

**UNIVERSITY OF LINCOLN**  
**Faculty of Business and Management**  
**Off Campus Programmes**  
**Postgraduate Dissertation Proposal**

Student Name: Harald Hofpeter

Student Enrolment Number: 008046950

Centre: FH Ludwigshafen

Award: MBA

Provisional Title:

An investigation in contemporary approaches to manage software development projects following an eclectic approach to process improvement through the application of a set of best practices.

Main Subject Area of Dissertation: **(Please Tick One box Only)**

Accounting and Finance	<input type="checkbox"/>	Administrative Management	<input type="checkbox"/>	Business Law	<input type="checkbox"/>	ECommerce	<input type="checkbox"/>
Economics	<input type="checkbox"/>	European Studies and International Business	<input type="checkbox"/>	Human Resource Management	<input type="checkbox"/>	Information Systems	<input checked="" type="checkbox"/>
Marketing and Advertising	<input type="checkbox"/>	Management Decision Making	<input type="checkbox"/>	Modern Languages	<input type="checkbox"/>	Quality Management	<input type="checkbox"/>
Strategic Management	<input type="checkbox"/>	Education	<input type="checkbox"/>	Other	<input type="checkbox"/>		

## ***Dissertation Proposal***

### **Name of Student**

Harald Hofpeter

Seelenpoint 1a

90427 Nürnberg

Tel. 0049 911 302855

[hofpeter@gmx.de](mailto:hofpeter@gmx.de)

### **Dissertation Supervisor**

Greg Kinsey

### **Program**

Postgraduate MBA - International Management Consulting

## **1. Proposed Project Area/Title:**

This research will be dedicated to the subject area of software project management and will investigate the planning and execution of software development projects. Consequently, other common issues of software project management, which are for example related to people or technology, are not within the scope of this research.

The proposed title of the dissertation is:

An investigation in contemporary approaches to manage software development projects following an eclectic approach to process improvement through the application of a set of best practices.

The Webster dictionary defines a process as a "particular method of doing something, generally involving a number of steps or operations". In accordance to this definition, a software development process can be characterised as a network of high-level and low-level activities that need to be performed during a software development endeavour. Within this network, each activity is associated with a role, a method, a deliverable, and a set of tools (Fayad, 1997:101)

## **2. Proposed Aim(s) and Objectives:**

It is important to note that most of the popular software development process models refuse to discuss influential factors. Rather, it is assumed that the process model is flexible enough to cope with any adversities that must be expected in the real world.

This dissertation, however, is aimed at proving this assumption wrong and it is intended to show that the situation is indeed an important influential factor for selection and configuration of process models.

The dissertation will critically reflect the practiced methods and will attempt to formulate an eclectic and situational approach, which will be based on popular process models and developed in three consecutive steps:

- Development of an analytical framework for the evaluation of the most popular process models.
- Analysis of the current approaches of experienced practitioners to utilise process models in software development projects.

- Identification of a set of best practices that lead to an improvement of the current approaches by a situational combination of different elements of the examined process models.

### **3. Relationship to previous work:**

The literature discusses several aspects of software engineering and project management. Wöhe (2002:186) characterises software engineering as the attempt to reach higher programming efficiency by the application of certain methods, procedures, and tools of engineering technologies. The survey "European Software Management Practices" points out that "the quality of a software product is largely determined by the quality of the software development and maintenance processes used to built it". This survey, however, also reveals, that hundreds of European companies reject or ignore most of today's software management practices (Dutta et al, 1998). In addition, Dodd (1995; as cited by Dutta et al.,1998) views software development as an organisational and management challenge, "as it is increasingly recognized that purely technological solutions yield benefits that are difficult to sustain and often eroded". Fayad (1997:102) also comes to the conclusion that "it is the management's job to show how process will help achieve the overall goals...".

Moreover, the cost estimation for software projects is often unpredictable. Strahringer (2002) references a survey of 250.000 software projects which was conducted in 1994 and showed that the average project was 222% over time and 800% over budget. One prominent example is the German Ministry of Finance's FISKUS project for tax calculation. The planed investigation was 150 Mio. € the estimate cost will be at 1.4 Billion. €.

Boehm (2003) claims, "most software project failures are caused by value-oriented shortfalls such as lack of user input, incomplete requirements, changing requirements, lack of resources, unrealistic expectations, unclear objectives, and unrealistic timeframes".

On the other hand, most of today's approaches, as discussed in Section Literature Review: to software management focus on process improvement.

This research, however, will show that these approaches do not sufficiently take into account situational factors and therefore do not address the actual root causes as identified by Boehm.

#### **4. Plan of work:**

See Appendix A

#### **5. Literature Review:**

The literature discusses several generic process models which are typically used by software development organisations to derive their specific engineering models. It will be shown that the various models follow different paradigms. Some, for example, are focused on the definition of detailed process steps, while others employ incremental and iterative techniques to achieve the evolutionary advancement of their deliverables. All of them, however, strike for the overarching goal of software product quality.

The attempt to take action against the chaotic approaches towards software development has a long tradition. As early as 1956, Benington introduced a phase model. The main elements of this linear model were operational plan, program specification, coding specification, coding, parameter testing, assembly testing, and shakedown. Royce (1970) extended this linear model by back loops to the previous phase and created the so called waterfall model.

Boehm (1998) recognized that the rules and laws of industrial production cannot be successfully adapted to software development and provided the first iterative and evolutionary-incremental approach in form of the spiral model. This model distinguishes itself for the reason that the sequence of process steps will be executed several times. In addition, the spiral model introduced steps for validation and risk analysis.

The Rational Unified Process, as described by Kruchten (2000), is a comprehensive approach to software engineering. This iterative and incremental process defines a generic process framework, which can be tailored for different areas of applications, organisations, and sizes of projects.

Extreme Programming, introduced by Beck (1999), is a so-called lightweight agile process. It focuses on teams, between two and ten project members. Beck sees the advantage of his approach in the capability to handle requirement changes in a more effective way, which enables a strong customer focus.

## **6. Methodology:**

Several factors call for an inductive approach for this research. Firstly, the limited resources do not permit an exhaustive data collection as required for an quantitative analysis. At the same time, the differences of software development projects across organisations suggest a qualitative analysis that can take into account the particular set of circumstances under which the data has been collected (Saunders et al., 1997:86). Secondly, in accordance to Gill and Johnson (1997:33), the inductive approach also allows to build up on the author's personal experience in the area of software project management.

In this respect, the aim of the dissertation will be addressed through desk research and structured interviews.

The desk research will begin with text books related to the management of software development projects and software engineering to identify the basic theories. In addition, articles in journals and symposium or workshop reports discussing applicability, advantages and disadvantages and limitations of process models for software development.

The results of the desk research will help to design an appropriate questionnaire for the structured interviews. In depth expert interviews will be used to confirm the results of the structured interview. According to Gill and Johnson (1997:1), "Research methodology is always a compromise between options, and choices are frequently determined by availability of resources" this option strongly depends on the availability of the interview partners. The resources available for my project suggest, that I resort to a combination of convenience and snowball sampling (*Saunders et al., 1997:175*) for the primary research.

## **7. Resources:**

The selection of the resources has been limited by the fact that there is no financial support available. For my project, the following resources are available.

- Personal Network: Twelve years of professional experience put me into the position of having a well populated address book at hand. I have identified 24 individuals, who not only have the required level of expertise, but might also want to participate in my project because they are interested in the subject.

Some members of my personal network have also offered to serve as gatekeepers to additional professionals.

- Libraries: There are several university (e.g. University of Erlangen, University of Applied Science Nuermberg, University of Mannheim, FH Ludwigshafen) and public libraries (e.g. Bayerische Staatsbibliothek) I have access to. In addition, university libraries offer a nation wide inter library loan service.
- Association for Computing Machinery: This special interest group for computer professionals provides several valuable resources. Most of them can be directly accessed online via the “Digital Virtual Library”:

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**Checked by:**

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Date

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Greg Kinsey

- SUPERVISOR -

## Appendix A

