

Leveraging Knowledge and Human Capital It's Not the Widgets, It's the People

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Introduction

Knowledge-management projects and the organizations that perform them have been at the frontier of project and resource management innovation for the past several years. Formal project management was born in the construction and aerospace industries, where projects tend to require lots of capital from the buyer organization. Project management in this arena usually follows long-established guidelines, with well-known practices that are relatively easy to document. Risk is typically mitigated on these projects by using a host of contractors and subcontractors, thereby leveraging the fact that, in these cases, one cadre of engineers or welders is about equal to another. The result of a successful project is an artifact--a refinery, a bridge, a pipeline.

In comparison to these contract-intensive projects, a knowledge-generating project has the primary goal of creating or expanding the use of intellectual property. If there is a product, it's almost always a virtual one. In the last decade or so, these knowledge-generating projects have become some of the largest and most creative projects in the world. Implementing ERP, converting to e-Procurement and e-Tendering technologies, using e-Commerce to sell B2B products, and more fall into this category. Almost all work done by IT groups is about creating or maintaining some sort of intellectual property. As IT becomes ever more integral to the success of the petrochemical and energy industries, managing knowledge projects well becomes more critical for business strategy.

CONTRACT PROJECT	KNOWLEDGE PROJECT
• Seeks stability	• Tends to instability
• Physical presence	• Virtual presence
• Hierarchical	• Networked
• Discrete functional groups	• Integrated business teams
• 3-5 year plans	• Transitional strategies
• Strategy reacts to business planning	• Strategy is driven by business leadership

Exhibit 1: Contract versus Knowledge Projects

Knowledge Projects Versus Contract Projects

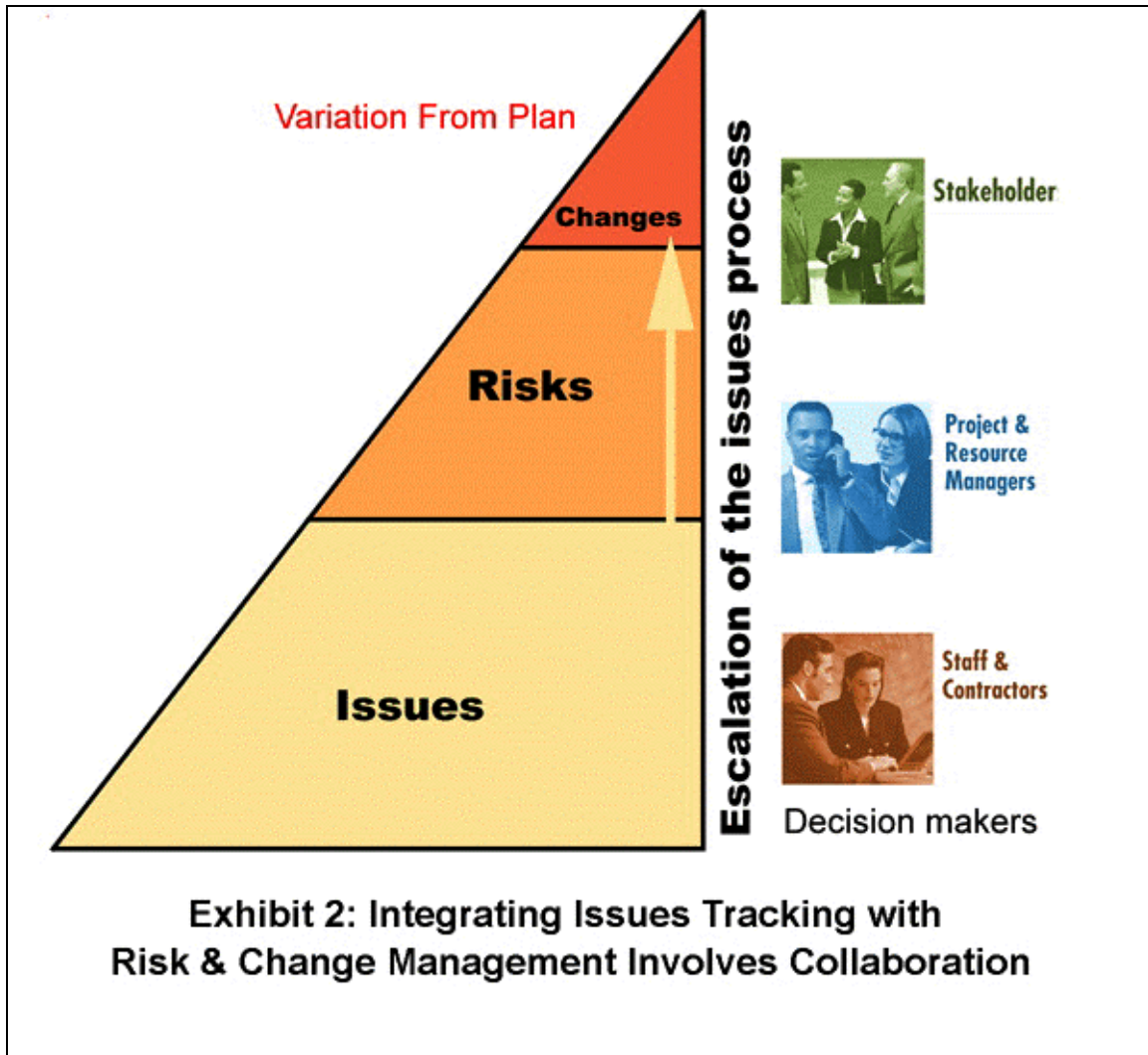
Many oil, gas and petrochemical organizations have been creating larger portfolios of knowledge management projects, while still managing new engineering, processing, and construction initiatives as well. Following are some differences between contract-intensive and knowledge-generating projects, along with notes on ways we've seen companies face the unique challenges:

Address the Risk Early

Rather than designing around stability to reduce risk as contract-intensive projects do, knowledge projects strive for innovation, creating value in areas where no processes exist or have been identified to serve as roadmaps. Knowledge projects are often based on or look for ways to profit from advances in technology, which itself is extremely dynamic, and this also translates into project risk.

Our suggestions: Keep schedules on technologically dependent projects to no longer than 18 months, and preferably much shorter. Divide deliverables and milestones up into smaller pieces if possible, so the project results can be leveraged and validated in the field. In their landmark "Chaos Report" on the success rate of IT projects, the Standish Group International confirmed that small projects are more likely to succeed than large projects (size was measured by budget, time, and number of people). Six months, six people, and less than \$750,000 had the highest rate in their survey: 55%.

Integrate risk and change management deeply with the project and resource management processes. The PMBOK® gives good guidelines to follow. Escalate issues, if needed, with formal risk management and mitigation plans. Track changes on projects, and also across project portfolios. Access to the issues, risks and changes information can be provided to all team members via web portals since risk management will often involve multiple members of the project team as well as managers, customers, partners, and other stakeholders. Managers can assign responsible resources to oversee steps in the risk management process. Make it simple for executive management and project managers to monitor any risks on their work from a risk summary page which provides high-level information on existing risks and allows for quick sorting by data, such as status and priority. Risks that have passed a user-specified target date should be 'escalated' and display in red to attract visibility. Provide a template in which project team members can document their risk management steps. Once a risk response plan has been submitted, provide an audit trail for the approval or disapproval of the plan.



Track Project Progress

Judging progress and when milestones are met on a virtual project are usually more subjective than the observable progress of constructing a refinery, fighter plane, or a widget. The typical progressing technique on projects where the product is virtual is to survey the team members on their estimates of percent complete.

Our suggestion: Use time reporting to track actual hours and compare to projected hours. Let the same information progress the projects automatically. Project team members can also report their own estimates on hours to completion, and add documents and remarks that will also be retained in a central repository for managers to review. An approval process can be made a part of this cycle. Resist doing status by checking off software features completed. Instead, create milestones, keeping them small (see above). Use performance indicators like Earned Value Analysis to compare project portfolios and to drive decisions on aligning work priorities with business strategies.

When it comes to project schedules, you can't manage what you can't measure. Time and expense accounting can also become the foundation to performance tracking your projects. This integrated system of

simple, accurate time and expense accounting can also provide a framework for notifying staff of weekly tasks and other work, tracking progress on projects and service requests, as well as charging work to customers, explaining changes and measuring quality and performance.

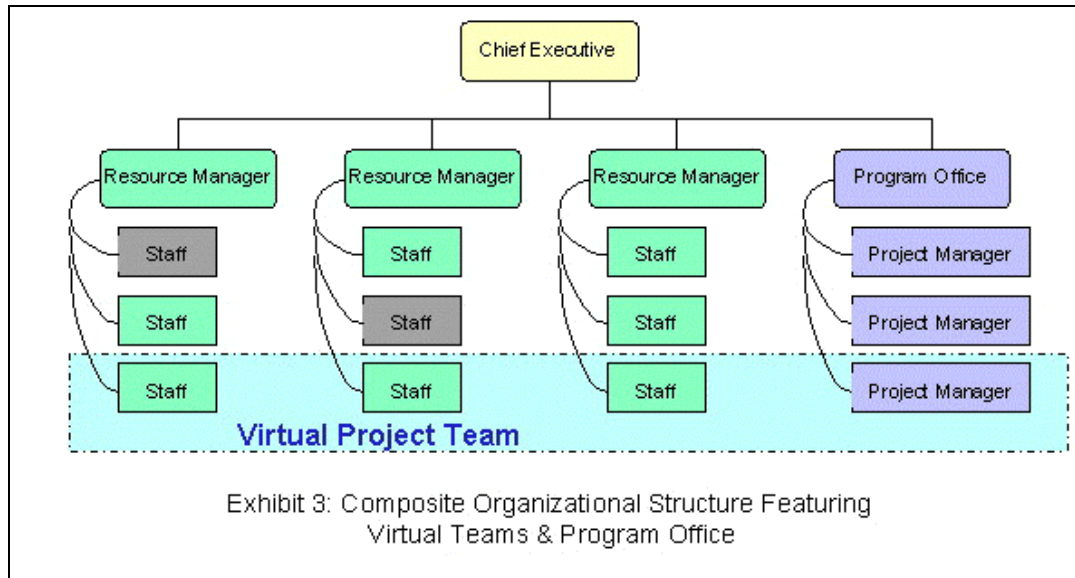
Web time reporting is fast becoming the de facto standard for knowledge workers. It can replace legacy timesheets and allow staff members from anywhere in the world to access their assignments and report their hours worked. Staff members may even be able to add maintenance, service logs, and other tasks on-the-fly to report time to them. Staff information should be fed back into the system to provide regular, timely status reports to functional managers and others.

Decentralize the Authority Structure

Contract-based projects depend on a hierarchy of contractors working together, while knowledge-generating projects depend on a network of information flow between people who often lack a formal reporting line. The classical functional organization is an hierarchy, where each project team member, manager, etc. has one clear supervisor. The resources are grouped by their function (engineering, analysis, accounting, etc.), and project scope is limited to the boundaries of the function. At the opposite end of the spectrum is the projectized organization, where project managers have much independence and authority, and most of the organization's resources are engaged in project work. The organizations we typically work with are composite structures, or matrix organizations, with both functional and projectized structures. The project managers typically have much authority, and their own org chart with a Program Office to manage the managers. Teams include full-time staff from different functional departments who are typically working on more than one project. (The average for our project-team-type users is 8-20 activities per week, of which 6-12 of these are project related.)

Our suggestions: Implement collaboration and communication tools integrated deeply with project management, but make sure they support role-based collaboration. For example, some things about the project should be shared between the executive sponsor and Javascript coders on the project team, but most times not all information is appropriate for every level of authority or investment in the project. The proper level of information is also important, as execs want rolled-up, high-level, program or cross-project indices typically.

Make sure everyone is accessing the same central repository in real-time so that they're all working off the same page. Make sure that all users are accessing the information to which they have grants, and at the granularity most appropriate for their role. Accept the democratization that comes with sharing knowledge. Knowledge workers are hired for their domain expertise and intellectual capital. In most cases, they should be allowed some autonomy.



Identify Best Practices

A bridge can be delayed for a year or two with little impact as the plan can be restarted and the iron trusses can still be shipped later. But a knowledge project will typically have to be re-scoped if a significant delay occurs.

Our suggestions: Begin to establish best practices and process roadmaps, if you haven't already. Provide, on a central repository, a method of turning successful projects into templates for future projects of the same type. Other templates can support project budgeting, and creating a project knowledge repository. Look for ways to leverage Best Practices in the IT industry as they become available. Web-based communities of interest are growing up around the challenges of IT project management and are providing some free processes as well as those they sell.

The project team members can enhance their performance through knowledge management support built around a content repository. From this, they can get access to real-time information on the project and their assignments, detailed best practices to assist them in doing their work, tools to support workflow and document control, and a web-based collaboration portal where they can share ideas and calendars, meet virtually, participate in discussion threads, and more.

Leverage a Project Office to keep these templates and other best practices fresh and in use. Use debriefing after a successful project completes, and after a failed project has been cancelled, to model and edit your organization's processes. Often business rules change so that processes become outdated, contributing to project complications, without review at a high level.

Manage Skills and Proficiencies

The bricklaying and welding skills of the workforce on a contract-intensive project typically need only be at an industry acceptable level. In contrast, project team members and their skills are the driving force in knowledge projects, and skills levels can make dramatic differences in project quality.

Our suggestions: Create a resource database in the same central repository with the project and other work database. Keep information in it such as: skills, proficiencies, interests, locations, resume, certifications, etc. Keep the skills database fresh by allowing team members to self-administer their data, with managerial oversight. Integrate the resource skills with a resource capacity planning system. This way you can search and allocate new work to the right person, knowing that the resource has project time available for it. Even better, make it a best-fit algorithm so that resources with longer availability are saved for the longer projects.

Resource capacity planning requires that you have a system that tells you the workforce availability based not just on project work. Your system should also track service work, other recurring work, customer support, administrative, training, etc. and make this information available to the project and resource managers who draw from the resource pools. For professional service organizations, having this dynamically displayed can help managers to maximize billable time. Since resource assignments are volatile, since they are generally forecast several weeks in advance and changes are inevitable, a good system will provide real-time updates to availability of individuals who are assigned to multiple projects.

Use the resource database and early project scoping to create a skills gap analysis for the opportunities coming to the organization. This skills pipeline can help drive recruitment or contracting initiatives so that the right people are available when the projects are approved. Organizations that give visibility and attention to managing a skills pipeline often create Resource Manager roles, have them involved in procurement and contractor management, make them responsible for developing staff skills, and incent them on staff retention and skills development. Another benefit of allowing the Resource Managers to “own” the resource pools is that they balance the goals of the project managers. In the larger organizations we work with, Project Managers are incented on getting in projects quicker and with quality deliverables, and will schedule week after week of mandatory overtime if they need to. Attrition in the workforce can be high, which is even more problematical with high-value knowledge workers who take valuable project experience with them when they go.

Manage Knowledge Workers for Business Improvement

The common core to planning, tracking and sharing work and resources across knowledge projects is assigning the right people to the right work and evaluating their performance. Preparing to put the right people on the right work is done through two parallel processes, one for resource planning and one for work planning.

Resource planning begins when the organizational budgets are set for headcount, subcontract spend, capital and other expenses. The budgets are the framework for recruiting, outsourcing, skills training and other resource pipeline activities. Resource managers are responsible for developing staff skills, understanding their areas of interest, their goals and managing their availability for work. All leading up to having the right people ready for the work.

Work planning starts with the needs of the customer and their relationship with the performing organization. The customer's business initiatives, the priorities they put on work, their budgets and tolerance to risk all help define the opportunities of the IT group. Writing these needs down in a scope of work or contract helps all of the parties understand what is expected in the relationship. A scope of work may define one or multiple projects. As you break the scope down to more detail you can pull in tools such as a project charter to define the specific expectations of each project and the responsible individuals in the project. One of the unique defining elements of your organization is who assigns resources to work. While there are many ways to perform this task, it is fundamental to the productivity of your organization. As discussed earlier, we typically see the matrix structure at our customer sites. Functional or resource managers have control over resource pools, and project managers request or reserve allocations from these resource managers.

Integrated into the planning and managing processes should be time and billing and expense reporting. These are the most timely and accurate sources for project status and billing information. Tracking skills development can begin here also, with managerial approval. A natural output of accurate time and billing based statusing is the ability to update both resource and work metrics to improve estimating and to define future work assignments for the resource. Updating project budgets with time-phased reporting on actuals can help an organization improve the management of its capital. Risk and change management, as discussed earlier, should be an integrated. Closing work out is sometimes the hardest step to accomplish, but it is critical to performance measurement and updating metrics.

All these business processes involve much more than just a project manager. Managing knowledge projects is typically a large endeavor involving managers, team members, and stakeholders. "When building a plan to organizational transformation, look to understand the roles necessary to accomplish the projects envisioned and source these roles based on available skills and whether they are central to the enterprise's overall transformation," said the Gartner Group in a 2000 Enterprise Management report. When viewed as a total picture, the relationship between roles and business processes show areas for efficiency and performance improvements. Your terminology may be different, but productivity gains come from the process improvements across the organization with each of the roles working together to a common set of goals.

Time Tracking Also Provides Metrics

As a side benefit of particular interest to knowledge-generating organizations, the metrics provided by project and resource management, and especially by time (and expense) accounting, can be leveraged for other uses. Integrating actuals with financial accounting, strategic analysis, chargeback and invoicing are now being done to improve centralized management. For professional service organizations, revenue recognition affects profitability, so quickly accounting for work is a necessity. A common challenge for organizations whose product or output is virtual is proving value to their clients (internal lines of business in particular) and constituents. We see actuals-driven chargeback reports as an effective tool for communicating work done.

Also, a new GAAP requirement directing how publicly traded companies must capitalize or expense the costs of software developed or purchased for in-house use has driven many organizations to do professional time tracking. By mapping work breakdown structures, against which time is reported, to the charter of

accounts, much of the compliance for the requirement SOP 98-1 can be automated with time tracking and quarterly reporting.

Conclusion

“Understanding future competency and skill requirements is necessary for IT organizations to support ongoing efforts, such as funding, direction, and proper people management (retention), especially during slow economic times,” stated the META Group in a 2002 report. Your people’s skills and knowledge are even more critical in knowledge projects. Research and develop best practices around optimizing their schedules and utilization. Software solutions can provide intelligent tools to ease the burden and help ensure actions are taken in a timely manner. Automated workflow can help knowledge projects move through each phase. Managing knowledge projects is changing the ways oil, gas and petrochemical companies organize to gain value from their people, the most-constrained resource.

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