
# YOUR NETWORK PLANNING CAN BE MORE EFFECTIVE

**Here's a systematic approach to an efficient network plan.**

You have a suspicion that your network planning is less than productive and efficient. But how can you tell?

Chandra Natarajan, Manager at The Pepsi Bottling Company and a specialist in network planning, says that you can ask three questions to determine if there is a problem:

1. Do our network projects take longer than expected?

2. Do we have difficulty communicating our results and getting them accepted?

3. Do we have to go through multiple iterations before operations managers will accept our findings and recommendations?

Another way to determine your effectiveness is to take the Network Planning spot audit developed by Chandra with Richard Muther & Associates (see next page). It's based on 10 considerations important to every network planning project.

## Action steps

If you find that improvement is needed, Chandra Natarajan recommends that you apply Systematic Network Planning (SNP). "It can be easily learned and applied by any network manager, planner or operations research team member" he says. In its simplest form, SNP follows six steps.

**Step 1: Orient the project**

- Write down, circulate and get early agreement on the project's purpose, scope and objectives.
- Understand the problem and the elements to be modeled.
- List all of the issues, expected problems or opportunities which may affect the planning of the network/or its subsequent operation. Then rate their importance and assign them to specific people for resolution.
- Publish a plan and schedule for the project.

**Step 2: Define the variables**

Chandra explains that this one of the most difficult steps in network planning. Before formulating variables into a model and software tool, he recommends:

- Visualizing the lanes and nodes to be modeled with a clear and explicit diagram.
- Identifying and confirming data elements and their sources, in terms of specific information systems, files, records or spreadsheets.
- Publishing relevant constraints.
- Publishing the assumptions list.
- Writing out any formulas or algebraic expressions that will be used.
- Reviewing all documentation of the intended variables with the appropriate people.

**Step 3: Analyze the sensitivities:**

Chandra calls this the credibility-building step. Here, you create a validated baseline by comparing your model results to actual performance of the current network during a recent period. Chandra says that it is good practice to explain in writing the variance in the model results. This will help you and your team to become better modelers by learning from each project.

**Step 4: Create the Scenarios:** The development and presentation of multiple scenarios and plans is central to Systematic Network Planning. There are always two or more courses of action and management will choose more quickly and effectively when selecting from a set of good alternatives.

- Identify potential scenarios that model the problem elements.
- Add or remove variables from the baseline to represent each potential scenario.
- Collect summary statistics for each alternative plan and document the results.

"Always develop two or more alternatives, each with good features," Chandra advises. "Then involve your operating personnel in deciding which one is best."

**Step 5: Evaluate the alternatives:** Evaluate the network plans in a formal way, scoring their performance against a set of weighted factors or considerations – recognizing that lowest cost is only one factor. Common intangible considerations include business risk, ease of implementation, effect on morale of the employees, societal or environmental concerns, image, and capital availability issues.

**Step 6: Detail and Do:** This is the step where details are worked out for the selected plan and then changes are made to the network. To become more effective in future modeling, planners should be involved in implementation. Says Chandra, "It is important to work closely with the operations team and to monitor the effects of the network changes. Be sure to perform a post implementation audit to make sure the model's projected savings were achieved." This helps capture lessons learned for future modeling.

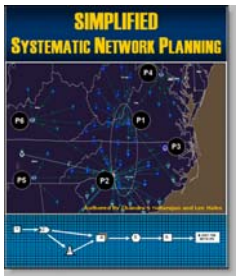
**Software Considerations**

While network planning requires the use of software, Chandra says "Software is only useful after you have the right 'thoughtware'." He mentions that there are many software providers who have made network planning an exciting domain. "With the advancement of computing capability, problems that once were difficult to solve are feasible and easier today." But none of the software teaches or provides a systematic approach to network planning projects. Working with the consulting firm of Richard Muther & Associates, Chandra has developed Systematic Network Planning (SNP) to fill this need and to help planners more effectively apply their software tools.

## NETWORK PLANNING SPOT AUDIT

COURTESY OF CHANDRA NATARAJAN AND RICHARD MUTHER & ASSOCIATES, MARIETTA, GEORGIA. PHONE: 770-859-0161. www.RichardMuther.com

| | EXCELLENT | VERY GOOD | GOOD | FAIR | POOR |
|---|---|---|---|---|---|
| 1. Quick start up on new projects – without confusion on purpose, scope, and approach. | ○ | ○ | ○ | ○ | ○ |
| 2. Finish on time or earlier than expected – without delays, excessive iterations and rework | ○ | ○ | ○ | ○ | ○ |
| 3. Visualization of the network being modeled – with clear and explicit diagrams of lanes and locations. | ○ | ○ | ○ | ○ | ○ |
| 4. Effective communication of model inputs and elements – data sources, assumptions, constraints, model structure. | ○ | ○ | ○ | ○ | ○ |
| 5. Effective documentation of the analysis performed – those not directly involved can see and explain the work. | ○ | ○ | ○ | ○ | ○ |
| 6. Formal evaluation of intangible factors in addition to cost – ease of implementation, business risk, flexibility. | ○ | ○ | ○ | ○ | ○ |
| 7. Involvement of operations personnel – especially in defining and evaluating scenarios and plans. | ○ | ○ | ○ | ○ | ○ |
| 8. Management chooses from multiple scenarios – each of which is a cost-effective course of action. | ○ | ○ | ○ | ○ | ○ |
| 9. Ready acceptance of model outputs by operations – without disbelief, objections, challenges of results | ○ | ○ | ○ | ○ | ○ |
| 10. Accurate results – actual results are close to projected savings. | ○ | ○ | ○ | ○ | ○ |




## FOR MORE INFORMATION

Chandra Natarajan is a Senior Supply Chain Manager at The Pepsi Bottling Group and is the co-author with Lee Hales of the forthcoming booklet: Simplified Systematic Network Planning (pictured at left). He has been a speaker on Manufacturing and Sourcing optimization at several seminars and is also a speaker at the Georgia Tech Logistics & Supply Chain Institute. To learn more about Systematic Network Planning please visit www.RichardMuther.com