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Project Server 2010



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Microsoft Project Server 2010 Integration with SAP

*Leverage the Power of Project Server to Provide Timely and
Cost effective Resource Forecast Business Intelligence
through integration with SAP and other ERP Systems!*

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Executive Summary

This white paper outlines the benefits and scenarios for integrating Microsoft Project Server 2010 with SAP's ERP; in particular integrating the actual time reporting from SAP with the time-phased planning and resource forecasting power of Project Server 2010.

This integration is cost-effective and enables the source of record Actuals (both Cost and Time reporting) to bring actuals to the planning activities that Project/Program Offices or Scheduling groups use Project Server 2010 for.

This connection and process enables a large national company to drastically reduce the time spent in planning and trying to map the actuals directly with the way that the organization schedules work. Further, it enables the feature rich reporting capabilities of Microsoft Project Professional, Project Server and SharePoint Server and puts that planning and reporting directly in the hands of the end users.

This white paper is not a Detailed Technical Systems or programming write-up, but a customer solutions case study focusing on the value of systems integration of a Project and Resource Planning Organization.

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Who Should Read this White Paper?

This is not a technical paper and instead depicts a customer story of a successful integration of actual time reporting from SAP with the time phased planning and resource forecasting that Project/Program Offices or Scheduling groups use Project Server 2010 to manage.

This white paper details approaches and solutions that work in utilizing **both** Microsoft Project Server 2010 and Microsoft Project Professional 2010 for reporting and managing Project Actuals, Resource Capacity, and Demand.

The document is intended for the following primary audiences:

- IT Managers looking to maximize reporting and system integration
- CFOs who are heavily invested in ERP systems, but want the power of Project Server and Project Professional Reporting
- Project organizations that would like to scale and implement Project Server without dropping existing workflows and functionality of existing ERP systems.
- Partners who want to understand the pitfalls and solution path in helping customers leverage integration with Project Server with SAP and other HR or Resource Forecasting Systems
- Solution Providers looking to solve integration approaches in bringing in cost, work and planning actuals from other systems

Readers will learn the power of integrating Project Server 2010 with existing ERP or legacy systems and maximize the reporting capabilities of resource and demand management reporting.

The pitfalls and solution path we will help identify can help organizations quickly adopt a Project Server 2010 environment without giving up or initiating a cutover from existing / legacy systems. The approach outlined in this White Paper enables first steps, and quick ROI, for organizations that have smaller budgets or want to quickly showcase the power of Project Server and Project Desktop 2010.

With the rich and powerful connected solutions and architecture in Project Server, Project Professional, and SharePoint Server, this is more attainable than ever before. Microsoft PPM received the highest rating possible in the recently released Gartner Project and Portfolio Applications MarketScope; full report: [Microsoft is Rated in the Gartner Project and Portfolio Applications MarketScope](#).

Microsoft Project Server 2010 aids organizations to make better Portfolio Project Management (PPM) capacity-planning decisions. Integration with ERP and other Line-of-Business (LOB) systems also saves time for employees through automated processes and a simpler more automated interface, gains more visibility into projects, and improved resource management.

Business Needs Overview

The case study that this project is based on was for a customer who is the largest investor-owned distribution utility in Canada, delivering more energy than any other utility in the province — approximately 21 per cent of the total energy consumed in British Columbia. The companies employ more than 2,000 people and serve more than 1.1 million customers in 135 communities.

The key challenge that was presented to Advisicon Inc (a Microsoft Gold Certified Project Management partner) was how to provide timely and cost effective Resource Forecast Business Intelligence through integration with corporate Enterprise Resource Planning (ERP) and other Line of Business (LOB) systems. The customer utilizes SAP as the corporate system where Timesheet Actuals and Planned Workload are centrally gathered.

This customer also leverages additional external planning and forecasting scheduling systems (ClickSoftware) to help identify crew assignments workload, resource availability. All of its ERP and LOB systems were not connected and did not meet its workload forecasting, resource demand planning, and detailed scheduling needs.

Microsoft Project Server 2010 was introduced to provide comprehensive Work and Resource capabilities to the scheduling and planning teams. It was seen as a software solution that could bridge the complex and difficult task to report, track, and map actuals to scheduled work and resources.

Customer Requirements

The following customer requirements were critical to the success of the Microsoft Project Server 2010 Integration with SAP. They are grouped into their appropriate categories.

1. Resource Management:

It is important to proactively and reactively manage the Resource Requirements though the Project life cycle. Project and Resource Managers need to understand both the short-term as well as the long-term capacity of the organization.

Key requirements in this area included:

- Integrate Project Server 2010 with SAP R3 (CATS), SAP CO, and the other HR or Resource Scheduling (i.e. ClickSoftware) Systems
- Pull Resource Availability/Calendars (SAP's R3) and translate that to Project Calendar, Resource Availability (that changed monthly)
- Enable "What-If" analysis and reporting capabilities that allowed end users and planners to leverage the new and improved Project Professional 2010 in daily to weekly resource balancing, planning and forecasting sessions
- Bring over resource peak availability and capacity information that changed monthly

2. Accounting and Cost Planning:

Actually capturing realistic cost estimates and tracking actuals allows management to assess the financial performance throughout the life cycle of the project. Project Management personnel and Resource Planners need to quickly and easily obtain accurate financial data from appropriate LOB systems.

Key financial requirements included:

- Utilize Work Actuals, and Cost Actuals to Projects, Regions, and Resource Departments
- Utilize Project Server 2010 and Project Professional 2010 for customers to model and plan with, reviewing cost forecast impacts and testing cost effective resource solutions
- Establish the ability to have multiple cost rate changes over time

3. Planning and Forecasting:

Capacity Planning and Forecasting for the Right Skills at the Right Time is a critical need for Project and Resource Managers. Better work planning and resource forecasting increases the accuracy of project deliverables and completion.

The ability to meet the following planning requirements:

- Leverage the power of Project Server 2010 to provide timely and cost effective Resource Forecast Business Intelligence
- Manage thousands of task assignments for resources and work crews, and allow quick organization by regions, territories, districts and municipalities
- Maximize the ROI of Strategic Resource Capability Planning for Project Server through cost effective integration with SAP
- Create time-phased views of planned actuals and resource over/under allocation
- Pre-load resource leveling scenarios that solved 80% of the normal resource leveling tasks that were currently being manually performed in other systems

4. End User Analysis / Reporting & Working Needs:

One of the greatest challenges organizations face is how to collect, analyze, report, and make decisions with an immense amount of data located in a variety of systems and formats.

End user requirements which were critical for this solution included:

- Export Data from Project Professional and Project Server directly to Office 2007 and Office 2010 applications
- Pivot reporting capabilities for both SharePoint Server and Excel analysis
- Data export from Project Server for cross analysis and QA audit of time tracking and reporting from SAP

5. High Level Business / Cost Requirements:

Key business and cost requirements that helped drive the creation of this solution:

- Zero additional Licensing costs



Microsoft® Project Server 2010

- Other (non-Microsoft) software programs required additional licensing for creating scenarios or for adding resources (in their pool). Project Server enabled the customer to add and use more Enterprise Resources in their pool. This change, at zero additional cost for adding resources, enables scenario planning with resources and using the tool for demand and resource forecasting.
- Centralizing resources and standardizing metadata about the enterprise resource pool as a key step to gain visibility and control of who was available, what they are capable of doing, and where they are located. The ability to integrate management of these resources across systems by using Active Directory integration was a critical requirement.
- A key requirement / benefit was that there were no incremental costs for adding resources to the resource pool (real or generic). This was also a key advantage over the non-integrated manual consolidation approach.
- Time to Market for solution needed to have the Enterprise System setup modeled and the integration of SAP and other Actuals up and running within 1 planning cycle
- Maintenance of the system needed to be almost zero as the end users were going to be the keepers of the data
- Review the ability of Project Server to help phase out more expensive and less functional systems without actually turning off those products or modules

Solution Approach, Steps, Issues & Resolution

This section addresses the approach that was taken by Advisicon to deliver the custom solution, detailing the present situation, including the existing system and any shortfalls. Technical and key products that were used in the final customer solution are then described. Planned implementation steps are also presented, along with any issues that were discovered along the way, including how they were overcome.

Customer Existing System and Shortfalls:

The ClickView system was being used to record resource availability and non-availability by each day. The data capture was by resource and not by role (within district and city group). The SAP system was being used to capture actual data and did not have any planned data. Excel spreadsheets were used to capture planned data manually at the beginning of the year.

- The data could not be mapped between systems due to different data structure and tracking elements.
- The changing of data elements in SAP was cumbersome and time consuming and other ERP systems changes were expensive and not flexible for quickly adapting and doing what-if scenarios.
- Only the software vendor could make changes to the software, and each modification was very expensive and time consuming.
- Information technology was an outsourced department, so changes or reports requested took days or weeks to get, whereas changes could be made in minutes with Microsoft Project.
- 2010 fit the IT roadmap plan and was an easy opportunity to continue to fold it into Microsoft SharePoint Server.
- Existing forecast reporting didn't exist or wasn't accessible to the teams planning and forecasting resources.
- Data coming in from actuals didn't map to the work planning that the resource planners used from Excel and ClickSoftware, and it would take a month or more to get the actuals converted and reviewed.
- Data conversion from SAP actuals took days to get and transform because the customer didn't have a scheduling system that reflected tasks.
- Shortfalls in the dynamic nature of resource planning tools in SAP and other products didn't allow for the simple ease-of-use interface that Project Professional provides.

Decisions that led to utilizing Project Server with the SAP Module Connection:

- With Project Server it is easy to capture all data elements due to well defined project, task, and resource and assignment structure.
 - This structure bridged the solution for both resource and Demand Management planning
- The infrastructure in Project Server to capture baseline and actual data was native and intuitive, and it could be updated easily and often through various planning cycles.

- The views and reporting capabilities in Project Server are all based on SharePoint Server, and the data exposed could be used in Excel, Excel Services, PerformancePoint Services and other Business Intelligence Reporting Tools that came with the Microsoft Office and the SharePoint Server system.
- Project Server infrastructure and Project Server Interface (PSI) implementation made it easier to implement and the graphic interface of Project Professional allowed the use of resource planning and visualization through the Team Planner, Resource Usage and Resource Graphical views.

Technical Systems and Key Products Used:

Critical to the success of the customer solution was the integration of the various technologies and business applications, to provide timely and cost effective Resource Forecast Business Intelligence through integration of Project Server 2010, SAP, and other LOB applications.

A .NET console program was written using PSI, LINQ, and Microsoft Project OLE technology to pull data from SAP, ClickView, and Excel. Transformation tables were used to perform multi-level resource allocation.

The solution approach was first to identify the technical components involved customer's side. Then, after the requirements gathering, we reviewed solution approaches to create or leverage the native technologies or solutions available. Below is a list of the functional elements we brought together and used to help complete the customer's final solution. As you can see, many of these are standard with a Project Server or SharePoint Server implementation as well as the pre-existing environments we pulled or connected data from at the customer site (including SAP).

- **Workflow walkthrough** – Business rules to assign resource team to task were captured in configuration/transformation tables with multi-level assignment logic in case of resource over-allocation. Transformation tables used to capture data mapping between different systems due to different data types
- **Project Server 2010** – Provides innovative capabilities across the entire life cycle to help organizations understand demand, effectively initiate, select, plan and deliver projects on time and on budget.
- **Project Professional 2010** – is the PC-based client that provides both resource and scheduling management capabilities, and a visual interface that provides a configurable rich graphical display of data.
- **SharePoint Server 2010** – provides the ability to create Web sites to share information, collaborate on documents, manage lists such as Risks or Issues, and provide Business Intelligence and Reporting across the enterprise.

- **SAP (CATS)** – The Cross Application Time Sheet (CATS) is used to track employee working times. Time data is recorded and can be transferred to corresponding applications and components of the SAP Business Suite.
- **SQL Server** – A relational database server whose primary function is to store and retrieve data as requested by other software applications, running on another computer across a network (including the Internet).
- **Project Server Interface** – client applications for Microsoft Project 2010 use the Project Server Interface (PSI), a set of Web services built on Microsoft .NET Framework 3.5 and the Windows Communication Foundation (WCF). The PSI, with the Project Server Eventing Service, exposes the functionality and data that developers can use to extend Project Server and to integrate other applications with Project Server.
- **Project Server Web Services** – Microsoft Project Server 2010 is a true multi-tiered system that extends the architecture introduced in Microsoft Office Project Server 2007. The Project Server architecture includes Microsoft Project Professional 2010 and Project Web App clients in the front-end tier. The front-end applications communicate with the middle tier only through the Project Server Interface (PSI) Web services, which in turn communicate with the business object layer.
- **.NET Framework/SQL Server Integration Services (SSIS)** – The SSIS package was created to pull data from ClickView system. A .NET 4.0 program with LINQ technology was used to perform integration between ClickView data, Planned data, and Actual data.
- **ClickSoftware**– A provider of automated workforce management and optimization solutions of field service business. Founded by Dr. Moshe BenBassat, a former university professor, ClickSoftware has its roots in academia and is used throughout dispatch and crew scheduling organizations.

Solution Steps Planned:

After mapping the business solution workflow and requirements, we reviewed the configuration of SAP and the other ERP systems that the customer wanted to bring into Project Server. We created a workflow process that would allow the Web Services and subscription and publication of data to be used not only by our connector, but by other systems as well.

For any organization wanting to try this solution approach versus purchasing a pre-built module, the following steps are important in order for an organization to correctly bring across, transform and integrate the external data with Project Server.

1. Map the 2010 Configuration (Server & Desktop) and the data integration/migration & reporting
 - Essentially ensure that you understand the Project Server fields and their locations (Task, Resource, Project and Assignment level data).
 - By identifying these locations, you can leverage the PSI and ensure correct views and reporting with the information that you bring over.
2. List the algorithms and automation of auto assigning overflow work to different resources
 - By identifying any transformation of the data coming across, you will be able to apply autoscrub, pre-leveling and correct data assignment before moving it into Project Server
 - We created some routines with our connector module that help expedite this, but in essence, this saved the customer from any manual manipulation and also ensured good data integrity of the information coming from other systems
3. Create the Extract and Validation agent:
 - This is the heart and soul of the Web Service and where the lion's share of publish and subscribe activity takes place
 - It is important to note that by having this publish and subscription agent in place, other line-of-business systems can be used to use Project data for reporting and their needs
4. Leverage PSI to move data into Project Server
 - You always should be leveraging the PSI for working with data and ensuring correct spawning and population of information into the database tables
5. Leverage Project Professional2010 to establish baselines and time-phased reporting, views and modeling
 - Project Professional2010 allows you to baseline and perform other vital updates and transformation for view and error checking
 - We found that having this installed on the server bypassed a significant amount of programming by simply leveraging native Project Professional behavior with VBA automation
6. Complete and establish the automation code module that runs the process without human intervention

Pitfalls and Issues Discovered and Overcome:

During the designing and building of the solution and the fine tuning of the SAP / CATS integration module, we ran into several problems that needed to be resolved.

In any normal project you will experience this. Our hope is that you will benefit from our experience and avoid similar situations if you attempt a similar approach.

- Baselining was being over-written in Usage views by Actual Work and Costs information, or it wouldn't load itself into the Time-phased views that the planners needed.
 - We had to address the Baselining of work, actuals and the issues using the Project Server Interface (PSI) and the time-phased views/data import
 - The solution was to leverage Project Professional as part of the solution and automate when the baselines were saved
- In the planning and archiving of data, the living Project schedule would lose information if notes, baselines and other key decisions weren't stored and retrieved.
 - This was addressed in the population of the Project Professional 2010 file that became the planning, forecasting, and what-if scenario needs of the customer.
- The customer had trouble understanding that views (Task, Project, Resource, and Usage) were not all in the same table. They wanted to combine elements that typically don't go together.
 - We needed to not only create some additionally updated enterprise fields
 - We also did some training for end users to help them leverage the views correctly
- Address the views needed and the configuration changes to the data that transformed the process and the data load to help them do capacity, demand, and historical actuals
 - We built macros to help move between task or resource details from one view to another by using a Task ID or Resource ID to re-center a view to the appropriate task or resource within the different views
- Complexity of resource capacity had to be configured to enter into Project Server, allowing for monthly changes of resource availability, capacity, and planned work
 - Again, a good understanding of the PSI and how to use Project Professional helped us bridge this gap by using the native functionality provided by the software
 - Using cost rate tables and the ability for Project resources to have resource availability changes over time was a quick and simple data table to populate addressing this need.

Final Customer Solution

The customer reviewed several different bridging solutions and decided to exclude other third-party systems due to the expense as well as the need to maintain control of the data and applications internally within the organization.

In this case, due to the sensitive nature of the work, the customer preferred to manage the data internally and wanted to try a cost-effective attempt before looking at a larger off-the-shelf solution.

Due to the desire to automate and empower the resource planning teams, the final solution was installed, configured, and in production faster than the original estimated plan for implementing Project Server.

The next page details the diagram of the final solution along with a table that describes the key components and solution activities of the Advisicon Resource-to-Actuals module deployed and configured for this Canadian customer.

Project Server / SAP Integration Diagram:

Error! Reference source not found. illustrates the diagram of the key integration components in this integration approach.

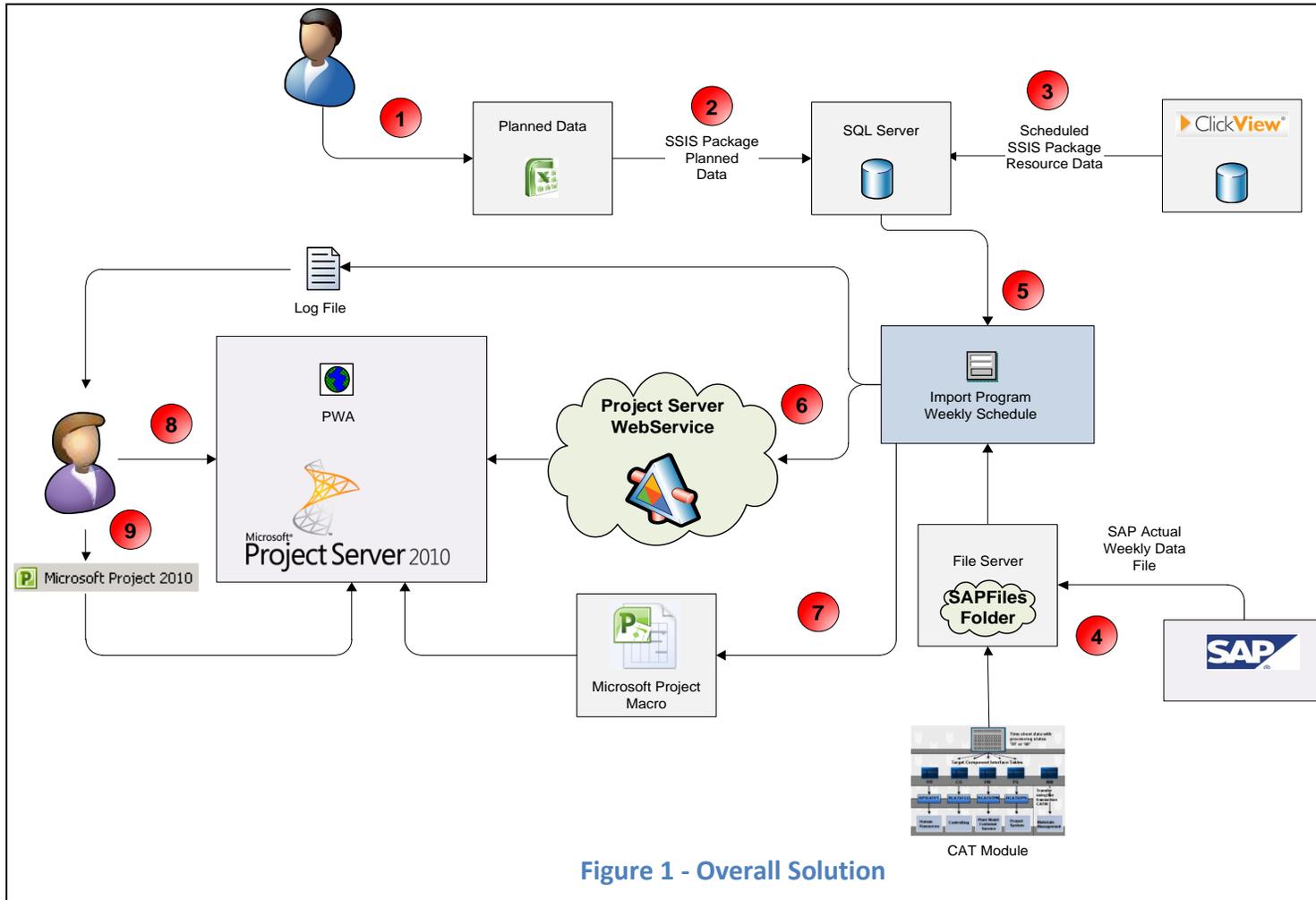


Figure 1 - Overall Solution

Integration Key Steps Details:

1	Resource Planner / End Users planned scheduling for all field work crews for the entire year using an Excel worksheet. The “Planned Work Schedule” data consisted of task information by customer, region and territory, with resource work units and hours broken out or estimated for each month for the entire year.
2	Leveraging SSIS, we create the planned data Package from their Excel Planning spreadsheet and then it loads data in SQL Server staging tables. This is a very important step as we created for the customer a standard custom resource loading, assignment and over-allocation leveling transformation procedure that drops data into the Planned data table structure ready to model in Project Server, Project Professional or any OLAP cubes as necessary.
3	The SSIS package pulls the resource data (Resource, Grouping, Skill Sets, Availability Calendar, and Holiday Calendar) from ClickView by using Linked Server technology. The SSIS Package is scheduled via SQL Agent to pull information on a nightly basis.
4	SAP / CATS module exports actual data in well-formatted files and drops to a share folder by using FTP on a nightly basis. Actual data consists of units and hours for each month from the beginning of year till as of today. This was programmed to be set at intervals the customer would like (Daily, Weekly, Monthly).
5	The .NET console program, which runs under Task Schedule on weekly basis, pulls actual data from Shared folder and imports into Actual data table structure.
6	<p>The .NET console program module performs the following actions using the Project Server Interface (PSI):</p> <ul style="list-style-type: none"> • It takes a backup of notes fields, retaining comments and other planning or scheduling actions, which are entered by user in project so that those can be kept intact after reload. • It deletes project and resources • It adds all projects into Project Server • It adds Resource into the Project Server resource pool and makes adjustments as needed with Active/Inactive resources • It assigns teams and local resources to Project Server and assigns them to the Task Assignments • It adds all planning work activities (tasks) to a project using planned data and notes (backup taken in beginning).

	<ul style="list-style-type: none"> • It populates the actual work and other Actual data from SAP into custom fields in tasks or into actual Project Server fields. • It performs task assignment using business rules (stored in SQL tables) based on resource availabilities. If a resource is fully allocated to other tasks, then the assignment or resource leveling goes to next level of resource and assign remaining of work, based upon customer pre-determined resource leveling rules. • It updates custom fields in resource to capture remaining capacity based upon resource vacation, holidays, or off time, scheduled in external system (ClickView) • It checks in and published the project.
7	<p>Using a .NET Automation class, we leveraged the power of Project Professional to help maximize and standardize the layout and visualizations in the Project schedule.</p> <ul style="list-style-type: none"> • Automation opens and runs a series of VBA macro code for the end user preparing the views and layout for reporting they requested in project by using the .NET automation class. • Create and updating project baseline using macro code. • Update actual data from custom fields to real fields in project • Checked in and published the project
8	<p>Open project from a PWA instance by using Internet Explorer and view task and resource assignment information to perform normal managing, reporting, planning and scenario management in Project Server.</p>
9	<p>Open a project by using Microsoft Project and view task and resource assignment information. Use custom views at task, assignment and resource level and do localized resource planning, strategic impact analysis of resource work, and project forecasting, plus reporting and team communication.</p>

Project Server / SAP Integration:

Figure 2 Error! Reference source not found. illustrates a high-level picture of the integration between ClickView, SAP, and the Project Server 2010 components. Direct table linkages or export reporting from SAP are both acceptable options.

TASK information is coming from Excel (Planned Data) and SAP/CATS (Actual Data), even though directly linking to SAP/CATS is an option. The customer preferred to keep the solution simple and we developed the reporting and queries to simply create the views/extract of the data into Excel and SQL tables.

RESOURCE information is coming from the ClickView system by direct query reporting and linkage to the source information.

ASSIGNMENT information is where the business rules are applied using a multi-level resource allocation algorithm to allow for assignments to tasks of resources and to line out the time-phased assignment. We also carried over the resource availability and populated that availability for the entire year (each refresh or sync) so that the capacity for resources is current with what is maintained in the external ERP systems.

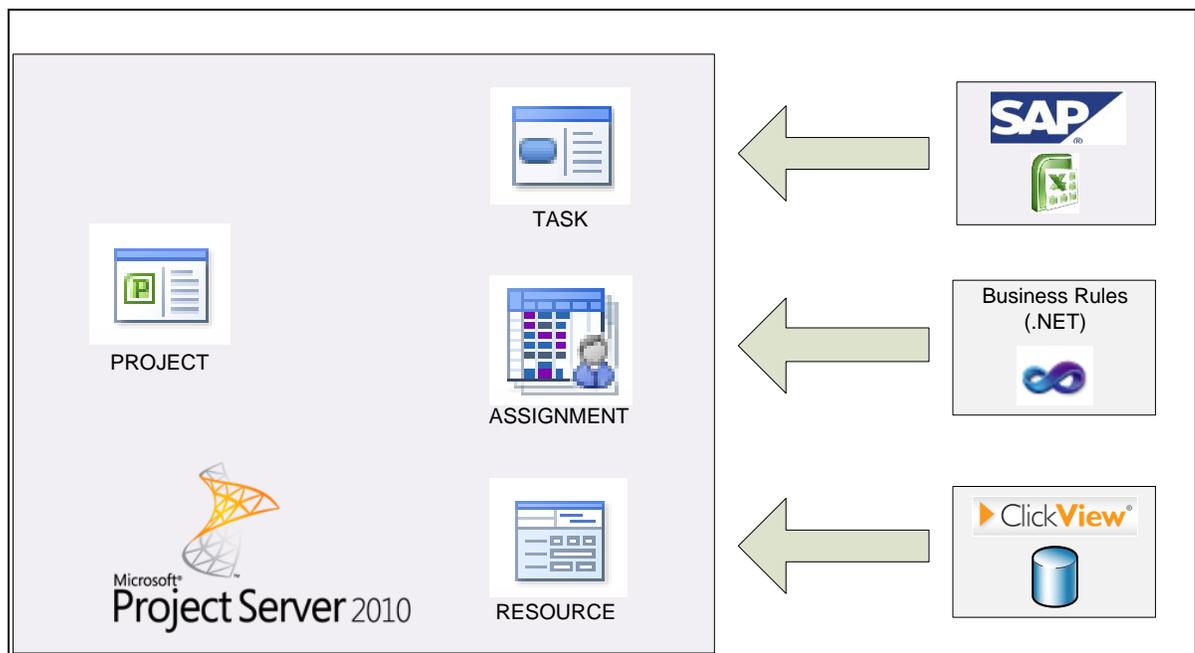


Figure 2 – Project Server, SAP and ClickView Integration

Server Infrastructure:

There are three systems used during Project Server integration. Project Server 2010 is installed on two servers: a web server and a database server. The ClickView and SAP systems are connected using linked server technology from the database server. Figure illustrates this setup.

The environment is very standard in most organizations: establishing web services or setting up web server with ERP systems, with end users accessing the information.

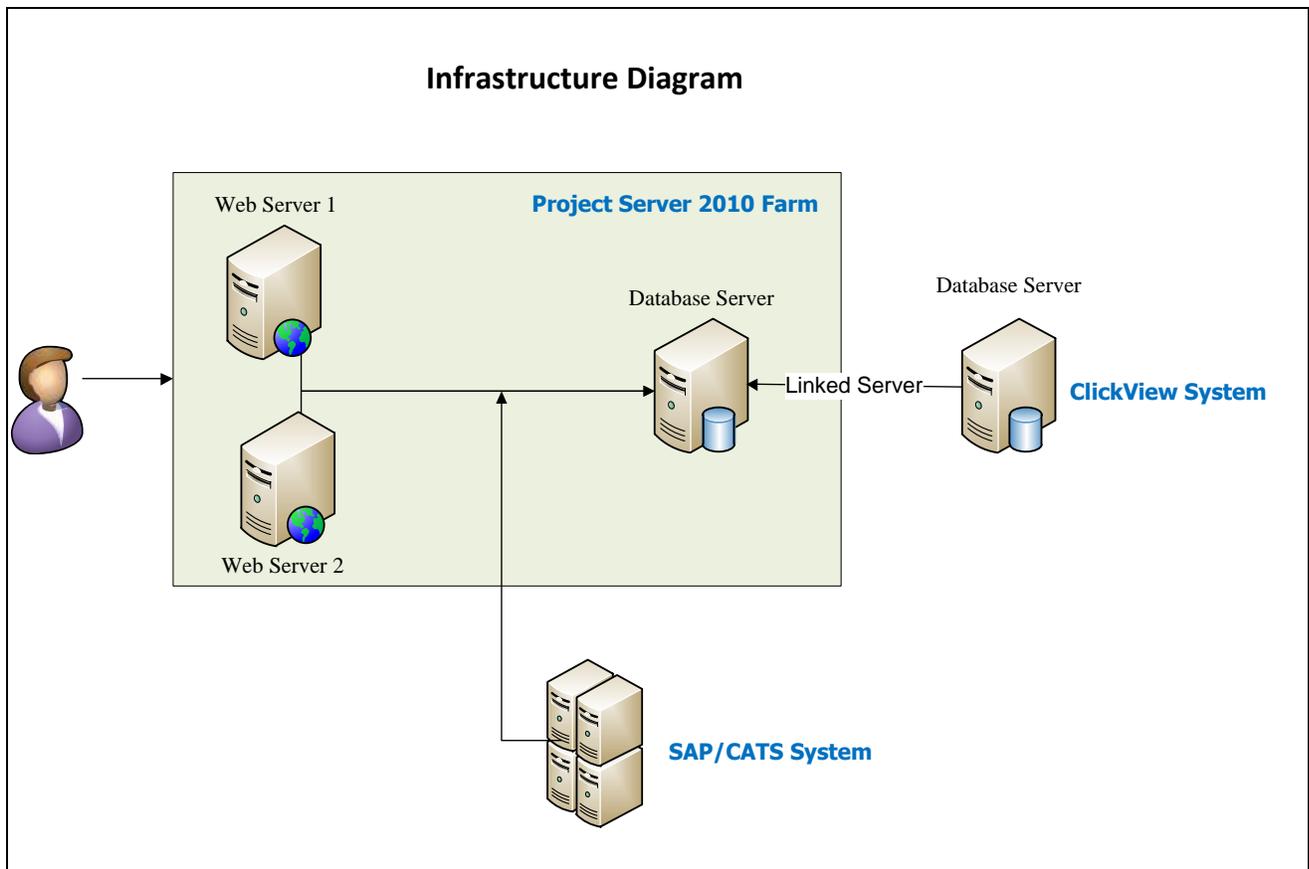


Figure 3 – Server Infrastructure

End User Visuals / Reports:

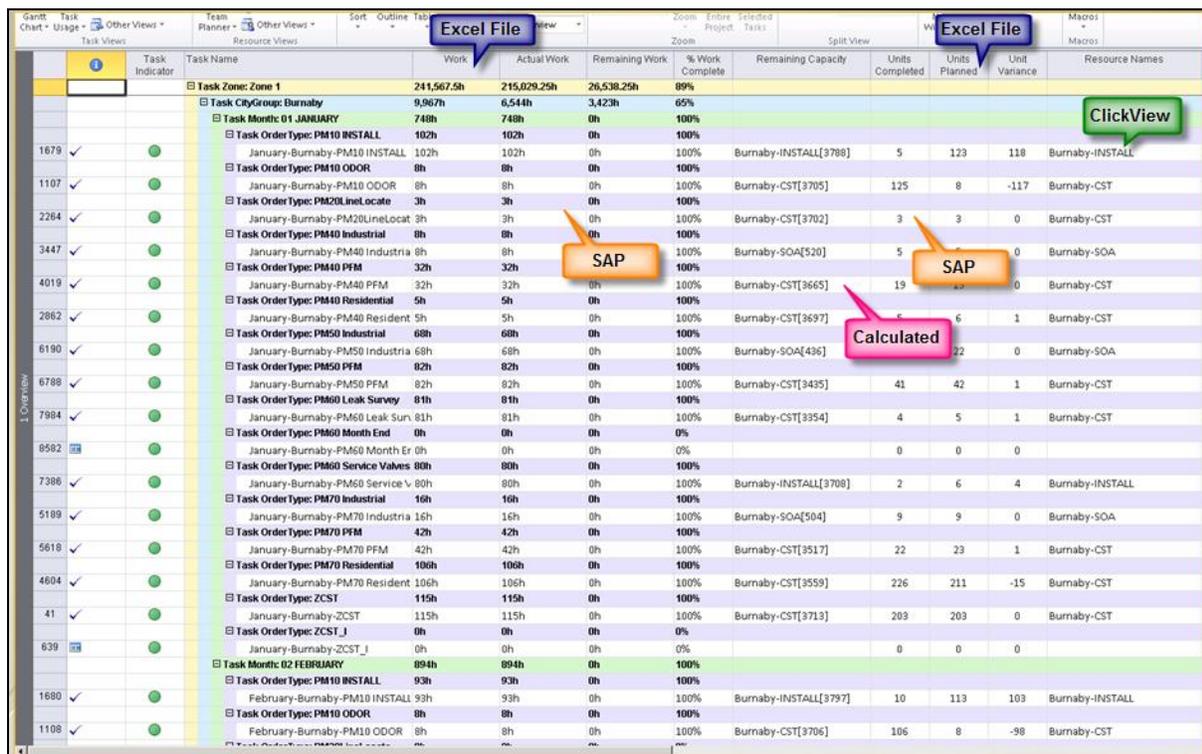
The customer wanted to leverage many of the planning, tracking, and reporting features of Project Professional in reviewing slippage and overages and in comparing planned with actuals.

This report is an example of where the customer reviewed the work of planned and actuals and would review if there were issues of resource over- or under-allocation.

Note the data here came from planning reports, extracts from SAP/CATS and other external systems and then were blended with their planning and forecasting data.

Calculations were performed to help identify and alert with visual graphical indicators if something was over or under plan and then the customer would use Team Planner and other Resource Usage views to review and address these issues.

View #1:



Task Indicator	Task Name	Work	Actual Work	Remaining Work	% Work Complete	Remaining Capacity	Units Completed	Units Planned	Unit Variance	Resource Names
	Task Zone: Zone 1	241,567.5h	215,029.25h	26,538.25h	89%					
	Task CityGroup: Burnaby	9,967h	6,544h	3,423h	65%					
	Task Month: 01 JANUARY	748h	748h	0h	100%					
	Task Order Type: PM10 INSTALL	102h	102h	0h	100%					
1679	January-Burnaby-PM10 INSTALL	102h	102h	0h	100%	Burnaby-INSTALL[3788]	5	123	118	Burnaby-INSTALL
	Task Order Type: PM10 ODOR	8h	8h	0h	100%					
1107	January-Burnaby-PM10 ODOR	8h	8h	0h	100%	Burnaby-CST[3705]	125	8	-117	Burnaby-CST
	Task Order Type: PM20 InletLocat	3h	3h	0h	100%					
2284	January-Burnaby-PM20 InletLocat	3h	3h	0h	100%	Burnaby-CST[3702]	3	3	0	Burnaby-CST
	Task Order Type: PM40 Industrial	0h	0h	0h	100%					
3447	January-Burnaby-PM40 Industrial	8h	8h	0h	100%	Burnaby-SOA[520]	5	0	0	Burnaby-SOA
	Task Order Type: PM40 PFM	32h	32h	0h	100%					
4019	January-Burnaby-PM40 PFM	32h	32h	0h	100%	Burnaby-CST[3665]	19	0	0	Burnaby-CST
	Task Order Type: PM40 Residential	5h	5h	0h	100%					
2082	January-Burnaby-PM40 Residential	5h	5h	0h	100%	Burnaby-CST[3697]	6	6	1	Burnaby-CST
	Task Order Type: PM50 Industrial	68h	68h	0h	100%					
6190	January-Burnaby-PM50 Industrial	68h	68h	0h	100%	Burnaby-SOA[436]	22	0	0	Burnaby-SOA
	Task Order Type: PM50 PFM	82h	82h	0h	100%					
6788	January-Burnaby-PM50 PFM	82h	82h	0h	100%	Burnaby-CST[3435]	41	42	1	Burnaby-CST
	Task Order Type: PM60 Leak Survey	81h	81h	0h	100%					
7984	January-Burnaby-PM60 Leak Sur.	81h	81h	0h	100%	Burnaby-CST[3354]	4	5	1	Burnaby-CST
	Task Order Type: PM60 Month End	0h	0h	0h	0%					
9582	January-Burnaby-PM60 Month Er	0h	0h	0h	0%		0	0	0	
	Task Order Type: PM60 Service Valves	80h	80h	0h	100%					
7386	January-Burnaby-PM60 Service V	80h	80h	0h	100%	Burnaby-INSTALL[3708]	2	6	4	Burnaby-INSTALL
	Task Order Type: PM70 Industrial	16h	16h	0h	100%					
5189	January-Burnaby-PM70 Industrial	16h	16h	0h	100%	Burnaby-SOA[504]	9	9	0	Burnaby-SOA
	Task Order Type: PM70 PFM	42h	42h	0h	100%					
5618	January-Burnaby-PM70 PFM	42h	42h	0h	100%	Burnaby-CST[3517]	22	23	1	Burnaby-CST
	Task Order Type: PM70 Residential	106h	106h	0h	100%					
4604	January-Burnaby-PM70 Resident	106h	106h	0h	100%	Burnaby-CST[3559]	226	211	-15	Burnaby-CST
	Task Order Type: ZCST	115h	115h	0h	100%					
41	January-Burnaby-ZCST	115h	115h	0h	100%	Burnaby-CST[3713]	203	203	0	Burnaby-CST
	Task Order Type: ZCST_I	0h	0h	0h	0%					
639	January-Burnaby-ZCST_I	0h	0h	0h	0%		0	0	0	
	Task Month: 02 FEBRUARY	894h	894h	0h	100%					
	Task Order Type: PM10 INSTALL	93h	93h	0h	100%					
1680	February-Burnaby-PM10 INSTALL	93h	93h	0h	100%	Burnaby-INSTALL[3797]	10	113	103	Burnaby-INSTALL
	Task Order Type: PM10 ODOR	8h	8h	0h	100%					
1108	February-Burnaby-PM10 ODOR	8h	8h	0h	100%	Burnaby-CST[3706]	106	8	-98	Burnaby-CST

Figure 4 – Example of Task Planning / Usage View

It is important to note that the customer used all the standard views in Project—Gantt, Calendar, Resource and Task Usage—but chose also to create some custom views that emphasized key groupings and filters related to their organizational planning.

The 99 levels of “Undo” were tested, as the customer would do complex “What-If” modeling to resolve different resource scenarios before publishing the changes back into Project Server.

View #2:

Task Indicator	Task Name	Work	Actual Work	Remaining Work	% Work Complete	Remaining Capacity	Units Completed	Units Planned	Unit Variance	Task Zone	Task CityGroup	Task OrderType
	Resource Names: No Value	302,311.5h	289,369.5h	12,942h	95%							
	Resource Names: 100 Mile House-CST	666h	416h	250h	62%							
	Task Month: 01 JANUARY	60h	60h	0h	100%							
	Task Order Type: PM10 ODOR	1h	1h	0h	100%							
✓	January-100 Mile House-PM10 ODO	1h	1h	0h	100%	100 Mile House-CST[243]	10	1	-9	Zone 4	100 Mile House	PM10 ODOR
	Task Order Type: PM40 PFM	2h	2h	0h	100%							
✓	January-100 Mile House-PM40 PFM	2h	2h	0h	100%	100 Mile House-CST[241]	1	1	0	Zone 4	100 Mile House	PM40 PFM
	Task Order Type: PM50 PFM	6h	6h	0h	100%							
✓	January-100 Mile House-PM50 PFM	6h	6h	0h	100%	100 Mile House-CST[209]	3	3	0	Zone 4	100 Mile House	PM50 PFM
	Task Order Type: PM60 Month End	5h	5h	0h	100%							
✓	January-100 Mile House-PM60 Mon	5h	5h	0h	100%	Calculated 304				Zone 4	100 Mile House	PM60 Month End
	Task Order Type: PM70 PFM	4h	4h	0h	100%							
✓	January-100 Mile House-PM70 PFM	4h	4h	0h	100%	100 Mile House-CST[215]	2	2	0	Zone 4	100 Mile House	PM70 PFM
	Task Order Type: PM70 Residential	22h	22h	0h	100%							
✓	January-100 Mile House-PM70 Resi	22h	22h	0h	100%	100 Mile House-CST[219]	44	44	0	Zone 4	100 Mile House	PM70 Residential
	Task Order Type: ZCST	20h	20h	0h	100%							
✓	January-100 Mile House-ZCST	20h	20h	0h	100%	100 Mile House-CST[244]	49	49	0	Zone 4	100 Mile House	ZCST
	Task Month: 02 FEBRUARY	54h	54h	0h	100%							
	Task Order Type: PM60 Month End	5h	5h	0h	100%							
✓	February-100 Mile House-PM60 Mo	5h	5h	0h	100%	100 Mile House-CST[210]	10	10	0	Zone 4	100 Mile House	PM60 Month End
	Task Order Type: PM70 PFM	8h	8h	0h	100%							
✓	February-100 Mile House-PM70 PFM	8h	8h	0h	100%	100 Mile House-CST[215]	4	4	0	Zone 4	100 Mile House	PM70 PFM
	Task Order Type: PM70 Residential	16h	16h	0h	100%							
✓	February-100 Mile House-PM70 Res	16h	16h	0h	100%	100 Mile House-CST[223]	32	32	0	Zone 4	100 Mile House	PM70 Residential
	Task Order Type: ZCST	25h	25h	0h	100%							
✓	February-100 Mile House-ZCST	25h	25h	0h	100%	100 Mile House-CST[239]	57	57	0	Zone 4	100 Mile House	ZCST
	Task Month: 03 MARCH	69h	53h	16h	76%							
	Task Order Type: PM10 ODOR	1h	1h	0h	100%							
✓	March-100 Mile House-PM10 ODOR	1h	1h	0h	100%	100 Mile House-CST[241]	6	1	-5	Zone 4	100 Mile House	PM10 ODOR
	Task Order Type: PM40 Residential	1h	1h	0h	100%							
✓	March-100 Mile House-PM40 Residi	1h	1h	0h	100%	100 Mile House-CST[240]	1	1	0	Zone 4	100 Mile House	PM40 Residential
	Task Order Type: PM60 Leak Survey	16h	0h	16h	0%							
✓	March-100 Mile House-PM60 Leak S	16h	0h	16h	0%	100 Mile House-CST[200]	0	2	2	Zone 4	100 Mile House	PM60 Leak Survey
	Task Order Type: PM60 Month End	5h	5h	0h	100%							
✓	March-100 Mile House-PM60 Mont	5h	5h	0h	100%	100 Mile House-CST[195]	10	10	0	Zone 4	100 Mile House	PM60 Month End
	Task Order Type: PM70 PFM	8h	8h	0h	100%							
✓	March-100 Mile House-PM70 PFM	8h	8h	0h	100%	100 Mile House-CST[216]	4	4	0	Zone 4	100 Mile House	PM70 PFM

Figure 5 – Example of Resource Assignments / Planning & Tracking Usage

Resource planning was the primary driver, and having all consolidated data in Project Server (for the Resource Analysis and other PerformancePoint and Excel Services views) was helpful for senior management to review.

The resource planners still preferred Project Professional for their planning and forecasting needs. There are additional views, but due to customer confidentiality, we were not allowed to display more.

View #3:

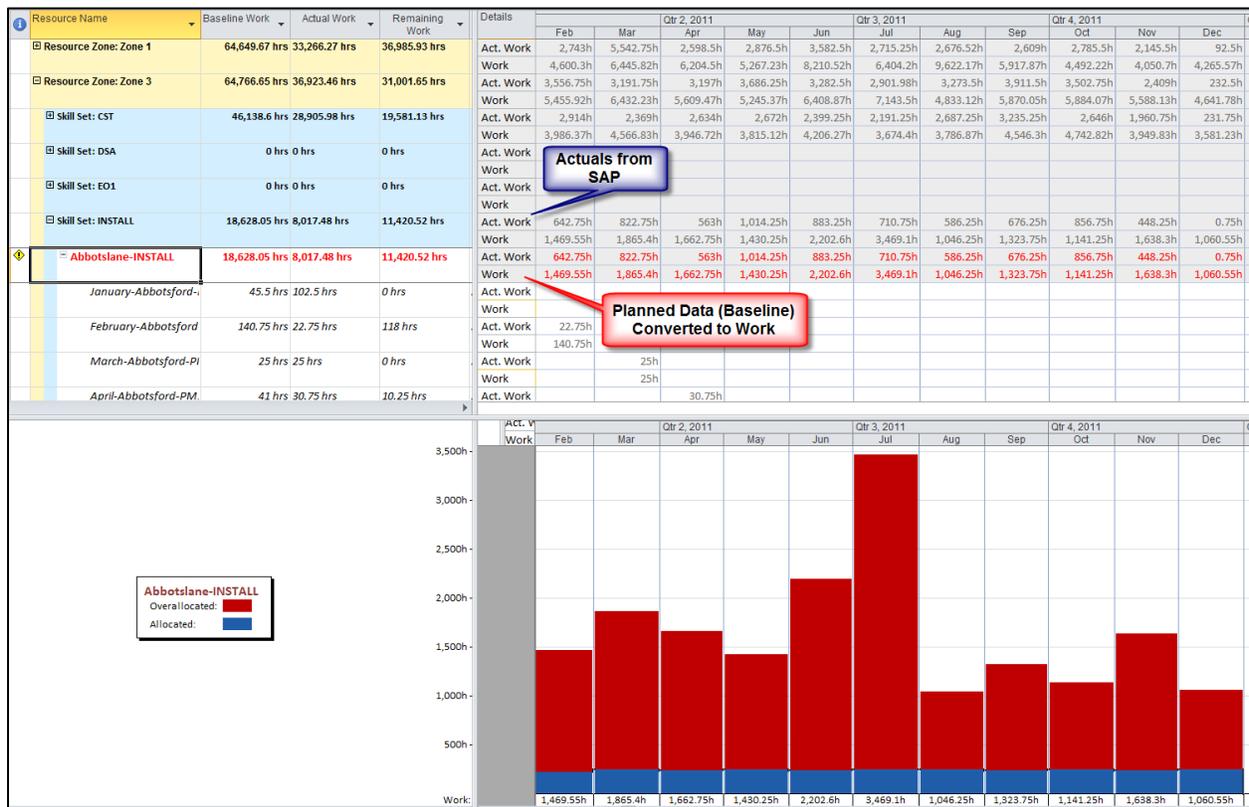


Figure 6 – Example of Resource Baseline to Actuals / Planning and Forecasting

Customer Outcome and Solution Benefits

In general the customer benefits were realized in every touch point from planning to forecasting and reviewing actuals. What used to be manual spreadsheet reviews that came only when a report was requested, pulled out of a system and then manually compared between different spreadsheets with dissimilar layouts, now was integrated, automated, and visually and graphically displayed.

Here are some of the high level outcomes that this project achieved. No doubt if you or your organization uses this approach, you may see similar capabilities and results with SAP data integrated into Project Server, SharePoint Server, and Project Professional.

Outcomes:

The customer had set initial targets for the project. Not only did it exceed expectations, but the the resource planners were able to customize and play with both Microsoft Project Web App (PWA) and Project Professional, and they were able to re-prioritize and re-allocate resources to work on other tasks in managing their work crews.

Here are some of the final outcomes that the Advisicon SAP Resource-to-Actuals Connector delivered:

1. The final solution is automated and runs nightly, weekly or is triggered by data refresh.
2. End users model weekly actuals, planned and review scenarios to change their forecasting and planning.
3. Completely scenario-based with 99 levels of undo and archive and back up and localization (taking the file offline for working meetings).
4. Performance-based reporting using features of Project Server and SharePoint Server together.
5. Time and cost invested was less than it took for the steering committee to define, review other PPM solution options (SAP, CA Clarity, and HP).
6. Project Professional enabled end users to perform real-time “what if” planning and (with a little training) enabled the resource planners and schedulers to create their own filtering, grouping, and reporting with the standard features provided by PPM tools from Microsoft.

Solution Benefits:

The customer was extremely pleased and was able to provide good feedback and see immediate return on investment (ROI) from the connected code module and automation / integration we provided for them.

Below is a list of metrics that really emphasized the value of utilizing Project Server, SharePoint Server, and Project Professional together.

1. Resource Planners time reduced by 50%, allowing for additional work on forecasting and growing the business.
2. Reduced time to analysis of actual work performed by resources from weeks to daily impact analysis as needed, enabling the ability to review work team performance.
3. Project Server enabled what-if scenarios with no additional costs (other ERP modules had significant costs associated with adding, removing and utilizing forecast analysis).
4. The process eliminated the 80% manual effort in building and collecting the reporting information, and it re-allocated time for resource planners and program coordinators to analyze and address work-related activities.
5. The customer loves the Project Professional 2010 interface that allows them to build grouping, views, and reports in minutes and respond to senior management's need for graphical reporting.
6. No more manual spreadsheet reporting and accuracy in planning increased, while errors in forecasting were reduced by over 90%.
7. The solution integration savings in licensing costs from other products used to achieve the same solution saved the company more in the first year than the entire projects costs, which included training in Project Professional, SharePoint Server, and Project Server.

Integration Options with SAP

While Advisicon has created a customizable integration module for SAP with Project Server, it is important to also highlight other good partners that have created solutions for this community of practice as well.

Third-Party Solutions:

As Project Server is gaining visibility as an enterprise application and a key Project Portfolio Management (PPM) solution within companies, customers are realizing that it needs to integrate with existing systems, starting typically with Enterprise Resource Planning (ERP) systems such as SAP, Oracle, and PeopleSoft.

In addition to the customer solution outlined in this paper, there are third-party provider solutions that also enable the bidirectional data exchange between Microsoft Project Server and SAP. With its extensive checking mechanisms, these “gateway” software interfaces ensure the complete consistency of all mapped data in the participating systems.

Two long-time Microsoft Project Server partners with SAP connectors are listed below:

- [Campana-Schott: CS Connect](#)
- [The Project Group \(TPG\): PSLink](#)

Refer to the Microsoft Project solutions page for more partner LOB solutions:

<http://www.microsoft.com/project/en-us/solutions.aspx>.

Other Resources to check out:

Here are other resources if you want to build your own connector:

1. [BizTalk Server](#) is the integration and connectivity server solution from Microsoft. BizTalk Server 2010 provides a solution that allows organizations to easily connect disparate systems. With over twenty-five multi-platform adapters and a robust messaging infrastructure, BizTalk Server provides connectivity between core systems both inside and outside your organization.
2. [Project 2010 Software Development Kit \(SDK\)](#) contains documentation, code samples, how-to articles, and programming references to help customize and integrate Project 2010 clients and Microsoft Project Server 2010 with a wide variety of other desktop and business applications for enterprise project management.
3. [Business Connectivity Services overview \(SharePoint Server 2010\)](#)
4. [Microsoft and SAP Alliance](#)

Key Summary Points

This solution was an example of recent and attainable approaches that Advisicon has used to help customers leverage to get more out of their Project Server solution. It is important to understand that cost-effective and ease-of-use solutions like Project Server and Project Professional help enable good visibility and planning for project organizations. Microsoft Project Server 2010 aids organizations in making better Project Portfolio Management (PPM) capacity-planning decisions.

This is not a unique situation. The Integration of Microsoft Project Server and SAP and other ERP solutions is fast becoming a common scenario with Project Server customers, world-wide. Please note that Project Server 2010 offers native integration with Microsoft [Dynamics SL](#) and [Dynamics AX](#). The need to address resource forecasting and blending actuals and HR systems information with scheduled work is in fact a growing need, given the need to do a better job of managing resources these days, across the enterprise.

ERP systems like SAP and Microsoft Dynamics are commonly the plan-of-record for project actuals. However, Project Offices or Project Management Organizations are commonly leveraging the Enterprise PPM (Like Project Server 2010) to do planning, forecasting, and addressing in real time the issues that are associated with work and resource management.

The following key summary points are highlighted here to remind you of some of the vital considerations that were presented in this white paper / customer success story.

- These solutions work for systems other than SAP, including other ERP vendors like Microsoft, Oracle, Sage, or JD Edwards, essentially anything that uses a relational database back-end.
- Project Server 2010 together with existing ERP or legacy systems provides a cost-effective and scalable solution that maximizes the reporting capabilities of resource and Demand Management reporting.
- Whether you purchase a pre-built module or (due to complexity of SAP and its configuration for any organization) it is better to apply a customized integration with Project Server, it is possible and both time- and cost-effective.
- The pitfalls and solution path identified in this paper can help organizations quickly adopt a Project Server 2010 environment without giving up or doing a cutover from existing and legacy systems. This approach enables the first steps and quick ROI for organizations that have smaller budgets or want to showcase quickly the power of Project Server and Project Desktop 2010.
- With integration with ERP systems and Project Server, it continues to be expandable for Business Intelligence Reporting in SharePoint Server and the rich environment for Excel Services,

Visio Services, and the continuing growing business reporting tool solutions coming out for the Microsoft Project Server/SharePoint Server environment.

Glossary

Enterprise Project Management (EPM) – The methods, tools, and processes to not only plan and track an existing set of projects, but to create a portfolio (per budget size, per calendar year, per budget year, per business line, etc.) of existing and future (demand) projects. This is also called Project Portfolio Management (see also PPM). EPM helps organizations gain visibility and control across all work, enhancing decision-making, improving alignment with business strategy, maximizing resource utilization, and enhancing project execution to optimize ROI.

Line of Business (LOB) – A set of one or more highly related products which service a particular customer transaction or business need (e.g. Sales, Marketing, Finance, Customer support are all LOB's in a company).

Line of Business Applications (LOB Apps) – Critical computer applications that are vital to running an enterprise (e.g. accounting, supply chain management, and resource planning applications). LOB applications are usually large applications that contain a number of integrated capabilities and are connected to a database management system.

Project Portfolio Management (PPM) – A recently adopted standard industry term used to describe the alignment of an organization's software, portfolios and projects for analysis and collaboration. PPM streamlines and optimizes management activities to facilitate and fulfill successful organizational, business, and technical objectives.

Project Server Interface (PSI) – A set of Web services built on the Microsoft .NET Framework 3.5 and the Windows Communication Foundation (WCF). The PSI, with the Project Server Eventing Service, exposes the functionality and data that developers can use to extend Project Server and to integrate other applications with Project Server.

SAP - A German software corporation that makes enterprise software to manage business operations and customer relations. Headquartered in Walldorf, Baden-Württemberg, with regional offices around the world, SAP is a market leader in enterprise application software.

ClickSoftware - A provider of automated workforce management and optimization solutions of field service business. Founded by Dr. Moshe BenBassat, a former university professor, ClickSoftware has its roots in academia and is used throughout dispatch and crew scheduling organizations.

References

Microsoft Project 2010 Resources:

Product information

- Project 2010 product site: <http://www.microsoft.com/project>
- Project Team Blog: <http://blogs.msdn.com/project>
- Case Studies: <http://www.microsoft.com/project/en/us/customer-success.aspx>
- White papers: <http://www.microsoft.com/project/en/us/articles-white-papers.aspx>

End-User Product Help

- Project 2010 Help <http://office2010.microsoft.com/project-help>
- Project 2010 Help <http://office2010.microsoft.com/project-server-help>

Interactive content – Videos & Sessions & Webcasts

- <http://www.microsoft.com/showcase/en/US/channels/microsoftproject>
- <http://www.microsoft.com/events/series/epm.aspx>

Project Professional 2010 and Project 2010 Demo Image:

- Download: <http://go.microsoft.com/?linkid=9713956>
- Hosted Virtual Lab: <http://go.microsoft.com/?linkid=9713654>

IT Professional related – TechNet

- Tech Center: <http://technet.microsoft.com/ProjectServer>
- Admin Blog: <http://blogs.technet.com/projectadministration>

Developer related – MSDN

- Developer center: <http://msdn.microsoft.com/Project>
- Programmability blog: http://blogs.msdn.com/project_programmability

Got Questions? Search or ask in the official Microsoft Forums!

- <http://social.msdn.microsoft.com/Forums/en-US/category/projectserver2010,projectprofessional2010/>

SharePoint 2010 Products

- <http://sharepoint.microsoft.com>

Company Information

Advisicon is a Microsoft Gold Certified Project Partner and Active Member of the PPM community providing training, installation, configuration, and support for applications surrounding Project, Program and Portfolio Management (like Project Server, SharePoint Server). Advisicon has offices around the US and Latin America supporting customers world-wide.

The A-Team have been helping companies implement PMOs and leverage and automate technology between systems for over 20 years for customers like Nike, Intel, Hewlett Packard, Bank Of America, and Scotia Bank, and it is proud to share this example of integration of Project Server with SAP/CATS.

For additional information, please visit:

- Home Page – www.Advisicon.com
- Case Studies – http://www.advisicon.com/case_studies/case_study_SAP.htm
- BLOG – www.Advisiconblog.com

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