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Sample Session Data File
iTHEIA

1.0

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1 Introduction

This document describes the format for the Sample Session CSV file generated by iTHEIA 2. The data file is a CSV file divided into two major sections: The Header section and the Data section containing the vehicle records.

This document describes the Sample Session data file format for the following version:

Version	Release Date
1.0	May 2025

2 Data File Format

The file name has 5 parts separated by underscores. The first piece is the type of report, which is always “SampleSessionData” for the CSV files, followed by the Session Name. If a session name contains any spaces, it will convert that space into underscores. The third and fourth pieces correspond to the timestamp of the segment. The timestamp will be in the following format: “yyyyMMdd_HHmmss”

If there are multiple segments, the last part will be “Xsegments”, where ‘X’ is the total number of segments. If there is only one segment, it will be “segmentY”, where ‘Y’ is the index of the segment.

Example file name: SampleSessionData_123_sunset_20250429_040346_segment1.itheia.csv

2.1 Header Section

Unless otherwise specified, the maximum number of characters for any String is 50.

Field Name	**Data Type**	**Description**
<Header Begin>	N/A	String marking the beginning of the header section. No data field, just a marker.
File Version	String	Version number for the Sample Session data file.
iTHEIA Core Version	String	Version number of iTHEIA core.
Product Name	String	Name of the product the report was generated from. Currently it’s static and set to “iTHEIA”.
Product Serial Number	String	Serial number of the device. This value is given to the unit during the manufacturing process.
Site ID	String	The identifier for the site
Site Name	String	The legible, user-friendly identifier for the site. Max 100 characters
Timezone	String	The name of the timezone being used on site. Possible values are defined in the IANA Time zone database.
Latitude	Float	Latitude of the site.

Longitude	Float	Longitude of the site.
Units	String	The unit of measurement used at the site. Currently only supports “Metric”.
Report Start	String	The beginning of the time period covered by this report. ISO 8601 datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Report End	String	The end of the time period covered by this report. ISO datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Classification Type	String	The classification format being used in this report. (ex. FHWA 13)
Sample Session Name	String	The name of the session. This is also used in the data file name.
Sample Session Segment	Integer	Applicable session segment number.
<Header End>	N/A	String marking the end of the header section. No data field, just a marker.

2.2 Data Section

This section has a header row that organizes the data beneath it. Each row underneath the header row represents a single, complete vehicle record.

Field Name	**Data Type**	**Description**
<Data Begin>	N/A	String marking the beginning of the data section. No data field, just a marker.
Headers	N/A	A row describing the data in each column. The headers are “Vehicle ID,Timestamp,Lane,Dir,Class, Axle Count,Speed,Frame Number,Bounding Box,Visual Class,Duplicate of”
Vehicle ID	Integer	Unique integer identifier created by iTHEIA to distinguish vehicles.
Timestamp	String	The time the vehicle was recorded as an ISO datetime format in site time zone. (ex. "2023-04-01T12:34:56.789-06:00")
Lane	Integer	The lane number the vehicle was recorded driving in.
Dir	String	One or two character short name for the direction associated with the lane that the vehicle passed in. (ex. W for West and NE for NorthEast)
Class	Integer	The vehicle’s classification.
Axle Count	Integer	The vehicle’s axle count.
Speed	Integer	When the data file is in metric, the speed of the vehicle in kilometers per hour. This may be omitted in certain products. Uncalculatable or invalid speeds are indicated with 999.

Frame Number	Integer	The exact video frame where the vehicle image was captured.
Bounding Box	Integer	Unique ID of the vehicle box used by AI to identify the vehicle.
Reviewed	String	Either 'Y' or 'N' representing yes or no regarding whether the vehicle has been marked as reviewed by a user in the UI
Visual Class	String	Field for manually corrected vehicle class when users review a session and spot AI classification errors. This field will be empty if not specified.
Duplicate of	Integer	Used when a user marks this vehicle as a duplicate; it stores the vehicle number of the original. This field will be empty if not specified.
<Data End>	N/A	String marking the end of the data section. No data field, just a marker.

3 User Review Data

Users can now make correction to the data directly through the UI. The supported correction types include:

- Visual Class
- Duplicate Of
- Missed Vehicles

The first two fields (Visual Class and Duplicate Of) are straightforward. When users enter values for these fields in the UI, the corresponding data will appear in the exported CSV as part of the existing row for that vehicle.

For the third correction type (Missed Vehicles) the behavior differs slightly. When a user adds a missed vehicle via the UI, the system will insert a new row between the two adjacent vehicles in the CSV. This inserted row will have all fields left empty except for the Visual Class property.

4 Appendix

4.1 Sample File

This is a sample Data File in plain text. Note: most data files generated from real data will have far more vehicle entries.

This file's name is "SampleSessionData_123_sunset_20250429_040346_segment1.itheia.csv".

<Header Begin>,
File Version:,1,

iTHEIA Core Version:,1.2.3,
Product Name:,iTHEIA,
Product Serial Number:,123456,
Site ID:,123,
Site Name:,Dev Site,
Timezone:,America/Phoenix,
Latitude:,33.4482,
Longitude:,-112.0777 ,
Units:,Metric,
Report Start:,2025-04-29T04:03:46.855+07:00,
Report End:,2025-04-29T04:08:46.000+07:00,
Sample Session Name,rest,
Sample Session Segment, 1
<Header End>,
<Data Begin>,
Vehicle ID,Timestamp,Lane,Dir,Class,Axle Count,Speed,Frame Number,Bounding Box,Visual Class,Duplicate of,
21,2024-10-16T00:27:59.867+07:00,2,N,8,3,120,45,16,Y,3,,
22,2024-10-16T00:28:00.873+07:00,2,N,12,6,110,99,17,,,21,
23,2024-10-16T00:28:01.901+07:00,2,N,2,2,103,31,18,Y,3,,
24,2024-10-16T00:28:03.140+07:00,1,S,8,3,111,78,19,Y,,,
25,2024-10-16T00:28:04.373+07:00,3,N,7,4,114,52,20,Y,2,,
,,,,,,,,,3,,
26,2024-10-16T00:28:04.421+07:00,2,N,3,2,104,15,21,Y,,25,
<Data End>,