

EPICENTRAL

A Newsletter from Epicenter Development Group highlighting ideas that improve organizations

Welcome to Epicenter Development Group's newsletter, EPICentral. The purpose of this newsletter is to highlight fundamental ideas that have helped organizations develop and maintain great manufacturing and service operations. We hope that you find our EPICentral newsletter helpful, and we would welcome your comments on its content.

Function Analysis - A Refocus on a 50-Year-Old Creativity Tool

Perhaps everyone has heard the story about the Russian Astronauts who used a pencil in outer space. The story (actually an urban legend) is that the American team designed a high-tech pen that was capable of writing in zero gravity (at a cost of several million dollars to develop) while the Russians just used a pencil. The point is that the goal was to simply "write information" in space, and the Russians came up with a much simpler (and much less expensive) method for meeting the need/function. This month's article is about Functional Analysis, a tool that can be used to help identify the "pencils" (lower-cost and simpler solutions) when solving problems, redesigning your "product" or improving your process.

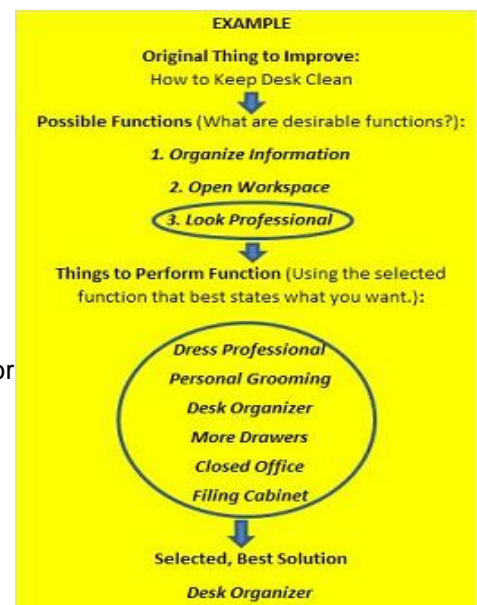
Function Analysis was first used at GE during World War II to evaluate alternatives during a period of limited labor, materials and parts. Essentially, the method is to focus upon a product's or process's function (what something "does" versus what it is) and then brainstorm other ways to achieve the same results. This process tends to lead to a much more robust and creative list of alternatives, because there are typically many ways to get the same result ("101 ways to skin a cat").

Function Analysis Process:

1. **DEFINE** - The first step of the process is to define the desired results in terms of function. This is best done by describing the function using a single verb-noun combination (ex: "heat liquid" or "transport materials").

- The function should be verifiable in that you can tell that it has happened.

- The noun should be measurable. You can't measure "happiness," for example, but you can measure "customer



retention" or "repeat work."

- The verb should be as active as possible. Verbs like "provide" and "monitor" are not as good as "shelter" and "verify."

- Try not to be too specific to the problem being considered because that can lead to the narrowing of the potential solutions. You want to "transport materials" versus "forklift drums."

2. **GENERATE** - Once you have defined the functions, the next step is to brainstorm alternatives that can also be used to meet the requirements (see EPICentral's Brainstorming article <http://www.epicentergroup.com/april-2006-epicentral>).

3. **EVALUATE** - After the brainstorming is complete, the team can now evaluate the alternatives to determine which ones would provide the necessary functions at the lowest cost. Note that there can be primary and secondary functions. Primary functions would be those that absolutely must be met whereas secondary functions are desirables but not necessary.

4. **RECOMMEND** - Finally, the team would present their recommendations for review and approval based upon the completed evaluation.

Considerations:

- Note that this approach can be applied in many different ways from solving problems to product design and redesign, to process improvement. The idea is to focus on what you really want and not how you get there.
- This tool falls under the category of "Value Engineering" which is a systematic approach to evaluating products or services in terms of end-user value.
- In brainstorming, please take into account that the goal would be to brainstorm around the function statements (what are alternative ways to achieve the same function) and not the original problem. Once the brainstorming is complete, you would then evaluate the ideas generated against their ability to solve the original problem.

Next Steps

If you would like more information on this topic or other similar types of tools, please contact Bill Proctor with your request at wproctor@epicentergroup.com or 216-702-0952. You can also find previous issues of EPICentral at [Newsletters](#).

Mr. Proctor also speaks on a variety of problem-solving and system design topics that can help companies significantly increase the success and profitability of their businesses. If you are interested in having Bill speak at one of your upcoming meetings/events or would like more information on any of the speaking topics, please visit [Speaker Services](#) or you can email sales@epicentergroup.com.

Epicenter Development Group is a unique consulting firm that seamlessly integrates the disciplines of Systems Engineering and Organizational Analysis & Development to create practical design solutions to your toughest challenges. It is on the cutting edge of problem-solving solutions and the creator of a unique process called GreenRoom Engineering. This process adds greater value and cost savings for clients as compared to traditional engineering methods.

William Proctor, Epicenter's founder and president, has provided services around the country to more than 100 companies consisting of a variety of organizations; and Epicenter continues to grow as a resource for firms of all sizes.

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