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Topic (iii): Accessibility and usability of IT applications

PX-Map2 VISUALIZES YOUR DATA IN DYNAMIC MAPS

Invited Paper

Prepared by Marianne Vik Dysterud, Statistics Norway, Norway

I. INTRODUCTION

1. In recent years Statistics Norway, in line with the majority of National Statistical Institutes, has increased the use of thematic maps and other graphic means in different ways of disseminating statistics. This is due to the educational impact provided by visual views compared to traditional tables. The first maps produced for presenting statistics were made by consultants. The demand for thematic maps was increasing. Statistics Norway decided to develop in-house systems for production of thematic maps. No off-the-shelf products were considered satisfactory. The main reasons for this are

- Price/performance considerations compared to our needs
- Complexity of user-interface
- Interfaces with statistical data/statistical databases

2. PX-Map is one of the contributions to the PC-Axis Family from Statistics Norway. The former versions of PX-Map were developed in 2 different developing environments. PX-Map 1.x – the Windows version - was developed in Visual Basic, and PX-iMap - the Web version - was developed in ASP. When further developments were demanded, Statistics Norway decided to freeze the existing PX-Map modules and start from scratch, developing source code that easily could be utilized for both Windows environment and Web environment. The choice of development technology and tools were .Net, C# and Java Scripts (js). Another important change was replacing ESRI shape file format for basic map data with the format Scalable Vector Graphic (SVG).

3. As the previous versions of PX-Map, the new PX-Map2 supports PC-Axis file format as well as character separated text files for the statistical input data.

II. RUNNING PX-MAP2

A. PX-Map2 in different environments

4. PX-Map2 can run as a Standalone program, as an embedded module from PC-Axis or other Windows applications, and as an embedded module in a Web Server application.

B. System Requirements

5. The machine intended to run PX-Map2 requires Microsoft .NET Framework installed as well as the program itself. The browser needs SVG-support..

III. FUNCTIONALITIES AND USER ADAPTATIONS IN PX-MAP2

6. PX-Map2 has some more functionality than the former versions. Some new possibilities are:

- several variables in one dataset;
- symbol maps with pies;
- symbol maps with charts;
- symbol maps with circles in different colours for negative and positive figures;
- tool tips in symbol maps;
- choropleth maps with 2 colour scales round a user defined threshold value;
- scrolling a variable produces “fake” animation;
- pointing to a region in the map highlights the corresponding bar in the Data Distribution View and opposite: the corresponding region is highlighted when pointing to a bar in the Data Distribution View;
- End user settings of colours are stored in Cookies.

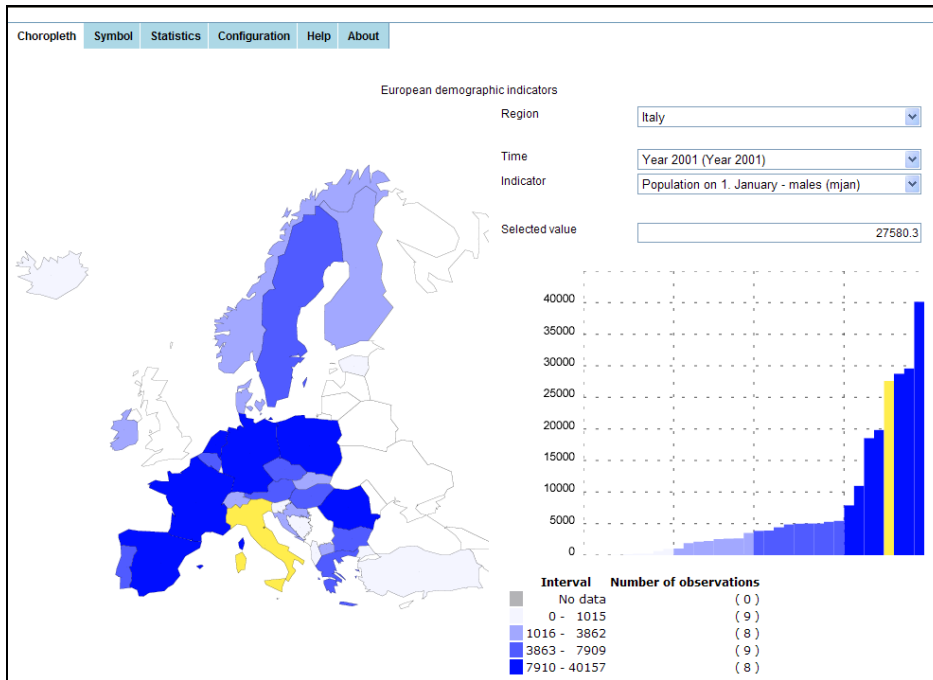
7. Adaptations of parameters that change more rarely could be set in the configuration file. Some of these parameters are default values for language, fonts, classification type, number of classes and colours of different objects among others.

8. The “fixed” texts in PX-Map2’s different views and error messages can easily be translated to a country’s own language. PX-Map2 has an XML-file (Language.xml) that should include all fixed texts in different languages. This xml-file can be edited in a common text editor like Notepad or in a more advanced XML-editor like XMLSpy. The figure shows some few sections of the Language.xml file.

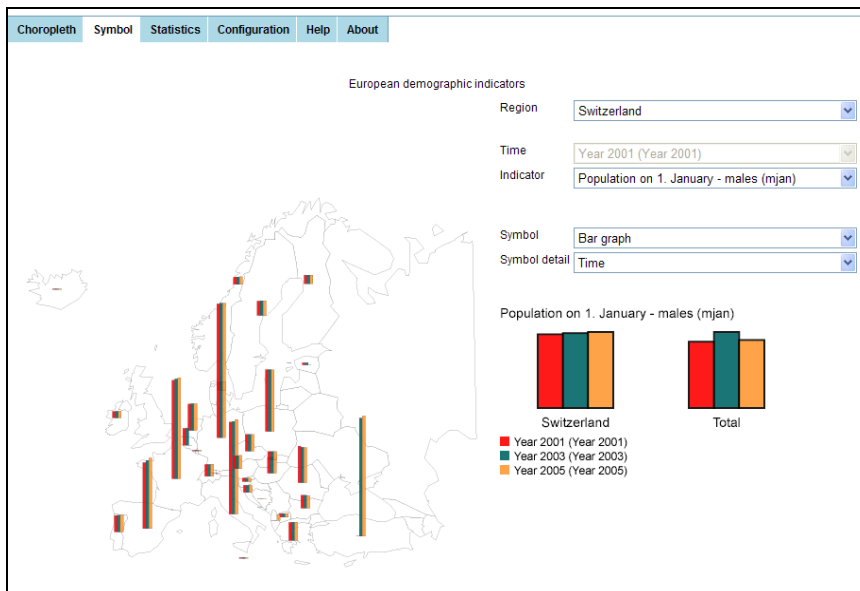
```
<?xml version="1.0" encoding="UTF-8" ?>
<Language version="1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="language.xsd">
  <Phrase id="Map">
    <Translation lang="en">Map</Translation>
    <Translation lang="nb-NO">Kart</Translation>
    <Translation lang="LL">xxxxxx</Translation>
  </Phrase>
  ...
  <Phrase id="Average">
    <Translation lang="en">Average</Translation>
    <Translation lang="nb-NO">Gjennomsnitt</Translation>
    <Translation lang="LL">xxxxxx</Translation>
  </Phrase>
  ...
  <Phrase id="ColorScale">
    <Translation lang="en">Colourscale</Translation>
    <Translation lang="nb-NO">Fargeskala</Translation>
    <Translation lang="LL">xxxxxxx</Translation>
  </Phrase>
  ...
  <Phrase id="HelpSVGGeneral">
    <Translation lang="en">Press the right mousebutton for General SVG-functionality</Translation>
    <Translation lang="nb-NO">Press høyre museknapp for generell SVG-funksjonalitet</Translation>
    <Translation lang="LL">xxx x xxxxx</Translation>
  </Phrase>
  ...
</Language>
```

9. The different Phrase id sections can be extended by an unlimited number of lines depending on how many different languages the user wants. If the example above should be adapted for Spanish language the letters LL should be replaced by es and all xxxxxx should be translated to Spanish according to the English (en) text within each Phrase id section.

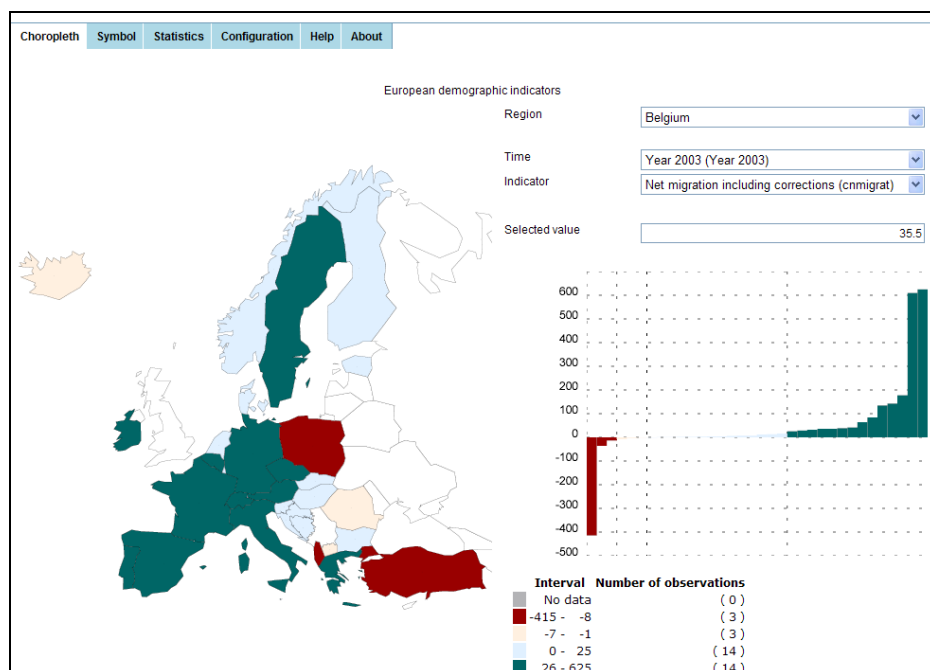
IV. ILLUSTRATION EXAMPLES OF PX-MAP2



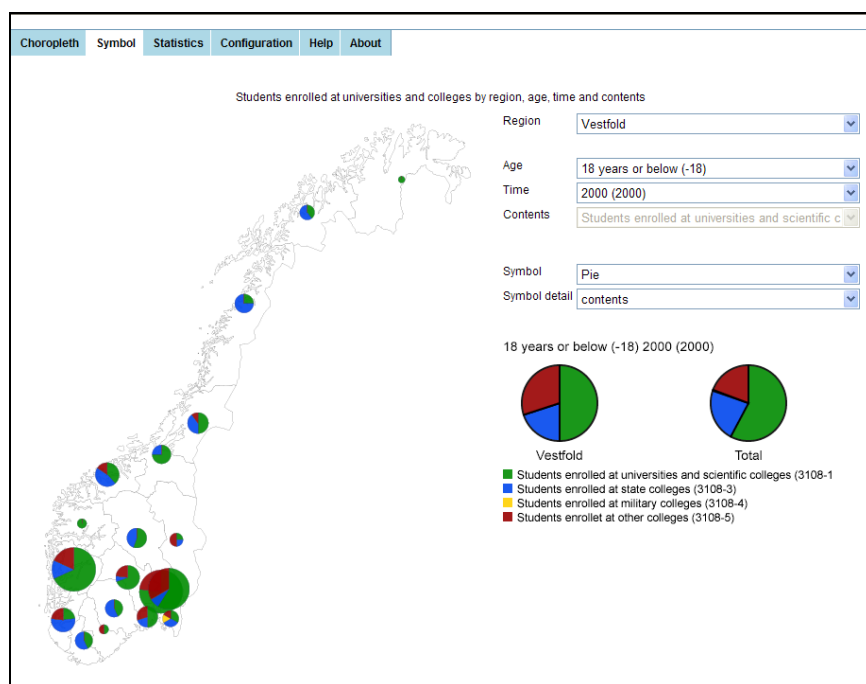
The figure illustrates dynamic links between the corresponding value in the map and in the Data Distribution View



The figure illustrates bars used in a symbol map.



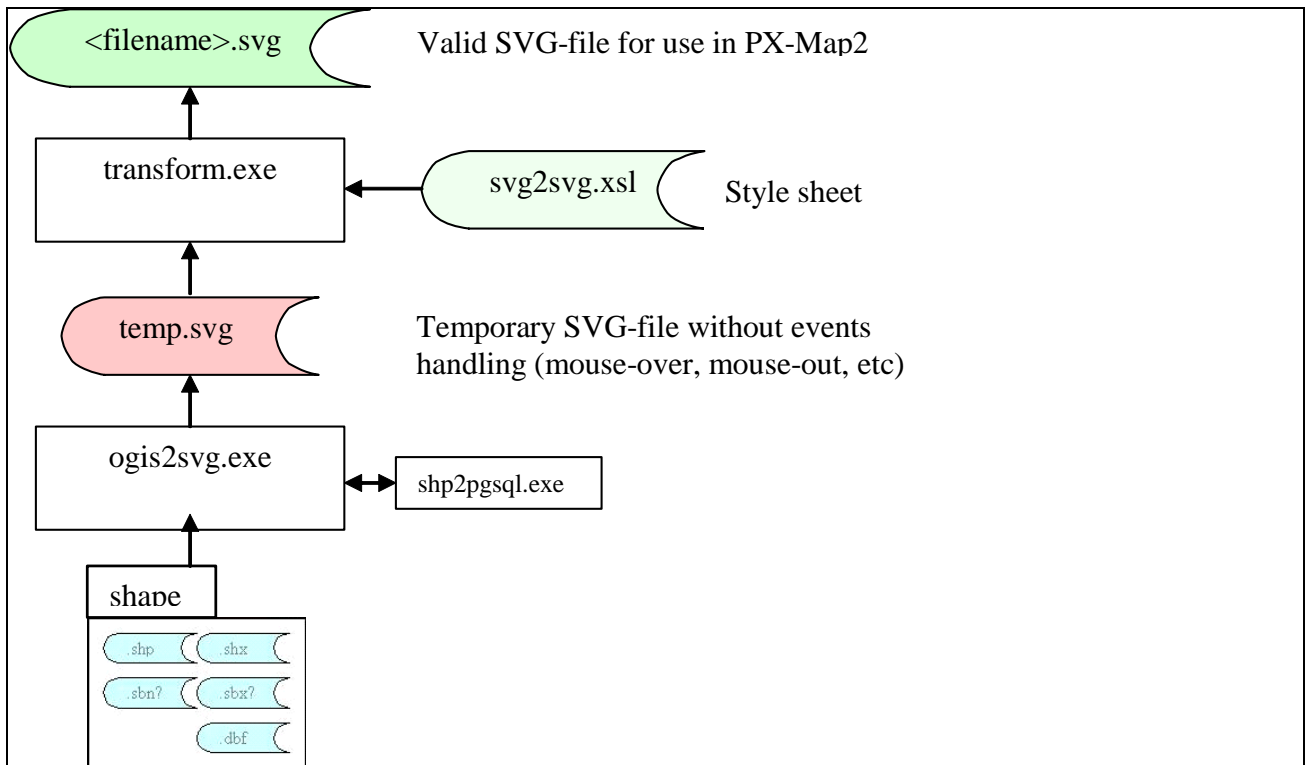
The figure illustrates use of 2 colour scales (threshold value is 0 in this case).



The figure illustrates symbol map with pies.

V. FROM ESRI SHAPE FILES TO PX-MAP2 VALID SVG FILES

10. Statistics Norway has developed a simple routine for converting ESRI Shape files to SVG files ready for use in PX-Map2. The dataflow in the routine is illustrated in the figure below:



The program ogis2svg.exe is downloaded from <http://www.carto.net/papers/svg/utis/shp2svg/>. The program transform.exe is developed in Statistics Norway.

VI. TEMPORARILY LIMITATIONS AND POSSIBLE IMPROVEMENTS

A. Browsers and SVG-viewers

11. PX-Map2 supports for the time being only one browser, which is Microsoft IE. This browser requires Adobe SVG reader to run PX-Map2. Currently Firefox is reviewed in order to support PX-Map2. Firefox has native SVG-support.

B. Performance

12. Some performance problems may occur due to the number of polygons (regions) in the map combined with the number of values in the data array.

C. Improvements

13. PX-Map2 is supposed to be further developed and improved from the end of 2007.

VII. Contacts

14. e-mail: marianne.vik.dysterud@ssb.no or pxmap@ssb.no

More information and downloads at: www.ssb.no/pxmap.
