

Mapping Content Management System Features with Knowledge Sharing Elements for Creating Online Knowledge Sharing Model

Mohamad Aizi Salamat^a, Mohd Farhan Md. Fudzee^b, Hairulnizam Mahdin^c,
Kamaruddin Malik Mohamad^d

Fakulti Teknologi Maklumat dan Multimedia
Kolej Universiti Teknologi Tun Hussien Onn
Parit Raja, Batu Pahat, Johor, Malaysia
Tel: +607-4538054, +607-4538053, +607-4538044

Email: ^aaizi@kuittho.edu.my, ^bfarhan@kuittho.edu.my, ^chairuln@kuittho.edu.my, ^dmalik@kuittho.edu.my

ABSTRACT

The emerging of knowledge management promises a great impact towards organization's productivity. The main idea is to enable knowledge sharing between knowledgeable staff while bringing the tacit knowledge into surface. However, the most challenging part in creating any portal is to design and develop the portal from sketch. Moreover, it acquires high expertise and cost; thus making it far from success. The arising of Content Management System (CMS) especially Open Source Software (OSS) provides alternative solution to cater with the mentioned drawbacks. The purpose of this paper is to propose a knowledge sharing model using CMS. The key activity in this research is to map the CMS features with knowledge sharing elements, by reviewing particular models. Significantly, the adoption of the proposed model in developing knowledge portal will decrease the design and development time, while using OSS can reduce the cost.

Keywords

Knowledge sharing, content management system (CMS), open source software (OSS), CMSharing model.

1.0 INTRODUCTION

The emerging of globalization era brings a multitude of benefits across the world, thus reflects the important of knowledge. Knowledge sharing within community is really crucial to ensure knowledge grows. But, to develop the sharing platform via online, some consideration must be put in the first place, especially when it involves a big amount of investment; money, knowledge's user and time. It is understood that top management is unlikely to invest in this kind of highly cost project. On top of that, it requires organization to design and develop the knowledge portal from stretch. sdd

The arising of OSS in open market enables organization with small resources to build online

platform for knowledge sharing. On top of that, almost all CMS applications can be understood and adopted with minor efforts from organization. Besides, the development time can be decreased as good programming skill is not a must.

This paper is organized into several sections. Section two describes some literatures and related works. Section three discusses about two research models and flows to derive the objective. Finally, as the result, section four will propose CMSharing model and some discussions based on particular analysis.

2.0 RELATED WORKS

2.1 Knowledge Management

Nowadays, many commercial or non-profit organizations or companies are facing stiff competition and need knowledge superiority in order to gain competitive advantage. The competitive advantage is in many forms such as trend, pattern and unseen relationship. Nonaka and Takeuchi (1995) emphasize the need for knowledge management as stated below:

"In an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge. Successful companies are those that consistently create new knowledge and disseminate it widely throughout the organization, and quickly embody it in new technologies and products."

Most of the knowledge workers in organizations is not fully utilized as their knowledge and experiences are embedded in their head and not documented. The most frequent word we hear today starts with the letter "K", as in K-economy. "K" means knowledge. There is an old saying, "knowledge is power" and this has a greater impact on current information era. The saying can give a greater impact if we could change it to "knowledge sharing is power" so that the organization is able to maximize the employees' intellectual.

2.2 Knowledge sharing

Knowledge sharing is becoming an important thing in carrying out activities in organizations. Since five years ago, many organizations have endeavor carrying out knowledge sharing in numerous ways. The realization of knowledge sharing is important in enabling staff to solve problems, to reduce redundant cost and to create innovation through the process of knowledge sharing. For knowledge sharing to be successful, organizations must first know who will benefit from the knowledge that is going to be shared (Dixon, 2002).

The main priority of the developed countries is to increase knowledge productivity. Countries that carried out the knowledge concept will dominate the economy in the 21st century (Drucker, 2000). To have knowledge sharing in universities and institutions of higher learnings, expertise in knowledge sharing must be developed and incorporated into the organization system.

According to Steven Horne of Arthur Anderson, he suggests that the system development have to be measured according to quality, time and cost. If we look at the process of knowledge sharing, it focuses at the output or result that has been achieved (Suzana, 2001). The number of organizations that have develop "learning effectiveness inventories" is increasing and expanding since knowledge sharing becomes the basis of human competency and organization development in the knowledge based economic era.

Capital Works in Williamstown, Massachusetts is the best example in practicing the knowledge sharing in the organization. This company has carried out Learning Value Analysis, where learning is the process of gaining knowledge from various dimensions based upon the followings:

- Operational efficiency in economy, production and human perspective.
- Knowledge efficiency which can be described as how to use knowledge, how to develop knowledge and how to develop social relationship.
- Learning efficiency which is actually training in the social aspect, dynamic working environment, critical behaviors and working dimensions.
- Efficiency in strategy which is actually to have a balance in both the economy and human objectives.

Human Synergistics / Center have developed Organizational Effective Inventory to share information with other organizations on the effect towards the employees in the organization.

As a conclusion, knowledge in an organization can be divided into few categories. By knowing the features and the use of the knowledge, one has to understand,

take, present and use the knowledge to the fullest in order to create new ideas and to be able to compete at the international level. Apart from that, knowledge management involves a cycle of activities such as the development of knowledge, storage, dissemination and accumulation. As a result, manipulation of knowledge with the use of supporting equipment either technology or non-technology, an organization can achieve a higher ranking as compared to its competitors.

2.3 Knowledge sharing elements

In the process of having knowledge sharing in an organization, there are three main elements that have to be considered. These elements are human, place and information. All these elements must exist in order to have an effective knowledge management sharing process.

2.3.1 Human

Knowledge exists because of human existence. Knowledge presenter must know what to be delivered to the other knowledge users. Knowledge presenter can also be referred to as knowledge user, because the presenter himself is using the knowledge that has been shared by other users to solve a problem. Contributor or knowledge presenter can be categorized as colleagues, experts, friends and also customer to the organization.

2.3.2 Place

Place here means that the location where the knowledge could be shared. By having this place, the shared knowledge can be discussed by knowledge users to share their ideas for a certain activity or problem. Apart from that, it can help in forming many communities which have expertise in their own fields and working together in running a certain project. For a knowledge user from a lower ranking group, he could learn many new things that can be used to upgrade his quality of work. In addition to that, the knowledge sharing helps in providing answers to existing problems.

2.3.3 Knowledge

Information or knowledge gained from the knowledge sharing process is either structured or unstructured. These two types of knowledge enable users to create new knowledge. The shared knowledge can be classified and accessed by the knowledge users. The shared knowledge must be useful to other users.

2.4 Approach of Knowledge Management in Knowledge Sharing Concept

Some organizations expand through the certain processes that determine by management. This

organization expand through the knowledge process they had been created, sharing the knowledge and idea, beside to tighten relationship and change the idea to another staff. Technical systems that have been developed are uses for processing data to information. For develop a facilities process of knowledge sharing, organization must look at the future about technical site and focusing on information environment in overall. Such as human resource policies, information transfer process, organization incentive structure and so on. Understanding about the organization context deeply and dynamic is an important and also pressures from the outside environment such as communities, government and competitors (Devenport, 1997).

Developing knowledge management will be open to human centered approach whereas organization will be look complexity from context that developed before. Knowledge management can be assume as a frame work or approach that need staff in organization create a community for collect every information and share the knowledge that they know to increase the quality of service. In figure 1 that show equipoise between information cultures with technology. Knowledge management had carried to three main resources in organization, there are people (staff), process and technology for organization can using and share the knowledge and information effectively.

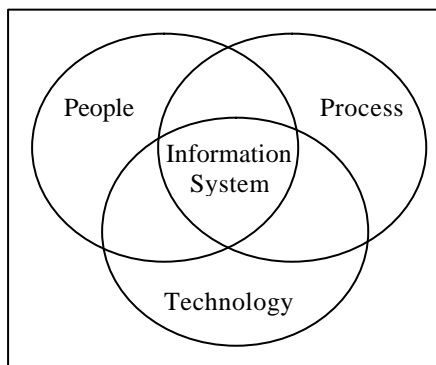


Figure 1: Keys for realization knowledge management

2.4.1 People (staff)

Staff is not the system that manages the knowledge, but organization can frame a policies and training to assist staff for share and manage the knowledge. Knowledge management can design professional cooperation by involving staffs actively in every level of management for sharing the knowledge about what they know and what had been learned.

In most sectors that been developed knowledge management in their organization, it proven that cooperation between staff in one group will produce an excellent working style and more effective.

This working group created relationship, trust and expertise. The also make resources sharing to assist in

working process for the future. Knowledge management will be encouraged for development and facilities communities of practice (CoP).

2.4.2 Process

Management process in organization either formal or informal needs a flow of information and knowledge. Staff not realize this process exist in organization. The processes that happen will help to produce the information need by other staff despite share to make benefits.

2.4.3 Technology and Information System

Technology refer not only as a center of saving the limited resources in organization and not as refer of using knowledge management. Technology as a tools and needs contribution for staff to make organization more effective. Effective technology in design knowledge management will make archive to the user groups that targeted and changing information with others groups in organization.

Briefly, knowledge management in knowledge sharing concept is a approach to inform how far using knowledge management and design the values in organization. We needs understand how to integrating knowledge management in specific organization. Most organization who invest in new technology without understand organization first and knowledge sharing patents, will not archive potential and profits from the investment that make (Petrides and Nodine,2003).

2.5 Content Management

Content management is content that being managed (video, audio, texts, graphics, chains and others) in order to get contributions from different resources with a control measurement to ensure quality.

Contributors are individuals that can be with or without computer backgrounds. Template is used to create a consistant websites. Content management also can be defined as concept, process, function and strategy.

Concept means to organized corporate information to make it more meaningful (in terms of the use of the information, where it will be displayed whenever it is needed by the user).

Process is a set of steps, templates, roles and procedures to achieve the content management concept. In other words it will make the information more useful to the users.

Functions can be described as a user that used the content management, the environment where the contribution happens, information quality control (to ensure quality on the information and the knowledge) and scaled.

Strategy is among from the overall content management process including:

- Strategy to organized information in an organization
- Strategy to understand what is the information in an organization itself
- Strategy to find the information on an organization
- Strategy to maintain the information on an organization itself (relevance and updated)

2.6 Content Management System (CMS)

Content Management System (CMS) is a combination of tools to achieve the content management objectives. CMS use to display information that can be shared through the Internet or intranet. CMS also can be said as a tool that can be used by a user with different background (technical or non-technical) to develop, update, manage and publish many types of information like text, video and others.

CMS allow all the information sent to be saved, updated, controlled and then produce output in many forms. Integration of database, workflow and update tools are among the solutions provided by CMS. It is favorable to be implemented in the displaying information process.

Other component in CMS can be used in knowledge sharing process. Among the elements are forums, chat, document sharing and others.

2.7 Open Source Software (OSS)

The open source does not only mean the access to the source codes. The elements for open source software should agree with the following terms:

2.7.1 Free to be redistributed

The license must do not limit any parties from selling or giving the software as a complete software distributions components that contains the programming from many sources. The license cannot be used to get a royalty or other payment from any sales made.

2.7.2 Source code

The source code is included with the programs, and the distribution of a compiled source codes is allowed. For some product that are distributed without source codes, a publicity/acknowledgement on how to get the source codes must be made and it price is fair with the cost of reproducing the codes, or simply the codes can be download from the Internet without any fees. The source code must be in a form that can be accepted by the public where programmer can made modification on it. The source codes that are intentionally distributed to cause confusions are not allowed. The middle forms

of source code like the output preprocesses are also not allowed.

2.7.3 Original work resources

The license must allow modification on the original work resources, and allow it to be distributed with the same terms with the original software.

2.7.4 The integrity of source code creator

The license can limit the distribution of source code in modification type if the license allows the distribution of additional file with source code in order to modify the codes during development phase. The license must clearly state that the distribution of a software created from the original works is allowed. The license may need the original work resources to bring a different name or version from the original software.

2.7.5 No discrimination to an individual or groups

The license must not discriminate towards any individuals or groups

2.7.6 No discrimination towards other fields

The license must no discriminate between different fields. For example the license can't disallow anyone from using the software in business or any biotech.

2.7.7 License distribution

The rights attached to the software can be used by anyone who receives the codes without the needs on additional license from any other parties.

2.7.8 License cannot be specified to a product

The right that comes with the programs must do not depends on the programs situation where it was a part from some software distribution. If the program is taken from the distribution and been used or been distributed under the program license terms, all parties where the program redistribution must have the same rights as the original program distribution.

2.7.9 License cannot limit other software

The license can't put limitation to other software that distributed with licensed software. For example the license cannot force other software that distributed in the same medium to be open source too.

2.7.10 License must be technology-neutral

License must not be bound to any individual technology or to only some style of interface.

All the terms stated above are the description on OSS. All application that involved OSS, should adhere to the terms that have been stated.

3.0 RESEARCH MODEL

Based on the literatures and related works discussed in the previous section, two research models is built. The first model is knowledge sharing model (Fiona Fui-Hoon Nah et. all, 2005), see figure 2. The second model is CMS model (Chris Kartchner, 1998), see figure 3.

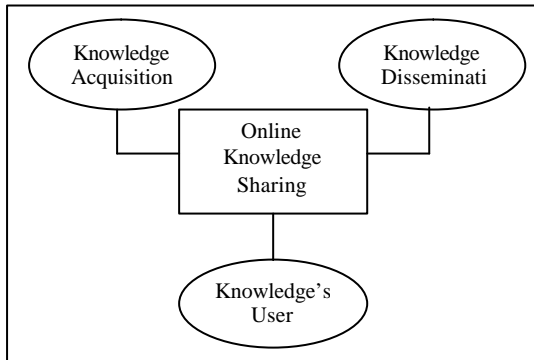


Figure 2: Elements in knowledge sharing

Figure 2 describes the relation between three elements in online knowledge sharing process. Knowledge acquisition, knowledge dissemination and knowledge's user are the elements of knowledge sharing. Knowledge's user is defines as the people whom wanted to share and to receive knowledge from other. Knowledge acquisition is describes as the acceptance of knowledge or document to be shared with one another. While knowledge dissemination is describes as delivering knowledge to particular users. The connection of these elements will create and establish sharing process.

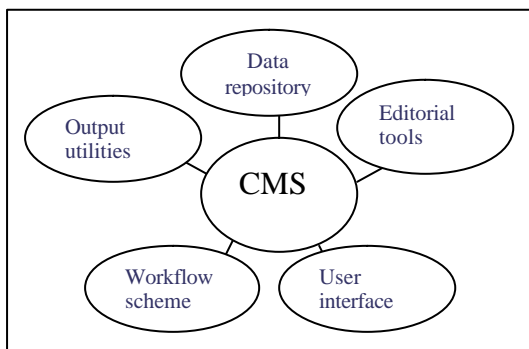


Figure 3: Elements in CMS

CMS model has five important elements that illustrated in Figure 3. It consists of Data repository, Output utilities, Workflow scheme, User Interfaces and Editorial tools.

3.1 Data repository

Also called a database, the data repository is the organization of the content to facilitate access, updating, and re-distribution. The specific organization of the information will depend on how it is to be accessed, but generally it will be broken down to its lowest logical level of granularity. The data repository might be one of the commercial relational-database products of varying size and power, or a custom database. The format of the information might be SGML or even plain ASCII text. It may be accessed from a local network, intranet, or the Internet, and security to control authorized access must be thought out and included.

3.2 User interface

The set of screens used to interact with the data make up the user interface. Since a CMS is typically an integration of several products, it will utilize several different-but-familiar interfaces, specifically those of Internet browsers and word processors. Frequently those are used in combination with custom interfaces designed to fit the specific process needs of an organization or publication.

3.3 Editorial tools

Word processors and SGML editors are key components of most CMS solutions. They provide tools that allow content creation and editing, as well as a fluid file form that facilitates the ongoing processing of the content. The ideal set of editorial tools would allow authors to work in a software environment that they are comfortable with, such as a word processor or text editor, while following a few basic rules. That is preferable to an environment where the author must be proficient in SGML tagging for editorial purposes. While some authors might be intrigued by the workings of a tagging scheme, most will be distracted by them, taking away from their content focus.

3.4 Workflow scheme

With a CMS, we always know what is happening with any given component of the content. The workflow scheme keeps track of each data element, its check-in and check-out history, as well as its version history. That allows those checking on the status of an article to know whether it has been accessed, is being edited, has been submitted for copy editing, has been returned to the author for re-work, or has been accepted in its final form. In addition, the version history tracks which version of the article has appeared in which publications. Different versions remain accessible forever. The workflow scheme can also generate custom reports to provide status information in a

variety of formats. It allows the publisher to control (or at least track) the content and process.

3.5 Output utilities

The output utilities are filters that take information in the data repository and format it for various publishing media. For instance, a filter may generate the CD-ROM version of the content in its final form, but may generate a print version in a partially tagged form to be sent to a typesetter for pagination.

Some would argue that the output utilities are the most important part of a CMS. Others skip over them as an afterthought. The reality is that even after getting the data in shape and providing access to it and control of it, without well-developed output utilities the content is not going anywhere. It is a misconception that once data is "media neutral" and in a data repository, the job is done. Clearly, the job is easier. However, not only is it not done, it is truly just beginning.

4.0 RESEARCH OUTCOME

After the two models been revised in term of their function, one collaborative model has been developed. The collaborative model is shown in Figure 4.

Collaboration between the functions in that two models shown that element knowledge acquisition in knowledge sharing model can collaborate with repositories service in model CMS. Whereas the main processes in this element are collect and store knowledge that want to share to others people. Every knowledge or information will be gathering from outside or inside to be store in repository. So the idea will not disappear.

Beside that function from collaborate between knowledge dissemination and workflow engine is disseminating relevant knowledge or information to people who want it. Users just only search the information or knowledge and download for the future use.

Despite, collaborate knowledge user and user interfaces elements show a place (interface) for user share their knowledge in chat room, forum, upload and download documents and others.

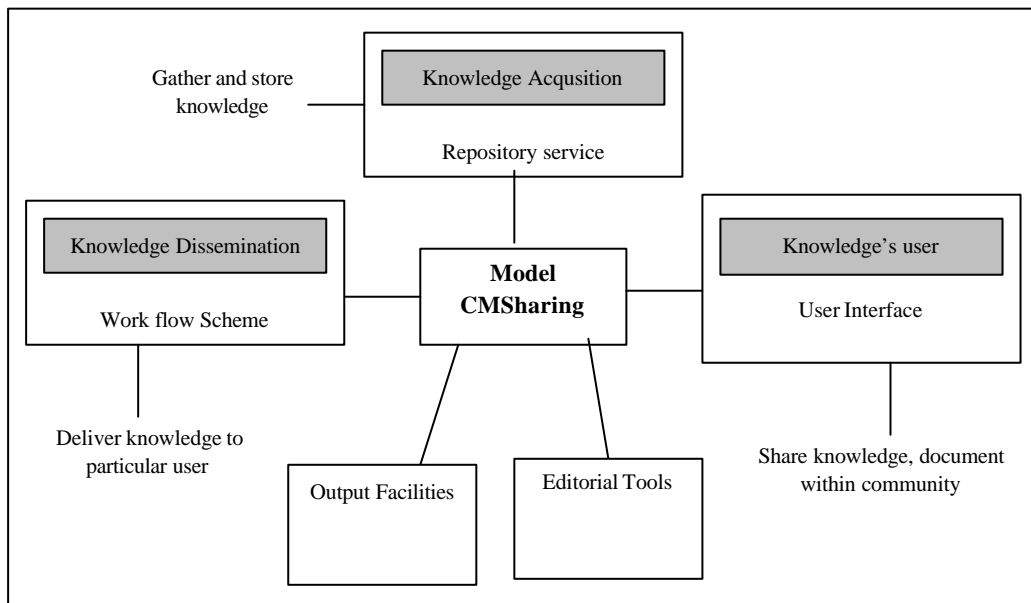


Figure 4: Collaboration model between CMS and knowledge sharing elements.

4.1 CMS Benefits

The main goal of CMS is to ensure the organization archives goals that have been decided. The contents can be use in any format - website, documents and etc. CMS will provide facilities on creating, editing and display information in website. Previously, when we want to develop a website, it needs certain technical skills (HTML, programming). A good CMS can allow

non technical website developer (who not expert in programming) can easily display information in their website.

At the same time it will reduce calling to call center to make information changes in website. CMS can make it time shortest to display information in the internet and allow user to get contents or information fast.

The security is one of important issue in process of disseminate and storing knowledge and information. CMS provide a better security facility. It can control registered user to send information or knowledge and can control user that only can read the information displayed. Its can also allow trusted administrator to control all the data and information in repository.

Users are not depending to web designer to change the website because it can do at anytime. Every user can update the website by oneself, rather than depending on expert person to do everything in website. CMS will determine the person who makes changes and the information (history) will be store by CMS if certain information changes in database.

The main transfer factor to CMS is costing. Website development process will spend a big money from organization. By using CMS, it reduces the cost for website development. This is why many CMS have been developed based on open source software. It also will reduce updating cost because user can do updating process without referring to consultant. Staff or officer training cost can be minimizing as it can be learned without any hassle. This is because many CMS will be provided with easy-to-learn user manual on how to use and maintain it.

Time is element that needs to be considered when developing the website. By using CMS based open

source software, time of website development can be reduced. This is because CMS has been developed by web developer around the world to share their ideas and expertise, regardless of profit. User just downloads any CMS from Internet, and then installs that CMS accordingly into server.

To put into the nutshell, CMS offers multitude of benefits that have been discussed earlier. We also mention about open source software, so in the next part we will discuss the advantages of using open source software (OSS).

4.2 OSS Advantages

OSS arises as an alternative to proprietary software. In Table 1 it shown comparison between open source software and proprietary software or commercialize software. The attributes that been compared are License, Controlling, Innovation, Time and Security/reliability (Chris Coppola, Ed Neelly, 2004). Cost comparison is concerning acquisition cost, implementation and support costs and costs of scale between open source and proprietary software also shown (Chris Coppola, Ed Neelly, 2004).

Table 1: Comparison between open source and proprietary software (Chris Coppola, Ed Neelly, 2004)

Attribute	Open Source	Proprietary
License	Licensed to provide freedom to use for any purpose, modify, and redistribute.	Licensed to restrict use to “acceptable uses”, protect against modification and redistribution.
Control	Balanced. Consumers and providers of commercial offerings have equal access.	Vendor is in control. Often large up-front investments in the software, training, and other implementation costs create a lock-in situation that strips the consumer of control.
Innovation	Rapid and diverse. Leverages a very large community of users and developers working in parallel.	Limited to vendor investments. Typically caters to the features sought by the largest audience. Low levels of innovation.
Longevity / Risk of abandonment	Software will always be available as long as it serves a useful purpose. The larger the adoption the safer the investment. No single point of failure.	Dependent on the success of the vendor. Single point of failure.
Security and reliability	As the great tradition of peer review produces high quality academic and scientific works, open source projects produce software that is generally more secure and reliable. Like peer reviewed papers, open source software is subject to greater scrutiny and leverages a larger collective intelligence than proprietary software.	

Total cost of ownership (TCO)		
Acquisition cost	Low or no initial license cost.	License costs on the rise in education.
Implementation and support costs	OS community support and competition for commercial support keeps costs low. Choice allows consumer to bear costs internally which may further decrease cost.	Costs determined by and coupled to vendor. Lack of choice. Alternative service organizations often lead to higher costs.
Costs of scale	No additional license cost with additional users, servers, etc.	License costs generally rise with increased use.
Platform support	Broader platform and server support increases leveraged investments in existing institutional infrastructure.	Platform support limited to what the vendor offers. May not fit well with institutional infrastructure.

5.0 CONCLUSION AND DISCUSSION

In website development as a platform of knowledge or information sharing, the main elements to be concerned are costing and time development. These two elements can be decreased efficiently by using or applying CMS based OSS. It is clear that there are many benefits and advantages by using CMS as a knowledge sharing platform. Other benefit beside cost and time is that user doesn't have to have any programming skill, and yet still can develop a website easily. From the model and advantages that we mentioned above, there are no barriers or reasons to organization, in giving excuse to the development of web based knowledge and information sharing platform.

Major problem in development a platform of knowledge sharing can be decrease as a minimum problem. As we know organization not need the expertise for development the platform because the CMS based on OSS is develop for none technical staff. Also the advantage of OSS in costing site that shown in Table 1, will be given a way for organization to develop a knowledge sharing platform with the minimum cost include.

In future, the next discussion that we can do is about how the knowledge can be capture when the user discuss through chatting, forum or voice chatting. The policies of incentive for the user that sharing the knowledge to other people must be develop.

Significantly, by using CMS for create or develop knowledge sharing platform is an excellent step because knowledge sharing is an important in 21st century and globalization era that is base on knowledge environment.

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