

ERP Requirements Management



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ERP Requirements Management

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ERP Methodology and Project Management

Agenda

- ERP Project Scope
- ERP Requirements Environment
- Requirements Gathering Methods
- ERP Requirements
- Requirements Management
- Summary

ERP Project Scope

- Scope is the logical set of self contained business processes that can be enabled by a standard software solution.
- ERP systems can define scope by:
 - ◆ Module – each module contains business processes (e.g. in SAP the Business Process Master List (BPML)).
 - ◆ By cross-functional business process, which may be obtained by cross module mappings to the implementation reference architecture.

ERP Requirements Environment

- **Multiple stakeholders** concurrently engineer the requirements and the architecture design to create a solution based on pre-existing ERP components.
- Requirements Engineering (RE) team extensively **reuses** predefined requirement artifacts (such as reference models).
- **Business process modeling** drives the RE cycle and is the key to acquiring, communicating, and validating enterprise knowledge and business requirements.
- The organization adopts an **architecture-centric approach** to manage systems and business changes and to establish and maintain a common information infrastructure across business units.
- RE teams emphasize consistency in **analytical measures**, such as systematic selection of common process and data requirements; **constructive measures**, such as consistent RE methods and tools; and **organizational measures** such as institutionalized quality assurance procedures.

Managing RE Teams

- To manage implementation complexity divide ERP project into subprojects based on the modules.
- Each **subproject** has a dedicated RE team.
 - ◆ Responsible for running the RE cycle and delivering the business process requirements document for the module.
 - ◆ Team includes:
 - ERP consultants with in-depth knowledge of process and ERP modules.
 - Process owners such as department mgrs and domain experts with knowledge of operational procedures the solution will support.
 - Process Architect to support teams. Knows ERP architecture; consults on requirements reuse, process methods, and RE tools.
 - Process Architect is shared among all teams.
- Identify interfaces between modules, negotiate interface requirements.

RE in an Iterative Life Cycle Model

- Three main activities:
 - Requirements elicitation: finding, communicating, and validating facts and rules about the business.
 - Enterprise modeling: analyzing and representing business processes and data.
 - Requirements negotiation: validating process and data architectures, resolving process and data issues, and prioritizing requirements.
- Deliver business blueprint.

Requirements Gathering Methods

- Sampling of existing documentation, forms, and databases
- Research and site visits
- Observation of the work environment
- Questionnaires
- Interviews
- Prototyping
- Joint requirements planning (JRP)
- Modeling

Joint Requirements Planning

Joint requirements planning (JRP) – a process whereby highly structured group meetings are conducted for the purpose of analyzing problems and defining requirements.

- ◆ JRP is a subset of a more comprehensive joint application development or JAD technique that encompasses the entire systems development process.

Guidelines for Conducting a JRP Session

- Do not unreasonably deviate from the agenda
- Stay on schedule
- Ensure that the scribe is able to take notes
- Avoid the use of technical jargon
- Apply conflict resolution skills
- Allow for ample breaks
- Encourage group consensus
- Encourage user and management participation without allowing individuals to dominate the session
- Make sure that attendees abide by the established ground rules for the session

Brainstorming

- Sometimes, one of the goals of a JRP session is to generate possible ideas to solve a problem.
 - ◆ Brainstorming is a common approach that is used for this purpose.

Brainstorming – a technique for generating ideas by encouraging participants to offer as many ideas as possible in a short period of time without any analysis until all the ideas have been exhausted.

Brainstorming Guidelines

- A facilitator runs the session, limits digressions and resolves or minimizes disagreements.
- Isolate the appropriate people in a place that will be free from distractions and interruptions.
- Make sure everyone understands the purpose of the meeting.
- Appoint one person to record ideas.
- Remind everyone of brainstorming rules.
- Within a specified time period, team members call out their ideas as quickly as they can think of them.
- After the group has run out of ideas and all ideas have been recorded, then and only then should the ideas be analyzed and evaluated.
- Refine, combine, and improve the ideas that were generated earlier.

Use of Narrative Techniques

- Poor requirements specification is often a problem in many IT projects.
 - ◆ In a study of 67 SAP implementations about 13.5% appeared successful from an engineering perspective but did not meet the real needs of the organization (Daneva 2003).
- Narrative type techniques help user groups better express needs.
- For example: A major cruise company gathered requirements on reservations by having reservation agents focus on scenarios (such as honeymoon couple reservation, group reservation, etc.).

Modeling Requirements

- Use Case modeling has become very popular for documenting software requirements.
- ERP projects are different – The primary requirements are driven by the business processes – hence process modeling is more appropriate means to document requirements.
- Model 'As-Is' and 'To-Be' business processes.
- Extensive academic research on enterprise modeling to better capture requirements.

ERP Requirements Best Practice

- Balance Technical and Business aspects.
 - ◆ Both sides (functional and technical) need to cooperate and have input into the ERP project.
- User Involvement
 - ◆ Users can help identify and resolve potential issues early, thereby improving implementation quality.
 - ◆ less likely to resist change
 - ◆ Opportunity for management to better gauge and influence user expectations.

Who Defines Requirements?

- ASAP approach has business team members work side-by-side with implementation consultants to define business process requirements.
- The risk is the consultants are biased to define requirements based on what is most convenient to configure as opposed to what is best for the organization.
- This is a type of conflict of interest.

Strategic Assessment

- The impact of ERP on the business can be analyzed by a strategic assessment.
- A fault with some requirements analysis is they do not explore the deeper organizational requirements that define a successful ERP.
- Missing strategic requirements become apparent over time when companies will need to embark on new projects to satisfy these needs.
- SWOT Analysis
 - INTERNAL
 - Strengths
 - Weaknesses
 - EXTERNAL
 - Opportunities
 - Threats
- SWOT analysis facilitated with checklists and consultants.

Example: Hydro Agri

- A SAP R/3 project from 1995 – 1999 with a total budget of \$126 M.
- 10 modules fully or partially implemented and more than 3000 end-users trained.
- Project was considered successful.
- BUT ... follow-up 'improvement projects' were necessary to meet strategic needs.

Example Continued

- Insufficient Evaluation of Strategy
 - ◆ Management needs were underestimated at strategic and tactical level. Hydro Agri use of Value-Based Management was not taken into account and its basic reporting requirements were not completely fulfilled in the first version.
 - ◆ A follow-up improvement project concentrated on the business side of the system.

Requirements in Government Acquisition of ERP

- The purchase of ERP is a major acquisition program.
- Consulting teams must submit cost and technical proposals for the work.
- The government agency must define the scope and requirements for the project.

ERP Requirements

- **Business Process Requirements:** The critical requirements for ERP are not technical system requirements but are related to the business process.
- **Information assurance requirements:** Ensure availability, integrity, authentication, confidentiality, and non-repudiation of transactions.
- **Performance requirements:** Transaction throughput and response times.
- **Control requirements:** (including Privacy and security)
- **Reliability requirements:** availability of system.
- **Interface requirements:** There will still be legacy systems, other ERP, etc.
- **Data conversion requirements:** how to convert legacy data to ERP.

ERP Requirements

- **Configuration requirements:** constraints on configuration changes.
- **Certification requirements:** For government contracts such as DCAA compliant (for accounting standards).
- **Supportability requirements:** Constraints on specialized software tools, maintenance.
- **User Interface requirements:** Requirements on the input and output formats and user interaction.
- **Training and document requirements:** ERP is a change management project, need to train users. Also, need to document system for maintenance.
- **Reporting Requirements:** Reporting is an integral part of ERP. Standard reports and ad hoc reports.

Criteria to Define System Requirements

- **Consistent** – requirements are not conflicting or ambiguous.
- **Complete** – requirements describe all possible system inputs and responses.
- **Feasible** – requirements can be satisfied based on the available resources and constraints.
- **Required** – requirements are truly needed and fulfill the purpose of the system.
- **Accurate** – requirements are stated correctly.
- **Traceable** – requirements directly map to the functions and features of the system.
- **Verifiable** – requirements are defined so they can be demonstrated during testing.

RE Should Stay Close to ERP Architecture

- Each ERP vendor offers an architecture concept that:
 - ◆ Defines underlying business principles
 - ◆ Structures the business reality (in terms of process and data views)
 - ◆ Provides conceptual modeling for each view
 - ◆ Contains predefined business processes and business objects

Government Agencies

- Government agencies might be hampered in adopting the best business practices embedded in ERP due to regulations and other laws.

Requirements Management

Requirements management - the process of managing change to the requirements.

- Over the lifetime of the project it is very common for new requirements to emerge and existing requirements to change.
- Studies have shown that over the life of a project as much as 50 percent or more of the requirements will change before the system is put into production.

Requirements Management

- Understand requirements
- Obtain commitment to requirements
- Manage requirements changes
- Maintain bidirectional traceability of requirements
- Identify inconsistencies between project work and requirements

Requirements Management

- Establish and maintain a plan for performing requirements management
- Provide adequate resources for performing the requirements management process, developing the work products, and providing the services of the process
 - ◆ Tools such as traceability matrix
- Assign responsibility and authority for performing the process, developing the work products, and providing the services of the requirements management process
- Requirements are a *configuration item* to be tracked and controlled
- Monitor and control the requirements management process against the plan for performing the process and take appropriate corrective action

Preventing Scope Creep

- Devise practices to prevent scope creep.
 - ◆ Establish standard criteria for completing the business blueprint and getting stakeholder acceptance.
 - ◆ Use reference models to monitor scope and check traceability through the artifacts.
 - ◆ Use standard Q&A (such as in SAP) to maintain links between what is asked and answered in the requirements elicitation sessions.

Documenting and Analyzing Requirements

- Document the draft requirements with various tools:
 - ◆ Process models (and other models)
 - ◆ Decision tables
 - ◆ Requirements tables
- Analyzing requirements to resolve problems of:
 - ◆ Missing requirements
 - ◆ Conflicting requirements
 - ◆ Infeasible requirements
 - ◆ Overlapping requirements
 - ◆ Ambiguous requirements
- Formalizing requirements
 - ◆ Requirements definition document
 - ◆ Communicated to stakeholders or steering body
- Document rationale for requirements.
 - ◆ Implementation of this practice eliminated 43% of the stated requirements in a Canada telecom.

Prioritize Requirements

- Standard practice to prioritize requirements
 - ◆ Need to overcome reluctance of process owners to prioritize for fear the project will only accomplish 'must-have' requirements.
 - ◆ Need to overcome consultants reluctance to admit that not all requirements can be implemented in time and budget available.
- Need to build a win-win partnership between process owners and external consultants.

Systematic Validation and Verification

- Do not skimp on requirements validation activities.
- Problems include:
 - ◆ Unnecessary implementation of complex functionality
 - ◆ Not realizing conflicting business drivers
 - ◆ Overlook critical technical issues
- Make RE teams aware of process.
 - ◆ **Validation:** ensure business requirements clearly describe the target solution.
 - ◆ **Verification:** confirms the requirements are technically implementable and the resulting architecture design satisfies the business requirements.
- Organize structured process validation walkthroughs.

Preventing Scope Creep

- Establish strong **change control process** to ensure requirements are met and to avoid “scope creep”.
- To prevent scope creep, form a **Requirements Review Board** to evaluate change requests and monitor progress against the requirements. Also define a rigid requirements management process.
- Assigning requirement IDs to each requirement helps the project manage scope creep.

Typical Requirements Management Documents

- Requirements acceptance criteria with results of requirements analysis
- Requirements document (agreed to requirements)
- Requirements impact assessments
- Requirements traceability matrix
- Requirements tracking system
 - ◆ Maintain requirements change history with rationale
- Requirements status
- Documentation of inconsistencies, including sources, conditions, rationale and corrective actions

Example Requirements Document for ERP Module on HR

TABLE OF CONTENTS	
ABOUT THIS DOCUMENT.....	1
DOCUMENT PURPOSE:	1
DOCUMENT ORGANIZATION:	1
SECTION 1 – PROJECT INTRODUCTION	1
BACKGROUND	1
OBJECTIVES.....	2
REQUIREMENTS GATHERING PROCESS	3
SECTION 2 - KEY REQUIREMENTS.....	4
DATA PROCESS, CONTROL AND INTEGRATION	5
<i>Workflow Processing</i>	5
<i>Security and Access</i>	5
<i>Integration with other UC systems</i>	5
USER INTERACTION	6
<i>User Interface</i>	6
<i>Training and Documentation</i>	6
REPORTING AND PRINTING	7
<i>Standard Reporting and Printing</i>	7
<i>Ad Hoc Reporting</i>	7
DATA ARCHIVING AND RETRIEVAL	8
BUSINESS PROCESS REQUIREMENTS	9
<i>Position Management</i>	9
<i>Recruitment</i>	10
<i>Personnel Administration</i>	11
<i>Time and Payroll Management</i>	12
<i>Benefits Administration</i>	12
<i>Personnel Development & Training</i>	15

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Summary

- Requirements require balance of business and technical aspects.
- ERP requirements rely heavily on business process modeling.
- Documentation is important.
- Policies and practices to limit scope creep.