Open Source SSAM File Format V3.0

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Document purpose

This document defines the software input file format for the Surrogate Safety Assessment Model (SSAM) 3.0. SSAM is used to perform safety analysis. This technique may be of use to researchers, transportation engineers, and safety engineers.

Revision History

Version	Date	Description
1.0	07/02/2004	Initial definition of the trajectory format.
1.01	07/19/2004	Corrected minor typos and formatting
1.02	07/20/2004	Changed scale and vehicle xy's to Float from Double
1.03	07/22/2004	Changed order to specifies units and scale ahead of min/max xy's
1.04	09/13/2004	Added more description of the trajectory file layout
3.0	01/23/2015	Added Elevation information

1. Trajectory File Format (1.04)

Trajectory file format 1.04 and earlier was developed and provided by Simens, under contract with US DOT. The file format can also be downloaded from "Documentation" folder.

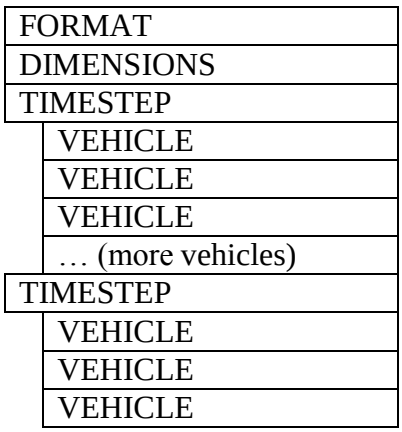
2. Updated Trajectory File Format (3.0)

The file format 3.0 and SSAM program developed by New Global Systems are backward compatible with trajectory files generated by SSAM 2.16 with File Format 1.04. This section describes the changes in 3.0.

The objective of the updates is to resolve the deficiency of conflicts on overpass/underpass interchanges. When there is an overpass or underpass, SSAM 2.16 will report false conflicts although vehicles are on different levels of highway.

2.1 The organization of records

The trajectory data are organized as shown in Figure 2-1. The changes to existing records are described in the rest of this document.



… (more vehicles)
TIMESTEP
VEHICLE
VEHICLE
VEHICLE
… (more vehicles)

Figure 2-1 The organization of Trajectory data

The vehicle record in Figure 2-1 may contain optional information. It is backward compatible with vehicle record in Figure 1 and Table 1.5 as well, if no optional and information are needed. The details of the records are described below.

2.2 Format Record

Table 2- 1 Format Record

Field Name	Type	Value Description
Record Type	Byte	0 = FORMAT record type
Endian	Byte	ASCII 'L' = little endian, used by Intel platforms ASCII 'B' = big endian, used by Motorola (Mac/Unix)
Version	Float	Allows decimal version number, which is currently 3.0
Z Value Option	Byte	Blank or zero indicates no elevation values within the trj file. Any non-zero or non-blank value, indicates elevations are included in vehicle trajectory

Two changes are made in the record. First, the version record should be updated to 3.0. Second, an optional entry is added to specify if the z values are used in this trajectory file.

2.3 Dimensions Record

There will be no changes in this record.

2.4 Supplemental Vehicle Record Description (Optional)

Information below will be added to end of each vehicle record.

2.4.1 Elevation

If the value in Entry 4, Record 0, Format Record, is not zero or blank, elevation values have to be attached to vehicle trajectories. That is, the following fields are added to each vehicle record, appended to Table 1.5 above. The z information will be used at interchanges to correctly identify the conflicts on different layers/sections of roadways.

Table 2- 2 Supplemental Vehicle Record Elevation Values

Field Name	Type	Value Description
Front Z	Float	ft or meter defined in Table 1-3.
Rear Z	Float	ft or meter defined in Table 1-3.

If no elevation is available in the simulation, -1 is recommended for elevation on underpass links/paths, 0 is recommended as the ground level links/paths, and 1 is recommended as overpass links/paths. For multiple-level under/over passes, additional +1/ -1 are recommended for each level.