Microsoft 365

Viva Insights

Organizational Network Analysis

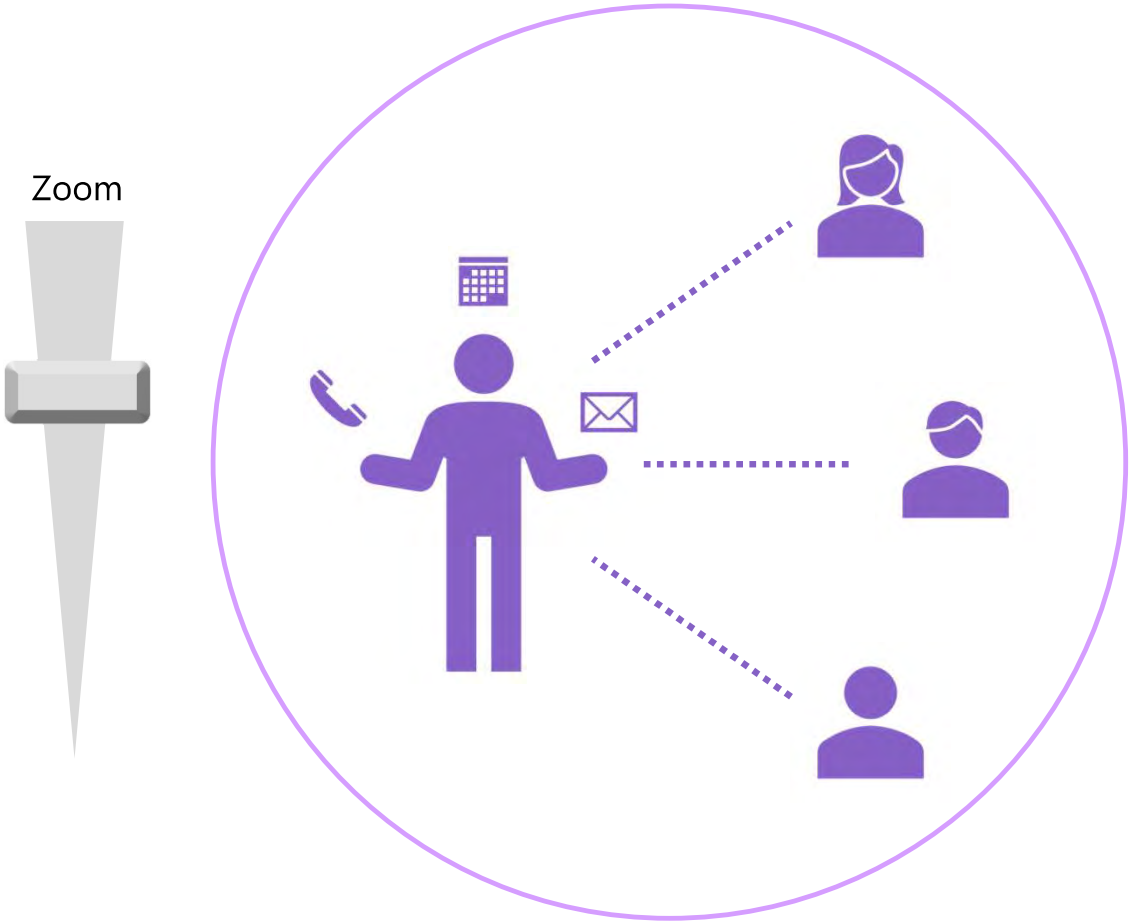
Contents

Network Analysis overview

Zoom

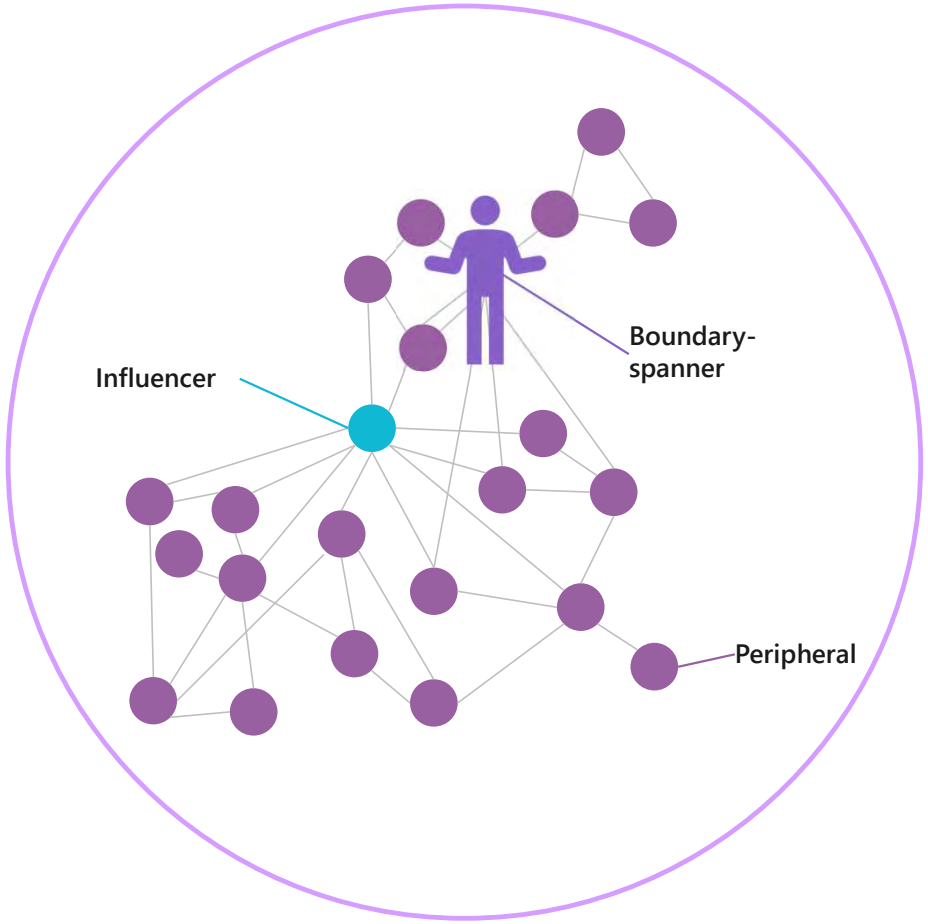
Viva Insights can capture how the average employee spends her time[1]

1 Deidentified and aggregated data

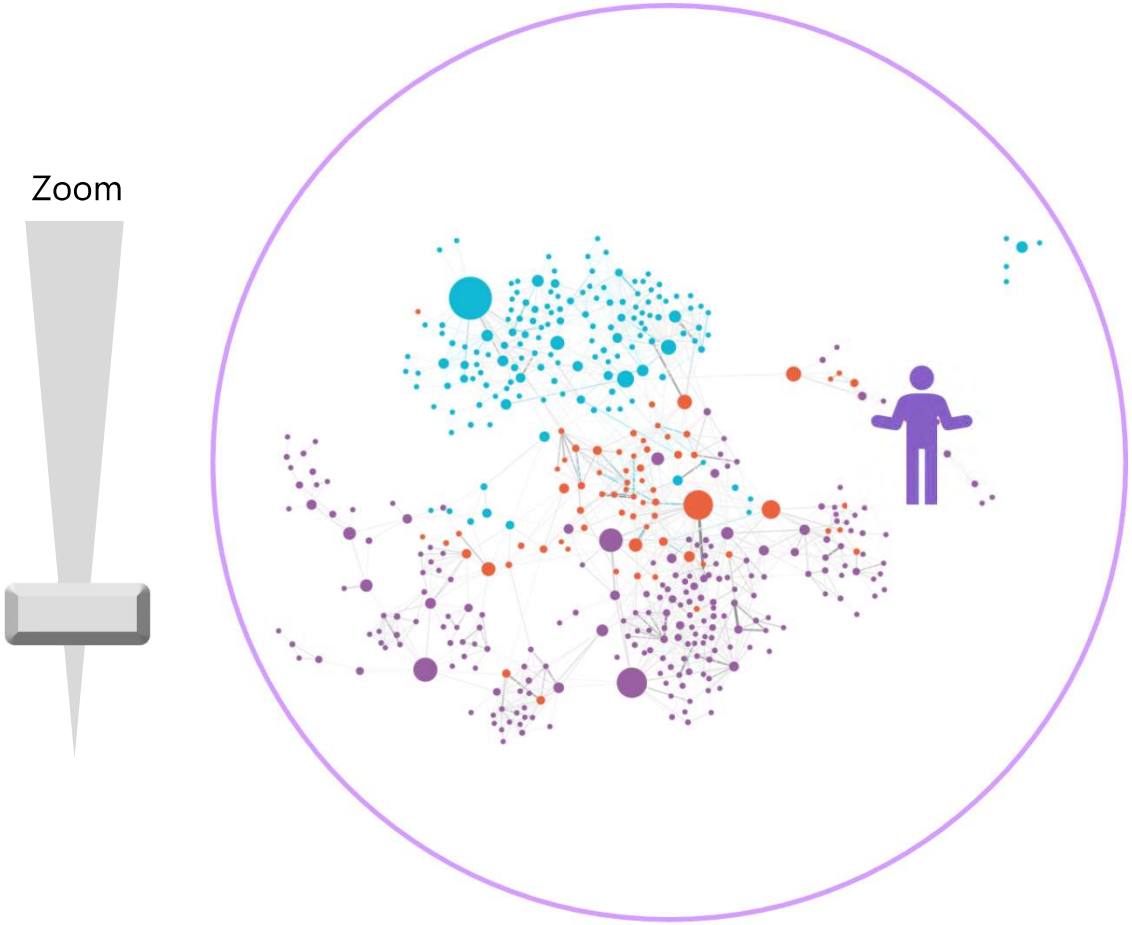


It has data about her immediate relationships

Zoom



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



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

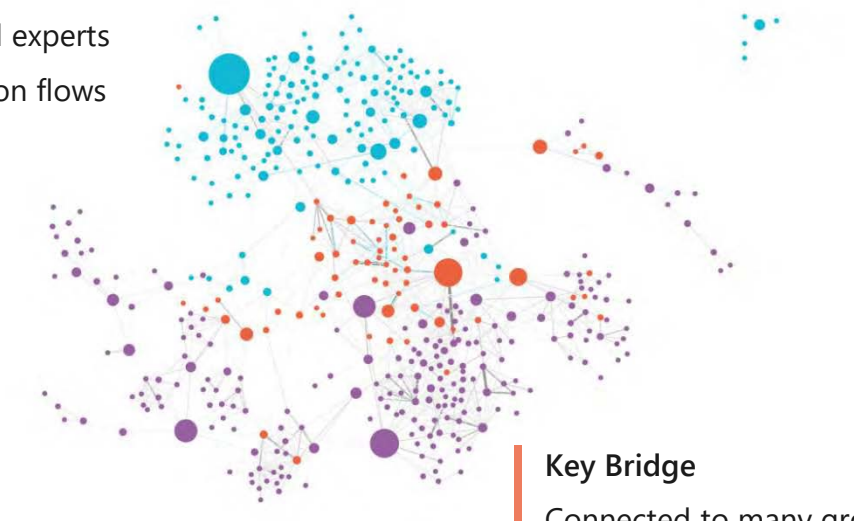
Organizational Network Analysis

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?

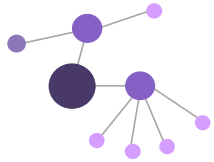
Datasets

Datasets from Viva Insights

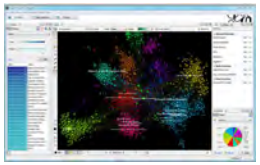
- Network: Person query
- Network: Person-to-Person query
- Group-to-Group query
- Person-to-Group query

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)

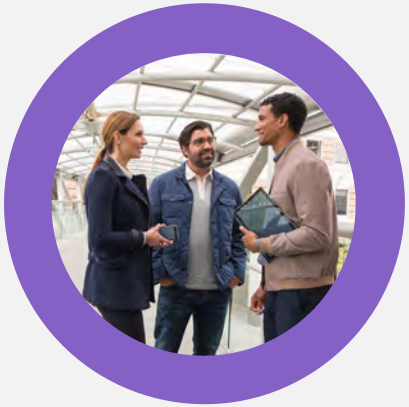
2. Confirm the network population in question is fully licensed with Viva Insights

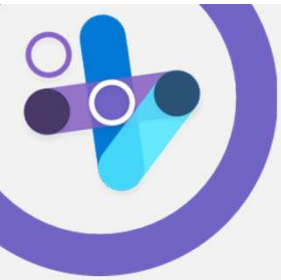
Think about how work gets done in your organization to inform who to include in the analysis. Maybe you want to analyze the entire network, or maybe you're interested in interactions within one particular group.

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

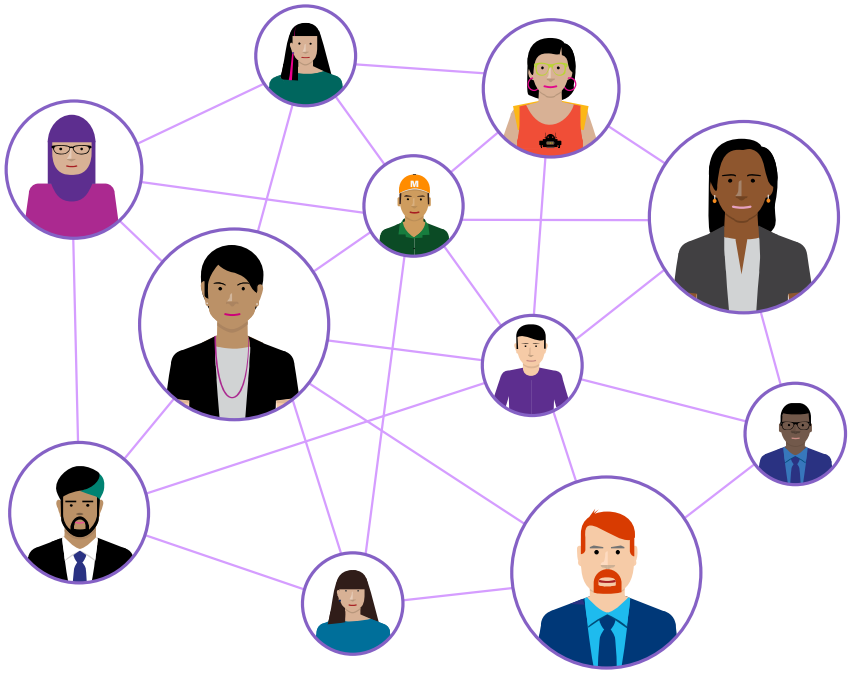
Group-to-Group Query

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

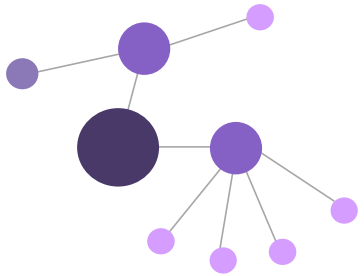
The *Network: Person-to-person query* returns one record per tie origin-destination pair, by month or by aggregated total (1 mo., 3 mos., 6 mos., 1 yr, custom)

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

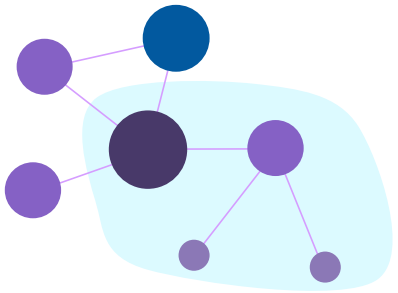
Influence index



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?

Influence index

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?

Strong/Diverse ties

Group-to-Group query

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

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%	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%	0.3%	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%	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

Algorithm

PageRank

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

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 measure 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

67% of organizations have a limited number of 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*

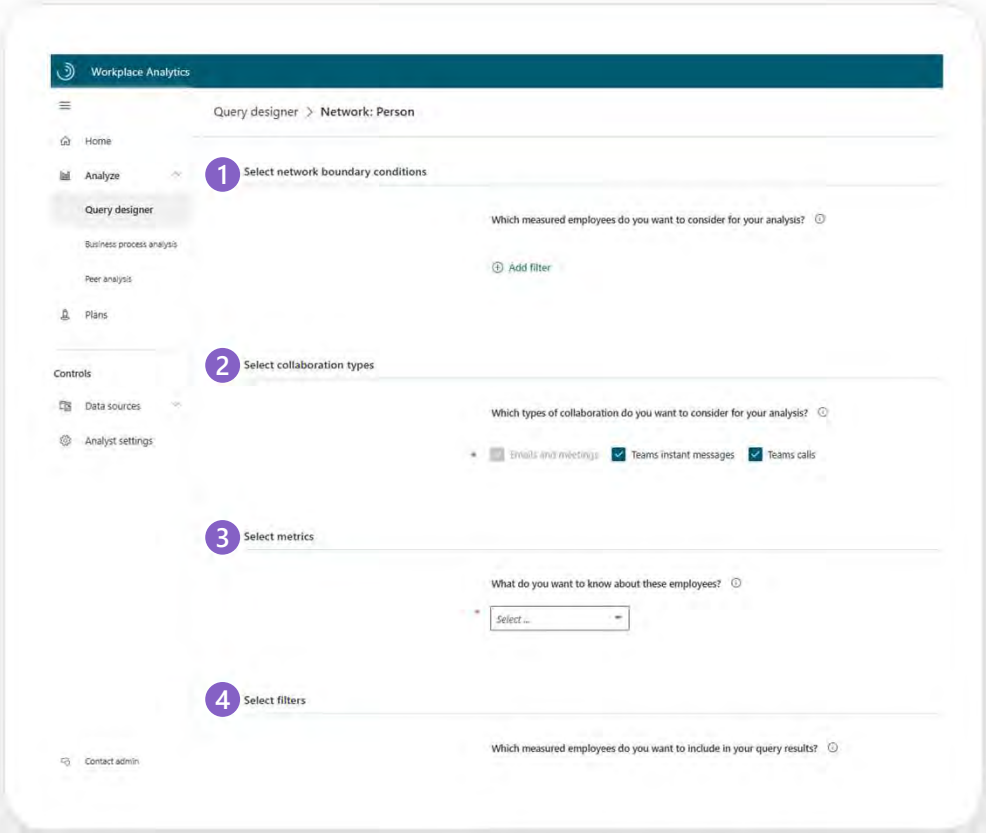
Log into: www.workplaceanalytics.office.com

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

Run query and export results



Example of an influencer analysis in PBI

Where are the influencers?

67% of organizations have a limited number of influencers

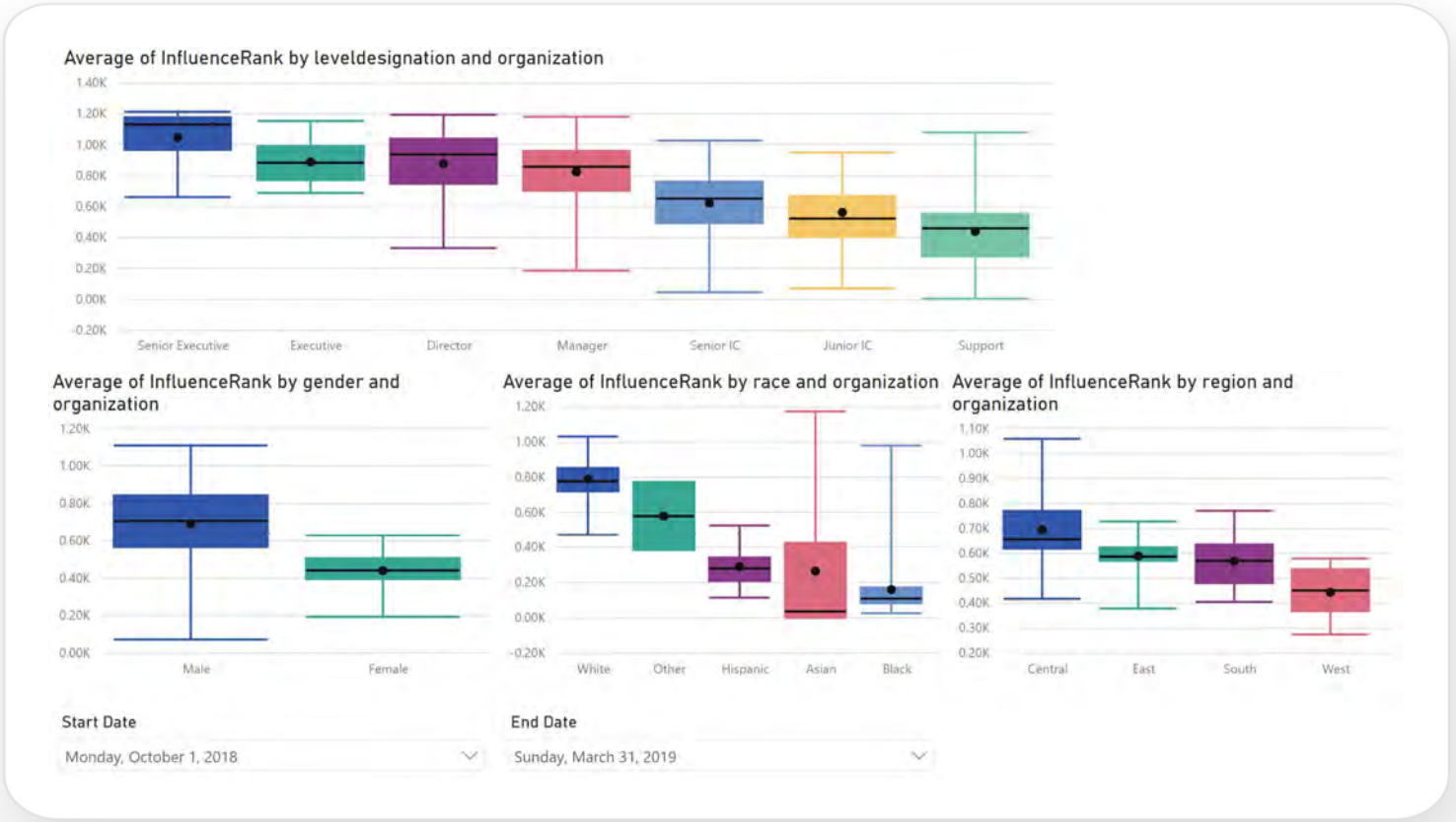
Organizations with the least and most influencers

Distribution of influencers by organization

A sample PowerBI dashboard is provided

Example of an influencer analysis in PBI

Where are the influencers?



Example Analysis Output – Requires additional analysis beyond query output

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

Accelerate adoption

Cohorts of influencers with common organizational attributes

Cohort A	Cohort B	Cohort C	Cohort D	Cohort E
Level: Director	**Level**: Manager	**Level:** Individual Contributors	**Employee Type:** Administrative Support	**Level:** Managers
Employee Type: Individuals not in Management and not Marketing	**Employee Type:** Technology	**Employee Type:** Operations	**City:** Chicago	**2nd layer indicator:** None
employees in Cohort 2106	**employees in Cohort** 397	**employees in Cohort** 421	**employees in Cohort** 62	**employees in Cohort** 150

Influence Index = scaled influence all employees in the organization: 100% = most influential, 0% = least influential

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

Algorithm

Granovetter, Homophily with bi-directional email treatment

Output

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

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*

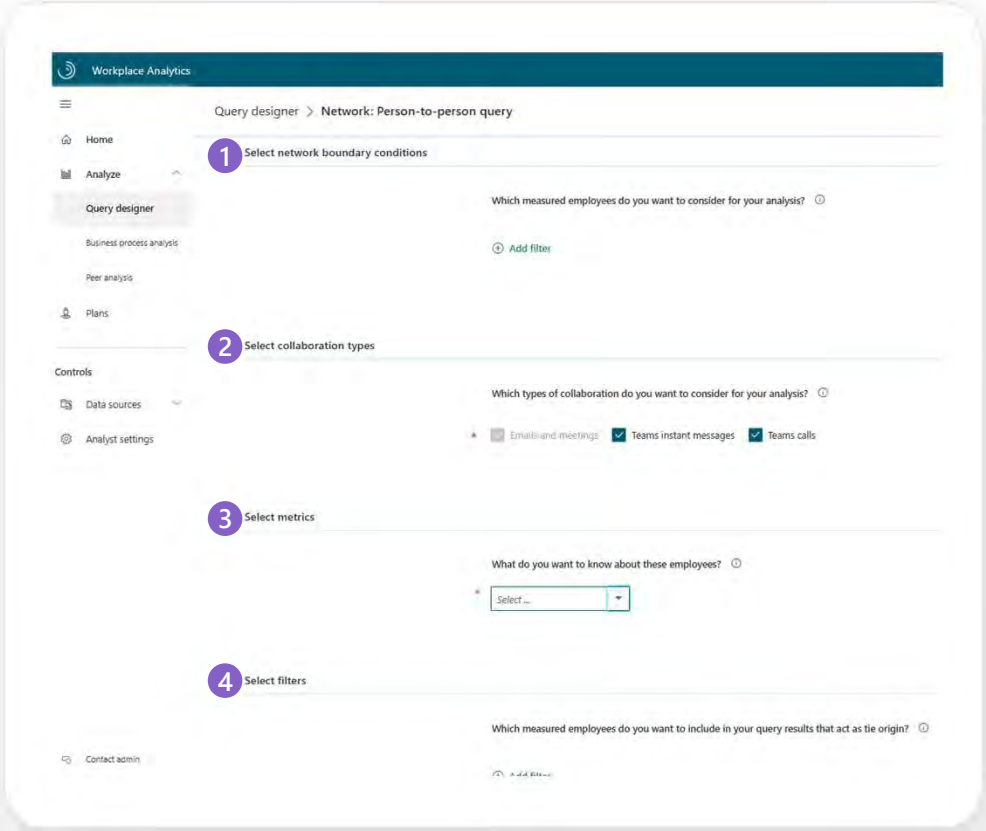
Log into: www.workplaceanalytics.office.com

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

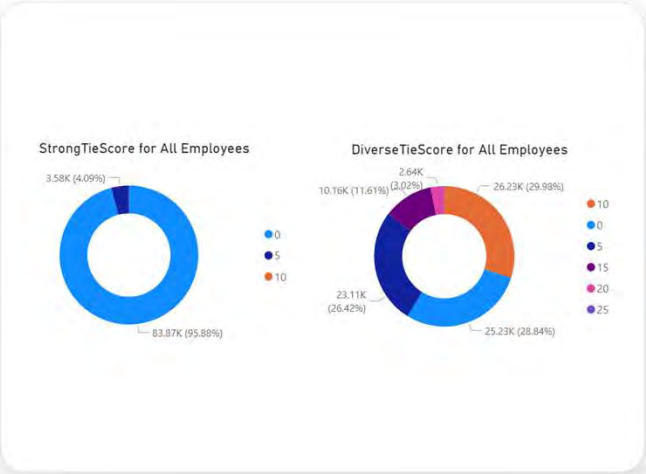
Choose metrics, filters, and organizational attributes

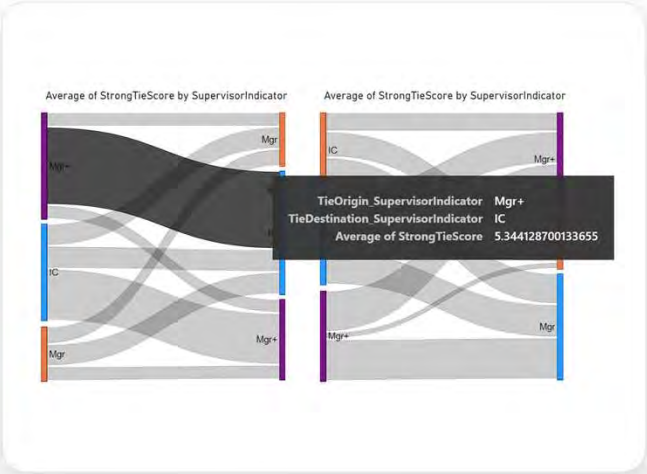
1. **Select network boundaries:** Define who is included in the network dataset
2. **Select collaboration types:** Pick the signals to use in calculating Strong and Diverse tie scores
3. **Select metrics:** Select metrics from dropdown
4. **Select filters:** None required, unless there is a specific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

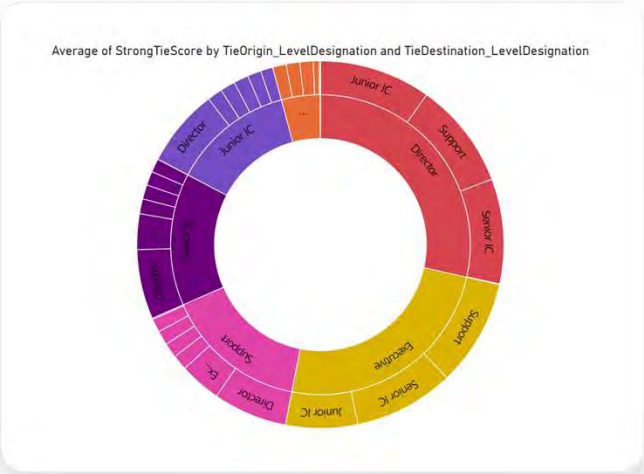
Run query and export results

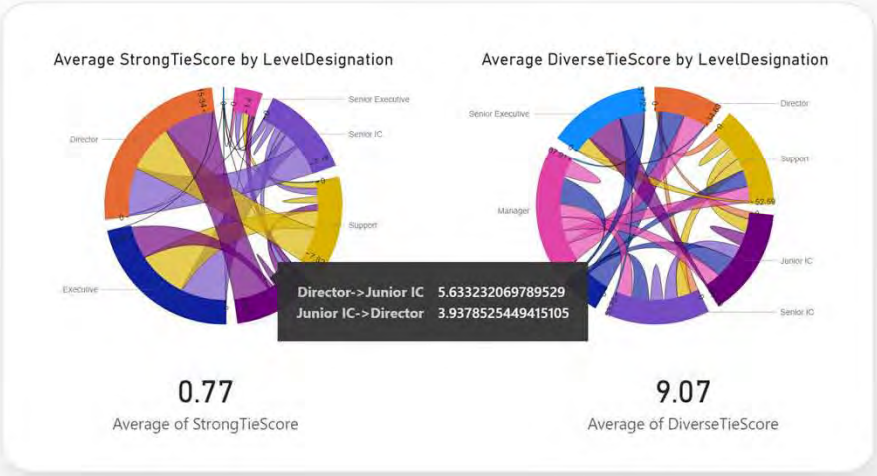


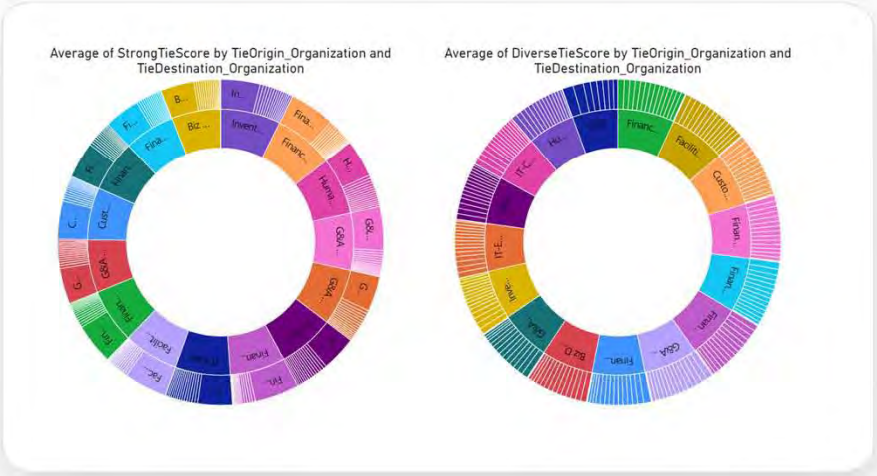
Example of a Strong and Diverse Tie analysis in PBI



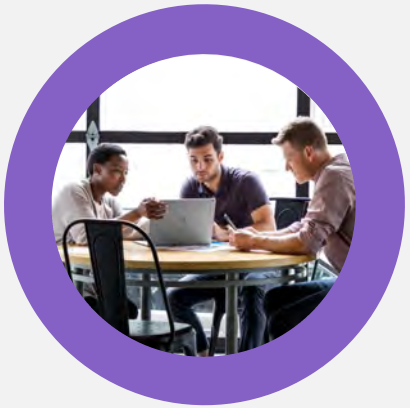








Group-to-group queries



Run queries | *Group-to-Group*

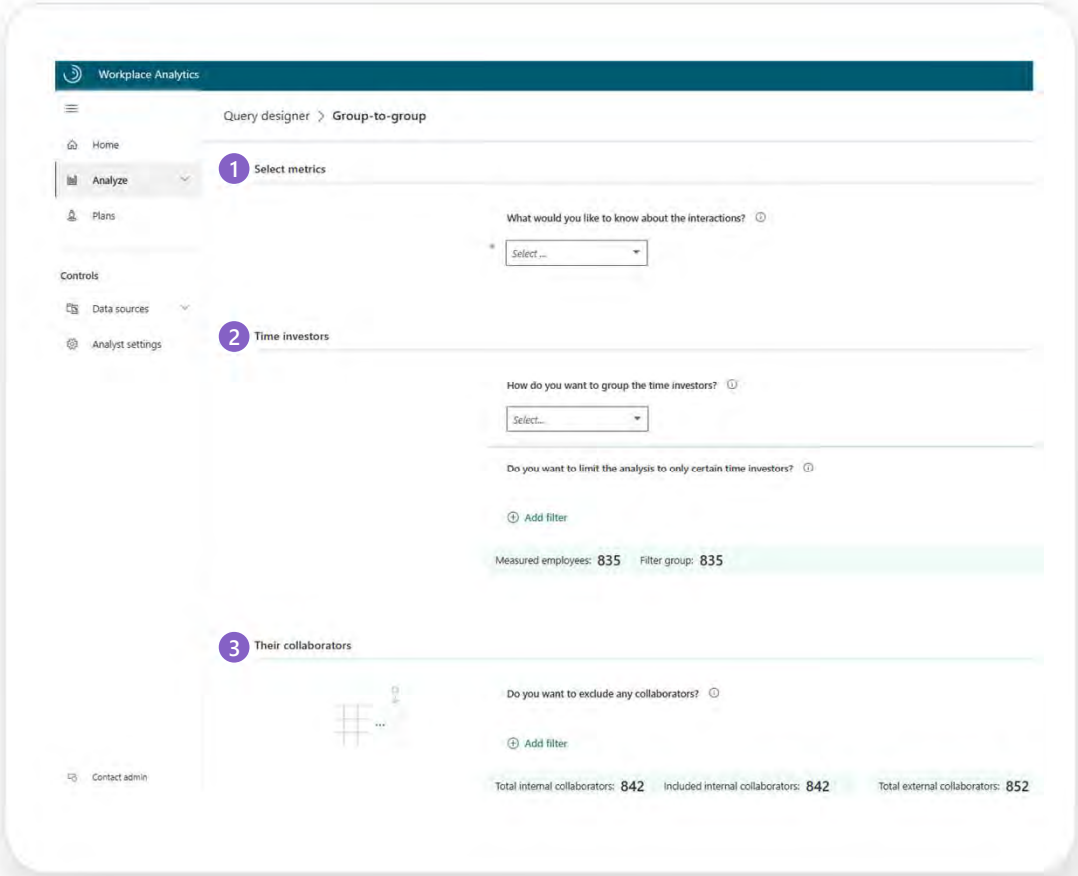
Log into: www.workplaceanalytics.office.com

Select Group-to-Group query in Query Designer

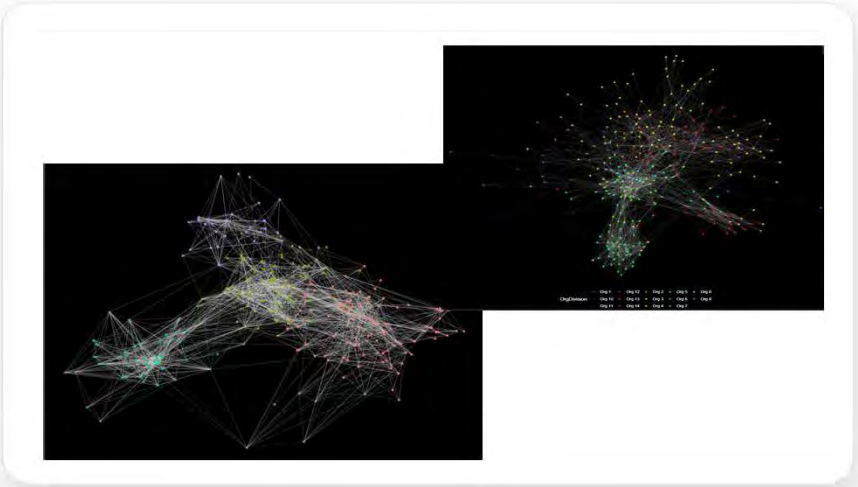
Choose metrics, time investors, and their collaborators

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

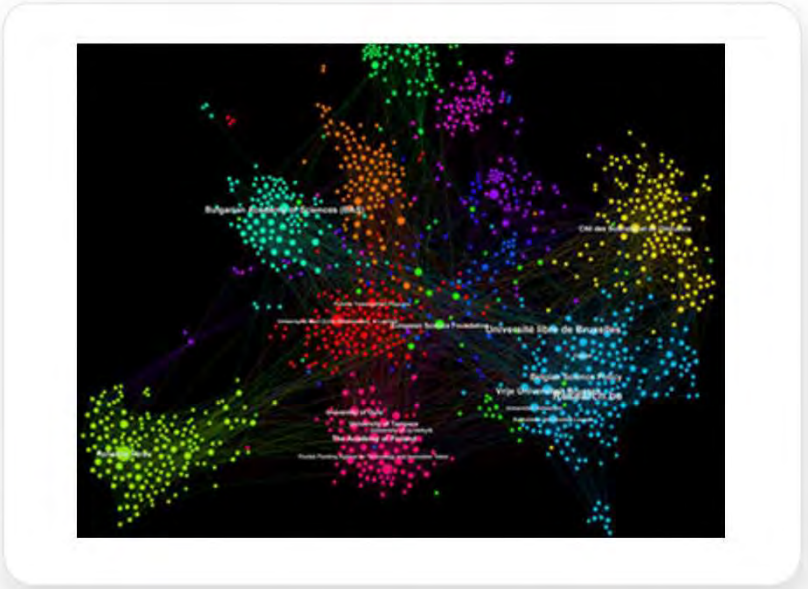
Run query and export results



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*

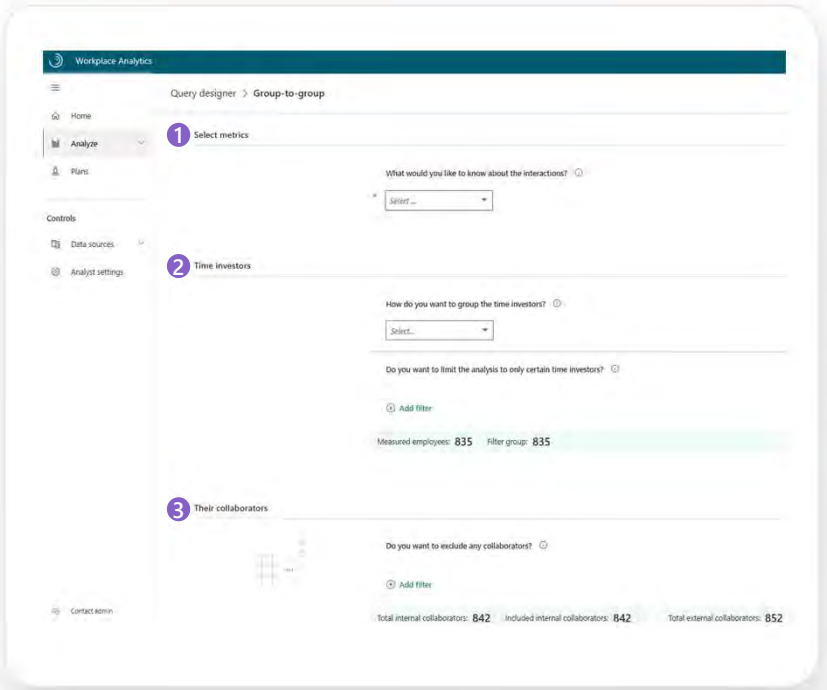
Log into: www.workplaceanalytics.office.com

Select Group-to-Group query in Query Designer

Choose metrics, time investors, and their collaborators

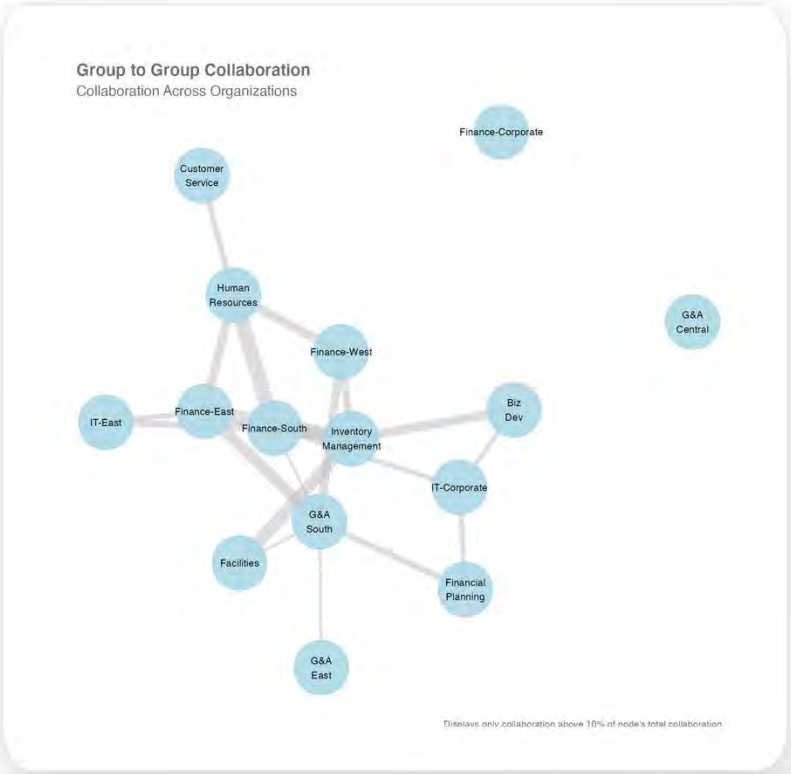
1. **Select metrics:** Select the metrics that describe the collaboration (e.g., Collaboration Hours, Meetings, Meeting Hours)
2. **Select time investors:** Pick the secondary EmployeeId
3. **Select collaborators:** Pick the secondary EmployeeId

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.

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%	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%	0.3%	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%	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%

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

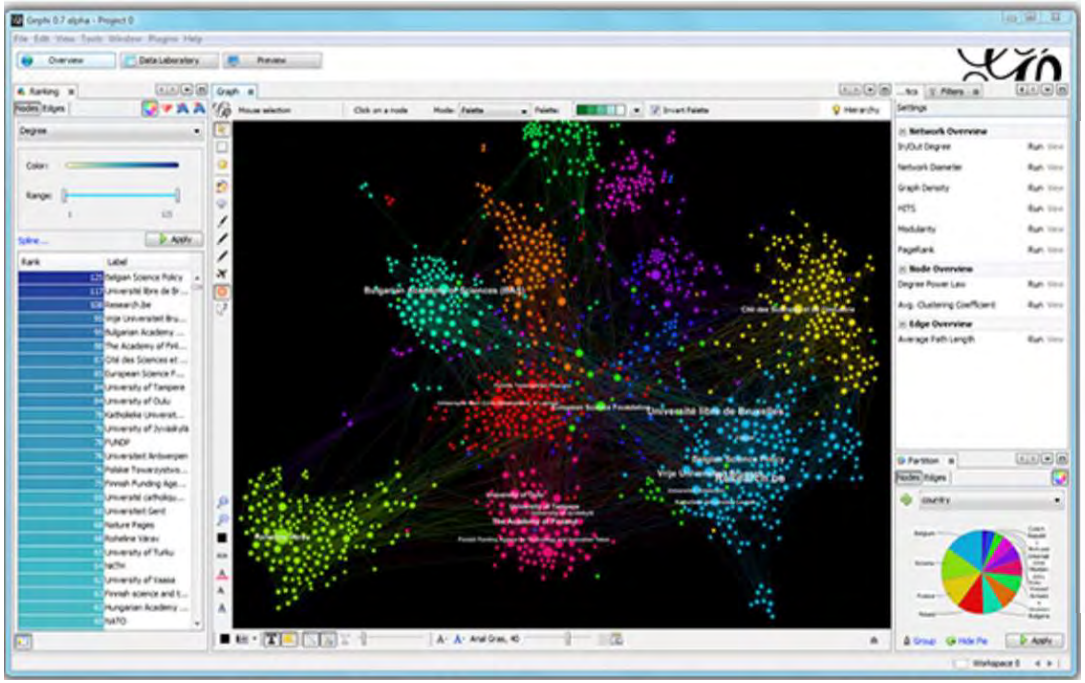
Gephi

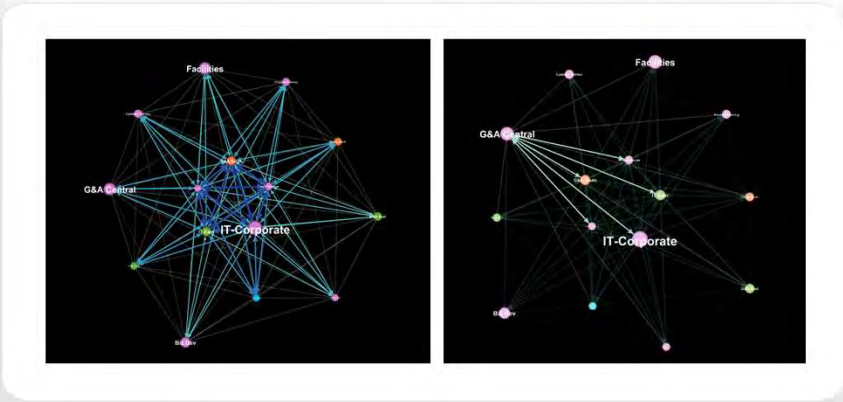
An open-source ONA visualization Tool

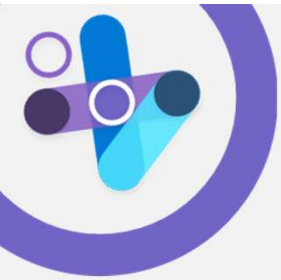
Viva Insights ONA External Tools: Gephi

A quick start

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







Gephi Features

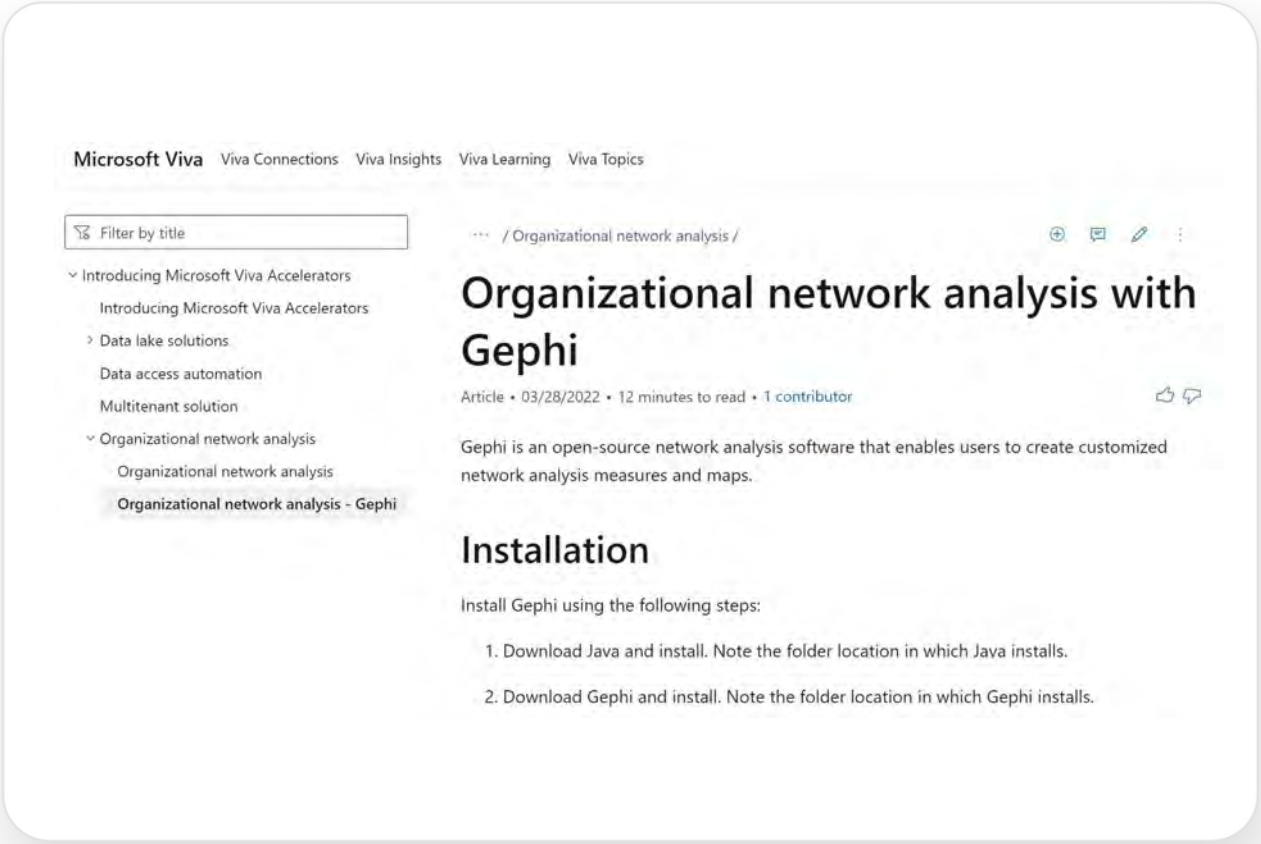
Gephi is a great tool for:

- 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

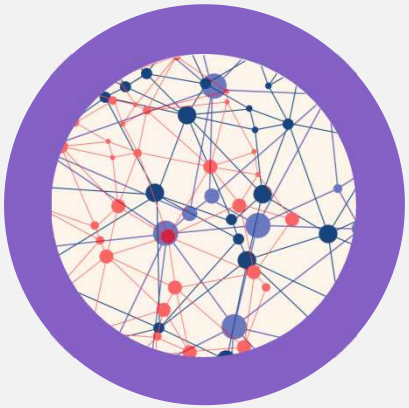
[Gephi tutorial](#) provides instruction on

- 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

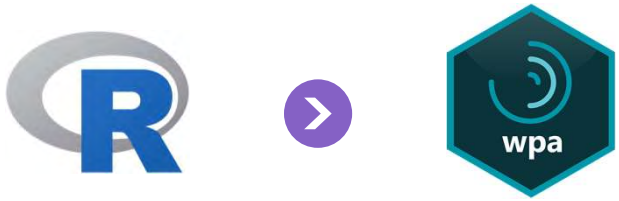


wpa R library

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

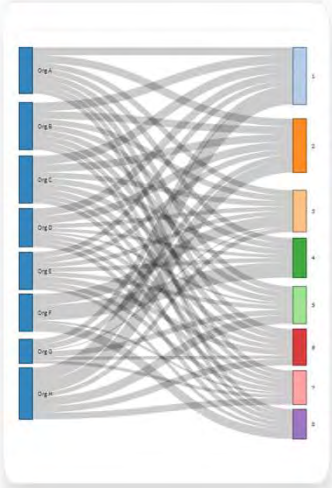
Introduction to Network Analysis with the wpa R package https://microsoft.github.io/wpa/articles/network-analysis.html

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

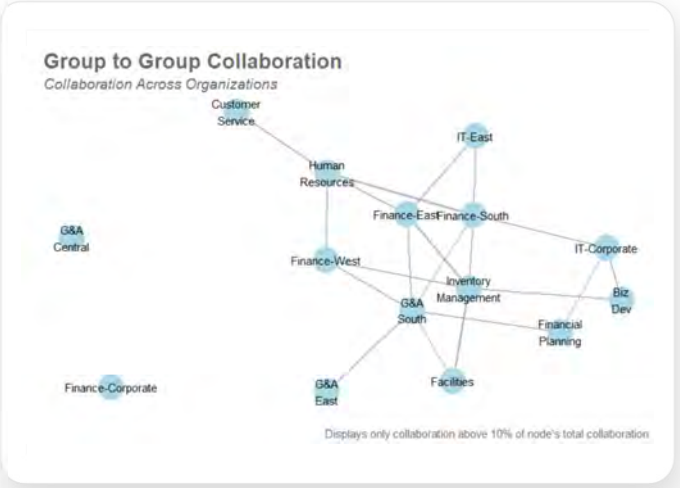
B `*network_p2p()*` for person-to-person queries

Community Detection



Person-to-Person visualization

Group-to-Group visualization



NETWORK_G2G()

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

1

Group-to-group

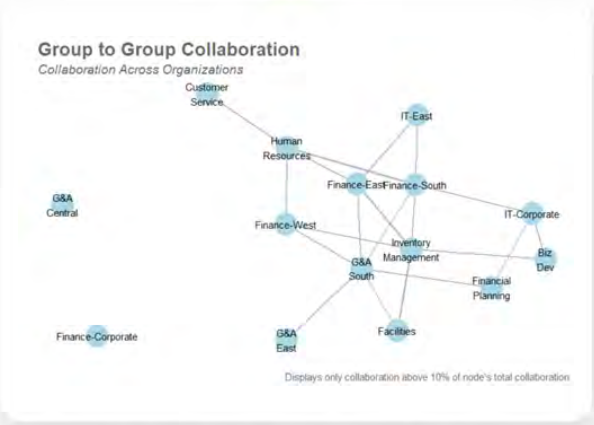
Analyze how two groups collaborate with each other

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.

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

NETWORK_G2G()

A Customize group-to-group network output

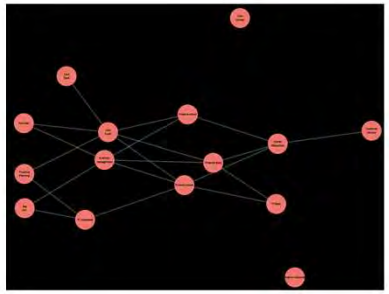
`network_g2g()` Customization options

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

Exclusion threshold
Exclude when % of collaboration is below a certain threshold

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

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



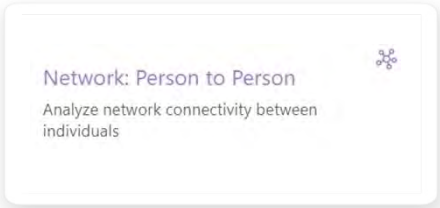
Formatting customizations to match reporting needs

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%	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%	0.3%	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%	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%

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

NETWORK_P2P()

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



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.

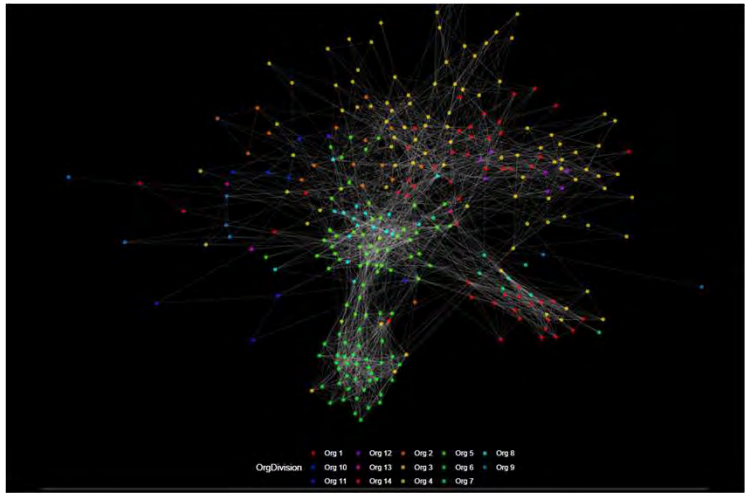
network_p2p()

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)

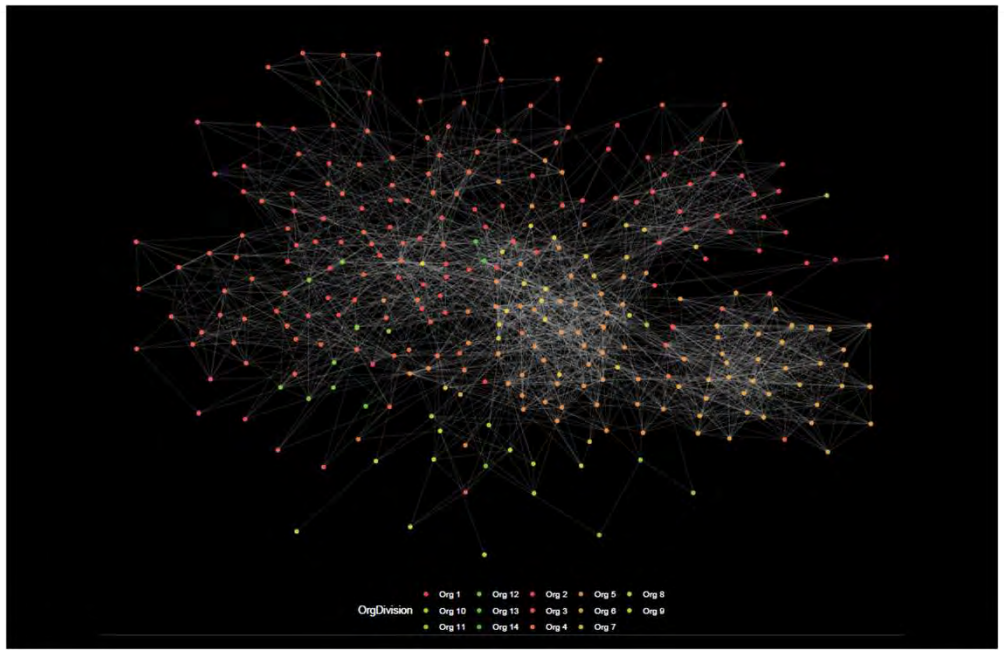
NETWORK_P2P()

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")
```

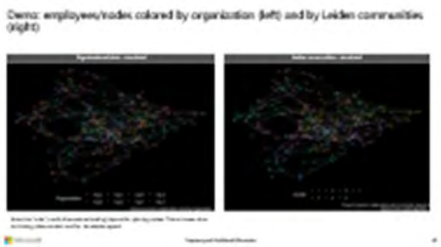
- Uses an alternative node placement algorithm (“lgl”) based on the Large Graph Layout algorithm. Other options include “kk” (Kamada-Kawai), “graphopt” (Graphopt algorithm), etc.
- Increased node opacity
- Uses heat map colours instead of “neon”

Sample output (In PDF)



NETWORK_P2P()

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.

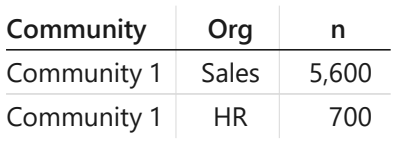
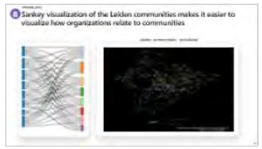
By HR attribute OR community

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	
Network	**igraph** object for analysts to conduct further analysis	igraph
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*

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

*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.

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

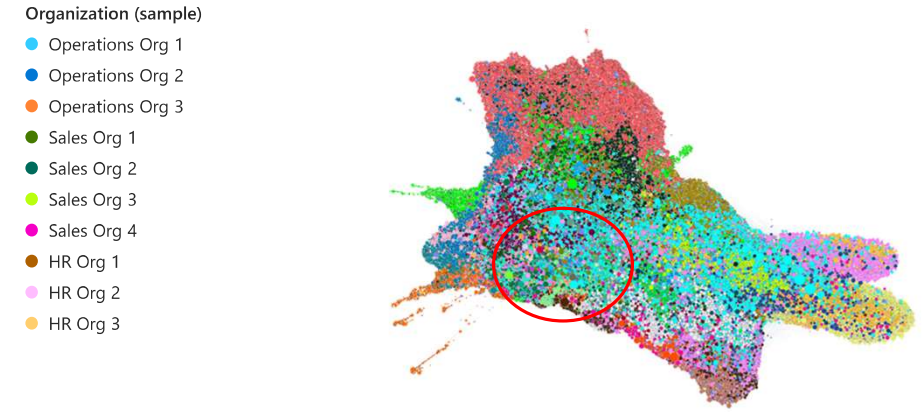
NETWORK_P2P()

B Use cases: Why community detection?

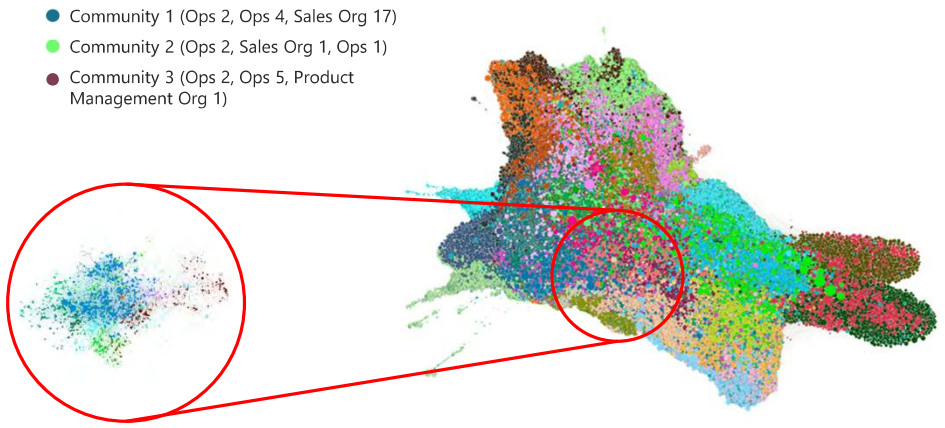
Understanding the "communities" of collaboration that organically exist within the company can give leaders insights into new ways of working, to inform:

- 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)



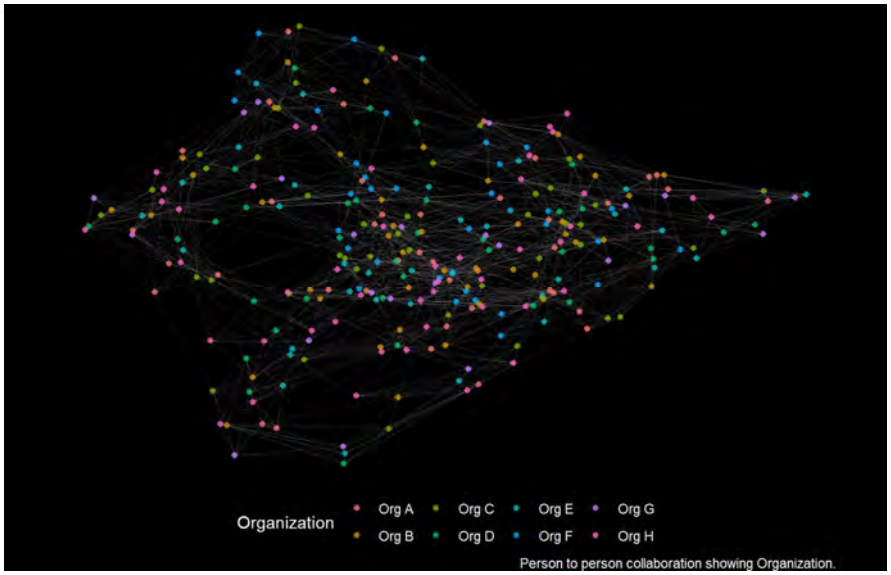
Telco company network graph by ONA-derived "communities"
(Nodes are colored by Communities)



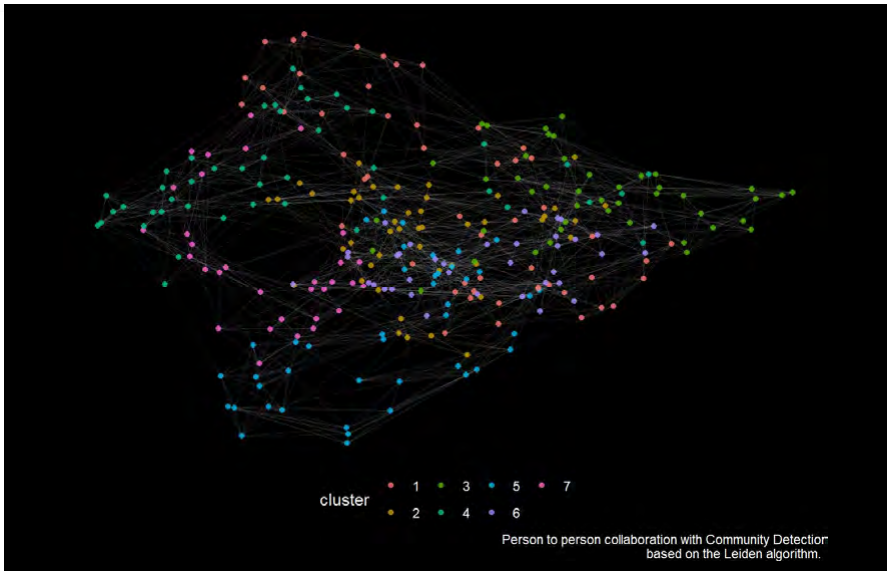
NETWORK_P2P()

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

Organizational data - simulated



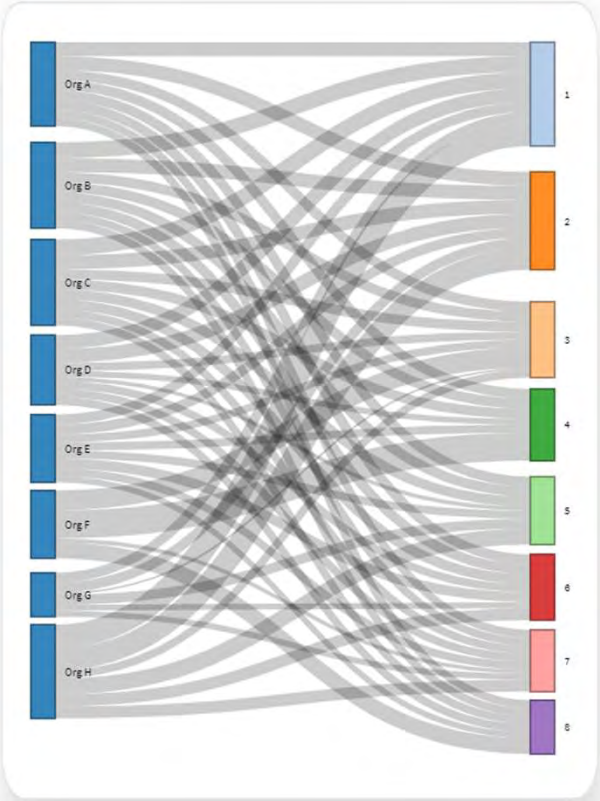
Leiden communities - simulated



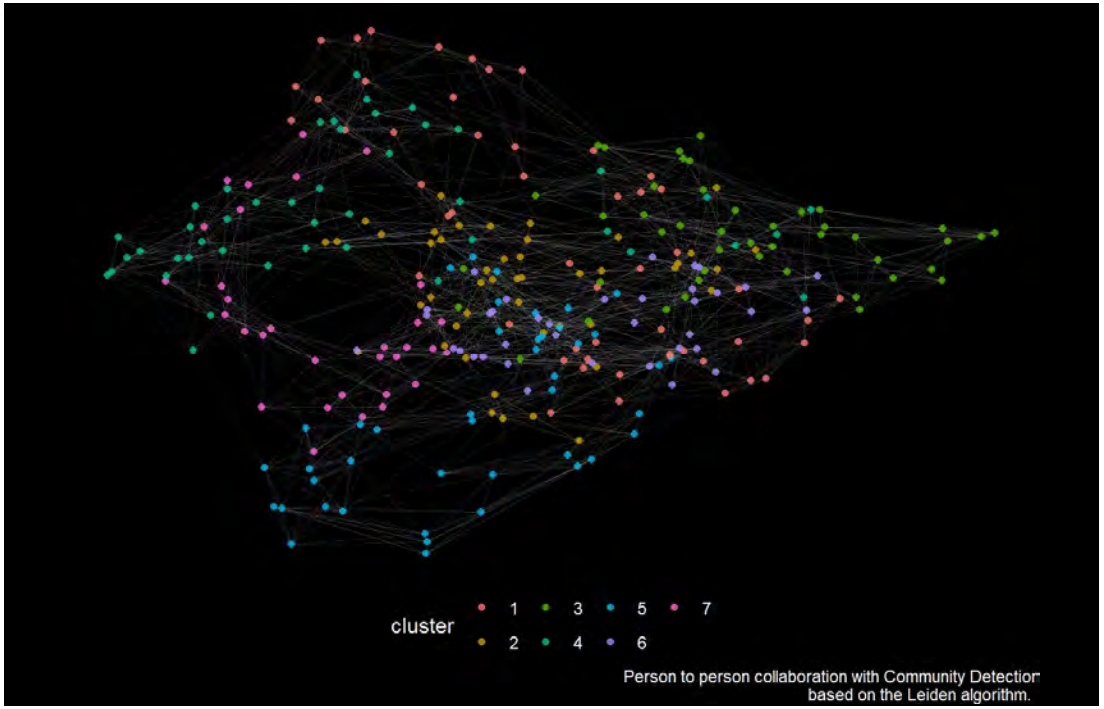
Note: the "mds" (multi-dimensional scaling) layout for placing nodes. This is chosen due to it being deterministic and for its relative speed.

NETWORK_P2P()

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



Leiden communities - simulated



NETWORK_P2P()

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