

Increase Resource Capacity without Hiring^{1, 2}

By: Chris Vandersluis

HMS Software

Introduction

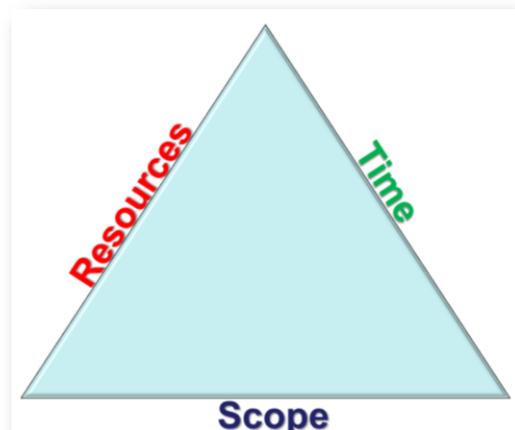
Good project management practices can make the most out of available resources but lack of sufficient resources is a universal challenge. Collaboration at the project tracking and timesheet level between project personnel and human resources personnel can generate resource capacity you didn't know you had. Using a timesheet to categorize non-project work opens a source of data that can be used to free up staff from tasks that are not productive and thus increase project resource capacity.

The Project Constraint Triangle

Project planners live with a well-known triangle of constraints. For any project, the scope, duration and resources can change but each one will affect the other. Want to do a set scope of work in less time? Think about adding resources. Need to do that scope of work with fewer resources, think about it taking a longer period of time. Have both resources and deadline reduced? Expect that the complete scope won't get accomplished.

The classic response to these constraints has been:

- 1) If you are constrained by resources, hire sub-contractors to resolve that constraint. (This is less likely to be acceptable when the work is highly technical making it difficult for sub-contractors to get up to speed quickly or during a period when the economy is challenged.)



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- 2) Reduce the amount of work so the existing resources can complete it within the deadline.
(This is quite unlikely in a global economy where competitors exist not just from around the corner but from all over the world.)
- 3) Work slower so the existing work can be done by the existing staff but be delivered much later.
(When there are many competitors with inexpensive labor, missing deadlines can be a short path to disaster.)

There are ways to be more effective of course. Project Managers specialize in exactly these techniques. Over the last 30 years, project management techniques have been promoted and taught to the point that they are now mainstream learning. There are numerous graduate programs in project management at top universities around the world and the term “project manager” is no longer characterized by a grizzled veteran dangling from an exposed I-beam at the top of a skyscraper in mid-construction. Project managers are now more likely to be thought of as many other mid-level managers within the organization.

Aside from specialized project management training, we find project management in mainstream business courses, IT courses, management classes and more. All of this has made an impact. It’s now quite common to walk into a business environment and find that many project management techniques and processes have been adopted. A challenged economy helps this by providing even more incentive for organizations to do more with less. Even where project management processes are less formal, we find that projects often run fairly efficiently. In more sophisticated organizations, attention has turned to project portfolio management (PPM) to try to extend project efficiencies to even before the project becomes active and to give tools to management to identify those projects which will provide the best return on investment.

Resource Capacity is almost a universal desire

Well, given we have an evolved project management culture and even portfolio management the problem should be solved, yes?

Unfortunately... No.

Resource capacity management remains one of the most sought after processes in the project management realm. Despite advances in project management, perhaps even within their own organization, senior management has difficulty getting answers to the most fundamental resource questions:

- Do we have enough resources to complete the work we have now?
- When will the work we have now be completed?

- ❑ How much more work can be take on given our projected resource capacity?

The challenge with delivering answers to these questions lies in the encompassing nature of resource capacity planning analyses. The inputs for such a calculation must include 100% of resource availability and 100% of resource workload. One might think these data points are simple to come by but in an organization of even a modest size they are not. There are almost always multiple inputs to both the availability of the resources and their workload.

Determining a reasonable level of resolution for the calculation is also a challenge. Should we include extended leave such as maternity or sabbaticals in our availability calculations? How about vacations? What about getting even more detailed? Should we include sick leave or scheduled days off?

On the workload side, the challenges are the same. Sure we want to include projects but do we include maintenance time also? Operations? Emergency work?

Organizations faced with this challenge have most commonly responded with three courses of action:

1. Automate
Purchase an EPM or PPM system in the hopes that projects will be more effective
2. Implement EPM/PPM processes
Implementing EPM/PPM processes with or without automation will hopefully improve project efficiency
3. Push the staff to overtime/more work

The untapped resource

Yet all of these responses live inside the scope of influence of the project manager. They are the answers that the project manager can deliver because they can be found in the project manager's domain.

This is remindful of the old joke of a man walking at night along the sidewalk who comes across a man on his hands and knees searching for something under a streetlamp.

"It's my keys; I've lost my keys," says the man on all fours.

The Good Samaritan puts down his bag and gets down on his hands and knees also and starts to look all around the lamp. After a minute or two it becomes quite apparent to the newcomer that there are no keys here. "Are you sure this is where you dropped them?" he asks.

"Oh no," says the man. I dropped them up the street."

“Then why are you looking here?” says the Good Samaritan as he gets to his feet, exasperated.

“This is where the light is of course!” says the man who turns back to his search.

We are most comfortable answering challenges from those sources where we control the answer. But there is an untapped source of resources to answer those resource-based challenges that is not directly within the control of the project manager but which could make resources available to him or her if they could access it.

Where does the time go?

If we extend our search beyond the pool of light under the lamppost there is a tremendous volume of resource hours which are being spent on **non**-project tasks. Some of those tasks are essential but some of them are not. There are three common areas where time is wasted in a way where not only the company would benefit if the waste was stopped but so would the employee who’s likely not happy to be wasting time in this way in the first place. They are:

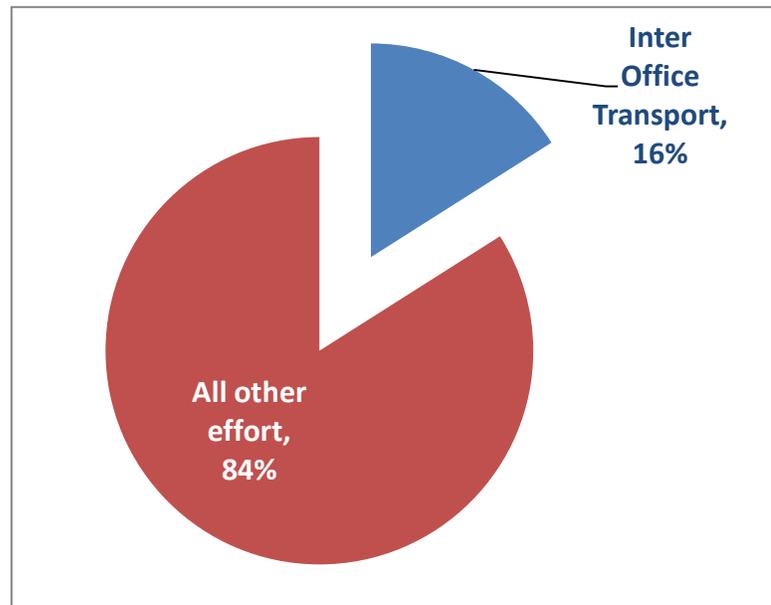
1. Bureaucracy
2. Maintenance
3. Legacy system support *(Particularly in IT)*

If we could categorize not only project data but also non-project data to see where staff spend their time, we have the potential to realize remarkable savings in efficiency. We have worked with numerous organizations who have done exactly this. They have selected a timesheet system which could serve both the needs of project management and the other needs of the organization so we can have one source of task-based data. Over the next few pages we’ll look at some actual case studies of how organizations have been able to take advantage of this data.

Case study 1: Inter-office transport

Management at a well-established manufacturing organization was quite certain that there were some inefficiencies in their project organization due to the physical nature of their offices. This organization had been established in a small town in the middle of America and as it had grown, rather than moving to one of the coastal metropolises had expanded right in its own home town. With employees now numbers in the thousands, it’s offices could be better described as a campus with numerous buildings spread across the town in which the company was by far the biggest employer.

Every day, numerous personnel would be asked to move from one building to another in order to do a meeting of some kind or another. If the buildings were adjacent, the trip might simply be a walk across the parking lot. If not, there were shuttle buses available to transport the person to the destination office. If they preferred, the staff person might take their own vehicle from their office building to another across town. The town was not large so the drive was not long but the time to get to the parking lot, drive across town, park the car and then arrive at the meeting added up.



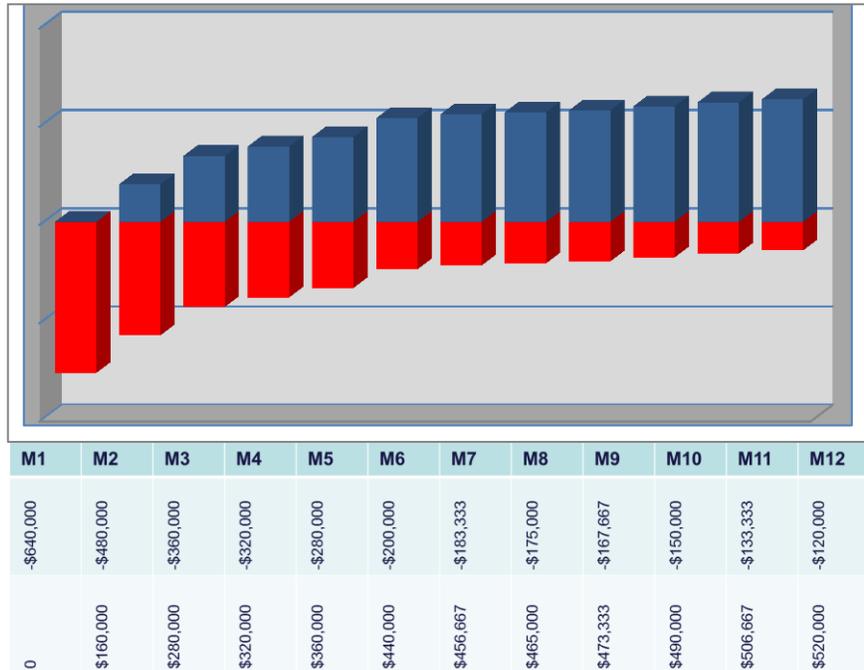
In addition, it was common for several project team members to travel as a group from their building to a building where the executive sponsor's office was located. The idea of asking the executive to travel to the building where the team members were located simply wasn't done.

Management knew this inter-office transport was part of the cost of doing business but several years ago, a forward thinking executive elected to measure how much time they were talking about.

A timesheet was deployed to approximately 1200 personnel that could supply the project system with task updates and the payroll system with time and attendance so that a single timesheet could be used. Staff were asked to record along with their other work, how much time was spent on interoffice transport. It was the opinion of management that this inefficiency might be as high as 8 or 9 percent. Ninety days after the deployment began, there was sufficient data in the timesheet system to do some analysis. Everyone was stunned to find out that the numbers were much worse than imagined. A full 16% of time was being spent on interoffice transport.

The results of the report went all the way to the CEO who the next morning issued the following guidelines to all personnel:

1. “Starting immediately all project personnel will be co-located to the maximum extent possible”
2. “If many project team members must travel to a meeting with one executive then that executive will travel **not** the entire team”



Savings started only 30 days later. It would take almost a year for the results to gradually even out at a much more reasonable 3%. The total savings for the year were estimated at over \$4 million dollars or the equivalent of hiring an additional 156 people. This organization was able to increase its staff availability by over 10% without hiring a single person. In many cases the personnel in question were already project staff whose increased availability was directly beneficial to other projects.

Case Study 2: Sub Contractor control

Several years ago, a large international bank with a technical staff of some 6000 people asked HMS to help with increasing overall resource efficiency of their organization.

The 6000 technical staffers were comprised of approximately 4000 internal salaried staff and about 2000 sub-contractors from a number of different firms. An internal study of time spent on overhead tasks revealed an excessive amount of time being spent on managing the timesheets, invoicing, approvals and payment to these subcontracting firms. The organization was also working to improve project planning by implementing activity-based-costing as there were very few metrics available on what the costs per project were.

The benchmark for sub-contractor invoice payment was a range of 8 to 12 weeks. The process to approve the invoice payment was laborious.

1. Each subcontractor would use their own internal timesheet system in which their staff would record hours as directed by their own firm. There were numerous

subcontract companies working for the bank and several of them had hundreds of workers working at the bank.

2. Each subcontractor would submit a monthly report for hours spent by their staff to the bank's accounts payable department.. The invoice would be at a very summary level. Each subcontractor would attach their summary timesheet information to the invoice as justification for payment. There were many formats of these timesheets and the data was typically time and attendance data only. Even summaries at the project level were rare. Invoices would typically arrive at the bank by the middle of the month following.
3. The bank would recompile the timesheet data into project-based summaries by re-keying much of the data and distribute that to the department contract managers involved. This was typically accomplished within 2 weeks of invoice receipt.
4. Department contract managers would quickly redistribute the data to the project managers implicated for that month and ask the project managers to reconcile the time invoiced with the work accomplished. The newest of the data in the packet each project manager would receive was already 30 days old. The oldest data was 60 days old. For most project managers this was much too long ago to try to remember what happened with a particular sub-contract employee.
5. Feedback from the project managers and contract managers required adjustments virtually every month. By the time the feedback had been returned to the contract manager, some of the data in the packet was already 10 weeks old. Communications, negotiations and adjustments between the bank and the subcontractor would often take 3-4 weeks. By the time the invoice was ready to be closed and approved for payment, another invoice for the next month and possibly another for the month following would already be in the approval process. Most typically, department/contract managers and project managers were managing 3 months of open invoices at a time.
6. The invoice was now queued for payment and would typically be paid within 2-4 weeks.

The entire approval process implicated some of the most critical project personnel including contract managers, project managers, the individual sub-contract resources themselves as well as a phalanx of internal accounting personnel who worked for many hours to complete the process.

Following the internal study, management asked to have all sub-contracts changed to insist that all new workers would have to use the bank's new internal timesheet system. They were informed that such a clause was *already* part of the standard sub-contracts. Management selected a single timesheet to use for both project and non-project personnel and for both internal and subcontracting staff. Timesheets were now approved by the project managers and operational managers each week. Given the approvals were so fresh, corrections were very quick to do as most staff could easily remember what had happened only a few days ago.

As part of this change, they offered to each sub-contracting firm a feed of timesheet results from only their personnel. This data was used by the sub-contracting firms at the end of the month to be able to instantly submit their invoices.

The bank was able to reduce the total cycle time of invoice approval from 8-12 weeks to less than 5 days. In doing so, they negotiated with the sub-contracting firms an early payment discount of 2% saving the bank approximately \$2.4 million in early payment discounts alone. The costs of implementing the new timesheet were less than \$100,000 so these savings paid back those costs almost instantly. This savings represents the equivalent of hiring approximately 60 people.

In addition, the bank saved over 1200 hours per week of timesheet review time from supervisors who no longer needed to go from a subcontractor's timesheet to review whether work was complete. They had already approved this time when the timesheet was first submitted. This was the equivalent of another 30 key personnel.

An additional approximately 1000 hours per week were saved from project managers who no longer need to confer with supervisors and the accounting staff during the reconciliation process. They had already approved timesheets as part of a matrix approval process where both supervisors and project managers could review the timesheet data when it was first submitted. If the invoice totals matched the totals in the timesheet, the review was completed. This was the equivalent of another 25 key personnel saved.

Additional time was saved with each sub-contracted resource in communicating with their supervisor on-site, their employer during the approval process and then with additional time in communications during the reconciliation and adjustment process which was constant. Estimates of an additional 500 hours per week of time or the equivalent of another 10-12 full time employees which could be reallocated to other project work.

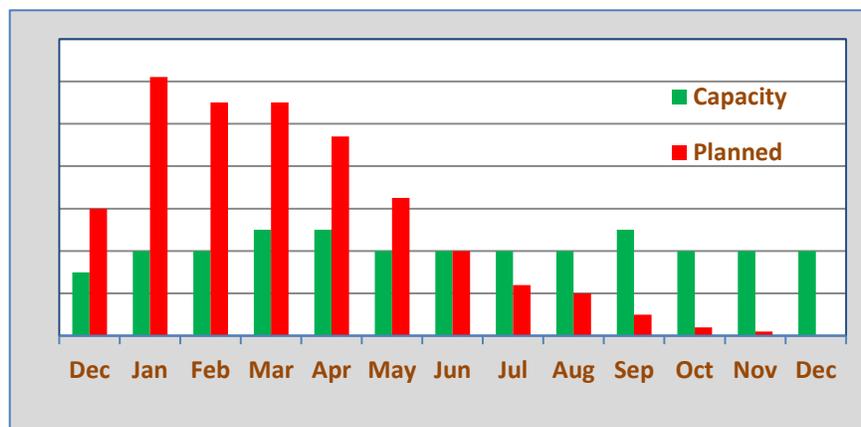
Finally, in the accounting department, numerous staff involved in the laborious reconciliation process could be re-allocated to other work.

Overall hard-savings from moving to a single internal timesheet system which controlled both project and non-project time was better than hiring 100 new project personnel.

Case study 3: Excessive Maintenance

In a mid-sized US-based university, the IT department had a resource capacity problem. The organization already had a centralized project management office and that office was struggling to answer numerous requests for IT services and products which the university required. We were asked to conduct a portfolio level analysis of resource capacity with a view to improving overall effectiveness.

At first glance, the resource level histogram showed an impossible picture. Over the coming 4 months, resources were clearly overloaded by over 100%. In the next 3 months by over 300%. Subsequently, the resource load dropped off to close to zero.



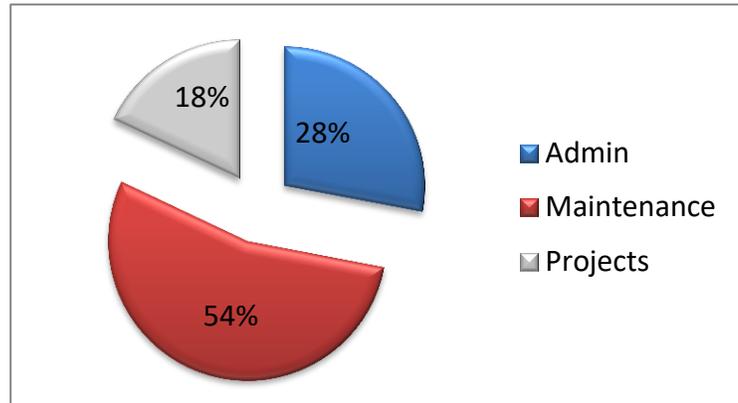
There was general speculation that if projects could be reprioritized into a more sensible order, that all work could be accomplished. The organization had further difficulty due to a high degree of change of priorities. Just seeing that the projects were 300% overloaded indicated that some projects had been started for which there were definitely insufficient resources and this caused all projects to be less effective.

The organization implemented timesheet data to be able to categorize where time was being spent. And a project prioritization exercise was initiated. Unfortunately, as all projects were loaded into the new process, it became apparent that the initial resource capacity report was showing only a fraction of the projects. Project which had already been approved but which had not been initiated for later in the year were not listed at all. When these projects were all added, the total load increased to a point where just leveling the data resulted in 2 years of work for the coming year of available resources.

Review of the new timesheet data revealed an additional situation.

Not only had only a fraction of the projects and project load been stated, but also only a fraction of the total resource availability was listed.

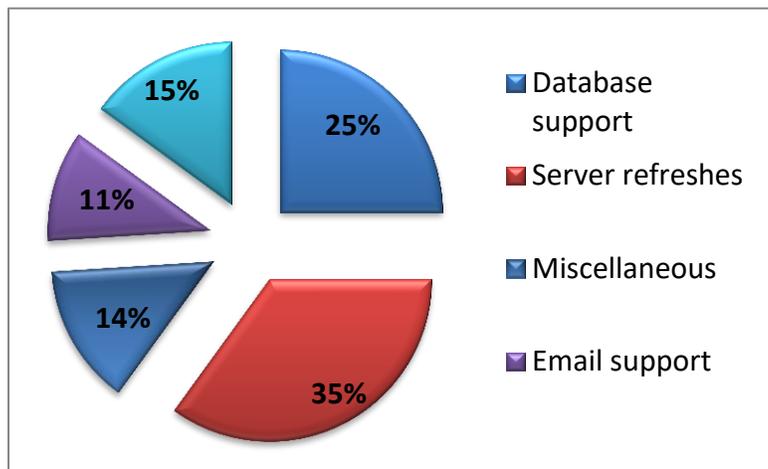
When the data was categorized into project work, administration and support work and maintenance, it showed that over 54% of all work was categorized in the maintenance category. The resource leveling effort for all projects was only making more efficient less than 1 in 5 employees in the department.



A simple question of “what is included in maintenance” turned out

to be not so easy to answer so additional refinements were made to the timesheet system to enrich the quality of data in that category.

Once this data was available, it was clear that server updates and database support made up the bulk of “maintenance” time, accounting for about 60% of the maintenance time. Additional time was revealed across a number of maintenance categories that were in fact project management time that had been ‘snuck into’ the maintenance work by subdividing project work into very small tasks that could be made into maintenance tickets.



Focus was now directed at how to reduce maintenance time. There were 8 databases currently being supported, this was reduced to 3. Additional time was saved by

outsourcing thousands of emails. Legacy applications were ended and improvements in server maintenance were done by moving some server capacity into the cloud.

Finally the new project portfolio prioritization process was allocated to larger sized maintenance work and the result was that some projects did not meet the standard to be done at all.

Over all improvements to the project resource capacity was to increase capacity by over 50 percent.

With improvements in what projects met the new business standards for starting or not, more efficiencies were found to reduce the overall workload.

Case study 4 – Data mine the timesheet data

In a large multi-national insurance firm, we were asked to assist with an initiative to improve project effectiveness in the IT department through reviews of high volumes of timesheet data. The organization had several years of data available and because timesheet data was gathered in a single source that was used for both payroll purposes and project tracking purposes for all staff, it was known that 100% of time was accounted for in the data.

The organization had a hypothesis that some projects were less effective than others and looked for a correlation between the effectiveness of projects and data available in the timesheets.

Trending analysis of over 30,000 timesheets was conducted and cross compiled with successful projects vs projects viewed as less successful and several interesting effects were revealed. Of these, one of the most significant was a direct correlation between unsuccessful projects and personnel who left the organization in mid-project. Further review revealed that staff satisfaction had a direct correlation to the amount of time spent in training tasks. Those staff who had better training were generally happier.

An initiative was undertaken to increase staff training and implement staff satisfaction metrics. Over a 12 month period the initiative showed measurable results. Staff turnover was reduced, time spent training new staff due to turnovers was significantly reduced and overall project effectiveness improved. Total resource capacity at the end of the year had improved by approximately 10%.

Other Places to “create” time

Aside from these examples, there are many places you can use combined timesheet data to reveal where time is being wasted and to implement better project management methods which can improve performance overall.

Some of these would include:

- **Portfolio Selection work only on projects with the best return on investment**

A Project Portfolio Management approach to project selection can result in not wasting time on projects which do not meet the business standard to be invested in. Methods of calculating return on investment will be different from organization to organization but there is always some method of evaluation that is possible that allows management to compare one project initiative to another. Working on

the “right” projects is one of the fastest paths to more efficiency in resource capacity.

- **Stage Gating and cancelling bad projects**

No one likes to pause or cancel a project once it’s underway but the stigma attached to cancelling a bad project is so severe in some organizations that some managers will be desperate not to let it happen no matter how bad for the overall organization it might be to continue. If market conditions, risks, technology or other project conditions change that alters the overall return on investment calculation, it’s worthwhile thinking about stopping the project where it is. A stage-gating process formalizes project reviews and makes a spot where the “gate” can be closed.

- **Data mining timesheets**

When you know you’re looking at 100% of the timesheet data, the possibility of doing analysis on that data is often attractive. This is even more true when the timesheet data includes not just time and attendance information but also task-oriented time. Timesheet data is ideal for data mining because it is almost always formally managed. We know that we did approvals of the data that the data is complete and that it is comprehensive. The data identifies staff, work and is date oriented. Possible trends that can be reviewed might include:

- non-productive bureaucracy e.g.:
- Internal analysis and reporting that serves no purpose because there are no readers for it.
- Excessive meetings that are not effective
- Excessive time preparing for executive review (over-management)
- Trends in production time (times spent on projects) vs. overhead time (this is often a shock to management)

Conclusions

The desire for effective resource capacity planning is almost universal and the demand for it is high enough that it is clear that it is not always easy to come by. Deploying a single timesheet system to use for both project and non-project personnel and purposes provides a single source of incredibly valuable data. When we have one timesheet for time and attendance and another for task-based project personnel, then there is still value in reviewing the data but the timesheet data often doesn’t have the comprehensive nature of a single source for all personnel.

A timesheet that can be used for both project and non-project purposes can come from numerous sources including within our ERP or project system itself. The system must be able to serve the financial requirements for payroll, billing, job-costing as well as have the detailed task-by-task tracking and forward looking estimate to complete data required by the project scheduling system.

If numerous products are being used to fulfill those requirements then a third party could also be considered.

When looking for efficiencies in the timesheet data start with looking at big slices of time categories then drill down for more detail. If the detail isn't there, be patient. Add additional categories to the timesheet and check again in several weeks. Try to resist making too many categories at once. Users who are overwhelmed with charge item choices will often just pick a miscellaneous category and put all their time there.

Typical places to look for savings include: excessive bureaucracy/overhead, project time masked as overhead time and long-standing processes that are rarely questioned. The cost of following a process is rarely revealed until you ask to track it in the timesheet.

Once you have new timesheet analysis that has revealed places to be efficient, look for senior management support in implementing changes. Change can cause upset so the ideal find is something that people don't like doing anyway that can be eliminated.

Think about making changes slowly so you can see the effects before implementing more change.

Finally, have reviews of your data be an ongoing exercise that's conducted perhaps annually rather than something that is done once and then forgotten.

About the Author



Chris Vandersluis

Montreal, Canada



Chris Vandersluis is the president of HMS Software based in Montreal. HMS Software has been a leading provider of project management and enterprise timesheet systems and services since 1984. HMS Software's TimeControl is recognized around the world as the most flexible project-oriented timesheet system.

Mr. Vandersluis has a degree in economics from McGill University and over 30 years' experience implementing enterprise timesheet and project management systems. Mr. Vandersluis spent five years on Microsoft's Enterprise Project Management Partner Advisory Council and has worked with Oracle-Primavera and Deltek on their project management systems.

Mr. Vandersluis' has been published in a number of publications including Fortune Magazine, PMNetwork magazine, Microsoft's TechNet and is the author of the popular project management blog EPMGuidance.com.

Mr. Vandersluis has taught Advanced Project Management at Montreal's McGill University and has been a member of PMI since 1986.

Mr. Vandersluis can be reached at: chris.vandersluis@gmail.com