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C5.133 second Report on Sustainability of the Software in the EDIT Platform for Cybertaxonomy

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PU	Public	
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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)	

C5.133 Second Report on Sustainability of the Software in the EDIT Platform for Cybertaxonomy

Executive Summary

The software produced in the framework of the EDIT Platform for Cybertaxonomy has been put under a public license and is distributed as open source. Sustaining the EDIT Platform thus means supporting the open source environment that allows maintenance and further development of the Platform.

All partners involved in Platform software development are committed to support further development in the context of in-house projects and to attracting further project funding to improve the Platform. Larger externally funded projects that support parts of the Platform functionality and that are already in place include PESI, SYNTHESYS II, BHL-Europe, VIBRANT, i4Life, OpenUp!, and GBIF-Germany. Two proposals to the European Commission have passed the initial threshold and an increasing number of applications are being submitted to international and national funding agencies. Some partners have already declared their intention to continue to make core staff time available to support Platform services or tool development.

A campaign is being conducted to both popularise and test the usability of Platform software. First results of this can already be seen, for example, major European botanical institutions have identified the Platform as the most suitable software for e-Flora development, and the partners hosting the Fauna Europaea and Euro+Med Databases will move these major checklists into the Platform environment.

However, especially in taxonomic data management, long-term dependability is a key for acceptance. The modern technological basis of the Platform architecture forms a base for long term joint development and support, as well as for versatility and fancy software features. Acceptance of new software is a slow process, and confidence in its sustainability is a key issue for decision makers. Successes in project applications and the increasing number of uses of the Platform is an encouraging sign that EDIT's comprehensive and collaborative approach is starting to provide the promised synergies. This needs to be followed up by the partner institutions with commitment of core resources. To be able to hold together the developments under the EDIT label, the future coordination of core elements of the Platform needs to be reliably secured.

An important step in that direction has been taken by the decision to carry on the work of EDIT's Information Science and Technology Committee (ISTC) as a committee under the Consortium of European Taxonomic Facilities (CETAF). The ISTC has decided to form a subgroup specifically concerned with the management and governance of the Platform's open source software. This is on the one hand to ensure coordinated and joint technical development. On the other hand, this will ascertain adequate representation of the stakeholder institutions and projects.

While current economic conditions have not permitted EDIT institutions to come forward with direct financial support for personnel executing the coordination tasks, we are confident that at present the momentum can be maintained and steadily increased through project resources and existing institutional commitments.

1. Introduction

The EDIT Contract defined a sustained Internet Platform for Cybertaxonomy as an outcome of the project, aiming "at the creation of a network of European Service Centres where individual institutions or small consortia take responsibility of ... software or information systems (Annex 1). The explicit collaborative nature of this endeavour stood in contrast to past monolithic software developments based at individual institutions, and it has proven to present a major challenge in the project. Workpackage 5 managed to produce a software architecture and software applications that adhere to the requirements defined at the outset of the project. Sustainability of the achieved results remains a challenge for EDIT institutions. Progress made to reach this aim is the focus of this report, which is a revision of the one delivered in February 2010.
Institutional policies vary among EDIT institutions and are not determined by the taxonomic workflow alone; in many cases these decisions are determined more by the necessities of the institutions administration and public relations, etc. Software developed as part of the EDIT Platform therefore had to be compatible with a range of options that are present in EDIT institutions. This was one of the main reasons to devise a new software architecture for the EDIT Platform for Cybertaxonomy. This architecture consists of several layers of specifications, software code, and software applications.

At the basis is the "Common Data Model" (CDM), which specifies the content and structure of the data handled in the Platform. It covers the entire scope of data needed in the taxonomic workflow, aiming at the production of monographs, faunas, floras, and checklists, both on the web and as print-output.

The CDM provides the specification for a "CDM Data Store", which is the repository of data used by a specific group of users (e.g. the authors of a web revision or contributors to a checklist). One of the requirements defined by EDIT institutions was scalability of the Platform, ranging from single-user application to institutional networks and Internet-based collaboration.

To access, edit and process data in the CDM Data Store, functions and procedures have been programmed, which are united in the "CDM Library". In addition to general programming code needed for the handling and processing of data, the CDM Library contains a comprehensive set of routines and procedures specific to the taxonomic domain, for example those based on the rules laid down in the international codes of nomenclature.
Database access is isolated from the functional code in the CDM Library, which has been programmed using the Java programming languages. This allows institutions to freely choose their database management system and operating system, which was another one of the basic requirements defined at the outset of the EDIT project.

The CDM Library provides programmers with an "application programming interface", as well as with "web services", both defining functions which programmers can use to compose a software application. Within the EDIT project, several applications have been produced in order to put these developments to use. The most important examples are the "EDITor" as the tool for data entry and manipulation and the "Data Portal", which is used to publish the content on the web. The Platform has also been integrated with pre-existing tools of partner institutions, for example the CATE software, which is fully based on the CDM Library, and the XPER^2 software, which handles the descriptive data for CDM stores while maintaining its stand-alone capabilities. Finally, there are a number of corollary services, mainly in the geographic and bibliographic domain, which are used by the Platform but can also be used independently.
This illustrates the new possibilities the CDM-based Platform offers for the integration of different software development efforts. However, the main requirements (comprehensiveness, platform independence, scalability) imposed a high level of complexity on the over-all development. Sustainability of the Platform will to a large extent depend on the management of that complexity.

2. Open source software and commercial options in EDIT

The EDIT Consortium Agreement clearly states: "Software and data standard development produced in the course of the project will be put under a public license" (Annex 2). This reinforces statements in the Contract's Description of Work (DoW) indicating that EDIT will produce and use open source software (Annex 3) as far as possible. This principle has been followed in the creation of software for the EDIT Platform for Cybertaxonomy, taking into account that underlying server operating systems and databases in use at EDIT institutions may also be commercial products. Software developed with EDIT funding for the Platform was put under open source public licenses and makes use of software libraries created by the general open source community (Annex 4).

This excludes the option to sell Platform components as commercial software. However, as open source communities demonstrate, there may be options to offer paid-for services such as packaging, training, and implementation of special features (which subsequently have to be released to the public). These options have to be explored over the next years, however, at present they are not expected to cover more than a fraction of the basic cost to sustain the software. The single most important source of funding for institutions taking responsibility for software components will be use and further development of the Platform within the scope of soft-money projects. The big advantage of the modular and open architecture (see section 1 above) is that projects aiming at specific implementations can build on and contribute to the common development effort. However, when relying on soft-money projects provisions have to be made to bridge gaps in funding.

The EDIT Information Science and Technology Committee (ISTC) provided an institutional representation in the development process of the Platform throughout the project. The ISTC is one of the EDIT activities that will be continued in the framework of the Consortium of European Taxonomic Facilities (CETAF). In its last meeting within the EDIT project in January 2011 in Paris, with some additional CETAF members already present, it was decided to form a subgroup concerned with the issue of further development of the EDIT Platform, in which all developers active in Platform development and representatives of their institutions should plan a joint management structure for the future.

3. What is implied in sustaining the Platform?

3.1 General aspects

In July 2009, a survey of the EDIT partners active in WP5 software development resulted in a wish-list with about 4 full time positions distributed among partners to maintain current activities. The Board of Directors has indicated that no immediate support on that scale can be dedicated from institutional core funding while the Platform tools are not yet in widespread use. Instead, project funding was recommended for the time being and this course was followed over the past year, successfully expanding the user base and anchoring the Platform in a number of projects and new communities. However, project funding will always be directed towards specific aims of the respective funding programme, not at sustaining the infrastructure itself. So at this moment, we will have to identify the issues involved and assess where priorities should be set and what and when the development of the Platform is at risk.

5 cross-cutting issues can be identified for Platform sustainability:

a. Ensuring continuing usability (including bug fixing, helpdesk, imports, and minor extensions).
b. Extension of usage, dissemination activities and cooperation with non-EDIT partners.
c. Ensuring compatibility (with new versions of operating systems, database management systems, and used open source software libraries; with extensions contributed by new projects and partners; with new hardware, etc.).

d. Extension of functionality (e.g. to link with collection management software, phylogenetic software tools, better integration with descriptive tools, etc.).
e. Managing the software life cycle (e.g. major revisions of parts of the library in view of experience gained in usage and with respect to new technological developments).

Points a-c above are essential coordinating activities, aimed at maintaining functionality and momentum, while activities under points d and e are not essential, at least not immediately, and could be addressed by new projects (institutional or soft-money funded). The present situation with respect to major Platform components is as follows:

3.2 CDM Library and developer group coordination

Was: WP5 Task 2, lead: BGBM Berlin

The library provides the base for all CDM-based products in the Platform. The Information Science and Technology Committee of EDIT concluded that there is a need for an open source management structure that ensures the technical coordination of the development effort. The discussion about the development of the code should be controlled by the developers (project or core staff) who are directly working with the CDM library and its interfaces (currently up to 15 people). However, institutions also need to be assured that their interests as stakeholders in Platform development are duly represented. In some cases, this may be achieved by their presence in the developers group. However, this needs further discussion, because confidence of the institutional stakeholders will be a prerequisite for long-term Platform development.

A subcommittee of the ISTC will be formed in the near future to develop both governance and management models for the open source development. Immediate tasks of that group will be to clearly re-define the scope of Platform development and to propose an open source management scheme (e.g. following the approaches used by established open source communities such as Apache or Eclipse). Further issues are decisions on the CDM development environment and development group tools (such as the currently used TRAC task management).

The Platform and the CDM library has become a central element of the **BGBM**'s biodiversity informatics strategy. The **BGBM** can currently offer to drive the development in collaboration with other interested parties. As there are several internal project directly connected to this task, some resources are available to continue the process, especially with respect to hosting the CDM development environment and tools (as long as no other permanent solution if decided upon), training of new software developers in using the CDM library, documentation of the CDM library, and incorporation of the Platform development into new funding applications. Externally funded projects that play a role in this context include PESI (until April 2011, with CETAF partners **MNHN, NHM, UvA**), ViBRANT (until 2013; lead: **NHML**, with **RBINS**, **UvA**, **MfN,** and **BGBM**), i4Life (until 2013, with **MNHN** and **BGBM**), and several pending and forthcoming applications to the German research council (DFG). **RBGK's** considers the Platform in the context of the nationally funded eMonocot project and the continued development of the CATE software (based on the CDM library). The Platform software has also been targeted and budgeted as a component of the LifeWatch infrastructure, and an infrastructure project proposal to the EU piloting parts of this infrastructure has been submitted, integrating the services of the EDIT Platform for Cybertaxonomy into LifeWatch workflows. This proposal has passed the initial threshold with an excellent ranking.

The e-Floras initiative is consortium including the major herbaria among CETAF members (Vienna, Meise, Helsinki, Paris,, Berlin Madrid, Geneva, Leiden, Kew). The group has formed under EDIT WP3 and intends to continue its activities. Principles for collaboration were developed and a major proposal to the EU was made by the partners to support the creation of an international e-Floras environment building on the EDIT Platform software. The proposal passed the first evaluation threshold.

Taken together, we think that these institutional commitments, funded projects, initiatives and proposals provide a sound base for further steady development of the EDIT Platform.

3.3 Descriptive tools

Was: WP5, Task 6; lead: MNHN/UPMC, Paris

Originally, the area of descriptive information (including, e.g., morphological descriptions of species, and identification keys) was not included in the EDIT platform priorities. However, over the past year the collaboration with the LIS (Laboratoire Informatique et Systématique, **MNHN/UPMC**) in Paris was intensified and now extends well beyond the import and export functionality (using the SDD standard) originally deemed achievable.

LIS developed the software application Xper[2], which is distributed free by the university Paris 6 under a Creative Commons License. Xper[2] can be used independently as a stand-alone system, but it is now also integrated with the EDIT Platform. Xper[2] is now able to run directly on the CDM classes and thus complements the Taxonomic Editor (EDITor) by allowing users to add descriptive data related to taxa already listed in a CDM database and offering interactive multi-access keys based on these descriptive data[1]. The same data can also be used by CDM functions to compute single access keys and taxonomic descriptions in natural language for print publishing or through CDM Data Portals.

The import/export SDD/CDM software developed in the context of the Platform, same as the output routines for "natural language" descriptions and the access and storage routines for structured data used by Xper[2] form part of the CDM library and are thus in the public domain. Further development and implementation into the Platform as well as updating of the documentation is ensured by permanent staff of the LIS in collaboration with staff at the BGBM, but also by means of collaboration within the ViBRANT project.

3.4 Geo-Platform

Was: WP5, Task 4; lead: RMCA, Tervuren

The development of the Geo-Platform components has mainly been driven by RMCA and CSIC-MNCN, with collaboration from MIZPAN and other partners. Because of continuing staffing problems at CSIC, RMCA had taken over the activities for the last project year.

For the Geo-Platform the following activities should be maintained: the map services, the map-viewer interface, addition of freely available base maps, and training activities. **RMCA** is willing to maintain geospatial components beyond the EDIT project, committing to host the principal site for the services in collaboration with the National Botanic Garden of Belgium **(NBGB)** in Meise and with other institutions which showed interest in mirroring the services. A load balancing function will be implemented to enhance performance; however, to scale up to growing demand it may be necessary to turn to external service providers in the future. RMCA agreed also to maintain the associated documentation, which will be available online and accessible to the community for supplying additional materials and update content[2].

Further developments of the GeoPlatform tools will be integrated into new soft-money projects[3]. RMCA activities in the context of SYNTHESYS 2, GBIF, and collaborative projects with African partners (funded until 2012) are using the GeoPlatform and contribute to further sustain it. The EDIT Mapviewer was accepted for use in the AEGOS (African-European Georessources Observation System) and CABIN (Central African Biodiversity Information Network) projects. Some further project applications are pending. In the training and documentation context, collaboration exists with the geospatial activities of the GBIF secretariat and the French GBIF node. We know that other EDIT partners have GIS-related staff, so there is further potential for support, which may play a role in future sustenance of this part of the platform.

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[1] See links in C5.161 "User documentation for the management and integration of descriptive data … " and M5.43 "Final presentation of the CDM capabilities on descriptive data through the selected exemplar group".

[2] See: C5.160 "Meta-documentation report".

[3] See also: C5.156 "Comprehensive report on technical continuity and sustainability of the Geoplatform ….".

3.5 Virtual Taxonomic Library (ViTaL)

Was: WP5, Task 3; lead: MfN, Berlin

After transferring EDIT's task 5.3 from the NHM in London to the MfN Berlin in the beginning of 2010, further development of ViTaL was closely coordinated with the Biodiversity Heritage Library Europe project (coordinated by the MfN). The catalogue components of EDIT ViTaL were merged with the respective BHL components, and the ViTaL component of direct access to (sources of) subscriptions of digitised literature were incorporated into a joint ViTaL/BHLE development. The ViTaL web portal accesses a references index built by the common library network GBV (Gemeinsamer Bibliotheksverbund, Göttingen). VZG, the head office of the GBV, handles the relationships with the providers of the proprietary PICA+ Software from OCLC within their existing full-access agreement and provides full support (this has been the major and finally insurmountable obstacle for EDIT with the previously used MetaLib product). The *Global References Index to Biodiversity* short *GRIB* (http://grib.gbv.de/) supports scientists in their search for relevant biodiversity related literature and librarians in their task to digitise legacy literature to make it freely available.

The index is part of the BHL-Europe technological infrastructure and service – also for the ViTaL portal. It will be maintained and further developed until the end of the BHL-Europe project and beyond. Further arrangements have been made with the VZG to continue the established service: MfN and VZG as the leading partners of the GRIB development agreed on a cooperation on the GRIB until February 2020[4].
Costs for sustaining the updating of library catalogues and subscription information in the ViTaL context still have to be assessed, but will be substantially lower than those previously anticipated.

3.6 The EDITor - EDIT Taxonomic Editor

Was WP5 Task 6; lead: BGBM

BGBM is willing to commit resources (core staff if necessary) to maintain the EDITor with respect to functionality, training and momentum (an estimated 3 PM p.a. if set in a team with the CDM and CDM Library work). Limited additional input from user institutions will be required e.g. for internationalisation. Implementing additional features will require additional resources, which are expected to be partially realised in the course of new projects (such as the parts of the GBIF-Germany project that aim at usage of the platform in the German systematics community).

3.7 CDM Data Portal

Was WP5 Task 8; lead: BGBM

BGBM offers to continue hosting the Drupal-based Data Portal Websites in place by the end of the EDIT project period (currently: Cichorieae, Palmweb, Euro+Med PlantBase, Flore d'Afrique Central, Flora Malesiana, Campanula Portal, Flora of Cyprus). In due time, the respective CDM Data Stores and Portals should move to the stakeholder institutions, namely **RBG Kew, NBGB Meise**, and **NMN Leiden**. Support for Portals set up at other institutions needs to be negotiated, especially if additional functionality is required (this normally occurs in the context of new projects with associated funding and may also imply implementation of new functions in the CDM library). Examples include the setup of CDM portals for butterflies at the **MfN,** for the Euro+Med Plant Base at the BGBM, and for the German national standard lists in collaboration with the German Federal Agency for Nature Protection, all funded in the context of the German GBIF-D project.

[4] See also: C5.151 "Sustainability review. A review of the commitments already made and the further commitments necessary to ensure the sustainability of the references index".

As experienced by the Scratchpad group, updating the underlying Content Management System Drupal may be a problem in the future and increase the costs of the implementation of new functionality in the Data Portal. The EDIT-CETAF consortium should think about a way to jointly support the maintenance of the various Drupal-based developments.

3.8 Further applications: EDIT Cybergate, BD Tracker, Specimen Explorer

The Flash-based Cybergate website needs no further technical development but continuous updating of the linked EDIT components and their descriptions. Texts and links needs to be provided by the **partner institutions** responsible for that component. **BGBM** commits to continue hosting the Cybergate page and including the information provided by partners.

The **BGBM** offers to continue to host the Drupal based BD Tracker and provide the technical maintenance. However, data provision (the description of non-Platform software useful for taxonomists) is not included. For descriptive systems and geo-tools, we hope that the **LIS** in Paris and **RMCA** in Tervuren, respectively, will continue their input. For other types of software (also, e.g., molecular bioinformatics tools and collection management software, both not yet included), **partners** should take responsibility. The organisation for Biodiversity Information Standards (TDWG) has been approached to consider taking over the BD Tracker.

The Specimen Explorer web portal is based on the BioCASE/SYNTHESYS software, connected to the GBIF cache database, and a generic query expansion that allows to connect provider-defined checklists to provide (e.g.) synonyms. It provides an ABCD interface to the CDM to store the specimen and observation records retrieved. **BGBM** will continue to support the BioCASE/SYNTHESYS portal software (and the Berlin GBIF mirror) through the SYNTHESYS-2 project (project period ends in August 2013) and the OpenUp project (March 2011-Februar 2014). The system is also used for the GeoCASE Portal at the **MfN** and in the context of several pending applications to the German research council (DFG). **RMCA** plans to continue to use and adapt the software for their African partner institutions through the "Belgian Cooperation". RMCA hosts a GBIF mirror and already installed the infrastructure to have a mirror in Kinshasa, too. The CABIN project uses the same software and BioCASe providers are also used in the context of the STERNA project. RMCA are offering these services both to the staff of their museum and the African partners, so they acknowledge that this is part of the work of the Cybertaxonomy unit and will be maintained beyond EDIT. However, third party funding will be thought for expansions and major software upgrades.

4. Conclusion

The EDIT project has set out to provide a platform-independent comprehensive base for open source software development in the field of taxonomy, using up-to-date technology and linking into existing resources by a strict adherence to community standards. The result is the EDIT Platform for Cybertaxonomy. The project succeeded in providing the complete architectural framework, a comprehensive programming library, and software using and demonstrating the utility of the approach taken. The third revision of the Platform library and software applications, published towards the end of the EDIT project phase, has attracted further projects that recognise the significant synergies that can be achieved by joining the existing framework.

While current economic conditions have not permitted EDIT institutions to come forward with direct financial support for personnel executing the coordination tasks, we are confident that at present the momentum can be maintained through project resources and existing institutional commitments. We expect that the development of transparent procedures for further development and the clarification of governance structures will encourage more stakeholders, institutions and projects, to join the community which is applying and further developing the EDIT Platform for Cybertaxonomy.

Annex 1: Sustainability in the EDIT Contract

"The integrating activities in WP5 with respect to the Internet platform for Cybertaxonomy have to lead to durable and sustained work processes and software components within the EDIT infrastructure. This activity aims at the creation of a network of European Service Centres where individual institutions or small consortia take responsibility for long-term help desk function and/or maintenance for software or information systems (digitisation, data provision, data harvesting, and analysis), ... [DoW p. 59]

An EDIT set of software programs and standards, specified, tested and implemented within the project and maintained and enhanced beyond the project's period in the spirit of open source software development, will not only forge an institutionalised European biodiversity informatics community, but also keep the development open for use and contributions through institutions not taking part in the initial network. [DoW p.66]

During the last two years of the project, an activity within WP3 will specifically address the sharing of responsibility for long term maintenance of the software components constituting the Platform. [DoW p. 68]

Annex 2: Software in the EDIT Consortium Agreement

9.4.6 Database and Software Access Rights

The provisions regarding Access Rights granted in this Consortium Agreement shall not apply in respect of any software programs or related source/object codes and documentation produced or used by any Party in the course of the Project.

Software and data standard development produced in the course of the project will be put under a public license.

However concerning Software programs and Database that are defined as Pre-Existing Know-How, the rules concerning ownership and Access Rights as defined in this Consortium Agreement shall remain applicable.

Access Rights to Software that is defined as Pre-Existing Know-How shall not include access to Source Code but only access to object Code. However Access Rights to Source Code may be granted subject to a separate agreement to be concluded between the Contractors concerned. [p. 43]

Annex 3: Software in the EDIT Contract

EDIT will require a strategy for accessing data that is to be protected and this will be developed within WP6 Unifying Revisionary Taxonomy, WP5 and WP3. The data and **software developed through the EDIT network will be freely and openly available** and IPR issues will arise chiefly in relation with proprietary the shared software tools and proprietary or restricted datasets that are brought into the network to form part of the platform [soft]ware developed (see WP5 and WP6, …). [DoW, p. 32]

.. IPR issues related to software will be developed through interaction between the NSC and the BoD, with advice from an Intellectual Property Use and Dissemination Committee (IPUDC), if any. [DoW p. 43]

Improving production and dissemination of taxonomic knowledge is the raison d'être of EDIT. .... EDIT will address this problem, at its necessarily limited scale, by ...and by implementing the

IT tools which will improve communication, collaboration and dissemination. These activities will produce Knowledge ... and it is the intention of EDIT that this Knowledge is free, open-access and disseminated freely as widely as possible. **Software will be produced or converted to an open-source licence model;** where that is impossible, the consortium will use appropriate legal mechanisms to protect them. [DoW p. 44]

An EDIT set of software programs and standards, specified, tested and implemented within the project and maintained and enhanced beyond the project's period **in the spirit of open source software development,** will not only forge an institutionalised European biodiversity informatics community, but also keep the development open for use and contributions through institutions not taking part in the initial network. [DoW p.66]

Annex 4: EDIT Software licenses

Software	Open source	License	Notes
Platform Cybergate (Flash application)	yes	MPL (Mozilla public licence)	MPL allows inclusion of the code in commercial software
Web-publishing component CDM Data Portal Module (based on Drupal)	yes	GPL 2.0 (GNU public licence 2.0)	GPL is a must because Drupal uses this scheme. This excludes commercial use of the code.
BD-Tracker Web Module documenting software of use for taxonomists (based on Drupal)	yes	GPL 2.0	
CDM programming library Java code, including all data access, import and export functions	yes	MPL	
Taxonomic Editor (using the Eclipse framework)	yes	EPL (Eclipse public license)	EPL also allows commercial use of the code
ViTaL Falx reference aggregator (Python code)	yes	Not yet stated	Source released in EDIT subversion system
ViTaL metasearch (using MetaLib)	no	Commercial software	Metalib by Ex Libris Ltd. Use will be discontinued
ViTaL/BHL Reference Index (through German common library network GBV)	no	Commercial sw with established usage agreement support	PICA+ Software from OCLC
GeoPlatform EDIT map viewer Distribution-mapservice; Point-mapservice	yes	Creative Commons BY-NC-SA	http://creativecommons.org/licenses/by-nc-sa/2.5/es/
Geo Platform Itinerary Tool	yes	GPLv2	http://www.gnu.org/licenses/old-licenses/gpl-2.0.txt
Geo Platform Coordinate converter	yes	-	Own licence disclaimer
Single Sign-on and security: Shibboleth	yes	Apache License, Version 2.0	http://www.apache.org/licenses/LICENSE-2.0.html
EDIT Specimen Explorer (using 'cherrypy' webapplication framework software)	yes	MPL BSD (cheerypy)	Cherrypy software based on BSD Licence
XPer² Java code	no	Creative common licence	Next version software free for non-commercial use, but not open source
ATBI Database	design yes	uses commercial software	MS Access & Excell
ATBI Field tools for testing: TerraSync (Trimble), ArcPad (ESRI)	no	commercial software	
ATBI - BioCase Provider Software	yes	MPL	