
BIODT
biodiversitydigitaltwin
Funded by
the European Union

BioDT Project Overview

- **Project name:** Biodiversity Digital Twin for Advanced Modelling, Simulation and Prediction Capabilities (BioDT)
- **Call title:** Next generation of scientific instrumentation, tools and methods (HORIZON-INFRA-2021-TECH-01)
- **Duration:** 1 June 2022 – 31 May 2025 (36 months)
- **Consortium:** 22 partners
  - Experts in biodiversity, high-performance computing, artificial intelligence, digital twinning and FAIR data
- **Work Package (WP) members:** 140+
- **Coordinator:** CSC – IT Center for Science
- **Website:** www.biodt.eu

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Partners

CSC

Trust-IT Services
communicating to markets

ECMWF
EUROPEAN CENTRE FOR MEDIUM RANGE WEATHER FORECASTS

HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

Swansea University
Prifysgol Abertawe

COMMpla

UK Centre for
Ecology & Hydrology

UNIVERSITY
OF OSLO

MANCHESTER
1824
The University of Manchester

Naturalis
Biodiversity
Center

SENCKENBERG
world of biodiversity

TNO innovation
for life

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

IT4I

GBIF

UFZ HELMHOLTZ
Zentrum für Umweltforschung

BAYER

KTH
VETENSKAP
OCH KONST

UNIVERSITY OF TARTU
1632

LifeWatch
ERIC

umweltbundesamt
ENVIRONMENT AGENCY AUSTRIA

MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG

BioDT Objectives

- OBJECTIVE 1:
  - Build and deploy a pre-operational BioDT for addressing biodiversity dynamics
- OBJECTIVE 2:
  - Support the interoperability of data and services through the integration of the BioDT
    with research infrastructure platforms and workflows
- OBJECTIVE 3:
  - Ensure interoperability of BioDT with Destination Earth and the European Data Infrastructure

Use Cases split into four groups

Species response to environmental change

- Biodiversity dynamics
- Ecosystem services

Genetically detected biodiversity

- Crop wild relatives and genetic resources for food security
- DNA detected biodiversity, poorly known habitats

Dynamics and threats from and for species of policy concern

- Invasive species

Species interactions with each other and with humans

- Disease outbreaks
- Pollinators

Species Response to Environmental Change

Biodiversity dynamics

Grassland biodiversity dynamics

- Aim is to investigate how different climate change scenarios, soil conditions and management regimes affect grassland biodiversity and productivity

Forest/bird biodiversity dynamics

- Aim is to investigate how different forest management strategies (treatment options) and climate change scenarios affect the forest and biodiversity

Real-time bird monitoring with citizen science data

- Aim is to investigate if and how citizen science can be employed to real-time bird monitoring as well as to develop a www-portal that shows data and predictions with minimal delay compared to the real-world system

Ecosystem services

Cultural ecosystem services

- Focus on how a digital twin prioritizing user-defined recreation preferences linked to biodiversity occurrence and locations with sparse biodiversity data could be used by various stakeholders

Crop wild relatives and genetic resources for food security

- Aim is to develop a prototype that enables the search for CWR and traditional cultivars that can contribute to improving domesticated crops to enhance their nutritional values, resilience to diseases and changing environments

DNA detected biodiversity, poorly known habitats

Genetically detected biodiversity – in cryptic habitats

- Aim is to help biodiversity researchers and monitoring initiatives with selecting localities/areas for further sampling according to selected criteria, when targeting cryptic biodiversity with eDNA metabarcoding methods

Invasive species

Invasive alien species dynamics

- Aim is to quantify the levels of invasion (i.e., the number of naturalized alien species) in different terrestrial habitat types across Europe under baseline conditions and various future climate and land-use change scenarios

Disease outbreaks

Wild boar–African Swine Fever (ASF) modelling

- Aim is to inform data-driven responses to manage spread of wildlife diseases, specifically ASF

Pollinators

Pollination/Honey bee Modelling

- Aim is to investigate how different spatial land use patterns, weather, beekeeping practices and climate change scenarios affect the vitality and productivity (honey production) of honey bees (Apis mellifera)

Thank you for your time!


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