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BHL-Europe

Business plan for long-term sustainability

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eContentplus

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¹ OJ L 79, 24.3.2005, p. 1.

1 Document History

1.1 Contributors

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1.2 Revision History

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13 Feb 2011	Thomas Garnett	0.4	Review and amendment second draft of D1.5
26 Feb 2011	Patricia Mergen	0.5	Review second draft of D1.5
8 Mar 2011	Henning Scholz	0.6	Review of D1.5 including feedback from Europeana Office
26 April 2011	Henning Scholz	1.0	Final version of D1.5
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02 November 2011	Henning Scholz	1.3	Draft including outcomes of further meetings with e.g. Europeana, Graham Higley
21 November 2011	Henning Scholz	1.4	Draft including input from Life and Literature

1.3 Reviewers

This document requires the following reviews and approvals.

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Financial/Sustainability WG of CCPA ¹	21 April 2011	0.6

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¹ The CCPA WG members have received the document for revision. A formal feedback/review was never provided by the date of submission.

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3 Introduction

This is the further development on the first overview business plan for a sustainable BHL-Europe service beyond the Best Practice Network of the EC eContentplus programme after 30 April 2012. It gives an overview of the current situation of the BHL-Europe project and a short description of the business model established for the project. This overview is an extract from the Description of Work incorporating the current situation of the project progress. Starting from this model, we evaluate the potential business models for the future. This includes a SWOT analysis of five strategic directions for BHL-Europe, the environmental scan, an analysis of the value chain for BHL-Europe and results of a survey among the BHL-Europe content providers. This evaluation is followed by an implementation plan of the favoured business models. This is the actual business plan section where the implementation is outlined and itemized for the business models (vision, mission, objectives, value proposition, governance, team, funding, roadmap, risk analysis).

It has to be noted that this still is a draft document. It will be revised after the new EC funding calls are launched. We need to align our business model with the objectives of the new FP7 and ICT PSP calls and validate our assumptions made in this document. The final version of D1.9 will be delivered in M36 of the project, as specified in the DoW.

It is also noted that one document that was planned as an additional deliverable for month 36 of the project is considered to be redundant: D1.10 – Implementation of results of BHL-Europe in other projects. The implementation and re-use of key results of the project by other projects, initiatives and organisations is an integrative part of the business plan developed herein. It is therefore not described in a separate document in detail and D1.10 only has a list of results that are implemented by others.

4 Current BHL-Europe business model

4.1 *Project summary, objectives and results*

The lack of access to the published biodiversity literature is a major obstacle to efficient research and a broad range of other applications, including education, biodiversity conservation, protected area management, disease control, and maintenance of diverse ecosystems services. This literature also has cultural importance as a resource for the study of the history of science, art and other non-science applications. Currently, a large number of small projects are digitising biodiversity material in numerous institutions across the EU to make access more open, but the corpus will still be seriously fragmented. These projects do not use common standards or interfaces and are not interoperable. In alignment with the EC i2010 initiative, BHL-Europe aims to make the biodiversity knowledge available to everybody who is interested by improving the interoperability of European biodiversity digital libraries.

BHL-Europe will review and test different approaches for such libraries based on the experiences of the partners involved in the project. The consortium will establish a best practice approach and promote the adoption of standards and specifications for the large-scale implementation in a real-life context. BHL-Europe will provide a multilingual access point for search and retrieval of digital content through EUROPEANA. In addition, it will provide a



robust multilingual portal with sophisticated search tools to facilitate the search for taxon-specific biodiversity information. The project will also develop operational strategies and processes for long-term preservation and sustainability of the data produced by national biodiversity digitisation programmes. BHL-Europe will generate activities to raise awareness and to ensure that the project outputs are known and used by the target users and that the proposed approach directly addresses user needs. BHL-Europe experience and best practice will be shared with the wider digital library community.

The project aims to make Europe's biodiversity information, which is locked in many disparate libraries or scattered in many digital repositories, available for everybody with interest in biodiversity through a global portal (BHL-Europe) with specific biological functionality (e.g. taxonomic intelligence) and to a wide European cultural audience through Europeana.

More precisely, BHL-Europe aims to:

- (1) review and test approaches for the establishment and management of multilingual biodiversity digital libraries;
- (2) improve the interoperability of European biodiversity digital libraries by the innovative application of proven technologies;
- (3) promote the adoption of best practice, standards and specifications for the large-scale implementation of such repositories;
- (4) facilitate the open access to taxonomic literature for a large number of target users including the general public;
- (5) provide a multilingual access point for the search and retrieval of biodiversity content through at least two portals (Europeana and BHL-Europe);
- (6) raise awareness and ensure that the project outputs are known and used by the target users and that the proposed approach directly addresses user needs;
- (7) develop operational strategies and processes for long-term preservation and sustainability of the data produced by national biodiversity digitisation programmes;
- (8) facilitate and enable the initiation of scanning initiatives in European countries not yet involved in digitisation programmes and improve the infrastructure for digital libraries in all EU countries;
- (9) negotiate with Rights Holders to enable access to in-copyright content.

The proposed project will produce the following specific and measurable results:

- (1) a robust biodiversity community portal with open, distributed architecture to provide multi-language access to the digital content;
- (2) >25 million pages of biodiversity literature from a large number of EU Member States for display through the Europeana and BHL-Europe portals;
- (3) tested and validated best practice methods, standards and specifications for technology platforms, digitisation and image storage;
- (4) tested and validated methodology for content enrichment and ingest;
- (5) tested and validated best practice workflow on implementing BHL-Europe architecture;
- (6) sustainable and persistent digital curation of biodiversity heritage literature; preservation and conservation of rare and fragile material;

- (7) the integration of Taxonomic Intelligence tools to facilitate the search for taxon-specific biodiversity information;
- (8) improved efficiency of research in the biology domain; improving access to information to non-museum biologists; building public engagement, awareness and participation;
- (9) permission from publishers to digitise previously published in-copyright content;
- (10) a metadata repository and collection analysis tool for all the leading libraries involved;
- (11) strategies, plans and processes for long-term preservation and sustainability of the data produced by national biodiversity digitisation programmes as part of BHL-Europe.

As the main and most tangible outcomes of the BHL-Europe, we offer to the user five routes to access the digital biodiversity literature – four European and one global (Figure 1):

- 1) BHL-Europe portal and preservation and archive system
- 2) The Global Reference Index to Biodiversity (GRIB)
- 3) Europeana
- 4) Biodiversity Library Exhibition (BLE)
- 5) Global BHL via Internet Archive – partners include Atlas of Living Australia, Chinese Academy of Science, BHL-US, Bibliotheca Alexandrina, Scientific Electronic Library Online, etc. (see section 7.2).

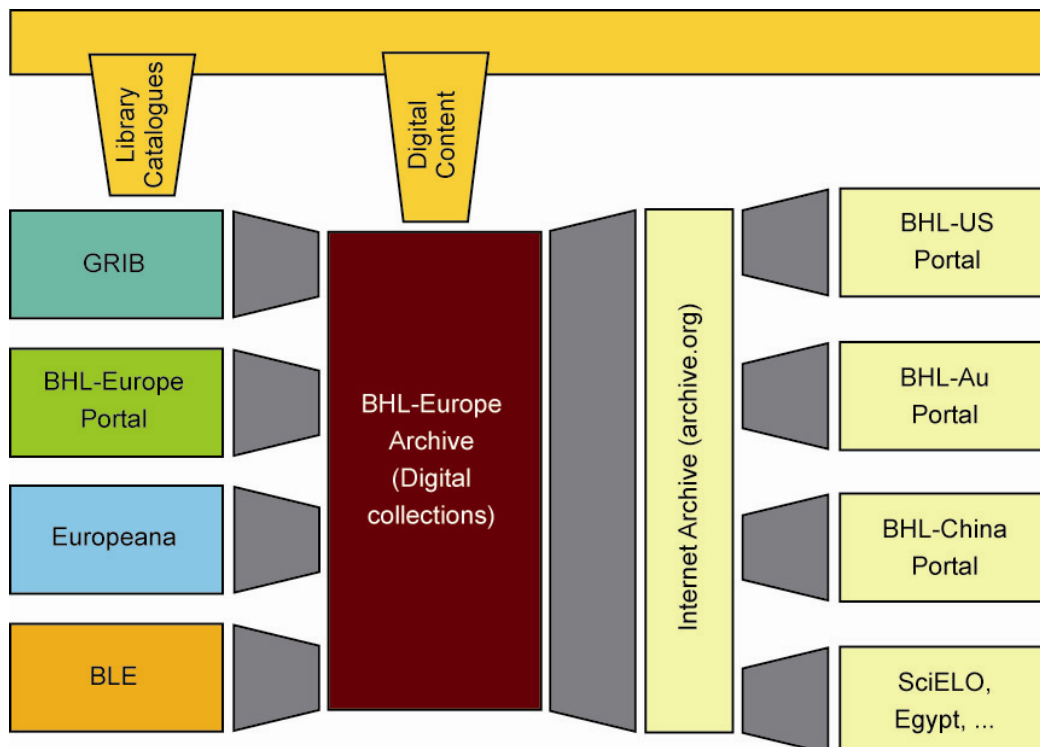


Figure 1. The access routes to the digital biodiversity literature provided by BHL-Europe. Our partner libraries will provide catalogue data and digital content to the GRIB and the BHL-Europe archive. The content in the archive is accessible through the GRIB, the BHL-Europe Portal, Europeana, BLE and any Global BHL Node including the BHL-US Portal via the Internet Archive. The library catalogues are only accessible through the GRIB to facilitate the digitisation management.

All these routes provide access to our digital library, but are self-contained applications working along-side the BHL-Europe preservation and archive system for the European digital literature. The BHL-Europe system and portal is the core product and outcome of the BHL-Europe project. It is closely linked to BLE to facilitate access to non-scientists and to open the content for education needs. The GRIB is another major outcome of BHL-Europe, developed in collaboration with the EDIT project. Europeana is a major partner of BHL-Europe with its own products and agendas.

4.2 Target users and dissemination channels

Two main user groups have been identified as beneficiaries of the project.

The first group of users (content users) – European citizens – will be interested in the content itself. The composition of this group will be eclectic and represent different interests in and uses of the content. Natural scientists may be interested in taxonomic information and the distribution of species through space and time. Social scientists and historians may be interested in the history of science, and background information about famous and significant scientists of the past. Artists may find inspiration in the artistic representations of plants and animals. For hobby scientists, hobby gardeners, and regional conservation organisations the literature is an inexpensive and easily available resource of information about animals, plants, and fossils occurring in their area. Policy makers on various levels (from local to governmental) need the literature as base and background information for their decisions. Students and learners on various levels (from school to university) need the content as a primary source for their studies. Teachers will be able to complement the content of textbooks by downloading historical and original texts of Charles Darwin, for example. These texts may be used as a teaching resource, since many of those historical texts contain important biological concepts and theories still valid today. These classic and scientifically important contributions help to put the results of modern research projects into context. Eventually, every European citizen who is interested in biodiversity, and has access to the Web is a potential user. These target users are manifested by the visitors to the large natural history museums that are now able to get background information on topics and objects present in museum exhibitions.

The second group includes technology users and content providers. Technology users are in particular libraries, digitisation centres, digital library networks, and universities/museums. They are interested in the technological outputs from the project, the best practice approach, the quantity and quality of content, but also in unsolved challenges of the project. These institutions may also be content provider for BHL-Europe.

In serving two independent markets, BHL-Europe in its current state is a multi-sided platform. Both customer are necessary to make this business model work.

To reach the target groups of the project and stakeholders, we have foreseen various mechanisms for dissemination and awareness raising activities:

- dissemination of the project results through consortium members (using already existing networks of European scientific organisations included in the BHL-Europe consortium and within the considerable number of professional and special interest organisations where they are members)



- dissemination through BHL-Europe Web site and other promotional materials for all target users and the European Commission (fact sheets, flyers, self-running demonstrators / multimedia presentations, posters, newsletter, etc.)
- dissemination through the BHL-Europe social media: Blog, Facebook, Twitter
- dissemination through the access points to the digital content: BHL-Europe Portal, Global References to Biodiversity (GRIB), Europeana, BLE and the portals of the global BHL partners
- dissemination through papers in professional journals, short articles in newspapers, texts in various online encyclopaedias and information services (Wikipedia) and blogs
- dissemination through presentations, demonstrations and workshops at conferences and other relevant events.
- dissemination through Europeana communication streams, e.g. project websites, newsletters, events etc, reaching out to a wider European audience
- dissemination through Online Discussion Groups involving internet professional groups and hobby science associations

4.3 Key resources, partnerships, activities

The partners for BHL-Europe include most important natural history museums and botanical gardens in Europe because they have large biodiversity libraries. All are domain experts, and will be disseminators of the project's outcomes through their extensive participation in related community networks and their contacts with the target user groups. Several of the selected partner institutions combine their domain and library expertise with a strong expertise in biodiversity informatics and related IT issues making them ideal for the technological implementation of the project. The IT expertise of the BHL-Europe consortium is completed by commercial companies. The Europeana Foundation is also a full partner of the BHL-Europe consortium to ensure a close collaboration. The consideration of the Smithsonian Institution and the Missouri Botanical Garden in the BHL-Europe consortium also ensure the close collaboration with the BHL-US project and the BHL experts around the world. The list of all consortium partners is provided below:

- Museum für Naturkunde - Leibniz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin
- Natural History Museum
- Narodni muzeum
- European Digital Library Foundation
- Angewandte Informationstechnik Forschungs-gesellschaft mbH
- ATOS Origin Integration France
- Freie Universität Berlin
- Georg-August-Universität Göttingen Stiftung Öffentlichen Rechts
- Naturhistorisches Museum Wien
- Land Oberösterreich
- Hungarian Natural History Museum
- Museum and Institute of Zoology, Polish Academy of Sciences
- University of Copenhagen

- Stichting Nationaal Natuurhistorisch Museum Naturalis
- National Botanic Garden of Belgium
- Royal Museum for Central Africa
- Royal Belgian Institute of Natural Sciences
- Bibliothèque nationale de France
- Museum national d'histoire naturelle
- Consejo Superior de Investigaciones Cientificas
- Università degli Studi di Firenze
- Royal Botanic Garden Edinburgh
- Species 2000
- John Wiley & Sons limited
- Smithsonian Institution
- Missouri Botanical Garden
- Helsingin yliopisto
- Humboldt-Universität zu Berlin

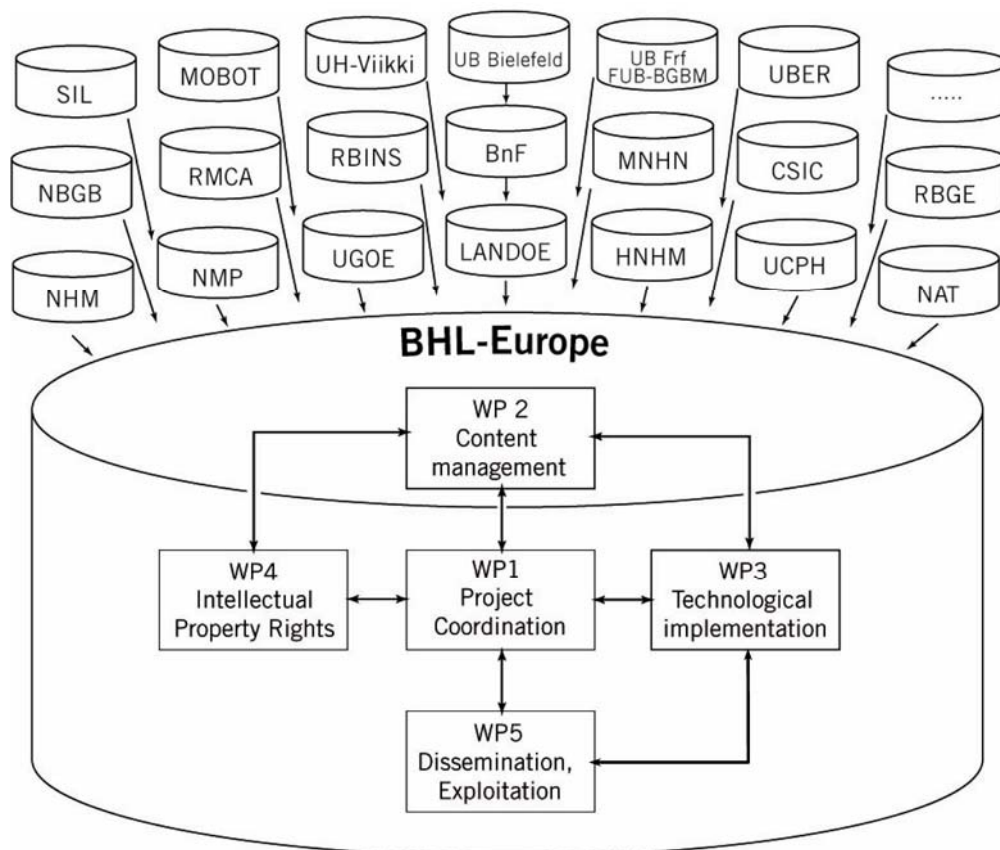


Figure 2. Organisation of the BHL-Europe project with five interacting Work Packages and a growing network of content providers.

A large number of these institutions are content provider for BHL-Europe (see also Figure 2). In addition to the content providers that joined the project from the beginning, we identified more European institutions holding digital biodiversity content that we acquired as new content providers for BHL-Europe. These new content providers currently are:

- Universitätsbibliothek Bielefeld

- Universitätsbibliothek Johann Christian Senckenberg, Frankfurt am Main
- Institute of Paleobiology Polish Academy of Sciences
- Gesellschaft für Biologische Systematik
- Landesbibliothekszentrum Rheinland-Pfalz – dilibri
- Rennes

Another very important partner for BHL-Europe is the Head Office of the Common Library Network GBV (VZG) in Göttingen (Germany), who is responsible for the development and hosting of the Global References Index to Biodiversity (GRIB), one of the key platforms developed within BHL-Europe. The other and main platform for BHL-Europe is the portal, together with the preservation and archive system and the ingest system running at a dedicated hardware infrastructure at NHM London.

5 Strategic analysis

5.1 Evaluation of potential future business models

In D1.5 we identified five potential strategic directions for BHL-Europe beyond the end of the project in April 2012:

- 1) Stop all: This strategy implies BHL-Europe will not continue any of the services established after the project terminates. This is our least favoured option, and as long as we are achieving the goals we have set for the project, there is no reason to follow this strategy.
- 2) Maintain: This strategy aims to keep the content that is already digitised and aggregated online on a long-term basis. This requires the technical maintenance of the systems on NHM servers in London.
- 3) Incremental growth: This strategy aims to continue the work with a significant part of the existing content provider network to some extent in order to improve quantity and quality of the content available through BHL-Europe. It is not intended to extend the network of content providers significantly. The improvement of the functionality of the BHL-Europe system is not foreseen. As the BHL-Europe system is based on open source software components and the BHL-Europe community portal is set up in Drupal, the community itself can help to add new features and improve the functionality of the components. This strategy requires the technical maintenance of the systems on NHM servers in London and the maintenance of the content provider network (incl. ingestion of new content).
- 4) Keep going and growing: This strategy aims to continue important activities started within the BHL-Europe project beyond the project duration. This includes the content aggregation, the technology development, the preservation and archiving, the dissemination and the work as an advisor for the digital library community in order to promote best practices. This strategy requires the technical maintenance of the systems on NHM servers in London, the maintenance and extension of the content provider network (incl. ingestion of new content) and the continuation of the technology development and dissemination. In terms of technology development, it mainly requires the incorporation of further user needs into the portal feature development and system extension.

- 5) Scale up: This strategy aims to extend the scope of the existing BHL-Europe project and collect much more content, invest more time in quality control and also develop technology solutions to cope with these requirements.

5.2 SWOT analysis of strategic directions

Using a SWOT analysis, we have evaluated the Strengths, Weaknesses, Opportunities and Threats of the five potential directions. The results are provided below. We analysed every option against the following main criteria: Content, Services, Funding, Stakeholders, Human resources, Technology. In more detail, these criteria cover Content quality, Content quantity, Service quality, Number of services, Network, Knowledge transfer, Partnership diversity, Funding, Governance, Scope, Staff expertise, Capacity building, Usability, Marketing. For every option, the results are summarised in a matrix.

Stop all

<p>Strengths</p> <ul style="list-style-type: none"> ○ not worry about funding, content, services, technology, human resources and stakeholders 	<p>Weaknesses</p> <ul style="list-style-type: none"> ○ lose content, services, technology, human resources and stakeholders ○ lose learning from Best Practice Network
<p>Opportunities</p> <ul style="list-style-type: none"> ○ none 	<p>Threats</p> <ul style="list-style-type: none"> ○ dissolution of the network ○ losing the brand positioning ○ repositioning of market existence if we decide to restart

Maintain

<p>Strengths</p> <ul style="list-style-type: none"> ○ content preserved & available ○ established a brand ○ little human resources, low costs 	<p>Weaknesses</p> <ul style="list-style-type: none"> ○ lose control of content development ○ no way of improving quality & quantity of content ○ lose learning from Best Practice Network
<p>Opportunities</p> <ul style="list-style-type: none"> ○ we can restart ○ attractive for other key players in the market to add value to their business 	<p>Threats</p> <ul style="list-style-type: none"> ○ overtaken by other partners or competitors ○ dissolution of the network ○ not flexible to market/technology

	<p>changes</p> <ul style="list-style-type: none"> ○ lose partner interest ○ losing the brand positioning ○ incremental decrease in usage
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Incremental growth

<p>Strengths</p> <ul style="list-style-type: none"> ○ capability to improve content & services ○ maintenance of partnership, network and users ○ develop brand visibility following key market needs ○ continue to provide data to Europeana 	<p>Weaknesses</p> <ul style="list-style-type: none"> ○ tight funding ○ slow reaction & inflexibility ○ slight content & branding weaknesses ○ not be able to keep up with new developments ○ no increase in partnership diversity ○ difficulty maintaining critical mass
<p>Opportunities</p> <ul style="list-style-type: none"> ○ this is fundable ○ we can grow ○ continue to exploit new resources & partners ○ focus on best practices in technologies provided by the market 	<p>Threats</p> <ul style="list-style-type: none"> ○ overtake by other partners & competitors ○ eroding partner interest ○ marginalisation

Keep going and growing

<p>Strengths</p> <ul style="list-style-type: none"> ○ we know how to do it ○ capability to improve content & services ○ develop partnership ○ develop brand visibility ○ continue to provide data to Europeana ○ sexy 	<p>Weaknesses</p> <ul style="list-style-type: none"> ○ difficulty to mobilise partner engagement ○ conflict of stakeholder interest
<p>Opportunities</p> <ul style="list-style-type: none"> ○ improve content quality & quantity ○ improve service quality & quantity 	<p>Threats</p> <ul style="list-style-type: none"> ○ requesting a larger amount of funding



- keep up with technology developments
- extension of partnership incl. diversification of partnership
- funding from other projects
- capacity building & knowledge transfer maintained
- be a significant global partner
- adapt to new user needs

- losing financial support
- lose reputation as reliable partner because expectations are not met
- completion of scanning is slow (high dependency on partner progress)

Scale up

Strengths

- capability to be a leading global player
- critical mass will be reached
- complete content ingestion fast
- very sexy
- continue to provide data to Europeana

Weaknesses

- difficulty obtaining a level of funding to do it

Opportunities

- step change in the improvement of content & service quality & quantity
- step change in the improvement of networking & integration
- partner with giants
- integrate European commercial / industrial partners
- adapt to new user needs
- provide additional value to Europeana
- providing best practices to Europeana
- potential to become a leader in technology and market

Threats

- overreach & collapse
- stir up the giants (Google, etc.)
- requesting a very large amount of funding
- losing financial support
- significant loss of reputation as reliable partner because expectations are not met
- completion of scanning is slow (high dependency on partner progress)
- no human resources
- lose core business and identity (to broad, less focussed)
- less service and nurturing (facilitating, engage) for partners

5.3 Environmental Scan

In order to narrow down the strategic directions and to identify and specify the objectives of the alternative strategies, we need to better understand the various aspects of the environment of BHL-Europe. The trends will show us future areas for work and help us to identify options for future projects based on the BHL-Europe project results. We need to consider technology factors, the economic climate and political factors to plan for the future. Potential allies and competitor need to be identified to investigate options for collaboration. We need to review the needs of our customers and understand the uncertainties to minimise the risks of a operational BHL-Europe service.

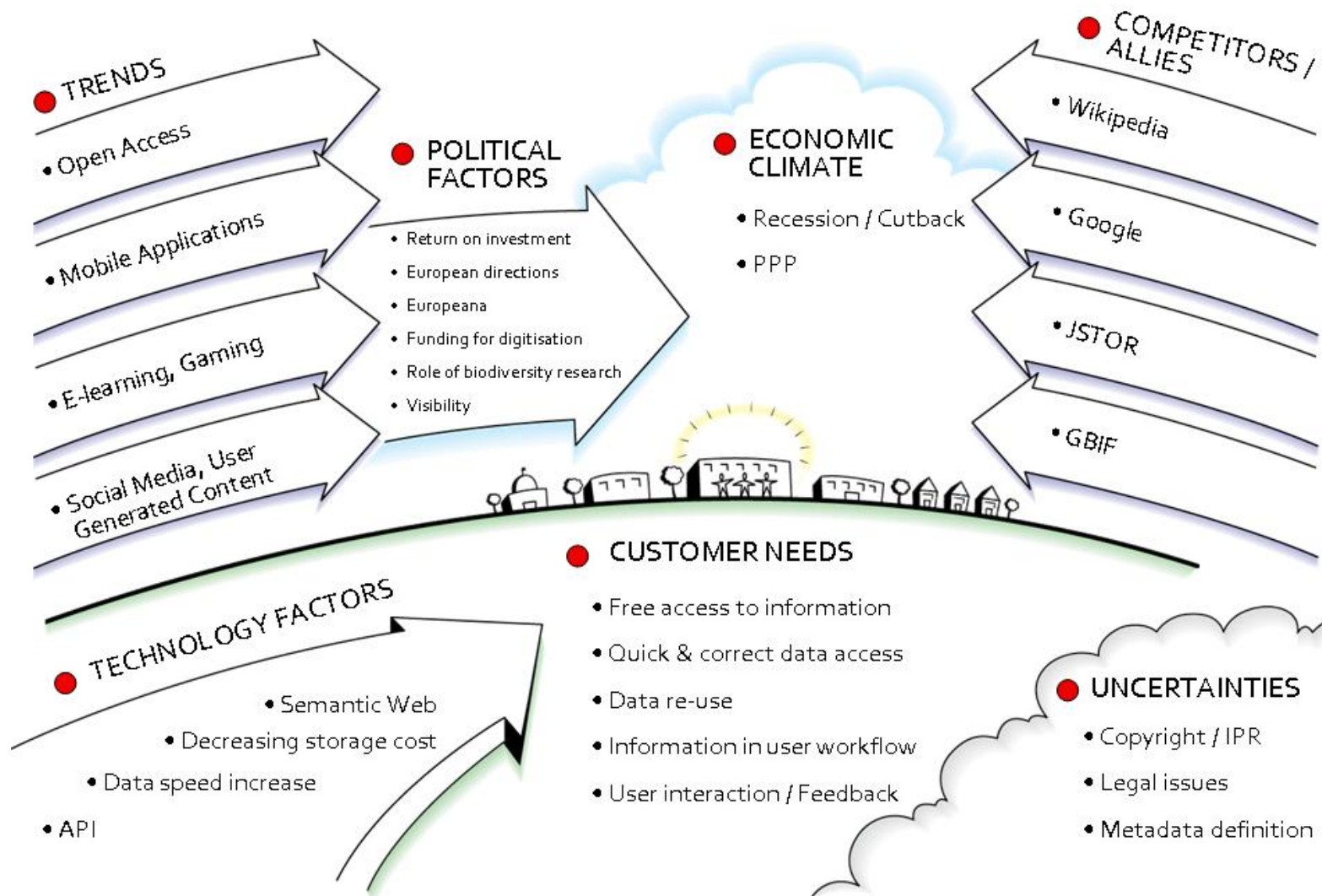
- Trends: Open Access, Mobile applications, Sharing / social media, User generated content / crowdsourcing, E-learning, Gaming, Semantic web, Cloud Computing / Cloud Storage, E-books
- Technology factors: API, Decreasing storage cost, Data speed increase, Semantic web, Cloud Computing / Cloud Storage
- Potential allies / competitors: Wikipedia, Google, JSTOR, GBIF, National digital libraries
- Economic climate: Recession / cutback, Public Private Partnerships
- Political factors: Visibility, Return on investment, European directions (Digital Agenda for Europe^{1,2}), Europeana, Funding for digitisation/aggregation, Role of biodiversity/taxonomy research
- Customer needs: Free access to information, Quick access to high quality data, Re-use data, Information in the user workflow, User interaction / feedback
- Uncertainties: Copyright / IPR, Legal issues (terms of use), Definition of metadata

Below is a graphical representation of the environmental scan.

¹ http://ec.europa.eu/information_society/activities/digital_libraries/index_en.htm

²

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/11/1292&format=HTML&aged=0&language=EN&guiLanguage=en>



5.4 Value chain

Based on the concept from Porter (1986), the value chain can be split into primary and support activities. We adapted this model to the situation currently established within the BHL-Europe project to better understand the value chain (Figure 3).

- (1) The first primary activity is the content acquisition and management of the content provider network to ensure a continuous delivery of content. The activities in the acquisition process includes the identification of potential content providers hosting relevant digital content according to our collection development policy. It is followed by the signature of the MoU to agree on the quality and quantity delivered to BHL-Europe over a certain timespan.
- (2) The second primary activity is the content processing, i.e. aggregation and enhancement. This activity is split into various activities ranging from metadata and content enhancement by the content providers (e.g. to follow the BHL-Europe file submission guidelines), content upload, metadata mapping, content ingest, data editing, and quality assurance (QA is done after every sub-activity in the process). This activity also covers the various options for data enhancement or semantic markup that are not yet implemented by BHL-Europe but envisaged for future (follow-up) projects. Thus, during this primary activity the main value for the users is created, which is high quality content with metadata enhanced according to user requirements.
- (3) The third primary activity is the content dissemination through the four access routes we are providing. Based on the functionalities of the sites, the user will have a different experience of the value depending on the task the user is performing.
- (4) The fourth primary activity is the marketing of the products and services through our main dissemination channels.
- (5) The fifth and last primary activity is the service provision through a dedicated feedback system for the content users and a helpdesk system for the content providers.

These primary activities are supported by a number of other activities to ensure a continuous and efficient execution of the primary activities (see also Schwolow & Jungfalk 2009).

- (1) The main support activity is the IT infrastructure we have established during the project including the hardware infrastructure and all software components deployed on this system. The automatic processing of data is an indispensable requirement to add value efficiently in terms of time and cost.
- (2) Human resources are another support activity, in particular on a management level and to provide technical support and training.
- (3) A final support activity is the knowledge management, which also involves the BHL-Europe helpdesk, project website and wiki to host, manage and distribute knowledge to the appropriate people and communities.

All these activities bring value to BHL-Europe, but also cost money, mostly in form of salaries for content providers, IT & data experts, and management resources (including technical support). In order to decide which strategic direction to follow and which business model to implement for a future and operational BHL-Europe, a value driven approach is required to fulfill the user needs and to survive as a competitive service in a highly dynamic environment. However, a cost driven approach is appropriate as a strategy to run the activities as described above but decrease the human investment into the primary activities. Instead of investing in the acquisition of new content providers, only the existing network of content providers is maintained to a large extent. As the second primary activity is the one with the highest potential to create value, but also the activity with the largest costs, it can not be

expected to perform this activity to its full extent with a cost-driven approach. As content aggregation is the basic activity in this context, content and data enhancement activities have to be reduced or even abandoned to reduce costs as much as possible.

The first three business models described above (stop all, maintenance, incremental growth) are considered as cost-driven, whereas the other two models are value-driven. Based on this categorisation and the arguments presented above, the decision process is now facilitated significantly. A survey analysis is presented in the next section to incorporate the view of the key BHL-Europe resources into the decision making process.

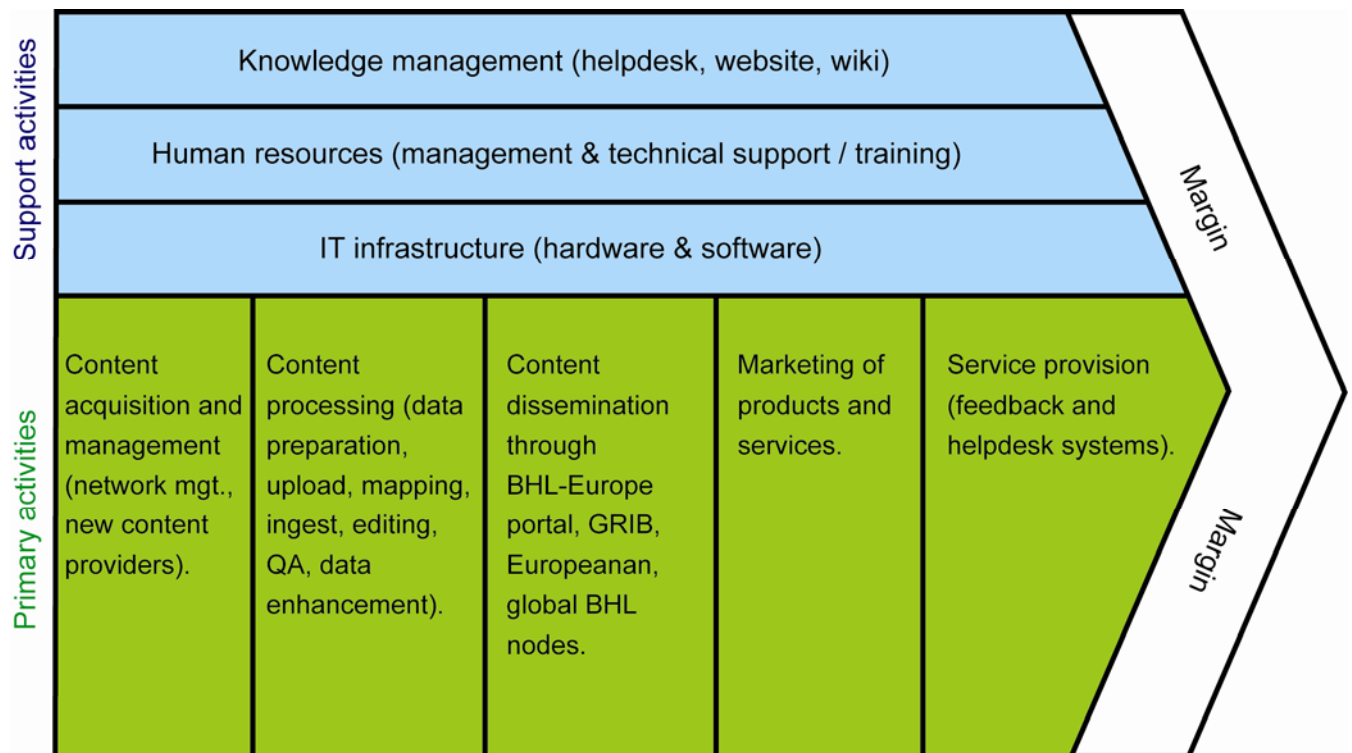


Figure 3. Overview of the BHL-Europe value chain as explained and detailed in the text above.

5.5 Content provider survey and user requirements

The content is the key for the success of BHL-Europe. Without a large volume of high quality content, all portal features and functionalities have no value. Therefore, continuous digitisation and aggregation is the basic operation to keep BHL-Europe going. It is also the basic for many kinds of data enhancement activities. Thus, the content providers are a key resource and partner to realise a continuous data delivery. This is also the largest group of people in the current project consortium. A survey among all current content providers was performed in summer 2011 to incorporate the view of this important resource for the future planning of BHL-Europe.

Twelve content providers filled the survey questionnaire. Ten of them indicated to continue scanning activities beyond the end of the BHL-Europe project. This means we would be able to continue the established aggregation process with the existing network of content providers without any extra efforts in content acquisition. An average of about five content providers is able to support the activities of an ongoing BHL-Europe network with in-kind contribution from the organisation itself (Figure 4). Although this would still allow BHL-

Europe to grow slowly, we would lose a significant number of content providers if we can not provide any additional funding to support the content contribution. This may explain why eleven out of twelve content providers are interested in a follow-up project. Based on the votes of the content providers, the majority is supporting the “Keep going and growing” strategy described above (Figure 5). Thus, the content providers are really interested to add more value to BHL-Europe, which requires additional funding.

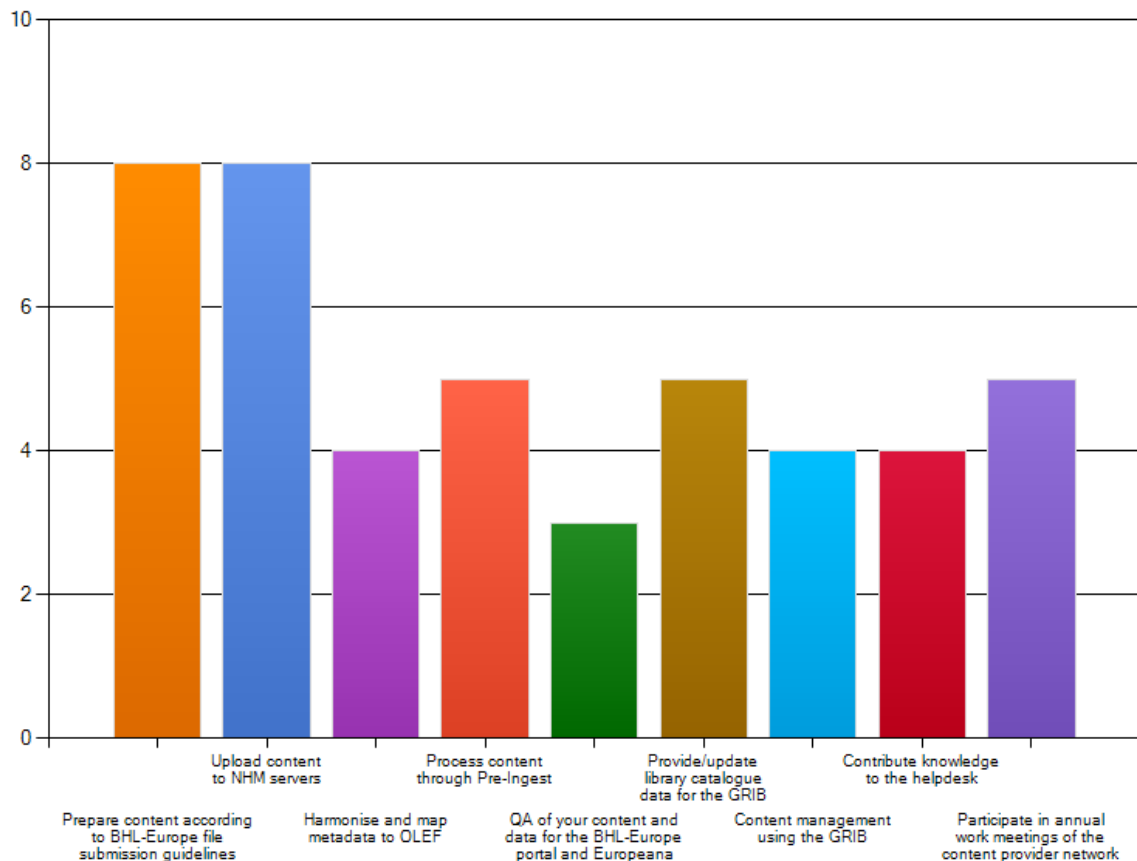


Figure 4. Results of the content provider survey: commitments for in-kind contribution of work after the end of the project.

In spring 2010, BHL-Europe did a user survey to identify the requirements of the users for the BHL-Europe system and portal¹. We also discuss with users regularly their requirements in personal meetings (at conferences, in dedicated workshops). This gives us an idea that the users highly appreciate the achievements of BHL made so far. However, more work is still needed to fulfill the requirements of the users, and some of these requirements are beyond the scope of the current BHL-Europe project. One example is the improvement of the search capabilities. This requires more and better data. Enrichment of metadata, semantic markup of texts and full text indexing of OCR are very important to make the BHL-Europe corpus more searchable. In order to enable high quality text mining, high quality OCR of the page images is required, which is a big challenge. The high costs for tools and services and the time to process this large corpus of page images are just two aspects of the challenge. It is impossible

¹ <http://www.bhl-europe.eu/de/publikationen/dokumente/first-user-evaluation-report>

to create this additional value to make BHL-Europe more attractive to various target users without additional funding.

The experiences with the users and the discussion we had with users over the last few years have shown that the users are able and willing to support the value creation. One example is the PDF generator of BHL-US. Users can create articles out of serial volumes themselves and download the pdf-files. Before downloading, users are asked to provide metadata for article they are downloading (author, title of the article, page range). Between January 2010 and April 2011, 60,000 pdfs were generated and 24,000 of them (40%) were ingested into CiteBank as users provided metadata for them. A quantitative analysis of the metadata quality has shown, that many users took the time to really create decent metadata to enable find the articles again in CiteBank¹. This example shows the motivation and engagement of the scientific community and high potential for crowdsourcing activities. However, more investment is required to set up infrastructures and services to facilitate crowdsourcing, e.g. for OCR improvement or semantic markup.

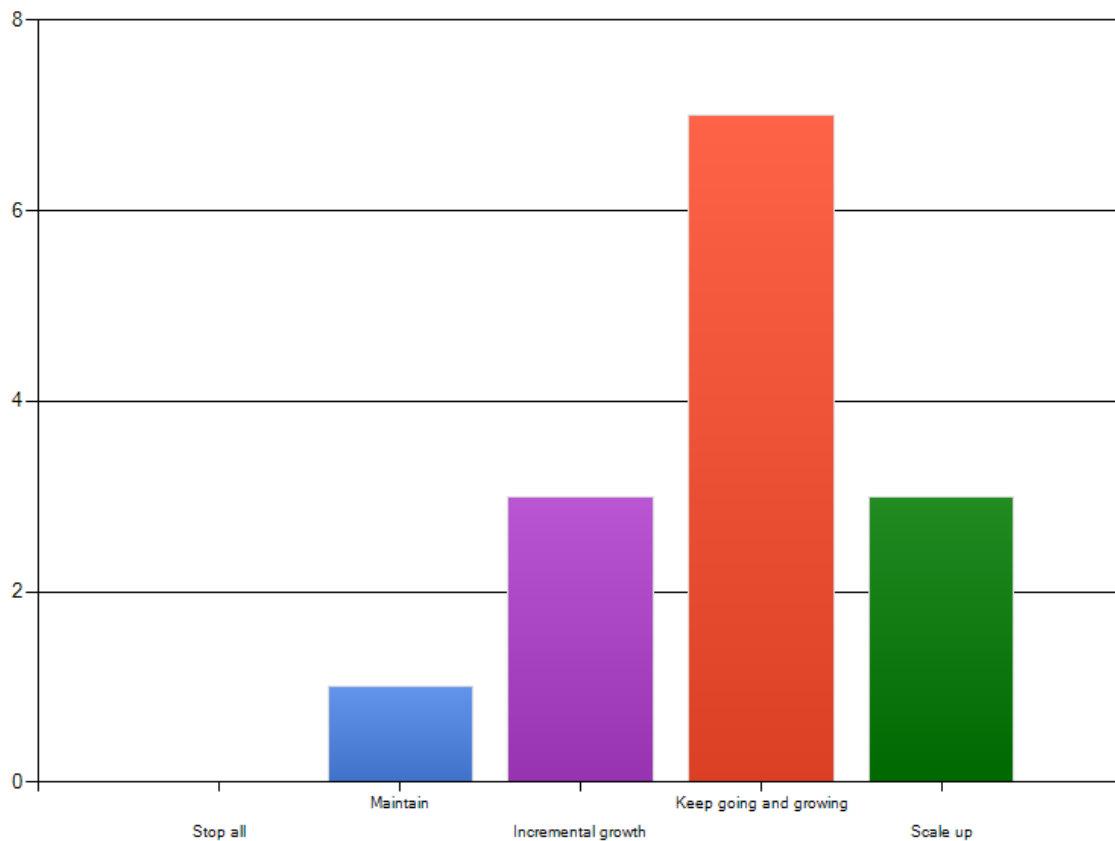


Figure 5. Results of the content provider survey: content provider view on the preferred business model.

On 28 October 2011, key players in bioinformatics and taxonomy gathered in London to celebrate the 150th birthday of Charles Davies Sherborn with a dedicated symposium: Anchoring Biodiversity Information - From Sherborn to the 21st century and beyond. It was a clear outcome of that day that BHL-Europe is an important player to build a Global Names Architecture that interconnects and integrates various initiatives, projects and services in the

¹ <http://www.slideshare.net/trosesandler/lita2011-bh-1crowdsrarticles>



biodiversity domain. This is necessary to leverage the full value of taxonomic and biodiversity information created and compiled around the world. These aspects have to be taken into account when planning for the future: Sustainability can only be achieved through the continuous integration of BHL-Europe results into the Global Names Architecture. On the other hand a continuous integration is also required in the context of the Europeana related initiatives, projects and services.

From 14-15 November 2011, BHL partners and collaborators from all over the world came together in Chicago for the Life and Literature conference. The goal of that conference was to set the goal for the next five years of BHL. One track of the conference focussed on education and the potential of the literature corpus of BHL in this domain. The educational outreach of BHL was identified as highly important. The BLE was well received during the conference and identified as the ideal tool to fulfill these requirements. Therefore, BLE needs to be maintained and further developed.

From the perspective of the BHL-Europe customers (content providers and content users), more value needs to be added to BHL-Europe to make it attractive and competitive. The current system as we are building it in the BHL-Europe project is a very important prerequisite and a good starting point. A continuous investment is required to build on the expertise and experience of the partner network and deliver a high value service for the content users.

5.6 Objectives of the EC work programme

- # needs to be checked and verified when calls are open and public
- it is expected that digitisation in a context necessary for BHL-Europe is not part of the next calls
- similarly it is expected that content aggregation will not be supported to the same extent as it was for the current BHL-Europe project
- a project is planned entitled EuropeanaResearch that will help Europeana to develop Europeana in a better service for researchers through data enhancement etc – if BHL-Europe will be part of this proposal, we can certainly create more value but the content aggregation will not be supported significantly; only a small part of the current BHL-Europe consortium would enter this project
- a proposal is underway entitled Pro-iBiosphere to identify current gaps before an Open Biodiversity Knowledge Management System can be build; BHL-Europe is represented by MfN to ensure legacy literature is considered as well in this approach

6 Business plan

Based on the above analysis it is clear that our two customer groups clearly want more value added to BHL-Europe. Although the incremental growth model is achievable without additional funding as specified below, it is clearly not sufficient to provide the added value with a cost-driven approach. Therefore, BHL-Europe should aim for the implementation of the keep-going-and-growing business model after the end of the project on 30 April 2012. However, keep-going-and-growing can not be implemented as specified in section 5.1 because a successor of the BHL-Europe project needs a new focus that goes beyond the mere content aggregation and the increase of the corpus of digital corpus of digital literature. We



need to build on top of this corpus and the infrastructure instead to create additional value for the customers. Furthermore, it is currently not achievable to keep the consortium together for a new project. Therefore, both business models need to be implemented in parallel to ensure the value delivered to the customers efficiently.

In the following the business plan for both models is developed, with the incremental-growth model as the baseline. We focus on the vision, mission, objectives, value proposition, key resources (including human resources and management), key activities and costs to outline the business models in more detail. We also present an overview of the roadmap for the future and a risk analysis for the chosen approach.

6.1 Vision statement

European biodiversity knowledge freely available globally to everyone.

6.2 Mission statement

Mobilising and preserving digital European biodiversity heritage literature and facilitating the open access to this literature through a multilingual community portal, the Global Reference Index to Biodiversity, and Europeana.

6.3 Objectives

Above we have analysed the strategic directions for an operational BHL-Europe service. Below the objectives for every individual business strategy are listed. The objectives in italics are not achievable implementing the incremental growth business model. #Below list needs to be verified based on the objectives of the new calls.

- Provide a multilingual and open access point for the search and retrieval of biodiversity content through BHL-Europe, GRIB, global BHL and Europeana.
- Further and value-added development of the BHL-Europe multilingual biodiversity digital library.
- Long-term preservation and sustainability of the content and metadata produced by national biodiversity digitisation programmes.
- *Establish cloud infrastructures for storage and mining of data from biodiversity literature.*
- Improve the interoperability of European biodiversity digital libraries by the application of tools and technologies developed with the BHL-Europe Best Practice Network.
- Collaborate with content providers to ingest metadata and content in a standardised way.
- *Collaborate with aggregators and content providers to automate and simplify the ingestion process, accumulate digitised content, standardise the data that describes it, enrich the data and promote persistent identifiers.*
- *Collaborate with content users to ensure that the proposed approach directly addresses user need and that the outcomes fulfill the user requirements.*



- *Collaborate with users to simplify the interaction between users and the BHL-Europe platform for crowdsourcing activities and engage them to contribute in the data enhancement process.*
- *Provide high quality OCR of page images to perform metadata enrichment, semantic markup and full text indexing of documents for a significant improvement of the search and retrieval process.*
- *Negotiate with Rights Holders to enable access to in-copyright content.*
- Disseminate best practice guidelines and standards to content providers and the community.
- *Promote the adoption of best practice, standards and specifications for the large-scale implementation of such repositories.*
- *Raise awareness and ensure that the services are known and used by the target users.*
- *Building a strong brand associated with BHL-Europe*
- *Facilitate and enable the initiation of scanning initiatives in European countries not yet involved in digitisation programmes and improve the infrastructure for digital libraries in all EU countries.*

6.4 Value proposition

BHL-Europe delivers the following values to content providers and content users and helps them to solve the following problems. In summary, the key value proposition for the IG model is aggregation, while for the KGG model it is data enhancement. What this means in detail is specified below. Values in italics can not be proposed implementing the incremental growth business model.

6.4.1 Value proposition for content providers

#Below list needs to be verified based on the objectives of the new calls.

- *BHL-Europe enriches the metadata of all partners so that every content provider can retrieve and re-use the enhanced data.*
- BHL-Europe helps to create OCR text from the scanned page images for further data analysis and metadata enrichment.
- *BHL-Europe helps to create high quality OCR text from the scanned page images for further data and text mining, metadata enrichment, semantic markup, and crowdsourcing.*
- BHL-Europe provides (open source) tools and technologies to cost-effectively present the digital content and manage digitisation projects in the biodiversity domain.
- BHL-Europe establishes a sustainable preservation and archive system to store, curate, manage, and migrate our partners' data. Thus BHL-Europe will have strategies and processes in place for long-term preservation of the data produced by biodiversity digitisation programmes.
- BHL-Europe provides access to an important up-to-date and cost-effective pool of information and network of collaboration to help partners use best practice approaches.



- BHL-Europe provides multilingual access to the content of all partners, thus saving partners the cost of creating a multilingual portal.
- BHL-Europe increases the visibility of the content of all partners, thus increases the visibility of the partner institutions.
- BHL-Europe is changing the library strategies for physical collections.
- BHL-Europe is facilitating and changing the interlibrary loan process.
- BHL-Europe will facilitate funding for scanning
- BHL-Europe dissemination activities will reach a large group of target users to increase the use of all data and content. Thus, BHL-Europe gives a cost-effective way to multiply the impact of partners' editorial activities and build a presence with users, the professional community, and other organisations including national governments.
- BHL-Europe makes all the content available through Europeana – a search platform to a collection of European digital libraries. This will increase the visibility of BHL-Europe content, and it will also increase the visibility of BHL-Europe content provider data. *As Europeana enriches the metadata, this new metadata can be retrieved through BHL-Europe too. BHL-Europe benefits from the network and knowledge building capacity of Europeana, thus increasing the access to state-of-the-art research and technologies.* A sustainable Europeana will also support the sustainability of BHL-Europe.
- BHL-Europe provides access to the complete content through the Global Biodiversity Heritage Library (see below for details). The content will be globally mirrored and backed-up for preservation and access.
- BHL-Europe helps content providers to manage their scanning activities through the Global References Index to Biodiversity.
- BHL-Europe is creating a collaborative spirit: working together on a common goal.
- BHL-Europe facilitates collaboration between partners beyond project goals.

6.4.2 Value proposition for content users

#Below list needs to be verified based on the objectives of the new calls.

- BHL-Europe is accumulating a trustworthy digital collection of Europe's biodiversity heritage literature for research, education and a number of other applications.
- BHL-Europe provides a sustainable preservation and archive system to store, curate, manage, and migrate our partners' data. This strengthens our position as a long-term trusted source.
- BHL-Europe provides free and direct online access to comprehensive information not currently publicly accessible through different access routes, thus facilitating the access for a large number of target users (see also more specific values proposed below).
- BHL-Europe provides a multilingual community portal to search or browse the digital archive, read the literature online, download all relevant data (bibliographic information, page images, pdf of the publication or parts of the publication, OCR) and print the literature.
- BHL-Europe provides access to Taxonomic Intelligence services to facilitate the search for taxon specific information. This does not only include the search for the scientific name of a species but also the search for vernacular names.



- BHL-Europe makes research in the biodiversity domain more efficient (time and budget) as identification of biological species takes less time, and thus research based on historical taxonomic works is easier and quicker, as time and costs involved in visiting libraries is significantly reduced.
- BHL-Europe improves the quality of research in the biodiversity domain as the accuracy of citations will be improved, and thus the possibility of “reinventing the wheel” is avoided where new research inadvertently repeats older research, as biodiversity information is shared with a very large community.
- BHL-Europe is repatriating biodiversity knowledge.
- BHL-Europe facilitates sharing books with other countries, e.g. third world countries.
- BHL-Europe facilitates library management by reducing the handling time for librarians and by reducing the wear and tear of special (rare) collections.
- BHL-Europe facilitates the production of high quality paper copies of rare or precious books.
- BHL-Europe provides high quality images (artwork) of animals and plants.
- BHL-Europe is an extensive resource for teaching material as a complement to textbooks used in schools.
- BHL-Europe provides access to the digital archive through Europeana thus making a major corpus of science material available to every European citizen to help raise the awareness and appreciation of biodiversity heritage. The access through Europeana also facilitates the cross-domain search and retrieval of content for all users.
- *BHL-Europe welcomes user feedback and interacts with users to effectively improve the service quality and the addition of further digital collections.*
- *BHL-Europe collaborates with users to establish crowdsourcing facilities to continuously enhance metadata and content quality.*
- *BHL-Europe continues to add more content to the existing corpus through the implementation of the collection development policy.*
- *BHL-Europe facilitates the grow of open access journals for taxonomists. One recent example is the European Journal of Taxonomy (EJT).*
- BHL-Europe provides information to users about the distribution of heritage material still to be digitised and offers mechanisms to place requests for scanning such material through the Global References Index to Biodiversity.
- In making all the content available through the Global Biodiversity Heritage Library, BHL-Europe is also incorporating content that is made available by the global partners (see section 6.4 for details). This is also bringing digital copies of European heritage literature that is not available in Europe anymore back to Europe.

6.5 Key Resources, Key Activities and Costs

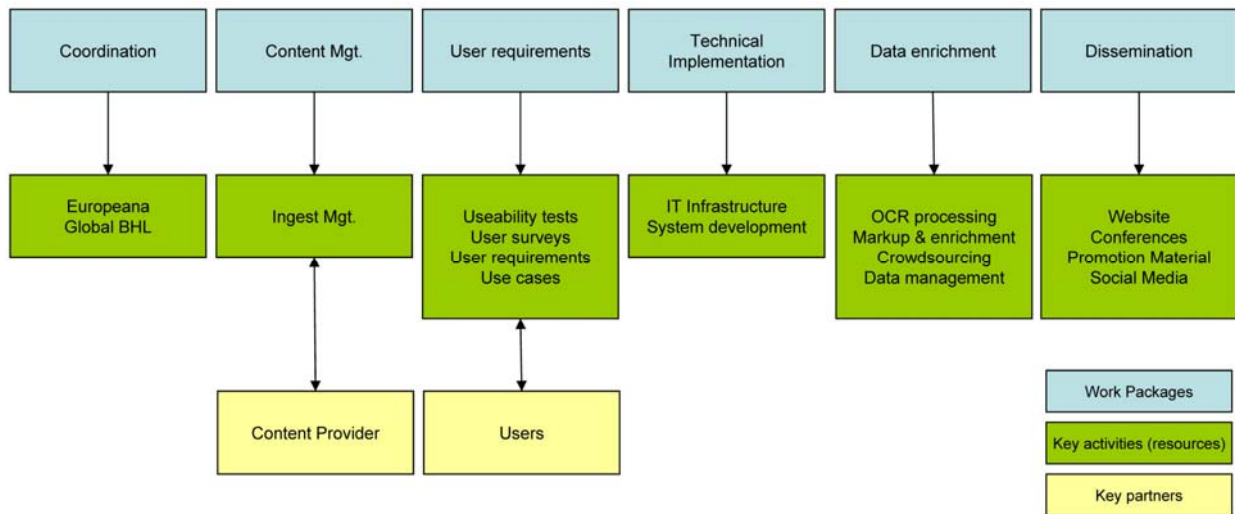


Figure 6. Key resources, activities and partners for the operations implementing the keep-going-and-growing model. As this model will be implemented in a new project, the separation in Work Packages is also indicated. This would be the role of BHL-Europe partners in such a new project – to be refined later in the process.

#Above is an outline for the keep-going-and-growing option. More details need to be investigated to develop this further, once the objectives of the new calls are clear.

For the implementation of the IG business model, we identified eight basic business components, which also translates into key activities (see also Figure 7). The commitments presented below need to be confirmed and more details will come with the final version of D1.9.

- (1) Long-term sustainability of the content already digitised and aggregated: To achieve this we need to manage the hardware and software infrastructure established within the BHL-Europe project. As NHM have committed already to maintain the infrastructure and thus the access to and preservation of the content aggregated during the BHL-Europe project, long-term sustainability of the content already digitised and aggregated is secured. We currently estimate this will need one full-time equivalent (FTE) including a Technical Director.
- (2) Long-term sustainability of the library catalogues already aggregated via the GRIB. The GRIB is build by the head office of the common library network GBV¹ (VZG²) for BHL-Europe. The Gemeinsamer Bibliotheksverbund (GBV) is the common library network of the seven German federal states with more than 400 member libraries. Its head office in Göttingen is responsible for the development of new library specific services. After the end of the BHL-Europe project in April 2012, the VZG will further host and maintain the GRIB at least until February 2020 according to a bilateral agreement. This service also includes the import of data from partner libraries as well as free and open access to the data via standard interfaces (www, Z39.50, SRU, internal XML, and OAI). The Museum

¹ GBV homepage: <http://www.gbv.de/vgm/>

² VZG homepage: <http://www.gbv.de/vgm/info/biblio/01VZG/index?lang=en>



für Naturkunde Berlin will act as the formal liaison between the BHL-Europe partner libraries providing the data and the VZG through the BHL-Europe Director.

- (3) Long-term sustainability of the (content provider) network, including Europeana. Library networks have proven to exist over long time periods and work continuously on a voluntary basis. The European Botanical and Horticultural Libraries (EBHL, <http://www.kew.org/ebhl/home.htm>), for example, exist as a network since 1994 with very little financial support. The activities of EBHL do very well align with the activities anticipated by the BHL-Europe content provider network. For example, EBHL partners are supporting each other to run digitisation projects. In collaborating with EBHL, we would be able to facilitate and support the knowledge share with the expertise we build in BHL-Europe. As some of the BHL-Europe libraries are already actively involved in EBHL, this collaboration would even reduce duplication of work. On the other hand, BHL-Europe would be able to hold meetings and workshops alongside the annual meetings of EBHL to efficiently use resources. We would be able to reach a larger group of libraries currently not involved in BHL-Europe to facilitate the content acquisition process. Further discussions with the board of EBHL are necessary to confirm the level of collaboration to support a sustainable network of (potential) content providers of BHL-Europe. The Museum für Naturkunde Berlin will act as the liaison for the BHL-Europe content providers providing through the BHL-Europe Executive Director. The director will maintain the communication channels also with the ingest manager and technical support team facilitated by the content provider helpdesk. The director will also continue to collaborate with Europeana (incl. CCPA/Europeana Network and ingest team).
- (4) European participation/leadership in Global BHL. To achieve this, the BHL-Europe Executive Director and Technical Director needs to align with the other BHL nodes. The BHL-Europe Executive Director will be a member of the Global BHL Coordinating Committee.
- (5) Easy method for current/future partners to add content to corpus, including IT support. To achieve this we need to maintain the mapping and ingest management and support structure established in the BHL-Europe project. This also may require minor tweaks and update of the software package for the portal etc. The museums in Vienna and Linz currently managing the ingest process have committed to maintain the ingest process for the content providers of the existing BHL-Europe project.
- (6) Maintain and amend the Biodiversity Library Exhibition in collaboration with Europeana and Global BHL. NMP has built BLE and will continue its engagement with BLE.
- (7) Helpdesk in managing user feedback on data/content quality and follow up data/ content QA management. To achieve this we need one contact point to collect and distribute incoming feedback. This will be the BHL-Europe Executive Director. The maintenance of the helpdesk infrastructure, however, will be provided by RMCA after the end of the project.
- (8) Lobbying and high level strategic network management: To achieve this we need to align with CETAF. CETAF is the Consortium of European Taxonomic Facilities. It is a partner for BHL-Europe although it will not be directly involved in the activities. CETAF has recently established a secretariat office at the The Royal Belgian Institute of Natural Sciences in Brussels funded by the major European natural history museums and botanical gardens. Thus, CETAF now has a much more solid foundation to also support the lobbying and the high level strategic management of initiatives like BHL-Europe.

For the basic operations under the IG model we plan in total with about 2.2-2.7 FTE. One FTE would be invested in the infrastructure maintenance. The overall coordination, network management and dissemination would be between 0.8 and 1.0 FTE for the Museum für Naturkunde Berlin. The ingest management and technical support is currently estimated to be 0.2-0.5 FTE in total for NHMW and LANDOE. The BLE maintenance is estimated to be 0.2 FTE for NMP.

These FTE estimates above do not include any work from the content providers. Every institution interested in contributing content to BHL-Europe is expected to provide the collaborative work with BHL-Europe as in-kind contribution of that institution (part of the existing scanning programme / project or library activity). BHL-Europe already discussed with the consortium partners the option for committing staff time to support BHL-Europe services to secure a project independent funding of BHL-Europe business components. As indicated in the results of the content provider survey (see above), at least some of the content providers have the capacity to cover the collaborative work necessary to support a continuous content aggregation.

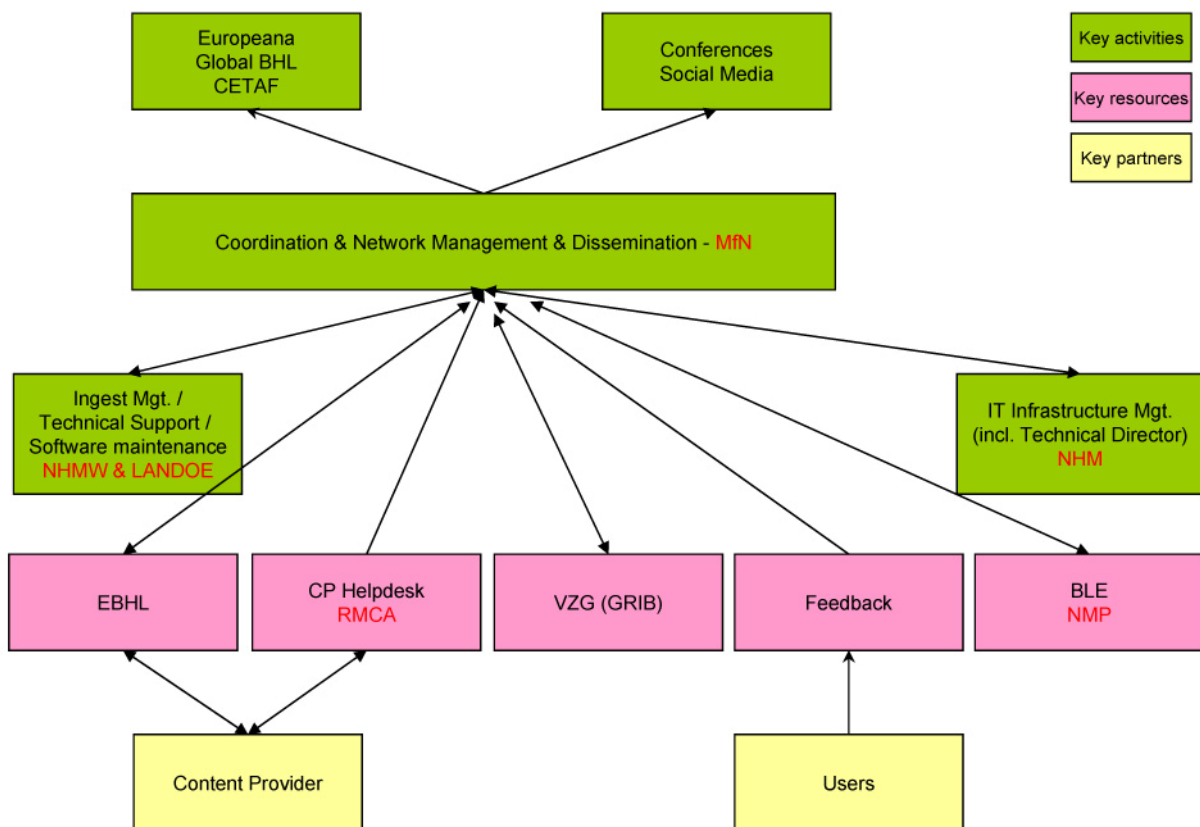


Figure 7. Key resources, activities and partners for the basic operations implementing the IG model. Dependencies and communication routes are shown as well. The commitments presented herein need to be confirmed and more details will come with the final version of D1.9. For more detail see text.

A formal structure is suggested to facilitate the governance of the BHL-Europe operations and make the decision making process transparent to all parties involved. We are going to implement the BHL-US governance model which has proven to work very well for



organisation of this size in this environment. The Europeana Foundation governance model is also very similar.

We are going to set up an Executive Committee with elected members. A Steering Committee will consist of the members with explicit commitments for key activities (currently MfN, NHM, NHMW, LANDOE, RMCA, NMP). The Institutional Council will consist of the content and data providers of BHL-Europe. More details will be provided with the final version of this document.

6.6 Business Model summary

Key Partners Content providers Content users Europeana Global BHL VZG CETAF	Key Activities Coordination Content / network mgt. Ingest mgt. <i>User requirements</i> <i>IT developments</i> IT infrastructure <i>Data enrichment</i> <i>Dissemination</i>	Value Propositions Four access points Preservation and archive Data enhancement Increased visibility Open source tools Best practice guides Knowledge pool Multiply partner impact Scanning management Trustworthy collection Long-term trusted source Free online access Multilingual portal Taxonomic Intelligence Facilitate library mgt. High quality artwork User interaction Scan requests	Customer Relationships Helpdesk FAQ Email Annual meetings Feedback form Email	Customer Segments Content Providers Content Users
	Key Resources IT infrastructure (incl. software & hardware) GRIB BHL-Europe Director Technical Director Ingest manager Technical support IT & bioinformatic experts PR & useability experts		Channels Website Access points (portal etc.) Social media Publications Partners & resources Conferences	
Cost Structure Platform Costs (Infrastructure maintenance) Salaries: in kind contributions / partner commitments		Revenue Streams Free		

#This certainly needs some more update if we amend the value proposition and objectives above.

6.7 Roadmap for 2015

Still to come.....

6.8 Risk analysis

Still to come.....

7 Europeana and Global BHL

Europeana is a major partner of BHL-Europe with its own products and agendas. Europeana itself has a business plan and a strategic plan that is highly independent from BHL-Europe. As Europeana is very important for BHL-Europe, a summary of their future strategies is also provided below.

Although BHL-Europe and Global BHL have some objectives in common, the Global BHL is a separate initiative. Therefore, an overview is provided below.

7.1 Europeana – ask for update

The Europeana Strategic Plan 2011-2015¹ sets out a clear vision for the future direction of Europeana - Europe's digital library, archive and museum. It focuses on four strategic tracks - aggregate, facilitate, distribute and engage - that will enable Europeana to generate real value for its stakeholders. The plan complements the release of 'The New Renaissance, the Comité des Sages'² report on digital cultural heritage to the Commission, which recommends 'a clear vision and plan for the future development of Europeana.'

The plan sets out to continue to aggregate the material from across Europe and become THE trusted source of cultural heritage. Europeana should also be a facilitator and support the cultural heritage sector through knowledge transfer, innovation and advocacy. To distribute the data and make heritage available to users wherever they are, whenever they want it; through APIs and search widgets, in teaching resources, on blogs, college sites and social networks. Europeana will also explore new ways of actively engaging users in the development of the site and making creative reuse of its content.

Europeana will be one of the access points via which the BHL-Europe material will be made available. Europeana aims to continue its service in the future and reach the goals it has set out in the strategic plan. The Europeana Foundation receives funding from the European Commission, with matching funds supplied by the Member States to carry out its activities. Europeana Foundation competes for project funding from the EU. It has one project run entirely by the Europeana Foundation, Europeana v1.0 and it is a partner or subcontractor in 20 other projects. Without this matching funding, Europeana cannot participate in the projects and would therefore not have been able to progress beyond the prototype phase of 2008 and leading directly to increased material being available from the countries and establishing improvements of the site for the end user.

Europeana v2.0 is a project under the ICT PSP programme starting summer 2011, with the aim to provide the majority of the funding required to ensure the continued running and development of Europeana from August 2011 to December 2013. Activities will include the enhancement of content, increase and facilitate the re-use of content, develop a sustainable finance and provision model, create centralised repositories of linguistic resources, release new versions and maintain the service and its APIs, develop features and functionalities, improve the user experience and coordinate the network of contributing organisations.

¹ Europeana v1.0 project website: <http://version1.europeana.eu/web/europeana-project/documents>

² European Commission website: http://ec.europa.eu/culture/pdf/report_Comite_des_Sages.pdf



7.2 Global BHL – ask for update

The Global Biodiversity Heritage Library (Global BHL) is a cooperative network of autonomous decentralised members operating programs and projects to make digitised biodiversity literature available through open access to all. The goals of the Global BHL are:

- Digitise and make available as much legacy biodiversity literature as funding and copyright law allows through the member programs and projects.
- Maintain repositories for the storage, preservation, and serving of this digitised literature.
- Develop services to make this digital content widely and easily available for use by biodiversity research projects and others.
- Share data, technologies and knowledge between nodes. Especially important in this regard is the redundant storing of BHL content in multiple, geographically distributed, independently administered sites. This will avoid the “monoculture” problem common to many large digital library projects and set the framework for long-term preservation of the digital assets.

The principles of the Global BHL are:

- Open access: The digital content served by Global BHL members is available without cost and can be reused by other projects and users in general.
- Collaboration: Each Global BHL member will actively coordinate and converge its activities with other BHL partners to achieve agreed-to objectives.
- Decentralisation: Each Global BHL is self-governing and funded.
- Interoperability: Each Global BHL member will deploy technologies enabling sharing of contents and services with other Global BHL members.
- Transparency: The processes of the Global BHL will be transparent, public and clear to all members.
- Respect and solidarity: The Global BHL will operate within the legal statutory frameworks of its members.

The Global BHL Partner Projects are:

- (1) BHL
- (2) BHL-Europe
- (3) BHL-China, which includes the Chinese Academy of Science – Institute of Botany, Chinese Academy of Science – Institute of Zoology, Chinese Academy of Science – Institute of Microbiology, and Chinese Academy Science - Institute of Oceanography
- (4) BHL-Australia, which includes the Atlas of Living Australia (ALA), Museum Victoria, and several Australian digitisation projects
- (5) BHL-South America, which includes BIREME/SciELO (Scientific Electronic Library Online), Museum of Zoology, University of São Paulo, National Biodiversity Program, Ministry of Environment, and several museum and herbaria libraries.
- (6) Arab Language BHL organised by the Bibliotheca Alexandrina.

The Global BHL partners are in different stages of project implementation and are establishing a Global BHL Coordinating Committee to better align the project's strategies. The hope is that by sharing digitised biodiversity literature content, by mirroring content, and by sharing technologies and best practices the global partners will reduce the resource burden required by each separate project.

8 Appendix and reference documents

8.1 BHL-Europe deliverables and documents

The Business Plan for long-term sustainability (D1.9) in M36 of BHL-Europe will further include as annex the following documents or refer to them:

- D3.8 – Sustainability policy for continuation of service e.g. hosting, future development, helpdesk provision for service users/content providers etc.
- D4.3 – Deliver IPR framework to support long-term access and sustainability of the digitised material
- D2.9 – Delivery of the final revised best practice guidelines and standards (incl. BHL-Europe in a nutshell, BHL-Europe collection development policy)
- BHL-Europe Memorandum of Understanding
- Future objectives for development based on the user survey and usability tests (D5.9)

8.2 Literature

Porter, M.E. 1986. Changing Patterns of International Competition.- California Management Review 28: 9-40.

Schwolow, S. & Jungfalk, M. 2010. The Information Value Chain: Strategic Information Management for Competitive Advantage.” Bachelor’s project. Copenhagen Business School, 2009. *Information Value Chain*. 2009. Web. 13 Mar. 2010. <www.informationvaluechain.com/information-value-chain.pdf> [checked 9 October 2011].