Data Spaces as an exploratory solution for big data biodiversity challenges in support of the European Green Deal: the case of terrestrial habitat connectivity

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Integrity of natural ecosystems, including terrestrial ones, and their connectivity is one of the main concerns of current European and Global Green Policies, e.g., the European Green Deal. Thus, public administration managers need reliable and long-term information for a better monitoring of the ecosystems evolution and inform decision making. Data Spaces are intended to become the EC comprehensive solution to integrate data from different sources with the aim to generate and provide a more ready to use knowledge on climate change, circular economy, pollution, biodiversity, and deforestation.

The AD4GD project does research on the co-creation of the European Green Deal Data Space as an open space for FAIR data and standards-based services tested in 3 pilot cases providing testbeds in terms of data, standards, sharing and interoperability. One of these pilots, is focused on Ecological Terrestrial Connectivity in Catalonia (NE of Spain).

The challenges are: (1) monitoring ecological connectivity in terrestrial ecosystems through the integration of state-of-the-art multi-sensor remote sensing imagery, ecological models, in-situ biodiversity observations and sensors; and (2) forecasting ecological connectivity to help to define effective actions to reduce terrestrial biodiversity loss.

To this goal, solutions are being proposed and tested, to integrate data from different sources using modern standards such as, raster-based land cover maps and connectivity maps structured as data cubes (Open Data Cube and Rasdaman), GBIF species occurrences exposed via OGC STAplus, as well as data from low-cost automatic sensors (camera traps with species identification software). All this data is related together by the use of semantic tagging with references pointing to vocabularies of GEO Essential Variables stored in OGC RAINBOW Definition Server.