

The Function Wheel

By Jeff Rude

Preface

In the world of the Value Methodology, there are many ideas and opinions for how to best perform both the process as a whole and each of the individual phases. Arguably the most contentious phase to attempt to present ideas is in the Function Analysis phase. This is the phase where we, as practitioners and lovers of the art of value, can tend to diverge and polarize into as many directions and philosophies as there are religions in the world. To preface this discussion, it's necessary to mention two things:

1. **This is an idea at the Verge:** This is a paper based on the result of the mixing of two opposite opinions about both the formation of functions and the use of those functions in a logical manner to help teams to arrive at relevant and unique discussion points. These opinions were discussed in French so some of it may have been lost in the translation.
2. **This is Not a New Idea:** This is something that according to AFAV, and some standards that I was referred to, is nothing new and, in fact, is written into some of the European standard. This being said, it *is* a new idea for me and, I assume for others within SAVE and so I write this paper to present it to you all. It also needs to be mentioned, however, that there will likely be someone who is familiar with the AFAV/EGB standard "Pieuvre" or Octopus who eventually reads this paper and accuses me of bastardizing their tool. To these folks, I agree wholeheartedly, I modified the tool to make it work for me and I invite anyone to again improve upon it with their own expertise.

This paper is meant to be an exploration into another tool, another approach, another opportunity to use our favorite tool, Function Analysis, the one thing that differentiates us as Value practitioners, to improve the experience of our workshops and the output from said workshops. I am writing this in the hopes that some will be so inspired and have the liberty to use this tool within their own workshops that they will be able to, in turn, improve on it. This of course is the best case scenario. Worst case, the three people who actually read this paper will put it down halfway through and take a nap and forget to pick it back up again.

Overview & History

I would like to start off the discussion of the function wheel with a quick explanation of why even call it a Function Wheel in the first place. It may help to go back into the history of where I learned about it and then move into the Function Wheel itself.

About two years ago one of the French business schools I teach at got the bright idea that we should team up and present an extended week Value Class where I would have the opportunity to teach the SAVE standard MOD I and we would combine it into an extended week where an Association Francaise pour l'Analyse de la Valeur (AFAV) certified trainer would teach their Level 1 training along with me. We each had the opportunity to complete our full courses, while the other one watched. For the sake of keeping this paper light, I would like to give you a quick description of the AFAV trainer.

For the sake of this paper the AFAV trainer, I will give him the name Pierre, was a retired veteran of the world of Value Consulting in France. He was around 80 years old and has probably forgotten, as they say, more than I know about value. Having worked in the automotive sector and other manufacturing sectors before moving into independent consulting for his career, he had a lifetimes worth of knowledge and about three times as many opinions on the subject of value. Over the seven days of training, when I was teaching he would sit, listen and comment when necessary to add AFAV factoids. When he was teaching I would do the same. As the week progressed, I listened a whole lot more than I commented, picked up a lot and Pierre, commented a lot and listened less.

Due to a well engrained respect for my elders I took many opportunities to, rather than put down his tools and use of function, to reach out and understand why he said the things that he said and why he did the things that he did within his version of the value process. To put it succinctly, the SAVE standard methodology and that of AFAV is extremely different. In fact, after having spent some time in discussions with Pierre, we decided that the only thing that we do truly have in common was that we followed a methodology that included understanding the project, analyzing its functions, and discovering alternatives to perform those functions. When taken from a non-dogmatic point-of-view, it's really the foundation of value and is really quite a lot to agree upon.

So to keep a long story short, out of this one week conversation, a lot of things were discussed and argued and I have done my best to distill the best of those interactions into a workable tool that will be gentle with our SAVE Function fundamentals sensibilities. To save anyone the stress and the heartache of arguing that the FAST Diagram does everything the Function Wheel does, I will state right now that I agree. In my personal opinion as a fellow Function and FAST Fundamentalist, the FAST Diagram is far superior and, as a side note, the students far preferred the FAST to this method. However, I have since been involved in projects that didn't seem appropriate for FAST due to the relation of the components of the project nor did they seem appropriate for Tabular Function Lists where this Function Wheel has worked quite well.

Positive Attributes of the Function Wheel

- Visually clear interactive connection between the elements of the project and how they interact functionally with the project under study.
- The system offers a directed approach for identifying functions as they relate to the elements.
- The system offers a big-picture view of the project.
- Very quick to assemble. As easy as tabular function with more logic associated to it.

An additional benefit to a function wheel is that it may very well rival the oohs and aahs that come out of the client when they see a multicolor post-it wall. Something about the shape of a well completed complex wheel looks like a fireworks explosion. This also changes the challenge of people thinking in the process diagram flow pattern which is often brought about by the left-right logic path of the FAST Diagram.

Basics of the Function Wheel

The Octopus and the Horned Beast

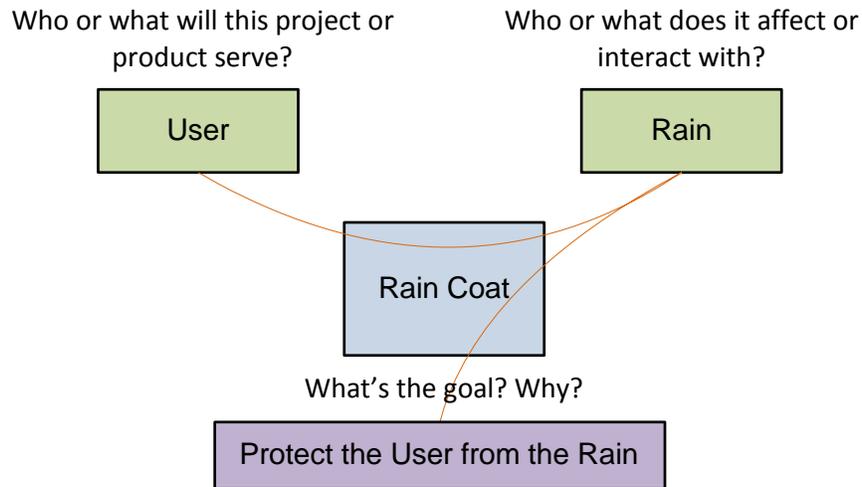
The Function Wheel is a derivation of the French “pieuvre” which translates into Octopus Diagram. In order to populate the Octopus using another tool that is called a “bête a cornes” or Horned Beast Diagram which helps to identify and understand the functions acting on a particular project. These two work hand in hand; one (the Horned Beast) to help identify the functions and elements and then the other (the Octopus) to identify how the functions relate to each other and the project as a whole.

The Horned Beast

Since the majority of this discussion is going to be about the Octopus/Wheel portion of the diagram, I will offer a brief discussion of the Horned Beast diagram as I understand it. I have been told that this is a diagram used regularly in project management, however I had never used it in my own endeavors and had never even heard of it until my fateful meeting with Pierre. The Horned Beast Diagram begins with asking three key questions:

- Who or what will this project or product serve?
- Who or what does it affect or interact with?
- What’s the goal?

Using these three questions, an AFAV practitioner would then create the Horned Beast:



As illustrated, the two elements, derived from the Horned Beast's questions helped to generate a function. Within the creation of the Horned Beast diagram Pierre and I discovered a fundamental difference in our understanding of function. Apparently, within the world of AFAV an idea such as "Protect the User from the Rain" is an acceptable function since it has the verb and a noun. Hours of discussion failed to convince him that this was actually two, three or possibly four really stellar functions built into one not-so-stellar non-function. But rather than laugh at the silly man, it started me to thinking, "One hundred well trained and well experienced Frenchies can't just be stupid... there must be something that can come out of this."

This example of a non-function is a perfect example of how many Subject Matter Expert (SME) team members think who are new to the process and haven't undergone forty hours or more of functional semantics finishing school. So if anything this non-function is a super way to begin the discussion of function. By starting with an idea and playing with it a bit with the team, one of these solid "non-functions" can easily be turned into at least a couple golden nugget functions without having to play a silly semantics game with SMEs. This is especially effective when your SMEs are savants who are insulted by the fact that you are forcing them to work within a Two Word Verb-Noun linguistic boundary.

Not to belabor the Horned Beast concept but once the Elements are laid out visually and we can see their interaction the transition between the discussion of "what is it" and "what does it do" has been much smoother, more enjoyable, and productive for team members. It's important to note that the Horned Beast Diagram concept would also be a time intensive discussion in a typical workshop agenda and so the Function Wheel is my attempt to combine both discussions into a workable and logical tool. Essentially, the Horned Beast diagram is a visual tool to illustrate the fundamental questions listed above.

The Octopus Diagram / Function Wheel

The purpose of the Octopus Diagram is to illustrate the associations of a system and the elements of its environment. These associations are actions of the system and/or one of these environmental elements. The associations are to be described by an infinitive verb followed by one or more complementary nouns. Rather than going into an exercise in translation, I will admit right now that this is the point where my mind wandered away from the finer points of the Octopus and ran into how I could actually use what I was being taught.

The Function Wheel is an attempt to repurpose and clearly explain what appears to be a useful tool for the French and make it palatable for our brand of function identification and analysis. The basic premise behind the Function Wheel is to illustrate the relationship between the elements that act with or against a project, the functions of those interactions, and the project itself. Additionally, it identifies functional interactions between functions. I just confused myself writing this so I will list it out:

1. Identifies project elements or Factors
2. Identifies interactions between the elements and the project using function
3. Identifies possible interactions between different elements using function

This is helpful in many ways for a team to visualize and justify or challenge the validity of project elements, factors acting on the project, or functional relationships between all the pieces. Up to this point, it has been as easy to complete as a Tabular Function Diagram while not sacrificing some semblance of a logical connection between those functions and their project.

I have started calling it a Function Wheel not only because it comes across better for clients than calling it an Octopus but also because when finished, the team will have created a function diagram that resembles a wheel with spokes moving towards a center point which is the project. The best way to describe the Wheel is to charge forward into explaining how to create one. The tools I have been using for them are exactly the same as the FAST Diagram: Post-It's and Markers.

How to build the Function Wheel Diagram

Circumference - Populating the Tire of the Wheel

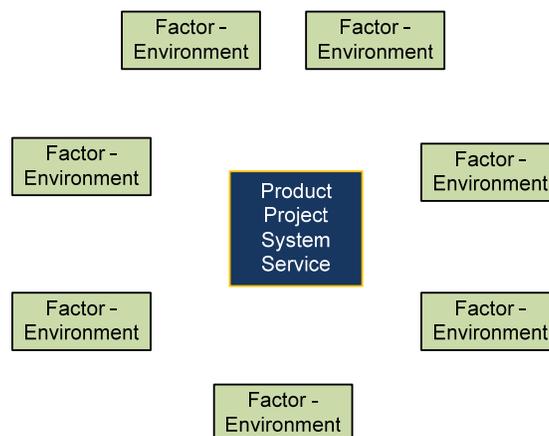
Starting with a Post-It with the project in the middle, we can start by using the questions of the Horned Beast, along with other questions that may help the team the facilitator will begin by creating a circle of Elements or Factors that will be related to the project. At this point I have not determined the best title for this part which is why I am jumping between "Elements" and "Factors". As a team leader, my goal is not in naming the products as much as it is using the appropriate terminology for the team to understand what we mean by the term. The best description for the Element/Factor term that I have come up with is as follows:

*Project Elements are those parts in the environment of the project that will influence or be influenced by the project.**

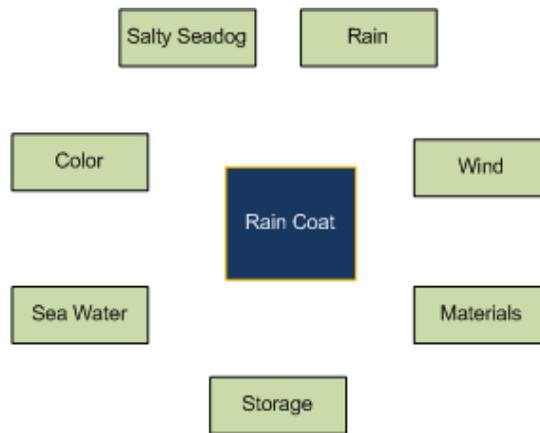
You could just as easily replace the word project for product, system, service etc. Some of the questions that I have used with teams to populate the radius of the wheel start with the Horned Beast questions and move from there*:

- Who or what will this project or product serve?
- Who or what does it affect or interact with?
- What are some unique features of this project?
- Where is this project going to be?
- How is it going to be used?
- When does it need to be used?
- What are the wants and needs?
- When does it need to be completed?

The completed wheel will likely grow and shrink as the team develops and refines the project elements. It's a great opportunity to discuss all the parts of the project and I have found that most teams actually enjoy populating the circumference of the wheel as it allow them to rehash what they have just learned in the information phase. It allows for a very natural transition from Information Phase into the Function Analysis phase and delivers a visual representation of what the team learned. After this step, the wheel will look like this:



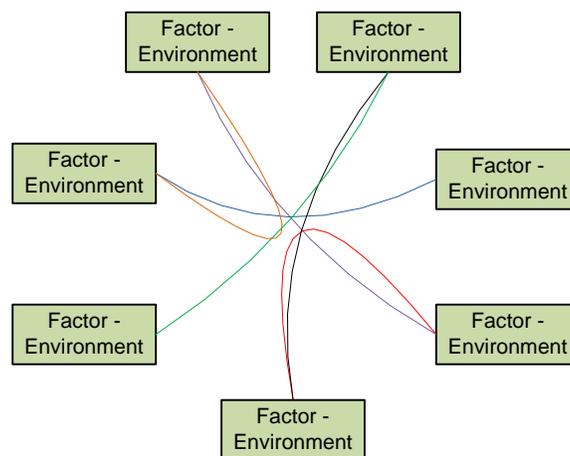
If we were to continue with the Raincoat example from the Horned Beast discussion, the first product may look something like this:



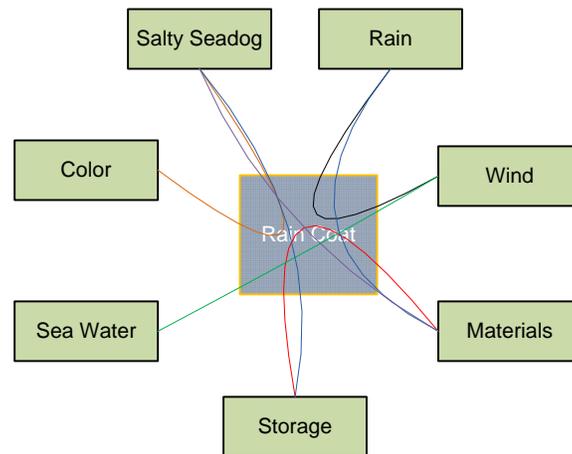
An important part to each step of the process is to confirm consensus that everyone on the team agrees that all of the elements of the project have been identified and represented. Once the circumference of the wheel has been completed and the team agrees that it looks proper, we can move on to the next step of identifying interactions between the functions.

Interrelations - Building the Spokes of the Wheel

Now that the circumference of the function wheel has been completed the next step is to build interconnections between the functions as they relate to the center product. This exercise is fairly intuitive and there are some simple questions that the team can work with in order to build the connection. The most basic question that is asked is, “Does Element X relate to Element Y?” If a connection is established, then sticking with Element X we would then ask if it relates to Element Z, Element A, Element B, etc. Each time a connection is established, we would draw a line connecting them, normally with a curve running through the center product/project. The final product would look similar to this:



Following our Raincoat example:



So for this example, we can see that there are a number of interconnections and relations between the elements of the Raincoat. There is a connection between the Rain and the Wind elements as they relate to the Raincoat. There is a relation between the Sea Water and the Wind as they relate to the Raincoat. There is a relation between the Seadog and the Color of the Raincoat. There is a relation between the Storage of the Raincoat and the Materials that are being used to make it. There is also a relation between the Seadog and the Materials being used to make the Raincoat.

One fact to point out immediately is that the Salty Seadog element, the user, could in some minds have a connection to all the other elements. In the interest of simplicity and to avoid over complications of the model, I generally avoid showing the obvious relations to the elements that could potentially have five or more lines coming from them. Drawing those lines tends to state the obvious and doesn't help with the function identification as the lines are intended. A practitioner will often find themselves faced with a function or two that seem to relate to everything. These are key elements and are important. If faced with a team that wants to connect it to everything, it's an opportunity to question those links and whether they are relevant to the scope of this particular project. Often this scope discussion will help to hone

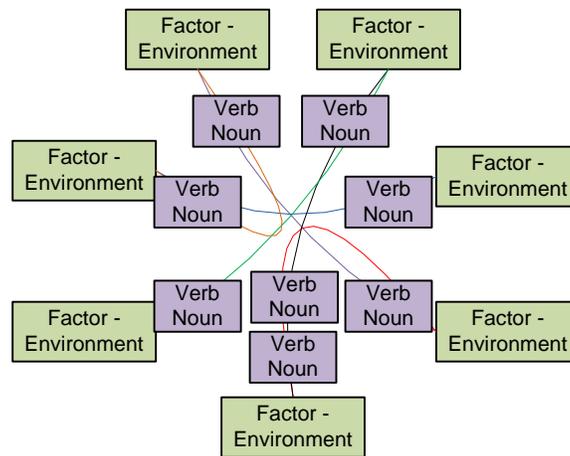
At this point in the construction of the Function Wheel, the team can easily transition into discussing the functions along the interconnections. In the studies that I have facilitated using this tool, the transition is extremely natural as the connections start very clearly illustrate that there *are* functional relationships between the elements as they relate to the project or product. So the next step is to populate the wheel with the functions.

Functions – Populating the Function Wheel with Functions

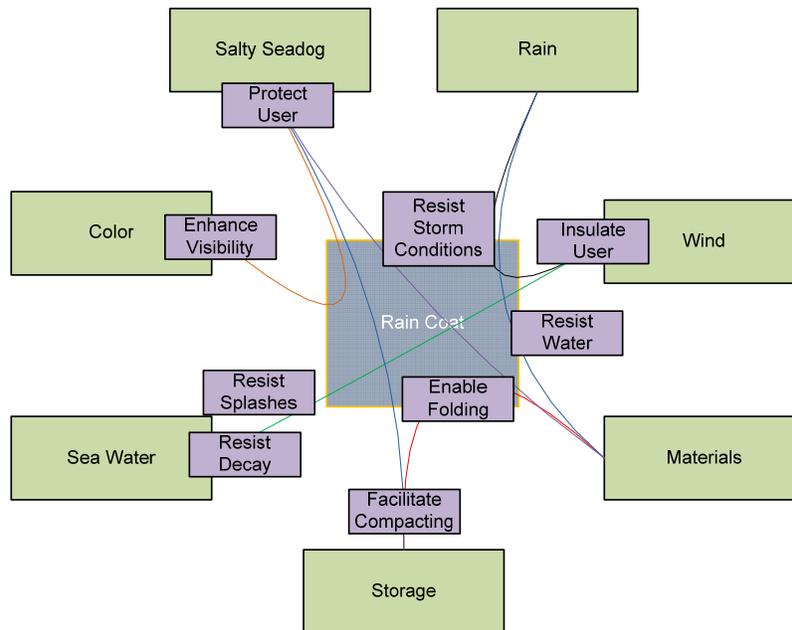
We now need to identify the functions on the spokes of the wheel. For a value practitioner, this process will be natural as you move forward into the wheel using the guidelines of the wheel that have already been established. The lines are the relations and they either relate to another element or they relate back to the project itself. There are some questions a practitioner can ask to help the team in their function identification:

- What does Element X do in relation to Element Y?
- What does Element X do to Element Y?
- How does Element X affect the project?
- How do Element X and Y affect the project?
- How do Element X and Y affect Element A?

Eventually, functions will populate the spokes of the wheel. On the wall they will be different color post-its. The functions, following SAVE Standards, should be stated in the Active Verb – Measurable Noun context. When populated, they should look something like this:



Following the Raincoat example, it would look something like this:



Looking at the Raincoat example, we can see that there are some functions that are related to each other as well as the elements being related to each other. One rule that I have been using up to this point is that the same function can go up as many times as is necessary in different areas of the Wheel and often it has turned out to be a Basic Function, but not always. This function wheel will generally grow and shrink as the team discusses and refines it. It's often a matter of moving it to a larger wheel, expanding it out or contracting it in. The size of the wheel and the number of functions that relate to it are often not fixed until the end of the exercise.

The How-Why Logic Path

I have attempted, on the Wheel, to use the How-Why logic path that is so effective on FAST diagrams. Up to this point, I can say that it does work but only so well, especially when there are many instances of the same function on the wheel and they start to interrelate to one another. One possibility might be, if a Value Team Leader were in a situation where he or she had a Function Analysis intense workshop where the client was in need of real focus, that a FAST could be made using the functions identified in the Wheel portion of Function analysis. It all depends on the amount of time a team leader has to complete it. Usually, these Function Wheels have taken between one to two hours to complete on moderately complex projects.

Basic Functions

Once the Function Wheel has been completed, the team can discuss which of the functions are basic, secondary and required secondary functions. This is done similarly to how one would complete the discussion using a Tabular Function Diagram and any of your own creativity in this endeavor can enhance it.

Way Forward

How can it get better? Essentially this is the only way forward I would like to propose on the Function Wheel. For those of you who would like to be so courageous as to attempt one of these in your own workshop and see how it works and see how it doesn't work, it would be fantastic if we could improve upon the model. As stated above, for the moment this is an ugly mix of some AFAV stuff along with some SAVE stuff and a little bit of my own stuff. This is far from a refined and scientifically proven tool and very little research has been put into it. It has been tested however and among the team members that I asked about it actually preferred it to other Function Analysis tools. It's fast, it lets the experts flex a bit more of their intellectual muscle and it creates a diagram that can easily represent the discussions held within the team as they relate to the project as a whole and the needs of the client. I invite all those who are interested to try one out in your next project and let me know how it went.