



Das DFG Verbundprojekt IBF – Datenfluss und Etablierung eines institutionellen Datenzentrums

A. Kehl

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G. Rambold, T. Schneider, D. Triebel, B. Volz, M. Weiss

Contents

- Demands of Science policy
- Traditional and aspired dataflow
- IBF-Project
 - dataflow
 - 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

Date

Field

Gathering of Primary Data

Pen & Paper

Date

Field

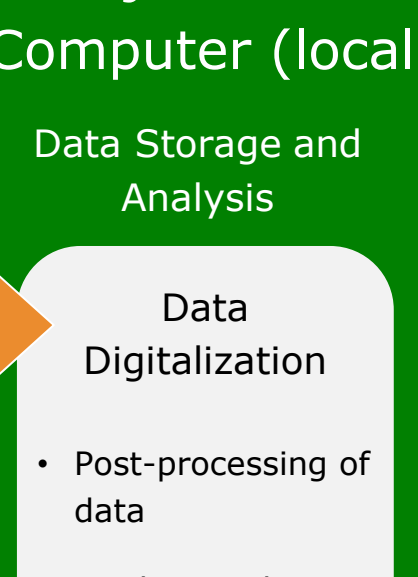
Gathering of Primary Data

Pen & Paper

Date



A diagram showing a sequence of data items (represented by green and white squares) being processed by a function (represented by an orange arrow labeled "Data items").



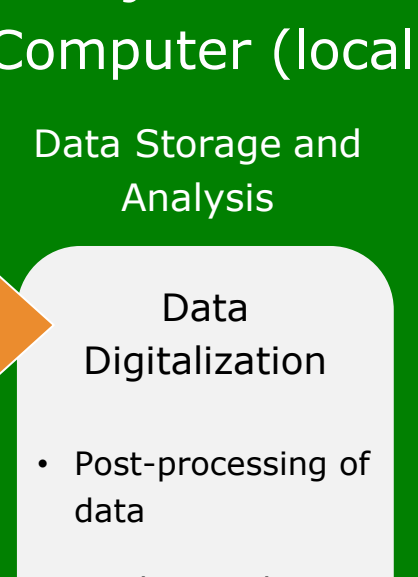
ms

Project-sided Computer (local)

Data Storage and Analysis

Data Digitalization

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



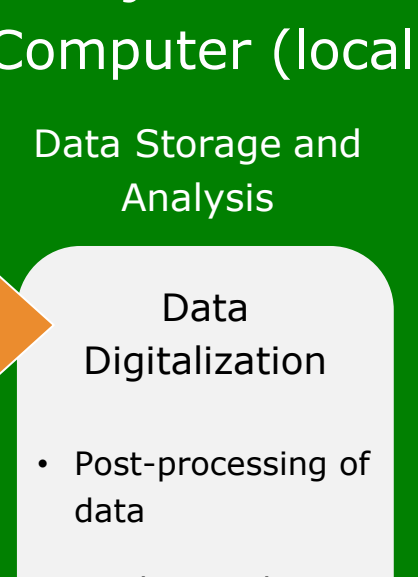
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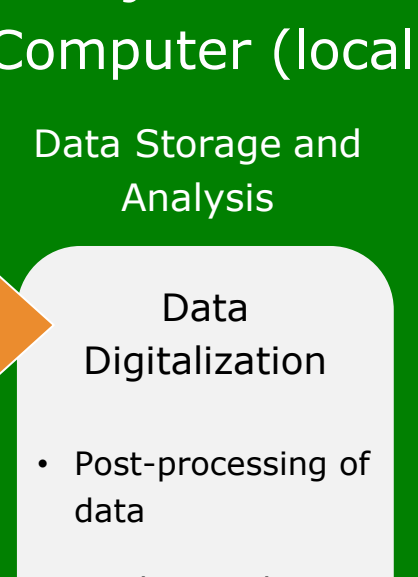
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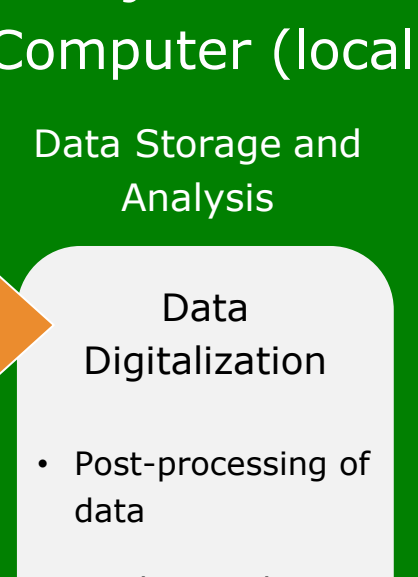
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- ms
- # Project-sided Computer (local)
- ## Data Storage and Analysis
- ### Data Digitalization
- Post-processing of data
 - Further analysis (e. g., statistics)



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	Lange Bre		
		2006	
2.70345	9.304575	4.56533	
11.15777	8.245374	4.2195	
11.20114	8.766963	4.5803	
15.4006	7.979641	4.8833	
14.72869	9.69536	4.5991	
13.068	9.201867	4.6691	
11.7128	10.36473	4.8324	
14.4871	9.304575	5.3389	
13.264	9.4202	4.9173	
16.3561		4.5403	
16.5391		4.2428	
13.9801			
13.6323			
12.74303	9.134		
16.6221	8.651133		
8.690567	9.730256		
7.84749	8.570495		

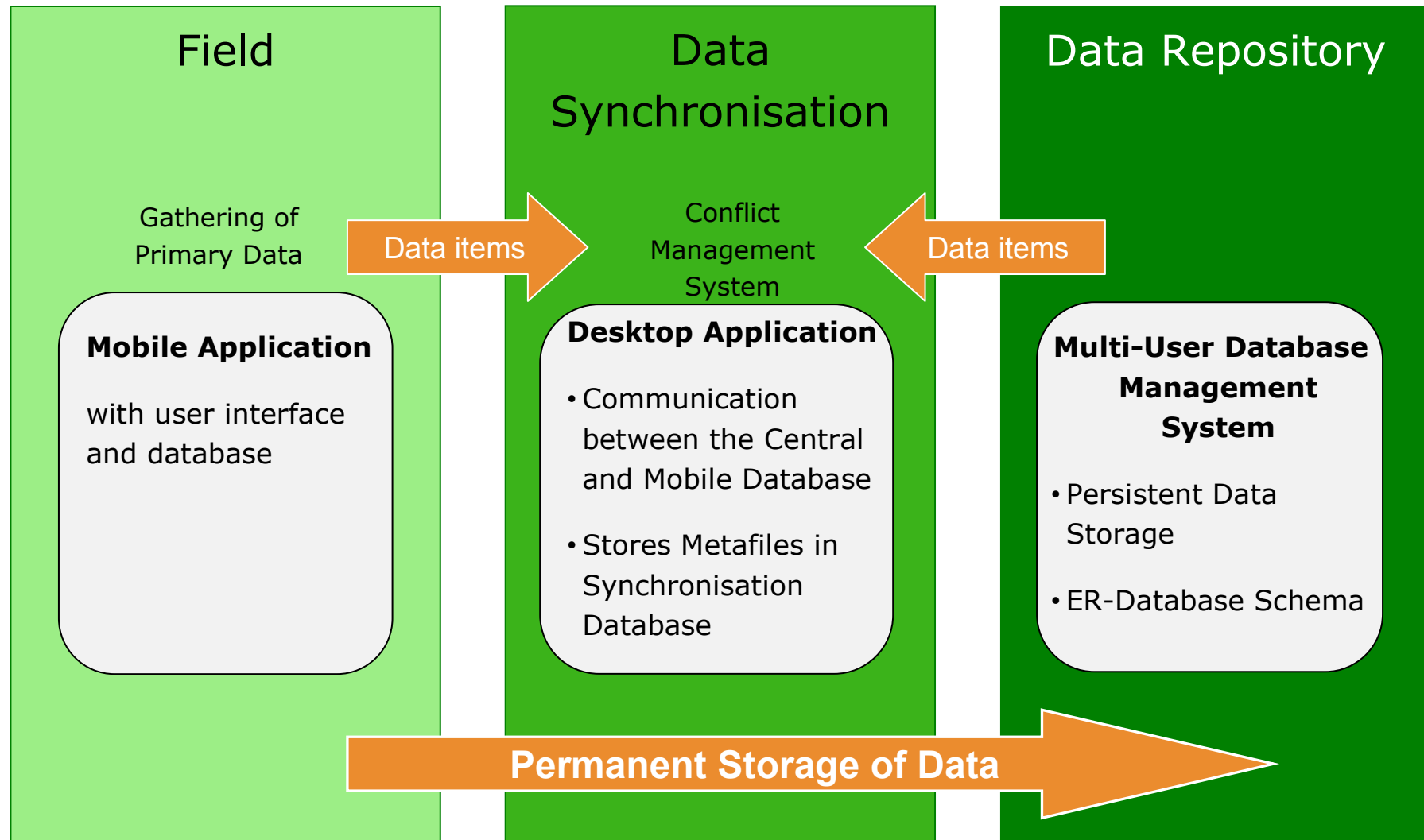
STO 1	STO 2	ID Ind.	Höhe cm	d mm	Datum
A	1	2/56			
A	2	4/12	54	6,5	23.9.05
A	3	2/45	125	19,4	
A	4	2/11	102	32,1	
A	5	2/1	280	57,3	
A	6	2/50	105	14,2	
A	7	2/36	118	28	
A	8	4/43	139	17,9	
A	9	2/34	249	22	
A	10	4/1	166	30,5	
A	11	2/8			
A	12	4/2	186	19,5	
A	13	2/57	133,5	19,6	
A	14	2/55	123	24,2	
A	15	2/51	140	17,7	
A	16	2/35	178	22,6	
A	17	2/58	118	12,5	
A	18	2/53	166	21,2	
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	187	29,1	
A	26	2/36	84	20,4	
B	1	4/13			26.9. ↓
B	2	2/34	/		
B	3	4/1	179	20	

	<i>H</i>	<i>P</i>	ITS-genotype			
			1	2	3	4
Leaf length (mm)	65.64	<0.001	79.15*	69.15**	72.75*	57.90*
Leaf width (mm)	142.42	<0.001	15.90*	12.15*	12.00*	11.00*
Leaf length/width	101.22	<0.001	4.95*	5.68**	6.09*	5.4*
Petiole length (mm)	98.15	<0.001	9.90*	7.75*	7.55*	4.60*
Pubesence upper leaf surface	167.18	<0.001	0.08*	2.74**	2.66*	15.88*
Pubesence lower leaf surface	174.04	<0.001	0.12*	9.96**	7.38*	23.84*
Dry weight of leaf (g)	137.10	<0.001	0.49*	0.29**	0.30*	0.22*
Leaf water content (g)	98.68	<0.001	0.87*	0.61**	0.63*	0.47*
Specific leaf weight (mg/cm ²)	36.54	<0.001	48.29*	46.14*	46.69*	41.87*
Height growth (cm)	56.43	<0.001	32.33**	46.19*	46.38*	41.33*
Diameter growth (mm)	17.51	<0.001	4.60*	8.55*	5.93*	4.73*
Growth form (diameter/height)	21.47	<0.001	0.94*	1.96*	1.23*	1.06**
Flotation phenology 2003 (days after April lat)	101.90	<0.001	16*	12*	14*	22*
Flotation phenology 2004 (days after April lat)	119.09	<0.001	16*	3*	3*	24*
Flotation phenology 2005 (days after April lat)	133.93	<0.001	14*	4*	5*	16*

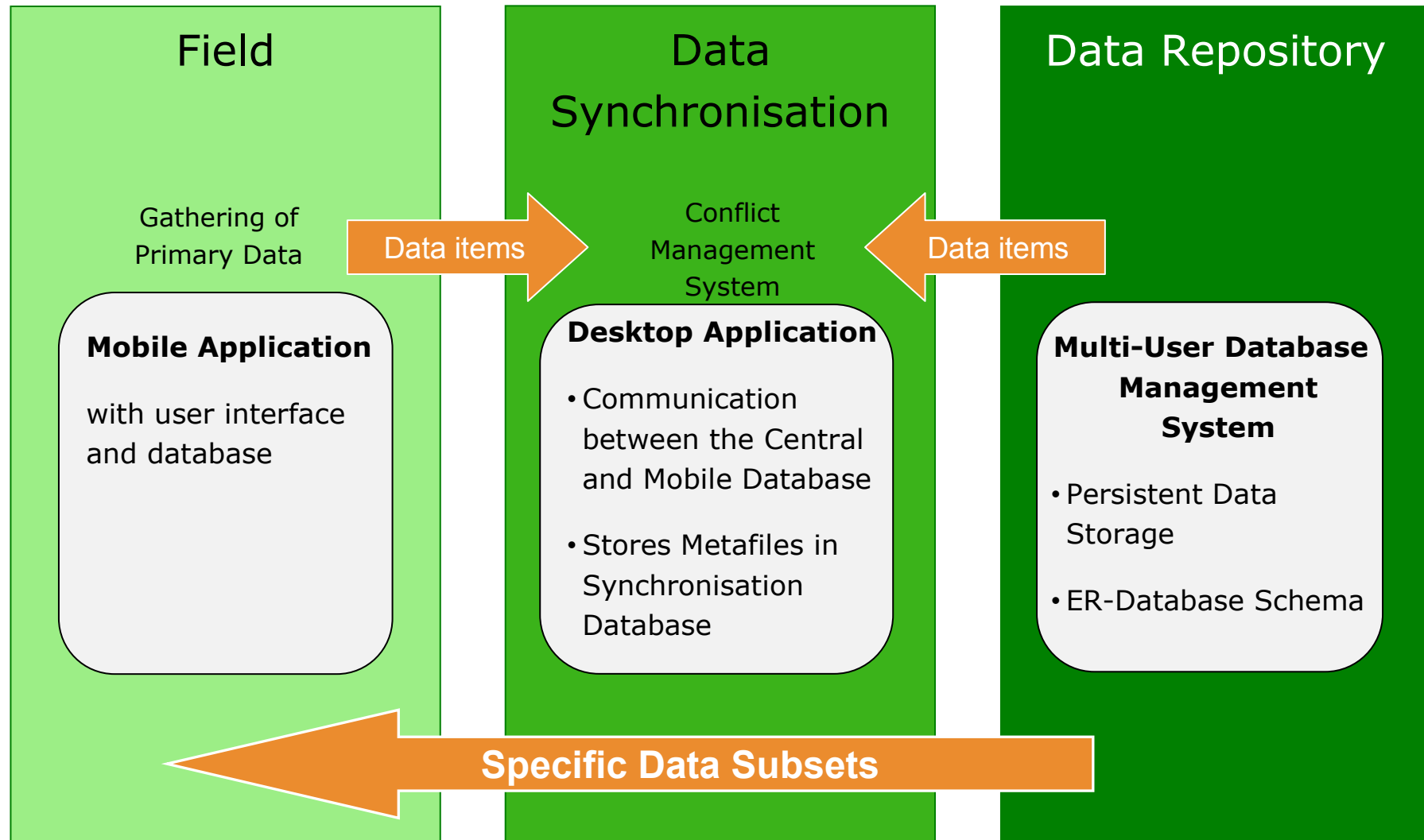
H test statistics, *P* significance level. Highest value per variable are in bold, different letters indicate significant differences

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Aspired Dataflow



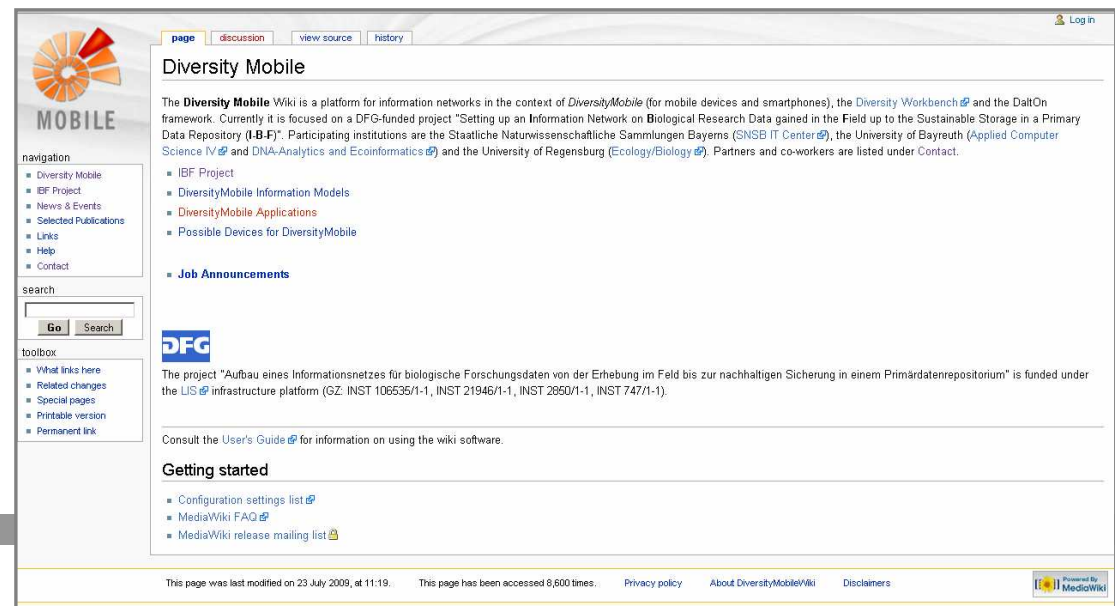
Aspired Dataflow



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

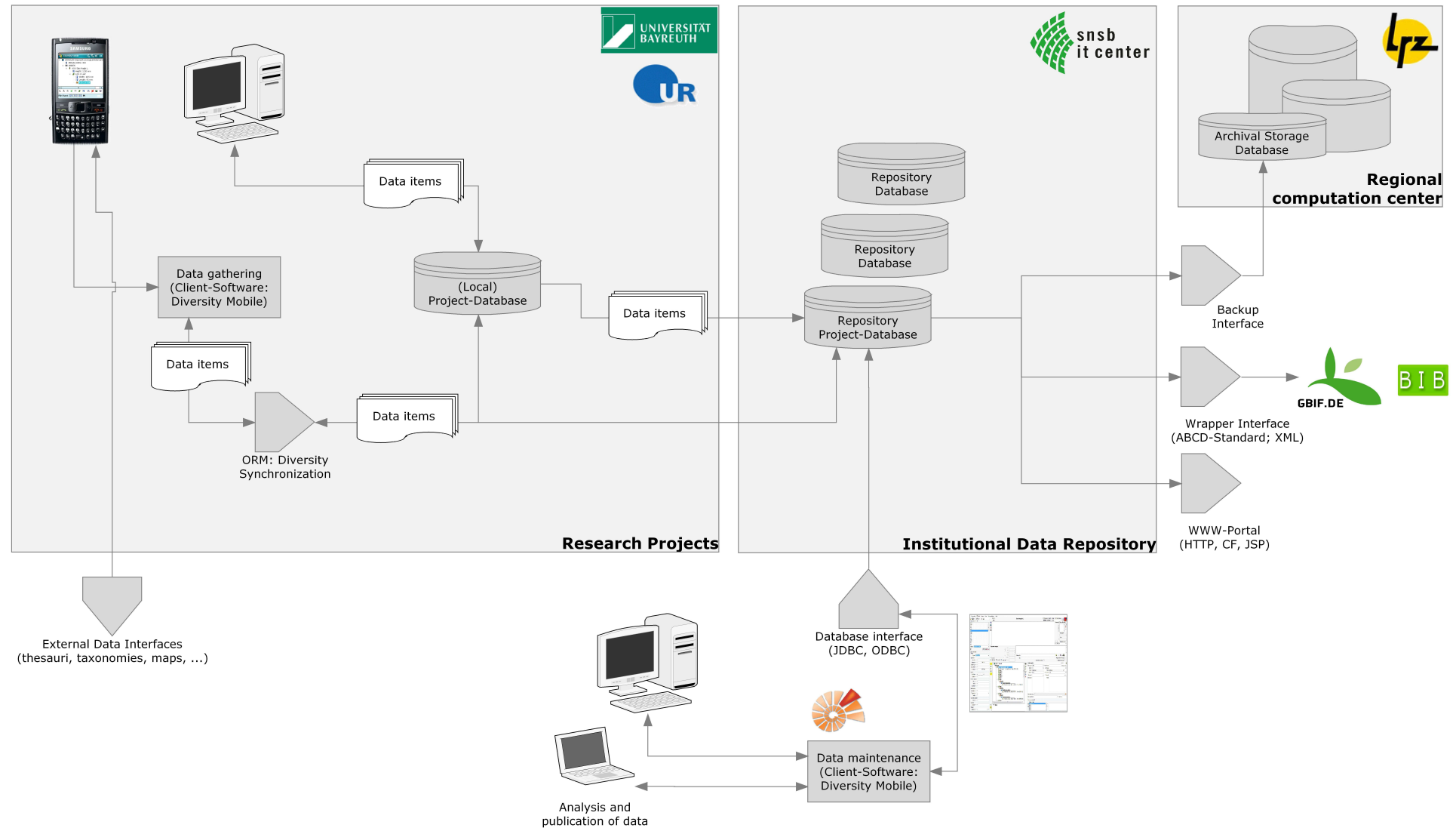
Data Storage
System: Diversity
Workbench

**Multi-User Database
Management
System**

- Defined ER-Database Schema

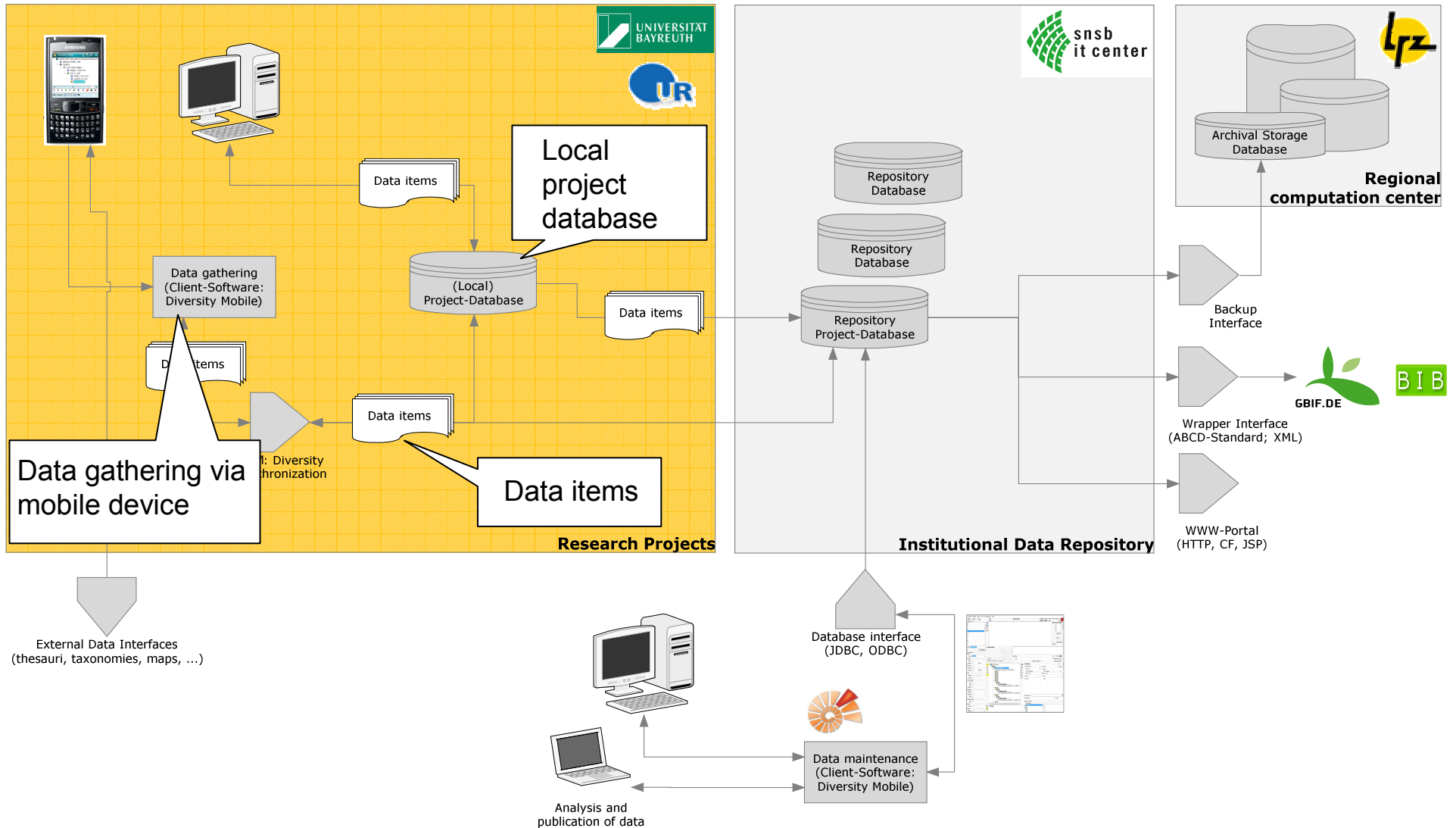
IBF Data Flow

Observatory Data, Data Flow



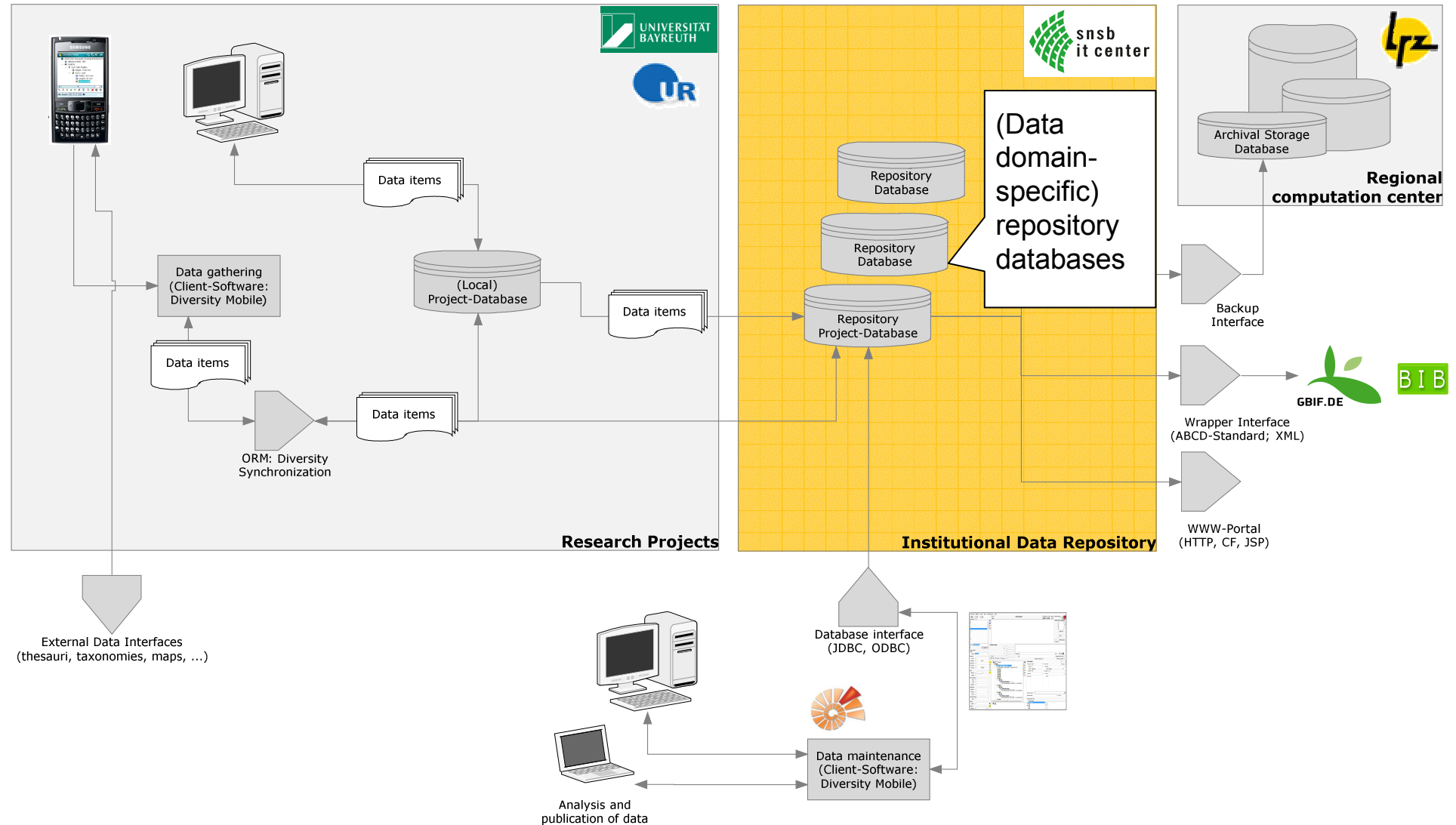
IBF Data Flow

Observatory Data, Data Flow



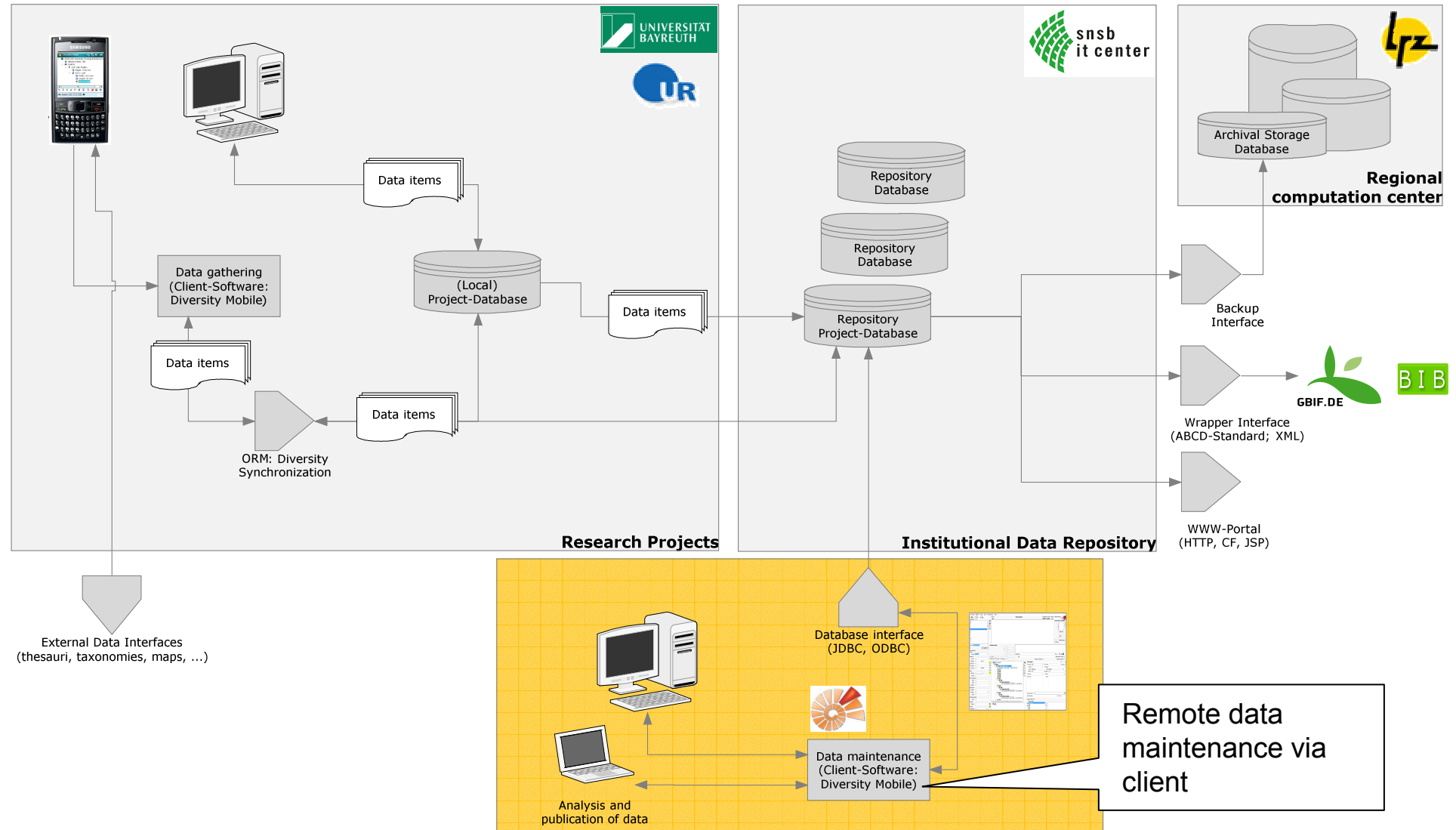
IBF Data Flow

Observatory Data, Data Flow



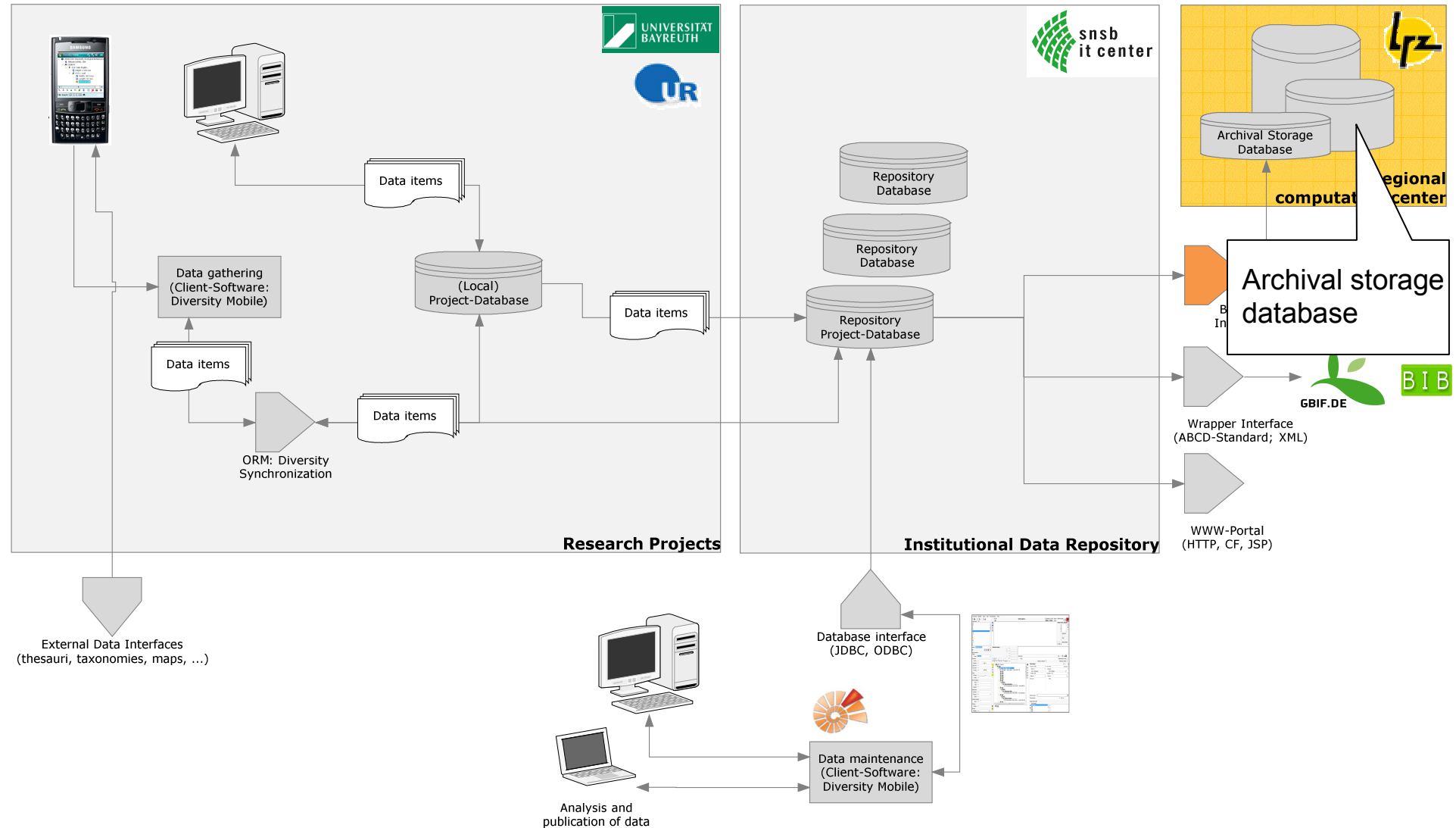
IBF Data Flow

Observatory Data, Data Flow



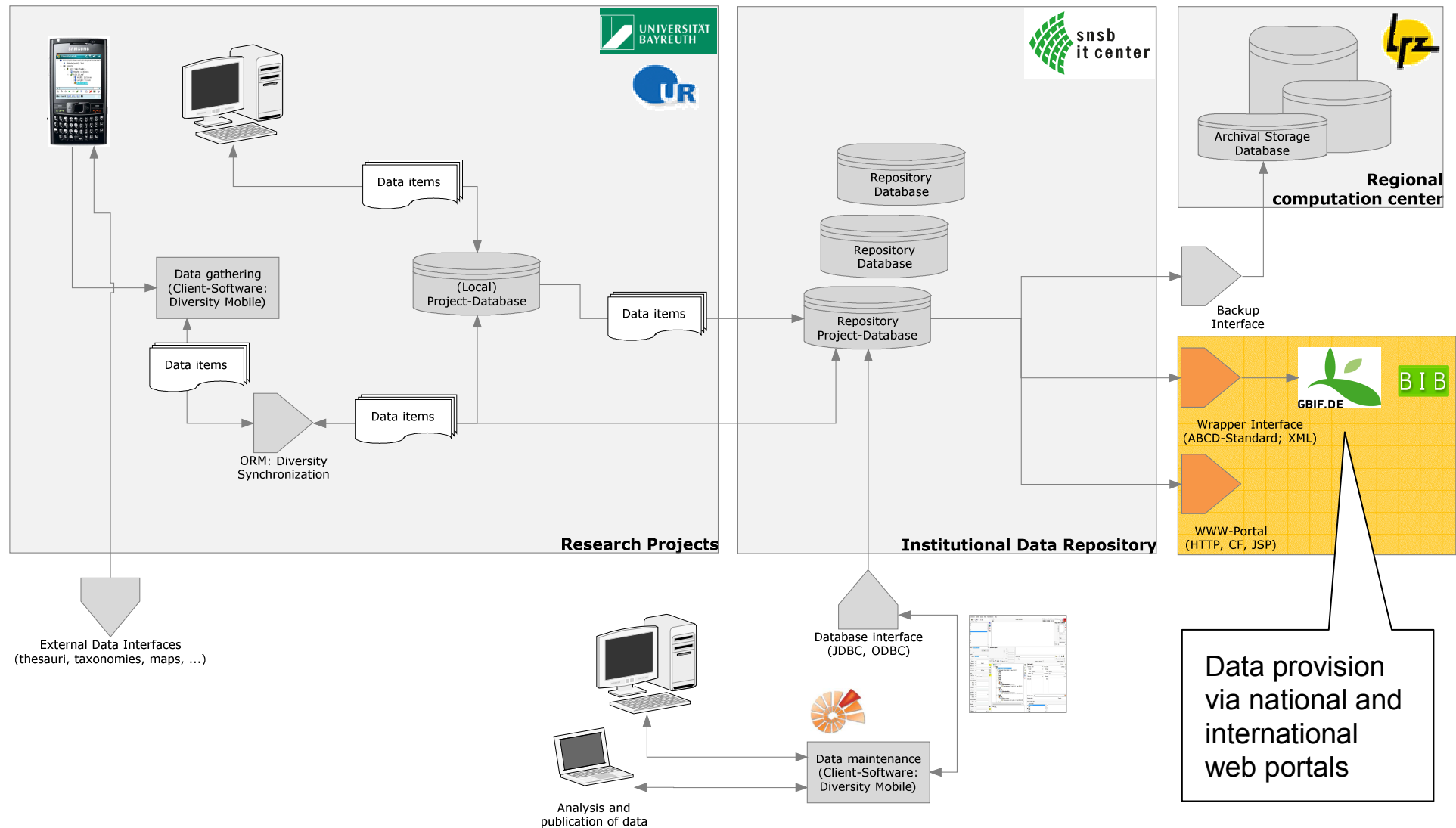
IBF Data Flow

Observatory Data, Data Flow



IBF Data Flow

Observatory Data, Data Flow

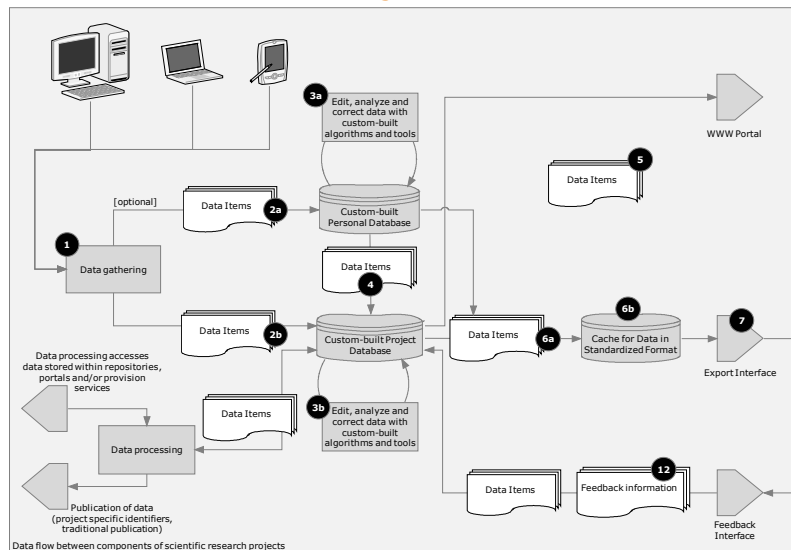


Data Repository Structure at SNSB

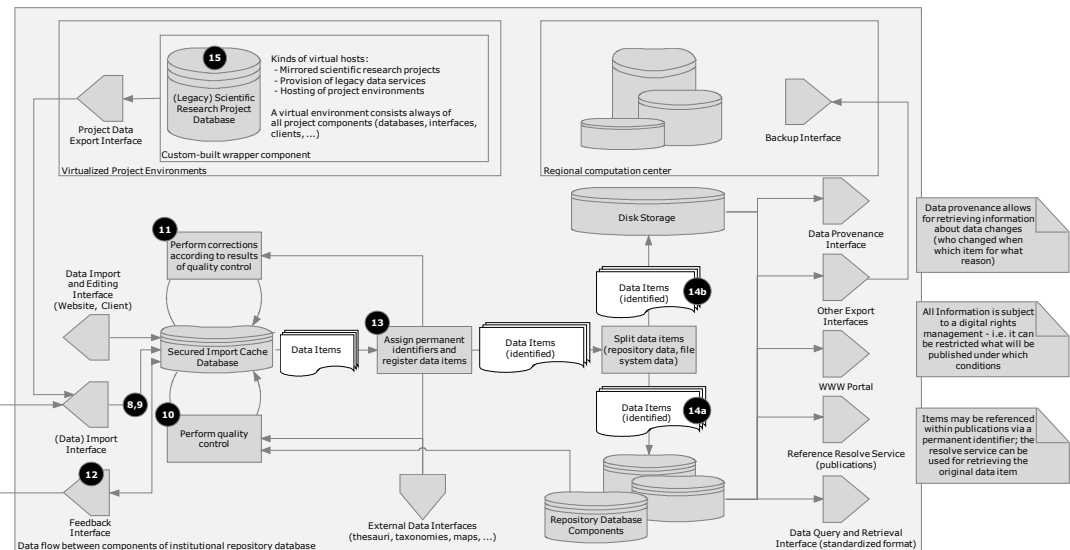
- Storage of structured research data
 - (Data domain-specific) structured 'standard data'
 - structured 'non-standard data'
- Provision/support of data standards (according to 'Biodiversity Information Standards', formerly TDWG)
 - Collection (and observation) data ABCD
 - Descriptive data SDD
 - Taxonomic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

Data Repository Structure at SNSB

Research project

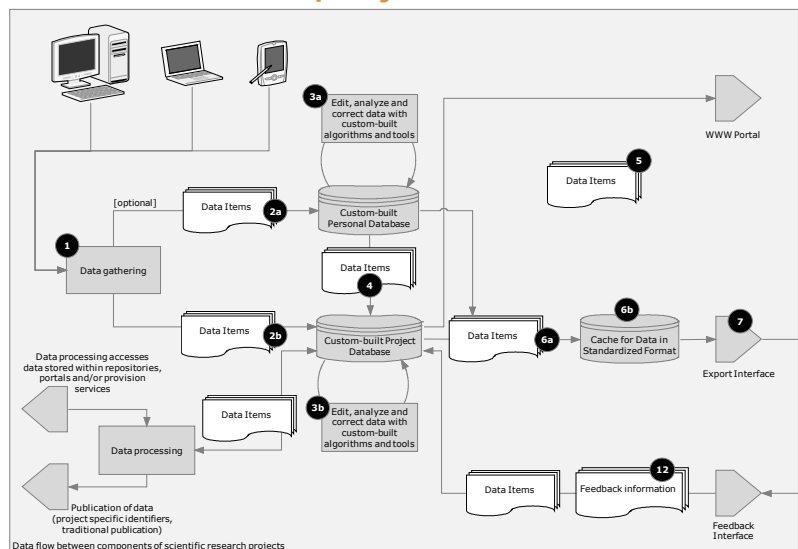


Institutional data repository

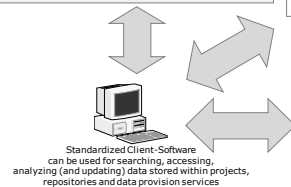
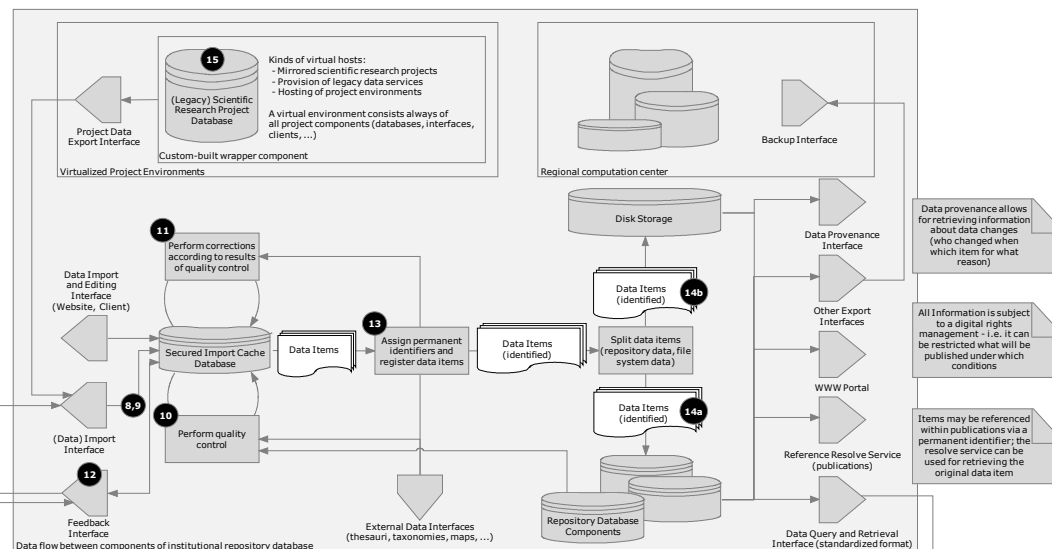


Data Repository Structure at SNSB

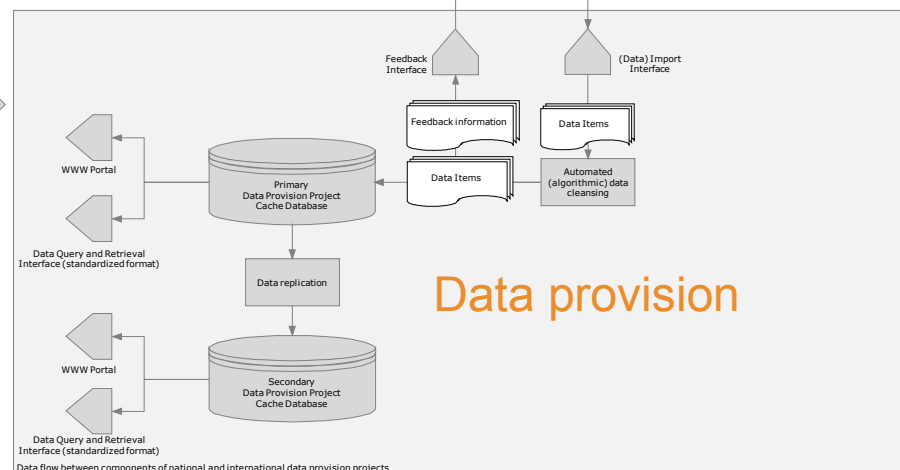
Research project



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

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