

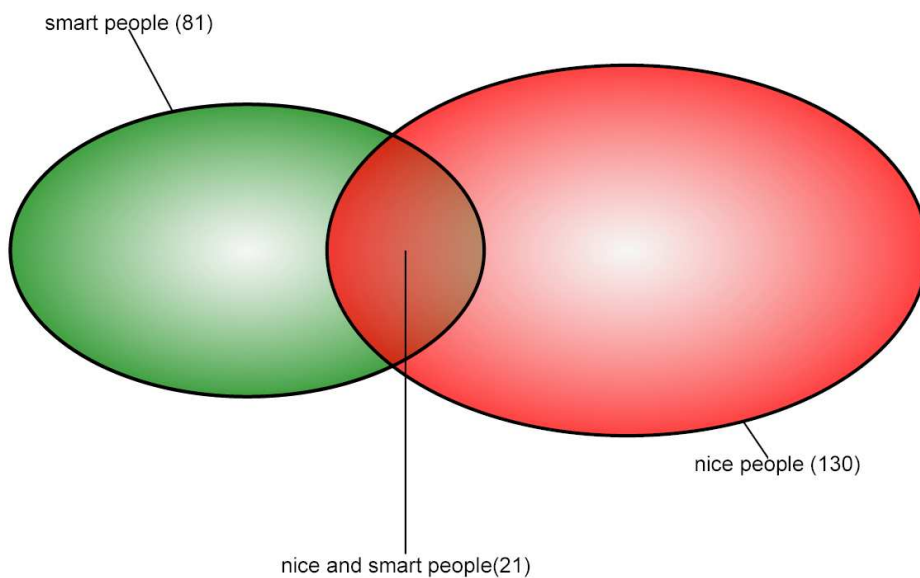
Xenn

When I needed to create some Venn diagrams for a report, I was surprised that I could not find an easy to use tool to create them for me (e.g. in Excel) so I would not have to drag circles manually and hope for correctness. There are some commercial tools available, but none that I could get working easily. So what do you do then? You create your own. This one is called Xenn and it is a single XSLT file that can transform XML files that contain the data into SVG images.

Features

Xenn is a simple tool for generating nice looking Venn Diagrams that look like this

example Xenn diagram



It allows you to customize the resulting image by

- Changing the data itself (of course); you have to specify the size of both groups, and the size of the overlap. You can provide names for both groups, and (optionally) a title for the overlap area
- You can add a chart title
- You can change the colors of both ellipses

Input Data

Xenn is a single XSLT file. It assumes the data has the following form:

```
<data>
  <venn title="example Xenn diagram" overlap="21" overlaptitle="nice and
    smart people">
    <elt title="smart people" value="81" color="green" />
    <elt title="nice people" value="130" color="red" />
  </venn>
</data>
```

There should be a single “venn” element. The overlap attribute contains the number representing the count of elements that should be in the overlap area. If an attribute “overlaptitle” is present, that title is shown too (but this is not required).

There should be exactly two “elt” elements, with values. Of course the overlap should be less than the two values. If you want, you can specify the colors of the circles (in CSS entities or exact colors)

Execution Instructions

It is only an XSLT file. You can run it with any XSLT engine on live data (like in a web server generating venn diagrams) or on static data. I have used Apache Ant (ant.apache.org) to create a simple script to actually produce the images. The Ant script looks like this (and is included in the distribution package)

```
<project name="Xenn" default="go">
  <target name="go">
    <xslt style="xenn.xslt" in="data.xml" out="xenndiagram.svg" />
  </target>
</project>
```

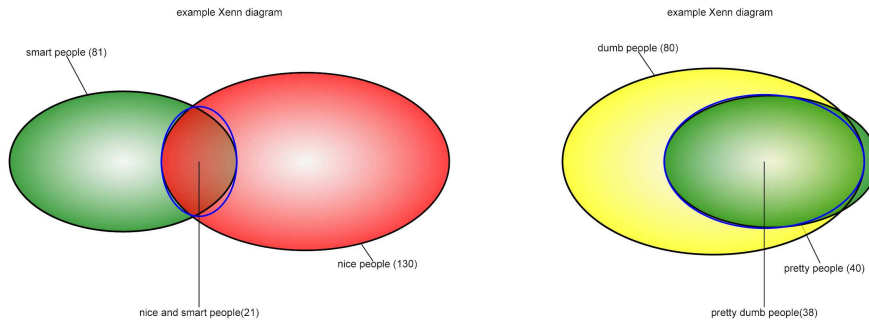
Isn't that beautiful? I'm sure you can change the script (and even the XSLT) to create your own useful versions of it. If you have something nice, let me know at anne@veling.nl

Mathematics

Why the ellipses? Why not circles? Because circles would be boring. And too easy. And the ellipses

just look much nicer. The ellipses all have a height/width ratio of $\frac{1+\sqrt{5}}{2}$ which is the golden

ratio. I was surprised (again) that it seems there is no mathematical formula to compute the overlap of two overlapping ellipses... Or I was too stupid to find it. If the ellipses are not overlapping too much, you can do some tricks by using pie cutouts, but not good enough for me. So I played around myself and found actually a nice way to estimate it.



It looked to me that if the overlap is small enough (relative to the total size of the circles), the overlap area resembles a vertical ellipse itself. And if the overlap gets really large (almost eating up one ellipse), the overlap looks like a horizontal ellipse. An ellipse is like a circle where the horizontal radius is different to the vertical radius. So I used a new function of ‘circliness’ (i.e. the degree to which something looks like a circle) that will change depending on the relative sizes of both circles, and used that to position this little helper ellipse in exactly the right place between the two ellipses, so that its area would be the overlap. There is a small error here of course (look at the blue circle line above) but I find that error negligible.

Blabla

This tool was created by Anne Veling of ENJOY Software and is free to use for whatever you may think it can be used. No guarantees or warranties whatsoever though. I would appreciate an email if you like or dislike the tool. You may contact me at anne@veling.nl