

KM Journey at National Library and Archives of IRAN: a Pragmatic Model for KM Aligned with Strategic Plan

Saeedeh Eslami

Head of Department of Knowledge Management, National Library and Archives of Islamic Republic of Iran, Tehran, Iran.

Email Address :s-eslami@nlai.ir

Saman Firouzi Sagharlou

Islamic Azad University, Karaj Branch, Tehran, Iran.

Email Address: saman.firouzi@gmail.com



Copyright © 2014 by Saeedeh Eslami, Saman Firouzi Sagharlou. This work is made available under the terms of the Creative Commons Attribution 3.0 Unported License:

<http://creativecommons.org/licenses/by/3.0/>

Abstract:

Purpose: This paper aims to propose a model for implementing knowledge management (KM) at National Library and Archive of IRAN (NLAI), which have been developed by focusing on the core processes and is aligned with its mission and strategy. Of course the comprehensive implementation of the model is a long term schedule at KM section of IT department of NLAI.

Design /approach: This paper describes a model which was built to address the strategic needs of NLAI. This is done by reading other articles from previous researches and considering our requirements. Whereas NLAI comprises 3 main deputies and 18 departments, to achieve our objectives, we define a KM model which could be performed in iterative and repetitive manner (somewhat like RUP methodology). Main model is consisted of 5 phases each phase includes of three different aspects. Within each iteration, the tasks are categorized into three aspects.

Findings: The main contribution is providing a comprehensive model which leads to discovering the knowledge gaps and duplications. Knowledge resource map, Knowledge asset map, Knowledge application map direct us to perform business process correctly with efficient time and cost. KM directs us to achieve our objectives and initiate Disaster Risk Reduction (DRR).

Originality/value: The originality of the paper lies in the lack of research into knowledge management at NLAI. By this research NLAI has KM model which is aligned with its strategic plan and has significant influence on DRR

Keywords: Knowledge management, knowledge audit, KM, Strategic plan.

Introduction

Nowadays, a knowledge base approach toward all organization's aspects is inevitable. Due to the increasing importance of knowledge in recent years, considerable amount of attentions

have been drawn to Knowledge Management (KM). KM is simply the practice of capturing, storing and sharing knowledge so that we can learn lessons from the past and apply them in the future. Knowledge Management is the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge (Alan Frost. M.Sc., 2010).

The application of knowledge and learning is vital to improve the quality of organizational affairs. Therefore, each organization needs to manage its owning knowledge effectively because all benefits of KM leads organizations to gain competitive advantages because having the right knowledge is crucial to effective decision making. KM help us figure out where and in what forms knowledge exists; what the organization needs to know how enhance performance in light of the organization's strategic goals and short term opportunities and threats. KM is about making the right knowledge available to the right people at the right time. It is about making sure that an organization can learn, and it will be able to retrieve and use its knowledge assets in current applications as they are needed.

This paper aims to propose a model for implementing KM at NLAI, which have been developed by focusing on the core processes and is aligned with its mission and strategy. It describes our model discusses how it relates to strategic plan and reduces the gap between existed and needed knowledge toward achieving NLAI strategic objectives. According to NLAI strategic plan, our main solution is transforming into Knowledge Hub as a central repository of diverse materials for national information-sharing. This paper is also guide the initiation, creation and sustainability of information for disaster risk reduction (DRR).

The paper is organized as follows: the second section presents the literature review and discusses the current status of KM at NLAI. Section three present our pragmatic model for implementing KM. Finally, the study is concluded in the last section

Current KM State at NLAI

As information and communication technologies continue to grow rapidly, KM applications will become critical in knowledge life cycle, from the knowledge creation stage to the knowledge dissemination stage (Kumar, Ajit, 2013). The knowledge management infrastructures (experts/human, processes and technology) at NLAI were investigated in 2012. This research showed that experts as a knowledge management infrastructure are qualified enough, while the situation of processes was inappropriate and the situation of technology was unknown (Hashempour, Ghaebi & Sharifabadi 2012). According to this study the followings should be improved at NLAI: the transparency of library functions and purposes, the knowledge of its staff about their duties, forming knowledge teams, considering NLAI strategic plan, personal management, determining the system of reward and pay according to the knowledge of staff.

All organizations are already involved in some level of Knowledge Management — even if they are not thinking about those processes within the framework of Knowledge Management and NLAI is not an exception. NLAI initiated its intranet portal, websites, its mail server, Microsoft office communicator for internal communications during the past 8 years. At present these are the most significant tools for knowledge sharing at NLAI. But still we need KM implementation in our organization to understand: What knowledge is needed at NLAI, Where they are gaps and redundancies, how things get done and how things could get done

better, whether you are getting better or worse, how the employee situation is. Fortunately NLAI has been recently established a group in order to implement KM. This paper explains our KM model and its phases.

Related Work

When applying KM into an organization, there are many benefits in applying a KM framework or a methodology, because it offers legitimacy, provides consistent language, outlines a process, provides a checklist, offers a source of ideas and addresses non-technical aspects (Robertson 2002). Different researchers have been proposed different methodologies but all the methodologies are common in some phases. Liebowitz stated that a critical part of a knowledge management methodology is performing a knowledge audit (Liebowitz, 1999). Its process consists of analyzing the current conditions and mechanisms of organizational knowledge, and reporting if any knowledge gap is identified. Knowledge Audit (KA) is agreed by most of researchers to be one of the most important and even considered as the first step of KM. Thus it suffices to mention to KA literature in this section.

KA is a document, which provides a structural overview of a designated section of an organization's knowledge as well as details of the qualitative and quantitative characteristics of the individual chunks of knowledge within that designated section. The document also identifies the knowledge repositories in which those chunks reside. They feel that the knowledge audit is a scientific measurement of the state of affairs of specified sections of corporate knowledge.

Chong (2009) stated five preliminary success factors for effective KM implementation: business strategy, organizational structure, Knowledge Management Team, Knowledge Map and Knowledge Audit. Thus, KA is assumed as one of the most important and preliminary steps of KM implementation and agree that KM successful implementation is closely related to a comprehensive KA (X. Jiuling et al.,2007 ; N. S. A. Rahman et al.,2011; P. D. D. Ganasan et al., 2011; J. Liebowitz et al.,2000).KA results could be very helpful in creating recommendations for organizational improvements.

There are variety of models and technique for KA. Noraini Che Pa et al. provides a research of KA from 2005 until 2012 including their models, methods, processes, tools, techniques, advantages, challenges and limitations (Noraini Che Pa et al., 2012). For instance, Knowledge Audit Framework (KAF) consists of a process and some templates to guide the planning and execution of audits of knowledge resources, with emphasis on sharing. KAF consists of 4 stages namely: Planning ((identify project and key team members), Execution (carry out the audit) , verification , Reporting findings and recommending change (P. Di Maio 2011). Other models such as Sharma (2007) model includes the following components: Knowledge need analysis, Knowledge inventory analysis, Knowledge flow analysis and Knowledge mapping (R. Sharma and N. Chowdhury, 2007). Sharma's tool for KA mostly used by other researchers such as Chandrika M. J. et al.,2011 ; O. Serrat 2008; National Library for Health 2005 .We also conducted by adapting a knowledge audit tool from Sharma & Chowdhury (2007). Table 1 give a brief description of Sharma components.

Table 1 - Components / Constituents of Knowledge Audit (Sharma 2007)

Knowledge Needs Analysis	Identify precisely what knowledge the agency has and what knowledge they would require in the future in order to meet objectives and goals
Knowledge Inventory Analysis	Locate knowledge assets and resources in the agency. This process involves counting, indexing, and categorizing of tacit and explicit knowledge to identify gaps and as well as areas of unnecessary duplication.
Knowledge Flow Analysis	Looks at knowledge resources in the agency, from where it is to where it is needed. It is to determine how people in an agency find the knowledge they need, and how do they share the knowledge they have. It will allow an agency to further identify gaps in their agency's knowledge and areas of duplication. It also highlights examples of good practice that can be built on, as well as blockages to knowledge flows and effective use.
Knowledge Mapping	A knowledge map is a visual representation of an organization's knowledge which is the outcome of synthesis of explicit/tacit knowledge.

NLAI Knowledge Management Model

According to NLAI strategic plan:

NLAI mission statement is: “Our ideal is to create a treasure of Iranian documentary heritage. Our decision is to preserve; ensure the survival and accessibility of documentary heritage for the future generations. NLAI is responsible for organizing of institutional memory of IRAN”.

NLAI Objective is: “Our ultimate goal in order to achieve the mission is creating national memory in a form of Knowledge Hub”.

NLAI tries to make decision today for its future and this is not possible without KM. To achieve our mission and objectives, we proposed a model to apply KM at NLAI. KM enables NLAI to better protect and exploit what it knows. It helps NLAI learn from past mistakes and successes. It better exploits existing knowledge assets by using knowledge from one department to improve or create a service in another department or by modifying knowledge from a past process to create a new solution. It enhances NLAI’s ability to protect its key knowledge and competencies from being lost or copied. It enhances the ability to innovate. In our model we mixed Sharma tools in various steps of our RUP based model. Whereas NLAI comprises 3 main deputies and 18 departments, we define a model which could be performed in iterative and repetitive manner (somewhat like RUP methodology). Main model shown in Figure 1, is consisted of 5 (Necessity of KM, Analysis current status, Design, implementation, and Evaluate) and each phase includes of 3 different aspects. Each phase could have multiple iterations. Within each iteration the tasks are categorized into three aspects:

- Technical
- Human/knowledge
- Strategy/Process

We use different tools which are compatible with organization needs to done the tasks of each aspect. For instance the common tools that can be applied to conduct a KA task in phase 2 are: site observation, questionnaire-based surveys, face to face interviews, focus group discussions, investigating intranet sites, internal seminars, and workshops.

Knowledge inventories, knowledge bases and knowledge maps are designed to identifying key experts in strategic knowledge fields which result in better change management in future. Policies and governance guideline for KM are defined. We define best practices for performing core processes. Where knowledge loss represents a significant risk to organization, then a knowledge transfer(KT) Strategy represents the management of change necessary to reduce that risk, thus a KT strategy is defined to facilitates the dissemination of knowledge and skills within NLAI itself and also externally to global users. All these are covered in particular phase.

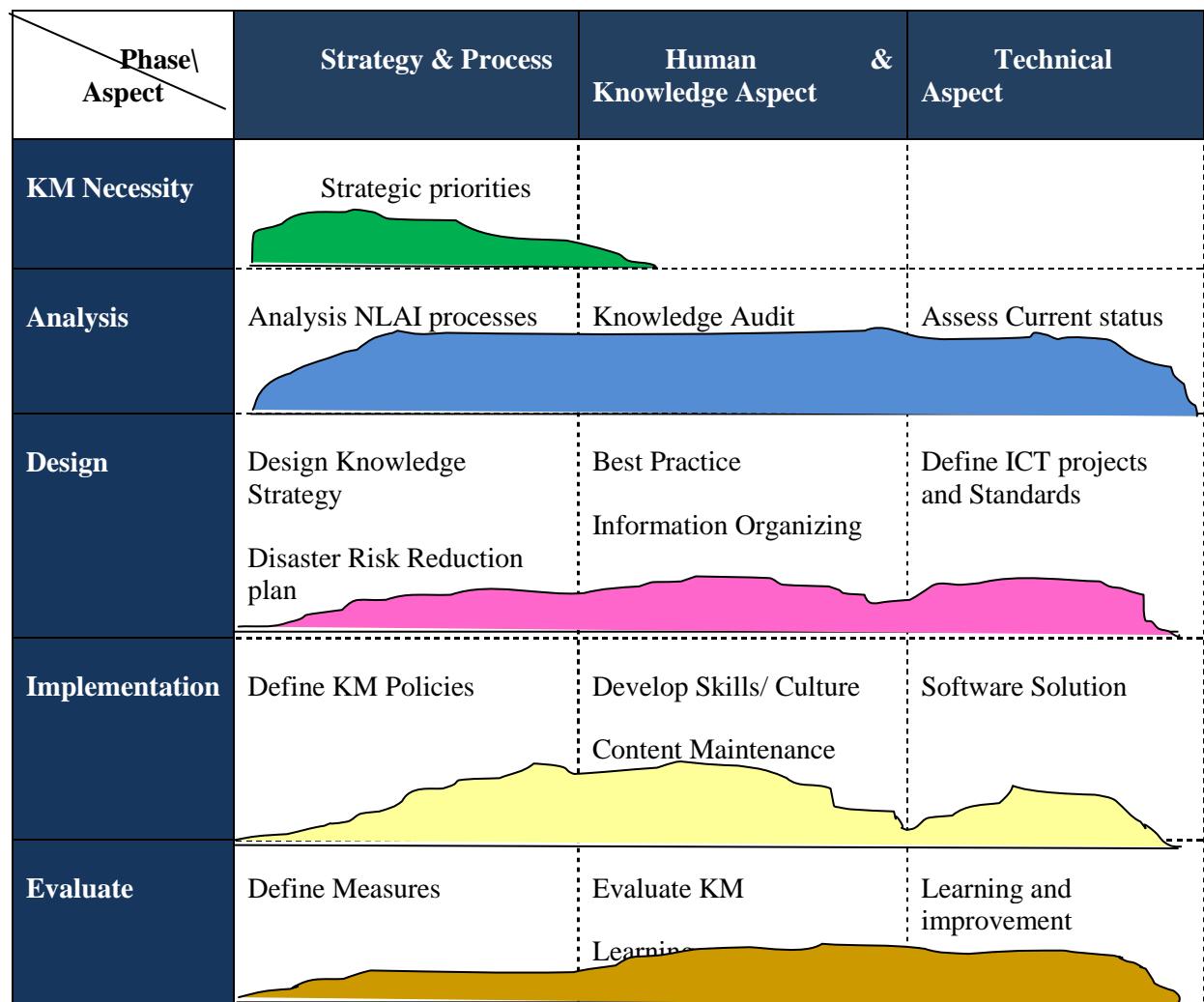


Figure 1 : Proposed Model for Implement KM at NLAI

When an organization is embarking on KM for the first time, it is recommended starting with a KA. But before that we need to know the necessity of implementing KM. Thus our model starts with the Necessity phase.

Necessity phase: In this phase we define business strategies and priorities and issues that KM can address. This phase focuses on strategy/process aspect which was discussed during

strategic sessions at NLAI on 2013 and is stated in NLAI strategic plan which is the input of other phases. Some of prominent strategic issues stated in NLAI strategic plan are:

- Improve effectiveness and efficiency of NLAI core processes
- Develop and manage Human Capital corresponding to strategic needs
- improve our services
- Preserving documentary heritage and ensure its survival for today and future generations
- Facilitating, accelerating and opening access to documentary heritage
- Identifying the treasure of documentary heritage relating to IRAN and Islamic culture.
- etc

Analysis phase undertake a full assessment of the current KM environment, analysis of business processes, ICT status and human knowledge. Actually the assessment of the three main dimensions of knowledge, technology and human resources is done in this phase. The main step of this phase is KA which focuses on human/knowledge aspect of the model. We focused on determining what knowledge is needed, what knowledge is available, what knowledge is missing, who needs this knowledge, and how this knowledge will be applied. Therefore, this phase is the phase of data collection. This data is gathered from 3 main deputies and 18 departments of NLAI. In KA we identify NLAI Knowledge, where it resides and how it is used. Then the audited unit could determine if it 'knows what it knows' and 'knows what it doesn't know' about its existing knowledge state. The output of an audit may be presented in various ways. In our model deliverables consists of knowledge inventory¹ and Knowledge maps².

First step of KA is to identify precisely what knowledge we have and what knowledge we would require in the future. This task is known as Needs Analysis (Sharma 2007). Techniques we uses include:

- facilitated discussions
- focus groups
- surveys
- staff interviews
- workplace observation
- contextual inquiry

Then we must locate knowledge assets and resources in NLAI. This task is known as Knowledge Inventory Analysis (Sharma 2007). The knowledge inventory gives you a snapshot of your knowledge assets or resources .The analysis may involve a series of interviews in order to get relevant answers on tacit and explicit knowledge. By making comparison between knowledge inventory and the earlier analysis of knowledge needs, we will be able to identify gaps and duplications in our knowledge. We designed some questionnaire for explicit knowledge asking about:

- the numbers, types and categories of documents, database, libraries, intranet website, links and subscriptions to external resources etc
- the locations of the knowledge
- The organization and access of the knowledge
- Purpose, relevance and quality, why do these resources exists, how relevant and appropriate are they for that purpose, are they of good 'quality' e.g. up-to-date, reliable, evidence-based etc?
- About knowledge Usage, are they actually being used, by whom, how often, what for?

¹ Knowledge inventory = either in spreadsheets or a database identifying information sources, ownership and usage (Skyrme 2011)

² Knowledge maps = visual representations of knowledge

We designed some questionnaire for tactic knowledge asking about:

- The numbers and categories of staff
- Their locations
- Their job levels and types
- Their academic and professional qualifications and experience

Then we must determine how people in an organization find the knowledge they need, and how do they share the knowledge they have. This is known as Knowledge flow analysis (Sharma 2007). It looks at how knowledge resources flow in organization. It will show where an organization needs to focus attention in their knowledge management initiatives in order to get knowledge moving from where it is to where it is needed. Knowledge Input-Output Template tool (Skyrme 2011) used as the basis for this step.

As the last step of KA we must create knowledge maps. We just define 4 types of knowledge map.

- Knowledge source map= which help us to find somebody who knows something special.
- Knowledge asset map= Which help us to find out how many X expert have, what are the strength and weakness of organization knowledge.
- Knowledge application map= which help us to realize what we need to know to take action at particular situation
- Knowledge Structure map= which help us to know what combination of skill sets we need to run this job.

Focusing on process aspect of the model the business processes of NLAi should be analysis to understand how the process works and how it can be improved.

A process consists of three components: inputs, activities, outputs. Business process is the set of step a business perform to create value for customers. NLAi business processes develop and change over time. Changes to business processes, and changes to the environment that these processes operate within, can cause them to become inefficient. Thus by analysis of business processes we could identify inefficiencies and their correction can reduce costs and improve the quality of our outputs. We use the following 4 steps to analysis of NLAi business process:

- a) Look for signs of process inefficiency such as long queues, long wait times or large work backlogs.
- b) Identify the requirements for the Business Process by interview key people who participate in that process and conduct group interviews/brainstorming sessions/ observations. We identify some key WH questions shown in Table 2.
- c) Document the current business process by creating process flowchart or process map.
- d) Analyze the Business Process requirements by performing task analysis and evaluating activities of each task. Then compare the result with interviews done in step b to find inconsistencies. For instance, does one step in the process deliver something to the next step that is not used in the next step? Then Identify activities and task outputs that are unnecessary. Then change the business process based on the business process requirements identified during interviews and brainstorming sessions.

Table 2- Questions which are asked during Anaysiss Bussines process at NLAI

What is being done? What should be done? What can be done?	Where is this job done? Where should it be done? Where can it be done?
Who does this job? Who should do this job? Who knows how to do it? Who should know how to do it?	When is this job done? When should it be done? When can't it be done?

Then in the technology aspect of this phase, IT infrastructure (devices, network, tools, applications, and data stores) was assessed. Fortunately the IT infrastructure is at suitable level.

Design phase, By considering NLAI strategic plan, a vision for the future of NLAI with its goals and objectives for KM will be developed. In fact in strategy&process aspect of design phase a KM strategy is defined. Strategy is how to achieve an objective and KM strategy should articulate a vision for KM within NLAI which establishes goals and objectives for the future – where we're trying to go. A KM strategy is simply a plan that describes how an organization will manage its knowledge better for the benefit of that organization and its stakeholders and address the real needs and issues. The KM strategy of NLAI will be aligned with its strategic plan in this phase. It should build upon knowledge gathered through the KA at phase 2 but also focus on new possibilities for the future. It explains how KM is managed, what are core principles and standards and it must contain the current KM situation, KM vision and strategy overview in one or two sentences followed by some key KM objectives, and action plan which give details of deliverables, timescales, resources and budgets required for all actions.

When defining KM strategy we consider some arrangements for Disaster Risk Reduction (DRR).The most commonly cited definition of DRR is one used by UN agencies such as UNISDR and UNDP: "The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development"

This model aims to provide ideas and entry points that can help us to better share and apply the knowledge that exists within NLAI on critical situation which could be caused to DRR. To support DRR, NLAI planned to create knowledge hub. A system that provides specific users with the explicit information required, in the most appropriate form and in the way the user needs it. This software will collaborate with stakeholders and use standards for accessibility, interoperability, ontology, compatibility, share data between libraries and insinuation locally and nationally.

We also must define KT strategy in KM strategy. "Knowledge Transfer" is the process to extract and transfer tacit knowledge or facilitate learning explicit knowledge. The following is a list of our knowledge transfer strategies we use:

- Briefing Paper
- Document Repositories
- Frequently Asked Questions
- Internships
- User Guides

- Webinars
- Question of the Day/Week
- Storytelling
- Job-Shadowing Programs
- Storyboards

Then at design phase, information organization should be done in knowledge aspect of the model. We organize the explicit knowledge we gathered at phase 2, so that it can be easily managed and retrieved by the staff. Explicit knowledge is categorized by content type, location, format and naming. A hierarchy of knowledge should be setup, and finally provide access to this information via portals or CMS.

At last we identify appropriate technology project and tools to support our KM strategy. NLAI tends to make a use of open source software. H.Frank reviews some open source tools that can be used by libraries for knowledge management initiatives to support learning, knowledge sharing, and team-based work (H.Frank 2013). For example we may develop a content management system, intranet portal, knowledge repository, personal KM tools, and Documents Management tools. According to our strategic objectives we define a project to publish national bibliographic and Authorities files of NLAI as Linked data.

Implementation phase: In this step we figure out how to accomplish the goals in NLAI KM strategy and begin to implement new tactics, initiatives, activities, and ways of working together to integrate good KM practices into the fabric of NLAI. We form the KM team that will design, build, and implement our KM solution according to KM strategy. A well staffed team with a strong team leader is ensure the successful implementation of KM. Throughout the life of a KM, leadership needs to constantly emphasize the quality and value of KM. Workers must learn to collaborate and contributors and users of the knowledge management system need incentives to encourage these activities and keep the system vital. Given the changes to corporate culture, behavior, and processes that usually characterize KM, corporate leaders have to be committed to the effort.

In human/knowledge aspect of his phase, we develop intranet and portal such as SharePoint or CMS to deploy and maintain information, considering the quality of content, controlling access to those contents. Training end-users to use such software are done in this phase. Then we should focus on organizational culture and creating culture which enhances the use of knowledge in the organization so everybody should be qualified, learning should be encouraged, and making high sense of communication. On technology aspect of this phase we must review software solutions and customized them or develop a software solution according to our requirements for instance we customized Microsoft SharePoint or Drupal for NLAI portals.

In the **Evaluation phase** we review, assess, and refine KM. Measuring the benefits and value of KM. Usually After Action Review (AAR) used as evaluation tool and then we learn from the evaluation result. AAR is a structured question and answer session which addresses the following four questions:

- What should have happened?
- What actually happened?
- Why were their differences (from plan to actual)?
- What lessons can we take forward to next time?

At the end of AAR session, people accept their mistakes and their mistakes considered as a learning experience. In other words, the outcome of AAR is lessons learned.

The KM process embraces several tasks, which include knowledge creation, collection, organization, dissemination, and maintenance. NLAI KM model notices to all these processes. KA is tools for knowledge creation/collection, Taxonomy/knowledge inventory/ Knowledge maps are tools for knowledge organization, knowledge repository/databases are tools for share/dissemination, intranet/CMS are tools for maintenance. It is worth to mention that the order of the aspect is not important, they can be done concurrently and also each phase can have multiple short iterations for example: 3 iterations in analysis phase for assessing 3 departments.

Conclusion and Future works

NLAI tries to make decision today for its future and this is not possible without KM. KM involves the management of knowledge that is useful for some purpose and creates value for the organization and it implies a strong tie to organizational goals and strategy, thus it is vital to align our model with our strategic plan. According to this plan we require KM to tackle the strategic issues which will be lead to our main objective which is transforming to Knowledge Hub.



Saeedeh Eslami: Master of Science, Technology and Communication Department, National Library and Archive of IRAN (NLAI)

Contact: s-eslami@nlai.ir +98 21 81622440

She holds BA degree in Computer Software Engineering in 2006 and then graduated in MA in Computer Software Engineering in 2010. She is Fellow member of staff NLAI and has been working as software specialist since 2005 and has participated prominently in NALI software projects. She is software analyst and programmer of Software Architected and Design Group. Now she is head of department of Knowledge management at NLAI.

She is also a university lecturer, teaches at Islamic Azad University and NLAI. Her research interest lies around Semantic Web with specific interest in developing Linked Data, Ontologies and Topic Maps, semantic web, knowledge management, information retrieval, Free/Libre Open Source Software development and interoperability and so on. She has published several Papers on such areas.

References

- Hashempour L, Ghaebi A, Rezaei Sharifabadi S. "An Investigation of knowledge management infrastructures in the National Library and Archives of Iran". national studies on librarianship and information organization. 2012; 23 (1) :74-88
- Kumar, Ajit, "Knowledge Audit: Its Learning Lessons", July 31, 2013. Available at SSRN: <http://ssrn.com/abstract=2319723> or <http://dx.doi.org/10.2139/ssrn.2319723>
- C. W. Chong and S. C. Chong, "Knowledge management process effectiveness: measurement of preliminary knowledge management implementation," Knowledge Management Research & Practice, vol. 7, no. 2, pp. 142–151, Jun. 2009
- X. Jiuling and W. Jiankang, "Enterprise Knowledge Management Audit based on Processes: Toward an Integrated Conceptual Framework," no. 2007, pp. 940–945, 2010.
- N. S. A. Rahman, A.A.; Shukor, "Knowledge Audit Process - Tales of Two Organizations," in Research and Innovation in Information Systems (ICRIIS), 2011 International Conference on , vol., no., pp.1-5, 23-24 Nov. 2011.
- P. D. D. Ganasan, A.; Dominic, "Knowledge Audit Made Comprehensive thru 6 Stages," in Research and Innovation in Information Systems (ICRIIS), 2011 International Conference on , vol., no., pp.1-6, 23-24 Nov. 2011.
- J. Liebowitz, B. Rubenstein-Montano, D. McCaw, J. Buchwalter, C. Browning, B. Newman, and K. Rebeck, "The knowledge audit," Knowledge and Process Management, vol. 7, no. 1, pp. 3–10, Jan. 2000.

Noraini Che Pa, Laleh Taheri & Rusli Abdullah (2012), “A Survey on Approaches in Knowledge Audit in Organizations”, Asian Transaction on Computers, Volume 2 Issue 5. ISSN 2221-4275 Pages: 1-8

P. Di Maio, “Knowledge Audit Framework”, published 2011-08-09, <http://arxiv.org/abs/1108.1490>.

R. Sharma and N. Chowdhury, “On The Use Of A Diagnostic Tool For Knowledge Audits,” vol. 8, no. 4, pp. 1–11, 2007. (<http://www.tlainc.com/article145.htm>)

O. Serrat, “Learning Lessons with Knowledge Audits”, Washington, DC: Asian Development Bank ,April 2008

NHS National Library for Health, What is knowledge management? In ABC of knowledge management; (2005) pp. 1-68

Chandrika M. J., Lariyah M.S., LIM L., Sharmila R.M., Nun S.H. , Aminah A., Hidayah B. An Overview of Knowledge Management in DeGPT System via Knowledge Audit. 3rd International Conference on Managing Rivers in the 21st Century: Sustainable Solutions for Global Crisis of Flooding, Pollution and Water Scarcity, Penang, Malaysia, 6th 9th December 2011