

## Title: Online applications and e-tools supporting the implementation of the Regional assets mapping RIS3 method

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### 1. General characteristics of the method

<b>Name of the method</b>	Regional assets mapping
<b>Applicable to the RIS3 stage</b>	Analysis of regional/national context
<b>Description of the method</b>	In terms of definition, regional profiling and assets mapping refers to <i>“the set of analyses that should be implemented and the associated evidence that should be collected in order to construct a source of knowledge to inform strategic choices and actions”</i> (Gianelle et al., 2014). Profiling indicators could be defined as <i>“the set of statistical indicators covering demographic, socio-economic, institutional and connectivity features of territories with the purpose of shaping the relevant characteristics of regional economies in terms of smart growth”</i> (Martínez, 2013).

### 2. Identification of relevant online applications supporting the method

<b>1</b>	<b>Cities Data Tool</b> <a href="http://www.centreforcities.org/data-tool/#graph=map&amp;city=show-all">http://www.centreforcities.org/data-tool/#graph=map&amp;city=show-all</a>	With the support of Future Cities Catapult the Cities Data Tool was launched in the beginning of 2015. The tool gives users access to data on UK cities in a variety of formats (map, line diagrams, bubble diagrams, bar charts etc.).
<b>2</b>	<b>Stats America</b> <a href="http://www.statsamerica.org/About.aspx">http://www.statsamerica.org/About.aspx</a>	StatsAmerica is a service of the Indiana Business Research Center (IBRC) at Indiana University's Kelley School of Business. It contains a unique and useful set of tools and reports based on a large number of data items from federal and state sources, along with some commercial or private source data. StatsAmerica adds value to these data through easy access and functionality, as long as the direct agency source of the data on every table, profile or map.
<b>3</b>	<b>Eurostat - Country Profiles</b>  <a href="http://ec.europa.eu/eurostat/guip/introAction.do?profile=cpro&amp;theme=eurind&amp;lang=en">http://ec.europa.eu/eurostat/guip/introAction.do?profile=cpro&amp;theme=eurind&amp;lang=en</a>	Country Profiles is a graphic tool which is easy to use and is accessible to everyone. This tool enables: <ul style="list-style-type: none"> <li>• Grouping of indicators according to the country and the region</li> <li>• Possibility to consult predefined series of 10-20 indicators by theme</li> <li>• Possibility to compare countries</li> </ul>
<b>4</b>	<b>Eurostat - Statistical Atlas</b> <a href="http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/">http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/</a>	Statistical Atlas is an interactive map viewer for statistical and topographical maps. You can combine geographical information from various "base maps", such as the borders of the NUTS regions or the Urban Audit cities, with information from statistical maps. Various functionalities are offered to view the details of the map display:

		<ul style="list-style-type: none"> <li>• Zooming in and out on Europe and outermost regions</li> <li>• Changing the transparency settings of the map layers</li> <li>• Retrieving the code, geographical label and statistical value of a specific NUTS region or Urban Audit city</li> </ul>
5	<b>Headwaters Economics - Economic Profile System</b> <a href="https://headwaterseconomics.org/tools/economic-profile-system/#measures-report-section">https://headwaterseconomics.org/tools/economic-profile-system/#measures-report-section</a>	<p>The Economic Profile System (EPS) uses federal data sources, including the Bureaus of Economic Analysis, Census, &amp; others. EPS is also known as the Human Dimensions Toolkit by the Forest Service. The user can download socioeconomic reports of communities, counties, &amp; states, including aggregations and comparisons.</p>
6	<b>Social Explorer</b> <a href="http://www.socialexplorer.com/explorer/maps">http://www.socialexplorer.com/explorer/maps</a>	<p>Social Explorer provides easy-to-use tools for visual exploration of demographic information. With these interactive online tools, users can examine change over time and understand the patterns behind the raw numbers. Datasets include the U.S. Census, American Community Survey, United Kingdom Census, Canadian Census, Eurostat, etc.</p> <p>The user can create and customize thematic and interactive maps. Data reports at all geographic levels can also be created and exported.</p>
7	<b>Policy Map</b> <a href="https://www.policymap.com/about/">https://www.policymap.com/about/</a>	<p>PolicyMap offers easy-to-use online mapping with data on demographics, real estate, health, jobs and more in communities across the US. The data comes from disparate sources, but is standardized to allow for simple analysis across indicators.</p>
8	<b>Cornell Program on Applied Demographics – County characteristics explorer</b> <a href="https://pad.human.cornell.edu/index.cfm">https://pad.human.cornell.edu/index.cfm</a> <a href="https://pad.human.cornell.edu/tools/countychar.cfm">https://pad.human.cornell.edu/tools/countychar.cfm</a>	<p>The Program on Applied Demographics (PAD) brings skills in demographics, economics, statistics, data gathering and data analysis together to provide a variety of organizations with data, information and advice. PAD works closely with the New York State Department of Labor, the U.S. Census Bureau and other organizations to assist them in their activities.</p>
9	<b>Profile.id &amp; economy.id</b> <a href="http://home.id.com.au/services/local-government-products-community/">http://home.id.com.au/services/local-government-products-community/</a>  <b>Example: SHOROC Region Community and Economic Profile</b> <a href="http://profile.id.com.au/shoroc">http://profile.id.com.au/shoroc</a>	<p>Both these applications are designed to help local authorities to build knowledge and facilitate evidence-based decision-making.</p> <p><i>Profile.id</i> uses demographic data to narrate a story about how your community is changing and how it compares to other areas. It is designed to assist councils apply for funding, allocate resources, manage assets, make confident decisions and provide useful information to the community.</p> <p><i>Economy.id</i> tells the story of your local economy, how it is changing and how it compares to other areas. Quantify, describe and promote your local economy and the role it performs in employment and wealth creation. Develop economic development strategies, attract investment, verify observations with data and quantify the effect of adding or losing jobs.</p>

### 3. Indicative profiles of some online applications

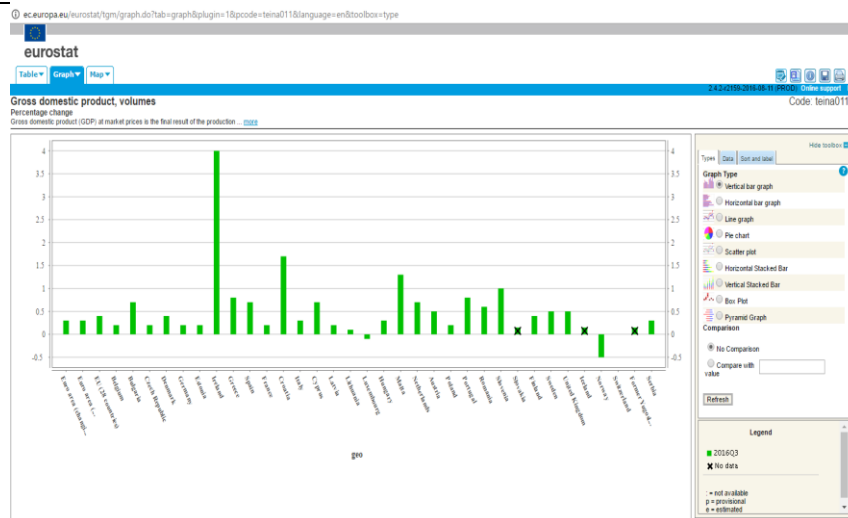
#### App #1

**Title:** Eurostat - Country Profiles

**Link:** <http://ec.europa.eu/eurostat/guip/introAction.do?profile=cpro&theme=eurind&lang=en>

**Description:** Country Profiles is a graphic tool which is easy to use and is accessible to everyone. This tool enables: a) Grouping of indicators according to the country and the region; b) Possibility to consult predefined series of 10-20 indicators by theme; c) Possibility to compare countries.

**Screenshot:**



**Open source or not?** NO

**If yes, link for the source code:** -

**If not, what is the cost?** It is free to use the online application.

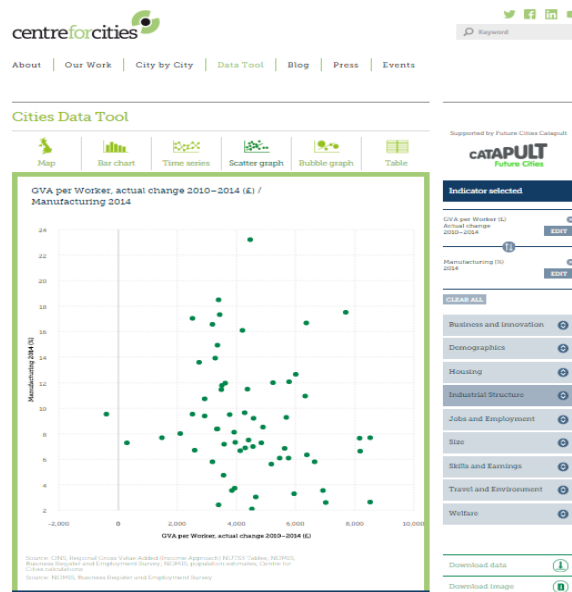
#### App #2

**Title:** Cities Data Tool

**Link:** <http://www.centreforcities.org/data-tool/#graph=map&city=show-all>

**Description:** With the support of Future Cities Catapult the Cities Data Tool was launched in the beginning of 2015. The tool gives users access to data on UK cities in a variety of formats (map, line diagrams, bubble diagrams, bar charts etc.).

**Screenshot:**



Open source or not? NO

If yes, link for the source code: -

If not, what is the cost? It is free to use the online application.

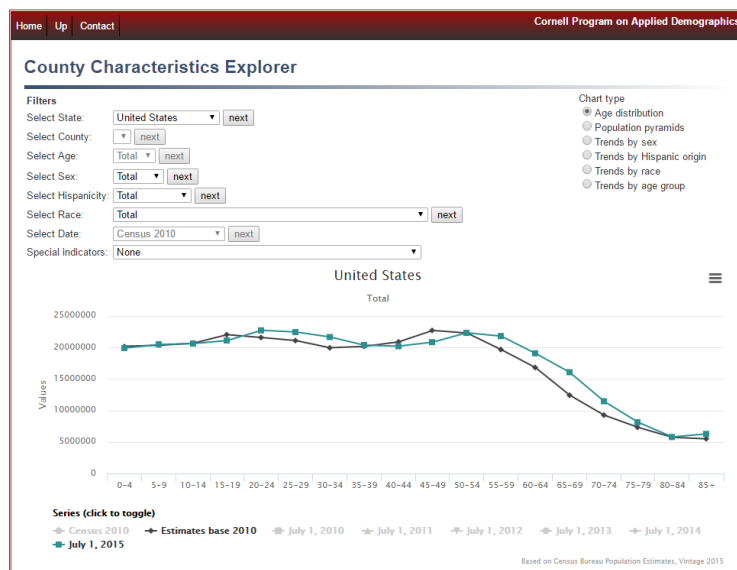
### App #3

**Title:** Cornell Program on Applied Demographics – County characteristics explorer

**Link:** <https://pad.human.cornell.edu/tools/countychar.cfm>

**Description:** This application uses a number of filters, based on spatial and indicator based information in order to produce online interactive charts.

**Screenshot:**



Open source or not? NO

If yes, link for the source code: -

If not, what is the cost? It is free to use the online application.

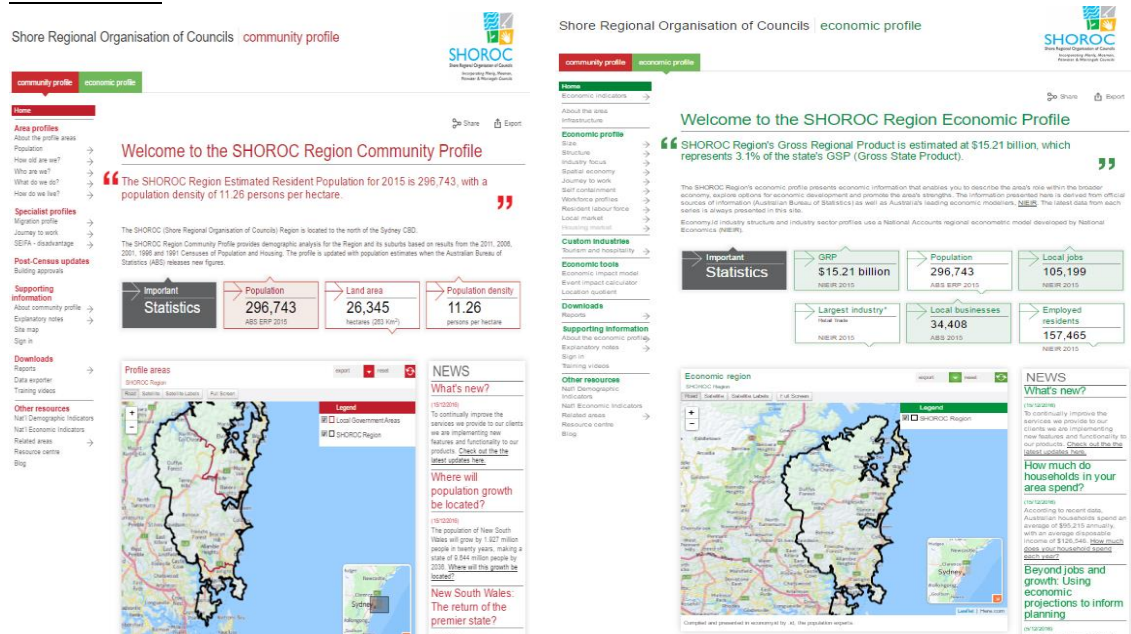
## App #4

**Title: Profile.id & economy.id**

**Link:** <http://home.id.com.au/services/local-government-products-community/>

**Description:** Both these applications are designed to help local authorities to build knowledge and facilitate evidence-based decision-making. The Profile.id & economy.id are a set of applications that cover distinctive sets of characteristics referring to demographics and economic conditions of the regions.

**Screenshots:**



**Open source or not?** NO

**If yes, link for the source code:** -

**If not, what is the cost?** It is not free to use the online application.

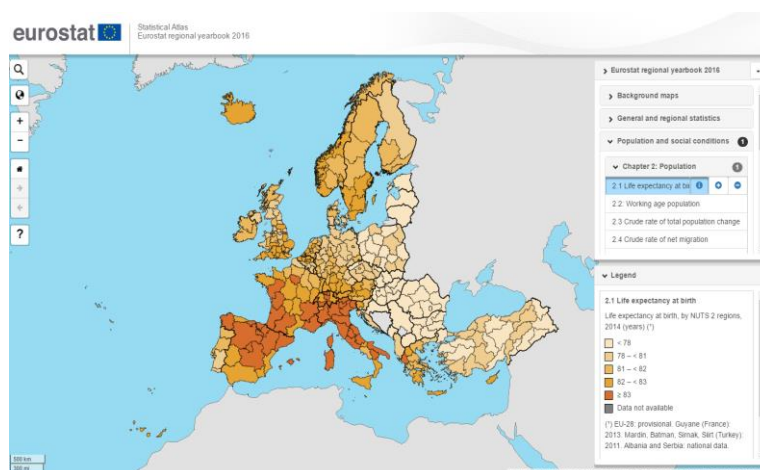
## App #5

**Title: Eurostat - Statistical Atlas**

**Link:** <http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/>

**Description:** Statistical Atlas is an interactive map viewer for statistical and topographical maps. You can combine geographical information from various "base maps", such as the borders of the NUTS regions or the Urban Audit cities, with information from statistical maps. Various functionalities are offered to view the details of the map display: a) Zooming in and out on Europe and outermost regions; b) Changing the transparency settings of the map layers; c) Retrieving the code, geographical label and statistical value of a specific NUTS region or Urban Audit city

**Screenshot:**



Open source or not? NO

If yes, link for the source code: -

If not, what is the cost? It is free to use the online application.

## 4 Analysis of the main applications/tools identified

### 4.1. Input data

In most cases, data coming from official national data sources are used for regional profiling issues. In the case of EU regions, the main data source is EUROSTAT and national censuses. Another interesting thing is that there is a categorisation of the data. More specifically, the main categories upon which regional profiles are being built are:

- Demographics: Including general information about the population of the region.
- Economy and Finance: Information about the evolution of regional economic indicators.
- Industrial structure: Information presenting the industrial/sectoral structure of the region.
- Science and Technology: Variables regarding R&D, human resources and patents.
- Social conditions: Variables referring to poverty and social exclusion.
- Regional typologies: Information regarding regional typology and synthesis.

### 4.2. Data processing

Data processing in terms of computational procedures is not required in this kind of application. However, processes referring to database development and interaction with the user should be an essential part of the tool to be developed. Another key part of the *Regional assets mapping* tool should also be the comprehensive connection between data and their visualisation methods. All the previously mentioned applications include a well-specified data visualization part, thus, it is important for *Regional assets mapping* tool to be able to offer a solid platform for data visualisation, as regional authorities aiming to use the ONLINE-S3 platform will find it essential to present their findings in charts and figure format.

### 4.3. Output data

The main outputs of the presented tools include:

- tables of selected regional profiling indicators (in .xls, .xlsx or .csv format)
- figures and charts of selected regional profiling indicators (in .png format)
- final reports for specific regions including selected tables, charts and figures based on the users' preferences. This output is available in a .pdf format. A very useful thing would



be to have the final report output at a .docx format for the user to be able to edit the report after having used the application.

In general, the main rationale behind that kind of applications is to enable the user to perform descriptive analysis regarding selected regional characteristics that he/she chooses to use. Thus, he/she will be able to start the development of the RIS3 strategy based on the regional assets mapping method.

#### 4.4. User environment

The main users of this application will be local authority employees. As a result, the user interface in almost all cases is simple and easy to use, avoiding high complexity interactions. It is designed in a comprehensive way, to be easy to understand by a wide variety of users, not only in terms of nationality, but also in terms of age and educational level.

Based on the previous descriptions, the interface in most of the cases includes three discrete functionalities:

1. the choice of the data and the construction of the main tables including the descriptive variables,
2. the creation of the diagrams, based on the selected data, and
3. the development of the report, where the user can choose which tables and figures will include.

In order to differentiate the first two functionalities from the report, a separate report part or button is used. An even more effective way to separate final report from other intermediate stages would be to use a different page for the report, illustrating the selected tables and diagrams by the user.

### 5. Specifications for a web application supporting / facilitating the implementation of the *Regional assets mapping*

#### 5.1 Functional specifications

Given the fact that regional profiling is the most prevailing RIS3 method applied essentially by all regions, alongside with the fact that regions use a variety of sources to map out a comprehensive 'picture' of regional assets, *Regional assets mapping* tool will be the main tool for integrating all relevant sources into a web-based dashboard. This application could help RIS3 stakeholders to access basic information in a quick manner.

As *Regional assets mapping* tool will be focused on RIS3 strategic planning, its main comparative advantage will be the fact that instead of incorporating a vast amount of information, its main database will mainly include indicators referring to various aspects of RIS3 strategic planning. According to the method description developed in a previous work package (WP1), the main categories and variables in this application will be:

1. Geography			
Sub-category	Variable Name	Recency	Link
<b>1.1 Typology (NUTS3)</b>	Urban-rural including remoteness	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>
	Metro Region	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>
	Border Region	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>
	Mountain Region	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>
	Island Region	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>

			<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">explained/index.php/Regional_typologies_overview</a>
	Sparsely-populated Region	2015	<a href="http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview">http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview</a>
<b>1.2 Major infrastructure</b>	Air Transport: Major commercial airports	-	
	Air Transport: Passengers carried per annum	2013	<a href="http://ec.europa.eu/eurostat/web/transport/data/database">http://ec.europa.eu/eurostat/web/transport/data/database</a>
	Maritime transport of passengers	2013	<a href="http://ec.europa.eu/eurostat/web/transport/data/database">http://ec.europa.eu/eurostat/web/transport/data/database</a>
	Maritime transport of freight	2013	<a href="http://ec.europa.eu/eurostat/web/transport/data/database">http://ec.europa.eu/eurostat/web/transport/data/database</a>

<b>2. Demography and Society</b>			
Sub-category	Variable Name	Recency	Link
<b>2.1 Population Size and dynamism</b>	Total Population	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Population aged 20-34 years	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Population aged > 65 years	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Crude rates of natural change of population	2014	<a href="http://ec.europa.eu/eurostat/web/population-demography-migration-projections/population-data/main-tables">http://ec.europa.eu/eurostat/web/population-demography-migration-projections/population-data/main-tables</a>
	Dependency Ratio, Elderly (% 65+ over population 15-64)	2014	<a href="http://stats.oecd.org/Index.aspx?datasetcode=REG_DEMO_TL2">http://stats.oecd.org/Index.aspx?datasetcode=REG_DEMO_TL2</a>
<b>2.2 Education</b>	Population completed tertiary education	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>

<b>3. Economy and Labour</b>			
Sub-category	Variable Name	Recency	Link
<b>3.1 Economy</b>	Gross Domestic Product (GDP)	2014	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Gross value added	2014	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
<b>3.2 Labour</b>	Economically active population	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Employment	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Unemployment	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Growth rate of employment (%)	2014	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Human resources in science and technology (HRST)	2015	<a href="http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database">http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database</a>
	Employment in medium-high and high tech manufacturing and knowledge-intensive services as percentage of total employment	2014	manually from <a href="http://ec.europa.eu/DocsRoom/documents/17824">http://ec.europa.eu/DocsRoom/documents/17824</a>

<b>4. Sectoral structure</b>			
Sub-category	Variable Name	Recency	Link
<b>4.1 Agricultural Statistics</b>	Agriculture (A-Div.01), Production value at basic price	2014	<a href="http://ec.europa.eu/eurostat/web/agriculture/data/database">http://ec.europa.eu/eurostat/web/agriculture/data/database</a>
<b>4.2 Structural Business Statistics</b>	Mining and quarrying (B), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Mining and quarrying (B), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Manufacturing (C), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Manufacturing (C), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Electricity, gas, steam and air conditioning supply (D), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Electricity, gas, steam and air conditioning supply (D), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Water supply; sewerage, waste management and remediation activities (E),	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>



	Number of persons employed		
	Water supply; sewerage, waste management and remediation activities (E), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Construction (F), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Construction (F), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Transportation and storage (H), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Transportation and storage (H), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Accommodation and food service activities (I), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Accommodation and food service activities (I), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Information and communication (J), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Information and communication (J), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Financial and insurance activities (K), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Financial and insurance activities (K), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Real estate activities (L), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Real estate activities (L), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Professional, scientific and technical activities (M), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Professional, scientific and technical activities (M), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Administrative and support service activities (N), Number of persons employed	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>
	Administrative and support service activities (N), Number of local units	2014	<a href="http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database">http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database</a>

5. Business Characteristics			
Sub-category	Variable Name	Recency	Link
<b>5.1 Enterprise demography</b>	Population of active enterprises	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Number of employees in the population of active enterprises	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Average company size: "Number of employees in the population of active enterprises" divided by "Population of active enterprises"	2013	
	Net business population growth	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
<b>5.2 High growth and innovating</b>	Number of high growth enterprises measured in employment (growth by 10% or more)	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	SMEs introducing product or process	2015	<a href="http://ec.europa.eu/eurostat/web/microdata/com">http://ec.europa.eu/eurostat/web/microdata/com</a>

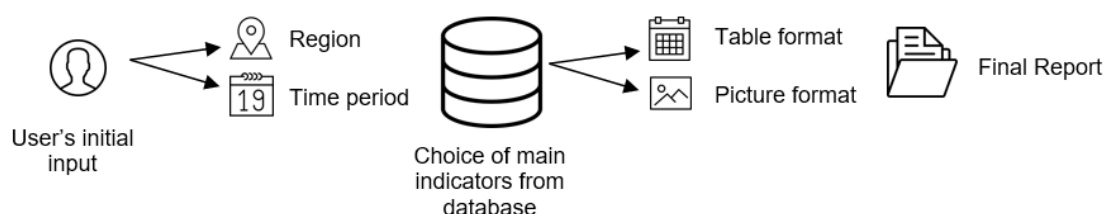
enterprises	innovations as percentage of SMEs	2015	munity-innovation-survey
	SMEs introducing marketing/organisational innovations as percentage of SMEs		<a href="http://ec.europa.eu/eurostat/web/microdata/community-innovation-survey">http://ec.europa.eu/eurostat/web/microdata/community-innovation-survey</a>

6. Innovation System			
Sub-category	Variable Name	Recency	Link
6.1 Critical Institutions	Knowledge Organisations (Universities, Research centers etc)	-	
6.2 R&D	Human resources in science and technology	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Employment in high-tech sectors	2015	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Total intramural R&D expenditure	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	Researchers, all sectors	2013	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
6.3 Patents	PCT Patent Applications	2011	<a href="http://stats.oecd.org/index.aspx?datasetcode=REG_DEMO_TL2">http://stats.oecd.org/index.aspx?datasetcode=REG_DEMO_TL2</a>
	Patent applications to the European patent office	2012	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>
	High-tech patent applications to the European patent office	2012	<a href="http://ec.europa.eu/eurostat/web/regions/data/database">http://ec.europa.eu/eurostat/web/regions/data/database</a>

The logical steps of the application, based on its methodological description in WP1, are:

- *Step 1.* Selection of the **region** and the **time period** that will be mapped.
- *Step 2.* Appointment of most relevant **sections** among the available categories.
- *Step 3.* Appointment of most relevant **indicators** within the selected sections.
- *Step 4.* Selection of the appropriate **visualisation** mode for the data.
- *Step 5.* Description and explanation of **results**.
- *Step 6.* **Report** synthesis and regional profile overview.

Following the application architecture described in previous steps, the information flows within the application are given in **Figure 1**, below. As it illustrated, the initial input coming from user will define the basic parameters needed regarding the region that needs to be described and the time period to which it refers to. By combining this information with the selected more relevant indicators, the corresponding data will be pulled from the main database. The processing of these data, in terms of visualization, will be based on table or graphic format, which will be sent to the final report. Individual tables or graphics should also be able to be extracted through the application.



**Figure 1:** Information flows within the Regional assets mapping application.

The main output of the application is the final report of Regional assets mapping exercise, which will give the user a comprehensive picture regarding his/her region for the chosen time period

frame. Moreover, individual information that might be needed to some other phases of the RIS3 development can also be extracted through this application.

## 5.2. Technical specifications

The system will be based in three-tier architecture. Data storage, functional process logic and user interface will be developed and maintained as independent modules:

- Data Tier: database servers where information is stored and retrieved.
- Application Tier: controls application functionality by performing calculations and data processing.
- Presentation Tier: it occupies the top level and displays information and forms of the application.

The recommended technologies for the application and each tier are:

- Database management system: MySQL
- Back-end development: PHP
  - > Web Server: Apache HTTP Server
- Front-end development: HTML - CSS - JavaScript - AJAX
  - > JavaScript Libraries for user interaction and graphs: jQuery / D3.js

## 5.3. User interface

Overall number of pages that compose the application: 7 (1 for each category + 1 for the final report). There will also be some additional pop-up windows.

All other user interface characteristics will be developed through the design guide prepared for WP3.

## 6. Existing applications that cover the specifications

Given the fact that this application will not include the development of regional maps based on selected indicators, it would be wise to include the links of the Eurostat tools: Country profiles and Statistical Atlas. It is important to understand that these already existing EU tools will work complementary to the *Regional assets mapping* tool, aiming to expand the regional indicators that are being used for the RIS3 strategy development.

## 7. References

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Martínez, D. 2013. OK Profiling Indicators in the Context of Regional Innovation Strategies for Smart Specialisation (RIS3) - Background note. IPTS-JRC, European Commission.