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FAIR: User-friendly delivery of climate and weather data

Christopher William Frank¹, **Richard Figura**¹, Bernd Fischer¹, Frank Dimpfel², Ulrich Rothstein³, Charlotte Eberz⁴, Marvin Schuchert⁵, and Max Lübcke⁶

¹CISS TDI GmbH, Sinzig, Germany

²YellowMap AG, Karlsruhe, Germany

³terrestris GmbH & Co. KG, Bonn, Germany

⁴mundialis GmbH & Co. KG, Bonn, Germany

⁵KME Karlsruhe Marketing und Event GmbH, Karlsruhe, Germany

⁶BayWa r.e. Wind GmbH, München, Germany

Climate and weather data play an important role for e.g. identifying actions against climate change and optimizing industries. However, a correct understanding and handling of such data is often difficult for users without a meteorological background. Moreover, specialized software solutions and an infrastructure capable of handling large amounts of data are needed to process and analyze these data.

The research project FAIR addresses this issue by simplifying the exchange of information and data between the German Meteorological Service (DWD) and stakeholders from industry and public. To fulfill this purpose, microservices for processing, caching, visualizing, and analyzing meteorological data in an efficient way are being developed. Processing comprises, for example, the selection of specific information from model data or the conversion of the result into formats commonly used by the user. The compilation of microservices makes it possible to support different types of applications and at the same time to make data from third parties available to the DWD. To demonstrate the utility of these microservices, three test scenarios are considered: 1) wind farm planning, 2) integration of meteorological data for individual traffic routing, and 3) planning of social events such as festivals.

In this article, we present the general idea and the current state of the project. The focus is on the challenges that have been identified for the three test scenarios and our technical approaches to address them. Herein we present the developed architecture, the data flow, the FAIR portal and the handling of metadata.