Using Onodo to visualise company ownership networks

[for the Youtube description:

- Have a look at the product of the tutorial.
- Onodo offers short tutorials https://onodo.org/tutorials
- Background info on finding company information: Blog finding BO info
- Five tips and tricks to find out what extractives companies tell their investors]

Introduction

About Onodo

Onodo was created in 2015 by the Spanish civil societal organisation Civio. Its goal is to visualise complex networks and to support your story-telling. Because Onodo is easy to use, the target audience does not need any technical knowledge to construct a network visualization. You can use Onodo to visualize company ownership networks to better understand the relations between different actors, may it be persons, companies or locations as well as their magnitude of influence.

In the context of extractives, Onodo can be used to visualise corporate ownership networks, web of payments between companies and governments, map the influence of politically exposed persons (PEPs), the use of service companies by the government or any other network of entities as well as contractual arrangements.

Visualising complex relationships: Mapping beneficial owners in oil&gas in Nigeria

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You can register for free, however, you will need an internet connection to work on the visualization. Since most of the work is preparing the data, this part can also be done offline using a [spreadsheet software](#).

About the use-case

The 2016 EITI standard requires companies to report on their beneficial owners (BO). Many company networks are not too easy to understand. For instance, from the EITI information, it is not always apparent if company owns different operations within a country. There is not always a uniform naming convention, and the chain of intermediate companies reported on can change from one company to the other.

In this example, we use information from [Zambia's 2015 EITI annual report](#). Most of the information was downloaded from the EITI website. Luckily, Zambia publishes the BO information in a separate annex as XLS, in annex 3.

You can have a look at the product [here](#).

The basics

- Practical tips:
  - Your work is saved automatically
  - Should you fail to see changes in the visualisation after altering the data input, hit the refresh button, as the visualisation sometimes freezes

When you start a new project on Onodo, you can either start from scratch, using a blank table, or import a spreadsheet, or import already available data. Let's first start looking at how Onodo works by creating a blank page.

The page is divided in two parts. A visualisation part at the top, and a table to input the data at the bottom. On the left, you have two tabs; one on the nodes, and one on their relations. On the right, you can adjust each tab by adding a new node or relation, add a column or do a network analysis.

The node tab

In the *Nodes* tab, you can add nodes, ascribe them to a type, add a description and an image. The *Node* column is straightforward, type in the name of the node.

The *type* column is an identifier that can make it visually look like any other node you enter later. If you enter the type name once, it will later reappear in the drop-down menu.

The *description* column is useful for story-telling. By clicking on the node, a sidebar opens in which your text appears. You can make minimal font changes and add a link.

The *image* column gives you the opportunity to have a picture instead of a node. The image can be uploaded or directly sourced from the internet. [This visualisation](#) shows you what effects adding a pictures and descriptions can have for a network visualisation.

In the *visible* column, you can decide whether the audience should see the column or not. This can be useful if you want to add a node for the sake of completeness and for those who want to download your table.

Once you have created the node, it should appear on the visualisation plane above. Onodo will give it a random colour. If you add another node and categorise it as the same *type*, the colour should stay the same. Should you give it a different type, the colour will change. This is also reflected in the *legend*, situated on the bottom left side of the visualisation.

Custom column for the node

So far, the only qualifying element of the size and colour of our node is the *type*. We can add other ones (*add custom column*). Be aware that it doesn't seem possible to delete a column once you have inserted it. That is why it is recommended to save a copy of the project early on. For this, go to the top part of the page, click on *actions* and then on *duplicate visualisation*.

Next to supplying additional information, new columns can act as a qualifier for the nodes (such as the type column), altering the colour and size of your nodes.

Name the column and choose from three column types: *String*, *number* or *Boolean*. A *string* is a simple text, which is similar to the *type* column. *Number* is a numerical comparison. A *Boolean* is a binary (for instance yes/no, true/false) category.

Finally, you can also add a *network analysis*. This serves you especially as a user when you are working with larger datasets. The different categories are also described if you hover over the question mark. These categories can also be used as qualifying element for the node sizes or colours.

Changing colour of the nodes

In the *settings*, you can modify the visualisation of the nodes. You can do so by colour or by size.

The colour settings are subdivided in three submenus. You can choose to give all nodes one colour under the sub-menu *solid*.

The sub-menu *quantitative* uses a quantitative qualifier that will signify the differences in different shades of the same colour. For instance, if you add a custom column based in numbers, you can choose this option, and in the second row choose the column.
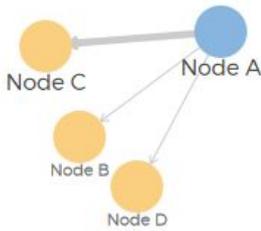

Finally, and this is the custom option, you can choose *qualitative*, which will colour the nodes according to either Boolean or string types (e.g. the *type* column) and colour all nodes within the same category in the same colour.

Changing the size of the nodes

Next to colour, you can change the size of the nodes. Here, you can either choose to keep all nodes at one size, out of which you can choose three (*Small, medium, large, extra large*) or base the size on a *column*. The node size will change if you assign a number-based column.
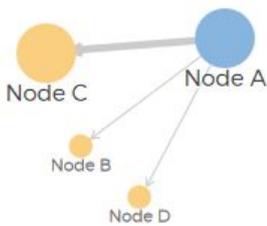
Links

Once you have added the nodes, you can assign their relations in the *links* tab.

By default, the links table has five columns*: source, link, target, date, direction*.

Let's start with the two most important ones: *source* and *target*. These are really the only two important columns you need to have a network visualisation. Depending on whether you want to depict a hierarchy, a chain of events or a movement, it does not matter what is *source* and what is *target*. Just type a node in either column, and they will be connected automatically.

Should you want to depict a hierarchy, a chain of events or a movement, the *source* column is your starting point, and the *target* column the target. If you then choose to depict a *direction*, the arrow will go from the source to the target.

You can change the way the lines are depicted. Go to the settings on the right side of the visualisation plane and on Links. The bottom option *links line style* lets you choose from three different types.

Once you have linked up two nodes, you can also add a description to the relation. This can be done under the *link* column. Make sure the description takes the direction of the arrow into account.

If you then hover over the nodes, the relationship description will appear.

Like in the *nodes* tab, you can also add a custom column and qualify the differences between relations. The most important category in the *settings* is *number*.

As you go to the *settings* and then the links tab, you can change the size of the links relative to the numbers column.

Another way to manipulate the links is under *settings* and *advanced*. Here, you can choose the strength of the links as well as the distance between the nodes. As you change the settings, you can see the outcome directly in the visualisation plane. Play around by pulling the nodes to see how the network visualisation reacts to find your optimum settings.

Finally, you can add a *date* and other columns, *string* or *Boolean*, which will not appear in the visualisation, but can be practical for your story.

Fix nodes

Unfortunately, Onodo does not allow you to directly arrange the visualisation, unless you go to the right side of the visualisation plane and choose *fix nodes*. Before doing this, arrange your nodes the way you would like to freeze them and then choose the fix nodes option.

Importing a spreadsheet

Next to starting from scratch, Onodo gives you the opportunity to import data. The accepted format is XLS(X), which is the standard spreadsheet that you can use with Excel, any open document software or google spreadsheet.

However, the data will need to be arranged in a certain way such as it can be read by Onodo and displayed as a table. The easiest way would be to download their template which you can find at the bottom of the *create visualization* page.

The template looks like the table described in the first part of this tutorial. You have a *Nodes* and a *Relations* sheet with the basic columns, to which you can add more.

The *visible* column in *Nodes* and the *directed* column in *Relations* are Booleans, which means that 1 means yes and thus show and 0 no and thus don't show.

In our use- case, we start with a table ([Annex 3 of the ZEITI report](#)) that includes quite a lot of text and less numbers as well as merged cells. The columns in the original source do not correspond to those in Onodo's template. One solution would be to pre-arrange the data in separate columns.

Breaking down the data

The central concept of Onodo is to visualise complex relations. However, the data input is simple. ***We can only build our visualisation by depicting one node and one relation at a time***.

In the ZEITI annex, we see the operation as our starting point, and the owning parties on the right, whereby one operation can have two or more merged cells enumerating the owners. For instance, if an operating company has three owning entities, we will have to make three rows for the relations.

After having pre-organised our data, we still need to describe the nodes. Here, we take each operating and owning company apart and describe them as individual nodes.

Adding a custom column

Adding a custom column in your spreadsheet, for instance on percentage interest, is easy. You just add a column, give it a name and type in the numbers. Onodo will auto detect that this column is a *numbers* column.

You can also add a custom string column, which is plain text. If you want to add a Boolean, you can either do this by adding 1 or 0 or two categories, like yes and no, member and non-member etc.

Once the data is arranged and you have filled out the Nodes and Relations spreadsheet, you can upload it on the *create visualization* page.

When you click on *create*, the visualisation should directly appear on the visualisation plane. Here, you can already see whether you have cleaned the data well. If you forgot to add relations, nodes would be floating around freely. You can manually make changes to the data.

Sharing

Before sharing, you need to publish your visualisation. This will make it appear in the *gallery* section of the website and open it to the public. Anyone can download your dataset and duplicate it.

You can unpublish your project at any time.

If you click on *share* on the right side of the visualisation plane, you can also get a permalink and an embed code for your website or blog.