In Your Own Backyard:
Using Virtual Teams and Skills Scheduling to Cut Outsourcing Costs

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Introduction

As world-class organizations move from regional to national to global arenas, resource and project management techniques are evolving to keep up with the new challenges. To get work done, most global organizations today must accept some form of a matrix or hybrid matrix structure, with shared resource pools and globally distributed project teams--also known as virtual teams--that let people work from wherever they are. There are "sticks" aplenty driving this evolution. Resource and skills shortages; the high cost of office overhead; the critical relationship between innovating into new markets and the skills mix of your people; and the long lead times to find, hire and train new workers are a few of them. Project managers entrenched in the old, line-of-sight management of their project teams have had to leverage the "soft skills" of culture building and communication to get buy-in from their virtual teams. Star project managers must also communicate well with executives, customers, and other stakeholders in other business units and even beyond the organization, on project goals, project progress, and setting expectations. They must now accept accountability for how they contribute to the overall success of the organization, often in terms of how they contribute to the bottom line, as in revenue generation and/or cost savings.

But there are some "carrots" now coming to light as organizations successfully make these shifts. This paper will offer two case studies on how business needs were addressed, challenges met, and millions of dollars in outsourcing costs were saved, sometimes in just a matter of months, by using virtual teams and skills scheduling. Yes, the virtual project trend represents a major cultural change, not the least of which is that it replaces absolute authority and hierarchies with distributed power and ad hoc organizational structure. If executive management is hesitant to embrace the use of virtual project teams, the "return-on-investment" carrot here may turn out to be an effective driver of change.

Two Global Case Histories

Both case studies involve global organizations, one a major pharmaceuticals service company and the other a large financial organization. Both understood that their business was built primarily around the intellectual capital of their high-value knowledge workers. Both had been allowing multiple project managers to use desktop solutions to manage work, with the result that it was difficult if not impossible to get enterprise-wide views of projects and workload. Neither had any consistent resource management processes in place, and project schedules rarely reflected the fact that the typical team member was working multiple assignments.

People with key skills would be routinely overbooked, sometimes to the point of burn-out, and schedules would suffer as a result. Project managers would scope a project and build a work breakdown structure, assign tasks--and then beg for information on status. If actuals on time and budget were tracked and compared to projections, this was done only for smaller groups within divisions.

These were some of the issues that drove these organizations to combine all the managers, resource pools, processes and tools into one centralized management initiative. In both cases, they selected a software tool that supported the key requirements they had identified: skills searching and scheduling, resource capacity planning, and time and expense tracking integrated with the more-standard features of project management. In both cases, the new processes and tools triggered an evolution of the organization's culture, its hierarchies and organizational breakdown structure, and management techniques.

	Case History #1	Case History #2
Who	Pharmaceutical Service Company	Mutual Fund Organization
Global Offices	Main metro offices: Philadelphia, New York & Pittsburgh. 35+ global offices. USA regions divided into Southern/West, Central/East, MidAtlantic, etc.	Development centers in San Francisco & Tampa. Global offices across the USA and in 29 countries.
Subcontractor Offices	San Jose, Ireland & India, etc.	Edinburgh, Hong Kong, Luxembourg, Nassau, Singapore & Toronto, etc.
# of Project Managers	About 100	About 200
Size of staff pool	About 450 Staff	About 1000 Staff
Reduction in Subcontracting Costs	US$7.5 million	US$30 million
Time Frame	over 9 months	over 12 months

The Surprise: Resource Under-Utilization

The surprise for both organizations was that changing to the new centralized management solution highlighted yet another problem: low resource productivity. Both of these organizations were well aware of the overbooked staff and unrealistic project schedule problems. Once their new solutions were in-place, they discovered that redundancies and under-utilization of their people were also issues. Many new projects and initiatives involved highly skilled, technical resources that didn't appear to be available, so both organizations had developed procurement groups to oversee their large contractor networks and outsourcing activities. Ironically, while millions were being spent to get skills in-house, another division of the organization--usually in another state or another country--often had resources with those skills available.

Because they were now managing globally using a web-based solution that supported communication and collaboration for geographically distributed project teams, managers were provided access to resource pools

they had not managed before. The new solutions they implemented gave visibility to the workload of all the resources in the organization (their staff) and also to resources in the extended organization (contractors, partners, etc.). A manager in Philadelphia, for example, was able to search by skills, by availability for project work, and other criteria, and assign tasks to team members in San Jose, Pittsburgh, and Singapore. Both organizations then established preferences for assigning project work to staff if at all possible, before turning to outsourcers. The result was, by their calculations, over a period of 9-12 months, global costs for outsourcing were cut by US$7.5 million in one case and by US$30 million in another. For the decision-makers who identified and drove the new tools and processes for centralized management, these figures provided a very high return on investment that they could hold up as hard-number benefits with their execs and stockholders.

The four major changes these organizations implemented that drastically reduced outsourcing were:

1) converting to a matrix structure of shared resource pools using virtual project teams;
2) consolidation of redundant work activities, i.e., workgroups now did organization-wide support;
3) creating an organizational view of resource capacity; and
4) implementing the right tools for managers to find the right people for specific work and allocate them.

Virtual Teams Challenges & Suggestions

Team-based project work can be challenging and risky even with co-located team members. Virtual teaming can double or triple the challenges. Team members are working physically apart from each other for most of the project's lifecycle. The team may not share time zones, culture, or even languages. Tools for collaboration, knowledge sharing, virtual meetings, conferencing, etc. become critical to support the asynchronous and synchronous communications a virtual team needs. Yet technology itself is constantly evolving, as evidenced by the advances in network infrastructure. Still, the upturn in virtual teaming is only possible because of these advances in technology.

Some of the tool and process changes these organizations undertook to support these challenges included:

1) They created, documented, and distributed a formal communications plan that covered approval workflows, authorities, change management, etc. In the communications plan, they noted which days and hours were optimal for all team members from all time zones to convene. For example: a 10:00 am Pacific Standard Time conference call would require team members in Luxembourg to attend at 8:00 pm.
2) They created shared calendars around milestones, checkpoints, phase changes, etc. They also noted all cultural and national holidays in the calendars, and all team members celebrated all holidays in their own way. This helped build cohesion amongst the members and improved morale.
3) They used web-based content management, with one central document repository that could be accessed by all team members. The access to the documents themselves (which included text documents, websites, and Acrobat files) was driven by the secure login of the user. Project managers usually had read/write access to all the project content, while a team member might have read-only access to some subset of those. Shared web portals provide the access to the repository, 24 hours a day, 7 days a week.

4) They identified conflicts early with a web-based issue tracking tool. They identified a risk workflow and escalated conflicts to risks and risks to changes, if necessary, using their practices and those promulgated by the PMBOK™.

Matrix Structures & Organizational Roles

"Hierarchical structures simply don't work for virtual teams, whose new rules include a shift from tasks to knowledge, from prescriptive work to flexible roles, from traditional work settings to virtual work environments, and from a functional orientation to a project orientation," said the Gartner Group in a May 2001 report. The structure of the performing organization often constrains the availability or terms in which resources become available to the project. 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 at the top. 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.)

Organizations that give visibility and attention to managing a skills pipeline often create Resource Manager roles, sometimes called functional managers, to balance the efforts of the Project Managers. Project Managers have the goal of getting projects in on-time and on-budget, and are incented on how well they do that. The problem with this focus in global organizations that invariably have more work than people to perform it, is that routine overtime and over-scheduling can contribute to resource burn-out and attrition. Resource Managers are typically committed to making sure the right people with the right skill are on-board when new projects arrive, and have jurisdiction over procurement and contractor management. Resource Managers are often incented on how well they develop new staff skills and retain their people. In these organizations, resource pools are managed by Resource Managers, and Project Managers must reserve or request allocations. The work gets done following schedules, versus overly optimistic ones, and the high-value resources are retained to grace the next project with their deeper experience and knowledge.

New Management Processes

Some of the processes used by these two organizations were similar, while others were more tailored for their business needs. A few of the common processes were:

Time Tracking Provides Metrics

Time tracking of all the work performed by the organization gave them, over a matter of months, metrics they used to analyze where resource time went, how well the work was aligned with the business goals of the organization, and where scope and estimates fell short of reality. Time was tracked not only to projects, but

to service-level agreements, maintenance, and standard work such as vacation, holiday, training, etc. Since professional time tracking is often a great culture change, the solution had to be easy (web based is usually best) and take only 10-20 minutes a week for the average user.

They discovered, as is always the case, that much less time was going to projects than they thought. The typical organization we work with discovers only about 40-60% of their time is project time. This awakening began to solve a host of unrealistic expectations once the metrics were there to analyze.

They used the reported time to automatically progress their project schedules each week. This was a much more accurate indicator than percent-complete estimates or guesses. It also automated one of the most time-consuming of the project managers' tasks: getting updates from their project teams. Getting estimates and status from globally distributed team members would have been even more complicated. The organizations used the resources' estimates of hours remaining to highlight schedule slippage. The quality of the schedule estimates was always being monitored by the project team members, who could include their own "estimates of hours to complete" in their web timesheets. Smart organizations use feedback loops like this from those on the "front lines" to improve future project estimates.

In the case of the healthcare organization, labor and expense costs were charged back to a Sponsor organization. Time and expense could be reported to any level of the work breakdown structure, including to service and support. This helped the group to identify the costs associated with new projects as separate from the costs of support. The actuals from the time and expense reporting system, which are auditable and verifiable, were exported to a financial/accounting system to generate invoices, cost-accounting reports, etc. This process reduces billing cycles by 1-4 weeks, according to a survey of some of our other clients, and helps with revenue recognition.

In the case of the financial organization, it was publicly traded, so fell under GAAP (generally accepted accounting principles) requirements. Since some of its programs created software for in-house use, they were able to use their new time and expense tracking to identify and prove which of its labor and costs it could legitimately capitalize under the terms of SOP 98-1. Again, the activities were tracked deeper than the project level, down to phases. These phases were mapped to the organization's charter of accounts, and quarterly reports were exported from the central repository for their financial group.

Both organizations leveraged the actual metrics on how the organization was doing and what projects and other work it had to justify the new centralized management initiative to senior managers. The senior managers were promised a half-day training on the new software tool to learn to pull reports and status information from the new system. But this training wasn't scheduled until there were 8-12 weeks of time and expense reporting metrics in the central repository. Training was accomplished using actual production data. Instead of theories about what the new initiative was going to do, senior managers were creating reports during training with actual, rich data. It helped gain credibility at the executive level.

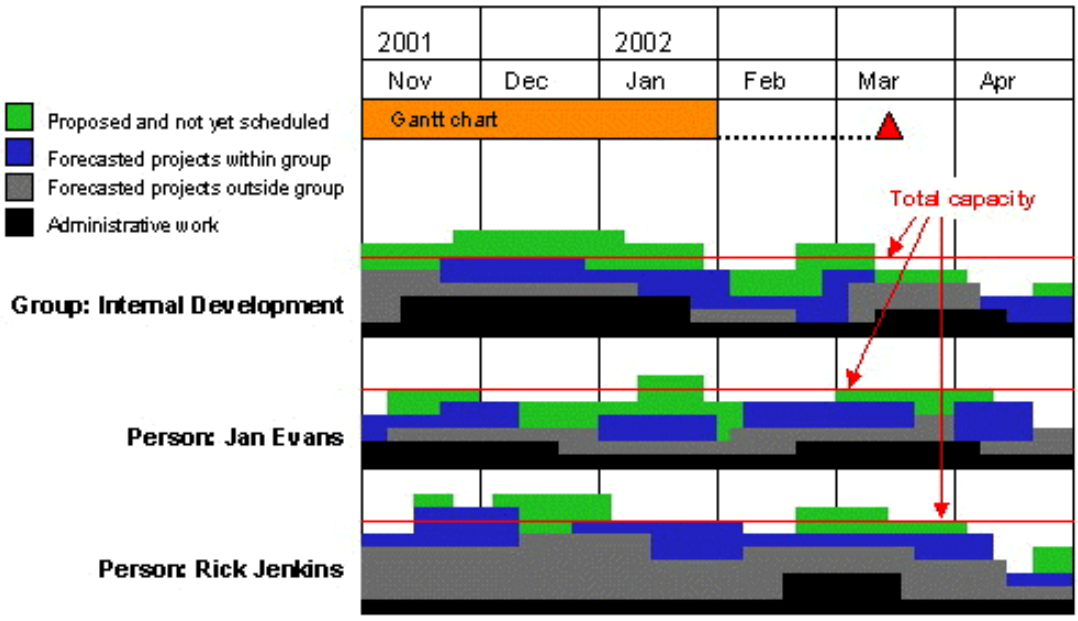

Exhibit 1: Gantt Chart & Histogram Showing Resource Capacity

Skills Scheduling

A centralized management system, by definition, runs off one central repository that holds all work and resource data. Setting up a skills database on the central repository containing both staff and contractors allows managers in different offices to search the repository by skills, availability, proficiency, location, interests, and other criteria for the best person(s) for a given task.

Searchable criteria associated with resources in the central repository are usually tailored for each organization. Some typical attributes can include:

Pharmaceutical Organization	**Financial Organization**
Chemist / Toxicologist / Lab Tech / Etc.	Analyst / Developer / Project Manager / Etc.
Skills / Clinical Competencies / Etc.	Certifications / Proficiencies / Etc
Metro Location	Location / Cost Center
HSC titles, etc.	Line-of-Business Sponsor, etc.

The pharmaceutical services company populated its resource database initially with exports from its PeopleSoft ERP system. The financial organization began with input from its HR Department. It's important to note that a one-time migration to the resource database was only a good beginning. Since skills can become stale or, on the other hand, mission-critical overnight in today's dynamic business environment, establishing a process where staff self-administers their information with managerial review can ensure that the skills database remains fresh. The software solution offered intuitive web interfaces for project team members to do this.

Creating a skills inventory is a useful first step. The next step was putting this inventory into a resource database integrated with the project and service management system. This became a major driver to reducing the needs for subcontractors at both of these organizations, as project managers were able to expand their resource searches to pools of staff and contractors in other offices. The resource search engine and resource scheduling engine in the software tool worked together to help find not only the person(s) with the right skills proficiencies, etc. for a task but also with project time available for the new work. The key to this was including the concept of resource capacity.

Manage Projects Around Capacity

The organizations tracked not just major projects, but also: ad hoc projects, service work, maintenance and operations work, and standard work (vacations, meetings, training, etc.). Existing work was tracked and displayed in the management tool in a combination Gantt chart and resource histogram. The new solution let managers view all their work, by portfolios if wanted, and also showed where resources were allocated work for other groups. (See Exhibit 1) Overbooking and under-use were displayed as a color-coded resource profile. The effect of new projects on existing work were both clearly presented in the resource histogram, or as values in a spreadsheet if the manager wished. The effect on resource workload was immediately apparent, giving managers knowledge about the reality of their project schedules at the time they were created so they could reallocate, push back milestones, etc.

A resource scheduling engine was a key component of the software tool. It integrated the skills database with this dynamic model of resource availability to create a resource capacity planning system. Managers could use the resource scheduling engine to search and allocate new work to the right person, knowing that the resource had project time available for it. A best-fit algorithm in the engine ranked resources with longer availability lower, so that they could be saved for longer projects. The resource scheduling engine was also flexible: availability for project work was a key criterion of a search, but not a requirement. Since high-value resources are often redeployed from one project to another when priorities change, the interface for search criteria was able to toggle strict availability on and off. At that point, the “soft skills” of the project manager came into play as they built a case with other managers for a constrained resource to be reallocated to their team.

Unique Processes and Procedures

Case Study #1: Loaning Staff to Reduce Subcontracting

The pharmaceutical services organization had been doing some global management of their resource pools even before their new centralized management and resource assignment initiatives. Project managers had gotten in the habit going to the resource pools kept by the Strategic Services Group (SSG) if competencies weren’t available in their own groups. Because of the way revenue was recognized in the organization, the SSG resources were considered “free.” The good news and bad news was that their Marketing/Account Execution group was being very successful in selling their services to new client and sponsor companies, which kept increasing the burden on the SSG resources. To get the competencies on-board to fulfill the

contractual obligations, the SSG had outsourced more and more work to clinical and IT/healthcare subcontractors.

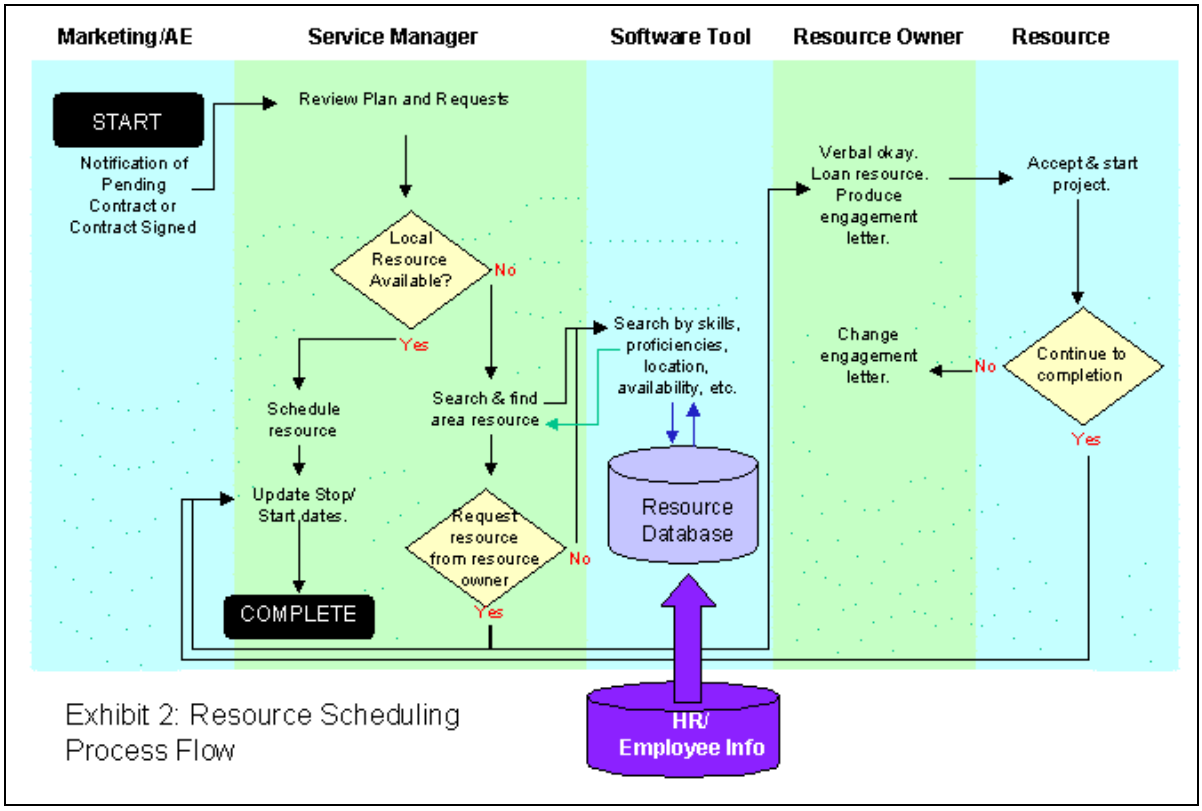

Exhibit 2: Resource Scheduling Process Flow

Implementing resource capacity planning and a new resource scheduling process flow drastically reduced the requests to the SSG. The result was that, after only nine months of implementing the new processes and management tool, the organization had cut their outsourcing costs by a third, or about $7.5 million. The new resource scheduling process (see Exhibit 2) gave priorities to assigning work within the organization's staff in a structured series of steps. A new title was created, that of "Loaning Owner" of the resources that were requested from other regions. They formalized the relationship between the borrowing organization and the loaning organization with "Revenue Transfer Letters" to help track profit and revenue to the right cost centers. The new scheduling process included these steps:

1) Assign resources from within our own region.
2) If not possible, request area resources (sort resource search engine results by state).
3) If not possible, request territory resources.
4) If not possible, request Clinical Intervention Program resources (which may include subcontractors).
5) If not possible, request Strategic Services Group resources (which may include subcontractors).

When a new project was assigned to a group, they had five days to allocate resources. The management software tool tracked the elapsed time and created alerts to notify managers and execs on the countdown. Managers had the option of flagging projects as "allocations being researched" which would give them a limited extension of time. Once the five days had passed, and if there were no flags, the unassigned projects were opened up to the other regions to be filled. If the other regions were successful in fulfilling the resource

requirements, the "Revenue Transfer Letters" ensured that their region got the revenue for their portion of the services rendered.

Case Study #2: Reducing Redundancies to Reduce Subcontracting

The financial organization had two development centers in the US that had never been consolidated. Each center had concentrated on their core business processes and had outsourced many of the other processes to subcontractors. Supporting the Lines of Business (LOBs) within the organization was a significant part of the outsourced processes. Their support work categories were substantial and included: database, email, hardware, software, installations, operating systems, network, phone, security, modem, internet, user assistance, and other. Much of the redundant work in the organization was also in the support categories, as well as in project initiatives.

With their new centralized management system, this organization consolidated project and service work, assigning virtual project teams to do global support. A project or service manager now managed team members from both development centers and from some of the other 40 global offices of the organizations. Reducing redundant work freed up development teams to take on more of the work that had been outsourced. In one year, the IT group in this mutual fund organization had their hands around the capacity of the organization for work, and were able to reduce their subcontracting spend from $36 million per year to only $6 million. As a side note, they also used metrics tracked on their service work to drive bug fixes and service projects, thereby supporting a quality control initiative.

Also, since the company was publicly traded, they were required to follow GAAP requirements in accounting for the costs of in-house software. They supported this in their new centralized management system by tracking their work breakdown structures (WBS) into capitalization and non-capitalization projects. Then time and expenses tracked against the projects was exported quarterly to financial/accounting systems for reporting requirements.

Conclusion

Both of these global organizations leveraged the skills and capacity of their staff and contractors to support business goals. Both faced challenges with implementing a new management software tool at the same time that they created new processes about resource allocations. Yet the new processes wouldn't have been possible (or at least as plausible) without some of the interfaces, engines and algorithms the new software tool provided. Recognizing virtual project teams as a cultural change, they wisely focused on how to draw together project teams into a virtual workspace. They also mitigated some of the chaos around these changes by performing phased roll-outs to bring in multiple offices in multiple countries over a period of about 6-12 months. Reducing subcontracting costs was one of the goals of the new centralized management initiative, and as this report shows, the results in that arena were highly successful.

References

Project Management Institute, 2000. *A Guide to theProject Management Book of Knowledge (PMBOK® Guide, 2000 Edition)*. Newton Square, PA: Project Management Institute.

Gartner Group, “From Hierarchy to Virtual Teams: For Business Reasons,” May 2001. #COM-13-5536.

Posner, Daniel A., “Tracking Multiple Clinical Projects Using MetricPrioritization and WEB based Technology for CROs.” PMI2001 Proceedings. November 1-10, 2001.

Brown, Rodney A., “Integrating Project Management with Knowledge Management to Improve the Speed and Quality of Drug Discovery.” PMI2001 Proceedings. November 1-10, 2001.