2012

A synthesis of a knowledge management framework for sports event management

Azizul Rahman Abdul Ghaffar
University Of Wollongong

Ghassan Beydoun
University of Wollongong, beydoun@uow.edu.au

Jun Shen
University of Wollongong, jshen@uow.edu.au

Will Tibben
University of Wollongong, wjt@uow.edu.au

Dongming Xu
University Of Queensland

Publication Details

Ghaffar, A. Rahman Abdul., Beydoun, G., Shen, J., Tibben, W. & Xu, D. (2012). A synthesis of a knowledge management framework for sports event management. ICSOFT 2012 - Proceedings of the 7th International Conference on Software Paradigm Trends (pp. 494-499). ScitePress.

A synthesis of a knowledge management framework for sports event management

Abstract
Due to rapid social development in Asia, sports events have grown larger and many new countries are also hosting them for their first time. In addition to required increase in expenditures and more efficient management, various instances of inadequate planning highlighted the needs for more effective and better sustainable structures to support knowledge transfer between organizers, from one event to the next. The research presented in this paper aims to facilitate the deployment of systematic knowledge management practices to sports event management, to enable sustainable planning. The research in this paper synthesizes is carried out on the Malaysian Games as an example of a sports event management. Furthermore, we introduce knowledge management (KM) framework that was developed based on studies and observations of processes and activities in this organization. The focus is on knowledge that is key to the success of the Malaysian Games and that which can be used to the development of the organization and in future games.

Keywords
event, synthesis, knowledge, management, framework, sports

Publication Details
Ghaffar, A. Rahman Abdul., Beydoun, G., Shen, J., Tibben, W. & Xu, D. (2012). A synthesis of a knowledge management framework for sports event management. ICSOFT 2012 - Proceedings of the 7th International Conference on Software Paradigm Trends (pp. 494-499). ScitePress.

A SYNTHESIS OF A KNOWLEDGE MANAGEMENT FRAMEWORK FOR SPORTS EVENT MANAGEMENT

Azizul Rahman Abdul Ghaffar[1] , Ghassan Beydoun[1], Jun Shen[1], Will Tibben[1], Dongming Xu[2]
[1]*School of Information Systems and Technology, University of Wollongong, Wollongong, Australia*
{arag865, beydoun, jshen, wjt}@uow.edu.au
[2]*School of Business, University of Queensland, Brisbane, Australia*
d.xu@business.uq.edu.au

Keywords: Knowledge management, Sports event management, Framework, Sports technology.

Abstract: Due to rapid social development in Asia, sports events have grown larger and many new countries are also hosting them for their first time. In addition to required increase in expenditures and more efficient management, various instances of inadequate planning highlighted the needs for more effective and better sustainable structures to support knowledge transfer between organizers, from one event to the next. The research presented in this paper aims to facilitate the deployment of systematic knowledge management practices to sports event management, to enable sustainable planning. The research in this paper synthesizes is carried out on the Malaysian Games as an example of a sports event management. Furthermore, we introduce knowledge management (KM) framework that was developed based on studies and observations of processes and activities in this organization. The focus is on knowledge that is key to the success of the Malaysian Games and that which can be used to the development of the organization and in future games.

1 INTRODUCTION

Sports events are more than ever important on a global scale – economically, socially, politically and technologically. According to Fuhrer (2002) the Olympic Games, particularly over the last 20 years, has experienced unparalleled growth and universal popularity. Similar expectation are placed on other international sporting events such as the Commonwealth Games. Applying knowledge management (KM) practices to sports event management can offer much needed support the multi-billion dollar industry growth (Halbwirth, 2001). Systematic handling of knowledge following an explicit framework underpins successful knowledge transfer and sharing (Heisig 2009, Sadrei et al 2007). A KM framework assumes that knowledge is a crucial factor to production and the sets about to improve the performance of processes, organization and systems (Van der Spek and Sijkervet 2005). The framework can be the basis for enhanced performance and utilization of resources because it can be used as a tool to leverage organizational knowledge resources (Aidemark and Sterner 2003). It provides a structure for a systematic process to harness the various benefits of KMS. We identified seven possible frameworks (Table 1) that were potentially applicable to sports event management areas in terms of business process and organizational structure.

2. THE BENEFITS OF A KM FRAMEWORK IN SPORTS EVENTS MANAGEMENT

Whilst various sports event management organisations are similar in goals and in scope, they differ in a number of ways: their structures and practices are often dependent on different staff and budgetary constraints, different technologies, different sports systems, different political climate, different culture and so forth. The Malaysian Games (MG) follows the execution format of Olympic events. It belongs to the National Sports Council of Malaysia (NSCM) and MG has recently seen a drastic growth in the participation of athletes,

operating expenses and expenses for technological information. The event size is steadily increasing. With this increasing size, it is important to introduce practices to ensure transfer of knowledge into the future as long been advocated and currently being instituted into the Olympic Games (Fuhrer, 2002).

Table 1 : KM Framework Comparison

Framework	User Organization, Usage Goal	Knowledge Agents
KM/BSC Model (Aidermark and Sterner, 2003)	Matsushita ltd, source of competitive intelligence for business	Systemic, resource oriented/technical, organizational
European KM Framework (Weber et.al, 2002)	European KM Organization, Standardization of European KM services	Intellectual, scientific, technological and economic
HA/DR KM framework (Dongsong, Zhou and Nunamaker, 2002)	Humanitarian Assistance/ Disaster Relief, Knowledge as a power to make decision	Architecture, internet as channel, knowledge base
KM Network (V. d. Spek and Spijkervet, 2002)	CIBIT Consultants, KM as a continuous learning process	Internal influences and external influences
KM Systems (Lacher and Koch, 2000)	Organizations with KMIT systems, KM support functionalities in a distributed environment	Shared info and team knowledge domain
KM Support Framework (Hahn and Subramani 2001)	Organizations with KMS Systems to balance info overload and maintenance	Motivation of users to use KM systems
KM SECI Model (Nonaka and Takeuchi, 1995)	Common in KM practice KM Process (SECI) to support knowledge creation	KM methodology and technique

This fast growth is creating a number of challenges. Schumakrer et al (2009) demonstrate that there is a vast amount of knowledge associated with sports events. This includes:

- knowledge relating to the actual sporting happenings (for example, relating to players and coaching); and
- knowledge about the actual organising of the events (for example, relating to the venues and cost (Schumaker et al. 2009).

Making sense of both types of knowledge is important for different decision making stakeholders such as the managers, organisers and coaches. Our focus in this research is on the second area identified by Shumaker et; al which is knowledge relating to enabling more effective event organising. From a governance perspective, this is quite significant given the large-scale public investment made in organising events. For example, many new facilities and venues may be required. These may turn out to be a financial burden on the host cities, and thus constitute a financial risk. Previous work in this research was directed at better defining knowledge process failures and bottlenecks in the MG (Ghaffer et. Al, 2011). we methodically applied the context analysis templates of knowledge analysis methodology, CommonKADS (Schreiber et al, 2000), to analyse the context of the Malaysian Games. That analysis uncovered these key existing problems in the MG current practices:

- Duties and responsibilities are not sustained between events;
- The IT Unit's overreliance on outsourcing; and
- subsequent problems related to ownership of games management systems.

Most sports events management problems encountered are often unexpected and can invariably be traced to inadequate coordination or specialized knowledge/resources. We aim to improve the coordination of information, the usage of resources or identify lacking areas within the sports organization. We pursue a KM framework which can offer incremental improvements. KM frameworks have been presented in many other areas. Heisig (2009) identified 160 KM frameworks that have been built from 1995 to 2003. None of which however is geared towards sports events organising. Our own research could not find any specific sports events KM framework in (2003-2011) other than that produced by Schumaker et.al (2009) which has resulted in a Sports Knowledge Framework, but its focus is on the use of data mining and data management (via statistics analysis and machine learning).

3. THE PROPOSED SPORTS EVENT MANAGEMENT KM FRAMEWORK

Rubenstein-Montano et al. (2001) distinguish three types of KM frameworks: Prescriptive frameworks prescribing different ways to engage in knowledge management activities; Descriptive frameworks identifying attributes of knowledge management important for their influence on the success or failure of knowledge management initiatives; or hybrid frameworks combining both. We develop a hybrid KM framework that can be applied to various sports event organisational environments. It describes a method to connect entities involved

through their perspectives of needing use of information and improved knowledge standard. This new KM framework, The Sports Event Management KM framework (SEMKM Framework), aims to overcome knowledge sharing problems related sports event management. It focuses on core resources of knowledge, communication enablers, KM activities, business processes and sports knowledge databases. The preparation of the SEMKM Framework will identify problems and prescribe opportunities to resolve them through improved KM practices. Based on the context analysis that we carried out previously in (Ghaffer et. Al, 2011), we intend to apply our framework to the Malyasian Games context. The use of this new KM framework will highlight the need of some organisational reform actions. It will highlight the need to add new elements to existing processes to solve existing problems based on strengthening the KM processes in the organization. New or modified business processes are expected to enable positive impact for the current operations of the sports event management. Towards developing our SEMKM Framework, we have identified four views of knowledge as used with the context of sports events organising and management:

Knowledge in People: The management must identify those people with the necessary knowledge (guided by the KM framework). Through a planned strategy, staff will be directly involved in KM initiatives conducted. Knowledge, qualifications and experiences will be fully utilized in achieving the goals of the organization. Staff are also encouraged to share ideas and always use quality knowledge with efforts to improve work performance.

Knowledge in Organization: The organization should carry out variety of programs that can foster the development of KM. This will involve business process reengineering and requires thorough analysis. Once the information is collected and analysed, the organization must commit to undertake KM strategic planning. Specifically for sports event management, all elements of internal, external, business process and operations of the whole must be studied and understood before the introduction of a new business process.

KM Infrastructure: KM is new in sports event organization. Therefore, planning should be done to enable the provision of infrastructure performed well. In the sports event in Malaysia as an example, it involved only a small group of sub-department and the focus will only be given to them. In preparing the infrastructure, the most attention are the guidelines, financial aspects, knowledge basic needs and appropriate technology to use. This infrastructure will function well if all the KM prerequisites have been met and any existing inadequacies should be highlighted by the framework.

KM Activities: To ensure that the principles of KM functions properly, the sports event organization should be cognisant of KM practices and goals as relating to their activities and the measures that need to be in place. This is an implementation awareness, with emphasis on continuous knowledge creation process, storage, efficient distribution in conformity with the sports event requirements. In the rest of this section, we describe this synthesis layered process, justifying the need for each layer.

Layer 1 : Knowledge Resources

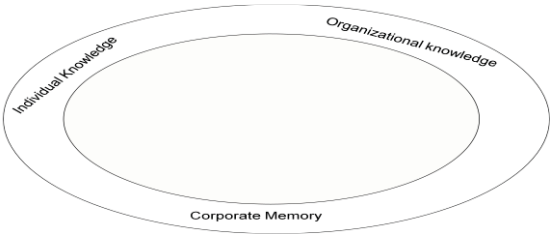

Figure 1. Layer 1 (L1)

Individual Knowledge: Each individual in the organization has the resources needed to generate knowledge management. Individual knowledge refers to knowledge of those who have long worked in this field.

Organizational Knowledge: Knowledge from several subunits or groups can be combined and used to create new knowledge. Tacit and explicit knowledge capabilities become a key of organizational knowledge. Using the Games Management Systems as a point of reference, during and after the MG leads to lessons learned over the events conducted.

Corporate Memory: A corporate memory for this area focuses on the combination of a repository, data and information that allow sports communities to interact with the systems (Beydoun 2009; Beydoun 2011). For example, in MG, The National Sports Council Athletes and Coaches databases currently facilitates the related tasks. However, there is still much room for improvement as much knowledge and information especially from 2000 and previous years have not managed properly.

Layer 2: Communication Enabler

Communication Channels: The sports KM systems will offer multiple communication platforms to connect specific knowledge, functions and sub-units with users, as well as sharing ideas, knowledge and understanding.

a) Internet/Intranet: The most common problems encountered concern on the internet infrastructure is for the preparation of the venues which is quite distant from major cities as well as needed technology. In Addition, there are hosting states that do not host have a strong internet infrastructure and requires additional work to be done in advance .

b) Websites: A games website is the most important source of information. It should be able to effectively disseminate sports knowledge.

c) Sports Portals: A sports portal has been developed by the NSCM and is being used in everyday tasks. Nevertheless, it does not have any direct relationship to all the systems used in MG has been provided by external providers. Therefore, knowledge sharing does not occur effectively.

d) Networking, Wireless, Cabling Based on the current situation, every time MG will be held, almost all matters relating to infrastructure will be repeated and should be developed from scratch.

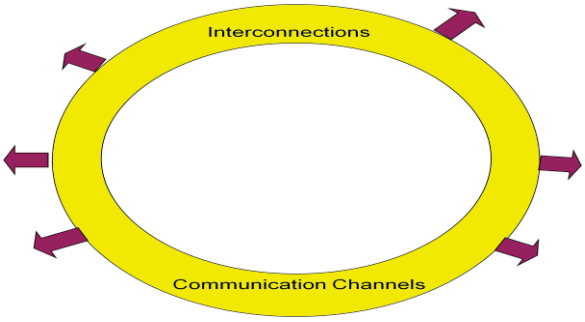

Figure 2. Layer 2 (L2)

Interconnections: The work undertaken here requires expertise in ICT, mass communications and engineering. There is much specialized knowledge to be shared, especially in terms of procedures and protocols used to ensure the event takes place effectively and efficiently.

Layer 3: KM Activities

The task to be done in the sports event management will be implemented in stages. Certainly it involves processes deployed and arranged to meet the recommendations made. KM activities carried out are as follows:

K-Identification**:** Internal Analysis/Identification of Existing Knowledge/Identification of current steps/ Methods and tools.

K-Acquisition**:** Acquire knowledge – suppliers/customers/specialists/sports products/sports partnership.

K-Application**:** Ensure appropriate knowledge used in organizations/knowledge needs/knowledge to be created, stored and shared/Identify knowledge gaps/representation of new knowledge.

K-Sharing: Transfer of knowledge/sharing in various way – manual or computerized/Methods and tools/ acceptance of knowledge provided by colleagues, partners and suppliers.

K-Development: Compliments K-Acquisition/Build Distinctiveness Competencies/Focus on conceptual, behavioural and technical abilities/overall improvement.

K-Creation: Creation of new knowledge – social interaction/services improvement activities/Research and development/Communities of Practice/encourage staff to bring in their explicit and tacit knowledge.

K-Preservation: Through Culture – Promote knowledge sharing and Communities of Practice/Through

Technology – store selective current/ retrieve specialized knowledge for constant usage /Capture, Use and Reuse and Update concept.

K-Measurement: To measure the effectiveness of KM/Individual reactions and feelings/Individual knowledge assessment exercise/Evaluate overall k-base/Performance focus.

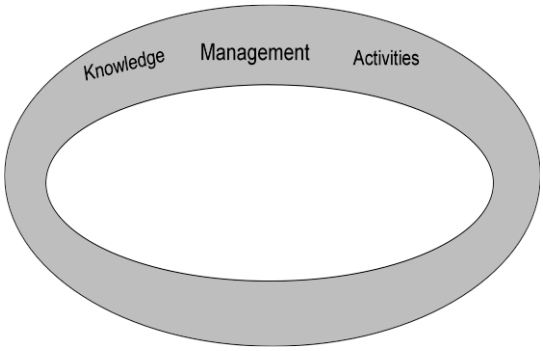

Figure 3. Layer 3 (L3)

Layer 4: KM Input/KM Output/ Business Process/Business Focus

KM Input : This process refers to the internal and external MG particular items, product, devices or mechanisms that can be used for the purpose of triggering the progression of a KM process in sports event management. Examples are: data and information of individual results, athletes, Officials and contingents.

KM Output: A final product in the MG after passing through the diversity of the KM knowledge process in the organization and is ready for use by sports users. An example is the daily results report.

Business Process**:** A collection of MG management activities designed to produce a specific sports managment output. It implies a strong emphasis on how sports event management is done. Currently, the MG Standard Procedure by the NSCM has been used as the basis for organizing the

MG. There seems to be room to improve the business process. KM can be included as an additional element. Example: decision making in accessing athletes and contingent performance.

Business Focus**:** Helps in defining the MG organization, give direction and avoid problems. It can help motivate members by communicating what the organization is striving for as well as providing a basis for recognizing accomplishments and successes. Example: Decision about the focus of the MG and the allocation for the next organizing.

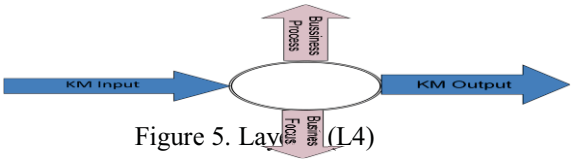

Figure 5. Layer 4 (L4)

Layer 4 : Sports KM Database (SKMD)

A sports KM database is a collection of sports knowledge that is organized so that it can easily be accessed, managed and updated. This aspect is the responsibility of the ICT Unit of the NSC. Currently, the system in use is operated separately and have the two entities that manage them, consisting of the NSC IT Unit and developers from outside of the organization. Improvements process should be done to create a foundation that can support the proposed knowledge management implementation accordingly.

Figure 5. Layer 5 (L5)

1. DISCUSSION, VALIDATION PLAN and CONCLUSION

Our SEMKM framework is flexible. Its use will be based on needs and size of the future events. Foreseen advantages of using it are as follows:

- SEMKM Framework can be used as a tool for decision making to provide a description of all kinds of knowledge and information needed by the organization. Knowledge requirements are identified and the analysis is the basis for systematic development.
- It can improve the quality of the organisational processes, targeting specific characteristics of organizational management, data management and knowledge flow networks.
- With all aspects of processes will documented, it aims to reduce repetition of work, provide guidance and prepare for new changes. In addition, it will provide updates, current guidelines and is easily accessible by all involved in the MG.
- SEMKM Framework will provide methods of information sharing, knowledge capture and knowledge generation. It can also be used to coordinate the knowledge effectively.
- SEMKM Framework can also be used to introduce a knowledge-based decision support tool for use in the management of the organization, and possibly other methods aimed at cultivating a technology based organization with methods to strengthen the knowledge management in the sports event management.

The framework will be initially validated and refined through a detailed case study applying it to MG. We have developed a detailed survey to capture the contextual conditions, focussing is on contemporary events, and the experience of the actors involved. We conducted a pilot test on 35 respondents with the aim to test the effectiveness of the validation methods to be used for SEMKM Framework developed. Respondents were given a set of questionnaire containing 76 questions which are linked directly to the problem being studied. A total of eight categories were determined. Questions were submitted in the categories of KM Adoption, Sports Knowledge in MG, Knowledge in SE organizing, Awareness KM, KM Systems, Knowledge and IT, KM and IT Performance and others. From the analysis, we found that all categories of questions, showed the respondents chose agree and strongly agree responses for each question. It indicated that 50-60% of the respondents agreed with our assumption in strengthening knowledge management in the sports event management. For the next task, the number of questions is to be increased to 84 questions, 405 respondents have been identified, and the questionnaire has been strengthened to ensure that the data obtained later will be accurate.

The developed framework is a road map to improve the sports event management. By creating KM centric processes, it can be used in improving the effectiveness of the organization's management. We have been assuming that there are advantages and disadvantages in running the sports event management and it has been sketched in the framework. Further validation is required. Survey based methods have been identified as a suitable tool for the validation process of frameworks (Tran et al, 2006; Beydoun et al 2006). They will identify specific aspects of the review and see whether the proposed framework can be used or not. The proposed survey will be at the same time a tool to apply KM in the organization after identifying the

needs of the organization and having examined all of the assumptions made. Through the survey, data and information required to be obtained accurately. The questions answered by the respondents would give a sign of an impact on the development and implementation of this framework. After the analysis is made, the proposed KM framework will be reviewed and improved before it is proposed to use the field of sports event management on a second validation case study.

REFERENCES

Aidemark, J., and Sterner, H. 2003. "A Framework for Strategic Balancing of Knowledge Management Initiatives." Proceedings of the 36th Hawaii International Conference on System Workshop Sciences. 6 -9 Jan **2003,** Hawaii, USA.

Alavi, M., and Leidner, D.E. 2001. "Knowledge Management Systems: Conceptual Foundations and Research Issues." Management Information Systems Quarterly (25:1), pp 107-136.

Benbasat I, Goldstein D and Mead M (1987) „The Case Research Strategy in Studies of Information Systems" MIS Quarterly Vol. 11, pp. 369-386.

Beydoun, G., Gonzalez-Perez, C., et al. (2006). "Developing and Evaluating a Generic Metamodel for MAS Work Products". Software Engineering for Multi-Agent Systems IV: Research Issues and Practical Applications. A. Garcia, R. Choren, C. Lucenaet al. Berlin, Springer-Verlag. LNCS 3914: 126-142.

Beydoun, G. (2009). "Formal concept analysis for an e-learning semantic web". Expert Systems with Applications 36(8).

Beydoun, G., Lopez-Lorca, A. et al. (2011). "How do we measure and improve the quality of a hierarchical ontology?" Journal of Systems and Software 84 (12): 2363-2373.

CEN (2004), European Guide to good Practice in Knowledge Management. CWA 14924, Part 1 – 5, European Committee for Standardization, Brussels.

Dongsong Z., Hou, L., and Nunamaker, Jr. J.F. 2002. "A Knowledge Management Framework for The Support of Decision Making in Humanitarian Assistance/Disaster Relief." Knowledge and Information Systems Springer-Verlag (4:3) July, pp 370-385.

Eisenhardt K (1989). Building Theories from Case Study Research" Academy of Management Review Vol.14, No 4, pp. 532-550.

Fuhrer, F. 2002. Sustainable Olympic Games: a dream or reality? Bollettino della Societa Geografica, Italiana, Serie XII, Vol VII, 4.

Ghaffar A. R. A., Beydoun G., Shen J., Tibben W. 2011. "Towards Knowledge Management in sports event management: Context Analysis of Malaysian biannual games with CommonKADS", Proceedings of the 6th International Conference on Software and Database Technologies (ICSOFT2011), Volume 2, pp. 377-383.

Halbwirth, S., and Toohey, K. 2001. The Olympic Games and Knowledge Management: A Case Study of the Sydney Organising Committee of the Olympic Games. European Sport Management Quarterly (1:2), June, pp. 91-111.

Heisig, P.(2009). Harmonisation of knowledge management – comparing 160 KM frameworks around the globe. Journal of Knowledge Management. vol. 13 no.4, pp 4-31.

Hevner, A.R, March, S.T, Park, J. and Ram, S. 2004. 'Design science in information systems research'. MIS Quarterly, vol. 28, no. 1, pp. 75–106.

Lacher, M.S., and Koch, M. 2000. "An Agent-based Knowledge Management Framework." American Association for Artificial Intelligence Workshop on Bringing Knowledge to Business Processes, 20-22 March, 2000.

Nonaka, I., and Takeuchi, H. 1995. The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. New York: Oxford University Press.

Rubenstein-Montano, B., Liebowitz, J., Buchwalter, J., McCaw, D., Newman, B., Rebeck, K and The Knowledge Management Methodology Team (2001), ''A systems thinking framework for knowledge management'', Decision Support Systems, Vol. 31, pp. 5-16.

Sadrei, E., Aurum, A., et al. "A Field Study of the Requirements Engineering Practice in Australian Software Industry", International Journal Requirements Engineering Journal **12** (2007), pp. 145–162.

Schreiber, G., Akkermans, H., Anjewierden, R., Hoog, R., Shadbolt, N., Velde, W.V., and Wielinga, B. 2000. Knowledge Engineering and Management: the CommonKADS Methodology. Boston, MA: MIT Press.

Schumaker, R., Solieman, O., & Chen, H., (2009). Sports Knowledge Management and Data Mining. Annual Review of Information Science and Technology, 44.

Tran, QNN, Low, GC et. al, "A Methodological Framework for Ontology Centric Agent Oriented Software Engineering", International Journal of Computer Systems Science and Engineering, 21, 117-132, 2006.

Weber, F., Wunram, M., Kemp, J., Pudlatz, M., and Bredehorst, B. 2002. "Standardisation in Knowledge management – towards a common KM framework in Europe." Proceedings of UNICOM Seminar. 27 February, 2002. London.