

Value Creating Networks: Organizational Issues and Challenges

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Introduction

Companies have long struggled to improve on their initial gains from re-engineered business processes and software. The problem is that these “left-brained” systems only deal with the tangible inputs that fit neatly into spreadsheets and engineering diagrams. Most estimates place intangible value – such as reputation, social capital, and human competencies at 50-70% of company value (Wild, 2009.) Yet, top executives admit management methods in this area are poor or nonexistent (Gordon-Miller, 2004).

In recognition of this problem, business practices are shifting to include a more human-centric and networked view. Some contrast highly variable *participant-based business processes* with rule-based automated processes. People are beginning to comprehend that a rapidly shifting human resource landscape is increasingly out of alignment with business processes, or more accurately, business processes are out of alignment with the ways in which things actually get done.

The impact of this human-centric orientation is likely to rival that which occurred in the early 1990s with the shift from functional views to process views. As a result of this re-orientation, there is a keen interest in the role of social networks in organizational life. As appreciation of their importance grows there has been a dramatic increase in new applications of social network analysis to understand knowledge sharing and communication flows and the adoption of social networking technologies to expand collaboration. However, linking these advances to actual business results continues to be a challenge.

Where we are now

Organizations are facing design and performance issues as their environments, markets, products and service offerings, and stakeholder relationships have become more complex. It has been well established that network analysis can be used to describe work groups, organizations, business webs, and other purposeful networks where both tangible and intangible value exchanges support the achievement of specific outcomes (MacCauley, 1963; Tichy et al., 1986; Granovetter and Swedberg, 1991; Nohria and Eccles, 1992). Most efforts to understand networks and organizations focus on networks of individuals and are attempting to demonstrate how different network patterns support innovation, team productivity, and knowledge sharing.

Although classic network analysis provides powerful insights into patterns of human relationships and communication flows, it falls short in describing overall organizational performance. The empirical link between network patterns and value creation or realization for the firm or the generation of economic and social good also has not been well demonstrated. However, business applications of Social Network Analysis (SNA), sometimes referred to as Organizational Network Analysis (ONA) when applied to organizations, have expanded dramatically in recent years. Several analysts and researchers are using SNA, both metaphorically and analytically, to try to apply SNA to organizational performance and strategic alliances (Cross and Parker, 2003; Dawson 2003; Iansiti and Levien, 2004; Anklam 2007; Basol and Rouse 2008). But progress has been limited due to certain inherent limitations of SNA:

- a. SNA is a *structural* analysis of network linkages. Given a set of nodes and links it provides insights into structural roles, degrees of separation between entities, “betweenness,” and other factors, but does not directly address economic or social value creation and outputs.
- b. The empirical link between organizational-level structure and firm-level performance remains to be adequately demonstrated.
- c. All linkages defined in a social network are exactly of the same nature and only one link is represented between actors. This makes analysis of multiple variables and unique characteristics cumbersome, requiring separate networks to be generated for each different type of social or economic exchange between actors.

d. Its use as a managerial tool is limited because of the high level of technical expertise required to analyze and interpret the network patterns.

Networks as value creating entities

Purposeful networks, such as organizations, consist of specific roles and value interactions oriented toward the achievement of a particular task or outcome. The active agents of any organization are real people who play particular roles to convert both tangible and intangible assets into negotiable offerings and fulfill different functions.

Organizational networks, therefore, can be considered value conversion networks, or value networks. A value network can be defined as *any purposeful group of people or organizations creating social and economic good through complex dynamic exchanges of tangible and intangible value*. *Tangible exchanges* are formally structured or contractual interactions directly generating revenue or funding. *Intangible exchanges* consist of all the informal, often ad hoc – yet critical supporting exchanges of information, support, and benefits.

This definition allows application of the value network perspective to internal value creating activities as well as external facing networks. Internal value networks include activity-focused sets of relationships within and among work groups (e.g., those within and between the manufacturing, research and development, or sales departments), and between and among the various work groups that make up the organization. External-facing value networks include those between the organization and its suppliers, its investors (including venture capitalists), its strategic business partners (e.g., a business with a complementary product), and its customers. Other kinds of networks cross organizational and industry boundaries, such as innovation networks or networks of people with the shared purpose of creating a particular social good or outcome, such as improving education.

The working hypothesis for value networks is that network analysis and organizational performance could be more tightly linked if network analysis is *significantly expanded* to include financial and non-financial asset utilization, value conversion and realization dynamics and

flows, linkages to business processes and intellectual capital, and network indicators that clearly link to organization and market-level performance. These analytical approaches very specifically seek insights into the question of exactly how purposeful networks (such as organizations, cross-boundary task networks, public agency collaborations, and societal change networks) can more effectively create value, achieve business outcomes, and generate sustainable success.

Early discussions of value networks were usually focused on supply chain, using frameworks, scorecards, and variations of supply chain models to describe supply chain networks (Parolini, 1999; Bovet and Martha, 2000). Others took a more extended view of the value network to include customers *and strategic alliances* (Normann and Ramirez, 1993; Christensen et al., 1995; Christensen, 1997; Stabell et al, 1998). Yochai Benkler (2006) moved more solidly into a value analysis approach with his landmark book, *The Wealth of Networks*, but focused primarily on Internet-based social production models, a distinct type of network. Shoshana Zuboff (2002) also drew a bit closer to value creating networks in *The Support Economy* with her brief discussion of the importance of intangibles in federated support networks, although she did not employ any SNA-based visualizations and analytics. Most discussions of value networks or business networks confine the definition and perspective to the relationships between the firm and various external stakeholder groups (Bien and Caswell, 2008). Internal value networks – cross-boundary networks operating within the firm – have been largely ignored.

Further, a decade of research and practice in intellectual capital has demonstrated that the impact of organizational (or purposeful network) interventions and actions must be understood in both tangible and intangible terms (Sveiby, 1997; Edvinsson and Malone, 1997; Wallman and Blair, 2000; Lev, 2001; Eccles et al., 2001). Based on that premise, a more rigorous approach to VNA, grounded in financial and intangible asset management and other organizational methods, has been proposed by Allee and colleagues (Allee ,1998, 2000, 2003, 2008; Allee and Taug 2006; Venezia et al., 2007; Allee and Schwabe, 2009). The Allee approach is the method that is the foundation of the examples and insights in this paper.

The value network approach can be applied to small purposeful networks, such as a work group or project team, as well as to larger and more complex networks. For example linkages between

of value network patterns and both economic performance and intellectual capital formation were established in the 2007 evaluation study for the European Commission of IST-RTD Impacts on Regional Innovation Systems (Allee et al., 2007). Its value has also been well demonstrated at the business network level, the more traditional perspective of a value network (Tapscott, et al., 2000). Other relevant work is emerging from the study of Complex Adaptive Systems, multi-variant analysis, organizational theory, organizational behavior, and computational analysis.

A network theory of value conversion

Both VNA and SNA draw from exchange theory and address the question of how social relationships convert into other forms of value. The theme of value conversion runs through social exchange theory and is a key question in the field of socioeconomics, as noted earlier. VNA departs from mainstream exchange theory, however, by linking the network to both financial and non-financial performance and asset generation both for the network overall and at the level of individual roles and transactions.

Participants in a value network, either individually or collectively, *utilize* their tangible and intangible asset base by assuming or creating roles that *convert* those assets into more negotiable forms of value that can be delivered to other roles through the execution of a transaction. In turn, the true value of deliverables received is *realized* by participants when they convert them into gains or improvements in tangible or intangible assets (Allee, 2008).

The emergent purpose and value dynamics of the network are revealed through the particular pattern of roles (contributing individuals or organizations) and their unique negotiated value exchanges in service to fulfilling an economic or social goal or output. Shared purpose and values may be *either* tacit or explicit but can be deduced from the network patterns and the nature of the exchanges. Value is continually being negotiated in this context of both individual and overall purpose and values.

Contribution of VNA to network theory

The value network business modeling language offers researchers, analysts, managers, supervisors, and front-line workers a more organic and accurate way to describe, analyze, evaluate, and improve organizational and firm-level performance, especially in complex environments. A VNA modeling language moves network analysis from being an expert analyst's tool to an organizational design tool with broad applicability and usage for any type of organization seeking to improve its performance.

As an integrative language VNA *fills the analytical and managerial gap* between other organizational tools. By modeling the work at a system level, VNA provides an even more effective way for SNA and other methods to optimally contribute to overall organizational effectiveness. Since it shows unique transactions, critical sequences or “value flows” can be teased out and analyzed with business process tools. If it can be assumed that many intangibles tend to flow along human-to-human pathways, then conducting SNA at the level of individuals can determine if the those pathways are open. VNA also provides a way to define critical causal loops surfaced in system dynamics analysis in terms of the needed roles and interactions to support healthy system-level behaviors. Figure 3 shows the relationship of VNA to other organizational performance methods and tools.

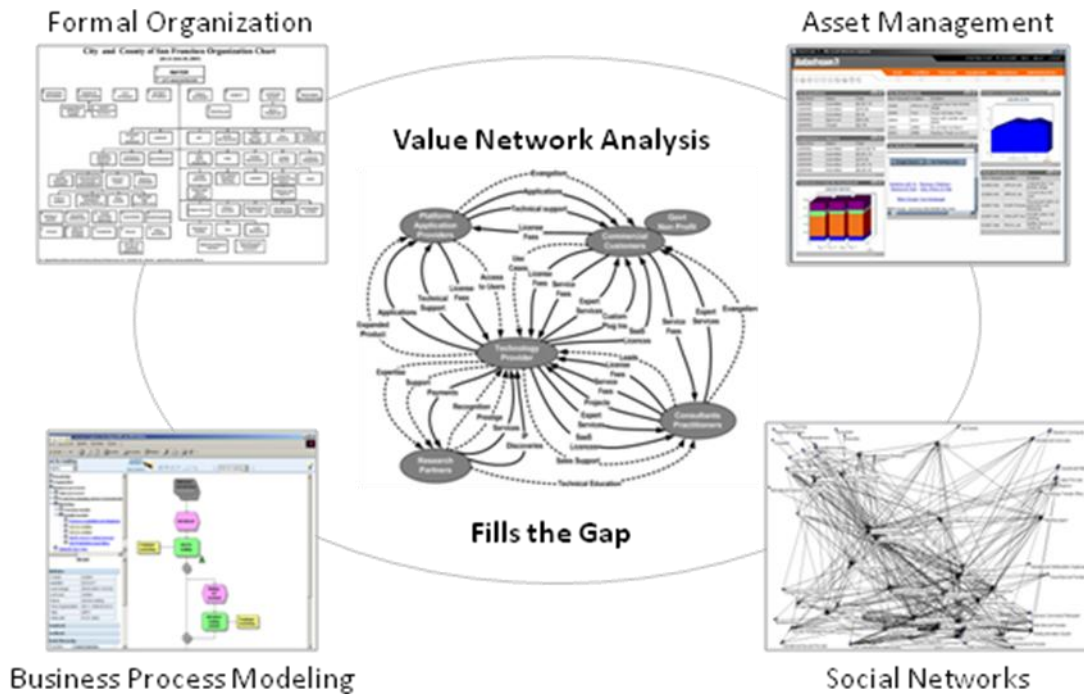


Figure 1: VNA fills the analytical gap between other organizational performance tools.

VNA practice and growing adoption

The ability of VNA to better describe effective work networks has been clearly demonstrated at many organizations addressing a wide range of business issues. The number of published case studies and academic articles referencing and applying Value Network Analysis is multiplying rapidly with more than 50 relevant academic articles published in 2007, more than double those published in 2006. Company adoption of VNA, especially the Allee method, has been growing rapidly in global companies, government agencies, and civil society organizations and networks.

For example, at the Boeing Company, VNA is being used to enhance organizational performance in multiple areas ranging from supply chain and lean manufacturing to organizational effectiveness and redesign. In one of the most remarkable examples, Boeing's Commercial Airplane Flight Test & Validation organization of 3500 people used system dynamics to define the needed structure for the organization and VNA to define the needed roles, flow paths, and

relationships (SAMS, 2008). The effort was so successful that all airplane testing has now been brought together in a new organization of more than 10,000 people worldwide, all using this approach to model the new work configurations.

The Boeing Company needed to move from the world of controlled processes to one of a complex adaptive system (CAS). Managers in the organization are shifting from the linear, engineering mindset of process managers to the systemic thinking required to support multiple flows and pathways. This does not mean throwing out process tools. The Boeing Company is a Lean Manufacturing environment and are masters of process tools. But VNA is what people do first, before they move into using process tools. They include both system dynamics and VNA in their “Lean +” toolkit as next generation modeling tools.

Value Network Analysis is also gaining fast adoption in the area of customer support. Symantec and other companies are using VNA to define the customer experience in customer support. At Symantec, Brad Smith and facilitator David Kay led the group in identifying key phases of the customer experience and defining the personas or “roles” with whom they interact. They then prioritized the value flows from each persona perspective. (Consortium for Service Innovation 2009)

Cisco Systems also used VNA to developed new global strategies for its Customer Interaction Network that sharply defined new and existing roles, gained efficiencies in task flows, and better deployed customer insights for improvements in products and service. This trend has strong support from The Consortium for Service Innovation, which has adopted VNA as a foundational method for improving customer support noting, “We’re used to measuring transactions—did we meet our SLA? What is the average time to case closure?” But to increase loyalty, companies must also ask, how do our customers feel about us? Mapping intangible flows alongside tangible transactions lets us explore less visible but crucially important loyalty drivers.

Further support for VNA is growing in the area of standards and non-financial business reporting. The XBRL movement (Enhanced Business Reporting Language) is supporting

adoption of Value Network Analysis taxonomies in market space and organizational reporting. The SEC is throwing its full weight behind adoption of XBRL as a way to bring auditable reporting into the Management Discussion and Analysis (MD&A) portions of the SEC 10K Filings (Eccles et al., 2007). In addition value networks are endorsed as critical in strategy blueprinting by the newest editions of industry process standard ITIL (Information Technology Infrastructure Library) and are integrated into eTOM (the enhanced Telecom Operations Map).

A detailed example of an internal value network for technical repair

This example demonstrates how value network modeling can bring fresh insights into even long established organizational structures and processes. A large utility company wanted to improve their ability to handle complex technology repairs and improve their service delivery. The project team convened a one-day workshop to map out the technology service activity and begin a VNA. Figure 2 is the original “as is” map showing both tangible and intangible deliverables. The temptation was to simply map the “official” repair service process. However, in order to address the real issues the group used a sequencing approach to map exactly where the technology repair became problematic and escalated to a “worst case” scenario. They first mapped the critical interactions and then “told the story” of the activated network by sequencing the interactions.

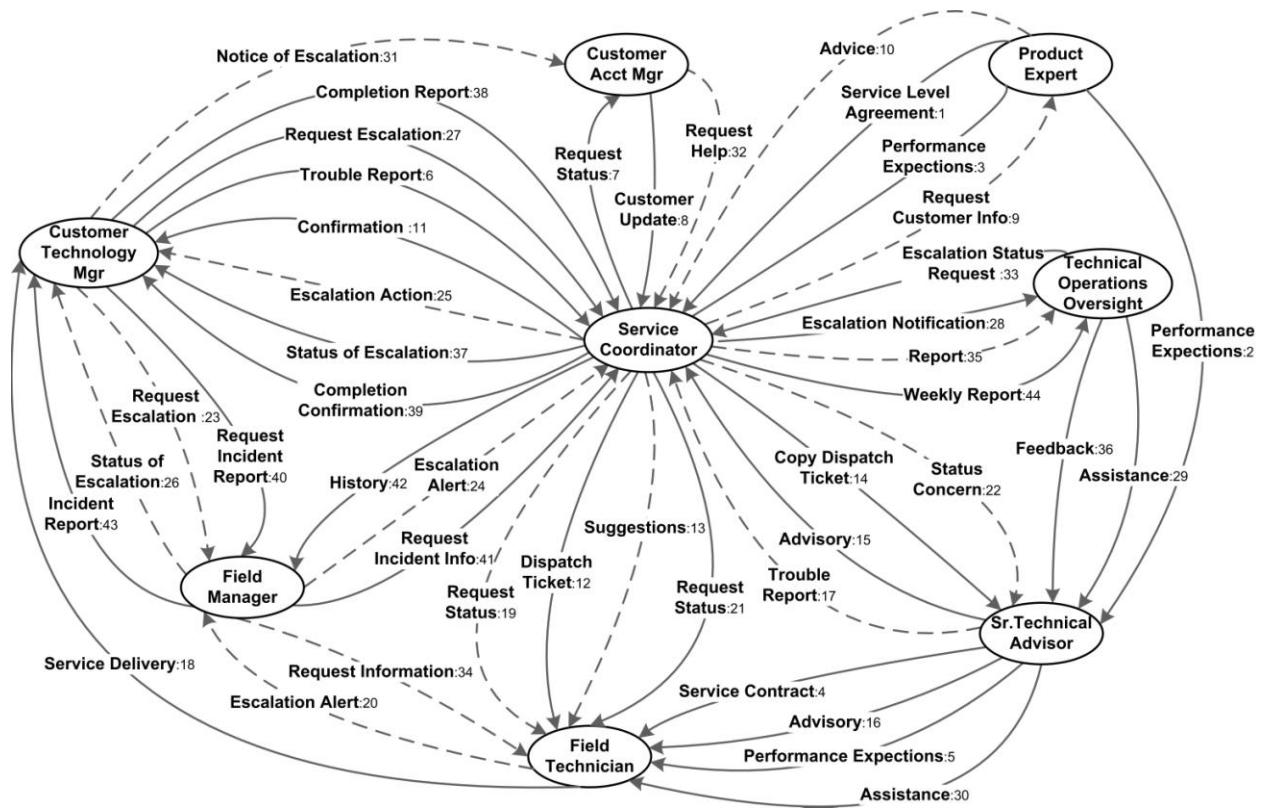


Figure 2. Escalated “As Is” technical repair in a utility company.

From this map the group identified and pulled out several different value flows where they could gain improvements. In the following figures the thick black lines and comments show where the group identified significant gaps in their own understanding of the roles, relationships, and interactions in the activity.

Figure 3 shows the “Happy Path” scenario, where the trouble is reported and handled as it should be and the customer is satisfied. Even in this happy path the project team was able to identify issues and improvements. VNA is especially valuable for addressing “hand-offs” where responsibility for the activity shifts from one role to another. The Happy Path team found a number of these hand-off areas where one role would assume something was being taken care of but there was no way of actually knowing. They also needed to better understand certain communication flows.

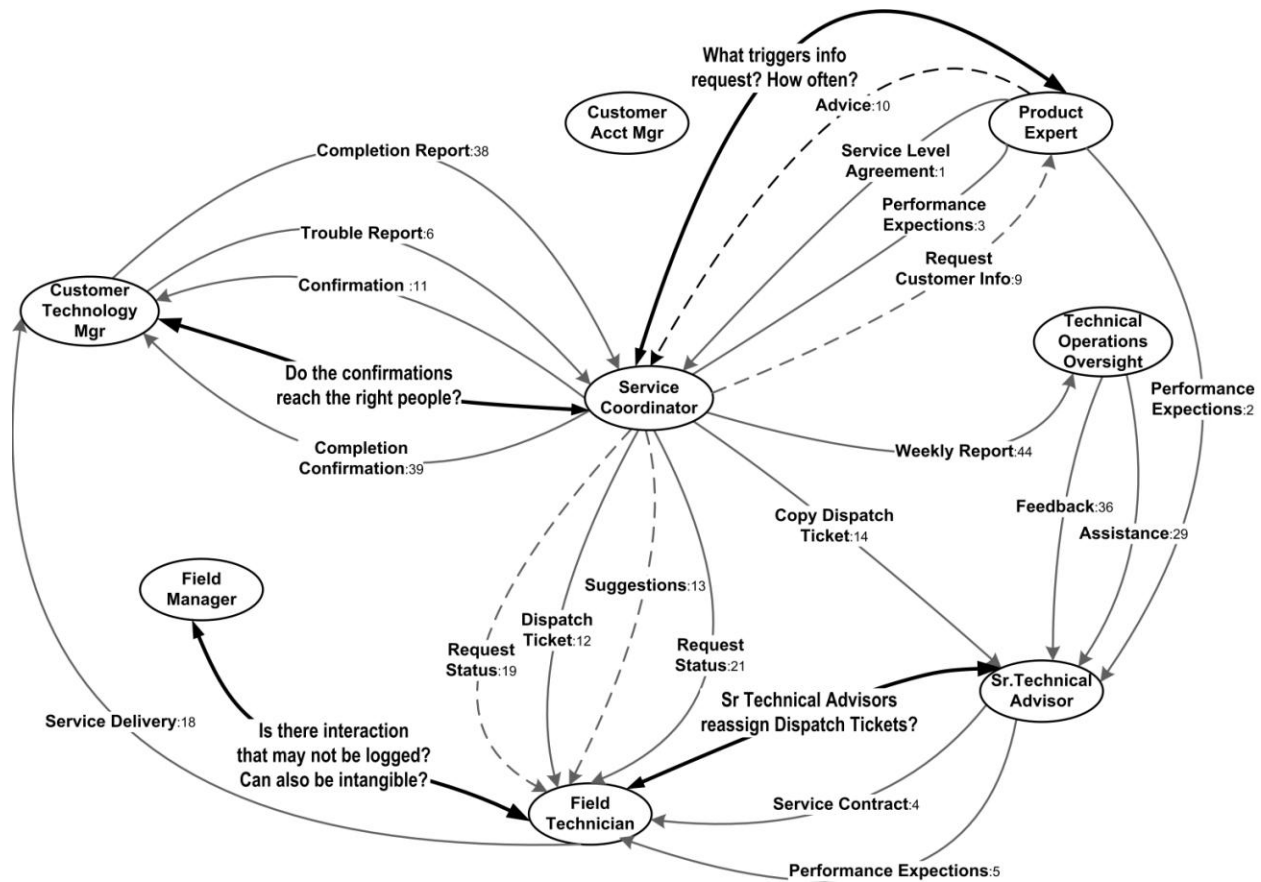


Figure 3. Technical Repair “Happy Path” where everything works as it should.

Figure 4 depicts the Service Level Agreements (SLAs) activity where these are developed internally. The Service Coordinators, Field Technicians, and Field Managers must reference this information frequently to respond appropriately to different customers. Yet, they found that the information is often missing or not complete. In other scenarios a particular Service Level Agreement had been created in a way that made response either difficult or needlessly labor intensive. They realized that for the technical repair activity to work well, they needed to be much more involved in developing and managing Service Level Agreements, but had little understanding of the activity or how they could best contribute to improving it.

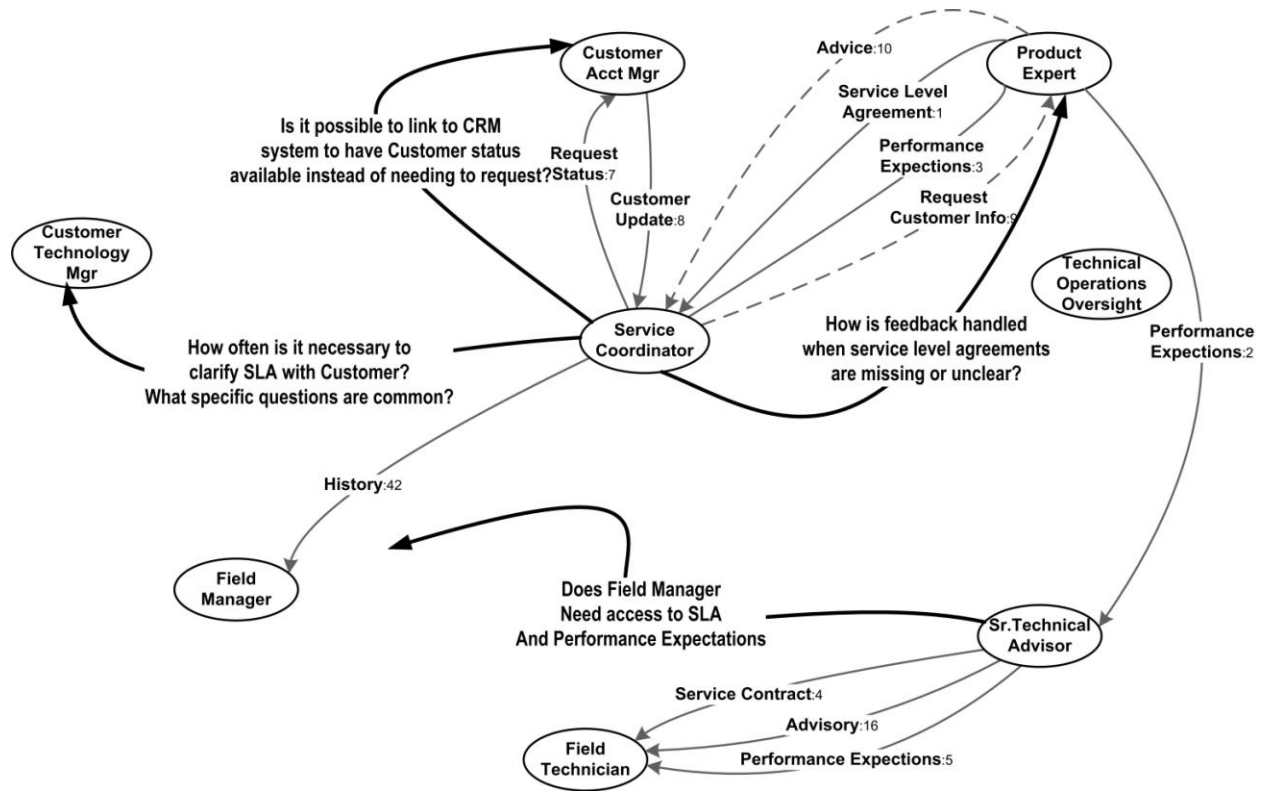


Figure 4. Service Level Agreement value flow.

Figure 5 shows the Escalation flow. This is what happens when things are not going well. Note the number of informal requests for information and updates passing between the Customer Technology Manager, Field Manager, Field Technicians, and Service Coordinator. Intangibles of this type are frequently found where there are “work-arounds” because something is broken. Here there were both and informal and formal processes that were needlessly redundant. The implications for coordinating these flows across multiple organizations within the company are significant. VNA provides a different foundation for thinking about technology support that goes far beyond simply processing trouble tickets or problem reports.

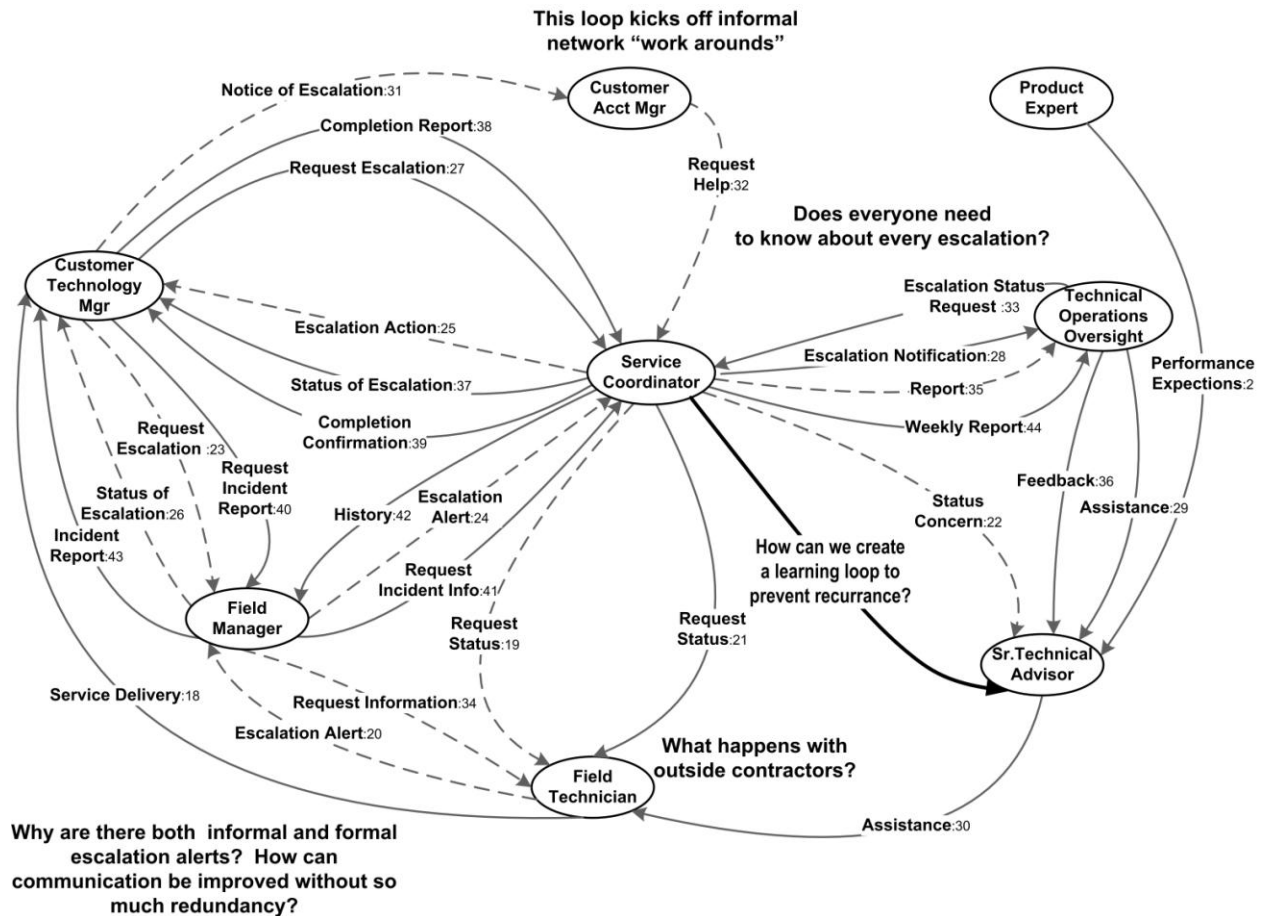


Figure 5. Technical Repair Escalation value flow.

This example shows just how many improvement insights can emerge from a VNA. In this case the project team divided into smaller groups, each dedicated to optimizing one of the value flows. They achieved outstanding performance improvements in just a few weeks of work with the issues. Perhaps more importantly, by engaging with other roles involved they improved communication and collaboration significantly across organizational boundaries.

Applying value network indicators

Network analysis opens up a whole new world of whole-system types of indicators that can provide powerful insights into the health and vitality of an organization. There is a learning curve for managers to understand where and how to use network indicators. Used effectively and appropriately, however, they bring powerful insights:

- *Resilience* requires the right balance of formal structure to informal knowledge sharing.
- *Value Creation* indicators show the capacity for each role to generate both tangible and intangible value.
- *Perceived Value (Brand)* assesses the level of value roles feel they receive from individual deliverables, from other roles, and from the network as a whole.
- *Asset Impact* indicators are used to consider which assets are most affected by the network behavior as a whole and by the actions of specific roles.
- *Reciprocity* indicators can point to a more hierarchical structure or show instability.
- *Structural Dependency and Risk* indicators work include role centrality. In VNA high centrality for any one role may actually be a risk factor for the network – or certain patterns of clustering may serve the overall value creation dynamics in unique ways.
- *Structure and Value* relationships are revealed by incoming and outgoing deliverables for each role.
- *Agility* depends on how quickly information can move around the network and how easy it is for any individual to reach the person who might be able to solve a specific problem.
- *Stability* is revealed by measures of network Density, the overall connectedness of the network.

Organizational issues and challenges of a network orientation

The basic challenge of the network orientation is the same challenge we have been dealing with in organizations for two decades with the focus on business processes: the world of human interactions and the world of business transactions are treated as two completely different worlds. Human interactions are dealt with in organizational charts, team charters, performance reviews, organizational culture, change management, and training. Business transactions are managed in the world of process maps, workflow systems, applications, and technology.

The danger is that we will continue this “split” in the way we apply social network methods and technologies in organizations. Many efforts in social and organizational network analysis focus on identifying communities of practice and communication patterns between individuals. While each effort focuses on a specific kind of community or a business topic area they are still

essentially mapping the “background” or “social ecosystem” that underlies the work. This is valuable and provides many important insights that have business impact, especially for learning communities, knowledge sharing, and communication.

However, if social network patterns are tightly linked to business activities and outcomes it is not only difficult to demonstrate business results – it will perpetrate the same kind of “disconnect” between people and business processes that have made work places increasingly stagnant. After all, the whole goal of business process engineering is to drive out variation. Yet in complex work environments variation is not only a given – it is desirable and necessary for rapid response and continuous innovation.

Supporting network patterns of organization requires addressing several key issues:

Supporting “roles”

Most staffing and resource efforts focus on filling seats or “jobs” on the formal organization chart. Common HR practice is not to seek people who can fill multiple roles, but to create a job description of specific credentials and skills and then seek candidates who have done exactly that same work for many years. Reorienting toward networks means supporting people in wearing different “hats” and filling roles in multiple value creating networks. Their formal position then just becomes a “home base” while they are more flexibly deployed where needed in different roles. The role doesn’t care who plays it. In companies where value networks have been implemented a daily duty roster first lists the role, then the individual who is assigned to the role and then what organization or “box” they come from.

Managing intangibles

While any executive will agree with how important intangibles are for success, very few companies put any serious effort into understanding or managing intangibles. As VNA spreads as a management practice, intangibles management moves from an esoteric corner of the executive suite right down to the shop floor. With value network maturity people negotiate both their formal and intangible deliverables and also learn to develop indicators for both financial and non financial impact.

Supporting the learning curve

Finally but certainly not least is the challenge of learning the language of networks. Back when companies were moving into process tools and learning to work as teams there was a huge amount of training support. Today, we tend to throw people into new technologies or toss a few buzz words at them like “collaboration” or “networks” and expect them to suddenly begin behaving differently. The shift into the process orientation and team structures required significant investments in training and education. However, comparable support appears to be seriously lacking as we move into the world of networked organizations. There are new skills sets, mindsets, toolsets, and behaviors that must be mastered. Otherwise “networks” comes out our lips but “processes” and “org charts” run our lives.

Conclusion

Value Network Analysis provides an opportunity to overcome the “split” in business management practices where human interactions and relationships reside in one world of models and practices and business processes and transactions reside in another. The engineering approaches of the last two decades have focused on driving out variation, with the unanticipated consequence of stifling organizational agility and innovation. The more human-centric orientation of the value network perspective brings these two worlds together in a powerful, simple and pragmatic way to model business activities and create more effective organizations.

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