

# Working with an AGI Data Federate (ADF)

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## Introduction

AGI Data Federate (ADF) is a data management system that enables you to share, collaborate and reuse your STK data across your teams and organizations. ADF provides a central data repository that can be accessed seamlessly from within STK through standard file loading and saving operations and provides STK with the capability of searching within and managing the data stored there.

This tutorial will guide you through the process of finding objects stored in an ADF, loading them into a scenario, and tracking the revisions that you make to an object. In order to perform all of the exercises in this tutorial, you will need to be connected to an ADF server and have permission to write to it. If you do not have such a connection available to you, you can get temporary permission to write to AGI's ADF server by requesting a guest account at:

<http://license.agi.com/adfeval>

To begin this tutorial, create a scenario with the default settings and when the Insert STK Objects tool is displayed, you are ready to begin.

## Searching an ADF

There are two ways to locate a file stored in an ADF – browsing and searching. Browsing for a file in an ADF uses the same methods as browsing for a file in Windows, so this tutorial will not waste time on it. Instead, you will learn how to search in an ADF.


Pretend that you want to insert a specific Earth observation satellite – one that does ground imaging - into your scenario, but you forget the exact name. From the Insert STK Objects Tool:


1. Click on **From AGI Data Federate** in the Select a Method list, and then click the **Insert...** button.
2. In the Open window that appears, click the **Search** tab. Here you will define search criteria that will hopefully locate the satellite file that you want to add to your scenario.
3. Since you do not recall the name at all, you will want to search for satellites that are identified as Earth observation satellites in their file details. Enter the words “Earth” and “observation” in the **Words or phrases in files** field.
4. If you knew when the satellite file had been created or modified in the ADF, you could refine your search to an appropriate date range in the **Date created** and **Date modified** fields. Assume that you do not know this information, however, and just click the **Search** button to search all files in the ADF for the keywords that you have entered.
5. After STK has searched the ADF, it displays all files that meet the criteria in the **Results** list. By default ADF will return results that match any of the terms given. As you can see, many files in the ADF match your search criteria.
6. Pretend that you recall that the satellite is Japanese. You can refine your search by adding “Japan” to the keywords in the **Words or phrases in files** field. But remember, ADF searches for any of the terms by default, so to restrict this search to only satellites that have “Japan” in their file details, place a plus sign in front of “Japan”. The **Words or phrases in files** field should now look like this:

Earth observation +Japan

You can read more about search expressions such as the plus sign in the ADF section of the STK help system.


7. Click the **Search** button and you will see a much shorter list of results than the list that was displayed for the first set of search terms.
8. When ADF searches the details of files, it compares the search terms against any instances of them in the file details. In other words, ADF does not know that you are searching for a Japanese satellite; it knows that you are searching for a file that contains the word “Japan” in it. Therefore, the results that it returns are not necessarily all Japanese satellites.

Select the file named “Trmm.sa” and click the  button in the Details column.

9. The Overview section of the File Details/History window contains the file's details. As you can see on the second line from the bottom of the current display, this satellite is actually French, not Japanese.
10. Scroll down through the details and you will soon learn why this file was returned as a search result: the satellite was launched in Japan on a Japanese rocket.
11. Click the **Cancel** button to close the File Details/History window without inserting it into your scenario, since this is not the satellite that you are looking for.
12. At this point, you could review the details of the other files in the list until you found the one that is a Japanese satellite, but to move this tutorial along, skip to the file named "ALOS.sa".
13. Click the  button in the Details column for this file and you will see that this is the Japanese, Earth observation, ground imaging satellite that you want.
14. Click the **Open Selected File** button to insert this satellite into your scenario.
15. Once STK has finished loading the satellite file, it will return you to the Insert STK Objects tool. The ALOS satellite and its twelve sensors are now displayed in the Object Browser.
16. Click the **Close** button to close the Insert STK Objects tool.

## Saving Files to an ADF

An ADF server is more than a remote storage device for your STK data; it is a collaboration device. In this exercise you will learn how to save files to an ADF using revision tracking, a powerful tool that allows you to save and access each incremental version of a file that you work with. Using the same scenario that you created in the previous exercise:

1. Double-click the ALOS satellite to open its Properties Browser.
2. Pretend that you are interested in testing new potential orbits for a satellite of this kind using STK's High-Precision Orbit Propagator (HPOP). Select "HPOP" from the **Propagator** drop-down menu.
3. Click the **OK** button to accept the change and close the Properties Browser. You will make more changes to the satellite, but first you will save this initial version of the satellite using the HPOP propagator.
4. Select **Save ALOS...** from the File menu. The Save As window will appear, and by default it has selected the folder where the ALOS.sa satellite file is stored in the ADF. This folder is in the Standard Object Catalog, however, and you do not have permission to write here. Even if you did, you do not want to overwrite the original version of the file anyway.
5. Browse to the Users folder, select it, and then click the  button to add a new folder for you to use. In the Add New Folder window, enter a name for the folder and then click the **Add New Folder** button.

6. In the **File name** field, rename the satellite “ALOS-HPOP” so that you will not confuse it with the normal ALOS satellite.
7. Select the new folder that you created and then click the **Save** button. The File Details/History window will appear.
8. Select **Enable revision control for this file**.
9. A new field – Revision Comments – appears in the window. You can use this field to describe changes that you made to the file since the last time that it was saved, or any other notes that you want to include for future reference. For this revision, enter, “Changed propagator to HPOP.”
10. Click the **Check In** button to save the file.



ADF uses the phrase “check in” when saving an file that is using revision control to distinguish this process from a standard STK save operation.

## Working with Revision Control

Now that you have saved a file with revision tracking enabled, you can put the full collaborative power of an ADF to use. In this exercise, you will make another change to the file, save that revision, and then load the first revision of the file back into the scenario. Using the same scenario that you created in the previous exercise:

1. The ALOS satellite has been renamed ALOS-HPOP in the Object Browser since that is the new name that you gave it when you saved it to the ADF. Double-click the satellite to open its Properties Browser.
2. Change the **Semimajor Axis** of the orbit to 8600 km.
3. Click the **OK** button to accept the change and close the Properties Browser.
4. Select **Save ALOS-HPOP...** from the File menu. The Save As window will appear, and by default it has selected the folder where you saved the first revision of the ALOS-HPOP satellite file.
5. Click the **Save** button. The File Details/History window will appear.
6. In the Revision Comments field, enter, “Increased Semimajor Axis to 8600 km.”
7. Click the **Check In** button to save the satellite file.
8. You now have two revisions of the ALOS-HPOP satellite saved to your folder in the ADF. Pretend that you have finished working on this file for today and select **Close** from the File menu. When you are prompted to save the scenario, click the **No** button.

Now pretend that you need to make a new scenario and that you want to use the ALOS-HPOP satellite, but with its originally defined semimajor axis, and that you cannot remember that value. This is no problem for you, because you will simply insert the first revision of the file, which you saved with the original semimajor axis value.

9. Create a new scenario with the default settings.
10. In the Insert STK Objects window, a satellite is already selected as the object to insert and the ADF is already selected as the method. Click the **Insert...** button.
11. In the Open window, you can see that the Browse display is already open to the folder that you created in the ADF. Select the ALOS-HPOP.sa satellite file.
12. On the toolbar at the top of the folder list, click the  button to open the File Details/History window.
13. The Revision field is a drop-down menu that shows you which revision details are being displayed in the window and allows you to select other revisions. By default, the latest revision of the file is displayed when you open the File Details/History window. You can see that in the Revision Comments field, your most recent comment – the change to semimajor axis – is displayed.
14. Click the Revision drop-down menu and select **1** to display the details of the first revision of the ALOS-HPOP satellite file. You can see that in the Revision Comments field, your first comment – the change to the HPOP propagator – is displayed.
15. Click the **Open Selected Revision** button to load the first revision of the ALOS-HPOP satellite file into the scenario.
16. Click the **Close** button to close the Insert STK Objects tool.
17. Double-click the ALOS-HPOP satellite to open its Properties Browser.
18. Change the **Inclination** of the orbit to 30 deg.
19. Click the **OK** button to accept the change and close the Properties Browser.
20. Select **Save ALOS-HPOP...** from the File menu. The Save As window will appear, and once again it has selected the folder where you saved the previous revisions of the ALOS-HPOP satellite file.
21. Something is different in the folder list this time, however. The icon for the ALOS-HPOP satellite file has an alert icon  displayed over it. This icon is warning you that there is a newer revision of the file in the ADF than the one that you have loaded into the scenario and modified.

In this tutorial, we know why the alert is being displayed, because we intentionally loaded an earlier revision of the file. However, if you did not know that there was a newer revision of the file than the one that you loaded, it was probably saved to the ADF while you were working on your copy. In such a case, you will want to investigate the newer revision of the file before proceeding to save your revision.

## Conclusion

The tutorial is now finished. You can save the new revision of the ALOS-HPOP satellite file or you can cancel the operation. Likewise, you can choose to save the scenario or close it without saving.

As you have now learned, using ADF is seamless and easy. In addition to the user interface that you have explored in this tutorial, STK's Connect library has been updated with commands for use with ADF; refer to the Connect section of the STK help system for details.

For more information about ADF, please consult the STK help system; complete documentation for the ADF user interface is available in the Manage Data section.