



Data repositories for biodiversity and ecology research

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Contents

- Introduction
- IBF Project
- Institutional Data Repositories
- Conclusions

Demands of Science Policies

- DFG (1998):
„Vorschläge zur Sicherung guter wissenschaftlicher Praxis“:
Storage for a minimum of ten years (mostly local databases)
- Allianz-Partnerorganisationen (2008):
„Schwerpunktinitiative Digitale Information“: Long-term storage
and guarantee of permanent availability and quality control in
“Data Repositories”

Traditional Dataflow

Field

Gathering of
Primary Data

Pen & Paper

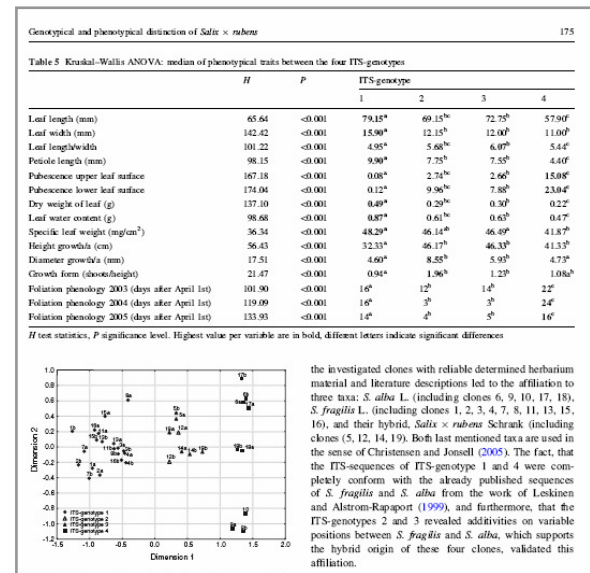
Data items

Project-sided
Computer (local)
Data Storage and
Analysis

Data
Digitalization

- Post-processing of data
- Further analysis (e. g., statistics)

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A	2	4/12	54	6,5	23.9.05
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A	4	2/11	102	32,1	
A	5	2/1	280	57,3	
A	6	2/50	105	14,2	
A	7	2/36	118	28	
A	8	4/13	139	17,9	
A	9	2/34	249	22	
A	10	4/1	166	30,5	
A	11	2/8			
A	12	4/2	186	19,5	
A	13	2/57	133,5	19,6	
A	14	2/55	123	14,2	
A	15	2/51	145	17,7	
A	16	2/35	178	22,6	
A	17	2/58	118	18,5	
A	18	2/53	166	24,2	
A	19	2/52	110	21	
A	20	2/56	112	16,2	
A	21	4/12			
A	22	2/45	74	12,7	
A	23	2/11	143	17,8	
A	24	2/1	167	29,1	
A	26	2/36	84	20,4	
B	1	4/13			26.9.
B	2	2/34			
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Journal
publication

Microsoft Excel - Elektron. Arbeitsblätter

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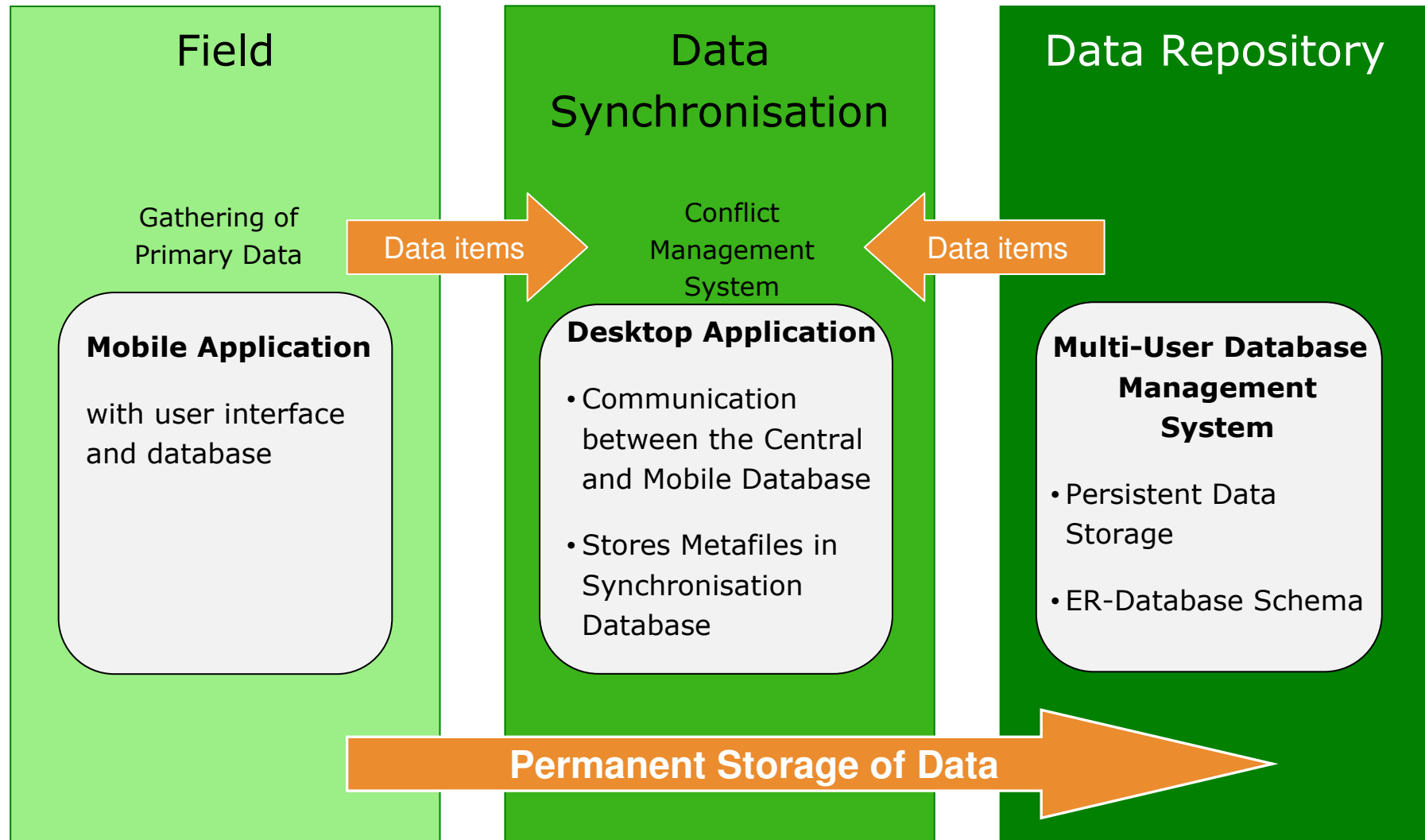
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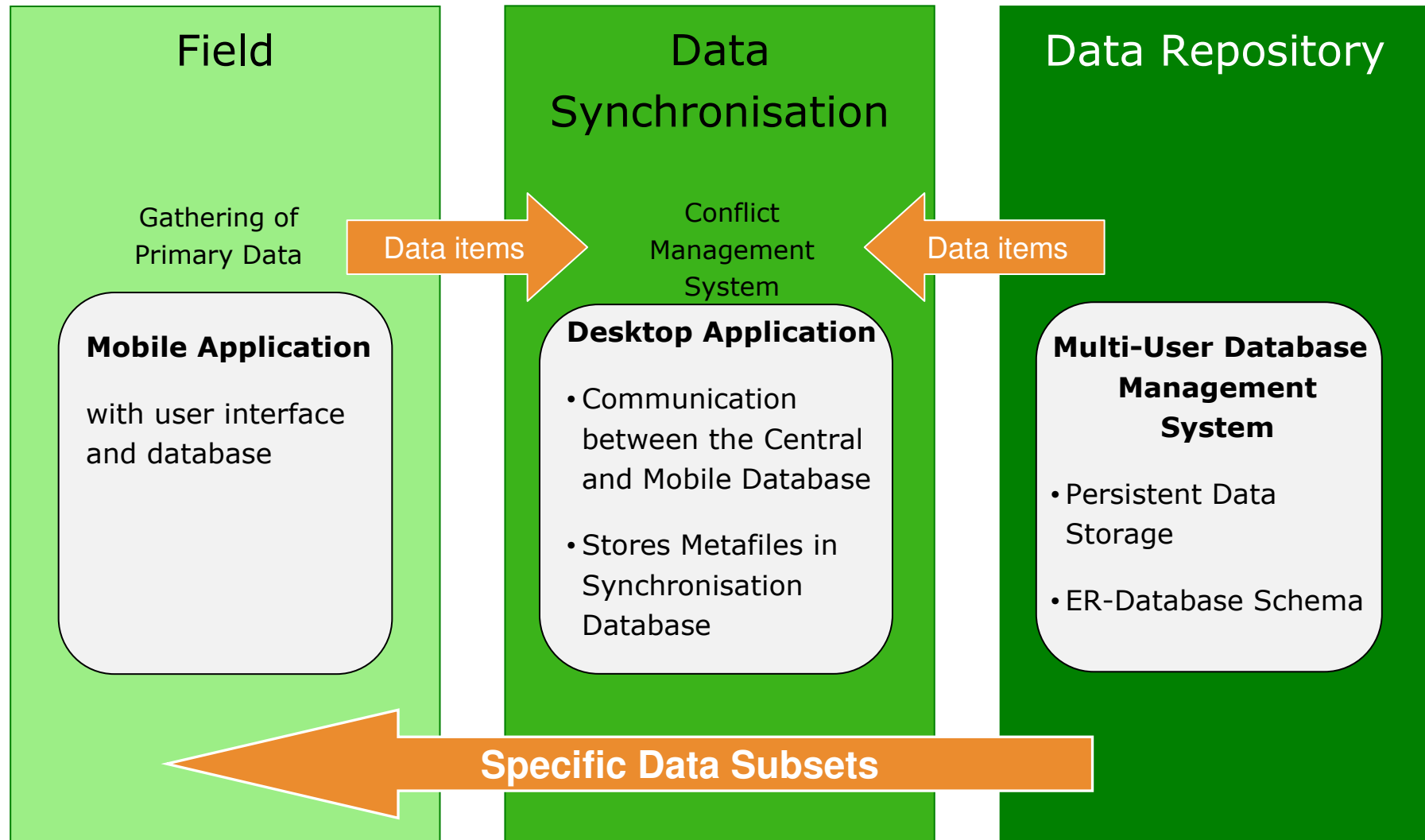
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Aspired Dataflow



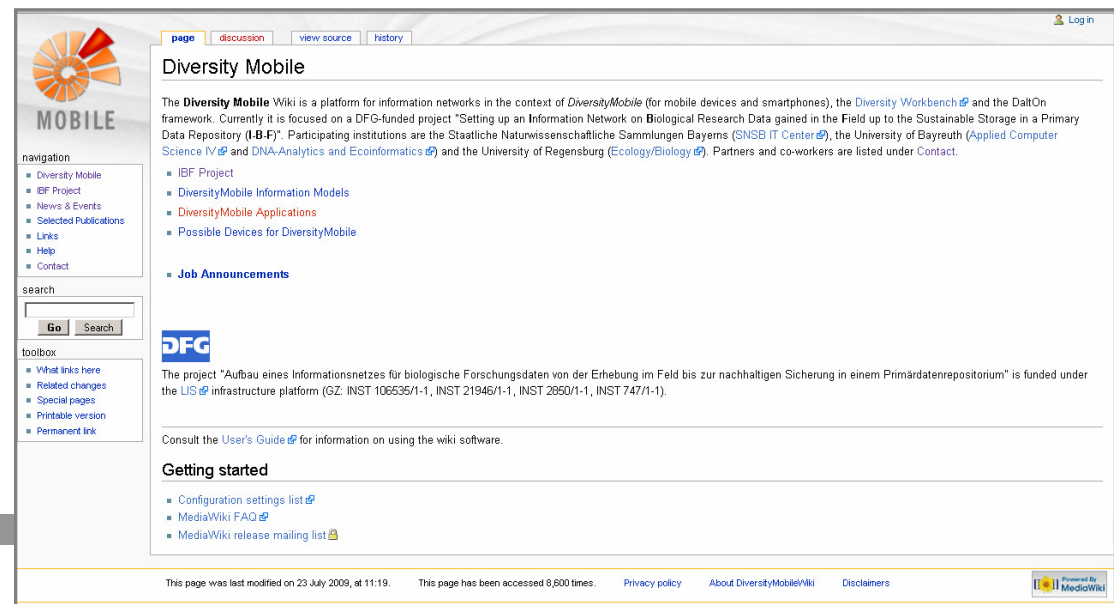
Aspired Dataflow



IBF Project

- Setting up an **I**nformation Network on **B**iological Research Data gained in the **F**ield up to the Sustainable Storage in a Primary Data Repository (**IBF**)

www.diversitymobile.net



IBF Project

Establishment of dataflow from and to an institutional data repository

- Data gathering in the field via mobile device (PDA, Smart Phone) with software (*DiversityMobile*) for
 - data entry
 - accessing taxonomy and ecology descriptor presets
- Data transfer to institutional data repository (via *DiversityWorkbench* database component *DiversityCollection*)
 - data storage
- Data redistribution to end-users by data transfer to PDAs, wrappers (ABCD schema) and diverse applications for data analysis and presentation
 - data analysis
 - data presentation
 - data re-usage

IBFProject

Field: Diversity Mobile

Tool for Gathering
Observation Data

Mobile Application

- Temporary Data Storage
- Local Windows CE Database

- Access to external data sources (e. g. standard list of taxon names)
- GPS functionality
- Collection of multimedia data (images, video, audio)
- Previously recorded data accessible in the field
- All entered data to be transferred to the data repository

IBF-Project



- Long-term data storage
- Access to data history
- Individual observations are referable (GUIDs, LSIDs)
- Selective data export for local post-processing
- Publication (traditional pathway, Internet)

Data Repository:
SNSB IT Center

Data Storage
System: Diversity
Workbench

**Multi-User Database
Management
System**

- Defined ER-Database Schema

IBF-Project

- Participating research groups

Working group
Fungi and Lichens



Working group
Vascular plants



Working group
Ecology



Working group
Fungi and Lichens



Working group
Vascular plants



Working group
Ecology



- Monitoring of fungi and lichens
- Various habitats (Regensburg surroundings)



Working group
Fungi and Lichens



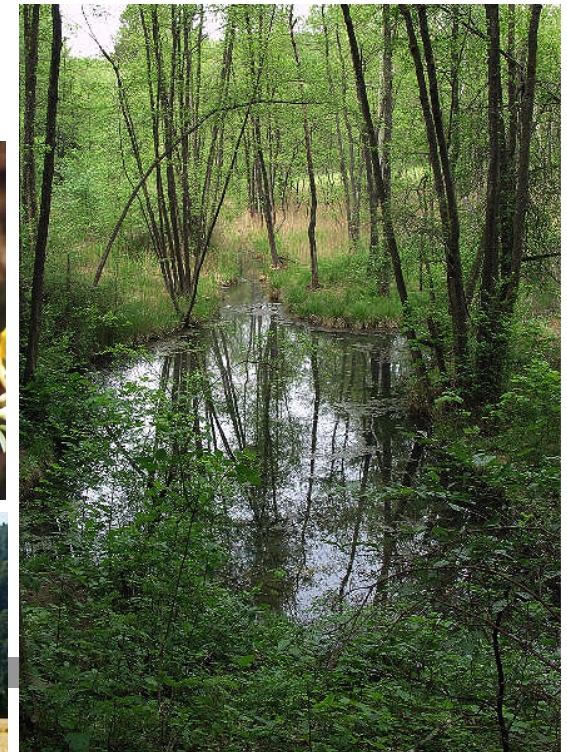
Working group
Vascular plants



Working group
Ecology



- Field mapping of vascular plants
- Transect and various habitats (Regensburg surroundings)



Working group
Fungi and Lichens



Working group
Vascular plants



Working group
Ecology



- Small-scale distribution of gall-inducing sawflies (Hymenoptera, Tenthredinidae) on *Salix fragilis*
- Experimental plot at University Bayreuth, EBG



Working group
Fungi and Lichens



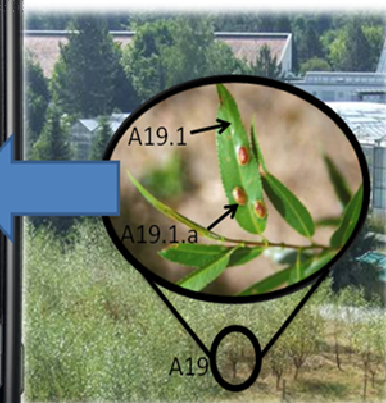
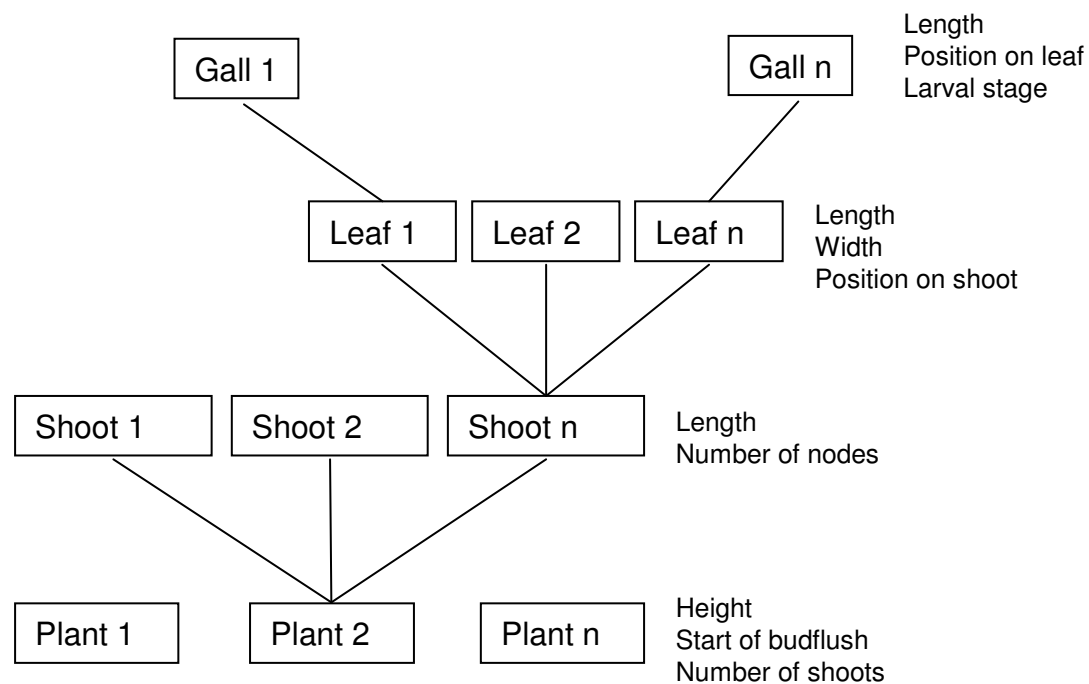
Working group
Vascular plants



Working group
Ecology

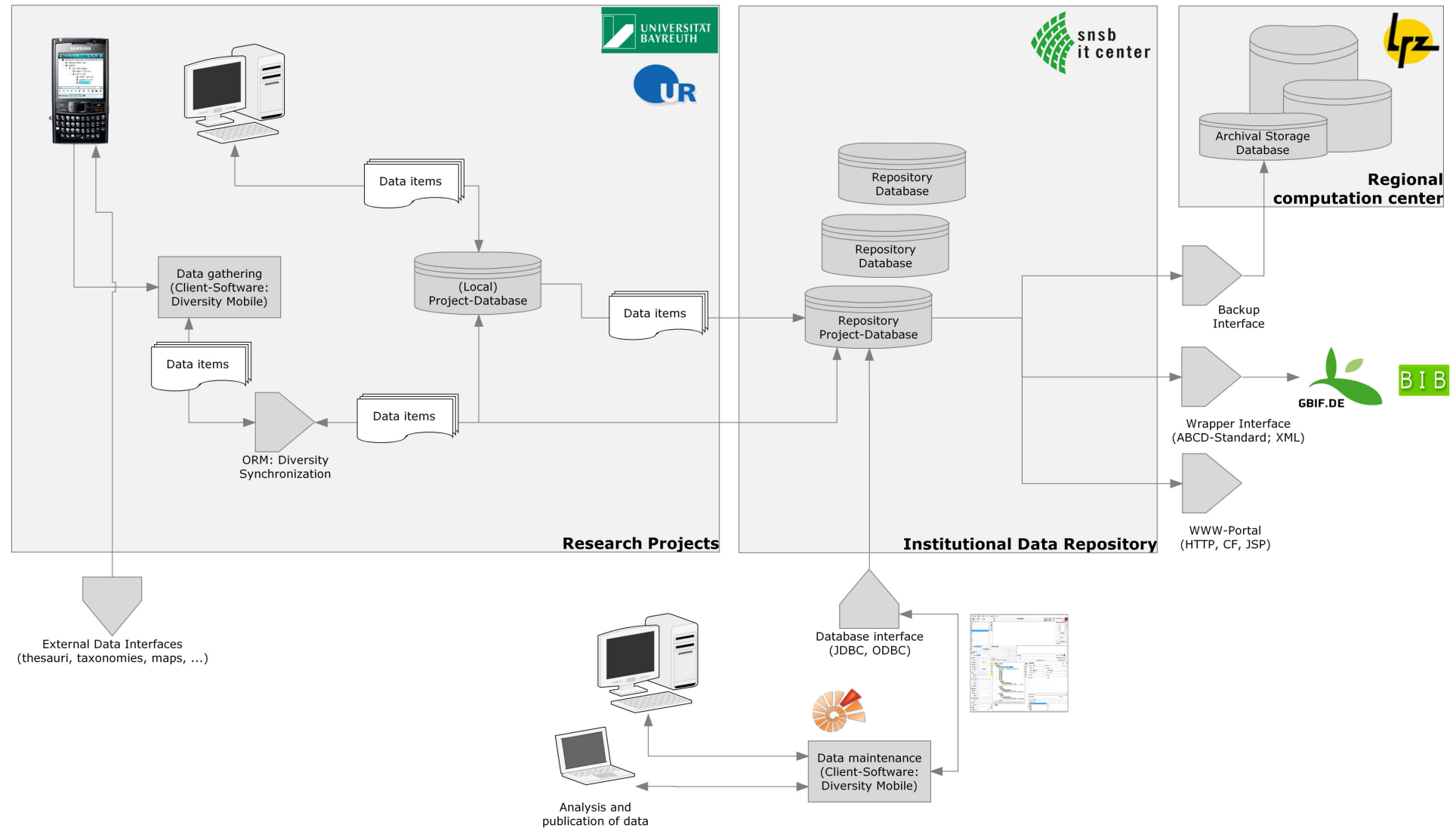


Tests of implemented client interface for gathering “multidimensional” data (at regular time intervals)



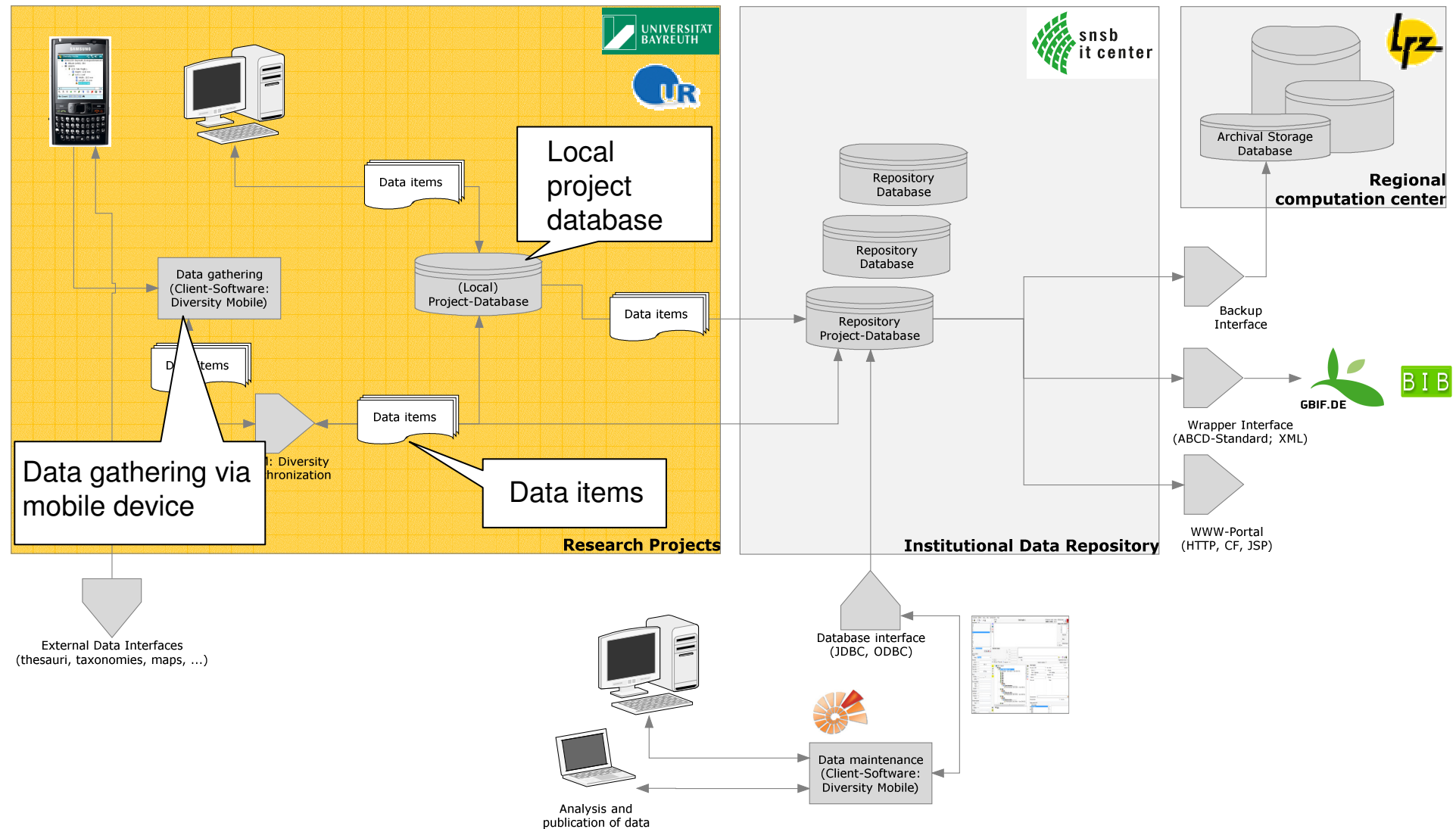
IBF Data Flow

Observatory Data, Data Flow



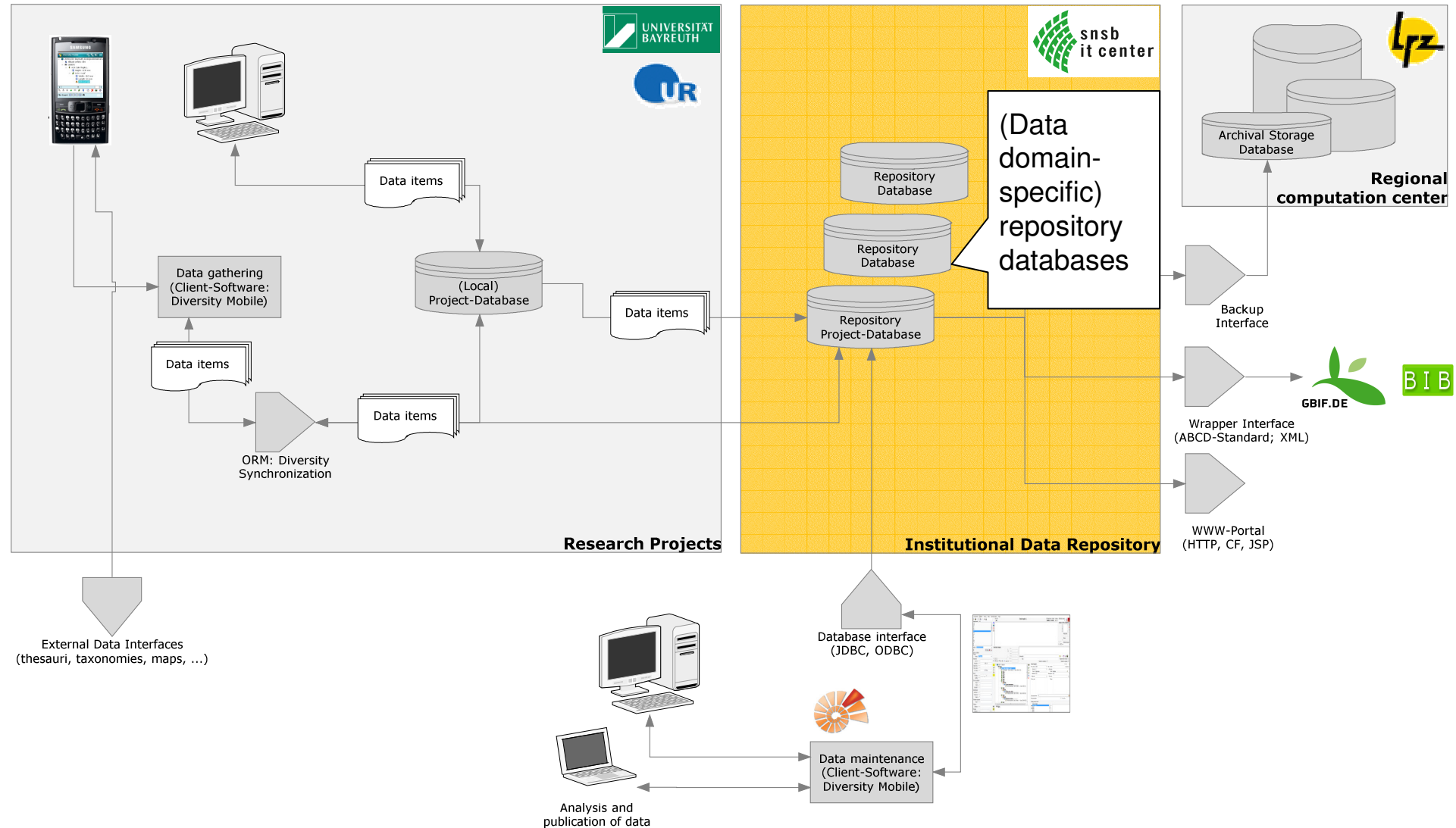
IBF Data Flow

Observatory Data, Data Flow



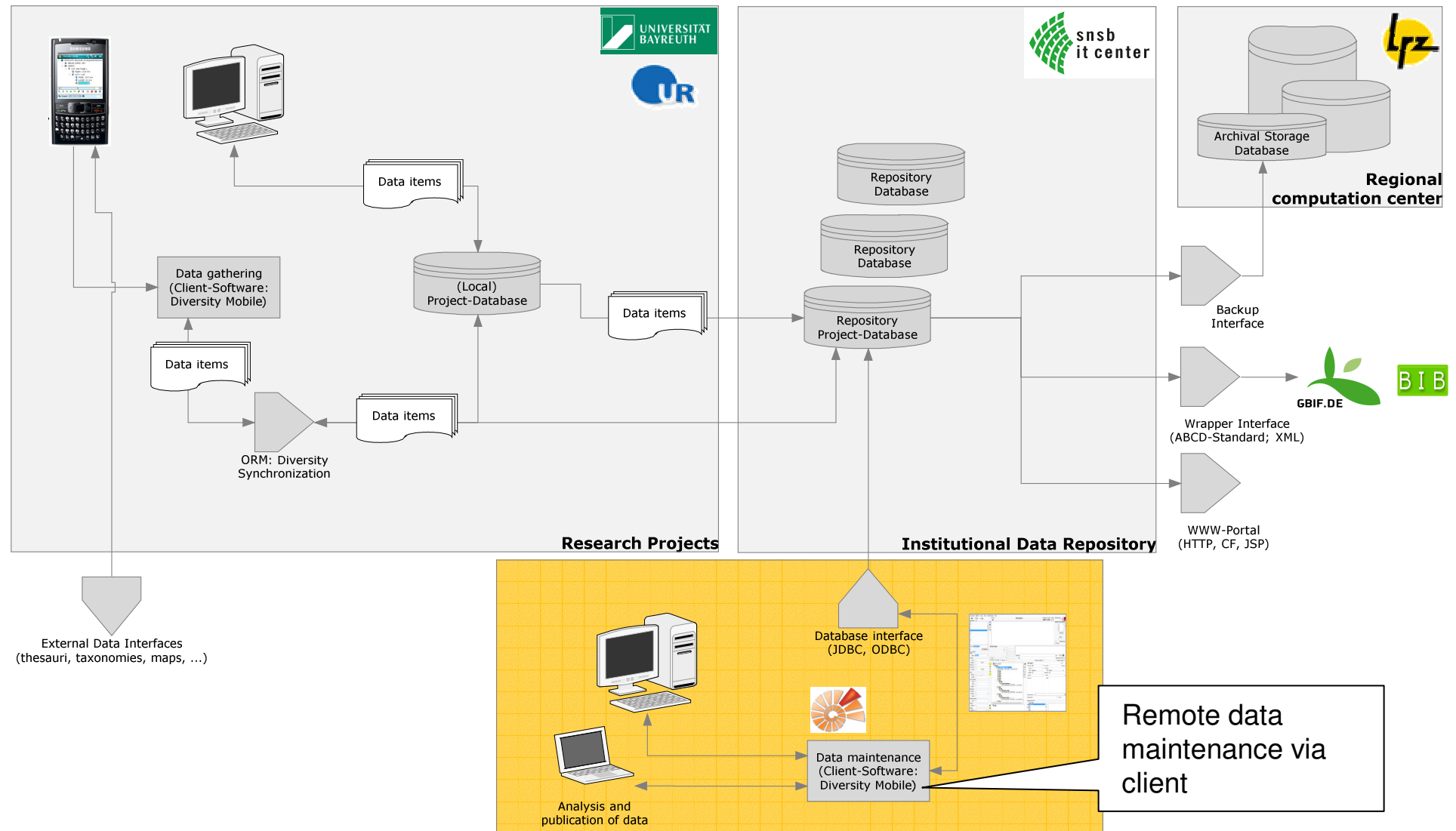
IBF Data Flow

Observatory Data, Data Flow



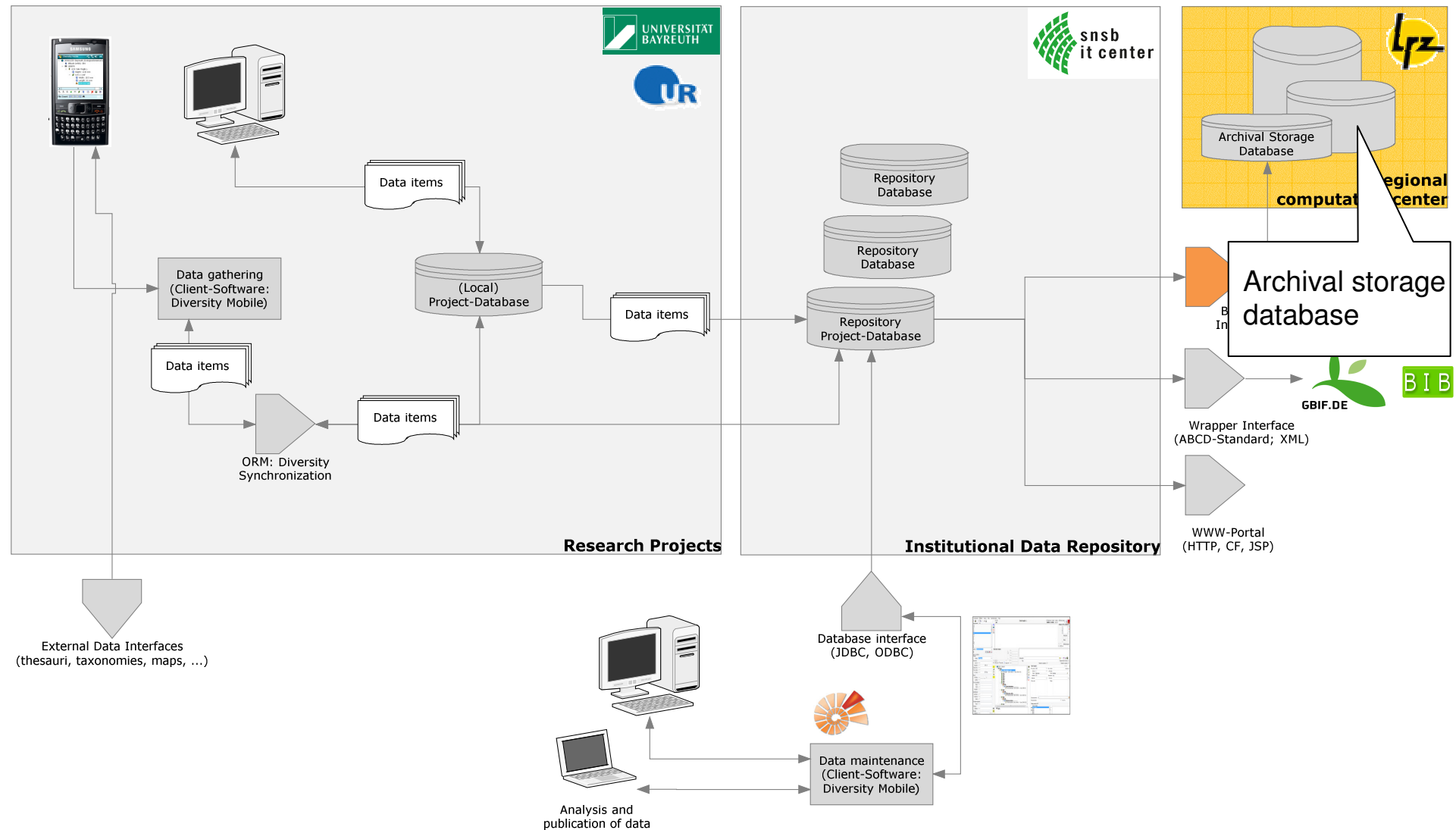
IBF Data Flow

Observatory Data, Data Flow



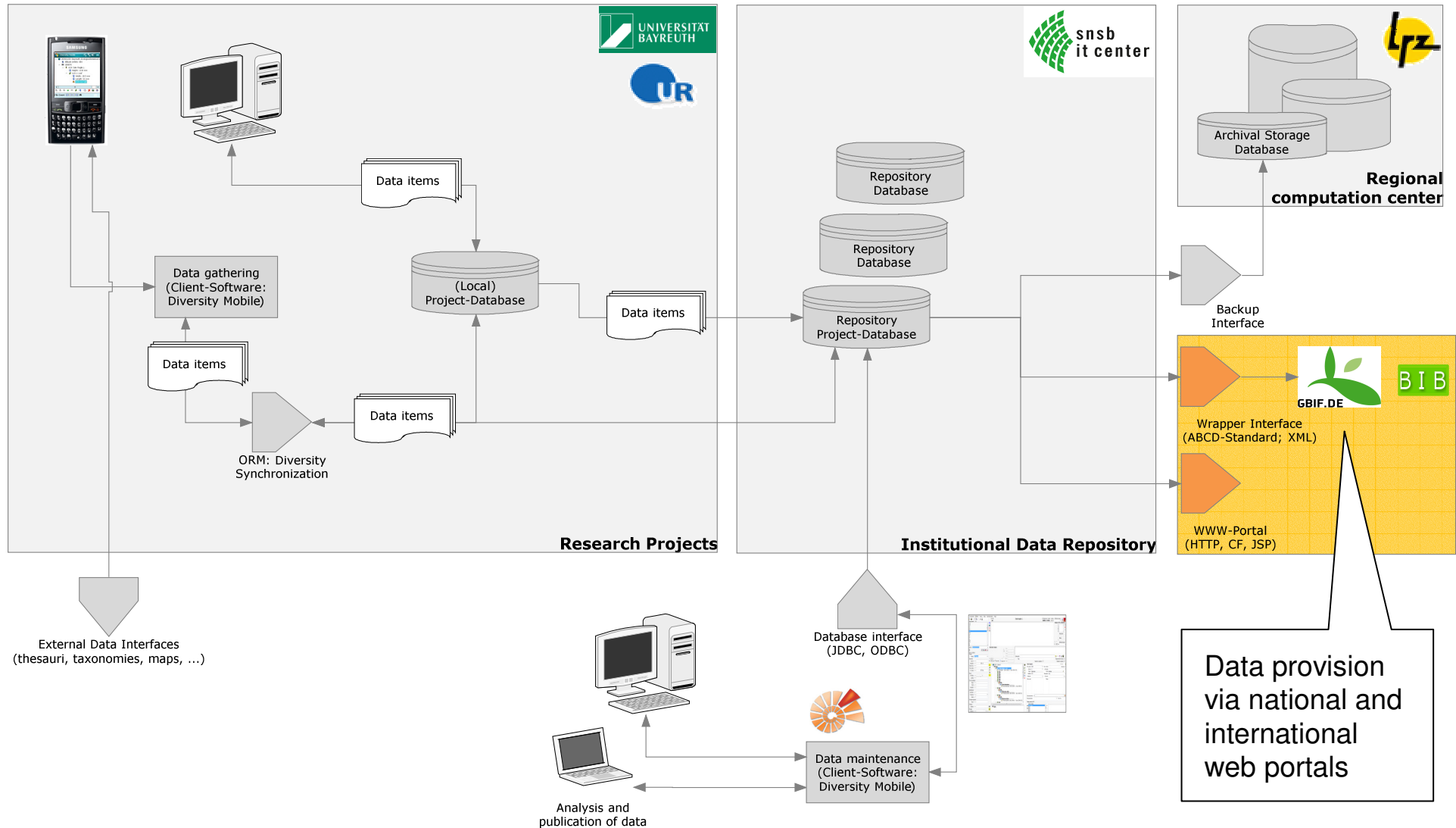
IBF Data Flow

Observatory Data, Data Flow



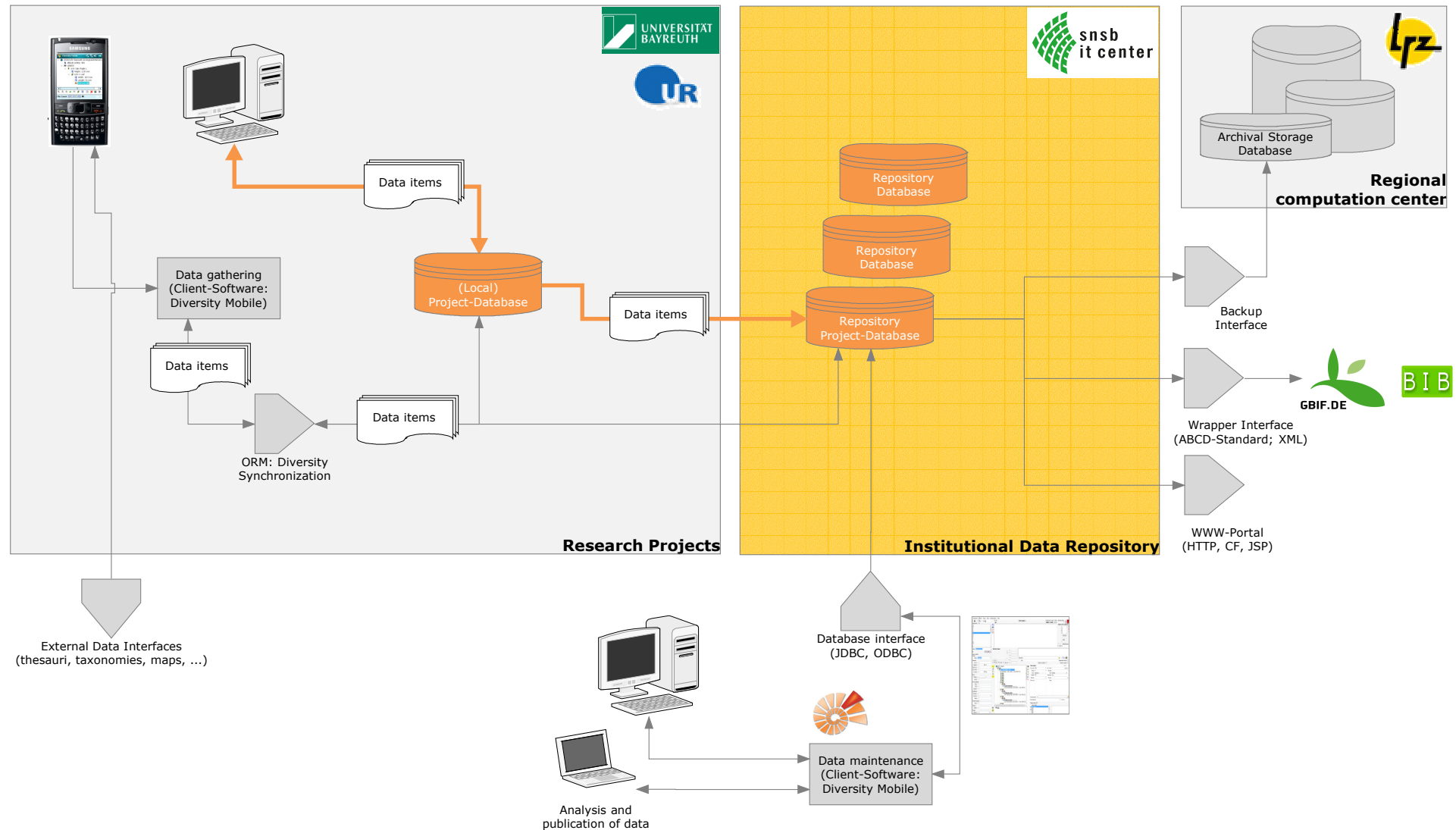
IBF Data Flow

Observatory Data, Data Flow



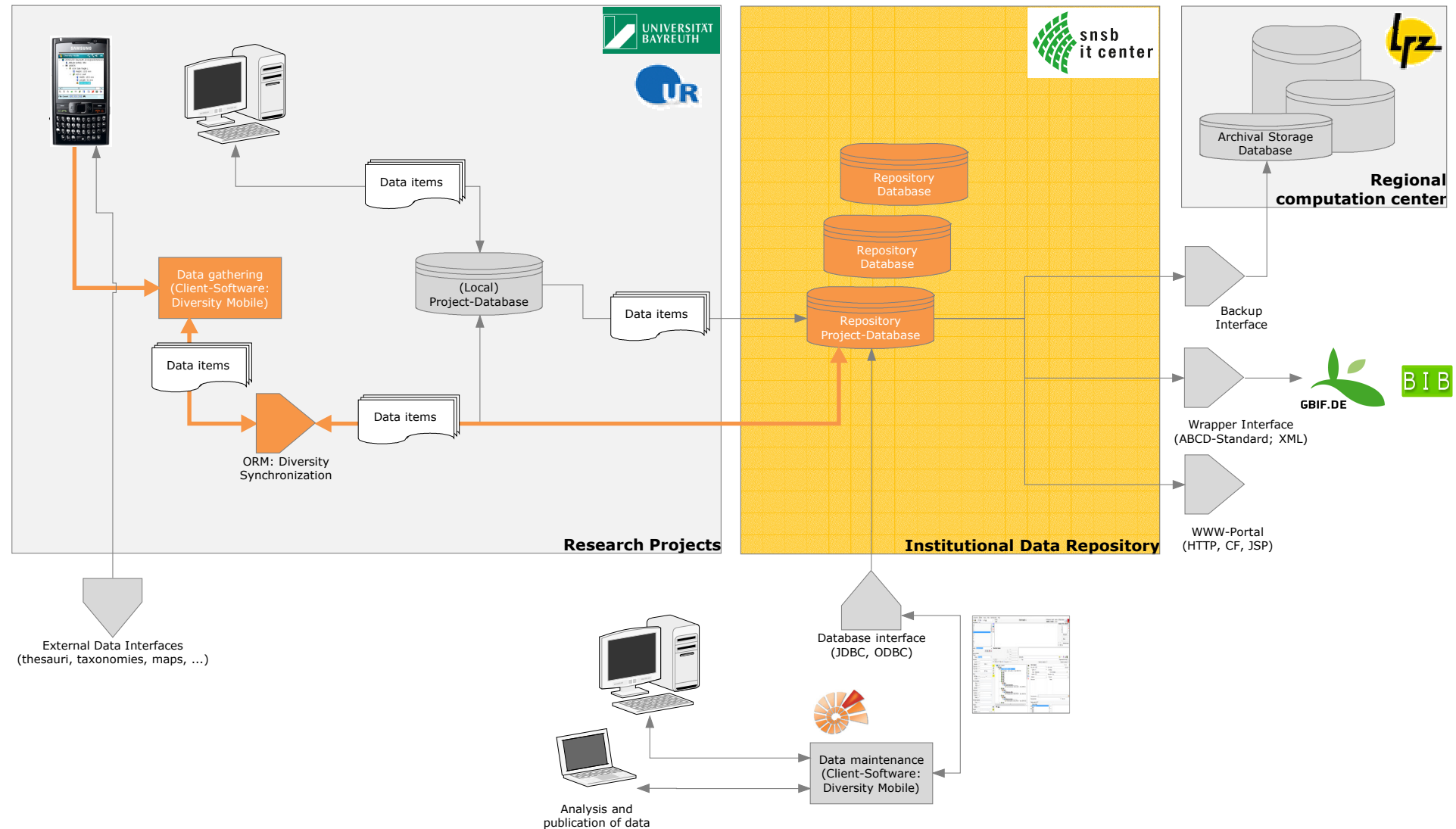
IBF Data Flow

Observatory Data, Data Flow



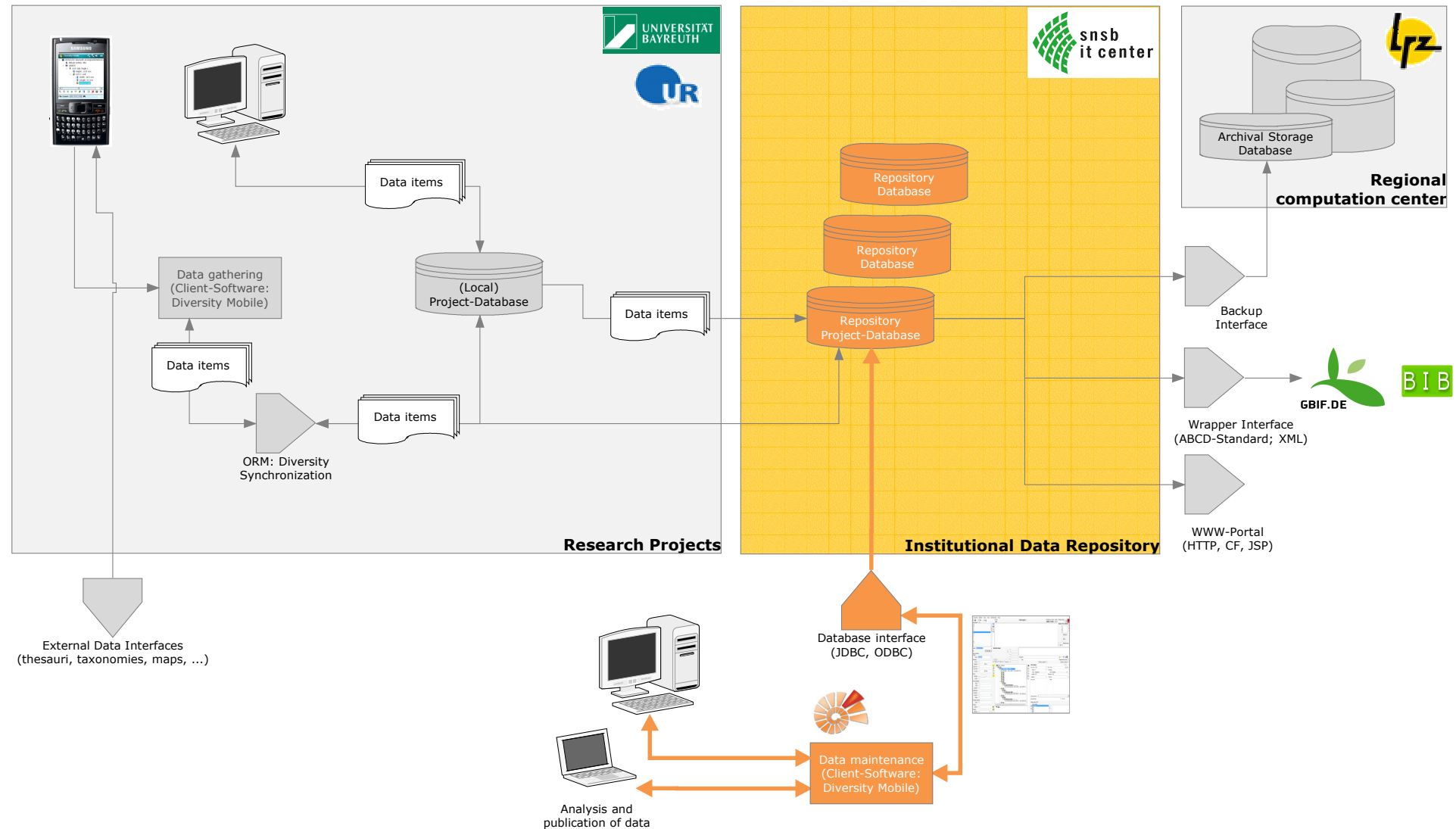
IBF Data Flow

Observatory Data, Data Flow



IBF Data Flow

Observatory Data, Data Flow

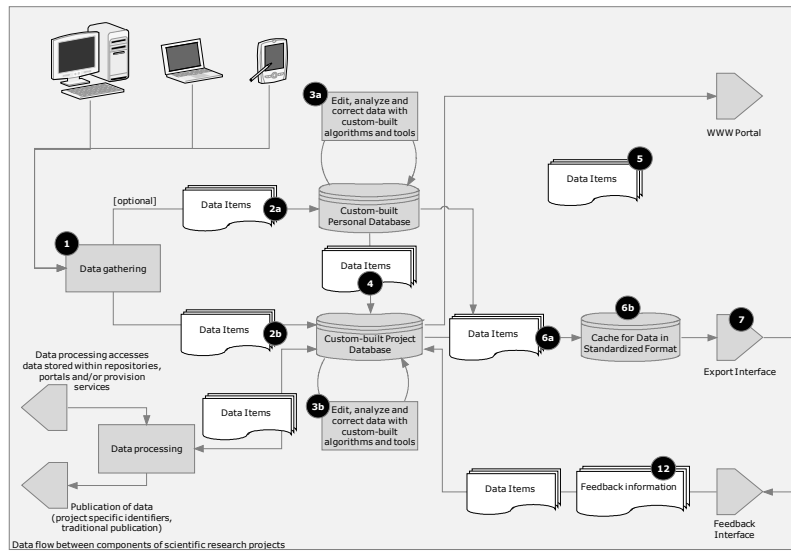


Data Repository Structure at SNSB

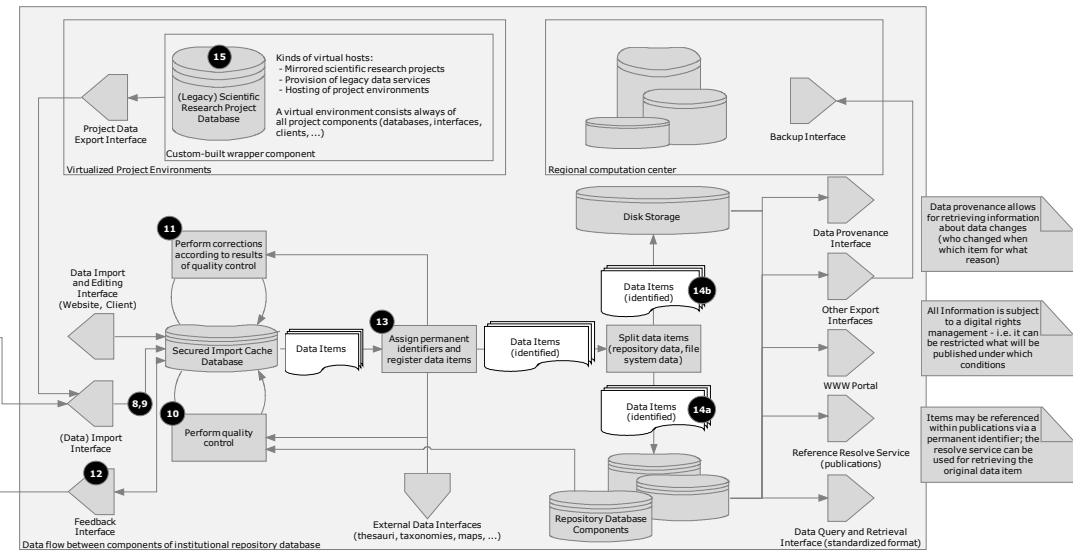
- Storage of structured research data
 - (Data domain-specific) structured 'standard data'
 - structured 'non-standard data'
- Provision/support of data standards (according to 'Biodiversity Information Standards', formerly TDWG)
 - Collection (and observation) data ABCD
 - Descriptive data SDD
 - Taxonomic data TCS
- Quality control and publication of primary data
(persistent identifiers)

Data Repository Structure at SNSB

Research project

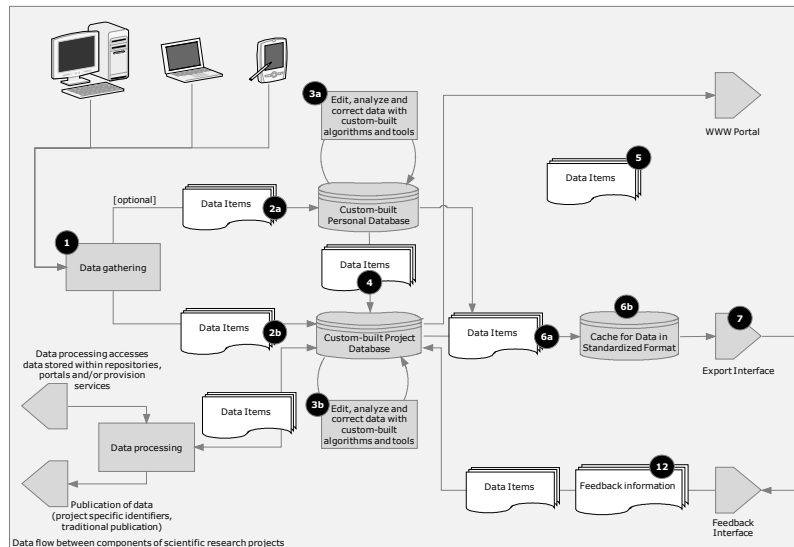


Institutional data repository

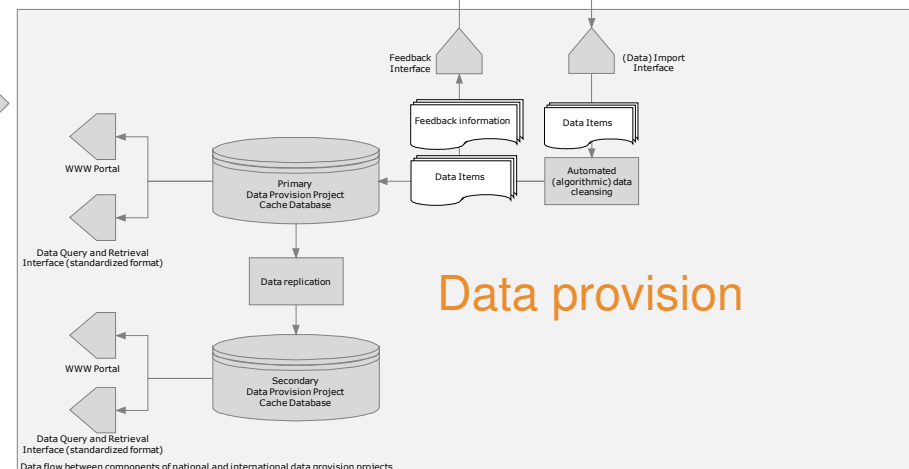
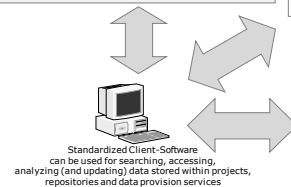
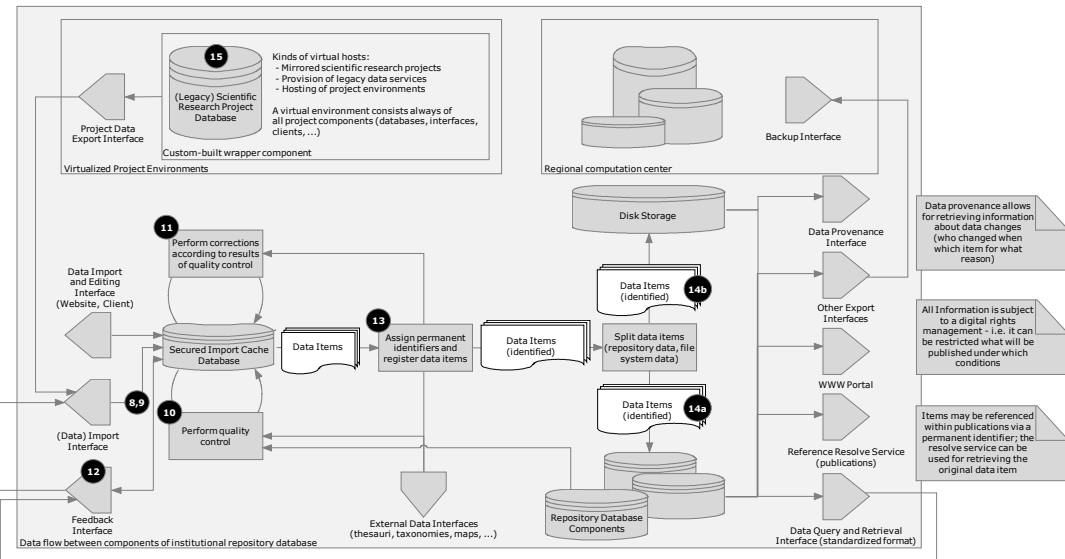


Data Repository Structure at SNSB

Research project



Institutional data repository



Data provision

Conclusions

Aspects of long-term storage of primary research data

- Scientific
 - Intersection and completion with standard data
 - Improvement of data quality
 - Precondition for reproducibility of data
- Economic
 - Access and subsequent use option on behalf of third parties
- Social
 - Credits to data owners and providers

Acknowledgements

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