

## 22J001 – Internship proposal

Front-end and backend software development: prototyping for Energy and Climate Dashboards

### Context

The European Institute for Energy Research was founded by EDF and the KIT in 2002 aiming at enhancing collaboration through joint projects applied to industrial issues. With its applied research orientation EIFER is bridging the gap between science and industry since more than 15 years. In the context of the European energy transition, EIFER provides research-based innovative energy solutions for the sustainable growth of cities, local communities and industries.

In the frame of the H2020 European project “RESPONSE”, the consortium is building an Energy-Climate Platform for Dijon Metropolis to monitor its energy-climate plan and support concertation with local actors; it will also provide the Metropolis with real time maps and predictions of air quality and temperature in order to protect inhabitants of environmental conditions. These two scopes provide features for both climate change mitigation and adaptation. The platform relies on real-time energy data collection (utilities’ data, sensors) and automatic data processing to compute indicators on energy (carriers, consumption, production, usages) and GHG emissions at the scale of the territory, and indicators to monitor projects contributing to decarbonisation. EIFER animates the local consortium, designs energy and climate indicators and develops an energy-climate dashboard.

### The assigned tasks involve

The general goal is to prototype how to render into a Content Management System graphs and geographical maps produced by both open-source libraries (such as Vega, Plotly) and proprietary frameworks (ESRI, analytics...), and to prototype computation solutions to generate the data to display:

- Test one or more Content Management Systems (CMS), configure it to match existing specifications of a GUI
- Test the integration of one or more CMS with graphing libraries such as Vega or Plotly, and maps rendering such as ESRI solutions or Leaflet
- Deploy simple databases and services for prototyping (for instance PostgreSQL or PostGIS)
- Test the integration of scientific workflows (KNIME) to produce the data to graph
- Contribute to the design of a simple architecture (architecture diagrams, presentation of proposals, architecture documents, documents for project management)
- Communicate with a team of external partners and end-users to test prototypes: presentation in meetings (English or French), reports, testing sessions, workshops

## Required qualifications / skills

The typical profile expected for this position is Licence 3 / Master 1 / Master 2 student in software engineering or engineering. We are open to any profile having the relevant mindset and background:

- Interest for data visualization, basic knowledge of at least one visualization framework (Vega, Plotly, graphviz, d3js, Apache superset, ...)
- Interest in delivering neat graphical user interfaces to end-users
- Good level in at least a high-level programming language (Python/Django, Java), basic experience with several programming languages (Python, Java, JavaScript, Scala, R...), being open to learn other languages if necessary
- Basics for web frontend development: HTML, CSS, JavaScript, JavaScript frameworks
- Basic knowledge of databases (structure, SQL language, indexing, experience with a database engine such as MySQL)
- Understanding of concepts and methods for software architecture: Object-oriented, database, UML, webservice
- A first contact with Geographic Information Systems (ESRI, GeoServer, QGIS ...) or Web Mapping (OpenStreetMap, Here Maps ...) is a plus but not mandatory.
- Tenacity, curiosity
- English B2 (institute's official working language), French B2 (definition of indicators includes French interlocutors)

## What you can expect

- Work collaboratively in a team with software architects and software engineers
- An international experience in a stimulating multi-disciplinary, multi-cultural environment at the interface between research and a large utility
- A stimulating context in which proposals compliant with technical and functional constraints would be welcomed
- Work on the first prototypes of a product with identified end-users

## Conditions

- Duration: 5-6 months
- Starting date: as soon as possible
- Location: EIFER, Emmy-Noether-Str. 11, 76131 Karlsruhe, Germany or remotely
- Working hours: 39.5 hours per week
- Monthly compensation: 450 € for compulsory internship

## Contact

If you want to join our motivated team, please forward your electronic application with one single PDF of max. 5MB to [jobs@eifer.org](mailto:jobs@eifer.org) (cover letter + curriculum vitae). Please refer to the offer number **22J001**.

For additional information concerning the work, please contact Omar Benhamid [omar.benhamid@eifer.org](mailto:omar.benhamid@eifer.org) or Samuel Thiriot [samuel.thiriot@eifer.org](mailto:samuel.thiriot@eifer.org).