

## Business Matters - Whitepaper



## Integrating Project Schedule & Resources

# @ h o k †

By Ted Barth, Managing Partner BNW Manufacturing Associates LLC

## Introduction:

When project driven organizations have multiple projects competing for the same resources:

- This environment defines one of several major categories (which also is the most common type of complexity in US Industry today) of a complex program management environment
- This is the time for those organizations who have thrived on Excel spreadsheets for planning & tracking to exit this methodology and use MS Project – which has all the capability to handle all aspects of complex PM environments with only 1/3 the effort of spreadsheet techniques.

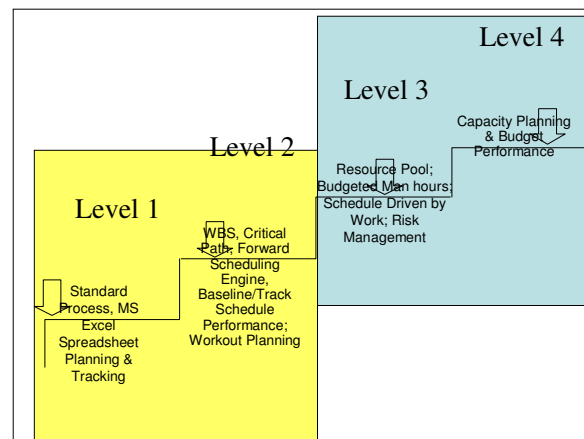
The goal of integrating schedules and resources is to have MS Project do the synchronization of using resource requirements to drive the scheduling engine (see Forward Scheduling Engine Whitepaper). This can be accomplished by using scheduled tasks, loading them with work from the resources to produce a resource requirements time phased schedule. In order to have Resource Capacity Management capability the capacity of the resources must also be established. Both time phased resource requirements schedule and resource capacity can be easily developed in MS Project by following the approach outlined in this whitepaper.

Results of this integration approach will be:

- A forecast of time phased work required by the resources to meet the schedule
- An independent forecast of time phased capacity of the resources that are available for the work that has to be performed.
- Provide an intermediate and long term Capacity Management tool where management can compare monthly forecasts of resource requirements and resource capacity and make adjustments to manage schedule, work, and—if required---the cost of work

## Organizational Progression up the Project Management Maturity Ladder:

In the Forward Scheduling Engine whitepaper the project management approach of the methodology and benefits of moving from PMM Level 1 Spreadsheet planning to utilizing PMM Level 2 MS Project forward scheduling engine was outlined. The benefit is that MS Project can easily produce a “forward scheduling forecast” that MS Excel spreadsheets cannot perform easily. Most organizations falsely believe that their spreadsheet planning and tracking



# Integrating Project Schedule & Resources Whitepaper

By Ted Barth, Managing Partner BNW Manufacturing Associates LLC

methodology will produce a true “forecast”. This step toward “forecasting” (MS Project) versus “tracking” (MS Excel) is the entire basis for organizations to progress up the PM Maturity ladder.

This progression from PMM Level 1 Standard Process with Spreadsheet Planning and tracking and moving to PMM Level 2 MS Project forward scheduling, critical path, baseline and tracking is outlined in yellow on adjacent diagram--- these were covered in Forward Scheduling Engine whitepaper. The integration of schedules and resources covered in this whitepaper is outlined in blue—PMM Level 3 and PMM Level 4. PMM Level 2 MS Project critical path, baseline and track is a prerequisite to integrating schedule and resources--- because of PMM level two’s ability to forecast time phased schedule and work.

## **Building Project Work Requirements:**

The first step in the integration of schedule and work is PMM Level 3—building project work requirements. The concept is simple—once the organization has a forward schedule forecast, “assigning” resources to the tasks in that schedule forecast allows the time phased schedule to “carry” the work (in man hours) requirements of every resource with those time phased tasks-----producing time phased project work requirements.

In order to build the project work requirements the user should use the three standard tools in MS Project 2007 that allows these calculations to take place—1. ) resource calendars; 2. ) generic resources; and 3. ) “assignments” of the generic resources to the tasks in the project schedules. These activities are all developed at PMM Level 3 in the diagram.

Resource calendars are unique alternative calendars established for generic resources—they represent a company holiday calendar with alterative weekly work schedules (regular 40 hours per week or overtime schedules) that can be assigned to each generic resource (a generic resource is a job description type of resource that represents a skill set that the resource has the skill to perform).

Generic resources can be set up in the Resource Sheet and is nothing more than a list of all resources that could be utilized on any of the multiple projects. Each generic resource can have a unique resource work calendar assigned to it. The resource work calendar will affect the schedule since it tells MS Project over how many hours per week to schedule the work that will be assigned to each task.

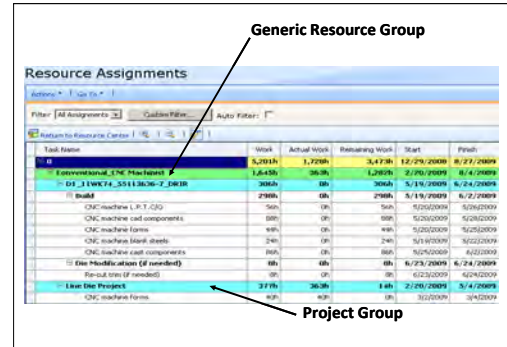
“Assignments” are the assigning of a generic resource (with its related resource calendar) to each task with work. Once an assignment of a resource is made to a task, the work formula (work = resource units x duration) will then drive the forward scheduling engine.

# Integrating Project Schedule & Resources Whitepaper

By Ted Barth, Managing Partner BNW Manufacturing Associates LLC

The combination of resource calendars, generic resources, and assignments then produces time phased project resource requirements required for the project—PMM Level 3 in blue in the diagram. These requirements tells MS Project exactly how much work is required and which work schedule applies to complete the project on time--- they have nothing to do with and are totally independent of capacity of those resources.

Consolidation of all resource requirements can provide “assignment” views by resource department or group as shown in the adjacent diagram. Consolidation can be done manually or utilizing an enterprise technology (see BNW Whitepaper “Enterprise Project Management Technology”).

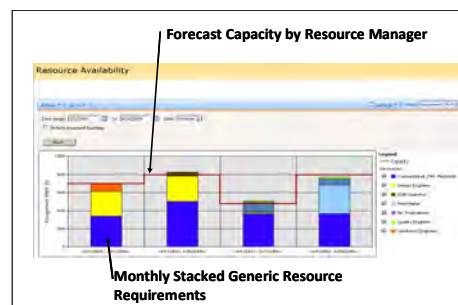


Now that the user has project schedule resource requirements, company management needs the resource capacity information in order to allow them to balance planned capacity to the defined and timephased project requirements.

## Building Resource Capacity:

Capacity of the generic resources can be setup and managed in MS Project 2007. The user will need only two things—timephased forcecount forecast and a resource calendar. The timephased forecast forecast resides in MS Project 2007 and is called Resource Availability Profile and allows each resource manager to supply the Project Management Office a forcecount forecast for any and all time period(s) required. The resource calendar has already been created and assigned to the respective generic resource in “Building Project Work Requirements” section above. MS Project uses the forecast forecast and the resource calendar to calculate the time phased capacity in man hours. Once this step is implemented the fundamental pieces are in place for PMM Level 4 in turquoise in the diagram.

Consolidation of the capacity forecast along with the resource requirements above can be done resulting a table and graph shown in the adjacent diagram. Again, consolidation can be done manually or utilizing an enterprise technology (see BNW Whitepaper “Enterprise Project Management Technology”).



## Utilizing Resource Capacity Management Information:

Once the project work requirements are established, MS Project will forecast time phased work (in man hours) of each project. When the resource capacity of each

# Integrating Project Schedule & Resources Whitepaper

By Ted Barth, Managing Partner BNW Manufacturing Associates LLC

generic resource is established, MS Project will calculate the time phased capacity of each project. The ability of a project to stay on schedule requires the users (Project Managers and Resource Managers) to plan on an intermediate to long term (defined as one to four/ six months planning horizon depending on the project life cycle and the capacity planning needs of the organization) how to balance the resource capacity to meet the project resource requirements. Over capacity time periods allows a project to move ahead of schedule and under capacity periods cause a project to slip. When the capacity of the resources can be adjusted to meet the time phased project requirements, one major constraint--- resource capacity---has been met to allow the project manager to meet his/her project schedule. Other constraints on project schedule performance--- primarily queues and delays not caused by the lack of adequate resource capacity--- can also cause project slippage. This is the subject of another whitepaper.

In a multiple project environment with multiple generic resources there are two fundamental technology means of achieving the ultimate goal of PMM Level 3 & 4--- Resource Capacity Management.

The most basic technology method is to use MS Project Standard 2007 which runs on individual computer hard drives, and produces project work requirements and resource capacity information from each individual project and is saved on each project manager's hard drive independent of each other---the project resource and resource capacity data from each project file is then transferred/ exported and consolidated into a single spreadsheet. This allows "multiple projects competing for the same resources" to be consolidated into a single spreadsheet that provides a time phased summary of both project resource requirements and resource capacity---allowing the organization to perform resource capacity management.

Since the most basic technology method described above can at the consolidation phase be considered laborious (note that this is considerably less laborious than using MS Excel planning and tracking spreadsheets without MS Project), there is a more automated method---using the most advanced technology. This method requires the use of MS Project 2007 Professional and Project Server technology. This technology is described in "Enterprise Project Management Technology" whitepaper. Fundamentally it allows the user to use the same approaches described above in "Build Project Resource Requirements" and "Build Resource Capacity" but allows it to be done in a single database that shares all data from all the multiple projects and contains all the resource calendars and generic resources in that single database. The end result is that all resource capacity management can be automatically produced and viewed in dashboard view or exported to MS Excel without the extra consolidation step outlined above using MS Project Standard technology version. This technology is described in more detail in the "Enterprise Project Management Technology" whitepaper by BNW Manufacturing Associates.

# Integrating Project Schedule & Resources Whitepaper

By Ted Barth, Managing Partner BNW Manufacturing Associates LLC

## About the Author:

Ted Barth, Managing Partner of BNW Manufacturing Associates is the Past President of the PMI (Project Management Institute) Great Lakes Chapter and Founding Director of the Michigan Huron Valley PMI Chapter and is a Microsoft Partner. BNW has been providing high performance project and program management solutions for clients since 1996. During that period, Mr. Barth has utilized his manufacturing and engineering line management experience – managing seven plants in five states---to assist clients to increase their project and program performance.

Mr. Barth's use of the BNW Project Management Maturity Model is considered one of the most accelerated and ease of adoption approaches in U.S. Industry today. BNW is considered to be a leader in the development of schedule, resource capacity management and cost management use for complex projects and programs. Mr. Barth currently is a guest speaker at PMI chapters and industry groups nationally on these topics.



## Together With You

Your organization will benefit from our team's commitment and hands-on experience. You'll gain a competitive advantage with a manufacturing software solution that delivers end-to-end functionality, low cost of ownership and ease-of-use to meet the complex needs of your manufacturing business. You'll agree that the combination of Infor ERP VISUAL and the BizTech Team is the right choice.

## Your solution choices include:

- ★ Business & ERP Software Systems
- ★ Implementation Planning
- ★ End-User Training
- ★ Best Practice Consulting
- ★ Data Conversion & Importing
- ★ Version Upgrades & Migrations
- ★ Custom Programming
- ★ Disaster Recovery & Business Continuity
- ★ Virtual Workplace
- ★ Computer Network Support

## About BizTech

Founded in 1999, Business Technical Consulting, LLC (BizTech) is dedicated to providing complete Enterprise Resource Planning (ERP) and Information Technology (IT) solutions that deliver long-term benefits to small and mid-sized manufacturing companies.

Like our 500+ clients throughout North America and 4,000 VISUAL customers worldwide, you can rest assured that your projects are in the right hands. BizTech is an Infor ERP VISUAL Channel Partner, a Microsoft Certified Partner, Comptia A+ Certified and a Citrix Authorized Solution Advisor. BizTech offers industry-leading technologies such as Infor, Microsoft, Dell, HP, Citrix, Cisco, Symantec, Sonicwall, ThinPrint, Wyse, Epson, Lexmark, and Xerox.

The BizTech Team has one simple goal: to partner with your company in a joint effort to improve your business processes and increase your profitability.

.....  
**BizTech is your single-source  
Enterprise Resource Planning  
(ERP) software provider.**

With strategic technology solutions and a seasoned implementation team, your company will benefit from centralized accountability, a simplified project plan and the most efficient implementation of Infor ERP VISUAL.