

## What's Wrong With Current Systems Development Methods? A Case for Value Network Analysis

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### Introduction

Systems development methods have come a long way since the early days of mainframe computing and the automation of clerical activities. New iterative development methods, mostly involving the use of packaged (COTS) products, are now becoming the norm. Prototyping tools allow us to simulate business processes in a way that potential efficiency gains could be modeled prior to the investment in automation software<sup>1</sup>. What hasn't changed however are the cost overruns, less than enthused end users, and the longer than anticipated "adaptation" time, as implemented systems are continually adapted or "tuned" to try and achieve the required business outcomes. Common comparisons are made between IT and engineering projects. Why can't IT projects be managed as tightly as engineering projects?

The common flaw in current systems development methodologies is the assumption that all business activity can be defined in terms of processes and information. Typically, a business analysis will involve a business process mapping exercise, where activities are mapped and their interdependencies highlighted. Processes may be re-engineered at that point or alternatively assessed against prospective COTS product provider processes. As requirements definition move to a lower level of detail, the Use Case model is introduced, with roles defined and interactions specified. Data requirements will also be identified for each process or transaction. This is all very straight forward and sensible. However, difficulties arise when people are introduced into the equation. Current methods identify roles largely as either information processors or process facilitators. In a business environment where something like 80% of all jobs involve interactions with others<sup>2</sup>, this can be a very narrow representation of what actually happens.

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<sup>1</sup> See <http://www.bpmi.org/> for business process management references

<sup>2</sup> Johnson, B., Manyika, J., & Yee, L. 2005. The next revolution in interactions.  
*McKinsey Quarterly*.

IT projects increasingly have to accommodate the full scope of people interactions, something engineering projects are less challenged by. Relationships between individual staff are becoming more critical as organisational hierarchies are flattened and decision making delegated to increasingly lower levels. Work place relationships go beyond simple information provision or process execution. They involve intangible aspects like building trust or confidence, reciprocity and the sharing of tacit knowledge<sup>3</sup>. Many a successful process execution will rely on undocumented “practices” developed through experience. A balance between process and practice is required if the business is to perform effectively<sup>4</sup>. As system functionality moves beyond simply automating transactions, to decision support roles, end users will have the discretion as to whether they use the system or not. Systems that are too constraining or prescriptive in how they interact with the end users will be ignored and very quickly, work around systems, using personal data bases and spreadsheets, will become the norm.

This paper introduces Value Network Analysis<sup>5</sup> as a business modeling technique capable of holistically capturing both the tangible process and intangible relationship related flows. Through the incorporation of both tangible and intangible flows into the analysis, the critical flows, whether they are tangible or intangible, can be identified and supported. The inclusion of intangible flows is more than decoration for the formal process flows. In some circumstances an important intangible flow like the development of rapport between a customer service agent and a prospective client, may change the whole nature of the process support required. In this situation, having information or knowledge at hand, that the customer service agent can relay to the client to build rapport, may be far more important than automating a work flow.

### **Value Network Analysis**

A value network can be defined as:

*“...any web of relationships that generates tangible and intangible value through complex dynamic exchanges between two or more individuals, groups, or organizations”*

- Verna Allee, 2002

Value network analysis is therefore the business modeling technique for capturing, visualizing and then analysing the network of interactions for improvement opportunities, whether they result in an organisational structure change or the implementation of a new

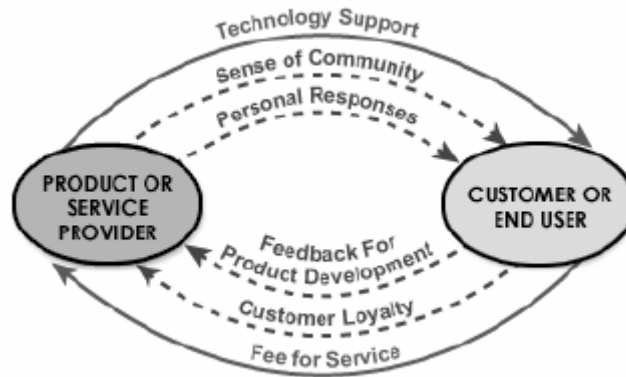
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<sup>3</sup> See [http://www.optimice.com.au/upload/Re\\_humanising\\_the\\_corporation\\_Dont\\_automate\\_facilitate.pdf](http://www.optimice.com.au/upload/Re_humanising_the_corporation_Dont_automate_facilitate.pdf)

<sup>4</sup> See [http://www.optimice.com.au/upload/Where\\_Business\\_Process\\_Meets\\_Business\\_Practice.pdf](http://www.optimice.com.au/upload/Where_Business_Process_Meets_Business_Practice.pdf)

<sup>5</sup> The information on VNA has been sourced from the value networks resource site <http://www.value-networks.com/index.html> provided under the creative commons license.

IT system. The technique inherits the attributes of a traditional business process mapping technique, with the addition of some unique features for identifying intangible flows.



**Figure 1 - VNA Map - Basic Components**

A VNA map consists of three basic elements. The ovals identify “participants”. Participants can be at the individual or group level, but at all times represent human decision makers. The arrows identify a flow between participants. They are always unidirectional. Solid lines represent tangible flows, dotted lines are intangible flows. Labels on the arrows are “deliverables” that move from one participant to the next. They can be tangible or intangible. Boundaries are typically drawn to limit the scope of the analysis to a workable level of detail.

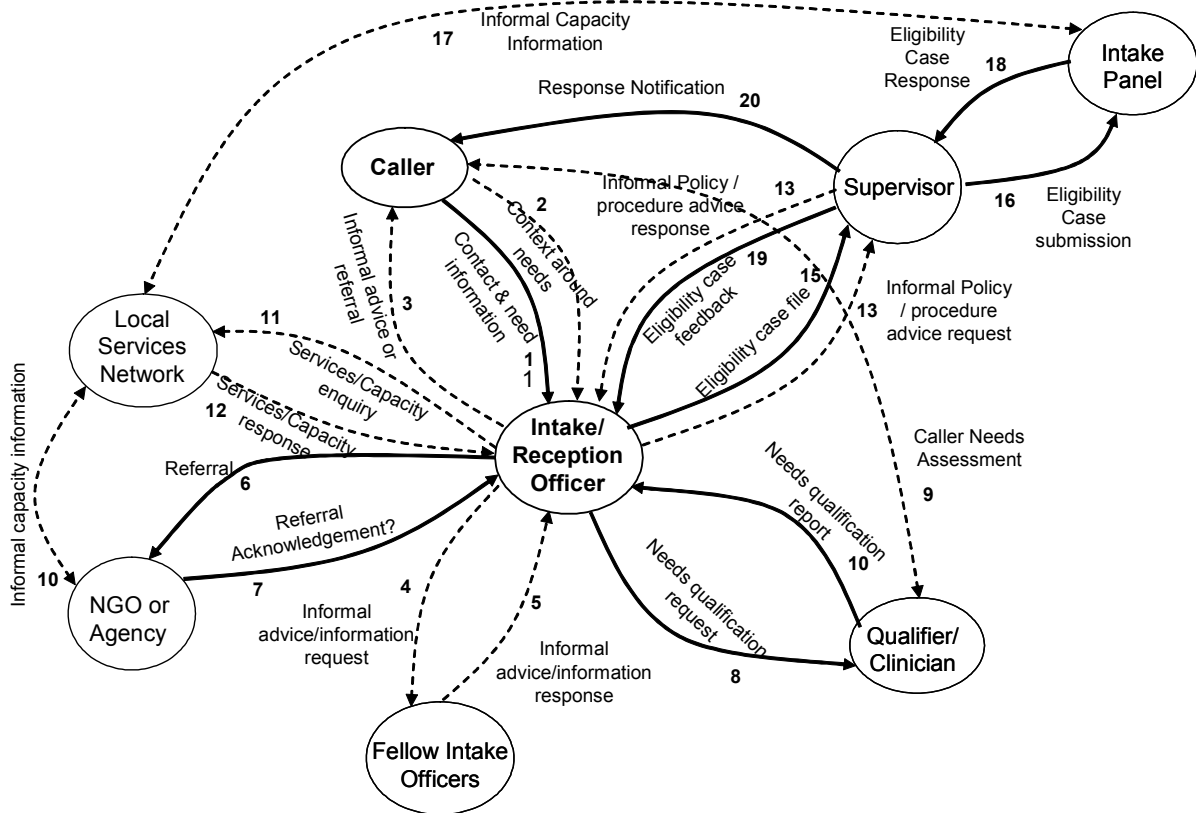


Figure 2 - Full VNA map example

The above map was developed for a community health agency's intake service. The numbers can be used to identify a typical sequence of activities. Without the dotted arrows the information provided is the same as that found in a typical business process or Use Case analysis. The dotted arrows however identify some important intangible interactions that are occurring. In the absence of accurate capacity information and deterministic admission rules (which is typically the case), much negotiation between the participants takes place before an effective operation can be achieved.

One can see from the map that working only with the tangible flows, some participants would not be identified at all and others, who might play critical knowledge sharing roles, are under-represented. A systems analyst using the business process flows alone may see an opportunity for a workflow solution to speed up the process, or a rule engine to process admission rules. However, considering the intangible flows above, the analyst would discover that a workflow solution would save no time at all, as the human negotiation interactions are more problematic and time consuming. In investigating the admission rules, the analyst might discover that the intangible interactions are often about how the formal rules can be relaxed to accommodate genuine cases, suggesting that the admission rules are far from complete or deterministic. In fact the whole nature of the system needs could be changed from insights gained from the VNA map. When asked to

place a relative value or ranking on the different flows, both tangible and intangible, it could eventuate that the most effective systems solution might be one which facilitates informal collaboration between the participants, rather than one which supports the process flows. As with business process analysis, costs, risks and benefits can be allocated to each flow to identify how value flows through the network, illuminating opportunities for improvement, be they via systems or organisational changes.

### **Integrating VNA with Systems Development Methodologies**

VNA is designed as a stand-alone business modeling technique with its own customised electronic support tools. As such it is most effective if used as the initial business modeling technique for a systems development. For those organisations that separate their business analysis techniques and toolsets from the systems development methods, the VNA mapping can be used to achieve what had previously been achieved with business process mapping, but with the addition of the intangible flows. Outputs can be captured for transitions to other systems through mechanisms like Microsoft Excel and Visio.

Once the requirements gathering reach the more detailed level, organisations may find that it is more appropriate to add VNA components to their requirements analysis techniques. The following example shows how intangible flows can be added to a simple Use Case model<sup>6</sup> to achieve VNA capability:

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<sup>6</sup> This use case example has been taken from Jacobson, I (1995), “The Object Advantage: Business Process Reengineering with Object Technology”, Addison-Wesley.

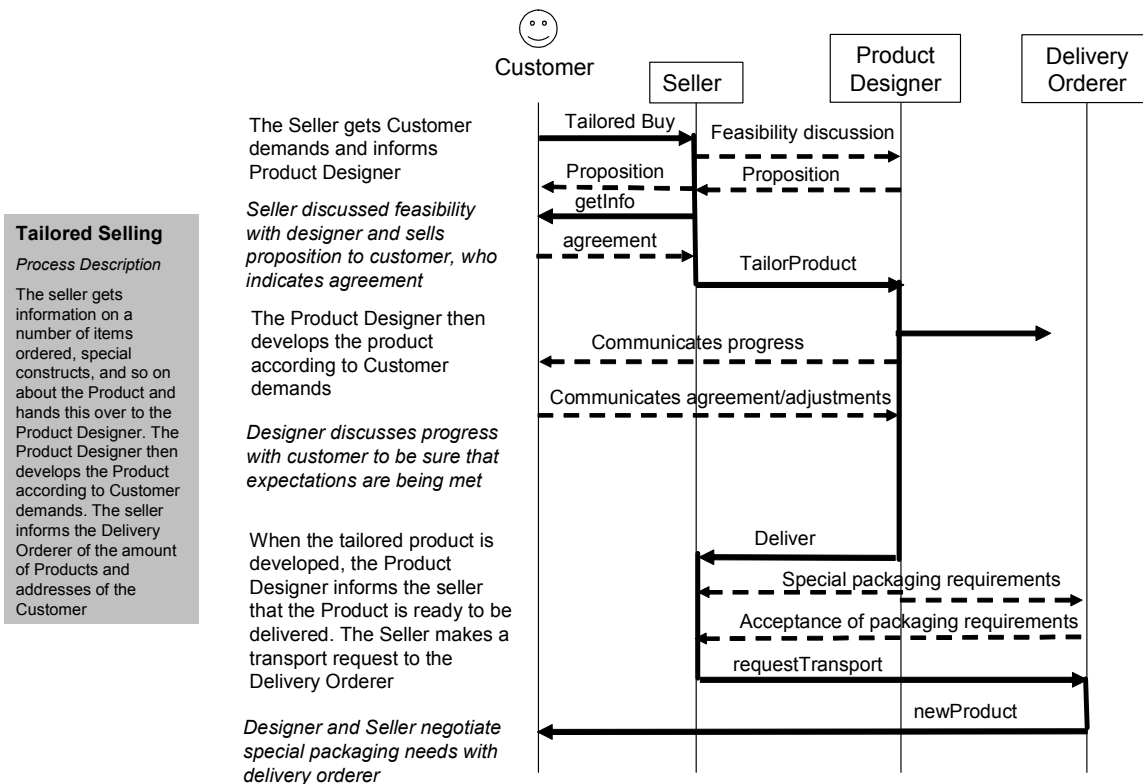


Figure 3 - VNA adaptations to Use Case Model

The dotted arrows and the italicized text show the intangible flow additions to the Jacobson Use Case model example. The additions are nothing more than activities that would typically take place but would not be captured in the short hand of a process map. Object models could still be developed from the above expanded Use Case. Where things may differ is in the translation from the object model to a systems implementation. Object models that reflect process flows are invariably converted to workflow style solutions. Once the intangible flows are added to the object model a more collaborative system might be prompted. For example, in the above use case, one could argue that the most critical interaction is that between the customer, seller and designer in discussing and negotiating what is possible in terms of a tailored product. If the designer and seller cannot win the confidence of customers for tailored products, then any amount of automation of the delivery processes will be superfluous. In this case the high value systems implementation might be a system to help sell the custom product capabilities of the firm, like a new computer aided design application. In this case getting the “right” product would be far more valuable that getting it fast, if a trade-off had to be made.

## Summary

This paper has presented a case for value network analysis as the business modeling tool of choice when considering major systems implementations. It has been argued that

current systems development methodologies are flawed in their focus on only process and information to represent the activities of a business. By including the intangible or knowledge based flows into the analysis, VNA provides a more holistic view of the business and a superior base for identifying critical value generation flows. This richer view can have major repercussions on which systems are developed and the type of support they provide to the human participants in the system. By facilitating a closer focus on the human participants and the richness of their interactions, systems implementations can be configured to be a more natural fit for these participants, leading to higher levels of systems acceptance and more targeted value generation from their use. While VNA is a stand-alone business modeling technique, an example was provided on how VNA concepts can be incorporated into traditional Use Case modeling.

### **About the Author and Optimice**

Laurence Lock Lee is a co-founder and principal of Optimice Pty Ltd, a company specializing in optimising business relationships. He has over 35 years of working experience as a researcher, manager and consultant across a breadth of public and private sector industries. His research and consulting has focused on the analysis and facilitation of relationship networks. He is currently completing a PhD on the links between a firm's corporate social capital and firm performance. He was published widely in the business and academic press on the above topics and presented and lectured on these topics in Australia, Asia, the USA and Europe.

Optimice is a niche consulting and intellectual capital company. It provides services to firms looking to improve and optimise their business relationships at the personal, intra-organisational or inter-organisational level using analytical techniques like Organisational Network Analysis (ONA) and Value Network analysis (VNA)

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