

Electronic Management of Technology Case Journal

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Abstract

To satisfy the need for management of technology (MOT) cases, a journal is being established on the Internet for management of technology cases. The concept will utilize the strengths of the Internet to provide a new tool to motivate the creation, collection, and dissemination of technology management case studies. The paper discusses the conceptual framework and principles that will be utilized for establishing this e-journal. The e-journal will be designed so that key ideas and taxonomy are mapped to a MOT theory structure. This will entail a logical hierarchy that permits linking specific ideas and taxonomy in the cases.

I. Introduction

The pervasiveness of technology and its impact on society has resulted in increasing the educational courses and programs available dealing with the management of technology. The related conceptual frameworks, principles, and tools are evolving in this emerging academic field. This paper discusses a concept for utilizing the Internet to enhance the study of management of technology.

II. Need for MOT Cases

Previous papers have outlined the need for cases to support the study of management of technology^{1,2}.

Nystrom and Huggans made the following observations as a result of surveying current programs and courses that were offered by engineering master's level programs in MOT.

- The development of more technology management case studies should be encouraged. A large number of courses use case studies and a number of respondents commented that it was difficult to find appropriate case studies that had sufficient content.
- There is no common usage of textbooks. This might reflect a shortage of appropriate textbooks. It was noted, however, that it might be difficult to develop textbooks that satisfy the diverse demand that exists.
- There is a value to a standard base of knowledge in the field to make it easier for students and employers to understand what is offered. Standardized course titles and terminology would also be helpful. However there seems to be a strong desire to maintain independence and flexibility to better meet their perceived customer demands.
- The integration of the relevant professional organizations could foster the development of case studies, common textbooks, and a more standard base of knowledge.
- Increased research and publishing opportunity in the area of technology management is another way to foster the necessary changes. This could generate the standard base of knowledge and necessary visibility.¹

In response to these findings, Nystrom and Myers outline the concept of creating a clearinghouse that would provide an online source of technology management cases that is easily accessible to users through the Internet³. This paper outlines the further development of this concept.

One objective of the authors is to relate published cases to a MOT knowledge structure that will enhance the student's understanding of the principles, concepts, and tools. The real understanding of these come with their application to a specific problem. Engineering education has traditionally made use of the laboratory experience to reinforce the classroom learning of principles, concepts, and tools.

In another approach for the same end, the legal education profession utilizes actual recorded court cases documenting the development and applications of principles and concepts to facts. The business and management higher education profession has followed the law schools in utilizing cases for experiential purposes for the students in applying the various concepts. One disadvantage that business and education has is no ready accessible cases, i.e., someone must write the cases.

The result is that there are desirable aspects of business and management cases that are not available. One is a lesser emphasis in business and management cases reinforcement of principles:

Cases should be used with the clear consciousness that the purpose of business education is not to teach truths – leaving aside for a moment a discussion of whether there are or are not such things as truths – but to teach men to think in the presence of new situations. There should not be a single problem [case] in use which is not capable of at least two intelligent solutions...Teaching by the case method is class discussion of possibilities, probabilities, and expedients – the possibilities of the combinations of very intricate facts, the probabilities of human reactions, and the expedients most likely to bring about the responses in others that lead to a definite end.⁴

With a greater emphasis on reinforcement of principles, the journal design will be significantly influenced by not only having students consider possibilities, probabilities, and expedients, but also the need to consider applicable guiding principles, concepts, and tools to reach viable solutions.

III. Journal Design

The Journal will be an online archive of refereed cases with instructor notes dealing with the management of technology. The present plan is to include a knowledge structure that follows one used by Betz.⁵ This would include seven (7) broad areas:

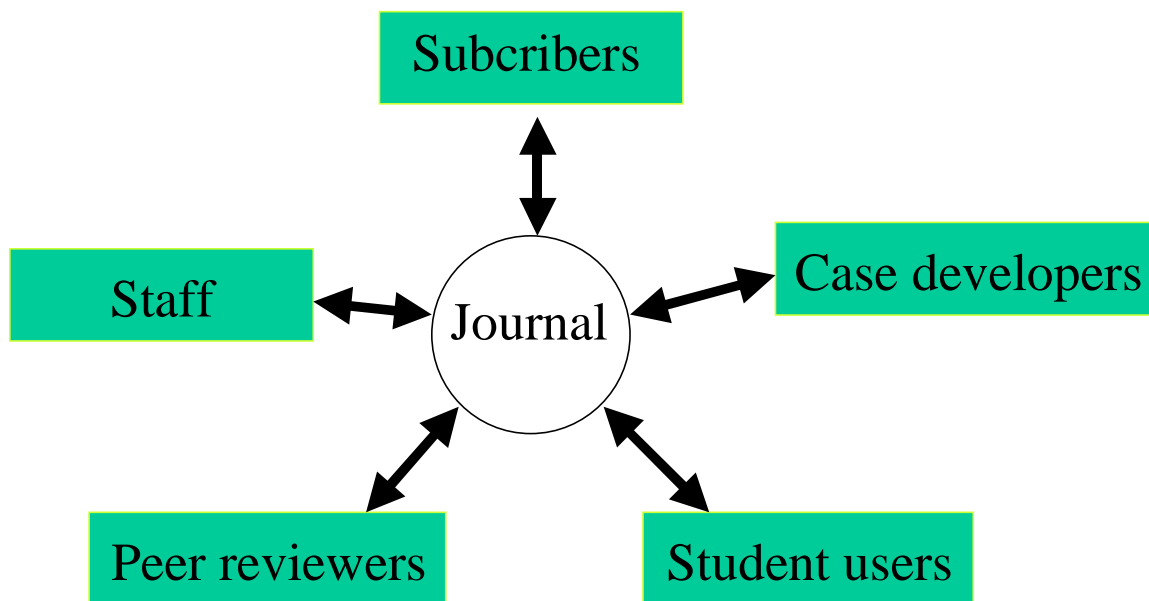
- Innovation Processes
- Enterprise Systems
- Technology Strategy
- High-Tech Ventures
- Research and Development
- Technology Operations
- Strategy Integration

Each area would have sub-areas such as entrepreneurship (which in turn would have further sub-areas) under high-tech ventures and product design under technology operations. By developing a logic tree of the theory of MOT with “key concepts”, it will be possible to map a problem structure (case fact situation) to a theory structure. Case analysis using various MOT concepts, models, procedures, and/or tools will permit developing key ideas for case solution(s).

A “prototype” website has been developed using Lotus Notes software. Cases (and instructor notes) would be submitted via the internet to this location for review and consideration for “publication” in the “MOT OnLine Case Journal”. The Editorial staff can access the case submittal and begin the review process including referral electronically to the selected reviewers by the Editor. It is envisioned that the case review process would be completely managed electronically without any hard copy transfer required.

Subscribers to the Journal will be able to access and select cases through the website. It would be expected that subscribers will approach case selection from a desire to reinforce a pedagogical perspective (educator) or problem oriented perspective (technology manager). To enhance this process, a “key concept” process will be used. It is envisioned that each case instructor’s notes will identify one or more predetermined (or new) “MOT key concepts” in their case. The Journal will maintain a database of these key concepts by area/sub-area of the above discussed knowledge structure. A search capability will permit the subscriber looking at a particular key concept to identify all cases that involves the concept of interest.

Communications flow through the Journal is envisioned as follows:



In addition to the “published” case journal, the authors envision a database of “unpublished cases”. This would include cases that were deemed to not meet the requirements of the journal by its referees, as well as cases that authors elected not to submit it as a case to be considered for the “published” database.

IV. Plans for Continued Development

At the time of submittal of this paper, a prototype website was been developed using Lotus Notes software to demonstrate the basic concept. Further development in the near term includes the following:

- Demonstration of the prototype to interested educators to develop interest in participation in various ways to insure a viable journal, i.e., case writers, case reviewers, panel participants in developing knowledge structure areas/sub-areas, etc.
- Seek consensus among MOT experts on the general knowledge structure and primary key concepts.
- Solicit MOT experts in taking leadership in developing specific knowledge structure areas/sub-areas and related key concepts.
- Develop and seek consensus on appropriate format(s)/style(s) for case and instructor's notes.
- Develop the pricing structure philosophy for subscribers to access and select cases.
- Refine the website to accommodate various possibilities, i.e., multi-media cases as well as make the website more user friendly for subscribers and case submitters.

V. Value Created by the Journal.

It is envisioned that the journal will provide:

- An MOT theory structure with key concepts and tools that will enhance the analysis of cases and map the analysis to key concepts for appropriate solutions.
- Cases that are timely addressing issues that are important and using examples of technologies that are interesting to the students due to their timeliness.
- Cases that are generated with a standard format and structure to facilitate its use.
- Cases that have undergone a thorough evaluation process through peer review.
- An easy reference to cases addressing similar issues through the use of the key concept database.
- Motivation to case developers to create quality cases through publication in its peer-reviewed journal.
- Effective communication media for interactive communication with case users, case developers, peer reviewers, students users, and staff.
- Efficient forum to accept, review and publish the cases to provide a low cost solution to the need for MOT cases.
- On-line access by industry professionals, educators and students for the cases as well as communication services to the educator facilitating the submission of case evaluations.

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