

## Summary

Software configuration management (SCM) is an important discipline in professional software development and maintenance. The increased necessity of customizing products for client and the shorter time for coming in the market with new product and for changes had led the companies to adopt this discipline and to use an SCM tool.

SCM concerns itself with controlling change in large and complex software systems. Its goal is to manage and control the numerous corrections, extensions, and revision that are applied to a system over its lifetime.

The aim of my study is to create a document that can clarify the costs and the benefits of SCM.

There are many aspects concerning the discipline that have to be considered; companies can apply different level of SCM, from a simple standard naming to a complex and integrated change process and can use many different tool, from a simple versioning tool to a complete instrument like ClearCase. The subjectivity of many SCM benefits causes a difficulty to identify and quantify these parameters because they depend on how and how much the SCM activities are implemented in a corporation.

For this reason, understanding that it would be impossible to create a 100% sure formula that can exhaustively describes the global earning of SCM in all the possible cases, I concentrate my efforts creating a model, a guide to use it and the ROI formula.

In the model both costs and benefits are organized in three degree of measurability: measurable, partially measurable and not measurable. In this way I could consider those parameters that are quantifiable and not dependant by the context where SCM is applied and for this reason they are usable in a generic ROI evaluation, those one that needs an interpretation because they are dependant on the particular SCM implementation and those one that are not economically quantifiable. The result is a matrix where I summarized all the aspects of SCM introduction focusing my efforts on its completeness. The guide is thought to help the potential user of the model to identify and quantify its parameters. The only measurable of them are the inputs of the formula. In this way I can better manage the difficultly quantifiable parameters and the different situation depending on the context of the company creating a more complete and elastic model.

The model with its three column matrix division permits to consider all the possible costs and benefits of SCM, including those subjective ones which can't be included in a general formula. This flexibility and the completeness of the model are the most improvement of my work instead of previous studies which must consider only the direct and obvious costs and benefits to create an explicit model that can be generally applied to all the SCM systems.