# THE DESIGN AND MANAGEMENT OF KNOWLEDGE INTENSIVE ENTERPRISES

**Michael M. Mann, Ph.D., EnCompass Knowledge Systems**
**Art Dhallin, EnCompass Knowledge Systems**
EnCompass Knowledge Systems, Inc.
11620 Wilshire Boulevard, Suite 450
Los Angeles, California 90025

**Abstract**
Knowledge intensive organizations depend more on ad hoc vs. formal structures. These tend to be process vs. functionally focused, and characterized by overlapping and interdependent networks of individuals.

EnCompass®, a computer supported system for organizational process visualization, analysis, synthesis, and management, integrates bi-nodal interaction information to produce issue and modus dependent, three-dimensional representations of the patterns of interactions, and to generate scalar metrics of organizational process effectiveness and drivers.

In this paper the application of this methodology to the management of knowledge intensive enterprises will be illustrated with industrial cases in the high technology sector.

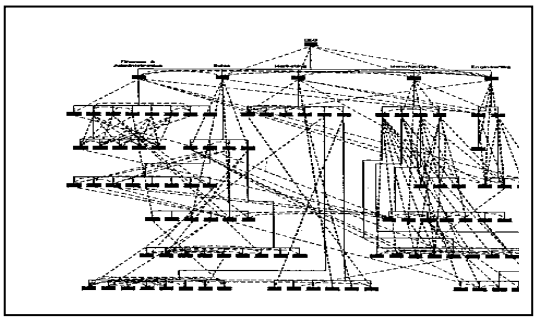
**Introduction**

The design and management of the organizational networks and infrastructures on which every enterprise depends for the conduct of its functions is complicated by a number of interrelated factors.

Organizations must concurrently conduct a broad range of differentiated, but interdependent tasks, e.g., R&D, product development, manufacturing, marketing, customer support, planning, corporate development, etc. The execution of each of these tasks involves multiple interactions and interfaces between organizational units and individuals that occur with varying frequency and have different levels of impact on performance and decision processes. The pattern of interaction is generally highly issue or task dependent. For example, Exhibit 1 shows the pattern of interactions (dotted lines) in a specialty foods company around the single issue of product development. The pattern bears little relationship to the formal structure represented by the solid lines and boxes. The frequency of occurrence and importance of the individual interactions varies, and, in many cases, the two parties involved may not attach the same level of significance to the interaction. The patterns of interaction are highly issue dependent, even for related issues.

The problem is further complicated by the fact that the patterns and the importance of the elemental interactions tend to be strongly influenced by factors such as proximity and the modus of interaction, e.g., concurrent (face-to-face, meetings, telephone, videoconferences) vs. non-concurrent (documents, e-mail, fax).

**Exhibit 1. Task Related Interactions.**



In addition to these complexities, there is another fundamental dimension to the challenge of synthesizing and managing the complex of networks. Around each issue of consequence, there exists not a single network, but a hierarchy of networks of decreasing dimension, i.e., communication networks, influence networks, and decision networks. At the lowest tier of the hierarchy is the communication network, linking those who provide information with those who need to access it in the execution of their responsibilities. The next tier is the subset of individuals who influence the particular decision processes and/or tasks. At the top tier is the still smaller set of individuals that are directly associated with decisions relative to the particular issue. In order to accurately and effectively analyze, synthesize, and manage the organizational processes, it is imperative that the multi-dimensional and issue dependent families and tiers of networks, as well as the interactions between them, be considered.

It is also important to recognize that there are often as many perceptions as to how the enterprise functions ("As-Is") and the needed changes ("Should-Be") as there are members of the organization. In order to create effective and enduring changes in group processes, it is vital that these individual perceptions be melded into a consistent view of the current situation and a common vision for the future. Therefore, it is valuable to have a tool for capturing and integrating

this multiplicity of perceptions and presenting the results in a form that can readily support process assessment and the development of consensus with regard to changes or improvements.

Depersonalized methodologies provide little or no information about how the enterprise actually organizes around tasks and the corresponding issues, and do not provide the information necessary to understand the interactions within, and external to, the organization that influence task execution and decision processes. Without the perspective of the "human" dimension, the picture is incomplete and provides only a partial foundation for the design, implementation, evaluation, and management of business processes, systems, and infrastructure.

The tools and methodologies used by behavioralists and anthropologists to analyze social networks have proven inadequate for unraveling the maze of task and issue dependent networks associated with the multi-dimensional, issue, and time-dependent processes that characterize complex business enterprises. Simply mapping communication networks provides some indication as to how data or information moves through the organization, but does not show the mechanisms or extent through which task execution is influenced or related decision processes are impacted. Many links or channels may have little operational consequence, or, in fact, may contribute to counterproductive "communication or information overhead." It is essential to have the capability to devolve the complex hierarchies of interacting networks. For interaction mapping tools to be of benefit in the design and management of organizational network processes in the task focused business context, they must be able to address fundamental questions, including:

1) Do the requisite communication channels exist to support informed decision and task execution processes?
2) Are the processes clearly understood, or are there significant misperceptions that could adversely impact current or future performance?
3) Are the right individuals involved and appropriately influencing the various decision processes? Are the links and networks through which decisions propagate through the organization appropriate?
4) Are there dysfunctional or irrelevant, resource absorbing, elements in the networks?
5) What are the factors that influence the structure of these non-formal networks, and how can the networks be altered to better align them with the needs of the operation?

## Organizational Network Process Mapping

EnCompass®, a PC supported system for organizational process visualization, analysis, synthesis, and management, was developed specifically to address these problems. The conceptual framework of EnCompass® is straightforward. Using a tailored data collection instrument (DCI), Exhibit. 2 and Appendix, information is collected from the members of the organization (and external interfaces, as appropriate) about their individual interactions on selected issues of consequence. In this case, the Issues included in the DCI were selected by a steering group of managers and other key individuals in a high technology manufacturing firm to reflect important decisions and activities associated with intellectual property management, the focus of the study.

The population for the survey is designed to include those individuals that could reasonably be presumed to have significant impact on the issues selected for consideration. The selected population is listed in the Name column of the DCI. Each participant completes the DCI indicating the individuals with whom they have regular, task related interaction; the frequency of the interaction,

**Exhibit 2. Sample Data Collection Instrument.**

NAME _____ STUDY NUMBER _____

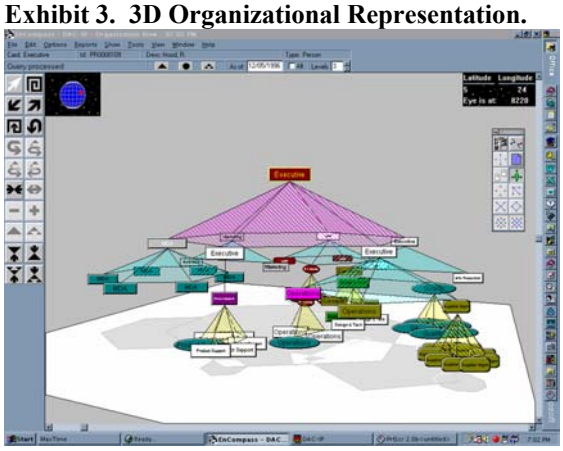
| With whom do you **interact at least quarterly** in ways that are generally important in order **to get your tasks one, or to help the other person get his/her tasks done?** (√ all that apply) | | | **Modus of Interaction** (√ all that apply) | | | About **how often do you interact** with the person in order **to do your tasks or for them to do theirs ?** *FREQUENCY* | About **how important is this interaction** for you **to do your tasks, or for them to do theirs ?** *IMPORTANCE* | When you interact with this person, **how often do your interactions have significant impact on making decisions either your decisions or theirs** about the following business issues? (Use the definitions on the attached sheet.) **IMPACT** **Impact Scale Range is 1 through 5** *(If "Never", leave blank)* Seldom----Occasionally----Half the time----Usually----Always 1 2 3 4 5 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ID#** | **NAME** | √ | **Personal** | **Paper** | **Electronic** | **Frequency Range** 5=Several times a day 4=Several times a week 3=Several times a month 2= About once a month 1=Less than monthly (If Never, leave blank) | **Importance Range** 5=Critical 4=Very Important 3=Important 2= Minimal Importance 1=Not Important (If Never, leave blank) | Generation of IP | Identification, Evaluation, Categorization & Protection of IP | Documentation Management | Policies & Procedures | External Distribution of IP | Updating of IP | Tracking and Audit of IP | Recovery and/or Destruction of IP | Revenue Generation |
| 001 | Haugland, David | | | | | | | | | | | | | | | |
| 002 | Becerra, Maricela | | | | | | | | | | | | | | | |
| 003 | Castle, Lora | | | | | | | | | | | | | | | |
| 004 | Colter, Richard | | | | | | | | | | | | | | | |
| 005 | Demerey, Donna | | | | | | | | | | | | | | | |
| 006 | Edgar, Michael | | | | | | | | | | | | | | | |

on a numerical scale relevant to the particular study; the importance that they perceive the interaction has for task execution on a numerical scale ranging from unimportant to critical; and the impact that the interactions have on decisions related to each of the issues.

Other parameters such as the modus and duration of the interactions are included as relevant. For example, case studies consistently show that modus (e.g.., face-to-face, electronic, paper) can strongly influence the non-formal network processes.

The data from the DCIs is input into EnCompass® (either by manual keyboard entry or via the Internet), along with descriptive information on the formal structure of the organization, e.g., an indentured outline reflecting the reporting structure. The formal organization is diplayed in EnCompass® in a three dimensional format in which individual organizational units are represented by cones with the manager at the apex and the manager's direct reports arrayed around the base of the cone. The design elements of the cards representing organizations or individual nodes (e.g., card shape, color, border, font) can be selected to reflect attributes judged significant to the particular study (e.g., function, discipline, location, tenure, etc.) Exhibit 3 shows the organizational structure for the case described in the DCI. Only the top three tiers of the hierarchy have been selected for display for clarity.

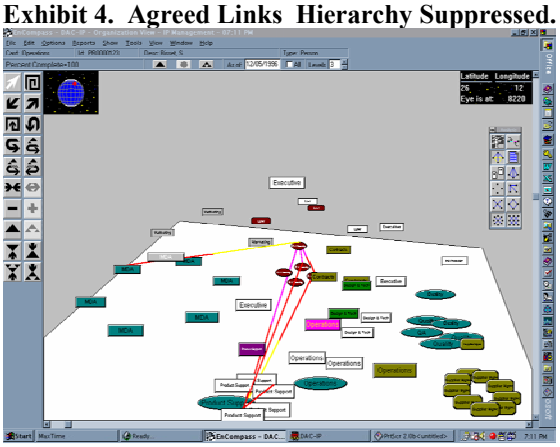
**Exhibit 3. 3D Organizational Representation.**



The displayed links consist of two half-links emanating from the associated nodes and representing the responses from that individual. The attributes (color, width, line form) of the link elements can be chosen by the user to reflect selected parameters for display (e.g., importance, impact, frequency). In Exhibit 4, the Agreed links associate with an analysis around the first issue, Intellectual Property Management, have been overlaid on the formal hierarchy (the formal structure has been suppressed for clarity). In this case, the pairs of half-links joining two individuals may have different colors, since the system allows the user to choose the criteria for agreement. In this case a relatively soft agreement criterion of + or – 1 on each of the parameters was utilized.

The system also permits the selection of a range of agreement, i.e., the differences between the numerical responses on each of the parameters by each respondent, that will result in the display of a link. The user may select "Agreed," "Disagreed," or "Either" as a criterion for the displayed links.

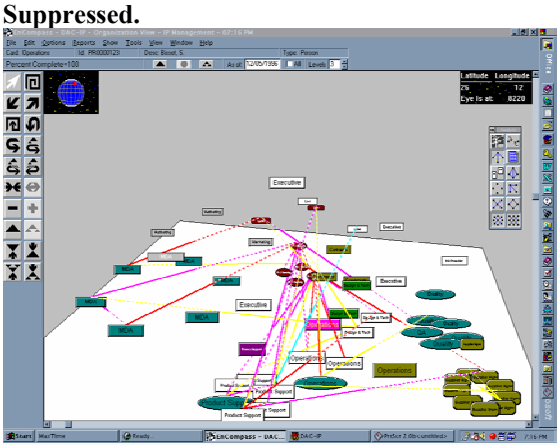
**Exhibit 4. Agreed Links Hierarchy Suppressed.**



Differences in the displayed characteristics of the pairs of half-links provide direct and easily interpreted information as to the perceptual disagreements by the individuals involved with regard to the selected interaction. The broken lines in Exhibit 5 showing Disagreed links flag existing or potential problems with decision processes and/or task execution and poor resource utilization.

Comparing the two Exhibits makes it very evident that there exist serious misunderstandings and confusion with regard to the processes associated with the issue being examined, Intellectual Property Management.

**Exhibit 5. Disagreed Links - Hierarchy Suppressed.**



The system can not only clarify "what" is happening, but can also provide some insights into "why." The attributes of the participants that may be anticipated to influence the patterns of interactions

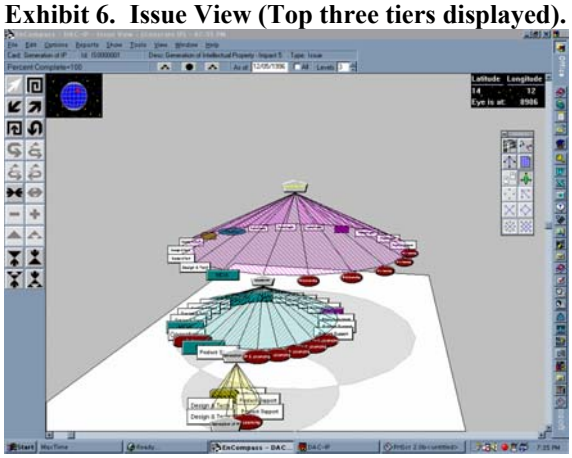
(e.g., discipline, function, location, organization, current or prior program experience, special competencies, tenure, etc.) can be included in fields attached to the records of the participants.

The system provides for filtering the views using a logical combination of attributes to determine the characteristics or attributes that are common to nodes in the networks.

EnCompass® generates two distinct views – the Organization View, and the Issue View. In the Organization View, illustrated in Exhibits 4 and 5, a 3D representation of the organizational reporting structure is used as the framework for visualization. The links are superimposed on this framework, and it is therefore useful in assessing the extent to which the organizational structure supports or inhibits particular organizational processes.

In the Issue View, EnCompass® creates a family of "virtual hierarchies" in which individuals are placed at a level that reflects their impact, as determined by the confirmed interactions with the other members of the population, on the particular Issue being examined (Exhibit 6). The position of the individuals in this view is independent of their position in the formal organizational hierarchy.

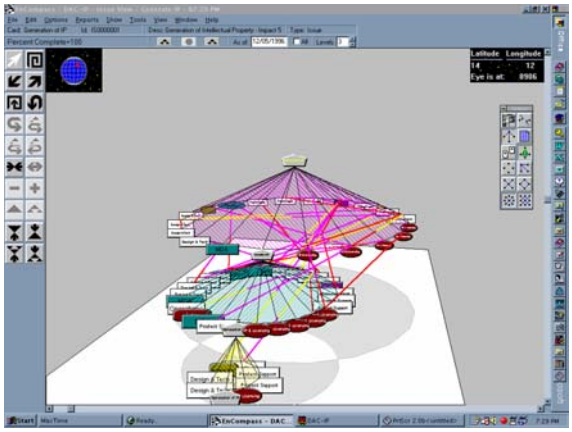
**Exhibit 6. Issue View (Top three tiers displayed).**



In this Exhibit, the individuals at the top tier (attached to an Issue object Impact = 5) are deemed to have critical impact on decisions relating to the selected issue, while the individuals attached at lower tiers (Impact = 4 and 3) have successfully less consequential impact on this issue. Note that in this view, the hierarchies are issue dependent, and an individual at the top of one hierarchy might be at the bottom of another, reflecting the varying roles and responsibilities of individual contributors in the organization. The links representing the bi-nodal interactions can be displayed on the Issue hierarchies, just as with the formal organizational hierarchy.

In general, the Issue View provides far more insight than does the Organizational View. The level of influence that individuals exert on decisions about a particular issue are immediately evident, the degree of interaction between the decision making group is directly displayed, and the channels through which decision makers receive information and the patterns of propagation for decisions through the balance of the organization are clarified (Exhibit 7)

**Exhibit 7. Issue View with Overlaid Links.**



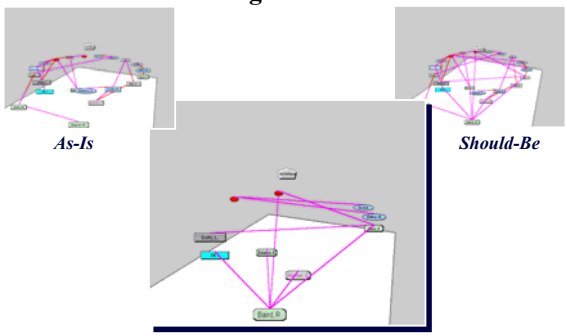
The displays are true 3D, and may be rotated in space or zoomed, or the viewing position or perspective altered to aid in interpretation. The system also provides a number of visualization or analysis tools that permit selecting, simplifying or expanding organizational and non-formal network or sub-network elements for detailed examination or tracing paths. The alternative of a 2D display in indentured outline format is also provided, as are facilities for generating textual or graphical reports,

EnCompass® provides for the creation and manipulation of multiple databases (e.g., "As-Is" or "Should-Be") and organizations. Organizational structures can be readily modified to reflect actual changes or to synthesize or evaluate alternatives. Effectivity dates can be attached to databases or organizational changes and utilized as a parameter in queries so that the path of change can be monitored. Often, it is evident that there is even more confusion and disagreement about the desired future state than there is about the existing "As-Is." The very visual and readily understood and communicated nature of the results provided the organization with an interactive tool for working through differences and establishing consensus on their plans for change. This is subsequently captured by creating a "Negotiated Should-Be," in which each links associated with each issue were confirmed by both parties.

The system provides for the subtraction of any two views to critically examine changes. For example, by subtracting an "As-Is" view from the corresponding "Should-Be," a view is created which shows the elements that need to be put into place (Exhibit 8). By reversing the process, i.e., subtracting the "Should-Be" from the "As-Is," a view is created that shows all the elements that

currently exist, but should be eliminated. The two views in effect provide a "template for change" showing what needs to be put into place and how resources may be reallocated to effect the changes.

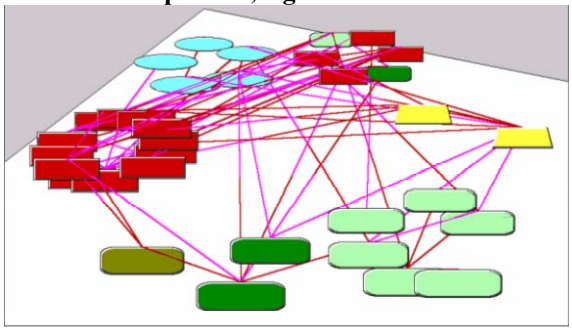
**Exhibit 8. Subtracting two views.**




This facility also provides an effective tool for change management. By periodically re-surveying during the course of a major change, the path of change may be monitored with "in-process" measurements by subtracting the updated "As-Is" from the "Should-Be", or incrementally by subtracting sequential "As-Is" views.

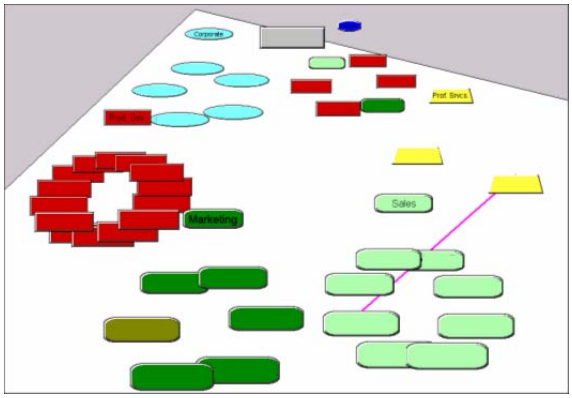
As mentioned in the introduction to this paper, the modus of interaction can significantly impact the patterns of interaction, and the significance that the individual participants attach to those interactions. This is readily seen in the case represented in Exhibits 9 and 10. In Exhibit 9, all the Agreed interactions deemed by the participants to be important are depicted (analysis parameter chosen to include Important, Very Important, and Critical). In Exhibit 10, the interactions are further limited to those that occur through non-concurrent (e.g., electronic, fax, voice-mail) modi of interaction. Only a single link survives! It is clear that in this organization, the culture attributes little significance to interactions in which the parties are not actively and simultaneously engaged. This was a critical, and unrecognized, issue in this company, which was geographically distributed. Despite extensive and continuing investments in electronic infrastructure, effective decision making interactions were limited to meeting, phone calls, and the occasional video-conference (i.e., concurrent modi of interaction).

**Exhibit 9: Important, Agreed Interactions.**



This situation is certainly not unique. As was ultimately the case in this firm, a great deal of sophisticated design, education, and acculturation is necessary to create an environment of "electronic proximity," in which people function via non-concurrent modi of interaction in a manner approaching more traditional, concurrent, decision making and knowledge sharing processes.

**Exhibit 10. Important, Agreed, Non-concurrent Interactions.**




**Applications**

This system has proven effective in aligning organizational and work processes in a broad spectrum of applications and environments. In the case from which the illustrations for this paper were drawn, it was employed to facilitate and accelerate the implementation of a shift in strategic emphasis for the company from manufacturing to design and technology development and licensing. Teams constituted with cross-functional membership from the relevant organizational elements analyzed the task related networks associated with critical success factors and synthesized alternatives that synergistically leveraged the competencies of the knowledge workers, and assured that the key issues of knowledge capture, exploitation, and protection were addressed. In this circumstance, the Issue Views provided a mechanism of focusing on the design of the processes and related networks without the complications and resistance associated with the formal organizational structures and the positions of the participants in the formal hierarchy. Only after the design process was complete were the results transferred to the Organizational View to assess the degree to which organizational changes might consolidate critical networks and streamline critical processes. At this point the system was used as a vehicle to support group assessment of organizational alternatives in a "What-If" mode, the equivalent of an "organizational spread sheet." In situations where physical separation or the priorities of the individuals involved made the requisite communication and information sharing channels impractical, the maps provided a template for modifying or integrating the information systems of the business units to support information sharing

and timely and informed decision processes. In particular, the EnCompass® maps provided a template for determining who needed to be connected to which database, and the appropriate access levels. The overall result was the cooperative and effective resolution of the challenging problems of knowledge management and integration that frequently produces high levels of stress and conflict, which, in turn, can seriously compromise performance and the realization of the objectives.

At the other end of the spectrum, the system has been used to support management review and planning processes and issues of corporate governance. For example, a multi-national marketing firm used EnCompass® to facilitate the annual strategic planning meeting of the individual country managers, each of which ran semi-autonomous units. In this case, the process provided the participants with a mechanism to assess the current operations, and synthesize international networks to leverage the broad geographic presence of the company to improve business capture, and to better support the objectives and operations of their multi-national corporate clients.

The approach has proven to be of great value in addressing the need for process improvement in situations in which inter-organizational barriers are substantial and the members of individual organizational units have limited knowledge of the operations of the balance of the enterprise. This situation can occur for a number of reasons: geographic separation (e.g., national or multi-national corporations, utilities); professional or institutional parochialism (e.g., multi-disciplinary engineering firms, universities, healthcare facilities, governmental bodies); policies or practices (e.g., military, public safety agencies, financial institutions); operational isolation (e.g., conglomerates, corporate research laboratories; classified projects; field services). In such cases, individuals may possess a "knowledge horizon" that extends no more than one or two interactions away, making it difficult to make sound decisions as to business processes that have cross-functional involvement or impact. In this type of situation, organizations often become rigid and unresponsive, or stumble through a series of ineffective and demoralizing "organizational experiments" in an effort to change. Thus, it is imperative to introduce a mechanism for capturing and integrating the valid local knowledge of individuals about their immediate interactions to create complete views of critical processes. The power of the EnCompass® methodology in such circumstances was demonstrated in a highly publicized study of a major metropolitan police department that flagged serious process problems and facilitated sweeping changes and improved inter-organizational interfaces.

One of the most productive applications has been in the field of Knowledge Management (Holmes, 1996). EnCompass® provides a systematic approach to the analysis, synthesis, and management of the human networks that are fundamental to the translation of information into knowledge and informed and effective action. For example, a large, commercial aerospace company utilized the system to transform the firm's intellectual property management practices, resulting in a dramatic increase in patent disclosures and licensing revenues.

EnCompass® also has been utilized as a complement to other management tools. When combined with workflow (Mann, 1999) and/or project management systems (Mann, 1995), it provides another dimension showing how individuals are connected to and impact the various stages of the process, enabling better planning and management of the evolution of the associated teams. It has proven very valuable in supporting integrated product development and concurrent engineering processes. When used with structured focus groups and customer surveys and a derivative of Quality Function Deployment, it provides a vehicle for translating the "Voice of the Customer" into the design of customer responsive organizations and processes (Moran and Mann, 1995).

**Conclusion**

In the past technology has primarily impacted the administrative and operational aspects of enterprise management. In the future, technology will have an increasingly important role in addressing the fundamental issues of enterprise design and governance.

**References**


Cross, Rob, Stephen P. Borgatti and Andrew Parker, "Making Invisible Work Visible: Using Social Network Analysis to Support Strategic Collaboration," *California Management Review, Winter* 2002, 44(2): 25-46.

EnCompass® is a registered trademark of EnCompass Knowledge Systems, Inc.

Holmes, Reginald, "Retooling for Knowledge Sharing," *Proceedings from the Knowledge Advantage Conference* (December 1996)

Krackhardt, David and Jeffrey Hanson, "Informal Networks: The Company behind the Chart," *Harvard Business Review* (July-August, 1993): 104-111

Lahti, Ryan K., Eric D. Krebs, and E. Valdis, "Developing the Productivity of a Dynamic Workforce: The Impact of Informed Knowledge Transfer", *Journal of Organizational Excellence*, Spring 2002, 21(2): 13-21.

Mann, Michael M., *"*Organizational Process Visualization*" HICSS-32, Workflow and Reengineering Mini-Track*, (January 1999)

Mann, Michael M., *"*Process-Focused Project Management," *Proceedings of Project World*

*'95, Invited Paper E-5* (December 1995)
Mann, Michael M. and Arthur J Dhallin, "Organizational Process Mapping: Aligning Organizational and Business Process" *Proceedings of the 2003 IERC Conference* (May, 2003)
Moran, John J. and Michael M. Mann, "Integrating Quality, the Customer, and the Team," *Product Development Management Association –Product* Development Conference Workshop (March 1995)
Reed, Nelson E., "On the Shape of Verbal Networks in Organizations", *Organization Studies* 2001, 22(5): 797-823.

**About the Authors**

**Michael M. Mann** received his Ph.D. from the University of Southern California in Electrical Engineering and Physics. He received an MBA from the University of California, Los Angeles and B.S. and M.S. degrees in Electrical Engineering from the California Institute of Technology. He is a Certified Management Consultant and is Board Certified in Business Appraisal. Dr. Mann is the Chairman and CEO of EnCompass Knowledge Systems, Inc and an Adjunct Professor of Industrial and Systems Engineering at the University of Southern California. He previously founded successful manufacturing, engineering, and service companies, has served as the CEO of both public and closely held enterprises, and as a senior executive with major aerospace firms. He has served on the Army Science Board and as an Examiner for the Malcolm Baldrige National Quality Award.

**Arthur J. Dhallin** is currently completing his Ph.D at the University of Southern California in Industrial and Systems Engineering. He has received a M.S. in Industrial and Systems Engineering and a B.S. in Civil (Environmental) Engineering at the University of Southern California. His current research activities involve best practices in organizational design in order to enhance quality management. He is currently a project manager with EnCompass Knowledge Systems.

## Appendix: Sample Data Collection Instrument

**NAME** _____ **STUDY NUMBER** _____

| With whom do you **interact at least quarterly** in ways that are generally important in order **to get your tasks done, or to help the other person get his/her tasks done?** (√ all that apply) | | | **Modus of Interaction** (√ all that apply) | | | About **how often do you interact** with the person in order **to do your tasks or for them to do theirs ?** *FREQUENCY* | About **how important is this interaction** for you **to do your tasks, or for them to do theirs ?** *IMPORTANCE* | When you interact with this person, **how often do your interactions have significant impact on making decisions either your decisions or theirs** about the following business issues? (Use the definitions on the attached sheet.) **IMPACT** **Impact Scale Range is 1 through 5** *(If "Never", leave blank)* Seldom-----Occasionally-----Half the time-----Usually-----Always 1 2 3 4 5 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ID#** | **NAME** | √ | **Personal** | **Paper** | **Electronic** | **Frequency Range** 5=Several times a day 4=Several times a week 3=Several times a month 2= About once a month 1=Less than monthly (If Never, leave blank) | **Importance Range** 5=Critical 4=Very Important 3=Important 2= Minimal Importance 1=Not Important (If Never, leave blank) | Generation of IP | Identification, Evaluation, Categorization & Protection of IP | Documentation Management | Policies & Procedures | External Distribution of IP | Updating of IP | Tracking and Audit of IP | Recovery and/or Destruction of IP | Revenue Generation |
| 001 | Haugland, David | | | | | | | | | | | | | | | |
| 002 | Becerra, Maricela | | | | | | | | | | | | | | | |
| 003 | Castle, Lora | | | | | | | | | | | | | | | |
| 004 | Colter, Richard | | | | | | | | | | | | | | | |
| 005 | Demerey, Donna | | | | | | | | | | | | | | | |
| 006 | Edgar, Michael | | | | | | | | | | | | | | | |
| 007 | Gorrell, Clark | | | | | | | | | | | | | | | |
| 008 | Guerrero, Francisco | | | | | | | | | | | | | | | |
| 009 | Highfield, David | | | | | | | | | | | | | | | |
| 010 | Laurean, Monica | | | | | | | | | | | | | | | |
| 011 | Law, Alexander | | | | | | | | | | | | | | | |
| 012 | Padilla, Jacqueline | | | | | | | | | | | | | | | |
| 013 | Uribe, Hope | | | | | | | | | | | | | | | |
| 014 | Morata, Vladimir | | | | | | | | | | | | | | | |
| 015 | Chaudier, John | | | | | | | | | | | | | | | |
| 016 | Cruz, Ricardo | | | | | | | | | | | | | | | |
| 017 | Hoesche, Anthony | | | | | | | | | | | | | | | |
| 018 | Horrigan, Yolanda | | | | | | | | | | | | | | | |
| 019 | Nichols, Brett | | | | | | | | | | | | | | | |
| 020 | Peterson, Jay | | | | | | | | | | | | | | | |
| 021 | Sauthoff, Taunya | | | | | | | | | | | | | | | |
| 022 | Thompson, James | | | | | | | | | | | | | | | |
| 023 | Alvarez, Jose | | | | | | | | | | | | | | | |
| 024 | Barrera, Wilbert | | | | | | | | | | | | | | | |
| 025 | Buchanan, Roy | | | | | | | | | | | | | | | |