Securing Content Management System based Web Applications with Analyzing Vulnerabilities and Effective Configuration Improvements.

Sunil Phulre
(ComputerScience and engineering)
LNCT University
Bhopal,India

Ajay Kumar Phulre
(Computer Science and engineering)
LNCT University
Bhopal,India

Megha Kamble
(Computer Science and engineering)
LNCT University
Bhopal,India

Abstract—**Technical users can develop various web applications or web sites according to their requirement. The Content Management Systems (CMS) plays a major role for technical or non-technical users who want to enable custom web applications according to their need using many attractive and useful features of CMS like a set of plugins, web Templates, Database, and an extended set of tools. The Internet is a source of information and it also provides a platform for various useful web application development for Worldwide users. Proposed work will analyze vulnerabilities, security, and Effectiveness with propositions for improvements.**

Keywords:— vulnerabilities ,Web Services, Communication Framework, Framework security, Content management System.

Fig: Multi-tiered CMS architecture

I. INTRODUCTION

Content Management Systems has many different frameworks, many types of data storage, many different platforms, and many different languages available to meet the needs of building a strong CMS. By allowing CMS to retrieve piggyback with Web server technology, content delivery and delivery is simplified because file formats already exist and intermediate technology now allows you to manage and integrate and deliver powerful content to the end user. In addition, because middle-ware is already in place, access to other types of server technologies (such as databases) is simplified, compared to writing support software to tie different servers and server types together.

CMS architecture is primarily based on tiers, where the tier is a unique and independent object that provides a particular service within a large software application. Tires often use different computers and communicate with each other using different protocols [2].
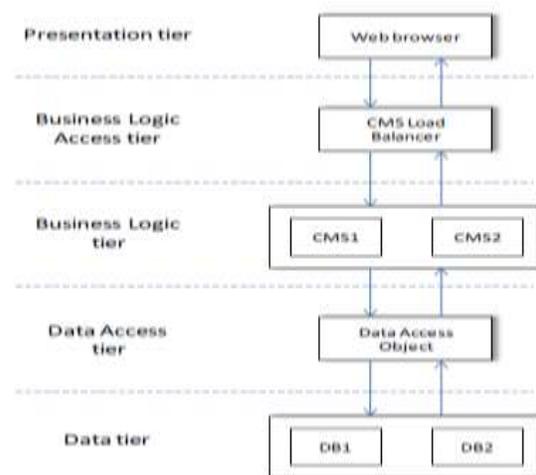
Content Management System (CMS) is a support system collection, creation, management, publication and the dissemination of information. CMS can be is defined as a set of business and planning rules processes used in the content of individuals and organizations to align online publishing efforts with business objectives [6]. Modern web applications use these content management systems to effectively and efficiently manage web content [27]. A particular type of CMS is known as a Web Content Management System (WCMS) with a primary focus on Web content [7]. In addition to using WCMS to support their web applications, web-based content management has become an additional burden of maintenance [4]. According to authors in [11], WCMS is partly a visible solution to the business pressure problem and partly a push for software providers. The latter may explain the lack of organization-oriented organizations they face today. Moreover, very high costs concerning the creation and preparation of costs related to the manufacture

and maintenance of the content may appear after the launch of the Web application [5].

Moreover, we found out when using the WCMS product, many organizations are fighting the organization procedures. When an integral part of key processes is supported by WCMS, entirely Control of this channel is required.

The research domain which we are discussing about in this manuscript by Web Engineering, defined as "systematic and quantifiable use methods (methods, techniques, tools) for less expensive requirements analyze the design, testing, operation, and maintenance of high-quality Web applications"[10].

II. Analysis of the Web Content Management System WCMS Process Framework

Management transforms strategy into working through Planning and Management processes, Budget Planning, Quality Management and Contract Management. Leading web organizations should provide services to the full Web team under the direction of the webmaster and coordinate web activities and equipment objectives. Leading web organizations also direct all Web activities across the organization and apply project management techniques planning and monitoring and reporting on Web activity. It is therefore clear that it is a personal power and requires proper management. This is done through the planning and control process.

Strategic Management processes cover all tasks in terms of general web strategies as specified objectives, policies and programs provided to overcome strategic and operational direction proper management of resources.

One the process described in Strategic Management is Description of the Organization, from the authors [5] clearly demonstrate the creation of independent content organizing a group and defining its organization setting and defining roles as well flow.

Supplier Relationship Management controls the provision of external content. In accordance with Ebner . [5] External content providers require contractual agreements between the registrant and syndicator to agree on regulatory issues such as patents, terms and conditions of delivery, and to pay. Also, the content should be the same based on registrar structure also presentation requirements.
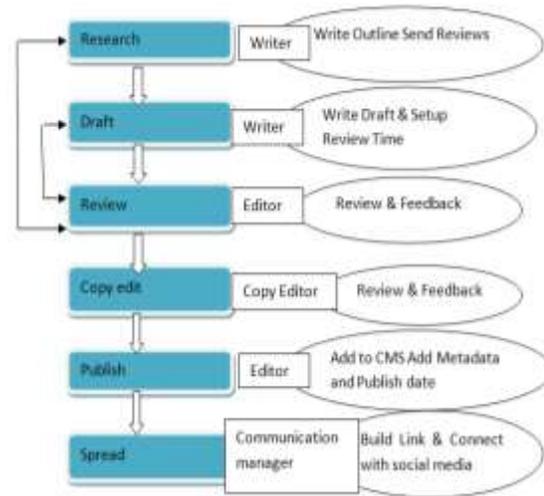

Fig : Content flow Diagram

Fuller pointed to that organizations with a very effective website include all participants in their web design applications. Therefore, the relationship of the participants Management defined. The customer description says another factor according to Fuller in [8]. is it is important that organizations learn to think like themselves customers, know what their needs and drivers are there is. Summarizing text details ('the message '), construction, structure and function within the publishing area requires a view in the books. Publishing Strategy is concerned to reinforce this view with regard to content logically available books form the marketing and communication system. The Examples Publishing Strategy outlines guidelines by communicating with different groups. And Promotion Description. Each process is described, based on in existing texts.

Performance Management Operational Management processes affect content production and web content storage. The following processes are described within Operational Management: Web Content Production Management; Page web design description; Product Standards Management to protect product flexibility (especially covered by pre-set templates such as content forms and style sheets); Transformation Management and Development Management for continuous improvement. The most common modern applications are 'in perpetual betaphase', meaning they are continuous and never finished. It is therefore not surprising that one of the results is that web-based organizations use consistent standards for page design and / or templates throughout the website. To gain more insight, we describe the "Production"

process. The content of the timely and rich Web application works to win users and increase user retention. Therefore, the Web application should have a critical amount of high quality content at the time of launch. However, the cost is very high with regard to content creation and editing arises after the launch of the Web application, thereby creating a work-in-progress process. To ensure that new content meets the required standards, new content must be reviewed before approval. [9] refers to this in the model life of his content such as creating, reviewing, extracting and publishing processes. Additionally, editing a page in the context of a CMS-based Web application involves putting one or more of the content together on a single page. It is not uncommon for the content creation process to have many authors write and edit content.

III. Proposed Risk Analysis and Development of Effective Corrections

We find out if our site is infected with some kind of Malware and Malicious code and then the primary action different WordPress users should take is to maintain their website updated with the latest version which is available, the updated version often fixes the general WordPress sensitivity available in previous versions. Apart from this, it is also necessary to do the same with the plug-ins that we use, and to remove all that we do not use.

• *Detecting the process of infected files.*

The first malicious code scanning process we like via the FTP scripts from a local node that has installed Antiworm program offline. With the help of FTP scripts we can download the complete website so that every web-based file is evaluated by searching for malicious code. generally the antivirus is able to analyze files while downloading so once the download is over we should go check the generated report only, so we know which ones are classified as malicious.

• *Process of configure wp-content folder*

In the wp content folder looking for folders to download PHP files containing PHP files. Therefore, delete all PHP files in the wp content folder. Due to the large size of the wp-contant folder it is not easy to

find PHP files to search for, we use (a) cPanel File Manager Now type .php in the search bar and choose the current directory. The file manager will display all the PHP files. (b) By Using the FileZilla file filter to search for any specific file type and delete the bulk file. A different way to discover PHP files in the download folder is to use Windows Search. Download the "uploaded" directory on system and use Windows Explorer search to record PHP files. You must scan the download directory for possible viruses. Generally, the download directory does not contain PHP files. Therefore, delete all PHP files in the wp-content directory After clean-up of your wp-content folder and reinstalling themes and plug-ins, and install security plug-in called Anti_Malware and Brute_Force Security , and update the WordPress with this plugin. This plugin can identify many known threats and traps and secure them.
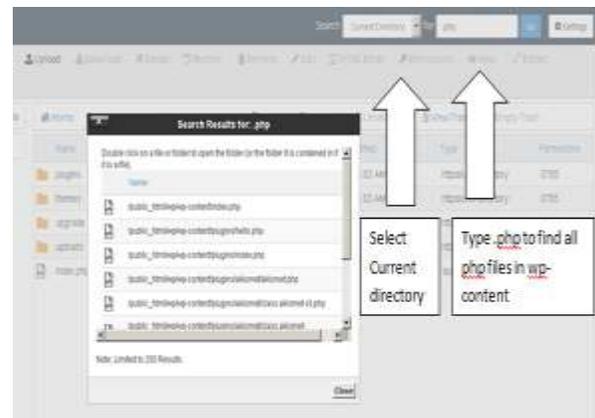

Fig: Detecting PhP files in WP-Content

IV. Active Configuration Improvements

The initial places will appear for those users who have experienced some form of changes recently. Recovery of potentially dangerous files to access via FTP and filter them on conversion date. If you have SSH access to your server, check which files on your

WordPress website have changed in the last four or five days, or since you saw cracks. You can do this by navigating to the location of your WordPress website and using the recovery command:

Get .mtime -5 –ls

 If the list is too long, use a small command to browse the list:

 Find .mtime -5 –ls |

slow One of the quicker ways to discover potentially risky files is to access FTP and edit it on the day of conversion. Therefore, in the initial places will come those who have experienced some sort of alteration recently. If we do not modify anything, it might be an warning that a certain kind of code is involved. The difficulty with this program code is that we have to go through all the dirctories that are part of the web site to find every infected file, a job that might be tedious if the code is embedded in different number of files. Before intervening, create a regular backup of your Word-Press website. We should keep the following: (a) Complete backup information (b) FTP Backup Account Your administrator may have a full backup system that is directly accessible via cPanel . Take the opportunity to get a complete ZIP of your site.

V.   CONCLUSION

We provide Proposed risk analysis and development of effective corrections , detecting the process of infected files, process of configure wp-content folder for active configuration Improvements. In this paper, we provide effective content management system configuration   for Web application implementation and optimization, which contains strategy for managing web content management systems. Also includes web content management process at the technical, professional and operational level. The framework has been confirmed by case studies in a co-operative union between municipalities. Content management systems provide unique way of software engineering to improve speed and effectiveness. Many organizations use the content management systems to operate their Web applications.

REFERENCES

[1]   Jitender Tanwar, Sanjay Kumar Sharma and Mandeep Mittal" Secure Framework for Web Services Communication" 2018 International Conference on Automation and Computational Engineering (ICACE - 2018)

Amity University Greater Noida Campus, U. P., India, Oct 3-4, 2018.

[2]   A. Ferguson "Creating content management systems in java", Charles River Media Publishing, 2007.

[3]   Jurriaan Souer, Paul Honders, Johan Versendaal, Sjaak Brinkkemper" Defining Operations and Maintenance in Web Engineering: a Framework for CMS-based Web Applications" 2007 2nd International Conference on Digital Information Management DOI: 10.1109/ICDIM13127.2007 .

[4]   G. Kappel, et al. Web Engineering - The Discipline of Systematic Development of Web Applications, John Wiley & Sons, Ltd., Chichester, England, 2006.

[5]   A. Ebner, B. Pröll, and H. Werthner. (2006). "Operation and Maintenance of Web Applications". In Kappel, G., Pröll B., Reich, S., Retschitzegger W. (Ed.), Web Engineering, The Discipline of Systematic Development of Web Applications. John Wiley & Sons, Ltd., Chischester, England. 2006, pp. 155-170.

[6]   T. Byrne. "Web content management products & practices", CMS watch, version 6.0. The CMS report (enterprise edition), 2004.http://www.cmswatch.com/CMS/Report/

[7]   M. van Berkum, S. Brinkkemper, and A. Meyer. "A Combined Runtime Environment and Web-based Development Environment for Web Application Engineering", Advanced Information Systems Engineering,
Proceedings of CAiSE04, A. Persson and J. Stirna (Eds.) LNCS 3084, June 2004.

 [8]   K. Fuller. "Becoming a Citizen Centered Government Through Best Practices in Web Management". USGS, in
cooperation with the Performance Institute. Open-File Report 2004-1359, 2004.

[9]   A.C. Schwickert "Dezentrales Web Content Management", Betriebswirtsch aftslehre - Wirtschaftsinformatik, Justus-Liebig-Universität Gießen, Arbeitspapiere Wirtschaftsinformatik, 2004.

[10]   C. Boldyreff, E. Burd, and J. Lavery. "Towards the Engineering of Commercial Web-based Applications", International Conference on Advances in Infrastructure for Electronic Business, Science, and Education on the Internet, August 2001.

[11]   R. Vidgen, S. Goodwin, and S. Barnes. "Web Content Management", Proceedings of the 14th International Electronic Commerce Conference, Bled, Slovenia, 2001, pp. 465-480.

[12]   S.H. Lee. "Usability Testing for Developing Effective Interactive Multimedia Software: Concepts, Dimensions,
and Procedures". Journal of Educational Technology &
Society, International Forum of Educational Technology &
Society, vol 2, issue 2, 1999.

[13]   M. Looijen. Information systems: management, control and maintenance. Kluwer Bedrijfsinformatie, Deventer, Netherlands, 1998.

[14]   N. Shahgholi, M. Mohsenzadeh, M. A. Seyyedi, and S. H. Qorani, "A new SOA security framework defending web services against WSDL attacks," Proceedings - 2011 IEEE International Conference on Privacy, Security, Risk and Trust and IEEE International Conference on Social Computing, PASSAT/SocialCom 2011, pp. 1259–1262, 2011.

[15] I. Siddavatam and Jayant Gadge, "Comprehensive test mechanism to de-tect attack on web services," Proceedings of the 2008 16th International Conference on Networks, ICON 2008, 2008.

[16] A. T. Siddiqui and A. K. Singh, "Secure E-business transactions by securing web services," Proceedings - 2012 International Conference on Management of e-Commerce and e-Government, ICMeCG 2012, pp. 79– 84, 201

[17] S.H. Lee. "Usability Testing for Developing Effective Interactive Multimedia Software: Concepts, Dimensions,and Procedures". Journal of Educational Technology & Society, International Forum of Educational Technology & Society, vol 2, issue 2, 1999.

[18]   M. Looijen. Information systems: management, control and maintenance. Kluwer Bedrijfsinformatie, Deventer, Netherlands, 1998.

[19]   M. Meijer. "Application Service Library (ASL) and CMM". bITa Monitor – The journal of IT Alignment and Business IT Alignment, Vol. 1(1), March 2003, pp. 21-26.

[20] O. Pastor, S. Abrahao, and J. Fons. "An Object-Oriented Approach to Automate Web ApplicationsDevelopment", LNCS, Vol. 2115/2001, pp 16-28.

[21] R. van der Pols. Application Services Library (ASL): A Framework for Application Management. Van Haren Publishing, Zaltbommel, Netherlands, 2005.

[22] R. van der Pols, R. Donatz, and F. van Outvorst. BiSL. A framework for Functional Management. Van Haren Publishing, Zaltbommel, Netherlands, 2005.

[23] S. Robinson. "Simulation model verification and validation: increasing the user's confidence", Proceedings of the 1997 Winter Simulation Conference, Atlanta, Georgia, United States, 1997.

[24] J. Souer, I. van de Weerd, J. Versendaal, and S. Brinkkemper. "Situational Requirements Engineering for the Development of Content Management System-based Web Applications", Int. Journal of Web Engineering and Technology, vol. 3, no. 4, Inderscience Publishers, 2007.

[25] A.C. Schwickert. "Dezentrales Web Content Management", Betriebswirtschaftslehre - Wirtschaftsinformatik, Justus-Liebig-Universität Gießen, Arbeitspapiere Wirtschaftsinformatik, 2004.

[26] I. van de Weerd, S. Brinkkemper, J. Souer, and J. Versendaal. "A Situational Implementation Method for Web-based Content Management System-applications: Method Engineering and Validation in Practice". Software Process: Improvement and Practice, 11(5), Wiley Interscience, 2006, 521-538.

[27] R.K. Yin. Case study research: Design and Methods, 3rd edition, SAGE Publications, Thousand Oakes, CA, USA, 2003.

[28] P. Honders, J. Souer, CML: Content Management Library, http://www.gx.nl/research/CML_framework.pdf, 2006.