



Software Process Improvement Case Study



Funded by the European
Commission Project Number
23873

Ireland No. 008 (English)

December 1998



Overview

ROSS Systems Ireland Ltd., is the Irish distributor for the RenaissanceCS integrated Enterprise Resource Planning System software developed and sold on the global market by ROSS Systems Inc. ROSS Systems Inc. operates out of Atlanta Georgia and is the world-leading supplier of processed ERP systems. Earning over 100 million dollars per year and operating in over 35 different countries worldwide. ROSS Systems Ireland was recently formed from the Business Systems Division of Tensor Technologies Ltd., where the business had been developed over the past five years.

Having inherited a Project Implementation Cycle, a considerable number of elements including coding standards and the software development process guidelines were not formally defined. It was decided to **Identify, Develop, Document and Implement** a Software Life Cycle Module which would greatly improve product quality and system operating effectiveness. Also customer satisfaction associated with the implementation of the RenaissanceCS product was expected to greatly improve.

The Organisation and its Environment

RenaissanceCS is the leading ERP system targeted at the process manufacturing market. Business supply chain management within this process environment, (which covers the pharmaceutical, chemical, food and beverage and consumer packaged goods segment) has a number of unique requirements and RenaissanceCS is uniquely placed to address these. The market opportunity is significant, as the sector is comparatively under-computerised.

The mission of ROSS Systems Ireland is to increase the share in the Irish market and to develop the export service potential, servicing the growing demand worldwide for implementation services around RenaissanceCS.

ROSS Systems Ireland Ltd., currently employees 25 industry professionals in the home and export market and operates with an inherited ISO9001 compliant quality system. In particular the Project Implementation Cycle around which the system was originally developed was in need of review and updating. This forms the basis for the current software improvement project.

The ultimate objective therefore is to update the software quality system at Ross Systems Ireland Ltd. with a Software Life Cycle, which addresses the current needs of the business and best practice policy

Starting Point

“What was the trigger for starting the SPIRE Project”

The lack of consistency of development, implementation and review of procedures was the main trigger for commencing the SPIRE project.

All productive work undertaken by Ross for customers was structured as a project. Systems Engineering was the methodology through which projects were successfully implemented, managed and controlled and provided a framework for the definition of the generic Project Implementation Cycle, which could be applied, to all projects undertaken by the company irrespective of industry or application type.

As you can see from the following list these are the phases through which a typical project passed. Depending on Customer requirements some projects may not have included all stages, or may not have followed in the same sequence.

1. Functional Requirements Spec.
2. System Specification
3. Contract
4. Customer Change Requests
5. System Design/Project Planning
6. Implementation
7. Works Test



8. *Installation/Commission*
9. *Systems Acceptance Test*
10. *Training*
11. *Support*
12. *Correspondence*
13. *Purchasing*
14. *Hardware Log*
15. *Software Log*

To facilitate the SPIRE project, Management laid out a comprehensive plan of action. The belief was that the development of a new standard methodology to define user requirements, design and develop the product with documented implementation and testing criteria would reduce overall project costs by between 10-15% and would at the same time enhance the product quality for Ross Systems.

An improvement plan was developed which contained the following objectives.

Objectives:

- *Develop a software development cycle module.*
- *Document this software development system to a recognised standard i.e. ISO certification.*
- *Implement the life cycle within the designated time scale of SPIRE.*
- *Provide Quality Awareness training to Ross Systems personnel to ensure successful implementation of the development life cycle and foster a culture of quality development and service.*

To identify the areas for improvement a SPIRE process evaluation together with a staff attitude survey was carried out.

The initial staff attitude survey, compiled at the outset of the project, indicated that staff within the Organisation had a basic commitment to quality procedures and they felt SPI could improve the quality of software ROSS Systems produced.

However, the process evaluation showed that documented procedures for most of the software development life cycle and operations areas did not adequately describe the activity currently in operation within ROSS Systems Ireland.

The original capability profile for software development was very low with an initial score of PA 0.5.

These assessments assisted Ross Systems Ireland to home in on the most beneficial improvement areas those areas likely to have the most impact in a short time frame.

Therefore the initial goals of the project were:

Project Goals:

- *Identify, develop, document and implement a software life cycle.*
- *When completed this would be the model for implementation within the other business units within Ross Systems.*
- *Develop a quality awareness ethos to ensure more effective implementation.*
- *Ensure that the full benefits of the operational effectiveness and associated customer satisfaction are obtained.*

The Improvement Project

After the appointment of a project manager it was decided to introduce a series of workshops, which would address the following key areas.

Key Areas:

- *Evaluate the current software development process.*
- *Agree desired end state software life cycle module.*
- *Perform system Gap/ Deficiency analysis.*
- *Identify required changes/ transitions from current state to desired end state.*

Management believed that without commitment from staff and leadership from management the project would not be accepted, therefore everyone was invited to attend and actively participate in the workshops.

All documentation and system developments were produced to comply to the ISO 9001 Standard. The control and content of the development system model complied to ISO system requirements to enable ease of transfer to ISO Software registration when they are officially released.



Microsoft project management tools were used to monitor project progress and review reports.

In general staff were positive and believed that there were benefits to the organisation, however due to the short time scale of the project and the impact of existing Ross System business commitments, staff availability for project progress and review was difficult to control.

Management were also distracted from the project due to the setting up of a new company to manage the Financial Service Business.

The Results

A software life cycle model has been defined, documented, flowcharted and communicated to all staff within the organisation. The model is split into three distinct stages:

The cycle flow between these sections is outlined below:

A.	Sales Process ↓
B.	Design Process & Development Process ↓
C.	Implementation Process & Support Process

The Model is controlled through the use of review/handover meetings between the various departments involved in the different stages.

The model has been fully incorporated in ROSS Systems as the standard method for project development and control. All future projects will be managed through a folder management system implemented with the model.

One of the benefits achieved from the SPIRE project was to develop the awareness of process improvement among ROSS staff. However, it is still too early to evaluate whether the quality ethos has permeated the ROSS Systems culture in the short time frame of the project.

The new life cycle model has been supported and welcomed by staff and management. The current view within the company is that the model is essential for the development and implementation of software solutions and is building a reputation of product and service quality for the new company.

A review of the final assessment showed that ROSS Systems capability profile for software development elements had moved up the charts from an initial score of PA 0.5 to a PA of 2.75 for most development trends.

However due to the many changes within the organisation a satisfactory comparison between the initial and final assessments, especially staff attitude, may not be realistic in evaluating improvements.

In addition, it may be too early to quantify the real benefits of the SPIRE project as only one pilot project was completed. The full cost benefits will not be fully proven until at least another two projects have been completed using the new methodology.

Lessons Learned

On completion of the project a number of factors affecting the success of the project can be identified. These can be split into those factors that were positive and those that were negative:

Positive Areas:

1. *The high volume of new employees proved a positive step in having the development model accepted quickly because they did not have sufficient time in the company to take on board the old process.*
2. *Both staff and management have accepted the model in ROSS Systems as the standard for evaluating project pre-sale risk, development control and implementation scheduling.*
3. *ROSS Systems have now defined an operating software life cycle model complying to ISO9001 standard with records of progress defined and maintained.*
4. *The process will improve product service quickly through better Q/A control in the development area.*



Negative Areas:

1. *Where staff had commercial development pressures it was difficult to obtain a commitment to a non-revenue project.*
2. *The major restructuring changes affected management's ability to stay focused on the project.*
3. *Because of the movement of staff and the high volume of new employees it was difficult to obtain a realistic comparison between the initial and final assessments.*
4. *Due to commercial needs the project manager was switched part way through the project, this inevitably caused some problems.*
5. *Staff mobility often contributed to delays in project progression and completion of inputs.*

Plans for the Future

- ◆ The managing director has decided to maintain the quality improvement team as the driving force for process improvement and develop an ethos of continuous improvement within the new organisation.
- ◆ Management has reviewed the SPI progress to date and have identified Configuration Management, Customer Support and Human Resource Management as areas for attention by the end of 1998.
- ◆ ROSS Systems Ireland plans to review the model against ISO9001 requirements and have an independent standards body assess the system for certification by the third or fourth quarter of 1998.
- ◆ All projects will be managed and controlled in line with the life cycle model and comply with the standards of quality assurance defined.

Acknowledgements:

This Case Study is published by CSE Ltd., Dublin, for the SPIRE project.

Thanks are due to the staff of ROSS Systems Ireland Ltd., especially Jennifer Shirran.

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