Assignment 4: Dashboard design

You get a lot of time for each assignment. Therefore, we ask you to take:

- Proper time for thinking: do not get stuck on the first reasonable idea, but think further if there are other options. Weigh the advantages and disadvantages.
- Proper time for considering visualization options.
- Proper time for reporting: avoid typos, substandard layout, inconsistent terminology, etc.

Research is all about being careful and taking time to do it right. All assignments can be solved in half the time, but this is not what we expect you to do.

Handing in assignments: Use e-mail and send to Marc (m.j.vankreveld@uu.nl). Use a specific format for the file name: INFOMSCIP-4-Y.pdf and Y is the group number. The pdf itself should start with the names and student numbers of everyone in the group. Always cc the whole group when submitting an assignment.

Assignment: Study different charts and maps used in information visualization. In particular, Wikipedia has a page on information visualization that links to other pages on heat maps, choropleth maps, dendrograms, parallel component plots, etc. Study all of these standard ways of visualizing data. But there are more: proportional symbol maps, scatterplots, histograms, etc. Also study the slides of the lecture, and finally, perform a Google Image search on “dashboard” to see many examples.

Given a data set concerning data about forest fires. Imagine a country with a lot of forest nature, and a data set of forest fires occurring in the last 50 years. For each fire, we have

- Date of start (date)
- Start location (point)
- Human or natural cause
- Number of days until under control (integer)
- Loss of biomass (value)
- Loss of property (Euros)
- Region affected/burned (polygon)
- Main wind speed and direction at outbreak of fire (vector)

Assume that we have this data for 40 fires.

Design a dashboard that can visualize (part of) this data set. Show a mockup image of the dashboard, based on data that you fabricate yourself. The mockup is simply a well-designed image; the interaction that will be possible in the real dashboard can be explained in text or will be obvious. The mockup should show at least four different views (which can be maps, bar charts, etc.) and should tell a story (or send a message). Also, give this story that the map is telling. You need not use all the data, just the part that is needed for your story. Pay attention to the organization of the views in the dashboard, the use of colors, the labeling of the axes, etc. Make it look professional; use a good drawing or visual design program.

Besides the dashboard and the story, explain for each view why you chose this visualization for the data it shows. In other words, motivate the choices that you made in the ways of visualizing the data. Typically, use four paragraphs (one per view).

Finally, discuss what you would have to do differently if the data set contains 800 fires instead of 40. Many information visualization methods do not scale up well. For example, a parallel component plot can have 20-40 lines, or maybe even 100, but 800 is really too much to see anything. Typically, use two paragraphs for the part on scaling up to 800 fires.

The dashboard itself (the image) should be one A4 page and the accompanying text should be at least 2 and at most 3 pages A4. Use Latex.

Time investment: 2x2 hours (each) of brainstorming and making choices, 12 hours (total) to make a dashboard mockup and another 4 hours (total) to write accompanying text. Another 1-2 hours (each) for checking and improving. Per person: approximately 10 hours. Please specify the hours each of you spent, with a very brief description.

Deadline: Saturday October 10, 2019 at 11am. Remember to cc the whole group.

Assessment criteria: Suitable choice of a story (10%), design of the dashboard globally (layout, color use, 20%), design of each individual visualization (30%), contents of the text (detailed choices for each view including use of colors, discussion on scale-up 20%), quality of the hand-in (careful explanation, proper argumentation, layout, structure, language, 20%).