AVSIMULATION

Scenario Importer
Generate a SCANeR™ scenario from real word data

SCANeR™ studio

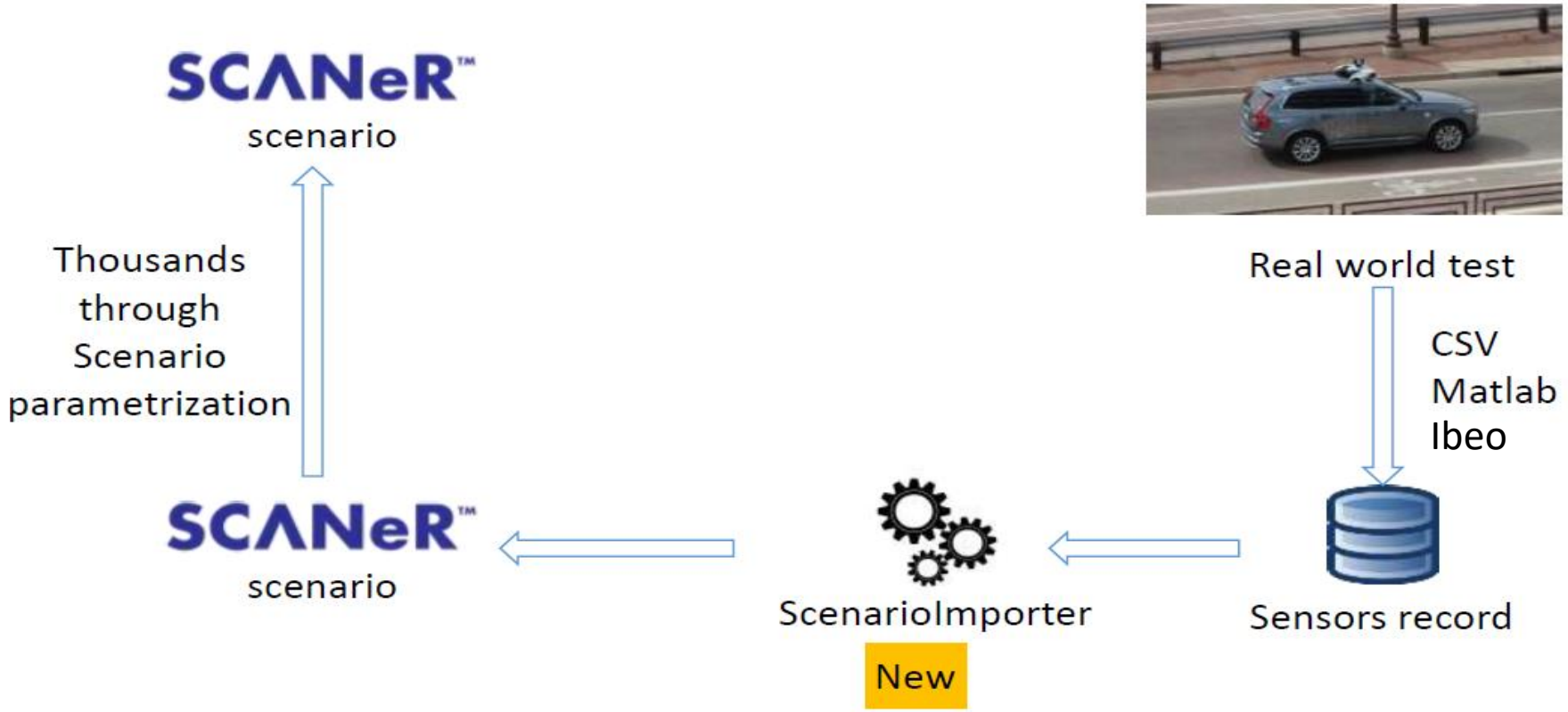
PLAN - SCENARIOIMPORTER: IMPORT REAL DATA

- Presentation
- File Format
- Result

- Presentation

SCENARIOIMPORTER: IMPORT REAL DATA

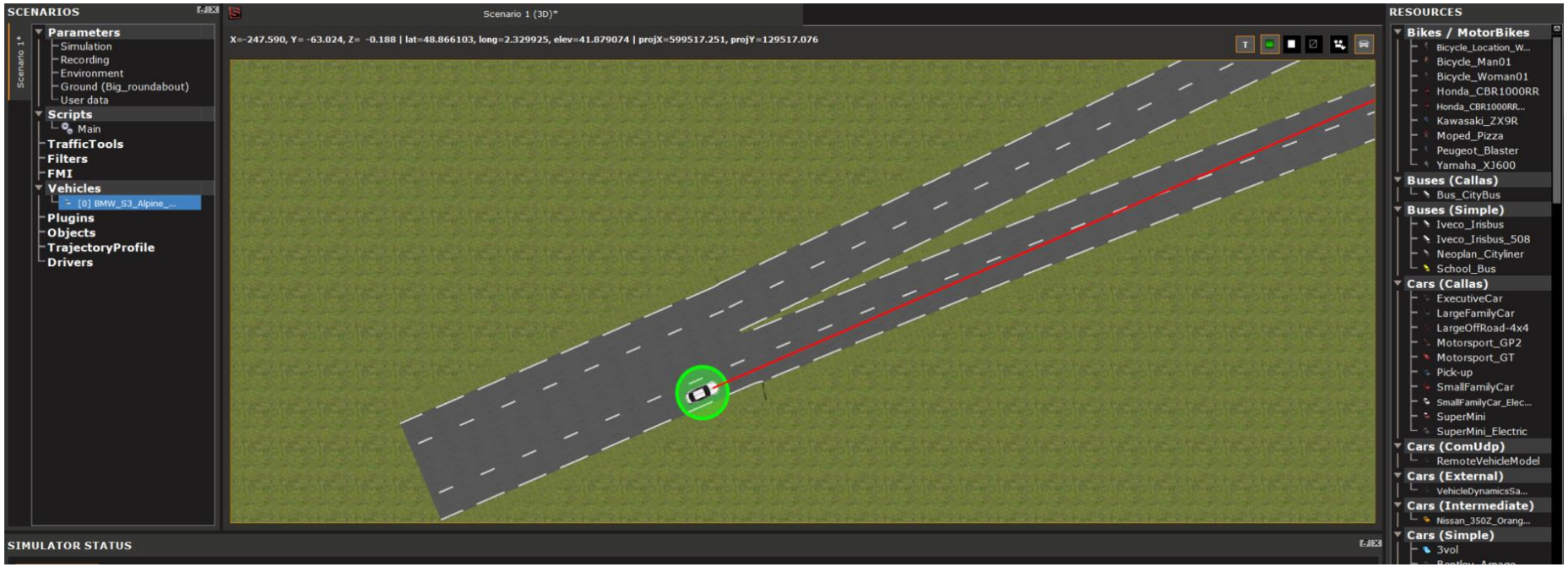
Presentation



SCENARIOIMPORTER: IMPORT REAL DATA

Presentation

- Tool available in SCANeR™Studio since the 1.8 version.
- Trajectory can be extracted and reused.
- The scenario is still editable.

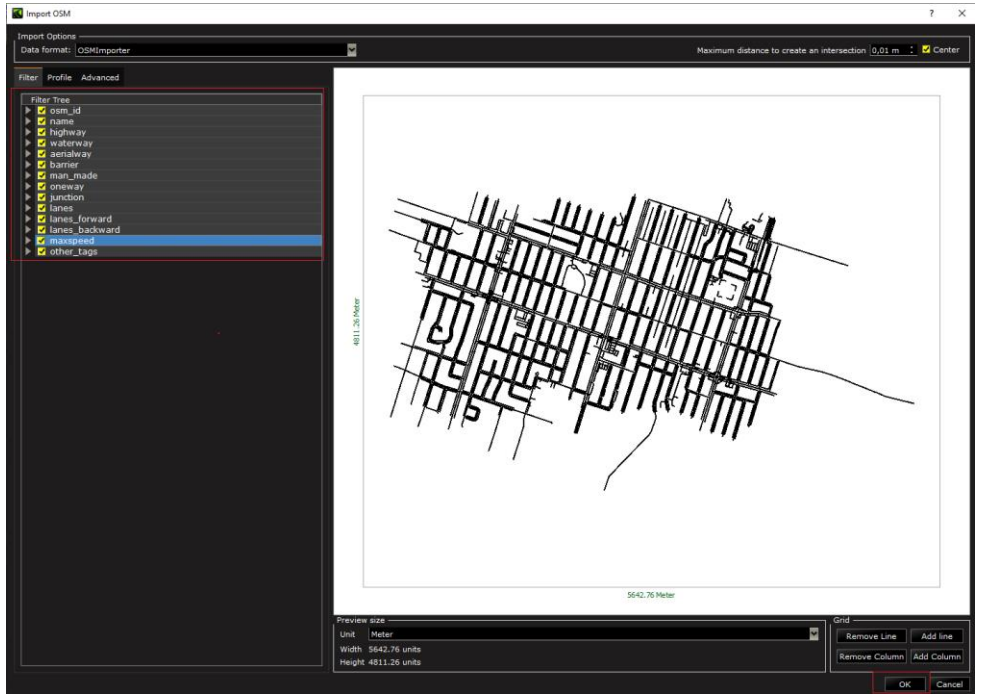


SCENARIOIMPORTER: IMPORT REAL DATA

Presentation

- To use this tool, you need to have the RND file (road logical content) and the IVE (3D file) in SCANeR™studio of the road network where the real world test took place.
- To do that, you can create from scratch these two files in SCANeR™studio. You can also import a file in order to automatically generate this road network. SCANeR™studio allows to import the following files formats:

  -SD Maps (Navstreet Shapefile, OpenStreetMap).
  -OpenDrive.
  -HD Maps (Here,TomTom).
  -Points of cloud (Mappel).
  -Custom (CSV).



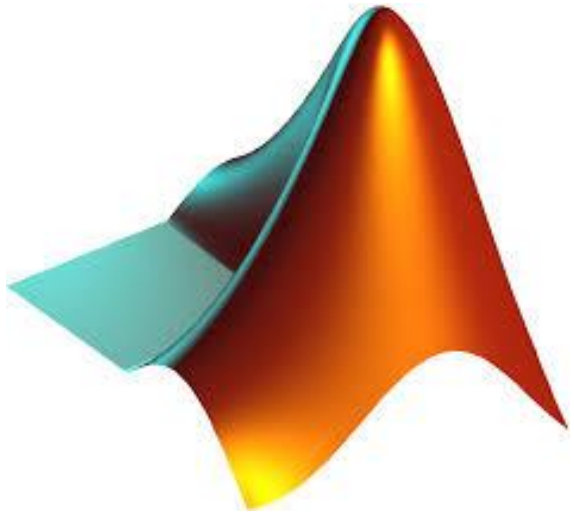
AVSIMULATION

- File Format

SCENARIOIMPORTER: IMPORT REAL DATA

File Format

- The file can be a : csv, a MatLab (.mat) file or a IBEO file (.IDC).



ibeo automotive

CSV

SCENARIOIMPORTER: IMPORT REAL DATA

File Format

- One input file to import the data of the EGO vehicle and the detected objects.
- The inputs data for the EGO vehicle are the the following. **Warning**: all these inputs need to be present in the input file.

Inputs	Comments	Data Types
Time	Unique time base [s]	vector [N*1] double
EGO_GPSdirection	GPS direction [°] (0° = north, clock-wise)	vector [N*1] double
EGO_latGPS	GPS latitude coordinate [°]	vector [N*1] double
EGO_longGPS	GPS longitudinal coordinate [°]	vector [N*1] double
EGO_longSpeed	Vehicle Speed [km/h]	vector [N*1] double
EGO_longAccel	Longitudinal Acceleration [m/s2]	vector [N*1] double
EGO_latAccel	Transversal Acceleration [G] (9.81 m/s2)	vector [N*1] double
EGO_SwAngle	SteeringWheel Angle [°]	vector [N*1] double
EGO_SwRotSpeed	SteeringWheel Rotation Speed [°/s]	vector [N*1] double

SCENARIOIMPORTER: IMPORT REAL DATA

File Format

- The inputs data for the detected objects are the following:

Warning: you need to put all these data for every detected objects.

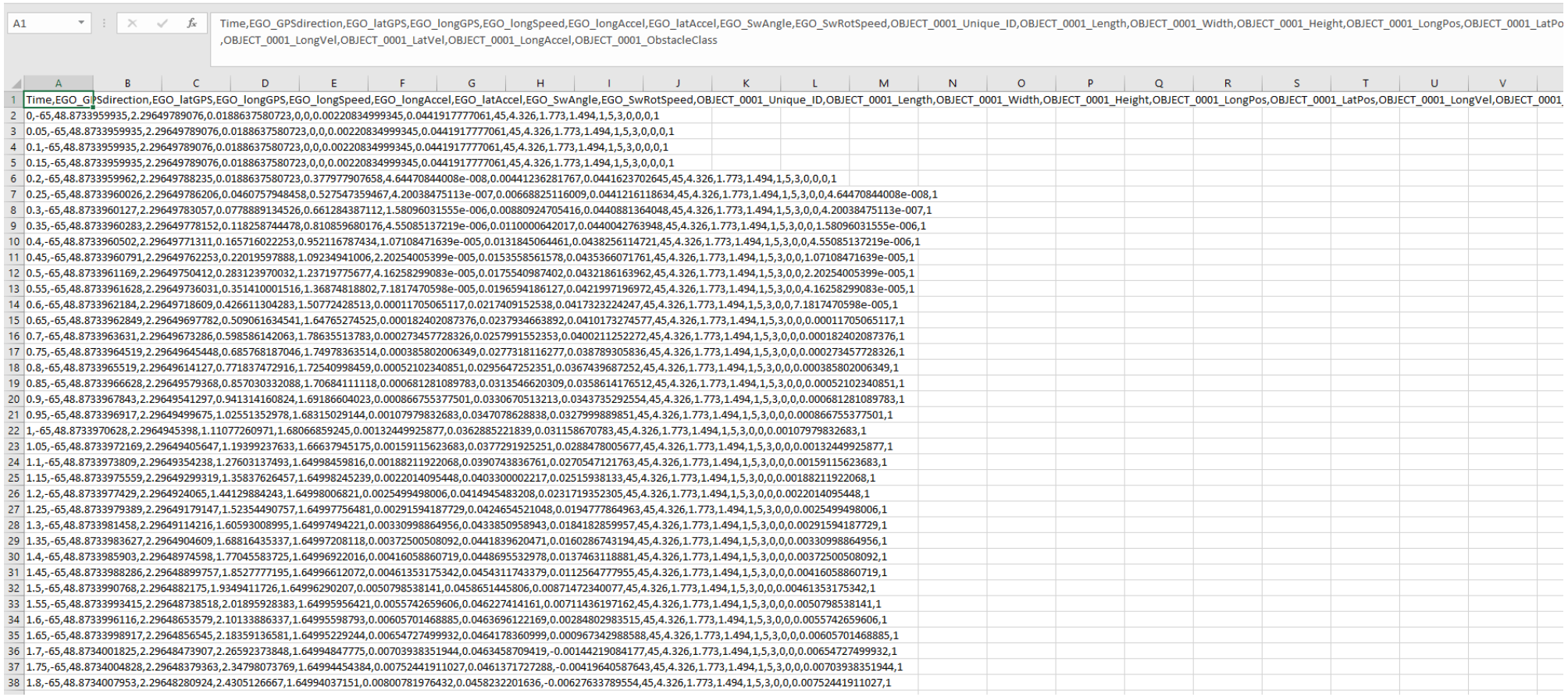
Detected objects	input	Data Types
OBJECT_xxxx_Unique_ID	Unique ID of object	vector [N*1] int64
OBJECT_xxxx_Length	Length of object [m]	vector [N*1] double
OBJECT_xxxx_Width	Width of object [m]	vector [N*1] double
OBJECT_xxxx_Height	Height of object [m]	vector [N*1] double
OBJECT_xxxx_LongPos	Longitudinal distance [m], relative to Ego's position	vector [N*1] double
OBJECT_xxxx_LatPos	Lateral distance [m], positive to the left, relative to Ego's position	vector [N*1] double
OBJECT_xxxx_LongVel	Longitudinal velocity [m/s], relative to Ego's speed	vector [N*1] double
OBJECT_xxxx_LatVel	Lateral velocity [m/s] , relative to Ego's speed	vector [N*1] double
OBJECT_xxxx_LongAccel	Longitudinal acceleration [m/s2] (absolute)	vector [N*1] double
OBJECT_xxxx_ObstacleClass	Object classes: 0=Undetermined 1=Car 2=Motorcycle 3=Truck 4=Pedestrian 5=Pole 6=Tree 7=Animal 8=General On-road 9=Bicycle 10=Unidentified Vehicle	vector [N*1] int64

Note: this tool is very sensitive to the data quality: the EGO position must be accurate.
Also, a bad detections means a bad scenario.

SCENARIOIMPORTER: IMPORT REAL DATA

File Format

- One example.



A1

Time,EGO_GPSdirection,EGO_latGPS,EGO_longGPS,EGO_longSpeed,EGO_longAccel,EGO_latAccel,EGO_SwAngle,EGO_SwRotSpeed,OBJECT_0001_Unique_ID,OBJECT_0001_Length,OBJECT_0001_Width,OBJECT_0001_Height,OBJECT_0001_LongPos,OBJECT_0001_LatPo
,OBJECT_0001_LongVel,OBJECT_0001_LatVel,OBJECT_0001_LongAccel,OBJECT_0001_ObstacleClass

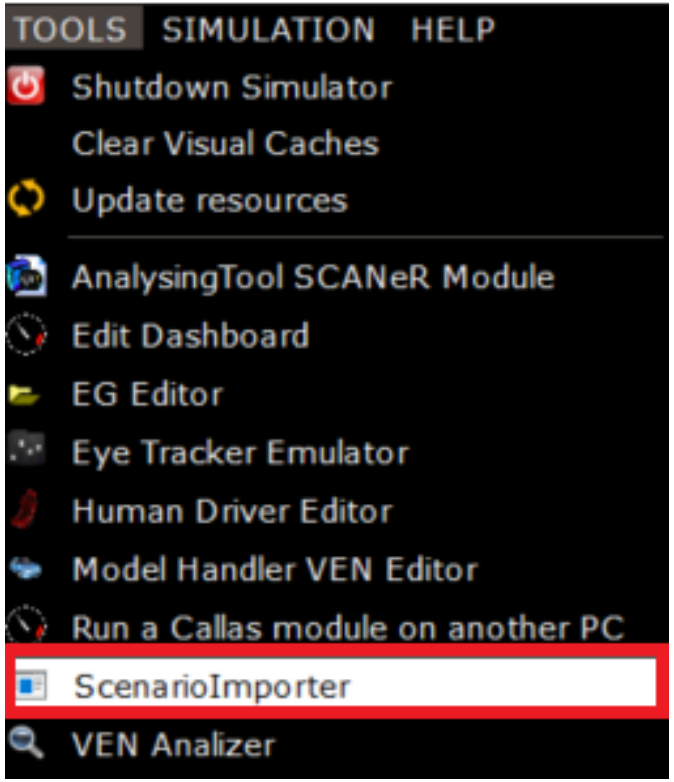
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	Time,EGO_GPSdirection,EGO_latGPS,EGO_longGPS,EGO_longSpeed,EGO_longAccel,EGO_latAccel,EGO_SwAngle,EGO_SwRotSpeed,OBJECT_0001_Unique_ID,OBJECT_0001_Length,OBJECT_0001_Width,OBJECT_0001_Height,OBJECT_0001_LongPos,OBJECT_0001_LatPos,OBJECT_0001_LongVel,OBJECT_0001																					
2	0,-65,48.8733959935,2.29649789076,0.0188637580723,0,0,0.00220834999345,0.0441917777061,45,4.326,1.773,1.494,1,5,3,0,0,0,1																					
3	0.05,-65,48.8733959935,2.29649789076,0.0188637580723,0,0,0.00220834999345,0.0441917777061,45,4.326,1.773,1.494,1,5,3,0,0,0,1																					
4	0.1,-65,48.8733959935,2.29649789076,0.0188637580723,0,0,0.00220834999345,0.0441917777061,45,4.326,1.773,1.494,1,5,3,0,0,0,1																					
5	0.15,-65,48.8733959935,2.29649789076,0.0188637580723,0,0,0.00220834999345,0.0441917777061,45,4.326,1.773,1.494,1,5,3,0,0,0,1																					
6	0.2,-65,48.8733959962,2.29649788235,0.0188637580723,0.377977907658,4.64470844008e-008,0.00441236281767,0.0441623702645,45,4.326,1.773,1.494,1,5,3,0,0,0,1																					
7	0.25,-65,48.8733960026,2.29649786206,0.0460757948458,0.527547359467,4.20038475113e-007,0.00668825116009,0.0441216118634,45,4.326,1.773,1.494,1,5,3,0,0,4.64470844008e-008,1																					
8	0.3,-65,48.8733960127,2.29649783057,0.0778889134526,0.661284387112,1.58096031555e-006,0.00880924705416,0.0440881364048,45,4.326,1.773,1.494,1,5,3,0,0,4.20038475113e-007,1																					
9	0.35,-65,48.8733960283,2.29649778152,0.118258744478,0.810859680176,4.55085137219e-006,0.0110000642017,0.0440042763948,45,4.326,1.773,1.494,1,5,3,0,0,1.58096031555e-006,1																					
10	0.4,-65,48.8733960502,2.29649771311,0.165716022253,0.952116787434,1.07108471639e-005,0.0131845064461,0.0438256114721,45,4.326,1.773,1.494,1,5,3,0,0,4.55085137219e-006,1																					
11	0.45,-65,48.8733960791,2.29649762253,0.22019597888,1.09234941006,2.20254005399e-005,0.0153558561578,0.0435366071761,45,4.326,1.773,1.494,1,5,3,0,0,1.07108471639e-005,1																					
12	0.5,-65,48.8733961169,2.29649750412,0.283123970032,1.23719775677,4.16258299083e-005,0.0175540987402,0.0432186163962,45,4.326,1.773,1.494,1,5,3,0,0,2.20254005399e-005,1																					
13	0.55,-65,48.8733961628,2.29649736031,0.351410001516,1.36874818802,7.1817470598e-005,0.0196594186127,0.0421997196972,45,4.326,1.773,1.494,1,5,3,0,0,4.16258299083e-005,1																					
14	0.6,-65,48.8733962184,2.29649718609,0.426611304283,1.50772428513,0.00011705065117,0.0217409152538,0.0417323224247,45,4.326,1.773,1.494,1,5,3,0,0,7.1817470598e-005,1																					
15	0.65,-65,48.8733962849,2.29649697782,0.509061634541,1.64765274525,0.000182402087376,0.0237934663892,0.0410173274577,45,4.326,1.773,1.494,1,5,3,0,0,0.00011705065117,1																					
16	0.7,-65,48.8733963631,2.29649673286,0.598586142063,1.78635513783,0.000273457728326,0.0257991552353,0.0400211252272,45,4.326,1.773,1.494,1,5,3,0,0,0.000182402087376,1																					
17	0.75,-65,48.8733964519,2.29649645448,0.685768187046,1.74978363514,0.000385802006349,0.0277318116277,0.038789305836,45,4.326,1.773,1.494,1,5,3,0,0,0.000273457728326,1																					
18	0.8,-65,48.8733965519,2.29649614127,0.771837472916,1.72540998459,0.00052102340851,0.0295647252351,0.0367439687252,45,4.326,1.773,1.494,1,5,3,0,0,0.000385802006349,1																					
19	0.85,-65,48.8733966628,2.29649579368,0.857030332088,1.70684111118,0.000681281089783,0.0313546620309,0.0358614176512,45,4.326,1.773,1.494,1,5,3,0,0,0.00052102340851,1																					
20	0.9,-65,48.8733967843,2.29649541297,0.941314160824,1.69186604023,0.000866755377501,0.0330670513213,0.0343735292554,45,4.326,1.773,1.494,1,5,3,0,0,0.000681281089783,1																					
21	0.95,-65,48.8733969917,2.29649499675,1.02551352978,1.68315029144,0.00107979832683,0.0347078628838,0.0327999889851,45,4.326,1.773,1.494,1,5,3,0,0,0.000866755377501,1																					
22	1,-65,48.8733970628,2.2964945398,1.11077260971,1.68066859245,0.00132449925877,0.0362885221839,0.031158670783,45,4.326,1.773,1.494,1,5,3,0,0,0.00107979832683,1																					
23	1.05,-65,48.8733972169,2.29649405647,1.19399237633,1.66637945175,0.00159115623683,0.0377291925251,0.0288478005677,45,4.326,1.773,1.494,1,5,3,0,0,0.00132449925877,1																					
24	1.1,-65,48.8733973809,2.29649354238,1.27603137493,1.64998459816,0.00188211922068,0.0390743836761,0.0270547121763,45,4.326,1.773,1.494,1,5,3,0,0,0.00159115623683,1																					
25	1.15,-65,48.8733975559,2.29649299319,1.35837626457,1.64998245239,0.0022014095448,0.0403300002217,0.02515938133,45,4.326,1.773,1.494,1,5,3,0,0,0.00188211922068,1																					
26	1.2,-65,48.8733977429,2.2964924065,1.44129884243,1.64998006821,0.0025499498006,0.0414945483208,0.0231719352305,45,4.326,1.773,1.494,1,5,3,0,0,0.0022014095448,1																					
27	1.25,-65,48.8733979389,2.29649179147,1.52354490757,1.64997756481,0.00291594187729,0.0424654521048,0.0194777864963,45,4.326,1.773,1.494,1,5,3,0,0,0.0025499498006,1																					
28	1.3,-65,48.8733981458,2.29649114216,1.60593008995,1.64997494221,0.00330998864956,0.0433850958943,0.0184182859957,45,4.326,1.773,1.494,1,5,3,0,0,0.00291594187729,1																					
29	1.35,-65,48.8733983627,2.2964904609,1.68816435337,1.64997208118,0.00372500508092,0.0441839620471,0.0160286743194,45,4.326,1.773,1.494,1,5,3,0,0,0.00330998864956,1																					
30	1.4,-65,48.8733985903,2.29648974598,1.77045583725,1.64996922016,0.00416058860719,0.0448695532978,0.0137463118881,45,4.326,1.773,1.494,1,5,3,0,0,0.00372500508092,1																					
31	1.45,-65,48.8733988286,2.29648899757,1.8527777195,1.64996612072,0.00461353175342,0.0454311743379,0.0112564777955,45,4.326,1.773,1.494,1,5,3,0,0,0.00416058860719,1																					
32	1.5,-65,48.8733990768,2.2964882175,1.9349411726,1.64996290207,0.0050798538141,0.0458651445806,0.00871472340077,45,4.326,1.773,1.494,1,5,3,0,0,0.00461353175342,1																					
33	1.55,-65,48.8733993415,2.29648738518,2.01895928383,1.64995956421,0.005574265960 6,0.046227414161,0.0071143619 7162,45,4.326,1.773,1.494,1,5,3,0,0,0.0050798538141,1																					
34	1.6,-65,48.8733996116,2.29648653579,2.10133886337,1.64995598793,0.00605701468885,0.0463696122169,0.00284802983515,45,4.326,1.773,1.494,1,5,3,0,0,0.0055742659606,1																					
35	1.65,-65,48.8733998917,2.2964856545,2.18359136581,1.64995229244,0.00654727499932,0.0464178360999,0.000967342988588,45,4.326,1.773,1.494,1,5,3,0,0,0.00605701468885,1																					
36	1.7,-65,48.8734001825,2.29648473907,2.26592373848,1.64994847775,0.00703938351944,0.0463458709419,-0.00144219084177,45,4.326,1.773,1.494,1,5,3,0,0,0.00654727499932,1																					
37	1.75,-65,48.8734004828,2.29648379363,2.34798073769,1.64994454384,0.00752441911027,0.0461371727288,-0.00419640587643,45,4.326,1.773,1.494,1,5,3,0,0,0.00703938351944,1																					
38	1.8,-65,48.8734007953,2.29648280924,2.4305126667,1.64994037151,0.00800781976432,0.0458232201636,-0.00627633789554,45,4.326,1.773,1.494,1,5,3,0,0,0.00752441911027,1																					

- Result

SCENARIOIMPORTER: IMPORT REAL DATA

Result

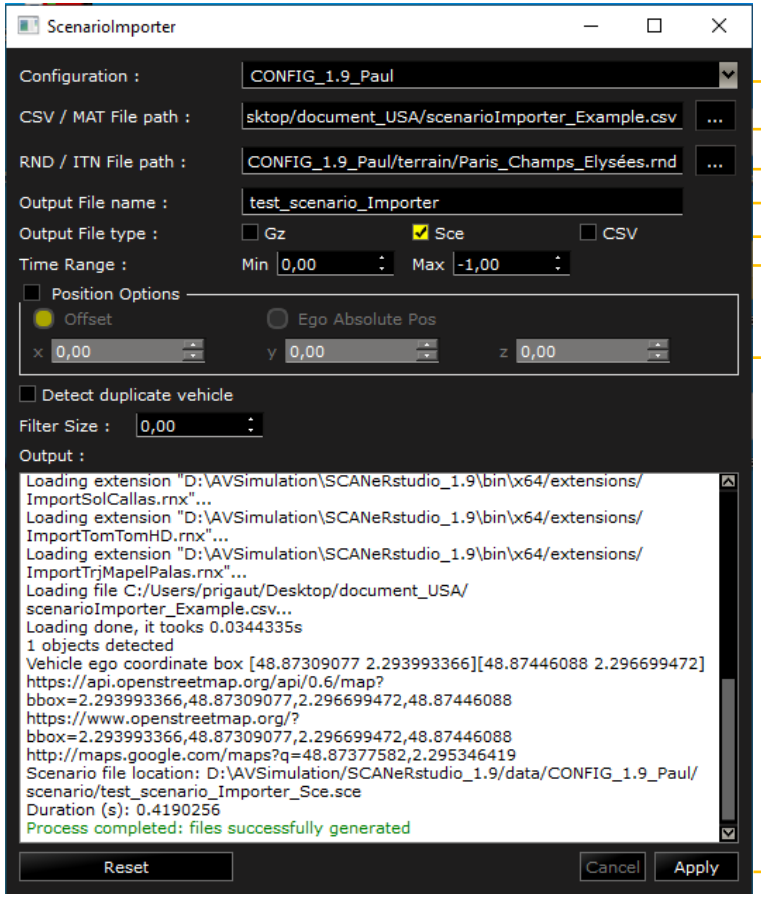
- First step : in SCANeR™Studio: Tools – ScenarioImporter.
  Note: This program can also be launched by command line.



SCENARIOIMPORTER: IMPORT REAL DATA

Result.

- Fill the ScenarioImporter GUI.



Your SCANeR™studio configuration

Your input file

Your SCANeR™Studio Terrain file

Output file name

Your output file type (SCE, gz,CSV).

The output time range. Put -1 to take all the time input.

Optional: you can put an offset on the position of the objects and EGO vehicle.

Apply when ready.

SCENARIOIMPORTER: IMPORT REAL DATA

Result

- The scenario is now available in your configuration.

QUESTIONS / ANSWERS

- ...

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