

# A Content Management Implementation at Intercollege

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**Abstract**-This paper presents in summary the implementation of a Web Content Management System (WCMS) at Intercollege. The system was developed to be used by the Research Office of Intercollege. As a Content Management System (CMS) the system presents a tool that can essentially be used to manage content, which materializes here as research activities and knowledge obtained, in various ways, so that it can be quickly and easily published and accessed. The purpose of this system, just like other CMSs, was to record, analyze, and be able to re-use accumulating information on research activities of Intercollege employees.

**Keywords:** Knowledge Management, Content Management Systems, Web Content Management

## I. A SHORT INTRODUCTION TO KNOWLEDGE MANAGEMENT AND CONTENT MANAGEMENT SYSTEMS

There may not be a universal definition of Knowledge Management (KM), but in a broader context this may be defined as the process through which organizations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves sharing among employees, departments and even with other companies in an effort to devise best practices. In other words, it is your firm's system for capturing, managing and re-using the knowledge that resides in electronic documents on your network or, more important, the tacit knowledge<sup>1</sup> that is in your employees' heads.

The use of KM in the business era is not entirely new. The initial tasks of knowledge management which include the collection and storage of knowledge in databases are dated back to the Industrial age when various organizations had the need to archive as much descriptive information as possible about their business processes. What is considered relatively new is the management of knowledge using the aid of information technology [2]. In fact, in our modern knowledge economy, where knowledge is greatly valued, knowledge management is one of the most common catchphrases used by vendors to get the attention of corporate executives.

Knowledge management is characterized by the following four basic activities: 1) Knowledge acquisition, 2) Knowledge analysis, 3) Knowledge preservation, and 4) Knowledge utilization. As it is easily understood, to manage knowledge,

first of all knowledge must be acquired either through the process of learning or through the process of identification. Then knowledge can be analyzed, stored and used at any time, on any subject of interest.

## Content Management Systems (CMS)

Content Management is the process of organizing, categorizing and structuring knowledge in such a way that it can be archived, published and reused.

A Content Management System is a tool that allows end users to manage this content (knowledge) in various ways, so that it can be quickly and easily published. CMSs incorporate simple features like: editing, content search, version history, approval processes, personalization and localization of content. In addition, CMSs include advanced features like dynamic content generation, metadata and taxonomy categorization, content analysis and content security.

The following five types of CMS are the most common and are widely used nowadays by organizations around the world [1]:

1. Web CMS (WCMS): Help organizations in the content creation, management, and delivery through the Web.
2. Transactional CMS (TCMS): Used in e-commerce transactions.
3. Integrated Document Management Systems (IDMS): Help organizations in managing enterprise documents and content.
4. Learning CMS (LCMS): Used for authoring and publishing web-based learning content.
5. Publication CMS (PCMS): Help organizations in managing their publications.

## II. WEB CONTENT MANAGEMENT AT INTERCOLLEGE

Intercollege is a tertiary education institution located in Cyprus. The Research Office of Intercollege is responsible for the coordination of all research activities undertaken by its employees locally and internationally. To meet its aims and objectives, Intercollege's Research Office needs to acquire, analyze, preserve and utilize knowledge regarding various projects - including proposed, ongoing and finalized projects - and research-related emails. Such tasks can be handled using the proposed Research Management System, a web-enabled Content Management System. As a web-enabled system and since it will be installed on Intercollege's intranet, this CMS will provide the ability to its end-users to access it securely from anywhere within Intercollege eliminating the need for

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<sup>1</sup> Tacit knowledge refers to the knowledge, which cannot be readily or easily written down, primarily because it is based on skills. It is the know-how contained in people's heads [1].

any software to be installed on their desktop computers. Furthermore, such a system will be more easily maintained and upgraded. Through it the Research Office will be able to rapidly publish a variety of content to interested parties.

The methodology selected for developing the Research Management System was that of Rapid Application Development (RAD) [3] that breaks down activities into four phases being: Requirements planning, User Design, Construction, and Cutover.

The first two phases (Requirements planning and User Design), were completed using the Joint Requirements Planning (JRP) and Joint Application Design (JAD) techniques. Both techniques rely heavily on the cooperation and collaboration of the system developer and the end-users.

During the construction phase, a prototype system was created by the developer to be reviewed by the end-users. Modification and upgrades were then made on the prototype until this was considered to be complete. At the cutover phase - the last phase of the RAD model - the constructed system has undergone thorough testing. The main end-user that cooperated with the developers during the development stages of the project was a senior officer in the research office. Other end-users such as faculty were not involved at this time. Training the remaining end-users, being all interested faculty, was scheduled to follow the institution's decision regarding conversion plans. System implementation was considered to have been completed at this stage.

### III. RAD PHASES OF PROJECT DEVELOPMENT

#### A. Requirements Planning

The main two problems identified with the existing system were:

- 1) Tracking proposed, ongoing, and finalized projects as well as current and future research activity of Intercollege's faculty.
- 2) Publishing and distributing research-related emails, (received in hundreds every week from local and international agencies), to interested parties at Intercollege. Examples of such research activities are requests for collaborators in big projects, announcements for seminars in specific research areas, etc.

Additional system requirements were identified during requirements' planning. According to these the required system should:

- Be Web-enabled (accessed through a web-browser) so as to be easily accessed, maintained and updated.
- Be fully managed by users with administrative privileges.
- Be accessible from Intercollege's Intranet.
- Allow faculty to submit and manage their projects (Proposed/Ongoing/Finalized) and other research interests.
- Provide the ability to its users to track down a specific project or research interest based on various criteria (Title, Author, Date, etc).
- Collect all research-related emails from the mail servers.

- Allow an administrator to format, categorize and distribute emails to user groups.
- Inform a user upon arrival of an email or project of their interest.
- Be tested for stability and security.

#### B. System Design

In a JAD session with the Research Office the attendees re-examined in detail the requirements laid down during the previous phase.

- The system to be designed had to be a Web-based system, which would be accessible through a browser, from any machine belonging to the Intercollege network. Plans for making the system accessible from the Internet were also considered but were later dropped for security reasons.
- The system should provide the ability to users with administrative privileges to fully manage it; that is, to add, edit or delete various content, to publish content of other users, to add or delete users, to add or delete research interest areas and to update the emails database on demand, i.e., at times other than the scheduled ones.
- Additionally, the system should provide tools that would aid the end-users to submit their projects and research activities and then manage (add/edit/delete) all their details.
- Consequently, users should have the ability to track down projects/research-interests/emails using a search tool resembling those found on Internet search engines.
- With regards to research-related emails, the system should retrieve new emails from the mail servers at scheduled time intervals, store them in its database in a readable format, notify the administrator about their arrival and provide the means for their acceptance/rejection and further distribution (publication) to interested user groups. Once the administrator distributes the mail the users concerned should be notified. Finally, the Research Office required that the system should be fast, stable and above all extremely secure due to the importance of the information being manipulated.

#### C. Construction

The construction phase of the project began by taking under serious consideration the hardware and the software infrastructure of Intercollege.

##### Hardware Infrastructure:

With the term "hardware infrastructure" we mean all the physical hardware components, which are used to interconnect computers and users. The infrastructure includes all transmission media like telephone lines, network cables, antennas, routers, switches and other devices that control the flow of information through transmission paths.

Due to the fact that the system to be built would acquire, manage and store information, a need for a database server was imperative. Two types of database servers were available at Intercollege's Local Area Network, being a Microsoft SQL