

Standardization and improvement of processes and practices using XP, FDD and RUP in the Systems Information Area of a Mexican Steel Manufacturing Company

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Abstract. This work focuses on standardization and improvement of processes and practices using a combination of methodologies including Agile Methodologies (AM). It was implemented at a Mexican steel manufacturing company using FDD, XP and RUP. The main goal was to improve the software systems production, maintenance and support.

1 Introduction

This document identifies the needs and problems that the company faced. There were no customary procedures in daily operation. Regarding the documentation, it was inadequate or nonexistent. To correct these processes, a redesign through the combination of RUP, XP, and FDD methodologies was adopted, including documentation and practices.

2 Diagnosis

Three main stages were identified: *New Projects*, *Project Change and Improvement*, and *General Support*.

- *New projects*: the development of a solution which does not involve existing modules. [3] [7]
- *Project change and improvements*: modifications that users request, and involve non-structural changes to existent applications and queries. [3] [7]
- *General support projects*: record and follow-up of system errors notifications, and technical questions. [3] [7]

Table 1. Summarization of problems and their indicators for each of the stages: New Projects (*N*), Change and Improvements (*C*), and General Support (*S*).

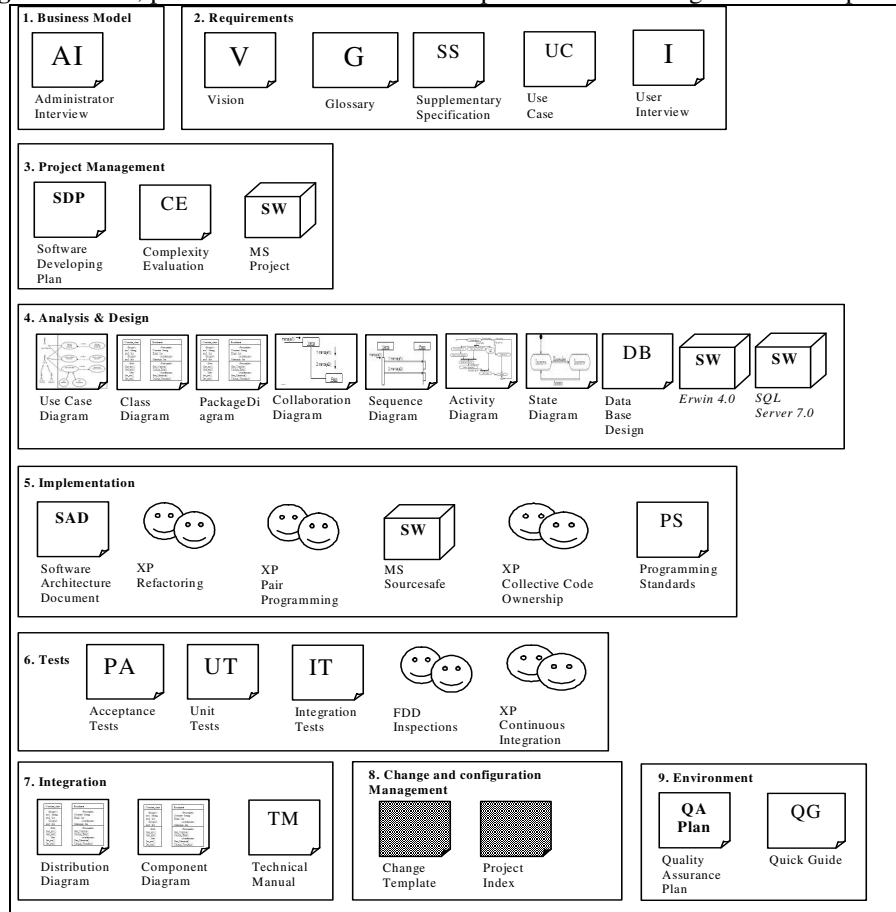
Indicator / Problem	Department is highly dependent on personnel	Difficult to adapt to organizational changes	Difficulty systems maintenance	Existent systems affectation errors.	Job posts without scope responsibilities	Non-documented or informal documented systems	Nonexistent formal development methodology.	Non-standardized development processes	Too much time invested studying system's code
Coworkers' collaboration.								N,C,S	
Responsibilities scope.					N,C,S		N,C	N,C,S	
Tasks continuation.					N,C,S			N,C,S	
Interface between personnel tasks.		N,C,S					N,C	N,C,S	
Opportune, truthful, and reliable documentation.				N,C		N,C	N,C	N,C	
Input and output documentation.							N,C	N,C	
Subordinate coordination.							N,C	N,C	
Version control.				N,C		N,C			
Centralized documentation.				N,C		N,C	N,C		
Personnel training time.	C		C,S						C

3 Redesign through XP, FDD and RUP

The redesign included both the documentation and the processes flow. The documentation redesign identified the RUP, XP, and FDD artifacts and the practices to implement as well as the actual way of working within the company. [2][4][5]

Artifacts that really had added value were chosen. All of them were adapted and approved by consensus. Finally it was cataloged according to RUP disciplines. [1] A set of software tools was implemented in each discipline.

Fig. 1 Artifacts, practices and software tools implemented according to RUP disciplines.



4 Results on the Use of XP, FDD and RUP

In order to carry out the redesign implementation, it became necessary to put in practice the redesigned processes. This was carried out through projects that matched the implementation needs: a new project, a change and improvement project and a general support request. Implementation results showed that the development period was greater than the previous one, which was expected. However, the goal of this project was not to accelerate the software developing period, but to standardize the work processes of the three departments.

Table 2. Comparative period of development between original and redesigned process in New Projects and Change and Improvement stages

Subprocess	New Projects		Change and Improvements	
	Redesigned	Original	Redesigned	Original
Needs identification	10	36	8	6
Requirements description and schedule	10	10	8	6
Analysis and Design elaboration	40	40	15	3
Implementation	20	24	4	2
Total Hours	80	110	35	17

Table 3. Comparative period of service between original and redesigned process in General Support stage.

Subprocess	Redesigned	Original
User service	2	2
System errors	8	8
Total Hours	10	10

5 Conclusion

Although not all of the artifacts were included, this redesign did not speed up the development process. Nevertheless, it helped the company in the standardization of its development processes as well as in the tasks among the development team.

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