



The Prominent Study on Software Re-Engineering for Software Development

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ABSTRACT

System developers are faced to produce complex, high quality software to support the demand for new and revised computer applications. Software guidelines have been with us in many forms within Software Engineering community such as knowledge, experiences, domain expertise, laws, software design principles, rules, design heuristics, hypothesis, experimental results, programming rules, best practices, observations, skills, algorithms have played major role in software development. A very important role in the development of software is Software Re-engineering because many production processes are 'computer aided'. The aim is to learn from well-known best practices and documenting newly developed and successful best practices as knowledge based when developing software systems across the life cycle. Thereby it allows reuse of knowledge and experiences.

KEYWORDS : Software Reuse, Software Re-engineering, Combined Methodology, Re-engineering Tools

INTRODUCTION

The term Software Engineering was coined by F. L. Bauer the chairman of 1968 NATO Software Engineering conference held in Garmisch, Germany to promote a disciplined approach to developing software. Engineering is the use of closely controlled approaches and laws when building software systems. Software Re-engineering is still a comparatively new area of engineering [1]. Software Engineering deals with the sensational view of the process of designing, creating and maintaining software. Best practices provide a step by step instructions/solution to software problem across the life cycle and are based on the successful use in real world.

Today everything has to go faster. Due to the rapid tempo of changing in market needs, new products must replace with the old, existing products earlier than before, so the development of new products has to go faster. A regulation in which extensive research has been carried out is termed as Business Process Reengineering and it includes the five actions: Plan for reengineering, plot and study as-is process, selection of design process, employ reengineered process and progress incessantly [2].

RE-ENGINEERING:

"To improve is to change; to be perfect is to change often." – Winston Churchill

As per the quotes "Reengineering is said to be a crucial rethinking and complete redesign of a business activity to attain dramatic improvements in significant, fashionable measures of performance such as challenge, quality, tune-up and speed"[3]. "A business method is a sequence of steps designed to produce an invention or a service. It includes all the activities that distribute particular results for a specified customer (external or internal) [4]." BPR spotlights on methods and not on everyday jobs, or people. It is accomplished to restore the planned and value added processes that go beyond organizational limits.

Generally they make three alternatives based on the standard:-

Dysfunction: Which are the most awful running practices?

Significance: Which are the most decisive and dominant in terms of customer satisfaction?

Possibility: Which are the processes that are mostly to be reengineered [4].

BPR challenges many of the assumptions which underpin the way organizations have been run for the last two centuries. First, it rejects

the idea of reductionism. Second, it encourages organizations to capitalise on substantial developments made in technology. Third, BPR enables organizations to take advantage of the more highly developed education and capabilities of the staff they employ (Beckford, 1998). **COMBINED METHODOLOGY:**



The premium technique to plan and progress the organization's procedures is to take a top down design.[9]

- Starting with assignment proclamation that define the initiative of the organization and describe what place it apart from others in its sector or trade.
- Creating revelation proclamation which defines where the organization is going, to provide a obvious representation of the preferred prospect position.
- Build these into a clear business approach thereby obtain the project objectives.
- Essential behaviors that will enable the organization to get done with the application.
- Recognizing key recital procedures to track progress.
- Relating competence improvements to the ethnicity of the organization.
- Identifying inventiveness that will improve performance.
- The different steps in the combined methodology of business process re-engineering is as follows:

1: Prepare for Reengineering.

"Failing to plan is planning to fail".

Planning and Preparation are very important features for any actions or occurrence to be booming and reengineering is no exception [5]. Before challenge reengineering, the query 'Is BPR obligatory?' should be asked? There should be a noteworthy need for the process to be reengineered. This activity begins with the development of managerial agreement on the importance of reengineering and the relation between get through business objectives and reengineering plans. BPR projects involve cross-functional collaboration and considerable

changes to the category quo; the preparation for managerial changes is difficult to conduct without planned direction from the top. Another important feature to be considered while establishing the tactical goals for the reengineering attempt is to make it your first precedence to appreciate the prospect of the customers and where your existing process fails to meet the necessities.

#2: Plot and study As-Is process.

Some BPR proponents argue against analyzing the current venture, saying that it hold back the creative process, which might not always true[1]. The important aspect of BPR is that the improvement should provide spectacular results. The main intention of this juncture is to identify disengage (anything that prevents the process from accomplishing favored result and information relocate between organizations or community) and value adding processes [9]. This is prompting by structuring and reference of actions and Process models making use of the different replication methods offered. Then, the consumed time and the tangible cost that apiece activity necessitates in terms of possessions is designed through replication and Activity Based Costing (ABC).

#3: Selection of Design Process.

The intention of this juncture is to produce one or more alternative method to the current situation, which satisfy the planned goals of the venture. The first stage is benchmarking. Benchmarking (also “best practice benchmarking” or “process benchmarking”) is a process used in management and particularly strategic management, in which organizations evaluate various aspects of their processes in relation to best practice, usually within their own sector [6].” The concluding improvements are identified to the existing project; the advancement of the imminent development replica is prepared using a wide range of modeling methods, in consideration of the principles of process design.

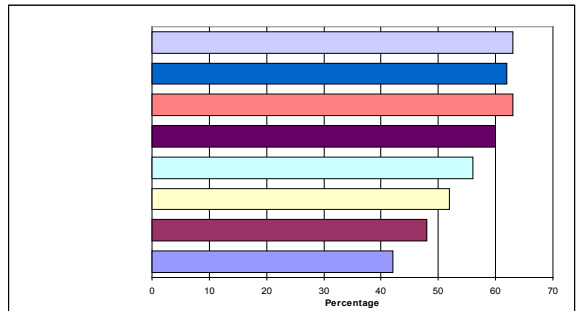
#4: Employ reengineered process.

The most difficult stage in software reengineering is the implementation stage where reengineering efforts congregate the majority divergence [2]. Hearts and Minds is about improving the culture of safety in an organization, making safety a fully integrated part of working behavior, and in the process easier to manage. It should be deep-rooted in minds of all and sundry involved in the BPR is very important for the achievement of the effort [7]. The next step is to develop a evolution plan from the to-be developed plan to the redesigned process. This draft must maintain the organizational configuration, information systems, and the industry policies with the redesigned processes. Recent developments in BPR software technologies facilitate automatic migration of the Work Breakdown structure relationships into a progression representation milieu. The benefit here in this phase is that we can now define the fundamental and time chronological relations between the different activities plan [4].”

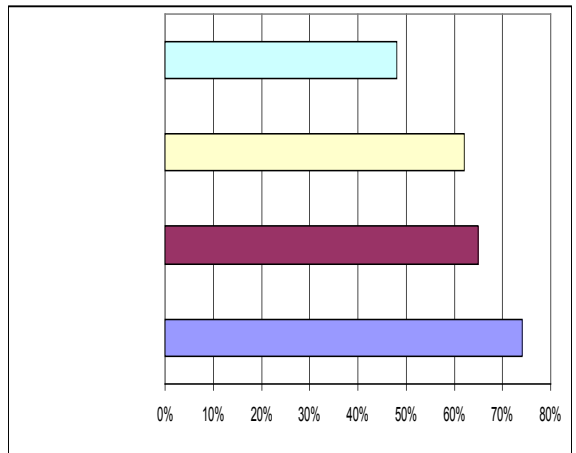
#5: Progress incessantly.

A very essential part in the accomplishment of every reengineering attempt lies in improving the reengineered process incessantly. Monitoring is the first step in this activity. Two important mania have to be monitored – the evolution of action and the results [8]. This can be achieved by conducting attitude review and discrete ‘fireside chats’ with those initially not directly involved with the change. Communication is reinforced throughout the organization, ongoing measurement is commenced, team reviewing of performance against clearly defined intention is done and a feedback loop is developed wherein the process of developing a process is reconstructed, reevaluated and re-intended. Thereby continuous improvement of performance is guaranteed through a performance measurement backline system and application of problem solving skills.

The various processes in an organization to be re-engineered [10]:



Some valid reasons for an organization to re-engineer software: [10]



CONCLUSION:

Strategy based Re-engineering can create best practices as procedures are to be followed when developing software which saves time, cost, and effort with quality. Our effort has shown increase in reuse gains to the maximum of 70%. The security feature can be accomplished up to 99%. Thus, we believe, attributes such as reuse and security factors can be improved significantly which results in achieving high quality of the software systems and reducing software development costs through software Re-Engineering.

REFERENCES

[1] Sommerville, Ian (2004). Software Engineering, Second Edition. Pearson Education. ISBN 0321210263. || [2] Pressman, Roger S. (2005). Software Engineering: A Practitioner’s Approach, Sixth. McGraw-Hill. ISBN 0072853182. || [3] Hammer,M., Champy,J., (1993), “Reengineering the Corporation: A Manifesto for Business Revolution.”, Harper Collins, London. || [4] Mayer, Richard,J., DeWitte, Paula,S., (1999), Delivering Results: Evolving BPR from art to engineering., || [5] A. Endres and D. Rombach, “A Handbook of Software and Systems Engineering”, Addison Wesley, Boston, 2003. || [6] Manganello, Raymond,L., Klein, Mark,M., (1994), The Reengineering Handbook: A Step-by-Step Guide to Business Transformation, American Management Association, New York. || [7] Obolensky, Nick., (1994), Practical Business Reengineering., Gulf Publishing Company, Houston. || [8] Carma L. McClure,(1988), Prentice Hall Publication, ISBN : 9780131193307. || [9] Furey, Timothy,R., (1993), A Six Step Guide to Process Reengineering., Planning Review 21 (2), 20-23. || [10] Feldmann Clarence,G., (1998), The Practical Guide to Business Process Reengineering using IDEF0., Dorset House Publishing, New York.