

COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME

Grant agreement for: CIP-Best Practice Network

Annex I - "Description of Work"
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Project acronym: OpenUp!

Project full title: " Opening up the Natural History Heritage for Europeana "

Grant agreement no: 270890

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A1: Project summary

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per project

General information

Project title ³	Opening up the Natural History Heritage for Europeana		
Starting date ⁴			
Duration in months ⁵	36		
Call (part) identifier ⁶	CIP-ICT-PSP-2009-4		
Objective most relevant to your topic ⁷	:		
Free keywords ⁸	animals, plants, collections, artwork, biodiversity, BioCASE, GBIF, EUROPEANA, multilingual metadata		

Abstract ⁹

European natural history collections manage and give access to over 1.5 bn objects from the world's biodiversity heritage, covering most of the species described worldwide. These are reference objects for all the common and famous species in the world, incl. those of high economic importance and even those that have already gone extinct. Many have great cultural value as they were collected during historic expeditions and scientific endeavours by well known epochal explorers or scientists like Darwin, Linnaeus, Humboldt, or Stanley. EUROPEANA will make these treasures for the first time available to the general public, in addition to providing scientists and policy makers with a substantial information source needed in the understanding and protection of global biodiversity.

Although being clearly within the scope of EUROPEANA as part of the scientific and cultural heritage, multimedia objects from the natural history domain are still dramatically underrepresented. This project aims at closing this gap. It will initially make available over 1 M high quality images, movies, animal sound files, and natural history artwork from 23 institutions in 12 European countries. Access will be based on the established technical infrastructure of the Global Biodiversity Information Facility (GBIF). Once the pathway from museums and GBIF to Europeana has been created, it will provide a steadily stream of additional objects that have entered the network.

The project will address the following objectives:

- Mapping between Community and EUROPEANA data standards
- Adding data providers for multimedia content
- Enrichment of metadata towards compliance with EUROPEANA standards
- Incorporation of multilingual metadata, in particular common names of organisms
- A single access point to distributed natural history multimedia content for EUROPEANA
- A sustainability plan for network maintenance
- Development of a consistent copyright strategy for participating data providers

A2: List of Beneficiaries

Project Number ¹	270890	Project Acronym ²	OpenUp!
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List of Beneficiaries

No	Name	Short name	Country	Project entry month ¹⁰	Project exit month
1	FREIE UNIVERSITAET BERLIN	FUB-BGBM	Germany	1	36
2	NATURAL HISTORY MUSEUM	NHM	United Kingdom	1	36
3	MUSEUM FUR NATURKUNDE - LEIBNIZ-INSTITUT FUR EVOLUTIONS- UND BIODIVERSITATSFORSCHUNG AN DER HUMBOLDT-UNIVERSITAT ZU BERLIN	MFN	Germany	1	36
4	BOTANICKY USTAV SLOVENSKEJ AKADEMIE VIED	IBSAS	Slovakia	1	36
5	NATURHISTORISCHES MUSEUM	NHMW	Austria	1	36
6	MUSEE ROYAL DE L'AFRIQUE CENTRALE	MRAC	Belgium	1	36
7	NARODNI MUZEUM-NATIONAL MUSEUM NM	NM	Czech Republic	1	36
8	STICHTING EXPERTISECENTRUM VOOR TAXONOMISCHE IDENTIFICATIES	ETI	Netherlands	1	36
9	ZOOLOGISCHES FORSCHUNGSMUSEUM ALEXANDER KOENIG	ZFMK	Germany	1	36
10	INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE	RBINS	Belgium	1	36
11	Global Biodiversity Information Facility	GBIF	Denmark	1	36
12	Københavns Universitet	UCPH	Denmark	1	36
13	ROYAL BOTANIC GARDEN EDINBURGH	RBGE	United Kingdom	1	36
14	AIT ANGEWANDTE INFORMATIONSTECHNIKFORSCHUNGSGESELLSCHAFT MBH	AIT	Austria	1	36
15	HELSINGIN YLIOPISTO	UH	Finland	1	36
16	ROYAL BOTANIC GARDENS KEW	RBGK	United Kingdom	1	36
17	STICHTING NEDERLANDS CENTRUM VOOR BIODIVERSITEIT NATURALIS	NCBN	Netherlands	1	36
18	NATIONALE PLANTENTUIN VAN BELGIE	NBGB	Belgium	1	36
19	MUSEUM NATIONAL D'HISTOIRE NATURELLE	MNHN	France	1	36
20	TARTU ULIKOOL	UT-NHM	Estonia	1	36

A2: List of Beneficiaries

No	Name	Short name	Country	Project entry month ¹⁰	Project exit month
21	Species 2000	Sp2000	United Kingdom	1	36
22	SOCIETY FOR THE MANAGEMENT OF ELECTRONIC BIODIVERSITY DATA LIMITED	SMEBD	Ireland	1	36
23	Land Oberösterreich	Land OOE	Austria	1	36

A3: Budget breakdown

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One Form per Project

Participant number in this project	Participant short name	Personnel costs	Sub contracting	Other direct costs	Total costs	Max EU Contribution	Requested EU contribution
1	FUB-BGBM	629,802.00	0.00	41,072.00	670,874.00	536,699.00	536,699.00
2	NHM	433,395.00	25,000.00	27,880.00	486,275.00	389,020.00	389,020.00
3	MFN	252,746.00	0.00	7,900.00	260,646.00	208,516.00	208,516.00
4	IBSAS	73,105.00	0.00	27,900.00	101,005.00	80,804.00	80,804.00
5	NHMW	254,590.00	0.00	9,460.00	264,050.00	211,240.00	211,240.00
6	MRAC	294,962.00	0.00	8,160.00	303,122.00	242,497.00	242,497.00
7	NM	87,350.00	0.00	33,920.00	121,270.00	97,016.00	97,016.00
8	ETI	127,288.00	0.00	7,260.00	134,548.00	107,638.00	107,638.00
9	ZFMK	56,250.00	0.00	7,740.00	63,990.00	51,192.00	51,192.00
10	RBINS	52,500.00	0.00	7,740.00	60,240.00	48,192.00	48,192.00
11	GBIF	56,000.00	0.00	10,220.00	66,220.00	52,976.00	52,976.00
12	UCPH	180,515.00	0.00	13,740.00	194,255.00	155,404.00	155,404.00
13	RBGE	149,843.00	0.00	6,180.00	156,023.00	124,818.00	124,818.00
14	AIT	183,892.00	0.00	9,620.00	193,512.00	154,809.00	154,809.00
15	UH	288,260.00	0.00	10,220.00	298,480.00	238,784.00	238,784.00
16	RBGK	358,092.00	0.00	9,420.00	367,512.00	294,009.00	294,009.00
17	NCBN	163,100.00	0.00	6,180.00	169,280.00	135,424.00	135,424.00
18	NBGB	108,060.00	0.00	12,880.00	120,940.00	96,752.00	96,752.00
19	MNHN	73,674.00	0.00	17,740.00	91,414.00	73,131.00	73,131.00
20	UT-NHM	39,200.00	0.00	7,740.00	46,940.00	37,552.00	37,552.00
21	Sp2000	22,500.00	0.00	7,260.00	29,760.00	23,808.00	23,808.00
22	SMEBD	34,000.00	0.00	6,180.00	40,180.00	32,144.00	32,144.00

A3: Budget breakdown

Participant number in this project	Participant short name	Personnel costs	Sub contracting	Other direct costs	Total costs	Max EU Contribution	Requested EU contribution
23	Land OOE	127,400.00	0.00	6,720.00	134,120.00	107,296.00	107,296.00
TOTAL		4,046,524.00	25,000.00	303,132.00	4,374,656.00	3,499,721.00	3,499,721.00

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project, and it cannot be changed. The project number **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

2. Project acronym

Use the project acronym as indicated in the submitted proposal. It cannot be changed, unless agreed during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a detailed justification on a separate note.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Activity code

Select the activity code from the drop-down menu.

8. Free keywords

Use the free keywords from your original proposal; changes and additions are possible.

9. Abstract

10. The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

11. The number allocated by the Consortium to the participant for this project.

Workplan Tables

Project number

270890

Project title

OpenUp!—Opening up the Natural History Heritage for Europeana

Call (part) identifier

CIP-ICT-PSP-2009-4

Funding scheme

CIP-Best Practice Network

WT1

List of work packages

Project Number ¹	270890	Project Acronym ²	OpenUp!
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LIST OF WORK PACKAGES (WP)

WP Number ⁵³	WP Title	Lead beneficiary number ⁵⁵	Person-months ⁵⁶	Start month ⁵⁷	End month ⁵⁸
WP 1	Scientific Coordination, Project Management, Liaison & IPR	1	86.00	1	36
WP 2	Technical Implementation	2	92.00	1	36
WP 3	Metadata Modelling and EUROPEANA Liaison	14	29.00	1	36
WP 4	Zoological Community Content Provision, Metadata Catalogue and Quality Control	3	197.00	1	36
WP 5	Botanical Community Content Provision, Metadata Catalogue and Quality Control	4	256.00	1	35
WP 6	Multilingual Metadata Enrichment Including Common Names	5	79.00	1	36
WP 7	Helpdesk Facility and Extending the Network	6	88.00	3	36
WP 8	Dissemination and Awareness	7	64.00	1	34
Total			891.00		

WT2: List of Deliverables

Project Number ¹	270890	Project Acronym ²	OpenUp!
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List of Deliverables - to be submitted for review to EC

Deliverable Number ⁶¹	Deliverable Title	WP number ⁵³	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D1.1.0	Risk management procedure	1	1	1.00	R	PP	10
D1.2.2	Annual report 1 & progress report 2	1	1	1.00	R	PU	12
D1.2.4	Annual report 2 & progress report 4	1	1	1.00	R	PU	24
D1.2.6	Annual report 3 & progress report 6	1	1	1.00	R	PU	35
D1.2.7	Publishable final report	1	1	1.00	R	PU	36
D2.1.2	Collections Data Quality Toolkit production version	2	1	0.10	O	PU	12
D2.2.2	Harvesting and Transformation Component production version	2	14	0.10	O	PU	9
D2.3.5	Distributed metadata base fully operational	2	1	1.00	O	PU	24
D2.4.2	OAI-PMH Interface production version	2	14	0.10	O	PU	12
D3.1.0	OpenUp! to ESE/EDM documentation	3	14	0.10	R	PU	35
D3.2.2	Domain specific vocabularies for EUROPEANA - final	3	14	0.10	R	PU	35
D4.1.3	Data quality service for zoological names production version	4	15	0.10	O	PU	9

WT2: List of Deliverables

Deliverable Number ⁶¹	Deliverable Title	WP number ⁵³	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D4.2.0	Local zoological provider software and metadata mapping functional for all content data sources	4	6	0.10	O	PU	18
D5.1.2	Data quality service for botanical names production version	5	16	0.10	O	PU	9
D5.2.0	Local botanical provider software and metadata mapping functional for all content data sources	5	4	0.10	R	PU	18
D6.2.4	Productive system for harvesting and parsing reference information	6	5	0.10	O	PU	24
D6.4.2	Productive system for caching environment	6	5	0.10	O	PU	30
D6.6.0	Report on multilingual data for natural history objects	6	5	0.10	R	PU	24
D7.1.3	Dispatching system to answer questions timely operational	7	19	0.10	O	PU	14
D7.1.4	Guidelines for users and content providers v. 1	7	6	1.00	O	PU	12
D7.2.3	Enriched + checked existing documentation	7	6	0.10	O	PU	16

WT2: List of Deliverables

Deliverable Number ⁶¹	Deliverable Title	WP number ⁵³	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
	in orig. language (website)						
D7.2.4	Availability of newly produced documentation on the helpdesk website	7	20	0.10	O	PU	32
D7.3.4	Standard procedure for associated partners operational	7	15	0.10	R	PU	24
D8.3.2	Dissemination and publication plan	8	7	0.10	R	PU	7
D8.5.1	Report on the impact of OpenUp! content in EUROPEANA and on user communities	8	13	0.10	R	PU	34
D8.6.2	(Second) report on outreach to educational sector	8	7	1.00	R	PU	23
Total				9.80			

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP1
Work package title	Scientific Coordination, Project Management, Liaison & IPR
Start month	1
End month	36
Lead beneficiary number ⁵⁵	1

Objectives

- Ensure adherence of the consortium to the rules, regulations, and financial guidelines of the funding programme.
- Coordinate the implementation of the project as set out in the work plan; ensure progress of the project; guarantee timely deliverables.
- Ensure verifiable progress of the project commitment to high quality output with tangible impact on the programme objectives.
- Ensure liaison with GBIF, CETAF and the related eContentPlus Projects STERNA and BHL Europe.
- Coordination of the intellectual property rights (IPR) framework for OpenUp!
- Identifying and implementing means to ensure long term sustainability of the project

Description of work and role of partners

Task 1.1 – Administrative Coordination: Financial Resource Planning, Monitoring and Control. Liaison between the Commission’s financial services and the project consortium. Ensure effective communication of administrative tasks and issues within the consortium. Production and consolidation of cost-statements; set-up of the Web-based project management portal. Organisation of Project Assembly meetings, progress reviews and Project Management Committee meetings. [BGBM]

Task 1.2 – Project Coordination Proper: Project lead, chairing the Project Steering Committee; identification and trouble shooting of organisational problems [BGBM with WP-leaders]. Production and consolidation of periodic external reports [BGBM]. Work plan maintenance, monitoring of progress, timely production and adherence to quality procedures of deliverables [BGBM]. Monitor activities in the areas of content provision (WP5/WP6) and of the Outreach and Dissemination Group to ensure proper communication between partners and work packages. [BGBM + WP resources]. Represent the project [BGBM].

Task 1.3 – Overall Technology Coordination and Quality Assurance: Lead the Technology Management Group to ensure interoperability and dependability of software components in the OpenUp! dataflow from harvesting procedure to adaptation EUROPEANA and OpenUp data models. Ensure adherence to standards and specifications. Contribute to the further development of metadata and technical standards. [BGBM, AIT, NHM, RBGK, UH]

Task 1.4 – IPR Framework: Identify, collect and provide access to IPR working documents relating to unpublished natural history documents as made accessible through OpenUp! (via the OpenUp! Scratchpad Site); advise existing and new content providers on IPR issues; assist data providers in drawing up secondary IPR Agreements where necessary; keep records of all agreements secure. [RBGK]

Task 1.5 – Liaison: Coordinate with relevant partner networks and projects (particularly CETAF (MfN) but also STERNA [MRAC], GBIF [GBIF]) and BHL [MfN], contribute to clustering activities of the EC [BGBM].

Task 1.6 – Long-term Sustainability of the Project: Establish a strategic plan for long term sustainability. Establish Memoranda of Understanding (MoU) for consortium partners and beyond to maintain and enrich EUROPEANA with Natural History content after the end of the project funding [BGBM with WP7].

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
1	FUB-BGBM	72.00
2	NHM	0.50
3	MFN	2.00
4	IBSAS	0.50
5	NHMW	0.50
6	MRAC	1.00
7	NM	0.50
11	GBIF	1.00
14	AIT	1.00
15	UH	0.50
16	RBGK	6.50
Total		86.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D1.1.0	Risk management procedure	1	1.00	R	PP	10
D1.2.2	Annual report 1 & progress report 2	1	1.00	R	PU	12
D1.2.4	Annual report 2 & progress report 4	1	1.00	R	PU	24
D1.2.6	Annual report 3 & progress report 6	1	1.00	R	PU	35
D1.2.7	Publishable final report	1	1.00	R	PU	36
Total			5.00			

Description of deliverables

D1.1.0) Risk management procedure: [month 10]
D1.2.2) Annual report 1 & progress report 2: Written report. [month 12]
D1.2.4) Annual report 2 & progress report 4: Written report. [month 24]
D1.2.6) Annual report 3 & progress report 6: Written report. [month 35]
D1.2.7) Publishable final report: [month 36]

WT3: Work package description

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS06	IPR working documents available on the OpenUp! web site	16	9	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP2
Work package title	Technical Implementation
Start month	1
End month	36
Lead beneficiary number ⁵⁵	2

Objectives

- Assembling and providing the hardware and software needed to set up a seamless, stable and sustainable data flow from content providers to EUROPEANA relying on innovative application of proven technologies
- Setting up the necessary failure-proof storage and play-out mechanism for OpenUp! metadata processing and provision
- Hosting the OpenUp! communication Web site using a ScratchPad site
- Documenting the technical implementation of OpenUp! infrastructure

Description of work and role of partners

Task 2.1 – Collection Data Quality Toolkit: Design an integrated spreadsheet-like software-toolkit offering a common User interface for OpenUp! data quality and integrity services. Set up this toolkit for a selection of data providers representing a broad range of content spectra (taxonomic, geographic, language, type of multimedia, etc.) and test its efficiency [MfN and IBSAS]. Adjust toolkit design and functionality accordingly and distribute it to all OpenUp! data providers. [BGBM with MfN and IBSAS]

Task 2.2 – Harvesting and Transformation Component: Implementing and setting up the component. The OpenUp! harvesting component will be set up to harvest data on request from the data repositories of the content providers and ingest the data to the OpenUp! OAI provider. The data will be transformed according to the requirements of the various harvesting routines of the target repositories (EUROPEANA, BHL etc.). [AIT]

Task 2.3 – Addressing Long-term Sustainability: Develop a distributed metadatabase in such a way that long-term sustainability of the metadata is secured. The NHM hosted database, availability checker and thumbnail creation toolset will be hosted on NHM infrastructure which is part of the BHL-Europe project, including a SAN, utilising redundant architecture. Duplicate tape backups will be kept with one set stored offsite. Mirror sites for the metadatabase will be set up by UCPH, NBGB and BGBM guided by NHM. [NHM, UCPH, NBGB, BGBM]

Task 2.4 – OAI-PMH Interface: The OpenUp! provider will expose the record metadata in the diverse formats needed. The OAI-PMH Interface will be constantly adapted and updated in order to fulfil the requirements of the evolving metadata standards (EUROPEANA ESE, EDM – OAI ORE etc). In close cooperation with the EUROPEANA technical office and other cooperation partners (e.g. BHL) standard procedures for continuous harvesting mechanisms will be elaborated. [AIT]

Task 2.5 – Implement an Availability Checker for Partner Content: Develop and implement a tool to ensure that the unavailability of local data providers will be identified in a timely way, an alert will be sent to the local providers informing them of the issue, and while the data is unavailable ensuring the corresponding metadata is flagged appropriately on the main database. [NHM]

Task 2.6 – Workflow Documentation: Develop and maintain documentation on the content workflow. The documentation will outline the process by which accurate metadata and content from content suppliers are seamlessly and reliably provided to EUROPEANA. [NHM]

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
1	FUB-BGBM	8.00
2	NHM	68.00
3	MFN	1.00
4	IBSAS	1.00
12	UCPH	3.00
14	AIT	8.00
18	NBGB	3.00
Total		92.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D2.1.2	Collections Data Quality Toolkit production version	1	0.10	O	PU	12
D2.2.2	Harvesting and Transformation Component production version	14	0.10	O	PU	9
D2.3.5	Distributed metadata base fully operational	1	1.00	O	PU	24
D2.4.2	OAI-PMH Interface production version	14	0.10	O	PU	12
Total			1.30			

Description of deliverables

D2.1.2) Collections Data Quality Toolkit production version: An integrated spreadsheet-like software-toolkit offering a common User interface for OpenUp! data quality and integrity services. [month 12]

D2.2.2) Harvesting and Transformation Component production version: The OpenUp! harvesting component, a software which will harvest data on request from the data repositories of the content providers and ingest the data to the OpenUp! OAI provider. [month 9]

D2.3.5) Distributed metadata base fully operational: [month 24]

D2.4.2) OAI-PMH Interface production version: 2nd Version of the interface, adapted to the evolving Europeana standards and fully operational. [month 12]

WT3: Work package description

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS01	Harvesting and Transformation component prototype	14	3	
MS02	Sample data service mock-up for data quality services - botany	16	4	The 1st year of the project is critical. The technical infrastructure (software, data storage + communication) on which the project's success depends has to be set up by several partners in parallel.
MS03	Sample data service mock-up for data quality services - zoology	15	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS04	Sample data service mock-up validation and enrichment layer	5	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS05	Sample data service mock-up data integrity services	1	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS07	Metadatabase production version operational	2	10	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP3
Work package title	Metadata Modelling and EUROPEANA Liaison
Start month	1
End month	36
Lead beneficiary number ⁵⁵	14

Objectives

- Ensuring the compatibility of the OpenUp! metadata provision with EUROPEANA standards
- Technical liaison with EUROPEANA
- Additional metadata vocabularies and services for data quality improvements
- Developing concepts of further integration of the natural history data domain with EUROPEANA
- Evaluate possible synergies with the BHL Europe initiative

Description of work and role of partners

Task 3.1 – Standard Conformance: Ensure that the metadata and image formats are consistent with international standards and specifically the requirements set by EUROPEANA. Participate in the relevant EUROPEANA working groups (WP3- Further Specification of Functionality and Interoperability aspects of EUROPEANA). Coordinate with the EUROPEANA Foundation Office. Investigation of mapping procedures and alignment of OpenUp! data to the emerging EDM standard. Management of thematic content contribution for EUROPEANA virtual content exhibitions. [AIT]

Task 3.2 – EDM Contribution: Developing a concept for inclusion of domain specific metadata vocabularies (e.g. common or scientific organism names) and contributing to improving access to scientific information in the future EUROPEANA development. [AIT]

Task 3.3 – Setting up the Natural History Data Integrity Service: Compile a set of rules defining data integrity constraints for OpenUp! information providers based on the existing SYNTHESYS data quality service prototype. Extend the SYNTHESYS service with the revised rule system consisting of regular expressions and term lists supporting controlled vocabularies. Set up the service and support its integration into the collection Data Quality Toolkit provided by work package 2. [BGBM]

Task 3.4 – Vocabularies: Investigating the potential of services offering additional metadata vocabularies for integration with the data quality improvement at source level (e.g. geographical area names). Survey and selection of current available and relevant vocabularies for metadata enrichment. Preparation and alignment of OpenUp! metadata according to the semantic enrichment requirements of EDM. Integration of user generated content. [AIT, NCBN]

Task 3.5 – Integration with BHL-Europe: Evaluate possibilities for integration of OpenUp! metadata with the BHL-Europe web portal. OpenUp! and BHL-Europe provide complementary natural history content. BHL-Europe will feature a sustained human-accessible Web portal accessing biodiversity literature held in the storage system at the NHM where OpenUp! metadata reside. This offers possibilities for semantic linkages which will be investigated. [AIT with NHM]

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
1	FUB-BGBM	5.00
2	NHM	1.00

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
14	AIT	21.00
17	NCBN	2.00
Total		29.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D3.1.0	OpenUp! to ESE/EDM documentation	14	0.10	R	PU	35
D3.2.2	Domain specific vocabularies for EUROPEANA - final	14	0.10	R	PU	35
Total			0.20			

Description of deliverables

D3.1.0) OpenUp! to ESE/EDM documentation: [month 35]
 D3.2.2) Domain specific vocabularies for EUROPEANA - final: [month 35]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
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WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP4
Work package title	Zoological Community Content Provision, Metadata Catalogue and Quality Control
Start month	1
End month	36
Lead beneficiary number ⁵⁵	3

Objectives

- Integration of the institutional and departmental base for zoological natural history content provision to EUROPEANA by means of OpenUp! mechanisms using the GBIF/BioCASE infrastructure
- Providing a model for the integration of content from the areas of palaeontology and mineralogy
- Zoological (and paleontological / mineralogical) metadata completion and quality enhancement
- Provision of multimedia objects and quality metadata to EUROPEANA using the OpenUp! workflow.
- Provision of a metadata vocabulary for zoological names and setting up a referring data quality service

Description of work and role of partners

Task 4.1 – Data Quality Service for Zoological Names: identifying complementary data sources to set up a metadata vocabulary for zoological names; setting up a data service that can be used by the Collections Data Quality Toolkit provided by WP2. [UH, GBIF, Sp2000, SMEBD]

Task 4.2 – Local Data Provision: Testing the local BioCASE provider functionality, connecting additional databases, where necessary; definition and mapping of constant metadata into ABCD, training of local personnel in provider setup and configuration [MRAC, UH, and the SYNTHESYS helpdesk at BGBM]

Task 4.3 – Data Quality Enhancement Process and Data Provision: Setting up and using Collections Data Quality Toolkit provided by WP2. Training of personnel in usage of the toolkit. Identification and exclusion of critical metadata items (e.g. modern location of endangered species of commercial interest). Control of ABCD data provision using the BioCASE Local Query Tool. After harvesting by the OpenUp! Harvester and incorporation into EUROPEANA, periodic checks of the EUROPEANA data display to ensure correct functioning of the newly established workflow. [All content providers].

Task 4.4 – Final Data Quality Checking. Regular checks of randomly chosen multimedia objects and, where necessary, feedback to provider institutions ensures the distribution of consistent quality standards across the network. [MfN]

Task 4.5 – Data Quality Service for Paleontological and Mineralogical Objects: standardise the content from areas of palaeontology and mineralogy for EUROPEANA and develop and test an integration model [NM]

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
2	NHM	14.00
3	MFN	47.00
6	MRAC	10.00
7	NM	10.00
8	ETI	23.00

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
9	ZFMK	10.00
10	RBINS	3.00
11	GBIF	5.00
12	UCPH	12.00
15	UH	24.00
17	NCBN	24.00
20	UT-NHM	7.00
21	Sp2000	3.00
22	SMEBD	3.00
23	Land OOE	2.00
Total		197.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D4.1.3	Data quality service for zoological names production version	15	0.10	O	PU	9
D4.2.0	Local zoological provider software and metadata mapping functional for all content data sources	6	0.10	O	PU	18
Total			0.20			

Description of deliverables

D4.1.3) Data quality service for zoological names production version: [month 9]

D4.2.0) Local zoological provider software and metadata mapping functional for all content data sources: Report on the software implementation and functionality at local providers. [month 18]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS09	Local provider software and metadata mapping functional for all zoological content data sources.	3	18	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP5
Work package title	Botanical Community Content Provision, Metadata Catalogue and Quality Control
Start month	1
End month	35
Lead beneficiary number ⁵⁵	4

Objectives

- Integration of the institutional and departmental base for botanical natural history content provision to EUROPEANA by means of OpenUp! mechanisms using the GBIF/BioCASE infrastructure
- Botanical metadata completion and quality enhancement
- Provision of multimedia objects and quality metadata to EUROPEANA using the OpenUp! workflow.
- Provision of a metadata vocabulary for botanical names and setting up a referring data quality service
- Feedback of botanical name metadata to improve the metadata vocabulary

Description of work and role of partners

Task 5.1 – Data Quality Service for Botanical Names: setting up a data service that can be used by the Collections Data Quality Toolkit provided by WP2 and manage feedback of names from data providers. [RBGK]

Task 5.2 – Local Data Provision: Testing the local BioCASE provider functionality, connecting additional databases, where necessary; definition and mapping of constant metadata into ABCD, training of local personnel in provider setup and configuration [IBSAS, RBGE, NBGB, and the SYNTHESYS helpdesk at BGBM]

Task 5.3 – Data Quality Enhancement Process and Data Provision: Setting up and using Collections Data Quality Toolkit provided by WP2. Training of personnel in usage of the toolkit. Identification and exclusion of critical metadata items (e.g. modern location of endangered plants of commercial interest). Control of ABCD data provision using the BioCASE Local Query Tool. After harvesting by the OpenUp! Harvester and incorporation into EUROPEANA, periodic checks of the EUROPEANA data display to ensure correct functioning of the newly established workflow. [All content providers].

Task 5.4 – Final Data Quality Checking. Regular checks of randomly chosen multimedia objects and, where necessary, feedback to provider institutions ensures the distribution of consistent quality standards across the network. [IBSAS]

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
1	FUB-BGBM	30.00
2	NHM	2.00
4	IBSAS	39.00
5	NHMW	15.00
7	NM	3.00
8	ETI	5.00
12	UCPH	9.00
13	RBGE	32.00

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
15	UH	1.00
16	RBGK	67.00
17	NCBN	1.00
18	NBGB	21.00
20	UT-NHM	7.00
23	Land OOE	24.00
Total		256.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D5.1.2	Data quality service for botanical names production version	16	0.10	O	PU	9
D5.2.0	Local botanical provider software and metadata mapping functional for all content data sources	4	0.10	R	PU	18
Total			0.20			

Description of deliverables

D5.1.2) Data quality service for botanical names production version: [month 9]

D5.2.0) Local botanical provider software and metadata mapping functional for all content data sources: Report on the software implementation and functionality at local providers. [month 18]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS10	Local provider software and metadata mapping functional for all botanical content data	4	18	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP6
Work package title	Multilingual Metadata Enrichment Including Common Names
Start month	1
End month	36
Lead beneficiary number ⁵⁵	5

Objectives

- Enabling access to information from natural history heritage objects for the general public by bridging to scientific names via their multilingual common names representations
- Providing a metadata model for the integration of content from botanical and zoological common names, geographical place names and person names
- Provision of a multilingual metadata enrichment service for natural history heritage objects
- Content validation for scientific names, common names, person names, and geographical place names on the basis of existing reference information from respective domains

Description of work and role of partners

Task 6.1 – Adoption and extension of existing BIOCASE metadata standards, taking other international metadata standards into account, for common names, geographical place names and person names including the definition of controlled metadata vocabularies [NHMW, NM, SMBED, Sp2000, UH]

Task 6.2 – Setup of an environment for harvesting and parsing federated reference information [NHMW]

Task 6.3 – Reviewing of available reference information systems for common names, place names, and person names and selection of appropriate resources [NHMW, NM, Sp2000, SMEBD, UH, UT-NHM, NCBN]

Task 6.4 – Setup of a caching environment for the accumulated reference information and mapping to their scientific representations in line with GBIFs, Sp2000, and SMBED global names initiatives [NHMW]

Task 6.5 – Integration of validation and enrichment layers into the OpenUp! infrastructures in coordination with WP2 [NHMW, BGBM]

Task 6.6 – Multilingual content. Investigate and document the multilingual aspects of natural history object data, i.e. which data are provided in different languages, which are significant for Europeana audiences, where is the application of controlled vocabularies possible, etc.

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
1	FUB-BGBM	3.00
5	NHMW	36.00
7	NM	15.00
15	UH	18.00
17	NCBN	2.00
20	UT-NHM	1.00
21	Sp2000	2.00

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
22	SMEBD	2.00
	Total	79.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D6.2.4	Productive system for harvesting and parsing reference information	5	0.10	O	PU	24
D6.4.2	Productive system for caching environment	5	0.10	O	PU	30
D6.6.0	Report on multilingual data for natural history objects	5	0.10	R	PU	24
	Total		0.30			

Description of deliverables

D6.2.4) Productive system for harvesting and parsing reference information: A software product. [month 24]
 D6.4.2) Productive system for caching environment: [month 30]
 D6.6.0) Report on multilingual data for natural history objects: [month 24]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS11	Protot. for harvesting, parsing and caching federated reference data (common-, place-, person names)	5	18	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP7
Work package title	Helpdesk Facility and Extending the Network
Start month	3
End month	36
Lead beneficiary number ⁵⁵	6

Objectives

- Offer a helpdesk facility for provider and users within and beyond the Consortium partners, including access to documentation, online tutorials, trainings and advisory helpline
- Provide access to existing and newly produced documentation and tutorials for the services of OpenUp!
- Formulate the procedures and outreach strategies for adding associated partners to enlarge the provider community beyond the current consortium members

Description of work and role of partners

Task 7.1 – Helpdesk Facility: (i) Setting up a network of key people that can act as helpdesk at the different partner institutions and beyond; including the already existing BioCASE and GBIF helpdesk. (ii) Implementing a helpdesk online environment, where providers have access to documentation, FAQ-documentation, a discussion forum and contact addresses (email and phone). (iii) Setting up of a dispatching system so that questions of providers and users are redirected to the available and right contact to ensure timely response. [MRAC with GBIF Nodes (ZFMK, BGBM, RBINS, UCPH, UH, MNHN, UT-NHM)]

Task 7.2 – Documentation: Identify existing documentation in collaboration with Consortium partners and beyond. Check, proof read, update, enrich existing documentation as needed. Identify documentation gaps and coordinate the production of new documentation of the services set up by OpenUp! for users and providers. Coordinate needed translation of documentation in national languages. . [UT-NHM with all]

Task 7.3 – Extending the Network: Establish the criteria for institutions and organisations to become associated partners to OpenUP! Identify and document benefits for institutions to become associated partners to OpenUp! Identify new partners with potential to join OpenUp! Develop an Outreach strategy to attract associated partners (in close collaboration with WP8 on Dissemination and awareness. Establish a standard procedure for addition of associated partners to OpenUp! [UH with GBIF nodes and GBIF secretariat]

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
6	MRAC	36.00
9	ZFMK	2.00
10	RBINS	6.00
11	GBIF	2.00
12	UCPH	6.00
15	UH	6.00
18	NBGB	6.00
19	MNHN	18.00

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
20	UT-NHM	6.00
	Total	88.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D7.1.3	Dispatching system to answer questions timely operational	19	0.10	O	PU	14
D7.1.4	Guidelines for users and content providers v. 1	6	1.00	O	PU	12
D7.2.3	Enriched + checked existing documentation in orig. language (website)	6	0.10	O	PU	16
D7.2.4	Availability of newly produced documentation on the helpdesk website	20	0.10	O	PU	32
D7.3.4	Standard procedure for associated partners operational	15	0.10	R	PU	24
	Total		1.40			

Description of deliverables

D7.1.3) Dispatching system to answer questions timely operational: A system on the website to redirect questions of providers and users to the available and right contact to ensure timely response. [month 14]
D7.1.4) Guidelines for users and content providers v. 1: [month 12]
D7.2.3) Enriched + checked existing documentation in orig. language (website): [month 16]
D7.2.4) Availability of newly produced documentation on the helpdesk website: [month 32]
D7.3.4) Standard procedure for associated partners operational: [month 24]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS08	Online helpdesk infrastructure installed and functional	6	12	
MS12	Outreach campaign to attract additional associated partners started	6	30	

WT3: Work package description

Project Number ¹	270890	Project Acronym ²	OpenUp!
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One form per Work Package

Work package number ⁵³	WP8
Work package title	Dissemination and Awareness
Start month	1
End month	34
Lead beneficiary number ⁵⁵	7

Objectives

- Run a consistent set of communication activities to raise awareness for the OpenUp! project and its content in EUROPEANA and effectively disseminate information about goals and results of the project to the general public and target scientific communities.
- Demonstrate benefits of the OpenUp! project at conferences, public events and on-line among the broad public and target user communities.
- Ensure awareness of OpenUp! activities among other projects and initiatives, also in other countries, to ensure maximum take-up and harnessing of the results through interoperable information access.
- Ensure the effective dissemination of the diverse activities and their results within the project member institutions and among new participants. Assess the impact of OpenUp!

Description of work and role of partners

Task 8.1 – Establish the OpenUp! Communication Site: Develop an on-line community within the consortium to prepare the dissemination plan and activities, set up a web environment for internal and external communication [NM, AIT].

Task 8.2 – Create and Establish the OpenUp! Design: Develop a corporate design for the OpenUp! project. Lay out the design concept (templates) for promotional materials, including the regularly published newsletter, conference posters, handouts and presentations. [NM, assisted by partners with graphics departments]

Task 8.3 – Dissemination and Demonstration Plan: Establish the detailed planning of the dissemination activities, coordinate the plan with partners especially with regard to the in-kind contributions expected from the partner's public exhibition and PR departments, provide a detailed plan for resource allocation within WP8 [NM] taking into account dependencies and collaboration with WP7. [NM, MRAC].

Task 8.4 – Execute the Dissemination and Demonstration Plan: Illustrate OpenUp! benefits, usage and functionality by self-running demonstration downloadable from the web page. Provide PR materials (electronic and in print) to consortium members. Publish semi-annual newsletter. Run an OpenUp! calendar to alert consortium members and target users to upcoming events (conferences, workshops etc) relevant to OpenUp! Provide materials for member institutions' websites and public terminals to promote EUROPEANA and the OpenUp! content. Plan and prepare special evaluation periods during the project. [NM]. Initiate contacts with other projects that provide content that could be made interoperable with OpenUp! content. [NM with BGBM]. Provide documentation package for new content providers; collaborate with helpdesk facility in WP7 to start outreach campaigns to attract new content providers [MRAC, NM, NCBN]

Task 8.5 – Assess the Impact of Dissemination Activities. Conduct user surveys using established survey methodology to measure uptake of the project's results, to identify additional target user communities, and to feed back priorities for digitisation activities to the content providing institutions. [RBGE].

Task 8.6 - Outreach to educational sector. Adapt the project documentation to the educational sector (pupils and teachers). Disseminate information through appropriate additional means (social networking, email invitations to schools, powerpoint demonstration of natural history content in Europeana, focused scratchpad pages, etc.).

WT3: Work package description

Person-Months per Participant

Participant number ¹⁰	Participant short name ¹¹	Person-months per participant
6	MRAC	4.00
7	NM	54.00
13	RBGE	3.00
14	AIT	1.00
17	NCBN	2.00
Total		64.00

List of deliverables

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D8.3.2	Dissemination and publication plan	7	0.10	R	PU	7
D8.5.1	Report on the impact of OpenUp! content in EUROPEANA and on user communities	13	0.10	R	PU	34
D8.6.2	(Second) report on outreach to educational sector	7	1.00	R	PU	23
Total			1.20			

Description of deliverables

D8.3.2) Dissemination and publication plan: [month 7]

D8.5.1) Report on the impact of OpenUp! content in EUROPEANA and on user communities: [month 34]

D8.6.2) (Second) report on outreach to educational sector: [month 23]

Schedule of relevant Milestones

Milestone number ⁵⁹	Milestone name	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
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WT4: List of Milestones

Project Number ¹	270890	Project Acronym ²	OpenUp!
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List and Schedule of Milestones

Milestone number ⁵⁹	Milestone name	WP number ⁵³	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS01	Harvesting and Transformation component prototype	WP2	14	3	
MS02	Sample data service mock-up for data quality services - botany	WP2	16	4	The 1st year of the project is critical. The technical infrastructure (software, data storage + communication) on which the project's success depends has to be set up by several partners in parallel.
MS03	Sample data service mock-up for data quality services - zoology	WP2	15	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS04	Sample data service mock-up validation and enrichment layer	WP2	5	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS05	Sample data service mock-up data integrity services	WP2	1	4	MS02-MS05 are functional mock-ups of the services required, which will ensure that requirements will be fulfilled in prototype development, especially with respect to interoperability.
MS06	IPR working documents available on the OpenUp! web site	WP1	16	9	
MS07	Metadatabase production version operational	WP2	2	10	
MS08	Online helpdesk infrastructure installed and functional	WP7	6	12	

WT4: List of Milestones

Milestone number ⁵⁹	Milestone name	WP number ⁵³	Lead beneficiary number	Delivery date from Annex I ⁶⁰	Comments
MS09	Local provider software and metadata mapping functional for all zoological content data sources.	WP4	3	18	
MS10	Local provider software and metadata mapping functional for all botanical content data	WP5	4	18	
MS11	Protot. for harvesting, parsing and caching federated reference data (common-, place-, person names)	WP6	5	18	
MS12	Outreach campaign to attract additional associated partners started	WP7	6	30	

WT5: Tentative schedule of Project Reviews

Project Number ¹	270890	Project Acronym ²	OpenUp!
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Tentative schedule of Project Reviews

Review number ⁶⁵	Tentative timing	Planned venue of review	Comments, if any
RV 1	12	Paris	
RV 2	24	Prague	
RV 3	35	Bratislava	

Project Effort by Beneficiary and Work Package

Project Number ¹	270890	Project Acronym ²	OpenUp!
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Indicative efforts (man-months) per Beneficiary per Work Package

Beneficiary number and short-name	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	WP 7	WP 8	Total per Beneficiary
1 - FUB-BGBM	72.00	8.00	5.00	0.00	30.00	3.00	0.00	0.00	118.00
2 - NHM	0.50	68.00	1.00	14.00	2.00	0.00	0.00	0.00	85.50
3 - MFN	2.00	1.00	0.00	47.00	0.00	0.00	0.00	0.00	50.00
4 - IBSAS	0.50	1.00	0.00	0.00	39.00	0.00	0.00	0.00	40.50
5 - NHMW	0.50	0.00	0.00	0.00	15.00	36.00	0.00	0.00	51.50
6 - MRAC	1.00	0.00	0.00	10.00	0.00	0.00	36.00	4.00	51.00
7 - NM	0.50	0.00	0.00	10.00	3.00	15.00	0.00	54.00	82.50
8 - ETI	0.00	0.00	0.00	23.00	5.00	0.00	0.00	0.00	28.00
9 - ZFMK	0.00	0.00	0.00	10.00	0.00	0.00	2.00	0.00	12.00
10 - RBINS	0.00	0.00	0.00	3.00	0.00	0.00	6.00	0.00	9.00
11 - GBIF	1.00	0.00	0.00	5.00	0.00	0.00	2.00	0.00	8.00
12 - UCPH	0.00	3.00	0.00	12.00	9.00	0.00	6.00	0.00	30.00
13 - RBGE	0.00	0.00	0.00	0.00	32.00	0.00	0.00	3.00	35.00
14 - AIT	1.00	8.00	21.00	0.00	0.00	0.00	0.00	1.00	31.00
15 - UH	0.50	0.00	0.00	24.00	1.00	18.00	6.00	0.00	49.50
16 - RBGK	6.50	0.00	0.00	0.00	67.00	0.00	0.00	0.00	73.50
17 - NCBN	0.00	0.00	2.00	24.00	1.00	2.00	0.00	2.00	31.00
18 - NBGB	0.00	3.00	0.00	0.00	21.00	0.00	6.00	0.00	30.00
19 - MNHN	0.00	0.00	0.00	0.00	0.00	0.00	18.00	0.00	18.00
20 - UT-NHM	0.00	0.00	0.00	7.00	7.00	1.00	6.00	0.00	21.00
21 - Sp2000	0.00	0.00	0.00	3.00	0.00	2.00	0.00	0.00	5.00
22 - SMEBD	0.00	0.00	0.00	3.00	0.00	2.00	0.00	0.00	5.00

WT6:

Project Effort by Beneficiary and Work Package

Beneficiary number and short-name	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	WP 7	WP 8	Total per Beneficiary
23 - Land OOE	0.00	0.00	0.00	2.00	24.00	0.00	0.00	0.00	26.00
Total	86.00	92.00	29.00	197.00	256.00	79.00	88.00	64.00	891.00

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It cannot be changed unless agreed so during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

53. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

55. Lead beneficiary number

Number of the beneficiary leading the work in this work package.

56. Person-months per work package

The total number of person-months allocated to each work package.

57. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

58. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

59. Milestone number

Milestone number: MS1, MS2, ..., MSn

60. Delivery date for Milestone

Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

61. Deliverable number

Deliverable numbers in order of delivery dates: D1 – Dn

62. Nature

Please indicate the nature of the deliverable using one of the following codes

R = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

63. Dissemination level

Please indicate the dissemination level using one of the following codes:

- **PU** = Public
- **PP** = Restricted to other programme participants (including the Commission Services)
- **RE** = Restricted to a group specified by the consortium (including the Commission Services)
- **CO** = Confidential, only for members of the consortium (including the Commission Services)
- **Restreint UE** = Classified with the classification level "Restreint UE" according to Commission Decision 2001/844 and amendments
- **Confidentiel UE** = Classified with the mention of the classification level "Confidentiel UE" according to Commission Decision 2001/844 and amendments
- **Secret UE** = Classified with the mention of the classification level "Secret UE" according to Commission Decision 2001/844 and amendments

64. Delivery date for Deliverable

Month in which the deliverables will be available. Month 1 marking the start date of the project, and all delivery dates being relative to this start date

65. Review number

Review number: RV1, RV2, ..., RVn

66. Tentative timing of reviews

Month after which the review will take place. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

67. Person-months per Deliverable

The total number of person-month allocated to each deliverable.

Annex I: Description of Work

Part B

ICT PSP 4th Call for Proposals 2010 - Objective Identifier
2.2 Enhancing/Aggregating Content in EUROPEANA

Project Acronym

OpenUp!

Project Full Title

**Opening up the European Natural History Heritage
for EUROPEANA**

Proposal Number and Date of Preparation

V 3.1, 9 November 2010

Name of Coordinating Person

Walter G. Berendsohn

List of Participants

Participant No.¹	Participant Organisation Name	Participant Short Name	Country
1	Freie Universität Berlin, Botanic Garden and Botanical Museum Berlin-Dahlem	BGBM (FUB-BGBM)	DE
2	Natural History Museum	NHM	UK
3	Museum für Naturkunde - Leibniz Institute for Research on Evolution and Biodiversity at the Humboldt University Berlin	MfN	DE
4	Institute of Botany Slovak Academy of Sciences	IBSAS	SK
5	Naturhistorisches Museum Wien	NHMW	AT
6	Musée Royal de l'Afrique Centrale	MRAC	BE
7	Národní muzeum Praha	NM	CZ
8	Stichting Expertisecentrum voor Taxonomische Identificatie	ETI	NL
9	Zoologisches Forschungsmuseum Alexander Koenig	ZFMK	DE
10	Royal Belgian Institute of Natural Sciences	RBINS	BE
11	Secretariat of the Global Biodiversity Information Facility	GBIF	DK
12	University of Copenhagen, Natural History Museum of Denmark	UCPH	DK
13	Royal Botanic Garden Edinburgh	RBGE	UK
14	AIT Angewandte Informationstechnik Forschungsgesellschaft mbH	AIT	AT
15	University of Helsinki, Finnish Museum of Natural History	UH	FI
16	Royal Botanic Gardens Kew	RBGK	UK
17	Stichting Nationaal Centrum voor Biodiversiteit Naturalis	NCBN	NL
18	National Botanic Garden of Belgium	NBGB	BE
19	Museum National D'Histoire Naturelle	MNHN	FR
20	University of Tartu, Natural History Museum	UT-NHM	EE
21	Species 2000	Sp2000	UK
22	Society for the Management of Electronic Biodiversity Data	SMEBD	IRL
23	Land Oberösterreich, Oberösterreichische Landesmuseen/Biologiezentrum	LANDOOE	AT

¹ Participant number 1 is the coordinator. The remaining participants are beneficiaries.

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PROJECT PROFILE

Proposal Acronym: **OpenUp!**

Proposal Full Title: **Opening up the European Natural History Heritage for Europeana**

Information on the Best Practice Network

Objectives: European natural history collections manage and give access to over 1.5 billion objects from the world's biodiversity heritage, covering most of the species described worldwide. These are reference objects, including all common and famous species in the world, those of high economic importance and even those that have already gone extinct. Many have great cultural value as they were collected during historical expeditions and scientific endeavours by well known epochal explorers and scientists like Darwin, Linnaeus, or Stanley. In many cases, OpenUp! for EUROPEANA will make these treasures for the first time available to the general public. The content provided by OpenUp! is exactly complementary to the resources mobilised by the *eContentPlus* project Biodiversity Heritage Library Europe. As a result, EUROPEANA will be providing scientists and policy makers with a substantial information source needed in the understanding and protection of global biodiversity.

Although being clearly within the scope of EUROPEANA as part of the scientific and cultural heritage, multimedia objects from the natural history domain are still dramatically underrepresented. This project aims at closing this gap. It will initially make available at least approximately 1.1 million high quality images, movies, animal sound files, and natural history artwork and brings together 23 institutions from 12 European countries. Access will be based on the established technical infrastructure of the Global Biodiversity Information Facility (GBIF) including the BioCASE network (Biological Collection Access System for Europe). Once the pathway and data flow from providers in the BioCASE network and GBIF has been created, it will provide a steady stream of additional multimedia objects to EUROPEANA. **The project will address the following objectives:**

- Mapping between GBIF data standards and the EUROPEANA metadata scheme ESE/EDM
- Enrichment of metadata towards compliance with EUROPEANA standards
- Incorporation of multilingual metadata, in particular vernacular names of organisms
- Incorporation of metadata that will allow semantic linking of content with other domains, particularly scientific organism names
- A single access point to distributed GBIF/BioCASE multimedia content for EUROPEANA
- Adding data providers for multimedia content, set up of data provider software
- A sustainability plan for the future network maintenance
- The development of a consistent IPR and copyright strategies for future data providers

Activities and Outcomes: The 23 project partners include some of the most outstanding natural history museums and botanical gardens in Europe and almost all will function as content providers. Many of these institutions also represent nodes in the GBIF network. As a result, they have a strong background in biodiversity informatics and will be able to provide the necessary technology for implementation. The project will connect EUROPEANA to the Global Biodiversity Information Facility GBIF, a steadily growing content provision framework that has been established by a resolution of OECD science ministers and subsequent signing of a Memorandum of Understanding by at present 54 countries (19 of them European) and 42 international organisations. The network comprises more than 300 data providers and offers open access to more than 200 million data records. The OpenUp! project partners that are European natural history collection institutions have an established connection to the GBIF network, which will ensure future sustainability and steady growth of content provision to EUROPEANA after the end of the project. These public museums and botanical gardens will support the work package focussing on the dissemination of EUROPEANA as the European portal of interest within communities related to biodiversity. With a work package dedicated to the extension of the provider community, OpenUp! will also actively encourage content holders beyond the project consortium to join the scheme (the total number of natural history collections in the EU is estimated to exceed 4000 institutions).

At present, the number of contributions to EUROPEANA that will be available under an adequate IPR licensing/clearing scheme from the participating institutions at item level and including standard-conforming adequate and quality-controlled metadata, will amount to at least the numbers given to the right:	High quality object images (number)	881 438
	Natural history artwork (number)	119 100
	Animal sound files (number)	21 350
	Movies (number)	1 200
	Other (number)	38 000
	Total, at least	1 061 088

Apart from the value of the content itself, unifying content provision through inclusion in EUROPEANA presents European added value in three respects: (i) Objects in European natural history collections are by no means restricted to national territories, they originate from expeditions and explorations all over the world. A unified approach, e.g. to metadata provision, therefore creates significant synergies as compared to a nationally

or institutionally restricted approach. (ii) The participating institutions' background knowledge will greatly enhance the metadata available for content indexing in EUROPEANA, particularly in the area of organism names, and thus allow semantic cross links with other data, for example scientific literature data provided by the Biodiversity Heritage Library project, or general letters and arts objects that refer to organisms by name. (iii) The international community coordination, outreach and dissemination activities in the project will increase public awareness and thus usage of Europe's uniquely rich heritage in the area of natural history objects. This also answers a plea from Europe's former colonies for enhanced access to the natural history objects that have been collected on their territories and were preserved by European institutions over the past three centuries.

Consortium: The intended consortium will be composed of natural history institutions that are members of the Consortium of European Taxonomic Facilities (CETAF), i.e. large European Natural Science Museums and Botanical Gardens, and of European GBIF nodes. The 6-monthly meetings of CETAF institution directors will provide an additional organisational framework and forum for the project, which will make the comparatively large consortium manageable. European GBIF Node meetings will further foment coherence.

All consortium members will be content providers, with the exception of AIT, MNHN-GBIF France, GBIF and SP2000, who are technology (or technology knowledge) providers and share that function with partners 1 and 2 who play a double role. All content providers are also active in biodiversity research and have exhibitions (and botanic gardens) accessible to the public. In the following, CETAF members are marked with an asterisk*, GBIF Nodes with a plus⁺ sign: (1) *⁺Freie Universität Berlin, Botanic Garden and Botanical Museum Berlin-Dahlem – project management, biodiversity informatics; project coordinator. (2) *Natural History Museum, London – WP lead, IT. (3) *⁺Museum für Naturkunde Berlin – WP lead, BHL Europe liaison. (4) *⁺Institute of Botany, Slovak Academy of Sciences, Bratislava – WP lead. (5) *⁺Naturhistorisches Museum Wien – WP lead. (6) * Musée Royal de l'Afrique Centrale, Tervuren – WP lead. (7) *⁺Národní muzeum Praha – WP lead. (8) *⁺ETI, Stichting Expertisecentrum voor Taxonomische Identificatie, Amsterdam – SME. (9) *⁺ Zoologisches Forschungsmuseum Alexander Koenig, Bonn. (10) *⁺Royal Belgian Institute of Natural Sciences, Brussels. (11) Secretariat of the Global Biodiversity Information Facility, Copenhagen – IT, taxonomic metadata. (12) *⁺ University of Copenhagen, Natural History Museum of Denmark. (13) *Royal Botanic Garden Edinburgh – usability testing. (14) AIT Angewandte Informationstechnik Forschungsgesellschaft mbH, Graz – WP lead, IT, Europeana liaison, SME. (15) *⁺University of Helsinki, Finnish Museum of Natural History – zoological metadata. (16) *Royal Botanic Gardens Kew – botanical metadata, IPR. (17) *Stichting Nationaal Centrum voor Biodiversiteit Naturalis, Leiden. (18) *National Botanic Garden of Belgium, Meise – IT. (19) *⁺ Museum National D'Histoire Naturelle-GBIF France, Paris. (20) *University of Tartu, Natural History Museum – IT. (21) Species 2000 – taxonomic metadata, 4D4Life and i4Life project liaison, SME. (22) Society for the Management of Electronic Biodiversity Data – PESI liaison, IPR, SME. (23) Land Oberösterreich, Oberösterreichische Landesmuseen / Biologiezentrum.

Impact: The inclusion of culturally-significant multimedia content from European natural history collections (i.e., more than 1 million pictures, artwork, movies, and audio files) and the cooperation of 23 well-known institutions from 12 different European countries will enhance the scientific dimension of EUROPEANA by adding substantial information about the natural world complementing the digital biodiversity literature, and in addition to the existing material primarily from the arts and humanities. The users of EUROPEANA will have direct online access to famous examples of natural and cultural heritage information that is kept in far-flung institutions preserving Europe's natural history and that would be arduous to visit in person. Also, and due to the history of Europe and its colonial past, a lot of this multimedia information is of high interest to countries outside of Europe and it will play an important role in the repatriation of information on items kept in European repositories to their countries of origin. Accordingly, this project addresses end-users worldwide and will make them familiar with EUROPEANA and its objectives. Different user communities, including those in research for example from the fields of biology in general and specifically biodiversity conservation and sustainable land management (agriculture, fish-farming, forestry, horticulture, disease control) as well as potential users in, e.g., education, taxonomic study, eco-tourism, or from pharmaceutical and drug companies will have access to information *via* EUROPEANA and this will greatly facilitate their work in their respective field of expertise. The presented information also has an overall educational role and makes the general users of EUROPEANA aware of important challenges like climate change or loss of biodiversity. The general public will also get a better understanding of the role and the work carried out in natural history institutions beyond what is exposed in exhibition rooms. From a technical point of view, many of the participating institutions have been or are still active in IT related projects. Their staff members are skilled in data processing and usage of international data-providing standards. The result of this project and the procedures set in place to make natural history data accessible can serve as proof of concept of the networking and distributed access mechanisms used for EUROPEANA content provision. This experience can be extended to other content provider communities with a similar high degree of distribution.

Section B1. Project Description and Objectives

B1.1. Project Objectives

Objectives and Proposed Action

OpenUp! will establish a close collaboration between European cultural and scientific institutions concerned with collections of natural objects with the aim of aggregating and contributing multimedia content for objects from the natural history domain into EUROPEANA.

OpenUp! will

- Put into place a single access point for EUROPEANA to distributed multimedia content in the natural history domain
- Put into place the validation mechanisms to ensure compliance with EUROPEANA standards
- Ensure sustained and open item-level access to the multimedia items
- Provide a multilingual metadata vocabulary and thesaurus for organism names, which can be used to enhance cross-linking for EUROPEANA content
- Extend participation in content provision beyond the original consortium
- Make the structures sustainable by integrating them into the established institutional framework and the existing networks in the domain.

Item-level access will be based on the established technical infrastructure of the Global Biodiversity Information Facility (GBIF) including the BioCASE network (Biological Collection Access System for Europe). For that purpose, OpenUp! will

- Provide the mapping between GBIF data standards and the EUROPEANA metadata scheme ESE and the EDM
- Draw on the existing efforts of partners with respect to vocabularies on organism names to unite them for EUROPEANA purposes; for metadata enrichment in the project as well as for indexing of other EUROPEANA content
- Put into place the procedures to enrich object metadata at the source level and control compliance with EUROPEANA standards as well as with OpenUp! vocabularies
- Quality control species names associated with the objects by matching and linking them with the European Commission funded species databases (European Register of Marine Species, Fauna Europaea, Euro+Med PlantBase, World Register of Marine Species, Species 2000 & ITIS Catalogue of Life).
- Aggregate the contents using BioCASE technologies and provide previews of objects in the aggregation cache
- Document best practice and develop a consistent IPR and copyright strategy for future data provision by consortium members and other content providers
- Mirror the aggregation site as well as the documentation to at least 3 sites across Europe to ensure performance and availability.

OpenUp! will closely cooperate with the complementary *eContentPlus* project Biodiversity Heritage Library Europe, which is concerned with mobilising digitised literature in the natural history domain.

Alignment with the Objectives of the Work Programme

OpenUp! will address the general objectives of the Work Programme by making a significant amount of existing cultural and scientific multimedia content accessible on-line through EUROPEANA.

European natural history collections manage and give access to over 1.5 billion objects from the world's biodiversity heritage, covering most of the species described worldwide. The collection institutions have set out to digitise these treasures, focussing on different aspects such as species of special importance, those collected in historical expeditions by famous naturalists, illustrated by highly skilled artists, or those presenting rarities of some other kind.

Initially, the content will be contributed by large European Natural History Museums organised in the *Consortium of European Taxonomic Facilities* (CETAF). OpenUp! will start out with more than 800,000 existing high quality images, movies, animal sound files, and natural history artwork while bringing together 23 institutions from 12 European countries. Participants have committed to continue digitising (from their own resources), so that at the most conservative estimate more than 1,000,000 multimedia objects will be available to EUROPEANA from the institutions in the Consortium. OpenUp! will further extend the amount of content provided by actively promoting the participation of providers beyond the project's initial consortium. This will be accomplished by incorporating content from institutions that are already providing multimedia data in the GBIF (*Global Biodiversity Information Facility*) or BioCASE (*Biological Collection Access Service for Europe*²) networks as well as by actively promoting the participation of further institutions in the network (the total number of natural history collections in Europe is estimated to exceed 4000 institutions).

OpenUp! will contribute to the next development phase of EUROPEANA by exemplifying the incorporation of an existing functional provision framework for distributed content, namely the Global Biodiversity Information Facility (GBIF). The CETAF participant node in GBIF is called BioCASE (the *Biological Collection Access Service for Europe*). OpenUp! will exploit the existing aggregation facilities of BioCASE and GBIF to channel the multimedia content from Europe's natural history museums and botanical gardens into EUROPEANA. **This project will thus truly 'open up' this important part of Europe's cultural and biological heritage to the European and world-wide public.**

OpenUp! will address the specific objectives of the call by establishing a reliable single point of access for multimedia objects from the natural history domain. The project will enhance the existing natural history data objects in three ways: (i) by ensuring strict adherence to the EUROPEANA set of metadata items, (ii) by providing additional quality-controlled metadata, particularly with respect to names of organisms, and (iii) by providing a EUROPEANA compatible metadata vocabulary and thesaurus of organism names (multilingual vernacular as well as scientific), which will directly enhance the searchability and semantic interoperability of EUROPEANA content. The project will thus contribute to 'open up' the content in EUROPEANA that relates to organisms, from art objects to literature citations to conserved specimens.

² BioCASE is the sustained result of a series of projects under FP3 (CDEFD – A Common Datastructure for European Floristic Databases), FP4 (BioCISE – Resource Identification for a Biological Collection Information Service in Europe) and FP5 (ENHSIN – European Natural History Specimen Information Network, and the BioCASE project itself).

B1.2 Contribution to the European Digital Library Initiative

Content: OpenUp! will provide multimedia objects from the natural history domain to EUROPEANA. These are digital representations of the physical reference objects in European natural history collections, which are of direct academic interest but will also attract the wide spectrum of amateur naturalists (citizen scientists), designers and artists, professionals in schools and universities teaching biology and related subjects, historians, social scientists and the general public concerned with the loss of biodiversity our planet is suffering. As many objects stem from former colonies, making this content available through EUROPEANA also contributes to the repatriation of knowledge to these countries.

Approach: The content gathering for EUROPEANA in OpenUp! is based on existing collaborative structures within the domain: the institutional cooperation in the Consortium of European Taxonomic Facilities (CETAF) and the technical infrastructure created for that purpose, i.e. the Biological Collection Access Service for Europe (BioCASE) as the CETAF participant node in the Global Biodiversity Information Facility GBIF. This approach also allows for a domain specific effort to improve the scope of possible semantic linking in EUROPEANA: a multilingual vocabulary of organism names, linked together by a backbone of scientific names can be used for cross-linking objects from a variety of domains.

Metadata Vocabularies: OpenUp! will introduce concepts that are specific to object collections to the metadata discussion and implementation in EUROPEANA (e.g. internationally agreed nomenclature, georeferencing). OpenUp! will collaborate with BHL Europe to link EUROPEANA to the global efforts to provide a functional metadata vocabulary and thesaurus for names of organisms. OpenUp! will contribute to review and test different approaches, standards and specifications for such an effort based on the experiences of the project partners gained by the large-scale implementation in this real-life context. OpenUp! will collaborate with other initiatives to contribute to effective geographic indexing of EUROPEANA content. OpenUp! will also directly contribute a multitude of person names who have been active in natural history and who in many cases authored other works present in EUROPEANA.

Metadata Alignment: The metadata used in the OpenUp! access point will be aligned to the latest versions of the EUROPEANA Semantic Elements (ESE) and the forthcoming EUROPEANA Data Model (EDM). Our baseline of work here is the mapping of the Darwin Core and ABCD (Access to biological collection data) standards of the organisation for Biodiversity Information Standards (TDWG) to the two EUROPEANA schemes and the constant update of the alignment. All thesauri, classification schemes and taxonomies used within OpenUp! will be provided in SKOS Format which allows their integration with the semantic web at a descriptive level using RDF.

Improvements in Interoperability: By using the OAI Standard and a common metadata scheme that maps to Dublin Core (OAI basic requirement) and the EUROPEANA semantic elements the data of all OpenUp! partners will become interoperable not only with EUROPEANA but also among the different partner institutions, in a cross-domain semantic web-based framework, and other community standards like LIDO, METS, or EAD. OpenUp! will make the established community standards ABCD (Access to Biological Collection Data) and DarwinCore (essentially a subset of ABCD) interoperable with EUROPEANA standards.

Open Access: With the agreed open-access contribution of their multimedia holdings, the participating institutions will encourage others to follow suit. Open access to content as well as the fully open source software environment used is setting an example for similar initiatives in other fields of interest.

Section B2. Impact

B2.1a. Target Outcomes and Expected Impact

Demand

Apart from the interest of the general public outlined above, there is an increasing demand for digitized multimedia objects from natural history, which constitutes a stronghold of the European heritage. This demand is fuelled by needs largely from science and education, and including multiple disciplines from the biological sciences (notably taxonomy, biogeography, and evolutionary biology), geological sciences (palaeontology, geography), but also humanities (sociology, cultural history, history of science) as well as the arts (specifically art historians).

All scientific fields investigating and relying on the physical objects and specimens need access to the data, measurements, and metadata associated with the objects and the information about them contained in publications. However, they also need access to (digital) representations of the objects themselves, both for further scientific work and as illustrations for educational purposes. Images and other multimedia representations of the objects from the museum collections thus will perfectly complement access to the object-associated data, which for biological specimens are already available partly via GBIF or the publications through the BHL-Europe project already feeding into EUROPEANA.

A recent analysis of demand undertaken by the EU funded Network of Excellence "Towards a European Distributed Institute of Taxonomy – EDIT (<http://www.e-taxonomy.eu>; deliverable 5.18) indicates that scientific image collections as part of the digital library are desired by over 90% of the scientists included in the survey (64 scientists from 19 countries). The wider interest and demand from the greater public in these objects is clearly indicated by the large numbers of visitors to the museum and institutional exhibitions (see above: B 1.2, Content).

Furthermore, free availability of multimedia representations of natural history and particularly biological objects will also support many citizen science based activities and movements in Europe and elsewhere, particularly the increasing number of projects involved in monitoring biodiversity change and other environmental challenges (e.g., the UK Butterfly Monitoring Scheme - <http://www.ukbms.org/>; Plantlife - <http://www.plantlife.org.uk>; ReefCheck - <http://www.reefcheck.org>, and many others). These many initiatives need and will greatly benefit from the availability of scientifically validated, object-based media, e.g., for helping to identify the target indicator species used in the respective monitoring and for training participants to be involved in those activities.

Access to multimedia data of voucher material held in natural history museums will also support monitoring programs for nature conservation. Significant parts of monitoring programmes are currently carried out by amateur biologists. Direct access to the voucher material can help to increase the skills in determining biological objects during field work.

Many of the objects concerned represent also important elements of cultural heritage, such as the first original specimens of *Archaeopteryx lithographica* preserved at the museums in Berlin (MfN) and London (NHM), a classical "missing link" between reptiles and modern birds, that considerably helped to boost the acceptance of the theory of evolution by Charles Darwin when discovered between 1860 and 1880, or the remains documenting human evolutionary history and cultural origins, such as the original fossil specimens from Heidelberg, Neandertal, Steinheim, or Cro-Magnon.

Apart from the great demand for the content of the mobilized multimedia data, substantial interest in the outcomes of the project will also come from the IT development and technological side, specifically with regard to the protocols, metadata vocabularies and alignment, and validation mechanisms to be developed in this project. The steadily increasing digitization efforts from many medium-size and even small institutions holding cultural and natural history collections will benefit from the standards to be established by OpenUp!, so that future digitization efforts for that realm can be expected to be more technologically streamlined and thereby also become more cost efficient.

Target Outcome

The inclusion of culturally-significant multimedia content from European natural history collections (i.e., approximately 1.1 million images, artwork, movies, and audio files) and the cooperation of 23 major institutions from 12 different European countries will enhance the cultural and scientific dimension of EUROPEANA by adding substantial information about the natural world in addition to the existing material primarily from the arts and humanities.

The users of EUROPEANA will have direct online access to famous examples of natural and cultural heritage information. These objects are kept in far-flung institutions that would be arduous to visit in person. Also, and due to the history of Europe - its colonial past and its history of discovery and exploration - many of these objects and thus their multimedia information are of high interest to people in countries outside of Europe. It will play an important role in the repatriation of information on items kept in European repositories. Accordingly, this project addresses end-user needs worldwide and will make extend the impact of EUROPEANA accordingly.

Different user communities, including those in research for example from the fields of biology in general and specifically biodiversity conservation and sustainable land management (agriculture, fish-farming, forestry, horticulture, disease control) as well as potential users in, e.g., education, taxonomic study, eco-tourism, or from pharmaceutical and drug companies will have access to information via EUROPEANA and this will greatly facilitate their work in their respective field of expertise. The presented information also has an overall educational role and makes the general users of EUROPEANA aware of important challenges like climate change or loss of biodiversity. The general public will also get a better understanding of the role and the work carried out in natural history institutions beyond what is exposed in exhibition rooms.

From a technical point of view, many of the participating institutions have been or are still active in IT related projects. Their staff members are skilled in data processing and usage of international data-providing standards. The result of this project and the procedures set in place to make natural history data accessible can serve as proof of concept of the networking and distributed access mechanisms used for EUROPEANA

content provision. This experience can be extended to other content provider communities with a similar high degree of content distribution.

Specific and Measurable Results

- (i) a robust data portal for machine access by the EUROPEANA harvester and based on an open, distributed architecture to provide multi-language access to the digital content
- (ii) one million multimedia objects from 10 EU Member States, with the pathway set up to harness the ongoing digitisation efforts of the institutions
- (iii) tested and validated methodology for metadata enrichment from content holding institutions
- (iv) tested and validated best practice workflow to connect the Global Biodiversity Information Facility and BioCASE networks to EUROPEANA
- (v) sustainable and persistent metadata enhancement of natural history multimedia content
- (vi) the provision of a metadata vocabulary and thesaurus for organism names to facilitate searches in EUROPEANA
- (vii) improved efficiency of research in the biology domain; improving access to information to non-museum biologists; building public engagement, awareness and participation
- (viii) strategies, plans and processes for long-term preservation and sustainability of the data produced by digitisation programmes at local institutions.
- (ix) long term sustainability of the network through permanent hosting and serving of the content metadata, thumbnails and ‘soundbits’ by OpenUp! partners (NHM and continental mirrors).

Assumptions, External Factors, Barriers and Risks

No barriers or risks are seen with respect to achieving the direct targets set by the OpenUp! work plan, assuming that the participating content provider institutions will continue to exist and providing that the EUROPEANA initiative will continue to work. As now conceived, the project depends on EUROPEANA to display the content aggregated. The technical architecture is based on existing, proven tools and mechanisms that are available as open source in the public domain. In the unrealistic case of failure of GBIF or of one of the name-providing entities (Species 2000 & ITIS Catalogue of Life, PESI, etc.), progress in the name metadata catalogue area could be slowed but not inhibited. In any case this would not endanger content provision, only somewhat lower the quality level of the provided metadata.

A perhaps obvious assumption is the persistence of the institutional base of natural history collections. The partners in the project are institutions that have played their role in discovering, distributing and preserving information about the natural world for a long time, in some cases hundreds of years. They are taking their role and responsibility into the information age without losing sight of their research and archival functions.

B.2.1b. Underlying Content

i) Content

Table 1 shows the existing multimedia content, as well as a conservative estimate of the number of objects that will be available by the end of the three year project period (in parenthesis under Quantity and type). The increase represent the results of ongoing institutional efforts, no resources from this project are used for creation of new multimedia objects.

However, recent developments show that digitisation of natural history objects is increasingly recognised as an important task, examples include the funding of the digitisation of the Paris Herbarium with more than 7 million objects, the 2-digit million Euro grant for NCB Natural for their collections from the Dutch government, and the announcement of the German research funding body DFG that a call for digitisation of science collection objects is forthcoming in 2010. OpenUp! will establish the pathway for all these projects to contribute their content to EUROPEANA.

Table 1: Underlying Content

Quantity and Quality of the Content								
Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
FUB-BGBM	Image	64,000 (approx. 84,000) scanning camera specimen images	FPX, TIFF, JPEG; 60-80 Megapixel, 600 dpi, colour	CC	BGBM-portal; GBIF network;	ABCD 2.06, 73 elements	English, German	Botany (in brackets number at project end).
FUB-BGBM	Image	16,000 high quality historical specimen images	TIFF, 12 Megapixel, 300 dpi, greyscale	CC	Internal scientific use at BGBM	Database with 35 fields; ABCD 2.06	English, German	Botany
NHM	Image	9,600 natural history artwork images	TIFF, 600 dpi, colour	NHM CC	NHM portal	MARC 21	English	Zoology (Entomology, Palaeontology)
NHM	Image	2,400 natural history artwork images	TIFF, 600 dpi, colour	NHM CC	NHM portal	MARC 21	English	Botany
NHM	Image	4,370 high quality specimen images	JPEG, TIFF, 72 dpi (1,050) 180 dpi (1,700) 300 dpi (1,200), 600 dpi (50), 1360 dpi (400), colour	NHM CC	NHM portal	Relevant data such as scientific name, collection, country, locality etc.	English	Botany

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
NHM	Image	6,000 high quality specimen images	JPEG, TIFF, 72 dpi (100), 300 dpi (1,300), unknown (4500), colour	NHM CC	NHM portal	idem	English	Zoology (Entomology)
NHM	Image	4,700 high quality specimen images	JPEG, TIFF, 72 dpi (1,650), 150 dpi (800), 300 dpi (1,200), 600 dpi (200), 1200 dpi (370), colour	NHM CC	NHM portal	idem	English	Palaeontology
NHM	Image	25,050 high quality specimen images	JPEG, TIFF, 72 dpi (23,050), 110 dpi (1,110), 300 dpi (950), colour	NHM CC	NHM portal	idem	English	Zoology
MfN	Image	20,000 (approx. 22,000) high quality specimen images	JPEG; TIFF; 2-10, mainly 3-6 Megapixel, mainly 300 dpi, colour.	CC-BY-NC-ND	GBIF network; internal use MfN	ABCD 2.06, 41 & 51 elements	English, German	Zoology (in brackets: number at project end).
MfN	Sound	10,000 (approx. 12,000) sound files	WAV-format, mainly 96kHz/24 bit, for transmission should be compressed.	Metadata freely available; CC-BY-NC-ND (representative parts of the original sound files).	GBIF network (metadata only); 1654 files audible via MfN portal [www.tierstimmenarchiv.de/schuelerportal]. Majority of files password protected for scientific use at [www.tierstimmenarchiv.de] (127 registered scientific users).	ABCD 2.06, 50 elements	English, German	Zoology (in brackets: number at project end).
IBSAS	Image	2,000 high quality specimen images	TIFF, JPG; 60-70 Megapixel, 1200 dpi, colour scans	CC	Metadata via GBIF network, scans on request.	Database with 20 elements.	English	Botany
NHMW	Image	50,000 high quality specimen images	TIFF, JPEG, JPC, 60-80 Megapixel, 600 dpi, colour	CC	Virtual Herbaria Portal; GBIF network	ABCD 1.2, 60 elements (to be enhanced by the end of 2010 to 84 elements)	English, German (and numerous other languages including Cyrillic)	Botany

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
MRAC	Image	15,718 High quality specimen images	TIFF, JPEG, PNG, DJVU, 10 Megapixel (mean), 300 to 600 dpi, colour	CC-BY-NC-ND is under discussion at MRAC (that keeps or claims full copyright).	GBIF network, Museum MRAC portal, internal use, various projects (i.e. the bird images in Sterna, amphibians in HerpNET).	Darwin Core In the internal MRAC database the ABCD concepts are used which makes it easier to provide the data in that format. In the framework of the GIS project GNOSIS we have also many metadata in the format: ISO19115. For associated literature we use also MARC 21.	English, French, Dutch, German and some other (depending on the nationality of the explorer and such), also some in local African languages	Zoology
MRAC	Image	1,000 drawings; natural history artwork	TIFF, JPEG, PNG, DJVU, 10 Megapixel (mean), 300 to 600 dpi, colour	CC-BY-NC-ND is under discussion at MRAC (that keeps or claims full copyright).	Currently mainly internal use, some examples on the MRAC Museum portal.	idem	idem	Zoology
MRAC	Sound	50 Animal sound files	MP3, CDA	CC-BY-NC-ND is under discussion at MRAC (that keeps or claims full copyright).	Currently internal use and on CD/DVD, prototype websites with birds sound of the Comoro islands and local name of edible insects in Africa.	idem	idem	Zoology
MRAC	Movie	700 film clips (most with parts on Natural history content)	MP4, VOB	CC-BY-NC-ND is under discussion at MRAC (that keeps or claims full copyright).	Internal use and use in a digitalisation project of the Belgian state, in the process to be put online.	idem	idem	

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
MRAC	Image	302,665 Areal photographs	TIFF, JPG, PNG, DJVU, 10 Megapixel (mean), 300 to 600 dpi, colour	CC-BY-NC-ND is under discussion at MRAC (that keeps or claims full copyright).	In the process to be digitised with a national project on areal photos and old maps (Copernicus), which will also have a portal.	Idem, plus if georeferenced use also OGC metadata standards and ISO19115.	idem	
NM	Image	approx. 8,000 high quality optical and SEM specimen photographs	TIFF, JPEG, 5-20 Megapixel, 300 dpi, colour and greyscale	CC	Internal database, only members of department can use it (about 5-10 persons).	Ms Access database with 10-15 fields (including identification, description, origin and locality).	English	Zoology (including Entomology)
NM	Image	approx. 3,600 high quality optical and SEM specimen photographs	TIFF, JPEG, 5-20 Megapixel, 300 dpi, colour and greyscale	CC	Internal database, only members of department can use it (about 10-15 persons).	Ms Access database with 15-20 fields (including identification, age, description, origin and locality).	English, Czech	Palaeontology
NM	Image	approx. 2,500 high quality optical and SEM specimen photographs	TIFF, JPEG, 10-20 Megapixel, 300 dpi, colour	CC	Internal database, only members of department can use it (about 5-10 persons).	Ms Excel database with 10-15 fields (including identification, description, origin and locality).	English, Czech	Botany
NM	Image	approx. 1,500 high quality optical and SEM photographs	TIFF, JPEG, 50-80 Megapixel, 600 dpi, colour	CC	Internal database, only members of department can use it (about 3-5 persons).	idem	English, Czech	Mineralogy

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
ETI	Image	2,400 digitised historical natural history artwork drawings	TIFF, JPEG, 241x281px - 4000x3000px, 72dpi, colour and black & white	Free accessibility within the project is assured. IPR defined in ETI IPR contracts with over 2,500 individual providers.	CD-ROM, DVD, http://www.soortenbank.nl ; http://nlbif.eti.uva.nl/bis/	KeyToNature D4.4 metadata fields http://www.keytonature.eu/wiki/File:D_4.4_MetadataExchangeAgreement-ODT-DOC-PDF.zip	English	Zoology
ETI	Image	600 digitised historical natural history artwork drawings	TIFF, JPEG, 241x281px - 4000x3000px, 72dpi, colour and black & white	idem	CD-ROM, DVD, http://www.soortenbank.nl ; http://nlbif.eti.uva.nl/bis/	KeyToNature D4.4 metadata fields (see above)	English	Botany
ETI	Sound	2,200 animal sound files	Quicktime, MOV, 22.05 KHz	idem	CD-ROM, DVD, http://www.soortenbank.nl ; http://nlbif.eti.uva.nl/bis/	KeyToNature D4.4 metadata fields (see above)	English	Zoology
ETI	Movie	500 movies	Quicktime, MOV, 1-200 Mb	idem	CD-ROM, DVD	Metadata such as species name, collection, ID available	English	Zoology
ETI	Image	18,000 digitised species drawings	TIFF, JPEG, 241x281px - 4000x3000px, 72dpi, colour and black & white	idem	CD-ROM, DVD, http://www.soortenbank.nl ; http://nlbif.eti.uva.nl/bis/	KeyToNature D4.4 metadata fields http://www.keytonature.eu/wiki/File:D_4.4_MetadataExchangeAgreement-ODT-DOC-PDF.zip	English	Botany
ETI	Image	72,000 digitised species drawings	TIFF, JPEG, 241x281px - 4000x3000px, 72dpi, colour and black & white	idem	CD-ROM, DVD, http://www.soortenbank.nl ; http://nlbif.eti.uva.nl/bis/	KeyToNature D4.4 metadata fields (see above)	English	Zoology

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
ZFMK	Image	20,000 high quality specimen photographs	Majority TIFF and JPG, 60-80 Megapixel, 600 dpi., colour	CC	SYNTAX portal, GBIF network	ABCD 2.06 format, ca 15 elements such as species name, type data etc.	English, German. Latin	Zoology (mostly from type specimens)
ZFMK	Image	1,000 scans, natural history artwork	JPG, 60-80 Megapixel, 600 dpi., colour	Partly CC, partly license	ZFMK , internal use	Bibliographic data, title	English, German. Latin	Zoology
ZFMK	Sound	5,000 animal sound files (Majority for singing insects i.e. crickets and grasshoppers worldwide, mostly referenced by voucher specimen)	WAV; mostly 44.1 kHz sampling rate	CC	SYNTAX portal, GBIF network	ABCD 2.06 metadata, ca 15 elements such as species name, type data etc.	English, German. Latin	Zoology
ZFMK	Image	1,000 3-D specimen images	PDF 3-D object file, TIFF stacks 60-80 Megapixel, 600 dpi, grey values	CC	ZFMK , internal use	Referring to voucher specimen with ABCD data	See above	Zoology
RBINS	Image	3,000 high quality specimen photographs	TIFF, JPEG; 30 Megapixel (1-15 MB), colour	CC	RBINS, internal use	Excel-database (16 fields)	French	Zoology (Entomology collection, Beetles)
UCPH	Image	35,000 high quality specimen images	JPEG, 10-12 Megapixel, colour	CC	internal use (<100 users)	Darwin Core database	English	Zoology, Geology
UCPH	Image	20,000 High quality specimen photographs	TIFF 60 Megapixel, colour	CC	internal use (<100 users) and Aluka portal at http://plants.jstor.org/	Darwin Core database	English	Botany
UCPH	Image	3,600 images, natural history artwork (Flora Danica plates)	JPEG, jpg 20 Megapixel, colour	CC	UCPH portal	FileMaker database	Danish, English	Botany
UCPH	Image	300 images, natural history artwork	JPEG, 2-6 Megapixel, colour	CC	UCPH portal	FileMaker database	Danish, English	Mycology
UCPH	Image	3,000 photographs, natural history artwork (Seidenfaden orchid Collection)	JPEG, 10-20 Megapixel, B/W	license	internal use; (<100 users)	Darwin Core database	Danish, English	Botany
UCPH	Image	7,000 specimen images (Seidenfaden orchid Collection)	JPEG, 10-20 Megapixel, colour	license	internal use; (<100 users)	Darwin Core database	Danish, English	Botany
UCPH	Sound	1,000 animal sound files (African frog voice recordings)	MP3	CC	internal use; (<100 users)	MS Word document	English	Zoology

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
RBGE	Image	95,000 high quality botanical specimen images (photographs 65,000; scanned images 30,000)	Photographs: RAW (65-120 Megapixel), TIFF (70-150 Megapixel), JPEG (0.8-1.5 Megapixel); Scans, TIFF (130-200 Megapixel) JPEG (0.8-1.5 Megapixel). All colour.	Creative Commons Licence; CC-BY-NC (RBGE keeps Copyright)	RBGE portal for scans and photographs, JSTOR for scans at http://plants.jstor.org/	DwC, from 5 to-35 elements available for individual records	English	Botany
RBGE	Image	200 natural history artwork scans	TIFF, (90-180 Megapixels), 50 colour, 150 Grey scale	CC-BY-NC-ND (RBGE keeps Copyright)	RBGE internal use	DwC, 4 elements	English	Botany
RBGE	Image	5,000 photographs & scans of photographic slides of living plants	TIFF, 40-60 Megapixel, colour	CC-BY-NC-ND (RBGE keeps Copyright)	RBGE internal use	DwC, 4 elements	English	Botany
UH	Image	2,000 high quality specimen photographs	JPEG, CR2; 12-25 Megapixel, 300 dpi, colour.	Partly CC, partly UH license: access free of charge, no distribution without permission of UH in accordance to copyright law.	Internal scientific use, Aluka portal at http://plants.jstor.org/	Aluka metadata, 39 elements	English	Botany

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
UH	Image	8,000 high quality specimen photographs	JPEG; 12-25 Megapixel, 300 dpi, colour.	Partly CC, partly UH license: access free of charge, no distribution without permission of UH in accordance to copyright law.	Internal scientific use, Aluka portal at http://plants.jstor.org/	Aluka metadata, 39 elements	English	Zoology
UH	Text	30,000 pages of historical accession books imaged and interpreted to ABCD	JPEG; 12-25 Megapixel, 300 dpi, colour	Conservation commons	Website at: http://digi.luomus.fi/	Dublin Core for books, EML for pages, ABCD 2.06 for rows.	English	Zoology
RBGK	Image	180,000 high quality specimen photographs	TIFF, 600 dpi, output as jpg 2000x1400 pixels, colour	Freely available for non-commercial use; see http://apps.kew.org/herbcat/gotoConditions.do	Kew on-line Herbarium Catalogue at: http://apps.kew.org/herbcat/ , GBIF network (metadata only), data partly available via JSTOR Plant Science.	DwC 1.21, 24 elements such as scientific name, collection, collector, country, locality etc.	English	Botany
NCBN	Image	7,200 high quality specimen photographs	JPEG high res., 2.5 Megapixel, 300 dpi, colour	CC	NCBN portal at extinctbirds.nl website, STERNA network	Database with relevant Metadata such as species name, registration number, sex, etc.	English	Zoology
NCBN	Image	800 high quality specimen photographs	TIF high res., 250 MB, 600 dpi, colour	CC	NCBN internal use	Large set, linked to collection registration.	English	Botany
NCBN	Image	3,500 natural history artwork scans	JPEG high res., 6 Megapixel, 96 dpi, colour	CC	Some records are available in STERNA, others in online bookviewer	Imagos Heritage edition metadata, 32 elements.	English	Zoology

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
NCBN	Image	1,500 natural history artwork scans	JPEG high res., 25-30 MB, 300 dpi, colour	CC	NCBN internal use	Existing metadata in Visual Foxpro, fields like barcode, species name, artist, kind of illustration etc.	English	Botany
NCBN	Sound	1,100 animal sound files	MP3, 192 kbps, 44 kHz	CC	NCBN internal use	Frog sounds: relevant metadata such as scientific name, collection, collector, date, locality are available.	English	Zoology (frogs/birds)
NCBN	Image	70,000 object and label photographs	JPEG 2000, high res., 6 Megapixel, 300 dpi, colour	CC	GBIF network, STERNA network	DarwinCore export available, ca 15-20 elements. Many more fields available.	English	Zoology (mainly)
NBGB	Image	50,000 (60,000) high quality specimen photographs	TIFF, 60-80 Megapixel, 600dpi; 24 bit colours	CC	Aluka portal (http://plants.jstor.org/), NBGB portal (http://www.br.fgov.be/research/collections/herbarium/herbariumdescription.php), GBIF network.	Aluka metadata, 39 elements	English, French, Dutch, German, Latin	Botany (in brackets: number at project end).
UT-NHM	Image	15,000 scanning camera images: High quality specimen images	TIFF, JPEG; 25-35 Megapixel, 600 dpi, colour	CC	UT-NHM portal - http://elurikkus.ut.ee/ and for the registered users - http://elurikkus.ut.ee/login_plutof.php?lang=eng	ABCD 2.06, at least 40 elements, incl. Institutional metadata, scientific name, common name, country, location, date, collected by, identified by, etc.	English, Estonian	Botany
UT-NHM	Image	3,000 photographic images: In situ (outdoor) high quality images of fungal specimens deposited in collection	JPEG, mainly 9 Megapixel, 300 dpi, colour	CC	UT-NHM portal, http://elurikkus.ut.ee/ and for the registered users - http://elurikkus.ut.ee/login_plutof.php?lang=eng	idem	English, Estonian	Mycology

Provider ^a	Type ^b	Quantity & Definition ^c	Format & Quality ^d	IPR ^e	Current Use ^f	Existing Metadata ^g	Language	Additional Comments
UT-NHM	Image	10,000 photographic images: High quality specimen images	JPEG, mainly 9 Megapixel, 300 dpi, colour	CC	UT-NHM portal, http://elurikkus.ut.ee/ , and for the registered users - http://elurikkus.ut.ee/login_plutof.php?lang=eng	idem	English, Estonian	Zoology
UT-NHM	Image	15,000 photographic images: High quality specimen images	JPEG, mainly 9 Megapixel, 300 dpi, colour	CC	UT-NHM portal, http://sarv.gi.ee/tug/ , GBIF	idem	English, Estonian	Palaeontology
LANDOOE	Image	82,000 medium quality specimen images	JPEG, 5-8 Megapixel, 150 dpi (30,000) 200 dpi (52,000), colour	Free for scientific and small business purpose	Metadata freely available via GBIF; images partly available on www.biologiezentrum.at and www.zobodat.at (100 named users, 50,000 different users per month) and for internal use.	ABCD 1.20, 33 elements will be switched to ABCD 2.06 with approx. 40 elements by the end of the year 2010.	German	Botany
LANDOOE	Image	(5,000) high quality specimen type images	JPEG, 12 Megapixel, 300 dpi, colour	Free for scientific and small business purpose	See above	ABCD 2.06 with approx. 40 elements.	German	Zoology, Entomology (in brackets: number at project end).

^a Short name of the participant who provides the content

^b E.g. Text, image, movie, sound, music etc.

^c E.g. 1,000 film clips, 2 million pages, 20,000 books etc.

^d E.g. Format - JPEG, MPEG, Quicktime, HTML, PDF etc., Quality – Resolution, sampling rate, colour/greyscale etc.

^e Access rights to use the content in the proposed project e.g. public domain or license. Where copyright is mentioned this does not affect access to content through EUROPEANA.

^f Describe current users of the content, including the number (e.g. registered users)

^g Describe fields, languages and structure of the metadata. ABCD Schema (Access to Biological Collection Data) contains a comprehensive metadata section for individual objects as well as entire datasets which covers the metadata elements (see Section Applying EUROPEANA Metadata). ABCD 2.06 currently comprises approximately 1200 concepts covering all concepts of the Data Schema used by JSTOR, DawinCore (DwC) and Dublin Core Metadata Initiative.

ii) IPR Issues

IPR issues of the underlying content that is to be made available (input)

The consortium has the necessary licensing and clearing arrangements in place for the Intellectual Property Rights (IPR) arising from the proposed project and this will ensure the far wider use and dissemination of the project output. Participant 17 (RBGK) has extensive experience of managing IP issues and has a dedicated IP officer, who will work on this project.

OpenUp! will provide open access to digitised material for which the IPR is held by the contributing data provider. Rights agreements reached by OpenUp! will be for global open access and will be managed mostly through Creative Commons (CC) licences or in a few cases similar licensing schemes (see Table 1). Pro forma documents and agreements are already available, so that the project would be able to start making further agreements with rights holders at any time.

IPR issues related to the project outcome including IPR clearing methods for content and tools (output)

All specialised software tools that will be required to operate the access system are or will be available under open source licenses and on public websites:

GBIF makes its software available under the Apache License, Version 2.0 (www.gbif.org)

BioCASE uses a Mozilla Public License. (www.biocase.org)

The ScratchPad website is based on the Drupal CMS, which operates under the the GNU General Public License. (www.scratchpads.eu)

If AIT's contribution to the project is based on own developed proprietary components that are not yet in the open domain, these will be re-factored and delivered under an open source license.

The GeoNames server considered as an initial tool for geographic name checking (needed mainly for the locality where the natural history objects comes from, not were it is housed today) operates under a Creative Commons *by* license for both, data and web services (REST, JSON). (www.geonames.org)

The textual metadata as well as thumbnail images or soundbits provided for EUROPEANA will be under open access without restrictions (Creative Commons cc by license).

For the access to the full multimedia object users will in some cases have to clear a page detailing the access rights. For access to the linked additional GBIF data on the object, the GBIF data use agreement³ has to be cleared by clicking the "Accept Terms" button.

iii) Multilingual and/or Multicultural Aspects

Due to the international nature of scientific names of organisms (see above) and the citations of collectors of objects, multilingual content will not be a major issue in the core set of metadata for EUROPEANA (e.g. in the dc:titel element). However, experience shows that access to natural history data by the public is usually effected by

³ <http://www.gbif.org/participation/data-publishers/gbif-sharing-agreement/gbif-data-use-agreement/>

common names of the organisms, not by the scientific name⁴. Common names are not only multilingual, but also exist in many regional variations, as explained above. WP 6 will deal with multilingual metadata enrichment including the incorporation of common names of organisms in many European languages. This will increase the success of search activities via the EUROPEANA data portal and its usefulness for the non-scientific public who are often unfamiliar with scientific taxonomic names. It will also allow the cross linkage with other digital objects in EUROPEANA, such as paintings, literature, sound files, etc. The taxonomic backbone of scientific names provided by WPs 4 and 5 will serve to link the multilingual common names to the actual species they refer to.

The use of multilingual thesauri and vocabularies for geographical names will open up the content to a wide multicultural audience. The assembly of a geographical multilingual thesaurus (a gazetteer) is not subject of this proposal. The open access NameServer (www.geonames.org) provides extensive though incomplete multilingual and multiscript area names and could be used for metadata enhancements, but a common solution for EUROPEANA would be preferable.

OpenUp! will be built upon the developments of the current work packages 2 and 5 of the EuropeanConnect project and integrate the future EUROPEANA Thesaurus for place names.

(iv) OpenUp!, BHL-Europe and STERNA

The content delivered to EUROPEANA by BHL-Europe is complementary to the content delivered by OpenUp! With respect to technological pathways, BHL and OpenUp! are sharing the same pathway for information provision to Europeana, namely the aggregator at the NHM London. Content and metadata aggregation itself is different and complementary between the projects, because both are using the pathways that have been established in their respective community – for BHL this is the library community and the library infrastructure, for OpenUp! this is the collections community and the BioCASE/GBIF infrastructure.

With STERNA, there is a potential overlap because multimedia collection data related to birds are clearly within the scope of OpenUp! and obviously also STERNA's area of operation. This potential duplication of content and effort will be identified in the beginning of the OpenUp! project in the context of task 1.5 (Liaison) and the internal deliverable titled "OpenUp! and the results of the STERNA project" and resolved by an agreement between both project defining the breakdown of responsibilities for bird-related multimedia content. Furthermore, the OpenUp! consortium agreement will explicitly exclude content provision to EUROPEANA through more than one project.

However, compared to the universe of content provided by OpenUp! the overlap with STERNA is small and doesn't affect OpenUp!'s performance benchmarks. A more serious consideration is a potential technological parallelism of both projects seemingly dealing with the same object types. On closer inspection, this is obviously not the case, and OpenUp! complements the STERNA approach towards the shared aim of biodiversity objects adequately represented in EUROPEANA. The STERNA initiative investigates and implements advanced semantic web technologies to bring together and integrate very different object types (taxonomic, migration data, habitats, diseases, etc.) for a given relatively small knowledge domain (birds). In contrast, OpenUp! streamlines

⁴ For example, the FishBase website (www.fishbase.org) receives around half a million visits per month. Less than a third of the queries use scientific names for the query (Rainer Froese, pers. comm.).

the process of providing massive amounts of objects (multimedia files representing organisms) for a broad knowledge domain (all organisms). Therefore, OpenUp! directly supports the aims of STERNA by providing high quality metadata for huge amounts of collection objects, which can then be semantically associated with related objects of different types using the technologies developed by STERNA.

B2.2. Long-term Viability

Concept for Long-term Viability

The basic strategy for viability, sustainability and scalability after the end of the project is to firmly root the opening up of the natural history heritage for EUROPEANA within the community of natural history institutions.

The OpenUp! consortium consists mainly of “knowledge institutions” with a century old record of information provision in their field – the large natural history museums and botanical gardens. These institutions fully embrace their role as the creators, guardians and provider of information about the living world and have realised the new challenges presented by the (electronic) information age. Basing the OpenUp! contribution to EUROPEANA at these institutions in itself constitutes a guarantee for continuity.

This is further reinforced by harnessing the domain’s very own information networks, BioCASE and GBIF, for the purposes of multimedia object provision to EUROPEANA. In essence, OpenUp! will use the same mechanism the institutions use to network their core research data, which play an essential role for fulfilling their role in research and public service.

Moreover, the Global Biodiversity Information Facility even goes beyond that in being a steadily growing content provision framework that has been established by a resolution of OECD science ministers and subsequent signing of a Memorandum of Understanding by now 54 countries (19 of them European) and 42 associated international organisations. The GBIF network comprises more than 300 data providers and offers open access to more than 200 million data records, with a currently minor but increasing amount of linked multimedia content. Once the information pathway from natural history collections and GBIF/BioCASE to EUROPEANA has been created, it will provide a steadily stream of additional objects that have newly entered the GBIF network.

The costs of storage for this project will be free - we will be utilising the BHL-Europe storage system bought under the *eContentPlus* programme. 'Storage' includes: live disks, tape back-up and high bandwidth access to the Internet. The content of the BHL-Europe data centre will be mirrored globally by the end of 2011 to Australia, China and the USA.

WP8 is dedicated at the promotion of the content provided by OpenUp! through EUROPEANA. These activities will lead to increased awareness about the content, which is in the direct interest of the content providers who themselves pursue constant promotional activities to attract the public to their institution’s exhibitions. This will reinforce the institutional base for the maintenance of the OpenUp! Service. The close link with the BioCASE network, which has been able to maintain its activities for over a decade now with the backing of the Consortium of European Taxonomic Facilities adds support to the community-based model for sustainability we pursue for OpenUp!.

With a work package dedicated to the extension of the provider community (WP7), OpenUp! will also actively encourage content holders beyond the project consortium to join the scheme.

In any case, OpenUp! will pay close attention to business models developed by other open access cultural content provider networks, repositories and portals (such as EUROPEANA itself or BHL) to identify opportunities for exploitation with the aim of sustainable service provision.

Sustainability of the Infrastructure

For the project's data quality tools, best practice materials and other documents an EDIT Scratchpad site will be used, for which hosting is guaranteed by the NHML for at least 5 years after the project ends. Moreover, in the course of the EU project ViBRANT the main Scratchpad node server will be distributed at multiple locations to provide failover, mirroring and load balancing services. The initial mirror will be hosted at the BGBM in Berlin.

Equally, the central metadata access point for OpenUp! is located at the NHM and will be maintained together with the Biodiversity Heritage Library storage facility. The OpenUp! Metadatabase will also be mirrored to at least 2 institutions on the continent.

Accessibility for the full content served by the individual institutions will be ensured by means of an automated control mechanism which notifies holders in case of difficulties and automatically shuts out providers that continuously malfunction.

The NHM will also offer full caching of the multimedia objects at their storage facility for institutions that prefer that option.

B.2.3. Wider Deployment and Use

OpenUp! will ensure that the project's approach and results become known and are put to practice by the target users identified below, by further content providers within the domain, and by projects attempting to set up a similar access scheme to highly distributed content. In general, the results of this project and the procedures set in place to make natural history data accessible via EUROPEANA can serve as proof of concept and prototype further provision of this kind of information.

Networking and Wider Deployment

OpenUp! is firmly rooted in a number of existing networking initiatives in Europe, most notably the Global Biodiversity Information Facility (GBIF) and the Biological Collection Access Service for Europe with their national networks, and the Consortium of European Taxonomic Facilities (CETAF). In addition, OpenUp! partners are highly networked in scientific societies and international initiatives, which form an ideal medium for propagating OpenUp! beyond the core consortium members. In particular, the following organisations will foster the project's impact for science and society:

- The Biological Collection Access Service for Europe (BioCASE, <http://www.biocase.org/>) is the European branch of the Global Biodiversity Informatics Facility providing open access to the world's primary biodiversity data. BioCASE has strong links to a variety of User communities and will use them to disseminate the Europeana-OpenUp! mission. In turn, the provision of consistent and high-quality Multimedia data through Europeana will form an invaluable additional resource for the BioCASE User community.

- The Pan-European Species directories Inventory (PESI, <http://www.eunomen.eu/pesi/>) is an EU 7th Framework funded e-infrastructure providing a unified view on European taxonomic checklists across all organism groups. Apart from its core mission, PESI adds value to its species pages by integrating related information and knowledge for individual taxa (e.g. distribution, threat status). The Europeana/OpenUp! pipeline will ideally complement this compilation with visual taxon representations. With this, both OpenUp! and Europeana will achieve high visibility within the central European backbone for species-level information.
- The European Distributed Institute of Taxonomy (EDIT) is an EU-funded Network of Excellence integrating European Taxonomic Research. A core deliverable of EDIT is the “Platform for Cybertaxonomy” (<http://wp5.e-taxonomy.eu/>), which is a software environment supporting the taxonomic workflow from the fieldwork to the data publication in the World Wide Web and on paper. The EDIT platform makes extensive use of specimen and occurrence data being the most reliable resource for the falsification or rejection of all kinds of scientific hypotheses. By integrating OpenUp! specimen information, all users of the EDIT platform software will benefit from the availability of high-quality multimedia-files as part of their workflows.
- TDWG Biodiversity Information Standards (<http://www.tdwg.org>) is the worldwide standardisation body for biodiversity informatics. Almost all OpenUp! partners are TDWG members, send representatives to the annual TDWG conference, or participate in another way in the standardization process. Through the TDWG Imaging Interest Group (IMG, <http://www.tdwg.org/activities/img/>) as well as the Multimedia Resources Task Group (MRTG, <http://www.tdwg.org/activities/img/multimedia/>) OpenUp! will be able to synchronise its protocols and data standards with the international developments and make sure that other organisations dealing with processing of multimedia information are aware of the OpenUp! implementations.

The following table describes target user groups, their needs and perceived involvement and role in OpenUp! activities.

Target user description	Needs	Involvement & Role	Country coverage
European natural history collections, incl. botanic gardens	Means to make multimedia data of their extensive collections available online	Content provider and as in the case of the consortium also in many cases technology provider; targets of dissemination and awareness activities (website, promotional material)	EU
Governmental agencies and NGOs	Information gain on wealth and loss of biodiversity	Targets of dissemination and awareness activities (website, promotional material)	Worldwide
Scientists (specifically in taxonomy, ecology, biodiversity conservation, and sustainable land management)	Means to make multimedia data of their respective field of research online available; information gain on current and lost biodiversity	Targets of dissemination and awareness activities (website, promotional material); future content providers	Worldwide
Education (teachers, students)	Taxonomic information; digitised demonstration material, better understanding of the diversity of life and climate change	Targets of dissemination and awareness activities (website, promotional material); future content providers	Worldwide
General public	Direct online access to famous examples of natural and cultural heritage information via Europeana for a better understanding of the past and future of global biodiversity (and its treatment in science, arts, and literature)	Targets of dissemination and awareness activities (website, promotional material)	Worldwide
Historians	Information on historical biodiversity research and biodiversity heritage curation	Targets of dissemination and awareness activities (website, promotional material)	Worldwide
Artists	Access of a wide range of documented biodiversity heritage objects	Targets of dissemination and awareness activities (website, promotional material)	Worldwide
Publishers, media archives, broadcasters, and image libraries	Information gain on wealth and loss of biodiversity	Candidates for providing content of the project to target audiences and main users including special interest groups	Worldwide
Economy (e.g., eco-tourism, pharmaceutical and drug companies)	Taxonomic information; better understanding of the diversity of life and effects of climate change	Targets of dissemination and awareness activities (website, promotional material)	Worldwide
Countries that have been explored or colonized by Europeans	Repatriation of information on items kept in European repositories to their countries of origin	Targets of dissemination and awareness activities (website, promotional material)	Worldwide

Dissemination and Awareness

The team at the National Museum in Prague will lead WP8 and the dissemination activities, drawing on their long-term experience and also the activities developed for the BHL-Europe project. The team includes people with various qualifications ranging from biodiversity and IT experts to PR specialists. This outward-oriented task is complemented by the efforts in WP7, which are directed at incorporating more content providers in the scheme. The team at the Royal Museum for Central Africa is well-versed in training activities and experienced in international networking efforts and will coordinate this task in close collaboration with WP8 and the rest of the project partnership.

We will raise awareness for the project and effectively disseminate information of the project and its results to the target user communities. We foresee various mechanisms for dissemination and awareness raising activities and run a consistent set of communication activities which ensure that the project results become known and used:

- Dissemination of project results through consortium members, their own information canals, web pages, leaflets, etc. . We will publish hard copy leaflets informing the audience of aims of the project. These leaflets will be distributed by partners (using already existing networks of European scientific organisations included in the OpenUp! consortium and within the considerable number of professional and special interest organisations where they are members), in conferences and in any meetings, where we will advertise the project to the public.
- Delivery the awareness of the project results by the website and other promotional material (self-running presentation, newsletter, etc.) to the target users. We will establish a home web page, where we selected each month one “picture (or series of pictures) of the month” with description of how it became a part of the project. The link to the project web page will be added to the home pages of all partners.
- The project website will be focussed on the main target groups of the project: content holding institutions such as museums, libraries, botanical gardens etc., demand side users, such as researchers, scientists, students, and also to hobby collectors. The web site will also inform them on how to connect their collections to the openUp! network. The website will offer special features for example RSS newsfeeds to optimise linkage to specific audiences (using Google).
- Address other organizations such as publishers, media archives, broadcasters and image libraries who are likely candidates to provide content of the project to the target audiences and main users including special interest groups.
- We invite broadcasters (e.g. from state radio) for interview with WP leaders to show the aims, progress and results of the project. We will organize a workshop for librarians showing the benefits of the project and instruct them, how they may use the content of published material.
- Dissemination through traditional channels such as conference posters, presentations in relevant sessions and workshops, proceedings papers and other relevant events and through direct invitation of selected parties to the cluster meetings. The following types of conferences and events are identified as relevant for OpenUp! to present the results. Annual meetings of the large national and European scientific societies (e.g. Systematic Association, Linnaean Society, European Society for Evolutionary Biology) and meetings and conferences of important community based projects (e.g. EUROPEANA, GBIF, EDIT, SYNTHESYS, CoL/Sp2000)

- Dissemination through articles in relevant journals, short articles in newspapers, texts in various online encyclopaedias (like Wikipedia), digital newsletters and online newsgroups and blogs.

The dissemination concept will work towards enhancing the image and awareness of OpenUp! and its impact of EUROPEANA content by developing follow major items:

- Web site design for internal and external communication – implementation of this design will be in cooperation with ATI
- Create and establish regularly (3-times a year) published newsletter and self-running demonstration to illustrate OpenUp! benefits The on-line newsletter will inform the target audience about news, progress in on-line publishing of the metadata and about newly available content.
- Identify potential new partners and explain the workflow of the OpenUp! usage (together with WP7)
- Bundled the results from other work packages and set up the project within the Scratchpad community.
- Organize workshop, alignment and awareness of related projects (BHL-Europe, GBIF, Edit...) for public and target users.

In addition to that, we will also identify institutions for educational development and teacher training (e.g. the State Institutes for School and Media) and show them the benefits of EUROPEANA and OpenUp!.

We will put in place surveys using established methodology to measure uptake of the project's results and develop online questionnaires to identify user requirements, preferences, experiences, benefits, and unmet needs. User evaluation results will be provided twice, the first time at the end of Month 28 to enable the analysis of demand, service elements of the project and to identify additional target user communities. The second report in Month 34 will provide the results of test and validate the impact of the project, and it will feed back priorities for digitisation activities to the content providing institutions.

Extending the Network

The institution partner to the project hold a substantial amount of digital objects relevant to the project that will be provided to EUROPEANA.

Currently GBIF provided access to more than 200 millions records concerning Natural History objects. A substantial part is either concerning information from the European territory or have a worldwide scope but is kept in European repositories. It is thus clear that the partner network will need to be extended to increase the available content for Europeana.

At GBIF statistics both about the European countries of origin of the information and the origin of the resource providing the information can be retrieved. Most of the OpenUp! Partners, especially those associated to WP7, play also the role of GBIF node. They will thus have an important role as liaison with other GBIF nodes not member of the current proposal to facilitate interoperability and further accessibility of relevant GBIF media content for EUROPEANA.

Many of these potential content providers have also digital information that is not yet published. Via the helpdesk facilities and examples to follow from the OpenUp!

Partners additional institutions will be asked to join the network as associated partner and provide content to EUROPEANA.

Independently from GBIF, the OpenUp! partners have their own local data infrastructure, have a long term existence and a well establish network of partnership with other institutions and association both in their own country, but also internationally. By providing assistance, helpdesk and promotional communication in collaboration with WP8, they will play a major role in extending the network and mobilizing more content in the appropriate formats for EUROPEANA

In practice WP7 in close collaboration with WP8 will:

- Establish the criteria for institutions and organisations to become associated partners to OpenUp!
- Identify and document benefits for institutions to become associated partners to OpenUp!
- Identify new partners with potential to join OpenUp!
- Do an outreach campaign to attract associated partners (in close collaboration with WP8 on Dissemination and awareness, including demos, best practices, presentation at different events, announcements on different websites, promoting the helpdesk services, ...).
- Establish a standard procedure for addition of associated partners to OpenUp!

Section B3. Implementation

B3.1. Consortium and Key Personnel

The Consortium

The Consortium is composed of natural history institutions that are members of the Consortium of European Taxonomic Facilities (CETAF), i.e. large European natural history museums and botanical gardens, and of European Participant Nodes in the Global Biodiversity Information Facility (GBIF). Most of the largest museums are present in the consortium, although some have declined at this moment because of organisational difficulties.

Three partners in the consortium are SMEs: the networks Species 2000 & ITIS Catalogue of Life with its membership of Global Species Databases, and SMEBD, representing the numerous contributors to the creation of the European species checklists, as well as the AIT who act as a technology provider.

Participant Descriptions and Key Personnel

1	Freie Universität Berlin, Botanic Garden and Botanical Museum Berlin-Dahlem (BGBM)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Botanic Garden and Botanical Museum Berlin-Dahlem (BGBM) of the Freie Universität Berlin is a centre of biodiversity research in Europe, housing extensive scientific collections of herbarium specimens (about 3.5 million), one of the world's largest living plants collections, as well as the most complete botanical library in Germany. BGBM recognised early the new role of natural history museums in the domain of electronic information. Today, the BGBM has a separate department of Biodiversity Informatics with at present more than 20 staff members (computer scientists, botanists, zoologists, engineers, mathematicians, and technicians). Focal point of R&D activities are taxonomic information systems and networking of distributed primary biodiversity information. The BGBM hosts numerous databases and information systems and is connected with a Gigabit backbone and Gigabit connection to the GÉANT network via GWIN.</p> <p>The BGBM (Berendsohn and his team) acted as coordinator in the following EU projects:</p> <ul style="list-style-type: none"> • BIO2-CT 93-0328: 01.08.1993-31.01.1996: Concerted Action CDEFD (A common Datastructure for European Floristic Databases). 5 Partners from 4 Countries. • BIO4-CT 97-2309: 01.08.1997-31.12.1999: BioCISE (Resource Identification for a Biological Collection Information Service in Europe). 16 Partners from 12 countries. • BioCASE-EVR1-CT-2001-40017: 1.11.2001-31.01.2005: BioCASE (A Biological Collection Access Service for Europe). 35 Partners from 30 countries. <p>Further project coordination activities of the BGBM and Berendsohn include:</p> <ul style="list-style-type: none"> • Participation in and coordination of work packages in past EU funded projects (Euro+Med PlantBase, ENBI, ENHSIN, Sp2000-Europa, SYNTHESIS). • A major role in the ongoing FP6 Network of Excellence EDIT (European Distributed Institute of Taxonomy), coordinating the largest workpackage that implements the "Internet Platform for Cybertaxonomy" • Coordination of work packages in the FP7 Projects LifeWatch, PESI, SYTHESYS-2, and i4Life. Participation in BHL-Europe and ViBRANT. • On the German national level, Berendsohn coordinated the "BIOLOG Biodiversity Informatics" and the "GBIF Germany" programmes, funded with 11.8 million Euro by the Federal Ministry of Research and Education 2002-2007. 	

Role / Commitment within OpenUp!

BGBM will coordinate the OpenUp! project and lead WP1 (Coordination, Management, Liaison & IPR). Within WP 3 BGBM will contribute to metadata modelling and to setting up the natural history Data Integrity Service. Chair of the OpenUp! Technology Management Group. Content provision and quality enhancement within WP5.

Key Personnel

Prof. Dr. Walter Berendsohn (Coordinator) is Director of the Dept. of Biodiversity Informatics and Laboratories at BGBM since 1998. Research activities focus primarily on information systems in biodiversity research, authored several information models. Coordinated numerous activities in EU projects with many partners and acted as coordinator of Federal programs in biodiversity informatics research in Germany,

Anton Güntsch, M.Sc. in Computer Science, Head of the Biodiversity Informatics and Documentation section in the Dept. of Biodiversity Informatics and Laboratories at BGBM. Scientific activities: design and implementation of collection and taxonomic databases at meta level and object level; design of cooperative networks of distributed biodiversity information systems; digitisation of living and conserved biological collections.

Dr. Marie Gebhardt, project manager, is currently coordinating WP5, Construction Plan Strategy, of the LifeWatch project at the BGBM. Since 2005 Head of Research Support Office at BGBM, 11 years of experience with EC Research Framework Programmes 4, 5, 6, 7, areas Information Society Technologies, Environment and Sustainable Development, Integrated Infrastructures, and others.

2	The Natural History Museum, London (NHM)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Natural History Museum is one of the world’s great museums, with over 4.2 million visitors, and 13 million online visitors per year. The NHM is also an international leader in the scientific study of the natural world. NHM has a strong track-record in EC funded research and training. It currently leads two EU Infrastructure Programmes projects; namely SYNTHESYS, which provides physical and virtual access and training in 20 natural history museums and herbaria and ViBRANT, which is virtual infrastructure supporting the mobilisation, sharing, reuse and publication of biodiversity data. NHM is leading a further 11 FPVII projects across a range of research disciplines. The NHM library has the largest collection of natural history materials in the world, with over 1,000,000 books (from 1469 onwards), 25,000 journal titles, and 600,000 works of art. The NHM is a leading participant in the Biodiversity Heritage Library BHL/ BHL-Europe and an active player in the Encyclopaedia of Life Project. NHM has a large number of staff members with good background in Library Management Systems and strong IT skills including programming and database creation.</p>	
<p><i>Role / Commitment</i></p> <p>The NHM will lead WP2 (technical implementation) and integrate the technical infrastructure of OpenUp! with that of the complementary <i>eContentPlus</i> project BHL-Europe (WP2 and WP3). Participation in the OpenUp! Technology Management Group. Liaison with BHL international in WP1. Content provision and quality enhancement within WP4 and WP5.</p>	
<p><i>Key Personnel</i></p> <p>Graham Higley is the Head of Library and Information Services and his experience of EU and global project management is extensive, and includes multi-million Euro IT programmes and large building projects. He is the Coordinator for the I3 FPVII funded SYNTHESYS contract, and WP leader for <i>eContentPlus</i> BHL-Europe and the Chair of the BHL and on the Steering Committee for the EOL Project.</p> <p>Gavin Malarky is Head of ICT Services and Operations and has worked at the NHM for 7 years in ICT support and management. Qualified in project management he has been responsible for delivering ICT projects including leading on the infrastructure to host BHL-Europe at NHM.</p> <p>Darrell Siebert is the NHM Collections Database Manager. He led cross-departmental support for Science Departments for the 3 projects that installed the collections database system in the museum, acting as project manager for the last year. He oversees development and use of the collections management database in a museum-wide context.</p>	

3	Museum für Naturkunde - Leibniz Institute for Research on Evolution and Biodiversity at the Humboldt University Berlin (MfN)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Museum für Naturkunde Berlin (MfN) is one of the world leading natural science museums, devoted to basic research and education in all fields of natural history, with a focus on biodiversity, biological evolution, and basic earth sciences. Its vast zoological, palaeontological and mineralogical collections comprise over 30 million scientific samples and more than 170,000 primary type specimens from all major regions and ecosystems of the World. Facilities at the MfN include several general and high-end laboratories (SEM, isotope analysis, DNA sequencing, 3D-CAD/visualization, micro CT), a large scientific library (>175,000 titles, >1,000 journals), and a recently upgraded ITC-infrastructure. Since 2009, the MfN is constituted as an independent Foundation under the Leibniz Association supported in equal shares by the State of Berlin and the German Federal Government. The institute, which remains affiliated to the Humboldt University in Berlin currently employs about 230 staff, including 70 scientists. Its exhibitions (ca 6,600 square meters) are seen by more than 500,000 visitors annually. The MfN coordinates the <i>eContentPlus</i> project BHL-Europe.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>The MfN will lead WP4 (Zoological Community Coordination, Metadata Catalogue and Quality Control). Liaison with the Consortium of European Taxonomic Facilities and BHL-Europe in WP1. Content provision and quality enhancement within WP4.</p>	
<p><i>Key Personnel</i></p> <p>Dr. Christoph L. Häuser, Head of the Office for Project Coordination and International Cooperation at the MfN Directorate since 2009. Actively engaged for more than 10 years with international biodiversity informatics and biosystematics initiatives, both at the scientific as well as at the organizational and science-policy level. He has acted as coordinator and work package leader in several EU projects with many partners involved.</p> <p>Dr. Christiane Quaiser, International Scientific Liaison Officer at the Office for Project Coordination and International Cooperation, MfN Directorate. Coordination of EU projects and working groups, and of the secretariat of the Consortium of European Taxonomic Facilities. More than 10 years working experiences in European natural history museums through several research projects.</p> <p>Dr. Karl-Heinz Frommolt, Curator of the Animal Sound Archive of the MfN since 1995, responsible for the MfN sound archive since 1987. Curatorial work comprises the conservation of different types of recordings including digitisation of analogue tape recordings, the enrichment of metadata linked to the recordings, and the improvement of the online access to the archive for research and public (see http://www.tierstimmen.org).</p>	

4	Institute of Botany, Slovak Academy of Sciences (IBSAS)
<i>Qualifications, Experience and Knowledge</i> The Institute of Botany SAS is the largest taxonomic research centre for the taxonomy of vascular and non-vascular plants in the Slovak Republic. The institute houses the Slovak Global Biodiversity Information Facility (GBIF) node and Global Taxonomy Initiative (GTI) national focal point. The Institute participated or still participates as a partner institution in several EU-supported projects: Euro+Med PlantBase, ENBI, BioCASE, Intrabiodiv, ENSCONET, EDIT and PESI. The institute has leading role in national projects such as the multivolume Flora of Slovakia (Flóra Slovenska), the Checklist of non-vascular and vascular plants of Slovakia (with updates), and the Red lists of non-vascular and vascular plants of Slovakia. The Institute has also recently established laboratories of flow cytometry and molecular systematics, which enable to apply most advanced methods in studies of the evolution of vascular plants and the phenomenon of polyploidy. The Institute houses also one of the largest herbaria in Slovakia, documenting diversity of vascular and non-vascular plants in Slovakia and adjacent regions. The herbarium comprises also several special collections as that of František Nábělek's Iter Turcico-Persicum collected during 1909-1910 in the area of present Turkey, Lebanon, Israel, Iran, and Iraq with a considerable number of type specimens, or that of Alois Zlatník, documenting the wide diversity of the genera Hieracium and Pilosella throughout Central Europe, again with numerous type specimens.	
<i>Role / Commitment within OpenUp!</i> IBSAS will lead WP5 (Botanical Community Coordination, Metadata Catalogue and Quality Control). Content provision and quality enhancement within WP5.	
<i>Key Personnel</i> Prof. RNDr. Karol Marhold, PhD. is the representative of the Slovak Republic in the GBIF Governing Board and member of the Global Taxonomy Initiative's Coordination mechanism for Central and Eastern Europe. He organised the participation of IBSAS in all above-mentioned EU-supported projects. RNDr. Pavol Mered'a, PhD. is one of the main authors of the recent volume of the Flora of Slovakia and one of editors of the Chromosome number survey of the ferns and flowering plants of Slovakia and the editor responsible for the on-line version of this work. He is currently the head of the team that develops the database of the distribution of vascular plants of Slovakia. He took part at the FP6 ENSCONET project. Mgr. Dušan Senko, PhD., is a specialist on GIS technologies and is working also with taxonomic databases as part of the FP6 NoE EDIT (European Distributed Institute of Taxonomy) and the FP7 infrastructures project PESI (Pan-European Species-directories Infrastructure).	

5	Naturhistorisches Museum Wien (NHMW)
<i>Qualifications, Experience and Knowledge</i> The Natural History Museum in Vienna was founded more than 250 years ago. The museum includes departments for Anthropology, Botany, Geology, Mineralogy, Karst and Caves, Palaeontology, and Zoology. Most departments are organised in “collections” for special taxonomic units with responsible scientific curators. The collections with more than 30 million specimens including hundreds of thousands of nomenclatural type specimens are a fundamental basis for any taxonomic work, as well as general aspects on biodiversity and ecological questions. The NHMW is member of the SYNTHESYS framework (AT-TAF).	
<i>Role / Commitment within OpenUp!</i> The NHMW will lead WP6 (Multilingual Metadata Enrichment Including Common Names). This WP will erect an infrastructure for semantic metadata enrichment especially dealing with common names for biological organisms. Thus it will play a key role for the general public to access information and materials from the natural history heritage. The second emphasis is to provide content for EUROPEANA and quality enhancement within WP5.	
<i>Key Personnel</i> Dr. Ernst Vitek – Interim Director of Department of Botany Besides being the Interim Director, Ernst Vitek is also the Head curator of the collections of phanerogams. Since 1997 he is the editor of the "Annalen des Naturhistorischen Museums, Serie B". Together with his colleagues, he is member of the Austrian working group for long-term storage. Heimo Rainer Heimo Rainer is a Botanist working with neotropical plant groups. He is strongly involved in the organisation for Biodiversity Information Standards and member of the Executive of the Taxonomic Database Working Group (TDWG) as the European representative. Current activities include active participation and local coordination of EU co-funded projects 4D4Life and BHL-Europe. Wolfgang Koller IT developer with special emphasis in RDBMS and Web 2.0 technologies used for management software in the private and public sector. He is currently engaged in the development and aggregation of software tools for “BHL-Europe”.	

6	Musée Royal de l'Afrique Centrale (MRAC)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Musée Royal de l'Afrique Centrale (MRAC) is a multidisciplinary institution with a special focus on Sub-Saharan Africa. It is a leading research institute and knowledge centre on the biodiversity and cultural heritage in Africa, particularly Central Africa, and aims to develop interest and understanding for African fauna, flora and cultural heritage in the scientific communities and the public at large. It manages collections of about 10 million specimens of animals and 60,000 wood specimens of 13,600 different botanical species. Researchers carry out studies both in the natural and urban environments, including on socio-economical impacts, aimed at gaining insight into biodiversity and to stimulate interest among the general public and the scientific community. The MRAC maintains an extensive library, including the top scientific journals, but also a unique collection of rare, old colonial publications. Scientific staff master ten languages; consequently, the library and reprint documentation is unusually multilingual. The institution is keeping more or less 1.2 km of Archives of unique interest, more than 200,000 cultural objects, more than one million of photographic archives, 700 movies and more than 6,000 hours of traditional music and voice recordings.</p> <p>MRAC is active in the organisation for Biodiversity Information Standards (TDWG), the Consortium of European Taxonomic Facilities, and collaborates in GTI (Global Taxonomy Initiative) capacity building activities with developing countries. It was and is involved in Biodiversity Informatics initiatives like GBIF (Global Biodiversity Information Facility), ENBI (European Network of Biodiversity Information), EDIT (European Distributed Institute of Taxonomy), SYNTHESYS (Synthesis of Systematic Resources), FishBase, BHL-Europe (Biodiversity Heritage Library), STERNA (Semantic Web-based Thematic European Reference Network Application), EOL (Encyclopaedia of Life), CBOL (Consortium Barcode of Life) and LifeWatch (ESFRI). MRAC is particularly involved in Biogeography Spatial Data Infrastructure and taxonomy training initiatives in the above mentioned projects. For EDIT, MRAC is the task leader for the Geospatial Components of the Platform for Cybertaxonomy. MRCA has been actively promoting the use of BioCASE technology, for example in CABIN (Central African Biodiversity Information Network).</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>MRAC will lead WP7 (Helpdesk Facility and Extending the Network) with the aim of extending content provision within and beyond the OpenUp! partnership, coordinating a network of multilingual technical advisors and helpdesk facilities. Co-Lead of the OpenUp! Outreach and Dissemination Group. MRAC will also provide the liaison with the <i>eContentPlus</i> initiative STERNA within WP1 and assist in questions of geographical metadata enhancement in WPs 3, 4 and 5. Participation in the OpenUp! Technology Management Group. Content provision and quality enhancement within WP4.</p>	
<p><i>Key Personnel</i></p> <p>Michel Louette, Head of Department and Scientific Director of the Department for African Zoology at the Royal Museum for Central Africa. Since 1990 Member of the International Ornithological Committee and since 2006 Member of the Standing Committee on Ornithological Nomenclature of the IOC. Since 2001 Chairman of the "Birds" group of the Scientific Committee CITES (Washington Convention) for the Belgian Federal Ministry of Health.</p> <p>Dr. Patricia Mergen has been responsible for external relations and project management at the MRAC since 2005. In 2004, 2005 and 2008 Patricia Mergen served as an independent expert for the evaluation of FP6 proposals. President of the Royal Belgian Zoology Association (2007-2008). Other memberships include the Taxonomical Databases Working Group of which she has been elected General Secretary starting 2010.</p> <p>Additionally the project will benefit of the expert input of the Biodiversity Information Unit staff</p>	

(Danny Meirte (curator), **Garin Cael** (Collection Manager, SYNTHESYS), **Franck Theeten** (Database Manager, Central African Biodiversity Information Network, CABIN), **Stijn Cooleman** (STERNA), **Kim Jacobsen** (EDIT, trainings), **Larissa Smirnova** (BHL-Europe), and **James Davy** (IT Developer, EDIT) as well as from the staff of MRAC's Information and Communication Technology Unit (ICT) and other units and departments as relevant.

7	Národní muzeum Praha (NM)
<i>Qualifications, Experience and Knowledge</i>	
<p>The National Museum is the largest museum in Czech Republic and a leader in science, PR and database technologies among other public cultural and scientific institutions. The collections, which are systematically extended and enriched, consist of almost 20 million items from the area of natural history, history, archaeology, arts, music, and librarianship from all over the world, with a particular focus on the Czech Republic. The most important are collections of mineralogy, paleontology, botany, entomology, zoology, and archaeology. The National Museum conducts research in various fields of natural and historical sciences and has a large exhibit activity. The collections and exhibitions are located in more than 15 public museums and exhibition halls all over the country. The museum publishes 12 scientific journals and numerous other non periodical publications.</p>	
<i>Role / Commitment within OpenUp!</i>	
<p>NM will lead WP8 (Dissemination and Awareness), taking a similar role in OpenUp! to that in the complementary <i>eContentPlus</i> project BHL Europe. Co-lead of the OpenUp! Outreach and Dissemination Group. Content provision and quality enhancement within WP4 and WP5. Contributing to the aggregation of common names catalogue in WP6.</p>	
<i>Key Personnel</i>	
<p>PhDr. Jana Součková, DrSc. is Vice-director and Scientific Secretary of the National Museum and the lead researcher in archaeology (special interest in the cultural history of the Near East, Hittites culture, temple of Neferefre). Dr. Souckova will represent the Museum in the Project assembly.</p> <p>Dr. Jiří Sejkora is deputy director of Natural History Museum and principal scientist in mineralogical researches in the Department of Geology and Mineralogy. Recently he lead main scientific project of Natural History Museum and is involved in management of the main database project of the National museum. He published more than 300 scientific papers.</p> <p>Dr. Kamil Zágoršek is a leader in zoo-paleontological science in the Department of Paleontology (head of department from 2005-2008). He managed several national and international scientific projects in paleontology; recently he conducts the main project of the Department aimed at implementing the paleontological database for the whole public and scientific project about tertiary marine evolution.</p>	

8	Stichting Expertisecentrum voor Taxonomische Identificatie, Amsterdam (ETI)
<i>Qualifications, Experience and Knowledge</i> ETI BioInformatics provides services to facilitate worldwide access to quality taxonomic and biodiversity information for scientific, educational and awareness purposes. ETI is a not-for-profit project-fund-driven organization. It is Associate Participant in GBIF. ETI is organized in two sections: The Informatics Unit designs, develop, implements and hosts ICT services and solutions to support the accessibility and interoperability of digital information. The Information Unit works with a global network of partners to harvest and compile taxonomic expertise to create and e-publish quality biodiversity information services. Over the past 20 years more than 100 CD-ROMS and DVDs have been produced and a vast amount of taxonomic multimedia objects have been created including nearly 100,000 drawings, artwork, sound files and movies.	
<i>Role / Commitment within OpenUp!</i> Content provision and quality enhancement within WP4 and WP5.	
<i>Key Personnel</i> Drs. Edwin van Spronsen , Biologist / programmer multimedia applications. Head ETI Information Unit. Specialization: multimedia environments, e-learning applications, geographic information systems, ecological niche modelling, 3D imaging, and virtual reality. Active member of the Dutch birding community, skilled amateur photographer. Mr Huub Veldhuijzen , Biologist. Custodian World Biodiversity Database and derived species websites: www.soortenbank.nl ; www.species-identification.org . Specialized in species identification and information systems. Ms Tekla Boersma . Biologist. Custodian ETI image library. Active member of the Dutch amphibian community. Specialized in data mining, tagging, and image processing. Ing Gideon Gijswijt , Application programmer, system management (background in systematics). Specialization: multimedia applications, taxonomic information systems, system management, application testing and technical support. Ir Wouter Addink , System developer (background in plant systematics and agricultural biology). Head ETI Informatics Unit and Adjunct Director ETI. Specialization: database programming, interoperability and common access tools; webportals, geographic information systems.	

9	Zoologisches Forschungsmuseum Alexander Koenig (ZFMK)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The “Zoologisches Forschungsmuseum Alexander Koenig” (ZFMK), founded as a private research and exhibition institute by Alexander Koenig (1858-1940), is one of the major natural history research museums in the Federal Republic of Germany (www.zfmk.de). As a member of the Leibniz-Gemeinschaft (WGL) the ZFMK is jointly funded by the state of Northrhine-Westphalia, the other states of Germany and the federal government. Today ZFMK employs 57 staff, including 15 scientists.</p> <p>The ZFMK scientific collections comprise an estimated 350,000 specimens of vertebrates (ca 80,000 mammals; 136,700 birds; ca 40,000 fishes; more than 77,000 reptiles and amphibians) and several million specimens of insects (1.35 M. butterflies, 1.9 M. beetles, 300,000 flies, and further specimens belonging to other insect groups). The library comprises an estimated 150,000 accessions of which more than 90% are already digitized. The digitization of the scientific collections at the species as well as at the specimen level is in progress.</p> <p>The ZFMK coordinates the German GBIF-Node for Vertebrata.</p> <p>Research at ZFMK is focused on phylogenetics, speciation and biogeography of terrestrial vertebrates and insects. Hence, research emphasises terrestrial fauna, 'terrestrial' defined in a wider sense, i.e. including limnetic organisms which evolved from terrestrial forms and ecologically are often linked. Several research projects include ecological and conservation aspects. Temperate Eurasia (Palaeartic region), tropical and subtropical Africa (Afrotropical region) and Central and South America (Neotropical region) are the regional focuses. Many research projects also include specific aspects of the ecology of vertebrates and insects, with special reference to proximate and ultimate factors.</p> <p>The ZFMK houses in its historical building a modern permanent exhibition entitled “Our blue planet – The living Network”. In lifelike habitats of the African Savanna, the rainforest, Arctic/Antarctic and Central Europe, exhibits are arranged for the visitor. The permanent exhibition is supplemented by changing special exhibitions.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Content provision and quality enhancement within WP4. Helpdesk facility in WP7. Participation in the OpenUp! Outreach and Dissemination Group.</p>	
<p><i>Key Personnel</i></p> <p>Dr. Klaus Riede (ZFMK) is senior researcher at the ZFMK. His main interest is biodiversity informatics and the biodiversity of tropical insects, with a strong focus on species communicating acoustically. To this end, he established a major multimedia database of Orthoptera type specimens and songs, containing about 20,000 images and 5,000 sound files (www.dorsa.de).</p>	

10	Royal Belgian Institute of Natural Sciences (RBINS)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The RBINS is the third largest European natural history museum. Its three missions are (1) research, (2) curation and management of collections, and (3) providing scientific expertise, services and public education in particular through permanent and temporary exhibits, conferences etc. The RBINS houses a diverse and exceptionally rich zoological collection, palaeoanthropology, prehistoric items and a diverse mineral collection. The total is in the order of 37,000,000 specimens with around 100,000 primary types. This places RBINS among the world top ten collections in terms of volume of specimen stored and available for research. The scientific library of the RBINS offers a vast range of books and magazines (695,368 volumes/7,000 periodicals). Taxonomic expertise is present for many groups of invertebrates and vertebrates worldwide, and in all sorts of ecosystems, i.e. terrestrial, freshwater and marine. The RBINS is a partner in numerous European biodiversity-related initiatives such as CETAF, ENBI, SciColl, ECOOP, SYNTHESYS, EDIT, BHL-Europe.</p> <p>The Belgian Biodiversity Platform (BBPF) is a distributed biodiversity information and communication initiative by the Belgian Science Policy (BelSPO). It serves as Belgian node of the Global Biodiversity Information Facility (GBIF), of the European Platform on Biodiversity Science Policy (EPBRs) and DIVERSITAS and is involved in the ERA-net BiodivERsA. It develops a database on Belgian biodiversity research resources (BioBel: BioBel.biodiversity.be), and coordinates the Freshwater Animal Diversity Assessment project. The BBPF also implements SCAR-MarBIN, the Antarctic marine biodiversity portal of the Scientific Committee on Antarctic Research (http://www.scarmarbin.be), and is involved in the BioFresh collaborative project - large-scale integrating project (FP7-ENV-2008-1). It organizes a yearly call supporting the digitization of biodiversity information.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>With the Belgian GBIF National Node, RBINS takes a role in WP7, providing helpdesk facilities and assisting in extending the OpenUp! content provision network. Participation in the OpenUp! Outreach and Dissemination Group. Content provision and quality enhancement within WP4.</p>	
<p><i>Key Personnel</i></p> <p>Dr. Patrick Grootaert is Head of Department of Entomology and Vice-Director of the Institute, and holds a PhD with a specialisation in Nematology and also obtained a Doctor in Science degree in Entomology. As the manager of BE-TAF (Belgian Taxonomic Access Facility) he coordinates the links between the Belgian content providers NBGB, MRAC, and RBINS.</p> <p>Dr. Hendrik Segers, PhD, coordinates the biodiversity-data related activities of the Belgian Biodiversity Platform (BBPF). As such, he is responsible for the implementation of the SCAR-MarBIN, FADA and BioFresh projects, and the BBPF digitization project call. Recently, he was elected to the council of the Society for the Management of Electronic Biodiversity Data (SMEBD).</p>	

11	Secretariat of the Global Biodiversity Information Facility (GBIF)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Global Biodiversity Information Facility (GBIF) is an inter-governmental organisation, originally initiated through the OECD but now open to any country or body that establishes a memorandum of understanding with GBIF and complies with its conditions, in particular, to make biodiversity data available. The mission of GBIF is to facilitate free and open access to biodiversity data worldwide via the Internet to underpin sustainable development. Priorities, with an emphasis on promoting participation and working through partners, include mobilising biodiversity data, developing protocols and standards to ensure scientific integrity and interoperability, building an informatics architecture to allow the interlinking of diverse data types from disparate sources, promoting capacity building and catalysing development of analytical tools for improved decision-making.</p> <p>GBIF forms informatics linkages among digital data resources from across the spectrum of biological organisation - from genes to ecosystems, and connects these to issues important to science, society and sustainability by using georeferencing and GIS tools. It works in partnership with other international organisations such as the Catalogue of Life partnership, Taxonomic Database Working Group (the international biodiversity information standards organisation), and the Consortium for the Barcode of Life.</p> <p>GBIF provides three core services and products:</p> <ol style="list-style-type: none"> 1. An information infrastructure – an Internet-based index of a globally distributed network of interoperable databases that contain primary biodiversity data – information on museum specimens, field, observations of plants and animals in nature, and results from experiments – so that data holders across the world can access and share them 2. Community-developed tools, standards and protocols – the tools data providers need to format and share their data 3. Capacity-building – the training, access to international experts and mentoring programs that national and regional institutions need to become part of a decentralised network of biodiversity information facilities. 	
<p><i>Role / Commitment within OpenUp!</i></p> <p>GBIF will work in WP4 (and WP5) to facilitate integration and harmonisation of distributed datasets through the development of standardisation services that form part of the GBIF vocabularies site. Participation in the OpenUp! Technology Management Group. Collaboration in WP1 to ensure liaison with the network of participant nodes globally and specifically in Europe. Contribution WP7 and WP8 (Outreach and Dissemination) by means of the GBIF outreach, liaison and helpdesk activities, particularly with respect to enhancing the content contributions made through GBIF's network of Participant Nodes. Participation in the OpenUp! Outreach and Dissemination Group.</p>	
<p><i>Key Personnel</i></p> <p>Dr. Vishwas Chavan, Senior Programme Officer with primary responsibility to devise strategies on increased discovery and mobilization of primary biodiversity data. 19 years experience of pursuing biodiversity and ecosystem informatics in a mega-biodiversity and developing nation, India. His recent interest is to develop a 'data publishing framework' that would overcome social, political and cultural barriers in expediting discovery and publishing of primary biodiversity data.</p> <p>Dr. Éamonn Ó Tuama, Senior Programme Officer dealing with access and interoperability issues for biodiversity data. Prior to joining GBIF in January 2007, he worked as a senior scientist at the Coastal and Marine Resources Centre, University College Cork, on INSPIRE influenced EU (GMES) and nationally funded projects relating to harmonisation and integration of marine data.</p>	

David Remsen, Senior Programme Officer of the ECAT work programme within GBIF. His primary areas of work for the past 20 years have been in the development of biodiversity data systems, networks and services and in teaching and training in biomedical and biodiversity informatics. His current focus is on the development of tools, services, and data standards that promote sharing and integration of taxonomic data.

Andrea Hahn, GBIF Data Portal Manager. She joined the GBIF Secretariat in Copenhagen/Denmark in 2005, after having steadily proceeded into the applied field of biodiversity informatics through collaboration in several database- and network-related projects while employed at the Biodiversity Informatics Department of the Botanic Garden and Botanical Museum Berlin-Dahlem (1998 to 2005).

Tim Robertson is System Architect at GBIF. Educated to Master of Engineering, Tim has a vast IT background working with large scale, high traffic and volume web applications. His development experience of 10 years includes secure messaging systems implemented in the Java and J2EE frameworks and, more recently, GIS development based on the OGC standards.

12	University of Copenhagen, Natural History Museum of Denmark (UCPH)
<i>Qualifications, Experience and Knowledge</i>	
<p>The Natural History Museum of Denmark is an institute of the University and holds the largest Danish natural history collections. Part of the collections has been digitized with images, and a newly acquired grant is speeding up the digitisation process drastically. The Danish GBIF node, DanBIF, is located in the museum and will take an active part in the work.</p>	
<i>Role / Commitment within OpenUp!</i>	
<p>Content provision and quality enhancement within WP4 and WP5. The Danish GBIF Node will take an active role in WP7 (Helpdesk facility and extending the Network) and will participate in the OpenUp! Outreach and Dissemination Group. In WP2, UCPH will help to address long-term sustainability of the OpenUp! content provision by setting up a metadatabase mirror in Copenhagen.</p>	
<i>Key Personnel</i>	
<p>Prof. Dr. scient. Henrik Enghoff, Director of Collections, Natural History Museum of Denmark. Since 2004 Steering Committee for SYNTHESYS (EU Integrated Infrastructure Initiative). 2008-2010: Steering Committee for PESI (EU Collaborative Project). 2006-2010: WP leader, Network Steering Committee and (ongoing) Board of Directors in EDIT (EU Network of Excellence). 2003-2005: WP leader, EU thematic network ENBI (European Network for Biodiversity Information)</p> <p>Dr. Isabel Calabuig, 8 years experience in teaching biology and population ecology. Since 2001 Node Manager, Danish Biodiversity Information Facility (www.danbif.dk), the Danish Participant Node of GBIF. 2006-2007 on leave from DanBIF to act as WP coordinator (WP2) in EDIT. 2003-2005 In parallel to DanBIF work, managing Work Package 13 of ENBI.</p> <p>Christian Lange, M.Sc., since 2007 Collection coordinator at the Natural History Museum, Denmark. 2006-2007 Node Manager of DanBIF (Danish Biodiversity Information Facility). Besides his M.Sc. in biology background in IT-support and IT-development.</p>	

13	Royal Botanic Garden Edinburgh (RBGE)
<i>Qualifications, Experience and Knowledge</i> The Royal Botanic Garden Edinburgh is an internationally renowned centre for botanical research and conservation which was founded in 1670. It has a herbarium of 3 million specimens, one of the largest collection of living plants of wild origin in the world, an important botanical library and archives and a staff of over 30 research scientists. The herbarium has strong representation of European specimens and is one of the best herbaria in the world for the area from the eastern Mediterranean to the Sea of Japan. The cultural importance of herbarium specimens and botanical art is a theme of research at the garden, building on the rich archive and herbarium. Digitisation is an important strategy and significant funds have been provided by the Scottish Government to develop mechanisms for speeding up high quality digitisation. The garden has a strong bioinformatics team which is working on ways of delivering biodiversity data to a wide range of end users. RBGE also has a strong standing in the area of biodiversity informatics and biodiversity information systems.	
<i>Role / Commitment within OpenUp!</i> Content provision and quality enhancement within WP4. Testing of software in the context of metadata enhancement at RBGE. Participation in the OpenUp! Technology Management Group.	
<i>Key Personnel</i> Dr David Harris , Herbarium Curator since 2001, Deputy Director of Science since 2006. Main focus at present is to increase curatorial standards, widen access to the specimens through digitisation. Selected grants/awards: Herbarium digitisation (Scottish Government, 2008-9; Botanical Capacity Building in Republic of Congo (Darwin Initiative; 2006-9). Dr Martin Pullan , Biodiversity Informatics, since 1998 Senior Scientific Officer. Selected grants/Awards: Prometheus I - A novel database system for classifying biodiversity (BBSRC 1999-2000); Prometheus II (BBSRC; 2001-4); <i>SYNTHEsys</i> NA D: Activity leader for requirements gathering and user testing, (EU FP 6, 2006); <i>EDIT</i> WP 5: Internet Platform for Cybertaxonomy: Activity leader for user testing coordination (EU FP 6; 2009-10). Robert Cubey , since 2002 Plant Records Officer. Current focus: Preparing for the next catalogue of Living Plants 2010, mapping the Living Collection of the RBGE (four sites). Digitizing the Preserved Collection of the RBGE, to provide access to herbarium database via multiple portals (GBIF, BGCI, etc.). RBGE Herbarium and living collections Data Administrator. Dr Elspeth Haston , since 2006 Assistant Curator (Digitisation). Current focus: Digitisation of RBGE Herbarium collections. Integration of digitisation methodologies and processes into curation practices. Classification systems for herbarium curation. Selected grants/awards: Type Digitisation (Andrew W. Mellon Foundation; 2006-9).	

14	AIT Angewandte Informationstechnik Forschungsgesellschaft mbH (AIT)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>AIT is an Austrian software and research company founded in 1979. Research work is done primarily in the field of information management (e.g. distributed databases, collection management and knowledge engineering). It is carried out within the EC (e.g. IST, Ten-Telecom etc.) action lines or on national and regional level. Research projects that AIT cooperated with or co-ordinated include: MOSAIC (Museums Over States and virtual Culture; TEN-Telecom), COVAX (Contemporary Culture Virtual Archives in XML; IST-Programme), REGNET (Cultural Heritage in REGional NETworks), Media.Alp (Setting up an integrated communication platform for achieving a cultural community in the Alpine space; Interreg Alpine Space Programme), and DISMARC (DIScovering Music ARChives; <i>eContentPlus</i>). Within DISMARC, OAI technology and protocols are used to create a common metadata catalogue of distributed archives. The DISMARC multilingual metadata platform is currently continued via the participation in EuropeanaConnect 2009-2011 and AIT brings in its experience in multilingual portal development in the BHL Europe Project (Biodiversity Heritage Library Europe) 2009-2012 (both ICT PSP). AIT is furthermore the Austrian content coordinator for the digital library project EuropeanaLocal 2008-2011, where a virtual content aggregation platform for museums, archives, libraries and other content institutions is being created based on OAI technology and international standards (Dublin Core). Further research work focuses on the provision of Web services for the cultural heritage domain, which are based on the SKOS vocabulary. First implementations concern the provision of vocabulary Web services as support process to the primary procedure “Cataloguing” (implemented standards: ANSI/NISO Z39.19, ISO 2788:1986, ISO-5964).</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>AIT will lead WP3 (Metadata modelling and EUROPEANA liaison) and will implement the OAI-PMH Interface and harvesting and transformation component within WP2. Participation in the OpenUp! Technology Management Group.</p>	
<p><i>Key Personnel</i></p> <p>Prof. Dr. Walter Koch – Director of AIT Ltd., chairperson of the CSC Europe EEIG and head of the Steinbeis Transferzentrum (IMCHI – Information Management and Cultural Heritage Informatics). He is consultant and contractor to various national and international organisations (e.g. UNESCO, DFG, EC, ESA, Austrian ministries, Graz municipality) and member of several national and international scientific associations (e.g. ICOM, ONORM, VÖB).</p> <p>Odo Benda, development of XML database applications for diverse international and national research projects (e.g. REGNET, MEDIA.ALP, MODOK, DISMARC, DIS). Currently working on the implementation of thesaurus Web services for the cultural heritage domain (based on international standards such as ANSI and SKOS vocabulary). Within EuropeanaLocal and EuropeanaConnect responsible for the thesaurus and vocabulary implementation for the virtual catalogues.</p> <p>Mag. Gerda Koch – Managing Director of AIT Ltd., collaborated in MOSAIC for the Austrian partner of the project. Her work focuses on cultural digital content provisions (e.g. for MODOK, COVAX). 2001-03 financial and administrative coordination of the EU IST-Project REGNET. For DISMARC, EuropeanaLocal, and EuropeanaConnect she works on the metadata and vocabulary mapping, user interface presentation, system validation.</p>	

15	University of Helsinki, Finnish Museum of Natural History (UH)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>Finnish Museum of Natural History is a national institution operating under the auspices of the University of Helsinki. The museum has 130 staff, 7 M€ annual budget, and it houses the national biological collections. The museum is the largest custodian of biological survey data in Finland, and its data holdings cover over 20 million digital primary biodiversity records, and 15 million un-digitised specimens. The museum group hosts several data collection portals for citizen networks. The Biodiversity Informatics Unit of the museum, which coordinates the GBIF node in the country, participates in this project. The Unit is responsible for digitisation of collections and operates an annual budget of 500,000 € for that purpose. In a major project in 2009 the most important historical accession books of the Zoological Museum were digitized and interpreted to structural form by remote workers. This work was done as part of the activities of the National Digital Library of Finland, and through this cooperation with the cultural heritage programmes content of the museum feeds already to Europeana. The Unit also manages taxonomic records of the country and is leading the cooperation of Nordic GBIF nodes on the Nordic taxonomic e-infrastructure.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Content provision and quality enhancement within WP4 and WP5. In WP4, leading role in setting up a data service for zoological names that can be used by the Collections Data Quality Toolkit provided by WP2. Participation in the OpenUp! Technology Management Group. The GBIF node takes a role in WP7 providing helpdesk services assisting to extend the Network). Participation in the OpenUp! Outreach and Dissemination Group.</p>	
<p><i>Key Personnel</i></p> <p>Dr. Hannu Saarenmaa is the leader of the Biodiversity Informatics Unit since 2007. In 2002-2007 he worked at the GBIF Secretariat in Copenhagen as the Deputy Director and Senior Advisor. In 1995-2002 at the European Environment Agency as Project Manager responsible of data networks such as EIONET and EC-CHM, streamlining the reporting system, and building up of EEA's information infrastructure. He is one of the original architects of the SEIS.</p> <p>Tommi Koskinen is responsible of IT support for digitisation. He has built a Drupal-based collaboration site to support industrial-scale digitisation of imaged content by remote workers, see http://digi.luomus.fi</p> <p>Nina Laurene is responsible of content of the taxonomic databases. She is currently participating in a new project for converting taxonomic content to semantic web which is underway in cooperation with the Aalto University.</p>	

16	The Royal Botanic Gardens Kew (RBGK)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Royal Botanic Gardens, Kew is fundamentally a scientific, amenity and educational organisation devoted to increasing knowledge and public understanding of plant and fungal diversity. Throughout its history, the Royal Botanic Gardens, Kew, has made important contributions to increasing the understanding of the plant kingdom and today is still first and foremost a scientific institution. Among its most important recent research achievements has been to lead a worldwide team to map the phylogeny of higher plants down to family level. The Kew Herbarium is one of the most comprehensive in the world, with a reference collection of around 8 million plant and fungal specimens. The Millennium Seed Bank is a rapidly growing collection of seed of wild species from semi-arid and arid environments world-wide and aims eventually to conserve ex situ approximately 10% of the world's flora on behalf of a worldwide collaborative network of national government organizations. The Library has more than 750,000 volumes, representing a globally important reference source for botanical research.</p> <p>Research is carried out by a complement of around 155 plant scientists, supported by another 445 staff of which about 200 are devoted to the cultivated plant collections. Increasingly Kew is broadening access to its collections by digitizing them and making them available over the Internet. Kew staff are involved in international collaborations and initiatives which seek to maximize the digitization of collections. This includes serving on Scientific Committees of Global Biodiversity Information Facility (GBIF); collaborating in major projects such as the Mellon Foundation funded Global Plants Initiative; digitising texts as part of the Biodiversity Heritage Library and playing an active role in relevant EU funded projects such as the EDIT Network of Excellence.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>RBGK will manage the IPR Framework for OpenUp! in WP1. RBGK will be responsible for setting up the Data Quality Service for botanical names, as well as contributing to content provision and quality enhancement within WP5. Participation in the OpenUp! Technology Management Group.</p>	
<p><i>Key Personnel</i></p> <p>Alan Paton is Assistant Keeper of the Herbarium at Kew. He supervises the management of Kew's Convention and Policy Section, dealing with CITES and The Convention on Biological Diversity (CBD). He is responsible for liaising with the Secretariat of the CBD on progress on Target 1 of the Global Strategy for Plant Conservation (GSPC -a widely accessible list of all known plant species) and serves on the GBIF ECAT (Electronic catalogue of names) committee.</p> <p>Abigail Barker manages the Science Applications Team at Kew with responsibility for the development and enhancement of all Science and Horticulture IT applications. She advises on science systems and plays a prominent role in the institutional IT and Digital Media Strategy Programme. She is a co-investigator on the eMonocot project, and is a participant in the EC-funded 4D4 Life and PESI projects.</p> <p>Bob Allkin is Information Projects Manager in Kew's Applications Development team. Bob has 25 years experience of managing and disseminating information about plant biodiversity; leading and working in multidisciplinary teams designing and managing databases and delivering information services.</p> <p>Anna Saltmarsh is the Digital Collections Manager of the Herbarium at Kew leading the digitisation programme of the Herbarium with responsibility for strategic development, and development and documentation of policy. Anna is a member of the Global Plants Initiative Technical Advisory Group.</p> <p>Monique Simmonds is Deputy Keeper of the Jodrell Laboratory and Head of the Sustainable</p>	

Uses of Plants Groups. Monique is Head of the Kew Innovation Unit and Chair of Kew's Intellectual Property Committee.

Nicola Nicolson is an IT Developer in Kew's Science Applications Development team. Nicola designs, develops and maintains scientific software, in particular that associated with the management and dissemination of scientific name information. Nicola provides technical leadership of the International Plant Names Index (IPNI) development.

Sarah Phillips is the Digital Collections Officer of the Herbarium at Kew responsible for curating the Herbarium digital collections and supporting the development of digitisation procedures and data management tools.

17	Stichting Nationaal Centrum voor Biodiversiteit Naturalis (National Centre for Biodiversity Naturalis) (NCBN)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>NCB Naturalis is the national museum of natural history of the Netherlands, housed in a modern new building in the city of Leiden, which was opened to the public in 1998. The museum was founded in 1820 and much of its collections date back to the 19th and 20th century. NCB Naturalis has a staff of about 160 people (124 fte), which include scientists, collection managers, exhibition designers, information officers, educators, etc. as well as a large number of associate researchers and volunteers. It has three main departments: public engagement, collections and research. The collections of zoological, paleontological and geological objects are estimated about 12 million objects. NCB Naturalis is merging with State Herbarium and the Zoological Museum of the University of Amsterdam. Staff will amount approx. 200 fte, total collection 35 million objects. See: www.ncbnaturalis.nl</p> <p>Specific expertise of the organisation for the project: With reference to the <i>OpenUp! – Opening Up the Natural History Heritage for Europeana</i> Naturalis can rely on a strong and innovative department of information services backed by natural history collections, library and archives which cover nearly 200 years of research and collecting. NCBN is involved in the <i>eContentPlus</i> projects BHL-Europe and STERNA and a partner in Europeana itself.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Participation in the investigation of metadata vocabularies in WP3. Participation in the OpenUp! Technology Management Group. Content provision and quality enhancement within WP4 and WP5. Contribution to common name thesaurus in WP6. Participation in outreach campaigns to attract new content providers in WP8.</p>	
<p><i>Key Personnel</i></p> <p>Kees Hendriks - Head of Information Services and Education. Before starting to work at NCB Naturalis in 2000 he worked for various employers as project assistant, project manager, department manager and vice director. The focus in all the jobs fulfilled is information exchange.</p> <p>Drs. B. v.d. Hoorn - Project manager Information Services. He currently works as a project manager information services at the National Museum of Natural History in the Netherlands. Most of his projects concern the development of websites and web-based applications. Examples of the websites and applications of the museum are www.walvisstrandingen.nl and www.nederlandsesoorten.nl</p> <p>Tom Gilissen has a degree in Information Sciences and works as information specialist for the library of Naturalis.</p>	

18	National Botanic Garden of Belgium (NBGB)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Herbarium of the National Botanic Garden of Belgium contains about 3 million specimens from all over the world, among which are about 50,000 nomenclatural types. Consequently it plays an important role in the conservation of the scientific world heritage that is kept in the European herbaria and musea. Our collections exist of Spermatophytes, Pteridophytes, Bryophytes, Algae, Fungi, Myxomycetes and Lichens. The collections are divided in three main geographical areas: the African, Belgian and General Collections.</p> <p>The department S.P. conserves one of the 25 largest collections of herbarium specimens in the world (more than 2.5 million specimens). This conservation comprises numerous specimens collected in Belgium (more than 300,000 specimens) and historical material from the time that Belgium was interested in the exploration of the New World (e.g. the Mexican collections made by Galeotti, the collection assembled in Venezuela by Funck and Schlim, and the famous Herbarium Martii). In 2007, the importance of the collection was raised by the permanent loan of the ca. 300,000 historical vascular plant specimens of the Van Heurck Museum (AWH). The 'Herbarium Africanum' contains about 95% of all the herbarium specimens collected in central Africa (R.D. Congo, Rwanda and Burundi). It contains also the Herbarium of the Africa Museum (Tervuren), which was already transferred to the National Botanic Garden in the 1930's. The 'Herbarium Generale' aims at worldwide coverage, allowing to find primary information on the earth's floras in the National Botanic Garden.</p> <p>The Cryptogamic department houses more than 500,000 specimens. A large amount of our collections comes from Central Africa. This has always been our main focal point of research. Some historical important mycological collections as De Wildeman & Durand, Bommer & Rousseau, Libert, Westendorp and Rabenhorst are kept here. Also the historical diatoms of Van Heurck are on permanent loan. For Bryology the collections of Douin, Vanden Berghen, Racovitza (Expédition de Gerlache) and Herbarium Martii are of great scientific value.</p> <p>The herbarium is steadily growing and frequently visited by botanists and scientists from all over the world. Acquisition, treatment, insertion and reinsertion, exchange programmes, visitor reception and loan management are important tasks.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Providing a mirror site of the metadatabase to address long-term sustainability within WP2. Content provision and quality enhancement within WP5. Participation in the Helpdesk facility and documentation task in WP7; participation in the OpenUp! Outreach and Dissemination Group.</p>	
<p><i>Key Personnel</i></p> <p>Sofie De Smedt. Master in Biology – option plant science (1998-2003) at Ghent University; September 2003 - February 2004 Attaché at the Ministry of Finances; National Botanic Garden of Belgium since March 2003: coordinator of the API project (African Plants Initiative); since January 2008: coordinator of the GPI project (Global Plants Initiative)</p>	

19	Muséum National d'Histoire Naturelle (MNHN)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The <i>Muséum National d'Histoire Naturelle</i> (MNHN) is one of the world's major natural history institutions and contributes to the knowledge and conservation of biodiversity through research dedicated to the study of biodiversity, evolution and the relation between man and nature, higher education and training, conservation of priceless reference collections, outreach activities in world famous museums, botanical and zoological gardens and providing expertise to the government for environmental policies. The <i>Muséum</i> is a public institution under the dual supervision of the Ministry of Higher Education and Research and the Ministry of Ecology and Sustainable Development. Today MNHN employs 1,880 staff, including 500 researchers; MNHN has 7 scientific research departments (350 students, master's and PhD, 3 scientific dissemination departments, 4 cross-cutting directions. The collections hold 68 million specimens, the museum has over 2 million paying visitors a year.</p> <p>The French GBIF node is located at the MNHN and contributes to promote the GBIF at the national level. The mission of the Global Biodiversity Information Facility (GBIF) is to facilitate free and open access to biodiversity data worldwide via the Internet to underpin sustainable development. Priorities, with an emphasis on promoting participation and working through partners, include mobilising biodiversity data, developing protocols and standards to ensure scientific integrity and interoperability, building an informatics architecture to allow the interlinking of diverse data types from disparate sources, promoting capacity building and catalysing development of analytical tools for improved decision-making.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>MNHN will substantially contribute to the WP7 tasks on helpdesk facility and extending the Network. Participation in the OpenUp! Outreach and Dissemination Group. Due to organisational reasons, the MNHN will not participate in this project as a content provider at this time.</p>	
<p><i>Key Personnel</i></p> <p>Anne-Sophie Archambeau, 2000-2004: Institute Pierre Simon Laplace (IPSL), Data Engineer, creating a metadata database, interaction with the Global Change Master Directory, NASA data base. 2004: Communication officer in the CLARIS project, Laboratory of Dynamic Oceanography and Climatology, Paris. GBIF France Communication Officer at the MNHN (since February 2008), promoting GBIF at national level, contribution to the SEP-CEPDEC program</p> <p>Michael Akbaraly and Delphine Gasc, IT engineers working for GBIF France: working on connecting data providers to the GBIF network, development of web tools, databases administration, and setting up and maintain the IT architecture.</p>	

20	University of Tartu, Natural History Museum (UT-NHM)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The University of Tartu was founded in 1632 by the Swedish king Gustavus Adolphus. It was initially called Academia Dorpatensis. The necessary preparations for creating a university in Tartu (then Dorpat) were made by Johan Skytte, governor general of Livonia. Academia Dorpatensis, modelled after the University of Uppsala in Sweden, was intended to pursue research and advance learning in a wide variety of disciplines. The University of Tartu (UT) has continued to adhere to this approach throughout the centuries, and remains today the only classical university in Estonia. Research at UT focuses on subjects as diverse as medicine and philosophy, genetics and computer science. UT is Estonia's leading centre of research and training. It preserves the culture of the Estonian people and spearheads the country's reputation in research and provision of higher education. As Estonia's national university, UT stresses the importance of international co-operation and partnerships with reputable research universities all over the world. The robust research potential of the university is evidenced by the fact that it is the only Baltic university that has been invited to join the Coimbra Group, a prestigious club of renowned research universities. UT includes nine faculties, five colleges and several regional development units, of which the latter two are situated in different parts of Estonia. To support and develop the professional competence of its students and academic staff, the university has entered into bilateral co-operation agreements with 48 partner institutions in 19 countries. The Museum of Natural History of the University of Tartu (UT-NHM), responsible for this project, was established in 1802. In 2005 the museum operates under the umbrella of the institution of UT Museums. One of the priorities of the Museum of Natural History is participating in the national co-operation network for developing the national biodiversity data base, integrating the museum collections and field studies. The backbone of this relational data base is hosted by UT.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Content provision and quality enhancement within WP4 and WP5. Assisting in the task of extending the Network in WP7; participation in the OpenUp! Outreach and Dissemination Group. Participation in the OpenUp! Technology Management Group.</p>	
<p><i>Key Personnel</i></p> <p>Prof. Dr. Urmas Kõljalg. Since 2006 Professor at UT, Faculty of Science and Technology, Institute of Ecology and Earth Sciences, Department of Botany; Since 2005 – Director of the Natural History Museum, University of Tartu. 1997, Yearly Award, Biosciences and Environment; Estonian National Science Prize. Current grants & projects: Specific and integrated questions in ecology, taxonomy and biogeography of mycorrhizal and lichenized fungi.</p> <p>Ass. Prof. Dr. Mati Martin. Since 2003 Associate Professor at UT, Faculty of Science and Technology, Institute of Ecology and Earth Sciences, Department of Zoology; Current grants and projects: Biodiversity and conservation of insects, Fauna Europea (contact person in Estonia), database curator for the Estonian eBiodiversity (elurikkus.ut.ee).</p> <p>Dr. Kai Vellak. Since 2009 - Since 2004 Senior Researcher at UT. Faculty of Science and Technology, Institute of Ecology and Earth Sciences, Department of Botany; Current grants & projects: Trends in plant diversity of wetland communities with changed management. Bryological diversity and its conservation possibilities in the course of changing climate and increasing human influence.</p>	

21	Species 2000, Reading, United Kingdom (Sp2000)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>Species 2000 is an International Network organisation that creates an index of the world's known organisms. It is a not-for-profit company limited by guarantee registered in England (Company No. 3479405) and registered as an SME with the European Commission. The Species 2000 distributed model synthesises the index from sectors supplied by taxonomic databases across Europe and around the world, many from the major European institutions of CETAF. The programme reached production scale as an EC scientific infrastructure under the FP5 EuroCat project, and as a member of EDIT celebrated coverage of one million species in 2007.</p> <p>Its Catalogue of Life is a global service (www.catalogueoflife.org) recognised by the UN Convention on Biological Diversity, and presently comprising a synonymic species checklist of 1.25 million plants, animals, fungi and micro-organisms, about 2.5 million names, and a comprehensive taxonomic hierarchy. It provides a taxonomic backbone for global biodiversity portals, such as EoL and GBIF, for about 40 national portals worldwide, and is used by scientists in 79 countries. It contributes content and the taxonomic hierarchy used by the uBio taxonomically intelligent tool in the BHL programme.</p> <p>Species 2000 operates a Global Secretariat at University of Reading and an office within the WorldFish Centre at Los Banos, Philippines.</p> <p>Species 2000 provides the residual legal body for the Species 2000 Global Programme, holding its IPR, copyright, domain names, access licences, MOU's, taking responsibility for continuity between major projects and providing the ongoing governance of the global programme. It is structurally a federation, owned and governed by the participants that become its formal members. It is a member of GBIF and TDWG and has MoU's with ITIS, EoL and CBOL.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Providing services to be used to set up the Data Quality Service for zoological names in WP4; providing common names for WP6 multilingual metadata enrichment. Participation in the OpenUp! Technology Management Group.</p>	
<p><i>Key Personnel</i></p> <p>Prof. Dr. Frank Bisby, Professor of Botany, Director of the Centre for Plant Diversity & Systematics, member of the Informatics Research Centre at the University of Reading. He is a founding member of TDWG. Leader of the Species 2000 organisation since its launch in 1996, as well as co-ordinator of the EC FP5 EuroCat project, FP7 4D4Life project and member/WP leader in other EC projects such as ERMS, Euro+Med, ENBI, EDIT, BHL-E.</p> <p>Dr Yuri Roskov, Catalogue of Life and 4D4Life content manager. Executive editor of the Annual Checklist editions 2006, 2007, 2008, 2009 and 2010. Co-director of ILDIS project.</p> <p>Ms Rebecca Mann, Financial and Admin Assistant 4D4Life Project</p> <p>Mr Viktor Didziulis, Systems Administrator 4D4Life Project</p> <p>Ms Annie Carpenter, Publicity and Project Manager 4D4Life Project</p>	

22	Society for the Management of Electronic Biodiversity Data (SMEBD)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Society for the Management of Electronic Biodiversity Data (SMEBD) makes scientifically authoritative biodiversity e-data publicly available for the benefit of science, environmental management and the general public (www.smebd.eu). SMEBD was established to own the intellectual property arising from the creation of the European Register of Marine Species (ERMS). This novel approach to biodiversity e-data management had several benefits, including the shared ownership, which also triggered a continued interest of the contributors in maintaining their data quality and expanding their content. It also efficiently controls the authorisation of data governance (data editing and validation) and further disseminations. It was anticipated that this function may prove useful for other biodiversity databases, and indeed, Fauna Europaea similarly became part of SMEBD.</p> <p>To date, SMEBD's most important role has been in owning of the pan-European checklists data, including the ERMS, Fauna Europaea, Euro+Med PlantBase, and a few Global Species Databases (like WoRMS and FADA). On behalf of the scientists who created these knowledge-based infrastructures, SMEBD authorises institutions to host these databases, and has committees that are responsible for their day-to-day management. These committees find new taxonomic editors and approve loans of the databases to other organisations. The society also finds ways to maintain these and other databases by actively encouraging and supporting members in submitting new funding proposals that will develop these and other biodiversity databases.</p> <p>SMEBD is legally established as a not-for-profit company, with limited liability, and no shareholders, in Ireland. It has annual audits in compliance with company law, and as a partner in EDIT complies with European Commission contractual requirements.</p> <p>There are over 700 members from many organisations in Europe. Current Council members include the leaders of biodiversity informatics initiatives in Europe, including ERMS, Fauna Europaea, Euro+Med PlantBase, FADA, CETAF, MarBEF, EDIT, OBIS, GBIF, Species2000, AlgaeBase, BioCISE, BioCASE, SpeciesBase, PESI and LifeWatch; and representatives of the taxonomic community.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>SMEBD will provide the Liaison with the PESI (EU-nomen) community, especially with respect to zoology (WP4), and with regard to the provision of common names (WP6). SMEBD will also collaborate with RBGK with respect to IPR issues (WP1), particularly with regard to the names metadata (Europe's Taxonomic Backbone).</p>	
<p><i>Key Personnel</i></p> <p>Dr Yde de Jong is head of the department of Biodiversity Informatics of the Zoological Museum Amsterdam, coordinator of PESI, executive manager of Fauna Europaea and council member (treasurer) of SMEBD. Besides he's chair of GBIF's ECAT work area and involved in several biodiversity informatics initiatives and work groups.</p> <p>Dr Ward Appeltans is employed at VLIZ as data manager of ERMS, WoRMS and EurOBIS and involved as task leader in EC projects like MarBEF and PESI. He is member of several committees, including the the SMEBD council (as secretary).</p> <p>Dr Mark Costello has leadership roles in the biodiversity informatics initiatives ERMS, WoRMS, SMEBD (as chair), IABO (member of IUBS), and OBIS. He's also involved in numerous other international activities. He is Managing Director of a research-based ecological consultancy company in Ireland (EcoServ), and as Executive Director of a marine science centre in Canada.</p>	

23	Land Oberösterreich - Oberösterreichische Landesmuseen / Biologiezentrum (LANDOOE)
<p><i>Qualifications, Experience and Knowledge</i></p> <p>The Biology Centre in Linz-Dornach, with its more than 15 million objects, represents the largest natural history collection in the province of Upper Austria and is the second largest in Austria, next to the Natural History Museum in Vienna. The Biology Centre maintains the natural-science collections of the Upper Austrian Provincial Museums. Additionally, the publication series <i>Stapfia</i> and <i>Denisia</i> and three journals (<i>Linzer biologische Beiträge</i>, <i>Beiträge zur Naturkunde Oberösterreichs</i> and <i>Vogelkundliche Nachrichten - Naturschutz aktuell</i>) are currently published.</p> <p>Our museum holds the biodiversity database ZOBODAT, which was founded in 1972 as ZOODAT. The database today includes more than 3.3 million records (approx. 38,000 species and 82,000 pictures) on the distribution of animals and plants mainly from Austria but holds at least one record from 180 different countries. Furthermore we have included literature citations (more than 35,000), OCR scanned books (approx. 500,000 pages) and bibliographies from about 9,000 biologists until now.</p>	
<p><i>Role / Commitment within OpenUp!</i></p> <p>Content provision and quality enhancement within WP4 and WP5.</p>	
<p><i>Key Personnel</i></p> <p>Dipl.-Ing. Michael Malicky started his career as IT Administrator of the Biodiversity Database ZOBODAT in 1991 at the Johannes Kepler University in Linz, Austria. Since 1999 he is also head of the IT at the State Museum of Upper Austria. 2002-2005 EU Project ENBI, WP Co-ordinator; 2002-2006 EU Project SPECIES 2000 Europa, Content Provider; since 2001: several projects within GBIF Austria; BHL Europa since 2009, 4D4 Life since 2009.</p> <p>Mag. Fritz Gusenleitner became custodian for Entomology at the State Museum of Upper Austria in 1981. In 2003 he became Deputy Director of the Biology Centre/State Museum of Upper Austria. In early 2011 he will start an internal project: „Digital type material (Entomology) of our natural history collections“ together with Michael Malicky.</p>	

B3.2a. Chosen Approach

Overall Strategy

The strategy to open up the natural history collection domain for EUROPEANA is based on enabling the natural history institutions to produce standard conformant multimedia objects and metadata that can be channelled directly towards EUROPEANA by means of a largely automated aggregation procedure.

Structure and Organisation

The OpenUp! project does not aim to develop and implement an entirely new infrastructure for the provision of Natural History multimedia objects to EUROPEANA. Rather, the existing BioCASE/GBIF network will be re-used and extended in a way that enables a consistent and EUROPEANA-compliant view on millions of objects and their associated metadata held by European Natural History facilities.

The basic information flow will consist of i) data provider services, giving access to multimedia collections based on the established GBIF/BioCASE protocols and software, ii) a data aggregation component which harvest metadata from the individual data providers, maps data elements used in data standards of the natural history domain to those relevant for EUROPEANA, and provides all data together with thumbnails/soundbits and links to the full multimedia objects through a single OAI-PMH Service access point to EUROPEANA.

Apart from the establishment of the basic information flows, OpenUp! will address metadata quality and enrichment as one of the central project goals. Again, we will not set up a fully new infrastructure for quality control, which would be at risk of becoming inactive with the end of the EU-funded phase. Instead, we will enable the existing network of BioCASE/GBIF data providers to control their data quality efficiently using a data quality toolkit provided by OpenUp! The toolkit will be a homogeneous compilation of data quality services including scientific name services (botanical and zoological as well as common names), data integrity services (testing syntax, controlled vocabularies, references), and geographic metadata services (coordinate data, geo-referencing). In addition to its role for detecting data quality problems, the data quality toolkit will be used to enrich existing metadata for example by appending common names to objects in provider databases.

Technical stability and reliability is important for OpenUp! and will be addressed in two ways: To provide the basis for the deployment of load-balancing mechanisms, the central OpenUp! content aggregator serving as the central EUROPEANA gateway, several system mirrors will be set up. They will also be utilized in case of a technical failure of the central aggregation systems. The possibility of an outage of individual OpenUp! data providers is addressed by the caching capabilities of the aggregation system always holding the Metadata as well as thumbnails for the entire network. To be able to promptly identify malfunctions of data providers, a content availability control mechanism will be put in place constantly testing data providers and flagging the unavailability of content if necessary.

OpenUp! will introduce innovative and efficient measures for networking multimedia objects and handling their associated metadata in the community of European natural history collection holders. These measures have to be documented appropriately for both consortium members adopting the OpenUp! technical specifications and quality control mechanisms and new data holders who want to join the network. We will collect

all documentations and best practices documents using a “Scratchpad”, a Drupal-based social networking tool tailored for the needs of collaborations in biodiversity-related communities. Snapshots of this constantly evolving documentation resource will be prepared in more “traditional” forms as part of the OpenUp! website, project leaflets, and best practice handbooks. A data provider helpdesk will ensure that new data providers will be assisted with setting up the data provider services and deploying data quality toolkits.

OpenUp! will also be promoted through its participation in the relevant events (workshops, conferences, meetings) of the natural history community. A regular newsletter will inform about the project progress and other relevant project news.

Content Workflow (Methodology)

Fig. 2 gives an overview of the proposed data processing steps in the mobilisation of natural history institution’s content for EUROPEANA. Details are given in the following sections.

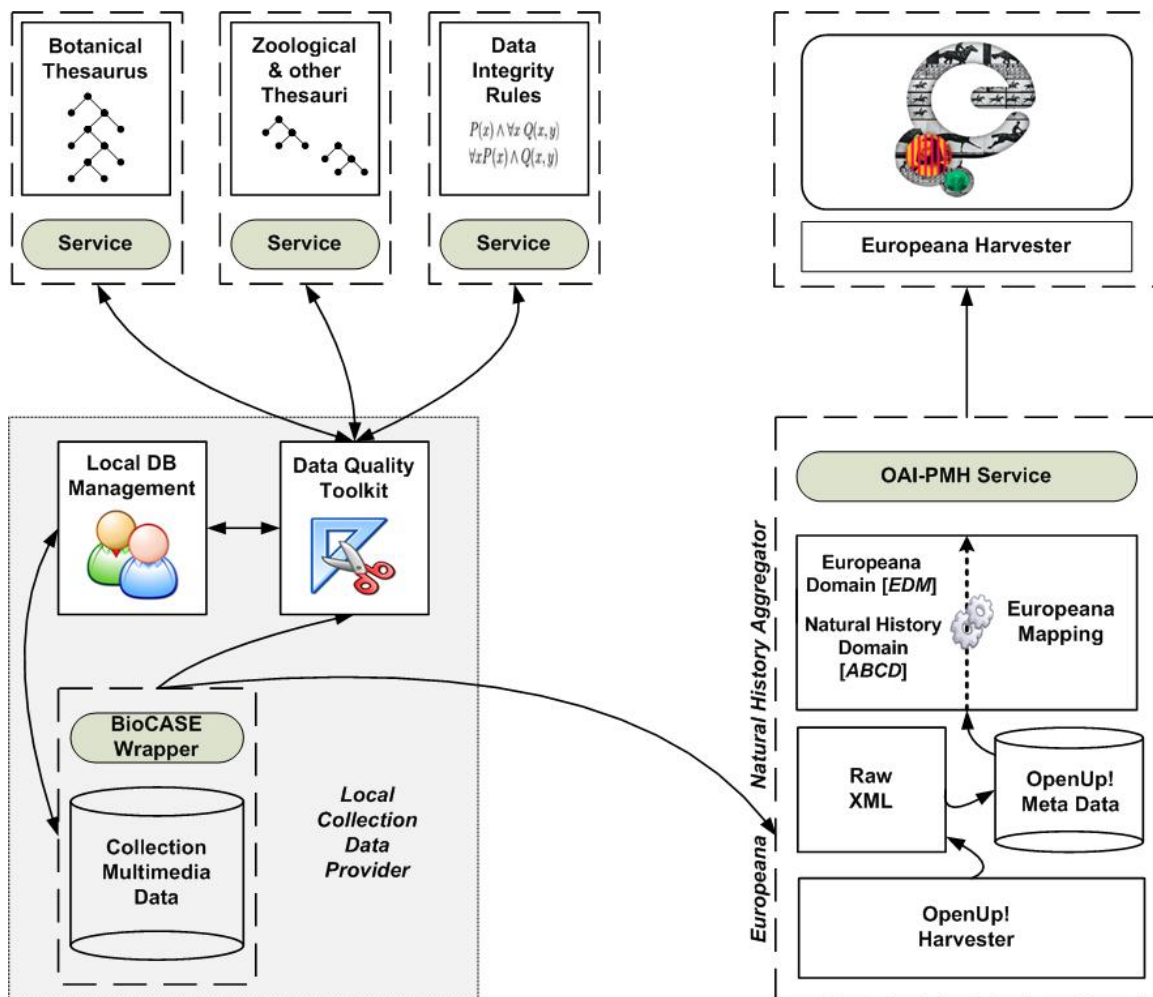


Fig. 2: At the centre of data provision is the local **collection database** holding records with references to multimedia objects. The collection databases are managed with local tools that may differ widely between collections, both with respect to content as to RDBM technology. The local database is accessible by the **BioCASE Wrapper**, which performs the transformation to ABCD standard XML and thus allows access by standard tools (Harvester and Data Quality

*Toolkit). The people conducting the **Local DB Management** interact with the database to introduce corrections revealed by the Data Quality Toolkit. The **Data Quality Toolkit** software interacts with the BioCASE Wrapper to access the data in the database, and uses services to conduct integrity checks with respect to names and other data integrity rules, the results of which are fed back interactively to the local DB management. It will also include an interface explaining XML errors that are discovered in the course of the harvesting process.*

*At the aggregator level the **OpenUp! Harvester** will access the local wrappers using the OpenUp! Metadata held and cache the ABCD XML files. Subsequently, these will be transformed to EDM conformant data using the **EUROPEANA Mapping** and provided by means of an **OAI-PMH Service** to EUROPEANA.*

Metadata Indexing and Quality Control (Methodology)

OpenUp! will ensure quality metadata for the multimedia objects provided to EUROPEANA using two approaches: metadata inclusion and cleaning at the source (WP4 and WP5) and establishing an automated quality control and alerting mechanism at the aggregation point (WP2).

Why separating botanical and zoological WPs? WP4/5 will coordinate the metadata indexing and quality control measures taken at the content providing institutions. The reasons to carry out this activity in two work packages are the different approaches taken with respect to assembling the metadata vocabularies and the given grouping that exists in the community. For botanical name data one of the partners (RBGK) is already part of an international effort to provide a global metadata vocabulary, which they are willing to incorporate into OpenUp! Nothing comparable currently exists for zoological names. Of the 18 participating content providers, 5 offer only botanical content (BGBM, IBSAS, NBGB, RBGE, RBGK), 4 offer only zoological and paleontological content (MfN, ZFMK, MRAC, RBINS). In the other institutions, these subject areas are clearly separated at a high administrative level (e.g. in Helsinki, where the Zoological Museum and the Botanical Museum are at completely different locations). This also applies mostly to content database management. The intense coordination necessary will be much facilitated by using the established communication pathways that exist at work level between zoologists and botanists, respectively. Arguably, these arguments may even speak for further separation (of, e.g., paleontological, entomological, and mineralogical communities), but we decided to pragmatically include palaeontology and mineralogy with zoology and not to separate the zoological realm any further, given that this separates the amount of content presently available into two more or less equal parts.

Applying EUROPEANA Metadata: The content standard ABCD Schema (Access to Biological Collection Data) contains a comprehensive metadata section for individual objects as well as entire datasets which covers the metadata elements presently required by EUROPEANA (ESE 3.2). The exact mapping between ABCD elements and ESE elements will be worked out by the metadata modelling task carried out by AIT in WP3. Care needs to be taken to distinguish data that refer to the origin of the analog object (where it was originally found) and the data referring to the current location of the analog object. The EUROPEANA-related ABCD metadata elements have to be communicated back to the institutions (via WP4 and WP5), in order to ensure that their database wrapper produces ABCD metadata that can be transformed into ESE elements without semantic ambiguity. The European BioCASE collection data provider helpdesk operated by the SYNTHESYS project at the BGBM and at the Natural History Museum in Stockholm will assist content providers to adjust their mappings, where necessary.

Ensuring Provision of Quality Names: All objects provided in the OpenUp! context will carry a scientific name as the result of the taxonomic identification of the organism the object represents, be it a drawing, sound file or actual specimen. The taxonomic identification is also a core element of the ABCD specification. For EUROPEANA, the scientific name will form the first part of the dc:title element. The entire title will be assembled in accordance with traditions of the respective sub-discipline and depending on the kind of object. For example, for a botanical herbarium specimen object, the name will be followed by the personal name of the collector, his or her collection number, and the standard abbreviation of the herbarium.

In combination with the OpenUp! names vocabulary (which will provide alternative titles, where appropriate), this will allow to link the content to all other occurrences of the name in EUROPEANA, for instance, the literature digitised by the BHL project. It is therefore of paramount importance to ensure the proper application of names in the data provided to the aggregating centre.

At the source the content provider will enhance the quality of the name metadata of the object (and the over-all system) by taking the following steps with regard to their database records that provide access to multimedia content fit for EUROPEANA:

- Elimination of orthographic variants and misspellings in the source database(s)
- Mark-up of names not resolvable to the metadata vocabularies, checking of other sources of name information⁵, if found to be a name in good scientific standing, notification to OpenUp! for inclusion in names vocabulary.

In an iterative process, the names will thus be corrected until all relevant entries in the provider's database system can be mapped to the OpenUp! names vocabulary. At this level, it will be up to the content provider if the name usage is updated (i.e. if names that are treated as synonyms in the OpenUp! Vocabulary are replaced with those that are accepted there).

Ensuring Provision of Quality Geographic Metadata: This refers to the location of the original site of the analog object. Natural history objects usually carry more or less detailed geographical provenance information; usually the better in quality the more recently the object has been created. Modern collection objects usually come with point references to geographic locations (i.e. coordinates). For the user of EUROPEANA, geographic area designations (place names, country) are more interesting, however, as present in the original materials these present major problems with regard to language, orthography, historical meaning, etc. This project will not be able to resolve these, but can provide some steps towards a solution. The data quality toolkit will include possibilities to check the database against services that provide geographical names, currently for example the open access Geonames server (www.geonames.org). In the future we hope to be able to use EUROPEANA's own services for this purpose. Where the database holds point location data, these can be checked for consistency against the EDIT Coordinate Checker. The organisation for Biodiversity Information Standards (TDWG) has published the "World Geographical Scheme for Recording Plant Distributions", and the PESI project adheres to this with minor additions for the

⁵ In sequence of priority: PESI taxon match tool [forthcoming, for European taxa only], www.catalogueoflife.org [Species 2000 and IT IS data, incomplete world wide coverage]; www.tropicos.org and www.ipni.org [for plant names only]; www.ubio.org;

European continental checklists in general. The EDIT GeoPlatform tools can be used to assign TDWG standard areas to the records that provide coordinates.

The screenshot shows the OpenUp! website interface. At the top left is the 'europeana think culture' logo. A search bar contains the text 'Mexican pistachio' with a 'Search' button. Below the search bar, it says 'Matches for: Pistacia'. The main content area displays 'Item details' for 'Pistacia mexicana'. On the left side, there is a sidebar with 'Related content' and 'Actions' sections. The 'Item details' section includes a thumbnail image of a herbarium specimen, a 'Return to results' link, and a 'share' button. The main text area contains the following information:

- Title:** Pistacia mexicana, Mexican pistachio, Mexikanische Pistazie, Pistacho mexicano, Mexicaanse pistache
- Date:** 1804; 2005-10-18
- Description:** Type of Pistacia mexicana Mexico: Chilpancingo [Chilpanzingo].
- Leg.:** A. J. A. Bonpland & F. W. H. A. von Humboldt. B -W 18334 -01 0. Mexican pistachio, Mexikanische Pistazie, Pistacho mexicano, Mexicaanse pistache
- Format:** 39.0 x 23.4 (cm)
- Source:** BGBM Herbarium
- Rights:** Creative Commons

At the bottom of the page, there are navigation links for 'Using Europeana', 'Accessibility', 'Sitemap', 'Terms and conditions', 'Privacy', 'Language policy', 'Contacts', and 'Send us feedback'. A 'co-funded by the European Union' logo is also present.

The figure shows two digital images of herbarium specimens of *Pistacia pubescens*. The left image is a full view of the specimen, showing a branch with pinnately compound leaves and small, round fruits. A color calibration chart and a ruler are visible in the bottom left corner. The right image is an enlarged view of the specimen, showing a close-up of the leaves and fruits. Both images have a 'Save as JPG...' button in the top left corner and a 'Close this window' button in the bottom right corner. Below each image is a citation:

Image should be cited as: Röpert, D. (Ed.) 2000- (continuously updated): Digital specimen images at the Herbarium Berolinense. - Published on the Internet <http://www2.bgbm.org/herbarium/> (Barcode: B -W 18334 -01 0 / ImageId: 295196) [accessed 27-May-10].
Direct link for this Image
© Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin

Fig. 3: An example for one of the types of objects OpenUp! will deliver to EUROPEANA. Above: OpenUp! Plant object searchable by scientific name and different common names in Europeana. This links to OpenUp! content provider showing the original object (below, left side). The enlarged view (below, right) shows in detail what the Europeans A. Bonpland and A. v. Humboldt held in hand when exploring Mexico's natural heritage in 1803/04.

Content Provision at the Source

The individual OpenUp! data provider will use the BioCASE provider software already installed at most of the participating content providing institutions to make their databases accessible to the metadata harvester.

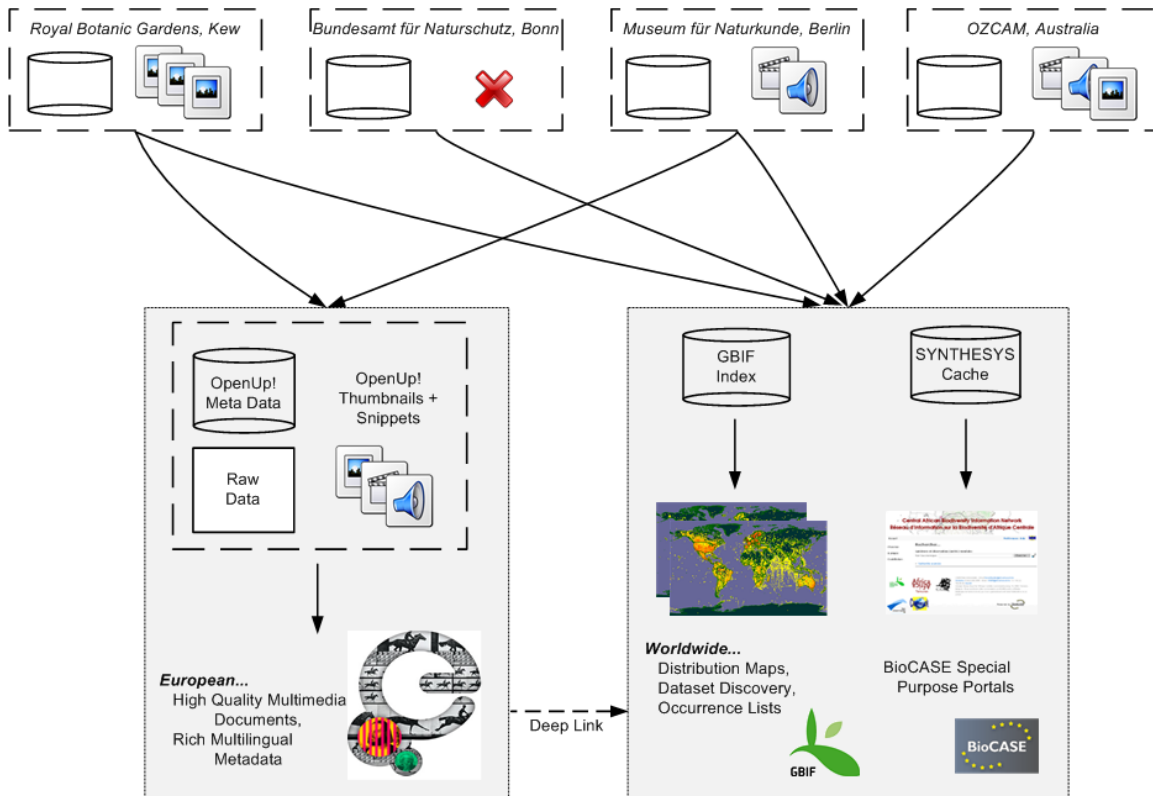


Fig.4: Information flows in the GBIF and OpenUp! networks. Content providers (top row) use the BioCASE provider software to serve both EUROPEANA and GBIF/BioCASE networks. OpenUp! metadata provided to EUROPEANA makes it possible to link from the image to the respective GBIF data. The GBIF portal provides access to textual data and a number of services. BioCASE portal software developed by the EU infrastructures project SYNTHESYS provides customised access to GBIF data.

Content Aggregation

In order to be able to offer a single EUROPEANA information gateway to a great number of distributed Natural History Information providers OpenUp! will set up a central aggregation system. This will be responsible for harvesting multimedia metadata from the data providers, storing them into a central caching system, transforming them from the domain standards ABCD and Darwin Core to the EUROPEANA metadata schemes ESE and EDM, and making them consistently and instantly available to EUROPEANA through a standardized OAI-PMH harvesting service. A more detailed description of the software components used for the aggregator is given in the “software enabling the OpenUp! workflow” section below.

The harvesting of individual data providers will be controlled by the respective provider database management to avoid unnecessary harvesting cycles in cases where no significant improvements of the provider database were made. “Harvesting on request” will also make sure that a new harvesting round can always be triggered if an

information provider wants to submit an improved data set to the EUROPEANA aggregator.

Thanks to the data quality toolkit and the data cleaning activities at information provider level, the aggregator can to a large extent count on the correctness of scientific Latin names contained in the metadata describing the natural history multimedia objects. However, due to varying taxonomic views collection holders might assign different (correct) scientific names to the same organism. Instead of trying to resolve this “plurality”, OpenUp! will display it to EUROPEANA Users. For this, the Aggregator will use the different quality services for scientific names to explore the synonymies of a given scientific name that comes with a multimedia objects. The mapping to EUROPEANA will then use the accepted name (in terms of the quality services) for the Dublin Core Title field. Synonyms will be used for alternative titles. In this way, synonyms will be displayed and searchable at EUROPEANA portal level.

Content Access and Provision for EUROPEANA

The links to the content provider’s multimedia content will be directed without further diversion directly to the multimedia file or presentation selected (one-click linkage).

The OpenUp! Availability Checker will regularly query random entries in the database for content provider’s server accessibility and multimedia file transfer performance. The results will be logged and in case of performance problems, the provider will be notified. In case of enduring problems, the provider can be marked up for exclusion from the metadatabase until the problem has been resolved.

On the other hand, OpenUp! will work with EUROPEANA to develop a mechanism communicating access levels and statistics for the content back to the data providers, so that they can assess the impact of their content.

Software Enabling the OpenUp! Workflow

BioCASE Provider Software

This set of tools was developed in the course of the EU-funded BioCASE project (2001-2004). It is an open-source, system-independent software module developed to enable collection database holders to link their collections to international data networks without having to modify the implementation of their systems. The BioCASE wrapper is currently (May 21, 2010) used by 83 data providers to serve 1430 datasets with a total of 29,475,419 records to the GBIF and BioCASE networks. A further 4-5 million records are expected from Australian herbaria, which recently installed BioCASE providers in the framework of the Atlas of Living Australia programme.

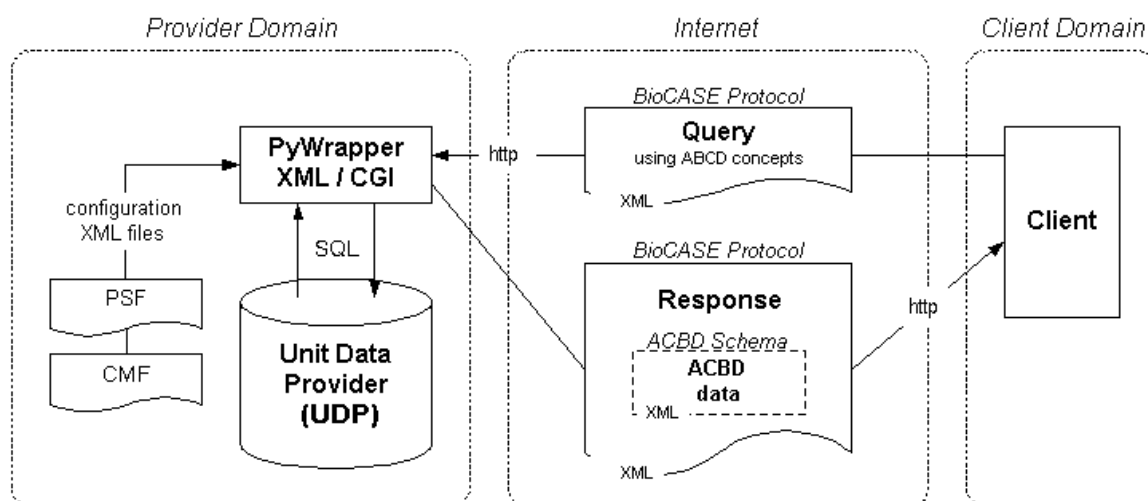


Fig. 5: The Biocase Provider Software

The BioCASE Provider Software (BPS), an xml data binding middleware, is used as an abstraction layer in front of a database. After local configuration the database is accessible as a BioCASE service - as defined by the BioCASE protocol - and can be used to create distributed heterogeneous information systems (Fig. 5). The BPS is agnostic to the kind of data being exchanged and any conceptual schema, such as ABCD for the GBIF and BioCASE network can be used to set up distributed networks.

The provider software is a collection of tools to be installed on the data provider's webserver. The core part of the provider software is the PyWrapper software. It is an XML/CGI database interface written in object-oriented Python, which allows standard access to a variety of database management systems and arbitrarily structured databases. This software therefore "wraps" the database into a standard XML format. Since version 2.0 the core PyWrapper libraries are bundled with this package. The configuration assistant includes since version 2.0 a so called Concept Retrieval Interface (CRI) to find appropriate concepts in the XML standard to map the provider's data to.

The connection to the database is done by different database modules that use SQL templates. This way it is easy to build new DB modules for different DB vendors. Non SQL capable databases will not be supported. There are a variety of DBMSs already supported by the wrapper. Further information is found on the documentation website⁶.

No OpenUp! resources will be necessary for this software segment, the BioCASE software is working and in use. A much-needed revision of the documentation and a new release is part of the work plan of Networking Activity 3 of the SYNTHESYS I3 Infrastructure Project to be carried out over the next year.

Data Quality Service for Botanical Names

The data quality service for botanical names offers a single and easy-to-use access point to an existing thesaurus system for botanical names with global coverage hosted at Kew Botanic Gardens based on http and xml (the OpenUp! Botanical Names Vocabulary). The service will be called using an http URL transmitting a list of Latin names to be checked:

<http://Botany.OpenUp.org?names=Calendula+aegyptiaca+Pers.%2Calendula+crisagalli+Viv.>

⁶ http://www.biocase.org/products/provider_software/index.shtml#download

As a response the service returns an xml-encoded result set containing matching records for each name, which was part of the query:

```
<ResultSet>
  <SearchedName Name="Calendula aegyptiaca Pers.">
    <Result Found=1 ID="AD662D33-6934-459C-A128-BDF0393E0F44">
      <Message></Message>
      <Status>Synonym</Status>
      <Accepted Id="DF000C7E-AE0C-3B15-B730-DFD2EF15CB91">Calendula arvensis (Vaill.)
      L.</Accepted>
      <CommonNames>
        <CommonName Language="German">Acker-Ringelblume</CommonName>
        <CommonName Language="French">Souci des Vignes</CommonName>
        <CommonName Language="Slovak">Nechtík roľný</CommonName>
      </CommonNames>
    </Result>
  </SearchedName>
  <SearchedName Name="Calendula cristagalli Viv.">
    <Result Found=0>
      <Message>No exact match for this name</Message>
      <FuzzyMatches>
        <FuzzyMatch ID="AA134B22-6934-459C-A128-BDF0393E0F44">
          <MatchingName>Calendula crista-galli Viv.</MatchingName>
        </FuzzyMatch>
      </FuzzyMatches>
    </Result>
  </SearchedName>
</ResultSet>
```

Specifically, each response contains the name which has been queried and a flag indicating whether an exact match has been found in the botanic thesaurus. If so, its status and Identifier, the accepted name and identifier, as well as a list of known common names in different languages will be returned. If no exact match can be found, a list of fuzzy matches with similar Latin names will be returned. The implementation of fuzzy searches will follow the TaxaMatch Algorithm by Tony Reese, which has been designed particularly for the purpose of finding similar scientific biological names in large datasets. TaxaMatch has several successful implementations for example in OBIS (Ocean Biogeographic Information System), Euro+Med Plantbase (ww2.bgbm.org/EuroPlusMed)), and the biological collection Web-Portal software SilverCollection (<http://www.silverbiology.com/>).

The essential components for this service are in place, they need to be assembled and be made interoperable for OpenUp! purposes.

Data Quality Services for Zoology

Ideally, the data quality service for zoological thesauri will follow the very technical protocol which will be implemented for the botanical domain. The homogeneity of the service level will be ensured by a specification phase involving all partners related to implementations of OpenUp! data quality services as well as developers of the Collections Data Quality Toolkit responsible for the provision of services in an integrated user interface. However, compared to the botanical domain, the “information space” for zoological names is much more fragmented, and a single resource acting as the OpenUp! Thesaurus from zoology can not be identified. The data quality service for zoology will therefore be composed of a set of thesauri (e.g. Species 2000 & ITIS Catalogue of Life and PESI) which together provide a complete as possible coverage of zoological names (the OpenUp! Zoological Names Vocabulary). For this we will need an additional layer between the xml-service and thesaurus databases, which distributes queries to the databases and wraps up their results into a single and consistent service response. This infrastructure can also be used to link up thesauri for additional domains such as fossils.

Again, the essential components for this service do not need a major development effort, but technical coordination will make some resource expenditure necessary.

Data Integrity Services

Apart from improving enriching and improving Latin scientific names and common names, data quality assessments within the GBIF/BioCASE infrastructures identified serious quality problems related to the adherence of Metadata to controlled vocabularies and other syntactical and semantic instructions, which have to be addressed by OpenUp! data quality measures. For this we will expand an existing service for data quality checks (GBIF indexer, www.gbif.org; Holetschek et al. 2009⁷) which has been prototyped in the context of the 6th Framework project SYNTHESESYS. The rule-based system checks primarily the syntax of data elements using controlled vocabularies and an extensible set of regular expressions. The set of rules will be carefully revised to ensure the coverage of EUROPEANA-requirements. We will also add more sophisticated rules checking the uniqueness of identifiers and the plausibility element combinations for example.

The refinement of the existing services demands some resources from the OpenUp! project.

Collections Data Quality Toolkit

The set up of data quality services detailed above will for scientific names from different organismic groups and other data elements relevant for the metadata associated with Multimedia objects will enable Natural History data providers to critically assess the completeness, correctness, and compliance of their information and to correct and enrich them according to the needs of both the EUROPEANA and the GBIF/BioCASE network. However, the services will be primarily designed for machine consumption and they will be hosted at different institutions so that a User interface for convenient and unified access to all services would still be required. We will put together this Collections Data Quality Toolkit as a local software built into an Office spreadsheet application calling the relevant web services in the background. It will be easy to install by collection data providers and it will offer an interface database managers are normally very used to. Being an office application, it has also the benefit of full integration into the workflow of database managers in the Natural History Domain, where Office-Products are still the mostly used instrument for data management tasks

The integration of the Data Quality Toolkit spreadsheet application and the decentralised and specialised Metadata enrichment services will be realised with RESTful webservice, which can be integrated into the spreadsheet with comparably little effort. Users of the toolkit will copy lists of Metadata terms (e.g. scientific latin names used in their collection database) into the spreadsheet which will trigger a call of the relevant quality services. The responses will consist of xml-documents containing lists of common names, similar scientific names, as well as related terms such as synonyms and misapplied names (see example on page 63-64). They will be parsed and inserted into the spreadsheet for transfer into the collection database and enrichment of the existing Metadata.

⁷ : Holetschek, J., Kelbert, P. Müller, A., Ciardelli, P., Güntsch, A., Berendsohn, W. G.: International Networking of Large Amounts of Primary Biodiversity Data. In: Fischer, S. et al. (ed.): INFORMATIK 2009, Lecture Notes in Informatics (LNI) 154 - pp. 23; 552-564.

The Data Quality Toolkit will also assemble other tools that data providers can use to test the conformance of their metadata to standards. For example, the BioCASE Provider Software comes with an easy-to-install Local Query Tool, where the data produced by the local wrapper can be queried and seen. Another functionality is to feed back possible conflicts in the metadata that surface at the harvester level.

Putting together this package needs to be done early in the project, and some resources should be provided to follow up the experience of the users in the course of their metadata enhancement processes.

OpenUp! Harvesting and EUROPEANA Transformation

The OpenUp! Network will need a software component responsible for harvesting connected Multimedia data resources, storing the metadata xml-files into a centralized file system and compiling the OpenUp! Metadatabase based on these files. We will use and extend the existing GBIF Harvesting and Indexing Toolkit (HIT, <http://cdn.www.cbd.int/gti/doc/gbif-HIT-en.pdf>, <http://code.google.com/p/gbif-indexingtoolkit/>) for this task, which is an open source harvesting tool for distributed GBIF- and BioCASE-compliant collection data. The HIT is open source and presently in a prototype state. We have contacted the developers, carefully tested a trial installation, and concluded that the harvesting section responsible for collecting and storing the xml metadata is mature enough for direct use in the OpenUp! endeavour. The parsing and metadata extraction part still needs a development effort in particular for selecting data elements not yet considered by the GBIF developers but relevant for OpenUp! and EUROPEANA. We will further develop HIT towards full functionality for OpenUp! and deploy it as the central harvesting facility.

The metadata generated by the parsing process will be stored in the OpenUp! Metadatabase still following the concepts used in the Natural History Domain and comprehensively defined in the ABCD standard for biological collection data exchange. The metadatabase will then serve as the basis for the transformation process from ABCD concepts to the elements defined by the EUROPEANA Metadata standard (EDM), which will then be served to the EUROPEANA harvester through an OAI-PMH compliant harvesting service.

Little additional resources will be used here for the adaptation of the GBIF software, however, since EUROPEANA requirements for metadata may change during the course of the project, some resources for adjustment

OAI-PMH Interface

Part of the OpenUp! Platform will serve as an OAI Provider for EUROPEANA. This provider can be harvested by EUROPEANA via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). The platform will be updated regularly in order to expose the data in accordance with the current EUROPEANA metadata schema (to date: ESE schema v3.2.2; <http://www.europeana.eu/schemas/ese/>) and to the future EDM. The data mappers for all OpenUp! Datasets will be managed and updated accordingly. The ESE schema f.e. includes data fields about the digital object described, but also a preview (image), a presentational view (portal page, etc.), the content providers' names, rights attached to the digital objects etc... In close cooperation with the EUROPEANA technical office a standard procedure for the continuous upload mechanism will be elaborated.

Availability Checker

One of the implications of the distributed nature of the Biodiversity Information infrastructures and its collection networks is that resources associated with technical less equipped data providers might temporarily be unavailable. OpenUp! recognizes this shortcoming and offers a single access point for EUROPEANA which has both a complete aggregation of metadata available through the OpenUp! network as well as image thumbnails (and audio and video surrogates) ensuring that an outage of a local data provider will not effect system malfunctions at EUROPEANA portal level. In addition, we want to provide a warning flag at metadata record level which informs about the availability of the respective full multimedia file. For setting this flag, a software will be implemented which continuously tests OpenUp! data providers and their content for accessibility and sets the warning flag accordingly.

The software will be implemented at the NHM.

Metadata Vocabulary Creation and Provision (Methodology)

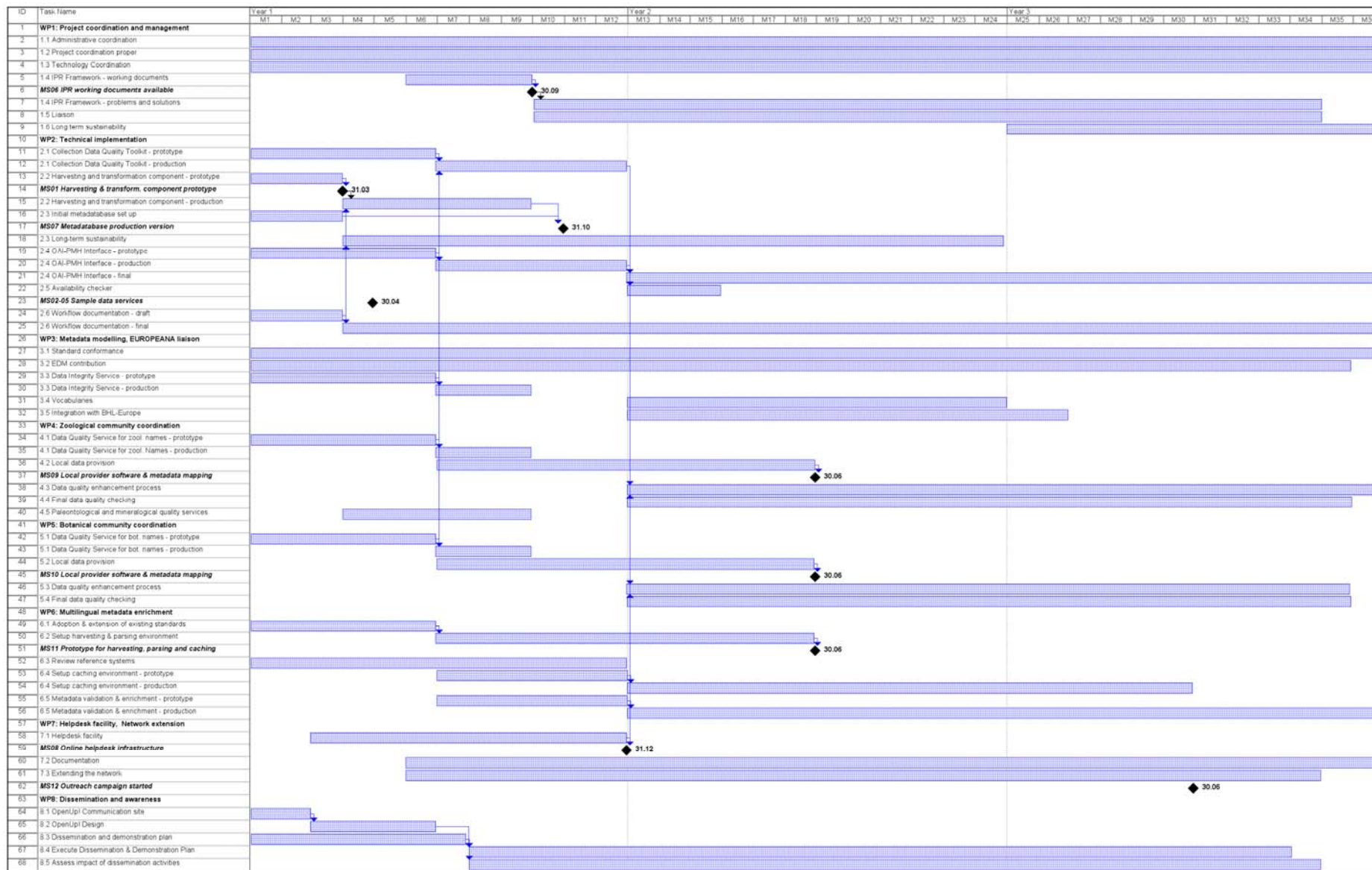
The metadata enrichment process will allow mapping of metadata to standard vocabularies of names and geographic locations, and other data items of public interest, as far as resources allow (e.g., names of explorers etc.). These mappings can be done in an automated process and batch processes. The Globally Unique Identifiers provided by the services will be communicated back to content providers and, where appropriate, incorporated into the OpenUp! metadata. OpenUp! will adhere to the proposed concept of the EUROPEANA Resolution Discovery Service for persistent identifiers (ERDS).

In cases where automatic services will not return satisfactory results due to the use of individually created vocabularies or the use of individual acronyms and codes the process will be supported by tools that enable the content provider to align their vocabulary to the standards. These tools will be integrated with the Collections Quality Enhancement Toolkit (see above).

Wherever feasible OpenUp! will adopt existing vocabularies and name infrastructures; we will build a gateway to various vocabularies and web services relevant to OpenUp! However, during the project lifetime the creation of various OpenUp! vocabularies for cross-domain usage may turn out to be useful. These new evolving vocabularies will then be developed as vocabulary web services in SKOS format.

Of particular importance in the domain are the vocabularies put together for scientific and common names of organisms in WP5, 6 and 7 of the project, which will be integrated into the data quality services for botany and zoology as described above. Efforts of the community to create a global names infrastructure are under way, and with GBIF, Sp2000 and SMEBD the project includes the key players in these activities. However, judging from experience it would be too early to count on these developments from the start on in the OpenUp! project, but the procedures set up in OpenUp! will be integrated with the outcomes of these efforts.

B3.2b. Work Plan



Performance Monitoring Table

No.	Project objective / expected result	Indicator name	Expected Progress		
			Year 1	Year 2	Year 3
1	- A single access point for EUROPEANA to distributed multimedia content in the natural history domain	Number of OpenUp! multimedia objects provided through EUROPEANA OAI-PMH harvesting interface	200,000	600,000	1,100,000
2	- Validation mechanisms to ensure compliance with EUROPEANA standards - Put into place procedures to enrich object metadata at the source level and control compliance with EUROPEANA standards	Data Quality Toolkit installations for OpenUp! Consortium Members	10	15	18
3	- Extend participation in content provision beyond the original consortium	Non OpenUp!-member data providers equipped with OpenUp! software (Provider software and data quality toolkit)	0	5	10
4	- Provide a multilingual metadata vocabulary and thesaurus for organism names, which can be used to enhance cross-linking for EUROPEANA content	Number common name languages provided by botanical and zoological thesauri	5	15	30
5	Making the structures sustainable by integrating them into the established institutional framework and the existing networks in the domain.	Number of institutions actively supporting OpenUp! helpdesk	2	4	6
6	Mirror the aggregation site as well as the documentation to at least 3 sites across Europe to ensure performance and availability.	Number of OpenUp! aggregation site mirrors	0	1	3

B3.3. Project Management

i. Overall Project Management Structure

OpenUp! includes 23 partners and an effort is made to include additional content providers into the network (though not formally into the project consortium). So a carefully designed management structure is needed to ensure an effective management of the project.

The OpenUp! project will be managed through the following instruments:

- The Project Coordination (CO): BGBM
- The Project Assembly (PA): Representatives of all members of the Consortium
- The Steering Committee (SC): Work package leaders
- Working Groups:
 - Technology Management Group (TMG): Representatives of technological tasks
 - Outreach and Dissemination Group (ODG): Operatives of WP7 and 8 and interested parties.
- Work Packages

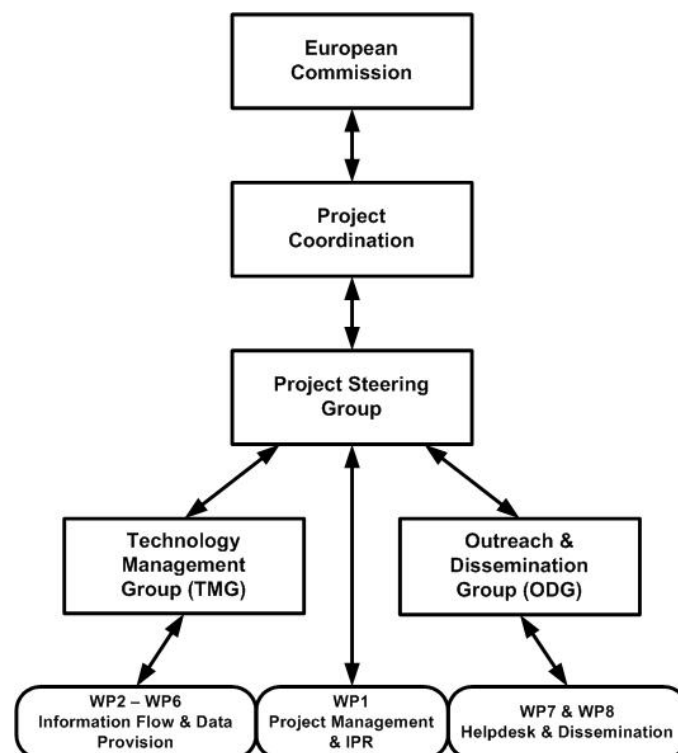


Fig. 6: A simple view of the project management hierarchy

Fig. 6 depicts a simplified view of the management structure. However, Fig. 7 shows some of the recognised complexity of the tasks for these groups. Fortunately, OpenUp! can count on extensive project management experience, not only for the part of Coordination, but also by WP Leader institutions and the other participants.

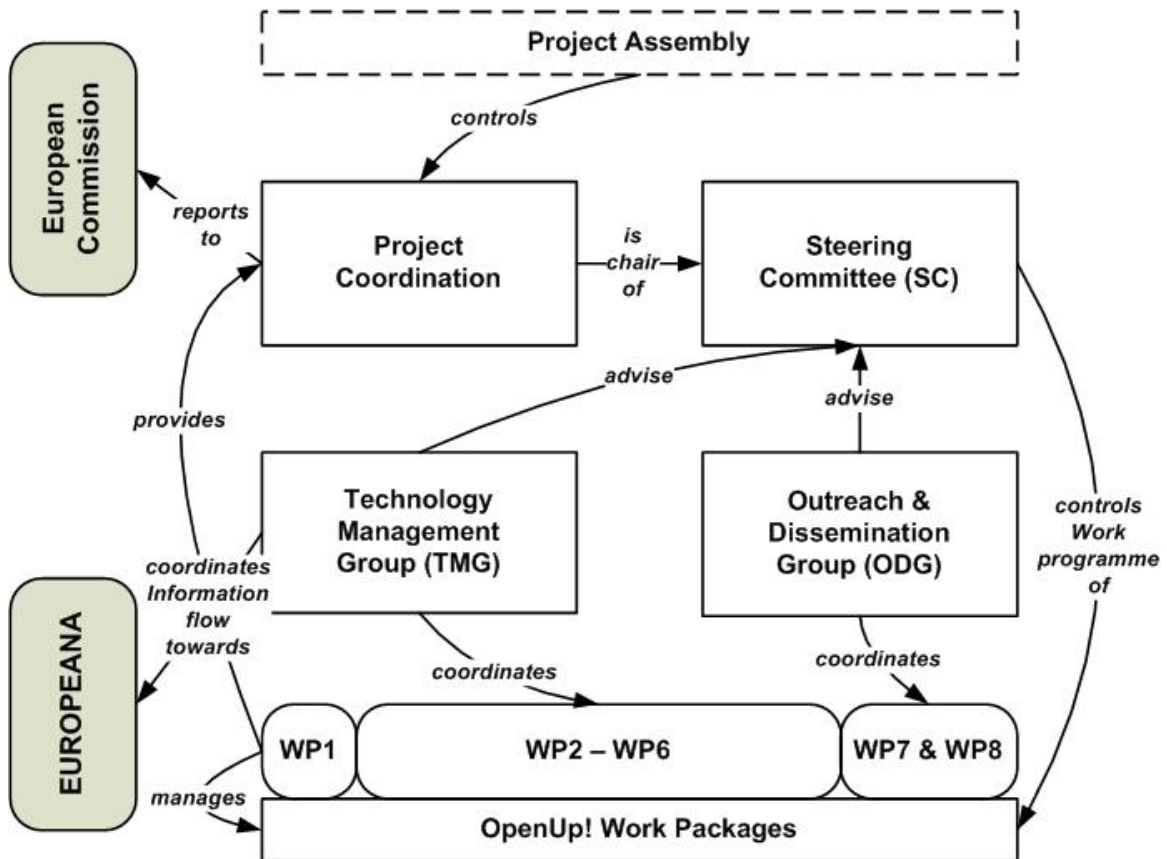


Fig. 7: General relationships between the project management instruments in OpenUp!

ii. Project Coordination (CO)

OpenUp! will be coordinated by Prof. Dr. Walter G. Berendsohn, Department Director at the Botanic Garden and Botanical Museum Berlin-Dahlem of the Freie Universität Berlin (BGBM). Berendsohn heads a successful team with proven administrative, scientific and organisational capabilities. As described in section B.3.1 (p. 33), Berendsohn has extensive experience in leading EU projects and project work packages from 1993 onwards, as well as in national projects and funding programmes.

In its role as Project Coordinator, the BGBM will ensure the running of the project in accordance with the contract and the work plan. The BGBM will be responsible for the project administration, project coordination proper, and for the over-all coordination of technology and quality assurance.

BGBM will use a project management tool (Microsoft Project Server) to ensure proper administration of the project

Administrative responsibilities include:

- Financial resource planning, monitoring and control: Claiming, distribution, accounting and reporting of funds distributed from the financial contribution from the Commission.
- Liaison between the Commission's financial services and the project consortium.

- Ensuring effective communication of administrative tasks and issues within the consortium.
- Production and consolidation of cost-statements and set-up of the Web-based project management portal.
- Organisation of general meetings, progress reviews and Project Assembly and Steering Committee meetings.
- Ensuring the integration of tasks concerning IPR with the PA.

An Administrative Officer (employed under WP1 and located at the BGBM) will be in charge of the administrative coordination tasks.

Project coordination proper will include:

- Chairing the Project Steering Committee.
- Identification and trouble shooting of organisational problems.
- Production and consolidation of periodic external reports.
- Work plan maintenance, monitoring of progress, timely production and adherence to quality procedures of deliverables.
- Monitor activities in the areas of content provision (WP4/WP5) and of the Outreach and Dissemination Group to ensure proper communication between partners and work packages.
- Represent the project.

These responsibilities will be carried out by the Project Coordinator.

Tasks of the Project Coordination with respect to technology and quality assurance:

- Lead the Technology Management Group to ensure interoperability and dependability of software components in the OpenUp! dataflow from content harvesting procedure to adaptation EUROPEANA and OpenUp data models.
- Ensure adherence to standards and specifications.
- Contribute to the further development of metadata and technical standards in the domain.

This task will be taken on by Anton Güntsch (BGBM), who also acts as the Chair of the Technology Management Group.

iii. Project Assembly (PA)

The Project Assembly will consist of one representative from each partner of the OpenUp! consortium, plus the project coordinator (chair) and a representative of EUROPEANA:

Walter Berendsohn (BGBM, Chair), Graham Higley (NHM), Walter Koch (AIT), Christoph Häuser (MfN), Karol Marhold (IBSAS), Ernst Vitek (NHMW), Patricia Mergen (MRAC), Jiri Kvacek (NM), Peter H. Schalk (ETI), Klaus Riede (ZFMK), Patrick Grootaert (RBINS), Vishwas Chavan (GBIF), Henrik Enghoff (UCPH), David Harris (RBGE), Walter Koch (AIT), Hannu Saarenmaa (UH), Alan Paton (RBGK), Kees Hendriks (NCBN), Sofie De Smedt (NBGB), Anne-Sophie Archambeau (MNHN), Urmas Kõljalg (UT-NHM), Frank Bisby (Sp2000), Yde de Jong (SMEBD), Michael Malicky (LANDOOE) and Lizzy Komen (EUROPEANA).

The PA has the over-all policy making role for the project and it is the ultimate body to resolve conflicts and disputes that may arise in the consortium. The PA will also be

responsible for discussing, communicating, and deciding contractual amendments and issues concerning the European Commission, including changes in funding allocation or work plan. Since most of the partners are content providers, the PA also acts as the body to express specific needs of these.

The group will convene face-to-face once a year, and will call additional meetings if needed.

Decisions of the PA should be by consensus but when necessary decisions will taken by a simple majority vote of the members with the chair having a casting vote in the event of a tie.

Agenda items will be circulated at least 7 days ahead of the meeting and minutes recorded and circulated to the SC and the PA within three weeks.

iv. Steering Committee (SC)

The Steering Committee consists of the work package leaders and the chair of the Technology Management Group and it is tasked with the overall operational management of OpenUp! This includes monitoring progress made in the work packages, reviewing deliverables and reports, and revising timelines where necessary.

The SC serves as the first instance for resolving conflicts in the consortium (the PA only gets involved if disputes cannot be settled on the level of the SC).

The group will convene at least twice a year in face-to-face meetings or (from year 2 on) through e-meetings.

Decisions of the SC should be by consensus but when necessary decisions will taken by a simple majority vote of the full members with the chair having a casting vote in the event of a tie.

Members of the SC are:

- Walter Berendsohn (BGBM, Project Coordinator, WP1) (Chair)
- Gavin Malarky (NHM, WP2)
- Walter Koch (AIT, WP3)
- Christoph Häuser (MfN, WP4)
- Karol Marhold (IBSAS, WP5)
- Heimo Rainer (NHMW, WP6)
- Patricia Mergen (MRAC, WP7)
- Kamil Zágorsek (NM, WP8)
- Anton Güntsch (BGBM, Chair TMG)

Key Personnel working on particular work package tasks may be invited to join the SC meetings temporarily.

Agenda items will be circulated at least 7 days ahead of the meeting and minutes recorded and circulated within three weeks to the SC and the PA.

v. Technology Management Group (TMG)

The Technology Management Group will coordinate and agree on all aspects of the OpenUp! technical workflow, from metadata capture and provision to harvesting by EUROPEANA. TMG members will assist the Project Coordination by revising all technical reports and developments delivered in the project. Fixed members include

those partners carrying out the implementation work (AIT, BGBM, GBIF, NHM, RBGK, UH), but in addition, the consortium will draw on the IT expertise of several other partners such as the GBIF National Nodes in the consortium, the GBIF Secretariat, Sp2000, RBGE, and UT-NHM. E-meetings will be scheduled in addition to face-to-face meetings especially during the most active implementation and software deployment phase within the first project year. Reporting to the Project Coordinator and the connection with the SC will be through the chair of the TMG, which is the Anton Güntsch, member of the project coordination team at the BGBM.

Minutes of meetings will be recorded and circulated within three weeks to the TMG and the SC.

vi. Outreach and Dissemination Group (ODG)

The OpenUp! Outreach and Dissemination Group coordinates the activities of WP 7 and 8 and in addition strives to involucrate the public institutions in the dissemination activities of OpenUp! for EUROPEANA.

Initial ODG members are the WP7 and 8 leads (Kamil Zágorsek, NM and Patricia Mergen, MRAC) and the French GBIF Node (Anne-Sophie Archambeau). In addition, other consortium partners are invited to attend the Group meetings, particularly members of the PR departments of the participating museums and the GBIF Nodes. The selection of permanent ODG members will be effected during the first months of the project.

To ensure an effective management at this level, working documents will be developed first in the ODG before they are revised in the SC and PA. Meetings will be carried out face-to-face and by means of e-meetings. The ODG will report to the SC through the co-chairs, the leaders of WP7 and WP8.

Minutes of meetings will be recorded and circulated within three weeks to the ODG and the SC.

vii. Work Packages (WP)

The work package leaders are responsible for coordinating and managing their work packages. In particular, this includes detailed planning of the work that needs to be carried out, coordination and division of work among the project partners, the responsibility to ensure that enough resources are allocated to get the work done, and the timely delivery of the results.

The work package leaders will report on a regular basis to the Steering Committee on work progress, and give due notice about any potential delay to achieving the deliverables set out in the work plan. In addition, they are also responsible for scheduling meetings of the work package members and relevant members of other work packages to discuss the technical issues within their work packages.

viii. Communication, Monitoring and Assuring Quality

The primary method for information exchange between the consortium members will be through project meetings at various management levels, as detailed above.

An additional platform for communication between the consortium members will be a Web-based project management portal with restricted access for consortium members which will be established within three months after the start of the project. This will be a customised and themed Scratchpad hosted in parallel to the public website by the NHM. On this platform, the Project Coordination (CO) provides management

information and guidelines, the work plan, templates for reports and the quality assurance procedure. The CO is responsible for regular updates (every three months) of the management information and to provide a status report as an internal review of the project. Consortium members may discuss specific problems, get all relevant information on upcoming meetings and new developments, and publish drafts of deliverables for internal review. Once deliverables with public status have been approved, they will be published on the OpenUp! web site in an open public area.

It is the responsibility of the WP leads and the CO to ensure the timely delivery of documents and software components produced by the project. This is controlled by deliverables and deliverable-components (internal deliverables), which are summarised in the following table. The SC will discuss the state of delivery in each of its meetings and the components will be listed on the project management portal.

Table: List of Deliverables, Milestones and Components (sorted by WP and Activity)

D/MS #	Component Number ⁶¹	Component/Deliverable Title	WP #	Lead	Nature	Dissemination level	Month	Part of
D05	C1.1.0	Risk Management Procedure	1	1	R	PP	10	D05
	C1.2.1	Progress Report 1	1	1	R	PP	6	D06
D06	C1.2.2	Annual Report 1 & Progress Report 2	1	1	R	PU	12	D06
	C1.2.3	Progress Report 3	1	1	R	PP	18	D15
D15	C1.2.4	Annual Report 2 & Progress Report 4	1	1	R	PU	24	D15
	C1.2.5	Progress Report 5	1	1	R	PP	30	D23
D23	C1.2.6	Annual Report 3 & Progress Report 6	1	1	R	PU	35	D23
D26	C1.2.7	Publishable Final Report	1	1	R	PU	36	D26
	C1.4.1	IPR problems and solutions for the domain of natural history objects	1	16	R	PU	34	D26
M06	--	IPR working documents available on the OpenUp! web site	1	16	--	--	9	--
	C1.5.1	OpenUp! and the results of the STERNA project	1	6	R	PU	12	D06
	C1.5.2	EUROPEANA and GBIF	1	11	R	PU	34	D23
	C1.5.3	EUROPEANA and CETAF	1	3	R	PU	34	D23
	C1.5.4	EUROPEANA and BHL-Europe	1	3	R	PU	34	D23
	C1.6.0	Memoranda of Understanding	1	1	R	PU	36	D26
	C2.1.1	Collections Data Quality Toolkit prototype	2	1	O	PU	6	D07

MS02	--	Sample data service mock-up for data quality services - zoology	2	15	--	--	4	--
MS03	--	Sample data service mock-up for data quality services - zoology	2	15	--	--	4	--
MS04	--	Sample data service mock-up validation and enrichment layer	2	5	--	--	4	--
MS05	--	Sample data service mock-up data integrity services	2	1	--	--	4	--
D07	C2.1.2	Collections Data Quality Toolkit production version	2	1	O	PU	12	D07
	C2.2.1	Harvesting and Transformation component prototype	2	14	O	PU	3	D02
MS01	--	Harvesting and Transformation component prototype	2	14	--	--	3	--
D02	C2.2.2	Harvesting and Transformation component production version	2	14	O	PU	9	D02
	C2.3.1	Initial metadatabase set up	2	2	O	PU	3	D16
MS07	--	Metadatabase production version operational	2	2	--	--	10	--
	C2.3.2	Continental Metadata mirror site in Copenhagen operational	2	12	O	PU	24	D16
	C2.3.3	Continental Metadata mirror site in Meise operational	2	18	O	PU	24	D16
	C2.3.4	Continental Metadata mirror site in Berlin operational	2	1	O	PU	24	D16
D16	C2.3.5	Distributed Metadatabase fully operational	2	1	O	PU	24	D16
	C2.4.1	OAI-PMH Interface prototype	2	14	O	PU	6	D08
D08	C2.4.2	OAI-PMH Interface production version	2	14	O	PU	12	D08
	C2.4.3	OAI-PMH Interface final version	2	14	O	PU	35	D23
	C2.5.0	Availability Checker	2	2	O	PU	15	D16
	C2.6.1	Draft data flow documentation and storage concept	2	2	R	PU	3	D16

	C2.6.2	Final workflow and software documentation	2	2	R	PU	35	D23
D24	C3.1.0	OpenUp! to ESE/EDM documentation	3	14	R	PU	35	D24
	C3.2.1	Domain specific vocabularies for EUROPEANA - interim	3	14	R	PP	18	D25
D25	C3.2.2	Domain specific vocabularies for EUROPEANA final	3	14	R	PU	35	D25
	C3.3.1	Data integrity service up and running	3	1	O	PU	9	D07
	C3.4.0	OpenUp! Metadata enrichment services	3	14	R	PU	24	D24
	C3.5.0	Integration with BHL-Europe Portal	3	14	R	PP	26	D23
	C4.1.1	Data sources agreement for zoological name vocabulary	4	15	R	PU	3	D03
	C4.1.2	Data quality service for zoological names prototype	4	15	P	PU	6	D03
D03	C4.1.3	Data quality service for zoological names production version	4	15	O	PU	9	D03
D12 & MS09	C4.2.0	Local zoological provider software and metadata mapping functional for all content data sources	4	6	O	PU	18	D12
	C4.3.1	Operational content provision (zoology), first report	4	3	R	PU	18	D12
	C4.3.2	Operational content provision (zoology), review and second report	4	3	R	PU	28	D23
	C4.3.3	Sustainable content provision (zoology), third report and outlook	4	3	R	PU	35	D23
	C4.4.1	Data quality check feedback (zoology)	4	3	R	PP	18	D15
	C4.4.2	Data quality check feedback (zoology)	4	3	R	PP	28	D23
	C4.4.3	Data quality check feedback (zoology)	4	3	R	PP	35	D23

	C4.5.0	Model for the integration of content from the areas of palaeontology and mineralogy	4	7	R	PU	9	D06
	C5.1.1	Data quality service for botanical names prototype	5	16	P	PU	6	D04
D04	C5.1.2	Data quality service for botanical names production version	5	16	O	PU	9	D04
	C5.1.3	Botanical metadata vocabulary status and improvement report	5	16	R	PU	35	D23
D13 & MS10	C5.2.0	Local botanical provider software and metadata mapping functional for all content data sources	5	4	R	PU	18	D13
	C5.3.1	Operational content provision (botany), first report	5	4	R	PU	18	D13
	C5.3.2	Operational content provision (botany), review and second report	5	4	R	PU	28	D23
	C5.3.3	Sustainable content provision (botany), third report and outlook	5	4	R	PU	35	D23
	C6.1.1	Definition of the metadata standard and controlled vocabularies	6	5	R	PU	6	D17
	C6.2.1	Prototype for harvesting and parsing common names	6	5	O	PP	12	D17
	C6.2.2	Prototype for harvesting and parsing geographical place names	6	5	O	PP	18	D17
	C6.2.3	Prototype for harvesting and parsing person names	6	5	O	PP	18	D17
MS11	--	Prototype for harvesting, parsing and caching federated reference data (common-, place-, person names)	6	5	--	--	18	--
D17	C6.2.4	Productive system for harvesting and parsing reference information	6	5	O	PU	24	D17

	C6.3.1	Evaluation and selection of reference information for common names, geographical place +person names	6	5	R	PU	12	D17
	C6.4.1	Prototype for caching environment	6	5	O	PP	12	D20
D20	C6.4.2	Productive system for caching environment	6	5	O	PU	30	D20
	C6.5.1	Prototype for metadata validation and enrichment layers	6	5	O	PP	12	D07
	C6.5.2	Productive system for metadata validation and enrichment layers	6	5	O	PU	35	D23
D18	C6.6.0	Report on multilingual data for natural history objects	6	5	R	PU	24	D18
	C7.1.1	Key staff for the Helpdesk Network identified	7	6	R	PU	5	D10
	C7.1.2	Network Helpdesks Strategy and Coordination	7	19	R	PU	10	D06
D10	C7.1.3	Dispatching system to answer questions timely operational	7	19	O	PU	14	D10
D09	C7.1.4	Guidelines for users and content providers v. 1	7	6	O	PO	12	D09
MS08	--	Online helpdesk infrastructure installed and functional	7	6	--	--	12	--
	C7.2.1	Identification of existing documentation	7	20	R	PU	10	DS
	C7.2.2	Analysis of documentation, gaps and plan for needed additional documentation	7	20	R	PU	14	D11
D11	C7.2.3	Enriched + checked existing documentation in orig. language (website)	7	6	O	PU	16	D11
D21	C7.2.4	Availability of newly produced documentation on the helpdesk website	7	20	O	PU	32	D21

	C7.2.5	Availability of complete documentation of OpenUp services in diff. languages on the helpdesk website	7	6	O	PU	36	D23
	C7.3.1	List of criteria and benefits to become Open Up! associated partners established	7	15	R	PU	12	D09
	C7.3.2	First OpenUp! tutorial and training session for new providers of the consortium	7	10	R	PP	18	D19
	C7.3.3	Preliminary list of potential associated partners identified	7	15	R	PP	18	D19
D19	C7.3.4	Standard procedure for associated partners operational	7	15	R	PU	24	D19
MS12	--	Outreach campaign to attract additional associated partners started	7	6	--	--	30	--
	C7.3.5	Second OpenUp! tutorial and training session for providers from associated partners	7	10	R	PU	34	D23
	C8.1.0	Create an OpenUp! Scratchpad site as the web environment for internal and external communication	8	7	O	PU	2	DV
	C8.2.1	Project Logo established as the result of a competition within the project	8	7	O	PU	1	D01
	C8.2.2	Draft design concept for promotional materials circulated to members	8	7	O	PP	3	DV
	C8.2.3	Design concept for promotional materials available	8	7	O	PP	6	D01
	C8.3.1	Draft Dissemination and Publication Plan available to membership for comment	8	7	R	PP	4	D01
D01	C8.3.2	Dissemination and Publication Plan	8	7	R	PU	7	D01
	C8.4.1	First 6-monthly newsletter	8	7	R	PU	10	D22

	C8.4.2	Database of relevant events available on the OpenUp! website	8	7	O	PU	12	D22
	C8.4.3	Collections Data Quality Toolkit documentation	8	7	R	PU	12	D07
	C8.4.4	Self-running demonstration downloadable from the web page	8	7	O	PU	14	D19
	C8.4.5	New providers information package	8	6	R	PU	14	D19
	C8.4.6	Workshop to disseminate the results of OpenUp! and related projects	8	7	R	PP	20	D22
	C8.4.7	Online demonstration of bundled results from other work packages	8	7	O	PU	34	D23
D22	C8.5.1	Report on the impact of OpenUp! content in EUROPEANA and on user communities	8	13	R	PU	34	D22
	C8.6.1	First Report on outreach to educational sector	8	7	R	PP	18	D14
D14	C8.6.2	[Second] Report on outreach to educational sector	8	7	R	PU	23	D14
	C8.6.3	Final Report on outreach to educational sector	8	7	R	PU	35	D3

The project management portal also contains the documentation of internal communication throughout the life-time of the project. The portal will also have specific tools and functionalities that facilitate and optimises book-keeping. In addition to the portal, a newsletter will be established to inform the members of the consortium, and other interested parties, about important developments in OpenUp!. Various mailing lists adapted to the project management structure are provided to every member of the consortium in order to facilitate communication within larger groups of members.

As part of the quality assurance procedure, each active partner has to deliver an internal report every three months to the CO. The CO will summarise these reports to inform the PA on the project status on a quarterly basis. For all internal reporting, the Project Coordinator will provide the necessary templates through the OpenUp! web site.

Reporting to the European Commission will be done according to contractual requirements, providing a status report on activities as well as finances. All partners report to the CO who will send an aggregated report to the EC Project Officer. The templates for official reporting are provided by the European Commission.

ix. Means for Resolving Conflicts and Risk Management

The Work Package leaders will immediately inform the CO if any problems in achieving their technical objective or if any potential conflict situations arise. As already mentioned above, the first opportunity to resolve disputes is in the SC. If conflicts cannot be resolved there, they will be brought into the PA who either can settle the conflict or suggest/decide strategies to further deal with the conflict.

Risk management requires risk identification, control, and recording of risks, highlighting of the consequences and the appropriate management actions. Risk management is a balance of judgement so that the risks are minimised without over-emphasising the potential problems. Controlling the risks will help to manage the project to achieve properly the objectives on time and to budget.

Risk management will be an integral part of the OpenUp! lifecycle management process. In this sense, risk assessment methods will be applied, where needed, in order to minimise possible deviations from the expected results and schedule. The CO will maintain and update a list of identified risks, which will be revised at every SC meeting.

With regards to risk management, the SC will have the responsibility to review and evaluate different situations which may lead to some kind of risk. To facilitate this procedure, the regular reporting via the project management portal will be used to consider and evaluate risk factors. Work package leaders will report apparent and imminent risks immediately, and the SC will decide upon and immediately carry out remedial actions.

At present, no major risks are anticipated, because the project builds on established technologies and management methods and does not depend on a single partner for any of the tasks to be carried out in the project. However, risk management will be an integral part in OpenUp! and will be applied at different levels of the project management structure. The work package leaders will be responsible for reporting any evolving problems or conflicts to the Steering Committee. If the Steering Committee is unable to resolve the problem, they will inform the Project Assembly immediately, who will then decide on problem solving strategies in order to settle the conflict. In all Steering Committed and Project Assembly meetings, the following table of Risks will be discussed and, where necessary, updated.

The risk management procedure will be tested in the first months of the project and a report will be issued in month 10 providing the detailed procedure in time for the project evaluation in month 13.

Table 6: Risk Assessment

Description of Possible Risk	Impact	Occurrence probability	Remedial Actions
Time commitment of participants, esp. WP leaders, unsatisfactory	High	Medium	Activities will be monitored by means of regular reports. Coordinator will assist whenever possible and play a leading role in finding problem solutions.
Lack of engagement and commitment to the long term objectives of the project	High	Medium	Reallocate funds away from underachieving partners and recruit new partners if required.
Partners do not meet deliverables	High	Low	Project manager to monitor deliverables and evaluate risks to critical systems.

Description of Possible Risk	Impact	Occurrence probability	Remedial Actions
Partner institutions leave the project	High	Low	Reallocate tasks within the consortium by coordinator in agreement with work package leads.
Misuse of funds	High	Low	Management team to monitor the spend pattern and negotiate mechanisms to deal with a misuse of funds by a partner.
Fluctuating exchange rates become disadvantageous to partners outside the Euro zone	Medium	Medium	Partners outside the Euro zone calculate with conservative exchange rates
Overspending of funds	High	Low	Management team to monitor the spending pattern and negotiate mechanisms to deal with an over-spend by a partner.
Communication problems – no response to emails	High	High	Management team will have contact by phone.
Insufficient data/metadata delivery	High	Medium	Activities will be monitored by means of checking data via the EUROPEANA portal.
Fail mid-term review and project budget cut	High	Low	Management team will assist to avoid failure.
Services for data quality measures not ready for use when data quality procedures start.	Medium	Medium	Participants will work with different existing services. This will slow down the labour efficiency but not stop the project.
Collection data holders ignore data quality reports and do not sufficiently correct/enrich their metadata.	High	Medium	Advice and contact (by phone), personal visits for larger providers.
Data integrity services outages	High	Low	Participants will work with different existing services. This will slow down the labour efficiency but not stop the project.
Collections Data Quality Toolkit prototype not fully operable at M6	Medium	Medium	Joint expertise of consortium partners experienced with these issues will speed up development of full operability.
Temporarily unavailable multimedia objects by OpenUp! providers	High	Medium	Availability Checker will be implemented to avoid system malfunctions at EUROPEANA portal level.
Outage or overload of central aggregator component	High	Low	Mirror site installations

x. Project Meetings

The following meetings are planned. Face to face meetings (in bold) are mostly bundled in months 1, 13, and 25 and 36 for cost efficiency:

Kick-off meeting (month **1**)

Wind-up meeting (month **36**)

3 Meetings of the Evaluation Panel with Steering Committee members (in months **13, 25 and 36**)

4 Meetings of the Project Assembly (in months **1, 12, 24 and 34**)

8 Meetings of the Steering Committee (in months **1**, 6, **13**, 18, **25**, 30, 34, and **36**)

10 Meetings of the Technology Management Group (**1**, **3**, **6**, 8, **10**, **13**, 18, **25**, 30, 34)

5 Meetings of the Outreach and Dissemination Group (**1**, **13**, **25**, 30, **36**)

Workshops (mostly back-to-back with Committee and Group meetings):

- "Further specification of the target user communities for OpenUp! Content in Europeana" (month **1**)
- "Network Helpdesks Strategy and Coordination" (month **10**)
- "The OpenUp! Tutorial 1" (month **18**)
- "The OpenUp! Tutorial 2" (month **34**)

Without being supported by the project, the 6-monthly meetings of CETAF institution directors will provide an additional organisational framework and forum for the project, which will make the comparatively large consortium manageable.

xi. Pre-financing and interim & final payments

Payments in the context of the OpenUp! project are scheduled as follows:

EURO 1 800 000 pre-financing within 45 days following entry into Grant Agreement,

EURO 675 000 interim payment after first review,

EURO 675 000 interim payment after second review,

+/- EURO 450 000 final payment.

B3.4. Security, Privacy, Inclusiveness, Interoperability, Standards and Open-Source

Interoperability between Products and Services

The OpenUp! infrastructure will consist of a large number of data provider services, a set of services mainly supporting data quality measures, and a central aggregation facility responsible for seamless integration of Natural History content into the EUROPEANA infrastructure. Thanks to the existing harmonization trends within the Natural History content provider community (see section about "Main standards used" below), OpenUp! data providers represent an interoperable and consistent information space allowing for instance access to all objects via standardized protocols.

Data quality services to be put into operation are potentially more diverse and will need an additional harmonization effort to assure their effective use within the OpenUp! infrastructure. In particular, different services related to quality control of scientific names should follow a common protocol. The OpenUp! project management will enforce the definition of an agreed quality service layer by common specification phase in the very beginning of the project. Every individual service being a component of the Collections Data Quality Toolkit ensures that the actual set up of the service follows this specification.

A third critical interface within the OpenUp! information flow is the access point of the OpenUp! Natural History Aggregator offering a single access point to all data generated by the network. We will ensure interoperability between EUROPEANA and the aggregator by i) mapping data elements defined and used by the Natural History community to the EUROPEANA Metadata specifications (WP3) and ii) offering a standardized OAI-PMH interface for efficient harvesting of the content (WP2).

Security and Privacy Issues

The Natural History Collection Community follows a very open data publication policy regulated by the GBIF Data Use Agreement (<http://data.gbif.org/tutorial/datauseagreement>) and the BioCASE Code of Conduct for Data & Portal Nodes (http://www.biocase.org/whats_biocase/code_of_conduct.shtml). Technically, data provider service installation a freely accessible and information form these services can be re-used as long as terms and conditions stated by the data provider are respected. In particular, the data provider has to be acknowledged in conjunction with the use of the data.

However, data security measures might become highly relevant for Metadata containing the collection sites of threatened and protected species which could attract notice to private collectors. To avoid this risk, Natural History data providers add an error value to the critical data elements (mostly geographic co-ordinates) so that the habitat of the threatened organism cannot be identified precisely. With this, critical metadata don't have to be protected by an additional security layer.

Main Standards Used

The technologies and standards used by the partners of the project and described in this proposal are by essence interoperable and open source. In particular the BioCASE protocol for access to Natural History data providers and the ABCD content definition schema are officially accepted and recommended standards of TDWG, the Biodiversity Information Standards organisation. TDWG was formed to establish international collaboration among biological database projects. It now focuses on the development of standards for the exchange of biological/biodiversity data. The most widely deployed formats for biodiversity occurrence data are Darwin Core (DwC) and ABCD. Past and ongoing projects of the DG Research, like ENBI (European Biodiversity Network), EDIT (European Distributed Institute of Taxonomy), SYNTHESYS (Synthesis of Systematic Resources) found high benefice and guaranties of interoperability and open source in TDWG.

Major International initiative and projects like the Global Biodiversity Information Facility (GBIF), BHL-International (Biodiversity Heritage Library) or EOL (Encyclopaedia of Life) implemented their portals relying on TDWG standards and experts advices. TDWG has recognized the importance of Digital Library projects and has already for years dedicated sessions on the subject. 2010 edition is organized back to back with a BHL-International meeting and has Digital Libraries as one of the major themes of the conference.

Past and ongoing projects of the DG Research, like ENBI (European Biodiversity Network), EDIT (European Distributed Institute of Taxonomy), SYNTHESYS (Synthesis of Systematic Resources) found high benefice and guaranties of interoperability and open source in TDWG.

Several eContentPlus projects already rely on TDWG standards or interact with TDWG:

- KeyToNature is constructed around the TDWG standard SDD (Structure of Descriptive Data). During the second round of review of the project the choosing by the consortium partners was evaluated as a guaranty of success and expected results for the project.
- BHL-Europe: to detect scientific names in publications within their project, they are testing the Name parsing algorithm of UBio which has been designed by TDWG

members. For the use cases on scientific use of their services they also greatly make use of TDWG expertise.

- STERNA, the part on Semantic Web projects and initiatives in the domain of Natural History of the very much appreciated Technological Watch report of this project, found its main sources in the list of presentations and posters about Semantic Web, Ontologies and Digital Libraries of the 2008 TDWG meeting.
- Furthermore to accommodate Natural History institution content about birds in the RNA tool data model of the project, the ABCD schema was of great inspiration and most of the ABCD concepts have been implemented in the STERNA data model.
- To retrieve information on birds from additional sources, STERNA build a connector to the BioCASE provider tool that is able to update the STERNA content based on the time stamps of the BioCASE-connected data.

For all these reasons the OpenUp! Consortium is confident in guaranteeing secure and stable data providing, respecting the needs and requirements of both the data providers and the end-users. Based on past experiences and due to previous commitments at all levels the consortium can guarantee full interoperability and openness of both the standards and technologies used. Furthermore the standards are officially accepted international standards used for providing hundreds of millions records and media on Biodiversity Content to which EUROPEANA has now the unique opportunity to “open up”.

Inclusiveness and Accessibility

OpenUp! partner institutions include the major European Natural History Museums housing a broad range of different taxonomic and thematic collection foci as well as significant multimedia collections. “What’s already there” will add a tremendously valuable information resource to the EUROPEANA network allowing users to discover Europe’s Natural History heritage. Being built on a stable and sustainable technical infrastructure provided by GBIF and BioCASE, additional data providers can be included with relatively little effort if new multimedia resources become available in the future.

Most of the partner institutions of the consortium are CETAF (Consortium of European Taxonomic Facilities, www.Cetaf.org) members. By being member of CETAF, the partner institutions have committed to its charter which is:

“CETAF is a networked consortium of scientific institutions in Europe formed to promote training, research and understanding of systematic biology and palaeobiology, Together, CETAF institutions hold very substantial biological (zoological and botanical), palaeobiological, and geological collections and provide the resource for the work of thousands of researchers in a variety of scientific disciplines.”

Most of the partners are public institutions that have already at national level a duty of knowledge and content sharing with the public at large. By adhering to CETAF’s consortium they clearly restate their role and commitment in this regard at European scale.

However, being based on an entirely distributed base of data providers OpenUp! has an inherent risk of temporary outage of individual data providers. We address this issue by i) storing all metadata in a caching system ensuring that EUROPEANA has always access to the OpenUp! data and ii) setting up an availability checker constantly

supervising OpenUp! data provider services and alerting the data provider management in case of malfunctions.

The combination of a sustainable and approved technological basis, a stable institutional link of data providers, as well as dedicated alert mechanisms will ensure that OpenUp! will be able to offer the widest possible coverage of European Natural History in a consistent and reliable structure to EUROPEANA.

B3.5. Resources to Be Committed

Justification of Costs

Personnel Costs

The budgeted personnel costs are based on the following rates:

Participant No.	Participant Short Name	Scientist Monthly Rate (EURO)	Technician Monthly Rate (EURO)
1	BGBM	6.188	4.294
2	NHM	5.461	4.696
3	MfN	5.265	3.649
4	IBSAS	1.835	1.350
5	NHMW	5.285	2.940
6	MRAC	5.988	3.009
7	NM	1.150	800
8	ETI	4.546	4.546
9	ZFMK	6.000	2.850
10	RBINS	6.300	3.500
11	GBIF	7.000	5.500
12	UCPH	6.572	5.339
13	RBGE	5.261	2.896
14	AIT	5.932	--
15	UH	6.090	4.060
16	RBGK	5.220	4.176
17	NCBN	5.600	4.760
18	NBGB	4.492	2.267
19	MNHN	4.093	--
20	UT-NHM	2.200	1.200
21	Sp2000	4.500	3.500
22	SMEBD	6.800	--
23	LANDOOE	5.000	4.800

Most of the personnel in the project is calculated at scientist' level. Technical level salaries are the following:

36 PM administration in WP1

29 PM IT technicians in WP2
64.5 PM data cleaning staff in WP4
97 PM data cleaning staff in WP5
18 PM graphics and dissemination support in WP8.

Coordination Cost

The costs for the scientific, technical and administrative coordination of the project are concentrated in WP 1, however, not all costs allocated to this WP are coordination and management (in particular, the IPR-related task). In all, management costs in the entire project are estimated at roughly EURO 200,000 or 5% of the total budgeted project personnel costs.

WP1 Personnel Costs

The personnel in WP1 includes the following positions:

- 36 PM, i.e. a full time position of scientific and technological coordinator, incl. Project Steering Group chair, lead of the Technology Management Group, contribution to clustering activities, and participation in MoU elaboration (scientific staff level, BGBM)
- 36 PM, i.e. a full time administrative coordinator, including financial management, communications, meeting organisation, and assistance to project coordinator (technical staff, BGBM)
- 6 PM for the elaboration of the IPR framework at RBGK.
- 0.5 PM each for participation in the Project Steering Group for WP lead institutions (NHM, MfN, IBSAS, NHMW, MRAC, NM, AIT; scientist)
- 0.5 PM each for participation in the Technology Management Group (AIT, NHM, RBGK, UH; scientist)
- 0.5 PM for each liaison activity (MRAC, GBIF, MfN (2x); scientist)

WP7 Personnel Costs

The personnel in WP7 includes the following positions:

- 36 PM, i.e. a full time position for leading the workpackage, liaising with the project coordinator and the other workpackages, setting up the Helpdesk infrastructure and network, provide helpdesk expertise and setting up the Network extension strategy (MRAC, scientist).
- 18 PM, i.e. a half time position for the main partner for setting up and running the helpdesk infrastructure (MNHN – French GBIF Node; scientist).
- 6 PM to harness long-term experience in digital library projects at NBGB (scientist)
- 6 PM each for the support of the network extension from GBIF National Nodes (RBINS - Belgium, UH - Finland and UT-NHM – Estonia; scientist).
- 2 PM for the same purpose but restricted to the German zoological community at ZMFK (botany is covered by the botanical GBIF node at the project coordinator's institution) (scientist)
- 2 PM to provide helpdesk expertise and further extend the liaison with the GBIF nodes in Europe (GBIF secretariat, scientist)

WP8 Personnel Costs

The personnel in WP8 include the following positions:

- 36 PM, i.e. a full time position for leading the workpackage, liaising with the project coordinator and the other workpackages, setting up the consortium's internal communication channels for dissemination activities (for example through ScratchPad, Wiki web space), and develop a dissemination strategy in coordination with EUROPEANA (NM, scientist).
- 18 PM, i.e. a half time position for running, maintenance and updating communication channels. (NM, technical).
- 1 PM advising on communication channel setup and coordination with EUROPEANA (AIT, scientist).
- 6 PM to ensure the effective collaboration with WP7 on the providers information package and the outreach campaign to attract new content providers (4 MRAC, 2 NCBN, scientist)
- 3 PM to conduct a survey to measure the impact of OpenUp! content on user communities and collecting recommendation for digitisation priorities to report back to content providers (RBGE, scientist).

Subcontracting

We were informed that EUROPEANA cannot be a partner in projects and that EUROPEANA normally requires a subcontracting of 25.000 Euro if a new aggregator is created (as in OpenUp!) and if EUROPEANA is the main portal that will show the aggregated content (which is indeed the case). The subcontract covers several efforts on the EUROPEANA side of content harvesting from the aggregator, such as the maintenance, updates, and enriching of data. The costs are assigned to the coordinator of WP2, the NHM. However, 20% will be reimbursed to the NHM from all partners own funds (not project funds) in proportion to their budget share.

The EUROPEANA subcontract will cover the collaboration as described in the following agreed text:

“EUROPEANA will be responsible for harvesting multimedia metadata from a single OAI-PMH access point to OpenUp! content at the computing facilities of the NHM-London (the OpenUp! repository). An initial test-run of the harvesting process will take place in month 7 of the project once the OAI-PMH prototype developed by AIT has successfully been deployed (D2.4.1). The sample data for testing harvesting procedures will be provided by a selected set of existing BioCASE providers representing the broadest possible domain coverage (but at least botany and zoology).

EUROPEANA and OpenUp! will agree on a data ingestion plan during the first three months of the OpenUp! project period. The data ingestion plan will cover the regular harvesting of the OpenUp! repository from EUROPEANA for the duration of the OpenUp! project. The plan will ensure that progress in content provision from OpenUp! to Europeana can be demonstrated through the EUROPEANA portal for the OpenUp! project evaluations scheduled in month 12, 24, and 36 of the project (February 2012, 2013 and 2014, respectively, provided that OpenUp! content is timely delivered to the repository).

In parallel to the harvesting activities, EUROPEANA will assess standardisation efforts made by OpenUP! This includes i) the metadata model of the OpenUp! repository, ii) the mapping of the natural history collections community's metadata elements to

EUROPEANA standards, and iii) OpenUp! structures used to represent term-lists and concept-relations to be included as contextual entities in Europeana. The respective formats will be provided by OpenUp! in the form of reports or documented datastructure diagrams. The assessment results will be delivered in the form of the annotated documents.

Europeana will give access to the Europeana information and process tools, like the Europeana Content Checker and to EuropeanaLabs (https://version1.europeana.eu/c/document_library/get_file?uuid=9f7ed5a7-fdaf-404a-b1a1-6a55b97b9b6a&groupId=10602)

Europeana will ensure participation of the consortium in the Europeana decision-making instruments such as the CCPA. (<https://version1.europeana.eu/web/europeana-foundation/content-council>).

There will be possibility to distribute achievements from the OpenUp! project through relevant Europeana communication channels (for example Newsletter) and visibility of the project will be achieved via the Europeana Group pages (<http://www.group.europeana.eu/>)."

Other Specific Direct Costs

This consists of (i) travel costs for meetings, (ii) cost for hosting meetings, (iii) consumables, and (iv) other costs.

(i) Meetings

The planned meetings are listed under B3.6 above. Face to face meetings are mostly bundled in months 1, 13, and 36 for cost efficiency. Meeting participation was calculated in accordance to the role of the partner in the project. The budget was calculated with a flat rate of EURO 160 for hotel and daily allowance per night and EURO 380 per trip (accounting for single trips for people attending back-to-back meetings); of course, the actual costs will be based on the expense.

(ii) Hosting of meetings

A flat rate for hosting of meetings was applied at EURO 1,000 per day for up to 10 participants, EURO 2,000 for up to 20, and EURO 3,000 for larger meetings. The resulting budget, EURO 60,000, was allocated equally to partners in Prague (NM) and Tervuren (MRAC). In case of a successful proposal, the actual hosts will be determined and the budget re-allocated accordingly and based on local cost levels.

(iii) Consumables

A flat allocation of EURO 3,000 per participant was added for consumables.

(iv) Other eligible costs

For hardware and software hosting the metadatabase, the NHM has EURO 17,000 allocated for the master database, and UCPH, NBGB, and BGBM EURO 6,000 each for the mirrors. At the NHM this consists of a dedicated server (approx. EURO 8,500) which will require operating system and application licenses including SQL-Server (approx. EURO 8,500). The server will be required to host the database which will contain the metadata and associated thumbnails for all the aggregated content (initially 1 million objects with high expected growth). Tool sets will also be required for 'availability checking' and thumbnail production and these will potentially need to run on the server too.

For print publication of PR materials, NM has an allocation of EURO 15,000.

Audits will be necessary at the BGBM (EURO 3,132) and at the BGBM (EURO 500).

Additional Resources Committed by Consortium Members (In-kind)

The project participants will contribute 20% of the total eligible costs from their own budgets. Apart from this, all partners will provide 'in-kind' contributions to the successful implementation of the project. This will be in the form of in-kind staff support for the local financial and project management of the grant, IT operational support for the infrastructure hosting the systems, participation in on-line discussions of strategic documents, participation (time) in the Project Assembly meetings and discussions, equipment such as personal computers of project staff or project usage, as well as the entire institutional overhead for provision and use of offices, work space, communication and IT services, etc.

This project will not provide funding for the actual digitisation activities, i.e. for the creation of new multimedia objects. Nevertheless, this is an ongoing effort at all content providing institutions in the Consortium, and the results will directly be incorporated into the OpenUp! content provision. Considerable resources for scanning, photographing, digital sound analysis laboratories, etc. are contributed by the institutions in these efforts. Ongoing activities range from routine operations with 4-6 PM per year to large scale digitisation efforts with up to 48 PM p.a. and more.

B3.6. Dissemination / Use of Results

List of Events & Meetings

Meeting	Month	Participants	Location
Steering Committee, 1 st	1	SC	Berlin
Kick-off Meeting and Project Assembly, 1 st	1	PA	Berlin
Technology Management Group, 1 st	1	TMG	Berlin
Outreach and Dissemination Group, 1 st	1	ODG	Berlin
Workshop 1: "Further specification of the target user communities for OpenUp! content in Europeana"	1	16 project partners	Berlin
Technology Management Group, 2 nd	3	TMG	London
Technology Management Group, 3 rd	6	TMG	Berlin
Steering Committee, 2 nd	6	SC	e-meeting
Technology Management Group, 4 th	8	TMG	e-meeting
Technology Management Group, 5 th	10	TMG	Tervuren
Workshop 2: 'Network Helpdesks Strategy and Coordinat.'	10	14 project partners	Tervuren
Project Assembly, 2 nd	12	PA	e-meeting
Steering Committee, 3 rd	13	SC	Paris
Review, 1 st	13	SC, EC reviewers	Paris
Technology Management Group, 6 th	13	TMG	Paris
Outreach and Dissemination Group, 2 nd	13	ODG	Paris
Technology Management Group, 7 th	18	TMG	e-meeting
Steering Committee, 4 th	18	SC	e-meeting
Workshop 3: 'The OpenUp! Tutorial 1'	18	All project partners	Prague
Project Assembly, 3 rd	24	PA	e-meeting
Steering Committee, 5 th	25	SC	Prague
Review, 2 nd	25	SC, EC reviewers	Prague
Technology Management Group, 8 th	25	TMG	Prague
Outreach and Dissemination Group, 3 rd	25	ODG	Prague
Steering Committee, 6 th	30	SC	e-meeting
Technology Management Group, 9 th	30	TMG	e-meeting
Outreach and Dissemination Group, 4 th	30	ODG	e-meeting
Steering Committee, 7 th	34	SC	e-meeting
Technology Management Group, 10 th	34	TMG	e-meeting
Workshop 4: 'The OpenUp! Tutorial 2'	34	All associated and potential additional content providers	Tervuren
Steering Committee, 8 th	36	SC	Bratislava
Outreach and Dissemination Group, 5 th	36	ODG	Bratislava
Wind-up Meeting and Project Assembly, 4 th	36	PA	Bratislava
Review, 3 rd	36	SC, EC reviewers	Bratislava

Dissemination and use of project results: WP7 is devoted to helpdesk and extension of the network. Trainings and good documentation on how to use and access the services are a key point to gather more content and associated participants to the network. Thus an online helpdesk facility will be set up drawing on existing documentation and helpdesk networks from GBIF and BioCASE. Additionally, two tutorial sessions are foreseen during the lifetime of the project. A first one for the project partners in the second year of the project and a second tutorial session also for associated and potential additional content providers by the end of the project. Content providers will so benefit of an efficient helpline and complete documentation on the services.

The outreach to attract additional partners will be done in close collaboration with WP8 which is entirely devoted to dissemination and awareness. The WP will setup an efficient communication and promotion strategy for OpenUp! using a variety of media, including a special and well recognisable design for the project, ensure presence, demos and presentations of the project activities at related events worldwide.

Dedicated workshops on dissemination will be organised back to back with other OpenUp! meetings. Regularly, user-surveys will be conducted to improve the communication and dissemination strategies and media.

For further details please refer to section 2.3 of the workplan.

IPR issues: The solution of IPR issues are detailed in section 2.1b (text and table 1). WP1 will further work on potential problems developing with the accession of further content providers to the project.

Risks for society and citizens: We have not identified any potential risk (real or perceived) connected to this project.