BIOLOMICS SOFTWARE & SERVICES

GENERAL INFORMATION DOCUMENT

BioAware SA NV - Version 2.0 - August 2013
**Dynamic Creation and Modification of Databases**

Create simple or complex databases on the fly. No need to be a software developer or a database manager. Add/modify tables and fields at any time and in seconds. You have the ability to evolve with the needs of your business and research projects. It’s so easy and great that you won’t believe it.

**Data Management System**

Management of data has never been as easy and intuitive. Users can create their own layouts or views on a given table or set of tables. Links between tables are directly visible from the main interface of the software and several tables can be accessed and modified from the same view. Data can be displayed as and edited in spreadsheets and hierarchical trees.

**Basic and Advanced Queries Made Easy**

Searching databases in an easy way without the need to build complex SQL queries is possible using the basic and advanced queries options. Queries can be saved and re-used at any time. Even extremely complex queries involving several linked tables that would require deep knowledge of SQL commands are easy.

**Security and Access Management**

Access to databases is made via login and password. Only registered users can access the system. Users belong to groups and latter have rights to read, write and delete tables, fields and records of a given database. Roles are granted at group level and are defined by the administrators of the database. This system is highly flexible and safe for your data. Only the right groups can view and edit tables, fields and records. For example, some records could be visible for researchers within the laboratory and hidden for Internet visitors accessing the database via the online version of BioloMICS.

**Tracking System**

All modifications made to a given database are recorded. Administrator can search the tracking system and undo or redo a number of actions. For example, it’s possible to search for all changes made by a given user between March and November of a given year.
DATA RETRIEVAL TOOLS
A number of tools have been implemented that allow users to easily retrieve data from pictures, electrophoresis gels, microplates readers, geographic databases and maps, DNA and protein sequences databases, publication databases, etc.

IMPORTATION AND EXPORTATION OF DATA
Easy and flexible importation and exportation of data is a must in BioloMICS. Data can be imported from a number of formats. All data can be exported using standard formats such as Tab delimited, text, MS-Word, MS-Excel, HTML, XML, Fasta, NCBI, Darwin core, etc. Users can also define their own formats and create reporting templates. For example, one can create templates for invoicing, periodic reports, catalogs or books.

STOCK MANAGEMENT
For culture collection, museums and laboratories, it’s important to keep track of the available stock and have a warning system when stock levels are too low. The stock system can be linked to clients, ordering and invoicing systems.

CLIENTS’ MANAGEMENT
Clients and users’ data can be managed properly and used with ordering and invoicing systems as well as the security system.

ORDERS AND INVOICES MANAGEMENT
Clients can order items (strains or specimens, for example) using the cart system of the online version of BioloMICS. Curators and sales responsible for the system are emailed and warned when orders are posted. They can view orders and perform the required actions to remove items from the stock and create invoices.

MOLECULAR DATA EDITION AND ANALYSIS
DNA and protein sequences can be properly stored and edited in BioloMICS. Basic statistics on sequences and a number of pairwise and multiple alignments algorithms are available to perform identifications and classifications.

LIMS TO MANAGE AND TRACK SEQUENCING OPERATIONS
Sequencing is a process involving a number of steps. From samples managements to DNA extraction, PCR and sequencing reactions, automated alignments of trace files, insertion of results in database and reporting, everything is included in this advanced module.
ALIGNMENTS OF TRACE FILES AND CONTIG EDITION
A trace files viewer (ABI, AB1 and SCF formats accepted) and contig edition tool is available with a lot of useful features like base caller, up to 5 quality statistics algorithms, zooming, stretching, multiple edition, multiple sequence alignments, etc. Results can be stored directly in BioloMICS databases or saved as independent XML files.

PAIRWISE BLAST ALIGNMENTS OF SEQUENCES
Create your own sequence databases and align unknown sequences in batch. Alignments can be performed against a local database and at the same time against Genbank/NCBI. Results are stored in a results directory and can be re-opened at any time. Many options are available to fine tune the alignment algorithms.

MULTIPLE ALIGNMENTS OF SEQUENCES
Multiple alignments of sequences can be performed. Alignments can then be edited and exported.

GELS AND ELECTROPHORESIS ANALYSIS
A complete one dimensional electrophoresis module is available. Any picture format can be opened, filtered and modified. Lanes are automatically retrieved. Empty lanes are detected and warping of lanes is possible allowing analyzing smiling gels. Automated bands retrieval, edition and computation of molecular weights, and distances of migration. Results can be incorporated in BioloMICS databases and used for identification or classification purposes.

96 AND 384 MICROPLATES SUPPORT
Microplate data can be saved in BioloMICS databases. Specific fields have been especially designed for this. A number of automated microplate readers can be controlled using BioloMICS. Data can be inserted in databases for identification or classification purposes.

IMAGES ANALYSIS
An image analyzes module has been introduced to allow for the measurements of objects present on a picture. A large number of filtering options are available and automated and manual retrieval of objects is possible. Descriptive statistics on objects such as length, width, perimeter and surface can be obtained automatically.

GEOGRAPHIC DISTRIBUTIONS
Search for latitude, longitude data of any locality in the world. Create dynamic distribution maps on the fly. Use Google maps or Shape files.
SCRIPTING TOOLS

BioloMICS is very large software with tons of modules and functionalities. However, some users want to integrate their own code in the software. It’s now possible using the integrated scripting tool. Repetitive tasks can be automated. Specific functions can be integrated in the system’s menus. Visual Basic.NET and C#.NET languages can be used and a complete source code editor with intelligence and automated formatting of the code is available.

ALGORITHMS

For the identification and classification modules, we’ve created a large panel of algorithms that are specific to each type of characters and fields. As an example, for the comparisons of one dimensional electrophoresis data, up to 8 different algorithms are available. For sequence alignments, 6 algorithms, etc. For each algorithm, a number of parameters can be defined such as tolerance or precision, weight, number of target records and subfields accounted. A different algorithm can be select for each characteristic or field. The latter can be included in or excluded from a given comparison.

POLYPHASIC IDENTIFICATION

Polyphasic identification means that unknown records can be compared with an unlimited number of reference records on the basis of any selection of characters or fields. For example, morphological, physiological, molecular, chemical, ecological or geographical data can be used and differentially weighted during the identification process. Easy reporting tool is available and highlighting of differences can be obtained.

POLYPHASIC CLASSIFICATION

Polyphasic classification means that a set of records can be compared on the basis of any selection of characters or fields. For example, morphological, physiological, molecular, chemical, ecological or geographical data can be used and differentially weighted during the classification process. Many classification algorithms have been implemented such as UPGMA, WPGMA, Single and Complete Linkage, UPGMA, WPGMC, Ward’s Minimum Variance, Neighbor Joining, Lance & Williams Flexible clustering or Multi-Dimensional Scaling.

DESCRIPTIVE STATISTICS

Descriptive statistics can be obtained for a selection of records and the characteristics or fields of the database. A complete advanced statistical module is be implemented in BioloMICS as well.
**Reporting**

Many reporting functions are available and data can be exported in a number of formats such as Tab delimited, text, MS-Word, MS-Excel, HTML, XML, Fasta, NCBI, Darwin core etc. User defined templates can also be created for standard reporting. With the integrated scripting tools, complex reports can also be prepared.
Publication on the Internet

What can the BioloMICS NET do for me?

Some institutions like culture collections, museums or research groups want to share their catalogs, data or want to communicate with clients. The Internet version of BioloMICS allows non programmers, curators and researchers to publish data on the web within seconds. It’s extremely easy and all the wanted tools are there.

Just have a look at three nice and quite different examples of potential usage of the Internet version of BioloMICS. The first one is the culture collection of the CBS in The Netherlands (www.cbs.knaw.nl/fungi). They use it as a catalog and clients query the database and order strains online. Another example is the Fusarium database of Dr. K. O’Donnell where pairwise sequence alignments and polyphasic identifications are available (www.cbs.knaw.nl/fusarium). Look also at the Q-Bank website containing a vast array of data and services (www.q-bank.eu).

Why choose it?

- Fast and easy to manage website
- Securely display your data on Internet
- Catalog and cart system included
- Basic and advanced searching
- News system to communicate with clients
- Online deposit of data
- Pairwise sequence alignments
- Polyphasic identification & classification
- Multi language available

Managers or curators of databases can decide which tables and records should be published on their website. In one click, records can be released to make them visible from the website. When data are changed from the desktop version of the software, the website is automatically updated. The online database is searchable and Internet users can easily query it via basic or advanced searching tools. Detailed information of the records in the database (strains, specimens, bibliography, taxonomy, molecular data, etc) will be automatically displayed.

The style of the website can be customized by the curator. No webmaster is required. Menus can be changed on the fly and pages are managed and editable from a specific interface of the BioloMICS software.

Many other options are available

The news system can be used by curators to communicate with their clients about important news items related to their collection.
The cart system allows clients to select the strains or specimens they want to order. Curators receive a warning email and can take care of the orders using tools that are available from the desktop version of BioloMICS.

The deposit system allows Internet users to send data to the central system where the curator can control the validity of the data and decide to incorporate deposited items in the active database.

The pairwise sequence alignment tool allows users to use an algorithm similar to Blastn to align unknown DNA sequences against a reference database. The polyphasic identification and classification tools allow comparing morphology, physiology or molecular data to obtain reliable identifications. Phenetic trees can also be produced dynamically.
Hosting Services

What’s that?

You don’t have the right hardware infrastructure and skilled human resources to store, manage and safely backup your databases?

You want your collaborators and clients to be able to access your data and services from anywhere in the world via remote desktop solution or a great website? Our hosting service is the solution you are looking for.

Store your database in our datacenter ensuring a secure, fast and reliable access to your data.

BioAware has heavily invested in the cutting edge hardware and software infrastructure allowing us to provide fast and reliable hosting services to our customers. The whole infrastructure is hosted in high-end datacenter and managed by our IT staff.
SOFTWARE DEVELOPMENTS

WHAT’S THAT?

Although BioloMICS, our main software solution, covers most aspects associated with large biological databases management, analyzes and publication issues, some clients still require some specific developments. Our policy is to help them achieving their goals as quickly and efficiently as possible.

We have a large team of developers understanding researcher’s needs, language and constraints. They can create new extensions to existing software or develop complete solutions for you. Our developments are mainly directed towards Microsoft Windows platforms using Visual Studio Visual Basic.NET, C#, Visual C++.NET and ASP.NET. Other operating systems and languages can also be envisaged.
**Installation Requirements**

**BioloMICS Desktop version**

The BioloMICS Main windows software is compatible with all MS-Windows operating systems (2003, 2008, XP, Vista, Windows 7 and Windows 8). It will work fine on Pentium II or more with 1GB of RAM. Higher values would however be better. A very good graphic card is needed. The .NET framework 4.5 must be installed on the PC. If not installed, the installation software will do it for you.

**BioloMICS Net version**

Windows 2003 and Windows 2008 are needed. Internet Information Service (IIS) must be installed. The Dot Net framework must also be installed. To host BioloMICS Net, we recommend having a 2 GB ram server. The basic software installation requires 100 MB. More will of course be needed for client’s data (pictures, PDF files ...) but this is not something that we can predict and that is variable depending on the website.
## Pricing

### Buying Price List*

<table>
<thead>
<tr>
<th>Product</th>
<th>Software Cost</th>
<th>Yearly Maintenance</th>
<th>Academic Price</th>
<th>Academic Yearly Maintenance</th>
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*Onsite training course of 3 days included for 5 or more users; travel and hotel expenses excluded

### Hosting Price List*

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<th>Product</th>
<th>Monthly Fees</th>
<th>Academic Monthly Fees</th>
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*minimum two years contract, then automatic renewal of contract; additional conditions are not listed

### Notes:

1. Licenses are granted to the client purchasing the software
2. Our invoices are due 30 days after date of invoice
3. Potential travel and hotel expenses should be fixed at the time of invoicing but are paid by the client
4. Prices are mentioned in Euros and excluding VAT if applicable
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