The Roles of the User in Project Planning an ERP Implementation

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Abstract

Enterprise Resource Planning systems are some of the most complex projects that we perform in companies. The difficulty of implementation is shown in their high failure rate and the lawsuits that have ensued. Their installation involves the entire enterprise either directly or through changes in established processes. In an ERP implementation there are many more stakeholders than users. How we choose them and how we use their knowledge to install the system is a critical success factor in these projects. This paper will offer guidelines for what stakeholders need to be involved in the different phases of a typical implementation.

Introduction

Enterprise Resource Planning (ERP) implementations are some of the most complex IT projects that we perform in a business. ERP systems, such as PeopleSoft, SAP, JD Edwards, and others, are large, complex packages that can significantly improve the way the business is managed. They touch all parts of the enterprise and require that everyone get involved. They are also very difficult to implement properly and there is a long history of failed ERP implementations, often leading to abandonment of a multi-million dollar package when it does not meet the company's expectations and too often to lawsuits with the implementers. This article discusses some aspects of user interface in implementing an ERP system. It is written from the standpoint of a project manager brought in as part of an outside consulting contract.

Background to ERP Implementations

In essence, an ERP package is a large database with associated connections to data sources, application software to collect the data in real time, and the report generation software to present it to users. It is not intended as an archive for historical data (that¹s done by a data warehouse) but to collect and present real-time data to enable decision-making using the most current enterprise-wide information available. These packages have business processes built into them, for this reason they're sometimes called companies-in-a-box.

The data that is collected, how it is processed, and how it is presented varies by industry segment and by company and is built around the business processes that are specific to that industry segment. Therein lies one of the major challenges in implementing an ERP system —- individual companies have individual business processes that are generically similar to other companies in the same industry but which can vary greatly. Older companies particularly have evolved processes that

have become entrenched over decades and cannot be changed without radical surgery.

The better ERP packages have pre-built business processes that form the best middle-of-the-road approaches for that industry, but which are almost never the specific processes in any one company. The business owners that are implementing an ERP system have a serious decision to make in determining whether to modify the ERP package to accommodate their specific processes, change their processes to comply with what is pre-built into the package, or to do some combination of both.

Modifying the software has significant costs and risks associated with it. ERP packages are so large and complex, SAP being the best example, that specialists must be hired who have detailed technical knowledge of the package and generic knowledge of the business processes. Since these modifications need be done primarily during the implementation phase, contractors or consultants are generally hired to implement the package while on-going maintenance work will be done in-house. The average duration of an implementation for a full-scale ERP system is 23 months according to research done by the Meta Group although each major ERP vendor offers a "plain vanilla" system in a rapid deployment package that can be accomplished in just a few months.

These consultants are very expensive and often have more experience in programming than they do in the business processes of the company. The greatest amount of time in the early phases of the implementation is spent with the business users understanding and documenting the specific processes for that company, what data is collected, how it is processed, and how it is reported.

Once the processes are documented and understood the ERP package is then modified accordingly so that the result fits into existing business practices. The major advantage to modifying the package is that existing processes do not need to be changed and employees do not need to learn new processes. The major disadvantage to modifying the package is that it is very expensive and must be redone when there are major upgrades to the ERP package. There is also the issue of training the employees on the new system. Even if the business processes have not changed, there are new computer interfaces to those processes that did not exist before.

The other approach, changing the existing processes to accommodate those built into the package, has another set of risks associated with it. Because the pre-built processes are almost never identical to what the company already has, existing processes must be discarded and the company rebuilt around the new processes. Having to unlearn processes employees have spent years learning and learning new ones is a significant cause of employee dissatisfaction and of inefficiency. The lack of productivity during the transition period while unhappy employees leave and while new processes are learned can be a significant cost factor in daily operations. Despite this downside, an article in Information Week’s Aug. 9, 1999, issue points out that keeping customizations to a minimum is a key success factor in keeping ERP implementations on cost and schedule targets.

ERP systems aren’t necessarily designed to give users high visibility into enterprise metrics such as invoice amounts. To obtain these metrics in packages like Oracle’s, the programmers must write programs to derive the metrics from the data. While

these are not necessarily complex programs to write, generally only a few lines of code, Sun's Java Tutorial cautions that designing in error detection code bloats the size of the code almost 400%. Details such as this need to be kept in mind when estimating the task efforts. Note that there are aftermarket programs that can gather these metrics and these may be a more cost- or effort-effective solution than programming them.

Where the Users Get Involved

Unlike smaller software packages that affect one part of the company or another, ERP systems impact every part of the enterprise. Users from all parts of the company and from every level of the company are affected by it, either as end-users who access the information gathered or as employees who find that the business processes they are used to have been changed, sometimes beyond recognition.

The stakeholders and users who are most immediately involved in an ERP implementation can be divided into four groups. They are:

- Executives and upper management
- Departmental personnel such as middle management, procurement, and salespeople
- The IT department
- Anyone in the organization who is affected by the process changes

This last group is a large and vaguely defined group whose impacts are generally not identified until late in the implementation as awareness grows of the specific process changes required. They are not users of the system, but they are important stakeholders from the enterprise perspective.

What stakeholders need to be involved, and when do they need to be included? The easy answer is that all of them need to be included at all times. As project managers we know that this isn't possible. Our time and the time of our team is too limited to spend all of it listening to all of the possible users who are impacted. So we must prioritize who we talk to and when they're included in the project.

In Alan Cooper's book "The Inmates Are Running the Asylum" he states that the best way to create a user-friendly system is to create fictitious users by giving them names, job descriptions, and realistic personae so that the developers can more readily visualize how the users will use the product. In ERP implementations we don't have to create fictitious users, we have lots of real ones who would be eager to get involved. The difficulty is getting representative users from each affected area and freeing them up from their normal jobs to provide constructive input.

Stakeholders During the Initial Phase

At the very beginning of the project, when we're setting up the project plan, we need to ensure that the full scope of the project is understood — what is the size of the hardware and software to be purchased and installed, how much customization will be necessary, and when will the work need to be done. Since we've been brought in from outside the organization, determining this information will require that we spend time with two particular groups of stakeholders.

The first group we interact with is the IT department gathering the detailed technical data we need on the mechanics of the installation. They will be heavily involved in buying and integrating into the existing system the hardware, software, and databases required. The more we can use the resources of the existing IT department, the easier the integration will go and the less money the client will spend on consulting fees. The greatest amount of programming time in the project will likely be spent in two areas —- customizing the interfaces between the new ERP system and the existing IT systems, and the process of extracting, transforming, and loading (ETL) the data from the legacy databases to the new databases. These are areas where the project manager is most heavily dependent on the company's IT personnel because they have the most detailed knowledge of these systems and data structures.

Several personnel in the department should be identified early on and trained in the ERP system so that they can serve as leaders for the department during the process. Another aspect that the IT department can support is in identifying the total number of users and identifying the expected number of concurrent users. These are critical to know because they impact the hardware, the storage, and the data throughput needed.

The second group of users we need to spend time with at this point are the managers of the departments whose areas we will most directly impact. While we will later talk to the people who are the users of the data and to the people who enter, manipulate, and report on the data, right now the middle management layer is most important to us.

Our interface with them at this point consists of communicating to them that their departments are going to be affected by the new ERP system to the extent that we can identify it. What we need from them is their buy-in to these extensive changes, the names of people in their groups who will lead the effort for them and can make ERP-related decisions that will impact the group, and identification of the processes that will most likely be affected. These people will be our points of contact (PoCs) that will gather the department-specific information we need and will lead the efforts within each department for the process redesign. Their managers should be made aware that their time will be heavily used during the middle and the end of this project.

In some packages there is a need to communicate with another set of users at this stage —- the upper managers and executives that will be the end users of the data coming out of the ERP system. The specific question they need to answer now is whether most of the information they want is pre-determined or will it be created as needed. In the first case, the queries can be programmed ahead of time and the programming needs determined from that. In the second case, they will be primarily interested in running ad hoc queries and this gives us a different set of project requirements. As an aside, this early contact with this layer of the organization is a valuable time to let them see both the benefits of the system and start impressing on them the amount of organizational change that is required.

Users During the Requirements and Design Phase

The requirements phase is one of the most critical of an ERP implementation just as it is in every technology project. This is when we learn what each type of user expects out of the new package and the impacts of their requirements:

- The data he/she wants to see
- How that data is presented
- The queries and the metrics the users are interested in
- The design of the screens used to enter data
- How many concurrent users there will be
- How long the data needs to be stored before it is no longer current and can be archived into a data warehouse

Answering these questions will provide the information required to more accurately scope the project. The users that will be most heavily interfaced with in this phase are the upper-level managers and the executives who are the end users of the data.

Installing a plain vanilla ERP system with little or no customization does not relieve the need to meet with the users. In 1998 DuPont Chemical and Merck & Co. spun off a joint effort named Endo Pharmaceuticals to manufacture Percodan and Percoset as a joint subsidiary. Endo implemented an SAP system using SAP's Accelerated Solutions program. The technical implementation was completed in only four months, but during the three months prior the executives spent in question and answer sessions with SAP consultants.

Installing a plain vanilla system is much easier in the case of a new company, such as Endo, with now established procedures that have been built up. For older companies, there needs to be a considerable amount of analysts' time spent in identifying the existing business processes impacted by the new system. For each process there needs to be an impact assessment and some determination as to how large the change is. If time and budget allow, an ROI calculation should be done on a process-basis with the information presented to the client to allow them to decide whether they want to keep the existing process and heavily modify the package or to use the package unmodified and change the process. Most likely some combination of both will be done.

These process changes are identified at a high level during the requirements-gathering phase of the project and carried on in detail during the implementation phase. These process changes go far beyond the technical impacts of putting in the ERP system. A process affects everybody who is directly or peripherally involved in that process, and processes interact with each other. A large-scale process, such as a manufacturing process, has a number of lower-level processes as part of it. Because outside consultants are not familiar with the internal details of a company's processes, the points of contact that were identified earlier by each department become heavily involved and are integral to these process improvements.

Re-designing processes is a part of the project that goes on in parallel with the design phase. (In a J.D. Edwards implementation the process is done in parallel with the users sitting down at generic screens and designing the screens they need and some parts of the processes together.) The tasks involved in process changes are a parallel thread in the project plan and involve people with intimate knowledge of the existing process. Once the impacted processes are identified along with their

interfaces, the processes can be redesigned, or new ones designed, and re-integrated into the business.

Because process redesign is often cyclic, going back and making changes to something you've just changed is a fact of life in this effort. As you make an improvement to a process you recognize an even large improvement that can be made by starting earlier in the process. Change management and change control is critical in this part of the effort so that both the people changing the processes and the programmers designing the customization of the software are always locked into the same state. From a time management standpoint the process changes must have a clear end date so that the programmers still have time to complete their design, customize the package, and test the system before the project deadline.

Users During the Customization Phase

Unlike the design phase where the users are heavily utilized to identify the information that needs to be collected and to design the screens, during the actual customization process the users have less involvement in most ERP systems. Their input at this point is to verify that what was requested during the design phase is indeed what they asked for. As so often happens in project management, at this point we discover that what the users asked for is not quite what they wanted, and so we have to anticipate users changing their minds and to be prepared for everything from small tweeks to the screens to major redesigns. The thoroughness with which the implementers interfaced with the users during the design phase will be rewarded multiple times as we go through the implementation phase.

In some ERP systems, such as a JD Edwards World system, the design and customization phases can be concurrent. A user sits down with the programmer while the programmer is modifying the set of screens the user will need until the user is happy with them. After the user has approved the screens the programmer can build the connections to the actual data and create the queries that will provide the information requested.

Users During the Testing Phase

During the testing phase representatives from all user groups need to be involved for functionality and usability testing. During stress testing a few users should be logged on and using the system while the automated stress testing script loads the system down. Their job is specifically to assess whether the system runs quickly enough for day to day use even under heavy load conditions.

The IT department is of course involved in all phases of testing outside of pure unit testing (done by the implementers) — interface testing, maintainability testing, and security testing. The should be involved during the test approach phase as well as during the test scripting process, test data preparation process, and test results review.

While unfortunately not common, testing of new or substantially re-designed processes should also be built into the project plan separate from the pure technology-related testing. Representatives from the groups involved with the process should run through the process at least once to ensure that major process

issues have been identified and corrected. Once a process is approved, everyone involved should be trained in the process before it is implemented.

Footnotes:

From InformationWeek July 6 1998, page 136: “The bankruptcy trustee for FoxMeyer Corp. last week filed a $500 million lawsuit against Andersen Consulting, alleging that the consulting firm’s flawed implementation of SAP R/3 software “played a crucial role in plunging FoxMeyer into liquidation” in 1996.

“FoxMeyer, once a $5 billion drug distribution company, was unable to process more than a fraction of its customer orders using the R/3 system, according to the suit, which also claims that the company paid Andersen $30 million for its services--twice the original estimate--and that Andersen used trainees instead of experienced professionals. ... In August 1996, FoxMeyer filed for bankruptcy protection; it was later bought by a major competitor for just $80 million.”

From The Wall Street Journal, Nov. 2, 1999, Page B14: The maker of Gore-Tex brand fabrics, W.L. Gore & Associates, has sued PeopleSoft Inc., Deloitte & Touche LLP and Deloitte Consulting, alleging the software manufacturer and the consultants botched a costly software installation.

Other failed implementations mentioned in the story included FoxMeyer Corp., UOP, and Hershey Foods. A story on page 181 of Information Week’s Nov. 1, 1999, edition discusses why Reebok International slowed down its migration to a newly installed SAP system.

Cooper, A. (1999) The Inmates Are Running The Asylum, Indianapolis, IN, SAMS Publishing.