



# **Technical Manual**

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This collection of technical materials includes the following information.

## **Quick-Start Guides**

BASS Manager's Quick-Start Guide BASS Stakeholder Quick-Start Guide

## BASS User's Guide

## BASS Administrator's Guide

Including:

Appendix A Intellectual Property Issues and Hosting Recommendations for BASS

Appendix B Commercial Licenses in BASS (Class 1)

Appendix C Open Source Licenses Used in BASS (Class 2)

BASS Technical Manual Bureau of Ocean Energy Management





# **Quick Start Guides**

## BASS Manager's Quick-Start Guide (Pg. 1)

## **BASS URLs**

**BASS Web Application**: The BASS Web Application is used to perform Bayesian Decision Support Analyses incorporating Science Measures, Subjective Stakeholder Input, or both. The BASS application can be accessed at http://alphasite.smartsoftwareinc.com:8080/bass/html/login.jsp

**BASS Viewport:** The BASS Viewport is used to explore spatial datasets and can be used to filter potential sites against advisory datasets. The BASS Viewport can be accessed from a link to the right of the BASS logo in the BASS Web Application.



The Navigation Bar can be used to navigate forward or backward through the tool by clicking on an appropriate tab to move to a desired page.



- Select an Existing Project from the "SELECT EXISTING PROJECT" list by clicking on the radio button, waiting for the page to load, then clicking "LOAD PROJECT"

## OR

- Define a New Project by Specifying Parameters Under: "DEFINE NEW PROJECT", then clicking "ADD PROJECT"

SELECT LOCATION

- Select an Existing Region from the "SELECT REGION" list by clicking on the Region's radio button

### OR

All Analyses Require

Project and Area of Interest Definitions

not there is reason to include Science Measures,

Stakeholder Measures or Both

Project-specific criteria will dictate whether or

- Define a New Region by clicking the "New Region" link below the "SELECT REGION" list and giving the region a name,

### THEN

- Select Existing Areas of Interest from the "AREAS OF INTEREST" list for a selected region

## OR

- Define New Areas of Interest by clicking the "Define New Area of Interest" link and specifying desired locations

### SCIENTIFIC MEASURES

- Select Relevant Scientific Measures from the "SELECT MEASURES" list, then click "LOAD MEASURES" to proceed to the Stakeholders tab, or click "SEND FOR CALCULATION" to run the models, then click "LOAD MEASURES" to go to the Stakeholders tab.
- **NOTE:** If you do not wish to incorporate Stakeholder Measures, click ahead to the "Results" tab in the Navigation Bar.
- **NOTE:** Clicking the "Request New Measure" link will send an e-mail request for a new scientific measure to the system administrator, as science measures require underlying data and model development, this will not result in the immediate addition of a new science measure to the list.

STAKEHOLDERS

DEFINE STAKEHOLDERS

See Page 2

## BASS Manager's Quick-Start Guide (Pg. 2)



## BASS Manager's Quick-Start Guide (Pg. 3)



- From this page a report can be generated that allows further exploration of the analysis results.

# **BASS Stakeholder Quick-Start Guide**

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## The BASS Header Bar Guides Progress through Stakeholder Input:





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# **User's Guide**



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# **1.** INTRODUCTION TO USING BASS

## Accessing and using the BASS tool

The BASS application suite is hosted at both Smart Software and at Oregon State University. Smart Software hosts the alpha version of BASS. OSU hosts the supporting BASS Scientific Model Service, the BASS Display Port & Map Services, and firewalled help and diagnostic tools for administrators. When completed, OSU will host all services hardware within the College of Earth, Ocean, and Atmospheric Sciences (CEOAS). The BASS Administrators guide provides a discussion of hosting options and licensing considerations under this and alternate deployment scenarios. Production deployment scenarios and instructions are outside the scope of this user guide.

This Technical User's Manual is intended to provide instructions at a level of detail suitable for a decision maker, also known as an Issue Manager, to build and run an analysis with the public-facing toolset.

The hostname of bass.coas.oregonstate.edu is reserved for this system. Several components fall under the umbrella of BASS, and the URL for each component is listed below. Issue Managers and Stakeholders use the BASS Decision Support Tool interface to set up projects and to collect stakeholder data. The display port may be used to advise any or all phases of a project from setup to data collection by providing a view and query environment for preloaded advisory and scientific model datasets. The BASS Model Services supply scientific model results, but are, for the most part, transparent to the user and are called by the BASS Decision Support Tool.

1. BASS Decision Support Tool (URL will change in production)

http://alphasite.smartsoftwareinc.com:8080/bass/html/login.jsp

2. BASS Display Port

http://hornet.coas.oregonstate.edu/bass/

- 3. BASS Model Services
  - GIS linked BBN Model Service
     http://bass.coas.oregonstate.edu/bass/ModelRunReguestImpact/
  - BASS Output Directory
     http://bass.coas.oregonstate.edu/impact\_output/
  - BASS Model Service Request Log <u>http://bass.coas.oregonstate.edu/bass/BASSlog/</u>
  - BASS Model Description Pages
     <u>http://bass.coas.oregonstate.edu/Model\_Descriptions/</u>

## **User scenarios**

The BASS tool assists with a myriad of spatial siting decisions. User scenarios guide users through the tool application best suited to the question they are trying to answer.

Specifically, the project team developed the following scenarios:

- Scenario 1: Planning Entity Seeking to Identify the Best Areas for Renewable Energy Development
- Scenario 2: Project Developer Vetting Site Alternatives
- Scenario 3: Agency Lead Evaluating Alternatives
- Scenario 4: Agency Evaluating a Permit Application

Each of the scenarios provides information to answer the following questions:

- Who is using BASS in this scenario?
- What is the area of interest?
- What question(s) are they asking?
- How is BASS used within this scenario?
- What is the useful output for this process?

These scenarios are designed to provide a clear vision of various BASS tool users and their needs and to identify the actual decision-making contexts where the BASS tool may be utilized.

## Data management

The BASS tool facilitates marine renewable energy spatial siting decisions using two types of data: predefined scientific data and stakeholder input. This section defines these types of data and explains how they inform BASS tool functionality.

## **EVALUATION OF SCIENTIFIC INPUT**

This section briefly defines and describes the scientific measures modeled in the BASS tool:

- Cetacean support
- Coastal resilience
- Crustacean support
- Commercial fishing support
- Groundfish support
- Kelp support
- Pinniped support
- Non-consumptive recreation support
- Viewshed support
- Three categories of wave energy device suitability:
  - > Coastal wave energy device suitability

- > Mid-depth wave energy device suitability
- > Offshore wave energy device suitability

## **EVALUATION OF STAKEHOLDER INPUT**

This section defines the process of obtaining and integrating stakeholder input into the BASS tool. Stakeholder input occurs in two phases, or with two constituent groups: 1) Assessing Agency Values and Preferences, and 2) Assessing the Values and Preferences of External Stakeholders. The methods for obtaining values and preferences in each of these constituencies are unique to the defined user scenarios.

### ASSESSING AGENCY VALUES AND PREFERENCES

Mission-driven organizations have specific charges that reflect the values and preferences used to inform CMSP decisions.

#### ASSESSING THE VALUES AND PREFERENCES OF EXTERNAL STAKEHOLDERS

The stakeholder outreach approach needs to be carefully tailored to the type of decision being made, the nature of the stakeholder community, and the desired objective of the stakeholder outreach. For example, if the decision maker is seeking to use the process to improve consensus amongst stakeholders, then a workshop format would be most suitable. However, where the decision maker is merely seeking to obtain or document stakeholder perspectives, using a remote engagement strategy may be warranted. Likewise, if a large number of stakeholders are being engaged, then remote surveys may be necessary.

The BASS tool is set up to allow for and support a variety of stakeholder data collection approaches, including remote engagement. However, it is important to state at the outset that remote stakeholder data collection should not be used without some form of prior engagement with the stakeholder or active participation in the survey process. Some examples include:

- Provide a brief introduction to the system and the nature of the questions prior to sending the survey to the stakeholder
- Send the stakeholder survey, but arrange to be on the phone with the stakeholder to walk them through the process and answer any questions

Stakeholders that have been through the process previously (we anticipate that representatives of interest groups could be frequent participants), should be able to complete the process with no additional guidance beyond that provided in the email.

The BASS tool is designed to support a remote stakeholder engagement approach. The "Invite Stakeholders" page allows the decision manager to send an email to selected stakeholders. If the decision manager chooses to use a remote engagement strategy with a stakeholder, then the email should include clear instructions that, at a minimum, include the following information:

- A concise statement of the context of the decision being made—what is the issue being decided, what parties are involved, and why is it relevant to the stakeholder (e.g., it is happening in their community, they represent an interest group that could be affected by the decision).
- A clear statement of what is being asked of them—depending on the nature of the outreach, that could be attending a workshop or other interactive event. For remote engagement, that will most likely be taking the time to respond to survey questions (in paper format), answering survey questions directly in the BASS tool, or engaging in a phone conversation.

- Clear directions for what the stakeholder needs to do to respond to the survey.
- If the stakeholder is new to BASS, then instructions should be provided for how to receive an orientation to BASS.
- Contact information for someone if they have questions about the process.
- If they are being asked to respond directly in BASS, then a link to access the tool and login information should be provided.

A decision manager can tailor the outreach approach to each stakeholder within the process. The decision manager can select specific stakeholders to include in an email that is setting up a remote engagement (see Define Stakeholders). If there is another group of stakeholders for whom more direct outreach is appropriate, a separate email can be sent to them setting up a live engagement. For stakeholders that will be responding directly within the BASS tool, it is also possible to ensure that the stakeholders are only responding to questions about issues or locations that are relevant to them. For example, if the decision process involves selecting between multiple sites that are each associated with a different community, then community members should only be surveyed about how they feel about potential effects to their community. However, a representative of an interest group that could potentially be affected by selection of any of the sites should be surveyed about all sites.

# 2. USING BASS FOR DECISION SUPPORT

This section provides instructions for using the BASS tool. Figure 1 illustrates the complex relationships between databases and tool programming, and the **Details** column identifies where the user provides input.



The tool addresses three types of users: Issue Managers, Stakeholders, and System Administrators. Each of these users has a different reason for accessing the tool, and as a result, the interface and prompts are specific to each. The following outline identifies specific information that must be provided by the user. For the completed manual these queries will be explained using a combination of graphics, screen shots and explanatory text.

## **BASS login and account request**

## LOGIN

Log into BASS at <u>http://alphasite.smartsoftwareinc.com:8080/bass/html/login.jsp</u> or <u>http://bass.coas.oregonstate.edu:8080/bass/html/login.jsp</u>. On the login screen enter a user name and password. These can be obtained from the administrator.

## **REQUEST AN ACCOUNT**

This sends a message to the administrator to request a new account.

### **FORGOTTEN PASSWORD**

<image/>
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## **BASS organization**

Every BASS screen has the same organization. Under the banner is a list of activities. On the left is information input and output. The central portion of the screen is an interactive map that shows locations and other geospatial information.



The activities shown are dependent on the user's role in the project. Aside from the System Administrator role, there two roles for users at the project level: Issue Managers and Stakeholders. For each new project there are one or more Issue Managers and zero or more Stakeholders. When BASS first opens it assumes you are a Stakeholder until you either choose a project for which you are the Issue Manager or you define a new project where you are the Issue Manager.

If you are a Stakeholder, there are three activities shown in the order in which they generally occur: Define Project, Assign Values and Evaluate Measures.

<b>BASS</b>		TECHNICAL DOCUMENTATION	TUTORIALS H	ELP SIGN OUT
DEFINE PROJECT	ASSIGN VALUES	EVALUATE MEA	SURES USING BELIEF	мар

If you are the Issue Manager, there are seven activities displayed. Three of these activities have subactivities as shown in the figure below. The major activities are major headings in the sections below.

BAS	SS			TECHNIC	AL DOCUMENTATION		ALS   HELP	ļ,	SIGN OUT
DEFINE PRO	ОЈЕСТ	SELECT LOCATION	SCIENTIFIC MEASURES	STAKEHO	LDERS EVA		RESULTS	>	REPORT
	VIEW / A	SSIGN VALUES	EVALUATE MEASURES		K	AN	ALYSIS RESULTS	T	WHAT'S NEXT
		_							
		C	EFINE STAKEHOLDERS	DEFINE N	IEASURES	INVITE STAK	EHOLDERS		

## Select/define project

When BASS first opens it lists all projects that you are involved in either as an Issue Manager or as a Stakeholder. You can either select an existing project or define a new project. If the SELECT EXISTING PROJECT area is empty, you are not currently involved in any BASS projects.



## Load existing project

Select one of the existing projects and click Load Project.

- For Stakeholders:
  - The activities headings remain unchanged, but focus is shifted to Assign Values.
  - The interactive map displays areas of interest associated with the project.
- For Issue Managers:
  - The activities area switches to the Issue Manager long version as shown on page 6 with the focus on the second activity Select Location.
  - o The interactive map displays areas of interest associated with the project.



## Delete, copy or edit existing project

To delete, copy or edit an existing project, select the project and then the desired action. Copy asks for a new name and all information for the project is copied to the new name. The new project is independent of the original project for editing, location change and evaluation. Editing opens the original project as described in the next section.

## **Define new project**

To define a new project:

- 1. Enter a project name.
- 2. Enter a description.
- 3. Enter links to documents on the Internet.
- 4. Choose the conditions for the evaluations.

The default setting is that all evaluations are for the impact of the technology on the locations. However, you may also wish to have the initial conditions evaluated so that the change from initial to impacted can be studied. Checking Yes only impacts the evaluations made using scientific measures, requesting initial evaluation with them. This increases computing time, but gives more flexibility on the Results page.

- 5. Choose the Technology Phase.
- 6. Choose a Renewable Energy Type.
  - Each energy type has a predefined list of scientific measures and models associated with it
  - Initially there are three Renewable Energy Types shown. Only Wave Energy has models developed at this time. The remainder are disabled.
- 7. Click Add Project to save the new project definition.

DEFINE NEW PROJECT				
PROJECT NAME				
DESCRIPTION				
DEFAULT EVALUATIONS ARE FOR IMPACTED CONDITIONS. ADD INITIAL CONDITIONS ALSO?				
○ Yes				
⊙ No				
TECHNOLOGY DEPTH				
Shallow				
O Medium				
O Deep				
TECHNOLOGY PHASE				
<ul> <li>Operation</li> </ul>				
Construction				
RENEWABLE ENERGY TYPE				
<ul> <li>Wave Energy</li> </ul>				
O Wind Energy				
<ul> <li>Tidal Energy</li> </ul>				
Clear Form ADD PROJECT C				

## Select location (Issue Manager only)

When the Select Location activity is highlighted at the top of the screen, the information input and output area shows the selected project and energy type in gold at the top.

For each project there are regions and areas of interest. An area of interest is a specific rectangular section defined by its latitude, longitude, east-west length and north-south length on the interactive map. A region is composed of a set of areas of interest. The management of areas of interest will be described first.

## **AREAS OF INTEREST MANAGEMENT**

The areas of interest for the chosen project are listed in the Information Input and Out area of BASS and shown on the Interactive Map. The check boxes next to each area supports four operations.

SAVE AS NEW REGION

To define a new Region:

- 1. Select Areas of Interest to be included in the region
- 2. Select Save as New Region.
- 3. Enter the name of the new region.
- 4. Click Save.

DEFINE A NEW AREA OF INTEREST

To define a new area of interest:

- 1. Click Define New Area of Interest.
- 2. A banner appears on the interactive map that says, Click on the Map to Set the Area's Top Right Corner and CanceL. The map can be dragged by holding down the left mouse button

while moving the mouse. Let go of the left mouse button when the desired area is displayed. Select the top right point with a single mouse click. This location is edited in the next step.

- 3. The Define Area of Interest window is displayed with the latitude and longitude of the top right point entered and a default size of 1 km x 1 km. These can all be edited and a name given to the area.
- 4. When complete, click **Save Area.** To cancel, click the X in the upper right corner.
- 5. The new area is added to the Areas of Interest list.

DEFINE AREA OF INTEREST	$\otimes$
AREA OF INTEREST - NAME	_
LONGITUDE (Top Right Corner)	LATITUDE (Top Right Corner)
-124.51019653320313	44.048758544921874
WEST-EAST LENGTH (km)	NORTH-SOUTH LENGTH (km)
1	1
	SAVE AREA
	CATE AILER O

SELECTED PROJECT:

SELECT REGION

DEFINED REGIONS

NNMREC Region 1

Invalid

Invalid
Invalid

NW Wind 1

NewRegion1

AREAS OF INTEREST

New Region Edit Region

Warrenton

Reedsport

Save as New Region

Define New Area of Interest

Newport

Edit Area

Delete Area(s)

RENEWABLE ENERGY TYPE:

LOAD REGION 🗊

LOAD AREAS 🗊

NNMRIC Test

Wave Energy

## EDIT AN AREA OF INTEREST

To edit the size, location or name of an area:

- 1. Select the area of interest to be edited.
- 2. Click Edit Area.
- 3. The Define Area of Interest window is displayed.

DELETE AN AREA OF INTEREST

To delete one or more areas:

- 1. Selct the area of interest to be deleted.
- 2. Click Edit Area.

A confirmation is requested before the deletion. Areas deleted are removed from all regions.

### **REGION MANAGEMENT**

A region is a collection of areas of interest. BASS supports making a decision to find the best area of interest in a region. Once areas of interest are defined, regions can be established.

### **NEW REGION**

To form a new region:

- 1. Select the areas of interest to be included in the new region.
- 2. Click New Region.
- 3. Give the region a name.
- 4. Click Save.

EDIT REGION

Edit Region only permits changing the region's name.

DELETE REGION

Not included in Version 1.0.

LOAD REGION

To activate a region it must be loaded. If there are new or changed areas of interest, a message will appear that says "Changing the region or associated areas will require the scientific measures to be recalculated. This may take a few minutes depending on the size of the areas. If you select LOAD REGION, BASS moves to the next activity: SCIENTIFIC MEASURES.

## Scientific measures (Issue Manager only)

The information input and output area now shows the Selected Project, Renewable Energy Type, Selected Region, and Selected Area of Interest. For each renewable energy type, there is a set of scientific measures for which data and models are available. For each project, a subset of these scientific measures can be included.

## SELECT MEASURES

All scientific measures for the renewable energy type are listed in the Select Measures area.

To select the desired scientific measures:

1. Select each measure you want to include in the current project. A Select All checkbox is in the upper part of the Select Measures area.

## 2. Click Load Measures.

The activity advances to Stakeholders.



### **REQUEST NEW SCIENTIFIC MEASURE**

If a scientific measure is needed that is not listed, there are two options.

It can be requested using the Request New Measure selection. This sends a message to the BASS administrator to collect the needed information and build a new model. This may take some time to accomplish.

Alternatively, a measure for which there is not an immediate scientific model may be included as a Stakeholder Measure as described in the next sections.

## **Define stakeholders (Issue Manager only)**

Within the Stakeholder activity there are three sub-activities: Define Stakeholders, Define Measures, and Invite Stakeholders.

Define Stakeholders – In the upper left area of the Define Stakeholders window is a list of potential (previous) Stakeholders and Issue Managers. Stakeholders for the current project can be selected from this list, new names can be added, or any Stakeholder can be made an Issue Manager. In BASS, Stakeholders are asked to evaluate value information. If the Issue Manager wants to assume the role of a certain Stakeholder, they define a Proxy. Details on Proxies are also included in this section.

BASS		TECHI	NICAL DOCUMENTATION TUTORIALS HELP SIGN OUT
DEFINE PROJECT SE	ELECT LOCATION SCIENTIFIC N	MEASURES STAKEHOLDERS	EVALUATION RESULTS REPORT
SELECTED PROJECT:		DEFINE STAKEHOLDERS   DEFINE MEASUR	RES   INVITE STAKEHOLDERS
RENEWABLE ENERGY TYPE:	DEFINE STAKEHOLDERS		
SELECTED REGION: NNMREC Region 1	POTENTIAL STAKEHOLDERS	SELECTED STAKEHOLDERS David Ullman (Manager) Terry Thompson	ADD NEW STAKEHOLDER NAME
SELECTED AREAS OF INTEREST: Warrenton Coos Bay Renderont	David Ullman Kevin Halsey E Chris Golfinger App Radil	Saety Hildenbrand	EMAIL
Newport	Ann Radil M Chris Romsos	Aanager	USER NAME
Warrenton 30	Chris Mochon Collura Mike Morrow Jason Busch	C	ASSIGN PASSWORD CONFIRM PASSWORD
26	Charles Pavlik 🔹 S	elect All	ADD 🤤
F	EXISTING PROXIES	SELECTED PROXIES	
Newport Salem <sup>0</sup>			ADD NEW PROXY PROXY NAME
- Readsport		c	ADD AS PROXY
Coos Bay	s	ielect All	ADD STAKEHOLDERS

## **SELECT STAKEHOLDERS**

To include someone in the POTENTIAL STAKEHOLDERS list in the current project use the  $\rightarrow$ button. To remove them from the SELECTED STAKEHOLDERS use the  $\leftarrow$ button. If you want all included, click Select All.

A person can be added as an Issue Manager. This displays the full set of activities and the ability to change any of the information in BASS concerning the currently active project. To select an Issue Manager:

- 1. Select a name from the **Potential Stakeholders** list.
- 2. Select the Manager checkbox.

Click the  $\rightarrow$  button. The name in the Selected Stakeholders list will be appended with (Manager).

## ADD NEW STAKEHOLDER

If the Stakeholder needed for the roject is not listed in POTENTIAL STAKEHOLDERS, the name can be added in the ADD NEW STAKEHOLDER area.

### **ADD A PROXY**

A proxy is used when a manager wants to play the role of a stakeholder without the stakeholder's direct involvement. Proxies are managed and added just like stakeholders.

## **DEFINE STAKEHOLDER MEASURES (ISSUE MANAGER ONLY)**

The second subactivity for Stakeholders is to DEFINE STAKEHOLDER MEASURES.

DEFINE STAKEHOLDER MEASURES							
STAKEHOLDER MEASURES	ТҮРЕ	UNITS	DELIGHTED	DISGUSTED			
Impact on viewscape	Qualitative		0	0	Edit Delete		
Impact on employment	Qualitative		0	0	Edit Delete		
Add New Stakeholder Measure							
ADVISORY MEASURES	ТҮРЕ	UNITS	DELIGHTE	D DISGUST	ED		
Add New Advisory Measure				LOAD	MEASURES 🗊		

Stakeholder measures are the parameters through which the members evaluate alternatives. In BASS, measures can be either:

- Qualitative (i.e., subjective) with no numerical targets
- Quantitative (i.e., objective) with numerical targets

Advisory measures are measures that are quantitative and have analysis external to BASS. They are defined either by a stock list that is included in all scenarios or they are added manually prior to the model runs. The intent is that advisory analysis results can be displayed in a sedond portal, not in the core of BASS, and then the stakeholders can base their evaluation on these and give input to BASS exactly the same as for stakeholder measures. Good examples are job creation and viewshed evaluation.

#### ADD NEW STAKEHOLDER MEASURE

To add a new stakeholder measure:

- 1. For each new measure, click the **Add New Stakeholder Measure** button. The STAKEHOLDER MEASURE window is displayed. This window defaults to TYPE = Qualitative. For Quantitative Measures see the next section. If the measure is qualitative, continue.
- 2. Enter the Name of Measure. This is a text string. Keep it less than 40 characters and use description and links for detailed information.
- 3. Leave the type of measure; Qualitative.
- 4. Add a description of what constitutes good measure satisfaction and poor measure satisfaction in the Comment area.
- 5. Click **Save**.

# TO ADD A NEW QUANTITATIVE STAKEHOLDER MEASURE

Quantitative measures can be one of three types: Less is Better, More is Better, Specific Target Best. Each of these types allows input of specific values that are used as targets (delighted values) and thresholds (disgusted values). Details of each follow:

AKEHOLDER MEASURE	Ø
MEASURE FOR IMPACT ON	
TYPE	
Qualitative	
Note, if you include a measure that is More is Better, Less is Better or Target is Better hen you can only use Belief Map Evaluation format and not the Slider Evaluation format. UNITS	
DELIGHTED (Value) DISGUSTED (Value)	
DESCRIPTION	
A	
SAVE 🗢	

- 1. Enter the feature measured by the measure. This is a text string. Keep it less than 40 characters and use comments and links for detailed information.
- 2. Select the type of measure, **Less is Better**, **More is Better** or **Specific Target Best**, by left clicking the appropriate radio button.
- 3. Input units. This is a text string. Keep it less than 10 characters and use comments and links for detailed information.
- 4. Ender Delighted and Disgusted values:

If the type is Less is Better:

- Input the value of the target that, if an area of interest's evaluation was equal to or less than this value, you would be delighted.
- Input the value of the target that, if an area of interest's evaluation was equal to or more than this value, you would be disgusted. Disgusted must be greater than Delighted.

If the type is More is Better:

- Input the value of the target that, if an area of interest's evaluation was equal to or more than this value, you would be delighted.
- Input the value of the target that, if an area of interest's evaluation was equal to or less than this value, you would be disgusted. Disgusted must be less than Delighted.

If the type is Specific Target is Best:

- Input the value of the target that, if an area of interest's evaluation was equal to this value, you would be delighted.
- Input the value of the target on either side of the target that, if an area of interest's evaluation was beyond this value, you would be disgusted. Disgusted can be greater or less than Delighted as this type of target is symmetric.
- 5. Add a description of the measure in the Comment area.

#### EDIT A MEASURE

To edit a measure:

- 1. Select **Edit** for the measure.
- 2. Edit the text in the window.
- 3. Click Save.

#### DELETE A NEW MEASURE

To delete a measure:

- 1. Select **Delete** for the measure.
- 2. Confirm the selection.

#### **ADVISORY MEASURES**

None are set or editable in Version 1.0.

### MOVE TO NEXT ACTIVITY

To move to another activity either select **LOAD MEASURES** or select another activity from the Activities bar. Load Measures takes you to Invite Stakeholders.

## INVITE STAKEHOLDERS (ISSUE MANAGER ONLY)

Stakeholders can be invited to contribute to the evaluation of areas of interest. The invitation process is described below:

- The invitation is defined on the INVITE STAKEHOLDERS page
  - > Specific Stakeholders to be invited are selected
  - > The Stakeholder Measures to be evaluated are selected
  - > The Areas of Interest for evaluation are selected
  - > A response date can be entered
  - > Evaluation Format (see Evaluation Section for details)
  - > A Message or Comments can be entered.
- When an invitation is defined, click **Send Invites** and an email is sent with a link to a web page for collecting the needed information. To preview the email before it is sent, click **Preview Email**.
- Any number of different invitations can be sent. For example you may want Stakeholder A to evaluate area 1 versus measure C and want Stakeholder B to evaluate areas 1 and 2 versus measures C and D. Invitations for each of these can be sent separately.
- When done click **Continue** to go to the next Activity—Evaluation.

DEFINE STAKEHOLDERS	DEFINE MEASURES   INVITE STAKEHOLDERS					
INVITE STAKEHOLDERS TO ASSIGN VALUES AND EVALUATE MEASURES						
David Ullman	Select					
Brad Holtz						
<u>.</u>	EVALUATION FORMAT					
EVALUATE MEASURES	Slider Evaluation					
Impact on viewscape	Belief Map Evaluation					
☑ Impact on employment						
	MESSAGE/COMMENTS FOR STAKEHOLDERS					
SELECT AREAS OF INTEREST TO EVALUATE MEASURES						
V Area 51						
V Area 43						
	<b>v</b>					
	Preview Email					
	SEND INVITES S CONTINUE S					

## Evaluation

Evaluation has two sub-activities: Assigning Values and Evaluating Measures.

## EVALUATION: VIEW/ASSIGN VALUES (ISSUE MANAGER AND STAKEHOLDER)

Values are a reflection of the stakeholder's viewpoint about which measures are most important. Stakeholders bringing different values to the evaluation add richness to the analysis as is discussed in the Results Section.

It is assumed that if an area of interest is weak in one measure, it may be compensated for or tradedoff by strength in another—measure satisfaction is combined in an "or" fashion. In this case, the value assigned by each Stakeholder is used to proportionally scale the influence of each measure, and these are added together. Thus, total satisfaction is a weighted sum of all the measure satisfactions as is common in most decision-support tools.

DEFINE PROJECT SE	ELECT LOCATION SCIENTIFIC MEASURES STAKEHOLDERS EVALUATION RESULTS REPORT
DEFINE PROJECT SE SELECTED PROJECT: NNMRIC Test RENEWABLE ENERGY TYPE: Wave Energy SELECTED REGION: NNMREC Region 1 SELECTED AREAS OF INTEREST: Warrenton Coos Bay Reedsport Newport	LECT LOCATION       SCIENTIFIC MEASURES       STAKEHOLDERS       EVALUATION       RESULTS       REPORT         VIEW / ASSIGN VALUES         Minimal Effect on Cetaceans         0.06         Move silders to reflect importance. As one importance increases, others will proportionally decrease.         good quality of life         good quality of life
	(SAVE D)

There are two "modes" for setting the measure values in BASS: Sum and Ranking.

Sum – The values always sum to 1.0. If one value is increased, all the others decrease proportionally. (default)

- 1. Select the **Sum** button.
- 2. Select a specific stakeholder (only those not grayed out are available).
- 3. Click and drag the slider to be changed.

Note that raising the value of one weighting will proportionally diminish the others to maintain a total weighting of 1.0 (with some round-off error possible).

4. Click **Save** when you are finished setting weights.

Ranking – The values are set based on the order of the values.

Using rank to set the values only requires that the most important measure be moved to the top of the list and all others ordered in descending importance. Then the weighting values are automatically set based on the number of measures and their order.

- 1. Select the **Ranking** button.
- 2. Click and drag a slider to change its rank relative to the other measures. Measure can be dragged vertically in any order and at any time.
- 3. Click **Save** when you are finished ranking.

## **EVALUATION: EVALUATE MEASURES (ISSUE MANAGER ONLY)**

There are two evaluation formats. The first uses Belief Maps and the second uses Sliders. The page loads with Belief Maps as the default format, but selecting Use Slider Evaluation just under the evaluator's name will bring up the alternative input option (see Slider Format Evaluation). This section first describes the Belief Map format.



The belief map provides a means for entering/displaying evaluation results in terms of knowledge, certainty, satisfaction and belief. Belief maps are a tool for an individual or a team to ascertain the status of an alternative's ability to meet a criterion; to visualize the change resulting from analysis, experimentation, or other knowledge increase or uncertainty decrease; and to compare the evaluations made by the team members.

Each point on the belief map is color coded to match the alternatives in Area B and numbered to match the criteria in Area C.

For qualitative evaluations the horizontal axis is referred to as *knowledge* as the evaluator's knowledge is the basis of the assessment. For quantitative evaluations (see next section) this axis represents the certainty of the information. These two terms are interchangeable as high knowledge implies higher certainty, and both are displayed on the axis.

### PLACE OR MOVE A POINT ON A BELIEF MAP

To place or move a point on a belief map:

1. Select an alternative, a criterion and member's name from the appropriate list. The entry on the belief map will be for the member's evaluation of the feature of the alternative (point color)

measured by the criterion (number in criterion). The point on the belief map that represents the selected evaluation will appear larger than the other points on the map.

- 2. Determine the member's certainty or knowledge about the characteristic of the alternative measured by the criterion. If the member knows everything about this characteristic of the alternative (is certain about her evaluation), then knowledge is very high. If the evaluation is only a guess, then she is uncertain, and knowledge is very low.
- 3. Determine the member's satisfaction in the alternative's ability to meet the unstated target implied by the criterion. If the member believes that the alternative fully meets the target of this measure, then satisfaction is very high. If the member is sure the alternative cannot meet the target, then satisfaction is very low.
- 4. Place the cursor over the location on the belief map that represents the certainty or knowledge and criteria satisfaction and click to place the point. You can also drag the selected point on the belief map.

Note that initially points are automatically placed at very low certainty and medium satisfaction (on the left side mid-way up the grid). The point in this location does not affect the analysis. Thus, if you know little or do not have strong feelings about whether or not the alternative meets the criterion leave the point in its default position, do nothing.



## SLIDER FORMAT EVALUATION

An alternative to the belief map input format is the use of sliders. While they are simpler to use, you can only see one evaluation at a time, not relative to the others. This makes the relative evaluation of multiple locations or measures (a common approach used by people) more difficult.

EVALUATE MEASURES USING THE BELIEF MAP	
Evaluator: David Ullman  Evaluate: David Ullman Evaluate each measure for each location below. Select each measure (numbered dot) then select a location (colored dot). Move the silders to indicate your satisfaction with the selected Measure at the selected Location.	EVALUATION TYPE: Qualitative Currently the Impact on viewscape at location Area 51 is: Poor Excellent
SELECTED MEASURES         FEATURE MEASURED         1       Impact on viewscape       Q         2       Impact on employment       Q       Impact         TYPES: Q = Qualitative Evaluation M = More is Better L = Less is Better T = Target is Best       Eter T = Target is Best	With the addition of proposed technology the Impact on viewscape at location Area 51 will be: Poor Excellent How sure are you of this impact assessment? Very Unsure Very Sure
SELECTED LOCATIONS Area 51 Area 43	RATIONALE
### **Results (Issue Manager Only)**

The real strength of BASS is in seeing results. A typical Results page is shown below where the levels of satisfaction are shown next to each of the locations on the interactive map. You can determine which results are shown as described below.



### **SELECT VIEWPOINT**

The satisfaction of each location relative to the scientific and stakeholder measures is the key output of BASS. This result is calculated from many different viewpoints where each is based on some subset of the measures and the values input on the View/Assign Values page. Each option (or group of options) is:

- **Overall Satisfaction**: The Results page opens with viewpoint defaulted to Overall Satisfaction. This is a combination of the analysis results from all scientific measures, all stakeholder inputs and all stakeholder values. This gives a quick summary of the relative satisfaction of each location.
- **Scientific Measures only even weighting:** The satisfaction values only include the results of analysis from the scientific measures all assumed to be equally important.
- Scientific Measures only Issue Manager weighting: The satisfaction values only include the results of analysis from the scientific measures using the values assigned by the Issue Manager.
- **Team member name**: Each Stakeholder and Issue Manager is listed. Selecting any one of them will show the analytical results using the selected individual's values as input on the View/Assign Values page. This analysis uses all scientific and stakeholder measures.
- **Measure name**: Each scientific and stakeholder measure is listed. Selecting any one of them will show the analytical results using only the selected measure.

### SEND FOR CALCULATION

Below the Select Viewpoint area is the Send For Calculation button. This causes the scientific measure analysis to be recalculated which can take a few minutes. The exact time required is dependent on the number and size of the areas of interest. In general, the first time the Results page is displayed, the results will only be shown for the stakeholder measures and a message will be shown that calculations are in process. As soon as the calculations are complete, all the measures are included and all the options in Select Viewpoint make sense. If the analysis needs to be rerun for any reason, click the Send For Calculation button to reanalyze the information.

### **INITIAL OR IMPACTED**

When evaluations have been made for both initial and impacted conditions, the results displayed can be controlled as described in the table below. To set the desired information, click the **Initial or Impacted** button and select the option desired.

	Initial Condition	Impacted Condition	What it means	What happens in BASS
1			Only the initial satisfaction and certainty values will be used. This is the default setting.	Weighting for the measure is applied to the initial values and the impacted values are ignored.
2		•	Only the impacted satisfaction and certainty values will be used.	Weighting for the measure is applied to the impacted values and the initial values are ignored.
3			The change due to the addition of the technology – the impact – is wanted.	The initial condition is subtracted from the final condition and the standard deviation is the square root of the sum of the squares of the two. Weighting for the measure applied to these calculated values.
4	•		No impacted values supplied evaluation (grayed-out box, it cannot be selected).	Weighting for the measure is applied to the initial values.
5			No initial values supplied by evaluation (grayed-out box, it cannot be selected).	Weighting for the measure is applied to the impacted values.

### SATISFACTION THRESHOLD

A Satisfaction Threshold slider that ranges from 0.0% to 100% controls the map to only display satisfaction above the value chosen. This gives the ability to see good candidates when there are many cluttering the map.

### **VIEW GRAPH**

Results may be viewed as a bar chart. This is accessed by selecting View Graph in the upper right corner of the interactive map. An example is shown to the right.

ANALYSIS RESULTS GRAPH			$\otimes$
Warrenton			
	55.39		
Coos Bay			
		64.13	-
Reedsport			=
	51.81		
Newport			
	47.49		
			Ψ.
		CLOSI	•

### What next

BASS	TECHNICAL DOCUMENTATION TUTORIALS HELP SIGN OUT
DEFINE PROJECT	SELECT LOCATION SCIENTIFIC MEASURES STAKEHOLDERS EVALUATION RESULTS REPORT
SELECTED PROJECT: NNMRIC Test RENEWABLE ENERGY TYPE: Wave Energy SELECTED REGION: NNMREC Region 1 SELECTED AREAS OF INTEREST: Warrenton Reedsport Newport	WHAT'S NEXT  Scientific measures only with even weighting Control Con

This function is run for the top 25 locations.

There are three options to define recommended next steps:

- Next Steps may Run on scientific measures only with even weighting.
- Next Steps may Run on scientific measures with Issue manager weightings.
- Next Steps may Run this on the Stakeholder Measures where there may be a lack of consensus.

### **Report (Issue Manager only)**



### **Issue Summary**

#### Title: NNMRIC Test

Description: Testing

Type: Wave Energy

Links:

Date: Mon Aug 27 15:08:11 CDT 2012

#### Manager Name: David Ullman

Scientific Measures considered:			
Name	Туре	Delighted	Disgusted
Minimal Effect on Cetaceans	MORE-IS-BETTER	1.0	0.0
Minimal Effect on Groundfish	MORE-IS-BETTER	1.0	0.0
Stakeholder Measures:			
Stakeholder Measure	Туре	Delighted	Disgusted
Minimal Effect on Cetaceans	MORE-IS-BETTER	75	25
Minimal Effect on Groundfish	MORE-IS-BETTER	75	25
minimal impact on viewshed	YES/NO		
good quality of life	YES/NO		

Manager Importance:					
	Measure		Weight		
	Minimal Effect on Cetaceans				
	Minimal Effect on Groundfish		0.0625		
	minimal impact on viewshed		0.4425		
	good quality of life		0.2525		
Locations considered:					
	Location	Coordinates			
	Warrenton	-123.965,46.165			
	Coos Bay	-124.231,43.605			
	Reedsport	-124.192,43.786			
	Newport	-124.08,44.669			
Science Evaluation :					
Stakeholders Involved:					

Member	Proxy
David Ullman	No
Terry Thompson	No
Kaety Hildenbrand	No

Stakeholder Values:

Member	Criterion	Weight
David Ullman	Minimal Effect on Cetaceans	0.2425
David Ullman	Minimal Effect on Groundfish	0.0625
David Ullman	minimal impact on viewshed	0.4425
David Ullman	good quality of life	0.2525
Terry Thompson	minimal impact on viewshed	0.5208
Terry Thompson	Minimal Effect on Groundfish	0.2708
Stakeholder Evaluation:	Minimal Effect on Cataceans	0 1458

Member	Area of Interest	Criterion	Knowledge or Estimate	Confidence or Min/Max Uncertainty
David Ullman	Warrenton	Minimal Effect on Cetaceans	50.0	25.0 75.0
David Ullman	Warrenton	Minimal Effect on Groundfish	50.0	25.0 75.0
David Ullman	Warrenton	minimal impact on viewshed	0.8726	0.7549
David Ullman	Warrenton	good quality of life	0.8692	0.2614

### 3. USING THE BASS DISPLAY PORT

The BASS Display Port is a web-mapping application preloaded with map layers and map tools specifically designed to assist both Issue Managers and Stakeholders during any or all phases of a project. Possible uses of the BASS Display Port fall into two broad categories:

• Assisting an Issue Manager with a project setup

In this situation the display port may be used to examine geographic data relevant to a project. For example, an Issue Manager or agency team may want to examine maritime boundaries, shipping lanes, critical habitats or other important location data and information prior to selecting sites for analysis in BASS. The display port incorporates web services from state and federal entities to support this prescreening.

Mapping tools for measuring distance and area, extracting coordinate information, and saving/printing map layouts are also provided through the display port interface and may be used to collect information relevant to project setup.

Scientific model attributes (inputs) as well as results (map outputs) are also available through the display port. Modifying any services or map layers is possible and is explained in more detail in the Administrator's Guide.

Assisting a Stakeholder during the BASS stakeholder data collection phase

In addition to the preloaded web services from the BOEM MMC and the NOAA CMSP programs, the BASS team has preloaded all BASS scientific model attributes (inputs) and BASS scientific model results to the display port. Therefore, any of these map layers is available to better inform stakeholder data collection.

### **Accessing the Display Port: URL**

The display port is accessed at <u>http://hornet.coas.oregonstate.edu/bass/</u> and requires that the user enable MS Silverlight for their web browser. (The above will change to <u>http://bass-</u><u>viewer.coas.oregonstate.edu/bass</u>) before project completion.

### **Display Port Layout**



### TOOLS

### PAN AND ZOOM

To pan the map view simply select the "Hand" in the upper right of the display, left click, hold, and drag anywhere in the map. Optionally use the Pan tools in the upper left region of the display. Zoom with the mouse scroll wheel or the with the graduated zoom tool.



Pan N, S, E, or W by clicking any arrow

Zoom to original "Full" extent.

Change Zoom level of display by moving slider up and down (+/-).

### **VIEWPORT DATA TOOLBAR**



### TABLE OF CONTENTS

The Table of Contents (TOC) organizes map services originating from the BASS tool as well as from data providers external to BASS, such as the BOEM Multipurpose Marine Cadastre and the NOAA CMSP Registry. The TOC also controls layer visibility and transparency of map layers from each service.

Expand a group of layers to explore the collection by clicking on the small arrows to the left of the group. Toggle layer or group visibility by placing a check in the box. Use the transparency slider bar to adjust the transparency of the group (and reveal layers below).



#### BOOKMARKS



#### **Bookmarks Tool:**

The Bookmarks Tool lets the user save bookmarks in the Bookmark Window where they can be selected to guickly move from location to location. This is a convenient way to get back to an area and zoom level that you previously identified as useful. Bookmarks are saved locally in the browser cache (client side). Your cache settings may erase bookmarks if your cache clears upon upon browser exit.

In this example we have selected the 'Newport Close Up' bookmark which has taken us to a close-up view of the city of Newport, OR.



#### MEASURE



### COORDINATES (YAQUINA HEAD)



#### PRINT



#### **OVERVIEW MAP**



#### EXTRACTING MODEL INPUTS/OUTPUT

Geospatial format BASS scientific model inputs and outputs are available for download from a webaccessible folder on the BASS server at OSU. The URL to download digital model attributes or outputs in ESRI formats is:

http://bass.coas.oregonstate.edu/geospatial/

An archive of attributes and outputs in ESRI personal geodatabase format will be maintained at the above address for desktop users.

BASS WEB SERVICES

The BASS Display Port contains three main web services that originate from within the BASS project. These services are provided by an ArcGIS Server 10.1 instance on the physical BASS server at CEOAS. Users may find it useful to access the services through their ArcGIS REST Service URL. Web map services such as these may be added directly to desktop GIS clients such as ArcGIS or even used for custom mash-ups.

BASS Model Attribute Service: A map service containing all BASS model input data layers.

http://hornet.coas.oregonstate.edu/arcgis/rest/services/BASS\_Inputs/MapServer

BASS Model Output Service: A map service containing all BASS model output data layers.

http://hornet.coas.oregonstate.edu/arcgis/rest/services/BASS\_Science/MapServer

BASS Overlay Service: A map service containing advisory data layers intended to provide additional spatial and management context for the Issue Manager and or Stakeholder.

http://hornet.coas.oregonstate.edu/arcgis/rest/services/BASS\_Overlays/MapServer

EXTERNAL WEB SERVICE

The BASS team has preloaded two relevant federal web mapping services available publically containing map layers useful for marine spatial planning and siting purposes.

NOAA CMSP

http://egisws02.nos.noaa.gov/cmspgisdataregistry/

BOEM MMC

http://marinecadastre.gov/MMC%20Pages/partnerships.aspx





# **Administrator's Guide**

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# APPENDIX A INTELLECTUAL PROPERTY ISSUES AND HOSTING RECOMMENDATIONS FOR BASS

### APPENDIX B COMMERCIAL LICENSES IN BASS (CLASS 1)

APPENDIX C OPEN SOURCE LICENSES USED IN BASS (CLASS 2)

## 1. OVERVIEW

### Architecture

Accord Enterprise is a client/server application. The server portion is the Accord Server. The server application runs on one computer within the local area network. The client application is Accord Client. Users retrieve the Accord Client application from the Accord Server.

Administrators can perform the following actions:

- Install the Accord Server
- Configure the server to use Secure Socket Layer (SSL) for communication
- Change the Accord Administrator's email address and/or password
- Change the owner of an Issue
- Change the email address of a User
- Monitor use

### **2.** INSTALLATION

This section describes how to install Accord Server.

### **Minimum server system requirements**

- Local intranet connection
- Administrator/root access
- Java Runtime Environment 1.5.0+
- RAM: 128 MB
- Processor: Pentium 500 MHZ
- Disk Space: 60 MB
- Operating System: Windows (2000, XP, 2003 Server), Other

### **Configure in a non-Windows environment**

Accord Enterprise is a Java-based web application. It comes bundled with the Jetty (www.mortbay.org) web server and servlet container (V5.1.1). Since Accord Enterprise is Java-based and since it is mostly a servlet, Accord Enterprise can run on non-Windows platforms and with non-Jetty servlet containers. However, as of version 2.4, Accord Enterprise is only distributed using a Windows installer. You must first install it in Windows before copying files to a non-Windows computer.

If you want to use a web server other than Jetty or a different servlet container, such as Tomcat, then you will still need to install Accord Enterprise in Windows and have Accord Enterprise set up the Jetty web server. Once the application is installed, you can use the Accord Server Configurator to assist with a different configuration. Please see the Section 3 (Accord Server Configurator) for details on using other web servers and servlet containers.

### **Install Accord Server**

The installation of the Accord Server will do the following:

- Collect configuration information.
- Extract the appropriate files.
- Configure the files for installation.
- Install the Accord Server as a service.

#### REQUIRED INSTALLATION INFORMATION

The installation application will collect the following information:

- Registration name and code You received a 20-digit alphanumeric number when you purchased Accord Enterprise. Please enter it exactly as you received it.
- Installation directory You can decide where you want Accord Enterprise installed. With V2.4, this must be on in a Windows environment.
- Port A number that tells other computers how to find the Accord service once they have contacted the host computer. This should be 80 unless you are running another web service.
- Database type There are two choices:
  - Default database The default database is a pure Java database called HSQLDB. This type of database requires the least amount of administrative action. However, it does require that the database be stored on the same computer as the application.
  - SQL Server This option allows the administrator to install the Accord Server such that it uses SQL Server 2000 or 2005 as its database. If you chose this option, decide whether you want the Accord Server to create the database or if you want to create it yourself. If you want to create it yourself, then you have two options:
    - 1. Contact Robust Decisions (RDI) to get the database creation script, or
    - 2. Wait until the installer warns you that it is about to make changes to the database. At this point, the installer will have extracted the installation files and placed them into the installation directory. The database creation script can then be found at:

<install directory>/AccordDatabaseCreationForSqlServer.sql

- Database server (SQL Server Only) This is the path to the database server. For example, //localhost.
- Database name (SQL Server Only) This is the name of the database. If the database does not exist, the Accord Server will attempt to create it.
- Database user name (SQL Server Only) This is the name of the user to associate with the Accord Server application when it is accessing the database. That is, there is one database user for all database access. Accord will keep track of changes made by its users.
- Database password (SQL Server Only) This is the password for the user name indicated above.
- Email address The email address for the Accord Administrator. This email address may be used by the Accord Server to send information to the administrator about different events.

- Password The password required is for the Accord Administration Interface. Through this interface, the administrator has access to all of the issues used in Accord.
- SMTP ServerName The name of the SMTP server that the Accord Server will send email through.
- SMTPPor t The port number to use when communicating with the SMTP server.
- SMTP Authentication Whether or not the SMTP server requires authentication.
- SMTP User Name The user name to use when logging into the SMTP server. It is only needed if the SMTP server requires authentication.
- SMTP Password The password associated with the user name and used when logging into the SMTP server. It is only needed if the SMTP server requires authentication.

Once the files have been extracted and modified for your specific installation, the installer will install the Accord Server as a service. This is done so that the Accord Server will always be available. Making it a service allows the computer to be rebooted and different users to log on without the administrator worrying about whether or not the Accord Server is running.

#### UNINSTALL

#### **ON WINDOWS**

- 1. Go to Start > Control Panel > Add/Remove Programs.
- 2. Select Accord Enterprise.
- 3. Select Change/Remove.

The Windows uninstaller will not remove the installation directory or the database.

### **Upgrade the Accord Server**

To upgrade from one version of Accord Server to another, the user must follow the following steps (Windows):

- 1. Open Windows Explorer and navigate to the Accord Server installation directory.
- 2. Double-click on the file remove\_service.bat.
- 3. Make a backup copy of the Accord Database directory.
- 4. Follow the instructions in the Uninstall section above to remove the current version.

This will leave the installation directory with the Accord Database and the AccordJvm150 directory. If you have the AccordJvm150 directory, you can now delete it.

5. Install the new version of Accord Server into the installation directory where the old version was located.

Installing the new version will automatically upgrade the database for the new version. Please note, the database is not backward compatible.

#### NON-WINDOWS

If you are using the Accord Enterprise on a non-Windows computer, the main thing to remember is that the database contains all of you important data and that Accord will automatically upgrade your database to the newest version.

## **3.** ACCORD SERVER CONFIGURATOR

The Accord Server Configurator (ASC)allows you to configure the application. There can be numerous files that need to be modified in order to configure the Accord Server for different situations. This tool attempts to automate that process for most situations.

Use the ASC to help with changing items such as:

- How the database is configured
- How Accord and the web server are configured
- The context name used for the application
- Which communication protocol is used (HTTP or HTTPS)

The ASC was developed to modify the following files (all paths are relative to the installation directory).

Short Name	Location	Description
Accord.jnlp	webapps/accord	This file is used by Java Web Start running on the client computer to download and start the Accord Thick Client application. This file needs to know the URL to use when talking to the web server.
AccordJettyConfig.xml	jetty	This file is a configuration file used by the Jetty Web Server.
accord_server_keystore.jks	config	This file is generated by the ASC when you are configuring Jetty and Accord to use HTTPS for communication. The AccordJettyConfig.xml file needs to point to this file so the Jetty web server can get the certificate.
accord_client_truststore.jks	config	This file is generated by the ASC when you are configuring Accord to use HTTPS for communication. This file is placed in the security.jar file for use by the Accord Thick Client. This allows the Accord Thick Client to validate who it is talking to.
isapi_redirect.properties	isapi	(IIS Only) This file is used to configure the isapi_redirect.dll.
uriworkermap.properties	isapi	(IIS Only) This file is used to configure the isapi_redirect.dll.
workers.properties	isapi	(IIS Only) This file is used to configure the isapi_redirect.dll.
security.jar	webapps/accord/ client_lib	This file is downloaded via Java Web Start by end users. The Accord Thick Client gets the truststore out of the file to verify it is talking to the correct server. This cannot be modified by hand.
web.xml	webapps/accord/ WEB-INF	This file is part of the Java Servlet specification. The file defines how the

servlet/application is configured. This file contains things such as database configuration, extra feature keys, etc.

To run the ASC, run the following batch file:

<install directory>/config/Run-AccordServerConfigurator.bat

The following sections take you through each of the panels of the ASC wizard. These sections will help you to understand what is being asked and what files are being modified.

### **Database Configuration Panel**

Accord Server Configurator - Database Configuration				
The Accord Server Configurator is used to assist with the configuration of the Accord Server. Users of Accord Server can save their data to files or to a database. This panel allows you to select your database configuration.	Pleas Pleasu HSQLDB (Default) Database Name:	e select the type of database you will be using: AccordDatabase		
HSQLDB (Default) - The HSQLDB is the default database used with Accord. If you have used Accord V2.3 or earlier, this is the type of your existing database. This database is assumed to be located on the web server's current working directory.	Microsoft SQL Server Database Name: Server Location: Database User: Database Password:	AccordDatabase Mocalhost Sa		
Microsoft SQL Server - For new installations, one can use Microsoft SQL Server as its database. Accord is configured with JTDS as the JDBC driver for use with SQL Server 2000 and 2005. If you want to use this option,		Exit Help Back Next		

The Database Configuration panel is used to set the database parameters in the web.xml file. Below is a description of the different parameters:

- HSQLDB(Default) The default database type of Accord is HSQLDB (http://hsqldb.org).
   HSQLDB is a pure Java database and is run in an embedded mode; the Accord application is responsible for writing to the database and is not a separate database server.
  - > Database Name The Database Name option under HSQLDB defines the directory used by Accord for storing the database files.

NOTE: Changing this value without moving the existing directory will cause you to lose data.

- Microsoft SQL Server Accord uses the jTDS (http://jtds.sourceforge.net/) JDBC driver for SQL Server. This driver supports both SQL Server 2000 and 2005.
  - > Database Name This is the name of the database in SQL Server.

- Server Location The server location tells the driver who to talk to. Typically, this is the name of the computer that is running SQL Server. For example, //mycomputer
- Database User This is the name of user that will log in to SQL Server when it needs to access Accord's database. This implies that the application will only need one SQL Server user account. At a minimum, this user account needs the ability to read and write to the tables in the database. If you give this user database creation rights, then Accord can create the database automatically. If you do not want to give this account that much freedom, one must use the following file to create the database:

<install directory>/AccordDatabaseCreationForSqlServer.sql

Database Password – This password is associated the user that logs into SQL Server.
 Please be aware that this password will be stored in the web.xml file in plain text.

### **Choose Server Type Panel**

🚺 Accord Server Configurator - Choose S	rver Type	
One can chose between multiple web servers to use with Accord. However, Accord does require a Java servlet container. Please see the Accord Administrators Manual for more information.		
Jetty (Default) - Accord is packaged with the Jetty Web Server and servlet container. If you know nothing about web servers, then use the defaults.	Please select the type of web server you will be using: © Jetty (Default) © Microsoft Internet Information Service (IIS)	
Microsoft Internet Information Service (IIS) - If your situation requires use of IIS as your main web server, then Accord can be configured	Other Servlet Container (i.e. Tomcat, etc.)	
to work with IIS. Accord still requires the use of a Java servlet container. The instructions here assume you do not already have a servlet container installed and will show you how to set up letty		
as your servlet container. Other Servlet Container - This option	Exit Help Back Next	

The Choose Server Type panel allows you to modify the appropriate files depending on your selection. This is useful if you don't like editing server files and to help with the coordination of all the different files. You have the following options:

- Jetty (Default) Accord comes bundled with the Jetty (www.mortbay.org) web server and servlet container (a pure Java web server). Selecting this option uses Jetty for both purposes.
- Microsoft Internet Information Service (IIS) This selects Microsoft's web server as the main web server end users will interact with. This is a great option for companies that want to restrict access to different parts of their infrastructure. (NOTE: This requires using Jetty as a servlet container.) Please see the IIS Installation Appendix at the end of manual for more information.
- Other Servlet Container For those administrators that want to use Accord with a different web server and servlet container (i.e., Tomcat or Web Logic). This option requires the fewest file modifications, but it is still useful to use the ASC. Please see the Other Servlet Container Installation Appendix at the end of manual for more information.

### **Application Context Panel**

The option in the Application Context panel depend on the server you chose on the Choose Server Type panel. All three versions share the Context parameter.

• Context – The name of an instance of Accord. End users use this name when connecting with the Accord Server. For example:

http://hostname:port/context or http://mycomputer:8010/Accord

The configurator does NOT change the directory name associated with the application. That is, the directory :

<install directory>/webapps/accord

will not be changed. In fact, the configurator assumes the path exists. There are some servlet containers that do not let you use a different context name from the name of the directory.

The following are the different versions:

J	E	Т	T	Y	

🚺 Accord Server Configurator - Applicatio	n Context	
Context Name is the name of the Java Servlet. This is the part of the URL that gets added on to the server name. That is, you are setting the context part in: http://hostname:port/context The default value for the context is /accord. This must be a non-zero length string made up of letters or numbers. Port Number defines the port that users will use to communiate to the Jetty web server. A port can only be bound to one application. The default port number is <b>80</b> . If you select a number other than 80, users will need to enter the port number in the URL they use to access the server. For example, the following is a URL that assumes a default port of 80:	Please enter port number and context name for the Java Servlet: Context: Accord Port Number: 8010	

• Port Number – The port number the Jetty web server uses to listen for requests. The default number for this is 80 for HTTP and 443 for HTTPS. If you use these numbers, then users will not need to specify a port number in their URL.

IIS

🚺 Accord Server Configurator - Applicat	tion	Context	
Context Name is the name of the Java Servlet. This is the part of the URL that gets added on to the server name. That is, you are setting the <i>context</i> part in: http://hostname:port/context The default value for the context is /accord. This must be a non-zero length string made up of letters or numbers.		Please enter port number and context name for the Java Servlet: Context: (Accord Hostname: BRIDEN-DELL2	
<ul> <li>AJP13 - Accord comes with the necessary tools so that IIS and Jetty can work together. This is acheived using the AJP13 protocal. This same protocal is used when configuring Tomcat to work with IIS.</li> <li>Hostname is the name of the machine that is hosting the Jetty servlet container. This can be a name or IP address. This machine may or may not</li> </ul>		Port Number: 9010	

In order to use IIS, use redirect calls from IIS to the Jetty servlet container. The parameters tell the ISAPI Redirector where to send messages.

- Hostname This is the hostname or IP address of the computer that Jetty is running on. Typically, this is the machine where you are running the configurator.
- Port Number This is the port number the ISAPI Redirector and Jetty will use to communicate.

#### OTHER SERVLET CONTAINER

Accord Server Configurator - Application	n Context	
Context Name is the name of the Java Servlet. This is the part of the URL that gets added on to the server name. That is, you are setting the <i>context</i> part in: http://hostname:port/context The default value for the context is /accord. This must be a non-zero length string made up of letters or numbers.	Please enter the context name for the Java Servlet: Context: VAccord	

Even if you are using a different web server and servlet container, the ASC needs the context so it can configure files such as Accord.jnlp with details on how end users are to contact the server.

### **Choose HTTP or HTTPS Panel**

🚺 Accord Server Configurator - Choose HT	TP or HTTPS	
The Accord Server Configurator is used to configure Accord's type of communication. Consider your security needs in order to choose the best option. HTTP - This option will send data back and forth between the client and server in plain text. This option should be used when the application is to be used behind a firewall and in other situations where data security is not a concern. This is the default configuration. HTTPS - The environment with higher security needs will want to consider HTTPS. This option will force the components to encrypt the data exchanged between the clients and server. This option should be used when the data is sensitive and when the application is	Please select the type of communication to use for the browser and Accord Client:	
oemg useu over me miternet.	Evit Help Back Next	

The following lists pros and cons of the different communication types:

• HTTP

1111F	
Pros	Cons
Easy to set up.	All data (including passwords) are sent across the network as plain text.
End users do not receive warnings.	Hackers can intercept sensitive data.
Easy to manage.	

#### • HTTPS (SSL)

HTTP3 (SSL)	
Pros	Cons
All data sent across the netw encrypted.	vork is Users may receive browser warnings about going to a secure connection.
Clients are ensured that th communicating with a valid/ server.	ey are Users may receive warnings about known the certificate if it has not been signed by a certificate authority, and if the information appears invalid for the server.
	Administrator must do more work to manage the certificate.
	Certificates expire.
	Certificates signed by a certificate authority (i.e., VeriSign) can cost

money.

Certificates belong to a specific computer so moving Accord will require a new certificate.

### Select Type of Certificate Panel (Jetty Only)

🚺 Accord Server Configurator - Select Type	e of Certificate
To use HTTPS, the server needs a certificate. The certificate is used so that the clients can verify that they are talking to a trusted server. <b>Certificate Authority (CA)</b> - This option provides the most seamless experience for the end users. It requires that the certificate be signed by known trusted authority such as VeriSign. <b>Self-Signed</b> - This option is just as secure, but end users will be warned that the certificate is not authorized by a trusted authority.	Please select the type of certificate:
	Exit Help Back Next

If you choose HTTPS for secure communication, then you need to choose the type of certificate you want to create.

• Certificate Authority

Certificate Authority			
Pros	Cons		
Users receive minimal warnings about communicating with the server.	Signing a certificate with an authority usually costs money (maybe \$400/year).		
Provides extra security that certificate is valid.	Getting a signed certificate can take several days. (You can start using Accord with a self-signed certificate while you are waiting.)		

• Self-Signed

Jen Jigheu	
Pros	Cons
Free – it does not cost money to generate a self-signed certificate.	Users may receive warnings that the certificate has not been signed by a trusted authority.
Data is encrypted just like when the certificate is signed by the certificate authority.	Hackers can potentially create certificates that appear to give the same information, so it is possible that users could communicate with an invalid server.

### Password Entry Panel (Jetty Only)

📕 Accord Server Configurator - Password E	intry
Each certificate is secured with a password. This will ensure that only you have access to the private key portion of the certificate.	Please enter a password that will be used to secure your certificate: Password: Re-type:
	Exit Help Back Next

The password dialog is used to get the passwords for the keystore. The ASC uses the same password for both the key and store.

### Server/Company Info Panel (Jetty Only)

Accord Server Configurator - Server/Com	ipany Info	
To create a certificate, information is need to identify the server. Users can use this information in order to decide if they trust the server. <b>Common Name</b> – This is the name of the server as in 'http:// <common< th=""><th>Please enter the following information about the server:</th><th></th></common<>	Please enter the following information about the server:	
Name>/Accord'.	Org Unit Name: AccordTesting	
<b>Org Unit Name</b> - Unit of the organization that is hosting the server.	Organization: SEI	
Organization – The company or groups legal name.	City: Bothell State: WA	
<b>City</b> - The city where the server is located.	Country: US	
<b>State</b> - The full name of the state. Please do not use abbreviations.		
Country - The two letter code for the		
country.	Exit Help Back Next	

- Common Name When creating SSL certificates, this field should be the base part of the URL used to communicate with the server: the name that appears in the URL when talking to the Accord Server—http://Server Name:Port/Accord. If the entered name is not the name in the URL, end users will get warnings about the the server not being the one identified in the certificate.
- Org Unit Name Name of the department or unit in the organization that is hosting the server.
- Organization Company's or group's legal name. If you are going to apply for a signed certificate, it is likely your certificate authority will require that this field contains your company's legal name.
- City City where the server is located.
- State State where the server is located.
- Country Country where the server is located. This must be your country's two digit code, i.e., United States = US. digicert.com has a list of country codes.

### **Certificate Authority Panel (Jetty Only)**

👙 Accord Server Configurator - Certificate Authority		
To use a Certificate Authority (CA) you must send them a Certificate Signing Request (CSR). Depending on the needs of your CA, you can either copy and paste the CSR text or save it to a file. This text will need to be sent to the CA so that they can send you a signed certificate. <b>PLEASE NOTE:</b> Once you click the 'Next' button Accord will be configured to use a Self-Signed key until your signed certificate arrives. Once you have a signed certificate you must <b>RUN THIS APPLICATION</b> <b>AGAIN</b> to configure Accord with the signed certificate.	BEGIN CERTIFICATE REQUEST         MIBIjCCAQECAQAWJEMMAOGALUECHMOCZRMMQWCGYDVQQIEWNZZGYXCAJBGNV         BACTANNKMQswCQYDVQQGEWJzczEVMBMGALUEAXMNQLJJREVOLURFTEWyMQswCQYD         VQLEWJhZDCBnzANBgkqhkiG9WOBAQEFAADBjQAwgYkCgYEAXEG42tsREznZOaso         SF2ghdAN9IIKOkzc7GEYeC9GrfZnDf+0cGKgmBoe0+D8QYMSVbH54yzRt0ZC+Fek         KPQQnmv5x2xX/BOT0YAC194ewp05Nlp03VMe6U5AuofE86gZZm3DytS5P6qDNMKT         k+ASxdy0BVWFr9wAxQmCrTvZoUCAWEAATALBgkqhkiG9w0BAQDgYEAFAr000z+         4p8q21APhQYG9D1IFKKVqKpI6vv3Y1Zs1L+ZNuvvoaktWf/MuCNfxfg/cvHsDrYF         8aQV07psCF9Fn381WCz+H7dnlqJ3aQ3pGWxmasxaPTHgMadPIW+8tNTUMfxQ4tar         /pqe0LPEQefSBIWZHrLwkrpzzcff19bluos=        END CERTIFICATE REQUEST	
	Save To File	
	Cancel Help Back Next	

If you want to use a certificate that has been signed by a certificate authority, send a certificate signing request (CSR) to the certificate authority. The authority will use the information in the request to generate a signed certificate.

NOTE: A CSR is a message from an applicant to a certificate authority to apply for a digital identity certificate.

#### SEND THE CSR

Send the text from the ASC as is. If your certificate authority requires you to enter the CSR into a web page, select the text in the ASC dialog and copy and paste it into the certificate authority's web page. If you need to send it in an email, we recommended you use the ASC to generate the file. You cannot use an application such as MS Word to contain the certificate because it will add invalid characters.

As shown above, that the certificate has beginning and ending tags.

-----BEGIN CERTIFICATE REQUEST-----

These tags must be part of the text sent to the certificate authority. The certificate will not be valid if they are absent.

#### CERTIFICATE AUTHORITIES

A certificate authority is known for signing certificates. Typically, these companies have certificates that come as part of the user's computer operating system. This allows your browser to identify the entity that signed the certificate and is why a self-signed certificate is considered to be signed by an unknown entity.

When visiting a certificate authority's web site, look for an secure socket layer (SSL) certificate. An SSL certificate is used with the HTTP protocol to establish a secure communication known as HTTPS.

Below is a list of certificate authorities.

- http://www.verisign.com/
- http://www.thawte.com/
- http://www.digicert.com/
- http://www.xramp.com/

We do not take responsibility for the certificate authority chosen. The authorities listed here are only for your information. It is up to the administrator to select an authority that meets the company's needs.

### Add Signed Certificate Panel (Jetty Only)

Accord Server Configurator - Add Signed	Certificate	
The CA will email you your certificate. If the certificate is an attachment (Cert.cer), you will need to open the file with Notepad. If the certificate is in the body of the email, copy and paste it into a text file using Notepad. Do not use Microsoft Word or other word processing programs that may add characters. Be sure to include the beginning and ending tags: BEGIN CERTIFICATE END CERTIFICATE	Please paste the certificate sent by the Certificate Authority in the box below. Signed CA Certificate: Paste certificate here	
	Cancel Help Back Next	

When the certificate authority sends the signed certificate, re-run the ASC. After entering your password, paste the signed certificate text into the application.

If the authority sent the certificate in the text of the email, copy and paste it into this dialog box. If the certificate was sent as an attachment, open the attachment with a text editor. You cannot use an application such as MS Word because it will add invalid characters to the text.

Uou must include the certificates beginning and ending tags.

```
----BEGIN CERTIFICATE-----
```

----END CERTIFICATE-----

The application will complain if these tags are missing or are not the first last characters of the text.
# **Configure Truststore Panel (IIS or Other)**

🖟 Accord Server Configurator - Configu	re T	Truststore	
You have chosen to use a non-Jetty web server and to use secure communication (HTTPS). In order for the Accord Client to communicate properly with the server, this application must create the trusted certificate that the Accord Client will use to authenticate the server. This application must also configure the files of the Accord Client.		Please enter file name and passwords of the server certificate.         Server Certificate File:       C:\AccordServer[accord_server_keystore.jks]         Store Password:	Browse
Server Certificate File - This is a file created by your other server's application that contains the server certificate. This file must be in the Java Keystore format. This format is also known as PEM and Base-64 encoded X. 509. This is the same format as created by Sun Microsystem's keytool utility. Store Password - This is the password for the store or file.		Key Password: Key Re-type: Alias: Accord	
Key Password - This is the password	4	Exit Help Back Next	

A truststore is a keystore that contains trusted certificates. The ASC needs to create a truststore for the Accord Thick Client. The Accord Thick Client uses this certificate in the truststore to validate the server it is talking to. The ASC will place the truststore in the security.jar file for download by the client.

- Server Certificate File Path to the Java keystore. This format is also known as JKS and Base-64 encoded X.509.
- Store Password Password for the file.
- Key Password Password for the key associated with the alias.
- Alias Name of the key.

# **Set Base Location Panel**



The base location is the full URL that end users use to contact the Accord Server. It is important this URL takes into account the following attributes:

- Protocol HTTP or HTTPS. This depends on the web server configuration.
- Hostname Host name or IP address exposed to end users. This may be the name of the web server or it may be an IP address of a router that is forwarding requests to a web server.
- Port Number Port number end users need to use to for the web server.
- Context Name of the Accord application or instance of one.

This value is placed in two files:

web.xml - The value in the web.xml file is sent to end users when they are sent emails.

Accord.jnlp - The codebase attribute of the <jnlp> element is also set to this value. Java Web Start and the Accord Thick Client use this value when contacting the Accord Server.

# **Configuration Summary Panel**

🚺 Accord Server Configurator - Configuration Summary			
Press the Next button to configure the Accord Server.	Pressing next will configure the Accord Server as described below: Configuration Summary		
	Database Type: Database Name:	hsqldb AccordDatabase	
	Server Type:	Jetty web server and servlet container	_
	Base Location:	https://BRIDEN-DELL2:8010/Accord	
	Protocol:	HTTPS	
	Certificate Type:	TEMPORARILY using Self-Signed	
	Common Name:	BRIDEN-DELL2	
	Organizational Unit:	AccordTesting	
	Organization:	SEI	-
	City:	Bothell	
	<b>NOTE:</b> You ha Accord will be you receive yo	we chosen to use a certificate from a certificate authority, temporarily configured to use a self-signed certificate. Once our signed certificate <b>you will need to run this application again.</b>	
		Exit Help Back Next	

This panel allows you to verify the data and the selected procedure before the configuration change is made to Accord. Clicking Next on this panel will cause the ASC to perform the following steps:

- Stop Accord Server
- Remove Accord Service
- Create keystores for server and clients
- Update the JNLP files
- Install Accord Service
- Start Accord Server

NOTE: If you selected to use a certificate authority, you will see the red text shown on the image above. This message lets you know the server will start up using a self-signed certificate. When you get the signed certificate, you will need to run the ASC again.

# **Modifying Files (Progress) Panel**

🚺 Accord Server Configurator - Modifying	Files	
The application is now modifying the files used in Accord for your chosen configuration. When it is done modifying the files, it will restart Jetty.	Disase wait while Accord is Undated to the new configuration	
	Please wait while Accord is oppated to the new conliguration.	
	Progress	
	Creating Communication Configuration	
	12%	
	Exit Help Back Next	

This panel shows ASC's progress.

The ASC will always attempt to stop and remove the Accord Server service. There are no problems if it is not running. If you selected Jetty or IIS, the ASC will attempt to install and start Jetty. If it fails to start Jetty, please see the FAQ on starting and stopping Jetty.

# **Configuration Completion Panel**

🚺 Accord Server Configurator - Finished		
The application has finished updating the Accord Server.	The modifications are complete. The Accord Server has been restarted. You can find the Accord Server at: http://BRIDEN-DELL2/Accord	
	Exit Help Back Done	

This is the last panel. When you get to this panel, you configuration options should be made and the server should be running. If the server is not running, check the bottom of the AccordServerLog-Jetty.html file for any messages from the server.

NOTE: If you have changed from HTTP to HTTPS or vice versa, you and end users will need to access the Accord Server with a different URL.

# **Warning Dialogs**

This section describes some of the warning dialogs an end user might see from Internet Explorer or from Java Web Start (Accord Client).

INTERNET EXPLORER WARNING DIALOGS

### SECURE CONNECTION

Displayed when a user goes from viewing insecure data over HTTP to viewing data over secure HTTPS.



### UNTRUSTED CERTIFICATED ISSUER/SIGNER

Displayed when the certificate on the Accord Server was not issued/signed by a company that Internet Explorer considers to be trusted. Users can add the certificate by selecting the View Certificate button.



### HOSTNAME DOES NOT MATCH

Displayed when the hostname associated with the certificate does not match the website that the page was downloaded from.

Securit	y Alert 🔀
P	Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
	The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.
	The security certificate date is valid.
1	The name on the security certificate is invalid or does not match the name of the site
	Do you want to proceed?
	Yes No View Certificate

### JAVA WEB START / ACCORD CLIENT WARNING DIALOGS

### UNTRUSTED CERTIFICATED ISSUER/SIGNER

Displayed by Java Web Start (JWS) when the server certificate has not been signed by a trusted authority. JWS checks certificates that have been indicated to be trusted by Internet Explorer.

Warning - Security	
The web site's certificate is invalid. Do you want to continue?	
Name: briden-dell2 Publisher: briden-dell2 Always trust content from this publisher.	
Ye	s No
The certificate cannot be verified by a trusted source. Only continue if you trust the origin of the application.	ore Information

### HOSTNAME DOES NOT MATCH

This dialog appears when Java Web Start detects that the server certificate does not have the same hostname as the site being accessed.

Warning - Ho	stname Mismatch	
The name certificate	of the site does not match the name on the e. Do you want to run the application?	1
Name: Publisher:	BRIDEN-DELL2 bad-server-name	
Tublisher	Run	Cancel

# **Manage Scientific Measures**

### ADD A SCIENTIFIC MEASURE

To add a scientific measure to be available for reporting:

1. Select the existing value from the OID table and increment it. We recommended this be done in a single transaction, as shown in the example:

```
begin transaction;
select oid from oid;
update oid set oid = oid + 1;
commit;
```

2. Execute the following insert statement, replacing the appropriate values in brackets with valid values:

```
insert into accord_scientific_measures values ([oid], [identifier],
[name], [type_id], [deleted], [delighted], [disgusted], [delighted2],
[disgusted2], [units], [sci_type], [advisory]);
```

- oid the OID value from step 1
- identifier value to identify measure to OSU Netica code
- name text to display to users to describe measure
- type\_id ID of the type of criterion from accord\_criterion\_types (make sure the criterion type is one visible in the BASS UI)
- deleted 0 or 1, a value of 1 hides the measure from selection
- delighted delighted value
- disgusted disgusted value
- delighted2 second delighted value for use with Range criterion type
- disgusted2 second disgusted value for use with Range criterion type
- units text description of measure units
- sci\_type the technology type under which this measure is available (eg. Wave Energy)
- advisory 0 or 1, a value of 1 indicates this is an advisory measure

### DELETE A SCIENTIFIC MEASURE

DO NOT delete the measure from the accord\_scientific\_measures table. Update the value of the deleted column to 1, instead.

### UPDATE A SCIENTIFIC MEASURE

Update the appropriate columns to the desired values for that measure, and any changes will be immediately reflected on all decisions utilizing those measures. If you do not want to change how the results come out for existing decisions, it would be better to add a new measure.

### **BASS Web Application Configuration**

The following are descriptions of what variables are expected to be set in web.xml:

- BaseLocation URL for accessing BASS application. Used in sending out invitation emails
- AccordLocation URL for accessing Accord to perform evaluations and retrieve results.
- $\ensuremath{\texttt{OSURequestUrl}}$  URL for requesting processing of location information from Netica by  $\ensuremath{\texttt{OSU}}$
- OSUResultsUrl URL for accessing Netica results
- OSUFileLocation Local path for storing copies of Netica results
- OSUCalculationTimeout Timeout in hours before a decision that has been sent to OSU can be resent in case of calculation failure.

# 4. ADMINISTRATOR'S WEB INTERFACE

The Accord Server provides web-based interface for performing many tasks such as:

- Monitoring user usage
- Change user passwords
- Changing the owner of an issue

These actions can be easily performed from any web browser that has access to the Accord Server. Directing the browser to:

```
http://hostname:port/Accord/Admin
```

where:

- hostname is this computer's name on the Internet
- port tells other computers how to find the Accord Server once they have contacted the host computer. This should be 80 unless you are running another web service.

The following sections describe the different web pages of the interface.

### **Getting Started**

The Getting Started page provides information needed to get others using Accord. At the bottom of the page, it also provides email assistance for sending an email to team members interested in using Accord.

### EMAIL INSTALLATION INVITATION

One way to get team members using Accord is to send them an email with the appropriate URL for them to navigate to with their web browser. The Getting Started page provides a link at the bottom of the page. Clicking on the link opens your email application with a message similar to the following, but the hostname and port will be filled in with the appropriate values for your installation.

Dear Team Members,

Please go to:

http://hostname:port/Accord

to start using Accord. You will need to press the 'New User...' button on the Login Dialog in order to create a User Account.

Thanks.

Your Accord Administrator

Please notice that users are responsible for creating their own account. This is done using the New User... button on the Login window. First-time users will need to create an account before they can get past this window.

Accord - Login	<b>X</b>
Accord Robust Decisions, Inc.	If you have NOT logged in before, please select the 'New User' button to setup an account. New User
Username:	
Password:	Help

### INSTALL ACCORD CLIENT

When client users click the Accord home link, they are sent to a page where they can:

- Install the appropriate Java Runtime Environment, if needed
- Download and start the Accord Client

When the client user navigates to the Accord home page, the page will determine if they have the required version of the Java Runtime Environment (JRE) installed. If they do not, they will be asked to install the JRE provided with this distribution.

NOTE: If your environment does not allow client users to install applications, the administrator will be responsible for installing the latest version of the JRE.

Once the latest version of the JRE is installed, clicking on the Start Accord link will download and start the Accord Client application. Client users can always start the application from this link.

#### WINDOWS USERS

Windows users will find that the second time they start the Accord Client, they will be given an opportunity to add shortcuts to their Start Menu and desktop. If they initially do not want the shortcuts and decide later that they do want them, they can create them using the main Java Web Start application.

#### JAVA WEB START

Java Web Start is a Control Panel for Java applications. However, Java Web Start provides the additional feature of supporting remote installations and automatic updates. Please visit http://java.sun.com/products/javawebstart/ for more information.

# **Accord Administration Home Page**

This page is the main page of the Accord administration interface. From this page, you can get to all of the different pages and see statistics on the use of Accord.

The statistics shown are as follows:

- Accord Web Server Started Date and time the server was started.
- Number of Active Sessions Number of users who are actively using Accord.
- Number of Accord Users Number of active users who have registered with this Accord Server.
- Number of Accord Computers Number of computers that have downloaded the Accord Client application.
- Number of Hours Used Total number of hours that users have been logged into Accord.
- SMTP Server Parameters of the SMTP server that the Accord Server will use to send email.

Accord	Accord Administration Home Welcome to the home of the Accord administration interface.		
Robust Decisions, Inc.	Accord Web Server Started	1/14/11 6:11 PM	
Accord Home	Number of Active Sessions	2	
Administrator's Home	Number of Accord Users	33	
Getting Started	Number of Accord Computers	22	
Edit Issue Properties	Number of Hours Used	534.66	
Manage Groups	SMTP Server	asmtp.gorge.net	
Edit User Account	Dioaso soloct a task from the li	st bolow:	
Edit Admin Account	Please select a task from the list below:		
<u>User Usage</u>	Accord Home	The main Accord page accessed by all users.	
SMTP Server Setup	Administrator's Home	The main page for the Accord Administration interface. (This page).	
Logour	Getting Started	Information to tell users on how to start using Accord.	
Help	Edit Issue Properties	Change the name, ownership, and activation of an issue.	
	Edit User Account	Change the details about a particular user.	
	Edit Admin Account	Change the Administrators email address and password.	
	User Usage	Information on each users usage of Accord.	
	SMTP Server Setup	Change the SMTP Server settings.	
	Logout	Exit the Administrator's Interface	
	Help	A PDF document that provides more detail on the Administrator's interface.	

# **Edit Issue Properties Page**

This page allows the administrator to change who the owner of the issue is and whether or not the issue is active.

Every issue must have an owner. The owner of an issue cannot be removed and must have an Access Level of either Manager or Facilitator (See the AccordUserHandbook.pdf for more information on Access Levels). Since a user must be a member of an issue in order to access the issue, the ability to change the owner becomes very important. If the team members of an issue leave the company, then you should change the owner in order to get access to the issue via the Accord Client interface. Another situation that can arise is when the owner of the issue is the only one with either Manager or Facilitator privileges. If this user leaves the company or is not available, change the owner so

someone else can have these privileges.

You can deactivate an issue if it is no longer being used and access to it is no longer required. This is helpful to reduce the number of issues that appear in searches and open dialogs. This is also a disadvantage.

		Edit Issue Properities
πιισια	Select Issue to	Edit:
Robust Decisions, Inc.	AccordTesting1	
<u>Accord Home</u> <u>Administrator's Home</u> <u>Getting Started</u> <u>Edit Issue Properties</u>	BASS Demo Choose best job Choose the best Concept selectio DanTest Differentiate you Instant Decision InstantDec test2	r Product test1
Manage Groups		
Edit User Account	Issue Name:	BASS Demo
Edit Admin Account	Owner:	Ullman, Dave 🔹
<u>User Usage</u>	Date Created	1/4/11 9:43 PM
SMTP Server Setup	Active:	
Logout		Enter
Help		

# **Manage Groups Page**

The administrator can create, review or delete groups. An important feature is the ability to import CSV files to create new groups.

Accord	Manage Groups
ACCOIO Robust Decisions, Inc.	Groups
Accord Home Administrator's Home Getting Started Edit Issue Properties Manage Groups Edit User Account Edit Admin Account User Usage	Clear Delete Group Name: Group 1
SMTP Server Setup	All Users Users in Group
<u>Logout</u> <u>Help</u>	Fred Fearson   Michael Harte   doug hoseck   jane@blow.com   ioe@blow.com   rick karlsrher   dantest one   Jack Ring   Ben Rogers   Brycen Swart   Gil Sylvia   TestUserF TestUserL   Dave Ullman   Instant Decision User   Instant Decision User3   Instant Decision User3   Instant Decision User4   Michael Ward   Robert Williams
	Register New User     Save     Define as New       Browse     Import CSV

# Edit User Account Page

You can adjust the account of an Accord user. Typically, you will only need to edit a user's account when:

- The user's email address changes and they do not remember their password.
- The user left the company and their account needs to be deactivated.

- A user's account needs to be reactivated.
- The user wants to change their User Name.

Other than these situations, users can change settings themselves via the Edit>Change User Details... option in the Accord Client.

The Edit User Account page includes the user Usage Hours and Last Logged In values. These cannot be changed.

Accord	Edit User Account
Accord Home         Administrator's Home         Getting Started         Edit Issue Properties         Manage Groups         Edit User Account         Edit Admin Account         User Usage         SMTP Server Setup         Logout	Doremus, Scott England, John Fearson, Fred Harte, Michael hoseck, doug jane@blow.com, jane@blow.co karlsrher, rick one, dantest Ring, Jack Rogers, Ben Swart, Brycen Sylvia, Gil TestUserL, TestUserF Ullman, David User, Instant Decision User2, Instant Decision User4, Instant Decision User4, Instant Decision

# **Edit Administrator Account Page**

Use this page to:

- Change your password
- Change your email address

It is rare you will need to access this page.

Accord	Edit Administrator Account
ACCUIU	Email Address:
Robust Decisions, Inc.	Old Password:
<u>Accord Home</u> <u>Administrator's Home</u>	New Password:
Getting Started	Re-type Password:
<u>Edit Issue Properties</u> <u>Manage Groups</u>	Enter
Edit User Account	
<u>Edit Admin Account</u> User Usage	
SMTP Server Setup	
Logout	
Help	

# **User Usage Page**

User names and usage statistics are displayed. Each user is listed with the totals for the current month, current year, and total usage in hours.

Accord			Use	r Usag	ge		
Robust Decisions, Inc.	Last, First	<u>First</u> Login	Last Login	Account Enabled	Month- To- Date (Hours)	Year- <u>To-</u> <u>Date</u> (Hours)	<u>Total</u> (Hours)
Accord Home					Incuro	Incuror	
Administrator's Home							
Getting Started							
Edit Issue Properties							
Edit User Account							
Edit Admin Account							
User Usage							
SMTP Server Setup							
Logout							
Stop Server							
Help							
Network Edition - v2.3 - R6 - 8/10/06 Copyright © 2006 Robust Decisions, Inc. <u>www.robustdecisions.com</u> All rights reserved worldwide.							

# SMTP Server Setup Page

You can change the SMTP server parameters used by the Accord Server to send email. All email sent via Accord is sent by the Accord Server. The Accord Clients do not send email directly. The SMTP server selected for use with the Accord Server must be able to email to all addresses of the people using the Accord Server.

Accord	SMTP Server Setup			
ACCOLO	The Accord Server Edition requires the use of an SMTP server so that it can send emails to users when they:			
Robust Decisions, Inc.	<ul> <li>Forget their passwords</li> <li>Want to invite team members to an issue</li> <li>Want to inform team members that a framin</li> </ul>	g change has been made		
Administrator's Home	Want to invite team members to evaluate an	ISSUE		
Getting Started	If you are unsure what your SMTP server is, and you	ou are on a machine which is		
Edit Issue Properties	already configured for sending email, you can copy these settings from your email program.			
Edit User Account				
Edit Admin Account	SMTP Server Name or IP Address:	smtp.company.com		
<u>User Usage</u>	SMTP Port Number (default is 25):	25		
SMTP Server Setup	SMTP Server Requires Authentication:			
Logout	User Name:	email@company.com		
	Password:	••••		
Stop Server	Re-type Password:	••••		
Help	Enter Send Test Ema	ail		
Network Edition - v2.3 - R14 - 10/20/06 Copyright © 2008 Robust Decisions, Inc. <u>www.robustdecisions.com</u>				
Help         Enter         Send Test Email           Network Edition - v2.3 - R14 - 10/20/08         Source State St				

# Logout

Use the Logout link when you are done with administrative tasks. This action sends your browser to the Accord Home page. You will need to log back in when you visit the Accord Administration interface.

# 5. FREQUENTLY ASKED QUESTIONS

I cannot connect to SQL Server. Is there a way I change the connection string to support my particular environment?

Accord Enterprise uses the jTDS JDBC driver to communicate with SQL Server. The installer creates the connection string that the Accord Server will use with the driver and places it in the file:

<install directory>/webapps/accord/WEB-INF/web.xml

You may notice that the DatabaseUrl does not contain the database name. The application will add this by adding,

databasename=<your name>;

to the end of the URL.

If you need to adjust this connection string, please see <u>http://jtds.sourceforge.net/faq.html</u> for more information on the parameters available.

NOTE: If you make changes to this in the web.xml file, then you will need to be careful when using the Accord Server Configurator. It will not keep these additions. Create a backup of the web.xml file, run the Accord Server Configurator, and then copy your changes back.

Can I upgrade my existing database (V2.3 or earlier) to SQL Server?

It can probably be done with tools like DbVisualizer (http://www.dbvis.com/), but Accord does not provide that capability at this time.

How can I keep my old data (V2.3 or earlier) that is in the HSQLDB and have my new data in SQL Server?

We recommend creating two instances of Accord. That is, one would need to configure their web server to have one version of Accord that uses the old database and another that uses the new database.

How do I start/stop the Accord Server?

### Windows

If you are using the default installation (the Jetty web server), then you can use following two batch files:

<install directory>/install\_service.bat – This batch file adds Accord Server as a Windows service and then starts the server.

<install\_directory>/remove\_service.bat – This batch file stops the server and then removes it as an available Windows service.

Non-Windows

Please see your web server's documentation for starting/stopping applications.

How do I change where the log files are placed and other aspects of logging?

Accord uses Apache's Log4j (http://logging.apache.org/log4j/docs/) for its logging mechanism. Log4j uses a properties file for specifying different aspects of logging – log4j.properties. Unfortunately, Accord has two of these files and which one you edit depends upon your configuration. The two files are:

jetty/log4j.properties – When you are running the default installation (the Jetty web server), the file found in the jetty directory is the one that is used. This file will override the other properties file.

webapps/accord/WEB-INF/classes/log4j.properties – When you are not using Jetty and are using another servlet container (i.e. Tomcat, Web Logic, etc), this is the properties file to edit.

This manual will not go into all of the ways to change properties file, but to change the location of the log files one just needs to change the following property:

log4j.appender.rolling.File

The following is a great article on configuring the properties file:

Don't Use System.out.println! Use Log4j - http://www.vipan.com/htdocs/log4jhelp.html

How do I change the location of the default database (HSQLDB)?

The location of the database is specified in the file

<install directory>/webapps/accord/WEB-INF/web.xml

The XML element named DatabaseName defines the directory that the Accord will look into for its database files. By default, Accord creates this directory in whatever is the server's current working directory.

If you do not like where the database is placed, then please follow these steps to change its location:

- 1. Stop Accord Server
- 2. Move the existing directory to where you want it to be
- 3. Edit the web.xml file so Accord knows where to find the directory (You may want to give it a full path name instead of a relative path name just to eliminate confusion later on.)
- 4. Restart Accord Server

How can I see what is inside my default database (HSQLDB)?

The first thing is to get a tool that allows you to look at database using JDBC drivers. One of these is DbVisualizer (http://www.dbvis.com/). This application will need to know the JDBC driver to use for accessing the database. This driver can be found at:

<install directory>/webapps/accord/WEB-INF/lib/hsqldb.jar

The second thing you will need to do is to contact RDI for other information in connecting to the database.

How do I install Accord with my existing Jetty web server?

If you are using Jetty as your web server and just want to add Accord, then you need to follow the configuration/installation instructions for Other Servlet Containers. You will still need to add Accord to your configuration file as a web application. For an example, you can look at the file:

<install directory>/jetty/AccordJettyConfig.xml

Does Accord support "clustering"?

We have not tested clustering with Accord. It may or may not work. However, if you are considering trying clustering, then it is recommended that you do not use HSQLDB as your database. We read somewhere that our use of HSQLDB in embedded mode would not allow for clustering.

# 6. IIS INSTALLATION APPENDIX

Accord is packaged so one can easily configure Accord and IIS to work together. These installation instructions have been tested on:

Windows XP Pro with IIS 5

Windows 2003 Server with IIS 6

To enable Accord to work with IIS, one must configure IIS to use an ISAPI Filter that redirects incoming messages to a servlet container, which is Jetty in our case. Accord comes packaged with Apache's isapi\_redirect.dll that uses Apache JServProtocal 1.3 (AJP13) (http://tomcat.apache.org/connectors-doc-archive/jk2/common/AJPv13.html).

AJP13 is not a secure protocol so one cannot protect the communication between Jetty and IIS. Hence, please be careful when configuring your environment.

The instructions are broken into two pieces: HTTP and HTTPS. Before you can setup IIS and Accord to use HTTPS, first try it out with just HTTP. You will need to follow the HTTP instructions first anyway.

# HTTP

1. Run the Accord Server Configurator.

The first step in configuring Accord to work with IIS is to use the Accord Server Configurator (ASC). The ASC will configure all of the files needed to allow isapi\_redirect.dll and Jetty to communicate. These files include (assume paths are relative to the installation directory):

jetty/AccordJettyConfig.xml - Configures the server to use AJP13 protocol

isapi/isapi\_redirect.properties – This is read by isapi\_redirect.dll to tell it where to find the other files, how much information to log, and other configuration parameters.

isapi/uriworkermap.properties – This is used by the DLL to know what requests should be directed at Jetty. It specifies the context used for Accord.

Isapi/workers.properties – This file tells the DLL what protocol, hostname and port number to use so that it can talk to Jetty.

When ASC is done configuring the files, it will start Jetty listening for requests on the specified AJP13 port number.

2. Open IIS.

Once ASC has all of the files configured and Jetty ready to go, you are ready to configure IIS. To open IIS, go to:

Start Menu > Control Panel > Administrator Tools > Internet Information Service

🖏 Internet Information Services		
<u>File Action View H</u> elp		
← → 🗈 🖬 🖀 😫	9 💂 🕨 ■ ॥	
Internet Information Services BRIDEN-DELL2 (local computer) Web Sites Default Web Site Default SMTP Virtual Server	Name Visit	

3. Open the Website Properties Dialog and select ISAPI Filter tab.

efault Web	o Site Prop	perties		?
Directory	Security	HTTP Heade	rs Custom Errors	ASP.NET
Web Site	•	ISAPI Filters	Home Directory	Documents
Filters ins order liste	talled here ar ed below:	re active for this W	'eb site only. Filters are ex	ecuted in the
	Status	Filter Name	Priority	A <u>d</u> d
t				Remove
r I				Edit
× 1				Enable
		ОК	Cancel Ap	ply Help

4. Click the **Add...** button.

Specify AccordRedirect for the Filter Name and use the **Browse...** button to select the isapi\_redirect.dll file found in the <install directory>/isapi directory.

Filter Prop	erties		X
<u>F</u> ilter Name:	AccordRedir	ect	
<u>E</u> xecutable:	C:\AccordSe	erver\isapi\isapi_re	edirect.dll
			Browse
	ОК	Cancel	<u>H</u> elp

5. Click **OK** when done.

The website properties dialog is displayed.

Default Web	Site Pro	perties				? 🔀
Directory Se Web Site	ecurity	HTTP Heade ISAPI Filters	ers H	Custom Error ome Directory	s	ASP.NET Documents
Filters insta order listed	lled here a below: Status	are active for this W Filter Name Accord Redirect	'eb site	only. Filters are e Priority * Unknown *		ad in the Add Remove Edit Enable
Details Filter Nan Status: Executab Priority:	ne: Ac *( ble: C: *(	cordRedirect Changed * \Accord\isapi_rec Jnknown *	direct.d	1		
		ОК	Ca	ncel A	oply	Help

- 6. Click **OK**.
- 7. Restart IIS.

After you have restarted IIS, open the Website Properties dialog again. You should see a green up arrow shown below in the Status column.

efault Web	o Site Pro	operties		? 🛽
Directory Web Site Filters inst order liste	Security talled here	HTTP Heade ISAPI Filters are active for this W	rs Custom Erro Home Directory eb site only. Filters are o	ASP.NET Documents
ţ	Status	Filter Name Accord Redirect	Priority High	Add Remove Edīt Disabl <u>e</u>
		ОК	Cancel	Apply Help

If you do not see the green up arrow, check the configuration to verify everything is correct. First check the <install directory>/isapi/iis\_redirect.log. If it does not exist, look at the isapi\_redirect.properties file to make sure the settings look correct.

8. Add Virtual Directory.

Right-click on your website (i.e., Default Web Site) and select New > Virtual Directory...

This will bring up the Virtual Directory Creation Wizard:

Virtual Directory Creation	Virtual Directory Creation Wizard			
	Welcome to the Virtual Directory Creation Wizard			
	This wizard will help you create a new Virtual Directory on this Web site.			
	Click Next to continue.			
	< <u>B</u> ack Cancel			

### 9. Click Next.

Virtual Directory Creation Wizard	
Virtual Directory Alias You must give the virtual directory a short na	ame, or alias, for quick reference.
Type the alias you want to use to gain acce same naming conventions that you would fo	ss to this Web virtual directory. Use the r naming a directory.
<u>A</u> lias:	
AccordRedirect	
,	
	< <u>B</u> ack <u>N</u> ext > Cancel

10. Set the Alias field to **AccordRedirect** and click **Next**.

Virtual Directory Creation Wizard	
Web Site Content Directory Where is the content you want to publish on the Web site?	
Enter the path to the directory that contains the content. Directory:	
C:\AccordServer\isapi	Browse
< <u>B</u> ack <u>N</u> ext >	Cancel

11. On the Web Site Content Directory window, use the **Browse...** button to select the directory

<install directory>/isapi

### 12. Click Next.

Virtual Directory Creation Wizard	
Access Permissions What access permissions do you want to set for this virtual directory?	
Allow the following:	
✓ <u>R</u> ead	
✓ Run scripts (such as ASP)	
Execute (such as ISAPI applications or CGI)	
<u> </u>	
Erowse	
Click Next to complete the wizard.	
< <u>B</u> ack <u>N</u> ext >	Cancel

13. On the Access Permissions window, click to select

Read

Run scripts

Execute

14. Click Next, then Finish.

15. Test the installation by navigating to the Accord start page, http://hostname/context.

# HTTPS

(If you have not already followed the instructions for HTTP, please the go to that section first.)

To use HTTPS on IIS with Accord, one must extract the server certificate so that the ASC can create a truststore for the Accord Thick Client.

(Better instructions need to be written for both IIS 5 and 6. Below are some really rough notes I have when getting it to work on XP and IIS 5).

Configuring IIS for HTTPS

NOTE: AccordJettyConfig.xml does not need to be configured for SSL. IIS will handle the server side issues. The Accord Client will be communicating with the IIS server for the certificate information.

Add Server Certificate

Export Certificate (XP & IIS 5)

Run > mmc

Select "File > Add/Remove Snap-in..."

Press "Add..."

Select "Certificates"

Press "Add"

Select "Computer Account" and press "Next >"

Select "Local Computer" and press "Finish"

Close "Add Standalone Snap-in" dialog

Press "OK" on "Add/Remove Snap-in" dialog

Select "Personal > Certificates"

Right-click on certificate

Select "All Tasks > Export..." to open "Certificate Export Wizard"

Press "Next >"

Select "No, do not export the private key"

Press "Next >"

Select "Base-64 encoded X.509 (.CER)", also know as PEM format

Press "Next >"

Save file in <Accord Installation Directory>

Press "Next >"

Press "Finish"

Close "Console1" dialog

Things are different on II6 and Windows 2003 Server

Update security.jar for the Accord Client

<Accord Installation Directory>\AccordJvm150\bin\keytool -import

keystoreaccord\_client\_truststore -alias accord -file <file name you saved to above>

# **7.** OTHER SERVLET CONTAINER APPENDIX

For those of you familiar with Java type applications, Accord Enterprise is a web application on the server side. It consists of a single servlet and miscellaneous standalone web pages. As a Java-based web application, it can be run in different servlet containers and on different operating systems. Below is a list of configurations that Accord has been tested with:

Servlet Container	Web Server	Operating System
Jetty 5.1	Jetty 5.1	Windows XP
Jetty 5.1	Jetty 5.1	Windows 2003 Server
Jetty 5.1	IIS 5	Windows XP
Jetty 5.1	IIS 6	Windows 2003 Server
Web Logic 9.1	Web Logic 9.1	Windows XP
Tomcat 5.5	Tomcat 5.5	Windows XP
Tomcat 5.5	Apache 2.0	Red Hat Enterprise Linux 4

(Note: Accord Enterprise Version 2.0 to 2.2 used Jetty 4.2.)

To configure Accord to work with a non-Jetty servlet container or your own Jetty installation, this is the configuration for you. The first step is to get things work with HTTP. If you need HTTPS, you can follow those instructions once you have completed the HTTP instructions.

Unfortunately, you will notice that at this time that you must first install Accord on a Windows platform before you can install it on a non-Windows platform. You will also note that Accord is not distributed a WAR file. This was not done so that we could easily reconfigure the installation. If one is familiar with WAR files, one might want to create a WAR file after running the Accord Server Configurator.

# HTTP

 The first step is to use the Accord Server Configurator (ASC) to configure the Accord files for Other Servlet Containers and HTTP. The main thing that you need to be aware of when using the ASC is the Base Location value. Since the ASC does not know anything about your server configuration, you are responsible for providing the ASC with the base URL end users will use to access Accord.

The ASC will configure two files:

• <install directory>/webapps/accord/Accord.jnlp – This is a static file that is downloaded by end users so that they can start the Accord Thick Client. This file tells Java Web Start and the

Accord Thick Client where to talk to the Accord Server. If the Base Location is not correct, the Accord Thick Client will not start.

- <install directory>/webapps/accord/WEB-INF/web.xml An application specific parameter, BaseLocation, is modified in this file and is used by the server when it is configuring URLs for end users. This allows the Accord Server to email users a link so that they can get back to the Accord Server easily.
- 2. The second step is to deploy the web application on your servlet container. You will need to refer to your container's specific instructions. However, some example installations are provided below:

### TOMCAT

The following example assumes that you are using Tomcat 5.5 and its Tomcat Manager.

The Tomcat Manager is very handy when it comes to controlling your web applications. From this interface, you can deploy, start, stop, and un-deploy your application. Please note the following:

- 1. If Tomcat is not running on the Windows machine where you have installed Accord and have been running the ASC, then you will need to transfer your files on to Tomcat machine.
- 2. Once the files are on the Tomcat local machine, you can use the Deploy section to configure Tomcat with the Accord web application.

Provide the Context Path. This MUST be the same context you used with the ASC.

Specify the location of the Accord files. This needs to be the directory:

<install directory>/webapps/accord

Note the Tomcat Manager will create a directory with your Context Path name in the webapps directory and then copy the files from Accord's webapps/accord directory.

🖉 /manager - Windows Internet Explorer										
🚱 🕞 👻 http://72.249.38.70:8080/manager/html				Google				P-		
🔆 💠 🕅 /manager 🐴 🖓 /manager 🖓 Tools - 🎽										
Manager										
List Applications HTML Manager H		Help	Manager Help			Server Status				
A										
Applications	ications		Dupping	Comp.				manda		
	Display Name		Running	Sessions	Ctort	Stop	Delead	Jodoplay		
(AccordTection	vveicome to Tomcat		true	0	Start	Stop	Reload	Undeploy		
/Accord resting	Accord Server		true	<u>v</u>	Start	Stop	Reload	Undeploy		
/admin	Torncat Administration Application		true	<u>v</u>	Start	Stee	Reload	Undeploy		
/manager	Tomcat Manager Application		true	0	Start	Stop	Reload	Undeploy		
romcat-docs	Nomcat-docs Tomcat Documentation		uue	Ŷ	Statt	<u>310p</u>	Reludu	Ondepioy		
Deploy										
Deploy directory or WAR file located on server										
Context Path (ontional): /AccordTesting										
XML Configuration file URL:										
WAR or Directory URL: file:/home/AccordServer/webapps/accord										
Deploy										
WAR file to deploy										
Select WAR file to upload Browse										
Deploy										
· · · · · · · · · · · · · · · · · · ·						×				
http://72.249.38.70:8080/manager/html-manager-howto.html 😜 Internet 🔍 100% 🝷										

- 3. Before you start the application, verify you have the correct database configuration for the machine you are running Accord on.
  - If you are using SQL Server, you likely do not need to check anything. Ensure you have the server location correct for where Accord Server is running.
  - If you are using HSQLDB, ensure the database directory is going to be placed where you want it. Move the directory created on your Windows machine to the machine where Tomcat is running.

To change the location of the database directory, you need to edit the file:

<Tomcat's webapps directory>/<your context name>/WEB-INF/web.xml

#### In this file you will find:

<init-param>

<param-name>DatabaseName</param-name>

<param-value>AccordDatabase</param-value>

</init-param>

AccordDatabase is the name of the database you gave in the ASC. Change this name to a full path declaration of where you want the directory to be. Remember, if you have a database on the Windows machine that you would like to keep, then you need to move it to this location.

- 4. You may also want to change where the log files are being placed. Please see the FAQ on changing logging properties.
- 5. You are finally ready to start your application. Press start and then click on the context name.
- 6. To verify that you have configured things correctly, you should test the following things.
  - Go to the Accord Home page and Start Accord. You should able to successfully start the Accord Thick Client and log in.
  - Start Accord again, but this time provide an incorrect password. This will cause the following dialog to appear.



Click the Email Password button to have Accord send a new password to your email account. Read the email and verify the URL in the email is correct. If the URL in the email is not correct, stop Accord and edit the web.xml file.

### WEB LOGIC

We did do some minimal testing with Web Logic. Accord does work with but we could not add the application without it requiring our context name/path to be accord. In our setup, Web Logic pointed itself at the directory where we installed Accord (i.e. c:\AccordServer\webapps\accord). Since we did not want to break the use of the ASC, we did not want to change the name of the accord directory.

### HTTPS

(If you have not already followed the instructions for HTTP, please the go to that section first.)

Assuming you have Accord running using HTTP, then you are ready to convert it to use HTTPS.

1. Create the keystore with the server certificate file or find the one being used. Follow your web server's instructions. Once you have this file, ensure that it is in JKS format – the default format of Java's keytool.

Below are links to creating server certificates for Tomcat and Web Logic:

http://tomcat.apache.org/tomcat-5.5-doc/ssl-howto.html

http://e-docs.bea.com/wls/docs91/secmanage/ssl.html

Note the ASC assumes the keystore has non-zero length passwords for both the key and store.

With Tomcat you can configure Accord to use Jetty over HTTPS and then use the keystore created for Jetty with Tomcat. The generated keystore can be found at:

<install directory>/config/acccod\_server\_keystore.jks

2. Run the ASC and select HTTPS on the Communication Type dialog.

The next panel will ask you for information about the keystore you got from your server. The ASC will create a trusted certificate to be used by the Accord Thick Client and it will bundle it up so it is automatically downloaded by end users. The ASC will also configure the BaseLocation parameter so it is using the HTTPS protocol. This implies it will modify the web.xml and the Accord.jnlp files.

You should now be ready to test your configuration. Please follow the directions above in the HTTP section.

# 8. BASS MODEL SERVICE AND DISPLAY PORT INSTALLATION

# Model Service and Model Display Port Overview:

The BASS Model Service is an online or live request tool for computing area of interest (AOI) and scientific measure–specific, pre- and post-treatment satisfaction and uncertainty scores. Geographic Information System (GIS)-linked Bayesian Belief Networks (BBN) are used to model 12 scientific decision measures for the BASS Decision Support Tool. The BASS Decision Support Tool sends requests for scientific measure model results to the BASS Model Service during a decision support problem. Responding to this request for information, the BASS Model Service processes model run requests from the BASS Decision Support Tool and posts the results in a web-accessible folder for the BASS Decision Support Tool to pick up and cache in the BASS Database. In this capacity and design, the BASS Model Service is dynamic and responsive to the BASS Decision Support Tool. However, an administrator can submit model scientific model requests outside of the BASS Decision Support Tool on either a site-by-site basis or for larger regions creating GIS layer output for visualization or analysis through the Display Port or through a desktop GIS.

The BASS Model Service may run on its own dedicated hardware platform or on the same hardware as any of the other two system components (BASS Decision Support Tool and/or BASS Model Display Port) as shown in Figure 1. In any hardware configuration, TCP port 8000 is dedicated for incoming and outgoing communication with the Bass Model Service. Model run requests (incoming) are handled by the Apache web server and Django web framework. Only properly formatted html POST requests will trigger a model run via the BASS Model Service. Furthermore, only requests originating from the BASS Decision Support Tool, or other trusted IP addresses, are permitted. Apache virtual directory directives "Deny from all" and "Allow from <IP Address>" are used to restrict unauthorized access to the BASS Model Service, as unauthorized access could potentially consume large processing capacity or attempt to execute or install malicious code. There are additional firewall rules or more sophisticated public key / private key authentication options for future development of this system if needed.

When a model run is requested by the BASS Decision Support Tool, instructions are sent to the BASS Model Service in the body of an HTTP POST request. The Model Service checks that the request is a

POST request then parses the XML formatted message body to initialize a model run. The BASS Decision Support Tool must specify the following items:

- 1. A unique request identifier (requestID)
- 2. At least one "site" (2-D ocean space described by 4 geographic corner coordinate pairs)
- 3. At least one Scientific Model

With this basic kernel of information, the BASS Model Service extracts geospatial input data from its database, processes the data through the specified Scientific Model BAYES Net(s), and creates a single result set formatted as comma-separated values (.csv) at

http://mustang.coas.oregonstate.edu/impact\_ouput

NOTE: The BASS Decision Support Tool will cache these results within its own database. Results are valid until a new request is generated with the same requestID.

To visualize geospatial model results, model inputs, or any relevant geospatial advisory information (e.g., planning, development, or regulatory overlays), a custom map viewer has been developed and deployed for BASS.

The BASS Model Display Port is combination of a web map viewer application and web map services that pre-populate the viewer with advisory information and scientific model input and output layers. The Display Port URL is currently:

### http://hornet.coas.oregonstate.edu/BASS/

The URL will change in the production environment. The Display Port and Map Services may be manually configured by an Issue Manager to present Scientific Model Outputs or any other geospatial data relevant to the issue. The Display Port is intended to support (not required for/by) any and all phases of the decision problem from scoping, to stakeholder data collection, to results exploration.

# **System Architecture**

The production system is installed at Oregon State University's College of Earth, Oceanic and Atmospheric Sciences in Corvallis, Oregon, and consists of two virtual machines hosted on one Dell R815 server. The server runs Windows Server 2008 R2 (64 bit) natively and uses Microsoft's HyperV for virtualization. This platform provides a high performance (64 core, 128GB RAM), low overhead space to host a production system. Virtual machines are implemented to sequester the BASS Decision Support Tool and BASS Model Display Port due to slightly different technology stack requirements (Figure 1). Note that the Model Display Port was developed under the PaCOOS and Oregon State Waters Mapping programs to utilize ESRI ArcGIS Server 10.1 for .NET. ArcGIS Server 10.1 for .NET requires the MS IIS web server while both the BASS Decision Support Tool and BASS Model Service utilize technologies better suited to the Apache web server. ArcGIS Server 10.1 also installs an Arcpy package that is incompatible with the BASS Model Service. For these reasons, two physical or two virtual host configuration is necessary.

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Total hardware resource is partitioned into two Virtual Machines to support the unique technology requirements of each component.

# Figure 1. Core BASS components, their supporting technologies, and the system architecture supporting the services.

NOTE: The BASS Model Display Port was developed under the Microsoft .NET platform and has different technology requirements from the BASS Decision Support Tool and BASS Model Service. Implementing two server instances through virtual machines is one solution to the mixed stack.

### MINIMUM REQUIREMENTS

The BASS Model Service performs computationally intense geospatial operations during the creation of Scientific Model output files for the BASS Decision Support Tool. Therefore, the system requirements are somewhat more demanding than those for the Accord compute engine.

Operating system	MS Windows Server 2008
Minimum RAM	8 GB, or more (12 in production now)
Processor	Quad core Intel Sandy Bridge or AMD equivalent

### THE BASS MODEL SERVICE TECHNOLOGY STACK

- Apache Web Server Version 2.2 and Mod\_wsgi (wsgi-compliant interface for Apache and Python)
- Django Web Framework Version 1.4
- ESRI ArcGIS Desktop 10.0 (with Python 2.6)

- Norsys Netica (Version 4.16)
- OSU BASS Modules for Python (Version 1.0)

### THE BASS DISPLAY PORT TECHNOLOGY STACK:

- Microsoft Internet Information Services 7 (IIS7)
- ESRI ArcGIS Server 10.1 for .NET
- Microsoft Silverlight (client requirement)

### **Installation and Configuration**

### BASS MODEL SERVICE INSTALLATION OVERVIEW:

Configuration of the BASS Model Service requires relatively few steps. A standard Apache, Django, mod\_wsgi configuration provides the base level web server and web application framework. We recommend that the ESRI ArcGIS Desktop 10.0 software be installed and functional before the Apache/Django webserver/web framework is installed. Due to the fact that Python 2.6 is bundled with ArcGIS Desktop and installed with ArcGIS Desktop, installing ESRI ARcGIS 10.0 first will install Python to the default ESRI location and will save the administrator time by skipping a separate Python installation step.

Prior to Model Service setup, all setup files must be downloaded to the server. These files are available from the project team and are provided as a zip package, BASS\_MS.zip. The archive includes:

- urls.py Django code to establish BASS urls
- views.py Django code to build web services
- BASS\_MODULES.py
   GIS-linked BBN processing code
- /nets/ Directory of BASS BBN models
- BASS\_model\_inputs
   File Geodatabase of BASS BBN attribute data

### INSTALL BASS MODEL SERVICE

- 1. Obtain ESRI ArcGIS Desktop 10.0 media and license from appropriate source (Academic, GSA, or Commercial).
- 2. Install the "Full" ArcGIS Desktop 10.0 software package using ESRI Media and the ESRI installation wizard. Install the software to the default location option (your server's system drive). No BASS-specific installation options or choices are necessary during the ESRI ArcGIS Desktop 10.0 installation. The BASS Model Service is intended to run on a default ESRI configuration.
- 3. Download Apache 2.2.22 for windows from this URL: http://archive.apache.org/dist/httpd/binaries/win32/httpd-2.2.22-win32-x86-no\_ssl.msi
- 4. Install Apache 2.2.22 for windows according to the installation directions at this URL: http://httpd.apache.org/docs/2.2/platform/windows.html

Note the entries for Network Domain, Server Name, and Server Port. This information is necessary to properly configure the BASS Decision Support Tool.

5. Install the Django Web framework according to installation directions at this URL: https://docs.djangoproject.com/en/1.4/intro/install/
Ensure Python has already been installed during the ESRI setup above (Step 2).

- 6. Download mod\_wsgi for Apache 2.2 and Python 2.6 from this URL: http://code.google.com/p/modwsgi/downloads/detail?name=mod\_wsgi-win32-ap22py26-3.3.so
- 7. Configure Django for Apache using mod\_wsgi

Save wsgi-win32-ap22py26-3.3.so

to

C:\Program Files (x86)\Apache Software Foundation\Apache2.2\modules

8. Edit the Apache httpd.conf file to use mod\_wsgi

Add LoadModule wsgi\_module modules/mod\_wsgi.so under the Dynamic Shared Object Support Section of the httpd.conf file.

9. Create a Django project for the BASS Model Service.

Create a directory of the BASS Model Service at C:\django\bass

From the command line change to the above directory and run:

>> Python django-admin.py startproject bass

Replace the auto-generated urls.py and views.py files with the urls.py and views.py file provided here.

Install the BASS\_Modules.py file (provided) to your Django BASS Model Service project.

- 10. Obtain a licensed copy and Install Netica 4.16(Windows executable).
- 11. Install the BBN models by copying and extracting Models.zip to C:\django\bass\bass\nets.

#### BASS DISPLAY PORT INSTALLATION OVERVIEW

Configuration of the BASS Display Port may vary depending upon where the BASS Web Map services originate from. There is no requirement for ESRI ArcGIS Server 10.0 to be located on the same server as the display port. This is, however, the default configuration at project completion.

#### BASS DISPLAY PORT INSTALLATION STEPS

- 1. Install and activate MS IIS 7.0 on your Windows server.
- 2. Obtain the installation media and license for ArcGIS Server 10.1 for .NET from the appropriate provider.
- 3. Install ESRI ArcGIS Server 10.1 for .NET according to the default setup instructions provided by ESRI. There are no BASS-specific ESRI setup instructions. A base installation of ArcGIS Server 10.0 or 10.1 will support the Model Display Port.
- 4. Copy the BASS\_Silverlight\_Viewer.zip file to your server.
- 5. Create an IIS virtual directory that points to the installation location.

#### Administration

You must be competent with the technology stack described in Figure 1 above. Typical activities associated with administration of these technologies include:

- Server Administration Software installation and software integration including web server and network administration. Also includes managing Security Policies and Access Control. Monitor and manage model service log files and output storage space.
- Database Administration Includes installation, configuration, upgrade, migration, replication, security.
- GIS Database Administration Includes maintaining both the input data layer collection as well as GIS output from any "Region Run Requests" destined for the Model Display Port.
- BBN Model Administration Includes adding, removing, or modifying models from the Model Catalog.

#### BASS MODEL SERVICE ADMINISTRATION

Post-installation BASS Model Service administration tasks include:

- Adding or Modifying BBN Models to the system
- Adding or Modifying GIS Attribute data layers to the Geodatabase

#### BASS DISPLAY PORT ADMINISTRATION

On the back end, the Model Display Port requires BASS-specific Map Services from an ESRI ArcGIS Server 10.1 instance. ArcGIS Server 10.1 is used instead of ArcGIS Server 10 because 10.1 is a true 64bit application and significant performance enhancements are available with ArcGIS Server 10.1. Administration of the front end or front facing "site" is accomplished by making edits to an application configuration file (AppConfig.xml) in the /BASS/ClientBin directory. This configuration file exposes the relevant items that control:

- Table of Contents Layers (A Listing of Loaded Map Services)
- Layer Order
- Widget Visibility

Additional changes to tools can be made from any one of the Widget-specific .xml files:

- BookmarkWidget.xml
- CoordinateWidget.xml
- ElevationWidget.xml
- ExtractionWidget.xml
- IdentifyWidget.xml
- MeasureWidget.xml

Administration of the back end services typically involves either creating (publishing) or updating (republishing) map services that are displayed in the Model Display Port. Generally, the workflow for publishing a map service includes:

- Creating an ESRI Map Document with the layers to be published.
- Creating a connection to the BASS ArcGIS Server Instance through ESRI ArcCatalog.
- Using the ESRI ArcMap or ArcCatalog publishing tools to create a map service.

Issue Managers may find it useful to develop and publish through the BASS Display Port map composition unique and specific to the decision problem. Any desktop map composition can be converted into an online map service using the BASS Display Port ArcGIS Server 10.1 instance. Instructions for publishing services using ESRI ArcGIS Server 10.1 are found at this URL:

http://resources.arcgis.com/en/help/main/10.1/index.html#/How\_to\_publish\_a\_service/0154000004 n3000000/

To support publishing a connection to the BASS ArcGIS Server, an instance must be made through the desktop GIS software. This connection requires a username and password. Contact the OSU BASS system administrator for credentials and specific instructions detailing how to create a publisher connection to this system. For security reasons we do not provide usernames, passwords, or connection information in this document.

Once the service has been created or a suitable new service resource has been identified from another source, the AppConfig.xml file must be edited to load the file to the BASS Display Port Table of Contents. The following is an example of a TOC entry in the AppConfig.xml file.

#### <LivingMaps>

<Layer title="BASS\_REGION" serviceType="Dynamic" opacityBar="true" opacity="1" visibleInitial="true" toggleLayer="false" visibleLayers="\*" refreshRate="0" restURL="http://extra.coas.oregonstate.edu/ArcGIS/rest/services/BASS\_REGION/MapServer" proxyURL="" token=""></Layer>

</LivingMaps>

New TOC layers are added as <Layer> elements to the <LivingMaps> element. Note that most element attributes may be simply copied for the new element. However, the restURL and title must reflect the layer you wish to add.

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# APPENDIX A: INTELLECTUAL PROPERTY ISSUES AND HOSTING RECOMMENDATIONS FOR BASS

# **1.** INTRODUCTION

## Overview

This technical memorandum summarizes the intellectual property issues that arise from integrating software application technologies and datasets to power the BASS tool. In addition, this memorandum provides recommendations to guide future decision making on hosting location, how to access, and how best to establish licensing agreements to use the BASS software and its results. We emphasize that BASS is a complex system with a number of components and dependencies. Installation and use of BASS requires expertise in the component systems and computer infrastructure, as well as the input datasets that power the scientific analysis.

After considering issues of licensing, location, and accessibility, we recommend maintaining all the components on OSU servers where they currently reside.

## **Licensing Multiple Applications**

This memo is a necessary component of the due diligence reporting to ensure that software and data developers' intellectual property rights are not compromised. The particulars described in this memorandum are based on published policies and believed to be correct, but have not been reviewed for specific compliance issues by legal representatives of the software developers, companies, or institutions involved.

The BASS Model Service must perform computationally intense geospatial operations during the creation of Scientific Model output files for the BASS Decision Support Tool. Therefore the system requirements are somewhat more demanding than those for the Accord compute engine.

# **2.** SYSTEM REQUIREMENTS

- Operating System MS Windows Server 2008
- Minimum RAM 8 GB, or more (12 in production now)
- Processor Quad core Intel Sandy Bridge or AMD equivalent

## **The BASS Model Service Technology Stack**

- Apache Web Server Version 2.2 & Mod\_wsgi (wsgi compliant interface for Apache and Python)
- Django Web Framework Version 1.4
- ESRI ArcGIS Desktop 10.0 (with Python 2.6)
- Norsys Netica (Version 4.16)
- OSU BASS Modules for Python (Version 1.0)

## The BASS Display Port Technology Stack

- Microsoft Internet Information Services 7 (IIS7)
- ESRI ArcGIS Server 10.1 for .NET
- Microsoft Silverlight (client requirement)

## **3.** INTELLECTUAL PROPERTY AND LICENSING CONSIDERATIONS

To develop BASS quickly and efficiently, the project team integrated four existing software packages and/or data models. These systems were integrated with custom code developed by the bass team to create the BASS system. The four existing packages are:

- Oregon Wave Energy Trust's (OWET's): Cumulative Effects Framework
- Robust Decision Incorporated decision support package: Accord
- Norsys: Netica
- ESRI: ArcGIS & ArcGIS Server

The existing packages and code developed for the project fall into three classes. We will first describe those classes and document the licensing agreements used for the development phase of the project.

## Class 1

Class 1 Software is owned and distributed by a third party and licensed to BASS under academic and research agreements for the duration of the project development (2010–2013). This software class includes products that are not owned by Parametrix, Oregon State University, or BOEM. *As such, permission and/or license fees must be paid to the owners for use beyond this research project.* 

**ESRI ArcGIS Desktop and Server** – Environmental Systems Research Institute (ESRI) owns the geoprocessing python site-package (Arcpy) that is used by the BASS Model Service. ArcGIS Desktop, Server, and Arcpy are commercial applications developed independently from BASS. The ESRI ArcGIS Desktop, Server, and Arcpy API were licensed for the duration of the project development phase under a multi-institution academic and research license.

**Norsys Netica** – Netica is a software program for working with Bayesian Belief Networks (BBNs). Netica provides both a graphical user interface for developing networks, and application programming interfaces that support integration with external software. Netica was licensed to OSU under Academic Agreement for \$285 during the development project phase.

**Robust Decisions Inc. Accord** – RDI owns the decision-making compute engine (Accord API) used by BASS. This is an application separate from BASS and called by it through an API interface. Accord API was licensed for the duration of the project, and a license fee paid of \$4250 per year (\$500 [license fee] + \$3750 [equipment]) for the two-year duration of BASS development.

## Class 2

Class 2 Software has been developed by a third party and is distributed freely to BASS under a public license agreement. The RDI User Interface and OSU Model Service cannot be used in derivative or other applications without specific written agreement with Robust Decisions Inc. *Code that supports the functions listed below can be used within BASS on a no-fee, no-support basis in perpetuity.* 

**Apache Webserver** – The Apache Software Foundation licenses the Apache Webserver under the free software Apache License 2.0. The Apache License 2.0 allows any user of the software the freedom to use the software for any purpose, to distribute it, to modify it, and to distribute modified versions of the software, under the terms of the license. No Apache source code was modified through this project.

**Django web framework** – Django provides the web framework for building python applications. BASS uses Django to manage model run requests and data transport from the model service to BASS. Django is distributed under the BSD License, a free and permissive software license. No Django source code was modified through this project.

## Class 3

Class 3 Software has been developed for the BASS project by the BASS team. Software in this class is owned by Oregon State University and RDI respectively. These entities grant a non-exclusive permanent license to BOEM at no cost.

**RDI user interface code** – To make BASS a success RDI licensed certain pieces of code to the BASS project on a no-fee basis. This code is primarily the BASS user interface.

**BASS Model Service and Viewport** – The BASS Model service is the web accessible BBN-GIS modeling framework developed to provide scientific measure information to the BASS user interface and Accord Compute Engine. The viewport is a custom coding based on Arc Server covered by the ESRI Licensing discussed for Class 1.

# 4. RECOMMENDATIONS FOR HOSTING THE BASS TOOL

The BASS development team examined three options for system deployment as detailed below. Choice of a deployment scenario should consider the following:

- Existing IT infrastructure
- Maintenance requirements for the system and input database
- Operating costs

#### 100 percent OSU Instance

Use Case – For agency-level decision support projects in which OSU and RDI research personnel assume research or facilitation roles (including further development of BASS Scientific Model and Display Port data) and the BASS Scientific Model Service is hosted at OSU for these non-commercial applications:

- ESRI Licensing is covered under an academic licensing agreement
- Norsys Netica Licensing is covered under an academic licensing agreement
- RDI Accord Licensing For projects in which Robust Decisions employees play a research or facilitation role totaling over \$10,000 per year, the Accord API license fee = \$5,000 per year. Otherwise, the RDI license fee is \$10,000/year
- System is administered and maintained by the original development team
- Easiest path to make changes or improvements
- Hardware and software is already in place at OSU

- Academic licensing available for non-commercial applications of some components (see above)
- Requires modest support plan (FTE for administrator, small budget for equipment and OSU maintenance fees)

#### 50 percent OSU - 50 percent BOEM Installation Instance

OSU-HOSTED COMPONENTS - MODEL SERVICE AND DISPLAY PORT

OSU maintains the model processing engine and hosts the Display Port (data visualization).

#### BOEM-HOSTED COMPONENTS - BASS WEB APPLICATION

BOEM serves the BASS Web Application and maintains the Accord Compute Engine/ Database on BOEM hardware/network.

Use Case – For decision support and research projects internal to BOEM in which OSU staff assist by managing the research models and results using the BASS Scientific Model Service and Display Port hosted at OSU. RDI employees play no active role.

- ESRI licensing is covered under OSU academic and research agreement
- Norsys licensing is covered under academic licensing agreement
- RDI Accord Licensing: For projects in which Robust Decisions employees play a research or facilitation role totaling over \$10,000 per year, the Accord API license fee = \$5,000 per year. Otherwise, the RDI license fee is \$10,000/year.
- Bayesian Belief Network (BBN) Ecosystem Service and Device Suitability Models stay in the academic domain and are licensed at no cost to BOEM.
- GIS-BBN processing framework is computationally intense. OSU has hardware and network and support personnel for this. (some maintenance fee could be necessary or negotiated).
- Greater potential for continued development and optimization.
- BOEM must set up dedicated hardware and software infrastructure to support the BASS Web Application as a high availability service.
- ESRI and Netica Licensing GSA Required for official agency projects.

#### **100 percent BOEM Installation Instance**

Use Case – For decision support and research projects internal to BOEM with no OSU hosting or academic/research involvement for projects external to BOEM including those undertaken by industry contractors:

- ESRI Licensing must transfer to federal responsibility
- Norsys licensing is covered under commercial and must transfer to federal responsibility
- RDI Accord Licensing For projects in which Robust Decisions employees play a research or facilitation role totaling over \$10,000 per year, the Accord API license fee = \$5,000 per year. Otherwise, the RDI license fee is \$10,000/year.
- BOEM manages BBN scientific measure models including model development where needed
- BOEM manages GIS model inputs and outputs including data development where needed

## Recommendation

The BASS Development team recommends the 100 percent OSU-hosted option. The BASS system is developed in state-of-the-art technologies. The hardware and software dependencies for BASS 1.0 are such that we recommend that the system be used as currently deployed at OSU.

The recommendation is based on several considerations.

- 1. The system is proven and operational on existing hardware and network connectivity at OSU.
- 2. The hardware required to serve the system publicly is already installed and supported at OSU.
- 3. The requirements of a web-based system that interacts with the public are such that the BASS system would need to be installed and firewalled from other BOEM computer systems, much as NOAA does for its public-interfaced servers. This may be problematic for BOEM or other agencies that are not currently set up to operate public-interfacing servers in that mode.
- 4. The OSU hosting option frees the project funder, BOEM, from managing the installation, maintenance, and troubleshooting responsibilities.
- 5. Hosting at OSU also provides a cleaner path for keeping both the scientific models and their input datasets up to date and in sync, as well as for interfacing with the academic community from which improvements to the specific models are likely to originate.

# 5. SCIENTIFIC MODEL DATA AND DATA ACCESS

It should be noted that access to model descriptions, metadata, input GIS layers, and resultant GIS layers should not and does not depend on the hosting choice above. BOEM will have access to BBN models, inputs, and outputs under any of the above hosting scenarios chosen.

## **Access to Bayesian Belief Network Models**

BBN Scientific Measure Models are currently in their Version 1.0 state (at project completion). We plan the models under version control in a subversion repository. BOEM personnel can "check out" a model over the internet (a download) using a variety of free tools (including the Tortoise SVN Client that integrates well with windows). This version-controlled repository allows for the models to be modified as needed while keeping a clean version history intact. BOEM or BASS users may also examine a description of the models at the Model Description web page.<sup>1</sup>

## **Access to BBN Scientific Measure Model Inputs**

BBN Scientific Measure Model Inputs are GIS datasets. The complete suite of GIS layers is served through the BASS Display Port. Any user with an internet connection can view and query input data through this interface. We have also created a map document (identical to the layout seen in the viewport) for download.<sup>2</sup> The map document contains full copies of all input datasets. This document will also be version controlled to capture any version history related to model development and special projects.

<sup>&</sup>lt;sup>1</sup> http://bass.coas.oregonstate.edu/Model\_Descriptions/

<sup>&</sup>lt;sup>2</sup> http://bass-viewer.coas.oregonstate.edu/bass/

#### APPENDIX B: COMMERCIAL LICENSES IN BASS (CLASS 1)

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Norsys Software Corp. 3512 West 23rd Ave. Vancouver, BC, Canada V6S 1K5

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Version 2.0, January 2004

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