



## **Directions for Deliverables of EDIT's First Reporting period (covering Month 0 – March 2006 to Month 11 – February 2007)**

The deliverables are often written reports but can also take another form, for example the completion of a prototype, etc. In such cases the deliverable should nevertheless also be documented in a written record of the achievement of the deliverable in addition to being listed as an achieved deliverable in the Periodic Activity Report, including any available supporting material (e.g. photos of the prototype, the report of the conference....).

Any delay in the submission of a deliverable must be reported in the Periodic activity report, in the section **“Section 2 - Workpackage progress of the period”**, where both the due date and the actual submission date (or the foreseen date, if the deliverable is not yet submitted) are reported.

Please note that the following front page is a standard provided by the EC, all requested information on this page must be filled in.

Max. 2 pages (front page excluded) per deliverable in “Garamond” 12 points. As far as possible please do not change the lay out of the standard front page.



Project no. 018340

**Project acronym: EDIT**

**Project title: Toward the European Distributed Institute of Taxonomy**

Instrument: Network of Excellence

Thematic Priority: Sub-Priority 1.1.6.3: "Global Change and Ecosystems"

## **D5.47 List (website) of identified and to-be-tested descriptive tools**

Due date of deliverable: Month 14

Actual submission date: Month 14

Start date of project: 01/03/2006

Duration: 5 years

Organisation name of lead contractor for this deliverable: MNHN 2

<b>Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)</b>		
<b>Dissemination Level ("X" in the relevant box)</b>		
<b>PU</b>	Public	X
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

## OBJECTIVES OF WP 5.6

The aim of WP5.6 is to identify, to test and to document available descriptive tools for taxonomists, and to collaborate with WP5.2 to integrate these tools as components of the Internet Platform for Cybertaxonomy.

### Available descriptive tools

Internet gives an access to an important number of taxonomic identification keys but a high percent of these applications are classical keys customized for the web (more or less dynamical HTML documents), but without using software managing taxonomic descriptions (see for example identification resources on Fishbase<sup>1</sup>). These online resources are very interested for a large public but don't propose tools to be include as components for an IT cybertaxonomic platform. Other web sites offer online atlas on a taxonomic group (see for example <http://www.zin.ru/Animalia/coleoptera/eng/index.htm> for an online atlas of Russian beetles) but don't offer tools usable by other taxonomists to create new applications.

At the contrary, online keys are computed by programs which can be used on different applications according to a specific format (see DELTA format for example (<http://delta-intkey.com/>)). Software, including editor and associated modules for interactive keys, are also available.

In WP5.6 we study software allowing taxonomists creating their own applications to store and to analyze descriptive data and producing keys, diagnosis, structured descriptions etc. The objective is to select tools for helping taxonomic experts in their scientific work.

To list the existing tools, we made some documentation and internet research and we consulted good reviews on tools for descriptive data and identification. The most complete are available on:

- Digital Taxonomy (<http://digitaltaxonomy.infobio.net/>)
- Delta web site developed and updated by M.J. Dallwitz (<http://delta-intkey.com/www/idprogs.htm>)
- Kew interactive Key Forum (<http://kikforum.wordpress.com/tag/tools/>)

We don't list taxonomic applications but only tools.

Actkey	Hong Song	<a href="http://flora.huh.harvard.edu/china/ActKey/">http://flora.huh.harvard.edu/china/ActKey/</a>	Hong Song of the Missouri Botanical Garden, developed this Java-based program using MySQL as the database server. Botanists interested in sharing their data sets (e.g., DELTA, MS Excel, MS Access, Lucid formats) via this Web-based system, or interested in translating any of the character sets into another language may contact Hong Song or Anthony R. Brach (brach (at) oeb.harvard.edu).
DELIA		<a href="http://www.naturebase.net/content/view/2401/482/">http://www.naturebase.net/content/view/2401/482/</a>	<i>DELIA</i> , the DELTA Integrator, extends the utility of DELTA format files by providing functionality that the DELTA System software can't. It provides a way to manage multiple datasets coded in DELTA and is designed to integrate with and complement the existing <a href="#">DELTA System</a> suite of programs. It is designed for those DELTA users who are interested in managing their data in an integrated environment. But we found only a beta version available.
DeltaAccess	G. Hagedorn ( <a href="mailto:G.Hagedorn@bba.de">G.Hagedorn@bba.de</a> )	<a href="http://www.diversityworkbench.net/OldModels/Descriptions/index.html">http://www.diversityworkbench.net/OldModels/Descriptions/index.html</a>	A SQL interface to DELTA, the Description Language for Taxonomy, implemented in Microsoft Access 97, 2000, and 2002 (= XP). DeltaAccess can be used in 3 ways: a) You can use DeltaAccess simply as a module to import DELTA coded text files into a database of your choice and then write an independent application for that database (e. g. a web interface). b) You can keep your data in DELTA coded text files, and

<sup>1</sup> <http://www.fishbase.org/identification/classlist.cfm>

			use DeltaAccess as a one-way import tool to analyze your data (incl. cross-tabulations, and charts), print form sheets to edit your data off-line, or to generate dynamic html/www output. c) You can use DeltaAccess as the central data repository around which your work is organized. You can thus make full use of advanced editing functions of DeltaAccess, like the multiple item editor.
Delta-Intkey	M.Dallwitz & R.Payne, Toni Paine, and Eric Zurcher	<a href="http://delta-intkey.com/">http://delta-intkey.com/</a>	The DELTA System is an integrated set of programs based on the DELTA format. The facilities available include the generation and typesetting of descriptions and conventional keys, conversion of DELTA data for use by classification programs, and the construction of Intkey packages for interactive identification and information retrieval.
EFG	<a href="#">Robert A. Morris</a> , <a href="#">Robert D. Stevenson</a> .	<a href="http://efg.cs.umb.edu/efgsoftware.html">http://efg.cs.umb.edu/efgsoftware.html</a>	The Electronic Field Guide (EFG) Project has developed a number of <a href="#">web-based applications</a> that facilitate the identification of species and recording of ecological observations. This project is the result of a collaborative effort between the Departments of <a href="#">Computer Science</a> and <a href="#">Biology</a> at the <a href="#">University of Massachusetts Boston</a> , with funding from the <a href="#">National Science Foundation</a> .
	<a href="http://efg.cs.umb.edu.efg2">http://efg.cs.umb.edu.efg2</a>	<a href="http://efg.cs.umb.edu/efgsoftware.html">http://efg.cs.umb.edu/efgsoftware.html</a>	EFG2 is the next generation of the electronic field guide page-building software. Using any spreadsheet or database app that can export to a comma-separated format, the author can build taxon-by-character data sources, add images, audio or video, and create a "synoptic" key using a searchable, menu-based interface. EFG2 can be used to create a backend to keys created with <a href="#">efgKEYS</a> , or is equally as effective at building standalone identification tools. EFG2 software comes with all the author needs to build and configure taxon pages and to deploy them on a web server ( <a href="#">Apache Tomcat</a> ) using a database backend ( <a href="#">MySQL</a> ).
FRIDA	Pier Luigi Nimis e Stefano Martellos	<a href="http://www.dryades.eu">http://www.dryades.eu</a>	The whole project is based on FRIDA, a package of software developed at the Department of Biology of the University of Trieste. Keys produced by FRIDA are provided with both dichotomous and multi-criteria query interfaces, are accessible on-line, and portable on different media (CD and DVD-Rom, pocket-PCs).
IKBS	Noël CONRUYT, David GROSSER, Yannick GEYNET Technical staff - IREMIA	<a href="http://www.univ-reunion.fr/ikbs/index.html">http://www.univ-reunion.fr/ikbs/index.html</a>	IKBS is a generator of knowledge bases that assists the user in the task of modeling, description, classification, identification, updating and dissemination of knowledge. Its originality lies in its capacity to iteratively manage evolving information by reconsidering and updating the descriptive model and cases. Identification module uses case based reasoning and construct decision trees.
Linnaeus II, IdentifyIt	F.MacIntyre & K.Estep (ETI)	<a href="http://www.eti.uva.nl/support/hints/id.php">http://www.eti.uva.nl/support/hints/id.php</a>	The strength of this random access identification key is the fast and strict elimination of possible species for any given set of characters and states, with the possibility of the computer suggesting the best separating characters. A drawback can be that creating a good matrix with taxa and characters/states demands that descriptions are consistent. Constructing such a matrix can be time consuming. The Identification keys can also be published online (e.g. <a href="http://nlbif.eti.uva.nl/bis/agromyzidae.php?menuentry=identificatie">http://nlbif.eti.uva.nl/bis/agromyzidae.php?menuentry=identificatie</a> ). Linnaeus II team is involved in the Key2Life project (6th Framework, eContentPlus) which has an outstanding chance of getting funded in the near future. In this project we will start the development of the next generation Linnaeus II.
Lucid	K.Thiele & G.Rutter	<a href="http://www.lucidcentral.org">http://www.lucidcentral.org</a>	Commercial. Based in the Faculty of Biological and Chemical Sciences, the Centre for Biological Information Technology ( <a href="http://www.cbit.uq.edu.au/about.htm">http://www.cbit.uq.edu.au/about.htm</a> ) develops, distributes and supports commercial quality software for application in biological research, training and natural resource management. A major research theme of the Centre is the development of software tools to rapidly develop identification and diagnostic keys for the Internet, involving data mining, natural language research and the integration of the Lucid software ( <a href="http://www.lucidcentral.org">www.lucidcentral.org</a> ) with international data portals and software associated with the Global Biodiversity Information Facility.
LYSANDRA	K.Dovgailo, A.Osipov & A.Shumeiko	<a href="http://www.bonk.ru/lysandra/english/">http://www.bonk.ru/lysandra/english/</a>	Commercial
Meka	Christopher Meacham	<a href="http://www.mip.berkeley.edu/meka/meka.html">http://www.mip.berkeley.edu/meka/meka.html</a>	It seems not accessible. No answer on the URL
Navikey		<a href="http://www.navikey.net/#introduction">http://www.navikey.net/#introduction</a>	NaviKey v. 4.0 is a tool for querying descriptive data and has been implemented as - a Java applet providing the contents of DELTA files - a stand-alone Java application for accessing DELTA files or PostgreSQL versions of DiversityDescriptions databases, respectively a module ("plug-in") of the Java-based Diversity Navigator database client (available soon!) for accessing DELTA files or PostgreSQL versions of DiversityDescriptions databases respectively;
NaviKey V4	Dieter Neubacher and Gerhard	<a href="http://www.navikey.net/">http://www.navikey.net/</a>	NaviKey v. 4.0 is a tool for querying descriptive data and has been implemented as

	Rambold		<ul style="list-style-type: none"> <li>* a Java applet providing the contents of DELTA files</li> <li>* a stand-alone Java application for accessing DELTA files or PostgreSQL versions of DiversityDescriptions databases, respectively</li> <li>* a module ("plug-in") of the Java-based Diversity Navigator database client (available soon!) for accessing DELTA files or PostgreSQL versions of DiversityDescriptions databases respectively.</li> </ul>
PalmKey	Cam Webb		
PANDORA	Richard Pankhurst	<a href="http://www.ibiblio.org/pub/academic/biology/ecology+evolution/software/pandora/">http://www.ibiblio.org/pub/academic/biology/ecology+evolution/software/pandora/</a>	Not supported now. PANDORA is a database system for taxonomic and biodiversity research projects, such as floras or monographs. It runs on DOS and MS Windows computers, is DELTA-compatible, and is available free of charge.
PICKEY (BIKEY)	M.Dianov & A.Lobanov	<a href="http://www.zin.ru/projects/pickey">http://www.zin.ru/projects/pickey</a>	Commercial. PICKEY (Pictured Interactive Computerized biological KEY) - an interactive multi-entry polychotomous key for identification of organisms by intensive use of images. PICKEY is a most user-attractive part of the package BIKEY, which include a large set of programs for creation, analysis and subsequent perfection of computer keys, the initial information for this programs is stored in the form of data bases of most widespread and accessible format DBF for systems FoxPro, dBASE, FoxBase, Clipper, etc.
Polyclave	Andrew Pavacic and Tim Dickinson	<a href="http://prod.library.utoronto.ca:8090/polyclave/">http://prod.library.utoronto.ca:8090/polyclave/</a>	It seems not accessible. No answer on the URL.
RACHIS		<a href="http://rachis.sourceforge.net/">http://rachis.sourceforge.net/</a>	Create key from Delta files. Rachis is an open-source application for the arrangement of <i>entities</i> in a hierarchical system (taxonomy), and an interactive key for the entities in that system. The development of Rachis is in a very early stage at the moment, but progressing at a reasonable pace. It seems not accessible. No answer on the URL.
SLIKS	Gerald F. Guala	<a href="http://www.stingersplace.com/SLIKS/">http://www.stingersplace.com/SLIKS/</a>	SLIKS is a small Javascript program that I developed to facilitate the use of interactive keys.
TAXEX	E.Butakov & S.Lelekov	zalex@ibss.inf.net	
TAXIS	Evgeniy Meyke	<a href="http://www.bio-tools.net/index.htm">http://www.bio-tools.net/index.htm</a>	Commercial. A system to manage all taxonomic data. Multi-entry identification using images and descriptions. Branching identification path control allows exploring different options without losing your main direction. Taxa images and character states images are available at all times throughout the identification.
X-ID	David Remsen and Patrick Leary	<a href="http://www.exetersoftware.com/cats/identificationSoftware.html">http://www.exetersoftware.com/cats/identificationSoftware.html</a>	The X:ID system is composed of a Editor and a Browser. The Editor is used to create and edit keys. The Browser is used to run them. X:ID is an XML-based identification and diagnostic key software system. It allows users to create their own web-based diagnostic or identification keys and run them over locally or over the web. The XML-based format is combined with the eXtensible Style Sheet Transformation (XSLT) markup to allow developers to tailor the look of their keys.
Xper2	Lab. Informatique & Systématique (UPMC)	<a href="http://lis.snv.jussieu.fr/apps/xper2/">http://lis.snv.jussieu.fr/apps/xper2/</a>	Antoine Chalubert, Guillaume Dubus, Cyril Gallut, Benjamin Pavie, and <u>Régine Vignes-Lebbe</u>

## Identified and to-be-tested descriptive tools

A list of software was selected for the phase of test. The criteria taken into account to select the software are:

- availability**. Accessible remote loading or purchase on line. We discard prototype and beta version.
- validation** for applications already available and showing their relevance for taxonomy.
- documentation**. A minimum of information must be available on line.
- editor** for descriptive data available . Tool not limited to identification. Software must be useful to digitize taxonomic descriptions or specimen descriptions. So software using Delta knowledge base for identification and not able to edit this format were discarded.

We obtain a list of software to-be-tested, to document for taxonomists and to analyse their integration in the platform of cybertaxonomy.

- Delta-Access
- Delta-Intkey
- EFG2
- IKBS
- Linnaeus II
- Lucid
- Xper2

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