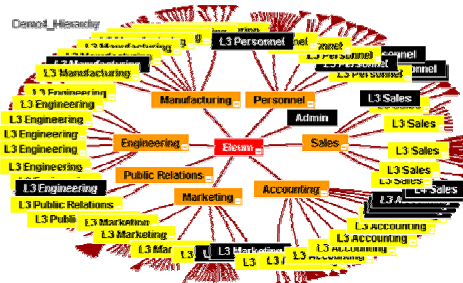


Collaborative Technologies Conference
Boston, USA
June 19-22, 2006

Collaborating in the Networked Organization

Mapping and Measuring Organizations as Networks



© 2006 NetAge

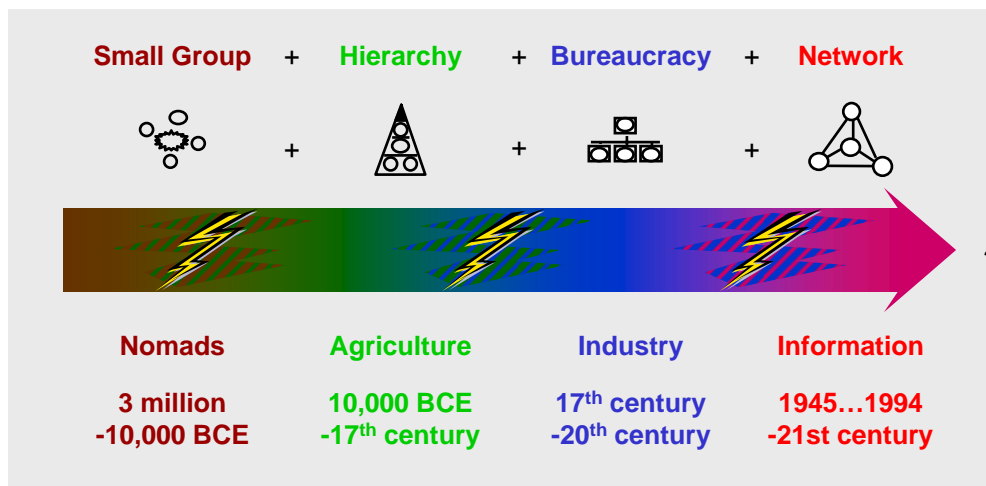
Jeffrey Stamps & Jessica Lipnack
www.netage.com



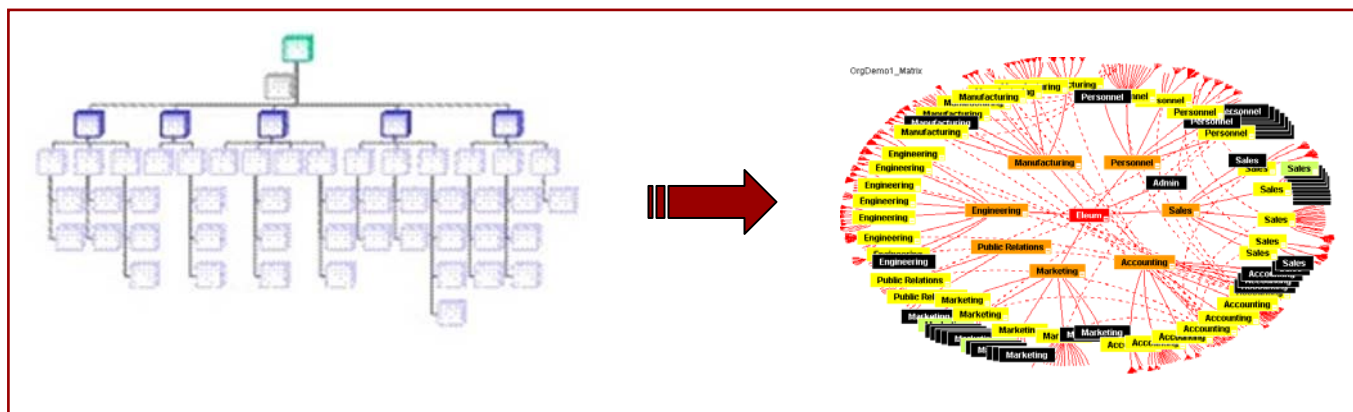


Our Organizational Predicament

“We can’t solve 21st-century problems with 19th-century organizations”



How do we go from hierarchy-bureaucracy to networked organizations?

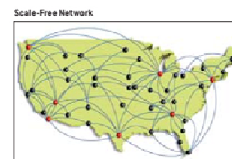
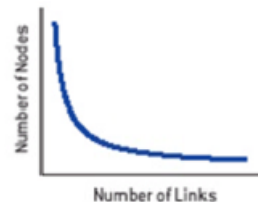
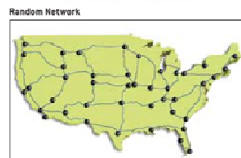
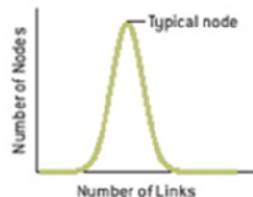




We Wondered About “New Science” of Networks

Do new principles apply to organizations? Are all organizations networks?

For past 50 years, networks regarded as relatively static node structures of uniformly or randomly distributed links with normal averages



In new view, a few highly-linked nodes — **hubs** — form webs with many less-linked nodes. Model is dynamic, growing and changing over time, new nodes attaching preferentially

Network	Type	Nodes	Links
Cellular metabolism	Biology	Molecules involved in burning food for energy	Participation in same biochemical reaction
Protein regulatory network	Biology	Proteins that help to regulate a cell's activities	Interactions among proteins
Sexual relationships	People	People	Sexual contact
Hollywood	People	Actors	Appearance in same movie
Research collaborations	People	Scientists	Co-authorship of papers
Internet infrastructure	Technology	Routers	Optical and other physical connections
World Wide Web	Knowledge	Web pages	URLs

From “Scale-Free Networks” by Albert-László Barabási and Eric Bonabeau, Scientific American, May, 2003

?	Hierarchy (organization chart)	Organization	Positions	Reporting relationships	?
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A Magnifying Glass for Organizations with a Zoom

Fly OrgScope through whole organization



Use **micro-OrgScope** to examine fine detail of each node

- OrgScope models organization with data taken directly from **enterprise data system** (e.g., SAP)
- Automatically generates **one-org-chart** map of solid-line reporting relationships, formal network of positions
- Each **position node** can stand for an organisation, a position with a job title, and a location, shown by the text label and the direct **reporting link** to a superior position
- Scales to **very large organizations** and networks of organizations
- Maps **simplify organizational complexity** and offer people new mental models based on shared enterprise data

Background, theory, and initial results can be found at [OrgScope Working Papers](#)

Fly **tele-OrgScope** to span very large-scale enterprises



- Allows you to model many jobs and roles in relationship to one another and **display them as a network**
- Generates **network metrics** like level in organization, size of organization, manager span, and virtual team distribution that can be immediately applied to business issues
- Further network science analysis brings power of **cross-domain network principles** to organizations at every scale, from small groups to largest human collaborations

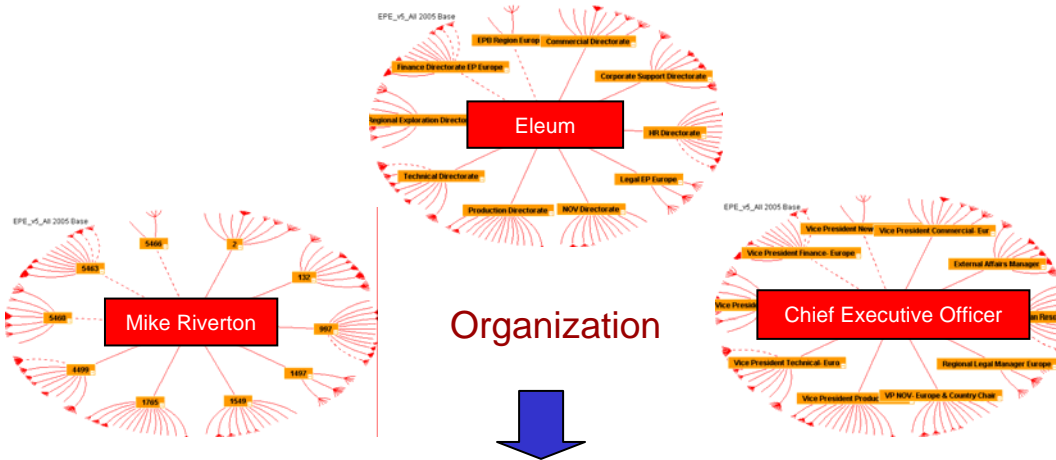
OrgScope based on “hyperbolic viewer” technology, first developed at Xerox PARC. Thank you, John Seely Brown and Ramana Rao



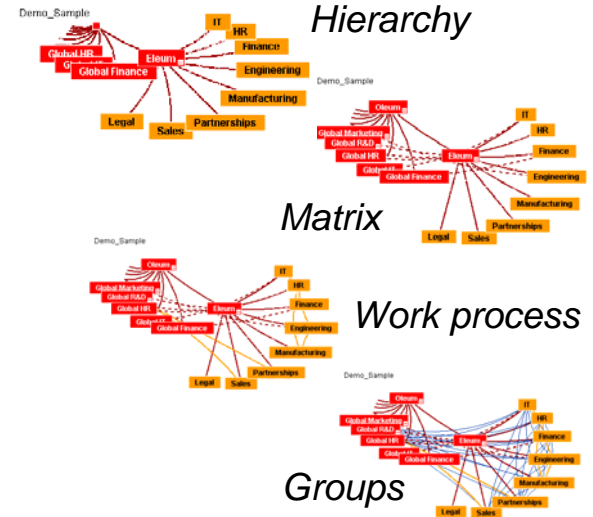
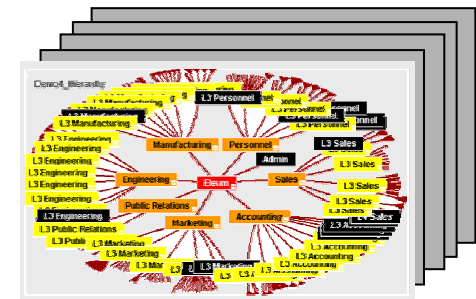
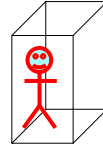
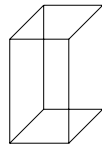
Organizations Are Natural Networks: Nodes Connected with Rich Webs of Links

To map hierarchy as a network, treat positions as **nodes** and reporting relationships as **links**. People play organizational roles.

Many types of **links** layer on top of formal hierarchy, including matrix reports, work process flows, group memberships, information exchanges, social influences ...



Person steps into Position to fill Job





Introducing Eleum: Our Sample Data Set

Note: OrgScope display data is sample set; results based on real data

- New 5000-position regional business unit within 100,000-position global company
- Complex company in complex industry
- Highly experienced and thoughtful senior executives
- Data from enterprise HR system
 - Each position reports to another position
 - Marks each position's level, its "degree of separation" from CEO
 - Each position associated with a specific organization
 - Most positions associated with named people (some open)
 - Each position is situated in a physical location
- Provides all data needed for complete, very large org chart, which we then analyze as a network. Simple measures offer surprising, and useful, results



What OrgScope Found at Eleum

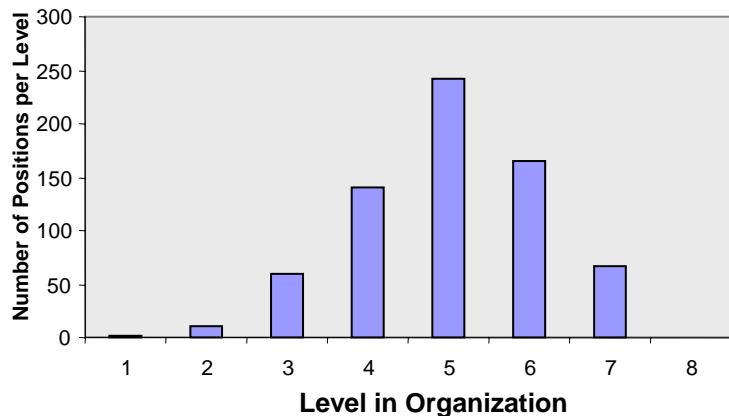
- Organization is a diamond, not a pyramid, 9 levels, not 5, deep
- Communication by cascade cannot reach whole organization quickly, but a 'sideways' strategy can
- A third of executive and line management teams are virtual, and can be pinpointed
- Most managers supervise small groups: a few manage very large staff—15 or more; these hubs hold the whole together
- Majority of sub-organizations are very small; some large organizations are quite deep in hierarchy (levels 5-7)
- Some functions over-represented, others underrepresented in formal leadership groups
- Some positions—about 20%—inherently **more complex** than others, the organizational 'hotspots'

Eleum immediately using OrgScope results to address business challenges

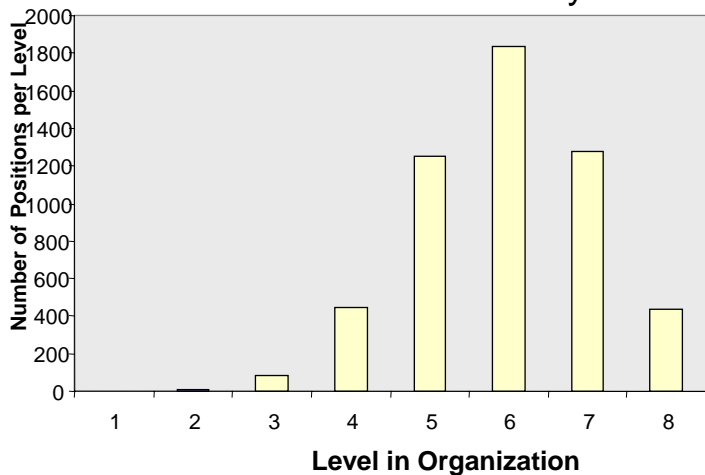


Eleum's Shape Is a Diamond, Not a Pyramid: Turns Communication Strategy on Its Side

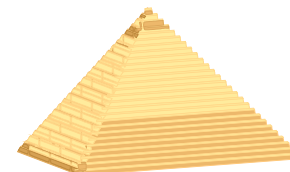
Distribution of Managers by Level



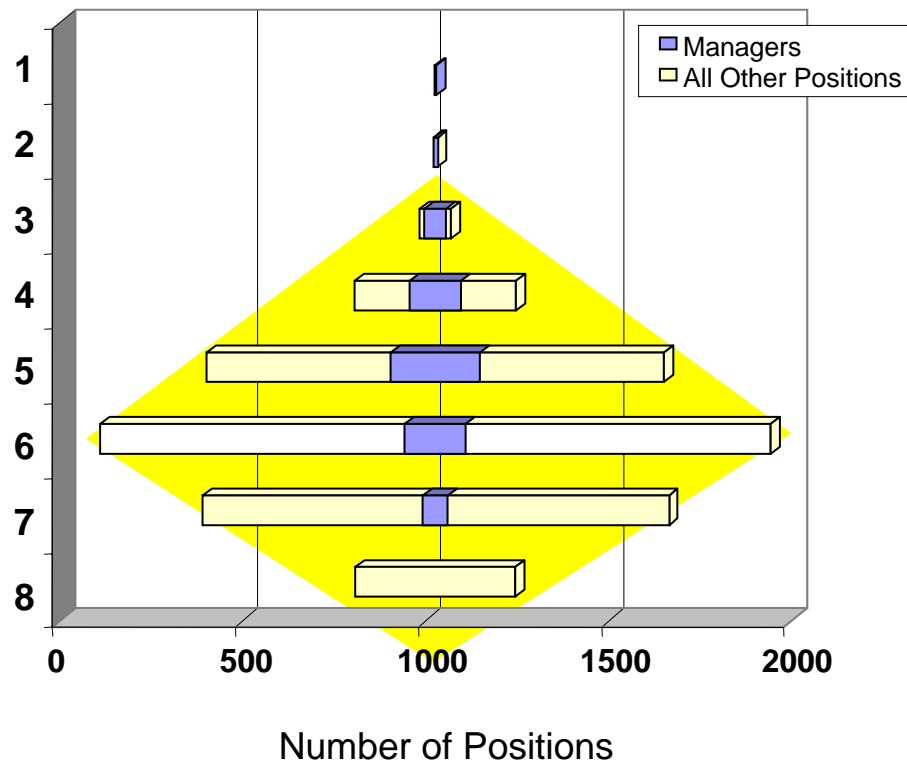
Distribution of All Positions by Level



Expected slope,
classic shape
of organization

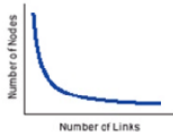


Level in
Organization

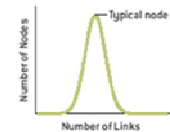




Eleum's Span? 80% Manage Small Staff, 20% Are Hubs: Identifies Manager "Hotspots" for Greater Support



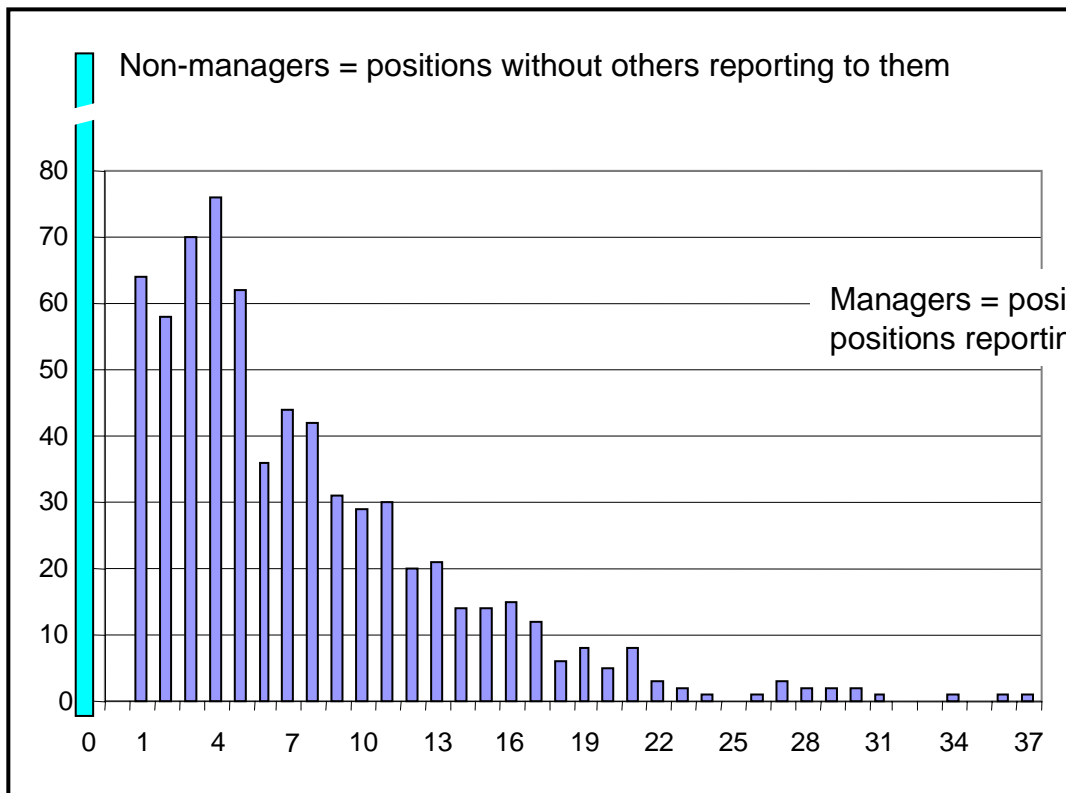
Hub view of span



Expected normal view of span

Many nodes, few links

of Managers



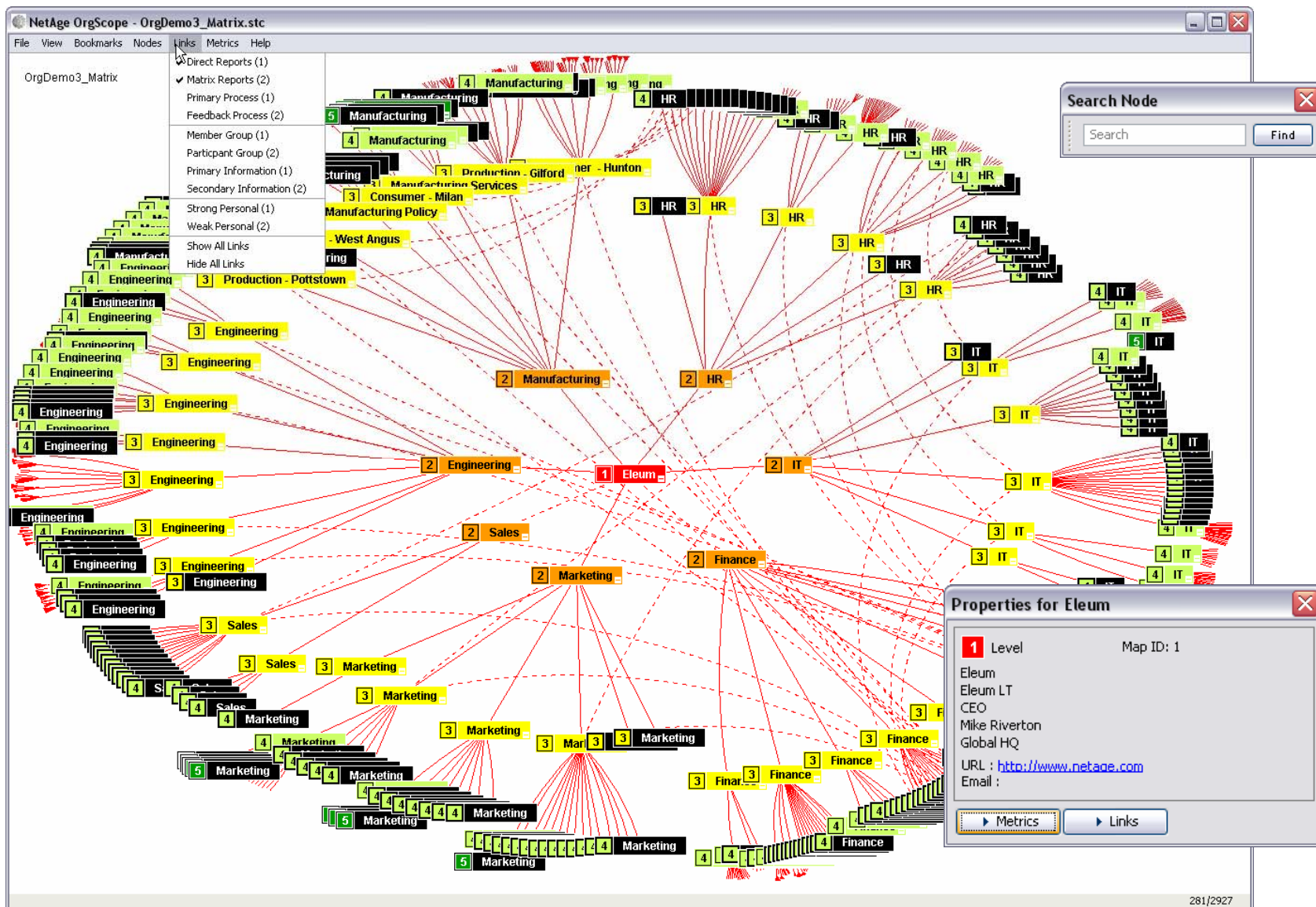
of Reporting Links (k)

Few nodes, many links

of People Reporting to Manager = Span

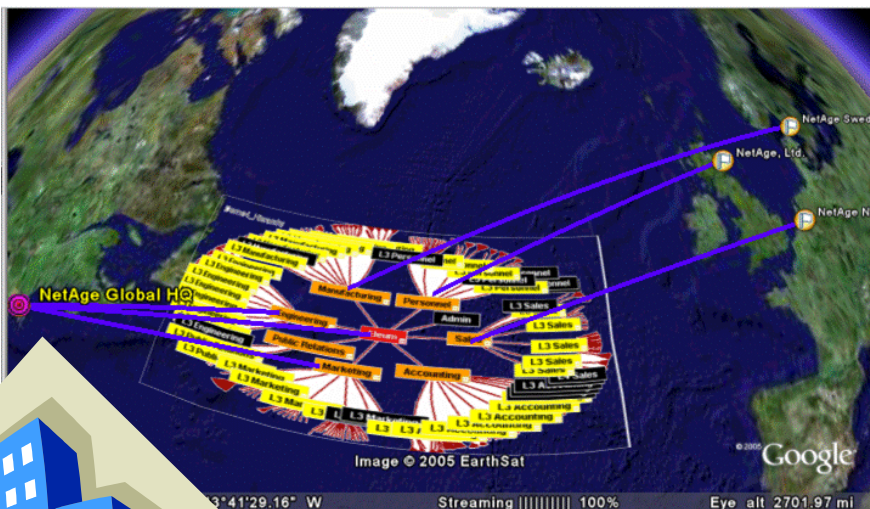


NetAge OrgScope Demo





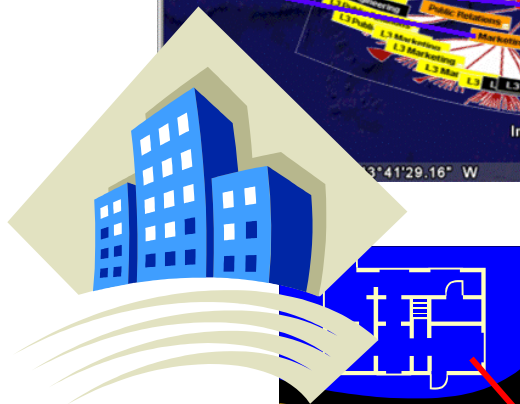
Positions in Virtual Organization Connect to Physically-Real Sites



When occupied, all positions represent real people, who are always in some particular place

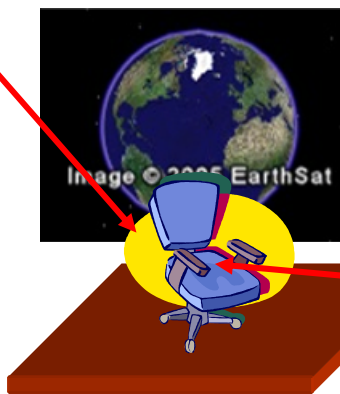
The world of the virtual organization is spread out over one real world, Earth

Traditional positions have desks or stations assigned to facilities with particular addresses and geo-points



On this street, 505 Waltham
Sits at this desk, WN 3-3

Positions can be anywhere, but they are always *somewhere*



when a person occupies position

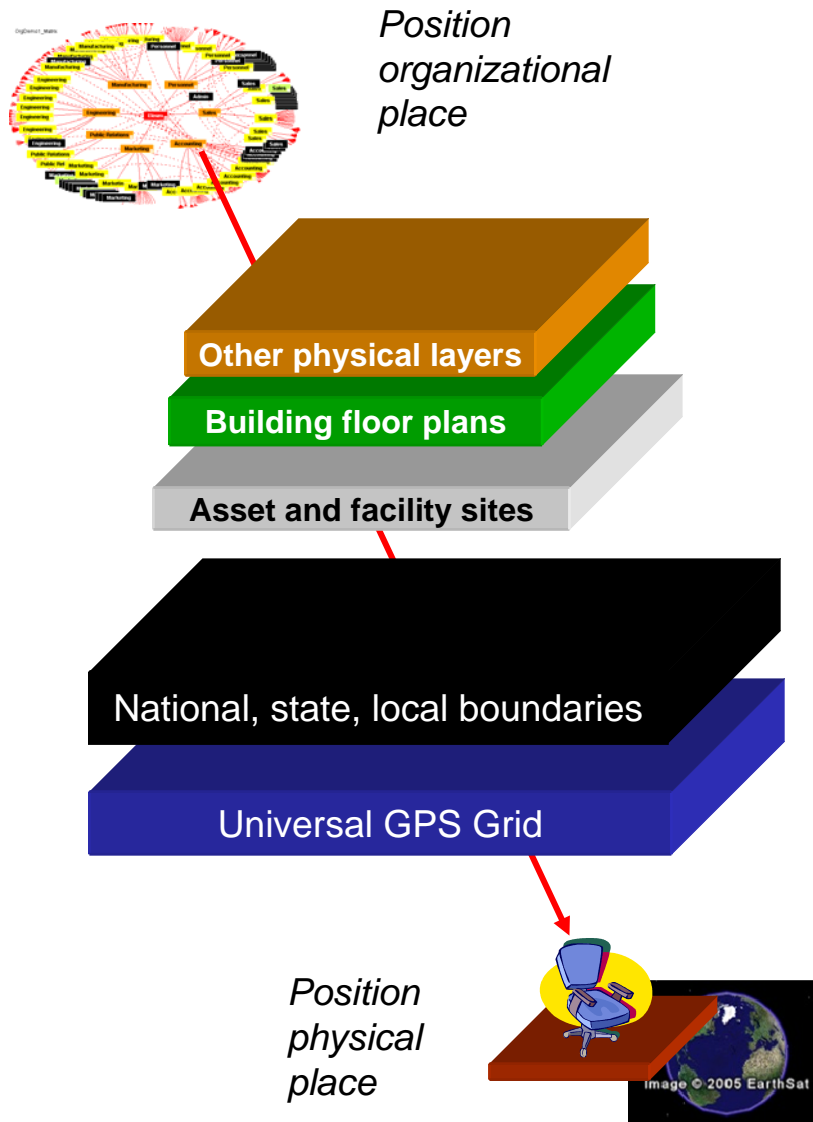


because real people are always somewhere





Abstract Positions Connected to Concrete Places Located in Many Layers



- Position “places,” anchored to points on the earth, “pass through” multiple layers based on physical things on the earth’s surface
 - All entities can have both GPS and jurisdictional place addresses
 - National boundary layer is near-universal global-local pattern of mutually-exclusive, whole-part hierarchies comprising one world
 - GPS coordinate system is universal global virtual layer on real earth



Global Leadership Dashboard: OrgScope-Earth for Large-Scale Collaboration

Organization
Layers

NetAge OrgScope

Google Earth

The screenshot displays a desktop environment with three main windows:

- Google Earth Plus:** Shows a satellite view of the Boston area. A purple location pin is placed on the map, labeled "NetAge Global HQ".
- NetAge OrgScope - OrgDemo3_Matrix.stc:** A large, complex network diagram with nodes representing different departments (e.g., Manufacturing, Engineering, HR, IT, Finance, Marketing, Sales) and their interconnections. The diagram is circular and uses various colors to distinguish between functional areas.
- Livelink virtualteams:** A web-based interface for a virtual team. It includes a search bar, navigation tabs (Team, Personal, Enterprise, Tools, Help), and a main content area with icons for "People", "Purpose", "Links", "Time", "Meetings", and "Content".

Red arrows point from the text labels above to the corresponding windows in the screenshot. Additionally, red arrows on the right side of the screenshot point to the Google Earth and Livelink windows.

Place
Layers

NetAge's Livelink virtualteams:
Collaboration Platform



Contact Us

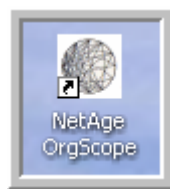


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+1.617.965.3340
info@netage.com
www.netage.com

*Background, theory, and initial results:
[OrgScope Working Papers](#)*



Background on NetAge and OrgScope



OrgScope:
Build 10



NetAge Principals: 25-Year Focus on Networks



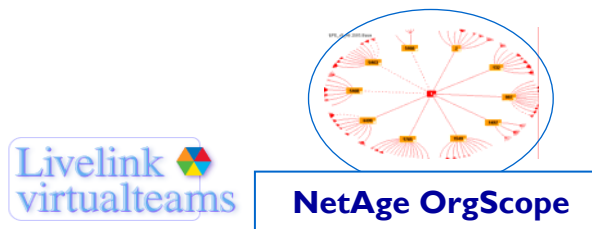
Books, articles, methods, theory



Jessica Lipnack



Consulting and projects



Training and software



Jeff Stamps



NetAge OrgScope Viewer (Alpha) Build 10 Features

Select View options

- View Bookmarks
- Tree
- Cross Links
- Orientation
- Thumbnail
- Expand To...
- Stretch...
- Levels
- Metrics
- Quantity
- Arrowheads
- Manager Color
- Staff Color

Bookmark a tour of nodes

- Bookmarks Nodes Links
- Add Bookmark...
- Organize Bookmarks...
- Clear Bookmarks

File name of loaded data set

OrgDemo3_Matrix.stc

Node choice, node name

Node choice, node name

Link type choices

- Links Metrics Help
- Direct Reports (1)
- Matrix Reports (2)
- Primary Process (1)
- Feedback Process (2)
- Member Group (1)
- Participant Group (2)
- Primary Information (1)
- Secondary Information (2)
- Strong Personal (1)
- Weak Personal (2)
- Show All Links
- Hide All Links

Quantitative display of network Metrics

Metrics Help

- No Display
- Total Org Size
- Direct Reports (1)
- Matrix Reports (2)
- Total Reports
- Find Maximum...

Search is by node field

Search is by node field
Search is case-sensitive
'Spotlights' as search progresses
Will 'Find Next'

Search Node

Nicola Find Next

Adjust Stretch Factor

Stretch Factor: [Slider]
Shorter Longer

Expand To Level

Expand tree to level: [2]
OK Cancel

Default color coding by organisation Level

- L1
- L2
- L3
- L4
- L5
- L6
- L7
- L8
- L9
- Staff

Text fields from current enterprise data; same as Nodes menu choices

From: Manufacturing
To: Production - Pottstown
Properties

Optional information

Level Map ID: 1
Eleum
Eleum LT
CEO
Mike Riverton
Global HQ
URL: <http://www.netage.com>
Email: []

List of Links to and from each node

Metrics Links

Link Properties

A1 Direct Reports
From: Manufacturing
To: Production - Pottstown

Right-click Link menu

- Expand Level
- Expand All
- Collapse All
- Add Child
- Rename
- Delete Link
- Delete
- Cut
- Copy
- Paste
- Calculate Metrics
- Clear Metrics
- Properties...

Right-click Node menu

Expand Level

- Expand All
- Collapse All
- Add Child
- Rename
- Delete Link
- Delete
- Cut
- Copy
- Paste
- Calculate Metrics
- Clear Metrics
- Properties...

Calculate Metrics from any node

Calculate Metrics
Clear Metrics

Detailed Metrics for each node

208/2927

View - lengthen or shorten links

Expand/ Collapse full tree (View) or from a node (right-click or +/- on node box)

Detachable search bar

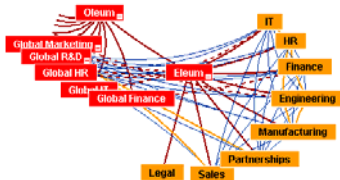
Data set caption

OrgDemo3_Matrix



OrgScope Maps Many Links and Generates Many Metrics

Demo_Sample



Cross Links of multiple types
Cross-links connect positions directly where more familiar
Tree option 'duplicates' matrix-ed nodes

Links Metrics Help

- Direct Reports (1)
- Matrix Reports (2)
- Primary Process (1)
- Feedback Process (2)
- Member Group (1)
- Participant Group (2)
- Primary Information (1)
- Secondary Information (2)
- Strong Personal (1)
- Weak Personal (2)

Link type selections define how size, and span display metrics are calculated

Metrics Help

- No Display
- Total Org Size
- Direct Reports (1)
- Matrix Reports (2)
- Total Reports
- Find Maximum...

View Bookmarks

- Tree
- Cross Links
- Orientation
- Thumbnail
- Expand To...
- Stretch...
- Levels
- Metrics
- Quantity
- Arrowheads
- Manager Color
- Staff Color

Tree and Cross Links are mutually-exclusive View options

Levels, Metrics, Quantity are mutually-exclusive View options

Properties for Eleum

Map ID: 1

Level 1

Eleum
Eleum LT
CEO
Mike Riverton
Global HQ
URL : <http://www.netage.com>
Email :

Metrics Links

Reports:	Up=0	Down=7	
Group:	Up=0	Down=0	
Total:	Up=0	Down=7	
Reports:	Direct=3844	+Matrix=4103	
Group:	Member=1	+Participant=1	
Total:	Primary=3844	+Secondary=4103	
Reports:	{1} 6	{2} 2	Total 8
Process:	0	0	0
Group:	0	0	0
Information:	0	0	0
Personal:	0	0	0
Total Links:	6	2	8
Locations:	5	N	
Position Types:	5	Y	
Organizations:	8	Y	

Node level
- Links up
- Links down

Organisation size
- Direct reports only
- Including matrix

Manager span
- Direct reports
- Matrix reports
- All reports



Metrics relative to specific data set being modeled

Metrics Links

A1	To	HR
A1	To	HR
A1	To	IT
A1	To	Marketing
A1	To	Engineering
A1	To	Manufacturing
A2	To	Finance
A2	To	Sales

Link type

Link direction

Link list changes with Node menu selection

Team locations

Link types (5x2)

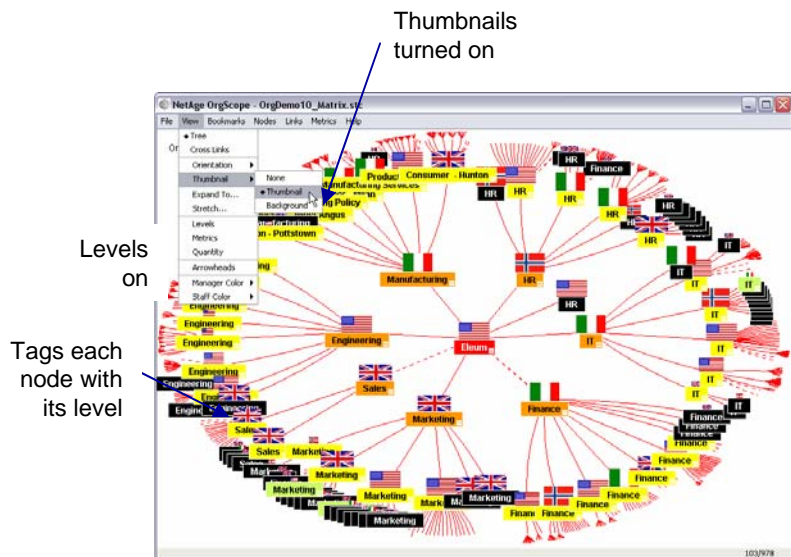
Links Metrics Help

- Direct Reports (1)
- Matrix Reports (2)
- Primary Process (1)
- Feedback Process (2)
- Member Group (1)
- Participant Group (2)
- Primary Information (1)
- Secondary Information (2)
- Strong Personal (1)
- Weak Personal (2)

OrgDemo 10 – June 2006



Customize with Thumbnails, Colors, Quantities, and URLs



Thumbnails are small JPEG files that may be associated with each node type

Icon denotes network membership



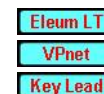
Node Type Thumbnail

Node Type	Thumbnail
Map ID	Net
Org	Flag
Group	Leader
Position	Net
Person	Picture
Place	Flag

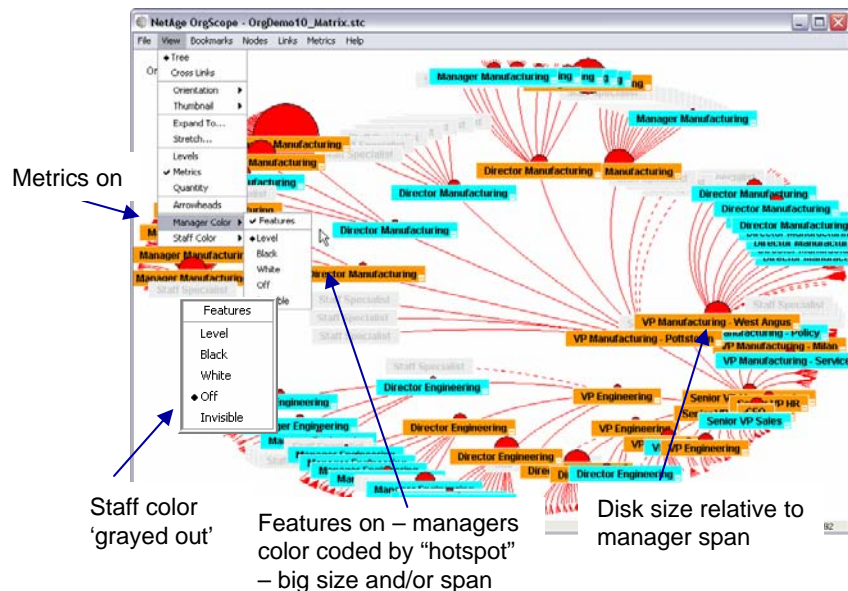


Flags of position (not person) location coded by Country field in data

Leadership networks coded from position-based list



Any image can be associated with any node selection





Node Type Feature Color Quantity Value URL or email

Node Type	Feature Color	Quantity Value	URL or email
Map ID			
Org			
Group			
Position	Hot		
Person			
Place			

Separate URLs may be associated with each node type

Nodes may be custom-color coded for specialized views; e.g.,

Hub: Hot orange 
Not hub: Cool blue 

Budget numbers or any other quantity can be associated with any node by type

OrgDemo 10 – June 2006