

# An interview with Nils Marstrand

Nils Marstrand is managing director of the Danish IT firm, Marstrand Innovation A/S. He is M. Sc. specialized in Operations Research from DTU and has an MBA from INSEAD. He began his career at Danish shipping giant AP Møller Mærsk. Since 1977, he has run his own firms, offering consulting services and solutions for production planning, supply chain management and project management.

Together with Jan Bonde, Nils developed the planning software, PMSIM, which he sold to Intentia (then Lawson, now Infor) in 1998 (who markets the solution under the name Advanced Production Planner). APP is among the world's most widely used and respected planning and simulation tools for complex production and supply chain planning with more than 400 installations worldwide.

Marstrand Innovation develops the technology for Marstrand Planning Intelligence (MPI). This platform was sold to Maconomy (now Deltek) end of 2009. Marstrand Innovation retains own IP rights. We talked to Nils about the growing trend in the professional services industries towards better resource and project planning.

*Nils, your own career has followed an evolving path, from providing tools for production planning, to solutions for planning people, their time, projects and priorities. Could you explain what you see as some of the key characteristics of this evolution?*

The early software solutions in the 1960s were made to support material requirements planning in production and the warehouse. In parallel, project planning tools were developed based on the Program Evaluation and Review Technique (PERT) planning method, which is a network model (developed by the U.S. Navy) that allows for randomness in activity completion time. The private sector increasingly employed PERT, which involves the following basic steps:

1. Identify the specific activities and milestones
2. Determine the proper sequence of the activities.
3. Construct a network diagram
4. Estimate the time required for each activity.
5. Determine the *critical* path adjusting the timing of all activities to the critical path.
6. Update the PERT chart as the project progresses.

You find this method in all project planning tools, such as Microsoft Project (MPP). The method does not directly include resource capacity constraints.

In fact, our fundamental idea when we first started developing PMSIM in 1979 was to use PERT planning philosophy to optimize manufacturing planning; linking production processes (routings) and material requirements (BOM, bill of materials) into synchronized networks and adding resource planning for machines, equipment and people across the many thousands of orders and tasks you are typically dealing with in industrial manufacturing. In this way we could find the best balance between shortest possible lead time, best possible utilization of capacity bottlenecks and minimized stock levels of materials, manufactured, as well as purchased.

The other fundamental idea was to include all planning horizons in one system, from operational, to tactical, and then, strategic planning, to give full flexibility and avoid the difficulty of transferring data between separate systems.

Now, with Planning Intelligence, we are taking essential elements and experiences from our many years with advanced production planning and applying them to what I call a “multi-project people planning solution” that facilitates operational, tactical and strategic planning.

*Could you explain what you mean by these three levels of planning?*

Operational planning involves using the resources you already have to reach your goal, a “make do with what we have” approach. The strategic approach is where you have time to acquire the needed resources. Tactical planning is a combination of the two, where you plan with the resources you have, but leave room for change, for perhaps hiring more resources through outsourcing, and so on.

*What are some of the general trends you see in the professional services sector?*

First of all, industrialization is coming to the services sector, with a focus on transparency, quality and productivity. You will see a transfer of experience and methods from manufacturing, such as the concepts from Lean, BPR, Six Sigma, and so on. We see a standardization of repetitive processes, the model perfected by Ford with the assembly line. This leads to investments in technology, human resources and IT solutions, including planning. These investments are best justified in big organizations, from which follows “economy of scale” strategies, with acquisitions and global thinking

The most successful professional services organizations (PSOs) today are those which divide up projects into standard elements or components and combine the processes into work flows using Lean principles. The goal is to eliminate all waste including unnecessary transfer of responsibility securing the short lead times.

A good example of this is ISS, a huge Danish company that employs almost 400,000 people worldwide. (ISS provides facility services to both private and public offices, including cleaning, catering and building maintenance). When ISS makes an estimate for a new customer, they price everything separately – for example, how many bathrooms and offices there are, how many of their people will be needed to clean the company’s premises. They can give their customers a precise estimate and control projects better. They employ a set of business processes across projects, which lead to more professionalism. They can control projects better and meet the budgets and time estimates they give to their customers.

*What are the current challenges to better project and people planning in PSOs?*

Most companies still have a project by project planning culture, where people plan for their own projects in complete isolation asking for resources. The most widely used planning tools currently in use are Microsoft Project, Excel, customized Excel spread sheets, and so on. These tools are generally not very good at taking a global view when you have many projects and activities competing for resources. This makes it very hard for the multi project company to prioritize the use of resources. The result is often firefighting, stress and temporarily idle resources and that decisions about change of capacity, e.g. training and hiring, are taken too late.

Another challenge is getting people to record information, such as hours spent on a project, both on time and accurately. You have to make this easy and quick for people. As processes are gradually becoming more standardized and predictable it is important to systematically compare the budget and plan with the

actual recorded execution. This is valuable input for systematic improvement of productivity and profitability.

As well, when you mention “resource planning” to folks, my guess is that a lot of people will balk at the idea; They will say, “You can’t plan *me!* I don’t want to be seen as just a production unit!” People don’t want it to seem as though they are treated as a component of a machine - they *are* unique with their individual skills and outlooks on life and, to some extent, unpredictable.

The challenge is to provide them with a consistent overview and clear information about assignments and performance expectations and give them the opportunity to react when demands are unrealistic. This is the way to avoid stress.

*What do you see as some of the key elements a CRP solution must have, so that people can use it effectively?*

The solution needs to support a flexible, user-friendly dialog with the planner, where he can suggest priorities and immediately see the consequences and compare them with other options. In many ways resource planning is like laying a puzzle, achieving a balance. A people planner needs to assume in its set-up that the information entered into it will be more fluid than the precise production data you would find in a production planning tool. It needs to effectively support the interests of both the project manager and the resource manager, the typical organizational setup in project driven organizations.

Furthermore, the solution must be designed to make it easy and straight-forward for people to get to the relevant data. There should be plenty of drill-down options, but it has to be presented in a way so that you are directed to the important information. In a sense, the solution has to guide the user to where they must look for the important information – and where and how they should enter information. You might call it “project intelligence”. We plan in our future solutions to include the score card method, where the solution automatically analyzes a project and its resources and directly presents imbalances in the plan to the planner.

The tremendous number crunching, graphical representation and communication power of the PC is our big opportunity. This is the ideal tool for the planner who wants to avoid the tedious work of calculation and manual placement of activities on planning boards, or maintaining data in complex spread sheets.

*If you introduce a new planning tool, people are going to ask, “What’s in it for me?” How can management sell CRP to its people?*

Essentially, resource planning is about giving all people in the firm an overview of their situation, so management can start with that point. With CRP, your firm gets a virtual neutral “blackboard”, which simply reflects the realities of the company’s situation. People can see things as they are, which in turn makes consequence calculation at the start and during a project more accurate. CRP can ultimately provide a more balanced work schedule, and who doesn’t want that? It can help everyone handle the unexpected better. There will be more stability and calmness at work, and therefore, better decisions will be made. That is a strong argument that I think will convince any employee.

Everybody will be better off, customer service, employees and the company’s profitability.