ESPON

RIMAP

(112_PR3_08_0477)

Design and Development of Rich Internet Online Mapping Tool

Scientific Platform and Tools Project 2013/3/8

Interim Report
14/12/2012

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This report presents a more detailed overview of the analytical approach to be applied by the project. This “Scientific Platform and Tools” Project is conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

Information on the ESPON Programme and projects can be found on www.espon.eu

The web site provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

This basic report exists only in an electronic version.

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List of authors

AIDICO – Technological Institute of Construction
(Spain)

Sergio Muñoz
Marcos Ros
Rubén Navarro
Rafa Porcar
Patricia Martínez
Lucía Irusta

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[1] The listing of the elements included here should serve as a reminder of the standard elements that need to be covered by an Inception Report. The concrete content might vary from project to project. The level of detail to which these standard elements need to be addressed also depends on the quality of the project proposal and the level of detail to which some of these elements might already have been addressed there. Therefore the table of content for the report can be devised by the TPG, taking into account the elements that are requested to be dealt with in this report.

Executive Summary

The RIMAP Interim Report covers the work done during the first period of the RIMAP project, between July and June December 2012.
According to Annex III of RIMAP Subsidy Contract (dated on 29th March 2012) the Interim Report shall include the following results:

- First beta-version of the Online Mapping Tool including the main structure of the tool and a linkage to the ESPON 2013 Database.
- Prototype of the remaining parts of the Online Mapping Tool.
- Table of Content for the user guidelines including a proposal for structuring the explanatory sections.
- Short reporting of the activities, both planned and realised, resolution of problems and definition of delimitations.
- Work plan until the Draft Final Report.

Taking it into account, this report is divided into 4 main sections:

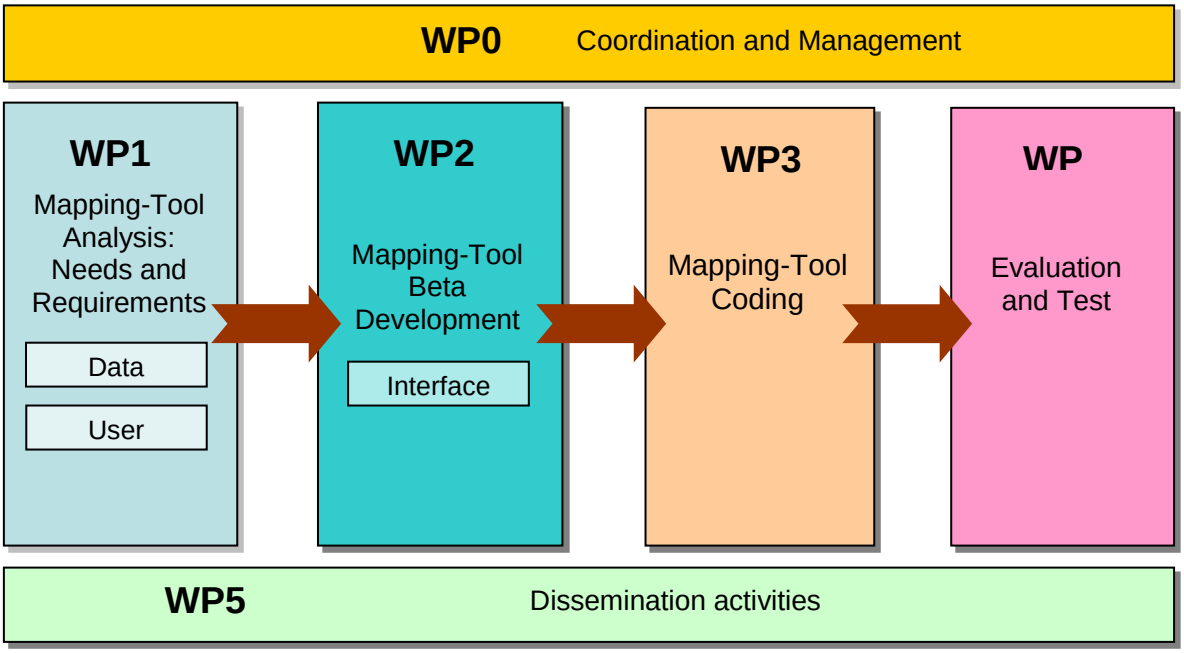
- ❖ Overview of the Interim Period.
- ❖ Results achieved.
- ❖ Orientation of the project previewed towards the Draft Final Report.
- ❖ Annexes.

1. Overview of the Interim Period.

RIMAP (Rich Internet MAPping Tool) is conceived for an On-line tool development upon ESPON 2013 Database. This tool will be online, made available via ESPON website and should provide a toolbox to visualise and analyse data in maps and diagrams. The main target is to fill the gap between disseminating data in tables and disseminating data in fixed and interactive maps.

If during the Inception period the main goal was to define the User and Data Requirements and de Architecture of the platform, in this period the main goal is translate these Requirements into a Prototype of the Mapping Tool.

Taking a look the work plan (see figures 1 and 2), in this period RIMAP team has been working mainly in the WP2, though some improvements of the WP1 have done too.



Gantt Chart	YEAR 1 quarter				YEAR 2 quarter			
	1	2	3	4	1	2	3	4
WP0 - Coordination and Management								
WP1 – Mapping-Tool Analysis: Needs and Requirements								
WP2 – Mapping-Tool Beta Development								
WP3 – Mapping-Tool Coding								
WP4 – Evaluation and Test								
WP5 – Dissemination and Exploitation activities								

1.1. Work Package 0 – Coordination and Management.

The aim of this WP is to establish an effective coordination and decision structure to adequately address the following objectives:

- Assure the execution of work packages and deliverables in terms of execution time, cost and adequate quality.
- Specify project objectives to be achieved within the estimated time and cost frame.
- Ensure communication between ESPON and external.
- Organization and coordination of project start, meetings and workshops.
- Coordination of networking activities.

Regarding the Progress monitoring of RIMAP, there will be regular content deliveries, which will contain the detailed implementation of the project, the deliverables and the planning for the next reporting period:

- Inception Report (June 2012).
- **Interim Report (December 2012).**
- **Draft Final Report (September 2013).**
- **Final Report (December 2013).**

Furthermore, complete financial delivery (progress reports) will be submitted each six months period (according to point 5.3 of Subsidy Contract). These financial reports will be validated by the first level control (appointed by AIDICO in a decentralized system) *(see Annex A-2).*

The first progress report was delivered past July.

1.2. Work Package 1 – Mapping-Tool Analysis: Needs and Requirements.

The aim of this WP is to analyze the needs and requirements of the Mapping-Tool since different points of view:

- Data: Indicators and Geographical Info may be analyzed in order to define how must be shown.
- Users: Is very important to define user capacities in order to develop and easy and friendly tool.

This information will be used to design the architecture of the Mapping-Tool through these actions:

- Selection of platforms and language development.
- Architecture design.
- Interface design.

Deliverables
D1 User and Data Needs and Requirements Report (June 2012).
D3 Architecture Design Report (June 2012).

1.3. Work Package 2 – Mapping-Tool Beta Development.

The aim of this work package is to develop a Mapping Tool prototype which can be used to verify the understanding about user needs and requirements.

It's very important to work closely with database TPG 2013, in order to make a good connection.

Development of a Mapping-Tool functional prototype for each device (computer, tablet) will be done as a limited representation of the final tool will be developed, allowing test real situations and explore the user experience.

Deliverables

D6 First beta-version of the Online Mapping tool (December 2012).
D7 Table of Content for the user guidelines (December 2012).

1.4. Work Package 5 – Dissemination Activities.

To carry out activities to disseminate research results and to prepare for their take-up and use, including knowledge management and, activities directly related to the protection of foreground.
A dissemination plan will be made at the beginning of the project (following the indications in Annex III of the Subsidy Contract). RIMAP project Communication and Dissemination Plan are structured in the following elements:

- Objectives and stakeholders.
- Strategy, Activities and tools selected.
- Estimated budget to put into practice these actions.
- Main expected results.
- EC and ESPON Requirements.

2. Results achieved

During the first period of the project, some tasks have been developed related to WP0, WP1, WP2 and WP5.

2.1. User and Data Needs and Requirements

The developing of a web mapping tool project needs some tasks that are focused specifically on identifying, gathering, communicating, and documenting user requirements. Once identified, the user requirements effectively define the basis for developers, testers, and implementers to begin determining the functionality, responsiveness and interoperability required of that system.

In the Inception Report, a deliverable **D1 - User and Data Needs and Requirements Report** was developed. However, this deliverable has been improved during this period taking account some MC comments.

Some tasks have been developed in order to improve the Requirements:

- Strengths and Weakness of most relevant existing Mapping Tools.
- New Online Mapping Tool Wireframing.
- User Modes Definition.

2.1.1. Review of the most relevant existing web mapping tools

The call of ESPON collected some websites where other web mapping tools can be found, so we have proceed to the analysis and extract some conclusions from there. Here is the list of the websites analysed:

- OECD Explorer - http://stats.oecd.org/OECDregionalstatistics/
- ECB: Inflation and the euro - http://www.ecb.eu/stats/prices/hicp/html/inflation.en.html
- Indiemapper - http://indiemapper.com/
- Interactive Statistical Atlas of Slovenia - http://www.stat.si/eng/iatlas.asp
- Gapminder - http://www.gapminder.org/world/
- France découverte - http://www.geoclip.fr/danseuse/carto.php?lang=en
- International Human Development Indicators - http://hdr.undp.org/en/data/map/
- Migrant Population Map - http://www.ninis.nisra.gov.uk/mapxtreme/InteractiveMaps/A8Migration/atlas.html
- Mapa interactivo de indicadores - http://www.guiadelmundo.org.uy/cd/indicators/index.htm

We can remark the strengths and weakness of these webtools.

Strengths

- The **tabs** are easy to understand, providing more options or changing them. *OECD Explorer*
- The **charts help to understand and reinforce the information**, which it's been displayed on the maps. *OECD Explorer*
- **Resizing** the charts and the maps to full size helps to the user focusing in the data or the visualization. *OECD Explorer*

- The **timeline** is a very intuitive resource for a variable that it is going to be used very often.

- The use of **dropmenu in indicators selection** is intuitive and saves space in the interface. *OECD Explorer*

- **Tooltips** reinforce the information displaying, are elegant if they have a good design and don't saturate the information display. *ECB: Inflation and the euro*

- Bubble charts are easy to understand and in addition they add other possibilities as basic operations with the indicators. *Gapminder*

- The **information** displayed in the map and the chart **has to be linked**. For example, when you choose a country the information of this country in the graph could be highlighted. *International Human Development Indicators*

Weakness

- **Too many options** in the main screen can cause no expert users don't use the tool because an information **overload**. In addition, with low-resolution screens as tablets or netbooks, it can be difficult to use and understand the information displayed. *OECD Explorer*

- **Too many charts and/or maps** (Three or four) **saturate** the user when he tries to understand the information, which it is been displayed. *ECB: Inflation and the euro*

- The tool has to be used as "it is", too many options and possibilities are confusing for the user. The tool has to be **intuitive with few and useful options**. Furthermore, the learning curve has to be as low as possible. *Indiemapper*

- The user does not need to know all the EU geography, so the tool has to provide some **options for choosing geographic areas in a visual way**. *Interactive Statistical Atlas of Slovenia*

2.1.2. New Online Mapping Tool Wireframing

In this period, the Wireframing has been restyled. The screen is divided in several zones:

User Mode Selection
Select between Basic or Expert Mode

Map Analysis
Select Map Analysis method between 3DMap and Overlays

Map Settings
Configure Map Settings: Study Area, Ranges, Colours, Borders, Fonts, etc.

Graph Selection
Select between Bar Chart, Pie Chart, Time Graph, Scatter Diagram or Frequency Diagram

Open/Save
Open or Save maps or map settings

Export
Export Map, Graph and Data to image or document

Print
Print Preview and Pinter Selection

Help
User Guidelines and Video Tutorials

Pan Controls

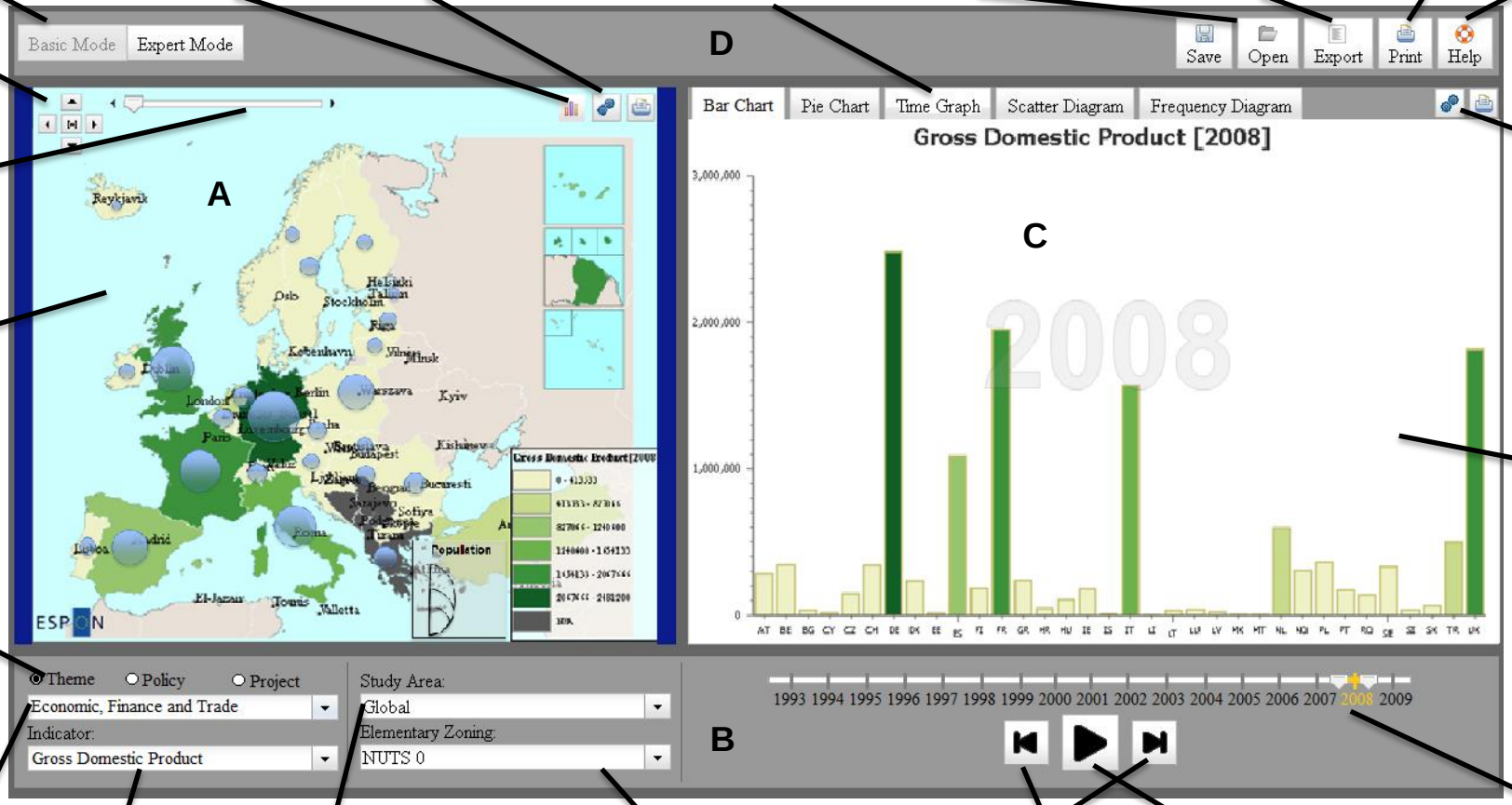
Zoom Controls

Map Window
Regions are mouse sensitive:
Mouseover: show information
One-click: selection
Double-click: Down level

Graph Settings
Configure Graph Settings: Ranges, Colours, Borders, Fonts, etc.

Graph Window
Mouse sensitive:
Mouseover: show information
One-click: Region Selection
Double-click: Down level

Indicators Classification Type
Select between Theme, Policy or Project



Theme/Policy/ Project Selector
Select one Theme, Policy or Project to Filter the Indicator Selection

Indicators Selection
Select one Indicator to visualize in the Map and Graph

Study Area Selection
Select one Study Area between: ESPON, EU-27, Eu-15, own area, etc.

Elementary Zoning Selection
Select Elementary Zoning between: NUTS0, NUTS1, NUTS2, NUTS3, etc.

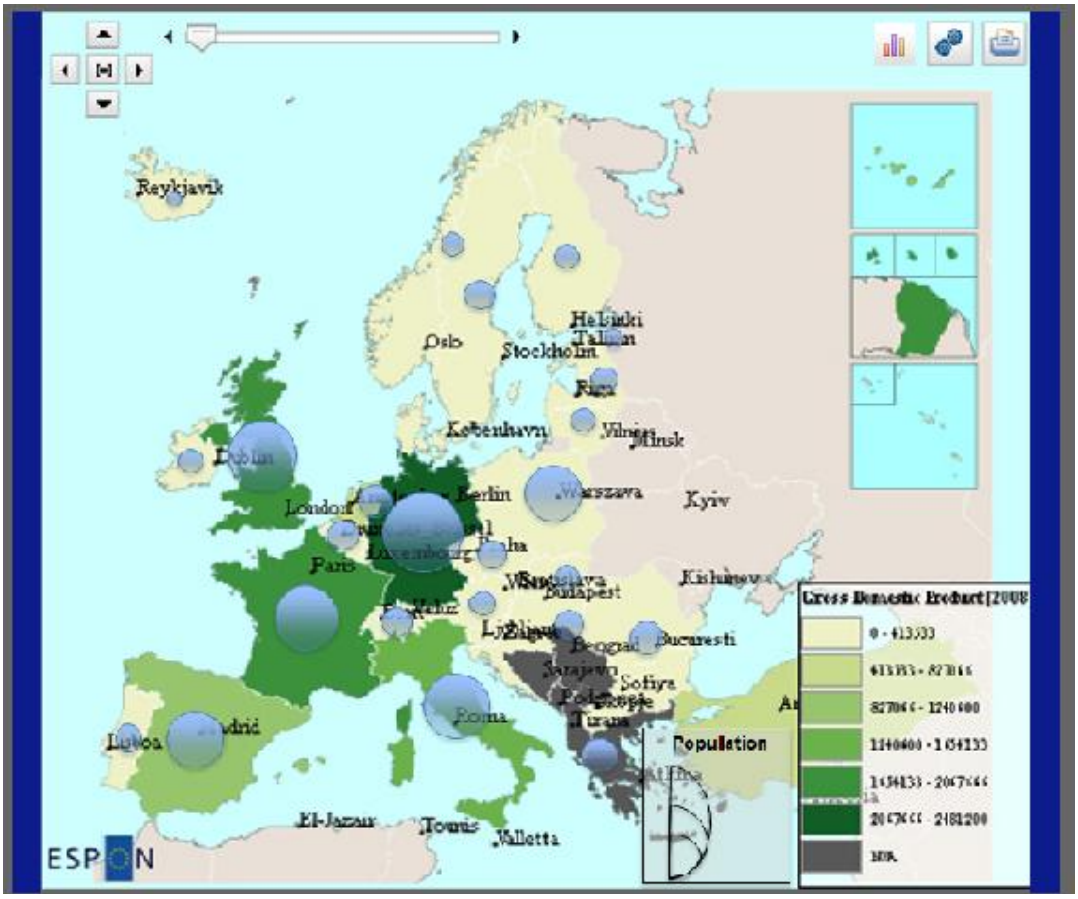
Previous/ Next Step

Play /Stop
Click Play/Stop to control the animation (Map and Graph)

Timeline
Click and drag to change start and end year

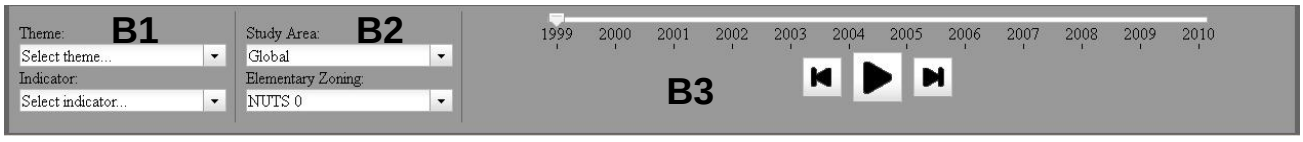
A: Main area for displaying maps. At this area, the user can do the actions:

- This area can be maximized or minimized for easy viewing.
- Zoom in/Zoom out.
- Pan.
- Select regions by mouse click events.
- Show region information by mouse over events.
- Change the Ranges representation.
- Restore to default map settings.
- Create new Study Areas.
- Select Map Analysis tools:
    - 3D Map.
    - Overlays.



B: Area for the temporary selection of which information will be shown. At this area, the user can do the actions:

- Search indicators by theme, policy or project: WHAT.
- Selecting Geographical Study Area and Level: WHERE.
- Selecting Time Period. Play and stop the representation of the temporal evolution of the selected indicators: WHEN.

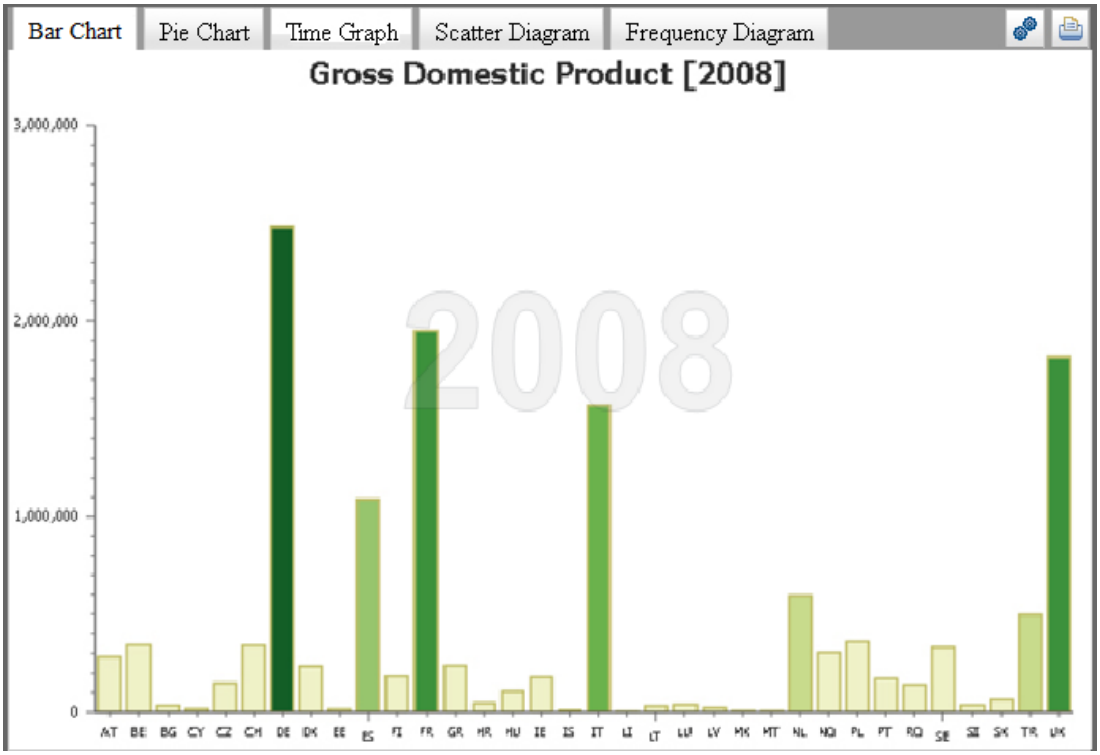


This area is subdivided in several zones:

- B1. Indicators Zone. It's composed by two combo selectors: theme and indicator.
- B2. Geographical Study Area Zone. It's composed by two combo selectors: Geographical Study Area (Global, ESPON, UE-27, UE-15) and Elementary Zoning (NUTS0, NUTS1, NUTS2 and NUTS3).
- B3. Time Zone. It's composed by two sub-zones.
    - A slider bar where user can select the Year or the time window.
    - Some buttons to control the time evolution functionality: play and stop, back-step and next-step.

C: Auxiliary area for displaying graphics. At this area, the user can do the actions:

- This area can be maximized or minimized for easy viewing.
- Tabs for selecting the chart type (Bar, Pie, Time, Scatter or Frequency).



D: Main menu area with icon based access. At this area, the user can do the actions:

- Select Basic or Expert Mode.
- General tool settings.
- General view options:
    - Map Style: Title, borders, font type and font size.
    - Map Ranges: Number, distribution typology, colours.
- Print and Print preview.
- Open/Save Map Settings.
- Export Map: as image (png, pdf, jpg…)
- About Mapping Tool.
- Help and assistance section.

2.1.3. User Modes

Taking account the scenarios and user cases included in the deliverable **D1 - User and Data Needs and Requirements Report**, two well differentiated User profiles have been defined:

- Basic Mode. This mode should be quite simple, offering the most important functionalities.
- Expert Mode. This mode will integrate all the possibilities, integrating some analysis functionalities.

The following table summarizes the functionalities in each Mode taking account the different Domains (Visualization, Analysis, Output, Support):

Domain		Basic Mode	Expert Mode
Data	Indicators	Only main indicators from ESPON Database will be accessible. See Annex I.	All the ESPON Database indicators will be accessible
Data	Indicators Selection	Selection will be by theme in two steps: 1. Theme selection. 2. Indicator selection.	Selection will be by theme, policy or project (theme by default) in three steps: 1. Selection between Theme, Policy or Project; 2. Theme/Policy/Project Selection. 3. Indicator Selection. A keywords search will be integrated too.
Data visualization	Study Area	Predefined study areas, such as ESPON, UE27, UE15, will be available for the user.	Predefined study areas, such as the ESPON, UE27, UE15, Danube region, NWEurope, Baltic Sea and Mediterranean regions, will be available for the user. But the user should also be able to define a study area based on a group of countries and/or regions (NUTS 0, 1, 2, 3, LAU 1, LAU 2). This will be done by selecting them from a list or from the map using the mouse right-button. A button to manage user study areas will be available with these options: Create, modify or delete study areas. • Name of the Study Area. • Regions in the Study Area.
Data visualization	Remark Area	Areas can be remarked (increasing its bright in the map and the graph) clicking over them. Multiple selections will be available by ctrl+click.	Areas can be remarked (increasing its bright in the map and the graph) clicking over them. Multiple selections will be available by ctrl+click.
Data visualization	Geometry Levels	Concerning the geometries and layers will be included in the Mapping tool NUTS0 to NUTS3 geometries.	Concerning the geometries will be included in the Mapping tool: NUTS0 to NUTS3 geometries, geometries for the urban data

			(LAU1 and LAU2), world data and the capital layer.
Data visualization	Down Level	User will be available to descend into a less level by double-click. For example, if Level is NUTS0 and user makes double-click over one country, the new study area will be only this country but divided into NUTS1 Regions. This will affect to Map and Graph Window.	User will be available to descend into a less level by double-click. For example, if Level is NUTS0 and user makes double-click over one country, the new study area will be only this country but divided into NUTS1 Regions. This will affect to Map and Graph Window.
Data visualization	Time evolution	When an indicator is available for a time series the user will have the possibility to view the changes over time in the map and the graph with some time controls: play, next, back, stop.	When an indicator is available for a time series the user will have the possibility to view the changes over time in the map and the graph with some time controls: play, next, back, stop. Moreover, a time window will be available to be selected. The maximum size of this window will depend on the type of graph.
Data visualization	Full Screen	A full screen button will be included in the map window and in the graph window.	A full screen button will be included in the map window and in the graph window.
Data visualization	Map Zoom	Map Zoom in/out is available through buttons or mouse.	Map Zoom in/out is available through buttons or mouse.
Data visualization	Map Pan	Map Pan is available through buttons or mouse.	Map Pan is available through buttons or mouse.
Data visualization	Map Title	The Title is the name of data set.	User will be able to edit the Title (default title is the name of data set), the legend and insert some textual information. Moreover, user will be able to change the font type, size and colour of all texts included in the map
Data visualization	Map Settings	No available	The end-user will be able to open/save the Map-Settings locally in the settings-file of the tool.
Data visualization	Map Ranges	6 lineal Ranges are defined. If positive and negative values are available, then 0 should be used as a break value.	6 lineal Ranges are defined. If positive and negative values are available, then 0 should be used as a break value. User will have the opportunity to change the minimum and/or maximum value, the number of Ranges and the

			type of classification (equal, quantiles, Jenks and manual intervals) and if 0 is a break value. Quantiles distribution would be: • 10, 50, 90. • 25, 50, 75. • 5, 25, 50, 75, 95. A restore option (to default classification) will be available.
Data visualization	Maps Colours Scheme	A default colour scheme will be available.	A default colour scheme will be available. User will have the opportunity to make changes in the colour scheme from a set of 8 different colour schemes (see Annexx II). Moreover User will be able to create a new colour scheme. User will also be able to change the colours of regions with no data, non-ESPON regions and the sea. A restore option (to default colour scheme) will be available.
Data visualization	Map Capitals	As a default the capitals will be indicated in the map displayed by their names and a symbol (•).User will have the opportunity to select if they are displayed or not.	As a default the capitals will be indicated in the map displayed by their names and a symbol (•). User will have the opportunity to make some changes in this in the font type, font size, colour, symbol, symbol size and colour and if they are displayed or not. A restore option (to default view) will be available.
Data visualization	Map Borders	As a default the borders should have a fixed setting on thickness and colour of the lines.	As a default the borders should have a fixed setting on thickness and colour of the lines. The user will have the opportunity to change the visualisation of the borders regions separately changing the thickness and colour of the border line and if they are displayed or not. A restore option (to default view) will be available.

Data visualization	Map Contextual Information	The user will also be able to retrieve information from the map by hovering over it, to retrieve information about the values in the map. The information that will be displayed is the name and code of the region, the value of the data displayed and some contextual information about the data displayed.	The user will also be able to retrieve information from the map by hovering over it, to retrieve information about the values in the map. The information that will be displayed is the name and code of the region, the value of the data displayed and some contextual information about the data displayed.
Geographical Comparison	Bar Chart	Some possibilities will be available: • 1 Indicator selected, Study Area Selected, 1 Year Selected. • 1 Indicator selected, Study Area Selected, 2 or 3 Years Selected. A Maximum of 15 regions will be shown at same time. A scroll bar will keep showing the other regions.	Some possibilities will be available: • 1 Indicator selected, Study Area Selected, 1 Year Selected. • 1 Indicator selected, Study Area Selected, 2 or 3 Years Selected. A Maximum of 15 regions will be shown at same time. A scroll bar will keep showing the other regions.
Geographical Comparison	Bar Chart Sort	In a Bar Chart, data will be available to be sorted by: • Alphabetic. • Ascending. • Descending.	In a Bar Chart, data will be available to be sorted by: • Alphabetic. • Ascending. • Descending.
Geographical Comparison	Bar Chart Average	A line with average value will be able to be shown or not.	A line with average value will be able to be shown or not.
Geographical Comparison	Pie Chart	Some possibilities will be available: • 1 Indicator selected, Study Area Selected, 1 Year Selected. • 1 Indicator selected, Study Area Selected, 2 or 3 or 4 Years Selected. 2 or 3 or 4 pies will be shown in this case. A Maximum number of regions will be shown at same time.	Some possibilities will be available: • 1 Indicator selected, Study Area Selected, 1 Year Selected. • 1 Indicator selected, Study Area Selected, 2 or 3 Years Selected. 2 or 3 or 4 pies will be shown in this case. A Maximum number of regions will be shown at same time.
Time Evolution	Line Graph	This graph will be used to show information about 1 indicator in the Study Area Selected for several	This graph will be used to show information about 1 indicator in the Study Area Selected for

		years.	several years.
Data Analysis	Scatter Diagram	This graph will be able to compare only one couple of Main Indicators.	This graph will be able to compare whatever couple of Indicators. Circle size and colour will be able to be set. Moreover, another indicator could be added as the circle size and including the possibility to add an indicator for the colour of the circles.
Data Analysis	Frequency diagram	No available	In this graph, data relates to how many items there are in a particular category.
Data Analysis	Overlays	No available	With this utility, two indicators will be shown in the map at same time in different layers: one a choropleth and another one symbols o top.
Data Analysis	3D Map	No available	With this utility, two indicators will be shown in the map at same time: one a choropleth, and another one, giving height to each region.
Output	Print	User will be able to print the map as viewed to a selected printer via the normally used printer selection window.	User will be able to print the map as viewed to a selected printer via the normally used printer selection window.
Output	Print Preview	A print preview will be made on the screen showing how the way the map will appear on paper when printing it.	A print preview will be made on the screen showing how the way the map will appear on paper when printing it.
Output	Save/Save as	User will be able to save the map made, locally, so that users can continue (re)building their maps in the Online Mapping tool.	User will be able to save the map made, locally, so that users can continue (re)building their maps in the Online Mapping tool.
Output	Open	User will be able to open the maps saved locally, so that users can continue (re)building their maps in the Online Mapping tool.	User will be able to open the maps saved locally, so that users can continue (re)building their maps in the Online Mapping tool.
Output	Save/Open Map-Settings	The end-user will be able to open/save the Map-Settings locally in the settings-file of the tool.	The end-user will be able to open/save the Map-Settings locally in the settings-file of the tool.
Output	Export	User will be able to export the map made as a file in various formats such as pdf, jpg, png, xls.	User will be able to export the map made as a file in various formats such as pdf, jpg, png, xls.
User Support		Basic User Guide.	Expert User Guide.

2.2. Architecture Design

The architecture of the Web Mapping Tool was defined in the Inception Report.
However, a small change has been done during this last period.
This change affects only to the Client (or Presentation) Tier, where, after making an analysis between different JavaScript Graphic Components Libraries, we have chosen Dojo Toolkit 1.8 Open Source, http://dojotoolkit.org to use it in the Web Mapping Tool.

Next table summarizes the different options analysed and the strengths and weakness of each.

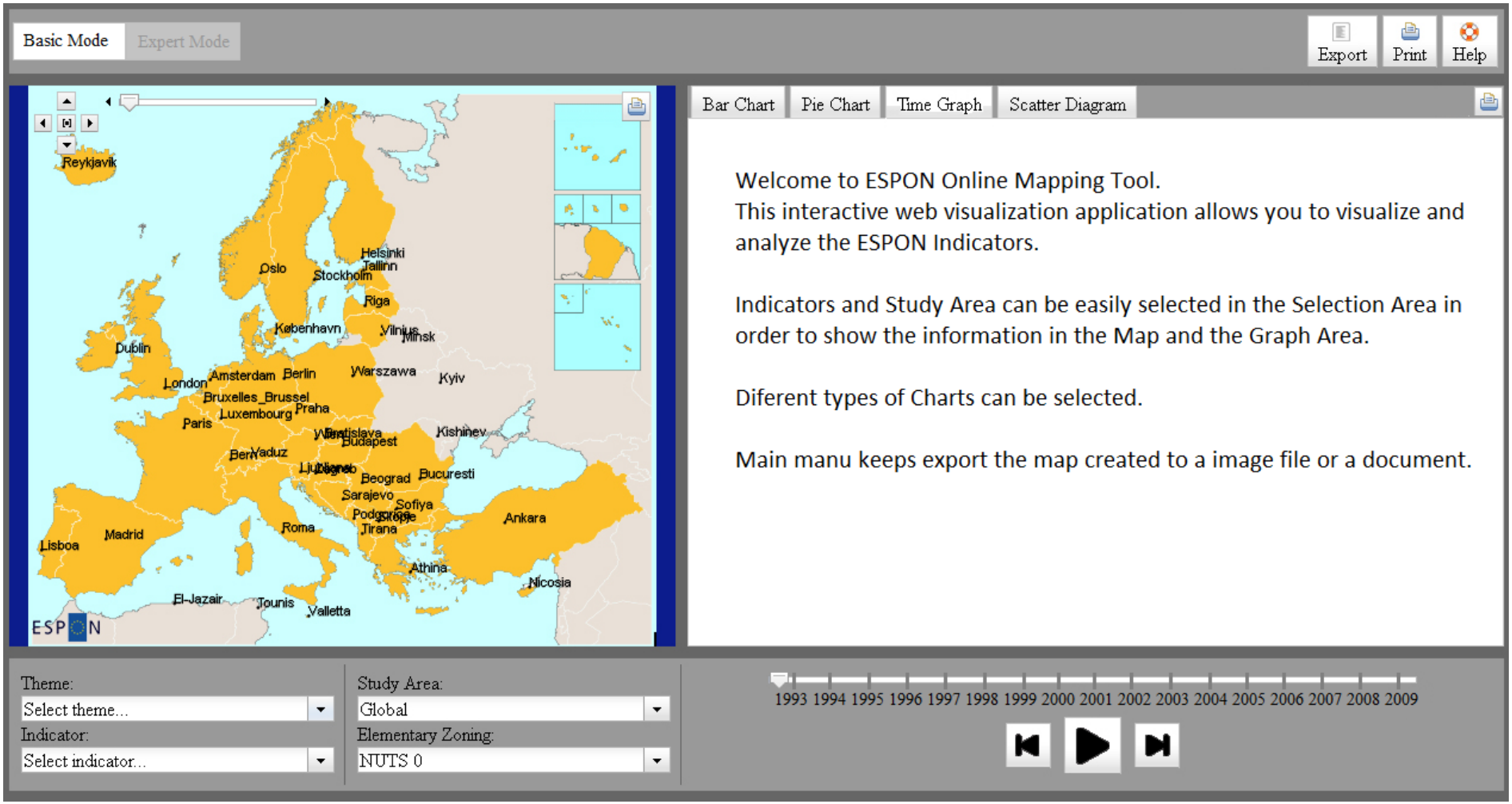
Library Name	Link	Strengths	Weakness
Dojo Toolkit 1.8	http://dojotoolkit.org	• Free • Open Source • In addition to chart components, includes some control components. • Nice components.	None
JQplot	http://www.jqplot.com	• Free • Open Source	• Not too nice.
Highcharts	http://www.highcharts.com	• Nice components.	• Not Free • Not Open Source

2.3. First Beta Version of the Online Mapping Tool

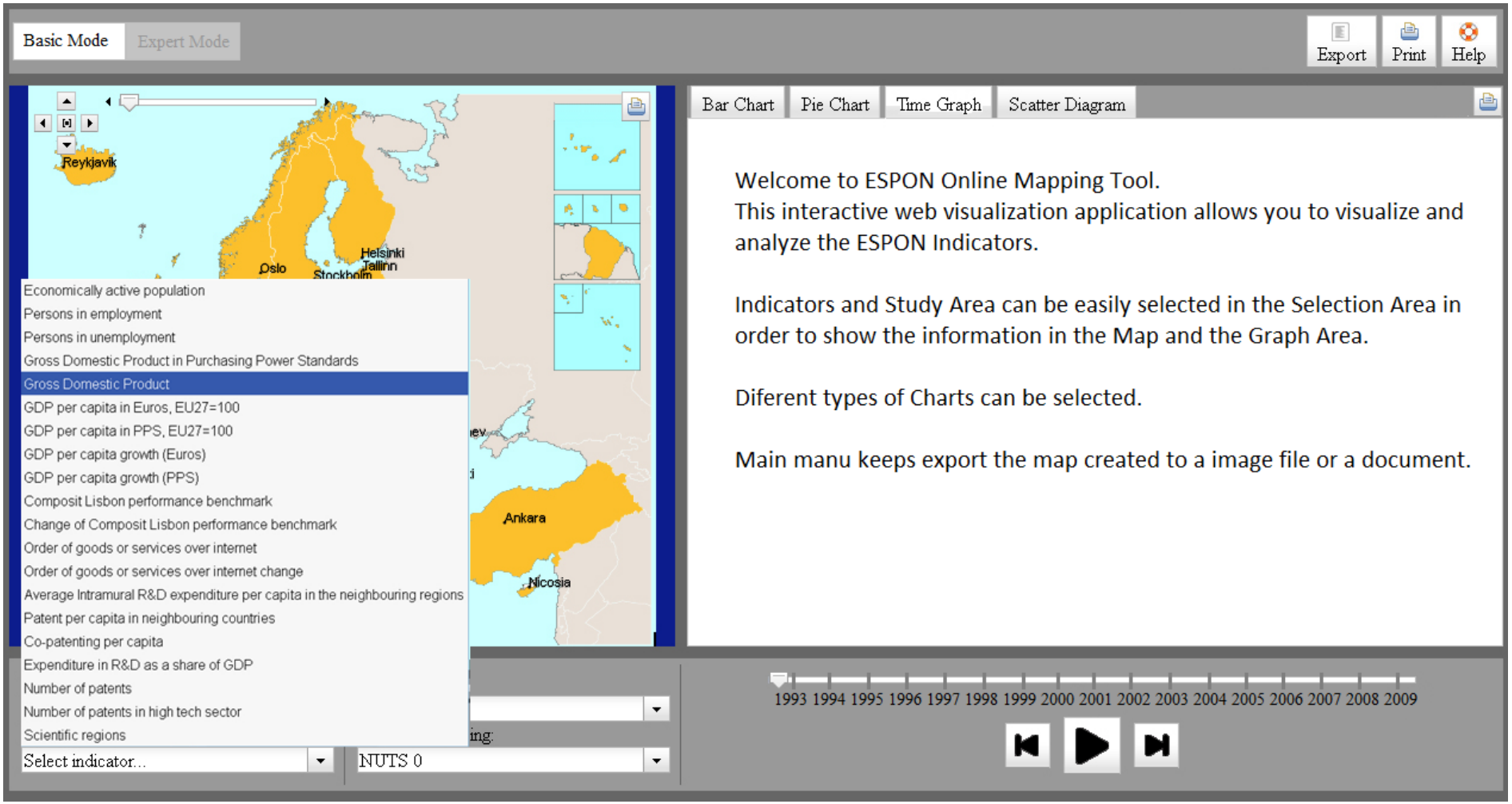
Taking account User and Data Requirements and the Architecture Design, a Mapping Tool prototype has been developed in order to verify the understanding about user needs and requirements.

This Prototype has been designed to be used in computer or tablet, and it will be done as a limited representation of the final tool will be developed, allowing test real situations and explore the user experience.

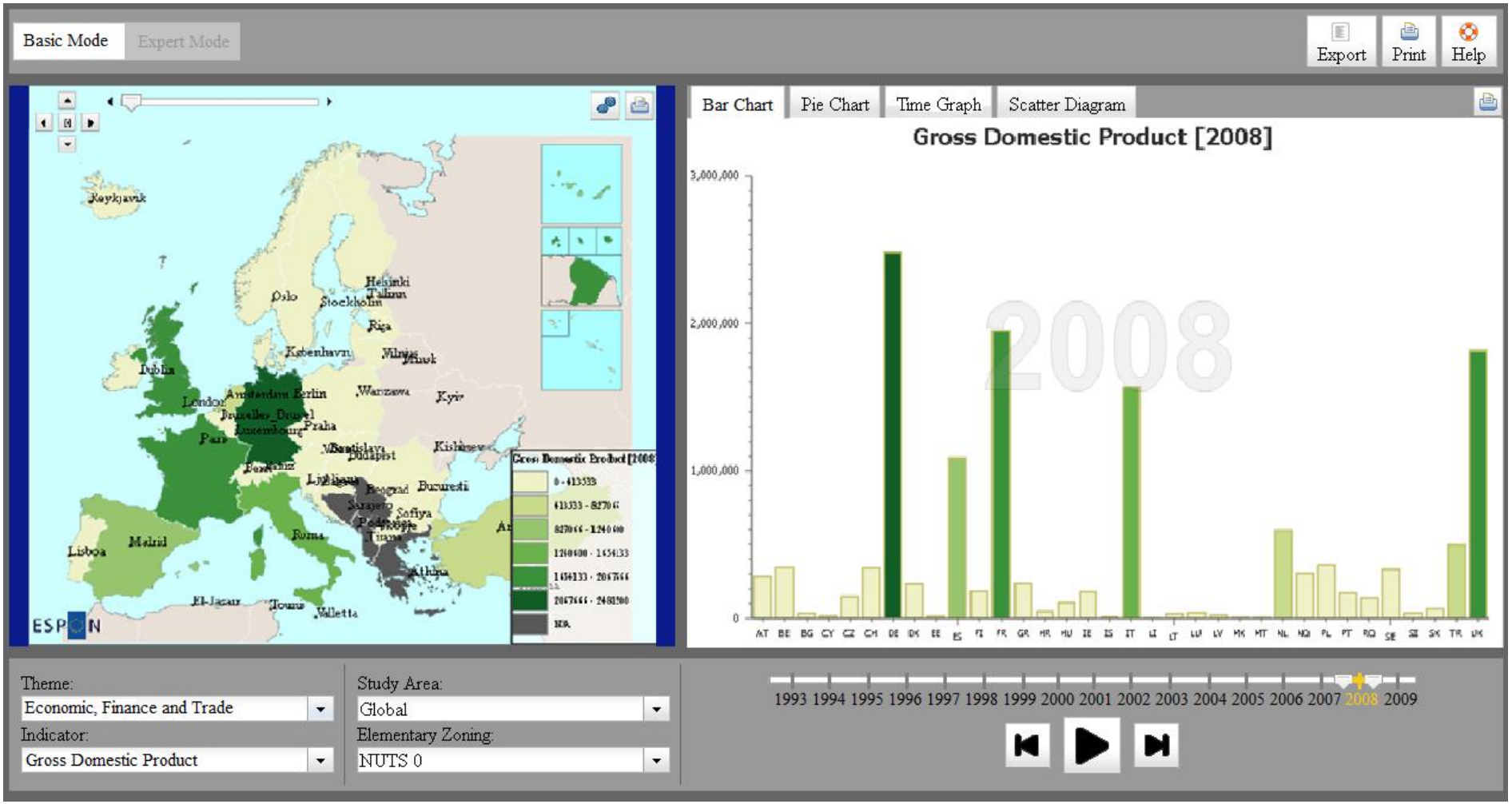
Although currently this prototype is only feasible since the RIMAP Team local computers, some screenshots and a video tour (annexed) are included in this Report in order to be analyzed by ESPON Committee.



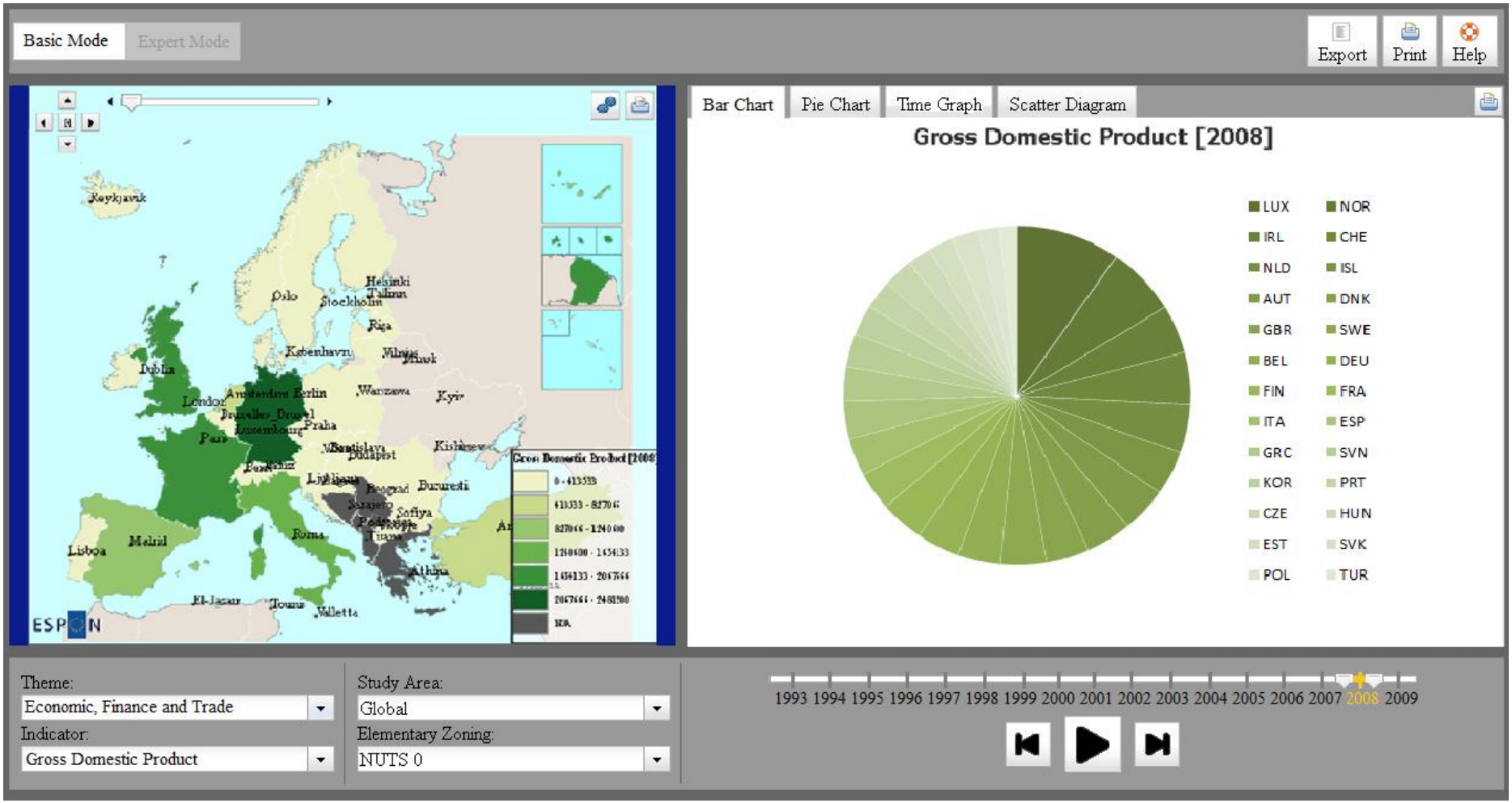
Basic Mode – Homepage



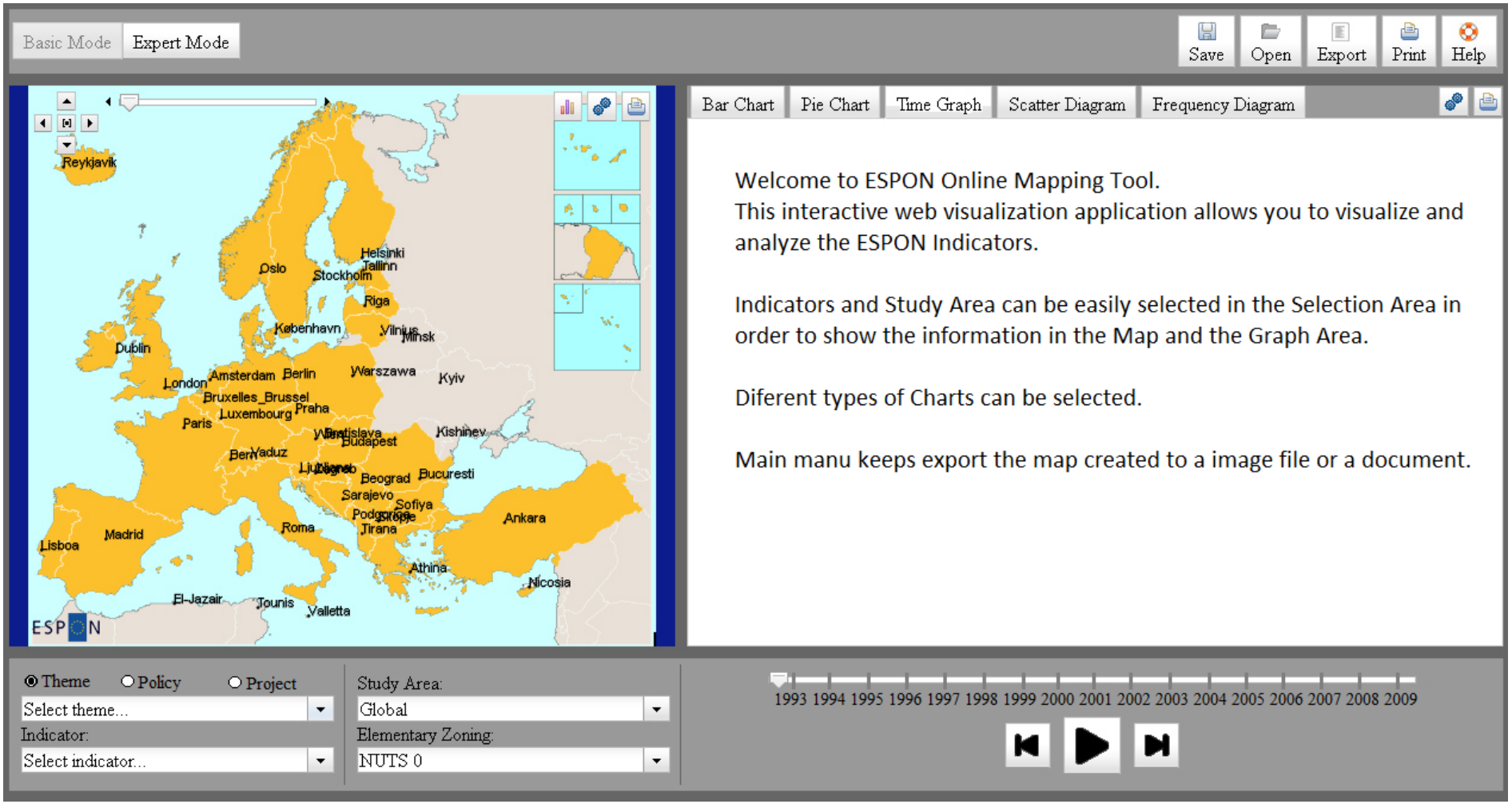
Basic Mode – Indicator Selection



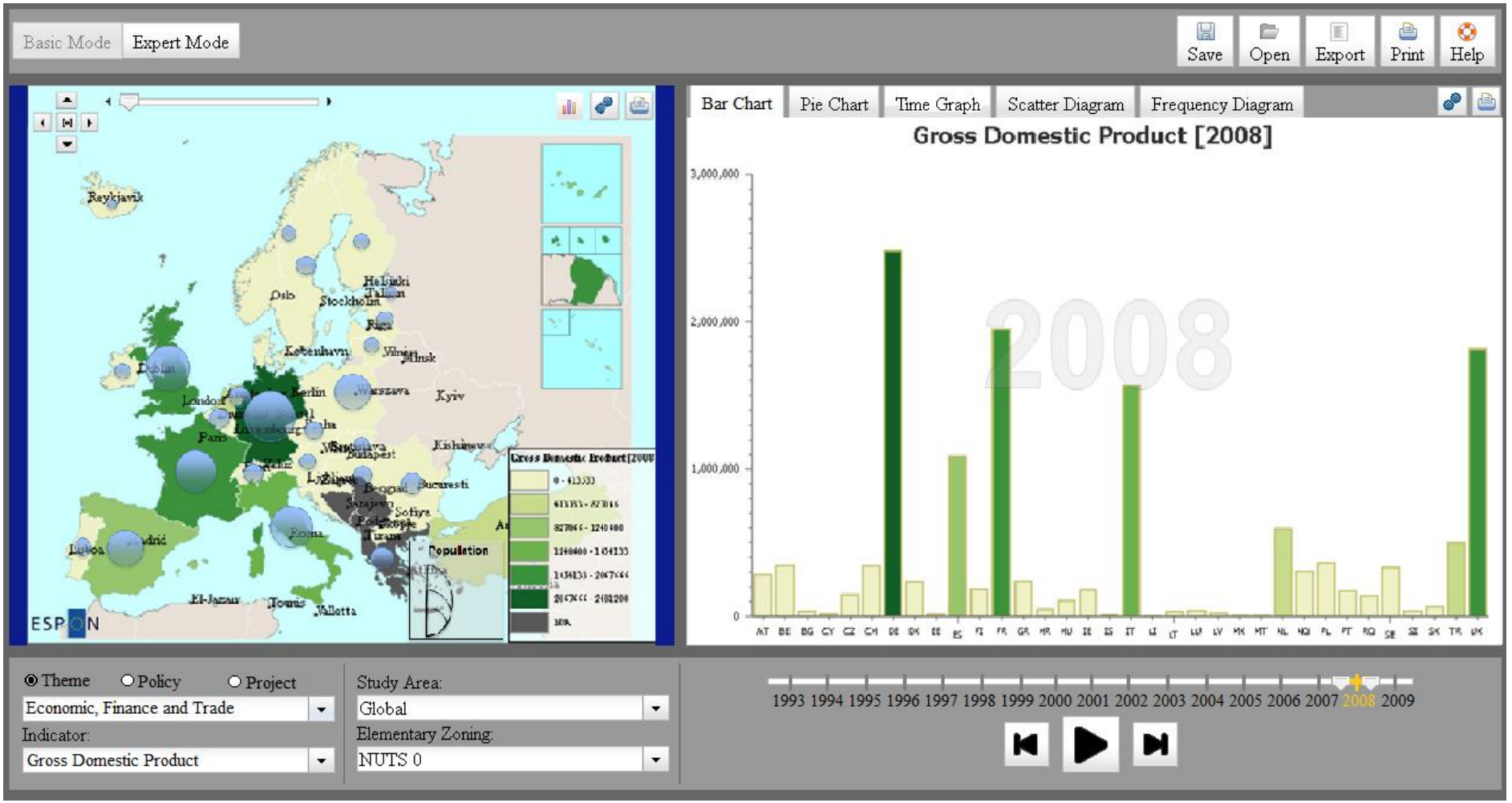
Basic Mode – Choropleth Map and Bar Chart



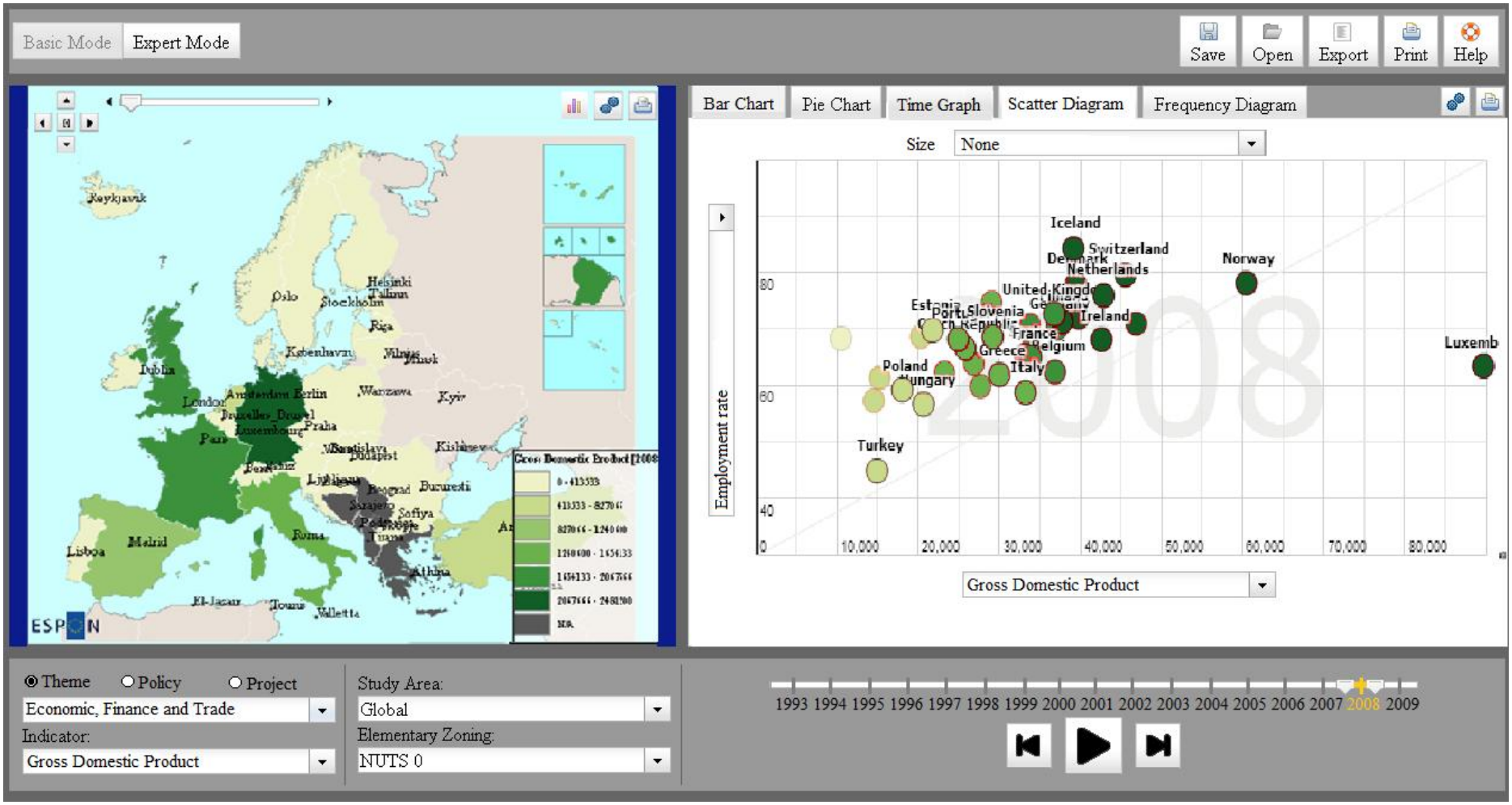
Basic Mode – Choropleth Map and Pie Chart



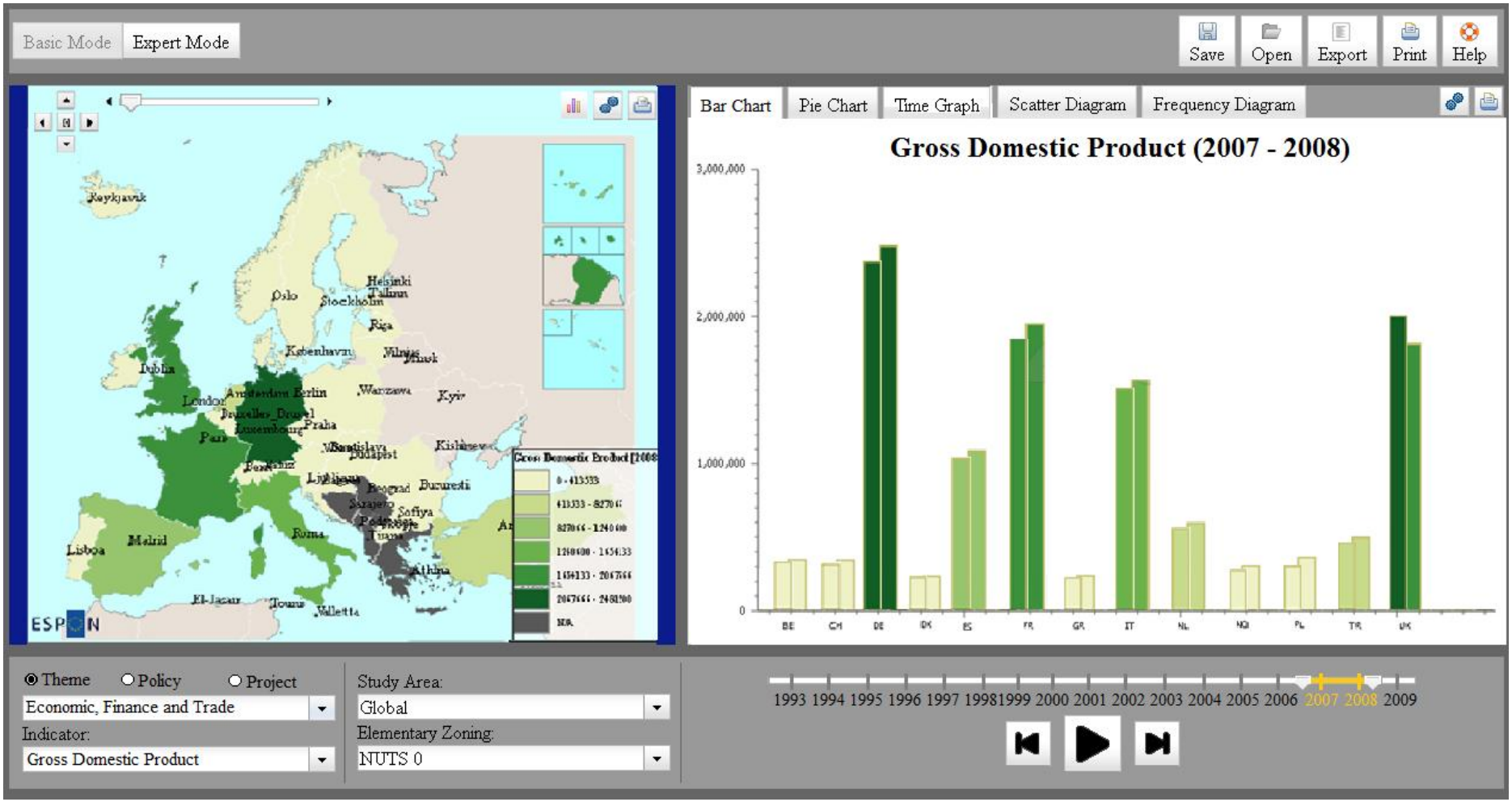
Expert Mode – Homepage



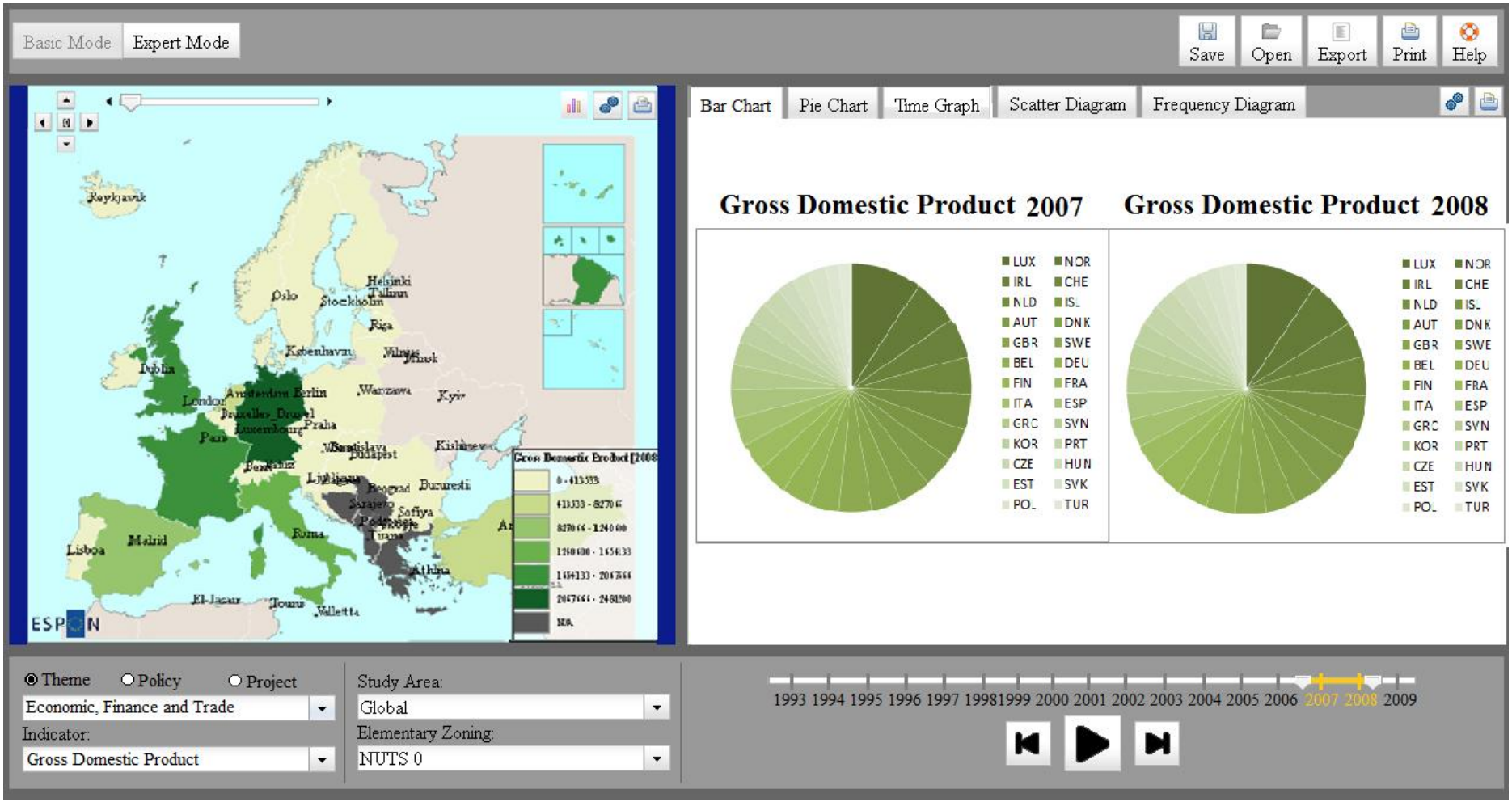
Expert Mode – Map Overlays



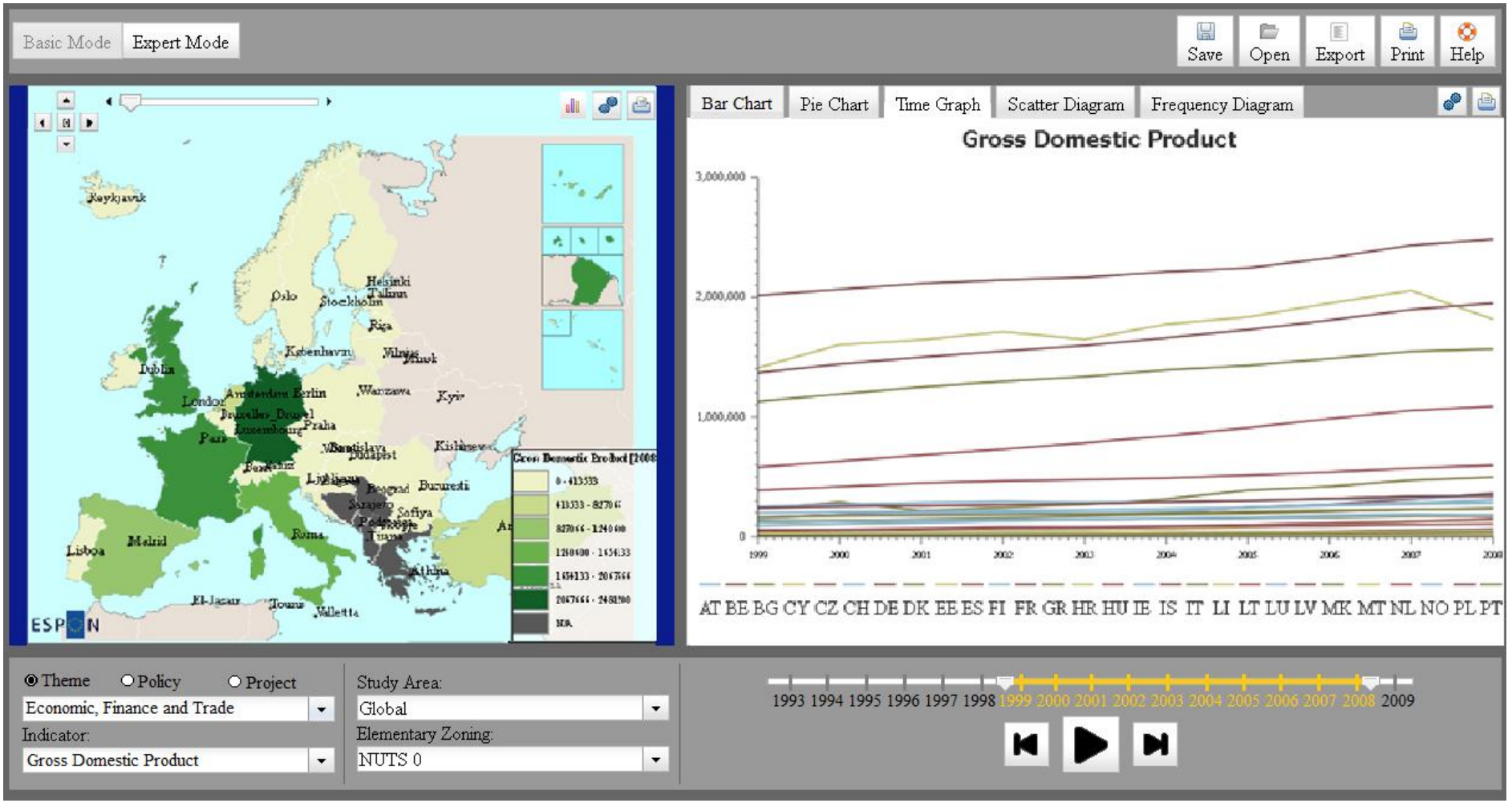
Expert Mode – Scatter Diagram



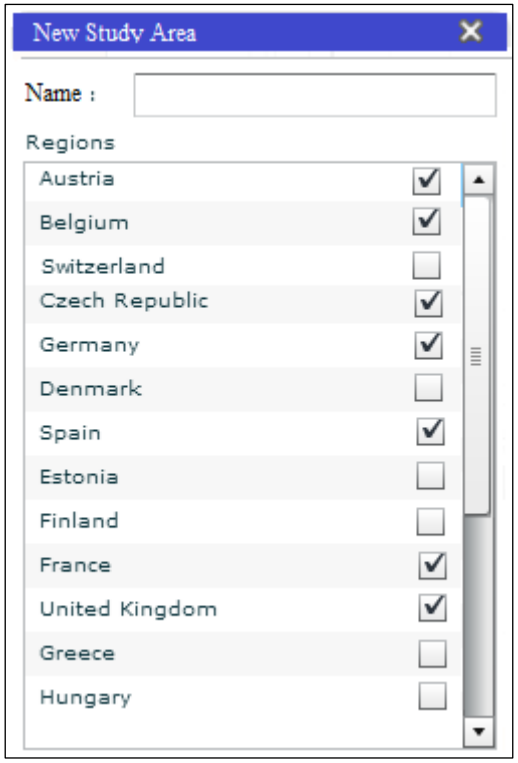
Expert Mode – Two years Bar Chart



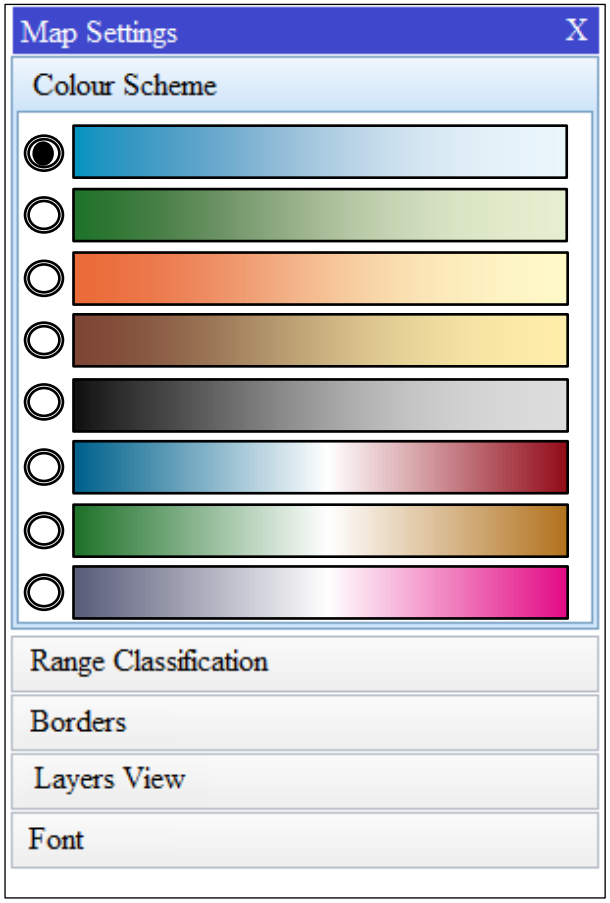
Expert Mode – Two years Pie Chart



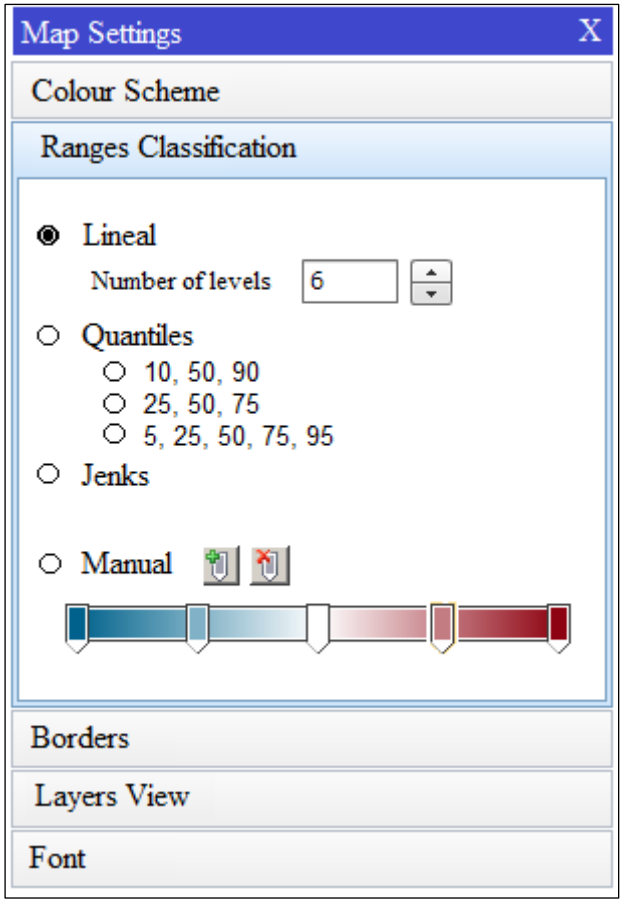
Expert Mode – Time Graph



Expert Mode – New Study Area Window



Expert Mode – Map Settings Window
Colour Scheme



Expert Mode – Map Settings Window
Range Classification

2.4. Table of Contents for the User Guidelines

1. Overview
   1.1. ESPON - RIMAP Web Mapping Tool
   1.2. Basic Mode. Main options: data, visualization, graphic evolution, time comparison
   1.3. Expert Mode. Extended options: data, visualization, graphic evolution, time comparison

2. Main Menu
   2.1. Basic/Expert Selection. Activates expert / basic mode
   2.2. Save button. Save Map or settings from user
   2.3. Settings menu. Configure Mapping Tool settings
   2.4. Session menu. Open Map or settings from user
   2.5. Help menu. User's guide, FAQ, video tutorial

3. The maps
   3.1. Overview
   3.2. Geographic selection:
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      3.2.2. Elementary Zone. Selection of regional or local areas.
   3.3. Indicator selection
      3.3.1. By theme
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      3.3.4. Keyword search
   3.4. Map Settings
      3.4.1. Colour Scheme.
      3.4.2. Ranges Classification.
      3.4.3. Borders.
      3.4.4. Layers.
      3.4.5. Fonts.

4. The charts: overview
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5. Data analysis
   5.1. Overview
   5.2. Scatter diagram – Multi-indicator selection: by size, X, Y coordinates
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   6.2. Slider bar
   6.3. Control buttons
   6.4. Options. Time series selection for:

6.4.1. Bar Chart
6.4.2. Pie Chart
6.4.3. Line Graphs

7. Help
7.1. Help menu
7.2. Video tutorials
7.3. FAQ

2.5. Dissemination Activities

RIMAP project was presented at **Paphos, Cyprus 5 and 6 December 2012. "Territorial Development Opportunities in Europe and its Neighbourhood - Fostering Global Competitiveness".**

On the other hand, contacts between RIMAP and M4D teams have been established during this period.

In the next months it is envisaged to identify and contact with other related initiatives and programs in order to promote the exchange of information and synergies.

4 Orientation of the project previewed towards the Draft Final Report

Next period of the project will be focused mainly in the WP3.

Work Package 1 – Mapping-Tool Analysis: Needs and Requirements.

Though this WP should be finished, RIMAP team has decided to collect some comments from potential users and other ESPON project teams through a survey in order to improve the Web Mapping Tool.

This survey will be launched in along the first quarter of 2013.

Work Package 3 – Mapping-Tool Coding.

The basic objective of this work package is to develop the code that implements the specifications and architecture defined in the previous tasks.

Coding will be done taking account that the data, the logic control and user interface are well differentiated so that any change in one of these three components will not affect others.

Moreover, some user guides must be developed.

Expected results are:

- Draft Final version of the Online Mapping tool.
- Draft Final version of the User guidelines.

Annex I. Basic Indicators

ESPON Database is composed by a high number of indicators (around 500). So, it's not useful to offer the possibility to access to these entire indicators in the Basic Mode.

Taking it account, a total of 70 Main indicators have been selected in order to be sown in the Basic Mode.

Theme	Indicators (Basic /Expert)
01. Economy, Finance And Trade	7/20
02. Population And Living Conditions	17/204
03. Labour Market	9/49
04. Agriculture And Fisheries	0/2
05. Education	1/13
06. Health and Safety	0/0
07. Information Society	7/29
08. Science And Technology	12/36
09. Transport And Accessibility	10/22
10. Environment And Energy	2/44
11. Governance	0/0
12. Territorial Structure	5/79

Following tables show the BASIC Indicators:

Economy, Finance and Trade:

ID	code	name	Abstract
4	GDPPPS	Gross Domestic Product in Purchasing Power Standards	Gross domestic product (GDP) in Purchasing Power Standards (PPS) at current market prices
5	GDP	Gross Domestic Product	Gross domestic product (GDP) at current market prices
75	GDP_EU27AV	GDP per capita in Euros, EU27=100	GDP per capita in Euro regarding to the EU27 average
76	GDPPPS_EU27AV	GDP per capita in PPS, EU27=100	Gross domestic product (GDP) in Purchasing Power Standards (PPS) at current market prices, regarding to the EU27 average
77	GDP_CH_RT	GDP per capita growth (Euros)	GDP per capita growth (Euros)
78	GDPPPS_CH_RT	GDP per capita growth (PPS)	GDP per capita growth (Purchasing Power Parity per inhabitant)
297	INTRNT_USAGE	Internet usage	Internet usage

Population and living conditions:

ID	code	name	Abstract
95	EMI_ABS	Emigration	Emigration
96	IMI_ABS	Immigration	Immigration
216	LE	Life Expectancy	Life Expectancy at birth, both sexes
217	LE_M	Life Expectancy, males	Life Expectancy at Birth – males
218	LE_F	Life Expectancy, female	Life Expectancy at Birth - female
325	LQMHIGHMAN	Share of employment in medium-high and high tech manufacturing	Location quotient employment in medium-high and high-tech manufacturing
326	LQKIS	Share of employment in	Location quotient employment in knowledge intensive services

		knowledge intensive services	
327	TYPO_TECHADV	Typology on technologically advanced regions	Typology on technologically advanced regions (Regions with location quotient of employment in medium-high and high-tech manufacturing and knowledge intensive services).
328	TYPO_KER	Typology on knowledge economy regions	Typology on knowledge economy regions (Regions being either technologically-advanced, scientific, networking, or a combination of the formers).
334	TYPO_ALLINN	Typology on firms innovation	Typology on firms carrying out product and/or process and/or marketing and organizational innovation
335	EDUC_HIGH_SH	Share of population by highest level of education	Percentage of population aged 15 and over by highest level of education attained over total population
336	EMP_EDUC_SH	Share of employed in the education sector	Percentage of population employed in the NACE education sector
338	RD_GDP_SH	Expenditure in R&D as a share of GDP	Expenditure in Research & Development as a share of the Gross Domestic Product
339	EMP_RD_SH	Share of employed in R&D	Share of employed in Research and development activities
379	POP_AGE_UNK	Unknown age and sex	Unknown age and sex
380	POP_AGE_T	Total population	Total population (sum of the age classes)
381	AGE_STRUCTURE	Population by age and sex	Population by age and sex, 5 years age-class

Labour Market:

ID	code	name	abstract
66	LF_REPL	Labour force replacement ratio	Labour force replacement ratio
83	UNEMP_RT	Unemployment rate	Unemployment rate
84	UNEMP_LONG_RT	Long-Term Unemployment rate	Long-Term Unemployed persons aged 15-64 years as a % share of all unemployed
85	LF_PART_1564	Labour Force Participation	Labour force participation rate, Persons aged 15-64 years
86	REAL_DR_1574	“Real” Dependency Ratio	Non-Working persons (all ages) per 100 employed persons (aged 15-74 years)
176	IMMIG_ABS	Immigration from outside Europe	Total number of persons immigrated to the NUTS2 region from non-European countries
177	LF_M_20-24_RT	Male Aged 20-24 Labour Force Participation	Labour force participation among male aged 20-24 years
255	TYP_COASTAL	Typology on costal regions	The classification displays the share of population living within the coastal zone.
256	TYP_INDTRANS	Typology on regions in industrial transition	Industrial regions in transition are those regions where the share of GVA and employment has changed between two points in time.

Education:

ID	code	name	abstract
		Share of population with a tertiary education	Tertiary educated persons (ISCED 5-6) as a share of population aged 15-64 years

Information Society:

ID	code	name	Abstract
257	MM	Multimodal potential accessibility, absolute level	Multimodal potential accessibility, absolute level
258	MM_I	Multimodal potential accessibility, standardised	Multimodal potential accessibility, standardised

263	AIR_I	Potential accessibility by air, standardised	Potential accessibility by air, standardised
278	RAIL_I_EU27	Potential accessibility, rail, EU27 average	Potential accessibility by rail, standardised (EU27=100)
289	POP_CH	Total population change	Difference of population between two time-periods
290	NAT_CH	Natural population change	Natural population change (difference between alive births and deaths)
291	CI1_TOT	Population growth	Population growth, annual growth rate

Science and Technology:

ID	code	name	abstract
284	EMP_CW_SH_CH_REL	Change of the share of the creative workforce	Evolution of the creative workforce per active population from t to t+1
285	EMP_CW_TYPO	Typology of evolution of the creative workforce	Typology of evolution of the creative workforce, based on quartile changes in the distribution of the creative workforce
286	EMP_CW_GDP_TYPO	Typology based on creative workforce and GDP per capita	Relationship between the share of creative workforce and GDP per capita, typology
287	EMP_CW_GDP_CH_TYPO1	Typology based creative workforce and GDP per capita change	Typology based on cross-plotting of creative workforce and GDP per capita change rates
288	EMP_CW_GDP_CH_TYPO2	Typology based creative workforce and GDP per capita change, normalised	Typology based on cross-plotting of normalised creative workforce and GDP per capita change rates
299	HH_ACC_INT_H	Households with access to the Internet	Households with access to the Internet at home
300	HH_ACC_INT_H_CH	Households with access to the Internet change	Households with access to the Internet change (absolute difference)
301	HH_ACC_BB_H	Households using a broadband connection	Households using a broadband connection
317	FUND_5PF_POP_NEIGHB	Average funding pc in FP in the neighbouring regions	Funds (estimated) received by the participants summed up by region and divided by population and then averaged in the neighbouring regions
318	RD_POP_AV_NEIGHB	Average Intramural R&D expenditure per capita in the neighbouring regions	Average Intramural Research and Development expenditure per capita in the neighbouring regions
319	PATENT_POP_NEIGHB	Patent per capita in neighbouring countries	Average number of patent released over population in the neighbouring regions
320	COPATENT_POP	Co-patenting per capita	Number of patents co-authored with inventors from outside the region over population

Transport and accessibility:

ID	code	name	Abstract
245	TYPO_RURAL1	Non-urban regions structural typology	Structural Typology for non-urban regions
246	TYPO_RURAL2	Non-urban regions performance typology	Performance typology for non-urban regions
247	TYP_URBRUR	Typology on urban-rural regions	Urban-rural typology developed jointly by DG Agri, Eurostat, JRC and DG Regio
248	TYP_METRO	Typology on metropolitan regions	NUTS-3 regions or groupings of NUTS-3 regions representing urban agglomerations
249	TYP_BORDER_A	Border regions	Those regions participating in cross-border cooperation programmes
250	TYP_BORDER_B	Border regions - internal and external	Those regions participating in cross-border cooperation programmes (internal and external)
251	TYP_ISLAND	Typology on island	Island regions are NUTS3 regions completely covered

		regions	by islands.
252	TYP_SPARSELY	Sparsely populated regions	Sparsely populated regions are regions with a population density below certain thresholds.
253	TYP_OUTERMOST	Outermost regions	The outermost regions are identified by Article 299(2) of the Treaty establishing the European Union.
254	TYP_MOUNTAINS	Typology on mountainous regions	Differentiation between regions affected by mountains to a varying extent

Territorial Structure:

ID	code	name	Abstract
382	REG_ALAND_CLC_1	Artificial surfaces	Artificial surfaces (Corine Land Cover nomencature)
383	REG_ALAND_CLC_2	Agricultural areas	Agricultural areas (Corine Land Cover nomencature)
384	REG_ALAND_CLC_3	Forest and semi natural areas	Forest and semi natural areas (Corine Land Cover nomencature)
385	REG_ALAND_CLC_4	Wetlands	Wetlands (Corine Land Cover nomencature)
386	REG_ALAND_CLC_5	Water bodies	Water bodies (Corine Land Cover nomencature)

Environment and Energy:

ID	code	name	Abstract
20	EXP_TYPO	European climate change regions	Regions with similar climate change characteristics
301	HH_ACC_BB_H	Households using a broadband connection	Households using a broadband connection

Annex II. Colour Schemes

Some colour schemes have been chosen in order to represent the indicators values in the map and the graph windows.
Three kinds of colour schemes have been defined:

- Colour Intensity:
  - Blue:
    - Max Value: rgb (0, 147, 193)
    - Min Value: rgb (235, 246, 252)

  - Green.
    - Max Value: rgb (31, 115, 42)
    - Min Value: rgb (230, 239, 207)

  - Red.
    - Max Value: rgb (235, 107, 57)
    - Min Value: rgb (255, 249, 200)

  - Brown.
    - Max Value: rgb (126, 70, 53)
    - Min Value: rgb (255, 237, 170)

- Grey:
    - Max Value: rgb (n95)
    - Min Value: rgb (n10)

- Opposite Colours:
  - Blue-Red:
    - Max Value: rgb (0, 98, 140)
    - Min Value: rgb (142, 3, 17)

  - Green-Brown:
    - Max Value: rgb (32, 115, 43)
    - Min Value: rgb (175, 110, 22)

  - Indigo-Fuchsia:
    - Max Value: rgb (90, 93, 122)
    - Min Value: rgb (226, 2, 128)

www.espon.eu

ESPON

RIMAP
(112_PR3_08_0477)
Design and Development of Rich Internet Online Mapping Tool

Scientific Platform and Tools Project 2013/3/8

Annex to the Interim Report
05/04/2013

EUROPEAN UNION

This report presents a more detailed overview of the analytical approach to be applied by the project. This “Scientific Platform and Tools” Project is conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

Information on the ESPON Programme and projects can be found on www.espon.eu

The web site provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

This basic report exists only in an electronic version.

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List of authors

AIDICO – Technological Institute of Construction
(Spain)

Sergio Muñoz
Rubén Navarro
Daniel González
Sol Taub
Paz Beltrán
Lucía Irusta

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1. Introduction
2. The linkage to the ESPON 2013 Database
3. Activities to identify and contact other related initiatives and programmes
4. Layout adjustments
5. Welcome message of the RIMAP home page
6. Suggestions for improvement

1. Introduction

The main goal of this Annex is to clarify and expand some issues of the Interim Report, as well as to correct some variations of RIMAP maps related to how to show ESPON maps.

Also, to suggest some additional functionalities to be integrated in the application and to show the final result of some adjustments proposed by TPG like the scope of the welcome message of the home page.

Moreover, in this annex a more detailed explanation about the establishment of a direct link from the online mapping tool to the ESPON 2013 Database for using the data and indicators available there in the Online Mapping Tool, is presented.

Finally, activities that have been and will be undertaken to identify and contact other related initiatives, programmes and ESPON project are detailed too.

2. The linkage to the ESPON 2013 Database

The Mapping Tool Architecture has been designed based on **client-server computing model**, more exactly, on 3-Tier Architecture. In these systems, the server component provides a function or service to one or many clients, which initiate requests for such services.

The client is the user interface and the server is which does the request to the database to get the data that the client needs to show. The server uses web services to request to the database.

A **web service** is a software function provided at a network address over the web or the cloud, it is a service that is "always on". So, Web Services allows you to expose the functionality of your existing code over the network. Once it is exposed on the network, other application can use the functionality of your program.

Web services do not provide the user with a graphical user interface (GUI). Web services instead share business logic, data and processes through a programmatic interface across a network. Developers can then add the Web service to a GUI (such as a Web page or an executable program) to offer specific functionality to users.

For example, Google offers a set of web services, a collection of HTTP interfaces to Google services providing data to developers to enrich their applications.

We're used to seeing applications that use web services every day, for example applications that use Google Search Web services to build an application that searches for given keywords. With the Google Web service, you can bring the power of the Google search engine to any web application.

Web Services offer many **advantages** over other types of distributed computing architectures.

- Interoperability - Web Services typically work outside of private networks, offering developers a non-proprietary route to their solutions.
- Usability - Web Services allow the business logic of many different systems to be exposed over the Web. This gives your applications the freedom to choose the Web Services that they need. Instead of re-inventing the wheel for each client, you need only include additional application-specific business logic on the client-side. This allows you to develop services and/or client-side code using the languages and tools that you want.
- Reusability - Web Services provide not a component-based model of application development, but the closest thing possible to zero-coding deployment of such services. This makes it easy to reuse Web Service components as appropriate in other services. It also makes it easy to deploy legacy code as a Web Service.
- Deployability - Web Services are deployed over standard Internet technologies. This makes it possible to deploy Web Services even over the fire wall to servers running on the Internet on the other side of the globe. Also thanks to the use of proven community standards, underlying security (such as SSL) is already built-in.

To link **RIMAP** to the ESPON 2013 Database it has been defined some web services. These web services offer functions through a network address, these functions make queries to database. When the client call the network address, the associated function is run and the database is attacked, then the server returns the data to the client.

Specifically, RIMAP uses web services to load the available indicators on combos and to read the stored data in the database to each indicator.
Note that if M4D project makes any changes to the database it immediately reflects in RIMAP by using web service.

M4D Project provided us scripts to install the database locally and we are developed our own web services until they could develop “official” web services..

Currently both, the web services and a test database are in our developed team computers for local testing;
M4D project must provide us the network address to the web services to link RIMAP to the real ESPON 2013 database.

3. Activities to identify and contact other related initiatives and programmes.

We only have been undertaken activities to contact with the M4D Project so far; these contacts were made via phone, email or in the ESPON Seminars. The results of these contacts were to exchange script files and resolution of questions regarding the installation of the database on our local computers.

We had planned to identify and contact other related initiatives and programmes in order to promote the exchange of information and synergies during the second period of the project but it hasn't been possible. We undertake these activities in the actual period.

We have taken into account the advice given to us to look into the work done by the following ESPON projects: INTERCO, TRACC and TPM and to contact the TPGs of the Urban Benchmarking Web tool, Monitoring Project and Atlas Project in the further project implementation.

We are looking into more detail the ESPON Project listed above to consider the possibility to implement the next elements:

- INTERCO: They used different methods to present and analyse data
- TRACC: They used frequency diagrams for urban-rural typology to analyse and present results from their case studies. This methodology could be used as frequency diagrams for countries
- Urban Benchmarking Web tool: they develop a web tool for urban statistics and benchmarking
- Territorial Monitoring Project: Their selection of basic indicators should be used as the basis for the indicators available in the basic mode.
- ESPON Atlas Project: Their selection of basic indicators should be used as the basis for the indicators available in the basic mode.

We will contact with these projects mainly via email and phone.

In the next meeting on 16-17 May 2013 in Paris also we will contact with some of these projects to support us in developing our application.

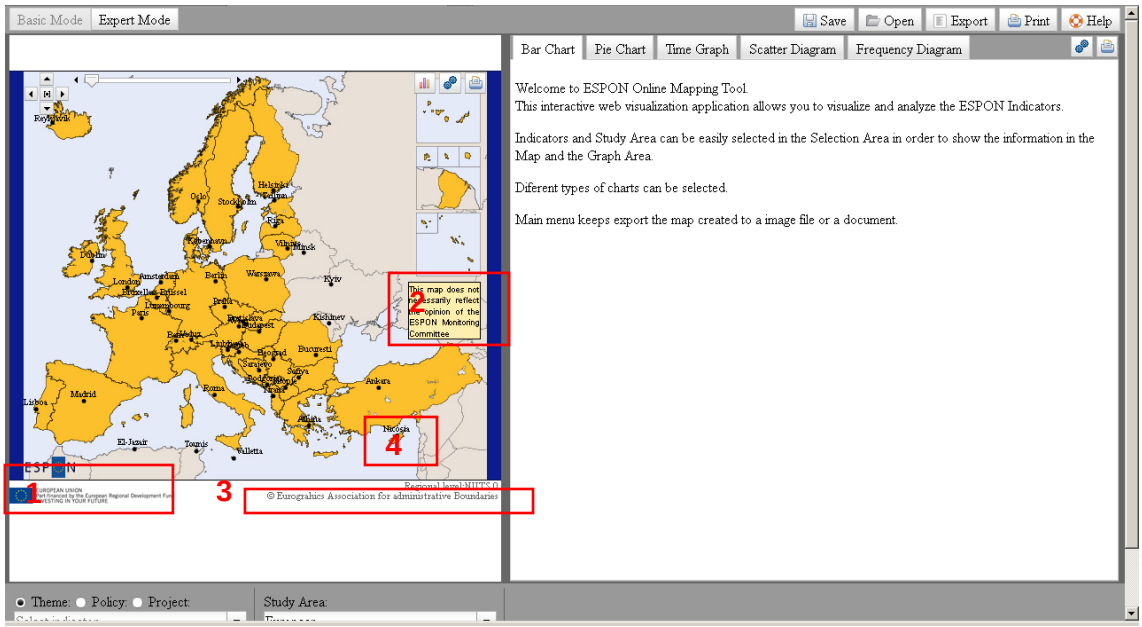
Moreover, some contacts will be established in the next ESPON Seminars.

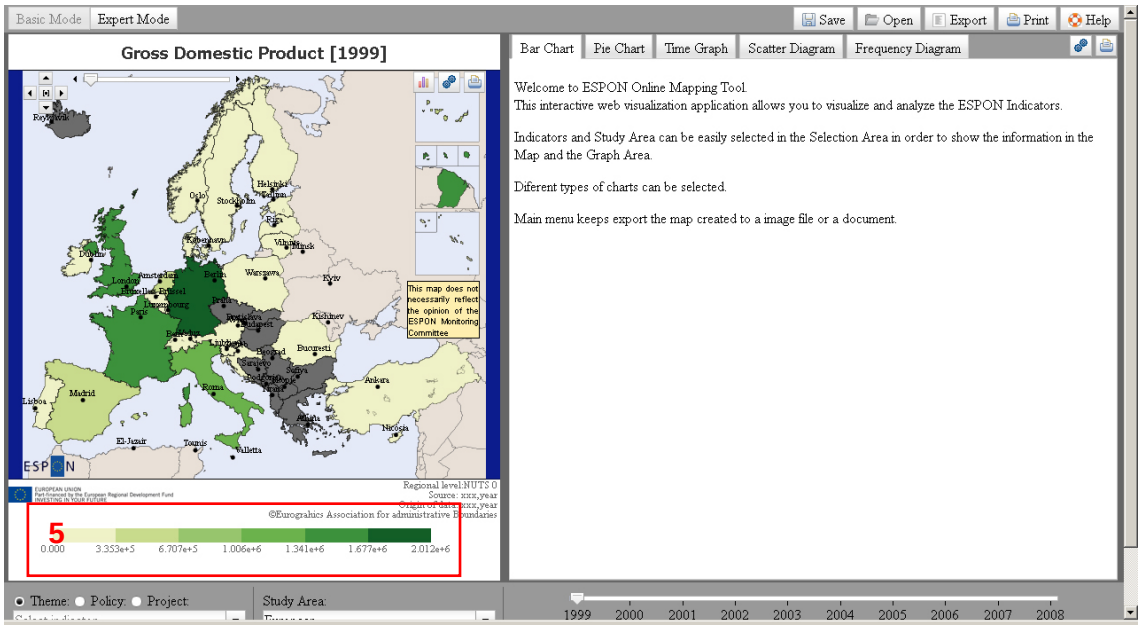
4. Layout adjustments.

Some layout adjustments have been done taking account ESPON CU suggestions:

1. The EC publicity requires an EU flag and a sentence, which are now missing and should be added.
2. The MC disclaimer is missing and should be added.
3. In case the geometries used to display the boundaries of the NUTS regions are from EuroGeographics, then the following copyright should be added: '© Eurogeographics Association for administrative boundaries'
4. The map presented at the homepage of the tool shows the NUTS 0 level regions including a white area over Cyprus. This white area should be removed in this specific case (see point 2.a of Annex 11 of the TPG Guidance: "Where no statistical data are involved (for example, when maps indicate EU member states or European islands etc.) the country appears in one colour.").
5. The maps presenting statistical data include a legend on the bottom-right part of the map. This legend covers Cyprus and it's therefore not clear if Cyprus is correctly presented. The TPG is asked to move the map of Europe a bit to the left of its window so that not part of the 31 countries funding ESPON is hidden.

The following figures show layout adjustments:




Basic Mode
Expert Mode
Save
Open
Export
Print
Help
Gross Domestic Product [1999]
Bar Chart
Pie Chart
Time Graph
Scatter Diagram
Frequency Diagram
Welcome to ESPON Online Mapping Tool.
This interactive web visualization application allows you to visualize and analyze the ESPON Indicators.
Indicators and Study Area can be easily selected in the Selection Area in order to show the information in the Map and the Graph Area.
Diferent types of charts can be selected.
Main menu keeps export the map created to a image file or a document.
This map does not necessarily reflect the opinion of the ESPON Monitoring Committee
Regional level:NUTS 0
Source: xxx,year
Origin of Data: xxx,year
©Eurographics Association for administrative Boundaries
5
0.000
3.353e+5
6.707e+5
1.006e+6
1.341e+6
1.677e+6
2.012e+6
Theme:
Policy:
Project:
Study Area:
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008

5. Welcome message

The TPG suggested us adjusting the text of the welcome message of the RIMAP home page in cooperation with the ESPON CU.

The preliminary proposal is:

Welcome to the ESPON Online Mapping tool.

This interactive web application allows you to visualize and analyze ESPON data and indicators.

Different types of maps, charts and analytical methods are available and can be applied according to your needs.

Your results can be printed, saved, adjusted, exported and shared with others.

Please consult the Help for additional information and support if needed.

6. Suggestions for improvement

This section describes suggestions for improving the Online Mapping Tool.

These suggestions are some functionalities related to when a user creates a map in order to share it:

1. To generate a link to the map (if someone clicks on the link, open the tool with the same options the user selected initially).
2. To Generate a link to the map picture (useful to "embed" this elsewhere)
3. To Share any of the two previous links in social networks (Twitter, Facebook, Google+, etc.) Using the corresponding button on the interface.

With these functionalities, ESPON Maps will be able to be disseminated on an easy way.