

# Methods of data display in the web applications ISPO

ISPO is a service that has grown over the years from an information system aimed at supporting decision-making in the Slovenian Government into an e-administration information system available to all web users at home and in the world.

The aim of the service is the display of the economic and administrative data of interest to the greater public domain.

Data are collected from different sources (Statistical Office of the RS, Employment Service of Slovenia, Human Resources Department of the RS, MNZ, CJMMK and other), and take on new value once collected within the ISPO system, as they cover range of sectors. And despite their variegated origin, they are available to the user all in one place.

## What kind of data is this?

The data in the ISPO system is mainly numerical, connected to a range of interlinked dimensions. These dimensions can be different, depending on the data type, most often time, space and the coding of the data itself. The space dimension distributes the data in geographic units, hence regions, administrative entities and communes, and the coding of the most commonly used is the code list of standard SKD activity classifications.

The data volume is large, as new data are added monthly to most of the 13 system blocks. Hence it is important to have these data logically structured. The system aims at offering data to those who do not have time to waste and hence want to reach the information as fast and easily as possible. This is why we had to work particularly hard on the data display, as it has to allow simple and effective insight into the content and a synoptic image of the data.

## Data display

Due to the variety of ISPO users, individual programs are adapted in order to offer access

to the data to different user types with different demands, different knowledge levels and different needs. Through dynamic parameter collection, we offer each individual the possibility to display data according to his/her own wishes.

## Parameter collection

Parameters such as dates, geographic units, activity and service codes define the framework of the data display. As these differ depending on the data module, the application looks for them in the database at each collection and hence ensures the data are up-to-date without the need to modify the web pages. The user hence chooses a certain block of data from which he wishes to obtain information. The application connects to the database and obtains the parameters specific to the chosen block. Thereupon it dynamically constructs the HTML code needed to display the webpage with the parameters through which the user chooses the way the data is displayed.

## Tabular and graphical data display

Depending on the selected parameters, the application appropriately interrogates the database and the results are shown on the webpage in the form of a table supplying the user with all the requested data. The table can be constructed in a range of ways, yet again depending on the user's selections. It may be organised time-wise in months

and years; otherwise, the application offers dynamic increasing and decreasing ordering of numerical data, carried out by the client without any further needs for server interrogation. Each table then offers a graphical display of the data for a clearer overview. With a click on the graph icon, the application is asked to produce a suitable diagram, which is then sent to the client to be displayed to the user. We use two types of graph: bar and line graphs. Bar or column graphs show the data, limited in time to one month, grouped into blocks depending on the geographic units or coding, hence allowing quick comparison. For a better understanding of the fluctuation of values over the months, we use line graphs, where the values are shown against time. If more datasets are chosen at once, all line graphs are sketched with different colours on a common coordinate system, hence allowing easier comparison between them. For more elaborate analysis and further data elaboration, each table also presents the user with the option to export the data onto his own computer. With a click on the button "export table into MS Excel" (izvoz tabele v MS Excel), the data are configured in Excel format and saved on the user's computer, where the information can then be freely elaborated. This option is very useful for the analysis of large datasets, e.g. in the preparation of an overview over many years.

## Geographic display

When the data are divided into geographic units, this allows a further display, in the form

of a map, subdivided into 58 communes or 193 administrative entities. The data needed for the map display are obtained from the GURS webpage (<http://www.gu.gov.si/>). They are stored in SHP format, the standard for geographic datasets, owned by ESRI (<http://www.esri.com/>). The original data are encoded in the Gauss-Kruger coordinate system, which is specific to Slovenia and defines special coordinates.

These coordinates are converted into point coordinates and written in a text file.

The map display takes place dynamically. The application generates a support picture (in JPG or PNG format), a subdivision into individual areas and the HTML code to display the picture and subdivisions from the given geographic data. The program allows the transformation of the geographic data and the preparation of the support picture for different screen resolutions. The areas on the map are divided into a scale of six value blocks. The blocks are shown in the legend and coloured in a scale from light to dark tones, depending on the increasing value of the data in the area. The application further prepares a mark for each area, containing information on the name of the area and the local value of the assessed data. These marks can be used by shifting the mouse over each area, hence simplifying the overview by geographic unit.

## Connection to e-administration

The ISPO system is integrated in content and style into the national portal of the Republic of Slovenia – e-administration (e-uprava). Users perceive the linking of services as an additional service of the ISPO system. Through e-administration, one can request to be informed of all updates on the data in a specific block.

Users requesting such services will receive a short e-mail with a brief description of the changes and a link to the content every time the data is refreshed. This way the portal reduces the workload on the user, as it spontaneously informs him of the new data available. Updates for each datablock can be requested separately. A different type of connection runs through the personal settings of the e-administration. Within "My e-administration" (moja e-uprava), each user selects the blocks of the ISPO system

that interest him. For each block the user chooses a geographic area for which he wishes to follow the data of the previous month.

## Which way now?

The described methods of data display meet and in many respects exceed the standards of specialised systems of numerical dataset display. However, we intend to further simplify the overview of the data or, better said, to bring it closer to the user's needs.

A system with a higher level of connection pushes towards a more user-friendly "my e-administration". If the user wanted to, he could write his address and the register of space units would fetch the data concerning the user's commune or administrative unit. This way the user could already be presented with the latest economic figures for his area as soon as he logs on. This way the data would be made not only more readable, but also closer in content to the user's interests.

## Summary

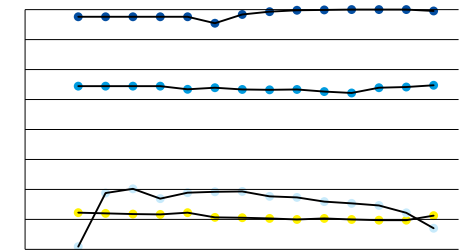
ISPO (the information system supporting decision-making in the Slovenian Government) has slowly grown into an information system for e-administration data, available to all web users at home and in the world. The aim of the service is the display of the economic and administrative data of interest to the greater public domain. Data are collected from different sources (Statistical Office of the RS, Employment Service of Slovenia, Human Resources Department of the RS, MNZ, CJMMK and others), and take on new value once collected within the ISPO system. The data shown by the ISPO system are mainly numerical, connected to a range of interlinked dimensions. These dimensions can be different, depending on the data

type, most often time, space and coding of the data itself. The system aims at offering data to those who do not have time to waste and hence want to get the information as fast and easily as possible.

Miha Pšenica

Examples of data display:

Picture 1. Line diagram



Picture 2. Column diagram

