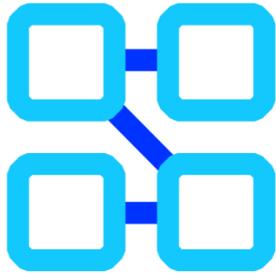

The Standard for Data Visualization and Analysis



Sentinel Visualizer[®]

Version 10 New Features



SentinelVisualizer.com

New Features in Version 10

Version 10 offers many significant enhancements to Sentinel Visualizer. It includes new features across the entire application with improved functionality and usability.

New Feature Summary

Many features are added in version 10:

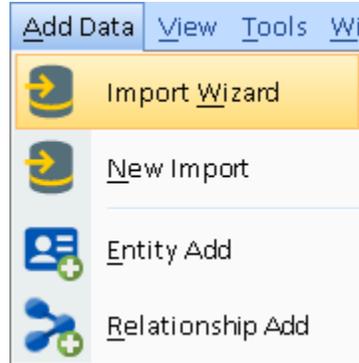
- Import Enhancements with a new Wizard.
 - Import data from SQL Server database tables and views.
 - Filter source data records with customizable WHERE clause.
 - Import additional entity columns such as brief, image files, unique ID etc.
 - Import additional relationship columns such as brief, credibility, reliability, etc.
 - Use Unique IDs to differentiate duplicate entity names.
 - Assign values directly to columns instead of assigning a value from source data.
 - New saved file format includes source data to be optionally loaded when opened.
 - When Source Data Changes, Column Assignments are Preserved.
 - Preview data before import.
 - New menu items, undo and redo, user interface enhancements, and much more.
- Online Maps with Microsoft Bing Maps to zoom into any place around the world.
- Visualizer Diagram Enhancements
 - Entities and Relationships with custom properties and labels.
 - Entity Replace to consolidate entities.
 - Curved relationship lines.
 - New 9500+ high-resolution icon file library.
 - Add items select among Entity Types limited to database.
 - Layout grouped by Entity Type.
 - Directional Get Links to only add links FROM or TO entities.
 - Refresh button to update the diagram when data changes.
 - Timeline Enhancements with new Month and Year views.
 - Social Network Analysis calculation's 1000 entity limit removed.
- Search Enhancements
 - Redesigned and enhanced Query Builder with results in separate forms
 - Combine Multiple Searches to find all, common, and most common entities.
 - Entity Distance Search from central location.
 - Metadata Search for any Metadata Type assignment and/or wildcard searching.
- Lookup Table Management with text search and adding multiple values at once.
- User Interface Enhancements
 - Home Page with images on MRU list and improved toolbar and left panel.
 - Reorganized Menus with more options; Text Filter on many forms

Import Enhancements

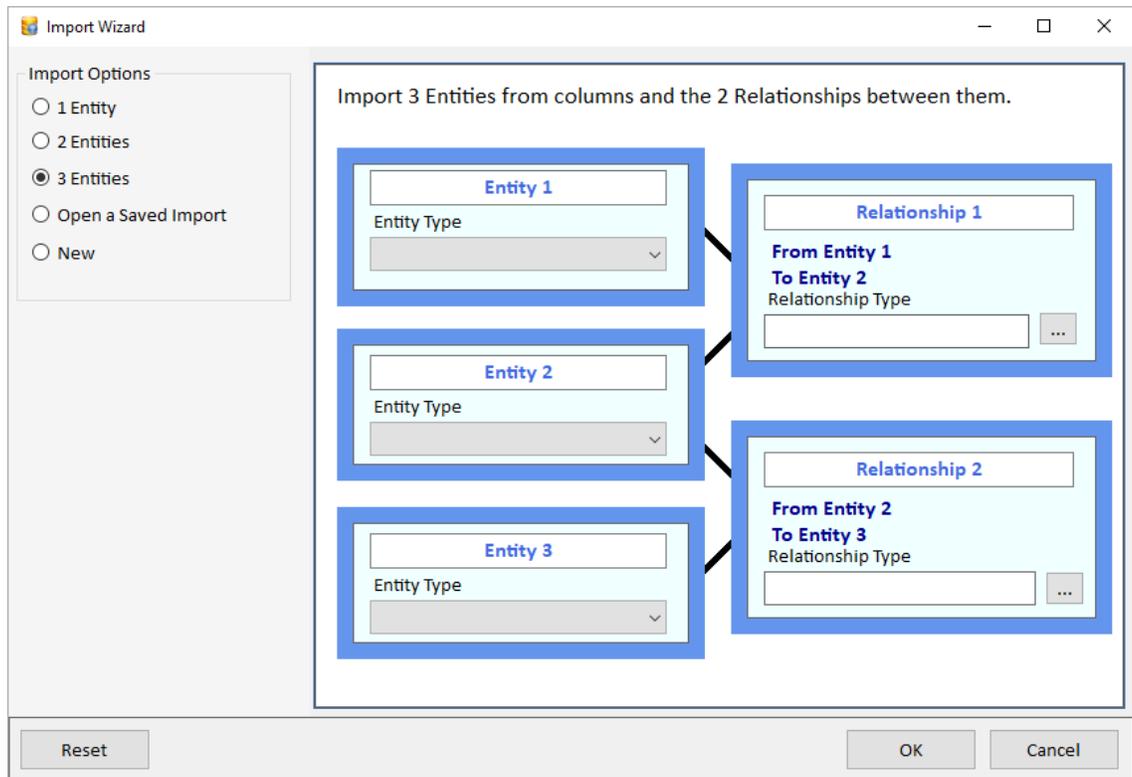
The Import feature is faster with a significantly improved and redesigned user interface.

New Import Wizard

The Add Data menu offers a new Import Wizard:



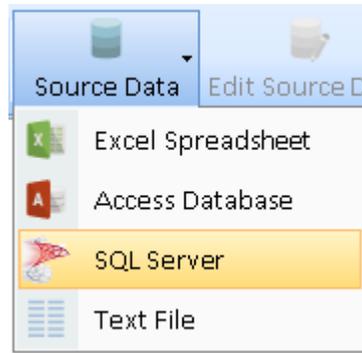
Use the Wizard to create a new import for one entity, two entities and a relationship, or two relationships.



Easily specify the types and titles before adding them to the Import form

Import SQL Server Data

Import data directly from a SQL Server database by choosing among its tables and views.

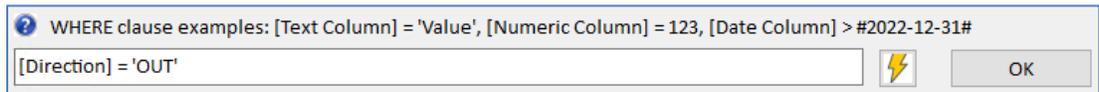


New SQL Server item

The SQL Server and Access database dialogs have options to list only tables, only queries/views, or both for your selection.

WHERE clause to Limit Source Data

Apply an optional WHERE clause on your Source Data (Excel, Access, SQL Server, and Text files) to limit the records to import.

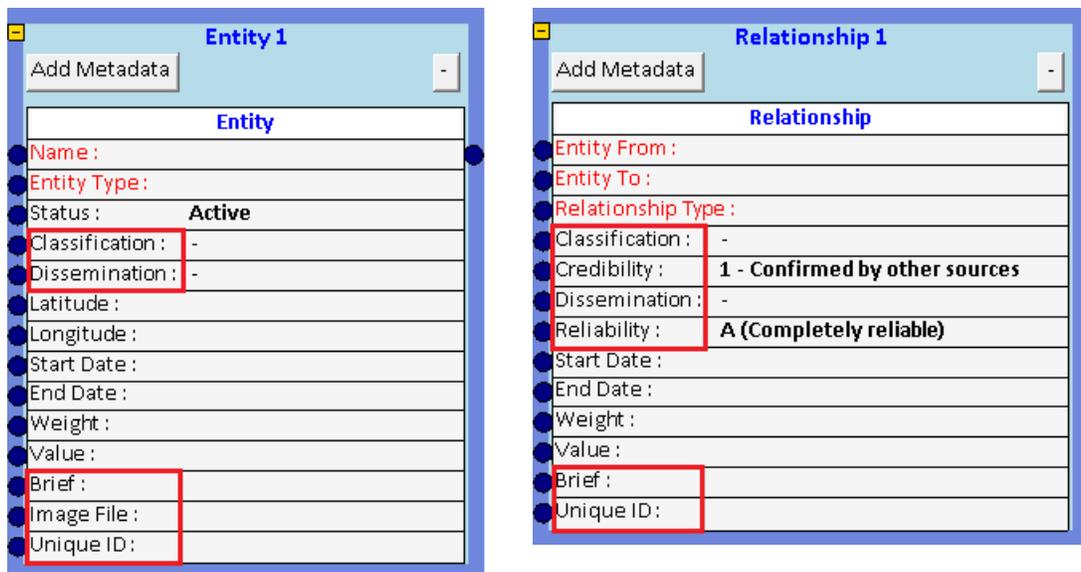


The WHERE clause can be exact matches on values, ranges, and even wildcard matching using the LIKE statement.

This simplifies the process of designing different imports for subsets of your Source Data. It eliminates the previous need to create separate copies of your import file with different records.

Import Additional Columns

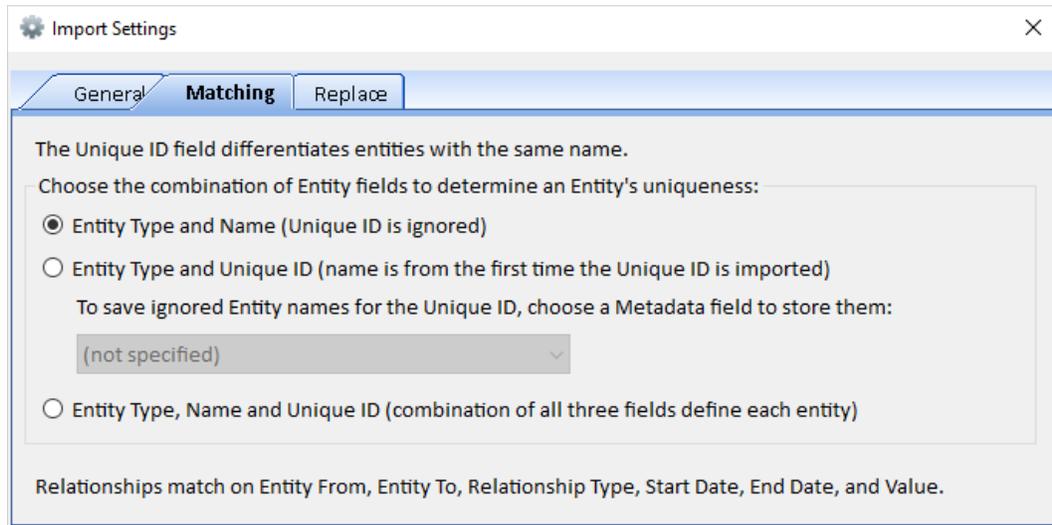
All the Entity and Relationship level columns can now be imported by assigning a source data column to them or specifying a value.



- 5 for Entity: Classification, Dissemination, Brief, Image File, and Unique ID.
- 6 for Relationship: Classification, Credibility, Dissemination, Reliability, Brief, Unique ID.

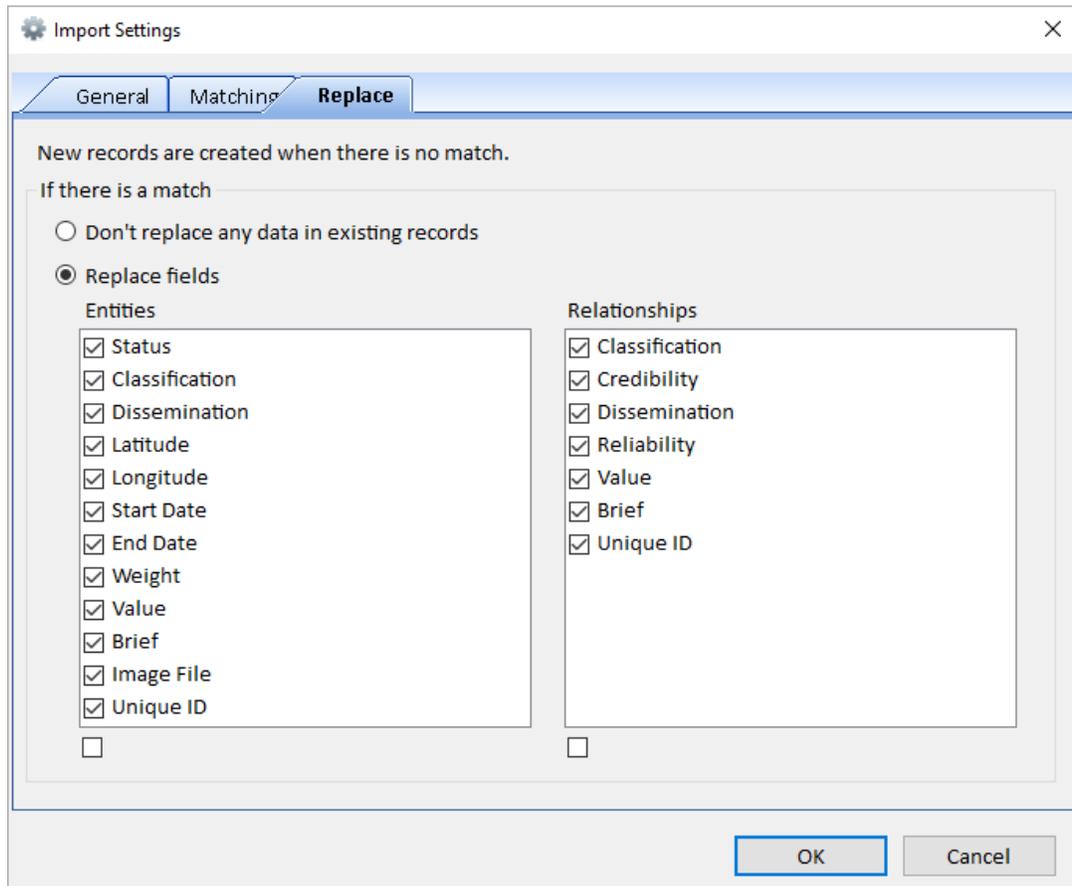
Define Entities by Unique ID

Choose among 3 options for the columns that define a unique entity. This let you have entities with the same name differentiated by their Unique ID field.



Choose which Fields to Update

If an imported entity or relationship exists in the database, the Import Settings let you control if the existing records are updated and if so, which columns.



Replacement Options for Matching Entities and Relationships

Assign Values Directly to Columns

In addition to assigning a column based on a field from the Source Data, you can now assign a value directly for all your imported records:

Latitude :	38.9166
Longitude :	-77.22717
Start Date :	10/10/2022
End Date :	12/31/2023
Weight :	90
Value :	2145.45

When Source Data Changes, Column Assignments are Preserved

When updating an existing source data, the new one may have different columns from the current one. Previously, all the columns needed to match to preserve assignments. Now, assignments for matching columns are preserved and only unmatched ones deleted.

New Saved Import File Format Includes Source Data

Import files are saved in a new encrypted format (*.SVIX) with source data specifications to offer the option to load the data when opened. It also has improved support for localized versions.

Open Saved Import File with MRU List and Options to Load Source Data

When opening a saved import file, a new form lists the previously opened files for selection. If the SVIX file has a Source Data, a prompt asks to load it. If it has lookup values that don't exist in the database, a list of the missing values is shown with a prompt to add them to the lookup lists.

Preview Data Before Import

Preview the entity and relationship import records (first 500) before importing it. Quickly ensure your column assignments are correct before updating your database.



New Toolbar Buttons

- [Undo] and [Redo] changes to your actions.



- [Edit Source Data] to change the data options such as its WHERE clause or database table.

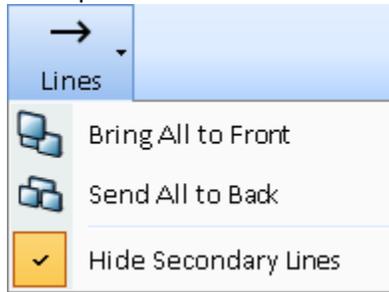


- These buttons are on the right side of the toolbar:



- [Import Settings] centralizes the options for Data Format, matching, and replace.
- If the lookup data changes (e.g. Entity Type, Metadata Type, etc.), click the [Refresh Lookups] button to update the lookup lists in the entity and relationship boxes.

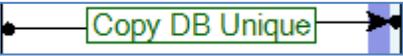
- Line options to move lines to the front/ back and hide secondary field assignments.

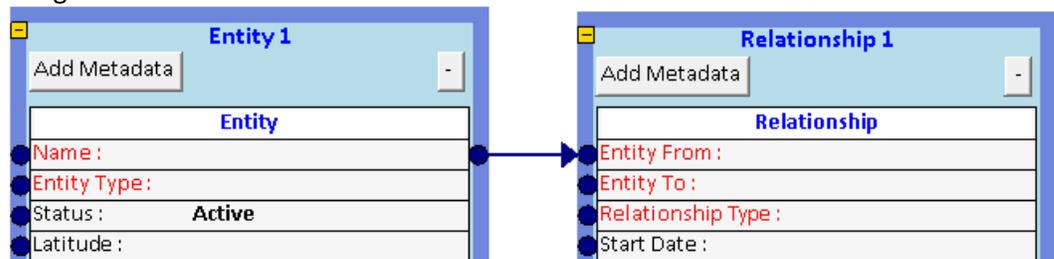


- Zoom to different levels and fit to page.

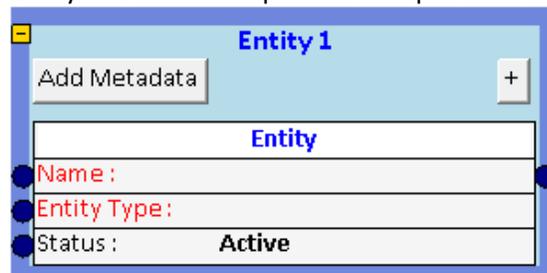
User Interface Enhancements

The user experience is improved with many new features.

- Adding a relationship box automatically adds two entity boxes connected to the relationship.
- New entity and relationship boxes are placed in empty spots and not over existing boxes.
- Line and port enhancements
 - Thicker lines and arrows to simplify assignments and selections.
 - Larger ports moved to the edge of the boxes.
 - Lines between boxes are cleaner by eliminating labels on lines. Prior versions had labels like this: 
 - Side panel simplified to no longer explain them.
- Required columns are red until they are assigned.
 - Assigned column names or values are bold.



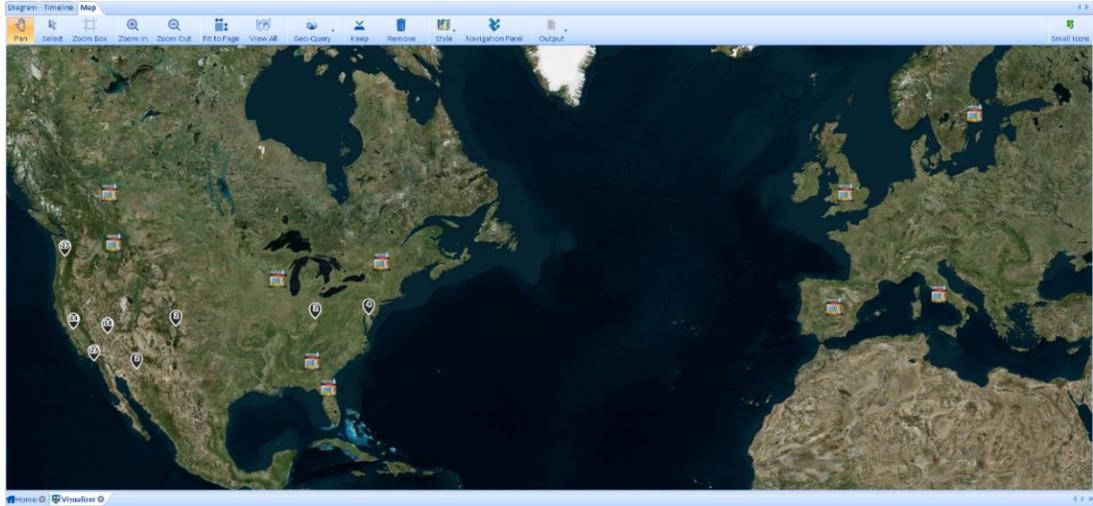
- “Drag col here” text on Relationship boxes is eliminated.
- Entity and relationship boxes collapse their heights to declutter complex imports.



- Box widths are resizable including the metadata grid.
- Boxes are more opaque.
- Bottom panel displays Source Data record columns and import status better.
- Opening a saved import addresses some UI issues with the layout of the boxes and lines.

Visualizer: Online Maps

Entities with latitude and longitude can be plotted on the Visualizer map. With an Internet connection, online maps from Microsoft Bing offer high resolution topography and road styles for any part of the world.



Online Maps with Imagery Style

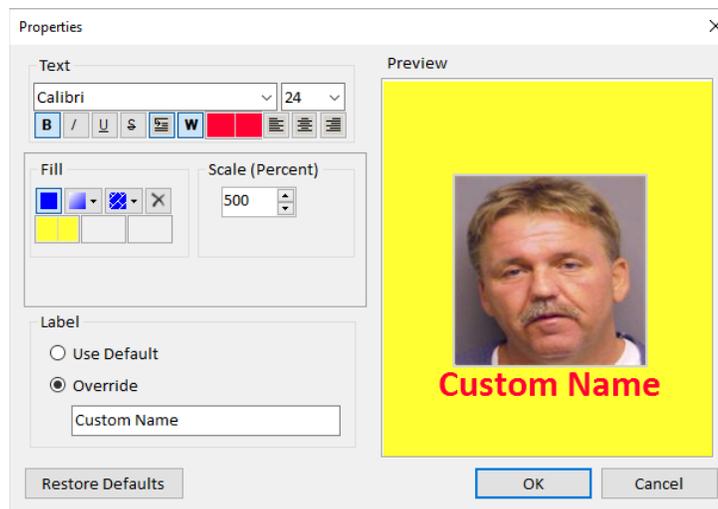
Zoom in and out of your map. Fit to Page automatically adjusts the map to show all your mapped items. Perform Geo-Query in a circle or rectangle to add entities in that region.

Offline maps are still supported including the use of shape files.

Visualizer: Custom Properties and Labels

On the Visualizer, Entity and Relationship lines can be customized individually or by type with different fonts, colors, size, line widths, etc. Labels can also be customized to display information like Metadata value, metrics, dates, etc. Custom properties can also be saved.

Entity Properties



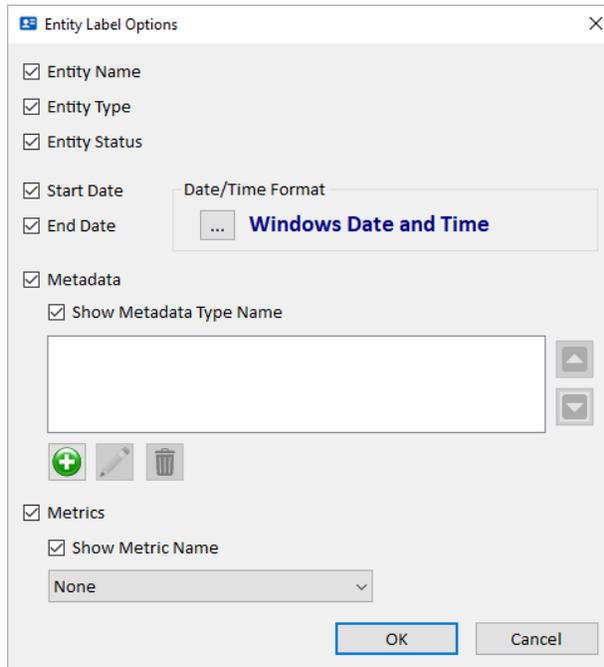
Custom Entity Properties: Yellow Background, Larger Red Bold Text with Custom Name

Individual entities can be customized with a label overriding the name, font, and color. The size and background color can also be set.

Properties can be saved to the entity to become its appearance on future diagrams.

Entity Label Options

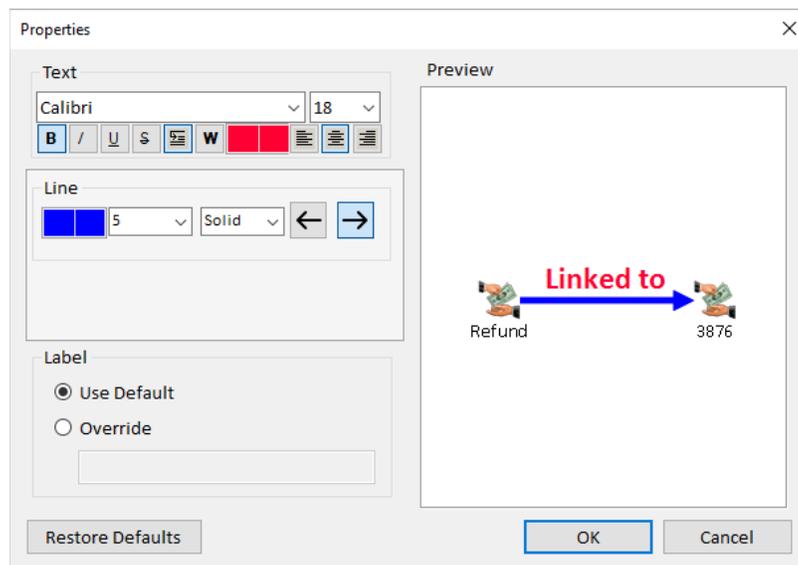
By default, Entity Labels show the Entity Name. In version 10, other values such as Entity Type, Status, Start and End Dates, Metadata Values and Metrics can also be shown.



Entity Label Options

For the Start and End Dates, you can set their Date/Time format. Metadata Types and Metrics can optionally show their names.

Relationship Line Properties



Relationship Line Properties

Lines can be customized with a label overriding the name, font, and color. The line thickness, style and color can also be set. Single relationship properties can be saved to the relationship to become the default appearance when it appears in future diagrams.

Relationship Label Options

By default, labels on single relationship lines show the Relationship Type. In earlier versions, if a line has more than one relationship, the number of relationships is shown (e.g. "5 Relationships"). In Version 10, if all the relationships are the same relationship type, the line says the number with the Relationship Type. There are also options to list the count of multiple relationship types, Start and End Dates, and Metadata Values.

Relationship Label Options

Relationship Type

Lines with Multiple Relationship Types

Summary (# Relationships)

Count by Relationship Type

3 Maximum Relationship Types

Sum of Relationship Values on a Line Numeric Format

Start Date Date/Time Format

End Date Windows Date and Time

Metadata

Show Metadata Type Name

OK Cancel

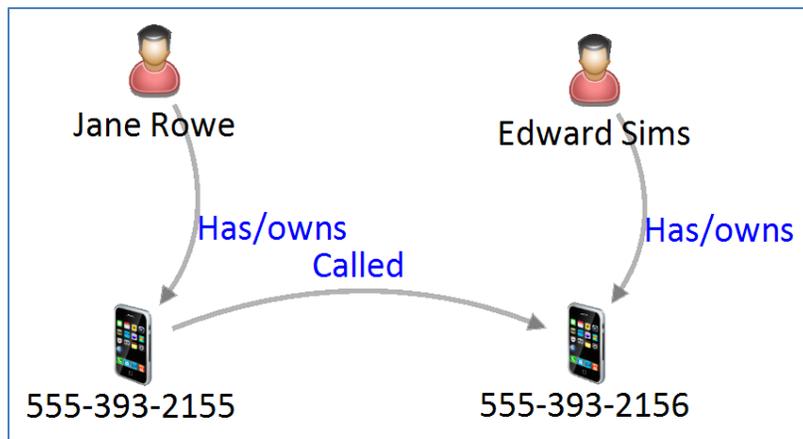
Relationship Label Options

Entity and Relationship Type Properties

Entity Types can have custom properties. All entities of that type without its own custom properties, use the type's custom properties. The same exists for Relationship Types.

Visualizer: Entity Replace

Entity Replace lets you keep and hide entities based on their types and relationships. This is powerful way to create higher-level views of your network and eliminate clutter. For instance, you may have telephone call data showing calls between phone numbers and the owner of each phone. Entity Replace lets you replace the phones with their owners to show the connection between the people rather than phones.



Original Diagram Before Replace

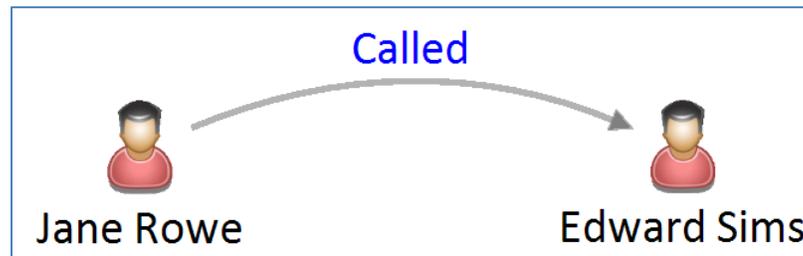


Diagram After Replacing Phones with Owners

Replace Added to Visualizer Entities Menu

The Replace Entities Settings form lets you specify the entity types to keep and replace:

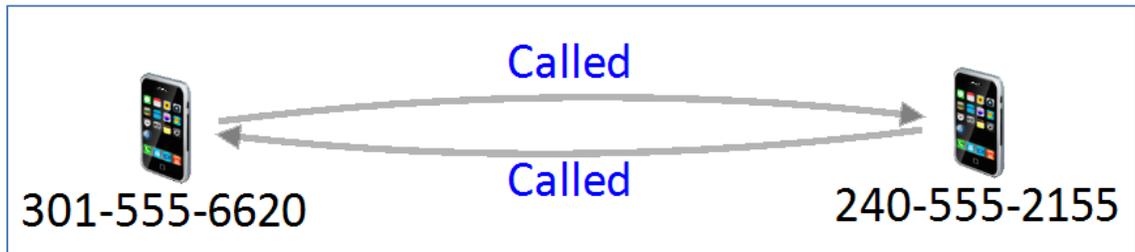
Replace Entity Type Phone Number with Person

The [Advanced...] button opens a Wizard to select multiple Entity and Relationship Types to keep and hide. Selections can be saved for future use. Multiple saved replacements can be combined.

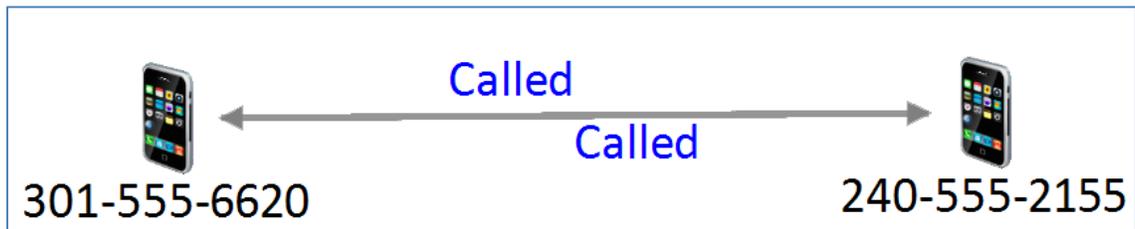
Entity Replace acts like a filter. Once it is set, if you add new entities to your diagram, like Get Links, the replacement is applied to the new entities. Turn off the Entity Replace to see to all your entities again.

Visualizer: Curved Relationship Lines

Relationship connections can now be a curve rather than a line. This is particularly useful for relationships in both directions to show the two lines with arrows:



Relationship Lines with Style as a Curve



Relationship Lines with Style as a Line

This is set on the Relationships panel's Style option.

New 9500+ High Resolution Icon File Library

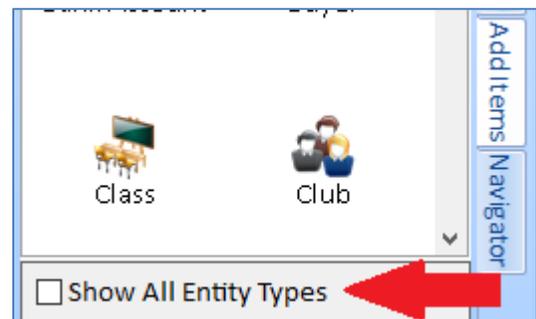
A new collection of 9,500+ high resolution images is included for your use on Entity Types and individual entities.

The new icons are 128x128 pixel PNG files and replace a much smaller collection of 32-pixel ICO files. For new databases, the default list of Entity Types has the higher resolution graphics.

The Visualizer diagram and other forms support the higher resolution graphics for a richer and more visually appealing appearance.

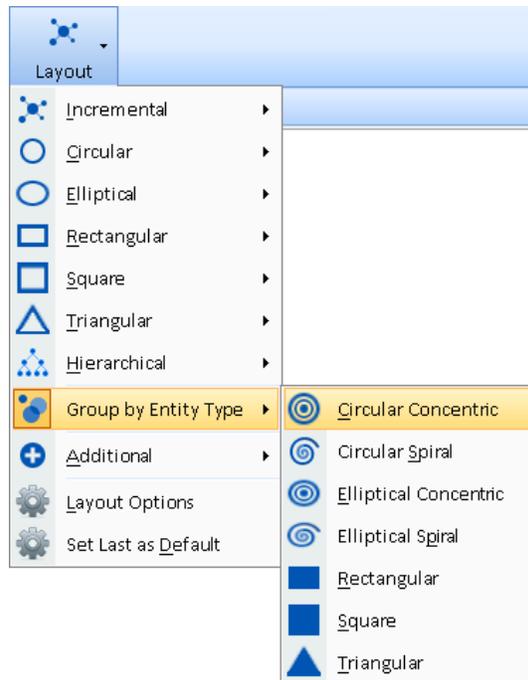
Visualizer: Limit Entity Types to Database

When adding entities to the Visualizer diagram, the Add Items panel has a new [Show All Entity Types] checkbox to limit the icons to your most likely selections. Uncheck the box to only show the icons of entity types used by entities in your database. If checked, all the entity types in your lookup table are shown, which is the previous behavior.

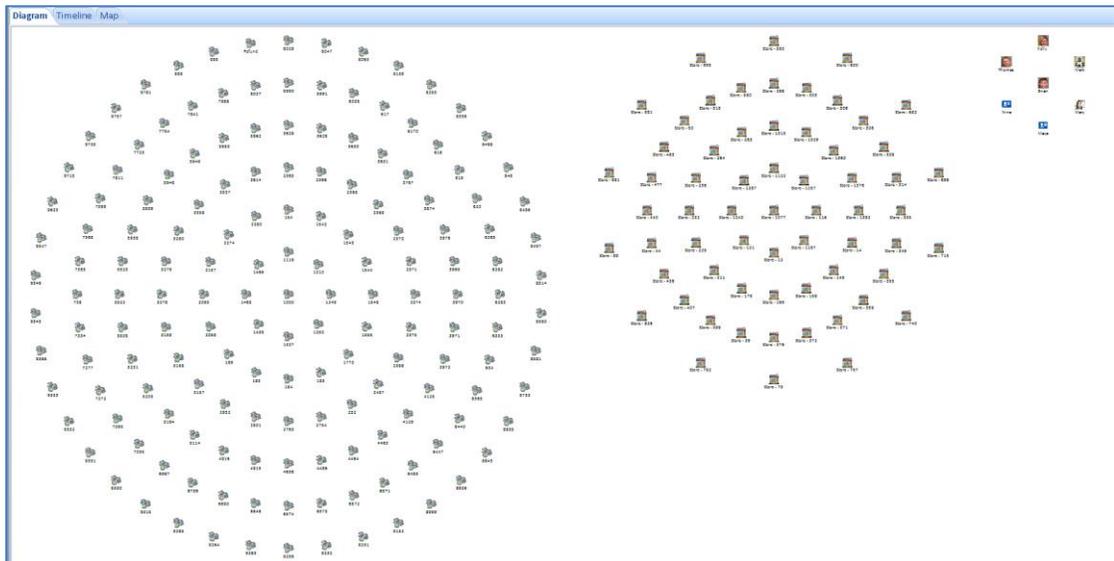


Visualizer: Layout Group by Entity Type

Layout automatically reorganizes the entities on the diagram. A new feature lets you easily see all the entities by entity type. Under Layout, a new [Group by Entity Type] item moves your entities into a variety of shapes for each entity type:



Each entity type is treated as a separate network arranged from largest to smallest, sorted by name within each type. For example, three entity types (transactions, stores, people) in concentric circles:

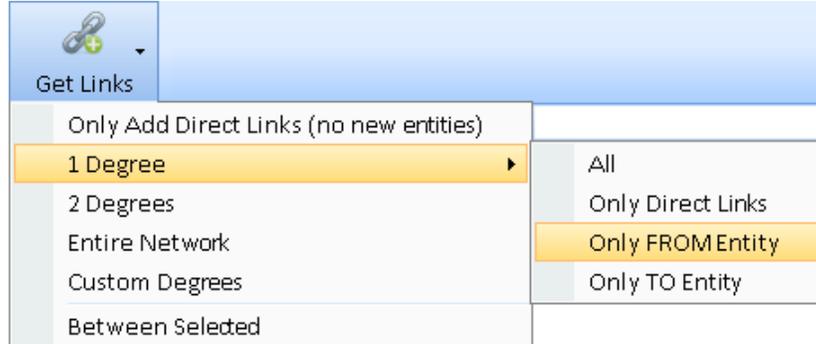


Layout by Entity Type in Concentric Circles and Hidden Relationship Lines

Easily select the entity types you don't want and remove them or select the ones you want and send them to a New Visualizer under Output.

Visualizer: Directional Get Links

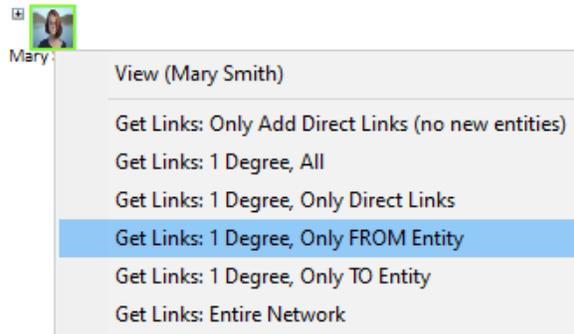
In the Visualizer, using Get Links 1 Degree adds all the entities with relationships to an entity. In Version 10, there are new options to just add links with relationships FROM or TO the entity. This is useful if you want to see flows like money in a particular direction.



Get Links, 1 Degree with 4 Options

- [All] adds all linked entities plus links among the linked entities.
- [Only Direct Links] only adds the linked entities without links among them.
- [Only FROM Entity] only adds entities with relationships FROM the selected entities.
- [Only TO Entity] only adds the entities with relationships TO the selected entities.

From the Diagram, the right click menu for an entity also offers the Get Links: 1 Degree options:



Right click context sensitive menu for an Entity offers Get Links 1 Degree options

Visualizer: Refresh and Panels Buttons

A new [Refresh] button updates the data for the entities and relationships on the Visualizer. This appears on the far right of the toolbar with the Panels and Options buttons.



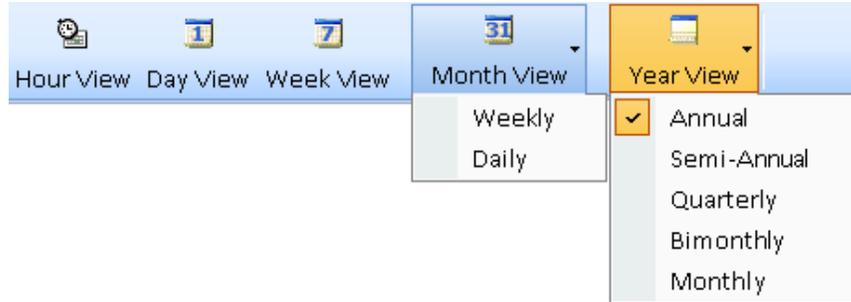
Visualizer Buttons on Top Right

Refresh is helpful if you or someone else updates the database. Refresh retrieves the latest data such as entity name image, properties, metadata, relationship type, etc. and updates your screen accordingly. Any filters, gradients or replace settings are applied against the new data.

The new [Panels] button toggles the right and bottom panels.

Visualizer Timeline

The Visualizer’s Timeline tab has new toolbar options for Month View and Year View to better control the width of time periods. Month has a new Daily option which is wider than the weekly option. Year has new wider options for semi-annual, quarterly, bimonthly, and monthly.



Date View Time Spans, Expanded

Examples of the width zooming into smaller and smaller periods of time from years to days:

Year Views

Year 2010					Year 2015					Year 2020				
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024

Year View, Annual with the Top Summary Label Every 5 Years (example 15 years)

Year 2022				Year 2024				Year 2026			
2021-12	2022-06	2022-12	2023-06	2023-12	2024-06	2024-12	2025-06	2025-12	2026-06	2026-12	2027-06

Year View, Semi-Annual with Summary Label Every 2 Years (example 6 years)

Year 2022				Year 2023				Year 2024			
2021-12	2022-03	2022-06	2022-09	2022-12	2023-03	2023-06	2023-09	2023-12	2024-03	2024-06	2024-09

Year View, Quarterly with Summary Label for each Year (example 3 years)

Year 2022						Year 2023					
12	2022-02	2022-04	2022-06	2022-08	2022-10	2022-12	2023-02	2023-04	2023-06	2023-08	

Year View, Bimonthly with summary Label for each Year (example 20 months)

Year 2023											
2023-01	2023-02	2023-03	2023-04	2023-05	2023-06	2023-07	2023-08	2023-09	2023-10	2023-11	2023-12

Year View, Monthly with the Summary Label for each Year (example 1 year)

Month Views

January 2023				February 2023				March 2023				April 2023			
01-01	01-08	01-15	01-22	01-29	02-05	02-12	02-19	02-26	03-05	03-12	03-19	03-26	04-02	04-09	04-16

Month View, Weekly with the Summary Label for each Month (example 4 months)

February 2023																											
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Month View, Daily (example 1 month)

Start and End Dates

By default, the Start and End Dates are the earliest and latest dates among your entities and relationships. A new End Date button sets the right edge. If an item has a missing start or end date, the label starts with an * if the Start Date is blank, and at the end for a missing End Date.

Visualizer: Social Network Analysis Entity Limit Removed

Previously, SNA metrics were calculated for networks with fewer than 10,000 entities. The limit is removed. It may take a while to calculate SNA metric, but it is no longer limited.

Query Builder Redesign and Enhancements

The Query Builder is revamped to be more powerful and easier to use.

More Advanced Queries

- Relationships can be searched on its own without entities.
- Relationships can have entity criteria on one or both sides of the relationship.
- Relationships can now search on Relationship ID, and like Entities, Created Date, Created By, Modified Date, Modified By, and Brief.
- Treat multiple, disconnected entity and relationship boxes as UNION queries.
- Search multiple values and wildcards on entity name and metadata values.
- Search for Blank and Not Blank values.
- Search for all values of a metadata type or all metadata types with a specified value.

Enhanced User Interface

- Adding a new Relationship automatically adds two entities.
- For Relationships, a new [Edit Links] button to reassign entity boxes, and optionally include or exclude TO/FROM entities.
- Lines between entities and relationships are thicker, at top instead of middle, and have arrows indicating TO/FROM direction.
- Criteria entries are validated for its column to be a date, number, integer, etc.
- Reordered columns for entities and relationship boxes for easier use and consistency.
- Collapse boxes to reduce their height to the last specified column value.
- Improved user interface for managing metadata criteria.
- Save and open retain the layout more accurately.

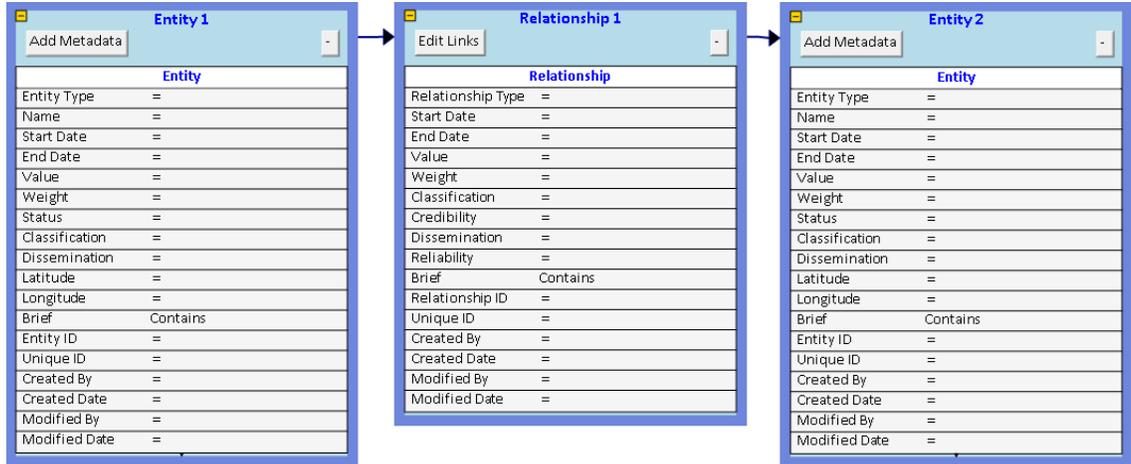
Query Results

- Each Run Query result is displayed on a separate form (instead of the bottom of the screen) so more data on a full screen can be shown and multiple results compared.
- Results form has text filter and options to send items to the Visualizer and Excel.

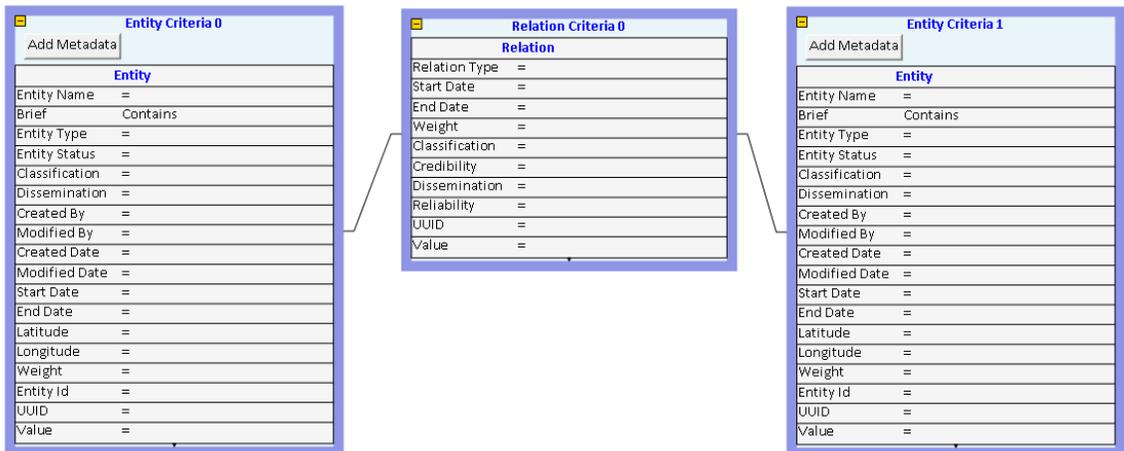
User Interface Examples

Version 10

More columns for criteria, thicker lines with arrows between boxes, Edit Links button for relationships, collapsible boxes, cleaner layouts.



Version 9



Combine Multiple Searches

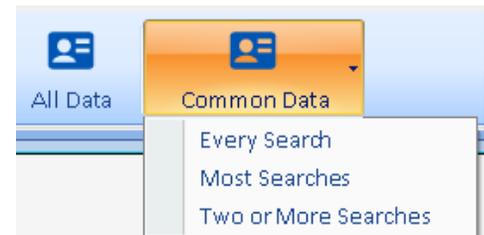
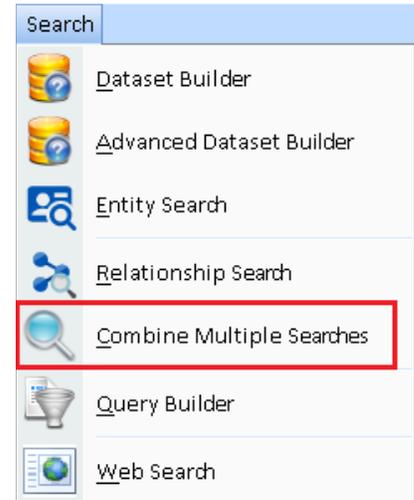
Searches for entities and relationships can be saved. Under Search, the new [Combine Multiple Searches] item lets you select and perform analysis among them.

Unlike saved Visualizer Diagrams which save specific items, saved searches are applied against your current database, so its results change with your data. Combine multiple filters to show their Entities and Relationships.

For instance, you may have saved a search for each crime scene selecting entities around a particular location and time. As your database is updated, each search retrieves new results. Wouldn't it be interesting to find entities that appeared at all or most of the crime scenes?

After selecting the saved searches, choose the Common Data options:

- **Every Search:** Find Entities and Relationships that are in every selected search. These are the highest value targets.
- **Two or More Searches:** Entities that are in at least two of the searches.
- **Most Searches:** Determine the maximum number of selected filters that an entity is found and show them. For instance, 10 filters are selected, but no Entities are in all 10. Sentinel Visualizer finds that the most filters an entity appears is 7, so it shows the entities (and relationships) that are in 7.



Entity Distance Search

The entity search screen now lets you select entities based on its distance from a location.

Distance from Location	
Distance	<input type="text" value="10"/>
Units	<input type="text" value="Miles"/>
Latitude	<input type="text" value="38.91648"/>
Longitude	<input type="text" value="-77.22663"/>

Entity Distance Search



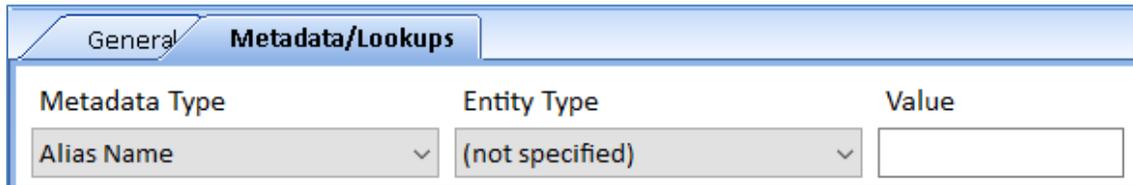
Specify the distance in miles or kilometers, and the center point based on the latitude and longitude. All the entities with latitude and longitude in the circle are selected.

Metadata Search Improvements

Entity and relationship metadata search for metadata is enhanced to find items with a metadata type regardless of value and wildcard searching on values.

All Items with a Metadata Type

For the entity and relationship metadata search, you can select a Metadata Type and leave the Value blank to find all the items that have that Metadata Type regardless of its value.



Metadata Type	Entity Type	Value
Alias Name	(not specified)	

Find Entities or Relationships with a Metadata Type

Previously, a value was required which did not support searching for any value for the type.

Metadata Wildcard Search

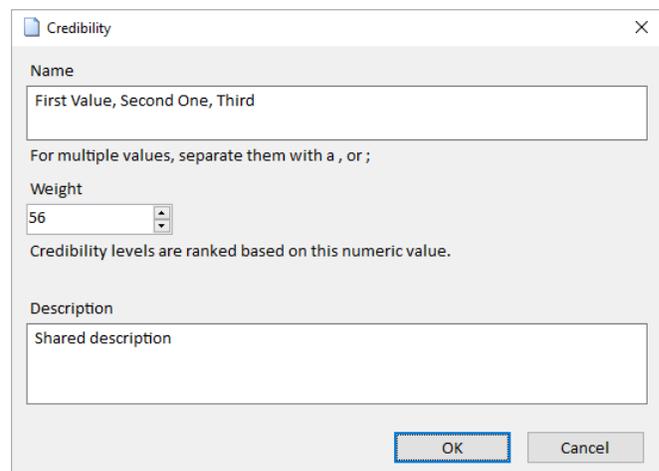
Wildcard searches support finding values that start with a letter(s), contain letters, and/or end with letters. The percent sign (%) is the wildcard character which symbolizes any characters. For instance, enter:

- A% for all values that start with the letter "A".
- US% for all values that start with "US".
- %a% for all values that contain the letter A (the search is case insensitive).
- %N for all values ending with the letter N.

Lookup Tables: Add Multiple Values at Once

Under Tools, Manage Database, you can set the values of the Lookup tables. Lookup tables are lists of values for some entity and relationship fields such as type, classification, dissemination, credibility, reliability, users, topics, etc.

Previously, each lookup value was added one at a time. For most of the lookups, you can now enter multiple values at once. Multiple values can be added by entering them separated by commas or semicolons, or as rows (pasted from Excel). If there are other values like Weight or Description, they are applied to each of the new items.



Credibility

Name
First Value, Second One, Third

For multiple values, separate them with a , or ;

Weight
56

Credibility levels are ranked based on this numeric value.

Description
Shared description

OK Cancel

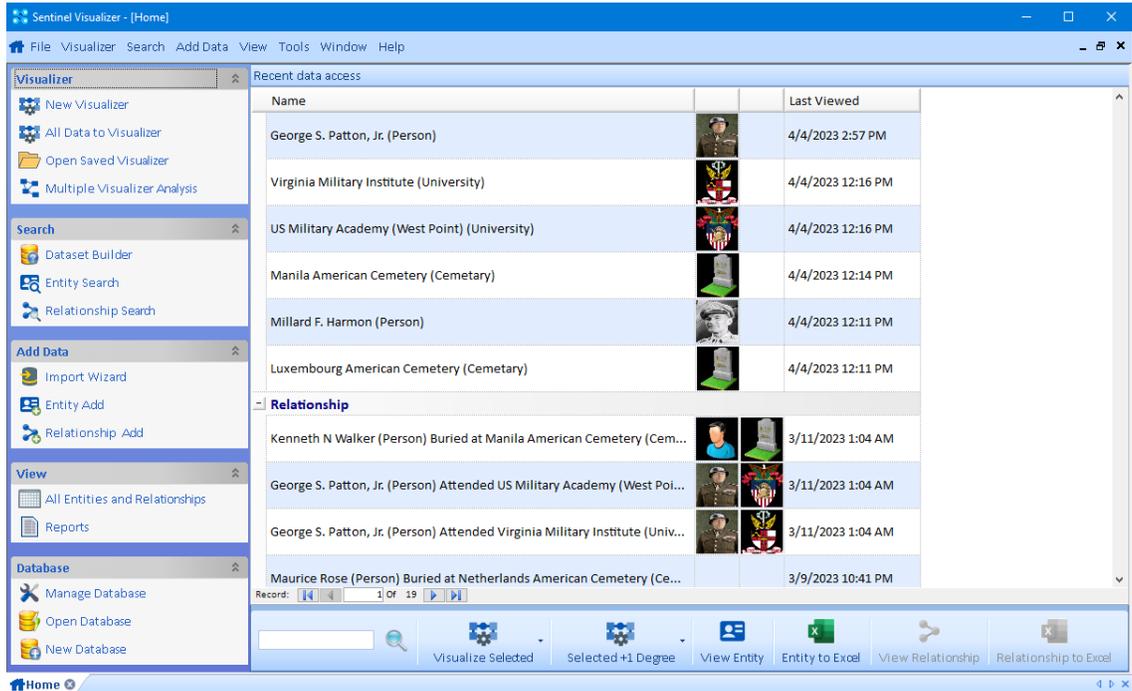
Larger Images for Entity Types

In addition to text searches for lookup tables, Entity Type supports larger image files which also appear as larger icons on the Entity Type grid.

Home Page Enhancements

Images on Most Recently Used (MRU) Entities and Relationships

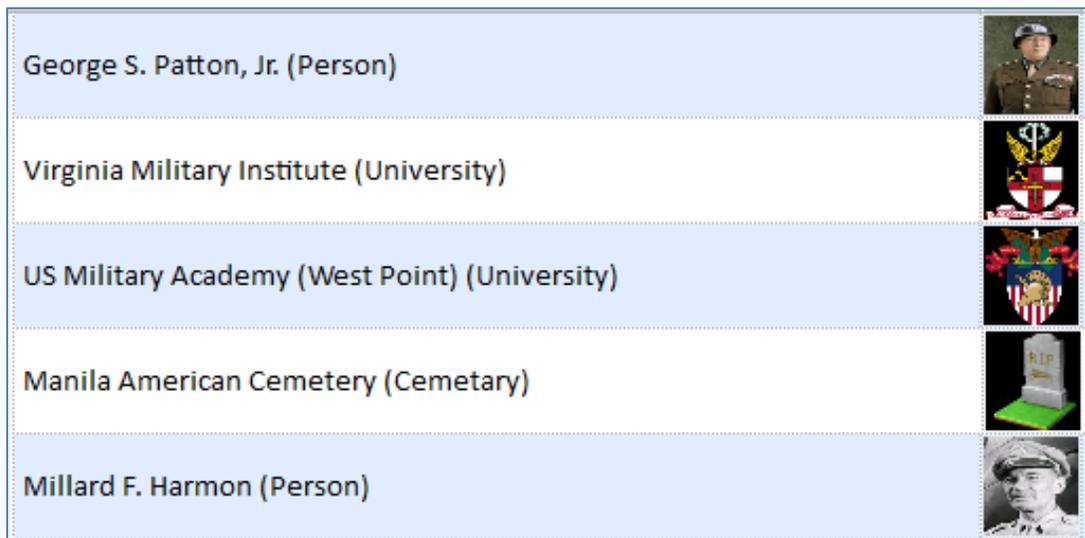
When you select an entity or relationship to add to the Visualizer or view its details, it is added to the MRU list. The list is prominently displayed on the Home Page and search forms to easily perform actions on your most frequently accessed items.



Home Page with MRU List showing Entity Images

Enhanced MRU List with Images

In version 10, a picture is displayed for each entity using its picture or its entity type icon. Relationships show the images of both entities in the relationship. This makes it easier to identify the entities and relationships.



MRU Entity List with some Images

For Relationships, the pictures of the FROM and TO entities are displayed.

Relationship	
Kenneth N Walker (Person) Buried at Manila American Cemetery (Cem...	
George S. Patton, Jr. (Person) Attended US Military Academy (West Poi...	
George S. Patton, Jr. (Person) Attended Virginia Military Institute (Univ...	

MRU Relationship List with Entity Images

Select one or more entities and relationships to perform tasks on them from the toolbar.

Toolbar

The toolbar at the bottom lets you perform actions on your selected MRU items.



Home Page Toolbar

- Type a few letters in the new filter feature to reduce the MRU list by their names.
- [Visualize Selected] sends the selected items to the Visualizer.
- If you select more than one entity, there is also an option to include the relationships between them:

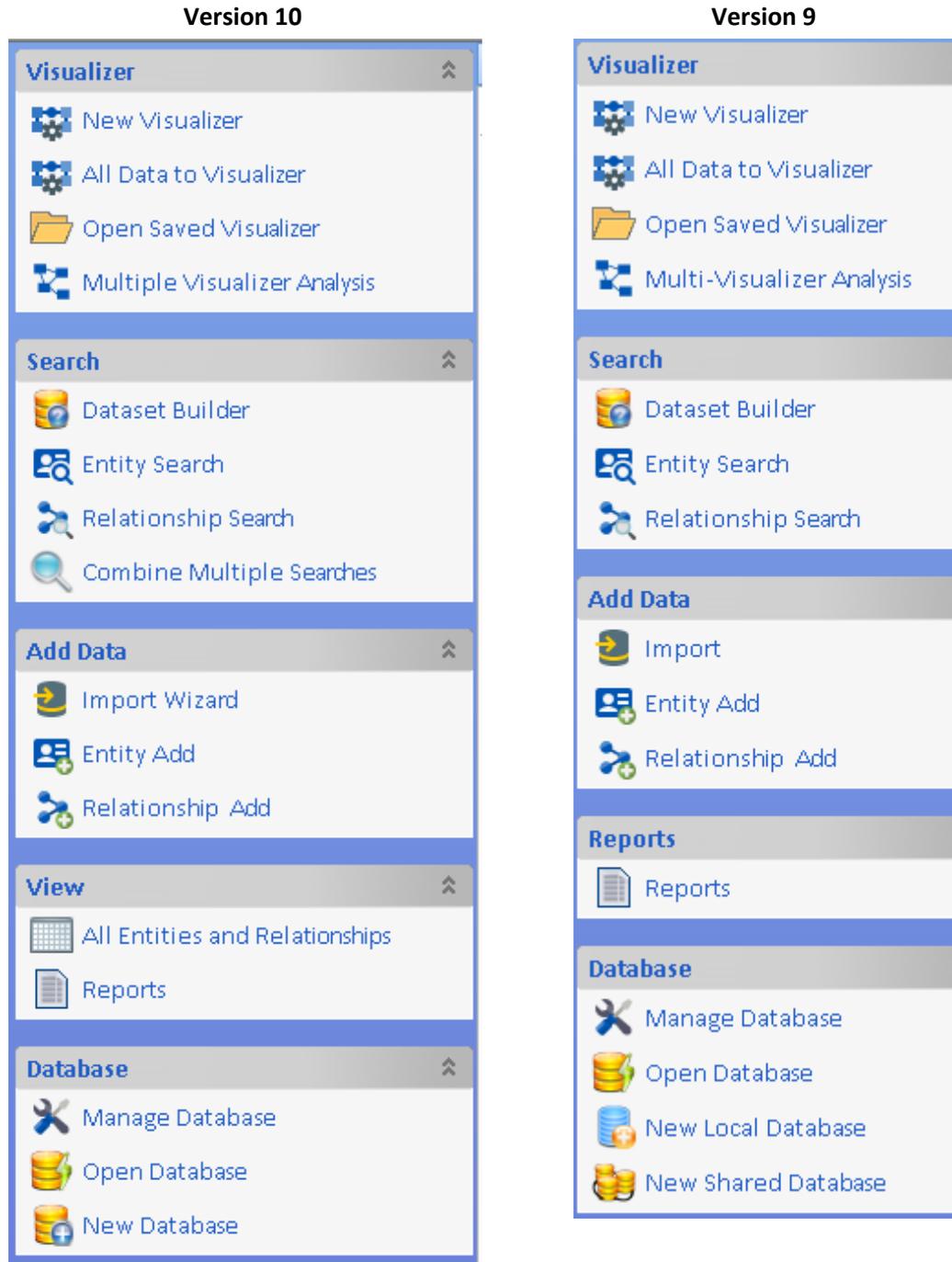


- [Selected + 1 Degree] lets you send the selected items to the Visualizer and add their connections to other entities (one degree links). Includes the new Directional links.



Reorganized Left Panel

Left panel options are the most common items from the top menu.



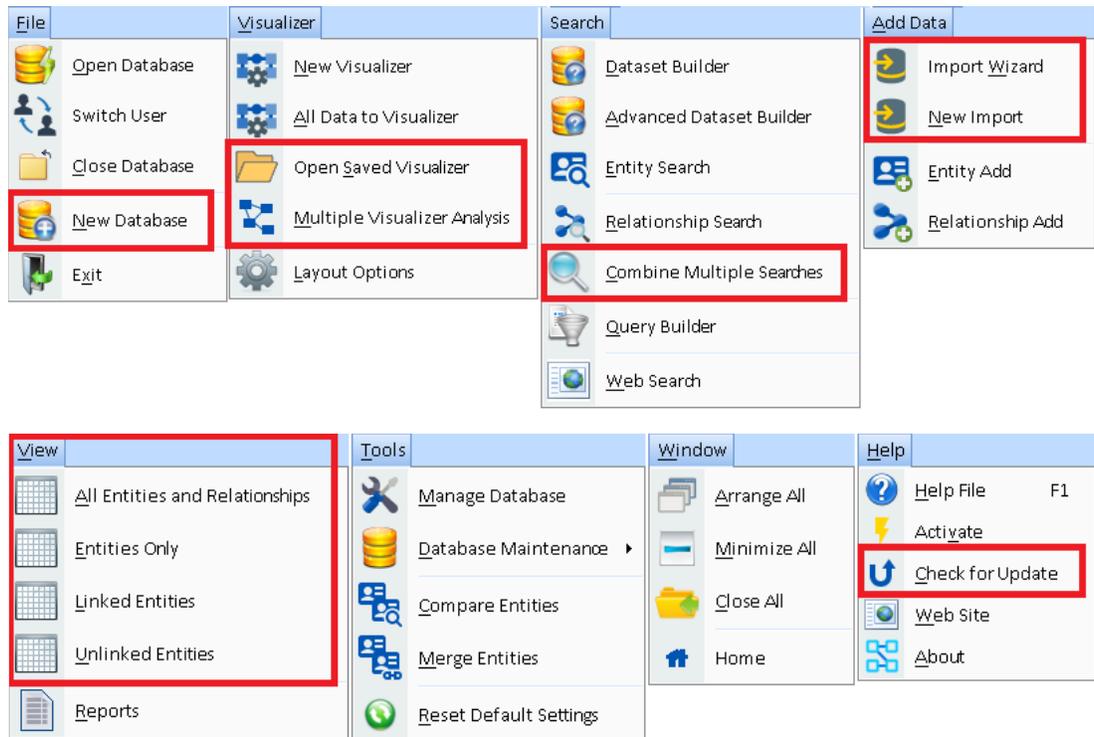
- Search has [Combine Multiple Searches] to find common items across your saved searches.
- Add Data has the new [Import Wizard] replacing [Import]. For the old feature to open a blank import form, use the menu and select [New Import] under Add Data.
- View has a new [All Entities and Relationships] to see the list of all of them. [New Database] combines separate items for local and shared databases.

Each section can be minimized by clicking  in their top right corner.

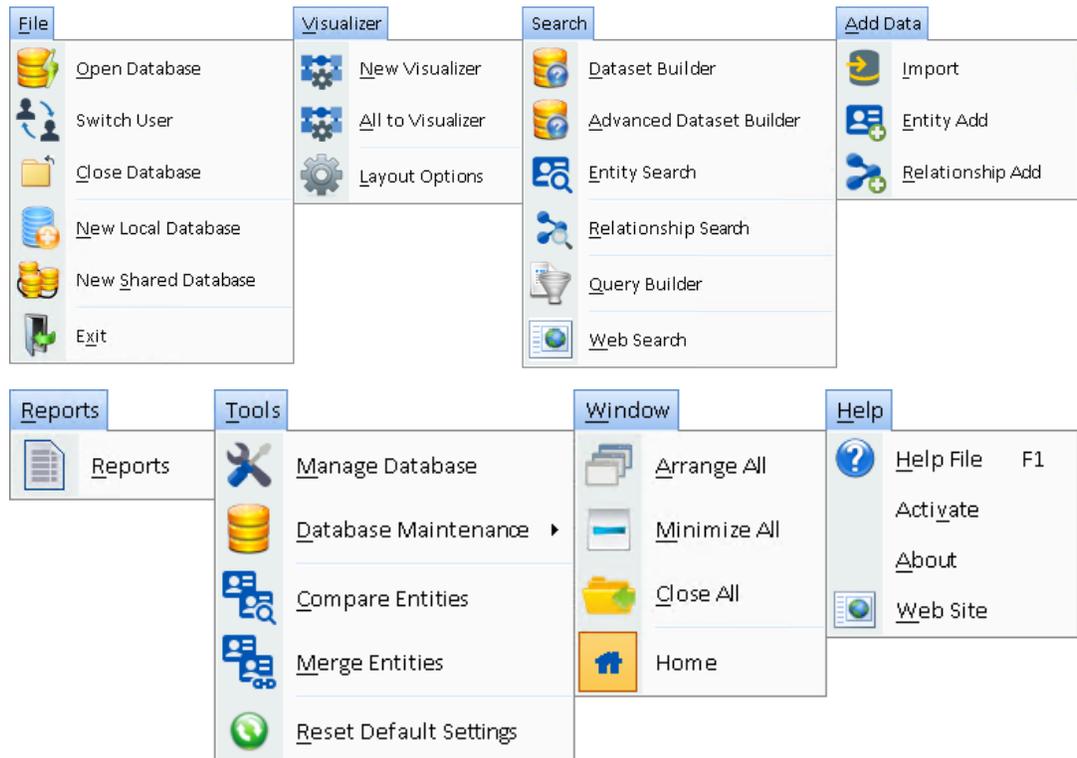
Menu Enhancements

The top menu is reorganized to match left border of the Home Page:

Version 10 Menus



Version 9 Menus



Menu Changes

File

- [New Database] combines [New Local Database] and [New Shared Database] into one.

Visualizer

- [Open Saved Visualizer] opens a saved diagram without opening the Visualizer first.
- [Multiple Visualizer Analysis] combines and compares multiple saved diagrams.

Search

- [Combine Multiple Searches] selects multiple saved entity and relationship searches to show all or only common items among them.

Add Data

- [Import Wizard] simplifies creating a new import with a Wizard.
- [New Import] is the button that opens an empty Import form.

View (replaces Reports)

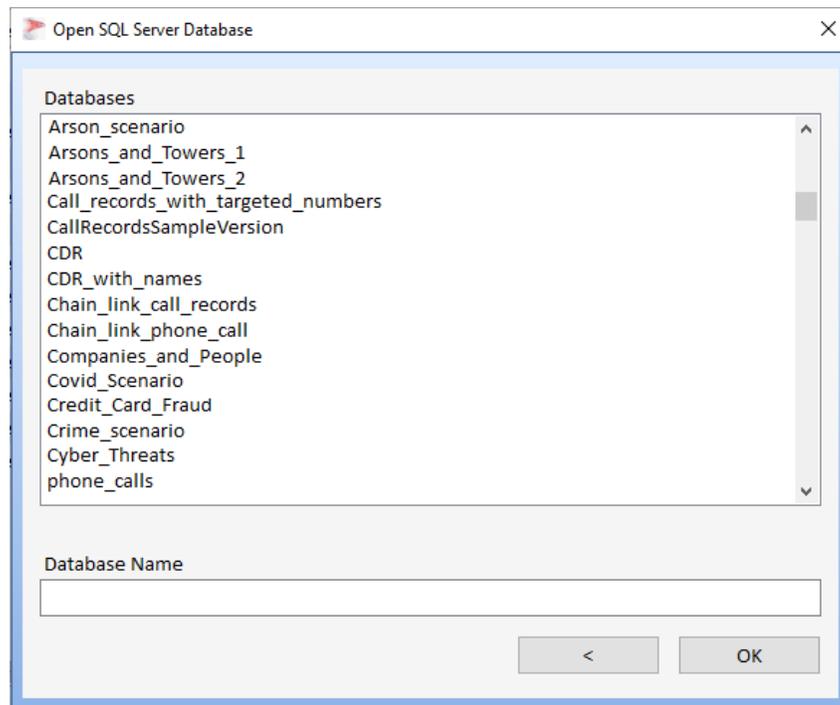
- New items to view lists of entities and relationships without using the dataset builder.

Help

- [Check for Update] to see if you are running the latest version of the program.

Open Database Wizard

When opening a database, a dialog appears with your most recently opened databases. If your database is not in the list, add it with a new Wizard that simplifies the selection process. Enter your server and credentials, if any, then see the list of databases to select.



Select a database from the list or type letters in the Database Name box to filter it before selecting one and pressing [OK].

Text Filter on Many Forms

In addition to the Home Page, a search box makes it easy to filter the records in several grids by typing in a few letters.



Text Search

This exists on the entity and relationship search pages, dataset builder results, query builder results, lookup table management, import preview, and other forms.

Enhancements in Earlier Versions

For lists of enhancements in version 9 and earlier, please visit our web site:

Sentinel Visualizer Version	Function
9	http://SentinelVisualizer.com/go.aspx?id=9
8	http://SentinelVisualizer.com/go.aspx?id=8
7	http://SentinelVisualizer.com/go.aspx?id=7
6	http://SentinelVisualizer.com/go.aspx?id=6
5	http://SentinelVisualizer.com/go.aspx?id=5

Contact Us

For more information, visit our website: <https://SentinelVisualizer.com>

To request a free trial, visit: <https://SentinelVisualizer.com/free-trial.aspx>

For the entire user manual, visit

https://SentinelVisualizer.com/LinkAnalysis/user_manual/version10.htm