

How to Implement Biotics in Your NatureServe Member Program

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1. Introduction and Purpose

As you know, implementing Biotics will require planning and preparation. Biotics encapsulates several methodological changes and a new technical architecture. This document provides guidance for a NatureServe Member Program planning to implement Biotics. It provides information about licensing, hardware, software, staff time, and training.

Each section of the document covers a topic that may impact a Member Program. Questions within each topic aim to help you estimate the staff time and other costs associated with implementation. While you will not necessarily be able to generate a precise budgetary number, the answers to the questions should help you begin to think in real terms about the time and money your Program will need to implement the new software and methodology.

2. What are your Licensing Costs?

Product License

There is a one-time charge of \$6,500 for each NatureServe member program. Payment of the license fee to NatureServe provides:

- All Biotics software components:
 - Biotics Tracker – User interface for tabular data management
 - Biotics Mapper – Custom ArcView GIS interface for spatial data management
 - Biotics Exchanger – Utilities for data import/export and bi-directional data exchange
 - Biotics Administrator – Interface for managing security, system options, and extensibility
 - Standard reports authored in Crystal Reports
 - Data conversion program for subnational BCD
 - BCD utilities for data QC
- Administration and help documentation
- One year of software upgrades
- One year of telephone and Internet help desk support from NatureServe staff
- Use of the software for an unlimited duration

The license fee does not vary based on the number of clients or users per site, nor does this fee vary if the program chooses to install only one or both of the Biotics applications at their site.

Annual Maintenance & Support

Starting in the second year, there will be an annual subscription fee of \$3,300 for software support and maintenance. This fee entitles programs to receive:

- One year of software upgrades

- One year of telephone and Internet help desk support from NatureServe staff

Investor Discount

NatureServe recognizes the significant contribution, funds and/or staff resources, which several Network programs have made to the development of Biotics. For this reason, the initial license fee is being waived or reduced for the programs listed below. All other programs should budget for payment of the license fee at the time they receive Biotics.

Program	Biotics Mapper Investor	Biotics Tracker Investor
British Columbia	√	√
Florida		√
Maine		√
Manitoba	√	
Michigan	√	
Minnesota		√
New York	√	√
Ontario		√
Oregon		√
Saskatchewan		√
Texas		√
TVA		√
Virginia		√
Wisconsin		√

[Jump to questions on planning worksheet](#)

3. What Hardware and Software Will You Need for the Biotics Infrastructure?

Deploying Biotics within your program will require an investment in hardware and software. This section of the guide describes what you will need to have in place prior to installing Biotics. The number of variables and potential configurations makes it impossible to provide exact specifications and costs. The goal of this section is to explain how Biotics has been designed and to use that information to answer the following questions:

- *Which components of Biotics will your program utilize?*
- *What software will your program need and what will it cost?*
- *What hardware configuration will your program need and what will it cost?*
- *How much staff time will be needed to complete the setup of the infrastructure?*

Network infrastructure requirements (LAN/WAN) are beyond the scope of this document. It is assumed that a program's network infrastructure will be sufficient to run Biotics.

3.1 Application Architecture – Understanding the Pieces

BIOTICS IS A NAME FOR MULTIPLE SOFTWARE APPLICATIONS THAT ACCESS THE SAME DATABASE

Biotics is comprised of two primary applications: Biotics Tracker and Biotics Mapper. Each application provides a windows interface and manages data stored within a common Oracle database.

Biotics Tracker	Provides data management capabilities for all of the tabular data ported from BCD ¹ and a number of new methodological enhancements. Provides support for remote users connecting over the Internet. Built upon Microsoft's Component Object Model (COM) ² and coded with Visual Basic ³ .
Biotics Mapper	Provides GIS data management capabilities. Supports the spatial EO methodology ⁴ . No remote user support ⁵ . Built as a client server application coded with PowerBuilder ⁶ and ArcView ⁷ .

¹ <http://whiteoak.abi.org/hdms/HDMSDoc/Scope/BCD-files-to-port.htm>

² <http://www.microsoft.com/com/>

³ <http://msdn.microsoft.com/vbasic/default.asp>

⁴ <http://whiteoak.abi.org/hdms/Biotics-Documentation.shtml>

⁵ Third party products provided by companies such as Citrix (<http://www.citrix.com/>) may be implemented to provide remote user support for the Biotics application

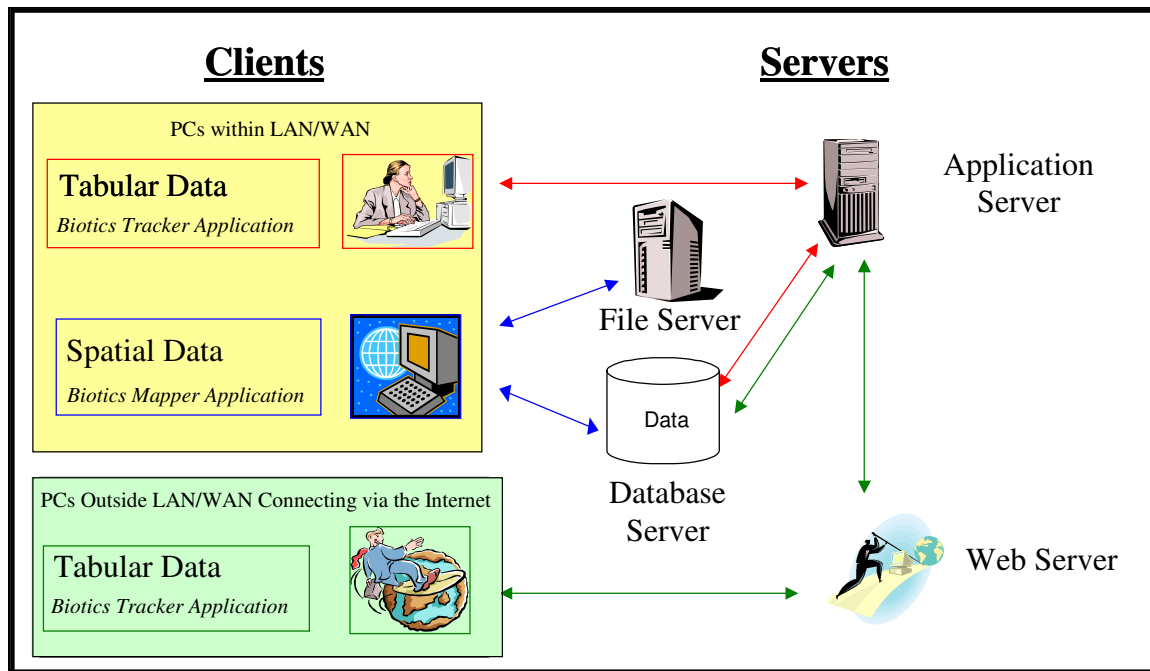
⁶ <http://www.sybase.com/pbsuccess>

⁷ <http://www.esri.com/software/arcview/index.html>

Biotics also includes some utility applications to perform system administration and configuration and to import and export data. These applications will not be discussed further in this document, as they do not impact implementation.

EACH APPLICATION IS COMPRISED OF MULTIPLE COMPONENTS

The following picture illustrates all of the logical components. The server components may be installed on separate computers or may be installed on the same computer.



The Biotics Tracker application and the Biotics Mapper application require software to be installed on the client (each user’s computer) and one or more servers depending on a member program’s configuration. Each application accesses data stored within the Oracle database. The Biotics Tracker application connects to the database through a middle tier called an Application Server, while the Biotics Mapper application connects to the database directly. Users unable to directly access a member program’s computer network may use the Biotics Tracker application (but not the Biotics Mapper application) by connecting through the Internet. A web server is required to support this configuration. Biotics Mapper accesses spatial data stored in ArcView shape files that reside on a file server.

COMPONENTS IN MORE DETAIL

The following tables provide a more detailed look at each component.

Components in common between the Biotics Tracker and Biotics Mapper applications:

Component	Description	Required Software
Database Server	Manages all of the non-spatial Biotics data.	Oracle ⁸ 8i (8.1.7 or later) or Oracle 9i (9.2.0.1.0 or later) running on any supported operating system. Oracle 10g is <i>not</i> supported at this time.

Components specific to the Biotics Mapper application:

Component	Description	Required Software
Biotics Mapper Client	The user interface for the Biotics Mapper application.	Windows NT ⁹ or Windows 2000 ¹⁰ or Windows XP ArcView ¹¹ (3.1, 3.2a or 3.3) Oracle ¹² Net8 (comes with Oracle) If accessing map data from an ArcInfo or ArcStorm server, NFS must be installed.
File Server	Manages Biotics spatial data stored within shape files (other GIS reference layers can be stored elsewhere as long as they can be mapped to a drive).	Microsoft Windows NT ¹³ or Windows 2000 ¹⁴

⁸ <http://www.oracle.com/ip/deploy/database/8i/>

⁹ <http://microsoft.com/ntworkstation/>

¹⁰ <http://microsoft.com/windows2000/professional/default.asp>

¹¹ <http://www.esri.com/software/arcview/index.html>

¹² <http://www.oracle.com/ip/deploy/database/8i/index.html>

¹³ <http://microsoft.com/ntserver/>

¹⁴ <http://microsoft.com/windows2000/>

Components specific to the Biotics Tracker application:

Component	Description	Required Software
Biotics Tracker Client	The user interface for the Biotics Tracker application.	Windows 98/NT/2000/XP ¹⁵
Application Server	Manages the Biotics COM objects that perform business logic, data access, and data transport.	Microsoft Windows NT ¹⁶ with Microsoft Transaction Server (MTS) ¹⁷ (MTS is free) or Windows 2000 ¹⁸ (recommended). Windows 2003 Server is <i>not</i> supported at this time.
Web Server	Manages http requests. Required for Biotics Tracker application users connecting remotely via the Internet.	Microsoft's IIS ¹⁹ (comes with NT and 2000)

¹⁵ <http://microsoft.com/windows/default.asp>

¹⁶ <http://microsoft.com/ntserver/>

¹⁷ <http://www.microsoft.com/com/tech/mts.asp>

¹⁸ <http://microsoft.com/windows2000/>

¹⁹ <http://www.microsoft.com/windows2000/technologies/web/default.asp>

DEPLOYMENT OPTIONS

The following table lists the deployment options for Biotics:

Option	Description	Comments
Biotics Tracker and Mapper	Both Biotics Tracker and Mapper applications are installed.	Not all users need to run both applications.
Biotics Tracker only	The Biotics Tracker application may be utilized by itself without Biotics Mapper. Programs who need more time to prepare for Biotics Mapper or who want to use their own GIS may deploy this option.	Programs can add Biotics Mapper at a later date. Programs can use their own GIS application. These programs will be responsible for any integration with Biotics Tracker.

[Jump to questions on planning worksheet](#)

3.2 Estimating the Cost for Required Software

ORACLE

Regardless of how you choose to deploy Biotics, Oracle database software will be required. Biotics was developed and tested using version 8.1.7 of Oracle 8i. However, Oracle 8i is no longer supported by Oracle and Oracle 9i is recommended. Oracle 10g is not supported at this time.

Oracle Pricing as of November 10, 2004

Pricing should be verified on Oracle's web site. For Standard Edition One pricing:
http://oraclestore.oracle.com/OA_HTML/ibeCCtpSctDspRte.jsp?section=15105

Oracle Enterprise edition is not required for Biotics, but programs with Oracle may have it already.

Term Designations:

- **Perpetual:** If your program license does not specify a term, it is perpetual and shall continue unless terminated as otherwise provided in the Agreement.
- **4-Year Term:** If your program license specifies a 4-year term, your program license shall commence on the effective date of the order and shall continue for a period of 4 years. At the end of the 4-year term, the program license shall terminate automatically. These licenses are priced at 60% of the product's perpetual list price (rounding rules apply).
- **2-Year Term:** If your program license specifies a 2-year term, your program license shall commence on the effective date of the order and shall continue for a period of 2 years. At the end of the 2-year term, the program license shall terminate automatically. These licenses are priced at 35% of the product's perpetual list price (rounding rules apply).

Named User License:

- **Named User:** is defined as an individual authorized by you to use the programs which are installed on a single server or multiple servers, regardless of whether the individual is actively using the programs at any given time. A non human operated device will be counted as a Named User in addition to all individuals authorized to use the programs, if such devices can access the programs. If multiplexing hardware or software (e.g., a TP monitor or a web server product) is used, this number must be measured at the multiplexing front end.

User Minimums:

- For Oracle Database Standard Edition and Standard Edition One, the required minimum is 5 named users.
- Standard Edition One is only available for servers that can support a maximum of 2 CPU's
- For Oracle Database Enterprise Edition, the required minimum is 10 named users per processor.
- If you are licensing by named user, follow the instructions below to calculate the minimum number of named user licenses required for your intended hardware configuration.
 1. Determine the number of processors on each server where the programs are installed and/or running.
 2. Add together the processors on each server.
 3. Multiply the total number of processors by 5 for Standard Edition or by 10 for Enterprise Edition.

4. The resultant number represents the minimum number of named user licenses required for this hardware configuration.

Oracle Standard Edition One Named User Pricing

License Duration	Cost per User	Number of Users					
		5	10	15	20	25	30
Perpetual	\$150	\$750	\$1500	\$2,250	\$3,000	\$3,750	\$4,500

Oracle Standard Edition Named User Pricing

License Duration	Cost per User	Number of Users							
		5	10	15	20	25	30	35	50
Perpetual	\$300	\$1,500	\$3,000	\$4,500	\$6,000	\$7,500	\$9,000	\$10,500	\$15,000
4-year	\$180	\$900	\$1,800	\$2,700	\$3,600	\$4,500	\$5,400	\$6,300	\$9,000
2-year	\$105	\$525	\$1,050	\$1,575	\$2,100	\$2,625	\$3,150	\$3,675	\$5,250

Oracle Enterprise Edition Named User Pricing

License Duration	Cost per User	Number of Users							
		5	10	15	20	25	30	35	50
Perpetual	\$800	N/A	\$8,000	\$12,000	\$16,000	\$20,000	\$24,000	\$28,000	\$40,000
4-year	\$480	N/A	\$4,800	\$7,200	\$9,600	\$12,000	\$14,400	\$16,800	\$24,000
2-year	\$280	N/A	\$2,800	\$4,200	\$5,600	\$7,000	\$8,400	\$9,800	\$14,000

Processor License:

- **Processor:** shall be defined as all processors where the Oracle programs are installed and/or running. Programs licensed on a Processor basis may be accessed by your internal users (including agents and contractors) and by your third party users.
- **Processor Calculations:** The total number of processors needed is calculated by adding the number of processors in each computer where the programs are installed and/or running.

Oracle Standard Edition One Processor Pricing

License Duration	Cost per Processor	Number of Processors	
		1	2
Perpetual	\$5,000	\$5,000	\$10,000

Oracle Standard Edition Processor Pricing

License Duration	Cost per Processor	Number of Processors							
		1	2	3	4	5	6	7	8
Perpetual	\$15,000	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000	\$90,000	\$105,000	\$120,000
4-year	\$9,000	\$9,000	\$18,000	\$27,000	\$36,000	\$45,000	\$54,000	\$63,000	\$72,000
2-year	\$5,250	\$5,250	\$10,500	\$15,750	\$21,000	\$26,250	\$31,500	\$36,750	\$42,000

Oracle Enterprise Edition Processor Pricing

License Duration	Cost per Processor	Number of Processors							
		1	2	3	4	5	6	7	8
Perpetual	\$40,000	\$40,000	\$80,000	\$160,000	\$160,000	\$200,000	\$240,000	\$280,000	\$320,000
4-year	\$24,000	\$24,000	\$48,000	\$72,000	\$96,000	\$120,000	\$144,000	\$168,000	\$192,000
2-year	\$14,000	\$14,000	\$28,000	\$42,000	\$56,000	\$70,000	\$84,000	\$98,000	\$112,000

[Oracle Support Services](#)²⁰ offers a comprehensive portfolio of focused services that support the IT infrastructure your organization needs to meet the demands of e-business. Powerful and easy to purchase, these services range from subscriptions for software updates to advanced support that delivers flexible solutions tailored to specific business needs.

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WINDOWS OPERATING SYSTEM

The Biotics Mapper application is supported on Windows NT or 2000. The Biotics Tracker is supported on Windows 98, NT, or 2000. *As of June 2003, additional testing for Windows XP has been done and this can now be supported for Biotics Mapper and Tracker clients.*

The Biotics Tracker application requires a Windows NT or Windows 2000 server. There must be client access licenses for each Biotics Tracker user. Windows 2003 server is not supported at this time.

Consult your approved vendor for Windows OS upgrade costs. When buying new hardware, the operating system can be specified and included in the cost.

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ARCVIEW 3.x

You will need an ArcView 3.x license for each Biotics Mapper user. Additional copies of ArcView should be obtained for all program staff who need to view your spatial data on-line. Under NatureServe's Master Purchase Agreement with ESRI, the first ArcView 3.x license can be purchased for \$290, and additional licenses are \$115 each. Under the MPA, programs can also pay one fee of \$115 to upgrade all ArcView 3.2 licenses to version 3.3. It is recommended that programs pay the upgrade fee to acquire ArcView version 3.3, even if you are not planning to install this version, in order to take advantage of the free, bundled Crystal Reports version 8.5 software (refer to the Crystal Reports section below.) Biotics Mapper is supported on Arcview 3.1, 3.2a and 3.3. Arcview 3.3 is recommended.

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²⁰ https://oraclestore.oracle.com/OA_HTML/ibeCCtpSctDspRte.jsp?section=11347

CRYSTAL REPORTS

There are many commercial software products that can be used to connect to Oracle and generate reports. NatureServe is recommending Crystal Reports for report development and viewing. It is expected that each program will develop its own reports and that the Biotics user community will share reports. NatureServe will facilitate the sharing of reports within the Network. The current version of Crystal Reports is 9. A version of Crystal Reports that can connect with Oracle is necessary for develop reports. Both Professional and Developer Edition supports Oracle. *Note: ArcView 3.3 comes bundled with Crystal Reports version 8.5 and this version supports Oracle.*

Crystal Reports pricing as of January 28, 2003:

Product Version	1 User	5 Users
Crystal Reports 9 Professional Edition Full Product	\$495	\$2351
Crystal Reports 9 Developer Edition Full Product	\$595	\$2826

Visit <http://www.crystaldecisions.com/products/crystalreports/> for more information and to verify prices. [Crystal Care](#)²¹ offers a suite of support options.

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3.3 Estimating the Cost for Required Hardware

Network based GIS systems such as Biotics need sizeable resources and a fast network speed to perform at a satisfactory level. Also, when Oracle loads, it reserves part of the RAM on the server for its System Global Area (SGA), excluding other applications from using this RAM. Thus, extra RAM on the server will allow Oracle to be configured to run as efficiently as possible without swapping to disk

Determining the “correct” hardware for each program is very difficult. There are too many variables to provide a one size fits all solution. Among the variables that must be considered are:

- Number of users (Under 4 is small, 4 – 12 is medium, above 12 is large)
- Types of users and frequency of use
- Amount of data (and resulting “size” of the database), under 5000 Element Occurrences is small, 5000 – 20000 is medium, more then 20000 is large.
- Biotics server configuration
- Sharing hardware with other applications

Generally speaking, both the Application server and Database Server will require high RAM and processor speeds. In addition:

- Hard disk requirements will be low for the Application Server
- RAID configuration is recommended for the Database Server

²¹ <http://www.crystaldecisions.com/products/crystalreports/support.asp>

CLIENT HARDWARE

For Biotics workstations, use the guidelines below to estimate whether your current hardware will be adequate to support the Biotics Mapper and Tracker applications. The *minimum configuration* represents a PC configuration on which we have successfully tested Biotics. A PC with CPU or RAM below this configuration may support the software, but would likely perform very poorly. The *recommended configuration* represents a typical PC configuration on which the Biotics software will perform moderately well. If you plan to purchase new client hardware for your Biotics workstations, you can probably do even better than this.

	<i>Minimum Configuration</i>	<i>Recommended Configuration</i>
CPU	550 MHz	2 GHz or better
RAM	256 MB	512 MB or better
Screen Resolution	1024 x 768 or higher	1024 x 768 or higher

SERVER HARDWARE

As previously mentioned, the server components can be deployed on a single computer or across multiple computers. As a very general guideline, here are some ways the components might be deployed starting from the most minimal configuration:

1. Database server, application server, and file server all on one computer.
2. Database server on one computer. Application and file server on another computer.
3. Database server, application server, and file server all on separate computers.

For the Biotics server, use the guidelines below to estimate whether your current hardware will be adequate to support the Biotics Mapper and Tracker applications for a configuration where one computer serves all components (option 1 above). The *minimum configuration* represents a server configuration on which we have successfully tested Biotics. A server with CPU or RAM below this configuration may support the software, but would likely perform very poorly. If you plan to run other high-demand applications on the Biotics server, especially in a single-server configuration, you can expect to have negative performance impacts. If you plan to purchase new hardware to serve the Biotics components, you can probably do even better than this.

	<i>Minimum Configuration</i>	<i>Medium Configuration</i>	<i>Large Configuration</i>
CPU	1 GHz	2.4 GHz	Dual 2.4 GHz
RAM	2 GB	3 GB	4 GB

Supporting remote users requires running an IIS web server. This web server should run on a separate computer from your application server and database server. There are also a number

of Internet security issues that should be addressed (firewalls, etc.) that are beyond the scope of this document.

Here are some links for estimating hardware prices:

- [Dell](#)²²
- [Compaq](#)²³
- [Gateway](#)²⁴

[*Jump to questions on planning worksheet*](#)

3.4 Staff Time

Based on your answers to the planning worksheet questions for the previous section, you should estimate the amount of staff resources or external consulting services required to install, configure, or upgrade your technical environment for the Biotics installation.

[*Jump to questions on planning worksheet*](#)

4. Are You Comfortable with Your Knowledge of the Revised Natural Heritage Methods?

Spurred by both the affordability of new technologies (such as GIS) and the evolution of conservation biology as a separate field, NatureServe and the Natural Heritage Network have been re-thinking many aspects of our methodology over the last 5 years. Biotics Version 4 incorporates those revised methodologies where the design work was vetted through the Network. Staff, from data managers to biologists, will need to understand these revised methodologies. Keep in mind that even if you choose to implement Biotics Tracker (without Biotics Mapper), tabular components of the data model still reflect the EO spatial methodology.

4.1 Revised Element Occurrence (EO) Methodology

The Revised EO Methodology modifies the way a program collects and manages information about EOs, in order to improve the accuracy and consistency of the data in a spatial environment. This has implications for the conversion of data from the old to the revised Methodology. There is a lot of available material describing the Revised EO Methodology:

- [*Complete, detailed methodology document, Draft EO Data Standard*](#)²⁵

²² <http://www.dell.com/us/en/gen/default.htm>

²³ <http://www.compaq.com/>

²⁴ <http://www.gateway.com/index.shtml>

²⁵ <http://whiteoak.abi.org/eodraft/index.htm>

- [Preparation for Biotics document](#)²⁶, including an up-to-date summary of the revised methodology.

In addition, there will be training opportunities at a variety of levels:

- Introductory sessions at Core Heritage training (offered twice yearly in Arlington, VA)
- NatureServe Regional conferences, which may include demonstrations, breakout sessions, and advanced discussion of the EO Methodology and its use
- Optional, on-site training specifically designed around Member Program data and processes; offered by NatureServe Staff at the time of installation (and included in installation fees).

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4.2 Biotics Enhancements

In addition to the Revised EO Methodology, Biotics incorporates additional methodological enhancements. In terms of managing data, many of these will have a greater impact on NatureServe staff than on member programs. However, these enhancements do include the Ecology Pilot, which will affect how program ecologists manage their natural community data.

You can learn about the enhancements in detail by viewing the [report from the December 2000 HDMS Working Group meeting](#)²⁷. Becoming familiar with these enhancements may require additional training opportunities and experience not yet defined.

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5. Have You Prepared Your Data for the New Application?

In order to convert to Biotics, a Program's managed and reference data must be ready for import and use in the system. This includes data currently stored in BCD (or other system) in both standard and customized optional fields, any digitized Natural Heritage data layers in GIS, and basemap GIS layers for reference in Biotics mapping. Programs not installing Biotics Mapper may not need to follow sections 5.2, 5.3, and 5.4, though spatial QC will help improve data whether they are imported into Biotics or not.

5.1 Tabular Data QC

Because data in Biotics are stored in Oracle tables that have stricter rules of format than BCD, extra quality control procedures (QC) must be done on tabular data before import. Field lengths and date formats are especially prone to cause rejection of data by Oracle if

²⁶ http://whiteoak.abi.org/hdms/BioticsDoc/Documents/Prep_for_Biotics.htm

²⁷ <http://whiteoak.abi.org/hdms/HDMS-Meetings-AdHocWG.shtml>

they are not exactly correct. NatureServe provides [BCD batch programs](#)²⁸ that produce reports indicating problems and explaining how to fix them. For those Programs not using the BCD System, documentation included with the QC programs can be used to perform similar QCs in other database systems.

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5.2 Spatial Data QC

NatureServe recommends a thorough QC of spatial data in BCD before import into the Biotics Mapper application. This includes any spatial information related to element occurrence, managed area, or site files. Data should be imported into a GIS and checked against known, valid GIS coverages for accuracy. This QC should also be used to check the validity of GIS coverages. Examples of data to be checked in this way include countycode, watershed, TRS, and quadcode values in EOR; countycode and quadcode for MABR and SBR. An [ArcView extension](#)²⁹ is available for automating this spatial QC. This extension is designed to work on either point or polygon themes and will check attributes for which you have both a GIS shapefile or coverage and values recorded in BCD or an equivalent database.

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5.3 Formatting Digitized Heritage Layers

Any digitized Natural Heritage GIS data layers, such as EOs or Sites, should be correctly formatted with the necessary attributes for loading into Biotics Mapper. For help in digitizing EOs and adding the necessary attributes, refer to [Preparation for Biotics](#)³⁰.

[Jump to questions on planning worksheet](#)

5.4 Collecting and Formatting GIS Data Layers

Programs must gather, or have access to, any GIS layers necessary for background or calculation of spatial attributes in Biotics Mapper. They must all be in the same projection and datum, usually the “standard” projection for that state or province, if such a projection exists. In addition to any layer needed for a calculation of a data field (watershed coverage, county coverage, or TRS coverage, for instance), basemap layers are needed to facilitate heads-up digitizing of new shapes in Biotics Mapper. Common basemap layers include DRGs (digital raster graphics) or DOQQs (digital orthophoto quarter-quad maps); these should be processed (“clipped”) for use.

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²⁸ <http://whiteoak.abi.org/hdms/Support-BCDQC.shtml>

²⁹ <http://whiteoak.abi.org/hdms/Support-BCDQC.shtml>

³⁰ http://whiteoak.abi.org/hdms/BioticsDoc/Documents/Prep_for_Biotics.htm

5.5 Examining Optional or Custom Data Fields

All optional fields or custom data fields should be examined to determine how much work will be needed to recreate them in Biotics. Some fields will need to be recreated in the Biotics database tables or in the reporting tool (Crystal Reports). Programs should analyze their optional fields and symbolics to determine (1) that they are useful and necessary, and (2) how much work will be necessary to recreate them in Biotics. NatureServe will provide guidance and assistance in this analysis.

[*Jump to questions on planning worksheet*](#)

5.6 Examining “Pirated” BCD fields

Some Member Programs have adopted uses for fields which are outside their original purpose or definition. Programs will need to identify these fields, decide whether they map to an existing field in the Biotics data model, or whether they need to be treated as an optional or custom field (Section 5.5). In any case, Programs will need to be careful so that data in “pirated” fields are not migrated to the standard Biotics data model field.

[*Jump to questions on planning worksheet*](#)

6. How Will You Convert Your Data to Biotics?

Converting to Biotics raises methodological as well as technical questions about a Member Program’s current dataset. A [*Sample Project Plan for Installation of Biotics*](#)³¹ is available for review.

6.1 Technical Conversion

Technically, conversion to Biotics is built around a move from an Advanced Revelation (BCD) to an Oracle (Biotics) table structure. NatureServe provides conversion routines to migrate the data from BCD to Biotics; additional work may be necessary post-migration to ensure data are in the correct place. A departure from that specific move will necessitate additional resources on the part of the Program and NatureServe Staff to ensure that current functionality can be continued in Biotics.

[*Jump to questions on planning worksheet*](#)

6.2 Methodological Conversion

Methodologically, there are different levels of effort that can be applied to migrating existing Element Occurrence data to the Revised EO Methodology. Member Programs must decide how finely to divide their existing EOs for evaluation, ranging from broad groupings (based

³¹ http://whiteoak.abi.org/hdms/SupportDoc/biotics4_workplan_template.htm

on precision values, for instance) to an EO-by-EO review. NatureServe recommends and has conversion routines to automate the simplest migration to the Revised EO Data Model. NatureServe also supports, at greater time and cost to the Member Program, a custom analysis of current EO data resulting in a more advanced application of the Revised Methodology. For more information on the data conversion please see [Preparation for Biotics and Implementation of the Revised EO Methodology](#)³². For detailed information on the EO Data Model please see the [Draft EO Data Standard](#).³³

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7. Have You Evaluated Your Business Processes?

The changes in methodology require some modifications to how programs collect and manage data. In order to ensure a smooth transition, each program should evaluate their critical business processes.

7.1 Field Form Changes

To fully implement the revised EO Methodology requires the collection of some additional information by field staff. Programs should revise their field forms to incorporate this additional information.

To learn more, please see [Preparation for Biotics and Implementation of the Revised EO Methodology](#).³⁴ [Example field forms](#)³⁵ from Network programs are also available on the Biotics web site.

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7.2 Data entry and data flow

The revised EO Methodology requires that element occurrences be mapped prior to the entry of the tabular data. This may or may not require changes for your program's data flow.

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7.3 Other Business Processes, Such as Environmental Review

There may be other business processes, such as environmental review, which will be impacted by the conversion to new methodologies and software.

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³² http://whiteoak.abi.org/hdms/BioticsDoc/Documents/Prep_for_Biotics.htm

³³ <http://whiteoak.abi.org/eodraft/index.htm>

³⁴ http://whiteoak.abi.org/hdms/BioticsDoc/Documents/Prep_for_Biotics.htm

³⁵ <http://whiteoak.abi.org/hdms/Biotics-FieldForms.shtml>

7.4 Filing System

When mapping element occurrences in Biotics, the data fields for dotnum, margnum and tenten are not populated. (These fields still exist in the data model for migration of legacy BCD data and can be used by a program that chooses to implement Biotics without the Mapper component.) This may or may not require changes for your Program's Geographic Manual File (GMF) organization.

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8. What Core Custom Reports, Products, or Procedures Need to be Recreated in the New System?

Each program has most likely created some standard reports, map products, and other procedures that are necessary for core business functions. These may need to be re-created in Biotics, either as custom data fields or as reports in Crystal Reports. Member Programs should plan to make a list of such reports and prioritize them, ensuring absolutely critical functions are available immediately in Biotics. Further report customization can continue after Biotics is in place. Keep in mind that NatureServe will facilitate sharing of reports across the network, which could save some time and duplicative effort.

8.1 Reports

[*Jump to questions on planning worksheet*](#)

8.2 Interface to Other Applications

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9. Does Your Program's Staff Have the Necessary Training and Experience to Implement Biotics?

With Biotics comes new technology that will require a different set of skills than the BCD System. While all of NatureServe will be learning the new system together, Member Programs will have more success converting to Biotics if they have a basic set of staff skills and application support. This set includes an experienced data manager, a staff member or support person skilled in operating system administration and Oracle administration, staff members who can use ArcView and Crystal Reports, and a designated Biotics administrator. Member Programs should take the time to assess these needs and decide whether further training or hiring may be necessary.

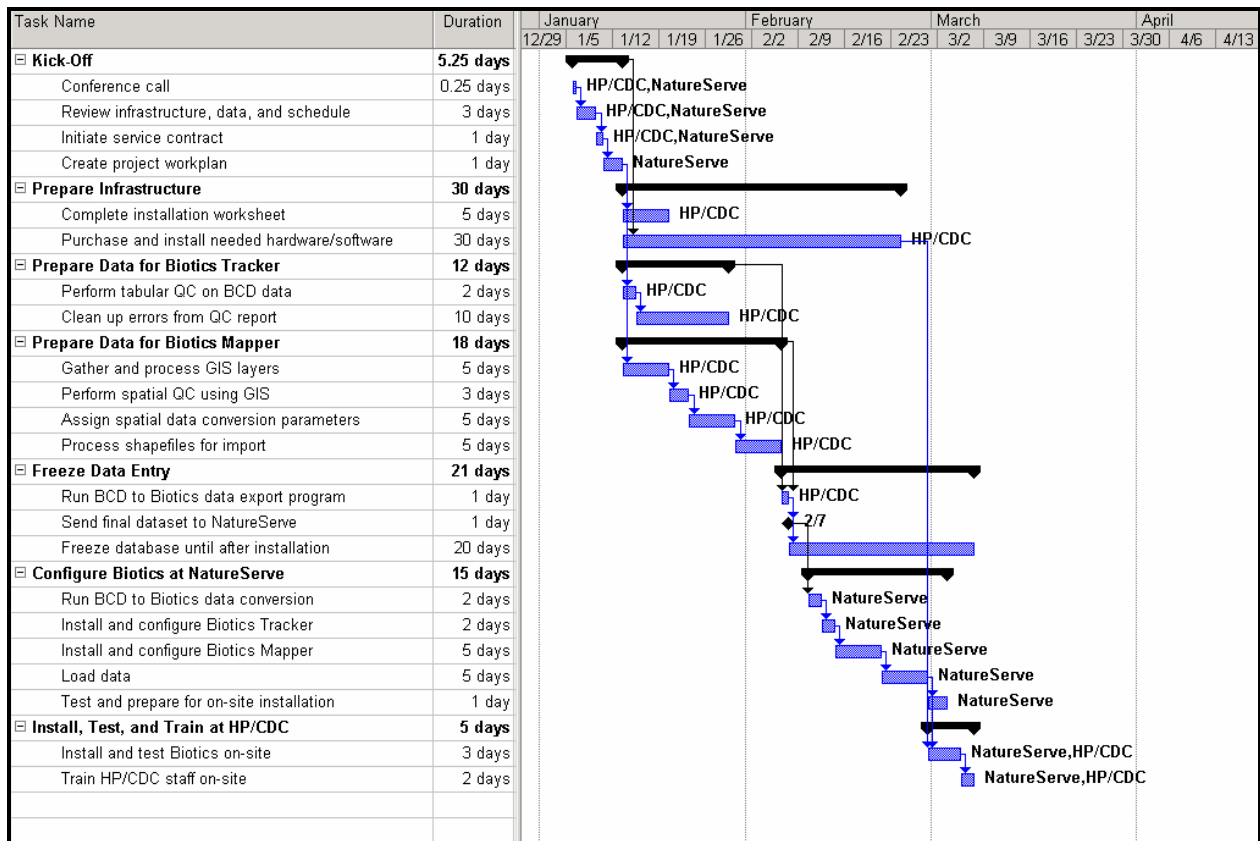
[*Jump to questions on planning worksheet*](#)

10. Will Your Program Need NatureServe Consulting Services?

NatureServe has established an installation fee of \$13,000 for Biotics 4. (For programs that implement the Biotics Tracker component only, or for those programs that are upgrading from Biotics version 3.1 to 4, the installation fee is \$6,500). The sample project plan below outlines the scope of effort for the HP/CDC staff and NatureServe staff during a typical Biotics installation. The installation fee is based on the amount of NatureServe staff time required to:

- Assist HP/CDC staff as needed with choosing the protocol for converting their element occurrence (EO) data into the revised EO methodology
- Assist HP/CDC staff during the data QC process
- Convert data from BCD to Oracle format
- Load the Biotics Oracle database with converted BCD data
- Load Biotics Mapper with spatial representations of EOs, MAs, and Sites
- Configure the Biotics application according to the HP/CDC's specifications
- Perform on-site installation and testing of the Biotics applications at the HP/CDC
- Provide application training to the HP/CDC staff

For programs requiring additional services, custom installation contracts may be arranged with NatureServe. Travel costs for one NatureServe staff person to visit the HP/CDC office, estimated to be no more than \$1500 (within North America), are not included in the installation fee quoted above. Actual travel costs will be billed separately upon completion of the installation trip.



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11. Planning Worksheet

What are your Licensing Costs?

What is the initial licensing fee for your program?

What is the subsequent annual support fee for your program?

\$3,000

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What Hardware and Software will you need for the Biotics Infrastructure?

Application Architecture – Understanding the Pieces

Do you intend to implement the Biotics Tracker application? If so, how many total users will there be? On average, how many users do you anticipate using the system at one time?

Do you intend to implement the Biotics Mapper application? If so, how many total users will there be? On average, how many users do you anticipate using the system at one time?

Do you intend to support remote users of the Biotics Tracker application over the Internet? If so, how many total users will there be? On average, how many remote users do you anticipate using the system at one time?

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Estimating the Cost for Required Software

Oracle

What will be your Oracle licensing fee for the current year(s) and future years?

What will be your Oracle support services fee for the current year(s) and future years?

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Windows Operating System

What will be your client computer operating system costs?

What will be your server computer operating system costs?

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ArcView 3.x

What will be your ArcView licensing fee for the current year(s) and future years?

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Crystal Reports

What will be your Crystal Reports licensing fee for the current year(s) and future years?

What will be your Crystal Care support fee for the current year(s) and future years?

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Estimating the Cost for Required Hardware

What will be your hardware costs for client workstations?

What will be your hardware costs for server(s)?

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Staff Time

What amount of internal staff resources will you need to budget for the installation, configuration, or upgrade of your technical environment?

What amount of external consulting services will you need to budget for the installation, configuration, or upgrade of your technical environment?

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Are You Comfortable with Your Knowledge of the Revised Natural Heritage Methods?

Revised Element Occurrence (EO) Methodology

Do you feel comfortable with your program's knowledge of the Revised EO Methodology?

Estimate the staff time needed for your program to become familiar with the Revised EO Methodology.

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Biotics Enhancements

Do you feel comfortable with your program's knowledge of the Biotics Enhancements?

What type of training would best suit your program: Tutorials? Manuals? On-site classes?

Estimate the staff time needed for your program to become familiar with the Biotics enhancements.

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Have You Prepared Your Data for Biotics?

Tabular Data QC

Have you run the programs to QC tabular data?

Running these programs requires only a few minutes. Estimate the staff time needed to make the necessary corrections.

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Spatial Data QC

Have you performed the QC of spatial data?

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Formatting Digitized Heritage Layers

If you have digitized any Heritage data layers, do they have the necessary attributes for import into Biotics Mapper?

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Collecting and Formatting GIS Data Layers

Have you identified all the GIS layers you want to use in Biotics Mapper? Your list may include:

- Digital raster graphic images of USGS quad maps or Orthophoto quads

- County coverage
 - Watershed coverage
 - USGS quad coverage
 - Other reference layers depicting hydrology, elevation, TRS, etc.
-
-

Are they all in the same projection? What is the projection and datum?

Are your basemap layers projected and processed?

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Examining Optional or Custom Data Fields

Have you examined your optional fields to determine whether they need to be recreated in Biotics or whether they are now part of the core data model?

Have you examined your symbolic fields to determine whether the functionality is now part of Biotics or whether the functionality may have to be recreated in Crystal Reports?

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Examining “Pirated” Fields

Have you examined any “pirated” fields to determine how to handle the data stored in them?

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How Will You Convert Your Data to Biotics?

Technical Conversion

Is the BCD System your only current data management system?

If not, please describe your current data management system (e.g., Access or Dbase, whether BCD field structure is duplicated or altered, whether some current data management still takes place in BCD).

If not using BCD, do you have staff available to write conversion routines specific to your database system?

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Methodological Conversion

Will you proceed with a basic automated data conversion, or a more detailed custom conversion?

Will you want NatureServe Staff to assist with the custom conversion?

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Have You Evaluated Your Business Processes?

Field Form Changes

Have you revised your field forms to accommodate the revised EO Methodology?

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Data Entry and Data Flow

Have you evaluated your program's data flow process and determined what, if any changes are necessary?

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Other Business Processes, Such as Environmental Review

Have you identified and evaluated these other business processes? Please list them.

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Filing System

Do you currently file manual EO files by dotnum, margnum or tenten?

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What Core Custom Reports, Products, or Procedures Need to be Recreated in the New System?

Reports

What custom tabular reports are necessary for core business functions?

What standard map products are necessary for core business functions?

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Interface to Other Applications

*What active database links do you maintain within your current data management structure?
Have you designed custom interfaces for entering, viewing, or reporting data?*

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Does Your Program’s Staff Have the Necessary Training and Experience to Implement Biotics?

Do you have an experienced data manager?

Do you have (as a member of your staff or through a technical support department) someone skilled in operating system administration?

Do you have (as a member of your staff or through a technical support department) someone skilled in, or at least familiar with, Oracle database administration?

Are your staff members skilled in, or at least familiar with, ArcView or ArcGIS?

Are your staff members skilled in, or at least familiar with, Crystal Reports?

Do you have a person that can be designated the Biotics administrator?

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Will Your Program Need NatureServe Consulting Services?

What are the estimated NatureServe consulting services fees for your program?

What are the estimated NatureServe consulting services travel expenses for your program?

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