

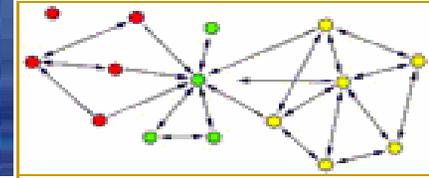
Dominion Case Study: Improving Performance of IT Architects

March 2006



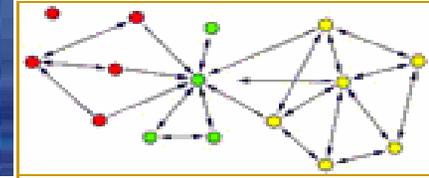
The **NETWORK ROUNDTABLE** *at the* **UNIVERSITY OF VIRGINIA**

Agenda



- About Dominion
- How Network Analysis Supports Information Technology (IT) Strategy
- Approach to Applying Organizational Network Analysis (ONA)
- Key Findings and Recommendations
- Critical Success Factors and Lessons Learned
- Appendix
 - How to Interpret a Network Diagram

About Dominion



- **Dominion** is a fully integrated energy company and one of the nation's largest producers of electricity and gas with:
 - 28,100 megawatts of power generation
 - 6,000 miles of electric transmission
 - about 6.3 trillion cubic feet equivalent of proved natural gas reserves
 - 7,800 miles of natural gas pipeline
 - the nation's largest natural gas storage system, with more than 950 billion cubic feet of storage capacity
- **One of the largest utilities in U.S. with over 4 million electric & gas customers**
- **\$52 billion in assets and \$18 billion in revenues**
- **Operations in 22 states and Canada**
- **Serves energy customers in nine states.**
- **Corporate headquarters are in Richmond, VA.**

Dominion's Business Units

Electric Generation



Transmission



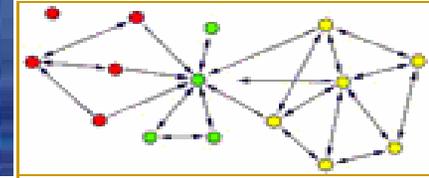
Delivery



Gas/Oil Exploration & Production

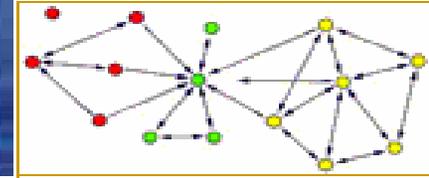


Dominion's IT Program is Responsible for Driving Business Transformation



- **Centralized Information Technology (IT) program in a services company**
- **Staffing of 1200 managing over 2,100 production applications**
- **IT teams located with clients in VA, OH, PA, WV, LA, TX, OK, CT and more**
- **IT is a change agent, leading major business transformations in Delivery, Generation, Exploration & Production**
- **Initiatives include incorporating new technologies and standardizing business processes**

Due to the Critical and Distributed Role of Architects', A Strong Network is Imperative

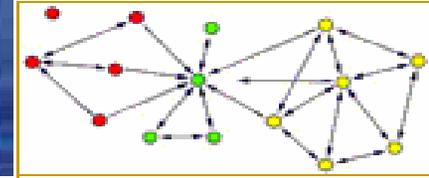


- **The job title of architect was created as part of the IT Infrastructure Planning & Engineering function.**
- **Role was expanded to include:**
 - Application Architects
 - Business Unit Architects
 - Data Architects
 - Development Environment Architect
 - Infrastructure Architect
- **Role reflects the variety and complexity of IT solutions**
- **The CIO initiated a review of roles, responsibilities, and number of architects in early 2005. Network analysis was an important part of this initiative.**

IT management initiated network analysis to learn how architects work and interact. The network analysis evaluated many factors:

- role in network
- organizational units
- location
- architect role
- skill
- sphere of communication
- methods & types of interactions
- energy
- decision-making

Network Analysis Quickly Assessed the Architect Community



Plan

- create network survey
- define community members
- obtain senior sponsor

Run

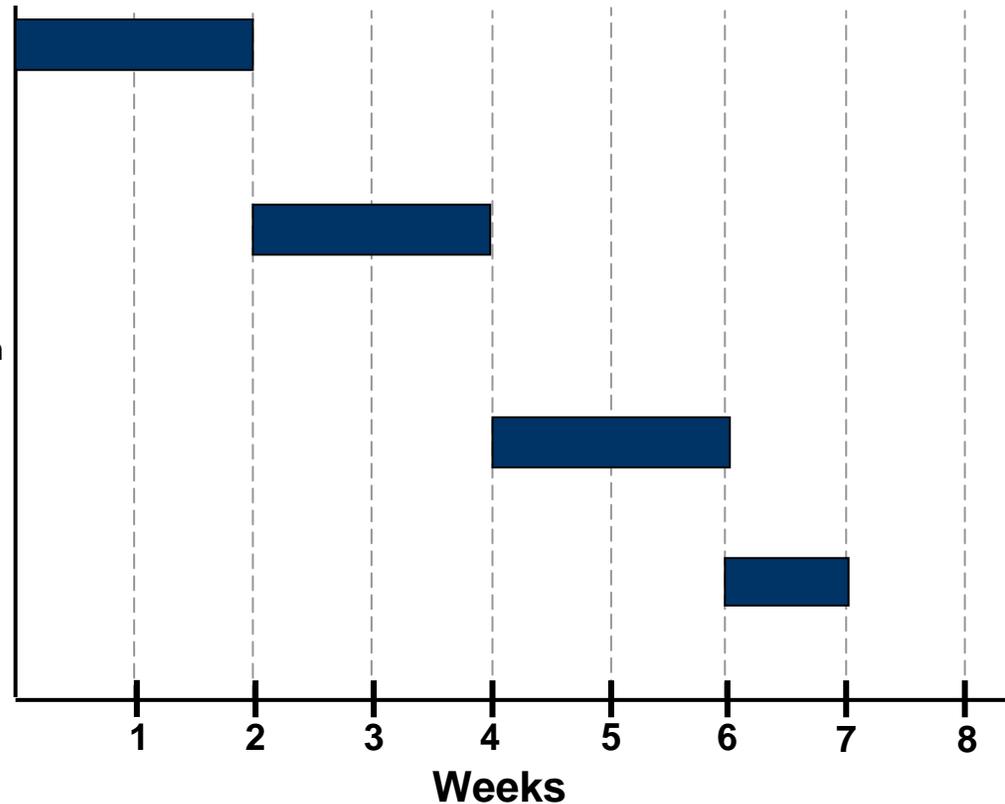
- test diagnostic with small sub-group
- administer Web-based diagnostic
- send system-generated e-mails to obtain responses

Assess

- create recommendation report
- provide personalized Web sites

Apply

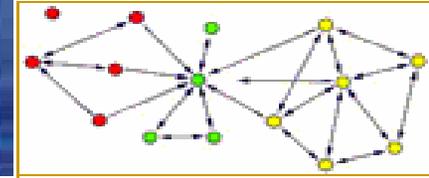
- develop and implement project plan
- take action on personal network results



In just under two months, network analysis provided important insights into the state of the architect community and identified what actions would have the biggest impact to create a stronger community.

The Top Findings and Recommendations

Pinpointed Specific Improvements

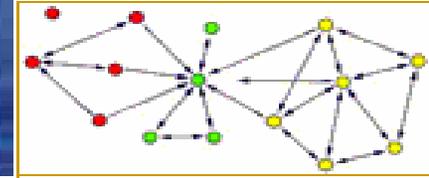


Findings

Recommendations

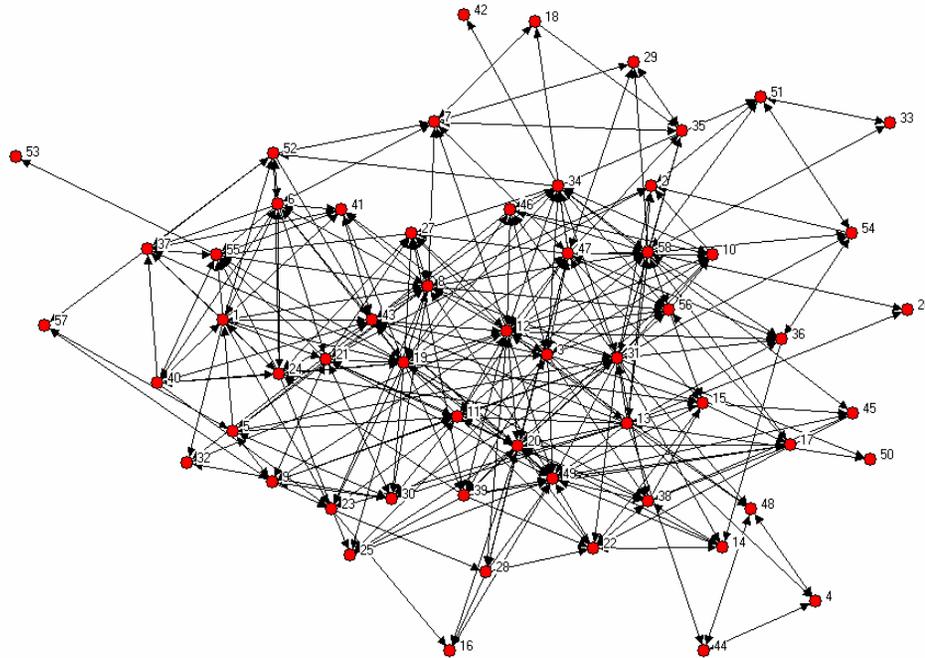
<p>Opportunity for improved collaboration</p> <ul style="list-style-type: none"> • Frequency of interaction is lower than expected • People are not aware of colleagues' skills and abilities. 	<ul style="list-style-type: none"> • Establish accountability for the quality of technical decisions with the architects, and set specific expectations for collaboration. • Implement processes that require collaboration among architects when making key project or strategy decisions. • Encourage connectivity with formal/informal reward mechanisms
<p>Silos exist within/between groups and roles</p>	<ul style="list-style-type: none"> • Establish project checkpoints that require participation and input from architects outside the responsible group. • Create opportunities for practitioners to share information and learnings through meetings and newsletters.
<p>Expertise is not evenly distributed in the network</p>	<ul style="list-style-type: none"> • Utilize central architects as key brokers for expertise and information among entire base of architects and specialists. • Share accomplishments and contributions across the organization to increase awareness of individuals' experiences and expertise.
<p>People are so focused on delivery that there is little/no time to share or innovate</p> <ul style="list-style-type: none"> • Insularity exists (unwillingness to turn to others outside of immediate group), especially with the most central people. • Interactions focus primarily on problem-solving and information exchange. • The company focus on delivering solutions to business units may impede collaboration. 	<ul style="list-style-type: none"> • Create formal and informal rewards and planning processes that create accountability for communication and innovation • Encourage high-performer behavior through individual development plans • Plan projects so that essential architecting tasks can be fully accommodated in schedules and budgets.

Overall Connectivity Could Be Improved by Rebalancing the Network



“Please indicate the frequency with which the people listed below provide you with information that helps you to accomplish your work.”

Response of somewhat to very frequently (interactions at least once per month)



Network Measures	Dominion	Target
Density	12%	20%
Cohesion	2.5	2.0
Centrality	7%	12

Note: Targets were determined by The Network Roundtable high performer benchmark database.

The network analysis showed:

- Frequency of interaction is below the benchmark
- Network is dependent on a few key people with many connections
- Several people are on the periphery with one or few connections

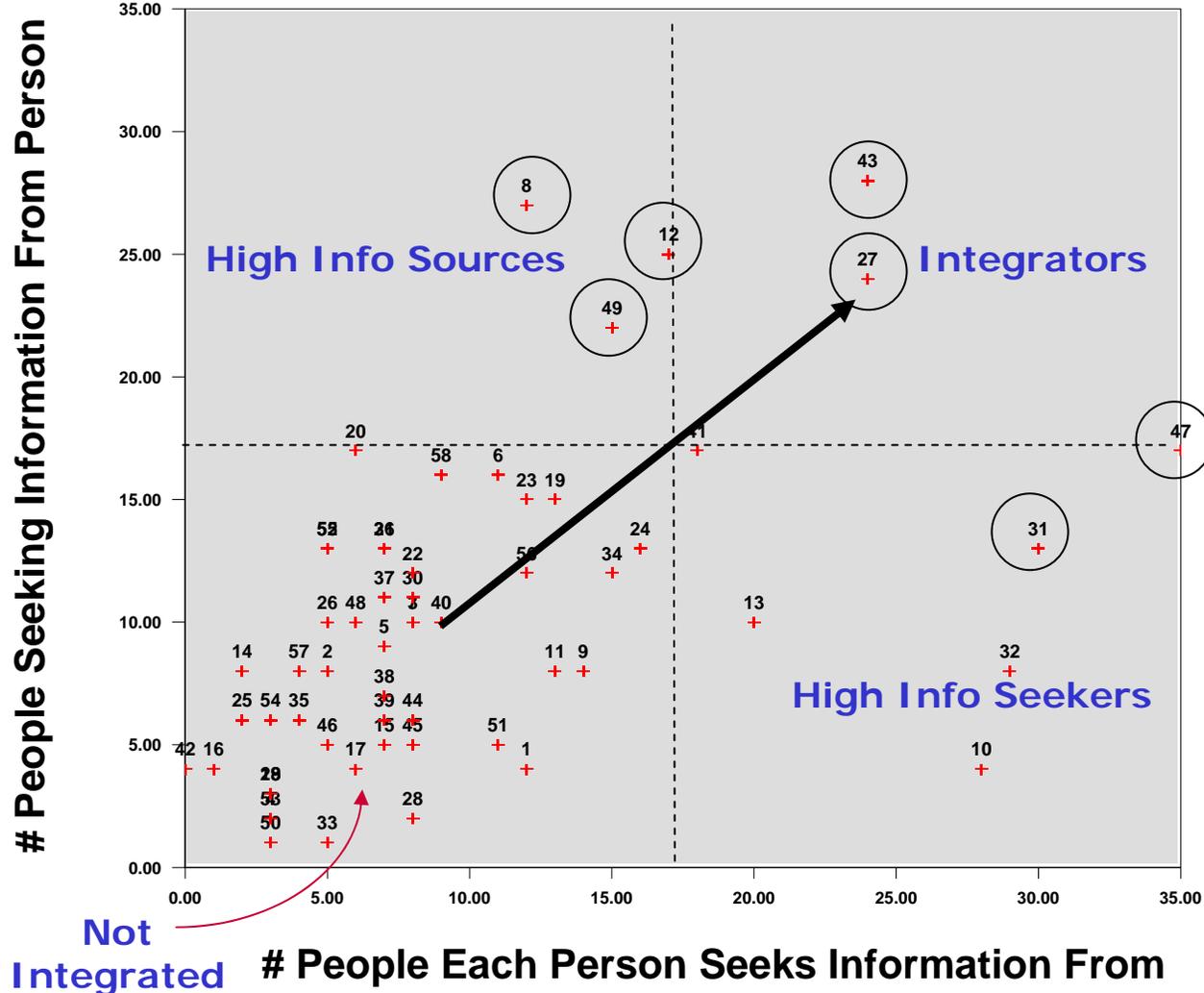
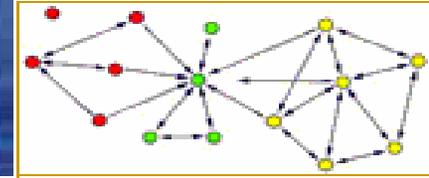
Network Measures Definitions

Density: Robustness of network. The number of connections that exist out of 100% possible in that network. More points connected often can mean quicker and more accurate information flow.

Cohesion (Distance): Ease with which a network can connect. Shows average distance for people to get to all other people. Shorter distances mean faster and more accurate transmission/ sharing.

Centrality (Degree): Identifies influential people (individual measure). Number of direct connections (ties) that individuals have with others in the group.

Moving Individuals Into the “Integrator” Quadrant Would Better Distribute Expertise and Reduce Reliance on a Few Key People



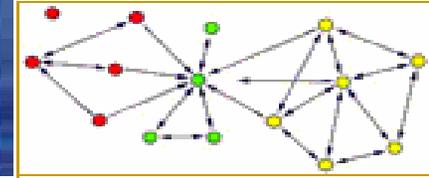
Circled individuals:

- Serve as experts in key areas
- Provide de facto technical leadership
- Are essential connectors in network
- Represent risks to the organization if they leave
- Are potential overload points

Opportunities:

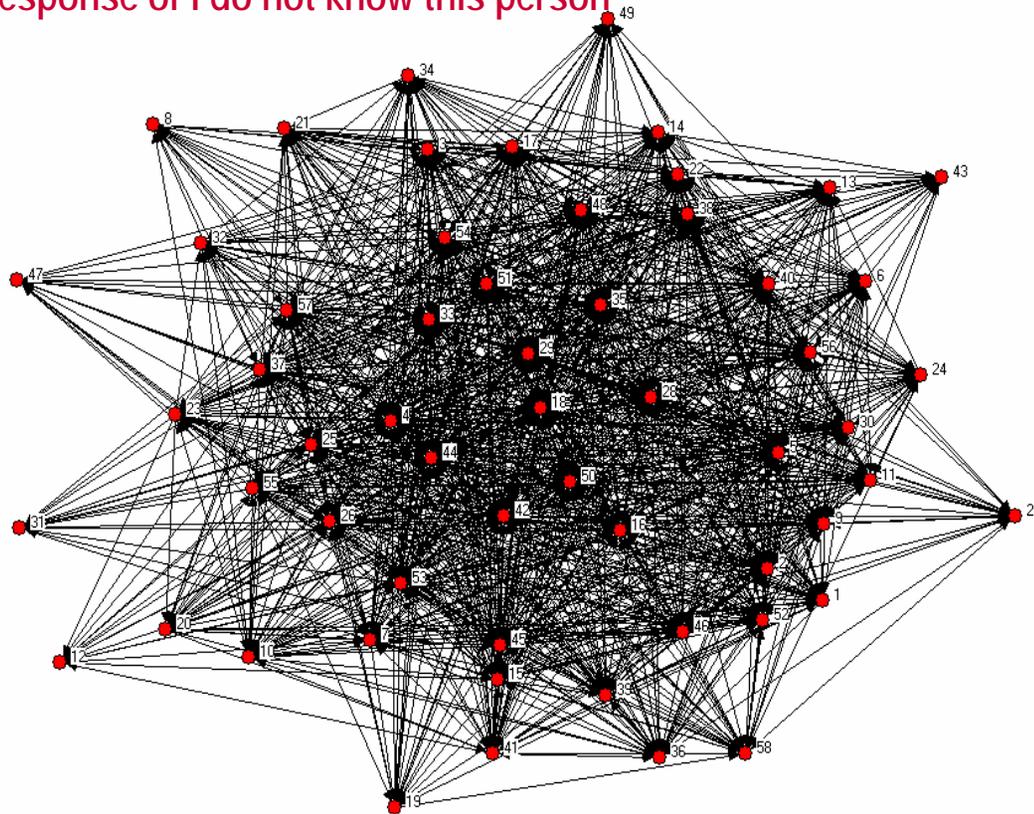
- Move individuals who are not integrated (lower left quadrant) into connected positions in the upper right quadrant
- Create opportunities to share knowledge, expertise
- Set expectations for individuals as part of performance management

Surprisingly, the Majority of Architects Were Not Aware of the Other Architects at Dominion



“Please indicate the frequency with which the people listed below provide you with information that helps you to accomplish your work.”

Response of I do not know this person

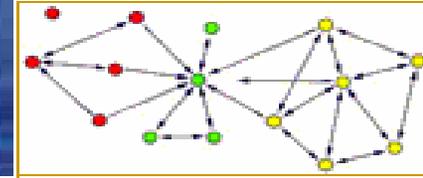


Lack of familiarity with each other, and with each other's knowledge and skills was a surprise!

On average, an individual knows only 24 of the 62 architects (40% of total). In a smaller group such as this one, 85-90% of architects should know each other.

Structured interactions, such as regular face-to-face meetings and videoconferencing are opening up communications.

There are Specific Junctures Where Collaboration Would Result in Better Solutions



- Target collaboration across groups (off diagonal) is low across many groups; the goal is typically 10-30% in critical areas.

Information Providers

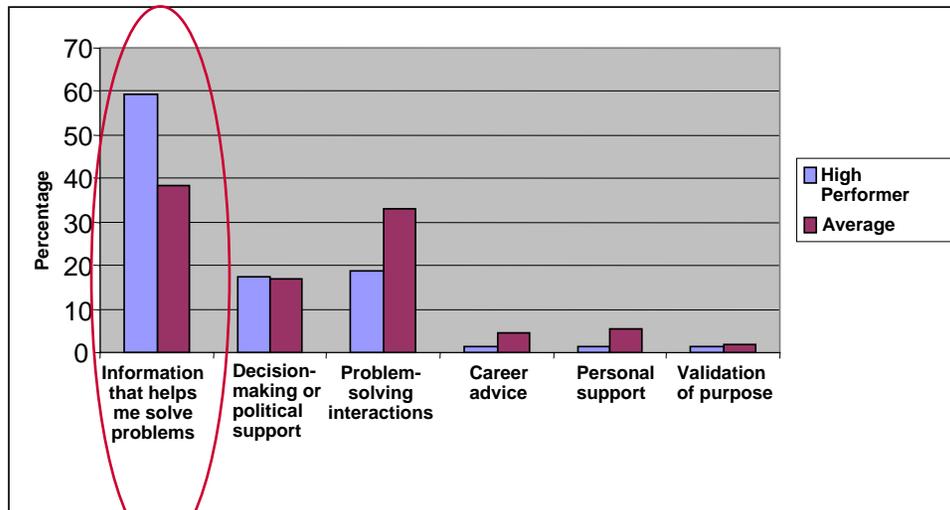
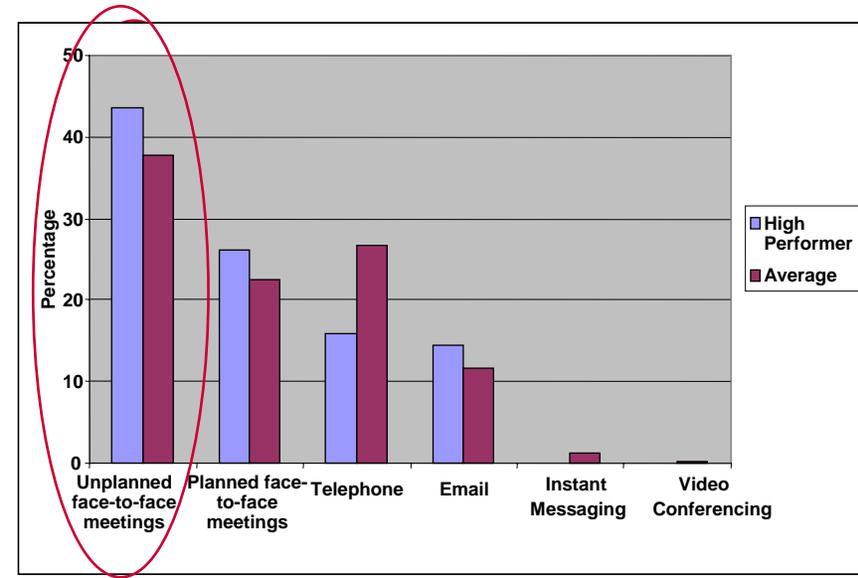
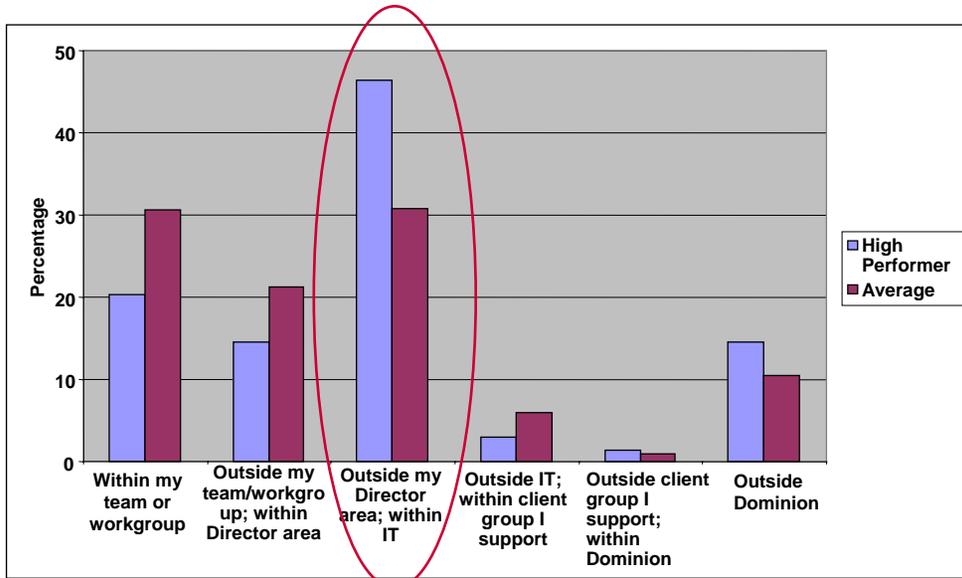
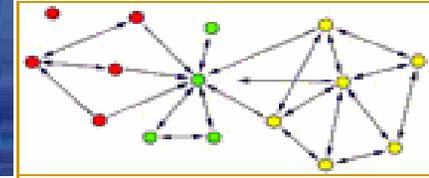
	Delivery	Exp & Prod	Gen	Port Mgmt	Trans	ERP/LMS	Bus Inte	Ent Ops	Field Ops	Strategy
ITBA Delivery (14)	23%	4%	6%	5%	17%	4%	18%	13%	7%	18%
ITBA Exp & Prod (5)	14%	70%	16%	15%	13%	0%	20%	16%	10%	10%
ITBA Generation (5)	13%	20%	90%	20%	7%	0%	29%	29%	20%	30%
ITBA Port Mgmt (4)	7%	5%	0%	67%	0%	0%	11%	4%	0%	50%
ITBA Trans (3)	19%	7%	7%	8%	0%	0%	24%	5%	0%	0%
IT ERP/LMS (2)	4%	10%	10%	0%	17%	0%	50%	14%	0%	25%
IT Bus Intel/Web (7)	19%	11%	14%	14%	24%	29%	48%	12%	14%	14%
IT Enterprise Ops (14)	9%	9%	14%	4%	5%	4%	5%	41%	25%	57%
IT Field Ops (2)	11%	10%	50%	0%	17%	0%	21%	68%	50%	75%
IT Strategy (2)	18%	30%	10%	38%	17%	0%	7%	71%	100%	100%

Chart Interpretation

Each cell reflects the percent of information seeking ties out of 100% that could exist if everyone were connected to everyone else at that juncture. For example, we see that in ITBA Generation 90% of the possible collaborative relationships existed whereas in ITBA Trans 0% of possible ties were there. The table is read from row to column when assessing who seeks info from whom.

- Target collaboration within groups (on shaded diagonal) varies by group, but should be approximately 40%. There is an opportunity to improve collaboration within ITBA Delivery, ITBA Trans, IT ERP/LMS.
- Since the ITBA Trans group was only comprised of three people, two of which were working from a common platform, collaboration should be close to 100%.

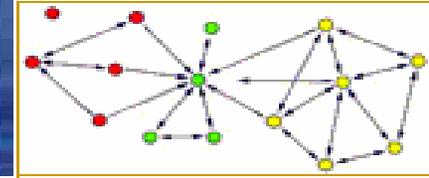
Characteristics of High Performers Were Identified and Serve as a Guide for Other Employees



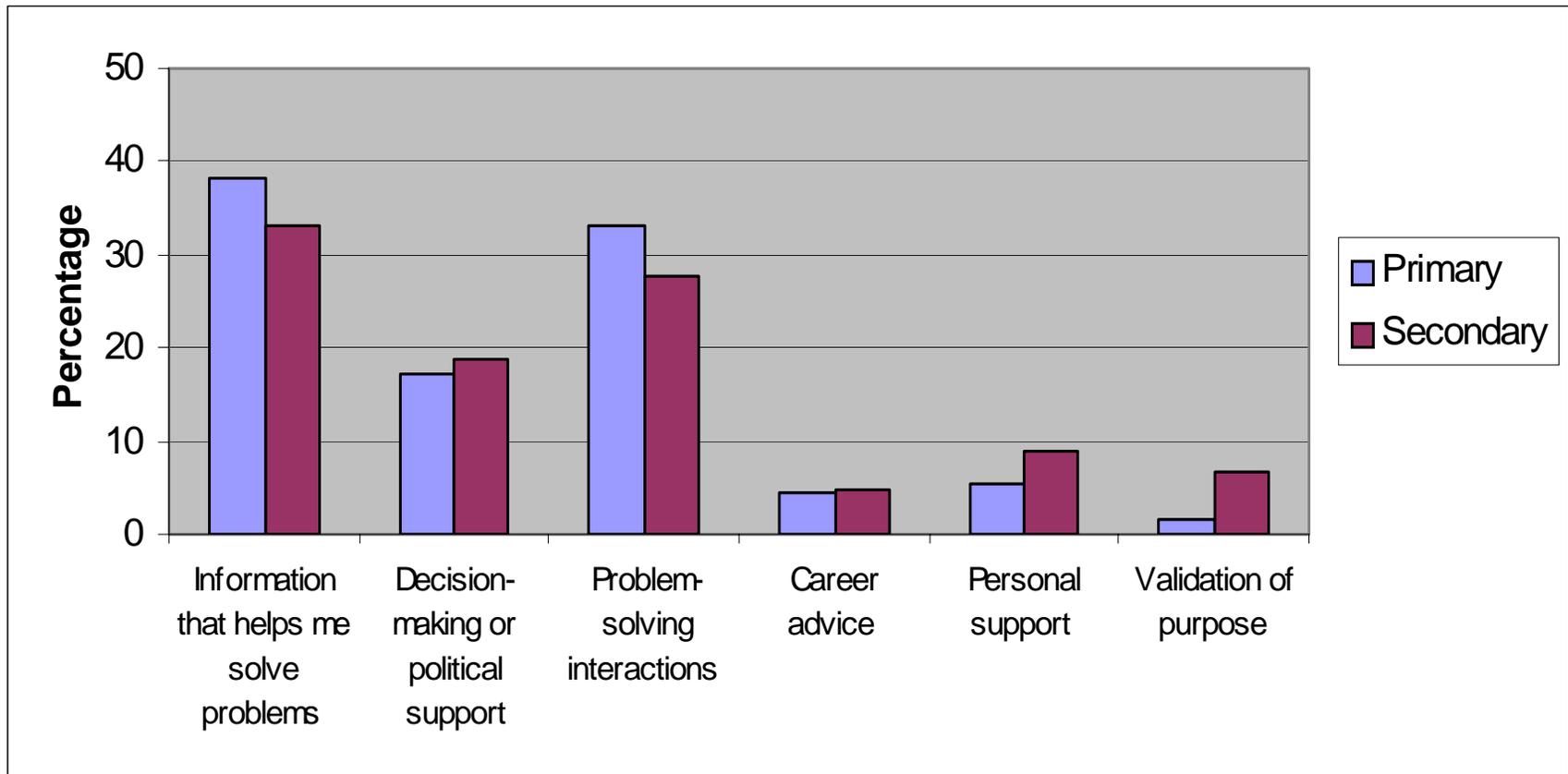
High performers demonstrate the following characteristics:

- Interacts with more individuals outside their Director group
- Engages in more unplanned face-to-face meetings
- Engages in more problem-solving conversations

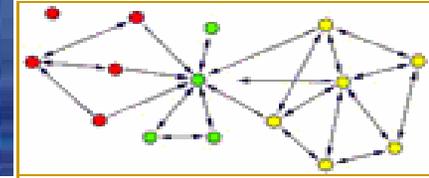
Interactions are Focused Primarily on Problem Solving, with Limited Personal Interaction



What is the primary and secondary technical content received from each person?



Factors Critical for Successful Network Analysis Projects at Dominion



- **The CIO sponsored the network analysis and strongly encouraged participation, resulting in a very high participation rate.**
- **Each participant received confidential feedback and recommendations to create individual action plans for improved personal effectiveness.**
- **Identifying specific interventions for improving information sharing and communications across IT groups as well as with internal clients**
- **Enabling the ability to tap into the total talent base and look outside of the immediate team to find others with appropriate skill sets**

The Network Analysis Resulted in Several Changes

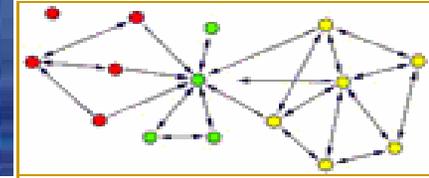
- A Chief Architect, who was technology savvy, a good communicator and central in the network, was appointed.
- Network analysis helped to identify people who were incorrectly classified as architects. As a result, Dominion moved those who were functioning in other roles into groups and titles that more accurately reflected their work.
- Structured mechanisms to foster interactions appropriate to each role were put in place.

Appendix



The **NETWORK ROUNDTABLE** *at the* **UNIVERSITY OF VIRGINIA**

Why We Should Focus Our Attention on Organizational Networks



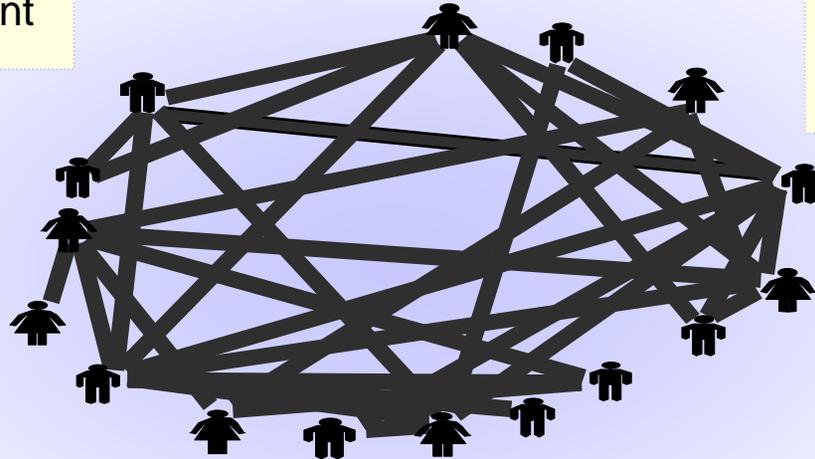
Key Reasons Why Organizational Networks Are Important

Where Work Happens

- Lack of boundaries
- Informal networks increasingly important

Where People Engage

- Join and commit to people
- Trust accrues in networks of relations



Where Knowledge Lives

- Rely on people for information
- People can provide more than databases

BUT...

- Invisible
- Complements formal structure

