



Viva Insights

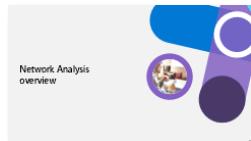
Organizational Network Analysis





Network Analysis Overview

Brief introduction to organizational network analysis (ONA) and its utility for business & people analytics



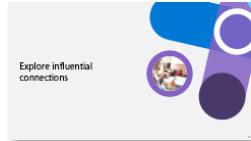
Viva Insights ONA Flexible Queries

Overview of datasets created by Viva Insights for ONA



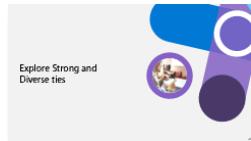
Explore influential connections

Details on conducting an influencer analysis using Viva Insights



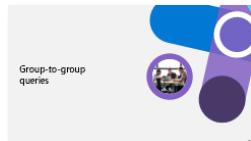
Explore Strong and Diverse Ties

Guidance on using the Strong Ties and Diverse Ties metrics



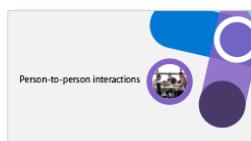
Group-to-Group Queries

Analyzing interactions between groups



Person-to-Person Interactions

Creating interaction metrics on a person to person level



External Tools: Gephi

Visualizing networks and calculating network metrics with open-source software



External Tools: wpa R Package

Analyzing Viva Insights ONA datasets with functions custom-built for flexible query outputs



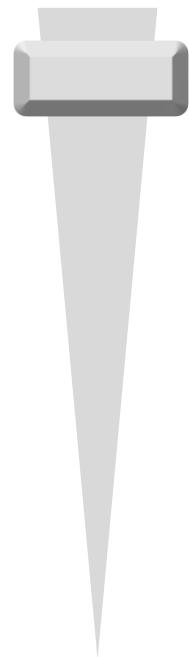
Contents

Network Analysis overview





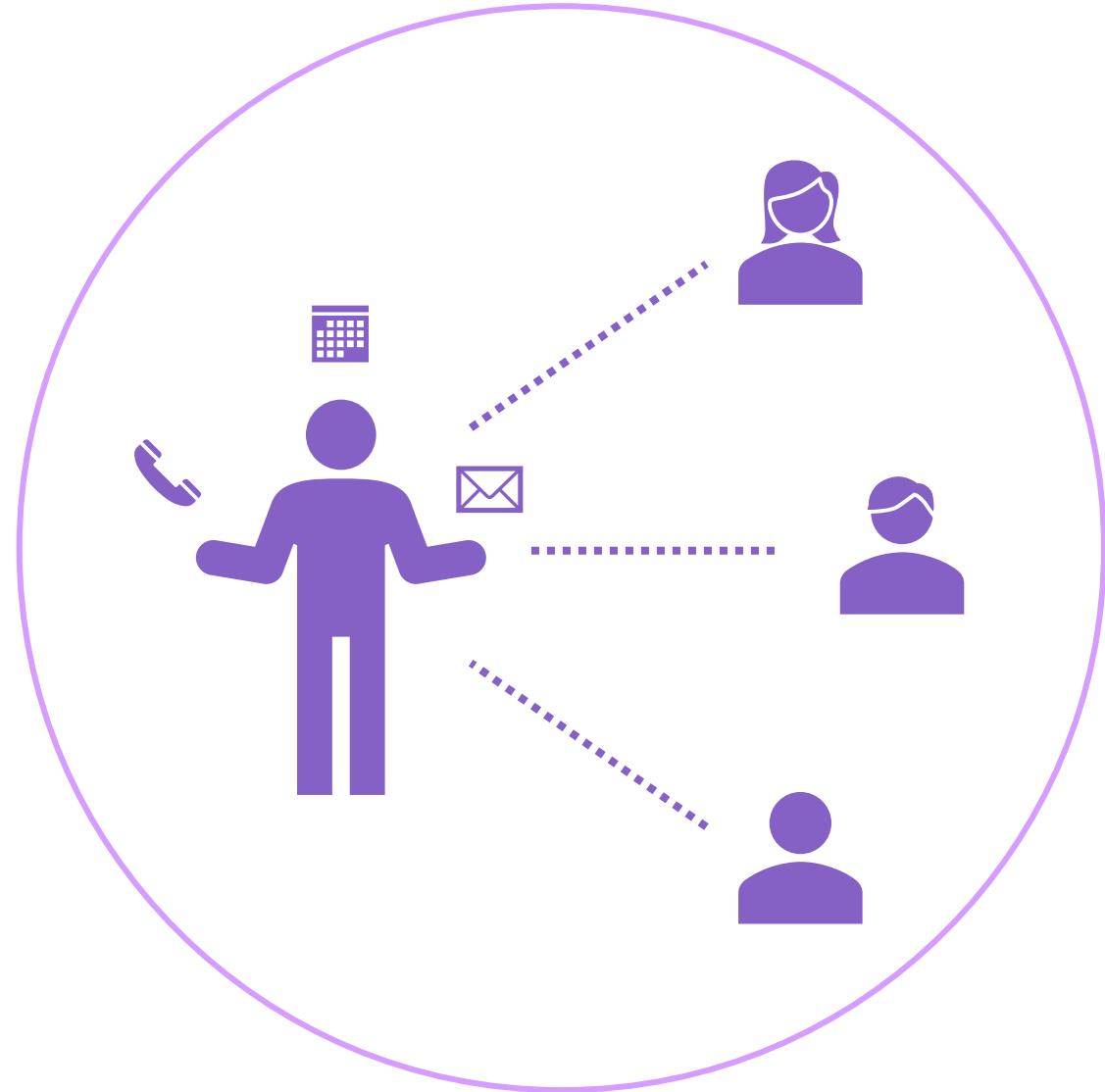
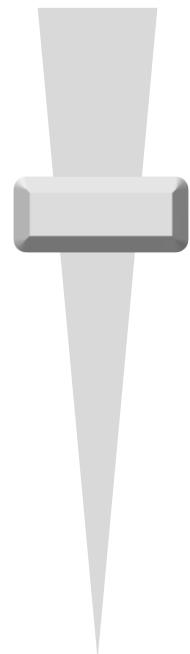
Zoom



**Viva Insights can capture
how the average employee
spends her time¹**



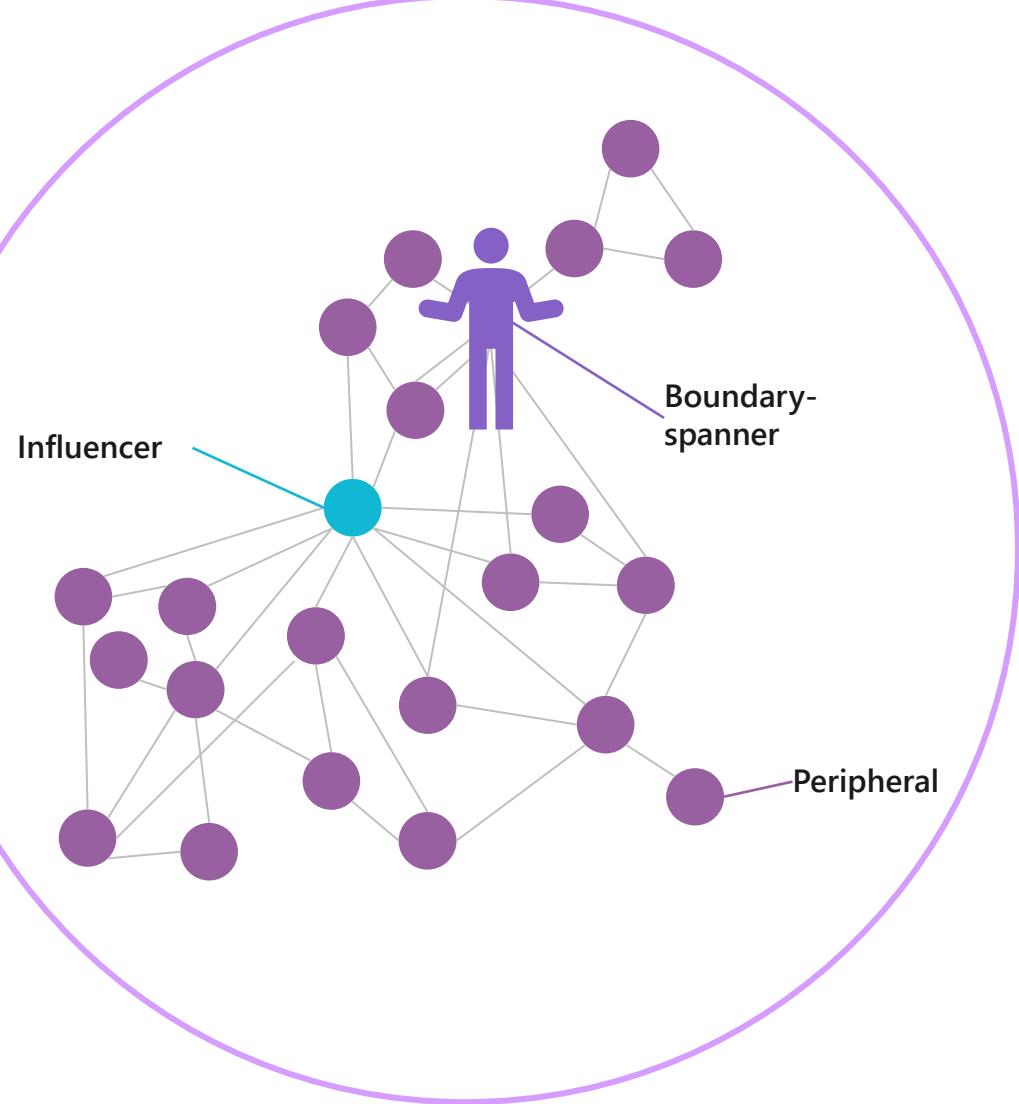
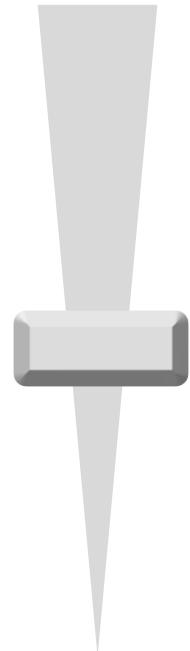
Zoom



It has data about her immediate relationships



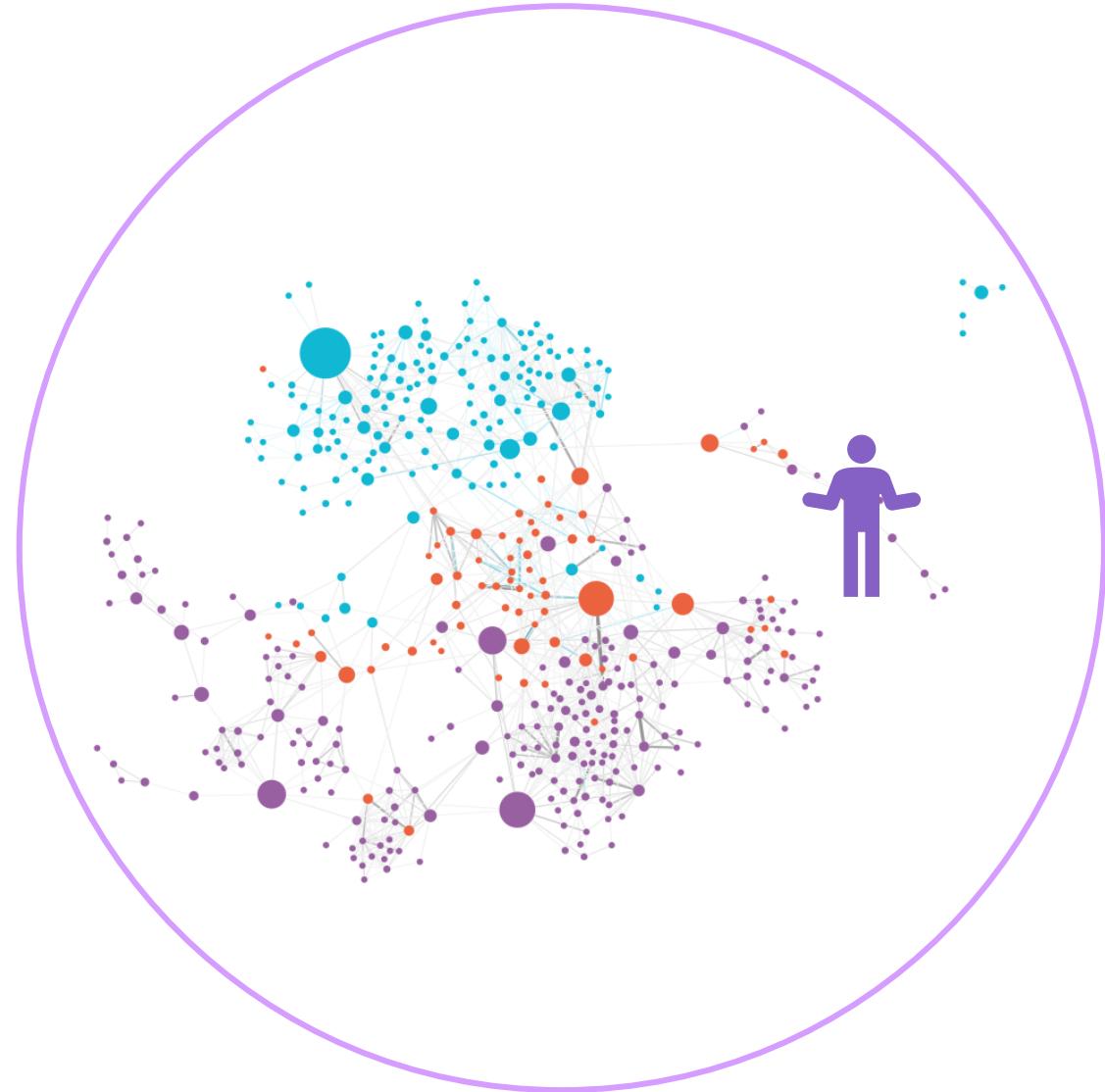
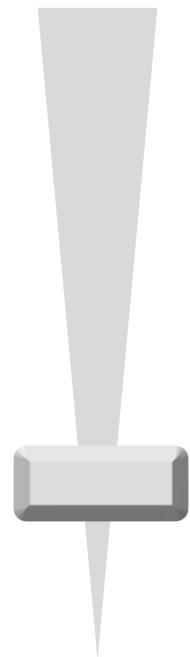
Zoom



But to understand her place in her business unit's network...



Zoom



**...or to understand her
position in her organization,
we need Organizational
Network Analysis**

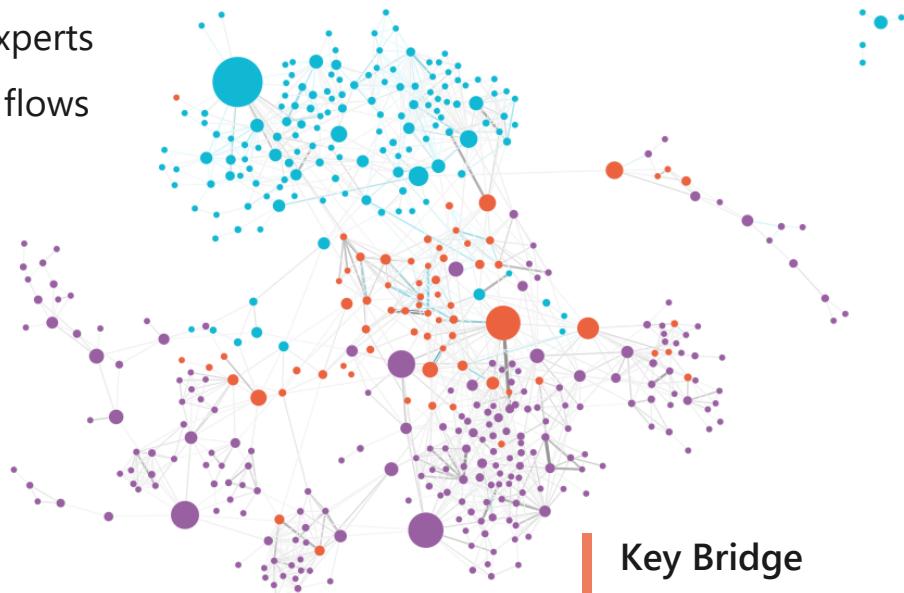
Organizational Network Analysis

Key Influencer

Highly sought out by those who are highly sought

Considered influential experts

Affect what information flows through the network



Peripheral

Less connected to the rest of the org

May have unique views

Key Bridge

Connected to many groups

Control how information flows

May also become bottlenecks or single points of failure

Organizational Network Analysis

(ONA) is a structured way to analyze how communications occur within the organization.

Network connectivity unlocks success for individual and team productivity, innovation, employee engagement and organizational change, as demonstrated by over 100 years of behavioral research.

By thinking about these communication structures, we can get visibility and understanding into individual and team productivity, into innovation, organizational change, etc.

Generating ONA with Viva Insights requires combining a question, dataset, and an ONA tool

Business Question

Example questions

- What does my organization's collaboration look like via a network lens?
- Are groups well-connected and interacting with each other per expectations?
- Are there isolated groups?
- Are shared-services groups being leveraged?

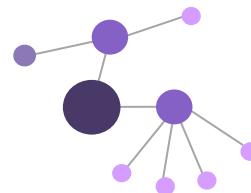
Datasets

Datasets from Viva Insights

- Network: Person query
- Network: Person-to-Person query
- Group-to-Group query
- Person-to-Group query transformed to Person-to-person

Tool

WPA, Excel, PowerBI



Gephi



Open-source
ONA
software

wpa R Package



Scripts in R
for Viva
Insights
datasets

Insights

Example insights

- Team A and B are siloed from each other
- HR is the connecting glue for my organization
- Directors have the highest influence of all levels

Which Viva Insights ONA option is right for me?

Query Output

Medium – High Learning curve for tools

Output based on analyst creativity with tools at hand

Many customers conduct analysis with general purpose software such as Excel and Power BI

Gephi

Medium learning curve

Produces manipulable and easy to customize network visuals

Calculates ONA metrics based on dataset (e.g., centrality, betweenness)

Specialized ONA software

Leverage [Viva Insights with Gephi handbook](#)

wpa R Package

Medium-Low learning curve (assuming knowledge of R)

Produces visuals or tables

Can conduct community detection and provide descriptions of communities

Leverage Viva Insights R network handbook

Medium – High

Analytical Complexity
to produce visuals

Medium - Low

Key consideration: Who should be included in the analysis?

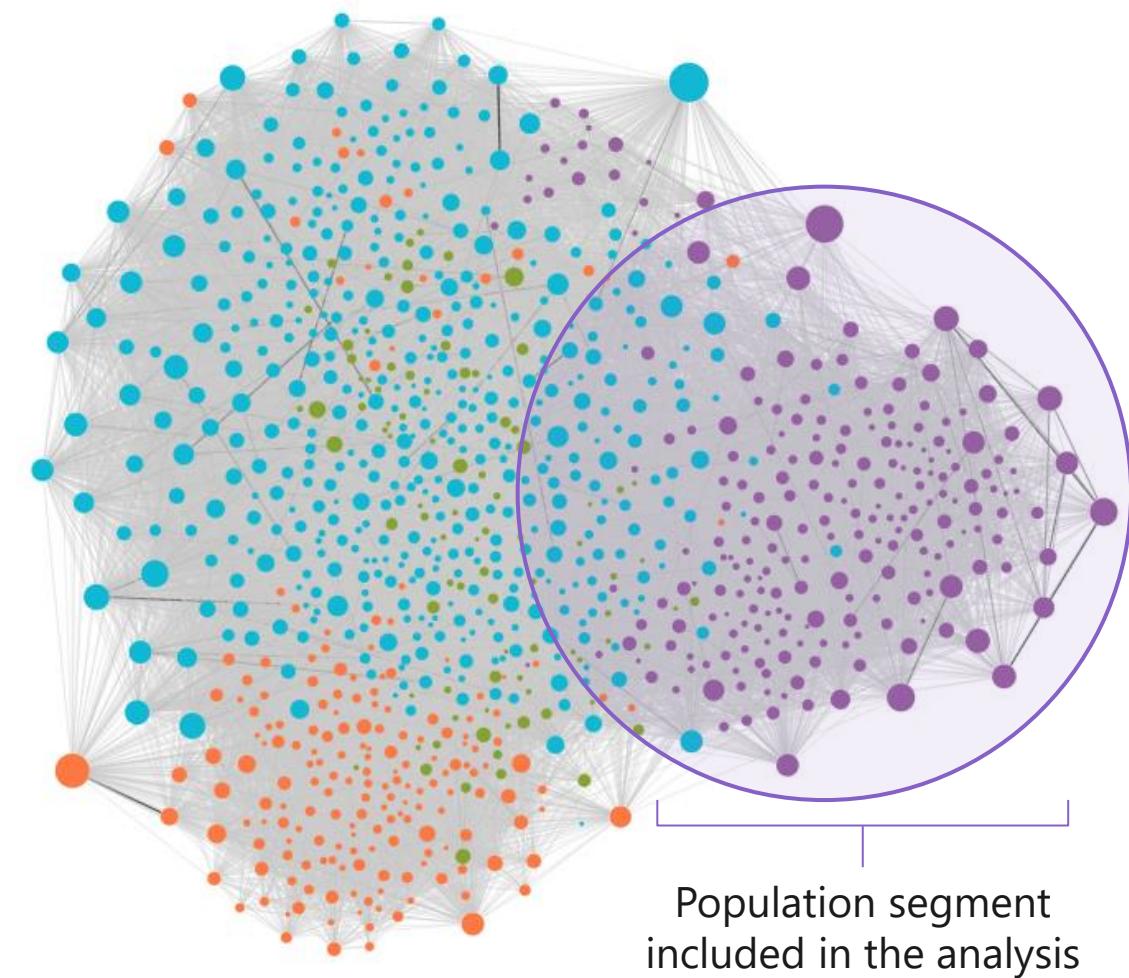
To identify the network boundary:

- 1 Use hypotheses about how work gets done to inform boundary-setting for analysis (e.g., Division or Business unit)
- 2 Confirm the network population in question is fully licensed with Viva Insights

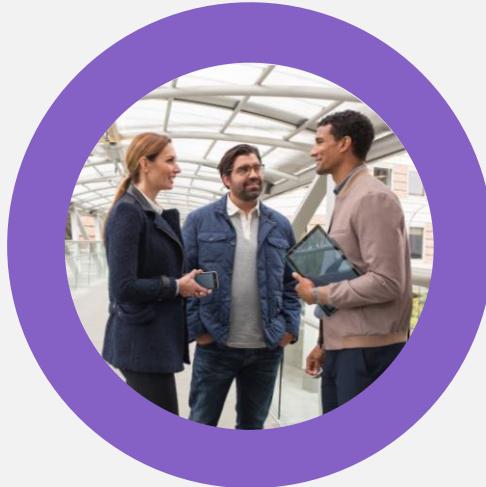
Think about how work gets done in your organization to inform who to include in the analysis. Maybe you want to analyze the entire network, or maybe you're interested in interactions within one particular group.

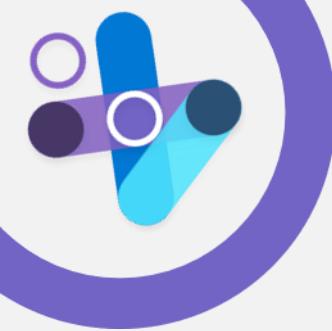
Keep in mind that for any employee not included in the network, the information pathways to/from these employees will be excluded. So, if you were to choose people at random, it would result in an entirely inaccurate understanding of the network.

If you choose to analyze HR only, you will get visibility only into the collaboration within the HR group. For accurate analysis, ensure your network population is fully licensed.



Viva Insights ONA Flexible Queries





Viva Insights ONA Flexible Query Output

Network: Person Query

- Use the Network: Person query to analyze the influence metric in the measured population. Aggregate the metric by attribute – like team, level, or location – to rank, compare and contrast influencers in the organization

Network: Person to Person Query

- Use the Network: Person-to-person query to analyze strong and diverse ties between individuals or groups in the measured population

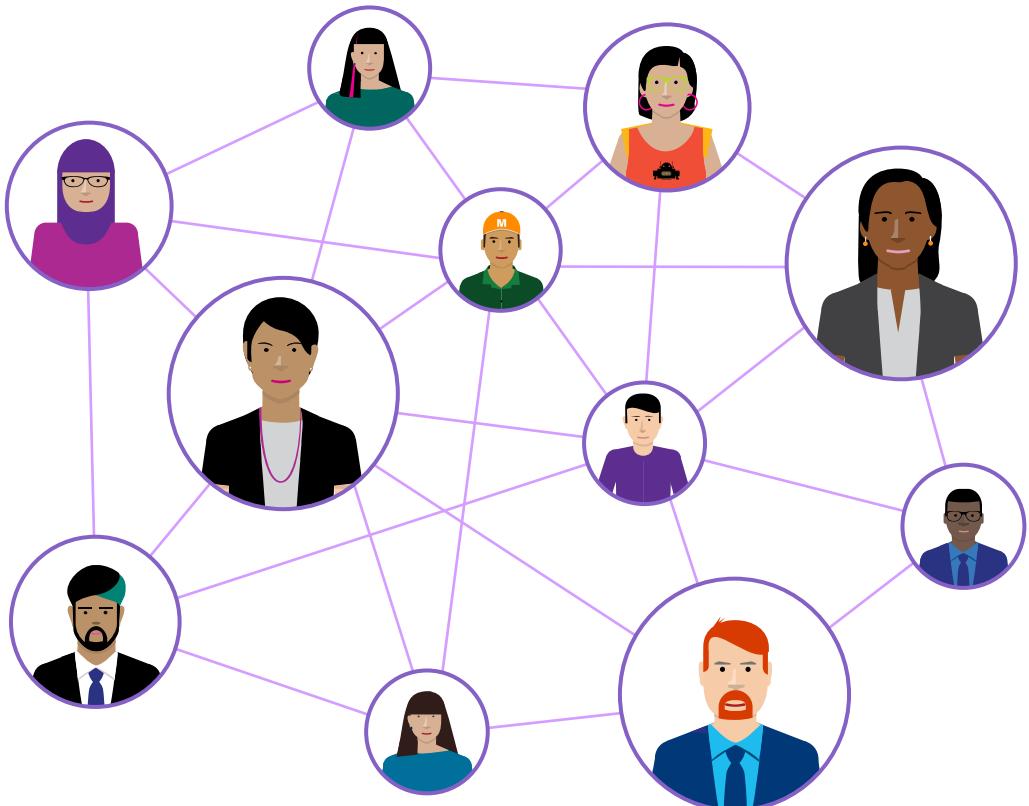
Group-to-Group Query

G2G query transformed into P2P query

- Use these queries to analyze and graph the collaboration patterns within your organization through metrics like collaboration hours or meeting counts at the Group-to-Group or Person-to-Person level. Open-source ONA tools can be applied on this type of data for visualization purposes or more in-depth ONA analysis
- P2P Query is a transform of the G2G query with an assigned identifier for each person to use as the “group.” This is a specialized technique that requires privacy approval

Network: Person query

Use the Network: Person query to analyze the **influence metric** in the measured population. Aggregate the metric by attribute – like team, level, or location – to rank, compare, and contrast influencers in the organization.



Use the network person query to:

- Learn where influential employees exist in the organization.
- Rank the influencers that exist in your organization.

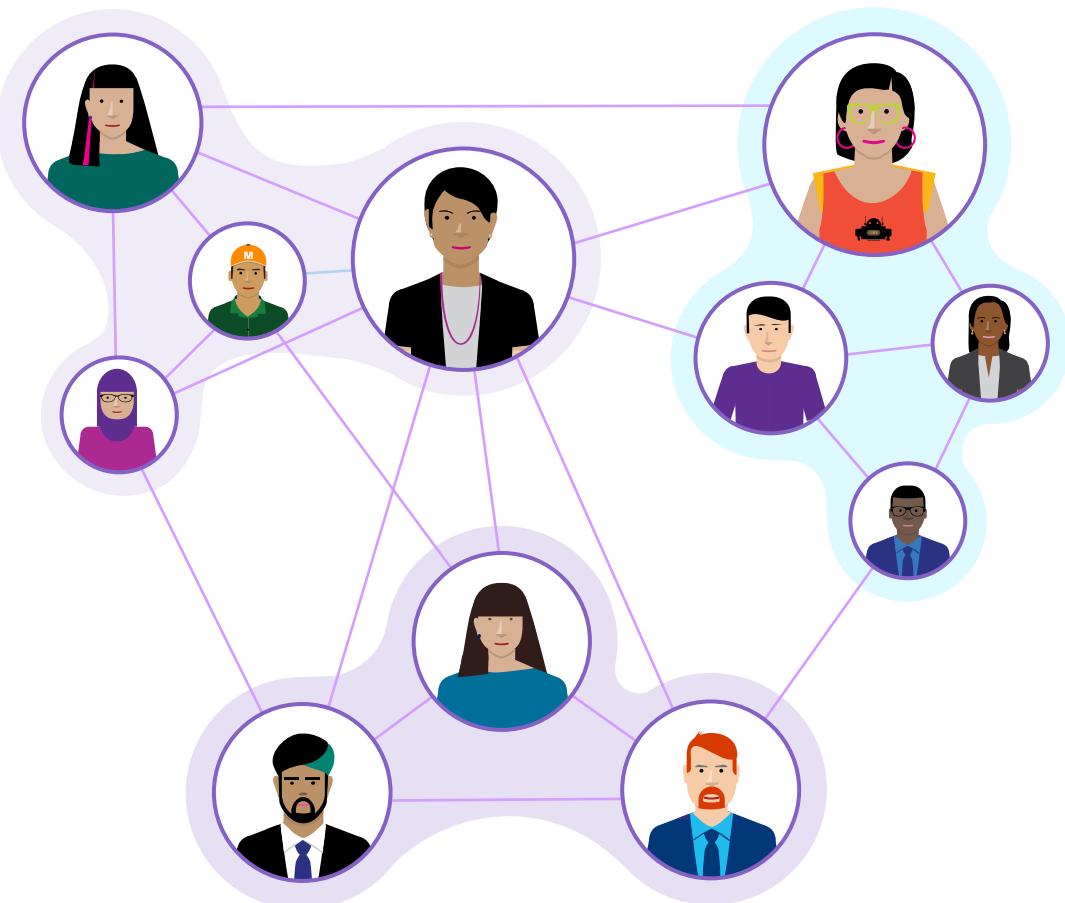
The *Network: Person query* returns one record per person, by month or by aggregated total (1 mo., 3 mos., 6 mos., 1 yr, custom)

Each record includes:

- **Person ID** – De-identified ID number for the person represented in that data row
- **Date** – The start date of the aggregated output
- **Person attributes** – Attributes about the person supplied through the latest organizational (HR) data
- **Metrics** – Any metrics that you include in the query (e.g., Influence Rank). For more information, see [Network metrics](#).

Network: Person to person query

Use the Network: Person-to-person query to analyze **strong and diverse ties** between individuals or groups in the measured population..



Use the network person-to-person query to:

- Learn where strong or diverse ties exist in your organization

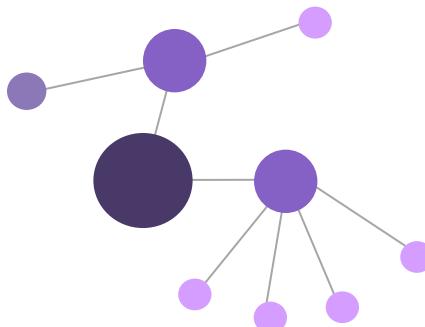
The *Network: Person-to-person query* returns one record per tie origin-destination pair, by month or by aggregated total (1 mo., 3 mos., 6 mos., 1 yr, custom)

Each record includes:

- Strong and diverse tie scores and types (For more information, see [Network metrics](#))
- Tie origin and tie destination organizational attributes
- Date

Targeted ONA analysis measures Viva Insights

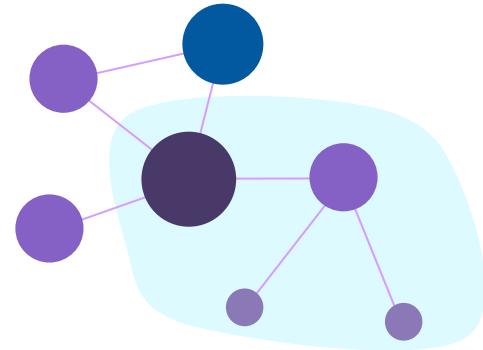
Influence index



The influence index is a score of how well connected an employee is in the organization. If an employee is connected to others that are well-connected, the employee will benefit from these connections.

Employees with a higher influence index are more likely to be able to connect effectively within or across groups to drive change.

Strong and Diverse ties



Network ties are connections between employees with at least two meaningful interactions. Strong ties have many connections in common, and diverse ties have fewer connections in common.

Groups with many diverse ties can represent teams with high innovative potential.

Clarify the question

Which Viva Insights ONA measure is right for me?

Are there individuals in the organization with many well-connected connections? Where?

How can we improve communication on strategic initiatives?

How can we accelerate improvement plans for the organization?

Where in the organization are employees connected in their group vs connected with others outside their group?

Where should we encourage connectivity to foster innovation?

Are there inefficiencies that suggest opportunity to improve team cohesion?

Influence index

Strong/Diverse ties

Group-to-Group query

Use a group-to-group query in Viva Insights to analyze collaboration patterns between teams

Time\InvestorOrg	Biz Dev	CEO	Customer Service	Facilities	Finance-Corporate	Finance-East	Finance-South	Finance-West	Financial Planning	G&A Central	G&A East	G&A South	Human Resource Management	Inventory Management	IT-Corporate	IT-East
Biz Dev	49.4%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	9.8%	9.8%	10.4%	10.1%	8.7%
CEO	4.2%	NA	6.0%	7.2%	5.6%	5.3%	7.6%	5.6%	7.9%	5.2%	8.1%	8.0%	4.6%	9.7%	7.0%	8.0%
Customer Service	0.2%	0.1%	50.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	10.2%	9.1%	9.3%	9.5%
Facilities	0.1%	0.0%	0.2%	48.9%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	9.6%	10.6%	9.9%	9.3%
Finance-Corporate	0.2%	0.0%	0.2%	0.3%	50.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%	9.8%	9.7%	9.6%	9.3%	9.5%
Finance-East	0.2%	0.0%	0.2%	0.2%	0.2%	46.8%	0.2%	0.2%	0.2%	0.2%	0.2%	10.5%	10.4%	10.7%	9.7%	10.2%
Finance-South	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%	46.5%	0.2%	0.2%	0.2%	0.2%	10.0%	10.7%	10.5%	10.1%	10.3%
Finance-West	0.2%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	47.9%	0.1%	0.2%	0.1%	10.3%	10.4%	10.3%	10.0%	9.6%
Financial Planning	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.2%	0.2%	48.6%	0.3%	0.2%	10.2%	9.9%	9.8%	10.1%	9.3%
G&A Central	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	50.5%	0.2%	9.3%	9.8%	9.6%	9.5%	9.3%
G&A East	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	50.5%	10.0%	9.9%	9.6%	9.5%	8.7%
G&A South	5.1%	0.0%	5.9%	5.8%	5.2%	6.5%	5.9%	6.9%	5.6%	6.0%	5.4%	38.1%	0.9%	0.9%	0.9%	0.9%
Human Resources	4.8%	0.0%	5.8%	5.6%	5.3%	6.6%	6.3%	6.5%	5.2%	6.2%	5.1%	0.8%	39.1%	0.9%	0.9%	0.8%
Inventory Management	4.9%	0.1%	5.6%	5.9%	5.0%	6.5%	5.9%	6.3%	5.4%	5.8%	4.9%	0.8%	0.9%	40.4%	0.8%	0.9%
IT-Corporate	5.3%	0.0%	5.7%	5.7%	5.3%	6.6%	6.2%	6.8%	5.6%	6.5%	5.5%	0.9%	0.9%	0.9%	37.4%	0.8%
IT-East	5.0%	0.0%	6.0%	5.8%	5.4%	6.6%	6.7%	7.1%	5.8%	6.6%	5.3%	1.0%	1.0%	0.9%	0.9%	35.9%

Opportunity

The data can be used as a basic interaction matrix as well as being used to generate more complex ONA measures.

Use the group-to-group query to:

- Understand where groups are investing their collaboration time
- Identify silos and bridging organizations

The *Group-to-group query* returns one record per tie origin-destination pair, by week or month or by aggregated total (1 mo., 3 mos., 6 mos., 1 yr, custom)

Each record includes:

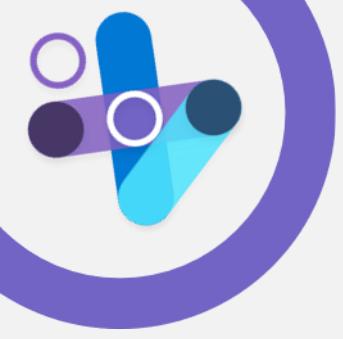
- Tie origin and tie destination organizational attributes
- Metrics about the collaboration (e.g., collaboration hours, email hours, email count, meeting hours, meetings)

Special Case:

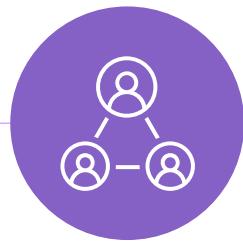
- Create a P2P query with collaboration metrics by assigning each person a unique identifier and running a group-to-group query using that as the group
- This case requires a privacy review and approval

Explore influential connections





Viva Insights ONA Out-of-the-Box Use Cases



Explore Influential Connections and
Accelerate adoption with influencers with
Viva Insights Network Person ONA Query

Influence Metrics



Network: Person

Analyze network characteristic and trend across the company

The Network: Person query returns Influence metrics

Definition

Influence is the degree to which an individual is well connected with others, who in turn are well connected with other people. A high score on Influence suggests that the individual's perspectives can flow through the company with efficiency.

Signals used in the metric:

- Meetings
- Email
- Teams IM
- Teams Adhoc calls

Signals are filtered based on:

- Measured users only
- Meetings with <20 attendees
- Meetings <4h duration
- Accepted meetings only
- Emails with <20 recipients
- Teams IM <8 participants
- Teams Adhoc calls <8 participants

Output

- SCORE: Raw score (between 0 and 1); values are relative
- RANK: Rank of every employee by influence score from 1 to n
- Aggregated or Monthly
- Available for entire time period



Algorithm
PageRank

Use cases

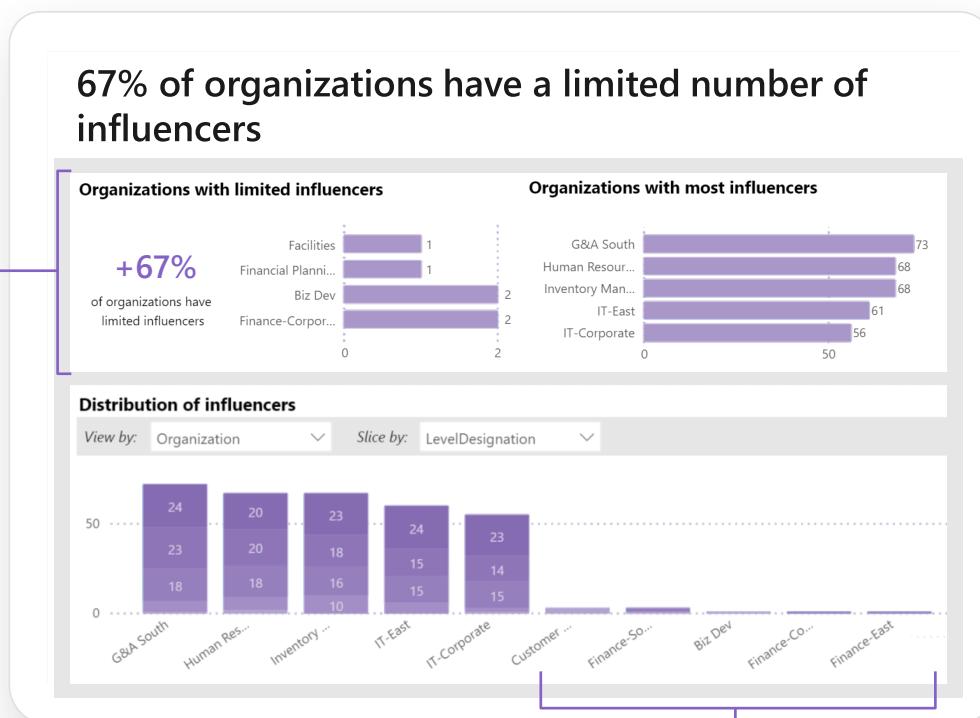
- General Influencer profiling
- Finding opportunity groups with Influencer presence to drive change
- Employee empowerment
- Manager effectiveness – comparison/effects on directs of top managers vs. rest

Use case overview: Accelerate adoption with influencers

The influence metric measures the degree to which an individual is well-connected with others, who, in turn, are well connected with other people. An individual with a high influence score suggests their perspective can efficiently flow through the organization.

Where are the influencers?

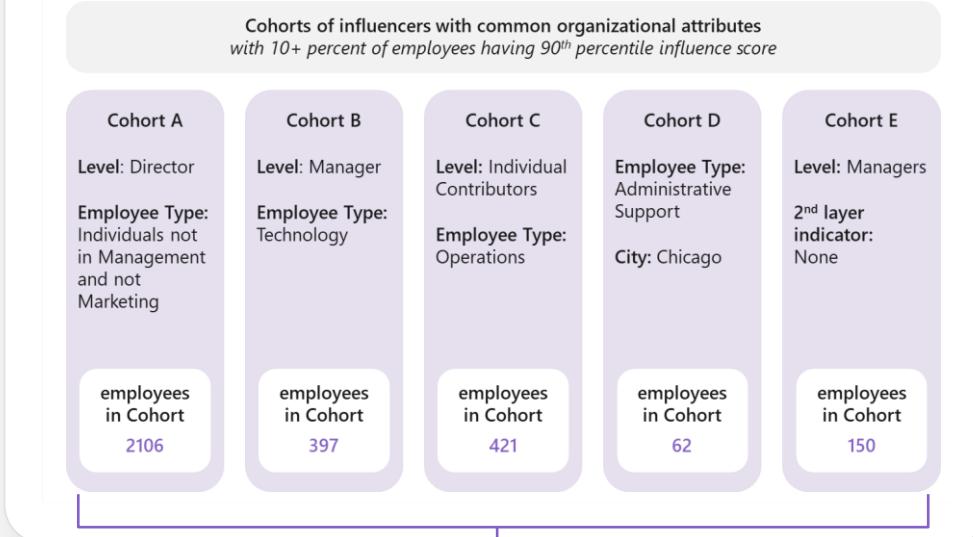
Organizations with the least and most influencers



Distribution of influencers by organization

Accelerate adoption with influencers:

Over 50% of all influencers fall into five distinct groups at Contoso



Cohort groups in the organization with top ranked influencers

Requires an additional layer of analysis on top of influence metric

Run queries | Network: Person query

Log into: www.workplaceanalytics.office.com

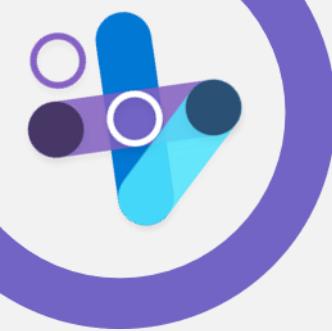
Select Network: Person query in Query Designer

Choose metrics, filters, and organizational attributes

- 1 Select network boundaries: Define who is included in the network dataset
- 2 Select collaboration types: Pick the signals to use in calculating Influence
- 3 Select metrics: Select metrics from dropdown
- 4 Select filters: None required, unless there is a specific group you'd like to analyze
- 5 Organizational data: Select all

The screenshot shows the Workplace Analytics Query Designer interface. The left sidebar has 'Workplace Analytics' at the top, followed by 'Home', 'Analyze' (which is expanded to show 'Query designer', 'Business process analysis', 'Peer analysis', and 'Plans'), 'Controls', 'Data sources', and 'Analyst settings'. The main area is titled 'Query designer > Network: Person'. It is divided into five numbered sections: 1. 'Select network boundary conditions' (with a note about measured employees and an 'Add filter' button). 2. 'Select collaboration types' (with a note about collaboration types and checkboxes for 'Emails and meetings', 'Teams instant messages', and 'Team calls'). 3. 'Select metrics' (with a note about what to know about employees and a dropdown menu labeled 'Select ...'). 4. 'Select filters' (with a note about including measured employees in results). At the bottom left is a 'Contact admin' link.

Run query and export results

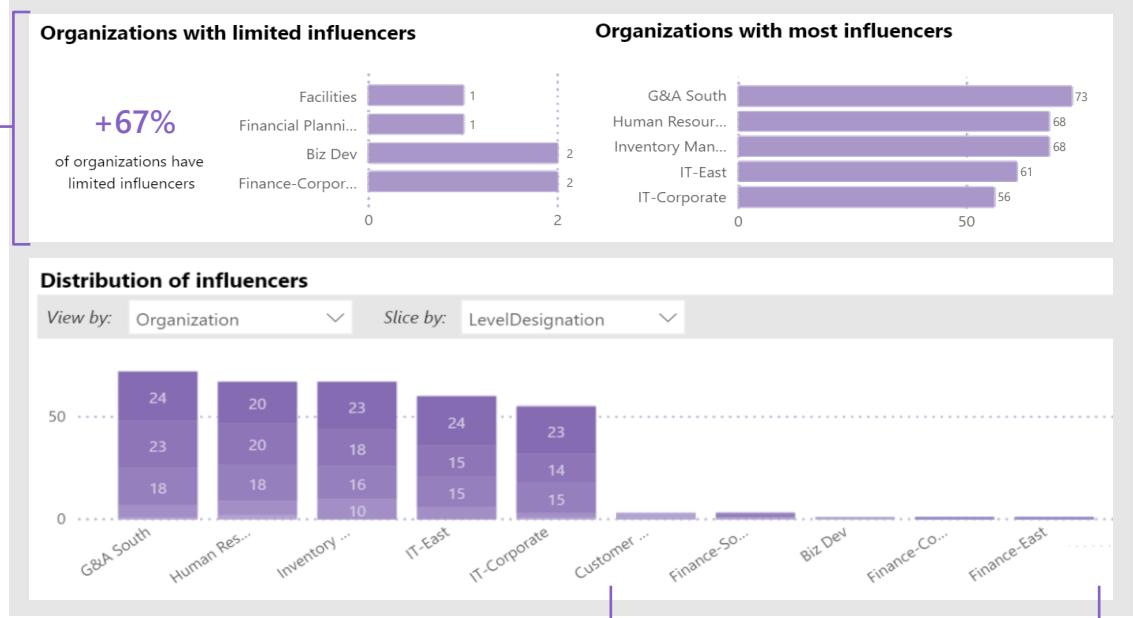


Example of an influencer analysis in PBI

Organizations with the least and most influencers

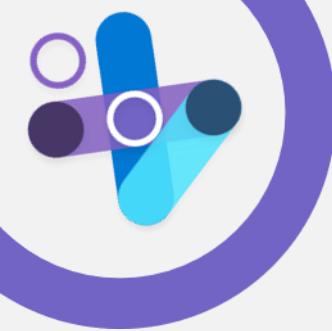
Where are the influencers?

67% of organizations have a limited number of influencers



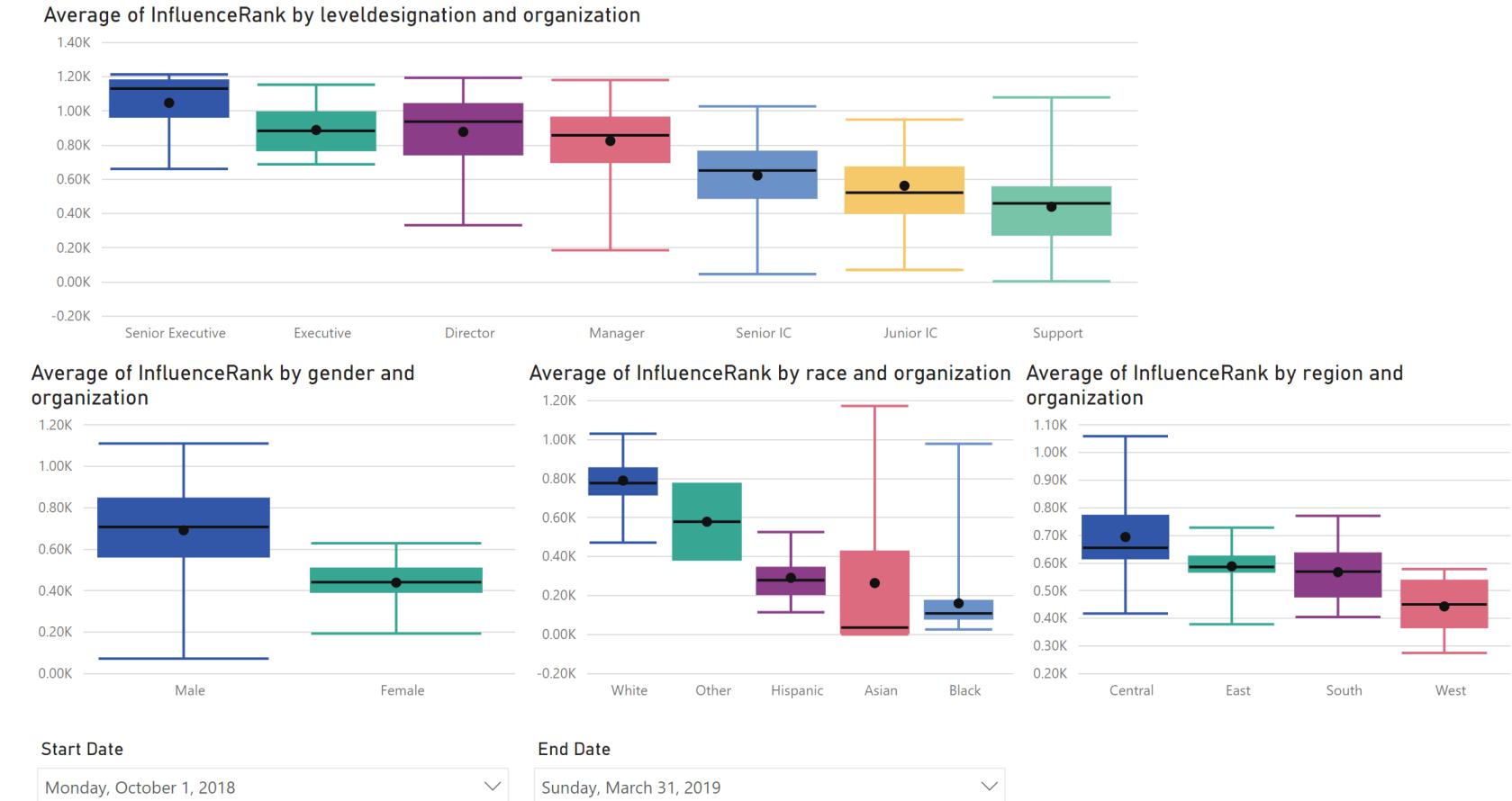
Distribution of influencers by organization

A sample PowerBI dashboard is provided



Example of an influencer analysis in PBI

Where are the influencers?





Over 50% of all influencers fall into five distinct groups at Contoso

Cohorts of influencers with common organizational attributes

Cohort A

Level: Director

Employee Type: Individuals not in Management and not Marketing

employees in Cohort
2106

Cohort B

Level: Manager

Employee Type: Technology

employees in Cohort
397

Cohort C

Level: Individual Contributors

Employee Type: Operations

employees in Cohort
421

Cohort D

Employee Type: Administrative Support

City: Chicago

employees in Cohort
62

Cohort E

Level: Managers

2nd layer indicator: None

employees in Cohort
150

Insights

Directors not in Management or Marketing, Managers in Technology, individuals in Operations, Administrative support in Chicago, and Managers have high percentages of influential individuals.

Why it Matters

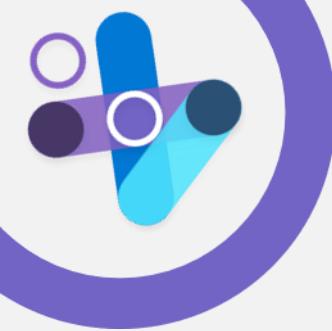
Targeting influential employees to share information on success initiatives could quicken adoption of these initiatives and potentially improve overall performance.

How

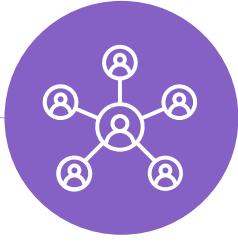
- A basic analysis is possible with Pivoting in Excel
 - Using machine learning to automatically detect common attribute of cohorts
- Sample solutions for both are provided on [GitHub](#)

Explore Strong and Diverse ties





Viva Insights ONA Out-of-the-Box Use Cases



Measure peer and group connectivity with
Network Person to Person Query

Explore employees' sense of belonging and inclusion with peers/teams, their ability to innovate via access to novel and fresh information, managerial excellence via their ability to connect their team members to appropriate resources and more

Strong & Diverse ties



Network: Person-to-Person

Analyze network connectivity
between individuals

The Network: Person-to-Person query returns Strong and Diverse ties

Definition:

Strong ties measures how many strong and tight engagements a person has.

Diverse ties measures how many varied and broad connections a person has.

Signals used in the metric:

- Meetings
- Email
- Teams IM
- Teams Adhoc calls

Signals are filtered based on:

- Measured users only
- Meetings with <20 attendees
- Meetings <4h duration
- Accepted meetings only
- Emails with <20 recipients
- Teams IM <8 participants
- Teams Adhoc calls <8 participants

Output

- Tie strength/diversity raw scores
- Aggregated or Monthly; weekly may come later depending on demand
- Available for entire time period



Algorithm

[Granovetter](#),
[Homophily](#) with
bi-directional
email treatment

Use cases

- Team cohesion
- Manager effectiveness, aka. [Gartner Connector manager](#)
- Manager connectivity beyond immediate workgroup
- Top performer analysis ([Ref1](#), [Ref2](#))
- [Team profiles](#) (efficiency, innovation)
- Teams adoption perspective – Does the use of Teams promote connectivity/cohesion?

Run queries | Network: Person to Person

Log into: www.workplaceanalytics.office.com

Select Network: Person-to-Person query in Query Designer

Choose metrics, filters, and organizational attributes

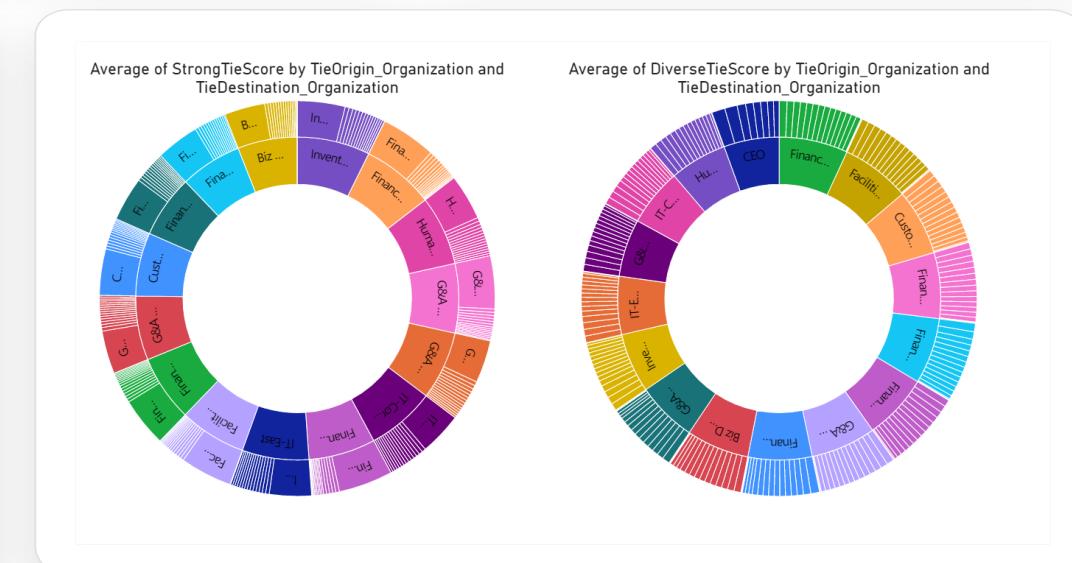
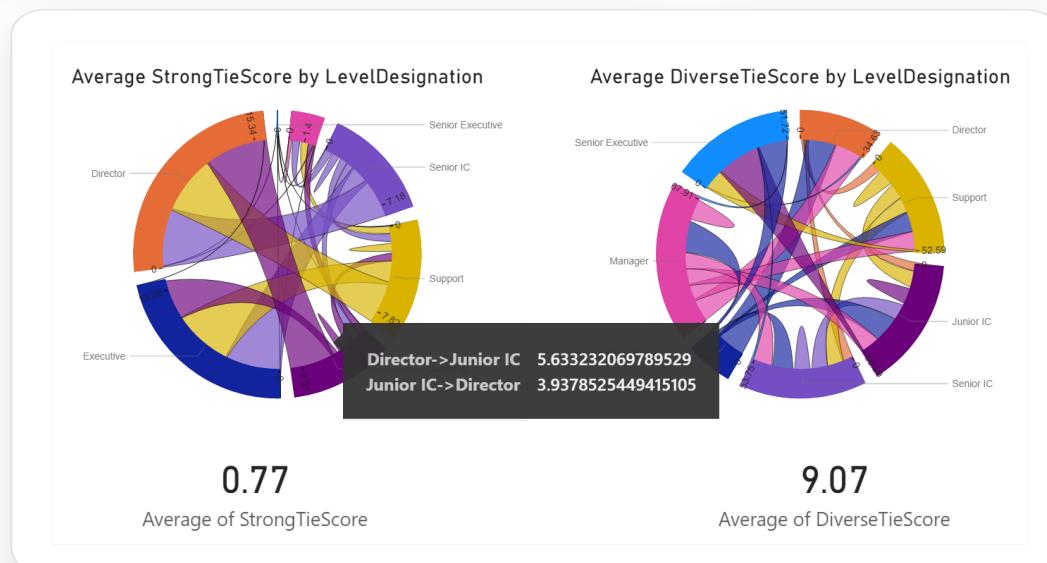
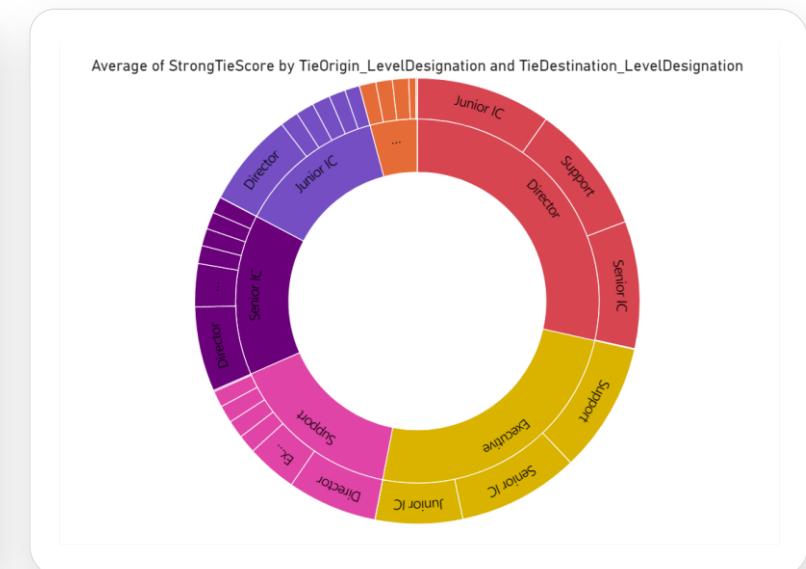
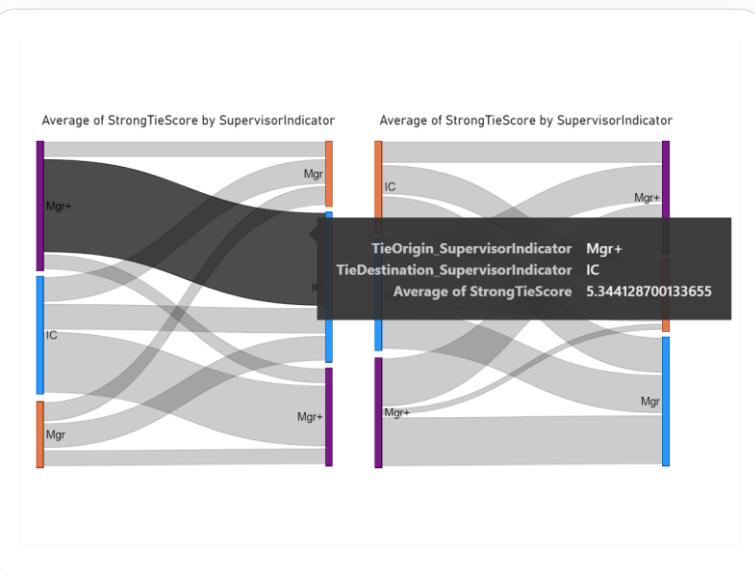
- 1 Select network boundaries: Define who is included in the network dataset
- 2 Select collaboration types: Pick the signals to use in calculating Strong and Diverse tie scores
- 3 Select metrics: Select metrics from dropdown
- 4 Select filters: None required, unless there is a specific group you'd like to analyze
- 5 Organizational data: Select all

The screenshot shows the Workplace Analytics Query Designer interface. On the left is a sidebar with options: Home, Analyze, Query designer (which is selected), Business process analysis, Peer analysis, Plans, Controls, Data sources, and Analyst settings. At the bottom of the sidebar is a 'Contact admin' link. The main area has a header 'Query designer > Network: Person-to-person query'. It is divided into five sections, each with a purple numbered circle:

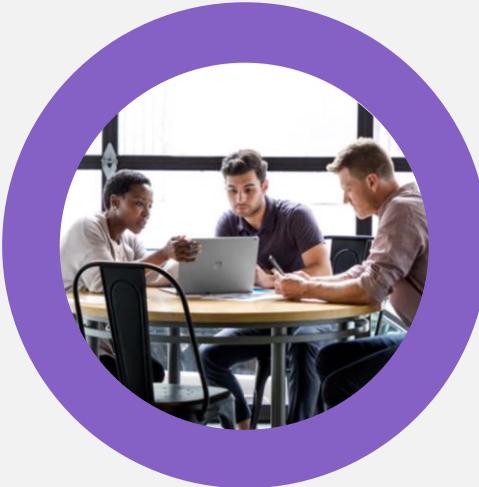
- 1 Select network boundary conditions: A question asks "Which measured employees do you want to consider for your analysis?". Below it is a "+ Add filter" button.
- 2 Select collaboration types: A question asks "Which types of collaboration do you want to consider for your analysis?". Below it is a list with checked boxes for "Emails and meetings", "Teams instant messages", and "Teams calls".
- 3 Select metrics: A question asks "What do you want to know about these employees?". Below it is a dropdown menu with a placeholder "Select ...".
- 4 Select filters: A question asks "Which measured employees do you want to include in your query results that act as tie origin?". Below it is a "+ Add filter" button.

Run query and export results

Example of a Strong and Diverse Tie analysis in PBI



Group-to-group queries



Run queries | *Group-to-Group*

Log into: www.workplaceanalytics.office.com

Select Group-to-Group query in Query Designer

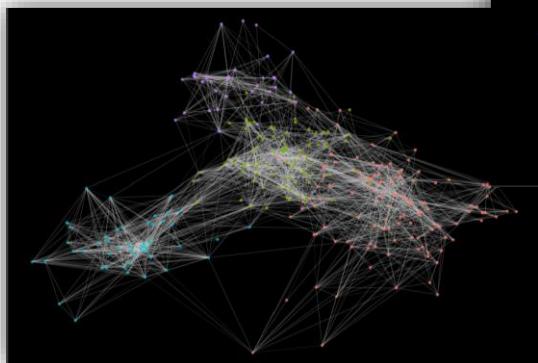
Choose metrics, time investors, and their collaborators

- 1 **Select metrics:** Select the metrics that describe the collaboration (e.g., Collaboration Hours, Meetings, Meeting Hours)
- 2 **Select time investors:** Pick the organizational attribute to group the time investors (licensed users) by, including filtering to a certain population
- 3 **Select collaborators:** Pick the organizational attribute to group the collaborators by, including filtering to a certain population. Typically kept the same as time investors for comparability

Run query and export results

The screenshot shows the Workplace Analytics Query Designer interface. The left sidebar has a 'Workplace Analytics' logo and navigation links: Home, Analyze (selected), Plans, Controls, Data sources, and Analyst settings. The main area is titled 'Query designer > Group-to-group'. The process is divided into three steps: 1. Select metrics, which includes a dropdown for 'What would you like to know about the interactions?'; 2. Time investors, which includes a dropdown for 'How do you want to group the time investors?' and a note 'Do you want to limit the analysis to only certain time investors?'; 3. Their collaborators, which includes a dropdown for 'Do you want to exclude any collaborators?' and a note 'Total internal collaborators: 842 Included internal collaborators: 842 Total external collaborators: 852'. At the bottom, there are 'Contact admin' and 'Add filter' buttons.

Person-to-Person interactions reveal collaboration patterns

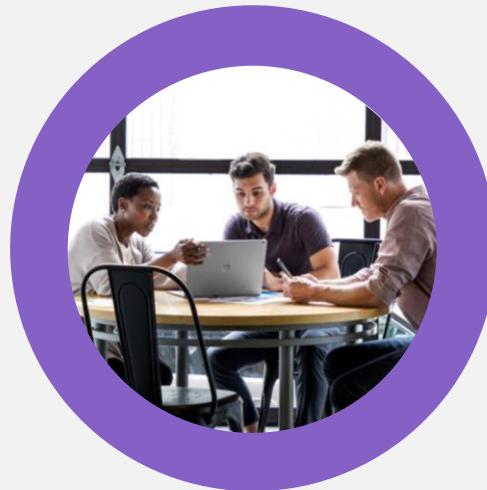


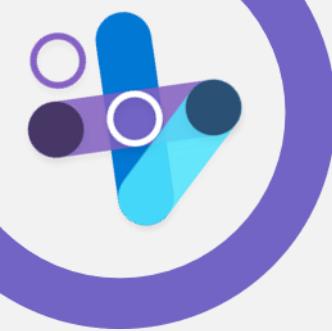
Person to person interaction rendered
by wpa R package



Person to person interaction rendered by Gephi

Person-to-person interactions





Person-to-Person interactions



With introducing a **secondary employeeId** in the Viva Insights organizational file, **Group-to-Group query** can be transformed to a **Person-to-Person Query**.

The transformed query can be used as the interaction matrix for person-to-person ONA analysis.

Run queries | *Group-to-Group*

Log into: www.workplaceanalytics.office.com

Select Group-to-Group query in Query Designer

Choose metrics, time investors, and their collaborators

- 1 **Select metrics:** Select the metrics that describe the collaboration (e.g., Collaboration Hours, Meetings, Meeting Hours)
- 2 **Select time investors:** Pick the secondary EmployeeId
- 3 **Select collaborators:** Pick the secondary EmployeeId

Run query and export results

Note: Please make sure the additional id is not your employee id or any identifiable number that would allow the analyst to identify and analyze the interactions at the person level.

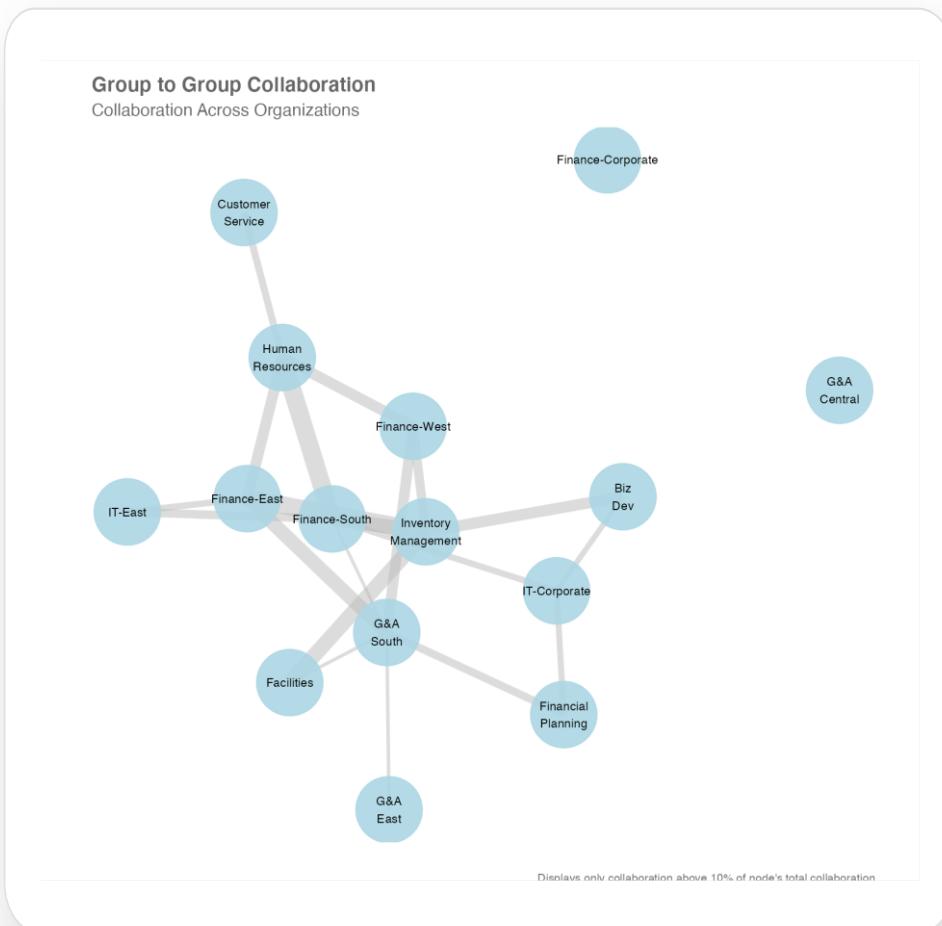
For privacy reasons, WPA by default de-identify the PersonId when HR org file is uploaded. The same policy is recommended to be used before uploading the additional id.

The screenshot shows the Workplace Analytics Query Designer interface with the following steps highlighted:

- 1 **Select metrics**: A dropdown menu labeled "What would you like to know about the interactions?" with an "Select..." option.
- 2 **Time investors**: A section for grouping time investors with a "Select..." dropdown and a note about limiting analysis to certain time investors.
- 3 **Their collaborators**: A section for selecting collaborators with a "Select..." dropdown and a note about excluding any collaborators.

At the bottom, there are summary statistics: Measured employees: 835, Filter group: 835, Total internal collaborators: 842, Included internal collaborators: 842, and Total external collaborators: 852.

Group-to-Group queries reveal collaboration patterns



Group to group query rendered
as a network diagram

TimeInvestorOrg	Biz Dev	CEO	Customer Service	Facilities	Finance-Corporate	Finance-East	Finance-South	Finance-West	Financial Planning	G&A Central	G&A East	G&A South	Human Resources	Inventory Management	IT-Corporate	IT-East	
Biz Dev	49.4%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	9.8%	9.8%	10.4%	10.1%	8.7%	
CEO	4.2%	NA	6.0%	7.2%	5.6%	5.3%	7.6%	5.6%	7.9%	5.2%	8.1%	8.0%	4.6%	9.7%	7.0%	8.0%	
Customer Service	0.2%	0.1%	50.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	10.2%	9.1%	9.3%	9.5%
Facilities	0.1%	0.0%	0.2%	48.9%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	9.6%	10.6%	9.9%	9.3%
Finance-Corporate	0.2%	0.0%	0.2%	0.3%	50.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%	0.2%	9.8%	9.7%	9.6%	9.3%	9.5%
Finance-East	0.2%	0.0%	0.2%	0.2%	0.2%	46.8%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.5%	10.4%	10.7%	9.7%	10.2%
Finance-South	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%	46.5%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	10.7%	10.5%	10.1%	10.3%
Finance-West	0.2%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	47.9%	0.1%	0.2%	0.1%	10.3%	10.4%	10.3%	10.0%	9.6%	
Financial Planning	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.2%	0.2%	48.6%	0.3%	0.2%	0.2%	10.2%	9.9%	9.8%	10.1%	9.3%
G&A Central	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	50.5%	0.2%	0.2%	9.3%	9.8%	9.6%	9.5%	9.3%
G&A East	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	50.5%	10.0%	9.6%	9.5%	8.7%	9.5%	8.7%
G&A South	5.1%	0.0%	5.9%	5.8%	5.2%	6.5%	5.9%	6.9%	5.6%	6.0%	5.4%	38.1%	0.9%	0.9%	0.9%	0.9%	0.9%
Human Resources	4.8%	0.0%	5.8%	5.6%	5.3%	6.6%	6.3%	6.5%	5.2%	6.2%	5.1%	0.8%	39.1%	0.9%	0.9%	0.8%	0.8%
Inventory Management	4.9%	0.1%	5.6%	5.9%	5.0%	6.5%	5.9%	6.3%	5.4%	5.8%	4.9%	0.8%	0.9%	40.4%	0.8%	0.9%	0.9%
IT-Corporate	5.3%	0.0%	5.7%	5.7%	5.3%	6.6%	6.2%	6.8%	5.6%	6.5%	5.5%	0.9%	0.9%	0.9%	37.4%	0.8%	0.8%
IT-East	5.0%	0.0%	6.0%	5.8%	5.4%	6.6%	6.7%	7.1%	5.8%	6.6%	5.3%	1.0%	1.0%	0.9%	0.9%	0.9%	35.9%

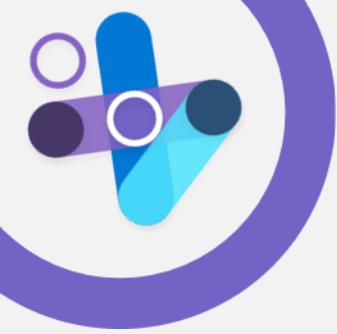
The same group-to-group query rendered as a heatmap based on percentage of time the organization spends with other organizations

Visual capabilities included in wpa R package

External Tools

Hands on with ONA





Viva Insights ONA Use Cases

External Tools

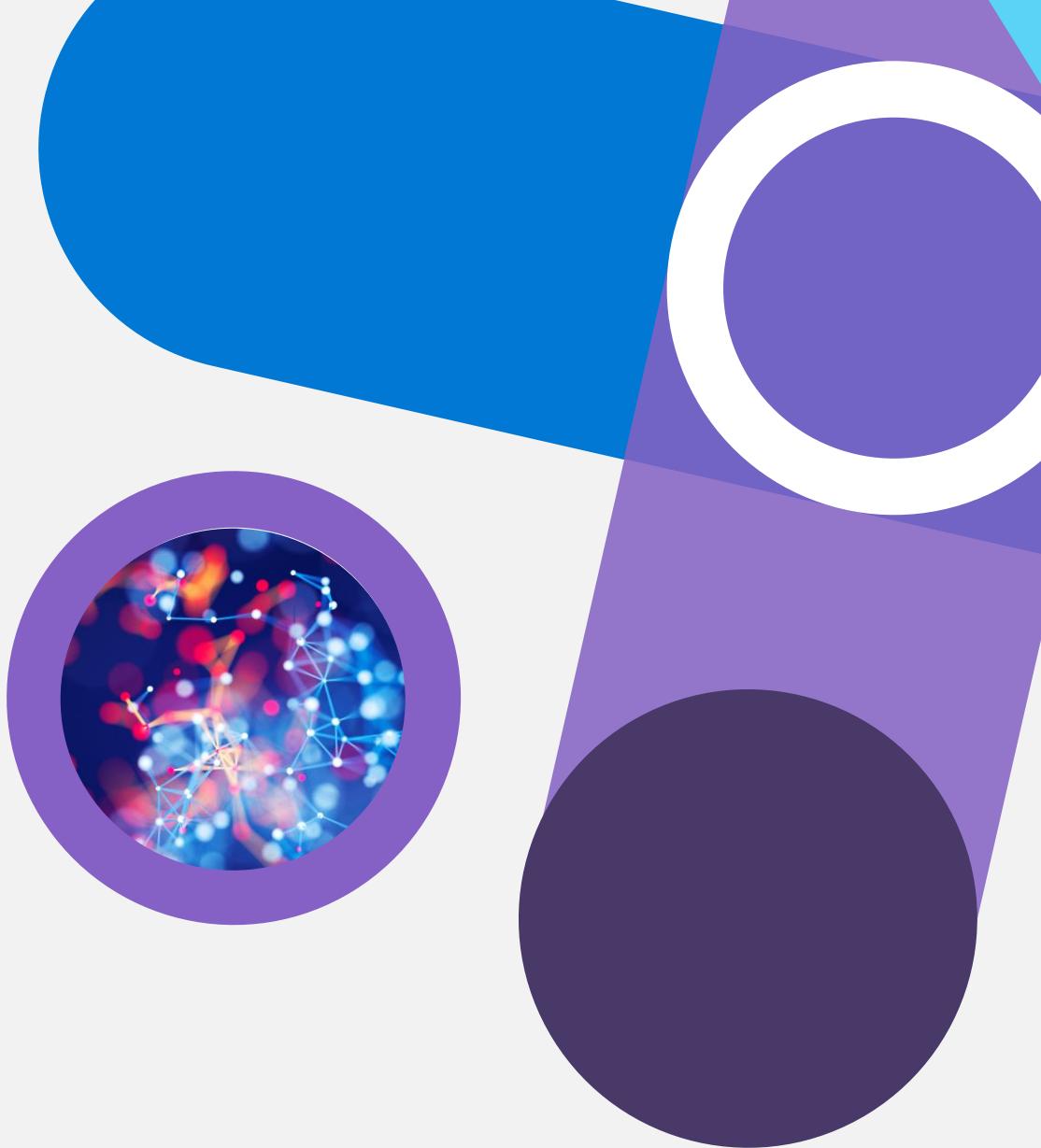


Users can explore a wide list of use cases with **Standard Viva Insights Queries** and ONA open-source tools like Gephi through **calculation and visualization of standard network statistics/measures** such as Degree, network diameter, density.

wpa R package offers a set of tools and functions for analyzing and visualizing Microsoft Viva Insights datasets

Gephi

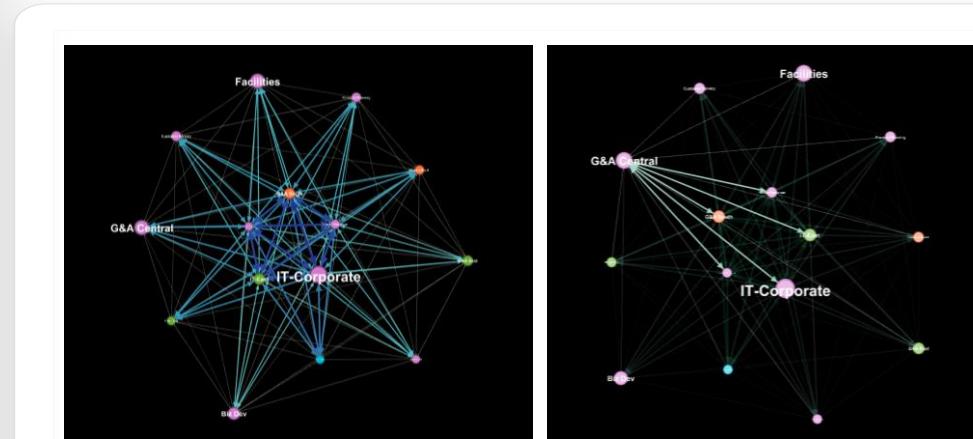
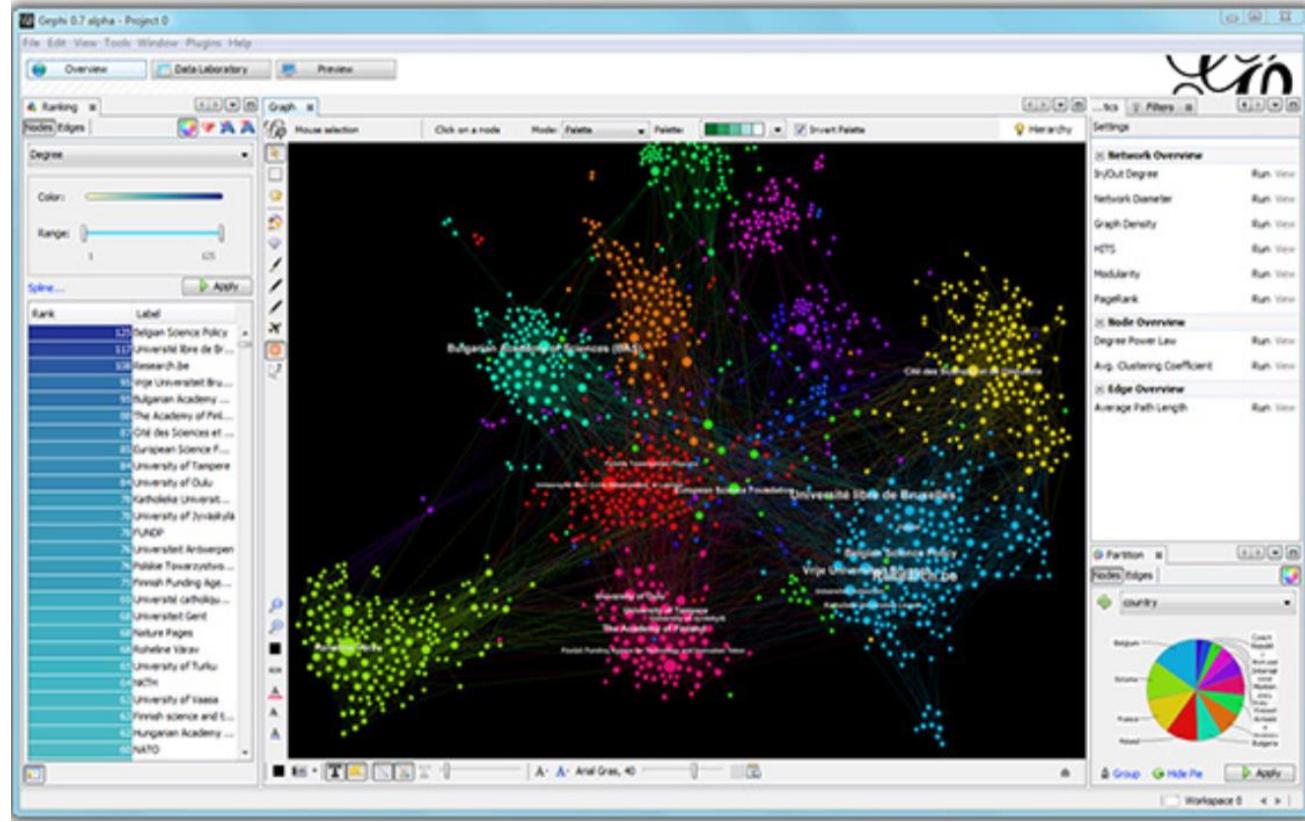
An open-source ONA visualization Tool



Viva Insights ONA External Tools: Gephi

[A quick start](#)

Gephi is the leading visualization and exploration software for all kinds of graphs and networks.





Gephi Features

Gephi is a great tool for:

- Visualizing and interacting with large graphs
- Adding extra attributes to nodes and partitioning graph based on those
- Sizing nodes based on attributes and nodes graph measures like degree, weighted degree, etc.
- Comparing partitions based on different attributes with static visualization of the network
- Filtering the network based on attributes and working in subgraphs
- Calculating standard network statistics like Degree, network diameter, density, etc.

Viva Insights ONA External Tools: Gephi

[Gephi tutorial](#) provides instruction on

- How to install Gephi
- Step by Step instruction to run Viva Insights queries and transforming the results
- Configuring Gephi to create a Person-to-Person and a Group-to-Group visualization

The screenshot shows a Microsoft Viva article page. At the top, there's a navigation bar with links: Microsoft Viva, Viva Connections, Viva Insights, Viva Learning, and Viva Topics. Below the navigation is a search bar labeled "Filter by title". To the right of the search bar are icons for creating a new item, messaging, editing, and more. The main content area has a breadcrumb trail: "... / Organizational network analysis /". The title of the article is "Organizational network analysis with Gephi". Below the title, it says "Article • 03/28/2022 • 12 minutes to read • 1 contributor". There are like and dislike buttons to the right. The article content starts with a paragraph about Gephi being an open-source network analysis software. It then has a section titled "Installation" with a sub-section "Install Gephi using the following steps:" followed by two numbered steps.

Microsoft Viva Viva Connections Viva Insights Viva Learning Viva Topics

Filter by title

... / Organizational network analysis /

Organizational network analysis with Gephi

Article • 03/28/2022 • 12 minutes to read • 1 contributor

Gephi is an open-source network analysis software that enables users to create customized network analysis measures and maps.

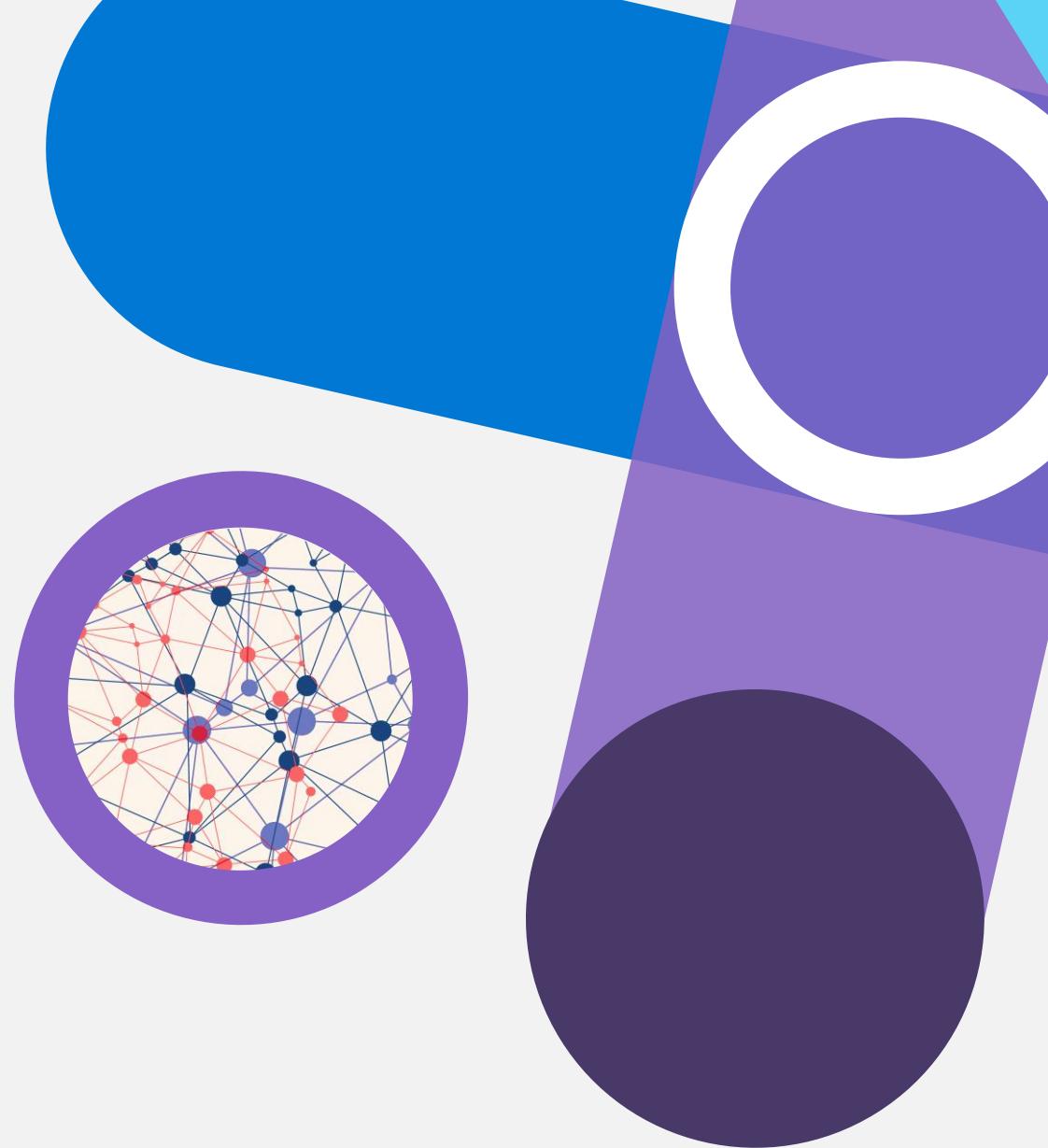
Installation

Install Gephi using the following steps:

1. Download Java and install. Note the folder location in which Java installs.
2. Download Gephi and install. Note the folder location in which Gephi installs.

wpa R library

Network Visualization



The open-source **wpa** R package helps analysts achieve more with Viva Insights



wpa is an R package that offers a set of tools and functions for **analysing and visualizing data from Microsoft Viva Insights**.

For full documentation on the R package, please see https://microsoft.github.io/Viva_Insights/

With the wpa R package, you can...

- Improve the **speed, scalability and reproducibility** on current Viva Insights workflow
- Maintain a **streamlined data science workflow** by integrating Viva Insights with existing R and data science workflows (e.g., analysing engagement surveys, ERP, or CRM data)
- Deliver **advanced analytics proof-of-value artifacts quickly** without switching over to a different stack or additional coding effort

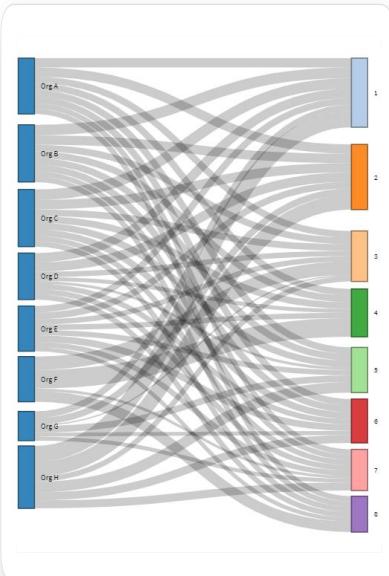
Viva Insights ONA Out-of-the-Box External Tools: wpa R Package

Introduction to Network Analysis with the wpa R package <https://microsoft.github.io/wpa/articles/network-analysis.html>

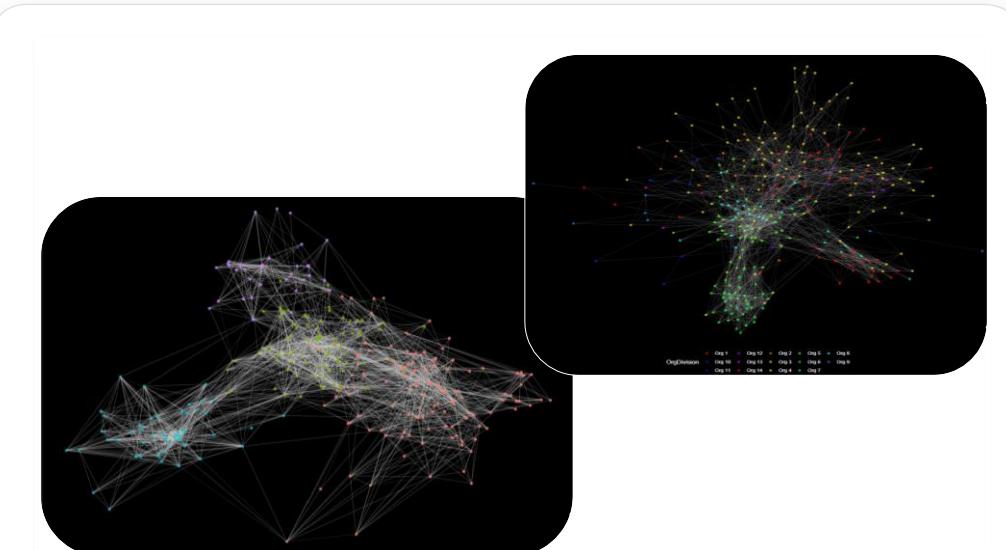
wpa R package offers a set of tools and functions for analyzing and visualizing data from Microsoft Viva Insights.

- A `network_g2g()` for group-to-group queries
- B `network_p2p()` for person-to-person queries

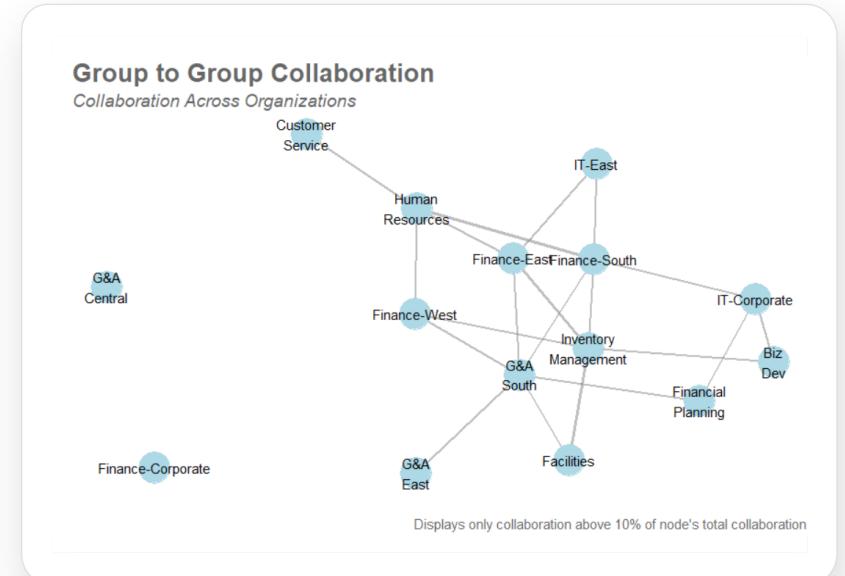
Community Detection



Person-to-Person visualization

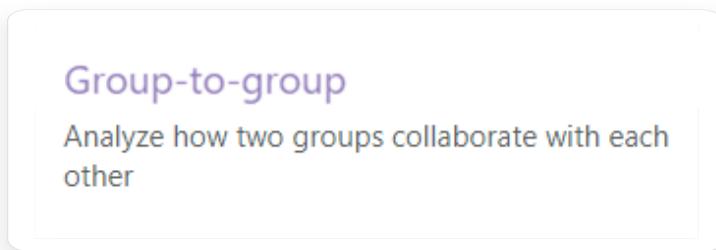


Group-to-Group visualization



Use the wpa R package to visualize group-to-group collaboration

1



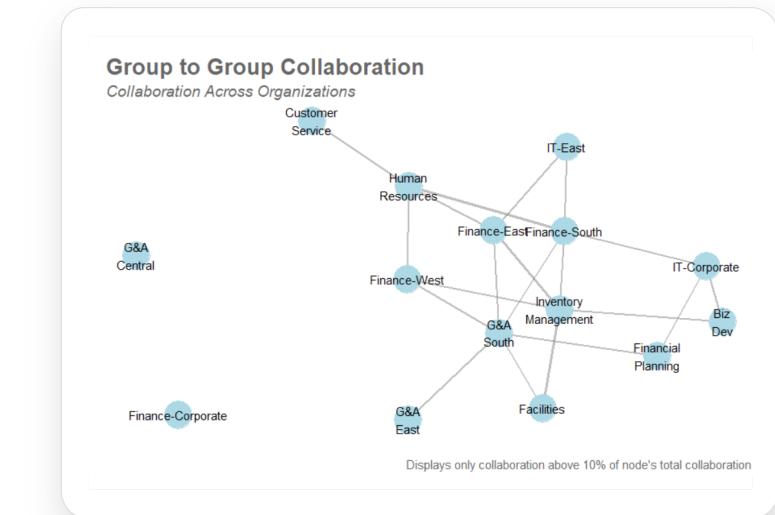
Group-to-Group Flexible query downloaded as CSV

2



Run ``network_g2g()`` function as part of the Viva Insights R package to generate visual on right

3



How to show basic network output from ``network_g2g()``

Network plots can be exported as vector images (SVG) for custom manipulation / formatting, where individual components can be coloured / highlighted as required.

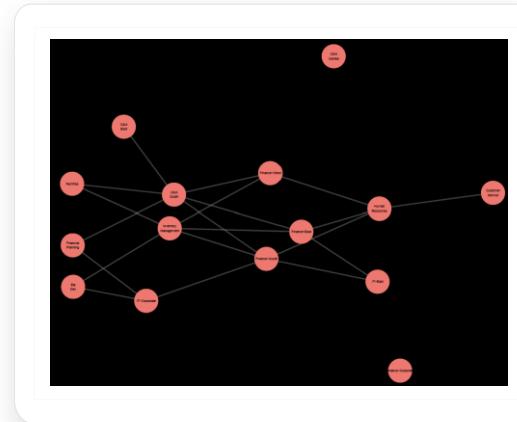
The `network` object can also be exported separately for further customization.

Customize group-to-group network output

`network_g2g()` Customization options

Type of metric

*Measure only a type of collaboration
e.g., Only Emails / Meeting or both*



Formatting customizations
to match reporting needs

Exclusion threshold

Exclude when % of collaboration is below a certain threshold

Summary Table

Return a summary table (matrix) instead of a network visual



TimeInvestorOrg	Biz Dev	CEO	Customer Service	Facilities	Finance-Corporate	Finance-East	Finance-South	Finance-West	Financial Planning	G&A Central	G&A East	G&A South	Human Resources	Inventory Management	IT-Corporate	IT-East	
Biz Dev	49.4%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	9.8%	9.8%	10.4%	10.1%	8.7%
CEO	4.2%	NA	6.0%	7.2%	5.6%	5.3%	7.6%	5.6%	7.9%	5.2%	8.1%	8.0%	4.6%	9.7%	7.0%	8.0%	
Customer Service	0.2%	0.1%	50.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	10.2%	9.1%	9.3%	9.5%
Facilities	0.1%	0.0%	0.2%	48.9%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	9.6%	10.6%	9.9%	9.3%
Finance-Corporate	0.2%	0.0%	0.2%	0.3%	50.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%	0.2%	9.8%	9.7%	9.6%	9.3%	9.5%
Finance-East	0.2%	0.0%	0.2%	0.2%	0.2%	46.8%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	10.5%	10.4%	10.7%	9.7%	10.2%
Finance-South	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%	46.5%	0.2%	0.2%	0.2%	0.2%	0.2%	10.0%	10.7%	10.5%	10.1%	10.3%
Finance-West	0.2%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	47.9%	0.1%	0.2%	0.1%	0.1%	10.3%	10.4%	10.3%	10.0%	9.6%
Financial Planning	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.2%	0.2%	48.6%	0.3%	0.2%	0.2%	10.2%	9.9%	9.8%	10.1%	9.3%
G&A Central	0.2%	0.0%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	50.5%	0.2%	0.2%	9.3%	9.8%	9.6%	9.5%	9.3%
G&A East	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	50.5%	0.2%	10.0%	9.5%	9.6%	9.5%	8.7%
G&A South	5.1%	0.0%	5.9%	5.8%	5.2%	6.5%	5.5%	6.9%	5.6%	6.0%	5.4%	38.1%	0.9%	0.9%	0.9%	0.9%	0.9%
Human Resources	4.8%	0.0%	5.8%	5.6%	5.3%	6.6%	6.3%	6.5%	5.2%	6.2%	5.1%	0.8%	39.1%	0.9%	0.9%	0.8%	
Inventory Management	4.9%	0.1%	5.6%	5.9%	5.0%	6.5%	5.9%	6.3%	5.4%	5.8%	4.9%	0.8%	0.9%	40.4%	0.8%	0.9%	
IT-Corporate	5.3%	0.0%	5.7%	5.7%	5.3%	6.6%	6.2%	6.8%	5.6%	6.5%	5.5%	0.9%	0.9%	0.9%	0.9%	37.4%	0.8%
IT-East	5.0%	0.0%	6.0%	5.8%	5.4%	6.6%	6.7%	7.1%	5.8%	6.6%	5.3%	1.0%	1.0%	0.9%	0.9%	35.9%	

Summary matrix for visualizing group-to-group collaboration in an alternative format

Network clustering

*Return a network object for further analysis,
e.g., community detection*

B Networks: create person-to-person ONA visualisations with options for customisation



Network: Person to Person

Analyze network connectivity between individuals



The [Person-to-Person](#) flexible query provides the pairwise score for 'strong ties' between every person in the selected licensed population

For more information, see [Introduction to ONA](#), an article on this family of functions.



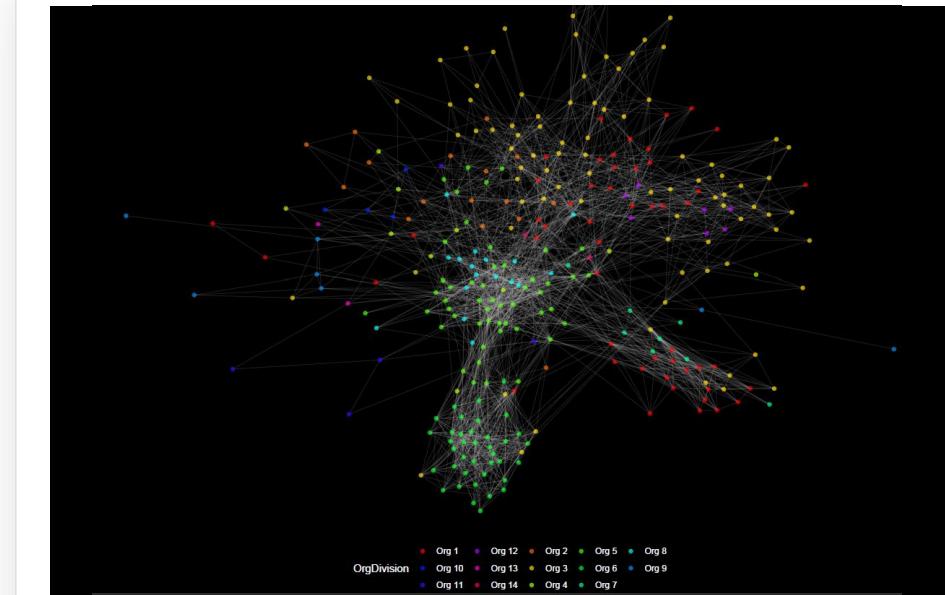
network_p2p()

The network function from the R package takes the Person-to-Person query and generates an ONA visualization on the right, directly from CSV on your local machine.

There are custom options for:

- Organizational attributes
- Returning summary tables or a network object
- Color palette
- Node placement algorithm

```
p2p_query_data %>%
  network_p2p(hrvar = "OrgDivision",
  path = "p2p network for org division")
```



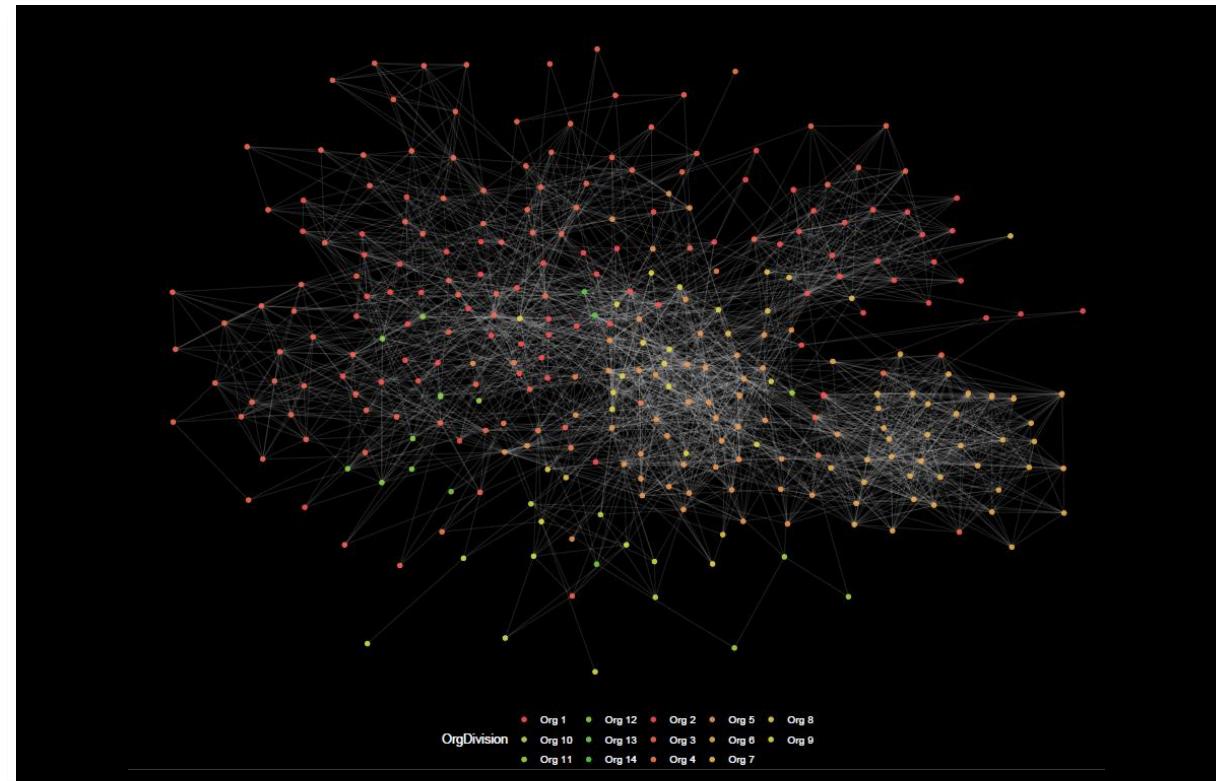
Sample output (In PDF)

B The `network_p2p()` function enables customization of node placement algorithms

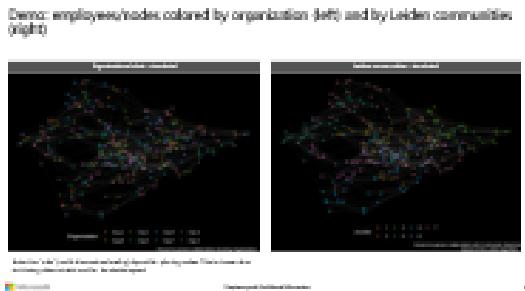
```
p2p_query_data %>%
  network_p2p(hrvar = "OrgDivision",
              palette = "heat_colours",
              node_alpha = 0.9,
              algorithm = "lgl")
```

- Uses an alternative node placement algorithm ("lgl") based on the Large Graph Layout algorithm. Other options include "kk" (Kamada-Kawai), "graphopt" (Graphopt algorithm), etc.
- Increased node opacity
- Uses heat map colours instead of "neon"

Sample output (In PDF)



B `network_p2p()` packs visualization and community detection in a single R function



The new **Person-to-Person** flexible query provides a pairwise 'strong ties' score* between every person in the selected licensed population

TieOrigin	TieDestination	STS
Alice	Bob	2.3
Carol	Alice	14.3



network_p2p()

The network function from the R package takes the Person-to-Person query and generates an ONA outputs, directly from CSV on your local machine.

By HR attribute OR community

display = "hrvar"

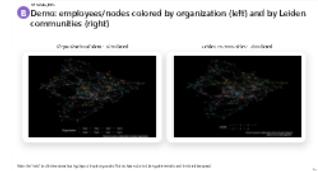
display = "louvain"

display = "leiden"

Options for return

Plot

Network visualizations coloured by the identified communities



Table

Summary table of the communities with respect to org attribute

Community	Org	n
Community 1	Sales	5,600
Community 1	HR	700

Network

igraph object for analysts to conduct further analysis



Sankey

Sankey chart for comparing communities with org attributes



Describe

Descriptions generated by looking at what org attributes best describe a community

E.g., 70% of Community 1 are Sales – US - Managers

... and more!
E.g., exporting vertex tables

*A numeric score that indicates how strong and tight a person's engagements are. It is based on both direct collaboration between two people and on the common network they share.

B Use cases: Why community detection?

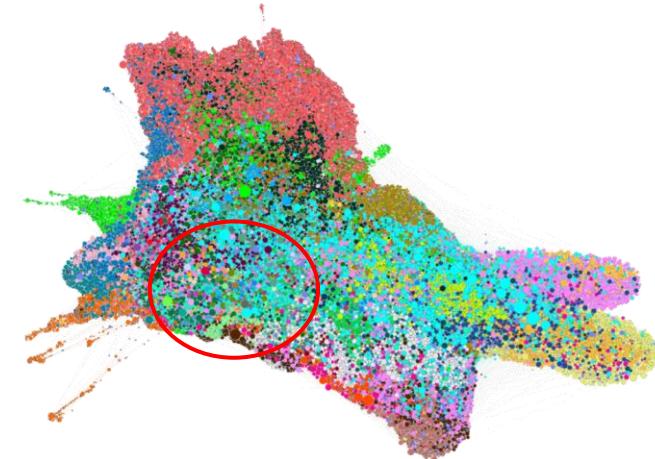
Understanding the “communities” of collaboration that organically exist within the company can give leaders insights into new ways of working, to inform:

- Team structures as part of reorganizations
- Forming cross-functional agile teams
- Coordination of same on-site days at the office
- Development of seating plans based on collaborative communities

Telco company network graph by organizational structure
(Nodes are colored by Organization)

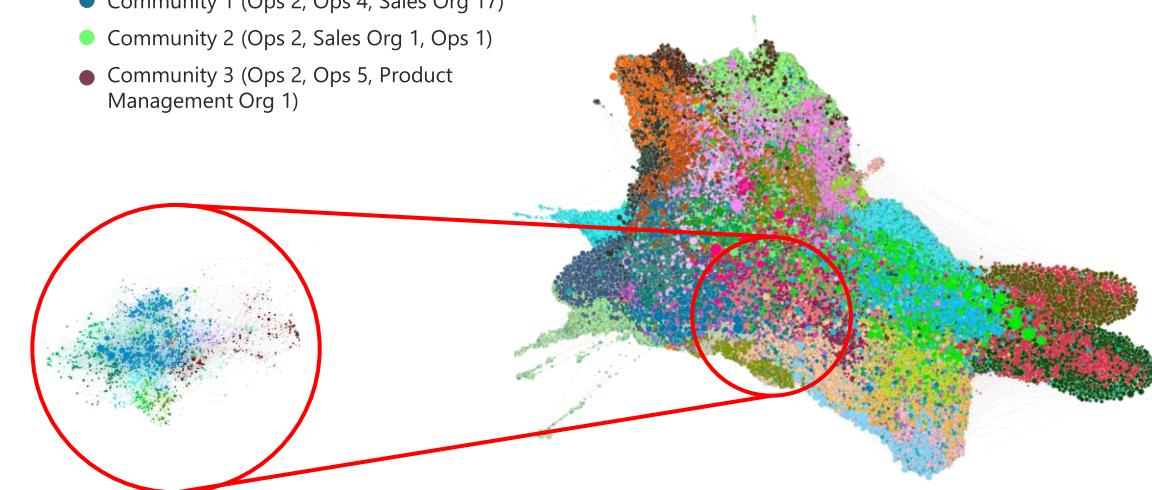
Organization (sample)

- Operations Org 1
- Operations Org 2
- Operations Org 3
- Sales Org 1
- Sales Org 2
- Sales Org 3
- Sales Org 4
- HR Org 1
- HR Org 2
- HR Org 3



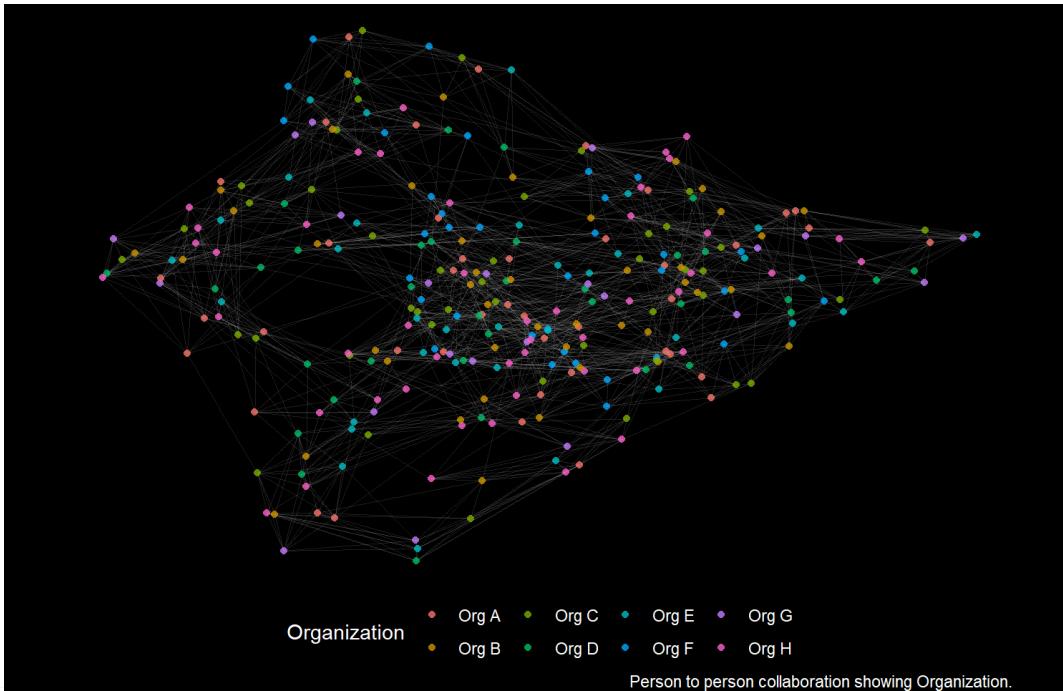
Telco company network graph by ONA-derived “communities”
(Nodes are colored by Communities)

- Community 1 (Ops 2, Ops 4, Sales Org 17)
- Community 2 (Ops 2, Sales Org 1, Ops 1)
- Community 3 (Ops 2, Ops 5, Product Management Org 1)

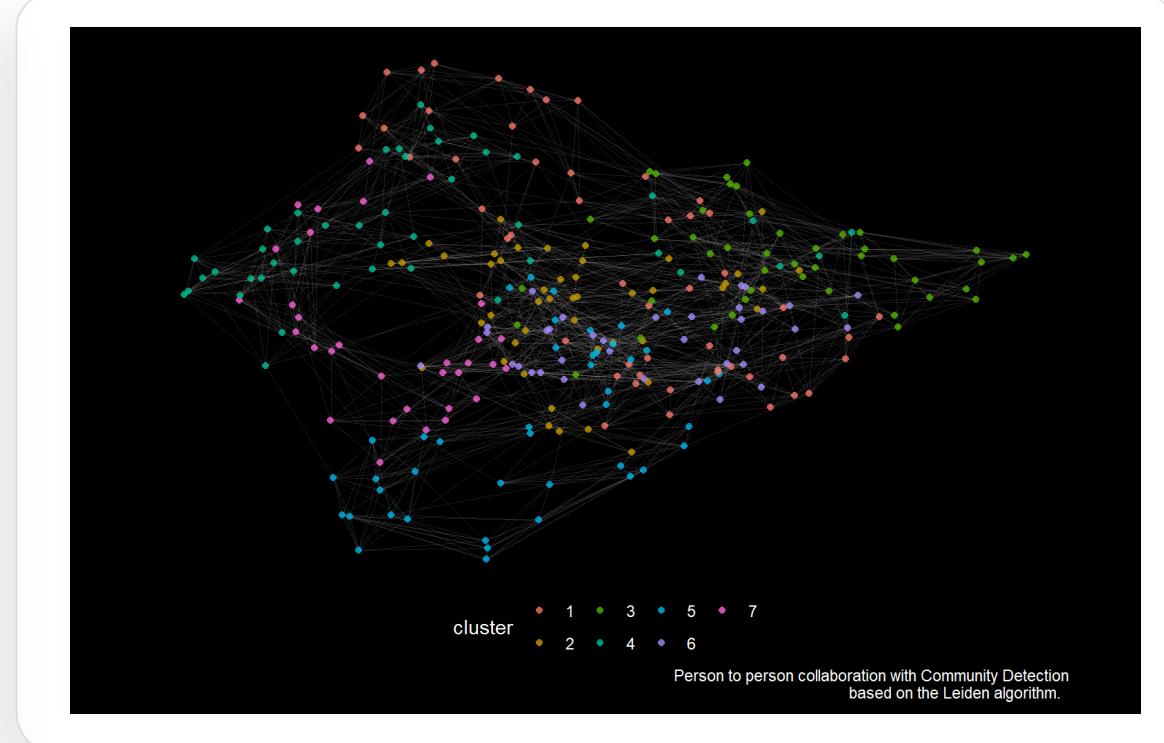


Demo: employees/nodes colored by organization (left) and by Leiden communities (right)

Organizational data - simulated



Leiden communities - simulated

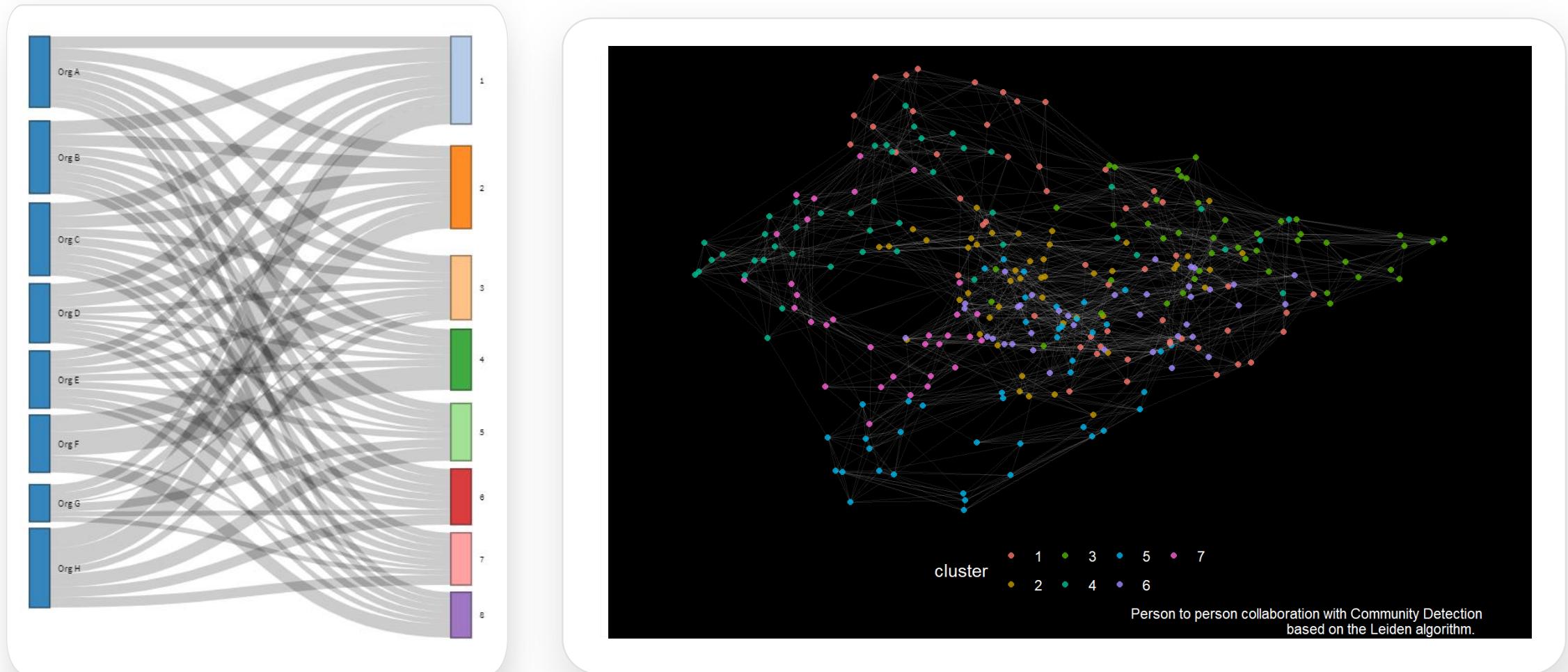


Note: the "mds" (multi-dimensional scaling) layout for placing nodes. This is chosen due to it being deterministic and for its relative speed.

B

Sankey visualization of the Leiden communities makes it easier to visualize how organizations relate to communities

Leiden communities - simulated



B Understand who is in each community by exporting the communities to excel/csv

Example of vertex table that can be exported from the function

PersonID	Community	Organization	...
A	8	Sales	
B	8	HR	
C	6	HR	
D	3	Legal	
E	7	Engineering	
...

Each row is a node/vertex, i.e., a licensed employee

wpa R package cheat sheet

Our cheat sheet offers a quick way to explore functionalities available in the **wpa R package**

The cheat sheet provides handy information on...

- Data import, export and validation functions
- Inbuilt sample data sets for testing package functions and features
- Basic and flexible analysis functions
- Meeting subject line text mining functions
- Quickstart report functions

For the full online documentation, please visit <https://microsoft.github.io/wpa>

Workplace Analytics with wpa:: CHEAT SHEET



See PDF documentation for full list of functions. This can be found alongside the installation tar ball.

Basics

(wpa) is an R package that offers a set of tools and functions for analysing and visualising data from Microsoft Workplace Analytics.

You can install or update the package with the following command:

```
# Check if devtools is installed. If not then install it
if(!"devtools" %in% installed.packages()){
  install.packages("devtools")}

devtools::install_github(
  "https://github.com/microsoft/wpa.git")
```

The full documentation can be found on our package website: <https://microsoft.github.io/wpa>

Data validation

Run **data.validation** functions prior to starting a piece of analysis. These functions are tagged as the 'Data Validation' family in the documentation.

validation.report()
Generate a report to validate person query data, with options to supply an additional *meeting.query*.

hrvar.count()
Count number of employees in HR attribute

extract.hr0()
Extract HR attributes in a query

check.query()
Print diagnostic data about the query to the R console

identify.holidayweeks()
Identify likely holiday weeks (for the entire pop) where collaboration hours lie far outside the mean

identify.nkvw()
Identify non-knowledge workers where average person collaboration hours lie far outside the mean

identify.inactiveweeks()
Identify likely person-weeks where collaboration hours lie far outside the mean relative to the population average

identify.tenure()
Calculate tenure based on a supplied hire date

subject.validate.report()
Generate a validmate report in HTML for common subject exclusion terms

Data import / export

Use our handy functions below which are optimised for best practice for getting data *in* and *out* of R.

import.wpa()
Import CSV queries faster and pre-formatted for wpa functions (instead of `read.csv`)

export()
Export a data frame to clipboard or write as a CSV, or a ggplot object as PNG or SVG

create_dt()
Generate an interactive HTML table with a data frame, using the JavaScript library DataTables.

Inbuilt datasets

Test functions and features in wpa by using sample datasets which are inbuilt into the package.

sq.data
Standard person query

mt.data
Standard meeting query

em.data
Hourly collaboration query

g2g.data
Group-to-group query

dv.data
Standard person query with in-built

Basic Analysis

Combine prefix with plot type to create a specific analysis on a WPA metric.

Available prefixes:
`collab`, `email`, `meeting`, `afterhours`, `onezone`, `workloads`

summary()
hrvar, mingroup, return

dist()
hrvar, mingroup, return

fizz()
hrvar, mingroup, return

line()
hrvar, mingroup, return

trend()
hrvar, mingroup, return

rank()
hrvar, mingroup

Meeting Subject Text Mining

Pass a *meeting.query* through to our text mining functions to extract insights on subject lines.

meeting_tm_report()
Report with a set of visualisations showing how keywords and phrases group together in subject lines.

tm_coc()
Create a word co-occurrence network plot

tm_freq()
Create a circular bar plot with frequency of words or n-grams

tm_wordcloud()
Create a word cloud based on meeting subject lines

Flexible Analysis

Flexible analysis functions are advanced versions of basic analysis functions which allow you to pass the metric as a string, e.g. `metric = "Email_hours"`

create_bar()
metric, hrvar, mingroup, return

create_fizz()
metric, hrvar, mingroup, return

create_boxplot()
metric, hrvar, mingroup, return

create_line()
metric, hrvar, mingroup, return

create_scatter()
metric, hrvar, mingroup, return

create_period_scatter()
metric_x, metric_y, hrvar, mingroup, return

create_stacked()
metric, hrvar, mingroup, return

create_bar_axis()
group, bar, bar, bar, percent, bar.colour (no aggregation vs `create_bar`)

network_g2g()
group, collaborator, metric
Pass a group-to-group query to generate a network chart

Quickstart Reports

collaboration_report()
Report offering a high-level overview of collaboration

capacity_report()
Report on metrics related to collaboration overload and work spans

coaching_report()
Report on metrics related to coaching between managers and their direct reports

connectivity_report()
Report on metrics related to network and connectivity

IV_report()
Report based on running the Information Value (IV) algorithm