# Ideanet

A menu driven application for concept mapping

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### About concept mapping

Concept mapping a method for crowd-sourcing the understanding of and/or the design of interventions of complex challenges. Unlike other group processes which rely on consensus; this process elicits the many and diverse viewpoints on a complex issue. The methodology relies on member of a community to work individually to:

- Generate ideas in response to a specific challenge
- Organize all of the collected ideas into groups of similar ideas that they [participants] individually create and name
- Optionally, assess (e.g., rate) ideas on one or more measure of value (e.g., importance, feasibility).

Mathematical algorithms integrate the individual contributions from multiple people into maps that show the detailed ideas, themes and priorities; the collective wisdom of the group. While visualization is driven by sophisticated algorithms, the graphics are interpretable without knowledge of the underlying mathematics. As such, community members that provided individual input can work together to interpret their group's results and plan actions.

### About the Ideanet application

Ideanet is a software application to support concept mapping. The application provides a menu-driven interface for data management, computation, and visualization for a concept mapping project.



Send suggestions, questions, improvements, etc. to: info@ideanetworks.io

This is a development version, improvements to the code and additional functions are in the process of being created and tested. The code has been developed and tested in a Windows PC environment. This application has **not** been tested in a macOS environment.

## How to get started with Ideanet

### 1. Download supporting software

This code has been developed ad tested using version 4.2 of R. I use RStudio (explained below) when working with R. At present the newest version of R is causing problems with RStudio. I recommend downloading the "patched" version of R if you use RStudio now or may do so in the future. R-4..2 Patched can be downloaded at the URL below. I recommend accepting all of the defaults.

Download & Install R 4.2.0 patched

Rstudio desktop is recommended for running R code, a free version can be accessed here: Rstudio

### 2. Install Ideanet application

Run the following code to install the application. This code only needs to be run once to install the application. Run this code again, in the future, as needed, to install newer versions of the Ideanet application. While I prefer using RStudio for editing and running code, launching Base R will open an interface that can be used to install and run the software.

#### RStudio install

- If you downloaded the file "*ideanet_install.R*" then you can double-click on that file to open Rstudio with the code in the source window.
- If RStudio is already open then, on the menu click on *File, Open file,* and navigate to the file and click to open.
- If you do not have the the file "*ideanet_install.R*" then copy and paste the code below into RStudio *source* window.
- Once the code is visible in the RStudio source window, click on *Ctrl+Alt+R* to run the code or, using the RStudio menu, click on *Code*, *Run region*, *Run all.*

#### Base R install

- If you downloaded the file "*ideanet_install.R*" you can double-click on that file to open R or if R is already open then, on the menu, click on *open script* and navigate to the file.
- If you do not have the file "*ideanet_install.R*" then from the menu, click on *File, New script* and then copy and paste the code below into blank editor window.
- Once the code is available then, on the menu click on *Edit*, *Run All.*

```
options(repos=structure(c(CRAN="http://cran.us.r-project.org")))#cran mirror

if (!require(rlang)){
  install.packages("rlang")
  suppressPackageStartupMessages(library(rlang))
}
if (!require(pacman)){
  install.packages("pacman")
  suppressPackageStartupMessages(library(pacman))
}
```

```
if (!require(devtools)){
  install.packages("devtools")
  suppressPackageStartupMessages(library(devtools))
}

pacman::p_unlock() # remove 00lock if present

remotes::install_github("ideanetwork/ideanet", force = TRUE)
```

### 3. Run the Ideanet application

If you have a copy of "*run_ideanet.R*" on your computer then follow the same procedure as described above for installing Ideanet except, in this case use, *run_ideanet.R*. If you do not have the the file"run_ideanet.R" then copy and paste the code below following the same procedures described above.

Once executed the code will open the program. Sometimes the Ideanet app will open behind other windows applications. Look on your task bar for *feather icon* or use the hot keys (Alt+Tab) to tab through open applications to find Ideanet.

Note that once the Ideanet application is open, R and RStudio will not accept input because the Ideanet application has control of R environment. To stop using the app and regain control of R or RStudio click *Quit, Close app.*

```
options(repos=structure(c(CRAN="http://cran.us.r-project.org")))#cran mirror

if (!require(pacman)){
  install.packages("pacman")
  suppressPackageStartupMessages(library(pacman))
}
pacman::p_unlock() # remove 00lock if present

Ideanet::ideanet() # open the application.
```

### 4. Use the Ideanet application

The following is a brief description of the menu options. Additional details can be found in application.

**Data entry** Use the menu option to create a blank Excel template for data entry. The Ideanet software is structured to read data from this template.

- Sorting data is required. Depending on how the sorting data was collected the data is added to either the racked worksheet if manually entered or stacked worksheet if downloaded from an online sorting program.
- The text for ideas is required and is entered in the ideas worksheet.
- If rating data is collected, the values worksheet accommodates up to three demographic variables and up to two measures.

**Review & define data** Sorting data can be checked for errors such as missing cards and data entry errors so that these may be corrected. Rating data can be defined by entering details about demographics and the measures.

**Compute maps** Multidimensional scaling (MDS) computes the location of points in two dimensions and computes a stress value for the solution. Label analysis computes the location for each label from each participant on the map. The map of items is partitioned with hierarchical cluster analysis to produce multiple cluster solutions. The app will create three output files that are useful for choosing an optimal cluster solution for further analysis:

- An Excel workbook with cluster solutions and cluster labels
- A slide deck illustrating cluster membership and labels for each cluster solution
- A slide deck illustrating cluster membership in a dendrogram.

**Create cluster report** Once a cluster solution is selected, this option creates a slide deck that is a detailed report for that cluster solution.

**Analyze values** Users may choose to subset data analysis by demographic variables and/or measure and saves results as a PowerPoint file.

- *Pattern Analysis* creates a cluster rating map to illustrate relative value among the clusters with a third (i.e., height) dimension.
- *Pattern matching* compares patterns in values between measures (e.g., importance & feasibility) or between demographic groups (e.g., management & staff). Two types of graphics are created for pattern matching:
  - A ladder graph comparing values at the cluster level
  - A bivariate plot comparing the item means within each cluster.

**Assess cluster solution** Once a cluster solution is chosen, in some cases, a review of the map may evoke assertions that a given point may be better placed in a nearby cluster instead of the cluster where the point is currently located. The analysis done here will validate cluster membership or indicate if the map may be improved by placing an item in a neighboring cluster.