

# Chapter 6 Conclusions and Future Research

## ● Conclusions

Since requirement change is usually the major cause of project failure, requirements management has been an important issue in software industry. Traditionally, the tracking and impact analysis of the requirements change are usually conducted manually. Only a few traceability items are stored using simple tools such as Microsoft Excel. The complicated traceability relationships are still needed to be traced step by step manually. It is hard for the managers to effectively control and trace the requirement changes and the influenced artifacts. Automated tools should be able to support managerial activities even when a large number of traceability items are involved.

This paper proposes an integrated Requirement Management framework which includes the Requirement Management Planning, Requirement Development, and Requirement Change Management processes and the associated activities. Due to the importance of organizational institutionalization to meet CMMI level 3 goals and the importance of requirement issues for the project success, the institutionalized processes addressed in this paper aims to serve as a guideline for tailoring RUP to enhance the capability level of process areas REQM and RD in CMMI.

The IREQM framework proposed in this research supports the project team to understand why (Motivation) to act, when (Time) to act, where (Network) the workshops are, how to do the activity (Function), who (People) are involved, and what (Data) to be used or generated. By reducing the complexity of RUP, IREQM provides a systematic tailoring approach to tackle the problems of uncertain project objectives, structure, resource, budget, size, in software development. *AutoREQM*, the implementation prototype of IREQM framework, is built upon the Rational Suite tools, RequisitePro and ClearQuest, to design the automated CMMI support system.

The IREQM framework integrates the practices of process areas REQM and RD in order to meet the generic and specific goals and practices of REQM in CMMI maturity level 2 and RD in maturity level 3. The framework also provides the compliance approach for the organizations expecting to pass the CMMI appraisal.

## ● Future Research

This study addresses the requirement issues in software development, in order to meet the RD and REQM goals in CMMI. In the future, other process areas related to REQM or RD, such as Technical Solution, Verification, Validation, and Measurement

and Analysis, are deserved to be concerned for further research. The integration of the research should be valuable for organizations to establish a better software development environment.

In addition to RequisitePro and ClearQuest, IBM Rational Suites also provide other tools, such as Rose, TestManager, and ProjectConsole, to support various phases of software development and management activities. For future research of other process areas integration, the connection of IBM Rational tools and/or other available tools are deserved to be investigated to provide more complete CMMI process support automation.