Power and Influence Charting

The Google Way

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Abstract: The success or failure of a project may be charted in the initiation phase. Therefore, initiation is arguably the most important phase of any project. During the initiation phase, the foundation for the project is established, including the selection of project sponsors and champions and getting their buy-in, which sets the project up for success.

Introduction

The most successful projects are those that have a solid foundation and actively supportive sponsors. However, the initiation phase can be challenging because of the number of details that must be defined to ensure project success.

One key issue that must be addressed during project initiation is the identification of the "right" project sponsor; one who has enough political clout and backing to overcome the obstacles that arise in the lifecycle of any project. In large and complex organizations, this task can be overwhelming because the organization hierarchy is often dispersed geographically encompassing multiple time zones on multiple continents.

Identifying the right project sponsor is a critical step, but is difficult to accomplish. Reliance on the organizational hierarchy to identify individuals is one way, but is not always optimal. To understand "true" power, it is important to understand what power is and how it manifests itself within an organization. According to the classic publication by French and Raven [1], there are five main types of power: legitimate, referent, expert, coercive, and reward.

Legitimate Power:

Power that is inherent to a role within the organization and not the person occupying the role.

Referent Power:

Power that comes from being liked and respected by those around you. This power is based on the fact that individuals are striving to be like you and follow your lead. It is inherent to the individual and not the role.

Expert Power:

Power that comes from others needing what you know and what you can do. It is inherent to the individual and not the role.

Coercive Power:

Power that is derived from forcing others to do that which is contrary to their own will through coercive means. This power could be based on punishment or through forceful means. Ability to execute this type of power could be based in a role or be an attribute of the individual.

Reward Power:

Power that is derived from coaxing others to do your will through promise of reward. This reward could be tangible or intangible, but the promise of a reward upon completion of the activities or set of activities is the basis for the power. Ability to execute this type of power could be based in a role or be an attribute of the individual.

In determining where this power exists within the organization, the organization hierarchy does a great job of modeling out legitimate power; however, it does not clearly identify individuals with either referent or expert power. In some circumstances, these individuals can have greater influence within the organization than those with legitimate power. Therefore, it is crucial to identify individuals with referent or expert power when determining optimal project sponsorship during the project initiation phase. Modeling expert and referent power is more challenging than modeling legitimate power, but the results are invaluable to understanding the true picture of organizational power.

To get a glimpse into how mapping the organization's power structure can occur, we can look into the history of how Google rose from an idea dreamed up in the dormitory of two grad students to one of the world's largest and most formidable companies in less than 10 years and merge that with a concept from one of the leaders in business research and analysis.

Google

In the late 1990s, there were a handful of major search engines fighting to gain market share in the search market. AltaVista, Excite, Yahoo, and several others had established themselves as internet search leaders. Indexing the World Wide Web was accomplished through a limited number of standard approaches.

The first method was to "crawl" the internet and identify all web pages that were linked together. Once a web page was found, the page content was used to rank how applicable it was to the search term the user submitted. This process was relatively simple and allowed users to find pages they were looking for. The dilemma was that just because the pages contained the search term, did not necessarily mean the intended needs of the user's

search were met. The other problem was that this approach allowed marketers to load a page with superfluous search terms to drive their web page higher in the ranking, even when there was no direct linkage between the search term and the web page.

To augment this type of indexing, these search engines also created human-managed indexes. Human reviewers would take the most sought after terms and put them into a hierarchy that could be easily searched. As they reviewed pages found in the web crawl, they were manually categorized and ranked with relative priority to other pages in that category. The outcome of these people-generated results were highly acceptable because they targeted returning content that people wanted to see and not just content that matched the search terms. It was limited by the fact that it was not highly scalable. With millions of pages having constantly changing content on the Internet, it was impossible for a person, or even a team of thousands of people, to track these pages.

This is where Google revolutionized the search industry. Although implementation was fairly complex, the concept behind Google's idea was simple. They identified that the only way to have a usable, maintainable index was to develop a way to generate meaningful search results without human intervention. Google envisioned an algorithm to automate the process of page categorization and ranking that would not rely on an individual constantly reviewing pages to keep them fresh and up to date [2].

The basic premise of this methodology was to rely not only on the content within the page, but to consider what other sites were linked to that page, the relative importance of those sites, and how many other pages that site was linked to. With the combination of these factors, Google was able to achieve meaningful results that were scalable as the Web grew. This process has been commonly referred to by Google as PageRank.

Google's definition of PageRank [3] states, "PageRank reflects our view of the importance of Web pages by considering more than 500 million variables and 2 billion terms. Pages that we believe are important pages receive a higher PageRank and are more likely to appear at the top of the search results. PageRank also considers the importance of each page that casts a vote, as votes from some pages are considered to have greater value, thus giving the linked page greater value. We have always taken a pragmatic approach to help improve search quality and create useful products, and our technology uses the collective intelligence of the Web to determine a page's importance."

One of the concepts Google has strived to continually maintain is to avoid manual intervention in the search algorithm. If issues were found in the ranking of a page, the algorithm was evaluated to identify how it could be optimized to rank that page. Google's purist philosophy has been challenging to maintain, but has also garnered trust from the user community. This confidence allows users to feel like they are getting the best results available and not the results that are best for the highest bidder.

The same innovation that propelled Google from obscurity to the top of the search industry can be applied to organizations to identify individuals who have referent and expert power, but don't necessarily show up at the top of the organizational chart. This ensures that all vital project stakeholders are identified in a quantifiable method.

Gartner Power Mapping

Gartner, a highly respected thought leader in the business research and analysis sector, has identified and published a method similar in nature to the early search engines. This method relies on knowledge of key individuals to evaluate and derive measures for an individual's power and influence in the organization. This method is called "power mapping" [4].

Power mapping is focused on smaller sized groups and its purpose is to identify which stakeholders have the most power and influence within that group. To accomplish this, the evaluator lists all stakeholders who are potential influencers. Then, the evaluator establishes categories with highest importance to the organization in terms of what power looks like in the areas of legitimate, expert, and referent (referred to as position, knowledge, and relationships by Gartner). Each individual is then evaluated on a numeric scale and the scores are added up to ascertain the overall power of each individual. The results are then vetted out through a series of interviews to ensure assumptions made in the scoring are correct. The final score represents the overall power and influence of an individual within the organization.

	Total	Position	Knowledge	Relationships
Stakeholder 1	6	3	1	2
Stakeholder 2	5	3	1	1
Stakeholder 3	7	2	3	2
Stakeholder 4	6	1	2	3

Table 1: Gartner Power Mapping

Like the early search engines, this process is extremely effective because it relies on human understanding of power throughout the organization and includes a validation process to ensure who key stakeholders are and their relative power and influence within the organization.

The manual nature of developing the power map in this fashion is very time consuming and requires institutional tacit knowledge, and changes in the organizational power base do not surface quickly. Consequently, manual development of a power map is neither scalable nor highly maintainable over the long term.

Gartner Meets Google

Here is where the concept that Google used to revolutionize the search industry can take the power map to a whole new level of scalability, maintainability, and adaptability. If the process can be automated and an algorithm developed to measure the influence and power of all individuals within an organization, then it can be scaled and updated regularly to capture power changes in the organization. In addition, the automated power and influence chart would be impervious to the need for an organizational expert's participation in the creation and maintenance of the chart, making it more resilient from a knowledge transfer perspective.

We used this concept at Idaho National Laboratory (INL) in an effort to automate the power and influence charting process and to identify the influence base within the organization. This approach allows the identification of key strategic partners throughout the laboratory who could be engaged to champion project efforts that align strategically with achieving key mission goals.

Background

In operation since 1949, INL is the Department of Energy's (DOE) lead nuclear laboratory and is dedicated to supporting DOE's missions in nuclear energy research, energy and environment, and national and homeland security. INL is operated by Battelle Energy Alliance and participates both independently and jointly with other labs in the support of work for DOE and other government agencies.

Process

The main process for mapping power in the organization follows these steps:

1. Identify intelligence sources
2. Map intelligence in categories of power
3. Gather data
4. Normalize data
5. Weight categories of influence and power
6. Summarize individual influences and power
7. Categorize individuals

Our first task was to identify which organizational artifacts would serve as intelligence sources. Key information was not available in a single consolidated system, but across the organization in the form of both structured and unstructured data. Structured data is where each data element is defined and it is possible to identify relationship between the elements, whereas unstructured data is in free form without definition or relationships.

Data had to be mined and consolidated and then classified into the areas of legitimate, expert and referent power. Often a single intelligence source was used to identify more than one type of power depending on the information extracted from it. Once this data underwent a process of classification and weighting, the relative influence that each individual has within the organization was derived and individuals were categorized making the information actionable.

Figure 2: Intelligence Sources

Legitimate

Legitimate power was the easiest to measure. To evaluate legitimate power within an organization, we were most concerned with the span of control for that individual. Span of control addresses how many people each individual manages and who those individuals are. When identifying span of control, both direct manager-employee relationships as well as matrix manager-employee relationships were assessed. Within INL, there are two additional organizations that reflect legitimate power outside of the organization hierarchy. Councils represent the oversight of investment and management systems represent oversight of processes. Different roles within these two organizations were assessed to identify an individual's legitimate power.

Expert

With expert power, we looked at accomplishments of individuals across the organization. To identify notable individuals, the first area we examined to identify expert power was INL's internal communication system. The centralized communication system allows for notes to be distributed across the organization. These notes communicate promotions, accomplishments, upcoming meetings, areas of research, or any significant information to managers and/or employees. We gave credit to each of the individuals mentioned in communications, weighting newer communications higher than the older communications.

The second area we examined to identify expert power was key strategic projects within the laboratory. These are areas of high interest to DOE and are critical for accomplishment during the fiscal year. Each key strategic project has multiple people acting in different roles. Each of these different roles within the strategic project was given a weight as to the influence exerted over its successful completion.

Referent

Referent power deals with connections within the organization and was the most challenging to identify. Similar to the method used by Google to rank pages, organizational connections are where whom an individual knows is more important that what the individual knows.

To accomplish this evaluation, we looked at a number of existing intelligence sources used in deriving legitimate and expert power to identify the referent power. When individuals are related within these intelligence sources, it is an indication of an organizational association between these individuals. The more associations that an individual has represents the higher the likelihood that the individual has referent power in the organization. Referent power is much more than who is friends in the organization, it establishes which individuals have influence over others to make things happen. To assess this, we looked at relationships among individuals on the councils, key strategic projects, and management systems.
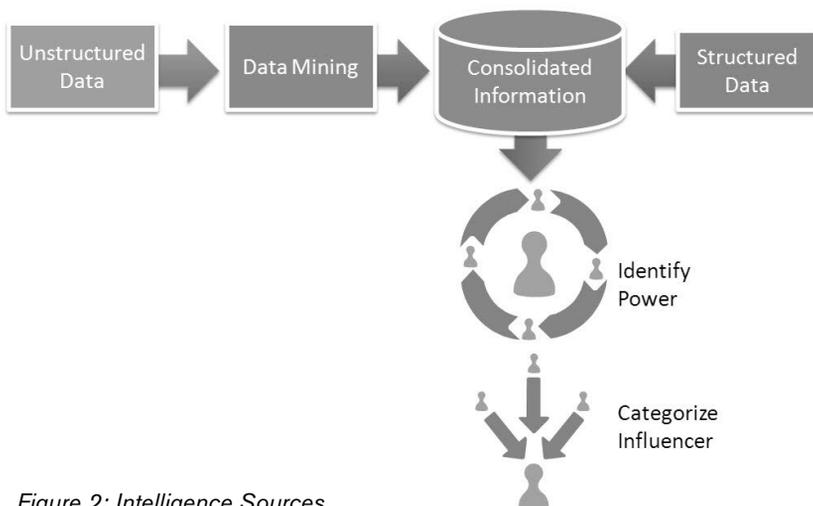
Figure 3: Referent Power Connections

Normalization

Since each of these factors generates results of different quantitative magnitudes, they must be normalized so that they can be combined. The goal in normalization was to take data sets with different domains and allow them to be added. Span of control might have values from 1-30, communication notes might have values from 1-5, and connections might have 1-1000. Just adding these numbers together would skew certain categories much too high in the evaluation of power.

Using some basic statistics, each number can be represented as the number of standard deviations from the mean (or the z score), putting a majority (99.9%) of the data within a normalized range and allowing it to be combined.

$$category\ score = \frac{x - \overline{x}}{\sigma}$$

$x = individual\ score$
$\overline{x} = average\ for\ sample\ (excluding\ 0s)$
$\sigma = standard\ deviation\ for\ sample\ (excluding\ 0s)$

Equation 1:
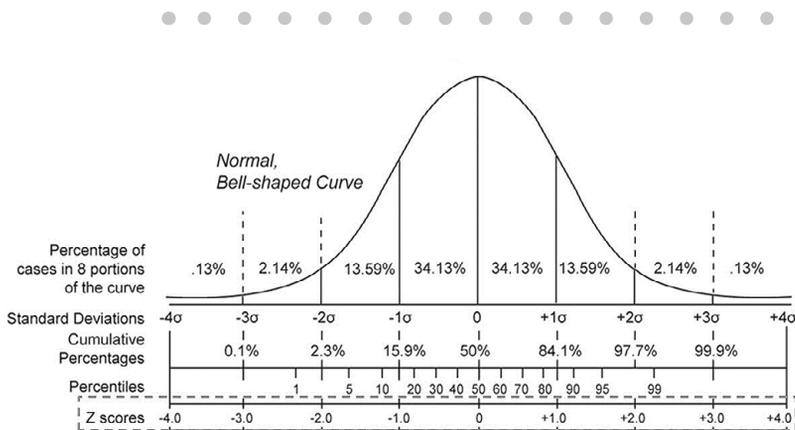
Figure 4: Normal Bell-shaped Curve

Not all data sets involved in the calculation are distributed normally and fit the standard bell shaped curve. In addition, there are often outliers in the data that have to be evaluated and addressed. In the case that data is skewed away from normalcy, other more advanced statistical methods are required to increase the relevancy of the overall power score.

We then evaluated each of the categories to identify which had the highest impact on the power for the individual. Each category was given a numeric multiplier to indicate its overall importance to the power base of the individual. These weights were then applied to each category's score and all of the scores were summed up to get a final power score.

Along with the identification of sources and calculation of factors, weighting of the categories is one of the most important aspects of this process. With multiple sources and factors participating in the overall score, a refinement of these weights is necessary to ensure result validity. To perform this refinement, the process is run iteratively, generating sets of results that can then be evaluated by knowledgeable individuals within the organization. Once their feedback is gathered as to the accuracy of the power scores, analysis is done to determine reasoning behind both false positives and false negatives and both the weights and distribution-based calculations are refined to more accurately represent the nature of power in the organization.

This power factor describes the relative level of influence and power an individual has in the organization. Since connections within the organization are reliant not only on how many connections an individual has, but also the relative influence score that those connections have, it is important to run the calculations through a number of times. The first time, all individuals in the organization have an equivalent influence factor. Each successive time that the calculation runs, the new power factors are used and the relative power factor exerted on the connection get closer to representing the truth. Each successive time the calculations are done, the influence factor changes some, but as it is done multiple times, that change gets smaller and smaller until it approaches zero. This gives us the most accurate representation of an individual's power score within the organization.

Categorization

This power score is a relative representation of the influence of the individual in the organization, but unless there is assurance that all intelligence sources were utilized and the weights are accurate, it can be misrepresentative of the exact influence of an individual. To simplify the usage and establish more usability to the number, we broke these into categories of influencers associating levels of influence based on their relative scores.

In Practice

At INL, this process has been instrumental in helping to identify influential stakeholders. In mid 2010, Information Management (IM) was given the charge to lead up efforts to transform the workplace at the laboratory through an initiative called High Performance Workplace. Since this initiative involved culture, information and process and not simply a technological change, it was imperative to identify influential stakeholders throughout the laboratory that would act as change agents for the initiative. Through use of the power map, we compiled a list of individuals throughout the organization with whom we could engage to

generate the "grass roots" support of the initiative to execute effective change. This distributed engagement with key individuals both at the management level and the organization level allowed us to ensure both a top-down and bottom-up approach to organizational change management. This approach has established a framework for success for the initiative.

Conclusion

With this categorization of employees, we have the capability to have a better understanding of where the true power in the organization lies. It also helps us to determine key individuals in the organization, which serves as one input into the decision making process for project initiation based on the relative importance of the request to the organization.

Through the application of methods and innovation that propelled Google to the top to a strategic toolset from Gartner, we were able to create a sustainable and objective manner to facilitate in the project initiation phase.◈

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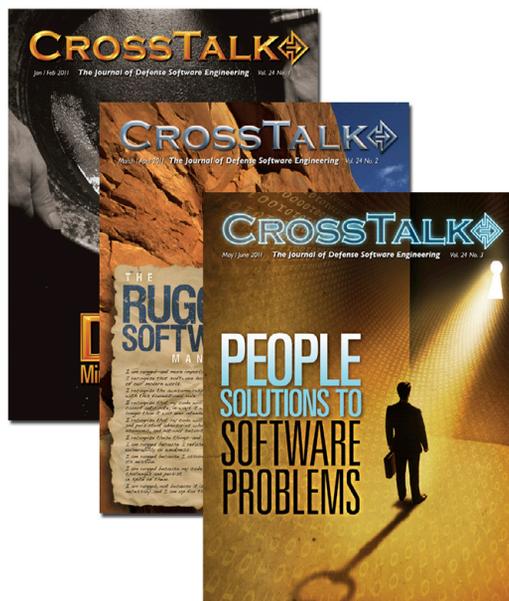**E-mail: Sharon.Berrett@inl.gov**
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