Title of the training: **Voila' dashboarding in the JRC Big Data Analytics Platform**

Given the great interest that Big Data Analytics Platform (BDAP) users have demonstrated on Voilà, this training will provide all the information needed for the development of Voila' dashboards. Thanks to the recent introduction of the VaaS (Voilà as a Service), users will be able to independently create and deploy in production their dashboards.

**Course objectives**

The training will illustrate how to create and deploy fancy and powerful data visualization dashboards inside the BDAP Voilà service. The attendees will have the possibility to experiment the newly created BDAP voilalibrary that greatly simplifies the development of the dashboard GUI. The course aims at creating a community of JRC developers that can publish their scientific output as modern dashboards backed by a fully-fledged data science environment.

**Course content**

After an introduction to Voilà and a brief demonstration of some of the most representative Voilà dashboards created by the BDAP team in recent times, the course will focus on the detailed explanation of the widgets libraries (ipywidgets and ipyvuetify) that are available inside the BDAP JupyterLab environment and on their usage for the design of the dashboard interfaces. The training will also provide some examples of: Pandas tabular data manipulation and display, visualization of charts using Plotly, creation of customs SVG drawing (with interactivity provided by ipyevents), display of geospatial vector and raster datasets. An important part of the training will be dedicated to the procedure for the autonomous deploy in production of Voilà dashboards using the VaaS service. The remaining part of the day will be allocated to the usage of the BDAP voilalibrary, also through the step-by-step analysis of an example of a complex dashboard to interact with EUROSTAT data on Energy Consumption in Europe.

In brief, the training will:

1. Introduce Voilà and showcase the dashboards already created in BDAP

2. Illustrate the visualization libraries available for Voilà in BDAP

3. Present the newly created BDAP voilalibrary to simplify some common tasks related to the creation of advanced dashboards

4. Provide hands-on experience with exercises for the creation of simple dashboards

5. Perform a step-by-step analysis of a real dashboard created using the BDAP voilalibrary

6. Describe and demonstrate the deployment procedure of the Voilà as a Service (VaaS) new BDAP service

**Target audience**

Anyone interested in developing Voilà dashboards and deploy them in production inside the Voilà servers hosted by the Big Data Analytics Platform. The creation of the dashboards requires a good knowledge of the Python programming language and some previous experience in the JupyterLab BDAP environment (JEO-lab).

**Background information**

The JRC Big Data Analytics Platform (BDAP) is a versatile platform with multi-petabyte storage co-located with computational power and a range of data services accessible from the internet. The BDAP aims at linking data, data science and thematic experts to generate enhanced policy relevant insights and foresight.

More information on the JRC Big Data Analytics Platform (BDAP) can be found here:

- BDAP service description (scope, target users, access): <https://webgate.ec.europa.eu/connected/groups/bigdataeoss/blog/2022/01/20/bdap-service-description>

- BDAP web page: <https://jeodpp.jrc.ec.europa.eu/>

- BDAP Voilà page: <https://jeodpp.jrc.ec.europa.eu/bdap/voila/>

- BDAP@Connected: <https://webgate.ec.europa.eu/connected/groups/bigdataeoss>

- BDAP reference publication: <https://dx.doi.org/10.1016/j.future.2017.11.007>

**Agenda**

- 09:30-09:45: Introduction to Voilà and brief showcase of some Voilà dashboards

- 09:45-10:20: Working with widgets to interact with the user and to subdivide the space on the page

- 10:20-11:00: Introduction to the BDAP voilalibrary

- 11:00-11:15: Coffee break

- 11:15-11:35: Visualizations of Pandas tabular data and Plotly charts

- 11:35-12:00: Custom visualizations/interactions/animations with SVG

- 12:00-14:00: Lunch break

- 14:00-14:30: Geospatial data display and interaction

- 14:30-15:45: Step by step analysis of a real dashboard: Energy consumption in Europe

- 15:45-16:00: Coffee break

- 16:00-16:30: Deploy of dashboards in production on the BDAP VaaS

**PREREQUESITES to attend the training**

All participants must:

1. Obtain credentials to access the BDAP **before** the training by following the instructions detailed [here](https://jeodpp.jrc.ec.europa.eu/home/registration)

2. Have successfully accessed the BDAP JupyterLab service (JEO-lab) at least once **before** the training. To access JEO-lab, please follow the steps described [here](https://jeodpp.jrc.ec.europa.eu/apps/gitlab/for-everyone/documentation/-/wikis/Jeodpp_services/JEO-lab).

3. Have some experience with Python programming.

To get the most out of the training users should have:

1. Some knowledge of git and on the usage of BDAP gitlab instance

2. Some basic knowledge of Pandas and Plotly python libraries