



## USING MULTIPLE RF OUTPUTS

The TAPESTRY system is a software suite developed by Navigation Laboratories Inc. to provide a modeling and control gateway for our LABPRO family of GPS Constellation Simulators.



## TWO RF OUTPUTS



TAPESTRY supports TWO RF Outputs per PCI-DSIM-ENGINE, they can mapped as shown:

# VEHICLES	RF1 ANT 1	RF2 ANT 2	RF3 ANT 3	RF4 ANT 4
1	●	●	⊗	⊗
2	●	●	⊗ / ⊗	⊗ / ⊗

requires a second MASTER SIM-ENGINE

You may use additional RF outputs to create more Vehicles ( up to 4) and/or additional UE antennas.

# CREATING ANOTHER VEHICLE

Note: Your simulator must have multiple RF Outputs to use these features



The Vehicle-unique elements within TAPESTRY are,

- The **Vehicle Motion Profile**.
- UE Antenna Characteristics [ 1-4 Antennas/Vehicle ]
- Attached Sensors [IMU, Automotive Dead Reckoning, 1553, ... ]

This document describes the *initialization* of the **Vehicle Motion Profile**. Once you have initialized the motion profile, it can be edited in the same fashion as Vehicle I. There are three choices; A Blank-Motion-Script creates the New Vehicle(II) with a “*blank slate*”. The other two methods write into the “*blank slate*” with motion derived from Vehicle-I or a Vehicle from a different Scenario.

- Define a Route
- Import a Motion Trajectory File
- Use the Script Editor Keypan to Create a Script

- **Blank Motion Script**

[ use if Vehicle-II motion is different from Vehicle-I ]

Vehicle-I Unchanged

Scenario **Default** used as a Template

Vehicle-II created with same Initial State\* as Vehicle-I

Vehicle-II Antenna-I assigned to *next* unassigned RF Output

Vehicle-II GPS Lever Arm zeroed / Default Patterns Loaded

Vehicle-II Motion Script and Sensors yet to be defined (**Blank**)

UE Sensor Files not overwritten

- **Replicate Vehicle I**

[ use if Vehicle-II motion is derived from Vehicle-I ]

**Blank-Motion-Script Created**

Vehicle-II Motion Script\* copied from Vehicle-I (*same flight profile*)

UE Sensor Files not overwritten

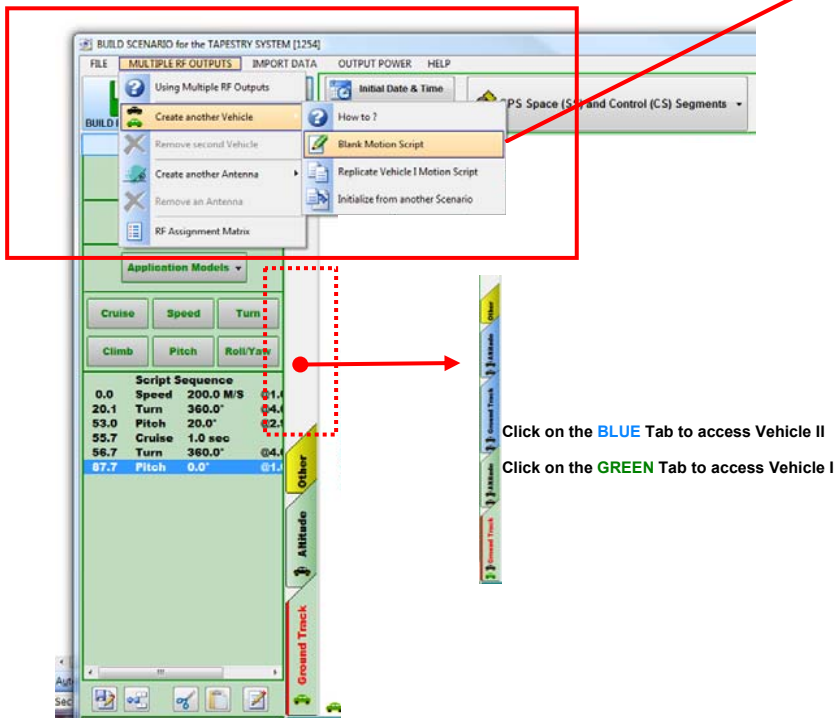
- **Replicate Vehicle from a (Source) Scenario**

[ use if Vehicle-II motion is derived from Vehicle-I/II from a different Scenario ]

**Blank-Motion-Script Created**

Vehicle-II Motion Script\* copied from *Source-Scenario*


UE Sensor Files not overwritten

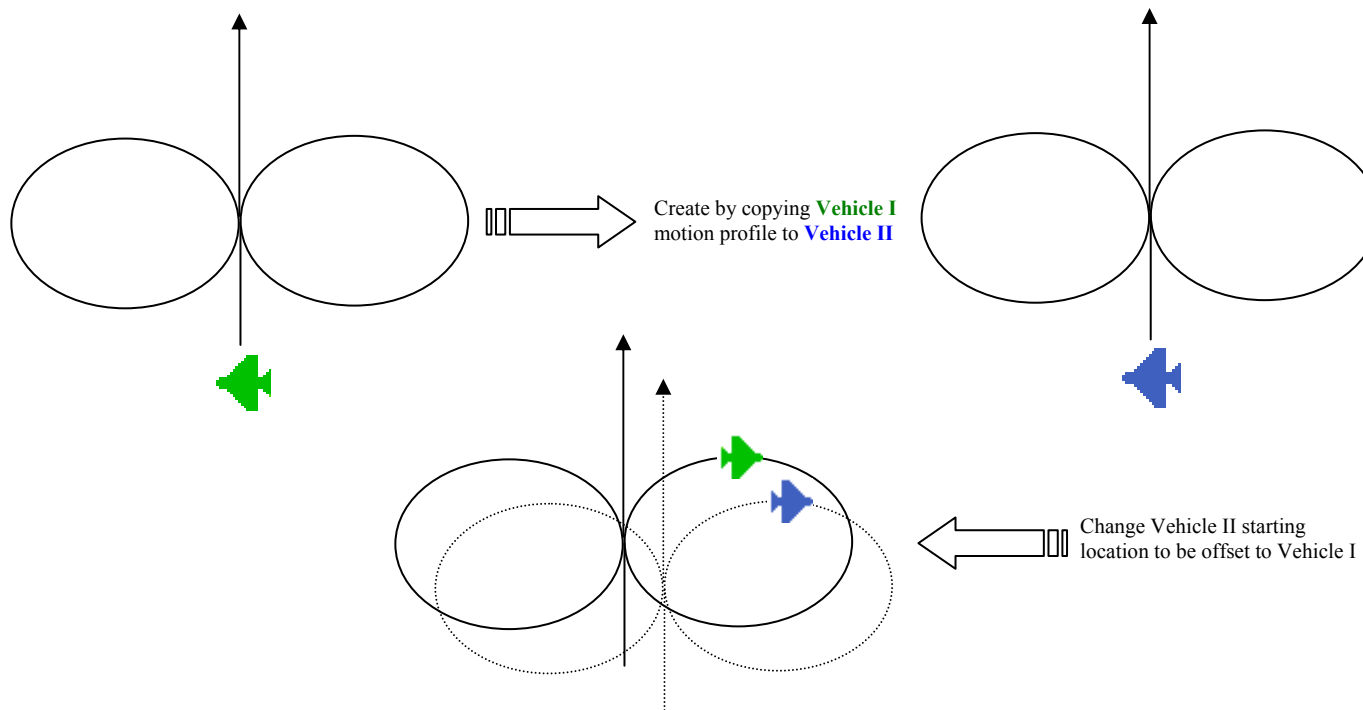


\* Values can be customized prior to building the Scenario using the appropriate Icons.

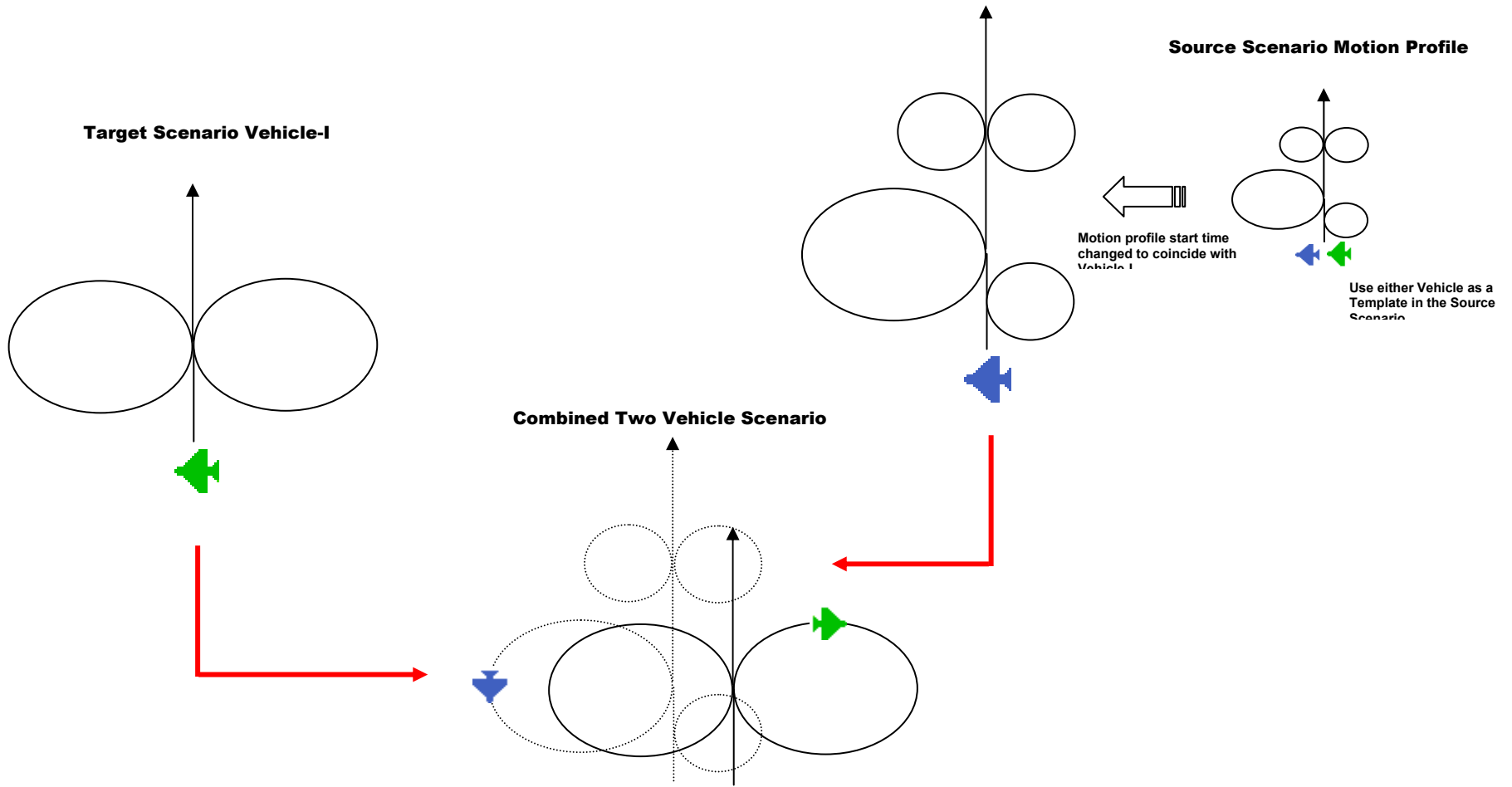
## Initialize from a (Source) Scenario

Use this method if Second Vehicle is to be initialized from a different Scenario. This provides a deterministic flight profile and dynamic vehicle setup from a known source. It performs the same function as **Replicate Vehicle-I** with the difference being the Second Vehicle flight (motion) profile is based upon a Vehicle in a different Scenario rather than upon Vehicle-I from the same Scenario.

Once you have created the Second Vehicle, either from a pre-existing Scenario or from Vehicle-I of the same Scenario, you can modify the *Initial Navigation State* using the control  **Initial State Vector**. This technique provides a mechanism in which two vehicles fly the same flight profile with one vehicle offset in location relative to the other.

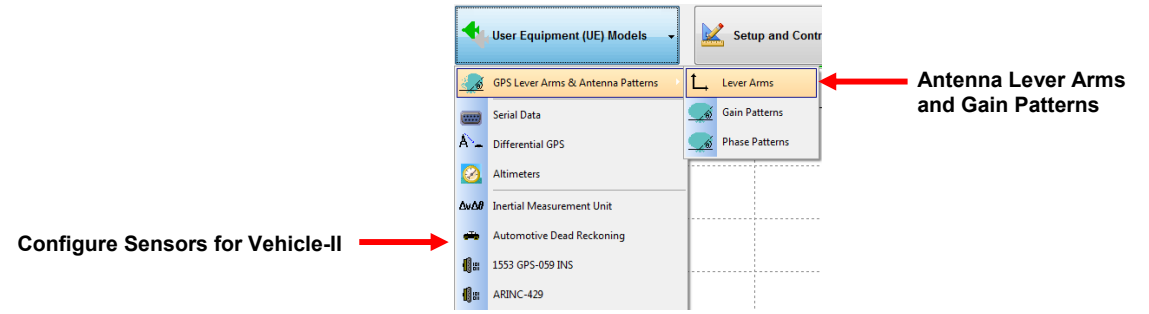


**CREATING ANOTHER VEHICLE USING VEHICLE-I AS A TEMPLATE\***



**CREATING A VEHICLE USING ANOTHER SCENARIO AS A TEMPLATE\***

Whichever method is used to initialize Vehicle-II, the Antenna Lever Arm of Vehicle-II is “0” irrespective of the setting in the *Source Scenario*. In addition, no apriori Sensors assignments are made. To create a Lever Arm or assign a Sensors use the usual controls;



\* Within Tapestry, a Template is a set of files that specify the Vehicle Motion-Trajectory

# CREATING ANOTHER ANTENNA

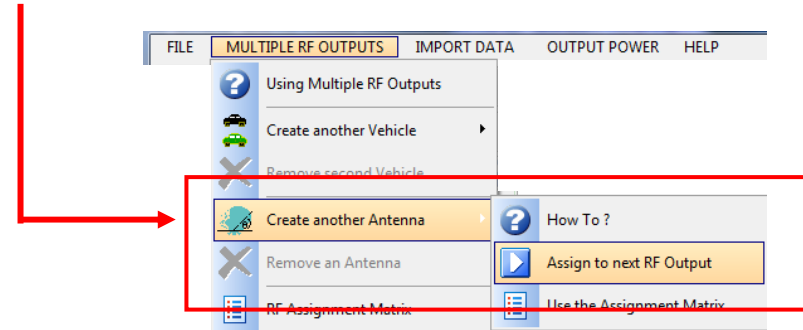
The Vehicle-unique elements within TAPESTRY are,

- The Vehicle Motion Profile.
- **UE Antenna Characteristics [ 1-4 Antennas/Vehicle ]**
- Attached Sensors [IMU, Automotive Dead Reckoning, 1553, ... ]

*Note: Your simulator must have multiple RF Outputs to use these features*

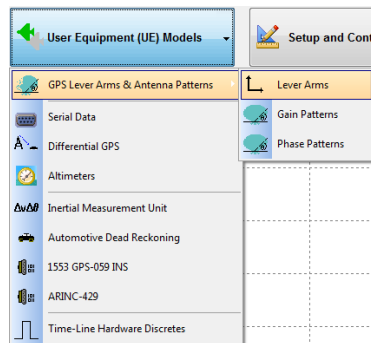
This document provides the procedure for adding an additional antenna to the current Vehicle. By convention, when a Scenario is created, Vehicle-I Antenna-I (V1A1) is unconditionally assigned to RF #1.

Multiple-RF Tapestry Scenarios are most commonly used for testing host vehicles with two or more Antennas. To add a second, a third, a fourth antenna, begin with the selection of **Create another Antenna**.



## Assign to next RF Output

Automatically creates an Antenna, associating it with the current Vehicle and an RF Output. The new Antenna is co-located with the Vehicle center-of-gravity (cg) resulting a zero Antenna Lever Arm.



**Use this pulldown to change the default Antenna Lever Arm and Gain Pattern**