BEXIS2 Forschungsdatenmanagement in Verbundprojekten

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Intro

BEXIS2 is:

- designed for small to large **collaborative projects**

- focus on **active data** (i.e. project life-time)

- focus on **tabular data**, but not limited to

- focus on **data integration** and **re-use**

- generic, scalable, modular, **free** and open source

End-User Features

Search Data

Find datasets by keyword (incl. autocomplete) or use facets, filtering, sorting to quickly retrieve the dataset you need.

Upload Data

Upload your tabular data or any other type of data to BEXIS 2 and describe it with metadata.

Dataset Permissions

Specify fine grained data permissions on who can view, access, or update your dataset

Dataset Versioning

Keep track of the evolution of your dataset (i.e. who did what and when) and return to any previous version if needed.

Re-use Data Structures

Design your dataset by specifying its data structures, variables, or units only once in BEXIS 2 and re-use them for any dataset.

Single Sign-on

Use your existing credentials of your organisation to log on to BEXIS. No need to remember another username and password.

Web API Access

Beside downloading a dataset from the portal, you may also retrieve data stored in BEXIS directly with a script or from your application (e.g. R) using API calls.

Data Publication

Publish your dataset with a renown data repository or data journal (e.g. GFBio, Biodiversity Data Journal) and make it a citeable data publication identified by a DOI.

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Concept: Dataset
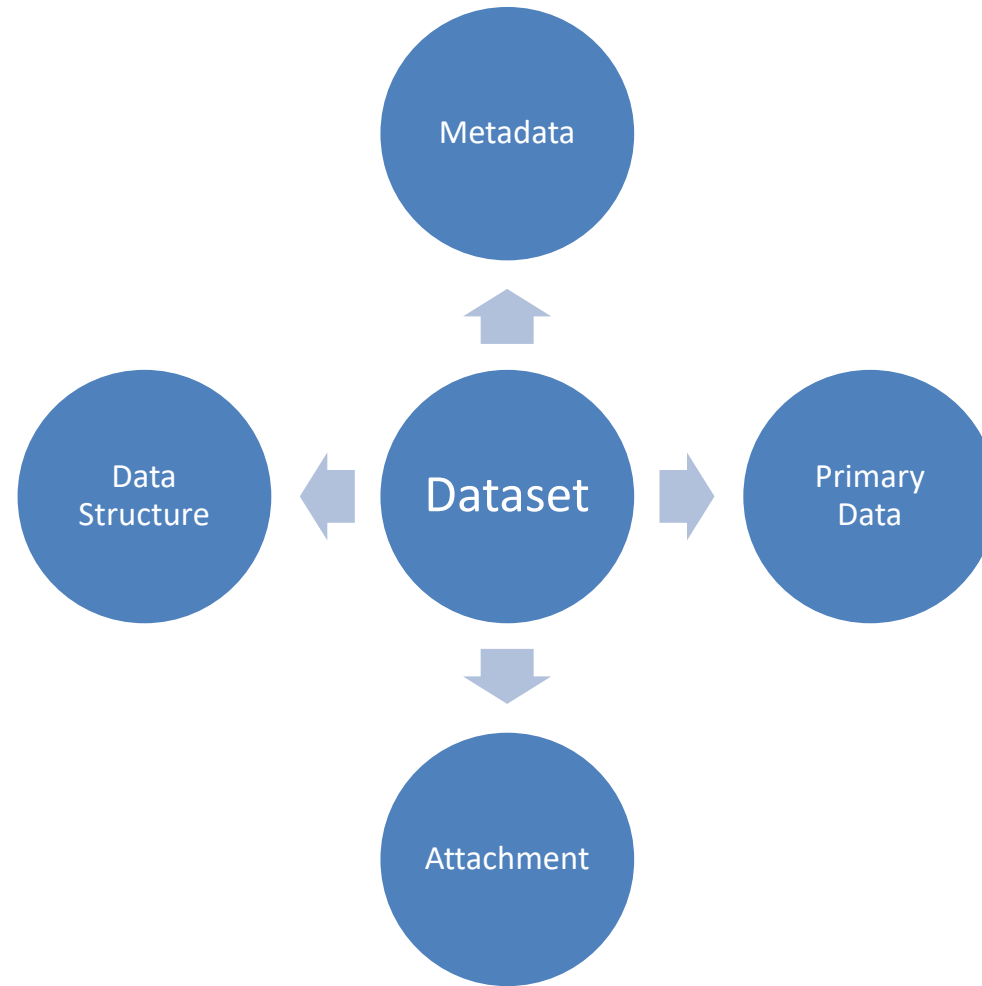
Data in BEXIS 2

Tabular

- MS Excel, CSV, TSV

	A	B	C	D	E	F	G	H	I
1	Year	Site	Date	DOY	Lat	Long	Rev	Suction	Males
2	2005	ACRE	17. Jun	169	40,47	-86,99	-0,07	0	0
3	2005	ACRE	24. Jun	176	40,47	-86,99	0,05	1	0
4	2005	ACRE	01. Jul	183	40,47	-86,99	0,17	0	0
5	2005	ACRE	08. Jul	190	40,47	-86,99	0,28	0	0
6	2005	ACRE	15. Jul	197	40,47	-86,99	0,40	2	0
7	2005	ACRE	22. Jul	204	40,47	-86,99	0,52	11	0
8	2005	ACRE	29. Jul	211	40,47	-86,99	0,63	75	0
9	2005	ACRE	05. Aug	218	40,47	-86,99	0,75	214	0
10	2005	ACRE	12. Aug	225	40,47	-86,99	0,87	370	0
11	2005	ACRE	19. Aug	232	40,47	-86,99	0,98	82	0
12	2005	ACRE	26. Aug	239	40,47	-86,99	1,10	15	0
13	2005	ACRE	02. Sep	246	40,47	-86,99	1,22	4	0
14	2005	ALBERTL	08. Jul	190	43,76	-93,20	0,28	0	0
15	2005	ALBERTL	15. Jul	197	43,76	-93,20	0,40	97	0
16	2005	ALBERTL	22. Jul	204	43,76	-93,20	0,52	0	0

File based

- Multimedia data

- Geospatial data

- ...

Heterogenity

Heterogenity

For example: 18,200 different variables in 856 datasets

	A	B	C	D	E	J
1	datasetid	name	type	unit	description	attribute
2	2663	Datum	date		PlotName	Date
3	2900	date	date			Date
4	2349	DATUM	date	-	date of forest inventory	Date
5	2623	Zaehlstart	character(16)	Uhr	date of counting	Date
6	2901	floweringstart	integerNumber		the date when the plant starts to flower	DayOfTheYear
7	2900	diameter_stem	date	mm	the diameter of the stem	
8	2923	SamplingDate	date			Date
9	3020	date	date	none	dd.MM.yyyy	Date
10	3100	Datum_Jahr	date			Year
11	3923	Date	character(16)		date of radiotracking event	DateTime
12	4021	Datum	date	DD.MM.YYYY HH:MM:SS	Date and time of a measurement.	DateTime
13	4823	Datum	date	dd-MM-yyyy		Date
14	6096	StartTime	date		Sampling Start Time	Time

→ mapped into ~80 Data Variables

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Dataset creation

*Sneak peek on version 3.0

Data structure suggestion

Data Structure Design

Data access

- **Download**
  - Including filter, sort, select of primary data
  - different formats (e.g. CSV, Excel)
  - bundles of primary data, metadata, data structure

- **Web API**
  - e.g. direct access from **R** (rBEXIS package)

Web API Data Access

Sample REST API calls: Data

- http://www.name.com/api/data/6
  - /api/data/6?header=id,name
  - /api/data/6?filter=(Grade>50 AND Grade <90)
  - /api/data/6?header=id,name&filter=(Grade>50)

Sample REST API calls: Metadata

- http://www.name.com/api/metadata/6

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Admin Features

Customizable Search Interface

Customize the Search Interface, e.g. select the metadata elements to be indexed and shown, specifiy the facets, and determine the representation of search results.

Extensible Architecture

BEXIS 2 follows a modular design and can be integrated with external applications and services or extended with custom modules

Use Multiple Metadata Schemas

Import multiple metadata schemas (XSD) relevant to your user community. For each schema a custom form will be generated by BEXIS.

System Feature Permission

Specify fine grained permissions on system features and tools for individual users or groups.

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Modules & Extensions

Modules Overview

This page contains modules which have been developed by the BEXIS2 community. Currently, they are provided "as is" without any warranty or liability. Please use at you own risk.

Most of the modules are constantly under development and are not (yet) provided as releases that match the official BEXIS2 releases. We hope to get there in the future. For the time being, if you are interested in using a module please contact the individual provider and to learn about the current status and how to use the module.

Name	Description	Contributor	Status	Contact
Module Template	This Module is a template for a BEXIS2 module to extend the functionality of the system.	BEXIS2	Public	BEXIS2 core team
BEXIS2-VAT System Interface (BEXIS2-VAT)	This BEXIS2 module extends the system with an interface to the Geo Engine	BEXIS2	Public (v1.0)	BEXIS2 core team
Data Summarization (DSM)		AquaDiva	Intern	Data Management Team
Event Management (EMM)	Simple to customize tool to manage participants registration for events (e.g. workshops, meetings, ...). Based on a fully flexible registration form. No user account needed for registration. Update your registration before the deadline.	Biodiversity Exploratories	Public	Data Management Team
Former Member Management (ALM)		Biodiversity Exploratories	BEXIS2 Core (SAM)	
Land-use Intensity (LUI)	A tool to calculate the index of land-use intensity (LUI) according to Blüthgen et al. (2012), based on information from the land owners on mowing, grazing and fertilization (Vogt et al. 2019) and your selections via a user-friendly interface.	Biodiversity Exploratories	Public	Data Management

Full list of modules: https://bexis2.github.io/software/modules

FAIR Data Principles Conformance Assessment

Biodiversity Data Journal

Home   Articles   About   About Pensoft   Books

Software Description

Biodiversity Data Journal 9: e72901
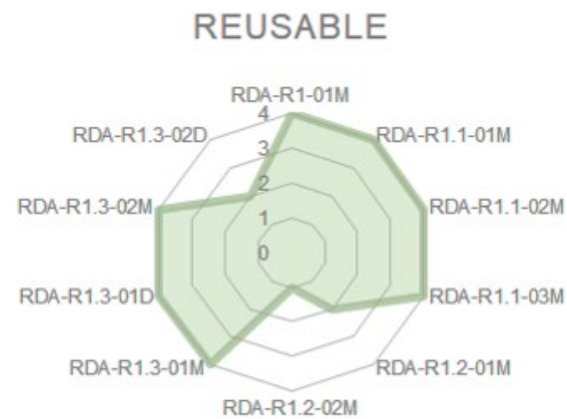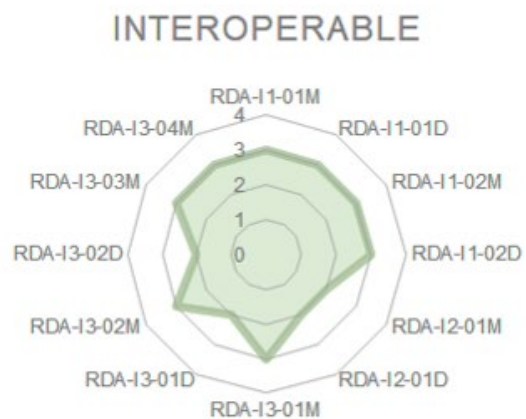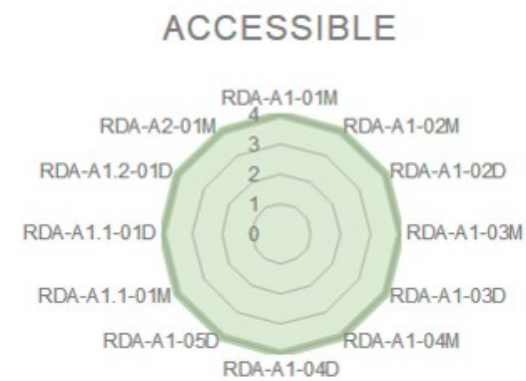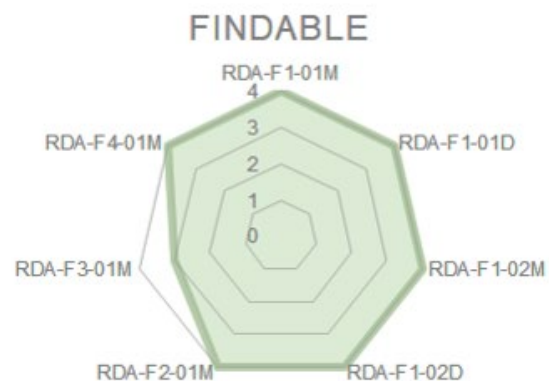https://doi.org/10.3897/BDJ.9.e72901 (05 Nov 2021)

BEXIS2: A FAIR-aligned data management system for biodiversity, ecology and environmental data

▼ Javad Chamanara, Jitendra Gaikwad, Roman Gerlach, Alsayed Algergawy, Andreas Ostrowski, Birgitta König-Ries

https://doi.org/10.3897/BDJ.9.e72901

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15

BEXIS2 FAIR conformance

Maturity level per indicator (per FAIR area) - 0 – not applicable; 1 – not being considered as yet; 2 – under consideration or in the planning phase; 3 – in implementation phase; 4 – fully implemented.

Typical BEXIS2 Deployments

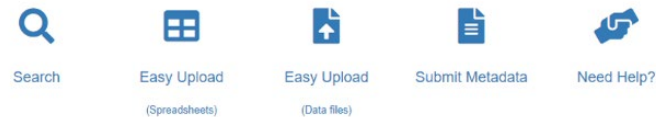Biodiversity Exploratories Information System

DFG SPP 1374

https://www.bexis.uni-jena.de/

Typical BEXIS2 Deployments

Data Repository of the German Centre for Integrative Biodiversity Research (iDiv)
Halle-Jena-Leipzig

https://idata.idiv.de/
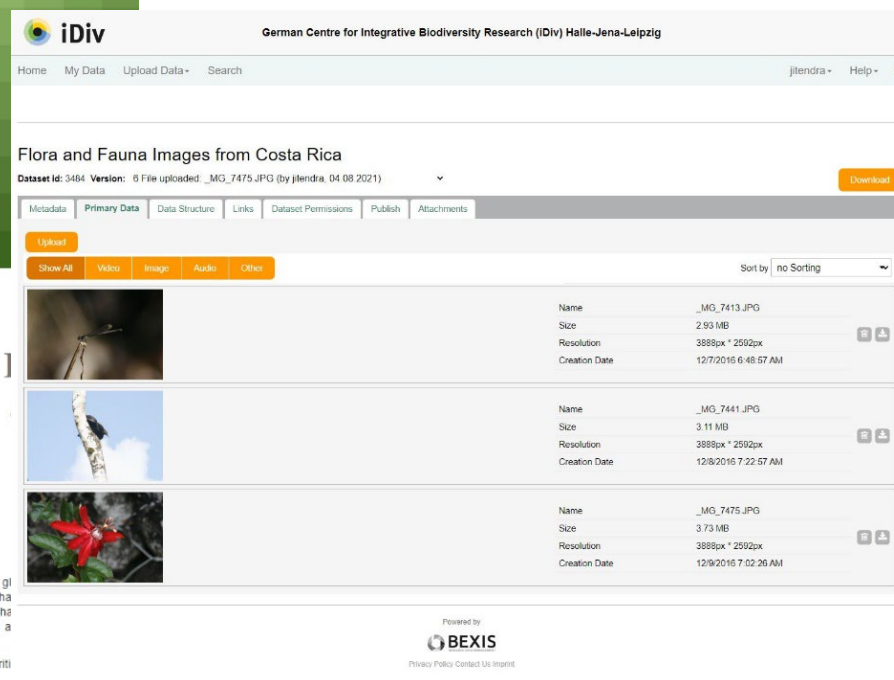
Community

Development Partner

Project Instances

- Open Source Software Licence: GNU LGPL 3.0
- Code: https://github.com/BEXIS2

BEXIS2 Demo website

https://demo.bexis2.uni-jena.de/

Acknowledgement

THANKS to all who contributed towards the development of the BEXIS2 over the years…

Thanks to all developers:

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Deutsche Forschungsgemeinschaft
DFG

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Thank you!

Questions?

Contact:
bexis-support@uni-jena.de
https://bexis2.github.io/