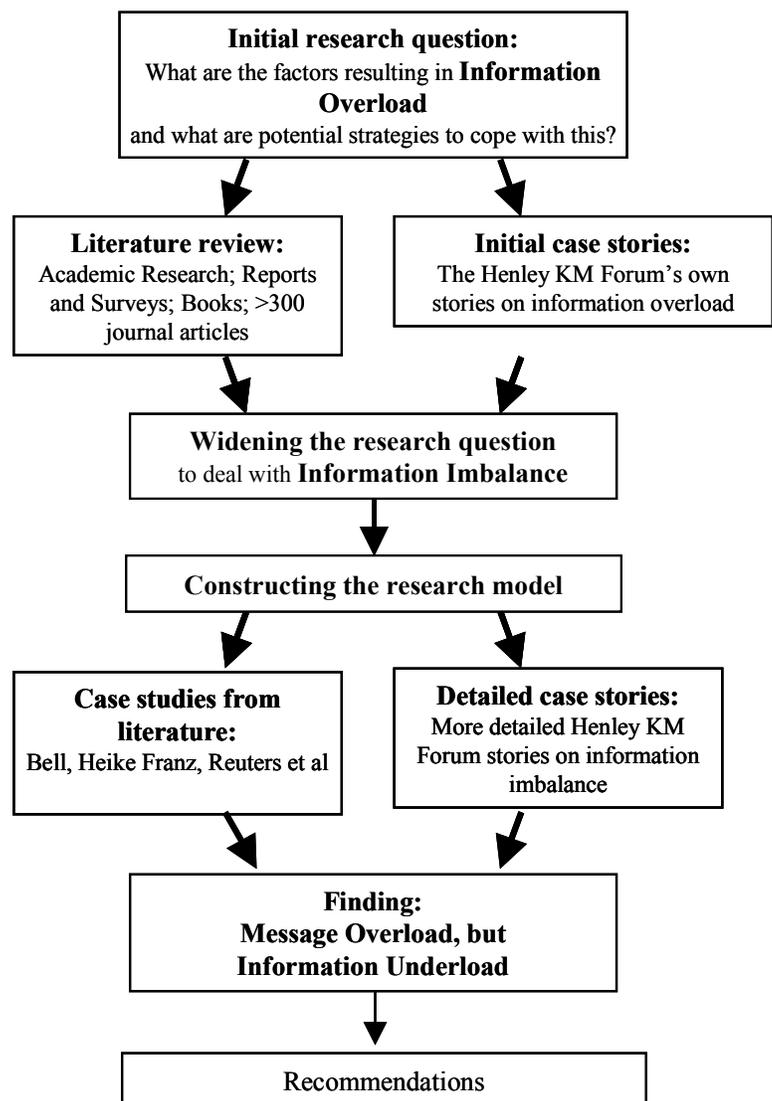
In the further development of this project we widened the research question to adopt Heike Franz’ broader concept of information load imbalance. We developed a research model, which embraces the major constructs. It shows information load imbalance stemming from what we call “direct objective factors” – be it pushed information or pulled information. Causes and effects are analysed on different organisational levels – and “moderating” factors were introduced.

### ***Case Studies***

Analysis of detailed case studies both from prior research and from the Henley KM Forum form the next stage which represents the status of this research-in-progress paper. The initial finding from this stage is that the problem of information overload translates into message overload and information underload. Technology is one of several strategies to deal with these problems, however the research is showing that other strategies are sometimes more important depending on the type of stakeholder: sender, receiver, or organisation.

## **Summary and Next Steps**

The presented literature shows the wide awareness of Information Overload. Researchers agree that information overload is a phenomenon exacerbated by new technologies such as E-mail and the Internet. All commentators agree that solutions have to be



**Figure 2. Methodology**

applied to solve this problem but nobody has found a comprehensive recipe for how to do this and when to use technology as a component.

The research demonstrates that the effect of technology is a double-edged sword. On the one hand it causes message overload, on the other hand it offers reasonable solutions to cope with the problem. Technology is not always the most appropriate solution. For example, one research finding is that training of message senders can have a significant impact on the volume and quality of e-mail. Ultimately the full solution is dependent on the people who are confronted with the technology, not with the technology itself. Or as futurist Saffo says:

*“The technical solutions are incomplete and partial. You’ve got to start with changing your behaviour first, then pick up the right tools for the job.”* (Foley 1995).

Further analysis of the case studies is contributing to overall recommendations validated by the Henley KM Forum members. Results will be reported at the conference and in the full paper.

## **Acknowledgments**

Grateful acknowledgements and thanks go to all contributing members of the Information Overload Project.

## **References**

References available on request.