Information Management Resource Kit

Module on Management of Electronic Documents

UNIT 1. OVERVIEW

LESSON 1. OPPORTUNITIES, CHALLENGES AND ROLES

NOTE

Please note that this PDF version does not have the interactive features offered through the IMARK courseware such as exercises with feedback, pop-ups, animations etc.

We recommend that you take the lesson using the interactive courseware environment, and use the PDF version for printing the lesson and to use as a reference after you have completed the course.

Objectives

This lesson will make you aware of:

• how **digital information technologies** can change and improve information production and distribution; and

• how **jobs are changing** and **new roles are emerging** with the introduction of digital information technologies for document management.

Introduction

What impact is the digital revolution having on the production and distribution of information?

In this lesson we will review a number of scenarios which show how the appropriate management of electronic documents can **improve efficiency** in agricultural organizations.

We will focus on a series of critical situations introduced by a series of questions: an interesting question is a good starting point!

How do we distribute extension leaflets effectively?

Ms. Auroux is the director of an extension service.

She considers leaflets as an important means of communication for her service.
But she also knows that they are always out of stock or out of date, and that the accountant is always complaining about the printing costs of unused leaflets.

She's just returned from an International congress with new ideas.

If other people can do it, so can we.
We have spent a lot of money connecting our local offices to the Internet - so let's start doing something with it!

How do we distribute extension leaflets effectively?

As usual, a committee is established, and it comes up with a report full of questions…

There are hundreds of leaflets on different subjects: how can officers find the right ones in an electronic system?

We produce electronic versions of the new leaflets, but many important ones were published before we started to use computers. How do we put those into electronic format?

The committee finds out that there are different **formats for electronic documents**, and then has to choose the appropriate one to use. It agrees that it would be appropriate to streamline the **procedures** for the production of leaflets.

How do we distribute extension leaflets effectively?

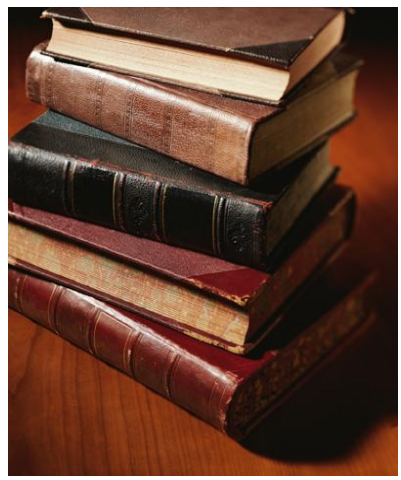
The committee has decided to use a system for the **management of electronic documents**.

Hardcopies will be converted to electronic format, and standards will be established for the creation, storage and distribution of electronic documents.

Where can I find information and guidelines on how to do this?

These subjects are covered in the following section of this module:
Unit 4: Production and management of electronic documents.

How to preserve historical soil survey documents?



Now let's change the scenario.

Imagine that the national association of soil scientists has made a very strong appeal to the Ministry of Agriculture.

They note that there is a lot of valuable information in historical soil surveys, but the documents are scattered over **several archives** in different regions in the country.

Some of the documents were printed almost 100 years ago on poor quality paper, and are becoming increasingly difficult to read. The association is concerned that this material might become completely illegible in 10 years time.

How to preserve historical soil survey documents?

So…

An expert from the national library is consulted, and it appears that there are effective techniques for preserving valuable books; namely de-acidification, controlled climatic conditions etc…

Indeed, older books could survive for many centuries if they were treated and preserved using the appropriate techniques. Unfortunately, there were too many soil surveys, and it is too expensive to treat all the documents in this way.

It would probably be cheaper to **convert them to an electronic format**, but how much cheaper?

How would **such a process** be **organized**? And then, how could **the electronic documents be distributed**?

How to preserve historical soil survey documents?

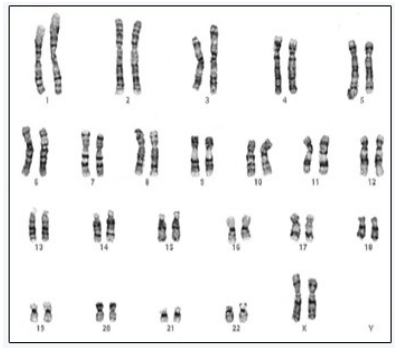
The soil scientists then found the appropriate solution to their problem:

Where can I find information and guidelines on digitizing and providing access to documents?

These subjects are covered in the following sections of this module:
Unit 3: Metadata standards and subject indexing
Unit 4: Production and management of electronic documents
In particular:
- Lesson 1: Digitizing printed documents: options and choices
- Lesson 2: From hardcopy to electronic document

Unit 5: Database management system

Graphical trouble



Now, let's imagine a research department which produces articles on cytogenetics.

One of the staff was a good photographer, and she took high quality microscopic pictures of chromosomes.

Unfortunately, the photographer is now about to retire and she is not familiar with computers. Every time the department required images in digital format, she would **scan the printed photographs**...

Graphical trouble

These are some of the difficulties related to electronic pictures that the research department is faced with:

• A paper was rejected by an **international journal**: the **quality of the electronic illustrations** was unacceptable. High resolution 'TIFFs' were required, and nobody in the department knew what a 'TIFF' was.

• The department provided some material for the development of the university's **website**. Some high resolution images were provided, but the WEBMASTER said they were not in an appropriate image format for publishing on the Web.

• A poster was produced for a scientific conference using **Microsoft PowerPoint.** However, when the poster was printed at full size the resolution and colour quality of the pictures in the poster was terrible, even though they looked acceptable on a computer screen.

How can they select the image formats they need?

Graphical trouble

Nicholas and Jane, both young scientists, have been asked to learn more about the various **electronic formats used for pictures**.

They found out that the appropriate **image format** depends on the media used for dissemination.

For example, 'GIF' and 'JPG' are suitable formats for the Web, while 'TIFF' is more suitable for use in printed publications.

Also, colour models for images must be chosen based on the media of presentation.

Where can I find more information on electronic pictures?
This subject is covered in the following section of this module:
Unit 2: Formats for electronic pictures and images
In particular:
Lesson 8: Formats of electronic pictures

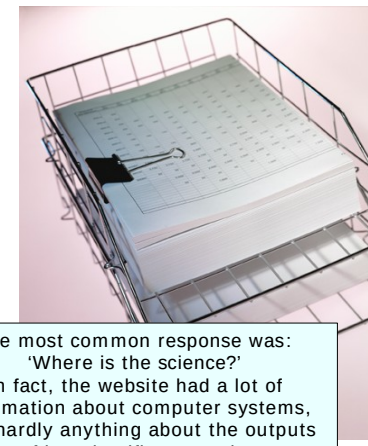
Managing all publications from a University

Finally, let's look at the following scenario.

Universities are often pioneers in the development of **websites**.

However, the private sector is spending large amounts of money to develop technically advanced sites, and some universities' websites are starting to look out-of-date and dull.

A committee was established to improve the website at a university, and a questionnaire was sent around to find out what faculty staff and outsiders thought about the site.



The most common response was:
'Where is the science?'
In fact, the website had a lot of information about computer systems, and hardly anything about the outputs of its scientific research!

Managing all publications from a University

Based on the questionnaire responses, the publications committee developed a plan which would provide better access to scientific information through the website.

A list of the university's scientific publications is already produced for the annual report. We could use the list as a starting point to create a database that could be consulted from our website!

Yes… then departments could put their publications on our web-server, and link them to the database.

A number of issues arose that had to be resolved:

• The database of titles was searchable, but the words in the titles did not contain enough information for any accurate **searching for publications on specific subjects**.

• Departments and individual scientists only wanted to contribute their information if they could **link their own departmental or individual webpages** to their publication.

So, **how could this be done?**

Managing all publications from a University

The committee decided to work on the following solution:

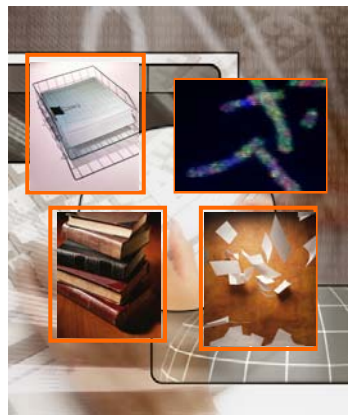
What we need is a database management system which provides the users with a powerful search tool.

The database can be searched directly from our website, and the site will be updated dynamically as new information is added.

Users will be able to find the information they need from us quickly via the Internet, and we can even add some information about our scientists and university programmes.

Where can I find information and guidelines on how to develop this kind of system?
These subjects are covered in the following sections of this module:
Unit 5: Database management system
Unit 6: Networking documents and databases

Management



All the previous scenarios clearly indicate the need for the effective management of electronic documents.

While reviewing them, did you find any similarities with some of the problems affecting your work environment?

If so, then this module will help you find solutions.

Now, let's have a look at the **new tasks and new skills** needed in an organization to ensure effective management of electronic documents and images.

New tasks and new players

Technology changes the way we work with information. Organizations have responded to this new environment in various ways:

New jobs are created like **Webmaster**, **Chief Information Officer** and **Information Management Specialist**. These new jobs may be undertaken by persons with traditional information and/or technology backgrounds (librarian, software developer, etc.); or by persons who are already managing information electronically in their field of expertise.

Some jobs differentiate: in the early days, **computer specialists** used to do all kinds of things, from repairing printers to analysing information flows. The growing range and complexity of computer-related tasks has led to **differentiation**, especially in larger organizations, into hardware specialists, software application managers, data analysts, etc.

Some job titles remain the same, like **librarian**. They still do essentially the same tasks, i.e. making information accessible to their users. They used to do so by providing books and periodicals. Nowadays, they may also be selecting relevant resources on the Internet or on CD-ROMs, and providing their users with links or downloaded documents.

New tasks and new players

Let's look at some of the people and roles involved with providing and managing information, and find out how their jobs are changing.

Click on each person to know more about his/her job.

Joan, AUTHOR

"I'm used to writing my documents directly on my computer."

The author is responsible for the intellectual content of a publication. Before the introduction of PCs in the office environment, the 'manuscript' would often literally be written by hand. Now most authors type their 'manuscripts' on their computers, and scientists who publish frequently may be advanced users of PC's and word processing software. In addition to intellectual content, authors often need to be concerned about **layout choices**.

The use of a consistent style by the author is an essential first step in creating a standardised document format for an organizational workflow. Stylesheets, often considered an advanced feature in word processing software, in fact offer a simple way to obtain a standard format and consistent visual effect throughout a document, rather than formatting each paragraph, document or page individually. At the same time, documents created using a standard format can be converted into other electronic formats, or distributed "as is".

Authors need to be convinced, and then trained, to use a standard stylesheet. They may also need training on how to manipulate and format their **illustrations** for a digital environment.

New tasks and new players

Gertrud, LIBRARIAN

"I'm doing things that I could not have imagined five years ago!".

Some traditional Librarians may see electronic documents as a threat, since they worry that fewer people will come to their library if most of the literature they need is available through their desktop PC.

Many institutions can no longer afford to spend enough to keep their library up-to-date. This results in users, and especially scientists, not having access to the information they require for their jobs.
Librarians may not be able to give users access to all the external publications they require, for several reasons including cost, but they **should always be able to provide access to the information and publications produced by their own organization.**
Librarians are well positioned to play a major role in the new digital environment, because they are familiar with:
• the development and use of electronic catalogues, including **subject indexing** and **metadata**;
• the use of **thesauri** and maintenance of **vocabularies of keywords**; and
• the development of **electronic information services** for users.

Aisha, PUBLICATIONS OFFICER

"Automated tools help me a lot, but the human element of the process is essential!".

Publications Officers are traditionally responsible for preparing manuscripts for printing, and managing the distribution of printed publications. Most of these tasks are still required if publications are produced and distributed electronically.

The Publications Officer will normally take care of a number of tasks:
• **Check the consistency of the text**: text processing software offers facilities to check spelling, and also some basic functions for checking grammar. However, consistency in terminology, grammar and writing style require intervention by an experienced editor and/or subject expert.
• **Layout of the texts** (page size, fonts used etc.) and **quality of illustrations**; this responsibility is shared with the author, but a final check needs to be done by an experienced editor. Standards for the style of publications need to be adopted, and authors must be trained in their use.
• **Distribution**: although in theory anybody can access a document on the web, people must be informed that the document exists. Announcements of new publications can be made by e-mail or by other more traditional mechanisms. Publications on CD-ROM require the same distribution process as printed publications.

New tasks and new players

Paul, COMPUTER SYSTEM OFFICER

"I'm always looking for the best technical solutions to optimize our workflows and provide better access to our users".

Users are becoming even more familiar with computers. Computer System Officers may perceive this increased awareness as a threat, as they may worry that users will start to develop systems on their own.
A computer systems officer needs **to go beyond his/her technical background** to understand the roles of the different players in the process.
On the other hand, these other players need to be aware of the limits of their understanding of the technical options, and to seek advice when required from Computer System Officers.
Computer System Officers need to look towards the development of an integrated process which includes and involves the other players.

Ming, WEBMASTER

"I'm always focusing on how users will access our information".
Many organizations create the position of Webmaster when they realise that their **Website** has become one of the most important channels of external communication and is here to stay.
Precise job descriptions do vary, but usually WEBMASTERS perform tasks like:

- prompting authors to create 'content' to be displayed on the website;
- ensuring that this content is converted into web pages;
- instructing others how to create web pages;
- loading web pages on a server as part of the website;
- managing the navigation structure of the website;
- ensuring the timeliness of information.

A Webmaster's main responsibilities and tasks relate to organizing and ensuring easy access to the content of a Website. This includes determining which file formats to use for documents and graphics, the navigation structure and which search tools to incorporate. In addition to the technical issues related to the delivery of content, special attention should be given to the design and layout of a Website to ensure that attractive and usable design is obtained. Webmasters do not necessarily have the artistic talent and graphic skills required to develop an attractive design and layout for their Website. Many WEBMASTERS would benefit from formal training in the design of web-based and electronic publications. Many organizations have opted to seek advice from, or hire graphical designers to help them create and manage the design of their Website.

New tasks and new players

What new knowledge and skills will be useful when dealing with new tasks in an electronic environment?

Role	Additional knowledge required on:	Where can I find this information?
Author	Word processors; use of templates and styles; digital image formats.	Unit 2- Lessons 2.1, 2.2, 2.8
Librarian	Tools and information for data access, including metadata; subject indexing and thesauri.	Unit 3
Computer systems officer	Processes and systems for managing electronic documents; database management systems and networks.	Unit 4 - Lesson 4.3
Publications officer	The features, usage and benefits of the various formats of electronic documents and images.	Unit 2, Unit 4 - Lesson 4.3
Webmaster	Creating and providing access to collections of documents.	Unit 4 - Lesson 4.3, Unit 5 – Lesson 5.3

Note: In some cases, it is advisable that all members of a team have basic knowledge of all the steps in the process in which they are involved. This becomes an important consideration in small organizations when a single person can have more than one role.

New organizational chart

Usually, organizations start developing their websites in an improvised way. There is a lot of enthusiasm and creativity in the initial phase. The hard task is to **institutionalize these activities to ensure continuity,** while **keeping the creativity and spontaneity**.

This can sometimes lead to disputes between different departments. For example, let's have a look at the following debate..

The Webmaster should report to the Computer department: they maintain the servers and the software.

I don't agree: the Internet is a PR tool, so the Public Relations department is responsible.

OK, but it is the Library that has to present the content in a logical way, and respond to the users!

New organizational chart

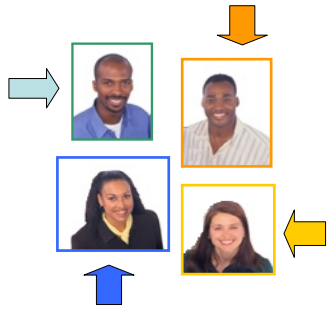
Finally each member proposes a temporary solution.

Which one do you think could work?

1. "We will give responsibility to the Public Relations department".
2. "We can establish an editorial committee with people from different departments".
3. "We can give joint responsibility to the Library and the Computer department".

Click on your answer

New organizational chart



Although there is no single solution for all organizations, the establishment of an **editorial committee** with people from different departments can be a good solution.

Such a committee will be aware of the information being produced across the organization and can propose and organize an integrated workflow for the electronic management of documents.

The danger is that the committee members may struggle to accommodate the time demands from the editorial committee with those from their department.

The senior management of an organization should show its commitment to streamlining operations and supporting new activities by providing the committee members with sufficient time and resources to do the work.

The information lifecycle

Now let's take a glance at how the production and distribution of information is changing.

This can be presented in different ways. The scheme below represents a traditional model that applies to **printed research publications**:

Phase	Who does what
Creation	*Authors* writes (sometimes by invitation from the *publisher*)
Acquisition	*Publisher* selects/accepts manuscript for publication
Processing	*Publisher* edits *Publisher* formats publication (typesetting) *Publisher* arranges for printing *Publisher* distributes to *libraries*
Storage	*Library* catalogues *Library* stores
Dissemination	Information about the publication is distributed in secondary publications (awareness bulletins, abstract journals) that the *reader* uses to discover about new publications.
Access	*Reader* requests publication from *library*. *Library* delivers document(s).

Variations occur when:

- Institutions act as *author* **and** *publisher* for some publications;
- the *library* is not included when the *reader is a* subscriber and receives the publications directly (e.g. extension leaflets or periodicals);
- 'acquisition' takes on a different meaning for a *library*, i.e. subscription to journals or purchase of books.

Changes in the information lifecycle

How this model changes if publications are distributed online?

Phase	Who does what
Creation	*Authors* writes, and does the initial formatting
Acquisition	*Publisher* selects/accepts the manuscript for publication
Processing	*Publisher* edits and completes the final formatting
Storage	*Publisher* loads the finished document to a webserver and adds metadata (information about the manuscript).
Dissemination	Information about the publication is distributed in online *databases* of abstract bulletins, or Internet search engines. The *reader* uses them to discover links to the publications s/he needs.
Access	*Reader* requests document from *publisher's* server. *Publisher* provides access to document by web download or e-mail.

There are a striking number of changes.

Particularly, the *library* no longer stores printed publications, providing instead access to digital publications on the organization's, or on the publishers', servers. However, the *library* still has to pay subscription fees to provide users with access to commercial publications.

While the new model is becoming a reality for many universities and research institutes, especially in developed countries, most have implemented a hybrid information cycle that includes access to electronic and printed publications.

Summary

- Technology has changed the ways in which **organizations produce and distribute information**, and **new opportunities and needs** have emerged as a result.
- Organizations are increasingly having to deal with the **creation, storage and dissemination of electronic documents**, and are finding ways to **optimize** and **institutionalize** these activities.
- **Roles within organizations are changing**, and **new roles are emerging**: authors, publication officers, computer officers, librarians, etc. need to acquire new knowledge and skills to perform the new range of tasks.
- People from various disciplines need to work together to propose an appropriate strategy to develop an **integrated workflow** for the **management of electronic documents** in their organization.

If you want to know more...

Getting Started in Electronic Journal Publishing. Sally Morris.
http://www.inasp.org.uk/psi/ejp/essay.html

Gaining independence: a manual for planning the launch of a Non-profit electronic publishing venture. Compiled for SPARC.
http://www.arl.org/sparc/GI/

A comprehensive overview of available resources is offered in:
Publishing Resources for Journals and Repositories
http://www.arl.org/sparc/core/index.asp?page=h16

Borgman, C.L. 2000. From Gutenberg to the global information infrastructure : access to information in the networked world. Series title: Digital libraries and electronic publishing. Published by Cambridge, MA - MIT Press. ISBN: 026202473X.