APPLICATION FOR SABBATIC LEAVE
EASTERN CONNECTICUT STATE UNIVERSITY

Name: **Dr Doncho I. Petkov, Professor in BIS**

Department: **Business Administration**

Leave Requested for: **Spring 2009**

Date Hired: March 2002, working at ECSU since August 2002, tenured 2006

SEMESTER AND YEAR OF LAST SABBATICAL: None

Signature: ……. **Date:…….**

ABSTRACT

The aim of this research is to identify the impact of ways of mixing soft systems methodology (SSM) with the work system method (WSM) for improvements in the communication within a software development team and with its clients. The work will involve theory building and real world case studies of its applications. This project will allow the integration of those methodologies in teaching Systems Analysis and Design in the BIS program, contributing to its distinctiveness. The proposed research is an important development in one of the major knowledge areas in IT linked to improving software development productivity.

SABBATIC LEAVE RESEARCH PROPOSAL

Dr D. Petkov

ABSTRACT

The aim of this research is to identify the impact of ways of mixing soft systems methodology (SSM) with the work system method (WSM) for improvements in the communication within a software development team and with its clients. The work will involve theory building and real world case studies of its applications. This project will allow the integration of those methodologies in teaching Systems Analysis and Design in the BIS program, contributing to its distinctiveness. The proposed research is an important development in one of the major knowledge areas in IT linked to improving software development productivity.

I. TITLE OF PROJECT:

INVESTIGATION OF WAYS OF MIXING SOFT SYSTEMS METHODOLOGY WITH THE WORK SYSTEM METHOD FOR IMPROVED SOFTWARE DEVELOPMENT PRODUCTIVITY

II. AIM OF THE RESEARCH

According to the founder of Software Engineering, B. Boehm, there is a strong need to u*nderstand how communication occurs within software development teams* (Boehm, 2006).

The aim of this research is to identify the impact of ways of mixing soft systems methodology with the work system method for improvements in the communication within a software development team and with its clients.

III. STATEMENT OF THE EXISTING KNOWLEDGE ON THE SUBJECT OR PROJECT:

Boehm's (2006) ideas have been extended by Petkov, Edgar-Neville, Madachy and

O'Connor (2008) to the need to continue the work on *integrating systemic methods promoting organizational learning* like systems dynamics, stakeholder analysis, soft systems methodology, critical systems thinking and others to identify the advantages of using specific methods and their limitations when dealing with uncovering the micro climate within a software development team. *More case studies need to be conducted in different software development organizations to validate the claims for the applicability of such methods and to distil from the accumulated knowledge best practices and critical success factors* relevant to flexible, high quality software development teams.

Soft Systems Methodology (SSM) evolved more towards the field of IS (see Checkland and Holwell, 1998). The relevance of SSM to the field of IS has been explored in two directions. One way is to apply SSM on its own in some IT related aspect; e.g. extend the standard SSM method to specify the information requirements of the system (see Wilson, 1990). The use of SSM in data modelling is explored by Lewis (1995). A second direction of using SSM in Information Systems is through the linking of SSM to existing design methods. Several authors have covered aspects of combining the Unified Modelling Language (UML) with SSM. A recent paper by Sewchuran and Petkov (2007) analyses the related theoretical issues and shows a practical implementation of a combination of UML and SSM within a Critical Systems Thinking (CST) (see Jackson, 2003) framework justified by Multimethodology (see Mingers, 2001).

Multimethodology is a meta theory for mixing methods from different methodologies and paradigms in the same intervention (Mingers 2001). Further refinement of the ideas on pluralist interventions can be found in a recent paper on Creative Holism (Jackson, 2006). Details on three pioneering case studies demonstrating how Multimethodology and CST were practiced in separate systemic interventions in the Information and Communications Technologies sector can be found in Petkov, Petkova, Andrew and Nepal (2007).

The work system method (WSM) provides a rigorous but non-technical approach to any manager or business professional to visualize and analyze systems related problems and opportunities (Alter, 2006). The first experimental study on the impact of the WSM on understanding information systems problems is described in Petkov

and Petkova (2006). We may note that the need for mixing in practice the work system method and soft systems methodology in software development is another justification for this research project.

In conclusion it may be pointed that the work that has been conducted by the applicant over the last few years is at the cutting edge of applications of the systems approach to IS development. This project is a natural continuation of that work and extends it further significantly.

IV. STATEMENT OF THE POTENTIAL VALUE OF STUDY OR PROJECT TO THE APPLICANT'S PROFESSIONAL GROWTH AND ITS POTENTIAL VALUE TO THE UNIVERSITY, OR ITS CONTRIBUTION TO A PARTICULAR FIELD OF KNOWLEDGE:

IMPROVED TEACHING AND IMPROVED STUDENT LEARNING:

This project will provide me with enriched knowledge to address the impact of systems approaches on the performance of software development teams and thus will allow me to strengthen the integration of the methods involved in teaching systems analysis and design in the Business Information Systems program. The BIS program at ECSU is one of the first in the USA to integrate the Work Systems Method in the Systems Analysis course since 2006. This project will enable me to extend that work towards mixing SSM and WSM in teaching Systems Analysis and Design. The investigation of the way how development team performance may be impacted by a mix of SSM and WSM will allow me to apply the insights from it in positively influencing and motivating my students and it will have an overall positive effect on the performance of my students and their learning.

CONTRIBUTION TO THE BODY OF KNOWLEDGE ON IS DEVELOPMENT MANAGEMENT:

The proposed research is a significant development in one of the major areas towards the broadening the application of the systems approach to IS development for the purpose of improving software development productivity. Conducting it with international collaborators reflects the continuous trends of globalization of the IT

industry and hence the results are expected to provide insights to the overall body of knowledge in Information Systems Development Management.

INTERNATIONAL PARTNERSHIP:

The project will allow me to cooperate with international scholars from South Africa, namely from the University of Johannesburg (The Dean of Engineering) and from the Durban University of Technology (The Dean of Accounting and Informatics), who had both worked with me in the past on other aspects of mixing methods in complex problem situations (see Petkov et al. (2007) and the two invitation letters attached from both institutions) as they have expertise and facilities to enable the implementation of the proposed project.

PROFESIONL GROWTH

The applicant is a Senior Area Editor for Information Systems, Software Engineering and the Systems Approach of the premier international journal on IT and the systems approach (IJITSA), published from 2008 by Idea Group Global, a leading IT publishing house. This work is a direct continuation of his current and past research activities and will further strengthen his position as one of the pioneers in this field.

PROPOSED ACTIVITIES AND RESEARCH METHODOLOGY:

1. Literature survey on software development productivity issues and on mixing SSM and the Work System method in Software development.
2. Formulation of the theoretical model regarding the possible way of mixing SSM and WSM in IT projects.
3. Testing of the theoretical model on a real case project.
4. Analysis of the results.
5. Write-up of the results and preparation of two manuscripts for publication in a recognized international journal and conference proceedings.

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