Autonomous Vehicle Simulation (AVS) Laboratory, University of Colorado

Basilisk Technical Memorandum
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NAVIGATION EPHEMERIS MESSAGE CONVERTER

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Status: Draft
Scope/Contents
Converter that takes an ephemeris output message and converts it over to a translational state estimate message.

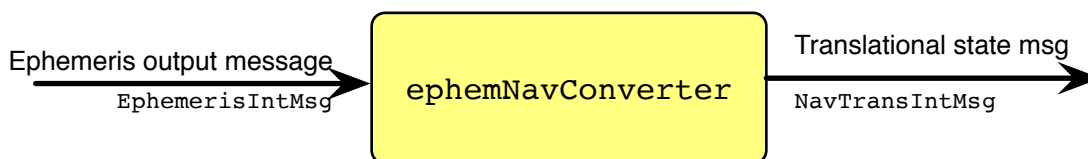| Rev	Change Description	By	Date
1.0	Initial Release	H. Schaub	2019-03-26

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Fig. 1: Module Input and Output Message Illustration.

1   Model Description

This converter module has a very simple purpose. It takes an ephemeris message of type `EphemerisIntMsg` and copies over the time, position and velocity information into an output message of type `NavTransIntMsg`.

2   Module Functions

- **Read in an ephemeris message**: A single ephemeris message is read in to convert it to another output type.

- **Translate navigation message**: The output message must be of type `NavTransIntMsg`

3   Module Assumptions and Limitations

No assumptions and limitations are present in this simple converter module.

4   Test Description and Success Criteria

The unit test for this converter modules creates an ephemeris message for Earth, and then translates the information into the expected output. The output position, velocity and time stamp values are compared to those of the input message.

5   Test Parameters

The unit test verify that the module output message states match expected values.

Table 2: Error tolerance for each test.

Output Value Tested	Tolerated Error
r_BN_N	10.0
v_BN_N	0.0001
timeTag	0.0001

6 Test Results

The unit test is expected to pass.

Table 3: Test results

Check	Pass/Fail
1	PASSED

7 User Guide

This converter module only requires that the following message names are specified:

- ephInMsgName: the input ephemeris message

- stateOutMsgName: the output state navigation message