DATIM

Design and Analysis Toolkit for Inventory and Monitoring

User Guide

Version 7.0.1
DATIM User Guide, version 7.0.1

Last updated: August 31, 2017.

This guide for users of DATIM is supplied by:

Resource Information Group (RIG)
Ecosystem Management Coordination (EMC)
USDA Forest Service
Washington, DC

This User Guide is available to the public at the [RIG-DATIM](http://www.fs.fed.us/emc/rig/DATIM/index.shtml) internet site.

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Preface

Last updated: 05/2017

DATIM (Design and Analysis Toolkit for Inventory and Monitoring) is a suite of software tools designed by a team of resource inventory and forest planning specialists from the National Forest System (NFS) and Research & Development (R&D) of the United States Department of Agriculture (USDA) Forest Service (FS). The application is intended to improve natural resource inventory and monitoring designs and data analyses by providing nationally consistent tools to access corporate databases.

DATIM is composed of four separate but integrated tools:

- **ATIM** (Analysis Tool for Inventory and Monitoring)
- **DTIM** (Design Tool for Inventory and Monitoring)
- **SIT** (Spatial Intersection Tool)
- **DCS** (DATIM Compilation System)

Who This Guide is For

DATIM’s user community will primarily consist of regional analysts and Resource Program Managers who are assisting forests during the Forest Plan Revisions and developing and conducting regional broad scale monitoring programs. DTIM was designed to assist inventory and monitoring planners and analysts at regional, forest and station levels. ATIM and SIT were developed largely for regional and forest staff involved in Land Management Planning and forest monitoring, however the entire Forest Service will have access to the wealth of FIA and NFS data through these tools. Because the DATIM data mart serves up enhanced data that FIA does not provide, DATIM is useful to FIA analysts, researchers, Forest Health Monitoring (FHM) analysts from State and Private Forestry, and others.

This edition of the user guide contains information intended for Administrative DATIM users. If you would like to change your user permissions to one of DATIM’s other user roles, please contact DATIM administrators at datim@fs.fed.us to request an alternate account.
How This Guide is Organized

This guide is designed to walk you through the DATIM application, beginning with the first time you use it. It is composed of the major sections listed below:

DATIM Overview describes the DATIM application and explains its purpose. It also provides general considerations for DATIM users, a list of system requirements and instructions for launching the application in an internet browser. Lastly, it discusses how to manage your user account and for administrative users, how to manage teams and other user accounts.

ATIM introduces the Analysis Tool for Inventory and Monitoring (ATIM) and helps you get started working with ATIM. It describes what an ATIM analysis is and teaches you how to create a new analysis, how to open existing analyses for your population of interest, and how to manage your collection of analyses. It then provides instructions for working with ATIM reports, including how to run standard reports, create custom reports, save report designs to the analysis, and view report output.

DTIM introduces the Design Tool for Inventory and Monitoring (DTIM) and helps you to use the tool to identify monitoring information needs and design requirements. As a DTIM user, you will be able to identify a variety of monitoring questions and indicators to meet specific monitoring objectives by using existing data to determine whether those data are sufficient to answer potential monitoring questions.

SIT introduces the Spatial Intersection Tool (SIT) and helps users with access to the tool to get started working with SIT. It includes instructions on executing SIT in Citrix and how to install the SIT ArcMap Add-in. It then describes how to work with SIT, including creating a SIT point layer, a SIT intersection, and an ATIM report using a SIT attribute.

DCS introduces the DATIM Compilation System (DCS) and DATIM datasets. It describes the process used by administrative users to compile resource inventory data sets and load them into the DATIM data mart for use by the other DATIM tools.

References, Technical Appendices, and a Glossary of Terms are provided in the back matter.

Conventions Used

A number of special conventions are used in this guide to assist you.

Text conventions include various typefaces used to identify terms and other special objects. These special typefaces include the following:
Table 1. Text Conventions.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italic</td>
<td>New terms or phrases when first introduced as well as a link to the glossary.</td>
<td>A dataset is a collection of estimation units and data points that are collectively exhaustive and mutually exclusive.</td>
</tr>
<tr>
<td>Monospace</td>
<td>Used for code, filenames, and directory names.</td>
<td>Up to 50 MB of disk space may be needed in the Windows system directory (C:\Windows\System 32) for ArcGIS to run.</td>
</tr>
<tr>
<td>Bold monospace</td>
<td>Text that you type.</td>
<td>In the text field provided, enter My New Analysis.</td>
</tr>
<tr>
<td>25% lighter bold</td>
<td>Indicates a label that does not prompt user input or action, such as a page title.</td>
<td>The Create Analysis page includes three tab-based forms that you must complete.</td>
</tr>
<tr>
<td>Bold</td>
<td>Indicates a field name or label prompting user input, or a button or link that you click.</td>
<td>In the Analysis name field, type in a unique name for your new analysis… When finished, click Create Analysis.</td>
</tr>
<tr>
<td>Bold italic</td>
<td>Indicates an option available for selection in a drop-down list.</td>
<td>From the Select Module list, select FIA Intensification.</td>
</tr>
<tr>
<td>Hyperlink</td>
<td>Provides a hyperlink to another resource.</td>
<td>For more information about DATIM and the Resource Information Group, go to the RIG-DATIM Internet site.</td>
</tr>
<tr>
<td>SMALL CAPS</td>
<td>Keyboard key that you press.</td>
<td>To select multiple datasets, hold down the SHIFT key and click each dataset you want to include in your analysis.</td>
</tr>
</tbody>
</table>
Textboxes are also used throughout this guide to alert you to Notes, Tips, and Cautions:

<table>
<thead>
<tr>
<th>NOTE:</th>
<th>Notes point out things you should be aware of to make better sense of the application.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP:</td>
<td>Tips are provided to show you faster, easier ways to accomplish tasks.</td>
</tr>
<tr>
<td>CAUTION!:</td>
<td>Cautions are given to help you avoid potential pitfalls that can result in loss of work or other difficulties.</td>
</tr>
</tbody>
</table>
Illustrations Used

This guide uses illustrations and screenshots to demonstrate information and/or steps found in the surrounding text. All images are provided with alternative text in accordance with Section 508 Compliance guidelines. It is important to note that images used in this document reflect available data at the time of writing and may be slightly different than what the user may see.

Responsible Organizations

Programming support for DATIM is provided by database and software developers employed by the USDA Forest Service in partnership with the University of Nevada, Las Vegas. The DATIM project is sponsored by the Ecosystem Management Coordination (EMC) Director and Research and Development’s (R&D) National Inventory and Monitoring Application Center (NIMAC) which is part of the Forest Inventory & Analysis (FIA) Program.

The Organizations responsible for DATIM are:

USDA Forest Service
Ecosystem Management Coordination
Sidney R. Yates Federal Building
201 14th Street, SW
Washington, DC 20024

USDA Forest Service
Forest Inventory and Analysis
Sidney R. Yates Federal Building
201 14th Street, SW
Washington, DC 20024

System Requirements

To use DATIM, your computer should have a supported operating system and the required hardware components and software resources.

Supported operating systems

Windows 10: Pro, Enterprise, and Home Editions (32 or 64-bit)
Windows 8: Pro, Enterprise, and Core Editions (32 or 64-bit)
Windows 7: Ultimate, Enterprise, Professional, and Home Premium Editions (32 or 64-bit)
Windows Vista: Ultimate, Enterprise, Business, and Home Premium Editions (32 or 64-bit)
Windows XP: Professional and Home editions (32-bit)
Macintosh OS/X: 10.5.7 or higher (Intel-based), requires Windows operating system to run SIT (see below) and any tools or tasks that require Internet Explorer.

**Hardware requirements**

- **CPU Speed:** 2.2 GHz minimum or higher.
- **Processor:** Intel Pentium 4, Intel Core Duo, or Xeon Processors, SSE2 or greater.
- **Memory/RAM:** 2 GB or higher, or around 500 MB if SIT is not used.
- **Display Properties:** 24 bit color depth.
- **Screen Resolution:** 1024 x 768 recommended or higher at Normal size (96 dpi)
- **Swap Space:** Determined by the operating system; 500 MB minimum.
- **Disk Space:** 2.4 GB. In addition, up to 50 MB of disk space may be needed in the Windows system directory (e.g., C:\Windows\System32) for ArcGIS.
- **Video/Graphics Adapter:** 64 MB RAM minimum; 256 MB RAM or higher.
  - 24 bit capable graphics accelerator.
  - OpenGL version 2.0 runtime or higher.
- **Networking Hardware:** Simple TCP/IP, Network Card, or Microsoft Loopback Adapter is required for the ArcGIS License Manager.

**Supported browsers**

- Internet Explorer version 11.0 or higher, 32-bit
- Google Chrome, 64-bit

**Software requirements**

- High-speed (broadband) Internet connection.
- ActiveX Filtering must be disabled.
- Zoom set at 100% or lower.
- Microsoft Silverlight 5.0 or higher.
For SIT:

- ArcGIS Desktop 10.5.1; For ArcGIS Desktop 10.5.1, the minimum versions of XP are XP SP3 (32-bit) or XP SP2 (64-bit). For Windows 7, SP1 is required. For more information about ArcGIS Desktop requirements, visit the ESRI Support website.
- Internet Explorer version 8.0 or newer, 32-bit.
- .NET Framework 3.5 SP1 must be installed prior to installing ArcGIS Desktop.
- Python 2.6.x and Numerical Python 1.3.0 (for Geoprocessing).
- Microsoft WinHelp patch for Windows 7 and Windows Vista (recommended for ArcGIS Desktop).
- JavaScript (also known as active scripting) must be enabled in your browser. Visit the Microsoft Support to learn how to enable JavaScript in Internet Explorer, Firefox, and other browsers.
- MSXML 4.0 or 6.0 (Internet Explorer only).

For help with system configuration support, visit the Customer Help Desk website or call 1-866-945-1354 or 1-800-877-8339 (TTY).
Assistance

The DATIM staff maintains the RIG-DATIM web site with information and documents related to DATIM. Frequently Asked Questions (FAQs) will be posted to the web. Users are welcome to report bugs and other problems with functionality, usability, or workflow by sending an email to datim@fs.fed.us. Suggestions for improvements to the application are also welcome.

For troubleshooting tips, visit Appendix L – Troubleshooting DATIM.

Technical Support

If you have questions or need help with e-Authentication, contact the Customer Help Desk (CHD) at 1-866-945-1354 or 1-800-877-8339 (TTY). If you are behind the Forest Service firewall, you can also initiate a help ticket via the Customer Help Desk website.

ReadMe

DATIM is in the process of migrating from Microsoft Silverlight to ASP.NET. There are several benefits to using ASP.NET, including being able to use DATIM on different platforms and in various browsers other than Internet Explorer. Please bear with us as we work to complete this transition. In DATIM 7.0, DATIM utilizes both Silverlight (referred to in this guide as DATIM Silverlight) and ASP.NET (referred to in this guide as DATIM). Although one impact is dual logins (one for functionality only in Silverlight, and another for functionality available in ASP.NET), our team has worked to streamline the process for you and make it as easy as possible to complete your work. Our goal is to be completely migrated to ASP.NET by DATIM 8.0, due for release on January 1, 2018.
Chapter 1: DATIM Overview

Last updated: 05/2017

What is DATIM?

The Design and Analysis Toolkit for Inventory and Monitoring (DATIM) is intended to improve monitoring designs and data analyses by providing nationally consistent tools to access corporate databases. The current focus is on forest and vegetation monitoring, but it can be expanded to other resources that also use plot-based monitoring and similar statistical estimators. These tools were initially designed for the National Forest System (NFS) but are being adopted by the Forest Inventory and Analysis program (FIA) and will be made accessible to public users.

DATIM provides national consistency in developing monitoring plans both at Forest and Regional levels. The application provides enhanced design planning to result in more efficient and effective monitoring plans for Forests and Regions. The application has the ability to address mid-level information needs (National Forest level) and accommodate plot intensification and the addition of other forest attributes. It provides for statistically defensible designs and derived estimates that are consistent between FIA and NFS. The application is to be used for customized reporting at Forest, Regional, National, and International levels.

In summary, DATIM will:

- Help Forests cost-effectively comply with the 2012 Forest planning regulations (USDA FS 2012c) related to assessment (36 CFR 219.6) and monitoring and evaluation (36 CFR 219.12).
- Help Forests and Regions improve monitoring designs and data analyses by providing nationally consistent tools, making more efficient use of the hundreds of millions of dollars spent by the agency on monitoring each year.
- Help National Forests and Grasslands better document their monitoring needs, thereby enabling the agency to better communicate monitoring objectives and funding needs.
- Be useable in multiple program areas including forest planning, inventory and monitoring design, and national and regional monitoring efforts.

DATIM is composed of four tools for improving monitoring designs and data:
**ATIM**, the **Analysis Tool for Inventory and Monitoring** (Figure 1-1), is used for creating statistically defensible analyses and reports which can be based on the monitoring questions posed in DTIM. ATIM assists you in analyzing forest and vegetation data – including Forest Inventory Analysis (FIA), FIA Regional supplements, and NFS data – to derive estimates of current conditions and trends on a forest and surrounding landscapes. This tool can also be used to track trends in vegetation diversity at a broad scale for monitoring climate change effects. ATIM enables you to derive estimates of population parameters along with the associated sampling errors for various design-based inventories, including FIA annual and regional NFS datasets. ATIM is also integrated with the Spatial Intersection Tool (SIT) to focus an analysis on a geographic area of interest and to summarize the results using map-based attributes.

![Figure 1-1. The Analysis Tool for Inventory and Monitoring (ATIM).](image)

**DTIM**, the **Design Tool for Inventory and Monitoring** (Figure 1-2), is used for identifying information needs and designing more efficient and effective monitoring plans. DTIM assists managers of national forests and grasslands to determine what potential monitoring questions can be answered based on available data. In future versions of DTIM, if available data are inadequate to obtain statistically defensible estimates of current conditions and trends, then this tool will help you to cost-effectively determine the additional sampling needed to meet your unique precision and cost objectives.
SIT, the **Spatial Intersection Tool** (Figure 1-3), is used to perform spatial intersections between plot-based data and user-selected geospatial *layers*. The results of those intersections are stored in DATIM for analysis in ATIM. SIT allows DATIM to access *geographic information systems (GIS)*, with the *spatial data* located locally and remotely on intranets/Internet. In addition to spatially refining the area to be analyzed, SIT can return map attributes of plots to be used as summary attributes in ATIM analyses. SIT includes enhanced spatial querying and reporting capabilities using *Esri’s ArcGIS* software and other data visualizing and data mining techniques.
**DCS**, the DATIM Compilation System (Figure 1-4), is a tool used by *regional administrators* to extract data from external sources, transform the data according to region-specific requirements, and then load the data into the DATIM data mart. Data sources include *Field Sampled Vegetation (FSVeg)* and FIA's *FIADB*. DCS provides a user *interface* for setting up a compilation project according to the selected regional *compilation module*. Administrative users are able to select datasets from the DATIM data mart, run the data through the *Forest Vegetation Simulator (FVS)* to compute additional data fields such as habitat types, and then store the results in DATIM.

**NOTE:** For more information about FIA classes, codes, variables, and other data definitions, refer to the *FIADB User Guide* (O’Connell et al. 2015).
What Data is Available For Users

DATIM contains resource data extracted primarily from two USDA Forest Service databases – FIADB and FSVeG. Only resource data collected using statistically valid inventory techniques is available in DATIM. Three types of resource data are currently available: measured and calculated tree attributes (including seedlings), calculated and aggregated down woody material attributes (coarse woody debris, fine woody debris, duff, and residual piles), and measured attributes on other vegetation (ground cover, cover by lifeform, cover by species, and structure). Only annual inventory data from FIADB has been extracted to DATIM. DATIM will make additional data available as the source databases are updated or based on user requests. Exploration through the Open Analysis and New Analysis tools within the Analysis tasks will reveal those inventories available in DATIM. To request the addition of inventory data that are available in FIADB or FSVeG, send us an e-mail at datim@fs.fed.us.

Executing DATIM

To get started using DATIM, the first thing you need to do is execute the application in your Internet Explorer web browser (Figure 1-5). Currently, DATIM is a USDA web application that can be accessed by USDA employees and non-staff customers or contractors with Forest Service Active Directory (FS AD) accounts. In your browser, enter: https://apps.fs.usda.gov/DATIM/default.aspx.
DATIM Compatibility with Internet Explorer

The keyboard shortcut, F5, is often used to refresh web browsers. However, using F5 causes the DATIM navigation links to disappear or malfunction. It is not recommended that users attempt to use the F5 button while working with DATIM.

A quick tour of DATIM

Your work in DATIM will be performed using pages and windows. A page is a display area containing drop-down menus, text boxes, checkboxes, buttons, hyperlinks, tooltips, tables, status indicators, and/or descriptive text. A window functions in the same way a page does, only it 'pops up' in front of a page in a separate, smaller view.

When you launch DATIM, the ASP.NET user interface consists of five main parts as shown in Figure 1-6 and explained in Table 2:
Figure 1-6. The DATIM user interface.

Table 2. DATIM ASP.NET user interface components described.

<table>
<thead>
<tr>
<th>Component number in Figure 1-6</th>
<th>Description of component</th>
</tr>
</thead>
</table>
| 1                               | The **User Help** area provides:  
  - The user help content via the **Help** link.  
  - The **Contact Us** link will open your email client with DATIM’s email address (datim@fs.fed.us) pre-filled in the email address field. |
| 2                               | The **DATIM navigation menu** provides links to each of the major areas of DATIM – Home, ATIM, DTIM, SIT, and DCS – and is your way of navigating through the application. |
Chapter 1 (revised: 08.2017)

Overview

Component number in Figure 1-6 | Description of component
---|---
3 | The **Tools Requiring Internet Explorer** area provides links to the DATIM Silverlight version. All of these links will require you use Internet Explorer as your browser:

- The **About DATIM** link will direct users to the About DATIM page in DATIM Silverlight.
- The **Admin Tools** link directs administrative users to the Administration Tasks page in DATIM Silverlight. This page is accessible by administrative users only who are logged into DATIM Silverlight.
- The **User Survey** link directs you to the User Survey page in DATIM Silverlight, where you can evaluate and provide comments to improve DATIM.
- The **DATIM Training** link directs you to the DATIM Training page in DATIM Silverlight, where you can sign up to be notified of future DATIM trainings.

4 | The **main DATIM view** is where you will interface with the various subsystems and tools as you navigate around the DATIM. When you open the DATIM application the Welcome to DATIM page is shown in the **main DATIM view**.

5 | The **Login** link opens a login view where you will type in your Active Directory short name and password. Once you are logged in, you will be able to use the DATIM application according to the permissions and authorizations granted to you.

Users may need to work in the DATIM Silverlight version as some portions of DATIM remain in **DATIM Silverlight**. The Silverlight user interface consists of eight main parts as shown in Figure 1-7 and explained in Table 3:

![Figure 1-7. The DATIM user interface.](image)

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Table 3. DATIM user interface components described.

<table>
<thead>
<tr>
<th>Component number in Figure 1-7</th>
<th>Description of component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The <strong>DATIM Silverlight Navigation Menu</strong> provides links to each of the major areas of DATIM Silverlight – <strong>home</strong>, <strong>admin tasks</strong>, <strong>help</strong>, <strong>contact us</strong>, and <strong>about DATIM</strong>. Use this menu to navigate through the application.</td>
</tr>
<tr>
<td></td>
<td>- The <strong>home</strong> link will return users to the DATIM ASP.NET version of the application.</td>
</tr>
<tr>
<td></td>
<td>- The Administration Tasks page is accessible using the <strong>admin tasks</strong> link. Administrative users will need to log into DATIM Silverlight in order to access this page. You will also be required to use Internet Explorer as your browser (if you are not already using it). From the Administration Tasks page, administrative users will be able to create a new analysis, manage user teams, view user accounts, manage system-wide roles, assign users to roles, and enable/disble the use of actual plot coordinates in SIT.</td>
</tr>
<tr>
<td></td>
<td>- The <strong>contact us</strong> link will open your email client with DATIM’s email address (<a href="mailto:datim@fs.fed.us">datim@fs.fed.us</a>) pre-filled in the email address field.</td>
</tr>
<tr>
<td></td>
<td>- The <strong>about DATIM</strong> link will direct you to the About DATIM page, which provides information on the intent of DATIM as well as information pertaining to the software and database version used during the current session.</td>
</tr>
<tr>
<td>2</td>
<td>Follow the <strong>Evaluate This System</strong> link to arrive at the User Survey page. The User Survey page allows users to evaluate the system through the completion of a questionnaire. The completed questionnaires are sent anonymously to DATIM team members to help improve DATIM.</td>
</tr>
<tr>
<td>3</td>
<td>Follow the <strong>DATIM Training</strong> link or the <strong>Training</strong> link in the upper right side of the DATIM application to sign up to be notified of DATIM training sessions via e-mail. A link is also provided to access the RIG DATIM website, where training content is posted, and to review the Forest Service Privacy Policy.</td>
</tr>
<tr>
<td>4</td>
<td>The <strong>System Information</strong> area provides system sponsor information.</td>
</tr>
<tr>
<td>5</td>
<td>The <strong>Main DATIM Silverlight Window</strong> is where you will interface with the various subsystems and tools as you navigate around the DATIM.</td>
</tr>
<tr>
<td>6</td>
<td>The <strong>Login</strong> link opens a login view where you will type in your Active Directory short name and password. Once you are logged in, you will be able to use the DATIM application according to the permissions and authorizations granted to you.</td>
</tr>
<tr>
<td>7</td>
<td>The <strong>User Help</strong> button opens the online DATIM User Guide. You may access this guide to become more familiar with the DATIM interface or to address any questions that you may have when interacting with the toolkit.</td>
</tr>
</tbody>
</table>
The Full-Screen Toggle button allows the user to display the DATIM navigation menu as well as the main DATIM view. This button will hide the system evaluation and information area, as well as the web page information displayed at the bottom of the DATIM webpage.

The Welcome to DATIM page

When you first open the DATIM application in your web browser, the Welcome to DATIM page appears. This page can also be accessed at any time while using DATIM, by simply clicking the home link from the DATIM navigation menu. Its purpose is to welcome you to the application, provide a brief description of the function of each of the tools in DATIM, and allows you to access the tools from this home page. Click the Analysis, Design, Spatial Intersection, or Compilation buttons to be taken to the ATIM, DTIM, SIT or DCS tool (Figure 1-8). This page also informs the user of the benefits of logging into DATIM with their Forest Service Active Directory (FS AD) user name and password. Some of the benefits include being able to save your work in DATIM to the DATIM server, and if you are an administrative user, then you are able to access and work with the DCS tool.

Design and Analysis Toolkit for Inventory and Monitoring

Welcome to DATIM!

The Design and Analysis Toolkit for Inventory and Monitoring (DATIM) is a suite of software tools used for designing inventory and monitoring programs and analyzing the results of those programs.

To get started, select one of the tools below.

- **Analysis Tool for Inventory and Monitoring (ATIM)**
  - Generate reports of estimate summary attributes for an area of interest and survey year. Users can select existing analysis datasets for use in reporting. Advanced users (login required) can create new analysis datasets. Note: Internet Explorer is required to create new analyses.

- **Design Tool for Inventory and Monitoring (DTIM)**
  - Design an inventory and monitoring plan to address specific information needs by identifying objectives, questions and metrics.

- **Spatial Intersection Tool (SIT)**
  - Perform spatial intersections between plot-based data and user-selected geospatial layers, and return map attributes for use in ATIM summaries.

- **DATIM Compilation System (DCS)**
  - Augment and enhance existing DATIM datasets with additional attributes for analyses and report generation. Requires login and advanced permissions. Multi-user operation is not allowed.

With the exception of the Compilation system, you do not need to login to use DATIM. To access advanced features, such as saving your work to the DATIM server, please login.

Figure 1-8. The ‘Welcome to DATIM’ home page.
User Roles

Users have different levels of access to DATIM based on their role. The default role for logged-in users is Registered User. DATIM uses the following roles:

**Guest User – no login required**
- May access ATIM, DTIM, and SIT (no access to DCS, or administrative tasks)
- May open publically accessible ATIM analyses
- May copy an existing ATIM report design
- May run standard analysis reports
- May create and save custom analysis reports to the local hard drive for loading back into ATIM
- May save analysis report results to the local hard drive
- May create and view new DTIM projects
- May print and save DTIM project reports to the local hard drive
- May access fuzzed plot locations.

**Wheels User – assigned by DATIM team members**
- Role granted to core team and development team members who be testing the DATIM application.
- Granted the same access as the Guest User along with the following:
  - Ability to promote/demote own user role at will

**Registered User – default role**
- Role granted to users with Forest Service Active Directory access.
- May access ATIM, SIT, and DTIM (no access to DCS or administrative tasks)
- Granted the same access as the Guest User along with the following:
  - May add/delete SIT attributes to/from their ATIM analyses
  - May save DTIM projects and reports to the application server
  - May create custom DTIM modules

**Forest Administrator**
- Role granted to National Forest System (NFS) Forest administrators
- May access ATIM, SIT, DTIM, and DCS (no access to administrative tasks)
- Granted the same access as the Registered User along with the following:
  - May create new ATIM analysis datasets
  - May create new standard analysis report designs
  - May use the compilation system to compile and load data to the DATIM data mart, add additional attributes, and create new DATIM datasets
Regional Administrator
- Role granted to Regional administrators for the National Forest System (NFS) or Forests Inventory & Analysis (FIA)
- May access ATIM, SIT, DTIM, DCS, and administrative tasks
- Granted the same access as the Forest Administrator with the following:
  - May edit DATIM datasets and projects for the assigned Forest Service Region
  - May access confidential information such as actual plot locations and ownership information for the assigned Forest Service Region and NFS lands. They also have access to fuzzed and swapped coordinates on private lands with 250 Acre Rule checks.
  - May create custom analysis report templates for regional datasets
  - May manage user roles and groups

SIT Specialist
- May access ATIM, DTIM, SIT, and DCS (no access to administrative tasks)
- Granted the same access as the Guest User along with the following:
  - May add/delete SIT attributes to/ from ATIM analyses
  - May copy an existing ATIM report design
  - May edit and save an existing ATIM report design to their local
  - May use the compilation system to compile and load data to the DATIM data mart, add additional attributes, and create new DATIM datasets
  - May save DTIM projects and reports to the application server
  - May create custom DTIM modules
  - May access confidential information such as actual plot locations and ownership information for the assigned Forest Service Region and NFS lands. They also have access to fuzzed and swapped coordinates on private lands with 250 Acre Rule checks.
  - May edit DATIM datasets and projects for the assigned Forest Service Region

Administrator
- May access ATIM, SIT, DTIM, DCS, and administrative tasks
- Granted the same access as all other user roles along with the following:
  - May edit DATIM datasets and projects for any Forest Service Region
  - May access confidential information such as actual plot locations and ownership information for any Forest Service Region
  - May create custom analysis report templates for any dataset regardless of region
  - May manage user teams, user accounts, system-wide roles, user role assignments, and projects stored on the application server
Login

In DATIM 7.0, DATIM utilizes both Silverlight (referred to in this guide as DATIM Silverlight) and ASP.NET (referred to as DATIM). As a result, users may need to login to DATIM Silverlight and DATIM separately dependent upon the task being completed.

TIP: Throughout the guide, we will inform you if login into either DATIM Silverlight or DATIM is necessary.

Logging into DATIM

Users are asked to login using their Forest Service Active Directory (FS AD) short name and password. When you first login to DATIM, you are granted the permissions associated with the Registered User role. If you would like to upgrade your account to one of the other user roles, please e-mail us at datim@fs.fed.us with your request. If you would like to continue working in DATIM as a Guest User, you do not need to login and can continue using DATIM with limited permissions.

TIP: If you’re having trouble logging in with your Forest Service Active Directory credentials, contact the Forest Service Customer Help Desk at 1-866-945-1354 (main) or 1-800-877-8339 (TTY) for user name and/or password retrieval.

Login to DATIM (FS AD users only):

1. Click login in the upper right-hand corner of the DATIM screen (Figure 1-9).

   Figure 1-9. Logging into DATIM.

2. The Login window pops up. Enter your Forest Service Active Directory (FS AD) short name in the User name section and the associated FS AD password in Password section. In our example, the user’s FS e-mail is smokeybear@fs.fed.us, so the short name would be smokeybear (Figure 1-10).
Figure 1-10. DATIM ‘Login’ window.

TIP: If you are having problems logging in with your FS AD account, be sure to click the Help button, to reveal contact information to help with password retrieval.

3. Lastly, click the Login button to be returned to the Welcome to DATIM home page.

Logging into DATIM Silverlight

Users are asked to login using their Forest Service Active Directory (FS AD) short name and password. Only FS AD users are able to login to DATIM Silverlight to access some of the specialized tasks. If you would like to upgrade your account to one of the other user roles, please e-mail us at datim@fs.fed.us with your request. If you would like to continue working in DATIM Silverlight as a Guest User, you do not need to login and can continue using DATIM Silverlight with limited permissions.

Login to DATIM Silverlight (FS AD users only):

1. Click login in the upper right-hand corner of the DATIM Silverlight screen (Figure 1-11).
2. The **Login** view pops up. Enter your Forest Service Active Directory (FS AD) short name in the **User name** section and the associated FS AD password in **Password** section. In our example, the user’s FS e-mail is smokeybear@fs.fed.us, so the short name would be smokeybear (Figure 1-12).

![Figure 1-12. The DATIM Login view.](image)

**TIP:** If you are having problems logging in with your FS AD account, be sure to click the expand Help button, ☰, to reveal contact information to help with password retrieval.

3. Click the **OK** button to close the **Login** view.

4. For first time users, the **Edit Profile** window pops up and allows you to fill in the following information regarding your user account in DATIM:

   - **Friendly name (optional)** – If you would like to be recognized as a name other than your user name when working with DATIM, such as a nickname, enter that “friendly name” here. Otherwise, your friendly name will be the same as your user name.
Email (required) – Enter a valid email address. Important news about DATIM upgrades and other information will occasionally be sent to the email address you provide here.

Forest Service affiliate? (required) – Leave this box checked if you are a Forest Service employee or contractor. Remove the checkmark if you are instead affiliated with a non-Forest Service group, such as an academic or educational institution, a non-Forest Service federal agency, a corporate or consultant industry, a non-governmental organization (NGO), a state agency, or other affiliation.

Affiliation (required) – Select your general affiliation from the drop-down menu. The choices available for your selection will depend on whether or not you are a Forest Service affiliate.

Specific affiliation (required) – Select your specific affiliation from the drop-down menu. The list of available choices will depend on your general affiliation.

Please specify – If you uncheck the Forest Service affiliate? box as well as selected Other as your affiliation, type your specific affiliation here.

You can provide this information now or at a later time.

NOTE: If you choose to provide this information at a later time, each time you login to DATIM, the Edit Profile window will continue to pop up.

Fill in the desired fields and click OK to save any changes made in this window. To fill in this information at a later time, simply click Cancel.

If you see that you are welcomed by name at the top of the DATIM screen (Figure 1-13), you have successfully logged in!

Figure 1-13. Username displayed in DATIM.

If you forget your user name or password, please send an email to datim@fs.fed.us to request help.
Manage Account

Users, who are logged into DATIM or DATIM Silverlight, have the ability to manage their account. Here you can update your account information including friendly name, email, whether or not you are a Forest Service affiliate, your affiliation, specific affiliation, and/or other affiliation. For more information on the account fields, please refer to the Login section of this guide.

To manage your account:

1. Login to DATIM or DATIM Silverlight.

2. Allow your mouse to hover over the arrow that appears next to your user name at the top of the DATIM screen. In DATIM, the Manager user account option will appear, select it (Figure 1-14).

   ![Figure 1-14. Managing user account information in DATIM.](image)

   If in DATIM Silverlight, the Manage Account option appears, select it (Figure 1-15).

   ![Figure 1-15. Managing Account information in DATIM Silverlight.](image)

   NOTE: In order to view this option, the full-screen mode must be off.

3. In DATIM, the User Profile window pops up and allows you to make changes to information regarding your user account in DATIM:
- **Friendly name (optional)** – If you would like to be recognized as a name other than your user name when working with DATIM, such as a nickname, enter that “friendly name” here. Otherwise, your friendly name will be the same as your user name.

- **Email (required)** – Enter a valid email address. Important news about DATIM upgrades and other information will occasionally be sent to the email address you provide here.

- **Forest Service affiliate? (required)** – Leave this box checked if you are a Forest Service employee or contractor. Remove the checkmark if you are instead affiliated with a non-Forest Service group, such as an academic or educational institution, a non-Forest Service federal agency, a corporate or consultant industry, a non-governmental organization (NGO), a state agency, or other affiliation.

- **Affiliation (required)** – Select your general affiliation from the drop-down menu. The choices available for your selection will depend on whether or not you are a Forest Service affiliate.

- **Specific affiliation (required)** – Select your specific affiliation from the drop-down menu. The list of available choices will depend on your general affiliation.

- **Please specify** – If you unchecked the Forest Service affiliate? box as well as selected Other as your affiliation, type your specific affiliation here.

Click the **Update** button to save your changes (Figure 1-16). If you would like to discard any changes made, click the **Cancel** button.

![User Profile](image)

**Figure 1-16.** Updating ‘User Profile’ information in DATIM.

4. In DATIM Silverlight, Manage Account window pops up. On the Details tabbed form, update your friendly name, email address, and affiliation information. Click the **Change**
Details button to save your changes (Figure 1-17). If you would like to discard any changes made, click the Cancel button.

![Image of Manage Account - JoeForester](image.png)

**Figure 1-17. Manage your account - Details tab.**

5. A message will pop up informing you that your account was successfully updated. Click OK to close the message. Exit the Manage Account screen to return to DATIM by clicking the “x” in the upper right corner of the view or clicking Cancel.

Managing Teams and Other User Accounts

Administrative users can manage (create and/or delete) teams. In future versions of DATIM, teams will allow users to share analysis reports with other team members. In addition, Administrative users can also view user accounts, manage (create and/or delete) user roles, and assign registered users to specific roles. These actions are performed using the options available in the admin tasks submenu—manage teams, view accounts, manage roles, and assign user roles. Administrative users must be logged into DATIM Silverlight prior to adjusting user accounts.

The Administration Tasks Page

The Administration Tasks page can be accessed by clicking admin tasks in the navigation menu. This page provides links to view the pages for Create new analysis, Manage user teams,
View user accounts, Manage system-wide roles, and Assign users to roles. Administrative users can access these same tasks using the admin tasks submenu (Figure 1-18).

![Figure 1-18. The Administration Tasks page.](image)

Additionally, on the Administration Tasks page, the administrative users may configure the SIT tool to use actual plot coordinates or disable this feature. To enable the feature, under the DATIM System Features heading you will see a checkbox; place a checkmark in the box to enable this feature (Figure 1-19). Alternatively, to disable, remove the check from the checkbox.
Chapter 1 (revised: 08.2017)  

Overview

Figure 1-19. Enabling SIT to use actual plot coordinates.

The Manage User Teams Page

The Manage Teams page provides users with the ability to create new teams, a list of all of DATIM’s existing teams, a description of the team, options to manage the teams, as well as deleting teams. To access the Manage Teams page from the Administration Tasks page, click the Manage user teams link. Alternatively, you can click the manage teams link in the admin tasks submenu (Figure 1-20).
Creating New Teams

To create a new team in DATIM:

1. Begin by accessing the Manage Teams page. In the New team name text box, insert the name of the team you would like to create. In our example, we will create the Documentation Team (Figure 1-21).

![Manage Teams](image)

**Figure 1-21. Naming a new team.**

2. In the Description text box, insert a description for your team indicating the purpose or reason why the team was created. In our example, we entered This team will be used for documentation purposes only (Figure 1-22).
3. Click **Add Team** to finish adding your team (**Figure 1-23**). If you find you would like to create a different team or start anew, click **Clear** to erase the text in both the **New team name** and **Description** text boxes.

New teams that are created will be added to the Teams grid on the Manage Teams page (**Figure 1-24**).
NOTE: Clicking the linked Team Name in the team grid, will display the Team window showing which objects are shared among the team members. In future versions of DATIM, users will be able to share objects among fellow team members.

Adding team members to a team

1. Begin by accessing the Manage Teams page.

2. In the Teams grid, click the Options link next to the team in which you would like to add new members to. In our example, we would like to add new members to the Documentation Team (Figure 1-25).

![Figure 1-25. The Options link on the Manage Teams page.](image)

3. The Sharing Options window opens (Figure 1-26).
4. Place your cursor in the **Add a new team member** text field. The field then changes to allow you to not only add the team member but also send the new team member a personalized email message informing them of their new addition (Figure 1-27).

![Figure 1-26. The ‘Sharing Options’ window.](image)

![Figure 1-27. The Add new team member text field.](image)

5. In the **Add a new team member** text field, type in the username and/or email of the person you would like to add to your team. In our example, we will add **Winnie** to the Documentation Team (Figure 1-28).

![Figure 1-28.](image)
Figure 1-28. Adding a new team member.

6. Each new team member is automatically assigned the **can edit** permissions. This permission allows the new team member to manage the team in terms of adding and deleting team members. The alternate option is the **can view** permission, which allows the new team member to only view other team members on the team. Use the drop-down menu next to the **Add a new team member** text field, to select the permissions you wish the new team member to have. In our example, Winnie will have **can edit** permissions (Figure 1-29).

![Image of can edit permissions]

Figure 1-29. Editing the new team member’s permission.

7. In the **Add a message**... text field, add a message you would like to send to the new team member. In our example, we have inserted the text: **Welcome to the Documentation Team, Winnie!** (Figure 1-30).

![Image of adding a message]

Figure 1-30. Adding an email message for the new team member.

8. Lastly, click the **Add** button to complete adding the new team member to the team (Figure 1-31).
9. The new team member will be added to the team and will also be displayed in the **Sharing options** window (Figure 1-32).

![Figure 1-31. Finalizing the addition of the new team member.](image)

![Figure 1-32. The newly added team member.](image)

**Removing a Team Member**

Only owners of teams or team members with *can edit* permissions have the ability to remove team members.

1. From the **Sharing Options** window, click the **Remove** link next to the Team Member name who you would like to remove from the team. In our example, we will remove **Winnie** from the **Documentation Team** (Figure 1-33).
Figure 1-33. Removing a team member from the team.

2. The **Remove Member From Team** message will pop-up informing you that by removing this team member, they will no longer have access to the team’s shared objects. Click **OK** to confirm the removal of the team member (Figure 1-34). Clicking **Cancel** will return you to the **Sharing options** window and will not remove the team member.

Figure 1-34. ‘Remove Member From Team’ message.

3. The user will be removed from the team and will no longer appear in the **Sharing options** window (Figure 1-35).
Figure 1-35. The ‘Sharing Options’ window with the team member removed.

Deleting a Team
Administrative users and team owners have the ability to delete teams or their own team.

1. Begin by accessing the Manage Teams page.

2. In the Teams grid, click the **Delete** link next to the team in which you would like to delete. In our example, we would like to delete the **Documentation Team** (Figure 1-36).

Figure 1-36. The ‘Delete Team’ link on the Manage Teams window.
3. The **Delete Team** message pops-up asking the user to confirm the deletion of the team. Click **OK** to delete the team (Figure 1-37). If you would like to keep the team, click **Cancel**.

![Figure 1-37. The ‘Delete Team’ dialog.](image)

4. The team will be deleted and will no longer appear in the team grid on the Manage Teams page (Figure 1-38).

![Figure 1-38. The team deleted from the ‘Mange Teams’ window.](image)

**The User Accounts Page**

The **User Accounts** page provides a list of all of DATIM’s registered users and information pertaining to their activity within DATIM. To access the **User Accounts** page from the Administration Tasks page, click the **View user accounts** link. Alternatively, you can click the **view accounts** link in the **admin tasks** submenu (Figure 1-39).
Figure 1-39. Accessing the User Accounts page.

The User Accounts page opens and will inform you of the users who are online, if they are approved to work with DATIM or if they have been locked out of DATIM, as well as dates for the user’s last login, activity, lockout, password change, and when the account was created (Figure 1-40).

Figure 1-40. The ‘User Accounts’ page.
The Manage Roles Page

The Manage Roles page allows administrative users to create new roles, use the link to manage who has access to these roles, and has the ability to delete the role from DATIM. To access the Manage Roles page from the Administration Tasks page, click the Manage system-wide roles link. Alternatively, you can click the manage roles link in the admin tasks submenu (Figure 1-41).

![Figure 1-41. Accessing the Manage Roles page.](image)

The Manage Roles page opens (Figure 1-42).
Creating a New Role

To create a new user role begin by accessing the Manage Roles page.

1. You will see a Create New Role area at the top of the page. Beneath the heading, you will see the New role name: text box. Enter the name of the role you would like to create in the textbox. In this example, we have entered “New Example Role” (Figure 1-43).

2. When finished, click the Add Role button (Figure 1-44).
Figure 1-44. Adding a new user role.

3. The new role you create will now be displayed on the Manage Roles page (Figure 1-45).

Figure 1-45. The newly created role.

Deleting An Existing Role

1. In the Role Name column, locate the name of the role you would like to delete.

2. Click the delete link associated with that role (Figure 1-46).
Figure 1-46. The delete link.

3. A pop-up will appear to confirm your decision to delete this user role. Confirm your decision by clicking the OK button (Figure 1-47). The user will be permanently deleted. Alternatively, if you have changed your mind about deleting a role, select Cancel.

Figure 1-47. The Confirm Delete Role notification.

The Assign User Roles Page

The assign user roles page (Figure 1-49) allows administrative users to assign and remove users from specified roles. This page also allows administrative users to delete other users. This page can be accessed in three ways: 1). Clicking the manage link associated with a role on the Manage Roles page; 2). Clicking the Assign users to roles link on the Administration Tasks page (Figure 1-48); or 3). Clicking the assign user roles in the navigation menu (Figure 1-48).
There are seven different areas of the Assign User Roles page, which are described below:

**Figure 1-48.** Accessing the ‘Assign User Roles’ page.

*Figure 1-49. The ‘Assign User Roles’ page.*
Showing Drop-down List

The Showing drop-down list is used to determine which users are in the particular role that is selected from the drop-down (Figure 1-50). Use the dropdown list to filter the users that appear in the user roles grid.

![Figure 1-50. The ‘Showing’ drop-down list.]

User Search Bar

The User Search Bar gives users the ability to filter users by user name. To filter by user name, type the desired user name into the text box (Figure 1-51). A few things you should be aware of when filtering: (1) search terms are not case-sensitive; (2) spelling must be correct; and, (3) the filter is applied to each page in the table, with search results displayed for each page. If you do not see your search term on the first page, use the page navigation tool to navigate to the next page until you do.

![Figure 1-51. The User Search bar.]

User Name Column

The **User Name** column displays the user names of all the registered and administrative users in the DATIM application. If you do not see the user name that you desire, use the Page Navigation tool to continue searching for the user name on the following pages (Figure 1-52).
Figure 1-52 The ‘User Name’ column.

User Is In Role Column

The **User Is In Role** column indicates whether or not a user is assigned to a role. This is specified by a checkmark in the boxes that populate this column. If the box does not contain a checkmark, the user is not assigned to the specified role that is selected from the Showing drop-down list (Figure 1-53).
Save and/ or Cancel changes

Use the Save button on the bottom of the Assign User Roles page to save any changes you have made to the user roles. Alternatively, if you would like to disregard any changes you made to the user roles, click the Cancel Changes button (Figure 1-54).

Viewing and Managing User Roles

To assign a user to a role begin by accessing the Assign User Roles page.
1. From the **Showing** drop-down menu on the **Assign User Roles** page, select a user role to display. In our example, we will choose the **Administrators** role (Figure 1-55).

![Assign User Roles](image)

**Figure 1-55. The Administrator role selected from the Showing drop-down list.**

2. In the **User Name** column, locate the user name of the user you would like to assign the user role to or remove from the assigned user role. Check the box next to the user name in the **User Is In Role** Column. Checking this box signifies that you would like to assign this user to the specified user role. For this example we would like to make **Winnied7** an administrator, and will do so by checking the box next to the user name (Figure 1-56).

![Assign User Roles](image)

**Figure 1-56. Assigning a user to a role.**

If the box already contains a checkmark, it means that the user has already been assigned to this role. You may select more than one user name at a time. Alternatively, to remove a user from a role, uncheck the box next to their user name.

3. When finished making any changes, click the **Save** button at the bottom of the page. To disregard any changes you made, click the **Cancel Changes** button.
Chapter 2: ATIM

Last updated: 05/2017

The Analysis Tool for Inventory and Monitoring (ATIM) was developed to provide Forests and Regions of the USDA Forest Service (FS) with a nationally consistent tool for analyzing resource inventory and monitoring data. ATIM is used to derive estimates of current conditions for attributes associated with vegetation to meet information needs on Forests and surrounding landscapes. It is also intended to be used by the Design Tool for Inventory and Monitoring (DTIM) to evaluate whether existing data are sufficient to meet information needs.

The analysis reports created in ATIM provide unbiased, sample-based estimates of population parameters and associated sampling errors for various natural resource inventories. Statistically sound estimates of the current status and trends of vegetation and associated attributes are fundamental to:

- developing Forest Plan components;
- Forest Plan monitoring associated with vegetation;
- monitoring of broad-level incidence and spread of invasive plant species;
- monitoring and management of wildlife habitat, including cumulative effects analysis for project level planning; and,
- monitoring and management of fuels.

Adaptive approaches are needed to address emerging monitoring requirements at the forest and landscape levels associated with climate change, carbon, biofuels, and forest certification.

In order to monitor key components of vegetation diversity over time, the inventory must have the same attributes measured at the same locations with remeasurements occurring over a meaningful time period. Forest Inventory and Analysis (FIA) data on forest and nonforest National Forest lands (where available), and data from similar National Forest inventories provide statistically-based inventories appropriate for use in broad-level planning and analysis. ATIM enables you to derive unbiased estimates and confidence intervals for large landscapes such as National Forests. In addition, since the inventories used in ATIM represent a spatially balanced sample across all lands, they can be associated with various spatial datasets such as ecological section or existing vegetation layers to describe vegetation characteristics within each map strata. ATIM’s integration with the Spatial Intersection Tool (SIT) enables administrative
users, SIT specialists, and analysis owners to focus the analysis on a geographic area of interest, summarize the results using map-based attributes, and produce map products via ArcGIS.

Although ATIM is publicly accessible, the tool was specifically designed to assist Forest and Regional Administrators of the National Forest System (NFS) and analysts of the Forest Inventory Analysis (FIA) National Program to conduct and improve inventory and monitoring data analyses.

Introduction to ATIM

Statistically sound estimates of the current status and future trends of vegetation attributes are fundamental to forest management planning. In order to monitor key components of vegetation diversity over time, the natural resource inventory used to derive current estimates must be design-based.

NOTE: A design-based inventory includes sampling that is random or spatially balanced to ensure an even sample across the population, with known and positive probabilities of selection for all sampling units in the population, and with associated metadata that describes the sampling methods (Bechtold and Patterson, eds. 2005).

ATIM analyses are composed of resource inventory datasets, known as DATIM datasets. The resource data used to create DATIM datasets constitute design and statistically-based inventories necessary for broad-level forest planning and analysis, including FIA annual inventories, FIA periodic surveys, and Regional FS datasets. These inventory datasets serve as the building blocks of ATIM analyses and reports. Because the inventories used by ATIM represent spatially balanced samples across all lands, you can also use SIT to access those datasets, intersect plot-based data with various geospatial layers, and add SIT attributes to the analysis.

Creating an analysis in ATIM begins with the selection of one or more resource inventory datasets for a population of interest. Datasets are available for tabular selection by State or National Forest, or by making spatial selections in the Spatial Selection View. The Spatial Selection View provides access to spatial datasets via ArcMap in ArcGIS Desktop where datasets are selected using spatial queries to identify the population of interest. ATIM bundles the resource inventory datasets and SIT attributes associated with a population of interest in the analysis. It then uses that analysis to generate reports of estimates of selected resource inventory attributes.
All users may save reports to their local file directory. Administrative users (Administrator, Regional Administrator (NFS and FIA), and Forest Administrator) are also able to design standard report templates in ATIM. These standard reports are made available to other ATIM users and can be run against any compatible analysis to generate reports.

**Getting Started with ATIM**

**To start using ATIM:**

1. From the DATIM home page, click the Analysis button. Alternatively, select analysis tasks in the DATIM navigation menu (Figure 2-1).

2. From the ATIM Welcome page, select one of the two options to begin (Figure 2-2):
   - Click the Create Reports button to run standard or saved reports, or create custom reports, against existing analysis datasets. For guidance on this topic, continue to the Creating Reports section.
Click the New Analysis button if you are an administrative user and want to create a new analysis dataset for a population of interest and inventory year. For guidance on this topic, skip to the Creating a new analysis report section.

Figure 2-2. The ATIM Welcome page.

Creating Reports

The ATIM Report Wizard will guide you step-by-step through the process of selecting analysis datasets and running reports.

Standard reports can be run against single or multiple analysis dataset, so long as each analysis dataset is associated with a different State. Custom reports can be designed and run against a single analysis dataset only.

NOTE: Non-overlapping analysis datasets can be combined without any issues. However, overlapping datasets are not normally combined. If you need help determining the compatibility of your selected analyses, contact your NFS-FIA Liaison. A list of NFS-FIA Liaisons can be found on the RIG-DATIM webpage.

Custom report designs can either be saved to the analysis dataset or, if you are an administrative user, as a new standard report template available to other users to run against any compatible analysis.
NOTE: At the top of each page in the ATIM Report Wizard is help content describing the set of tasks to be completed. Click the Help button, to display this content. Click the button a second time if you want to hide it.

Step 1: Welcome!
1. From the ATIM Welcome page, click the **Create Reports** button (Figure 2-3). This will launch the ATIM Report Wizard where you can run standard or saved reports, or create custom reports, against existing analysis datasets.

![Analysis Tool for Inventory and Monitoring (ATIM)](image)

**Figure 2-3. Launching the ATIM Report Wizard.**

Step 2: Open Analysis
From the Open Analysis page, you will select one or more analysis datasets by State or National Forest.

Select Analysis by State or National Forest
1. To select an analysis by State, click the first arrowhead to expand the list of States. To select an analysis by National Forest, click the second arrowhead to expand the list of the National Forest Regions (Figure 2-4).
Figure 2-4. Expanding the ‘State’ and ‘Forest’ analysis lists.

2. If selecting an analysis by State, click the arrowhead for the State of interest to expand the list of available analyses for that State. Select an analysis by clicking its checkbox. For this example, we have chosen Oregon and then the Oregon 2005-2014 ATIM analysis (Figure 2-5).
Figure 2-5. Selecting an analysis by State.

If selecting an analysis by National Forest, click the arrowhead for the Region of interest to expand the list of National Forests in that Region, and then click the arrowhead for the National Forest of interest to expand the list of available analyses for that National Forest. Select an analysis by clicking its checkbox. For this example, we have chosen Pacific Northwest Region (6), Siuslaw (R6), and then the Oregon 2005-2014 ATIM analysis (Figure 2-6).
ATIM Report Wizard

Step 2: Open Analysis

3. Continue selecting as many analyses as desired for running Standard Reports. If you will be creating custom reports, select one analysis only at this time.

4. When you select multiple analyses, the analysis datasets will be combined when you run reports. Because the datasets are combined, it is important that you select just one analysis for a single State so that you are not reporting on duplicate data.

CAUTION! The tool will not prevent you from combining analyses for the same State, but if you do, any report results that you generate will be erroneous.

Selected Analysis Summaries

1. Each of your selected analyses is listed in the Selected Analysis Summaries list box. To access an analysis summary, click the arrowhead next to the analysis name to expand the view (Figure 2-7).

The analysis summary (Figure 2-7) includes general metadata, a matrix describing the DATIM Datasets included in the analysis, a matrix of any attributes created by SIT and added to the analysis, and a matrix of an FVS attributes created by DCS and added to the analysis.
2. To deselect one analysis at a time, click the **Remove** link next to the analysis name (Figure 2-8).

Figure 2-7. The Selected Analysis Summaries box.
NOTE: To deselect the full list of analyses, click the **Remove All** button, beneath the **Selected Analysis Summaries** box.

3. To continue to the next step, click the **Select Reports** button (Figure 2-9).
**Step 3: Select Reports**

In this step you will select existing reports to run against the analyses selected in the previous step. You are also provided the option to customize an existing report.

If you selected more than one analysis in Step 2, you are limited to running Standard Reports in this current version of DATIM. If you selected a single analysis, you may run Standard Reports, Saved Analysis Reports (including previously saved custom reports), and any Unsaved Session Reports against the combined datasets for those analyses. You can also load a report design previously saved to your local file directory to run in this current session.
So long as you selected just one analysis in Step 2, you may skip Step 3 and start creating a new custom report by clicking the Step 4: Create Custom Report link (Figure 2-10).

ATIM Report Wizard
Step 3 Select Reports

Figure 2-10. The ‘Step 4: Create Custom Report’ Link.

1. You can begin making your report selections by filtering the available reports by forest land or timberland. Use the Filter by Land Use dropdown to select the desired land use and then click the Filter button (Figure 2-11). Please note that in order to access reports with change estimates, this filter must be set to All.

Figure 2-11. The Land Use Filter.
Select Reports

The Select Reports box organizes available reports using three report types. An arrowhead indicates that reports are available for that report type. The three report types are:

- **Saved Analysis Reports** include any custom reports saved to the analysis in an earlier session.
- **Unsaved Session Reports** include custom reports you are working to create during the present session but are not yet saved.
- **Standard Reports** include report templates created by DATIM representing common retrievals of estimate attributes by suggested row and column grouping variables.

**NOTE:** Reports can only be saved to your local file directory in this version of DATIM. Consequently, no reports are currently available under Saved Analysis Reports. In future versions you will have the option to save your work to the DATIM Data Mart as well as to your local directory.

2. Click the arrowhead next to the report type of interest to expand the list of report themes (for example, Standard Reports) (Figure 2-12).

![Figure 2-12. Expanding the Standard Report type.](image)

3. If the report type includes themes, these will be listed in the next level. Click the arrowhead for the theme of interest to expand the list of available reports (for example, Area for Standard Reports). Select a report by clicking its checkbox. In this example, we have selected Tree Volume and the Net volume of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by forest-type group and stand-size class (Figure 2-13).
**ATIM Report Wizard**

**Step 3 Select Reports**

To create a custom report, skip this step and continue with [Step 4: Create Custom Report](#).

**Filter by Land Use** [All] **Filter**

*For Change Reports, you must set the Land Use Filter to All.*

**Select Reports**

![Select Reports](image)

**Selected Report Summaries**

![Selected Report Summaries](image)

*Figure 2-13. Selecting reports.*

You may select as many reports as you like in this step to run in batch mode with a single button click. However, processing time is expected to increase as the number of selected reports increases.

**Load Report Design**

1. To load a report design previously saved to your local file directory, click the **Load report design from local directory** link (Figure 2-14).
Chapter 2 (revised: 05.2017)

2. Browse to the report design that you want to load and then click the **Load** button (Figure 2-15). ATIM report design filenames end with .atim.

3. Once loaded, the report design will become available for selection under the Unsaved Session Reports category.

**Selected Report Summaries**

1. The description for each selected report is listed in the Selected Report Summaries list box.

   The report summary includes: general metadata about when the report was created and last modified and by whom; the display group denoting the report type or theme; the land use type (forest land or timberland); the population estimation attribute; the page, row, and column variables and the database tables they reside in; whether it is a standard report template; and whether the report is publically accessible versus protected as private.

   To view a report summary, click the arrowhead next to expand the view (Figure 2-16).
Figure 2-16. The Expanded Selected Report Summary.

Customize Selected Report

1. To customize a selected report, click the **Customize** link from the Selected Report Summaries box (Figure 2-17). For information on how to customize a report, skip to **Step 4:**
Create Custom Report.

Figure 2-17. Customize link to customize a selected report.

Run Reports

1. To run each of your selected reports at once, click the Run Report button at the bottom of the screen (Figure 2-18). For information on viewing the report results, skip to Step 5: View Report Results.
Figure 2-18. Running the selected reports.
2. To continue to the next step, click the **Create Custom Report** button (Figure 2-19).

   ![Welcome!](image1)
   ![Open Analysis](image2)
   ![Select Reports](image3)
   ![Create Custom Report](image4)
   ![View Report Results](image5)

   **ATIM Report Wizard**
   **Step 3 Select Reports**

   ![Help](image6)

   To create a custom report, skip this step and continue with Step 4.

   ![Filter by Land Use](image7)
   ![For Change Reports, you must set the Land Use Filter to All.](image8)

   **Select Reports**
   - DOWN woody material
   - Tree count
   - Tree volume
     - Net volume of live trees (at least 5 inches d.b.h./d.b.d.)
     - Net volume of standing-dead trees (at least 5 inches)
     - Net volume of live trees (at least 5 inches d.b.h./d.b.d.)
     - Net volume of standing-dead trees (at least 5 inches)

   **Selected Report Summaries**
   - Net volume of standing-dead trees (at least 5 inches d.b.h./d.b.d.)

   ![Figure 2-19. Navigating to the Create Custom Report step.](image9)

### Step 4: Create Custom Report

In this section you will learn how to design a custom *analysis report* to generate *estimates* and associated sampling errors, variances, and confidence levels and then run it against a single analyses selected in Step 2. The ability to run a custom report against multiple compatible analyses will be available in future versions of DATIM.

In this step you can use an existing report, such as a Saved Analysis Report or a Standard Report, as a template which you can then customize and save as a new custom report (see the **Customize Selected Report** section to learn how to customize an existing report). You can also create a new custom report from scratch. If you are customizing an existing report, the report selections will be automatically loaded for you.

---

**NOTE:** If at any point you want to clear the custom report pages and start a new report, navigate to the **Setup** page and click the **Clear Form** link, [Clear Form](#).

You can view your current report design at any time during the process by clicking the **CURRENT DESIGN** tab in the upper navigation panel (Figure 2-20).
NOTE: In future versions of DATIM, administrative users will have the additional ability to save a custom report design as a new Standard Report template and make it available to other users to run against any compatible analysis.

Report Setup

1. From the Report Setup page, enter a **Title** and **Description** for your report. If you prefer to name and describe your report after you have worked on the report design, you can always return to this page later.

   **TIP:** The recommended format for the report **Description** includes the estimate attribute, land use, and the row and column variables. For example: *Area of forest land by owner group and reserved status.*

2. Continue to the next task by clicking the **Estimate Selection** tab at the top of the page, or the **NEXT** link at the bottom (Figure 2-21).
Estimate Selection

1. From the Estimate Selection page, select an estimate attribute by expanding the dropdown list for the theme of interest and then clicking the attribute or condition you want to calculate estimates for (Figure 2-22).

Figure 2-21. Continuing to the Estimate Selection tab.
If you used SIT to add new attributes to the analysis, you must first click the **Refresh Lists** link to load the new attributes to the list of available estimates (Figure 2-23). This will also add the new SIT attributes to the lists of available page, row, and column variables as well as the datasets filters list. You will use those lists later to format your report table and apply filters to the data.

2. Click the **Report Format** tab or the **NEXT** button to continue (Figure 2-24).
Report Format

In this step you will format your report table by specifying the respective variables you would like to group your pages, rows, and columns by. This will determine the subtotals included in the report. All three groupings (pages, rows, and columns) can be formatted individually or in combination, or you can choose not to select any report groupings. If no groupings are selected, the report will provide a single total for the estimate attribute.

1. From the Report Format page, use the first dropdown list for each desired grouping to select the Grouping Level for the sampling unit or geographic scope of interest. Then use the second dropdown list to select the desired Grouping Variable. (Figure 2-25)
Figure 2-25. The Grouping Level and Variable drop-down lists.

Depending on the estimate attribute selected, available grouping levels include **Plot, Subunit, Tree / Sapling, Seedling**, and **SIT-plot intersection**. Subunit is a broad term used to indicate a portion of a plot sampled, such as subplot, microplot, transect or condition.
Grouping and Filter Levels

Plot relates to variables collected on the entire plot.

Subunit relates to variables collected on a portion of the plot, such as subplot, microplot, transect, or the discrete combination of landscape attributes that define a condition¹.

Tree / Sapling relates to variables collected on each 5 inch diameter and larger tree, and between 1 and 5 inch diameter sapling, and found on a microplot, subplot, or core optional macroplot.

Seedling relates to variables collected on live trees on a microplot and less than 1 inch in diameter, and at least 6 inches in length for conifer species and at least 12 inches in length for hardwood species.

SIT-plot intersection relates to variables added to the analysis using the Spatial Intersection Tool.

¹ A condition will have the same land class, reserved status, owner group, forest type, stand-size class, reserved status, owner group, forest type, stand-size class, regeneration status, and stand density.


2. Click the Dataset Filters tab or the NEXT button to continue (Figure 2-26).

![ATIM Report Wizard Step 4: Create Custom Report - Report Format](image)

Figure 2-26. Continuing to the Dataset Filters tab.
Dataset Filters

In this step you may specify how the data contained in the analysis are subset in the report. Filters are used to include only those groups of data that serve a purpose in your report. This is useful if the analysis on which your report is based contains more data than necessary for reporting purposes.

1. From the Dataset Filters page, use the dropdown to select the first Filter Level (Figure 2-27). The filter levels available for selection depend on the scope of the estimate attribute and include one or more of the following choices: Plot, Subunit, Tree / Sapling, Seedling, and SIT-plot intersection. You must select a filter level before you can select a filter attribute.

2. Use the next dropdown to select a Filter Attribute for the filter level selected in the previous step (Figure 2-28).
3. Click the Select Filter Values button to open a list of available filter values for the filter level and attribute selected in the previous steps (Figure 2-29).

From the Select Filter Values popup window, select each filter value that you want included in the report for the selected filter attribute (Figure 2-30). Values not selected will be filtered out and excluded from the report output. Click the Add button to complete the filter selection.
To include all of the filter values in the list, click the **Select All** link. To clear the selections and start over, click the **Clear All** link. To close this window and discard any selections, click the **Cancel** button.

4. Repeat steps 1-4 for each additional filter you want included in the report design.

5. Each of your selected dataset filters is listed in the **Selected Filters** box, including the filter level, filter attribute, and all of the selected filter values (**Figure 2-31**). Review this list and make any adjustments necessary.
Figure 2-31. The Selected Filters List Box.

You can remove a filter by clicking the **Remove** link. To edit the filter values selected for a given filter attribute, click the **Edit/View** link. This will open the **Select Filter Values** popup window again where you can modify your previous selections. To remove *all* of the selected filters, click the **Remove All** button at the bottom of the page.

6. Click the **Run Options** tab or the **NEXT** button to continue (Figure 2-32).
Figure 2-32. Continuing to the Run Options tab.

**Run Options**

In this step you can select sampling error options and chose to hide specific rows in the report. You can also add custom notes report here.

1. From the Run Options page, indicate how you want the sampling error to be shown in the report in the Sampling Error box. By default, the error will be shown as **Sampling error percent**. To change it to **Confidence interval**, click the appropriate radio button (Figure 2-33).
2. If you chose to display the sampling error as a **Confidence interval**, you now have the option to indicate the desired confidence interval. By default, the 68% confidence interval is selected for you. To change this to another common percentage, click the appropriate radio button. Alternatively, click the radio button for the empty text box and then type in the desired percentage between 50 and 99% (Figure 2-34).

3. In the **Hide Rows** box, indicate whether you want to hide row sub-totals and/or empty rows in the report by clicking the appropriate radio buttons (Figure 2-35).

4. In the **Notes** text box, enter any custom notes you want added to the analysis report (Figure 2-36).
Notes

<Enter customized notes here>

Figure 2-36. Customizing the Notes section.

5. Click the **CURRENT DESIGN** tab or the **NEXT** button to continue.

**Current Report Design**

You can view the current report design at any time during the process of creating a custom report by navigating to the Custom Report Design page. Here you can review the selections and inputs made in all of the previous steps, including the selected analysis and estimate attribute, report format, applied dataset filters, and run options (Figure 2-37). To generate a printable view of this page, click the **Print Preview** link.

**Figure 2-37. The Current Report Design View.**
To modify the current report design, return to any of the previous pages in the ATIM Report Wizard by clicking the tabs in the upper navigation panel (Figure 2-38).

**Run Report**

When you are satisfied with your report design thus far, click the Run Report button at the bottom of the page (Figure 2-39). You can return to the Create Custom Report pages at any time to make changes to the report.

**Step 5: View Report Results**

Your selected and/or custom reports are listed on the View Report Results page. Following a compatibility-check to ensure that the report design is compatible with the selected analysis (or with at least one analysis if you selected more than one to run Standard Reports against), you are then provided three options for viewing the report. Click the appropriate link to view the report in Excel, XML, or HTML (Figure 2-40).
Figure 2-40. Viewing the ATIM Report Results.

If after running a custom report you want to make additional changes, click Create Custom Report in the left navigation pane to return to the custom report design pages.

**Saving Reports**

To save a custom report, navigate to the custom report wizard by clicking Create Custom Report in the left navigation pane. Click File in the upper navigation pane and select Save to Local from the dropdown menu.

**NOTE:** For DATIM 7.0, saving to the local file directory is the only way to save in 7.0, but in future versions of DATIM, you will be able to save to the DATIM database (login required). See the section on Loading Report Designs to load a report design from your local file directory.

**Creating a New Analysis (Administrative Users only)**

Administrative users have the ability to create new analyses in ATIM. When an administrative user creates a new analysis in ATIM, one or more resource inventory datasets (available from the DATIM data mart as DATIM datasets) are selected for a population of interest. These datasets provide the foundation of ATIM analyses.
In this section, you will learn how to bundle DATIM datasets, how to name and describe it, how to save it to the DATIM data mart, and lastly, how to add spatial attributes to complete bundling the ATIM analysis you want to create.

CAUTION! It is strongly recommended that users use Internet Explorer for their browser if they plan to create a new analysis. This portion of DATIM utilizes the Microsoft Silverlight plugin, which is not supported by other browsers. You will be continuously prompted to download Silverlight, even though it may already be on your local systems. This will no longer be necessary in DATIM 8.0, because the Silverlight plugin will no longer be utilized.

For more information about DATIM datasets, see Appendix B – Understanding DATIM Datasets.

Step 1: Welcome!
1. From the ATIM Welcome page, click the New Analysis button (Figure 2-41).

![Figure 2-41. The ‘New Analysis’ task on the ATIM Welcome page.](image)

2. You will be redirected to the Silverlight version of DATIM and prompted to login. In the Login window, enter your FS User name and Password and click OK to continue (Figure 2-42).
3. You will be directed to the Administration Tasks page where you will select the Create New Analysis link to continue. Alternatively, you can click the create new analysis task in the DATIM navigation menu (Figure 2-43).
Figure 2-43. The Create New Analysis task in DATIM Silverlight.

4. The Create New Analysis page opens (Figure 2-44). Here you will select the DATIM datasets you want included in the analysis, name and describe your analysis, and decide whether you want to open the analysis in SIT so that you can add spatial attributes.
The simplest way to add \textit{DATIM datasets} to a new analysis is to select them from lists organized by NFS Region or by State (Figure 2-45).
Figure 2-45. Selecting DATIM datasets by NFS Region or State.

Which list you use to make your selections depends on your area of interest. For example, your area of interest may cover an entire National Forest. Because a National Forest can extend across state lines, it is best to use the NFS Regions list to make your selections.

Selecting DATIM datasets by NFS Region

1. Click the NFS Regions arrow to expand the list of available choices (Figure 2-46).

Figure 2-46. The ‘NFS Regions’ list.

2. Click the arrow for your NFS Region of interest to expand the list of choices, and then click Administered Forests arrow to expand the list of available administered forests.

In the example below, we are interested in the Pacific Northwest Region (6), with over 10 administered forests listed under it (Figure 2-47).
3. Click the arrow next to the forest you are interested in to expand the list of available datasets.

4. Select one or more datasets to include in your new analysis by clicking the checkboxes next to the dataset name to insert a check mark.

In our example (Figure 2-48), the 2014 annual inventory for the Siuslaw National Forest are checked: Oregon 2005-2014, Annual P2, includes Region 6 intensified off-grid plots, All plots and Oregon 2005-2014, Annual P2, includes Region 6 intensified off-grid plots, Sampled plots.
TIP: Resize the width of the list box by positioning the mouse pointer on the right boundary between the Select from the available DATIM datasets and the Selected datasets list box until it appears as a double arrow. Drag the cursor left or right until the box is at the desired width.

Your selected datasets are displayed in the Selected datasets list box on the right side of the page (Figure 2-49).
Selecting DATIM datasets by State

1. To select datasets from the list organized by state, select the arrow next to States to expand the list of choices (Figure 2-50).

Figure 2-49. The ‘Selected datasets’ list box.

Figure 2-50. Expanding the list of available DATIM datasets by State.
2. Click the arrow next to your state of interest to expand the list of available inventories.

3. In our example, we have chosen **OR** (Oregon) (Figure 2-51).

**TIP:** Some National Forests extend across State lines. For example, Helena National Forest (NF) is located in both Montana and Idaho. Therefore, each Helena NF dataset is listed twice, once under Idaho (ID) and once under Montana (MT). You need to select both datasets if you are interested in the entire National Forest.

![Create New Analysis](image)

**Figure 2-51.** The inventory categories for the state of Oregon.

4. From the appropriate **inventory** category, click the arrow to expand the list of available **DATIM datasets** for each inventory of interest.

   In our example (Figure 2-52), the Oregon 2005-2014, Annual P2, includes Region 6 intensified off-grid plots, All plots and Oregon 2005-2014, Annual P2, includes Region 6 intensified off-grid plots, Sampled plots are selected from the Oregon 2014 inventory data obtained from **FIADB** category.
Figure 2-52. Locating an inventory and dataset of interest.

The dataset(s) that you select are displayed in the Selected datasets list box in the right side of the page.

When you are finished with your dataset selections, you can proceed with naming and describing your analysis.

**Naming and describing the analysis**

Before you can create your new analysis and save it to the DATIM data mart, you must give it a name and description.

1. At the bottom of the Create New Analysis page, enter a name for your analysis in the *Analysis name* field using 50 characters or less. The recommended format is to provide the full state name followed by the span of *inventory* years for the selected *dataset* (e.g., Oregon 2005-2014), as shown in the following example (Figure 2-53).
2. In the **Description** text box, type a description of the analysis using 255 characters or less (Figure 2-54). The recommended format is to provide the State and Inventory Year followed by the summary *attributes* included in the data (e.g., Oregon 2005: All Area, Current Area, Current Volume).

![Figure 2-53. Naming your new ATIM analysis.](image)

![Figure 2-54. Describing your new ATIM analysis.](image)

**NOTE:** The analysis name must be unique. If the name already exists in the DATIM data mart, you will get a Create Analysis Error message. Click OK to close the error message and enter a new analysis name.

Selecting **DATIM datasets**, naming your analysis, and describing your analysis are required for creating a new analysis. The **Create Analysis** button will become enabled once these prerequisites have been met. Continue to the next section on creating an analysis to complete the process.
Creating an analysis

The final step is to create your new analysis. Once created, the analysis is saved to the DATIM data mart.

To create your analysis and save it to the DATIM data mart:

1. Click the Create Analysis button at the bottom right corner of the Create New Analysis page (Figure 2-55) to save your new analysis. Once the analysis has been created, you cannot modify it except by using SIT to add attributes.

   ![Figure 2-55. The 'Create Analysis' button.](image1)

   NOTE: Because the save process reproduces the records stored for the DATIM datasets selected when creating the new analysis, the result is a stand-alone analysis dataset.

   The process of populating the ATIM analysis with data may take several minutes. A series of status bars will display during the process.

2. An Analysis Created notification will pop up letting you know that the new analysis was successfully created. Click OK to close the message (Figure 2-56).

   ![Figure 2-56. The ‘Analysis Created’ notification.](image2)
Your new analysis is now available for selection when opening an analysis in the ATIM Report Wizard.

If you are not yet finished making your selections and want to subset your data selections with spatial intersections, proceed to the next section on selecting datasets in the spatial selection view.

Selecting datasets in the Spatial Selection View

As an alternative to selecting datasets to add to a new analysis, or to subset your tabular selections with spatial intersections, you can use SIT to select a geographical area of interest in ArcGIS. Once a spatial selection is made with SIT, plots can be intersected with standard spatial layers to store spatial attributes, strata, and estimation units. The intersections are then returned to ATIM where the results can be summarized.

Examples of spatial attributes that can be intersected include watershed, distance to the nearest road, and distance to water. SIT can use approximate “fuzzed” geospatial coordinates to protect the plot owner and the integrity of the plot itself, or it can use the actual coordinates depending on the authorization level of the user and the nature of the analysis.

After a new analysis is saved, you can use SIT to spatially filter or add attributes to your selected datasets by intersecting additional geographic information system (GIS) layers with the set of inventory plots contained within the selected datasets.

Access the SIT tool from the Create New Analysis page by clicking the SIT Tool link in the upper right corner of the page (Figure 2-57).

For guidance on how to use the Spatial Selection View and SIT, see Chapter 4: Welcome to SIT.
Chapter 3: DTIM

Last updated: 08/2017

The Design Tool for Inventory and Monitoring (DTIM) is intended to assist natural resource managers to design resource inventory and monitoring plans that address their information needs and are both statistically defensible and cost efficient. DTIM provides a wide selection of inventory and monitoring objectives, questions, and metrics defined by the U.S. Department of Agriculture (USDA) Forest Service (FS) and the FS National Forest Regions.

Introduction to DTIM

Designing a resource monitoring or inventory plan in DTIM involves a number of important steps. The first three steps involve identifying the broad objectives of the plan, selecting monitoring questions, and indicating the attributes or metrics necessary to answer the questions.

Using DTIM, you will also be able to assemble and evaluate existing data to determine if the data are adequate to meet your information needs. If existing data are inadequate, DTIM will guide you through the process of designing an inventory plan to either intensify an existing inventory or start a new one. You will be walked through the steps of selecting precision constraints and estimating sample sizes with an intensified or new inventory.

DTIM 7.0 uses a project creation wizard to guide you through these first three planning steps:

- Selecting objectives – DTIM presents a list of broad monitoring objectives based on nationally and regionally defined needs for forest monitoring, such as forest health, ecosystem restoration, biological diversity, and forest productivity. You can also create your own custom objectives. In this step you will select broad objectives based on desired conditions and outcomes.

- Selecting questions – For each objective that you select, DTIM presents a list of monitoring questions and indicators organized by relevancy to that objective. Custom questions can also be added to your project. In this step you will select one or more questions for each of your stated objectives.

- Selecting metrics– For each objective and question pair, you will select one or more metrics from the lists available in DTIM. For example, metrics offered to answer questions related to crown condition include all live gross volume, basal area, and number of all live
trees. You can also create custom metrics. In this step you will select one or more metrics for each objective and question combination.

DTIM offers base modules with predetermined sets of selectable objectives, questions, and metrics according to a specific need or directive. Modules currently available in DTIM for developing forest plans are focused on the National Forest Management Act (NFMA) 2012 Planning Rule, Food and Agriculture Organization of the United Nations (FAO) Forestry, National Forest Inventory and Analysis (FIA) plot intensification, the National Forest System (NFS) Monitoring and Evaluation Framework (MEF, also referenced as M&E), and the Mark Twain National Forest Monitoring Guide. Other modules, including international modules, are being developed with alternative sets of objectives, questions, metrics, and calculations. Advanced users can also create their own custom DTIM modules to serve other management needs.

For more information on the base modules available in DTIM, see Appendix C - Information about preloaded DTIM Base Modules.

**Getting started**

To start using DTIM:

1. Select DTIM in the DATIM navigation menu or select the Design button from the Welcome to DATIM home page as shown in Figure 3-1.
Figure 3-1. Accessing DTIM from the DATIM navigation menu and DATIM home page.

When DTIM is launched, you are directed to the Welcome page (Figure 3-2) where the tool and its intended uses are described. Information on navigating the project creation wizard is also provided.
2. Lastly, users are encouraged to login to DATIM as more options become available to users including saving and opening *DTIM projects* created using the wizard. To login from the DTIM application, click the **LOGIN** link at the top right of the application webpage (Figure 3-3).

![Welcome page](image)

**Figure 3-2. The DTIM Welcome page.**

3. You are redirected to the DATIM screen and can follow the steps in the instructions outlined in Chapter 1 to login (see Chapter 1, Login).
4. Navigate back to DTIM. If you were previously working on a project before logging in, a message will pop up informing you that you were previously working on a project and asked if you want to save and load that previous project. Click OK to save and load your project. Follow the instructions in the Saving a DTIM Project section.

When you launch DTIM, the user interface consists of six main parts as shown in Figure 3-4.

![Figure 3-4. The DTIM User Interface components.](image)

Table 4. DTIM Wizard user interface components described.

<table>
<thead>
<tr>
<th>Component number in Figure 3-4</th>
<th>Description of component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The <strong>DATIM navigation menu</strong> provides links to the user help, to contact us, to open more information about DATIM, to access the other DATIM tools, and to access the DATIM tasks that require you to use Internet Explorer as your browser. These tasks include About DATIM, Admin Tools, User Survey, and DATIM Training.</td>
</tr>
<tr>
<td>2</td>
<td>The <strong>DTIM wizard navigation menu</strong> contains a menu with seven numbered tasks to guide you through the process of designing a basic monitoring plan. Each step links to a new page containing one or more tasks that you will need to complete. You can navigate between the tasks by clicking the numbers in the list.</td>
</tr>
<tr>
<td>3</td>
<td>The navigation buttons in the <strong>DTIM project</strong> creation wizard will allow you to continue to the next task or return to the previous task. These buttons are located at the bottom and/or top of the pages.</td>
</tr>
<tr>
<td>4</td>
<td>Use the <strong>Español</strong> link to translate the DTIM Wizard to Spanish. Alternatively, to change from the Spanish version of DTIM to the English version, use the <strong>English</strong> link.</td>
</tr>
</tbody>
</table>
Designing a DTIM project

The DTIM project creation wizard walks you through six main steps as you design your monitoring plan. Each step is briefly introduced below.

**Step 1: Launch the project creation wizard.** The wizard is launched from the DTIM Welcome page. Read the welcome message to learn a few tips about using the wizard.

**Step 2: Select a base module.** The base module provides a starting template for your project. The objectives, questions, and metrics offered are based on a specific need or directive, such as the 2012 Planning Rule. A base module may not meet all of your particular needs, but you are not limited to the objectives, questions, and metrics offered by that module. You can always customize your project by adding new objectives, questions, or metrics of your own making. If you are an administrative user, you can also create new base modules.

**Step 3: Select objectives.** The list of available monitoring objectives depends on the module you selected in Step 1. You can also create new objectives for your project. In this step you will identify one or more objectives for your monitoring plan.

**Step 4: Select questions.** For each objective you selected, you will now select the questions that need to be answered to assess how well the objective is being met. You can also create new questions for your project.

**Step 5: Select metrics.** In this step you will select one or more metrics for each of the question and objective combination selected in the previous steps. This entails selecting an attribute along with the associated page, row, and column values. Collectively, this is referred to as a metric in DTIM.

**Step 6: Editing and printing output tables.** In step, you can edit your output tables in regards to the metric and page/row/column (PRC) combinations chosen for your DTIM project report.
**Step 7: Set precision requirements of current values.** Specify your precision requirements, focusing only on those tables for which the precision of results is critical for decision making. You can either retrieve ATIM estimation attributes to provide values for precision values or input them after running an ATIM analysis report. Input the scale, confidence interval half-width, confidence level, and *estimate* for the table cell of interest. Verify the current sample size and then input the sampling error. DTIM will then display the coefficient of variation, the required sample size for current estimates, and the resulting sampling error.

**Launching the wizard**

From the Welcome page, click the Base Modules link in the DTIM wizard navigation menu or the Start Wizard button at the bottom of the page to launch the project creation wizard (Figure 3-5).

![Figure 3-5. Launching the DTIM project creation wizard.](image)

Continue to the next step and select a base module.

**Selecting a base module**

In this step you will select a base module to use as a template for your DTIM project.
1. From the Base Module page, you have the option to filter available modules by FS Region (Figure 3-6). To view only those modules associated with a given Region, use the Region dropdown list to select your region of interest. To view all of the available modules, select All Regions from the drop-down list.

![Figure 3-6. Filtering base modules by FS Region.](image)

2. Select a base module by clicking on it. In the example below, the FIA Intensification module is selected (Figure 3-7).
Figure 3-7. Selecting the base module.

You can view *metadata* about a module by selecting the module in the list. At the bottom of the page is an area called **More Information** (Figure 3-8) where you can view the module’s owner, the FS Region it was created for, a description, and the name of the user who created it and a creation time stamp.

![More Information](image)

Figure 3-8. Additional information about a base module.

3. Once you have selected your base module, click the **Objectives** button (Figure 3-9) at the top and/or bottom of the page to proceed. Alternatively you can click the **Objectives** button in the *DTIM* wizard navigation menu. To return to the previous page, click the **Welcome** button and you will be returned to the Welcome page.

![Objectives Navigation](image)

Figure 3-9. Navigating to the Objectives page.

Continue to the next step and select your monitoring objectives.

**Selecting objectives**

In this step you will identify the broad objectives of your *monitoring* plan based on your desired conditions or outcomes.

1. From the **Objectives** page, select one or more objectives from the **Available Objectives** list box. To select an objective, double-click it or drag and drop it into the **Selected Objectives** list box. To remove an objective from the **Selected Objectives** list box, double-click it or drag and drop it back into the **Available Objectives** list box. In our example, we have selected the objective: **Wildlife Habitat** (Figure 3-10).
Step 3: Objectives

Report

Current Module: FIA Intensification

Select your Objectives by double-clicking or dragging and dropping between lists.

Available Objectives

- Forest Health
- Ecosystem Restoration
- Forest Fire Effects
- Effects of Invasives
- Biological Diversity
- Wildlife Habitat

Select one or more objectives from the Available Objectives list box by double clicking or dragging the objective(s) into the Selected Objectives list box.

Selected Objectives

- Wildlife Habitat

Clicking the Add All button will place all of the available objectives into the Selected Objectives box. Alternatively, click the Remove All button to move all selected objectives back into the Available Objectives box (Figure 3-11).

Figure 3-10. Selecting Objectives using drag and drop.
2. To add custom objectives to your project, skip to the section on creating custom objectives.

3. When you are finished selecting your objectives, click the Questions button at the top and/or bottom of the page to proceed (Figure 3-12). Alternatively, you can click the Questions button in the DTIM wizard navigation menu. To return to the Base Module page, click Base Modules.

Continue to the next step and select your monitoring questions.

Selecting questions

Once you have identified the broad objectives of your monitoring plan, the next step is to identify the monitoring questions to be answered in order to address each of your objectives.
1. At the top of the Questions page, the objective you will be selecting questions for is displayed in the Current Objective box (Figure 3-13).

   **Step 4: Questions**

   ![Figure 3-13. The Current Objectives box.](image)

   For each Objective, you must select at least one question by double-clicking or dragging and dropping between lists. A

   Objective 1 Of 1: Wildlife Habitat

   ![Figure 3-14. The ‘Previous Objective’ and ‘Next Objective’ link.](image)

   Available Questions: Show Least Relevant Questions

   Most Relevant Questions

   What is the distribution of tree species across the forested landscape? What tree species are increasing or decreasing in ecological importance?
   Indicator: Tree abundance

   What is the abundance of snags and is it changing? Is land management reducing snag abundance below levels needed by wildlife?
   Indicator: Snag abundance

   If your project has more than one objective, use the Previous Objective and the Next Objective links under the Current Objective list box to navigate through your objectives (Figure 3-14).

2. Questions available for selection on this page are based on the objective(s) you selected in the Selecting objectives section. The questions are organized in the Available Questions list box by Most Relevant Questions, Somewhat Relevant Questions, and Least Relevant
Questions. These categories are intended to assist you in selecting appropriate questions for a given objective (Figure 3-15, #1).

- **Most Relevant Questions** are strongly related to the objective. The answers to these questions are considered highly valuable and useful in addressing the current objective.

- **Somewhat Relevant Questions** are only moderately related to the current objective. The answers to these questions may only be partially useful in addressing the objective.

- **Least Relevant Questions** are available for your selection, but they are not closely related to the objective and are not likely to be selected. You can access the **Least Relevant Questions** by clicking the **Show Least Relevant Questions** link (Figure 3-15, #2).

Note: Beneath each question are one or more **Indicators**. These are variables indicative of specific environmental conditions and determine the types of metrics needed to answer the questions.

Figure 3-15. Viewing the Available Questions.

Select one or more questions for the current objective from the **Available Questions** list box. To select a question, double-click it or drag and drop it into the **Selected Questions** list box. To remove a question from the **Selected Questions** list box, double-click it or drag and drop it back into the **Available Questions** list box. In our example, we have selected four questions: (1) **What is the distribution of tree species across the forested landscape?** What tree species…; (2) **What is the abundance of snags and is it changing?** Is land management reducing snag abundance below levels needed by wildlife? **Indicator: Snag abundance**; (3) **What is the amount and distribution of coarse woody debris and is it changing?** Are land…; and (4) **What is the composition and diversity of understory vegetation by forest type?** Is… (Figure 3-16).
Figure 3-16. Selecting questions for your current objective using drag and drop.

Clicking the Add All button, below the Available Questions list box, will display an Add Questions pop-up window, which allows you to select the category (most relevant, somewhat relevant, and least relevant) of questions you would like to add. You are also given the option to select all of the questions in each category by selecting All from the dropdown list. Once you’ve selected a relevancy category, click Add (Figure 3-17).

Figure 3-17. Selecting All Questions from the Available Questions list box.

Alternatively, clicking the Remove All button, below the Available Questions list box, will move all selected questions back into the Available Questions list box.
3. If you have selected two or more objectives for your project, use the **Next Objective** link and repeat step 2 to select questions for each additional objective in your list.

4. To add custom questions to your project, skip to the section on **creating custom questions**.

5. When you are finished selecting questions for each project objective, click the **Metrics** button at the top and/or bottom of the page to proceed (Figure 3-18). Alternatively, you can click the **Metrics** button in the *DTIM* wizard navigation menu. To return to the **Step 3: Selecting objectives** page, click the **Objectives** page.

![Figure 3-18. Navigating to the Metrics page.](image)

Continue to the next step and **select your metrics**.

**Selecting metrics**

In this step you will select one or more metrics that need to be collected to answer each objective and question combination included in your project.

1. At the top of the **Metrics page**, the question you will be selecting metrics for is displayed in the **Current Question box** (Figure 3-19).

![Figure 3-19. The Current Question box.](image)
If your project has more than one question, use the Previous Question and the Next Question links under the Current Question list box to navigate through your list of questions (Figure 3-20).

**Step 5: Metrics**

1. For each Question, you must select at least one metric.

   ![Figure 3-20. The Previous and Next Question links.](image)

2. Next, you will select the metrics that need collecting in order to answer each of your questions. You must select either a DTIM or ATIM compatible metric for each of your questions.

   The DTIM metrics available for selection are organized in the Available DTIM Metrics list box by Most Relevant, Somewhat Relevant and Least Relevant. These categories are intended to assist you in selecting appropriate metrics for a given question (Figure 3-21, #1).

   - **Most Relevant** metrics are strongly related to the associated question. These metrics are considered highly valuable and useful in answering the current question.

   - **Somewhat Relevant** metrics are only moderately related to the current question. These metrics may only be partially useful in addressing the associated question.

   - **Least Relevant** metrics are available for your selection, but they are not closely related to the current question and are not likely to be selected. You can access these metrics by clicking the Show Least link (Figure 3-21, #2).
Figure 3-21. The metrics available for selection.

The ATIM Compatible metrics available for selection are organized in the **Available ATIM Compatible Metrics** list box. These are metrics that are compatible with the ATIM tool and will assist you in obtaining values on the **Precision** page in DTIM (Figure 3-22).
Figure 3-22. Selecting an ATIM Compatible Metric.

Select one metric for the current question from one of the Metric drop-down lists. In our example, we will select a metric from the Available DTIM metrics section. The metric we will chose is **Area of forestland (acres)** (Figure 3-23).

Figure 3-23. Selecting a metric for your project.
TIP: If you are looking for a specific metric, use the search feature in the drop-down lists to find the specific metric.

3. Select the Page, Row, and Column value using the appropriate drop-down menu to design the output table for the metric selected. In the example below, we have selected no value from the Page drop-down (appears as None); from the Row drop-down menu, we have selected Forest type group; and from the Column drop-down menu, we have selected Stand size (Figure 3-24).

TIP: If you are looking for a specific value in the Page, Row, or Column drop-down menus, use the search feature in each drop-down list to find the specific value.

![Figure 3-24. Selecting Page, Row, and Column values.](image)

4. Click the Add button at the bottom of the Available DTIM Metrics box or alternatively at the bottom of the ATIM Compatible Metrics box to finalize your selections. Your added metric will then appear in the Selected Metrics box (Figure 3-25). If it is a DTIM metric, it will appear under the DTIM heading; if it is an ATIM compatible metric, it will appear under the ATIM heading.
**Figure 3-25.** The metric added displayed in the ‘Selected Metrics’ box.

---

**CAUTION!** If you fail to click the Add button before navigating to the next or previous step, the current metric selection will not be saved to your project.

---

5. Optionally, repeat steps 2-4 to add more metrics to your current question. At least one metric is required for each question. All added metrics for a particular question will appear in the **Selected Metrics** box. In our example, for our current question, a total of two metrics and associated page, row, column values were added and now appear in the **Selected Metrics** box (Figure 3-26).

---

**Figure 3-26.** All metrics added are displayed in the Selected Metrics box.
To remove a metric from your list of selected metrics, click the **Remove** link located to the right of each metric in the **Selected Metrics** list box (Figure 3-27).

![Figure 3-27. Removing added metrics from your project.](image)

6. Click the **Next Question** link and repeat steps 1-4 for each additional question in your list.

7. To add custom metrics to your project, skip to the section on **creating custom metrics**.

8. When you are finished selecting metrics for each question in your list, select the **Output Tables** button at the top and/or bottom of the page to proceed (Figure 3-28). Alternatively, you can click the **Output Tables** button in the **DTIM** wizard navigation menu. To return to the **Step 4: Questions** page, click the **Questions** button.

![Figure 3-28. Navigating to the Output Tables Page.](image)

Continue to the next step and **design your output tables**.

**Designing the output tables**

The Output Tables *page* displays each objective, question, and metric **PRC** combinations selected in steps 3 through 5. If you are not satisfied with your metric PRC combinations, then
you have the option to edit your selections here instead of going back through the DTIM wizard. How you design your output tables will determine how your final DTIM report is presented.

Additionally, from the Output Tables page you can select which metric PRC combinations you would like to specify precision requirements for on the Precision page. This will allow you to generate estimates for your selected metrics based on available data and include those in your report. Those estimates will be critical for determining whether existing data are sufficient to answer your monitoring questions or whether additional sampling is needed.

**Editing your selected metrics**

1. From the Output Tables page, you can click the metric link for the metric you would like to edit. In our example, we have chosen the metric *Area of Forestland (acres) (DTIM)* (Figure 3-29).

2. The Update Output Table Values window pops up. Use the drop-down lists to make any desired changes to the Metric, Page, Row, and Column values (Figure 3-30).
Figure 3-30. The Update Output Table Values window.

3. When you are finished updating the output table values, click OK to save your changes. Or, if you decide not to edit your selection, click Cancel. You will be returned to the Output Tables page.

4. Review your metric and PRC selections. If you are satisfied with your selections, you can continue to identifying precision values or previewing/printing output tables.

Identifying Precision Values

From the Output Tables page you can choose which metric PRC combinations you would like to estimate current values for. All of your metric and PRC combinations are automatically included in your precision calculations. However, you can deselect any combinations you would not like to include in your precision calculations.

To deselect a metric PRC combination:

1. On the Output Tables page, identify the metric PRC combination(s) you do not want to estimate current values for.

2. Next, for each combination you want to exclude, uncheck the associated checkbox in the Include in Precision column. In our example, we will deselect the checkbox for the Number of standing dead trees 5” + dbh (trees) (DTIM), Coarse Woody Debris: (cu ft) (DTIM), and Diversity (DTIM) metric and PRC combinations (Figure 3-31).
Step 6: Output Tables

<table>
<thead>
<tr>
<th>Objective: Wildlife Habitat</th>
<th>Question: What is the distribution of tree species across the forested landscape? What tree species are increasing or decreasing in ecological importance? Indicator: Tree abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric (Click to Edit)</td>
<td>Page</td>
</tr>
<tr>
<td>Area of forestland (acres) (DTIM)</td>
<td>None</td>
</tr>
<tr>
<td>Trees (ATIM)</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective: Wildlife Habitat</th>
<th>Question: What is the abundance of snags and is it changing? Is land management reducing snag abundance below levels needed by wildlife? Indicator: Snag abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric (Click to Edit)</td>
<td>Page</td>
</tr>
<tr>
<td>Number of standing dead trees 5”+ dbh (trees) (DTIM)</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective: Wildlife Habitat</th>
<th>Question: What is the amount and distribution of coarse woody debris and is it changing? Are land management and silviculture reducing CWD below levels needed by wildlife? Indicator: Coarse woody debris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric (Click to Edit)</td>
<td>Page</td>
</tr>
<tr>
<td>Coarse Woody Debris: (cu ft) (DTIM)</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective: Wildlife Habitat</th>
<th>Question: What is the composition and diversity of understory vegetation by forest type? Is native understory richness is declining over time? Indicator: Understory native plant richness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric (Click to Edit)</td>
<td>Page</td>
</tr>
<tr>
<td>Diversity (DTIM)</td>
<td>None</td>
</tr>
</tbody>
</table>

Figure 3-31. Excluded metric and PRC combinations from precision calculations.

3. When you are finished, review your selections and proceed to the Precision page. Select the Precision button at the top and/or bottom of the page to continue (Figure 3-32).

Alternatively, you can click the Precision button in the DTIM wizard navigation menu. To return to the Step 5: Metrics page, click the Metrics button.

Figure 3-32. Navigating to the Precision Page.

You can continue to the section on assigning precision of current values.
Assign precision of current values

In this step, you will provide the DTIM project Creation Wizard with your precision requirements for estimating current values. DTIM will use this information to compute the number of additional plots that will need to be sampled in order to answer your monitoring questions.

1. The metric and PRCs you have decided to estimate the precision of current values for, will appear in the metric section (Figure 3-33).

![Step 7: Precision Report](image)

Click on a metric below to view the precision of current values. Supply data for the requested fields and DTIM will calculate the precision values.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Page Row</th>
<th>Column</th>
<th>Complete Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of forestland (acres)</td>
<td>None</td>
<td>Forest type group</td>
<td>Stand size class</td>
</tr>
<tr>
<td>Trees</td>
<td>None</td>
<td>FIA tree class</td>
<td>2 inch diameter class, 0-29+</td>
</tr>
</tbody>
</table>

[Figure 3-33. The linked metric section.]

NOTE: To adjust the prioritization or position of your metric and PRC combinations, use the down/up arrow buttons, †‡, to adjust your selections.

If your project has more than one precision value to calculate, use the Previous Precision and Next Precision links under the Details heading to navigate through your list of precision values (Figure 3-34).
Step 7: Precision

Report

Click on a metric below to view the precision of current values. Supply data for the requested fields and DTIM will calculate the precision values.

---

**Details**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Page</th>
<th>Row</th>
<th>Column</th>
<th>Complete</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of forestland (acres)</td>
<td>None</td>
<td>Forest type group</td>
<td>Stand size class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees</td>
<td>None</td>
<td>FIA tree class</td>
<td>2 inch diameter class, 0-29+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

The Details section provides some information about the precision value that is currently selected (Figure 3-35):

- The **Table Name** field is derived from the Metric and PRC fields and follow the format: metric by page, row, column selections.
- The **Objective** field is the objective you selected during project creation and associated with the selected metric and PRC selection.
- The **Question** field is the question you selected during project creation and associated with the selected metric and PRC selection.
- The **Indicator** field is the Indicators that is associated with the question selection.
- The **ATIM Compatibility** field will inform you if the metric and PRC combination you made are compatible with ATIM.
Step 7: Precision Report
Click on a metric below to view the precision of current values. Supply data for the requested fields and DTIM will calculate the precision values.

![Output Tables]

<table>
<thead>
<tr>
<th>Metric</th>
<th>Page</th>
<th>Row</th>
<th>Column</th>
<th>Complete</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of forestland (acres)</td>
<td>None</td>
<td>Forest type group</td>
<td>Stand size class</td>
<td></td>
<td>↓</td>
</tr>
<tr>
<td>Trees</td>
<td>None</td>
<td>FIA tree class</td>
<td>2 inch diameter class, 0-29+</td>
<td></td>
<td>↑</td>
</tr>
</tbody>
</table>

**Details**

<< Previous Precision  Next Precision >>

**Table Name:** Trees by None by FIA tree class by 2 inch diameter class, 0-29+

**Objective:** Wildlife Habitat

**Question:** What is the distribution of tree species across the forested landscape? What tree species are increasing or decreasing in ecological importance?

**Indicator:** Tree abundance

**ATIM Compatibility:** Compatible Select ATIM Analysis

Labels

Page: None

Row: FIA tree class

Figure 3-35. The Details section on the Precision page.

If you would like to provide an additional name or different label for your PRC selection, use the text fields in the Labels section that correspond to the Page, Row, and Column headings (Figure 3-36).
Figure 3-36. Page, Row, and Column Labels.

Continue to the next section on Providing Precision Values or skip ahead to the section on Retrieving Estimation Attributes.

Providing Precision Values

1. If the metric and PRC combination is not compatible, as indicated by the ATIM Compatibility field in the Details section, you will need to provide the Precision values. Below the Details section are the fields requiring user input in order for DTIM to calculate the precision of current values. Input the following information into the appropriate fields:

   - **Scale** – enter the scale of the analysis. For our example, our scale will be forest (Figure 3-37, #1).

   - **Confidence Interval Half Width (%)** – enter the desired half-width for the confidence interval. Smaller values will require a larger sample size. This field is automatically populated with the value 10, but can be changed. We will leave it as is for our example (Figure 3-37, #2).
Confidence Level \((1-\alpha)\) (%) – enter the desired confidence level. Higher values will require larger sample sizes. This field is automatically populated with the value 68, but can be changed. We will leave it as is for our example (Figure 3-37, #3).

Estimate – enter the attribute total value. This value can be obtained by the totals presented in an ATIM analysis report of the same metric and page, row, column selections. Visit the sections on creating reports in ATIM for more information. For our example, we entered 29656167 (Figure 3-37, #4).

Sampling Error (%) – enter the percent sampling error of the estimate. This value can also be accurately obtained from running an ATIM analysis report. On the report, this value is located below the estimate total value for an attribute. For our example, we entered 0.47 (Figure 3-37, #5).

Current Sample Size – enter the number of FIA plots used to estimate the metric. On the ATIM analysis report, this value will be the total plots for the non-zero plots in the estimate. For our example, we entered 9468 (Figure 3-37, #6).

---

**CAUTION!** When entering values, do not include the percent symbol, %, or use commas, DTIM will automatically format the numbers with commas if needed, once you click outside of the text field.
Figure 3-37. User input required for precision calculations.

2. Click outside of the input fields. Based on the values you entered, DTIM will automatically calculate (Figure 3-38):

- **Confidence Interval Half Width** – the desired confidence interval half-width as a percent of the estimate.

- **Sample Size Required to Obtain CI Width at Confidence (1-α)** – the number of sample plots needed to obtain a confidence interval width (as specified as a percent and given in absolute terms) at the desired confidence level.
- CV% – a measure of variability.
- **Resulting Sampling Error (at 68% Confidence Level)** – the expected sampling error if the sample size changed.

### Details

<< Previous Precision  [Next Precision >>

**Table Name:** Area of forestland (acres) by None by Forest type group by Stand size class  
**Objective:** Wildlife Habitat  
**Question:** What is the distribution of tree species across the forested landscape? What tree species are increasing or decreasing in ecological importance?  
**Indicator:** Tree abundance  
**ATIM Compatibility:** Not Compatible

#### Labels

- **Page:** None  
- **Row:** Forest type group  
- **Column:** Stand size class

#### Precision Values

<table>
<thead>
<tr>
<th>Scale:</th>
<th>forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence Interval Half Width (%):</td>
<td>10</td>
</tr>
<tr>
<td>Confidence Level (1-α) (%):</td>
<td>68</td>
</tr>
<tr>
<td>Estimate:</td>
<td>29,656,167</td>
</tr>
<tr>
<td>Sampling Error (%):</td>
<td>0.47</td>
</tr>
<tr>
<td>Current Sample Size:</td>
<td>9,468</td>
</tr>
<tr>
<td>Confidence Interval Half Width:</td>
<td>2,965,616.7</td>
</tr>
<tr>
<td>Sample Size Required to Obtain CI Width at Confidence (1-α):</td>
<td>20.752</td>
</tr>
<tr>
<td>CV %:</td>
<td>45.733</td>
</tr>
<tr>
<td>Resulting Sampling Error (at 68% Confidence Level):</td>
<td>10</td>
</tr>
</tbody>
</table>

---

**Figure 3-38. DTIM’s calculation of precision values.**

---

**NOTE:** A check mark symbol, ✔️, will appear in the **Metrics** section under the **Complete** heading signifying that the precision values for that metric and PRC combination have been completed successfully.
4. Repeat steps 1 through 3 for each additional metric and PRC combination that you want to calculate precision values for and is not compatible with an ATIM analysis. If the metric and PRC combination is compatible with ATIM, continue to the section on Retrieving Estimation Attributes.

5. When finished, select the Output Tables button at the top and/or bottom of the page to go back to the Output Tables page (Figure 3-39). Alternatively, you can click the Output Tables button in the DTIM wizard navigation menu.

Figure 3-39. Navigating to the Precision Page.

Skip ahead to the section on viewing the DTIM report to review all of the selections you made in the DTIM Project Creation Wizard.

Retrieving Estimation Attributes

If the selected metric and PRC combination is compatible, as indicated by the ATIM Compatibility field in the Details section, you can select an ATIM analysis to retrieve estimation attribute values from, which will automatically populate some of the precision fields on the Step 7: Precision page.

1. Next to the ATIM Compatibility heading, select the Select ATIM Analysis link (Figure 3-40).

Figure 3-40. Selecting a Compatible ATIM Analysis.
2. The **Select Analysis** window will pop up. Use the **Filter by Land Use** drop-down to filter the ATIM analyses by **Forest Land** or **Timberland**. Alternatively, select **All** from the drop-down list to view all of the ATIM analyses available for selection. For this example, we want to view all of the available analyses, so we will select **All** from the drop-down list.

3. Next, choose whether you would like to filter the available ATIM analyses by **State** or **Forest**.

   To select by **State**:
   
a. From the **Select Analysis** window, select the **State** link (Figure 3-41).

   ![Select Analysis](image)

   **Figure 3-41. Selecting an analysis by State.**

   b. Next, from the list of states, choose the state the ATIM analysis is associated with. For this example, we will choose **Oregon** (Figure 3-42).
NOTE: Use the Reset link, Reset, to clear the selections you made up to that point for selecting an ATIM analysis.

c. The available ATIM analyses based on the state you selected will be populated. From the list, select the ATIM analysis you would like to retrieve estimation attributes from. For this example, we select the Oregon 2005–2014 analysis (Figure 5-43).

Figure 5-43. Selecting the ATIM Analysis.
d. You will be returned to the Step 7: Precision page.

To select by Forest:

a. From the Select Analysis window, select the Forest link (Figure 3-44).

![Select Analysis](image)

Figure 3-44. Selecting an analysis by Forest.

b. Next select, the region for which the forest belongs to. For this example, we will select Pacific Northwest Region (6) (Figure 3-45).

![Select Analysis](image)

Figure 3-45. Selecting the Region of the ATIM Analysis.

c. From the lists of forests, choose the forest associated with the ATIM analysis you are looking for. For this example, we will select Siuslaw (R6) (Figure 3-46).
d. The available ATIM analyses based on the state you selected will be populated. From the list, select the ATIM analysis you would like to retrieve estimation attributes from. For this example, we select the Oregon 2005-2014 analysis (Figure 3-47).

Figure 3-47. Selecting an ATIM Analysis.

e. You will be returned to the Step 7: Precision page.

4. Select the Retrieve Estimation Attributes link to continue (Figure 3-48). Alternatively, select the Change ATIM Analysis link to change your selection for the ATIM analysis.
5. The **Retrieve Estimation Attributes** window will pop up, with a wait indicator showing that your report has been requested and to please wait. Once the report has been generated, a table with estimation attributes available for selection will be created. From the available selections, find the estimation attribute you would like to use. For this example, we will select the first estimate attribute in the populated list by selecting the **Select** link (Figure 3-49).
Figure 3-49. Selecting an Estimation Attribute.

6. You will be returned to the Step 7: Precision page with the appropriate **Labels** and the following fields populated based on your estimation attribute selection:

- **Confidence Interval Half Width (%)** – the desired half-width for the confidence interval. Smaller values will require a larger sample size. This field is automatically populated with the value 10, but can be changed (Figure 3-50, #1).

- **Confidence Level (1-\(\alpha\)) (%)** – the desired confidence level. Higher values will require larger sample sizes. This field is automatically populated with the value 68, but can be changed (Figure 3-50, #2).

- **Estimate** – the **attribute** total value. This value is obtained by the totals presented in an ATIM analysis report of the same metric and page, row, column selections (Figure 3-50, #3).

- **Sampling Error (%)** – the percent sampling error of the estimate (Figure 3-50, #4).

- **Current Sample Size** – the number of FIA plots used to estimate the metric (Figure 3-50, #5).
Figure 3-50. The Labels and Precision Values populated based on selected estimation attribute.

Based on these values from the estimate attribute selected, DTIM will automatically calculate (Figure 3-51):

- **Confidence Interval Half Width** – the desired confidence interval half-width as a percent of the estimate.

- **Sample Size Required to Obtain CI Width at Confidence (1-\(\alpha\))** – the number of sample plots needed to obtain a confidence interval width (as specified as a percent and given in absolute terms) at the desired confidence level.
CV% – a measure of variability.

Resulting Sampling Error (at 68% Confidence Level) – the expected sampling error if the sample size changed.

Details

Table Name: Trees by None by FIA tree class by 2 inch diameter class, 0-29+
Objective: Wildlife Habitat
Question: What is the distribution of tree species across the forested landscape? What tree species are increasing or decreasing in ecological importance?
Indicator: Tree abundance
ATIM Compatibility: Compatible - Current Analysis: Oregon 2005-2014 (All)
Change ATIM Analysis. Retrieve Estimation Attributes.

Labels
Page: None
Row: FIA tree class
Column: 2 inch diameter class, 0-29+
Growing-stock
diameter >= 1.0 and < 3.0

Precision Values
Scale: 
Confidence Interval Half Width (%): 10
Confidence Level (1-α) (%): 98
Estimate: 4,379,589,766
Sampling Error (%): 2.24
Current Sample Size: 14,746

Confidence Interval Half Width: 437,958,976.6
Sample Size Required to Obtain CI Width at Confidence (1-α): 734.148
CV %: 272.01
Resulting Sampling Error (at 68% Confidence Level): 10

Figure 3-51. Precision values calculated by DTIM.

NOTE: A check mark symbol, ✔️, will appear in the Metrics section under the Complete heading signifying that the precision values for that metric and PRC combination have been completed successfully.
7. Repeat steps 1 through 5 for each additional metric and PRC combination that you want to calculate precision values for that is compatible with an ATIM analysis. If the metric and PRC combination is not compatible with ATIM, review the section on Providing Precision Values.

8. When finished, select the Output Tables button at the top and/or bottom of the page to go back to the Output Tables page (Figure 3-52). Alternatively, you can click the Output Tables button in the DTIM wizard navigation menu.

Figure 3-52. Navigating to the Precision Page.

Continue to the next section on viewing the DTIM report to review all of the selections you made in the DTIM Project Creation Wizard.

Viewing the DTIM Report
The selections you made while creating your DTIM project can also be viewed in an interactive report format.

To access your report:
1. Click the Report link located at the top of Precision page (Figure 3-53).

NOTE: The Report link is also present on the Objectives, Questions, Metrics, and Output Tables page and can be used at any time to view your DTIM report and the selections you have made.

Step 7: Precision
Click on a metric below to view the precision of our view the results of the calculations.

Figure 3-53. The ‘Report’ link displayed on the Precision page.
2. A new tab will open in your browser displaying your DTIM report consisting of *metadata* related to your project, your objective, question & metric selections, and output tables. The report opens with the **Master** tab of the report output active. This tab lists all of your selections made during the project creation in DTIM (Figure 3-54). Scroll through this tab to review your report selections.

![Figure 3-54. The Master tab of the DTIM Report.](image)

If you saved your *DTIM project*, the project name will appear in the **Project Title** text area at the top of your DTIM report as well as the description you provided when saving your DTIM project. For this example, our project name is displayed as **Sample DTIM Project** and the description provided is *This is a sample project intended for documentation purposes only* (Figure 3-55).
The Project Metadata

The project metadata displayed on the DTIM report page includes the following information (Figure 3-56):

- **Creator** – User who created the DTIM project.
- **Date Created** – Date the project was created.
- **Last Modified** – Date the project was last modified.
- **Base Module** – The module you chose to base your DTIM project on when using the project creation wizard.
- **Module Creator** – User who created the module.
- **Module Type** – Description given to the module by the user who created it.
- **Project Region** – The region the module was intended for.
- **Project Forest** – The forest the module was intended for.

**TIP:** Click the **-Hide Project Metadata** link to hide the project metadata from the DTIM Report page. Alternatively, if you would like to display the metadata click the **+Show Project Metadata** link.
Figure 3-56. The DTIM Project metadata.

The OQMs Tab

On the DTIM Report page, click the OQMs tab to make it active. This tab displays your OQM selections you made while choosing your objective, questions, and metrics. It also details how many objectives, questions and metrics are within your DTIM project (Figure 3-57).

Figure 3-57. The active OQMs tab.

The objective you selected will appear in the Objective area of the tab. For this example, the objective for our project was Wildlife Habitat (Figure 3-58).
Figure 3-58. The Objective display area.

To view your question and metric combinations for the specific objective, click the Questions button under the Objective heading (Figure 3-59). Click the button again to hide your selections.

Figure 3-59. Using the Questions button to expand your question and metric combinations.

You can also click the Expand all link to display all of your questions and metrics. To hide the questions and metric combinations, click the Collapse all link (Figure 3-60).

Figure 3-60. Using the ‘Expand all’ and ‘Collapse all’ links to display or hide your selections.

When you click the Expand all link, your question and metrics will be listed (Figure 3-61). Scroll through this tab to review your objective, question and metric selections.

Figure 3-61. The expanded Question and Metric combinations.
The Output Tables Tab

On the DTIM Report page, click the Output Tables tab to make it active. This tab displays the output tables that consist of the output table names, and the associated objective question and metrics (Figure 3-62).

![Figure 3-62. The active Output Tables tab.](image)

By default, all of your output tables are listed. You can use the Objective, Question, and Metric drop-down menus to filter or sort the output tables that are displayed by their respective category (Figure 3-63).

![Figure 3-63. The filters available to sort your output tables.](image)
In this example, we will use the **Metric** drop-down menu to filter our output tables to only show those with the metric **Diversity** (Figure 3-64).

![Figure 3-64. Using the Metric filter drop-down.](image)

**NOTE:** To refine your output tables further, you can select one filter from any of the drop-down menus.

As a result of the filter, only output tables with the metric **Diversity** will be displayed on the **Output Tables** tab (Figure 3-65).

![Figure 3-65. The filtered output tables.](image)

**NOTE:** The DTIM output **Table Name** comes from your metric and **PRC** selections. It is in the format of **metric** by **column** by **page** by **row** value.

**TIP:** To clear all filters, click the **Clear filters** link next to the **Current filters** heading.

**Saving a DTIM project**

To save your project in **DTIM**, you must be logged into DATIM.
NOTE: A DTIM project can be saved at any time during the creation process. It is not necessary to wait to finish the DTIM project creation wizard steps in order to save your project.

1. Click the Save link in the upper right corner of the DTIM project wizard page (Figure 3-66).

![Figure 3-66. The Save link on the DTIM project wizard page.](image)

The Save Project window opens (Figure 3-67).

![Figure 3-67. The Save Project window.](image)

2. In the Project Name text box, enter a brief name for your project. The name should be descriptive enough so that it can be differentiated from other DTIM projects, but brief enough that it fits within the text box provided. In our example, we have inserted Sample DTIM Project in the Project Name text box (Figure 3-68).
3. In the **Project Description** text box, type a description of the DTIM project. The description serves a variety of purposes, such as to remind you why you created the project and its intended usage. The description will be saved along with the project name so that you can easily access it again later. In our example, we have inserted *This is a sample project intended for documentation purposes only* in the **Project Description** text box (Figure 3-69).
4. Next, from the Region drop-down list choose the region for which your project applies to. In this example, we will select the Pacific Northwest Region (6) (Figure 3-70).

Figure 3-69. Creating a project description for your saved project.

Figure 3-70. Selecting a region when saving your project.
5. From the **Forest** drop-down list, choose the forest for which your project applies to. The **Forest** drop-down list displays forests that are in the region that was selected from the **Region** drop-down list. In this example, we will select the **Siuslaw (R6)** (Figure 3-71).

![Figure 3-71. Selecting a forest when saving your project.](image)

6. Click the **Save** button to save your new project to DTIM (Figure 3-72).
A Project Creation Wizard Message pops up (Figure 3-73) confirming that your project was saved. Any changes made to the project from this point on will be saved automatically when you move on to another step. Click OK to close the notification.

In addition you can save your project during one of the steps when using the project creation wizard by clicking the Save link at any time.

**Starting a new DTIM project**

After you save or open a project, the New link appears (Figure 3-74). Clicking the New link will return you to the Welcome page where you can begin designing a new DTIM project.
Using the Project Manager to open and delete projects

The Project Manager is used to open and delete existing projects in DTIM.

Opening a saved project

1. Click the Project Manager link in the upper right-hand corner of the screen (Figure 3-75).

2. When the Project Manager opens, use the Module drop-down list to filter the project you are looking for by the module it was created under. Choosing All, as in our example, will show all projects available to load regardless of module (Figure 3-76).
Figure 3-76. Filtering the projects available in DTIM by module.

3. Use the **Project Name** drop-down list to view the projects available to load. Select the project you would like to open. The description, region, and forest information is given for the selected project. In our example, we have selected the **Sample DTIM Project** (Figure 3-77).

Figure 3-77. Selecting a project from the Project Name drop-down.

4. Click the **Load** button to open the selected project (Figure 3-78).
Your project will open to the step you were on when your progress was last saved.

Deleting a saved project

1. Click the **Project Manager** link in the upper right hand side of the *DTIM* application.

2. When the **Project Manager** opens, use the **Module** drop-down list to filter the project you are looking for by the *module* it was created under. Choosing **All** will show all projects available to delete regardless of module.

3. Use the **Project Name** drop-down list to view the projects available to delete. Select the project you would like to open. In our example, we have selected the **Sample DTIM Project**.

4. Click the **Delete** button to delete the project from DTIM (Figure 3-79).
5. A **Delete Project** message will pop up asking you to confirm the deletion. Click the **Delete** button to confirm (Figure 3-80).

![Delete Project window](image)

**Figure 3-80. The Delete Project confirmation window.**

Once your project has been deleted, you will be returned to the **Project Manager** window. The deleted project will no longer be available in the **Project Name** drop-down list.

**Converting a Project to a Module**

Administrative users have the capability of converting a project they have created into a *module* to be used by all users.

1. Click the **Project Manager** link in the upper right hand side of the **DTIM** application.

2. When the **Project Manager** opens, use the **Module** drop-down list to filter the project you are looking for by the module it was created under. Choosing **All** will show all projects available to load regardless of module.
3. Use the **Project Name** drop-down list to view the projects available to convert to a module. Select the project you would like to convert. In our example, we have selected the **Sample DTIM Project**.

4. Click the **Convert Loaded Project to Module** link to convert the project to a module (Figure 3-81).

![Figure 3-81. Deleting a saved DTIM project.](image)

**The Convert Project to Module window** opens (Figure 3-82).

![Figure 3-82. The Convert Project to Module window.](image)
7. In the **Module Name** text box, enter a brief name for your module. The name should be descriptive enough so that it can be differentiated from other DTIM modules, but brief enough that it fits within the text box provided. In our example, we have inserted **Sample DTIM Module** in the **Module Name** text box (Figure 3-83).

![Convert Project to Module](image)

**Figure 3-83. Naming your module.**

**TIP:** To quickly clear the module name, use the × button to clear the module name and replace it with another.

8. In the **Module Description** text box, type a description of the DTIM module. The description serves a variety of purposes, such as to remind you why you created the module and its intended usage. The description will be saved along with the module name so that you can easily access it again later. In our example, we have inserted **This is a sample module intended for documentation purposes only** in the **Module Description** text box (Figure 3-84).

![Module Description](image)
9. From the **Region** drop-down, select the region for which this module is intended to be used for. In our example, we will select **Pacific Northwest Region (6)** (Figure 3-85).

10. From the **Forest** drop-down, select the forest for which this module is intended to be used for. In our example, we will select **Rio Grande (R2)** (Figure 3-86).
11. Click the **Save** button to save your new module to DTIM (Figure 3-87).
12. The conversion may take several minutes, but once finished, a **Project Creation Wizard Message** pops up (Figure 3-88) confirming that your project was saved as a module to be used by others. Click **OK** to close the notification.

![Figure 3-88. The Project Creation Wizard Message.](image)

**Loading a Project from Template**

Users can load another project’s selections that exists in the DATIM data mart as a DTIM template project. Choosing to create your project based on another template project will not in any way affect the template project selections. To mark a DTIM project as a template project, contact DATIM administrators at datim@fs.fed.us with your request.

1. Click the **Project Manager** link in the upper right hand side of the **DTIM** application.

2. Select the **Load Project from Template** link (Figure 3-89).

![Figure 3-89. The ‘Load Project from Template’ link in the Project Manager.](image)
3. The **Load Project from Template** window pops up. Use the **Project Template** drop-down menu to select a project template to use (Figure 3-90, #1). A description of that project will appear once a project is selected (Figure 3-90, #2).

![Load Project from Template](image1)

Figure 3-90. Choosing a Template Project.

4. Next, provide a name for your project in the **Name of Your Project** text field (Figure 3-91).

![Load Project from Template](image2)

Figure 3-91. Naming your loaded DTIM project.

5. Lastly, click the **Create** button to create your project based off a DTIM template project (Figure 3-92).

![Load Project from Template](image3)

Figure 3-92. Creating a DTIM template project.
Your newly created project will open the DTIM Project Creation Wizard with the project selections from the template project.

Creating custom objectives, questions, and metrics

When you begin creating a new project in DTIM, you are obligated to select a base module to serve as a template. Even so, you are not limited to the objectives, questions, and metrics offered by that module. You can always add your own custom objectives, questions, and metrics to your project.

Creating custom objectives

There are two ways to create a custom objective and add it to your DTIM project: 1) You can add a new objectives through text entry; or, 2) You can use an existing objective to create a new one. Both methods are described here.

Adding new objectives through text entry

1. From the Objectives page, click the Create New Objective link in the Project Features box at the bottom of the page (Figure 3-93).
2. The New Objective window opens. In the Objective Text box, type your new objective. For this example we have inserted: **This is a sample DTIM objective for documentation purposes only.** into the Objective Text box (Figure 3-94).

3. Click the Save button to save your new objective to your DTIM project (Figure 3-95).
4. When you return to the Objectives page, your new objective will already be selected and available in the **Selected Objectives** list box (Figure 3-96).

![Figure 3-96. The newly created objective displayed in the Selected Objectives list box.](image)

5. Repeat the previous steps to add any additional custom objectives.

**Create a new objective from an existing objective**

To create a new objective from an existing objective:

1. From the Objective page, select the objective you wish to modify from the **Available Objectives** box. In the example below, the objective *Wildlife Habitat* is selected (Figure 3-97, #1).

2. Click the **Create New Objectives** link in the Project Features box (Figure 3-97, #2).
3. When the New Objective window opens, click the **Create from Currently Selected Objective** link (Figure 3-98).

![Figure 3-98. The Create from Currently Selected Objective link.](image-url)
4. The selected objective is copied to the **Objective Text** box. Edit the text as you see fit. For our example, we have edited the selected objective to read: *Wildlife Habitat- example of how to edit a selected objective for your project* (Figure 3-99).

![Figure 3-99. Editing an existing objective.](image)

5. Click the **Save** button to save your edited objective as a new objective (Figure 3-100).

![Figure 3-100. Saving an edited objective.](image)

**CAUTION:** If you click the Save button without changing the objective text, a Project Creation Wizard Message pops up indicating that the text entered is already in the list. You must click OK to exit this message and you will be returned to the New Objective window.
6. You are returned to the Objectives page. Your new, edited objective will already be selected and available in the Selected Objectives list box (Figure 3-101). The original objective remains available for use in your DTIM project.

Creating custom questions

As with custom objectives, there are two ways to create a custom question and add it to your DTIM project: 1) You can add a new question through text entry; or, 2) You can use an existing question to create a new one. Both methods are described here.

Adding new questions

1. On the Questions page, scroll through the list of selected objectives using the Previous Objective and Next Objective links until you find the one you want to create a new question for.

2. Click the Create New Question link in the Project Features box at the bottom of the page (Figure 3-102).
3. The New Question window opens. In the Question text box, type your new question. For this example, we have inserted: **This is a sample DTIM question for documentation purposes only** (Figure 3-103).

![Figure 3-103. The New Question window.](image)

4. In the Indicator text box, type in the associated indicator to your question. For our example, we have inserted: **This is a sample DTIM indicator for documentation purposes only** (Figure 3-104).

![Figure 3-104. (Figure 3-104).](image)
Figure 3-104. Inserting an indicator to be associated with your new question.

5. Click the **Save** button to add your custom question to your *DTIM* project (Figure 3-105).

Figure 3-105. Saving your new question and indicator.

6. When you return to the Questions page, your new question will already be selected and available in the **Selected Questions** box (Figure 3-106).
NOTE: If you would like to assign your question to a category (i.e., most, somewhat, and least relevant) simply drag and drop the question to the appropriate category list in the Available Questions list box.

Figure 3-106. The new question displayed in the Selected Questions list box.

7. Repeat this process for any additional questions you wish to create and associate with a given objective.

Editing questions

To edit an existing question and save it as a new custom question:

1. From the Questions page, select the question you wish to modify from the Available Questions list box (Figure 3-107, #1). Be sure this question corresponds to the current objective you want to create the custom question for.

2. Click the Create New Questions link in the Project Features box at the bottom of the page (Figure 3-107, #2).
Figure 3-107. Selecting the Create New Question link on the Questions page to edit.

3. When the New Question window opens, click the Create from Currently Selected Question link (Figure 3-108).
4. The selected question is copied to the **Question** text box, and the associated indicator will also be copied to the **Indicator** text box. Edit the question and indicator text to suit your needs (Figure 3-109).

5. Click the **Save** button to save your edited question and indicator (Figure 3-110).
6. You are returned to the Questions page. Your new, edited question and indicator are selected and available in the Selected Questions list box (Figure 3-111). The original question remains available for use in your DTIM project.
Creating custom metrics and page, row, and column values

As with custom objectives and questions, there are two ways to create a custom DTIM metric and add it to your DTIM project: 1) You can add a new DTIM metric through text entry; or, 2) You can edit an existing DTIM metric and save it as a new one. Both methods are described here.

Adding new DTIM metrics

1. From the Metrics page, scroll through the list of questions using the Previous Question and Next Question links until you find the one you want to create a new metric for.
2. Click the Create DTIM Metric link at the bottom of the page (Figure 3-112).
3. The New DTIM Metric window opens. In the Metric Text box, type your new metric. For this example, we have inserted: New Metric Example (Figure 3-113).

4. Click the Save button to add your custom metric to your DTIM project (Figure 3-114).

5. When you return to the Metrics page, your new metric will already be selected from the Metric drop-down menu. Additionally, it will be available under the Somewhat Relevant subheading in the Metric drop-down (Figure 3-115).
Figure 3-115. The new metric is now available in the Metric drop-down list.

6. Repeat this process for any additional metrics you would like to create.

Creating a new custom DTIM metric from an existing DTIM metric

To edit an existing DTIM metric and save it as a new custom DTIM metric:

1. From the Metrics page, select the metric you want to edit from the Metric drop-down list (Figure 3-116, #1). Be sure this metric corresponds to the Current Question you want to create the custom metric for.

2. Click the Create Metric link at the bottom of the page (Figure 3-116, #2).
Figure 3-116. Using the Create Metric link to edit an existing metric.

3. When the New DTIM Metric window opens, click the Create from Currently Selected Metric link (Figure 3-117).

Figure 3-117. Editing a metric from a currently selected metric.

4. The selected metric is copied to the Metric Text box. Edit the metric to suit your needs (Figure 3-118).
5. Click the **Save** button to save your edited metric (Figure 3-119).

6. You are returned to the Metrics page. Your new, edited metric will already be selected from the **Metric** drop-down menu. Additionally, it will be available under the **Somewhat Relevant** subheading in the **Metric** drop-down (Figure 3-120).
Figure 3-120. The edited metric displayed in the Metric drop-down list.

Adding a new DTIM page, row, and column (PRC) values

1. From the Metrics page, click the Create DTIM PRC link at the bottom of the page. Scroll through the list of questions using the Previous Question and Next Question links until you find the one you want to create a new metric for.

2. Click the Create DTIM PRC link at the bottom of the page (Figure 3-121).

Figure 3-121. Selecting the Create PRC link on the Metrics page.
3. The New DTIM Page, Row, Column Value window opens. In the **Page, Row, Column Text** box, type your new *PRC* value. For this example, we have inserted: **New PRC Example** (Figure 3-122).

![New DTIM Page, Row, Column Value](image)

*Figure 3-122. Entering a custom value in the New Page, Row, and Column Value window.*

4. Click the **Save** button to add your custom PRC to your DTIM project (Figure 3-123).

![New DTIM Page, Row, Column Value](image)

*Figure 3-123. Saving your new PRC.*

5. When you return to the Metrics page, your new value will be available for selection in the **Page, Row, and Column** drop-down lists (Figure 3-124). All PRCs created will be at the bottom of the drop-down list.
Figure 3-124. The new PRC value displayed in the Page, Row, and Column drop-down menus.

6. Repeat this process for any additional PRC values you would like to create.

Creating a new page/row/column (PRC) values from an existing PRC

To edit an existing page, row, or column value and save it as a new custom value:

1. From the Metrics page, select the value you want to edit from the Page drop-down list. In the example below, the *Forest Type Group* value is selected (Figure 3-125, #1).

| NOTE: | PRC values can only be edited from the Page drop-down menu. However, your edits will also be applied to the Row and Column drop-down menus. |

2. Click the Create DTIM PRC link at the bottom of the page (Figure 3-125, #2).
Step 5: Metrics

Report

For each Question, you must select at least one metric.

When the New DTIM Page, Row, Column Value window opens, select the Create from Currently Selected Page link (Figure 3-126).

4. The selected PRC value is copied to the Page, Row, and Column Text box. Edit the value to suit your needs (Figure 3-127).
5. Click the **Save** button to save your edited PRC value (**Figure 3-128**).

6. When you return to the Metrics page, your new value will be available for selection in the **Page**, **Row**, and **Column** drop-down lists (**Figure 3-129**). The non-edited value remains selected in the **Page** drop-down list, so ensure you have selected the correct value in each of the drop-down lists. All edited PRCs created will be at the bottom of the drop-down list.
Figure 3-129. The edited PRC values displayed in the Available Metrics box.

**Using the Get Project Link**

The Get Project Link allows you to return to a project you were once working on without logging into the DATIM application. Then you can make changes to the project or finish a project you started but did not complete. You can share this link with whomever you would like so that they can access the project and make changes as well.

In order to retrieve your project link, you must first select a base module and move onto the Objectives page.

1. Select the **Get Project Link** located in the upper right corner of DTIM (Figure 3-130).
2. **The Project Creation Wizard Message** dialog opens. Copy the link provided to your clipboard (Figure 3-131).

![Figure 3-131. Copying the project link.](image)

**TIP:** Save this link somewhere you can easily refer to it for future reference. As you move from step to step in the wizard, the changes you make changes are automatically saved.

3. When you are ready to return to your project, paste the link in your browser address bar.

**NOTE:** Share your project by sharing this link. Any changes made to the project by you or others are automatically saved.
Exiting DTIM

Once you have finished using the DTIM application, you can easily exit the application and be returned to the DATIM application.

To exit DTIM:

1. Click the **Exit** link in the upper right corner of the DTIM window (Figure 3-132).

![Figure 3-132. Exiting DTIM.](image)

The Exit Application dialog will pop-up (Figure 3-133). Click **Yes, Exit Application** to exit DTIM and returned to the DATIM application. Click **No** to return to DTIM to save any project or module work you have not yet saved.

![Figure 3-133. The Exit Application dialog.](image)

If you choose to return to the DATIM application, you can begin work with a different tool.
Chapter 4: SIT

Last Updated: 08/2017

The Spatial Intersection Tool (SIT) provides a geospatial interface (GI) for users to access natural resource inventory datasets and intersects plot-based data with geospatial layers via ArcMap in the ArcGIS Desktop. It is integrated with the Analysis Tool for Inventory and Monitoring (ATIM) to enable you to focus your ATIM analysis on a geographic area of interest and to summarize the results of your analysis reports using map-based attributes.

This application accesses the data features contained in the Field Sampled Vegetation (FSVeg) database, the FSVeg Spatial database, and the Forest Inventory and Analysis (FIADB) database. The FSVeg and FSVeg Spatial databases can only be accessed after logging into NRM (e-Authentication is required).

TIP: Documentation related to accessing and working with these databases can be found online by visiting these websites: for FSVeg documentation; for FSVeg Spatial; and for FIADB documentation.

GIS information stored in or provided by SIT meets Forest Service standards. Horizontal map accuracy requirements for this information are based on the map scale of the map under consideration. This is described in tables 3-3 and 4-1 of the Forest Service’s Existing Vegetation Classification, and Inventory Technical Guide, Version 2.0 (Nelson, Brewer and Solem 2015). Examples include Estimation Unit Polygons, FSVeg inventory plots (not FIA, not Stand Based), CSE Stand Exam Plots, and for templates for other vegetation and non-vegetation inventories.

Introduction to SIT

Before using the Spatial Intersection Tool (SIT), it is assumed that the user has a basic understanding of geographic information systems (GIS), including experience with geoprocessing functions and overlays with multiple layers. Additionally, we assume that your computer meets the system requirements required to use ArcMap and the geospatial interface (GI). Finally, we assume you are a Forest Service (FS) employee with an Active Directory account, as you will need it to use the tool.

NOTE: Future versions of DATIM will allow the SIT tool to be used by the general public, but at this time, you must be a FS employee with an Active Directory account to use SIT.
Although you have the option to run ArcMap on your local desktop computer, Forest Service employees with current Active Directory accounts are encouraged to run it from the Citrix environment as often as possible. Doing so will give you access to the Natural Resource Manager (NRM) system of database tools for managing Agency data across the Forest Service, including the GI, as well as access to all of the agency's geospatial data. Because the CIO maintains the ArcGIS software, running SIT in Citrix will also minimize ArcGIS software loading and updating.

Getting started with SIT

To start using SIT:

1. Select SIT in the DATIM navigation menu or select the Spatial Intersection button from the Welcome to DATIM home page as shown in Figure 4-1.

![Figure 4-1. Launching the Spatial Intersection Tool (SIT).](image)

2. The Spatial Intersection Tool page opens with specific instructions on how to access the add-in file from the Citrix Home Directory and instructions on where to save the SIT addin file in your Desktop Home Directory if you choose to use ArcGIS from your desktop. A link to download the SIT add-in file is also provided on this page (Figure 4-2). To begin, you must install the SIT Addin file.
Spatial Intersection Tool Addin Instructions page.

**Launching SIT in Citrix**

To launch SIT in Citrix:

1. Login to the Enterprise Production Data Center Citrix Farm (in Kansas City) using your Active Directory user name and password (Figure 4-3).
2. After you have successfully logged into Citrix, open the Natural Resource Manager Directory by navigating to Main, select National Applications, next click the Natural Resource Manager, and lastly click the ArcGIS 10-3-1 folder. From this folder, select the ArcMap 10-3-1 icon (Figure 4-4).

3. A new ArcMap project will open in your browser window. To immediately start working with SIT, skip to the section entitled Working with SIT.
Installing the SIT Add-in File in ArcMap

1. Begin by launching ArcMap in Citrix from a NRM blade.
2. From the ArcMap standard toolbar, click Customize (Figure 4-5, #1).
3. From the Customize menu, select the Add-In Manager… option (Figure 4-5, #2).

4. The Add-In Manager window will open, click the Options tab.
5. On the Options tab, click the Add Folder… button. (Figure 4-6).
5. Next, browse to the folder:
   T:\FS\Reference\GeoTool\agency\Application\ArcGIS1031\Add-Ins
   and select SIT (Figure 4-7, #1).

6. Lastly, click OK (Figure 4-7, #2).

7. You will be taken back to the Add- In Manager window. Ensure the option to Load all Add-Ins without restrictions (Least Secure) is selected, and click Close and continue to Adding the SIT Add-in to the ArcMap toolbar (Figure 4-8).
Installing the SIT ArcMap Add-in to your Desktop

Begin by accessing the Spatial Intersection Tool Addin instructions page, which is discussed above.

1. First, select the link: Click here to download the SIT Addin File (11.3MB) as shown in Figure 4-9.

---

NOTE: If using SIT through Citrix, then the SIT add-in file will only need to be installed one time. If the add-in file is updated, the CIO will automatically update the SIT add-in file in the Citrix T drive.

---

Figure 4-8. Adding the SIT Add-In file.
2. A file download dialog pops up, prompting you to open or save the download file. Select the Save button, which will save the file to your Downloads folder on your local system (Figure 4-10).

3. Once the file has completed downloading, you will receive another download dialog pop-up that allows you to either select the Open button to open the add-in file, select the Open folder button which will open the downloads folder where the add-in file is located, or open the browser downloads folder by selecting View Downloads. Select the Open folder button (Figure 4-11).

Figure 4-9 Spatial Intersection Tool Addin Link

Figure 4-10 File Download Dialog Pop up.

Figure 4-11. Selecting the Open Folder button.
4. This will open your systems **Downloads** folder as shown in Figure 4-12. Your **SIT** add-in file should be located in this file.

![Downloads Folder](image)

Figure 4-12. Downloads Folder where SIT add-in file is located.

5. To use the SIT Tool and **ArcMap** from your Desktop, cut and paste the add-in file in your downloads to the following location: `C:\Users\<USER NAME>\My Documents\ArcGIS\AddIns\DestopXX.XX`.

**NOTE:** XX.XX is the version of **ArcGIS** on your machine. ArcGIS will need to be installed, and then add the last folder.

**NOTE:** If a new version of the SIT Add-in file has been released, you will need to repeat the process of installing the updated SIT add-in file to your Desktop.

### Adding the SIT Add-in to the ArcMap toolbar

After you have successfully installed the **SIT** Add-in to run **ArcMap** from the **Citrix** server or from your local computer, you will need to add it to the ArcMap toolbar.
From the ArcMap standard toolbar, click **Customize** (Figure 4-13, #1).

From the **Customize** menu, select the **Customize Mode** (Figure 4-13, #2).

![Figure 4-13. Selecting the ‘Customize Mode…’ option.](image1)

The Customize window opens; there are three tabs—**Toolbars**, **Commands**, and **Options** (Figure 4-14).

![Figure 4-14. The Customize window in ArcMap.](image2)

From the **Customize** window, select the **Commands** tab (Figure 4-15, #1).
From the **Categories** list, select **DATIM** (Figure 4-15, #2).

Drag the **SIT** tool icon from the **Commands** list (Figure 4-15, #3) onto an existing menu or toolbar (Figure 4-15, #4).

![Figure 4-15. Adding the SIT Add-in to the ArcMap toolbar.](image)

From the **Customize** window, click **Close** (Figure 4-15).

**Working with SIT**

The steps to create a point layer of the *plots* are the same whether you are running the **SIT** from the **Citrix** server or on your desktop computer. The SIT accesses the **DATIM dataset** selected and uses the stored location coordinates to create a point shapefile. For **FIA** data, all annual plot coordinates are *fuzzed* within 0.5 miles for most plots and up to 1.0 mile on a small subset of plots, which makes it difficult to locate the plot on the ground while still maintaining a good correlation between the plot data and map-based characteristics.

At this time SIT is allowing the user of the publicly available FIA plot locations, i.e. the fuzzed locations. In the future it is anticipated that SIT will also be able to access the actual FIA plot locations. With the use of actual plot locations spatial queries or intersections performed will follow the 250 Acre Rule (Private Lands & Public Lands) and in future versions the Rule of 3 (Private Lands).

When performing plot intensifications for FIA plots whether on or off **grid**, Blackard and Patterson suggest in the [National FIA plot intensification procedure report](#) that the GRID method should be used (Blackard and Patterson 2014). The Latsat grids, provided by FIA, are used when
performing intensification schemes on the Forest-Non-Forest *stratification* grid. Although this is not a part of SIT, it is recommended to follow this method for plot intensification.

Log into Citrix and open *ArcMap* 10.2.2 under the Natural Resource Manager (*NRM*) directory. Alternatively, launch ArcMap 10.2.2 on your desktop computer.

When ArcMap opens, select the data *layers* in your map.

---

**Caution!** You must select data layers in your map prior to working with SIT. If you attempt to use SIT without selecting data layers, then SIT will not function as described in this and subsequent sections of this document.

---

From the ArcMap toolbar, select the SIT Tool icon as shown in Figure 4-16. This button will launch SIT.

![The SIT Tool Icon](image)

*Figure 4-16. The SIT Tool icon in the ArcMap toolbar.*

The **DATIM Login** window will pop-up. There are two ways to login to the SIT tool.

i. Connect using your FS AD user name and password.

ii. From the DATIM login window, ensure that the **PROD** is selected from the **Connection** drop-down as the server to connect to (Figure 4-17).
b) In the space provided, enter your *FS AD User Name* and *Password* for the DATIM Database Connection selected. When finished select **OK** (Figure 4-18).

![Figure 4-17. DATIM login required to run SIT.](image)

![Figure 4-18. The DATIM Login View.](image)

c) Once you have entered in your FS AD login information, select **OK**. After logging into DATIM, you are automatically directed to the DATIM – Spatial Intersection Tool (SIT) *page* as shown in Figure 4-19.
ii. Alternatively, you can connect using the Session Link Key.

   a) At the top of the Spatial Intersection Tool Addin page, copy the **Session link key** to your clipboard. This session link key will be used in the DATIM login window. Select the **Copy to clipboard** button (Figure 4-20).
Spatial Intersection Tool Addin

**Note for SIT users without an eAuthentication or Active Directory account:**

Please copy this session link key and enter it into the SIT Addin. This will link your SIT session with this browser session.

**Session link key:**

Copy to clipboard

*Warning:* If you close your browser window while working in SIT, all linked progress will be lost.

SIT is available to Forest Service (FS) users with Active Directory accounts, and to non-FS users with Level 1 eAuthentication accounts. If you do not have an eAuth account, you may request one from the USDA. Click here to request a new USDA Level 1 eAuthentication account.

**To use SIT using your local ArcGIS installation:**

1. Save the SIT Addin file to your local machine. Click here to download the SIT Addin File (11.3 MB).
2. Place the SIT Addin file in the C:\Users\<USER_NAME>\My Documents\ArcGIS\Addins\DesktopXX.XX directory, where XX.XX is the version of ArcGIS on your machine.
3. Proceed with the instructions below for using SIT in Citrix.
4. For unauthenticated users, check **Connect to SIT using Session Link Key**, paste the Session Link Key from DATIM, and click OK.
5. For Forest Service users, enter your FS AD User Name and Password and click OK.

**To use SIT in Citrix:**

1. Launch ArcMap in Citrix from a RIM blade.
2. Go to Customize > Add-In Manager.
3. In the Add-In Manager dialog, click the Options tab.
4. Click the button labeled Add Folder.
5. Browse to the folder \FS\Public\SECTools\AddIn\Application\ArcGIS 10.3\AddIn and select SIT. Click OK.

**Figure 4-20. Copying the session link key to your clipboard.**

**TIP:**

If you are using Internet Explorer a message may pop up requesting access to your clipboard, select the **Allow Access** button, to continue.

b) From the DATIM login window, select the checkbox to **Connect to SIT using a Session Link Key**. In the **Link Key** text field, paste the session link key and
select OK to continue (Figure 4-21).

Figure 4-21. Logging into DATIM using the session link key.

c) You are automatically directed to the DATIM – Spatial Intersection Tool (SIT) page as shown in Figure 4-19.

From the Select Task tab, click the Create Point Layer (Fuzzed Coordinates) button (Figure 4-22). Alternatively, you can click the Create Point Layer tab.

Figure 4-22. Selecting the Create Point Layer tab in SIT.

TIP: All of your selections made while using SIT, will appear on the right-side of the application under the Your Selections heading.
Choose an analysis from the **Select Analysis** list box. For this example, we will create plots for Arizona. We will select **Arizona 2005-2014**. Next select the Feature Dataset to match the Layer’s Projection- the layers shown are those in the table of contents in your ArcMap project.

After you select the dataset and projection dataset, select the **Create Point Layer** (Fuzzed Coordinates) button (Figure 4-23).

![Figure 4-23. The Create Point Layer Button.](image)

A **Save As** screen will pop-up next, indicating for you to create a file name for your shape file and a destination to save it to. For this example, the file name is: **Arizona_2005-2014_Fuzzed**. When you are finished, select **Save** to save the shape file (Figure 4-24).
At this point, SIT will create the Point Layer shape file of the point layer using the fuzzed coordinates. Fuzzed coordinates are used to maintain the security of the actual plot locations. It may take a few minutes to create the shape file depending on the state of the dataset collected. Once the point layer has been created, you will receive a notification. Select OK to close the notification as well as the SIT program as shown in Figure 4-25.

The point layer dataset will now appear in the Table of Contents section of ArcMap (Figure 4-26).
Next, right select the dataset in order to view more options; from the available options, select the Open Attribute Table option (Figure 4-27).

The Attribute Table will open in ArcMap. The XCoord and YCoord columns are the X and Y fuzzed UTM coordinates. The sauf_cn column consists of control numbers that will be used by ATIM and other applications, including SIT, to perform intersections and more.
Creating a SIT intersection

To create a SIT intersection using ArcMap:

1. Within ArcMap, begin by selecting the SIT tool.

2. Next, in the DATIM Login window, select the server that you want to connect to and enter your user login information. Once you are finished, select OK.

3. From the Select Task tab, click the Setup Intersection button (Figure 4-28).

4. When the SIT Intersection tab opens, from the Analysis drop-down list, select the DATIM analysis you want to work with. For this example, we will be working with Missouri 2004–2008 (Figure 4-29).
Figure 4-29. Choosing a DATIM analysis from the drop-down list.

5. Next, enter a name and description for the intersection you want to create. In our example, we have entered in TEST HUC10 (Figure 4-30).

Figure 4-30. Inserting an ATIM Attribute name.
6. Next, enter in a description of your intersection (Figure 4-31).

7. Move to the next tab by clicking the Next button at the bottom of the Intersection page, or click the Feature Dataset tab heading.

TIP: Use the Previous button, and Next button, to navigate through the SIT tabs.
8. From the **Select Feature Dataset** list box, select the polygon layer to intersect. For this example, we have chosen `MTNF_HUC_10s_UTM83` (*Figure 4-32*).

![DATIM Spatial Intersection Tool (SIT) screen](image)

*Figure 4-32. The Select Feature Dataset list box.*

**NOTE:** Choosing the **Filter CNs** button allows you to enter a text file of specific SAUF_CN’s that come from the Plot Shapefile you created using SIT. Once the file is uploaded, SIT will search and select only these plots and use them in the Intersection.

9. From the same tab, use the **Select Point Data Set** drop-down list to select the Point shapefile that you want to use. For this example, we want to select `290801_MISSOURI_2008_2004-2008_CURRENT_AREA_CURRENT_VOLUME_FUZZED` (*Figure 4-33*). Be sure that the Point Data Set is the one that you would like to use.

**NOTE:** Checking the **Use Actual Coordinates** box will intersect polygons with temporary plots created from the actual plot coordinates. Only administrative users will be capable of selecting this option. When available, this intersection will follow strict FIA rules. No plot file is created for the user.
10. Move to the next tab by clicking the **Next** button at the bottom of the **Feature Datasets** page, or click the **Attributes** tab. Within this tab, you will see a list beneath the label **Select Attribute(s)**, select the polygon attribute to transfer to the plot data. In this example, we will select **HU_10_NAME** (Figure 4-34).
Figure 4-34. Selecting a polygon attribute.

NOTE: Checking the Edit Intersected Plot values (meters) box allows administrative users to determine if the plot is in the correct place. If it is not then you can change the attribute that you selected.

11. Once all of your selections have been made, click the Run Intersect button (Figure 4-35).

NOTE: The process of running an intersection may take some time to complete, please be patient during this time.
NOTE: Use the Clear button, \( \text{Clear} \), to clear all of your selections in SIT and start again.

12. Once completed, a message will display indicating that the intersection is complete (Figure 4-36). Click OK to close the message. The SIT interface will remain open in case you want to select and add another attribute to the same data sets or run other intersections. The intersection results are now stored in the Analysis dataset in the DATIM data mart.
Generating Population (POP) Tables

DATIM Population (POP) tables are used to compute population estimates. These describe the area in which samples reside, the scope of population estimates that can be computed from those samples, the sample design and sample method used, and stratification method employed.

This SIT feature allows the user to create their own DATIM datasets rather than use those created by FIA. Doing so may produce more precise estimates.

---

**CAUTION!** Ensuring that an appropriate POP table is created requires detailed knowledge about how the sample locations were selected and what was recorded at those locations.

---

To begin working with POP tables, navigate to the Intersection tab in the SIT tool.

1. Check the box next to Generate POP Tables (Figure 4-37).

![Figure 4-37. Selecting the ‘Generate POP tables’ checkbox to set up the POP tables.](image)

2. Select the Properties button as shown in Figure 4-38.
Figure 4-38. Selecting the ‘Properties’ button to set up the POP tables.

The Pop Table Properties window will open. Here you will name your pop table, select the estimation scope, sample design, sampling method, and stratum method. An example of the Pop Table Properties window is shown in Figure 4-39.

Figure 4-39. The Pop Table Properties window.
3. Begin by entering a name for your Pop table in the text area under the **DATIM datasets description** label. For our example, we will insert *test1* into this text area.

4. Next, from the drop-down list for **Estimation Scope** select from: **ALL AREA**, **SAMP AREA**, or **RESAMP AREA** (Figure 4-40). The following are descriptions of these choices:
   - **ALL AREA** – Out of population samples are included.
   - **SAMP AREA** – Samples are excluded when completely out of population.
   - **RESAMP AREA** – Samples are included only if measurements from two occasions are included.

   ![Figure 4-40. Selecting the ‘Estimation Scope’ for your POP table.](image)

5. From the **Sample Design** drop-down list, select from: **simple random**, **post-stratification**, **stratified random**, **double sampling** (Figure 4-41).
6. Next, choose one of the following from the Stratum Method drop-down list: NONE, ESTIMATED (sampled), and KNOWN (wall-to-wall) (Figure 4-42).

7. Once the Pop table properties selections have been made, select OK as shown in Figure 4-43.
Figure 4-43. Selecting ‘OK’ after completing the Pop Table Properties.

8. The Pop Table Properties window will close and you will be returned to the Feature Data Sets tab in SIT. Next, select the Filter CN’s button (Figure 4-44).

Figure 4-44. The ‘Filter CN’s’ button.
9. A new window – **Open the CN list file** - will open, prompting the user to select a text file. This file will contain a list of the CN numbers representing and linking the *plots* that will be used in the SIT intersection. Select the appropriate text file and select **Open** (Figure 4-45).

![Open the CN list file](image)

Figure 4-45. The ‘Open the CN list file’ window.

10. You will be returned to the **Data Sets** window in SIT. Select the **Run Intersect** button to run your intersection so long as all of the other selections have been made according to the section, **Creating a SIT intersection**
Chapter 5: DCS (Administrative Users Only)

Last updated: 05/2017

Introduction to DCS

The DATIM Compilation System (DCS) was developed to augment and enhance existing DATIM datasets with the additional metrics necessary to conduct analyses and generate reports. Using DCS, advanced users are able to convert selected DATIM datasets to a format that can be read by the Forest Vegetation Simulator (FVS), and then run FVS to obtain computed variables. Users are also able to run post-processors in DCS to produce additional computed variables using FVS variants that contain regional algorithms and methods. The augmented dataset can then be loaded back into the DATIM data mart for use by ATIM (Analysis Tool for Inventory and Monitoring), DTIM (Design Tool for Inventory and Monitoring), and SIT (Spatial Intersection Tool) users.

Running a compilation in DCS is an optional step in building a DATIM dataset. Advanced knowledge of the inventory data, compilation methods, and DATIM dataset construction is required. The data is “compiled” according to region-specific requirements using FVS. A working knowledge of FVS is also highly recommended. Users must have administrative privileges in order to run this program. For additional information regarding DCS and FVS, please see Appendix G – DCS and the Forest Vegetation Simulator (FVS) overview.

Getting Started

To start using DCS:

1. After logging into DATIM, select DCS in the DATIM navigation menu. Alternatively, you can select the Compilation button on the Welcome to DATIM home page (Figure 5-1).

NOTE: If you do not login prior to clicking the DCS link or on the Compilation button, you will be prompted to do so. See section on logging into DATIM.
2. You will be directed to the Welcome to the DATIM Compilation System (DCS) page with two options: Compile an ETL Project and Update Attributes (Figure 5-2).

If you would like to augment and enhance existing DATIM datasets, continue to the section on compiling an ETL project. If you would like to update the metadata for attributes in the DataMart, continue to the section on updating attributes.
Compiling an ETL Project

A compilation module in DCS refers to a predetermined set of user inputs and processes used to run a compilation to enhance selected DATIM datasets using Forest Vegetation Simulator (FVS) and, in some cases, to conduct post-processing.

When compiling an ETL project, you can do so by utilizing FVS with or without the use of an uploaded keyword component file (KCP), which is an “addfile” used to perform complicated interactions with the FVS models. With this task, you will be able to load and compile basic data and create new DATIM datasets.

**CAUTION!** Multiple users are not able to use the basic compilation module and run FVS at the same time. FVS is a single-user operation.

The DCS wizard walks you through four main steps to compiling an ETL project. Each step is briefly introduced below.

**Step 1: Project Selection.** The DATIM data mart stores ETL’d data from external sources from corporate databases (i.e., FIADB, FSVeg, or NIMS). During this step, you will identify the ETL project you want to use to create the DATIM Dataset. The ETL projects available for selection vary by region.

**Step 2: Load Project.** You will specify the run settings depending on whether you would like to compile data for national forests plots only or if you would like to compile all forest and non-forest data plots in the selected ETL project, regardless of ownership.

**Step 3: Configure FVS.** You will specify which variant to process and whether you would like to use the default KCP file or if you would like to use a customized KCP file.

**Step 4: Displaying FVS results and errors.** Once FVS has finished running, you will be able to review your results and any errors that occurred during the run. You can also download the results to your local system, commit the data to the data mart, and start over with compiling a new ETL Project or variant.

**ETL Project Selection**

**To compile an ETL Project:**

1. From the Welcome to the DATIM Compilation System (DCS) page, select the Compile an ETL Project button (Figure 5-3).
2. From the Step 1: Project Selection page, use the drop down list to select the region associated with the ETL Project you would like to unlock. From the Region drop down list, we will select Region 9 (Figure 5-4).

![Diagram of Region selection]

Figure 5-4. Selecting a region for your ETL Project.

**NOTE:** If you are unsure which FS Region to select for the forest inventory data you are interested in, then follow the link to a map of the various Forest Service Regions.

3. Next, using the ETL Project drop down list, choose the ETL project you would like to transform and make it FVS-ready. From the drop down list, we will select FIADB_29_2005 (cycle 6) (Figure 5-5). This ETL project consists of Region 9 FIADB data collected for the state of Missouri (indicated by the state code for Missouri, 29, in the ETL project name) for the inventory year 2005.

**NOTE:** A list of state codes are provided in Appendix J for your reference.
Figure 5-5. Selecting an ETL Project.

4. Select the Select a Project button to continue on to the next page – Step 2: Load Project – where you will specify the run settings for the ETL project you want to load (Figure 5-6).

Figure 5-6. Finalizing the ETL Project selection to move onto the next step.

NOTE: Most ETL projects are processed by State and Inventory Year (the initial year the data were collected in the field). Currently, FIADB and FSVeg data can be loaded into the DATIM data mart. Check with your Regional Administrator for data availability and compatibility.
Load Project and Select Run Settings

Determining the data you want to run in FVS:

1. The top of the Step 2: Load Project page, displays the ETL project selections you made in step 1 – region and ETL project name. Below are two radio buttons to choose from for the Run Settings: Run National Forest Plots Only and Run State, Private, and National Forest Plots. In our example, we have selected the Run National Forest Plots Only option, which is also the default selection. A gray dot inside the radio button indicates which option is selected (Figure 5-7).

Choosing Run State, Private, and National Forest Plots, will allow you to compile all forest and non-forest data plots in the selected ETL project, regardless of ownership. Whereas the Run National Forest Plots Only option will compile only data plots for national forests.

![Figure 5-7. Choosing ETL Project Run Settings.](image)

2. Next, select the Load ETL button to continue to the next page where you will configure the FVS settings for the ETL project (Figure 5-8). This process allows DCS to determine which FVS variants are included in the ETL project selected. Selecting the Previous option will take you to the previous page where you selected which ETL project you wanted to work with.
3. A notification will pop-up informing you that DCS is processing the data to determine which FVS variants are included in the ETL project (Figure 5-9). This process can take several minutes to complete.

**Figure 5-9. ‘Processing…’ notification while FVS variants are being determined.**

---

**NOTE:** All ETL datasets have one or more FVS variants, assigned by the FS Region where the plots are located. Variants are geographic zones that are mutually exclusive and non-overlapping. A variant controls which volume and growth equations will be used to process the data. The variant is part of the dataset, and each plot is assigned to a variant based on the plot’s location. For a list of FVS variants and their codes, see Appendix G – List of FVS Variants.

---

4. Once the data has been successfully split into separate data files according to FVS variant, you will automatically be directed to the Step 3: Configure FVS page, where you will decide which variant to process and the run settings for that process.

Continue to the section on **Configuring FVS Settings**.

**Configuring FVS Settings**

Determining the variant you want to process and the run settings:
1. From the Step 3: Configure FVS page, use the **Variants** drop-down menu to view the variant code(s) found during the search. Select the variant of interest. For the `FIADB_29_2005 (cycle 6)`, we will select the `CS` variant from the drop-down list to process, which is also the only variant available for selection (Figure 5-10).

**CAUTION!** Multiple variants are especially common in the Western Regions, while the Eastern and Southern Regions typically use a single variant. If your ETL project contains more than one variant, you will need to process each variant one at a time.

**NOTE:** For more information on the variant(s) available for selection, visit Appendix G – List of FVS Variants in this document.

![Figure 5-10. Selecting an FVS variant.](image)

2. Next, you will choose how you want to run FVS by choosing one of the three available options:

   **Option 1:** Running DCS using Default settings.

   **Option 2:** Running DCS using Custom settings.

**Default DCS Settings (Option 1)**

Using the default settings option in DCS, for ETL projects selected for Regions 8 or 9, DCS will run the FVSSTAND post-processor that is programmed into DCS. For ETL projects selected for Regions 2, 3, and 4, the default Region 3 KCP file will be ran, which is also programmed into DCS. The names of the computed attributes must exactly match the names of the FVS data attributes (See Appendix F – List of FVS Data Attributes).

**CAUTION!** There are currently no default settings for regions 1, 5, 6, and 10, a custom KCP file should be ran for ETL projects selected for those regions. Please see the section on using Customized DCS Settings.
NOTE: For more information about FVS keyword component addfiles, visit the Forest Vegetation Simulator web page.

To run DCS using the default settings:

1. From the Step 3: Configure FVS page, ensure you have selected a variant to process.

2. Below the Variants drop-down list, are two radio are two radio buttons to choose from for the Run Settings: Default Settings and Custom Settings. We will select the Default Settings option, which is also the default selection. A gray dot inside the radio button indicates which option is selected (Figure 5-11).

![Figure 5-11. Using Default DCS Settings to configure FVS.](image)

3. Next, select the Run FVS button to begin processing the ETL project (Figure 5-12).

   Since the ETL project we selected is from Region 9, the default settings will run the FVSSTAND post-processor on the ETL project to process the data.
Customized DCS Settings (Option 2)

The second option for processing an ETL project is to upload a custom KCP file, which you can do for any FS region. The customized settings can also be used for Regions 1, 5, 6, and 10 since there is no default settings for these regions. You can also choose to use the FVS post-processor to run FVS.

Post-processors are programs which read FVS output files and produce additional reports such as stand and stock tables, wildlife habitat related estimates such as elk hiding cover, and various other metrics (Dixon 2002). The FVS Stand Alone post-processor is an advanced forest planning post-processor used to produce standard stock and stand tables (Vandendriesche 2014).

NOTE: For more information about FVS keyword component addfiles, visit the Forest Vegetation Simulator web page.

To run DCS using customized settings:

1. From the Step 3: Configure FVS page, ensure you have selected a variant to process.

2. Below the Variants drop-down list, are two radio buttons to choose from for the Run Settings: Default Settings and Custom Settings. We will select the Customized Settings option. A gray dot inside the radio button indicates which option is selected (Figure 5-13).

Figure 5-12. Running FVS.

Skip ahead to the sections on Displaying FVS results and errors, Downloading FVS Results, and Committing FVS Results.
Figure 5-13. Customizing your FVS Settings.

3. The Step 3: Configure FVS page will display the custom setting options. In the **Custom FVS File** box, you can either type or copy and paste the KCP file you would like to use. For this example, we will copy/paste the Region 3 KCP file into the **Custom FVS File** box (Figure 5-14).

Figure 5-14. Inserting a custom KCP file.
4. Below the **Custom FVS KCP File** box, you can use the **Post Processor** drop-down to select whether you would like to use a post-processor or not. The current post-processor that DCS accommodates is the FVS Stand post-processor. For this example, we will select the option of **None** (Figure 5-15).

![Figure 5-15. Selecting a Post Processor when customizing FVS Settings.](image)

5. After you have completed all of your selections, select the **Run FVS** button (Figure 5-16).

![Figure 5-16. Running FVS with Customized Settings.](image)

Continue to the sections on **Displaying FVS results and errors**, **Downloading FVS Results**, and **Committing FVS Results**.

**Displaying FVS Results and errors**

After you run FVS, you will be taken to the **Step 4: FVS Results** page. This page displays the FVS results obtained after selected the ETL project of interest, the variants you would like to run.
the compiler on, and the default or customized settings. Any errors that may have occurred while running FVS are also listed on this page. You can also download the results to your local system, and lastly, once you are satisfied with the report results, you can commit the report results to the DATIM data mart to be used by other DATIM tools.

NOTE: Refer to Appendix H and Appendix I to see which FVSSand Data Attributes are committed to the DATIM data mart.

1. After FVS has finished running, you will be directed to the Results tabbed form on the Step 4: FVS Results page. This form displays the calculated data, and you can use the page navigation at the bottom of the form to view all of the results (Figure 5-17).

![Figure 5-17. Displaying FVS Results.](image)

2. To view the FVS error log, click the Errors tab on the Step 4: FVS Results page (Figure 5-18).
For information about errors reported on the Errors tab, visit the FVS Technical Support web page. Many errors are explained in the Frequently Asked Questions (FAQs) portion of that web page.

If you believe that an error is serious enough to impact the data, you may need to contact the Regional Administrator and discuss potential remedies. “Data out of range” type errors may be ignored.

**Downloading FVS results**

After you have reviewed the FVS results and the error log and are satisfied with the FVS output, you can download a zip file of the project results to your computer.

1. At the bottom of the Step 4: FVS Results page, select the Download Results button (Figure 5-19).
Figure 5-19. Downloading FVS Results.

2. A zip file will be downloaded to your local downloads folder. Navigate to your Downloads folder to find the file. The zip file will be named following the format FVSResults-[YYYYMMDD].zip. Where [YYYYMMDD] represents the year, month, and day you updated the attributes. For this example, the file folder in our Downloads folder will be FVSResults-20170520.zip (Figure 5-20).
Committing FVS Results

After you have reviewed the FVS results and error log and are satisfied with the FVS output, you may now commit the FVS results to the DATIM data mart.

1. At the bottom of the Step 4: FVS Results page, select the **Commit Results** button (Figure 5-21).
2. When the FVS results have been successfully loaded into the DATIM data mart, a notification will pop up letting you know that the results successfully committed to the data mart. Click OK to close the message (Figure 5-22).

CAUTION! The FVS results that are committed to the data mart vary. An alternate message will pop up in the instance that not all attributes are committed to the data mart. Please see the appendices I and J to see which attributes get committed to the data mart.
Congratulations! You added a compiled dataset to the DATIM data mart! This dataset is now available for selection using the create new analysis task in ATIM.

Starting Over in DCS
To start again in DCS:

1. At the bottom of the Step 4: FVS Results page, select the Start Over button (Figure 5-23).

![Figure 5-23. Starting Over in DCS.]

You will be returned to the Step 1: Project Selection page, where you can start another compilation project in DCS or to unlock an ETL project.

Unlocking your ETL Project
When you open an ETL project, DATIM locks it for your exclusive use. This feature prevents multiple users from simultaneously using the same project. If you do not intend to create a compilation with an ETL project you were previously using, we suggest you unlock it so that other users may access it.

NOTE: Clearing the compilation form, starting over in DCS, logging out of DATIM, or closing DCS will NOT unlock the ETL project.
CAUTION! All administrative users have the ability to unlock any ETL Project whether it is in use or not. Once you are finished working with a particular ETL Project, it is very important that you find the project and unlock it. Otherwise, an administrative user may unknowingly unlock a project being worked on. If you are an administrative user and would like to unlock an ETL project, we recommend you check back at a later time to see if the user has unlocked the project. Unlocking a project in use could cause disruptions in the compilation.

To unlock a project: from the Welcome to the DATIM Compilation System (DCS) page:

Here we will unlock the ETL Project – **FIADB_29_2005 (cycle 6)** – used in an earlier section of this chapter that discussed **Compiling an ETL Project**.

From the Welcome to the DATIM Compilation System (DCS) page, you will:

1. Select the **Compile an ETL Project** button.

2. From the **Project Selection** page, use the drop down list to select the region associated with the ETL Project you would like to unlock. From the **Region** drop down list, we will select **Region 9** (Figure 5-24).

![Figure 5-24. Selecting a region corresponding to the ETL project you want to unlock.](image)

3. Next, using the **ETL Project** drop down list, choose the ETL project you want to unlock. From the drop down list, we will select **FIADB_29_2005 (cycle 6)** (Figure 5-25).
4. If the project is locked, a notification will pop up, informing the user of this. Select OK to close the message (Figure 5-26).

5. You are returned to the Project Selection page. Select the Unlock Project button to continue (Figure 5-27).
6. A notification will pop up asking if you are sure you want to unlock the selected project. To unlock the ETL project, select the **Unlock** button (Figure 5-28).

   If you click **Cancel**, instead, you will be returned to the **Project Selection** page, where you can select a different [ETL project to unlock](#) or work on [compiling an ETL project](#).

   ![Unlock Project](image)

   **Figure 5-28. Notification confirming unlocking the ETL Project.**

The ETL project is now unlocked and available for use by other users.

**Updating FVS Attributes**

Administrators responsible for running the compiler can also use **DCS** to update FVS attributes. This feature places the updated **FVS** variants in either the SAMP_UNIT_FOREST or SAMP_UNIT_TREE table in the data mart.

To update FVS attributes:
1. From the Welcome to the DATIM Compilation System (DCS) page, select the **Update Attributes** button (Figure 5-29).

![Figure 5-29. Selecting the DCS ‘Update Attributes’ task.](image)

You will be directed to the **Project Attribute** page, where you will select the region and ETL project for which the attribute metadata you would like to update.

2. From the **Project Attribute** page, use the **Region** dropdown list to select the region associated with the ETL project you would like to update the attribute metadata for. From the **Region** drop down list, we will select **Region 9** (Figure 5-30).

![Figure 5-30. Selecting a region for the ETL Project you want to view or update attributes for.](image)

3. Next, from the **Project** dropdown list, select the ETL project. For this example, we will select **FIADB_29_2005 (cycle 6)** (Figure 5-31).
Figure 5-31. Selecting an ETL Project to view or update the attributes for.

4. The **Project Description** box is populated with the description metadata for the project. If you would like, you can alter the text in the **Project Description** as needed (Figure 5-32, #1). Once you are finished select the **Save** button and continue (Figure 5-32, #2).

![Figure 5-32](image)

**Figure 5-32.** Updating the ETL Project Description Metadata.

5. Below the **Project Attribute** information area, there is the **Attribute** section. Use the **Attribute Level** drop down list in the **Attribute** section to filter the attributes available for selection. The levels available for selection are:
Plot – FVS can be configured to compute plot level attributes populated in the DATIM data mart SAMP_UNIT_FOREST table. Choose this level to filter the attributes available for selection by plot.

Subplot – FVS can be configured to compute subplot/condition level attributes populated in the DATIM data mart SAMP_UNIT_TREE table. Choose this level to filter the attributes available for selection by plot.

For this example, we will choose the Plot level (Figure 5-33).

6. Next, from the filtered attributes, use the Attribute drop down list to view and select the attribute for which you would like to update the metadata for. For this example, we will select FVS_ANNUAL_CF_GROW (Figure 5-34).
7. Once you have selected an attribute, the metadata will be displayed in the fields listed in the Attribute area (Figure 5-35). Some of these fields come pre-populated; grayed-out fields cannot be updated.

NOTE: For a description of each of the metadata fields, see Appendix K.

Figure 5-35. Attribute Metadata Fields.

8. Once you have finished making changes to the metadata for a particular attribute. You can either save your results to the DATIM data mart using the Save button at the bottom of the Project Attribute page (Figure 5-36, #1); and/or you can download a report of the updated project attribute metadata to your local system by selecting the Download Report button at the bottom of the page (Figure 5-36, #2). A PDF version of the report will be downloaded to your local Downloads folder. Navigate to your Downloads
folder to find the file named following the format Attributes-[YYYYMMDD].pdf. Where [YYYYMMDD] represents the year, month, and day you updated the attributes.

Figure 5-36. The Project Attribute ‘Save’ and ‘Download Report’ buttons.

NOTE: Use the Return to DCS Main button, at the bottom of the Project Attributes page to be returned to the Welcome to the DATIM Compilation System (DCS) page where you can compile an ETL project or update attributes.
References


Technical Appendices
Appendix A – Understanding DATIM

**Introduction to DATIM**

*DTIM* (Design Tool for Inventory and Monitoring) is used for designing more efficient monitoring plans based on user-selected objectives, questions and metrics. If available data are insufficient to obtain statistically defensible *estimates* of current *conditions* and trends, then DTIM helps the user plan for the additional sampling needed.

*ATIM* (Analysis Tool for Inventory and Monitoring) is used for creating statistically defensible analyses and reports. This tool assists users in analyzing forest and *vegetation* data to derive estimates of current conditions and trends for an area of interest, such as for answering monitoring questions posed in DTIM.

*SIT* (Spatial Intersection Tool) is used to perform spatial intersections between *plot*-based data and user-selected geospatial *layers*, with the results of those intersections stored in *DATIM* for analysis in ATIM to refine analyses and reports. SIT is used to access geographic information systems (GIS) with the *spatial data* located locally and remotely on intranets/internet. This tool includes enhanced spatial querying and reporting capabilities using Esri’s ArcGIS software and other data visualizing and data mining techniques.

*DCS* (DATIM Compilation System) is used by national and *regional administrators* to load external data into the DATIM data mart for use in DATIM. Users are able to select datasets from the DATIM data mart, run the data through the *Forest Vegetation Simulator (FVS)* to compute additional data.
Appendix B – Understanding DATIM Datasets

To better understand what an ATIM analysis is and what it consists of, you first need to understand what DATIM datasets are, the sources of data used to create them, and how they are generated. We will now give you a glimpse into what happens "behind the scenes" to generate the resource inventory datasets that you will use to construct your ATIM analyses.

Introduction to DATIM datasets

To understand what an ATIM analysis is and how it is created, you must know a little something about its building blocks. The building blocks of ATIM analyses are DATIM datasets, which currently comprise resource inventory data (field collected resource data and calculated variables) derived from source datasets extracted from the Forest Inventory Analysis Database (FIADB) (http://www.fia.fs.fed.us/library/database-documentation/) (O’Connell et al. 2015) maintained by the U.S. Forest Service’s Forest Inventory Analysis (FIA) Program, as well as FIA and NFS resource data extracted from the Natural Resource Information System (NRIS) Field Sampled Vegetation (FSVeg) (http://www.fs.fed.us/nrm/fsveg/index.shtml) database. In the future, natural resource datasets from other FIA programs, such as the National Information Management System (NIMS), will also be used to create DATIM datasets.

A DATIM dataset contains the necessary resource data for computing population estimates. DATIM datasets are currently composed of related inventory data obtained from FIADB; thus the DATIM dataset structure includes one or more estimation units, with estimation units comprising one or more data points, and with data points comprising of one or more attributes. Below we provide a definition for each component of the dataset structure, as described by Brand and Alegria (2011).

- A dataset is a collection of estimation units and data points that are collectively exhaustive and mutually exclusive.
- Each estimation unit included in a dataset is a pre-defined area of known size that contains data points that share the same plot design, sampling intensity, and set of attributes collected with the same protocols. An estimation unit encompasses enough plots so that useful variances may be computed.

NOTE: As defined by Bechtold and Patterson, Eds. (2005), a plot is a cluster of 4 points arranged such that point 1 is central, with points 2, 3, and 4 located 120 feet from point 1 at azimuths of 360, 120, and 240 degrees, respectively. Each point includes a microplot, a subplot, and an optional macroplot. A sampling unit is the basic unit of selection and observation. FIA units use the center point of the 4-point cluster of subplots as the primary sampling unit.
• A data point is an attribute that is collected or calculated according to common protocols for an estimation unit.

• An attribute is a discrete or continuous variable, usually associated with the classification or measurement of area or vegetation (Bechtold and Patterson 2005).

Your ATIM analysis, then, consists of the DATIM datasets that you select for your population of interest, including all of the estimation units, data points, and attributes associated with the source data.

How DATIM datasets are created

DATIM datasets are created by regional Forest Service specialists during the compilation phase for use by resource analysts. The process by which DATIM datasets are generated is a complicated one. In general, the regional specialist identifies a source dataset to be included in the DATIM data mart. (An example of a source dataset identified by a regional specialist is a Setting List in FSVeg) The source dataset is then extracted from the original data source and loaded into the DATIM data mart where it becomes available as DATIM resource data.

Next, the regional specialist uses the DATIM Compilation System (DCS) to compile selected DATIM resource data by running it through the appropriate regional compilation module. Each regional compilation module included in DCS includes a particular set of calculated variables and algorithms for transforming and summarizing resource data according to the Region's specific data requirements.

NOTE: The process of extracting data from an external data source, transforming the data according to regional requirements, and then loading the data into the DATIM data mart is known as ETL, for "extract, transform and load."

Because a DATIM dataset must include resource data from a statistically valid sample, additional population data associated with the compiled DATIM resource data must be extracted, transformed, and loaded (ETL’d) into the DATIM data mart. These include population data such as estimation units, stratification information, and purpose of estimation. The resulting product is a DATIM dataset with available attributes for a specific geographic area and time period. The DATIM dataset not only contains the field collected resource data, but also derived variables such as those generated by the FVS tool. This greatly expands the types of analyses that can be performed on DATIM datasets.

Currently, the only source of population data used to produce a DATIM dataset is FIADB. Eventually, users will also be able to produce their own custom DATIM datasets and analyses.
DATIM dataset naming structures

When you select DATIM datasets to create an ATIM analysis, you will notice that those datasets are presented in a variety of structures. This is because the datasets were created by a variety of Forest Service specialists, each with their own system of organizing, naming, and differentiating datasets.

The data structure provided in the following DATIM dataset examples applies to the majority of the datasets that you will encounter in ATIM. They were created from annual state inventory datasets extracted from FIADB (POP_EVAL table).

Examples of DATIM dataset names include the following:


As in the examples provided, DATIM dataset names will typically begin with the 6-digit evaluation ID used to identify a source evaluation record for expansions of the estimated variable(s). This number is equal to the EVALID in FIADB and the online EVALIDator. Next, the dataset name will often contain the evaluation description, which includes the name of the State inventoried, the report year, and the span of years included in the dataset inventory measurement cycle (start year – end year). A cycle is one sequential and complete set of panels, with a panel defined as a sample consisting of the same elements measured on two or more occasions (Bechtold and Patterson 2005). Finally, the estimate attribute will often be included in the dataset name (e.g., ALL AREA, CURRENT AREA, and CURRENT VOLUME).

In the first example, ALL AREA refers to the evaluation used to estimate total area, including sampled and non-sampled plots. In the second example, CURRENT AREA refers to the evaluation used to estimate total area from only the sampled plots, and CURRENT VOLUME refers to the evaluation used to estimate volume, biomass or number of trees, based on the sampled plots within the population that qualify for volume estimates (Woudenberg et al. 2010).

For more information about the various types of expansions of estimated variables included in FIADB, refer to the FIADB User Guide, which can be accessed at the following web address: http://www.fia.fs.fed.us/library/database-documentation (O’Connell et al. 2015).

Understanding DATIM subsets

When you create an ATIM analysis, the DATIM datasets that you select are copied into a DATIM subset. DATIM subsets are stored in the DATIM data mart for later use by you and your team as a snapshot in time and will not change even when data in the data mart are revised,
which is critical for Forest planning. The DATIM subset consists of all of the data you selected for inclusion in your ATIM analysis.

The ability to create DATIM subsets means that you have greater flexibility in the kinds of analyses that you conduct. DATIM subsets allow you to group DATIM datasets together to provide a more complete analysis. For example, you may want to look at both the current estimates and change estimates for a given place and time. However, the DATIM dataset used to compute current estimates may differ from the dataset used to compute change estimates. Bringing both datasets together into one subset clearly makes them part of the same analysis.
Appendix C – Information about preloaded DTIM Base Modules

Base Modules
The Base Module is the first task in the DTIM project creation wizard. This module will predetermine which available objectives, questions and metrics will be grouped together for use in your monitoring plan. A number of base modules are available in DTIM with nationally and regionally defined objectives, questions, and metrics. If you are an administrative user, you can also create your own modules from saved projects. The module that you select or create depends on the type of monitoring plan you want to design. The base modules preloaded in DATIM version 6.0 include the following:

- The 2012 Planning Rule module is based on the National Forest Management Act (NFMA) land management planning rule adopted by the U.S. Department of Agriculture (USDA) in 2012. The new planning rule guides the development, amendment, and revision of land management plans for all NFS units, including national forests. It sets forth process and content requirements to guide the development of land management plans. For more information, see the National Forest System Land Management Planning, Final Rule (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf).

  Citation:

- The Forest Inventory and Analysis (FIA) Intensification module is based on intensified sampling according to the FIA Program's national sampling design and estimation procedures. For more information about FIA Intensification, see Blackard and Patterson (2014), General Technical Report RMRS-GTR-329 (https://www.fs.fed.us/rm/pubs/rmrs_gtr329.pdf).

  Citation:

- The English-language Food and Agriculture Organization of the United Nations (FAO) – English 2015 module is based on the Food and Agriculture Organization of the United Nations (FAO) program to support countries in developing national forest
monitoring systems and assessments (FAO 2013). For more information, visit the FAO Forest Monitoring and Assessment web page (http://www.fao.org/forestry/fma/en/).

Citation:


- The National Forest System Monitoring and Evaluation Framework is based on the National Forest Service's Monitoring and Evaluation (NFS M&E) Framework, which was established to help Forest Service planners meet monitoring requirements. The framework focuses on the need to monitor progress toward desired conditions of key resources such as biological diversity; land health and vitality; soil, water and air; social benefits; economic benefits; and infrastructure capacity (USDA FS 2014d). For more information, visit the Forest Service's Monitoring and Evaluation Framework web page (http://www.fs.fed.us/emc/met/).

Citation:

- The Mark Twain National Forest 2005 Monitoring Guide module is based off the Mark Twain National Forest Monitoring Guide. The module consists of questions matched to the 2012 Rule Objectives.

Citation:

- The National Forest Monitoring System (NFMS) – Spanish & English modules are available in Spanish and English and are based off needs discussed for forests within the Caribbean region.

Citation:


- The **Kaibab Module** consists of needs outlined in the Kaibab National Forest Plan.

  *Citation:*


Appendix D – Standard reports preloaded in ATIM

Standard ATIM Reports:

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<th>Report Description</th>
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<tr>
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<td>Dry weight of CWD on forest land by ownership class and site productivity class.</td>
</tr>
<tr>
<td>ATIM f-DRY_BIOMASS_DWM_PILE</td>
<td>Dry weight of DWM piles on forest land by ownership class and reserve status.</td>
</tr>
<tr>
<td>ATIM f-DRY_BIOMASS_DWM_PILE 2</td>
<td>Dry weight of DWM piles on forest land by ownership class and site productivity class.</td>
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<tr>
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<td>Dry weight of FWD (large) pieces on forest land by forest-type group and site productivity class.</td>
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<tr>
<td>ATIM f-DRY_BIOMASS_MD_FWD</td>
<td>Dry weight of FWD (medium) pieces on forest land by ownership class and reserve status.</td>
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<tr>
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<td>Area of timberland by forest-type group by stand-size class</td>
</tr>
<tr>
<td>ATIM02.8 f-AREA</td>
<td>Area of forest land by county and forest-type group</td>
</tr>
<tr>
<td><strong>Tree count reports</strong></td>
<td></td>
</tr>
<tr>
<td>ATIM04.1 f-NBR_TREE</td>
<td>Number of live trees (at least 1 inch diameter at breast height (d.b.h.)/diameter at root collar (d.r.c.)) on forest land by species group and diameter class</td>
</tr>
<tr>
<td>ATIM04.2 f-NBR_TREE</td>
<td>Number of live trees (at least 1 inch d.b.h./d.r.c.) on forest land by species group and tree class</td>
</tr>
<tr>
<td>ATIM05.1 f-NBR_TREE</td>
<td>Number of growing-stock trees (at least 5 inches d.b.h.) on forest land by species group and diameter class</td>
</tr>
<tr>
<td>ATIM06.1 f-NBR_TREE</td>
<td>Number of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by species group and diameter class</td>
</tr>
<tr>
<td><strong>Tree biomass reports</strong></td>
<td></td>
</tr>
<tr>
<td>ATIM10.1 f-DRY_BIOMASS_AG</td>
<td>Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.) on forest land by species group and diameter class</td>
</tr>
<tr>
<td>ATIM10.2 f-DRY_BIOMASS_AG</td>
<td>Aboveground dry weight of standing-dead trees (at least 5 inches d.b.h./d.r.c.) by species group and diameter class</td>
</tr>
<tr>
<td>ATIM10.3 f-DRY_BIOMASS_AG</td>
<td>Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.) on forest land by ownership class and reserve status</td>
</tr>
<tr>
<td>ATIM10.4 f-DRY_BIOMASS_AG</td>
<td>Aboveground dry weight of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by ownership class and reserve status</td>
</tr>
<tr>
<td>Report Code</td>
<td>Report Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ATIM11.1 f-DRY_BIOMASS_BOLE</td>
<td>Aboveground dry weight in the merchantable bole of live trees (at least 5 inches d.b.h.) on forest land by species group and diameter class</td>
</tr>
</tbody>
</table>

Tree volume reports (*Volumes provided in DATIM are only FIA calculations; users should consult with FIA resources to get the actual calculations.)*

| ATIM14.1 f-NET_VOL_CF          | Net volume of live trees (at least 5 inches d.b.h./d.r.c.) on forest land by owner class and reserved status |
| ATIM14.2 f-NET_VOL_CF          | Net volume of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by owner class and reserved status |
| ATIM14.3 f-NET_VOL_CF          | Net volume of live trees (at least 5 inches d.b.h./d.r.c.) on forest land by forest-type group and stand-size class |
| ATIM14.4 f-NET_VOL_CF          | Net volume of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by forest-type group and stand-size class |
| ATIM14.5 f-NET_VOL_CF          | Net volume of live trees (at least 5 inches d.b.h./d.r.c.) on forest land by species group and diameter class |
| ATIM14.6 f-NET_VOL_CF          | Net volume of standing-dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by species group and diameter class |
| ATIM16.1 f-NET_VOL_CF_SAWLOG   | Net volume of sawlog portion of sawtimber trees on forest land by species group and diameter class |
| ATIM22.1 f-GROSS_VOL_BF        | Gross volume of sawtimber trees (International 1/4-inch rule) on forest land by species group and diameter class |
| ATIM23.1 f-GROSS_VOL_CF        | Gross volume of live trees (at least 5 inches d.b.h./d.r.c.) on forest land by species group and diameter class |
| ATIM24.1 f-SOUND_VOL_CF        | Sound volume of live trees (at least 5 inches d.b.h./d.r.c.) on forestland by species group and diameter class |

Tree carbon reports

<p>| ATIM47.1 f-COND_C_STAND_DEAD   | Carbon in standing dead trees (at least 5 inches d.b.h./d.r.c.) on forest land by state and ownership group |
| ATIM53.1 f_C_AG               | Aboveground carbon in live trees (at least 1 inch d.b.h./d.r.c.) by species group and diameter class |</p>
<table>
<thead>
<tr>
<th>Report Code</th>
<th>Report Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATIM53.2 f-C_AG</td>
<td>Aboveground carbon in live trees (at least 1 inch d.b.h./d.r.c.) by state and ownership group</td>
</tr>
<tr>
<td>ATIM54.1 f-C_BG</td>
<td>Belowground carbon in live trees (at least 1 inch d.b.h./d.r.c.) by species group and diameter class</td>
</tr>
<tr>
<td>ATIM54.2 f-C_BG</td>
<td>Belowground carbon in live trees (at least 1 inch d.b.h./d.r.c.) by state and ownership group</td>
</tr>
</tbody>
</table>
Appendix E – DCS and the Forest Vegetation Simulator (FVS) overview

As illustrated in Figure E-1, prior to working with DCS, vegetation field data were collected, error checked, and stored in a corporate database such as FIADB, FSVeg, or NIMS. The data were then extracted, transformed, and loaded – or ETL'd – from the external data sources into the DATIM data mart and stored as ETL Projects by State and Year. The DATIM Administrator then identified the ETL Project to be used to create a new DATIM dataset for use in ATIM analyses. The ETL data were converted into an FVS-ready format and the converted data stored in the DATIM data mart. Next, FVS was run to “compile” the data to provide current year data estimates and to create additional attributes. (See Appendix F for a list of DATIM dataset attributes.) Finally, the compiled data were error checked before being loaded into the DATIM data mart.
Inventory data are typically collected over a 5, 7 or 10 year cycle, which varies by FIA region. An inventory is considered complete once the data for each year in that cycle have been collected. For example, data must be present for years 1999, 2000, 2001, 2002 and 2003 to complete a 5 year cycle for inventory start year 1999. Working with DCS, the compiler must be run on each of the ETL Projects for each of these years, because DCS can only process one year at a time.

Forest Vegetation Simulator (FVS) overview

Forest Vegetation Simulator (FVS) is the forest growth and yield model used by the USDA Forest Service and other government agencies to predict forest stand dynamics, and by forest managers to summarize current stand conditions, predict future stand conditions under various management alternatives, and update inventory statistics (Dixon 2002). For more information on FVS, visit the FVS home page (http://www.fs.fed.us/fmsc/fvs/).
**DCS** uses FVS to create new computed attributes from inventory attributes. Compiled data sets with these new computed attributes can then be used to provide FVS with current year *estimates* and projections such as growth, management, and yields, as well as future projections for forest and vegetation populations.

The **keyword component file (KCP)** is a text file that contains keywords that tell FVS what to do. A simple example of a KCP file using the keywords “InvYear”, “NumCycle” and “TimeInt” is shown below (Figure E-2).

![Figure E-2. Example of a KCP file.](image)

For more information about FVS, visit the U.S. Forest Service [Forest Vegetation Simulator web page](http://www.fs.fed.us/fmsc/fvs/index.shtml) to learn more and access resources.

### Appendix F – List of DATIM Dataset Attributes

DATIM database attributes computed by `Cmp_FVS_Model_Output2_2015apr01.kcp` KCP file and found in FVSOut.mdb.

<table>
<thead>
<tr>
<th>DATIM Database Attribute Name</th>
<th>Description</th>
<th>Where &amp; How Computed</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVS_ANNUAL_CF_GROW</td>
<td>FVS Annual Cubic Foot Growth (Mort+PAI).</td>
<td>CuGrow from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_ANNUAL_CF_MORT</td>
<td>FVS Annual Cubic Foot Mortality (Mort).</td>
<td>CuMort from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_BF_HARVEST</td>
<td>FVS Harvest – Merchantable Board Feet/Acre</td>
<td>ABdFt from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_BF_LIVE</td>
<td>Merchantable Board Feet/Acre.</td>
<td>BMCuFt from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CF_HARVEST</td>
<td>FVS Harvest – Merchantable Cubic Feet/Acre</td>
<td>AMCuFt from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CF_LIVE</td>
<td>FVS Live – Merchantable Cubic Feet/Acre</td>
<td>BMCuFT from FVS program Cmp_FVS_Model_Output2_2015apr01.kcp.</td>
</tr>
<tr>
<td>FVS_CROWN_BASE_HT</td>
<td>FVS Crown Base Height.</td>
<td>CrBsHgt from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CROWN_INDEX</td>
<td>FVS Crowning Index.</td>
<td>CrwnIdx from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CWD_DIA_0TO3_INCH</td>
<td>FVS Coarse Woody Debris 0-3 in. diameter.</td>
<td>CWD0003 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CWD_DIA_11PLUS_INCH</td>
<td>FVS Coarse Woody Debris 12 in. + diameter.</td>
<td>CWD12p from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>DATIM Database Attribute Name</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>FVS_CWD_DIA_3TO12_INCH</td>
<td>FVS Coarse Woody Debris 3-12 in. diameter.</td>
<td><strong>CWD03t12</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CWD_DUFF_LAYER</td>
<td>FVS Coarse Woody Debris Duff Layer.</td>
<td><strong>CWDuff</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_CWD_LITTER_LAYER</td>
<td>FVS Coarse Woody Debris Litter Layer.</td>
<td><strong>CWDLtr</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_DWARF_MISTLETOE_AWARE _IND</td>
<td>FVS Dwarf Mistletoe Awareness Indicator.</td>
<td><strong>DMAI</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_MTN_PINE_BEEFLET_HAZARD</td>
<td>FVS Mountain Pine Beetle Hazard (Ponderosa Pine).</td>
<td><strong>MPB_HZRD</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_NEW_SNAG_TPA_11PLUS_IN CH</td>
<td>FVS Recruit Snags 11 in. + tpa.</td>
<td><strong>Rcr11p</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_NEW_SNAG_TPA_12TO18_IN CH</td>
<td>FVS Recruit Snags 12-18 in. tpa</td>
<td><strong>Rcr12t18</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_NEW_SNAG_TPA_18PLUS_IN CH</td>
<td>FVS Recruit Snags 18 in. + tpa.</td>
<td><strong>Rcr18p</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_NEW_SNAG_TPA_3TO11_INC H</td>
<td>FVS Recruit Snags 03-11 in. tpa.</td>
<td><strong>Rcr03t11</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_NEW_SNAG_TPA_8TO12_INC H</td>
<td>FVS Recruit Snags 08-12 in. tpa.</td>
<td><strong>Rcr08t12</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_PCT_SDI_DIA_12TO18_INCH</td>
<td>FVS Percent Stand Density Index (Dj) 12-18 in. diameter.</td>
<td><strong>SDI12%18</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_PCT_SDI_DIA_18TO24_INCH</td>
<td>FVS Percent Stand Density Index (Dj) 18-24 in. diameter.</td>
<td><strong>SDI18%24</strong> from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>DATIM Database Attribute Name</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>FVS_PCT_SDI_DIA_1TO5_INCH</td>
<td>FVS Percent Stand Density Index (Dj) 1-5 in.</td>
<td>SDI01%05 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_PCT_SDI_DIA_24PLUS_INCH</td>
<td>FVS Percent Stand Density Index (Dj) 24 in. + diameter.</td>
<td>SDI24% from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_PCT_SDI_DIA_5TO12_INCH</td>
<td>FVS Percent Stand Density Index (Dj) 5-12 in. diameter.</td>
<td>SDI05%12 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_PROPORTION_STOCK_AREA</td>
<td>FVS Proportion Stockable Area.</td>
<td>Prp_Stck from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SDI_REINEKE_DQ_METH</td>
<td>FVS Stand Density Index - Reineke (Dq) Method.</td>
<td>SDI_Dq from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SDI_ZEIDE_DJ_METH</td>
<td>FVS Stand Density Index - Zeide (Dj) Method.</td>
<td>SDI_Dj from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SNAG_TPA_11PLUS_INCH</td>
<td>FVS Snags 11 in. + tpa.</td>
<td>Sng11p from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SNAG_TPA_12TO18_INCH</td>
<td>FVS Snags 12-18 in. tpa.</td>
<td>Sng1218 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SNAG_TPA_18PLUS_INCH</td>
<td>FVS Snags 18 in. + tpa.</td>
<td>Sng18p from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SNAG_TPA_3TO11_INCH</td>
<td>FVS Snags 03-11 in. tpa</td>
<td>Sng03t11 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SNAG_TPA_8TO12_INCH</td>
<td>FVS Snags 08-12 in. tpa</td>
<td>Sng08t12 from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_SPRUCE_BEETLE_HAZARD</td>
<td>FVS Spruce Beetle Hazard.</td>
<td>SB_HZRD from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>DATIM Database Attribute Name</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>FVS_STAND_BIOMASS_TREE</td>
<td>FVS Stand biomass for the Tree Component.</td>
<td>TrBiomss=TreeBio(1,1,1,All,0.,200.,0.,500.) from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_STAND_CARBON</td>
<td>FVS Stand Carbon.</td>
<td>StdCarbn from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
<tr>
<td>FVS_TORCH_INDEX</td>
<td>FVS Torching Index.</td>
<td>TrchIdx from FVS program Cmp_FVS_Model_Output.kcp using file FVSOut.mdb</td>
</tr>
</tbody>
</table>
**Appendix G – List of FVS Variants**

List of FVS variants by ID and name, with hyperlinks to variant overview documents.

<table>
<thead>
<tr>
<th>Variant ID</th>
<th>Variant Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK</td>
<td>Southeast Alaska and Coastal British Columbia</td>
</tr>
<tr>
<td>BM</td>
<td>Blue Mountains</td>
</tr>
<tr>
<td>CA</td>
<td>Inland California and Southern Cascades</td>
</tr>
<tr>
<td>CI</td>
<td>Central Idaho</td>
</tr>
<tr>
<td>CR</td>
<td>Central Rockies</td>
</tr>
<tr>
<td>CS</td>
<td>Central States</td>
</tr>
<tr>
<td>EC</td>
<td>East Cascades</td>
</tr>
<tr>
<td>EM</td>
<td>Eastern Montana</td>
</tr>
<tr>
<td>NC</td>
<td>Klamath Mountains</td>
</tr>
<tr>
<td>KT</td>
<td>Kootenai, Kaniksu, and Tally Lake</td>
</tr>
<tr>
<td>LS</td>
<td>Lake States</td>
</tr>
<tr>
<td>Variant ID</td>
<td>Variant Name</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------</td>
</tr>
</tbody>
</table>
Appendix H – List of FVSStand Data Attributes (Veg_Class.txt)

Attributes computed by FVSStand Post Processor (FVSSTAND.exe) and found in the Veg_CLASS.txt file.

<table>
<thead>
<tr>
<th>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</th>
<th>Description</th>
<th>Where &amp; How Computed</th>
<th>Committed to the Data Mart (☒ =YES; ☐=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVS_BA_STEM</td>
<td>FVS basal area per acre (trees greater than 1.0 in. diameter)</td>
<td>BASTM – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_BA_STORY</td>
<td>FVS Canopy Layers/Stories using R3 Regional ruleset; BA per 8 in. sliding diameter range</td>
<td>STORY – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_BA_WT_DIA</td>
<td>FVS basal area weighted diameter (including seedlings and stems).</td>
<td>BAWD – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_BA_WT_HT</td>
<td>FVS basal area weighted height (including seedlings and stems).</td>
<td>BAWH – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_BA_WT_SIZCL</td>
<td>FVS basal area weighted diameter size class using Regional rulesets</td>
<td>BSC – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☐</td>
</tr>
<tr>
<td>FVS_CAN_AGE</td>
<td>FVS Canopy Age of the Canopy Size Class in years</td>
<td>ICSA – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_CAN_CLASS</td>
<td>FVS Canopy Cover by interval class using Regional rulesets</td>
<td>DMCC – output from FVS program FVSStand Post Processor to the Veg_CLASS.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
<td>Committed to the Data Mart <em>(☒=YES; ☐=NO)</em></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>FVS_CAN_COV</td>
<td>FVS Canopy Cover corrected for overlap including seedlings and stems.</td>
<td>VCCT(NA,5,22) – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_CAN_SIZCL</td>
<td>FVS Canopy Cover dominant size class using Regional rulesets</td>
<td>IDLYR – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_CAN_STORY</td>
<td>FVS Canopy Layers/Stories using R6 Regional ruleset; canopy cover per subordinate layers</td>
<td>VSTRCT – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_CAN_SZTMB</td>
<td>FVS Canopy Cover dominant size class (R2 HSS size classes, R3 timberland types, R4 SWIE size classes).</td>
<td>ITLYR – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_CAN_SZWDL</td>
<td>FVS Canopy Cover dominant size class R3 woodland types.</td>
<td>IWLYR – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_DOM_TYPE</td>
<td>FVS Tree Dominance Type calculated by Regional rulesets</td>
<td>ADTYP – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_FIA_TYPE</td>
<td>FVS Forest Inventory Analysis (FIA) forest cover types.</td>
<td>AFT – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_PVT</td>
<td>FVS Potential Vegetation Type; compute&gt; FVS_PVT=APVT</td>
<td>APVT – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
<td>Committed to the Data Mart (✓=YES; □=NO)</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>FVS_QMD_AGE</td>
<td>FVS Stand Age of the Quadratic Mean Diameter top 20 (QMD_TOP20)</td>
<td>IQMDSA – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_QMD_SIZCL</td>
<td>FVS Quadratic Mean Diameter Size Class by 5 in. interval</td>
<td>QSC – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_QMD_STEM</td>
<td>FVS Quadratic Mean Diameter (trees at least 1.0 in. diameter).</td>
<td>QMDSTM – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_QMD_TOP20</td>
<td>FVS Quadratic Mean Diameter (top 20% by diameter, exclude seeds unless &lt; 10% canopy cover, then seeds +).</td>
<td>QMDT20 – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_ROCKY_MTN_VS S</td>
<td>FVS Rocky Mountain, R3 Vegetation Structural Stage: Goshawk guidelines</td>
<td>AVSS – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_SDL_STORY</td>
<td>FVS Stand Density Index Canopy Layers/Stories R3 Ruleset, Canopy cover</td>
<td>STRY – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_SDL_SUM</td>
<td>FVS Stand Density Index (summation method (trees at least 1.0 in. diameter)).</td>
<td>ISDISM – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>FVS_SEED_PER_AC</td>
<td>FVS Seedlings Per Acre (trees &lt; 1.0 in. diameter).</td>
<td>VCCT(NA,0,10) – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>✓</td>
</tr>
<tr>
<td>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
<td>Committed to the Data Mart (☒ =YES; ☐=NO)</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>FVS_STAND_AGE</td>
<td>FVS Stand Age (FIA).</td>
<td><strong>JAGE</strong> – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_STAND_BIOMASS_TREE</td>
<td>FVS Stand Biomass for the Tree component</td>
<td><strong>TrBiomass</strong> – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☐</td>
</tr>
<tr>
<td>FVS_STEM_PER_ACRE</td>
<td>FVS Trees Per Acre (trees at least 1.0 in. diameter).</td>
<td><strong>STEMS</strong> – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_TREE_PER_AC</td>
<td>FVS Trees Per Acre (including seedlings and stems).</td>
<td><strong>VCCT(NA,5,10)</strong> – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
<tr>
<td>FVS_VERT STORY</td>
<td>FVS Canopy Layers/Vertical Story, Region 1 Ruleset; basal area per size class</td>
<td><strong>VRT</strong> – output from FVS program FVSStand Post Processor to the Veg_Class.txt file</td>
<td>☒</td>
</tr>
</tbody>
</table>
Appendix I – List of FVSStand Data Attributes (Veg_Values.txt)

Attributes computed by FVSStand Post Processor (FVSSTAND.exe) and found in the Veg_Values.txt file. These values are used for image processing work and are not loaded into the DATIM data mart at this time.

<table>
<thead>
<tr>
<th>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</th>
<th>Description</th>
<th>Where &amp; How Computed</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVS_ATTR</td>
<td>Basis for Dominance Type (i.e. Canopy Cover, Basal Area, Trees)</td>
<td>ATTRIB – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_ALL</td>
<td>All species contribution for FVSSTAND Dominance Type calculation</td>
<td>VCCT(NA,5,KK) – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_GENUS1</td>
<td>Primary tree species contribution to FVSSTAND Dominance Type calculation</td>
<td>GCC1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_GENUS2</td>
<td>Secondary tree species contribution to FVSSTAND Dominance Type calculation</td>
<td>GCC2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_GENUS3</td>
<td>Tertiary tree species contribution to FVSSTAND Dominance Type calculation</td>
<td>GCC3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_HARDWOOD</td>
<td>Hardwood tree species contribution to FVSSTAND Dominance Type calculation</td>
<td>VCCT(ND,5,KK) – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_GENUS1</td>
<td>Primary genus contribution to Attribute on a percentage basis</td>
<td>XGCC1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_GENUS2</td>
<td>Secondary Genus contribution to FVSSTAND Dominance Type calculation on a percentage basis</td>
<td>XGCC2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_GENUS3</td>
<td>Tertiary Genus contribution to FVSSTAND Dominance Type calculation on a percentage basis</td>
<td>XGCC3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_SPECIES1</td>
<td>Primary species contribution to FVSSTAND Dominance Type calculation on a percentage basis</td>
<td>XSCC1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>DATIM Database Attribute Name from Table SAMP_UNIT_TREE</td>
<td>Description</td>
<td>Where &amp; How Computed</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_SPECIES2</td>
<td>Secondary species contribution to FVSSTAND Dominance Type calculation on a percentage basis</td>
<td>XSCC2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_PCT_SPECIES3</td>
<td>Tertiary species contribution to FVSSTAND Dominance Type calculation on a percentage basis</td>
<td>XSCC3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_SOFTWOOD</td>
<td>Softwood species contribution to FVSSTAND Dominance Type calculation</td>
<td>VCCT(NC,5,KK) – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_SPECIES1</td>
<td>Primary species contribution to FVSSTAND Dominance Type calculation</td>
<td>SCC1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_SPECIES2</td>
<td>Secondary species contribution to FVSSTAND Dominance Type calculation</td>
<td>SCC2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_ATTR_SPECIES3</td>
<td>Tertiary species contribution to FVSSTAND Dominance Type calculation</td>
<td>SCC3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_GENUS1</td>
<td>Primary genus tree genus index number.</td>
<td>IG1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_GENUS2</td>
<td>Secondary genus tree genus index number.</td>
<td>IG2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_GENUS3</td>
<td>Tertiary genus tree genus index number.</td>
<td>IG3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_SPECIES1</td>
<td>Primary species FVS tree species number (FVS Variant specific).</td>
<td>IS1 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_SPECIES2</td>
<td>Secondary species FVS tree species number (FVS Variant specific).</td>
<td>IS2 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
<tr>
<td>FVS_SPECIES3</td>
<td>Tertiary species FVS tree species number (FVS Variant specific).</td>
<td>IS3 – output from FVS program FVSStand Post Processor to the Veg_Values.txt file</td>
</tr>
</tbody>
</table>
# Appendix J – State Codes (used in FIADB ETL Project Names)

<table>
<thead>
<tr>
<th>State Name</th>
<th>State Abbreviation</th>
<th>State Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>AL</td>
<td>1</td>
</tr>
<tr>
<td>Alaska</td>
<td>AK</td>
<td>2</td>
</tr>
<tr>
<td>Arizona</td>
<td>AZ</td>
<td>4</td>
</tr>
<tr>
<td>Arkansas</td>
<td>AR</td>
<td>5</td>
</tr>
<tr>
<td>California</td>
<td>CA</td>
<td>6</td>
</tr>
<tr>
<td>Colorado</td>
<td>CO</td>
<td>8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>CT</td>
<td>9</td>
</tr>
<tr>
<td>Delaware</td>
<td>DE</td>
<td>10</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>DC</td>
<td>11</td>
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<tr>
<td>Florida</td>
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<tr>
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<td>Missouri</td>
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<tr>
<td>State Name</td>
<td>State Abbreviation</td>
<td>State Code</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Montana</td>
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<td>Oklahoma</td>
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<tr>
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<td>OR</td>
<td>41</td>
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<tr>
<td>Pennsylvania</td>
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<td>42</td>
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<td>RI</td>
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<td>South Carolina</td>
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<tr>
<td>South Dakota</td>
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<tr>
<td>Tennessee</td>
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</tr>
<tr>
<td>Texas</td>
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<tr>
<td>Utah</td>
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<tr>
<td>Washington</td>
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</tr>
<tr>
<td>West Virginia</td>
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<tr>
<td>Wisconsin</td>
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<td>55</td>
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<tr>
<td>Wyoming</td>
<td>WY</td>
<td>56</td>
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<tr>
<td>Puerto Rico</td>
<td>PR</td>
<td>72</td>
</tr>
<tr>
<td>U.S. Virgin Islands</td>
<td>VI</td>
<td>78</td>
</tr>
</tbody>
</table>
## Appendix K – Description of the FVS Attribute Metadata Fields in DCS

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description of metadata field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>[Name of the DATIM Oracle table in which the attribute resides.]</td>
</tr>
<tr>
<td>SRC</td>
<td>[Group or entity that derived the attribute, e.g. NFS region, FIA region, Forest Service division.]</td>
</tr>
<tr>
<td>ESTN_SCOPE</td>
<td>[The scope of an estimation variable. NULL if ESTN_VAR_YN &lt;&gt; Y. This is used in reporting to ensure an appropriate DATIM dataset is used.]</td>
</tr>
<tr>
<td>LOOKUP_TBL_NM</td>
<td>[Table containing meaning of codes for categorical attributes, NULL if this is not a categorical attribute.]</td>
</tr>
<tr>
<td>Short Description</td>
<td>[Short description used in pick lists.]</td>
</tr>
<tr>
<td>Long Description</td>
<td>[Long description used in reports and tips.]</td>
</tr>
<tr>
<td>Definition</td>
<td>[Definition of the attribute.]</td>
</tr>
<tr>
<td>Unit</td>
<td>[Measurement units associated with the value of the attribute.]</td>
</tr>
<tr>
<td>Theme</td>
<td>[FVS keyword list.]</td>
</tr>
<tr>
<td>Cite</td>
<td>[Citation describing the attribute.]</td>
</tr>
<tr>
<td>GEOG_EXTENT</td>
<td>[Appropriate geographic extent of the attribute]</td>
</tr>
<tr>
<td>SAMP_HIER_CD</td>
<td>[A code for the level of measurement, calculation, or summarization.]</td>
</tr>
<tr>
<td>PRE_CONDITION</td>
<td>[Dependencies or preconditions that must be met before the attribute can be used or populated.]</td>
</tr>
<tr>
<td>POST_CONDITION</td>
<td>[Lists what is dependent upon the attribute. These post conditions may require action if changes are made to the value of the attribute.]</td>
</tr>
<tr>
<td>ARCHIVE_YN</td>
<td>[Y if this attribute has been archived and is no longer used. N otherwise.]</td>
</tr>
<tr>
<td>ARCHIVE_DATE</td>
<td>[Date the attribute was assigned archive status.]</td>
</tr>
<tr>
<td>APPROVE_YN</td>
<td>[Y if the attribute has been approved and is no longer in draft status. N otherwise.]</td>
</tr>
<tr>
<td>APPROVE_DATE</td>
<td>[The date the attribute moved from draft to approved status.]</td>
</tr>
<tr>
<td>DEFN_USER</td>
<td>[User logon name of the person who created the attribute.]</td>
</tr>
<tr>
<td>SRC_CONTROL</td>
<td>[Description of how to access the source code for computed or derived attributes.]</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description of metadata field</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ALGORITHM</td>
<td>[Actual or pseudo algorithm used to compute the value of the attribute.]</td>
</tr>
<tr>
<td>PAGE_VAR_YN</td>
<td>[This attribute can be displayed as pages in a report.]</td>
</tr>
<tr>
<td>ROW_VAR_YN</td>
<td>[This attribute can be displayed as rows in a report.]</td>
</tr>
<tr>
<td>COL_VAR_YN</td>
<td>[This attribute can be displayed as columns in a report.]</td>
</tr>
<tr>
<td>FILTER_VAR_YN</td>
<td>[Y if this the values for this column can be used as filters. N otherwise.]</td>
</tr>
<tr>
<td>ESTN_VAR_YN</td>
<td>[The type of estimation variable, e.g. area or tree based. Used to determine the form of the estimation query.]</td>
</tr>
<tr>
<td>ALIAS_FSVEG</td>
<td>[When found in FSVeg, the table name concatenated with a period and the column name.]</td>
</tr>
<tr>
<td>ALIAS_R1</td>
<td>[When found in R1, the table name concatenated with a period and the column name.]</td>
</tr>
<tr>
<td>ALIAS_R5</td>
<td>[When found in R5, the table name concatenated with a period and the column name.]</td>
</tr>
<tr>
<td>ALIAS_FVS</td>
<td>[When found in FVS, the variable name used. Other metadata about the source of the variable such as program and file is in ADMIN_COL_DESCR.CITE.]</td>
</tr>
<tr>
<td>ALIAS_FIADB</td>
<td>[When found in FIADB, the table name concatenated with a period and the column name.]</td>
</tr>
<tr>
<td>ALIAS_NIMS</td>
<td>[When found in NIMS, the table name concatenated with a period and the column name.]</td>
</tr>
<tr>
<td>POP_ESTN_TYPE</td>
<td>[The type of estimation variable, e.g. area or tree based. Used to determine the form of the estimation query.]</td>
</tr>
<tr>
<td>DISPLAY_GRP</td>
<td>[Used to group estimation, page, row, column, and filter variables for display purposes. Required for estimation variables.]</td>
</tr>
</tbody>
</table>
Appendix L – Troubleshooting DATIM

Accessing DATIM Silverlight
If you are trying to access DATIM Silverlight using Internet Explorer, you may receive a notice to install Microsoft Silverlight®, as shown in Figure L-1.

![Figure L-1. Notice to install Microsoft Silverlight®.](image)

Before you click the button on the message to install Microsoft Silverlight®, check to see if it is already installed on your computer.

**To determine whether Microsoft Silverlight is installed on your computer:**
Visit the official Microsoft Silverlight installation page in any browser. If you have Silverlight installed, this page will detect and display the version.

If you use the Windows 7 Professional operating system and want to determine manually whether Silverlight is installed:

1. Click the Windows Start button (Figure L-2), and then click Control Panel.

![Figure L-2. Windows Start button.](image)

2. In the list of Control Panel items, click Programs and Features.

3. Scroll through the list of programs to see if Microsoft Silverlight is installed for version 5.0 or higher (Figure L-3).
Figure L-3. Locating Microsoft Silverlight in the list of installed programs.

If you confirm that the minimum version of Microsoft Silverlight® is already installed on your computer, then receiving the notice to install it means that you have ActiveX Filtering enabled. You must disable ActiveX Filtering before you can launch DATIM.

To disable ActiveX Filtering in Internet Explorer 11 or higher:
1. From the Internet Explorer toolbar, select Tools to expand the list (Figure L-4, #1).
2. Hover over Safety in the drop-down menu (Figure L-4, #2).
3. Find ActiveX Filtering in the list. If a check mark appears next to it, it means that ActiveX Filtering is enabled. Select ActiveX Filtering to remove the check mark and disable it (Figure L-4, #3).
4. Re-launch DATIM.
Add DATIM Silverlight as a Trusted Site

If you are still experiencing issues with getting DATIM Silverlight to work on your local system, try configuring your security options in Internet Explorer:

1. From your Internet Explorer browser, select the Tools icon, located in the upper right hand corner of your browser toolbar.

2. Select the Internet Options selection from the Tools menu (Figure L-5).

![Figure L-4. Disabling ActiveX Filtering in the Internet Explorer toolbar.]

![Figure L-5. The Internet Options selection in the Tools Menu.]

1. Click on Tools in the Internet Explorer toolbar to expand the list.
2. Point to Safety in the dropdown menu.
3. Click ActiveX Filtering. There should not be a check mark next to ActiveX Filtering.
3. The **Internet Options** window pops up. Select the **Security** tab to make it active (Figure L-6).

![Internet Options window](image)

Figure L-6. The ‘Security’ tab in the Internet Options window.

4. Next, in the **Select a zone to view or change security settings** section, select the **Trusted Sites** icon (Figure L-7, #1).

5. Click the **Sites** button (Figure L-7, #2).
6. The **Trusted Sites** window will open. In the **Add this website to the zone**: text field, enter: [https://apps.fs.usda.gov/DATIM/default.aspx](https://apps.fs.usda.gov/DATIM/default.aspx) (Figure L-8, #1). Next, click **Add** (Figure L-8, #2).

Figure L-8. The Trusted Sites window.
7. DATIM will be added to the list of websites in the trusted zone.
Glossary of Terms

2012 Planning Rule

The National Forest Management Act (NFMA) planning rule adopted by the Forest Service in 2012. The new planning rule guides the development, amendment, and revision of land management plans for all National Forest Systems (NFS), including national grasslands. It sets forth processes and content requirements to guide the development of land management plans (USDA FS 2012b) (http://www.fs.usda.gov/planningrule).

accuracy

The degree to which a measured quantity approaches the true value of what is being measured (Lincoln et al. 1998).

administrator

A user role assigned in DATIM that grants the user the same permissions and accessibilities assigned to the Registered User, Forest Administrator, and Regional Administrator, as well as additional permissions to assign and manage the roles of other DATIM users. Also known as the “Super-User”.

analytical

(1) Of or relating to analysis or analytics. (2) Separating into elemental parts or basic principles. (3) Reasoning from a perception of the parts and interrelations of a subject (Webster 1984).

analysis report (ATIM)

The estimates generated and stored by ATIM for the forest inventory variable selected by the user. The estimates are based on the sampling design used and the estimation method (which can be modified by the user), and organized into pages, rows, and columns according to the categories and variables that the user assigns to them. An analysis report is designed by the ATIM user, and is associated with a single analysis.

annual inventory

The measurement of a proportion of plots in each State every year, prescribed by Congress for FIA in the 1998 Farm Bill (Bechtold and Patterson 2005).

ArcGIS

The geographic information system (GIS) platform developed by the company Esri for working with maps and geographic information.
Glossary of Terms

ArcMap

The main application used in ArcGIS for Desktop for mapping, editing, analysis, and data management. ArcMap is used for all 2D mapping work and visualization.

ATIM

ATIM (Analysis Tool for Inventory and Monitoring) is a DATIM tool used for creating statistically defensible analyses and reports. This tool assists users in analyzing forest and vegetation data to derive estimates of current conditions and trends for an area of interest, such as for answering monitoring questions posed in DTIM.

ATIM analysis

The resource inventory datasets associated with the selected population of interest stored by ATIM, along with the associated estimation units, data points, and attributes. Also known as a DATIM subset.

attribute

A discrete or continuous variable, usually associated with the classification or measurement of area or vegetation (Bechtold and Patterson 2005). The variable can be collected in the field or calculated using equations and algorithms. Examples of field collected attributes include tree diameter, tree height, slope, aspect, county code, and owner group code. Examples of computed attributes included tree and area expansion factors, and tree volume.

basal area per acre

The cross-sectional area of a single stem, including the bark, measured at breast height (4.5 ft. or 1.37 m above the ground) per acre (adapted from Helms 1998).

biofuels

The fuel component of biomass (adapted from Helms 1998).

biomass

(1) Ecology the total dry organic matter at a given time of living organisms of one or more species per unit area (species biomass) or of all the species in the community (community biomass). (2) The living or dead weight of organic matter in a tree, stand or forest in units such as living or dead weight, wet or dry weight, ash-free weight, etc. (3) Harvesting the wood product obtained (usually) from in-woods chipping of all or some portion of trees including limbs, tops, and unmerchantable steps, usually for energy production (Helms 1998).

Citrix

Software that enables organizations to securely access Windows-based line-of-business applications over the Internet with just a web browser. The software makes centrally maintained information and applications easy to update and retrieve (Anon. 2009). Used in DATIM to provide user access to ArcGIS and the Spatial Intersection Tool.
Glossary of Terms

**classification**

(1) The process of grouping similar entities into names types or classes based on shared characteristics. (2) The grouping of similar types (in this case, vegetation) according to criteria (in this case, physiognomic and floristic) that are considered significant for this specific purpose. The rules for classification must be clarified before the types are identified in the classification standard. The classification methods should be clear, precise, quantitative where possible, and based on objective criteria so that the outcome will be the same no matter who developed the definition (or description). Classification by definition involves definition of class boundaries (FGDC 1997, citing UN-EP/FAO 1995).

**compilation module (DCS)**

A predetermined set of user inputs and processes used to run a compilation to enhance selected DATIM datasets using FVS and post-processing. Each compilation module in DCS was developed to satisfy region-specific requirements for augmenting datasets with the additional metrics necessary to conduct analyses and generate reports.

**condition**

A change in land use or a change in vegetation that occurs along more-or-less distinct boundaries. Reserved status, owner group, forest type, stand-size class, regeneration status, and stand density are used to define forest conditions (Woudenberg et al. 2010).

**coordinates**

In mapping, pairs of numbers that express horizontal distances along orthogonal axes; or, triplets of numbers measuring horizontal and vertical distances (FGDC 1998).

**DCS**

DCS (DATIM Compilation System) is a DATIM tool used by national and regional administrators to load external data into the DATIM data mart for use in DATIM. Users are able to select datasets from the DATIM data mart, run the data through the Forest Vegetation Simulator (FVS) to compute additional data fields, such as habitat types and individual tree biomass, and then store the results in DATIM. The different compiler modules used in DATIM were designed to meet regionally specific needs.

**cycle**

One sequential and complete set of panels (Bechtold and Patterson 2005).

**cycle (DCS)**

A projection cycle is a period of time for which increments of tree characteristics are predicted (Dixon 2002).

**cycle length**

The period of time required to measure a complete set of panels; synonymous with measurement cycle (Bechtold and Patterson 2005).
data point

A set of attributes that are collected or calculated according to common protocols that is associated with the plot center. Commonly referred to as a ‘plot’ or a Primary Sampling Unit (PSU) and refers to the center of the plot and to the collection of attributes collected across all subplot centers (Brand and Alegria 2011).

dataset

A collection of estimation units and data points that are collectively exhaustive and mutually exclusive (Brand and Alegria 2011).

DATIM

DATIM (Design and Analysis Toolkit for Inventory and Monitoring) is a suite of software tools designed by a team of resource inventory and forest planning specialists from the National Forest System (NFS) and Research & Development (R&D) of the United States Department of Agriculture (USDA) Forest Service (FS). The application is intended to improve natural resource inventory and monitoring designs and data analyses by providing nationally consistent tools to access corporate databases.

DATIM dataset

The collection of data and information used to produce estimates of a given suite of metrics for a population of interest in ATIM. A DATIM dataset includes a particular set of estimation unit(s), a stratification scheme, and the collected field data (resource data) for the attributes and timeframe(s) of interest.

DATIM subset

During the creation of an ATIM analysis, the selected DATIM datasets are copied into a DATIM subset and stored in the DATIM data mart. A DATIM subset represents a snapshot in time and will not change even when data in the DATIM data mart are revised. DATIM subsets allow the analyst to group DATIM datasets that, when combined, provide a complete analysis.

design-based inventory

An inventory that includes sampling that is random or spatially balanced to ensure an even sample by each stratum in the population, known and positive probabilities of selection for all sampling units in the population, and metadata that describe the sampling methods (adapted from Bechtold and Patterson 2005).

DIA (ATIM reports)

The ATIM reporting filter used to indicate the diameter class of measured trees.

diameter at breast height (d.b.h.)

The diameter of a tree stem, located at 4.5 feet above the ground (breast height) on the uphill side of a tree. The point of diameter measurement may vary on abnormally formed trees (Bechtold and Patterson 2005).
Glossary of Terms

**diameter at root collar (d.r.c.)**

The diameter of a shrub-like "woodland" tree species, measured outside bark at the ground line or stem root collar (Bechtold and Patterson 2005).

**dominance**

The extent to which a given species has a strong influence in a community because of its size, abundance, or coverage. Strong dominance affects the fitness of associated species (adapted from Lincoln et al. 1998).

**double sampling for stratification**

A method that uses two random samples, where the second sample is a stratified subsample of the first sample (Cochran 1977). The first-phase sample is for estimating proportions of the population found in various strata in order to calculate stratum weights. The second-phase sample is for making observations of random variables in the sample units (Chojnacky 1998).

**down woody material**

Dead pieces of wood >3.0 inches in diameter. Down woody material includes downed, dead tree and shrub boles, large limbs, and other woody pieces that are severed from their original source of growth or are leaning more than 45 degrees from vertical (Bechtold and Patterson 2005).

**DTIM**

DTIM (Design Tool for Inventory and Monitoring) is a DATIM tool used for designing more efficient monitoring plans based on user-selected objectives, questions, and metrics. If available data are insufficient to obtain statistically defensible estimates of current conditions and trends, then DTIM helps the user plan for the additional sampling needed.

**DTIM project**

The entire set of selections and inputs made using the various tab-based forms in DTIM, along with the resulting study design generated by DTIM based on the user's selections and inputs. It consists of the monitoring plan's objectives, questions, and metrics; area information; precision values; number of additional plots to be sampled; and the cost of the monitoring design.

**E-Authentication**

USDA e-Authentication account identification consists of a User ID, a password, and a customer profile that enables one to access a range of USDA applications. It provides the convenience of transacting business with USDA online, anytime, anywhere (Anon. 2009).

**ecosystem**

A complete interacting system of organisms and their environment (USDA Forest Service 1991).
Glossary of Terms

EMC

[Acronym]: Ecosystem Management Coordination

Esri

Environmental Systems Research Institute (http://www.esri.com/), the international supplier of ArcGIS.

estimate (ATIM)

The variable to be estimated in the analysis report.

estimation unit

A defined geographic extent within the area encompassed by a DATIM dataset. The estimation units (subpopulations) are exhaustive and mutually exclusive within the area encompassed by a DATIM dataset (Brand and Alegria 2011).

ETL

[Acronym]: Extract, Transform, Load. The process by which a resource inventory dataset is extracted, transformed, and loaded into the DATIM data mart and made available to the user as DATIM datasets.

ETL Project (DCS)

A dataset that has been extracted from an external data source like FIADB, FSVeg, and NIMS and then transformed and loaded into the DATIM Data Mart.

evaluation

The comparison of dynamic sampling results to management objectives consisting of predetermined standards, expected norms, threshold values, and/or trigger points (Brohman and Bryant 2005).

FAO

[Acronym]: Food and Agriculture Organization of the United Nations

FIA

[Acronym]: Forest Inventory and Analysis
Glossary

FIA Green Book


FIA tree class (ATIM)

The ATIM reporting filter used to indicate the FIA tree class code that describes the general quality of measured trees.

FIADB

[Acronym]: Forest Inventory and Analysis Database (http://www.fia.fs.fed.us/library/database-documentation/) 

FIDO

[Acronym]: Forest Inventory Data Online 

Field Sampled Vegetation (FSVeg)

FSVeg (http://www.fs.fed.us/nrm/fsveg/index.shtml) is the pre-processor tool for FIA data that stores data about trees, fuels, down woody material, surface cover, and understory vegetation. FSVeg supports the business of the common stand exam, fuels data collection, permanent grid inventories, and other vegetation inventory collection processes.

forest administrator

A user role assigned in DATIM that grants the user access to DATIM datasets within a particular Forest Service forest. This administrator can create analytical report templates for a Forest for use by all Registered Users, but does not have access to actual plot locations and other confidential information.

FHM

[Acronym]: Forest Health Monitoring

forest land

Forest land has at least 10 percent canopy cover of live tally tree species of any size or has at least 10 percent canopy cover of live tally species in the past, based on the presence of stumps, snags, or other evidence (Bechtold and Patterson 2005).
Forest Vegetation Simulator (FVS)

The forest vegetation simulator growth model used by the USDA Forest Service and other government agencies to predict forest stand dynamics. Forest managers use FVS to summarize current stand conditions, predict future stand conditions under various management alternatives, and update inventory statistics (Dixon 2002).

FS

[Acronym]: Forest Service [United States Department of Agriculture]

FS AD

[Acronym]: Forest Service Active Directory [United States Department of Agriculture]

FSVeg

Field Sampled Vegetation

fuzzed

A technique applied to FIA annual plot coordinates to make it difficult to locate the plot on the ground while maintaining a good correlation between the plot data and map-based coordinates. All annual plot coordinates are fuzzed within 0.5 mile for most plots and up to 1.0 mile on a small subset of them (USDA FS 2011).

FVS

[Acronym]: Forest Vegetation Simulator (http://www.fs.fed.us/fmsc/fvs/)

FVSStand Alone

An advance forest planning post-processor used to produce standard stand and stock tables (Vandendriesche 2014).

geographic area of interest

A user-defined area, selected either spatially using the SIT or by the tabular selection of available resource inventory datasets (DATIM datasets) stored in the DATIM data mart (ESRI 2014).

gеographic information system (GIS)

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information (ESRI, 2014).
geospatial data

Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth, often derived from remote sensing, mapping, and surveying technologies (Anon. 2009).

Geospatial Interface (GI)

The Geospatial Interface (GI) (http://fsweb.nris.fs.fed.us/products/Geospatial_Interface/index.shtml) is an ArcMap extension that helps resource specialists’ work efficiently with data. It provides tools that simplify loading data while giving access to custom Forest Service products for display, analysis, and output of data. You can think of the GI as a lens that gives users access to the full suite of corporate data.

GI

[Acronym]: Geospatial Interface

GIS

[Acronym]: Geographic Information System

GIS Specialist

A user roles assigned in DATIM that grants the user permissions to create and save analytical report designs and output, plus view and work with standard ATIM reports, but does not have access to confidential information (actual plot coordinates and private ownership information). This user has the added ability to add and delete SIT attributes in ATIM and has full access to DTIM.

grid

(1) A set of grid cells forming a regular, or nearly regular, tessellation of a surface. (2) Set of points arrayed in a pattern that forms a regular, or nearly regular, tessellation of a surface. The tessellation is regular if formed by repeating the pattern of a regular polygon, such as a square, equilateral triangle or regular hexagon. The tessellation is nearly regular if formed by repeating the pattern of an “almost” regular polygon such as a rectangle, nonsquare-parallelogram or nonequilateral triangle (FGDC 1998).

Guest User

A user role assigned in DATIM that grants the user permissions to open publically accessible ATIM analyses, run standard analysis reports, and create and view custom analysis reports. In DTIM, this user can define a project, open a publically accessible project, and view, print, and locally save project reports. This user has the most limited access of all the users.

indicator

A biotic or abiotic feature measured for a forest (Bechtold and Patterson 2005).
interface

*Computers* A hardware and software link that connects two computer systems, or a computer and its peripherals, for data communication (Helms 1998).

inventory

The systematic acquisition, analysis, and organization of resource information needed for planning and implementing land management (adapted from USDA NRCS 1997).

KCP

[Acronym]: Keyword Component File

**keyword component file (KCP file)**

Keyword component (KCP) files are "addfiles" containing sets of FVS keywords used to perform complicated interactions with the FVS models, and which perform actions not currently included in the FVS models.

layer (GIS)

A digital information storage unit, also known as a theme. Different kinds of information such as roads, boundaries, lakes, and vegetation, can be grouped and stored as separate digital layers or themes in a GIS (Anon. 2009).

map

(1) A spatial representation, usually graphic on a flat surface, of spatial phenomena (FGDC 1998). (2) A representation, usually on a plane surface, of a region of the Earth or heavens (Robinson et al. 1978).

map scale

The extent of reduction required to display a portion of the Earth’s surface on a map; defined as a ratio of distances between corresponding points on the map and on the ground (Robinson et al. 1978). Scale indirectly determines the information content and size of the area being represented. The mapping scale is determined by the agency’s business needs and the characteristics of the data obtained for the project area. Maps generated from digital imagery can appropriately be displayed at a range of scales (Brohman and Bryant 2005).

metadata

Refers to "data about data"; describes the content, quality, condition, and other characteristics of a given set of data. Its purpose is to provide information about a dataset or some larger data holdings to data catalogues, clearinghouses, and users. Metadata is intended to provide a capability for organizing and maintaining an institution’s investment in data to provide information for the application and interpretation of data received through a transfer from an external source (Jennings et al. 2004, as modified from FGDC 1997).
module (DCS)

See compilation module (DCS).

module (DTIM)

A predetermined set of available resource inventory monitoring objectives and associated questions and metrics presented to the user for selection in DTIM for a specific use, such as a Forest Plan Revision.

monitoring

(1) The systematic collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives (adapted from SRM 1989). (2) The collection and analysis of resource data to measure changes in the amounts, spatial distribution or condition of resource types or parameters over time (Brohman and Bryant 2005).

Monitoring and Evaluation Framework (MEF)

The Monitoring and Evaluation Framework (MEF) (http://www.fs.fed.us/emc/met/) was established by the National Forest System (NFS) to help Forest Service planners meet monitoring requirements. The framework focuses on the need to monitor progress toward desired conditions of key resources (biological diversity; land health and vitality; soil, water and air; social benefits; economic benefits; and infrastructure capacity) (USDA FS 2014d).

NFMA

[Acronym]: National Forest Management Act

Natural Resource Manager (NRM)

A system of database tools for managing Agency data across the Forest Service. Natural Resource Manager (http://www.fs.fed.us/nrm/) includes: Forest Service Activity Tracking System (FACTS), Infrastructure (Infra), Natural Information System (NRIS), and Timber Information Manager (TIM) applications. NRM applications provide tools for most of the agency's natural resource business areas.

NIMS

[Acronym]: National Information Management System

NFS

[Acronym]: National Forest System

OQM

Objective/Question/Metric
**owner**

The owner class that best corresponds to the ownership (or the managing agency for public lands) of the land in the condition class (USDA FS 2014b).

**owner group**

The FIA owner group identifying the ownership (or the managing agency for public lands) of the land in the condition class (USDA FS 2014b).

**page**

A page is a display area containing dropdown menus, text boxes, checkboxes, buttons, hyperlinks, tooltips, tables, status indicators, and/or descriptive text.

**panel**

A sample in which the same elements are measured on two or more occasions. FIA divides plots into five panels that can be used to independently sample the population (Bechtold and Patterson 2005).

**periodic survey**

A noncontinuous inventory system. A survey strategy whereby a set of inventory panels is measured simultaneously over a short time frame, often 1 to 3 years in the case of FIA, and there is a time lag, often many years, before the panels are remeasured (Bechtold and Patterson 2005).

**phase 1 (P1)**

FIA activities related to remote-sensing, the primary purpose of which is to obtain strata weights for population estimates (Bechtold and Patterson 2005).

**phase 2 (P2)**

FIA activities conducted on the network of ground plots. The primary purpose is to obtain field data that enable classification and summarization of area, tree, and other attributes associated with forest land uses (Bechtold and Patterson 2005).

**phase 3 (P3)**

A subset of Phase 2 plots where additional attributes related to forest health are measured (Bechtold and Patterson 2005).
plot

A cluster of 4 points arranged such that point 1 is central, with points 2, 3, and 4 located 120 feet from point 1 at azimuths of 360, 120, and 240 degrees, respectively. Each point includes a microplot, a subplot, and an optional macroplot (Bechtold and Patterson 2005).

plot (grouping level)

Relates to variables collected on the entire plot (O'Connell et al. 2017).

population

A basic building block of land area for which the number of plots and the land area being sampled are known. In FIA, this is typically the county, but some counties may be grouped into super-counties due to small numbers of forested plots or to mask a large landowner (Bechtold and Patterson 2005).

post-processor

A post-processor is a program that reads FVS output files and produces further reports such as stand and stock tables, elk hiding cover, and various other metrics (Dixon 2002).

post-stratification sampling

A method where stratification is delineated after selection of the sample. This method is useful when the stratum to which a unit belongs is not known until the data have been collected (Cochran 1977).

PRC

Page/Row/Column

registered user

A user role assigned in DATIM that grants the user permissions to create and save analytical report designs and output, plus view and work with standard ATIM reports, but does not have access to confidential information (actual plot coordinates and private ownership information). This user has limited access to ATIM, and full access to DTIM.

regional administrator

A user role assigned in DATIM that grants the user access to all DATIM datasets and projects for their Forest Service Region, including confidential information. This "Super User" has access to actual plot coordinates and can edit any of the regional data in the DATIM data mart. He/she has the ability to create analytical report templates to limit how the regional data are analyzed and viewed by other DATIM users. Additional permissions include the ability to compile and load inventory information to the Data Center, define and populate new attributes, edit and create metadata associated with those attributes, and create DATIM datasets.
remeasurement cycle

The number of years required to sample a set of panels to complete an inventory.

resource data

A collection of field samples from one or more inventories that span a DATIM dataset area and share a set of attributes collected according to consistent protocols during a desired time period. The field samples come from a probabilistic design-based inventory. The spatial coordinates for the field data could be either the center of the primary sampling unit (plot center) or the secondary sampling units (subplot center for example).

R&D

[Acronym]: Research & Development

RMRS

[Acronym]: Rocky Mountain Research Station

sample list

A set of field sample locations determined by the original sample design including any defined subsets, such as annual panels or intensifications. The field samples are selected according to a sample method (i.e., simple random sampling, stratified random sample, and double sampling for stratification) and cover a defined geographical region. There is a set for each inventory which can be composed of subsets due to subsampling of whole plots.

sampling unit

The basic unit of selection and observation. All FIA units use the center point of the 4-point cluster of subplots as the primary sampling unit (Bechtold and Patterson 2005).

Seedling (grouping level)

Relates to variables collected on live trees on a microplot and less than 1 inch in diameter. And at least 6 inches in length for conifer species and at least 12 inches in length for hardwood species (O'Connell et al. 2017).

simple random sampling

A method of selecting n units out of the N such that every one of the samples has an equal chance of being chosen (Bechtold and Patterson 2005).

SIT

[Acronym]: Spatial Intersection Tool, a DATIM tool used to perform spatial intersections between plot-based data and user-selected geospatial layers, with the results of those intersections stored in DATIM for analysis in ATIM to refine analyses and reports. SIT is used to access geographic information systems with the spatial data located
locally and remotely on intranets/internet. This tool includes enhanced spatial querying and reporting capabilities using Esri’s ArcGIS software and other data visualizing and data mining techniques.

**SIT-plot intersection (grouping level)**
Relates to variables added to the analysis using the Spatial Intersection Tool.

**spatial data**
Data that record the geographic location and shape of geographic features and their spatial relationships to other features (USDA Forest Service 2004).

**species**
In biological classification, the category below genus and above the level of subspecies and variety; the basic unit of biological classification (adapted from Lincoln et al. 1998).

**standard report (ATIM)**
A report template that users can run against any compatible analysis. Some standard reports were preloaded in ATIM, while others are designed by administrative users and saved as standard report templates.

**status (ATIM)**
The ATIM reporting filter used to indicate the FIA tree status code assigned to the measured trees.

**strata**
Non-overlapping subdivisions of the population such that each primary sampling unit is assigned to one and only one subdivision (or stratum). The relative sizes of these strata are used to compute strata weights (Bechtold and Patterson 2005).

**stratification**
A statistical tool used to reduce the variance of the attributes of interest by partitioning the population into homogenous strata. It may also involve partitioning a highly variable but small portion of the population (Bechtold and Patterson 2005).

**stratification scheme**
A means of classification of the sample area into sub-populations (strata) often to produce homogeneous areas of a key attribute to improve the precision of estimates drawn for the area. A stratification scheme must: (1) Be uniquely defined within an Estimation Unit but may be defined differently across Estimation Units; (2) Define strata to be exhaustive and mutually exclusive within Estimation Units. This implies that strata are also exhaustive and mutually exclusive across the data set area; (3) Contain strata that have samples drawn by one and only one of the currently supported sampling methods: simple random sampling, stratified random sampling, double sampling for...
stratification or post-stratification. Currently supported stratification schemes include none (simple random sampling), wall-to-wall (stratified random sampling or post-stratification), and first-phase sample to estimate strata sizes (double sampling for stratification); (4) Contain strata with samples drawn with equal probability of selection within a stratum. This restriction is due to the current version of ATIM and may be loosened in future versions; and, (5) Contain a description of each stratum and a link to the spatial layer of the strata.

**stratified sampling**

A method where the population of N units is first divided into subpopulations (strata) that are nonoverlapping and together comprise the whole population (Cochran 1977).

**stratum**

In general, one of a series of layers, levels or gradations in an ordered system. In the natural environment, the term is used in the sense of (1) a region of sea, atmosphere or geology that is distinguished by natural or arbitrary limits, or (2) a layer of vegetation, usually of the same or similar height (adapted from FGDC 1998).

**subplot center**

The Secondary Sampling Unit (SSU) within a Primary Sampling Unit. The coordinates of the SSU and the collection of attributes associated with the data point (Brand and Alegria 2011).

**Subunit (grouping level)**

Relates to variables collected on a portion of the plot, such as subplot, microplot, transect, or the discrete combination of landscape attributes that define a condition (O’Connell et al. 2017).

**task (DATIM)**

A set of selections and inputs that the user performs in DATIM to create projects, analyses, reports, and other outputs.

**timberland**

Forest land that is capable of producing at least 20 cubic feet per acre per year at culmination in fully stocked, natural stands (1.4 cubic meters per hectare per year) of continuous crops of trees to industrial roundwood size and quality (Woudenberg et al. 2010).

**trees**

Woody plants that generally have a single main stem and have more or less definite crowns. In instances where life form cannot be determined, woody plants at least 5 meters in height are considered trees (FGDC 1997).
Glossary of Terms

Tree / Sapling (grouping level)
Relates to variables collected on each 5 inch diameter and larger tree, and between 1 and 5 inch diameter sapling, and found on a microplot, subplot, or core optional macroplot (O’Connell et al. 2017).

USDA
[Acronym]: United States Department of Agriculture

variant (DCS)
When equations, such as those for tree growth, mortality, and volume, are developed for a specific geographic area and imbedded in the FVS framework, the resulting model is called a geographic variant of FVS (Dixon 2002).

vegetation
The total plant life or cover in an area; also used as a general term for plant life; the assemblage of plant species in a given area; cf. faunation (Lincoln et al. 1998).

window
A user interface that pops up in front of a DATIM page.