



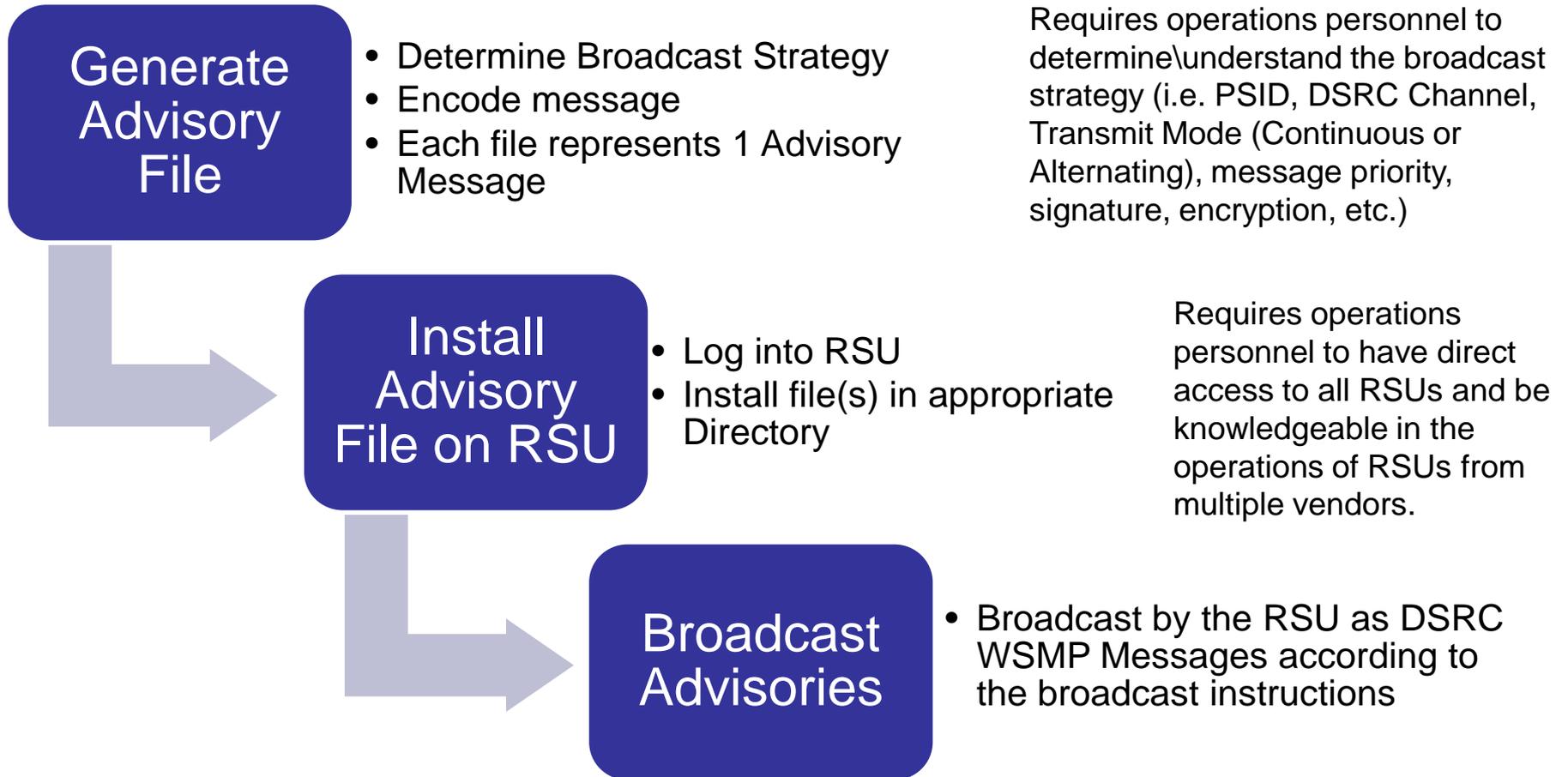
Connected Vehicle
PlugFest

Traveler Situation Data Intersection Situation Data

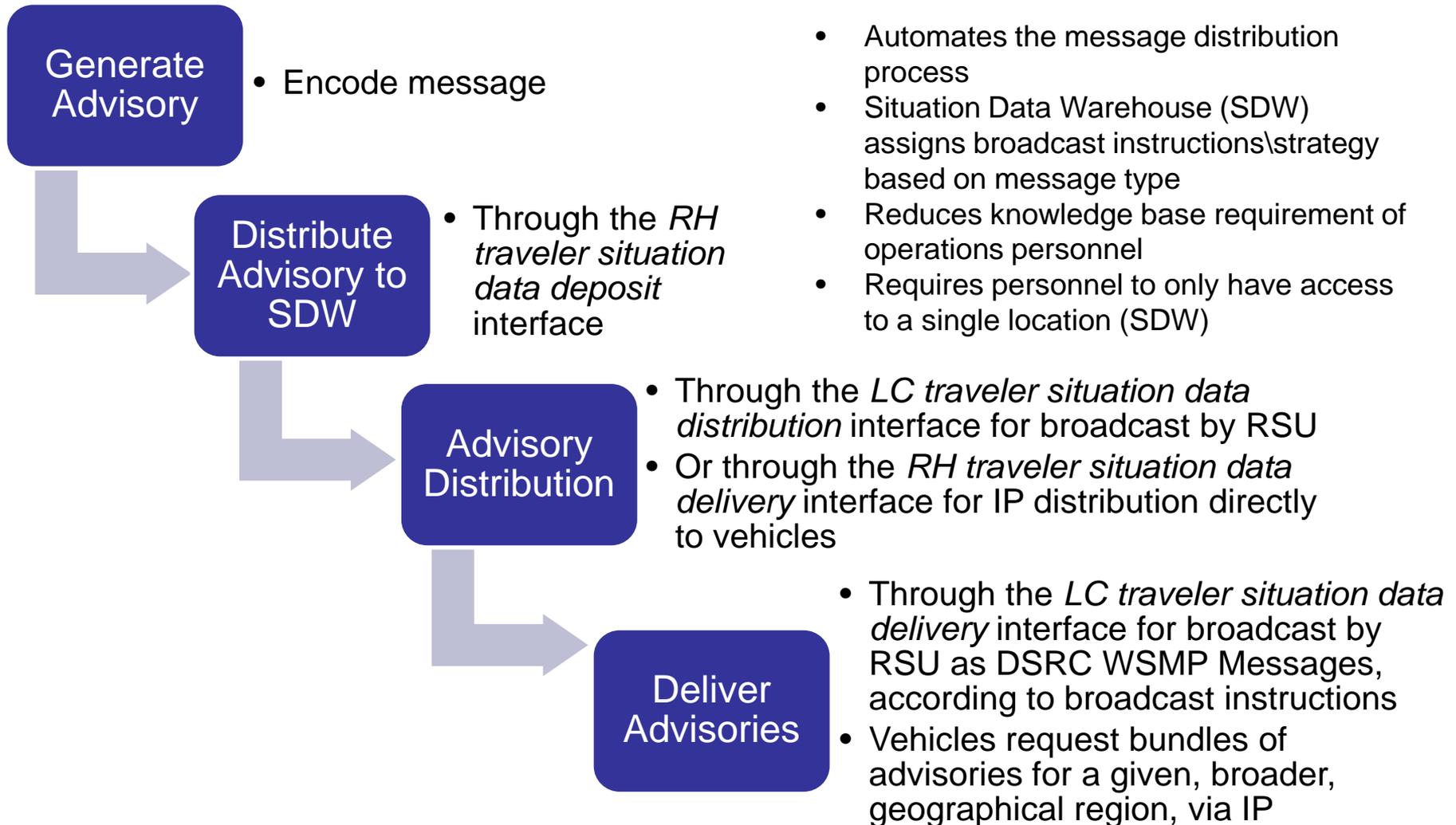
Southeast Michigan Connected Vehicle Test Bed Project 2014



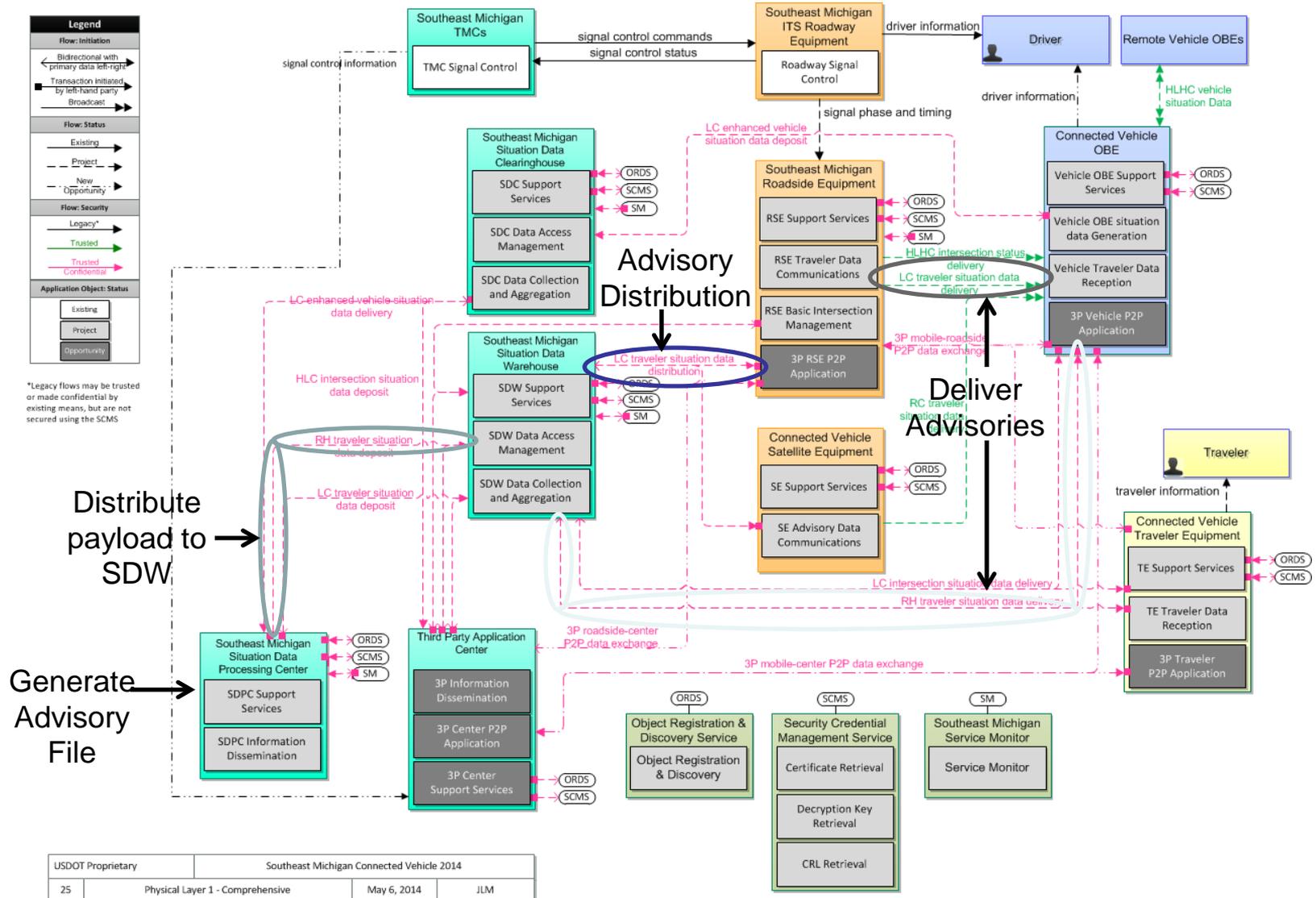
RSE 3.0



2014 Architecture



2014 Architecture



USDOT Proprietary	Southeast Michigan Connected Vehicle 2014		
25	Physical Layer 1 - Comprehensive	May 6, 2014	JLM

Traveler Situation Data Tool



GUI – based conventions, example 1

- Two lane roads, two-way stop signs.



Message ID: 7
Message Count: (0 - 127)
Layer Type: (Optional)
Select Number of Intersections:

- Screen 1 of the GUI:

- Message count can be varied.
- Layer Type 3 is intersection data.

Cont.

- Screen 2, Intersection location and ID:
- Reference point data is the location of the center of the intersection.
- Intersection ID is calculated from Lat, Lon, Elv values.



Intersection Sequence Data 1	
Descriptive Name:	<input type="text" value="1200N, Woodford Co. IL"/> (Optional, Max Length = 63) e.g. Major Street and Minor Street, City, ST
Reference Point Data - Use Decimal Degrees Notation	
Latitude:	<input type="text" value="40.765020"/> e.g. 42.12345
Longitude:	<input type="text" value="-89.140284"/> e.g. -83.45678
Elevation:	<input type="text" value="224"/> (Optional) Enter Value in Meters
Intersection ID:	<input type="text" value="C3FF22E0"/> <input type="button" value="Auto Generate Unique ID"/>
Reference Intersection ID:	<input type="text" value="21004"/> (Optional)
Select Number of Approaches	<input type="text" value="4"/>

Cont.

- Screen 3, Approaches:
- Start with Northbound at Approach number 1 and continue numbering counterclockwise.

Approach 1 Data	
Approach name:	Northbound e.g. Northbound
Approach ID:	1 e.g. 1
Approach Lane Data	
Select # of Driving Lanes	1
Select Number of Crosswalks	0
Approach 3 Data	
Approach name:	Southbound e.g. Northbound
Approach ID:	3 e.g. 1
Approach Lane Data	
Select # of Driving Lanes	1
Select Number of Crosswalks	0

Approach 2 Data	
Approach name:	Westbound e.g. Northbound
Approach ID:	2 e.g. 1
Approach Lane Data	
Select # of Driving Lanes	1
Select Number of Crosswalks	0
Approach 4 Data	
Approach name:	Eastbound e.g. Northbound
Approach ID:	4 e.g. 1
Approach Lane Data	
Select # of Driving Lanes	1
Select Number of Crosswalks	0

Next Step

Cont.

- Screen 5, ASN.1 encoded data:

Data Element and Value	Encoded Data		
Message ID: 7	800107	Approach Descriptive Name: Northbound	800a4e6f727468626f756e64
Message Count: 0	810100	Approach ID: 1	810101
Layer Type: 3	830103	Number of Driving Lanes: 1	
		Approach Drive Lane Number: 1	800101
Number of Intersections: 1		Approach Drive Lane Width: 275	81020113
Intersection Descriptive Name: 2100E and 1200N, Woodford Co, IL	8020323130304520616e6420313230304e2c20576f6f64666f726420	Approach Drive Lane Attributes: 14	82010e
Intersection ID: C3FF22E0	8100	Approach Drive Lane Offsets:	A310040600b0fcf800e004060000df1c00e0

3082011E800107810100830103A582010D308201098020323130304520
616E6420313230304E2C20576F6F64666F726420436F2C20494C8100A
2128004184C3F988104CADE45A88204000000E08302520CA781CA3031
A22F800A4E6F727468626F756E64810101A21E301C8001018102011382
010EA310040600B0FCF800E004060000DF1C00E03030A22E800957657
374626F756E64810102A21E301C8001028102011382010EA31004060159
DC1300E004062E13000000E03031A22F800A536F757468626F756E6481
0103A21E301C8001038102011382010EA3100406FF8B032900E00406000
0275900E03030A22E800945617374626F756E64810104A21E301C800104
8102011382010EA3100406FCA6FF9D00E00406D45C000000E087028191



SPaT

Approach Data		
Approach 1	Select Type of Light and Color for Approach	Set Time To Change
Lane Number: 1	Solid Ball <input type="text"/>	12002
	Green <input type="text"/>	
	State Confidence	
	Time Likely to Change <input type="text"/>	
Approach 2	Select Type of Light and Color for Approach	Set Time To Change
Lane Number: 2	Flashing Ball <input type="text"/>	12002
	Red <input type="text"/>	
	State Confidence	
	Time Likely to Change <input type="text"/>	
Approach 3	Select Type of Light and Color for Approach	Set Time To Change
Lane Number: 3	Solid Ball <input type="text"/>	12002
	Green <input type="text"/>	
	State Confidence	
	Time Likely to Change <input type="text"/>	
Approach 4	Select Type of Light and Color for Approach	
Lane Number: 4	Flashing Ball <input type="text"/>	
	Red <input type="text"/>	

- Stop signs will be encoded as a flashing Red Ball.
- Yield signs will be encoded as a flashing Yellow Ball.
- TimeMark will be encoded as 12002 - undefined time

Signal Phase Indications Encoding

	Green	Yellow	Red	Flashing
Ball	0x00000001	0x00000002	0x00000004	0x00000008
Left Arrow	0x00000010	0x00000020	0x00000040	0x00000080
Right Arrow	0x00000100	0x00000200	0x00000400	0x00000800
Straight Arrow	0x00001000	0x00002000	0x00004000	0x00008000
Soft Left Arrow	0x00010000	0x00020000	0x00040000	0x00080000
Soft Right Arrow	0x00100000	0x00200000	0x00400000	0x00800000
U-Turn Arrow	0x01000000	0x02000000	0x04000000	0x08000000

* Note: DARK = 0x00000000

The Signal Light State value is built by ORing the various bitmasks together for that approach.



DDateTime

Enter DDate Time or leave default value

Time Stamp:	8004E8BBBD7F
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- Absolute time when data elements are created.
- UTC within 1msec.
- DYear, DMonth, DDay,
- DHour, DMinute entered as integers.
- *DSecond entered as in integer in units of seconds.*



Bundle Header

Dialog ID:	800200A2
Sequence ID:	810105
Request ID:	820402E072F2
Bundle ID:	830101
Time To Live:	840102
Geo Region:	A51CA00C8004184C47098104CADE3BD4A10C8004184C38268104CADE4F7D
MAP Payload:	808201223082011E800107810100830103A582010D308201098020323130304520616E6420313
Time Stamp:	8004E8BBBD7F
SPAT Payload:	81363034800113A22f8100820100A5283008820101830104860030088201028301048600300882
ISD Record	3082019B800200A2810105820402E072F2830101840102A51CA00C8004184C47098104CADE

- Geo Region automatically calculated based on the most Northerly, Westerly, Southerly, and Easterly points in lane definitions.



Intersection Situation Data Tool

