IMPORTING A VEHICLE MOTION FILE

The Tapestry system is a software suite developed by Navigation Laboratories Inc. that provides a modeling and control gateway for the LabPro SCS3500/3510 Global Positioning System

The SCS3500/3510 when controlled with the Tapestry system, is capable of outputting 24 channels of L_1 (C/A, P, Y, M), L_2 (C/A, P, Y, M) , L_2C, L_5, and WAAS with deterministic Doppler and Doppler derivatives derived directly from Host-Vehicle Dynamic Motion. Tapestry includes a high integrity 6-DOF Motion Generator that will allow you to develop a ***Motion Script*** based upon selection of maneuver primitives from a list.

Should this type of interface prove inadequate, or should you have another mode of construction of vehicle motion, you may input your own motion data in several formats.

This document provides a description of the formats.

IMPORTING A MOTION PROFILE

At the heart of the Tapestry Scenario process is the Vehicle Motion and Attitude *Profile*. The *Profile* is used to construct GPS line-of-sight data, auxiliary sensor truth data, and numerous special effects and error models.

The Tapestry system includes a very accurate Six-Degree-Of-Freedom (6-DOF) trajectory generator as part of the software suite. However, in many end-user applications, there is a desire to import a Vehicle Motion and Attitude *Profile* created externally outside of the Tapestry system. This document describes the various formats supported for importation.

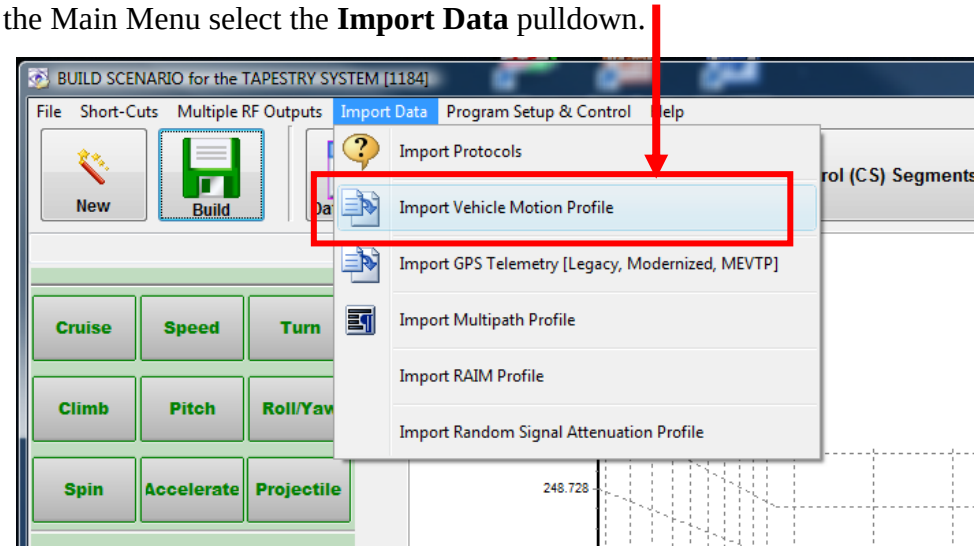
NOTE Tapestry does no integrity checking of your data – the number of digits provided in the ascii file impacts accuracy and file size. Tapestry provides 5 digits beyond the decimal point when it creates text files. If file size becomes prohibitive, use the binary protocol which is the logically same data (Week Seconds + ECEF Data).

IMPORTING A VEHICLE MOTION (Trajectory) FILE INTO TAPESTRY

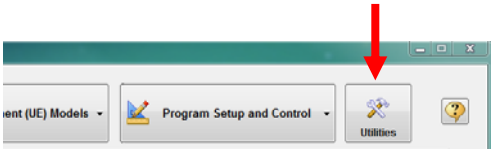
To import your vehicle motion profile you must use the **Build Scenario** application. You may import a Profile into a pre-existing scenario or into a new scenario created for that purpose. You can also import a Profile repeatedly into the same scenario.

There are two gateways within **Build Scenario** for importation of user developed Trajectory Profiles:

From the Main Menu select the **Import Data** pulldown.



Or Select the UTILITIES icon.



In either instance, the supported protocols are displayed to the user. With the exception of the binary format, all of the ascii (text – space delimited) files share a "common" data portion with a variability in how the Time Epoch is expressed.

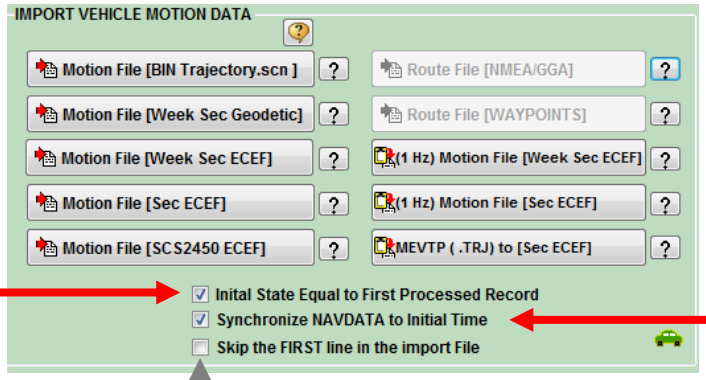
All follow the cryptic format [Time-Epoch Data]. The data portion is the *same* for all protocols; (3 components of position, velocity, acceleration, jerk, attitude, angular rate, angular acceleration, angular jerk).

The differences revolve around how the Time-Epoch is expressed. There are two:

[Week Seconds]: The Week and Seconds-into-Week are provided (eg. 1514 220800 + data). Worthy of note, this is the format used when Build Scenario dumps the Trajectory Truth data via the UTILITIES Icon.

[Seconds]: Only Seconds into Week is provided. (eg. 220800- + data). In this form, **Build Scenario** uses the apriori Week. To change the week use the ***Date & Time*** Icon. This format is used for importation of an Interstate Electronic Corp. (IEC) SCS2450 log file. This IS also the format for the MEVTP (Modernized Evaluation & Test Procedures) TRJ trajectory files.

Select the Import Control based upon the Time-Epoch format of you file [10 Hz].



Select one of these Controls if your data file is 1Hz.

If CHECKED, the first *processed* record in the Imported File is used as the Initial Time and Location. If UNCHECKED the apriori Initial State in the ***Time & Date*** and ***Location*** Icons are used.

If you include a comment line as the first record in your file, CHECK this item.

If CHECKED, the TOE/TOA/UTC and Time of Transmission associated with the Telemetry [NAVDATA] is propagated consistent with the Initial Time. This link provides more details. If UNCHECKED the data is not propagated. The Time of Transmission is equated to the simulation start time

From this Link you can hyperlink to the Interface Document appropriate to your format as well as general details (filenames, file extensions, etc.). Use on the following Links to display the Trajectory File Interface Document appropriate to your format.

Select one of the following protocols for the VEHICLE MOTION TRAJECTORY

binary
(ascii) Week, Seconds Geodetic Data [10 Hz]
(ascii) Week, Seconds ECEF Data [10 Hz]
(ascii) Seconds ECEF Data [10 Hz]
(ascii) Seconds ECEF Data (SCS2450 Format) [10 Hz]
(ascii) Week, Seconds ECEF Data (1 Hz)
(ascii) Seconds ECEF Data MEVTP (1 Hz)
(ascii) NMEA (~ 1 Hz)