

## Knowledge Network Mapping Leads to Improved Customer Support

The Canadian manufacturing firm S.A. Armstrong Limited undertook to identify its subject matter experts (SMEs) by querying the organization. Once lists of top and up-and-coming SMEs were made available to the Customer Support department, Armstrong customers received faster responses to complex questions about Armstrong fluid-engineered products.

### Core Topics

Knowledge Network Mapping, Capability Networks, Knowledge Transfer, Patterns, Peer-evaluated Expertise, E-Workplace Systems and Technology, Knowledge Strategy, INFLOW™, UCINET™, KNETMAP™

### Key Issue

Knowledge Network Mapping to Subject Matter Experts

Innovative and globally competitive firms, including manufacturers such as S.A. Armstrong Limited, function mostly on the basis of the know-how of their people, yet this knowledge is difficult to codify. Knowledge network mapping can identify those individuals deemed by their peers to be subject matter experts on important products, processes and services.

### Issues Addressed:

The manufacturer S. A. Armstrong Limited produces a wide array of products for a company of its size. There are more than twenty product lines, and each line contains differently configured products. As each product is manufactured according to custom order, there are thousands of permutations of size, power, options and features. Additionally, each product must conform to the HVAC standards of the destination country and the intended industry.

The Customer Support department is responsible for addressing questions on these products. It prides itself on providing a response within two hours of receiving the call, either by telephone or email. The questions are generally complex, and frequently require an opinion or recommendation from a subject matter expert. Frequently these SMEs are not available (they may be out of the office or otherwise not reachable). When the top SME is not around, who is the next in line who can answer a customer support question? And when the next in line is not available, what is the pool of up-and-coming SMEs that can be accessed to provide a timely response to a customer question?

### Objectives:

- Identification of critical skills and expertise required to support the twenty main product lines;
- Identification of the source of the skills and expertise;
- Analyze the dependence on these people for expert advice, and assess the risk to the organization if this resource were lost.

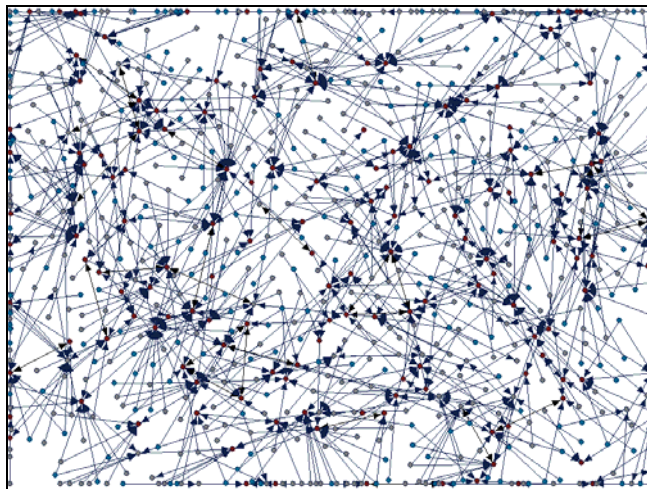
### Approach:

- A query about expertise is sent by email:

**Example Query e.g. To whom do you go for technical support regarding Vertical In-Line Pumps?**

- Employees respond to each query by selecting individuals from a pick list of names;
- New names (including external contacts) are added to the list;
- The data is displayed in a dynamic knowledge network map that updates after each submission.

We used the data-gathering tool KNETMAP™. This application generates dynamic Web-based knowledge network maps in real-time after each submission by a participant.



*Figure 1: Sample Screen shot of KNETMAP™ knowledge network map*

With the cooperation of 258 participants who were requested to provide data in response to twenty email queries over a period of two weeks, a series of "knowledge network maps" of people whose expertise was sought were generated for each of the following domains: Vertical In-Line Pumps, Horizontal Split-Case Pumps, End-Suction Pumps, Circulators, Vertical Multi-Stage Pumps, Sump and Sewage Submersible Pumps, Integrated Pumping Systems, Booster Pumps, Fire Pumps, Heat Exchangers, Circuit Balancing Valves, Flo-Trex Valves, Suction Guides, Hydronic Specialties, Motors, Variable Frequency Drives, Diesel Engines, On-Line Order Tracking, Heat Exchanger Software, ACE Product Selection Software.

Maps were made available for viewing by participants after each submission and were archived for retrieval, either for decision support, for location of expertise, or for monitoring changes in the knowledge networks. Specific

attributes designating location (Canada, UK or USA) were assigned to all participants; these attributes were included in this sample ranked list.

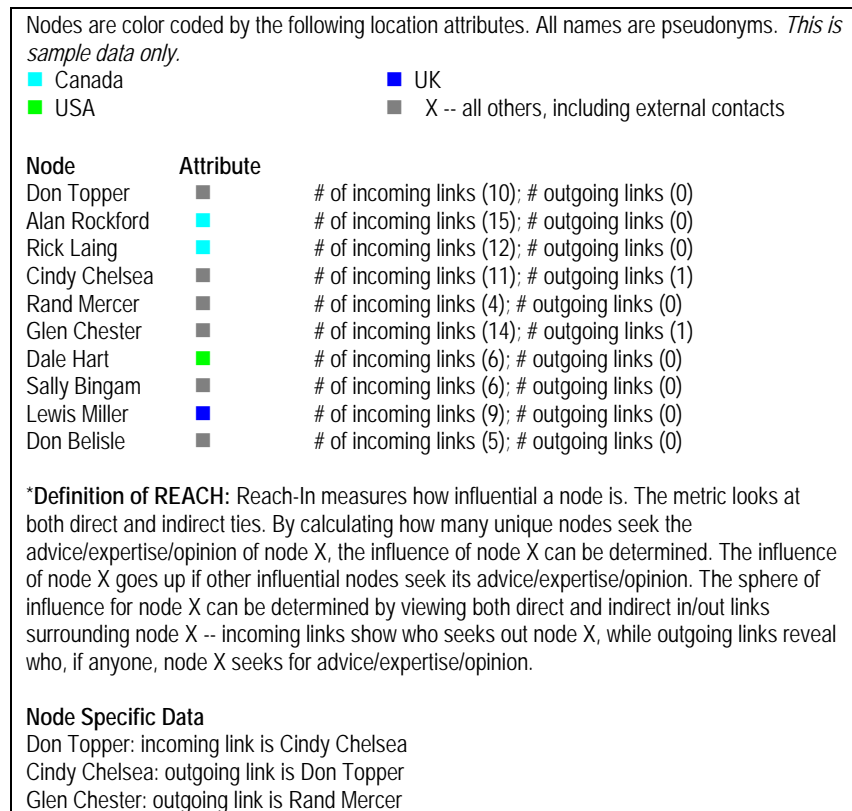


Figure 2: Analyzed Data

**Results:**

- Lists of known subject matter experts;
- Lists of up-and-coming subject matter experts.

**Benefits**

- Reduced subjectivity in identifying SMEs due to the peer evaluation approach
- Identification of individuals with deep corporate knowledge
- Exposure of vulnerabilities related to critical skills assets
- Decision support for targeted training

**Future Considerations**

- Generating and archiving knowledge network maps of subject matter experts and making such maps and/or lists available to all staff;
- Using subject matter expert network maps as orientation tools for new staff;

- Launching communities of practice led by retiring SMEs as part of a program of continuous learning leading to capabilities development for a new wave of managers, thereby mitigating loss of expertise.
- Updating the Yellow Pages system and creating links to the network maps;
- Making such maps and/or lists available to customers and suppliers.

### **Conclusion**

The data gathered in this pilot revealed many of the 'lynchpins' in the flows of knowledge instrumental to getting answers to complex technical questions. Such individuals are generally only manifest in informal networks because information flows do not follow managerial lines. These informal links help circulate information and are responsible for significant activity that sustains the effective functioning of the organization, including better customer support.

Feedback from the participants was increasingly enthusiastic as this initiative progressed; several significant cultural issues were raised. Once the first few maps were generated, product managers became extremely interested in seeing results of their product lines and made an effort to better understand the emerging patterns through discussions with the KNETMAP™ project leader. Of particular interest to them were the "surprise" SMEs who surfaced as key resources.

Network maps show the relationships based on information exchange between colleagues. They are also a reliable snapshot of how work gets done in an organization. These maps have significant potential for decision support related to HR planning.

### **References:**

Degenne, A. and Forse, Michel (1999), *Introducing Social Networks*, Sage Publications.

[www.knetmap.com](http://www.knetmap.com)

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