European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

CEN TC278 WG3 SG10

OpRa

Operating raw data and statistics exchange

Italian scenario for PT indicators

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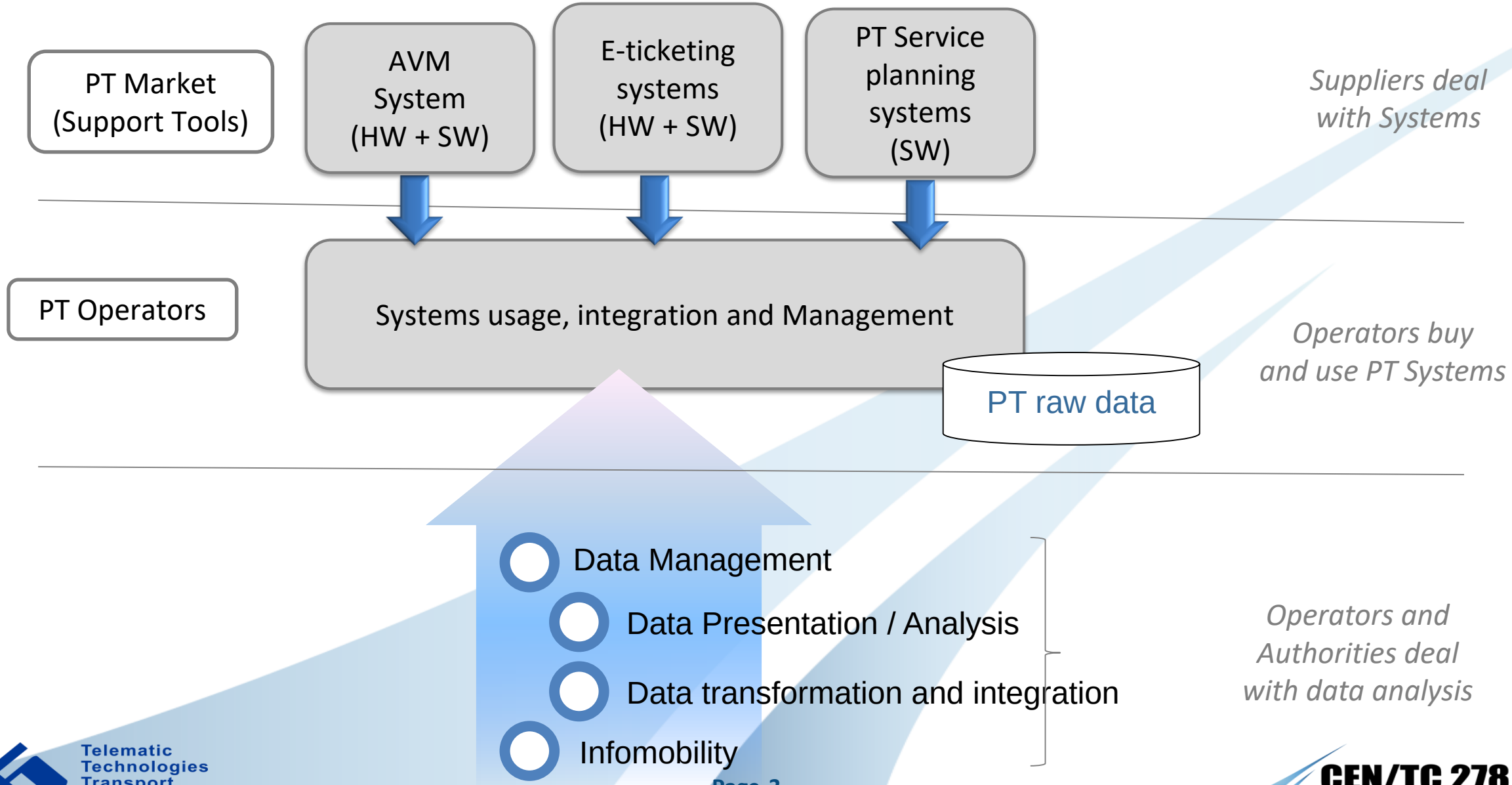
Telematic
Technologies
Transport
Traffic
Torino

CEN/TC 278
ITS standardization

PT Service involved actors

- **Public Transport Operator** in charge to provide PT Service in accordance with a contract with Public Authority. Interest in having an efficient Service to reduce costs.
- **Public Authority** at several levels (Central and delegated ones) in charge to create contracts and verify results of the PT Service respect contract Service Level Agreement (SLA).
- **System Integrators** that provide hardware devices and software platforms and applications to facilitate the operations of PT Service.
- PT Service **passengers** that represents the demand of transport to be satisfied in a sustainable way by Public administrations and stakeholders.

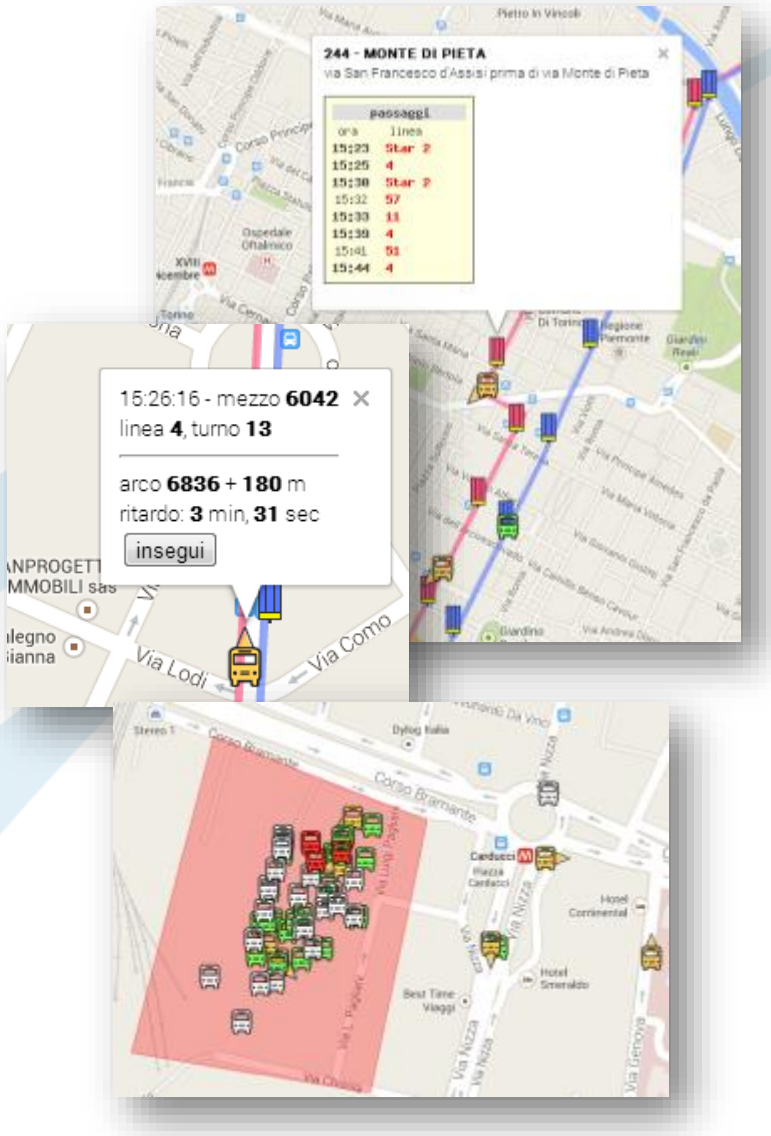
Technological and process context



FLEET MANAGEMENT TOOLS AND DATA ROLE

Fleet vehicle status in real-time

- **Real-time information** displayed on Maps (commercial or Open)
- Current position of each vehicle and additional information (i.e. delay, shift, …)
- Route paths, STOP_POINT, infomobility data (i.e. forecast arrival time)
- Show Depots positions
- In general, every georeferred data could be displayed

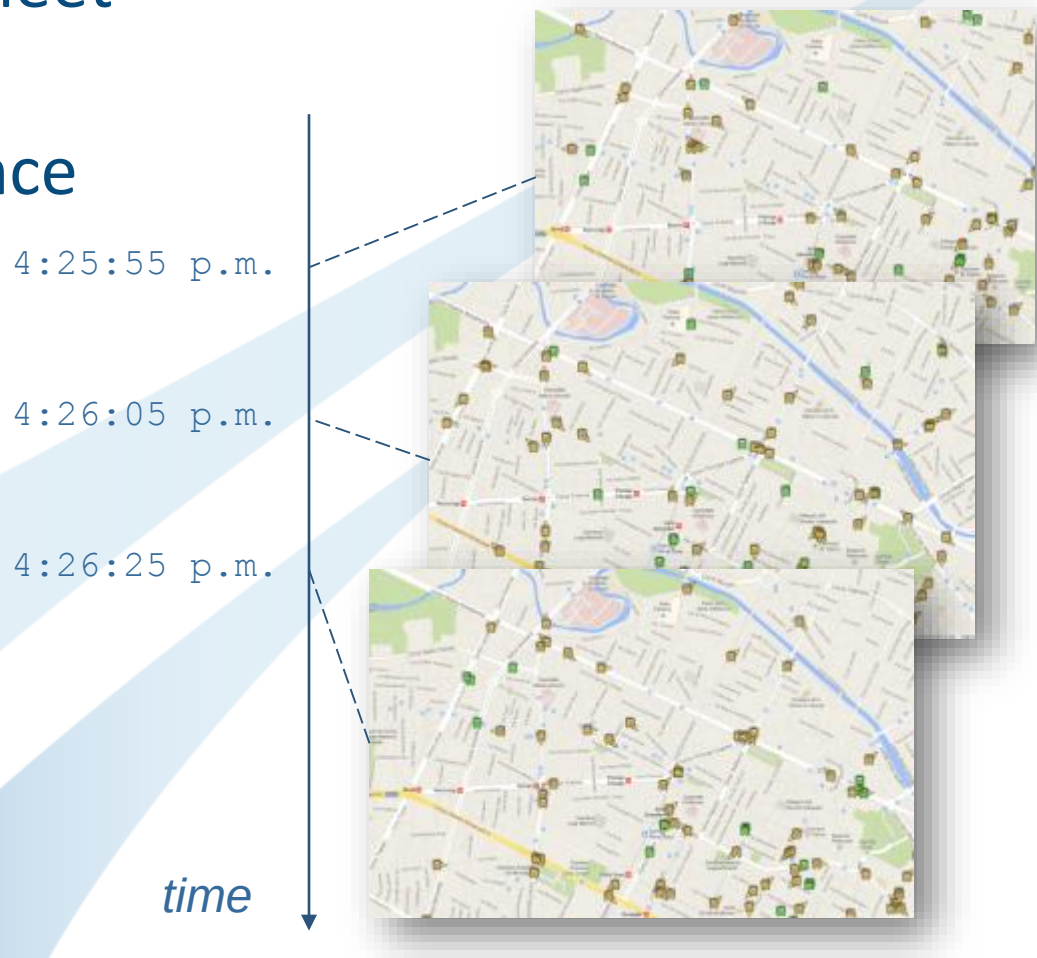


“Rewind” the PT Service performed by fleet

- Replaying fleet “past activity” with **historical** fleet vehicle position **data**
- Historical data to enable PT service performance analysis
- Accidents detection and double check for insurance purpouses

Historical data

Engine



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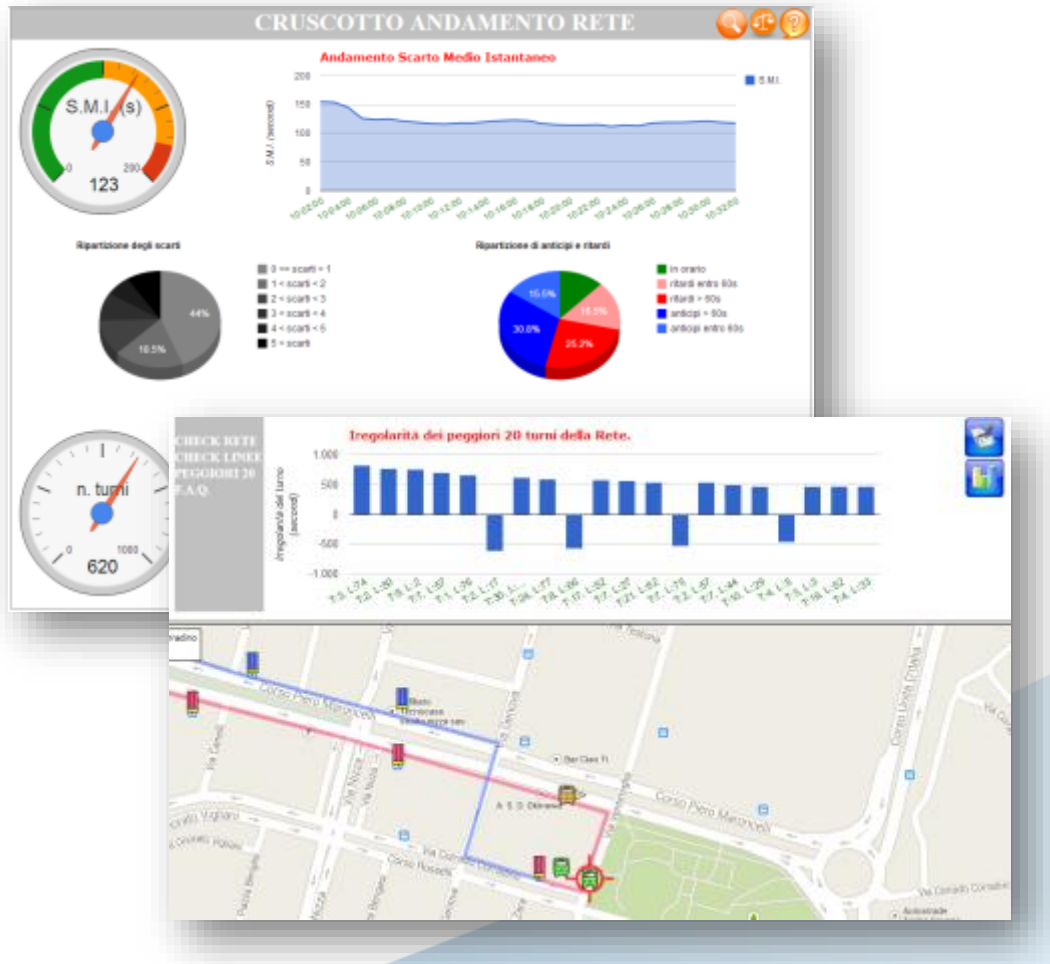
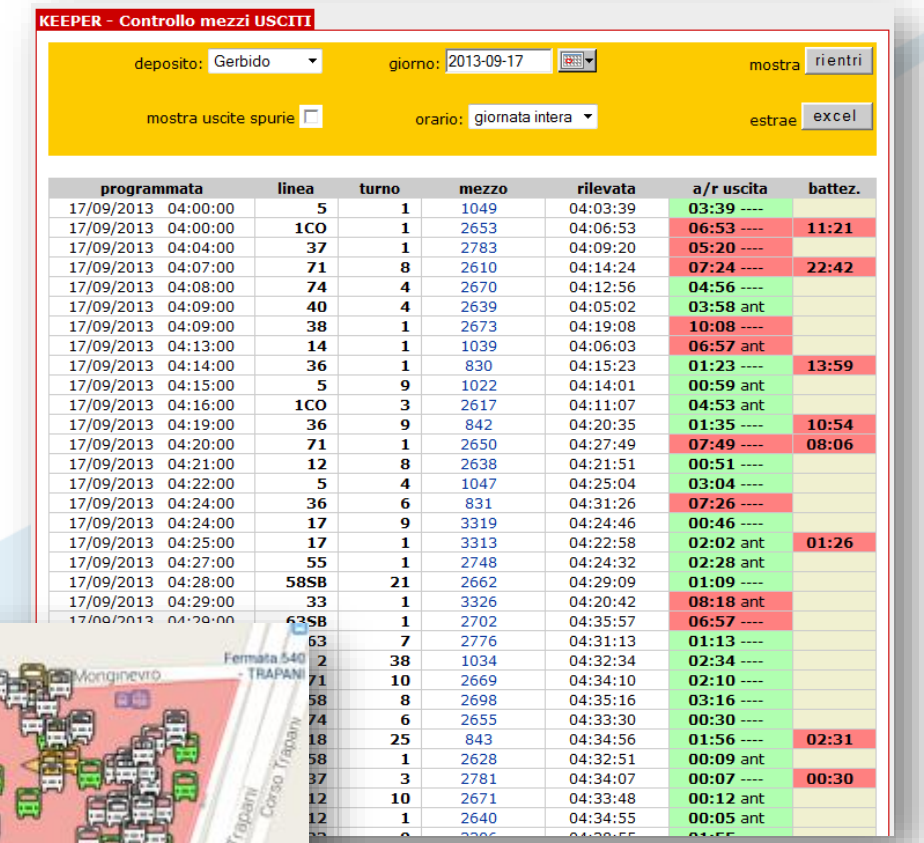
Decision Support Systems - smart KPIs



- Calculation of Real time KPIs for fleet management
- Navigation among hierarchy levels of data (drill down/up)
- Graphical representations
- WEB based application
- Integrated with other applications

Fleet vehicle depots usage monitoring

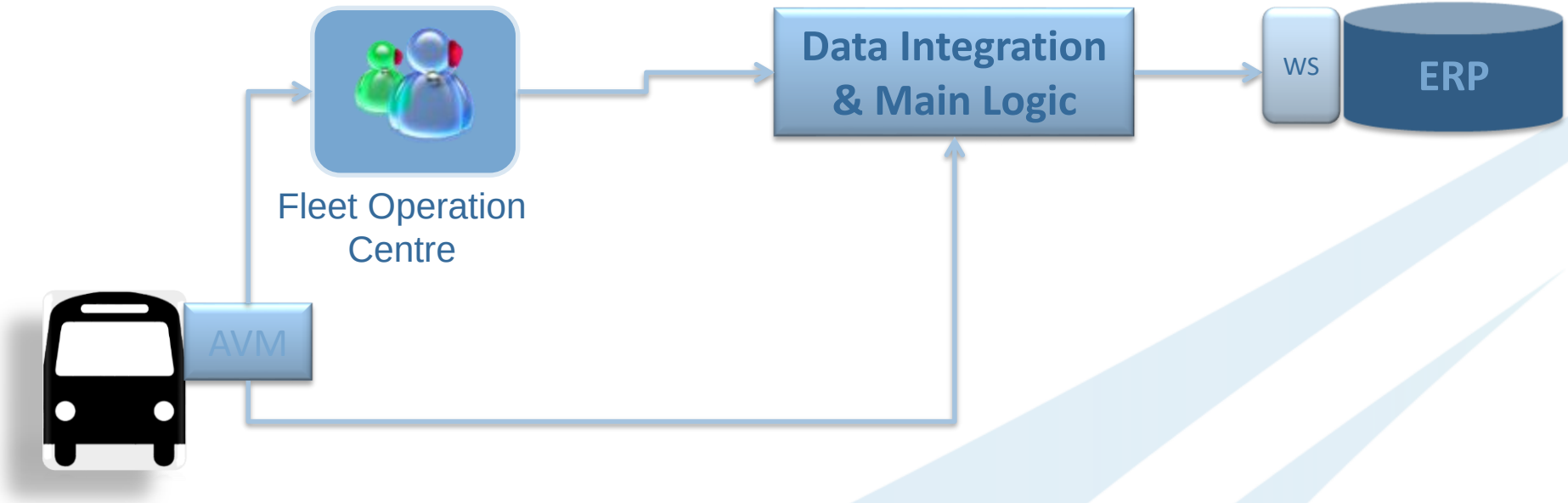
- Check if a vehicle is into a depot (which one) or on the road (in Service or not)
- Collection of actual exit/entrance timestamps (match with scheduled)
- inferring results from geographical rules



programmata	linea	turno	mezzo	rilevata	a/r uscita	battez.
17/09/2013 04:00:00	5	1	1049	04:03:39	03:39 ----	
17/09/2013 04:00:00	1CO	1	2653	04:06:53	06:53 ----	11:21
17/09/2013 04:04:00	37	1	2783	04:09:20	05:20 ----	
17/09/2013 04:07:00	71	8	2610	04:14:24	07:24 ----	22:42
17/09/2013 04:08:00	74	4	2670	04:12:56	04:56 ----	
17/09/2013 04:09:00	40	4	2639	04:05:02	03:58 ant	
17/09/2013 04:09:00	38	1	2673	04:19:08	10:08 ----	
17/09/2013 04:13:00	14	1	1039	04:06:03	06:57 ant	
17/09/2013 04:14:00	36	1	830	04:15:23	01:23 ----	13:59
17/09/2013 04:15:00	5	9	1022	04:14:01	00:59 ant	
17/09/2013 04:16:00	1CO	3	2617	04:11:07	04:53 ant	
17/09/2013 04:19:00	36	9	842	04:20:35	01:35 ----	10:54
17/09/2013 04:20:00	71	1	2650	04:27:49	07:49 ----	08:06
17/09/2013 04:21:00	12	8	2638	04:21:51	00:51 ----	
17/09/2013 04:22:00	5	4	1047	04:25:04	03:04 ----	
17/09/2013 04:24:00	36	6	831	04:31:26	07:26 ----	
17/09/2013 04:24:00	17	9	3319	04:24:46	00:46 ----	
17/09/2013 04:25:00	17	1	3313	04:22:58	02:02 ant	01:26
17/09/2013 04:27:00	55	1	2748	04:24:32	02:28 ant	
17/09/2013 04:28:00	58SB	21	2662	04:29:09	01:09 ----	
17/09/2013 04:29:00	33	1	3326	04:20:42	08:18 ant	
17/09/2013 04:29:00	63SB	1	2702	04:35:57	06:57 ----	
	63	7	2776	04:31:13	01:13 ----	
	2	38	1034	04:32:34	02:34 ----	
	71	10	2669	04:34:10	02:10 ----	
	58	8	2698	04:35:16	03:16 ----	
	74	6	2655	04:33:30	00:30 ----	
	18	25	843	04:34:56	01:56 ----	02:31
	58	1	2628	04:32:51	00:09 ant	
	37	3	2781	04:34:07	00:07 ----	00:30
	12	10	2671	04:33:48	00:12 ant	
	12	1	2640	04:34:55	00:05 ant	

Depot Area

PT Fleet vehicle Failure alerts system



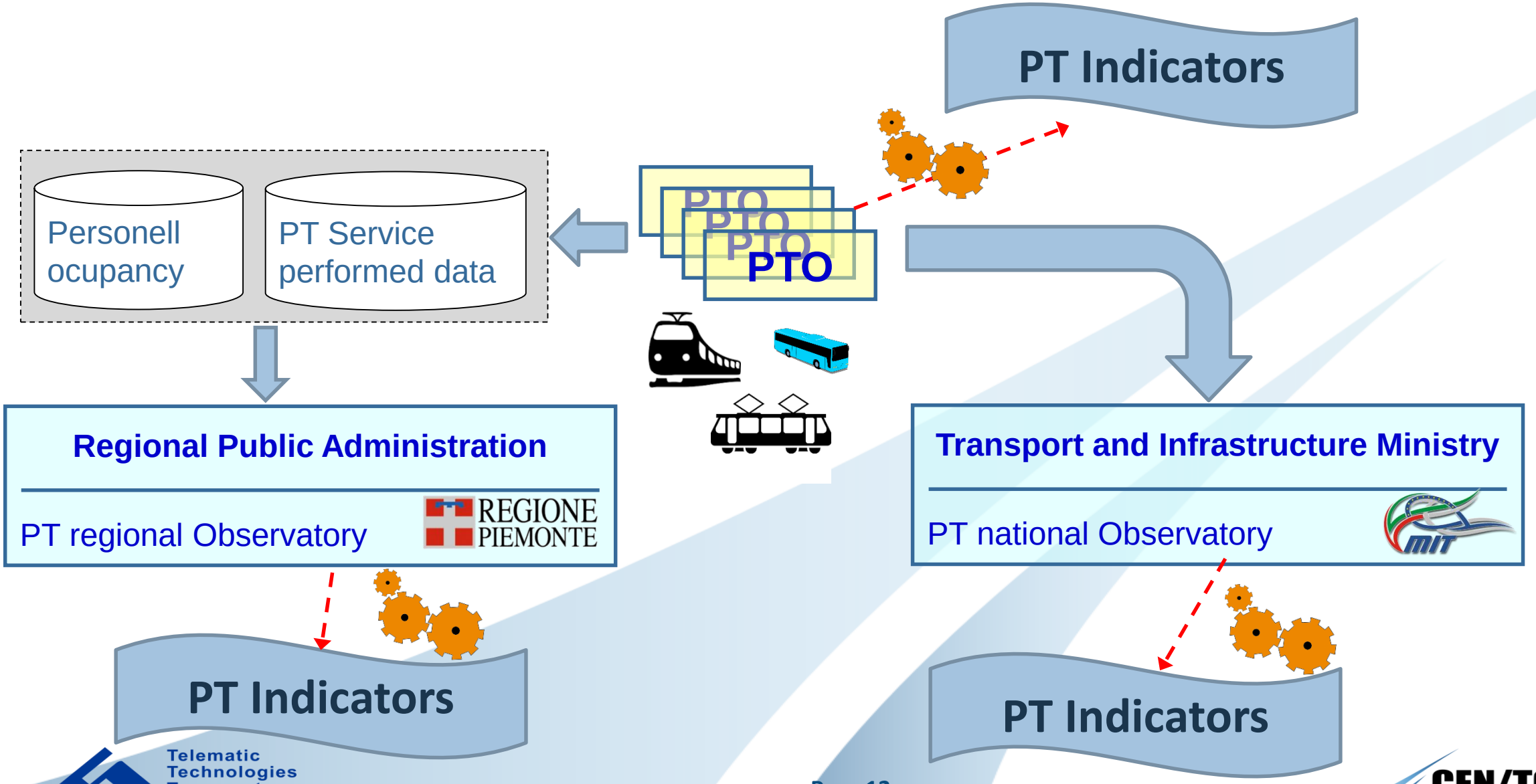
- Collecting failure data arising during vehicle service, information sources:
  - driver (through *ad hoc* GUI)
  - operator of Fleet Operation Centre
- XML based Data exchange
- Data are integrated and stored into Operator ERP

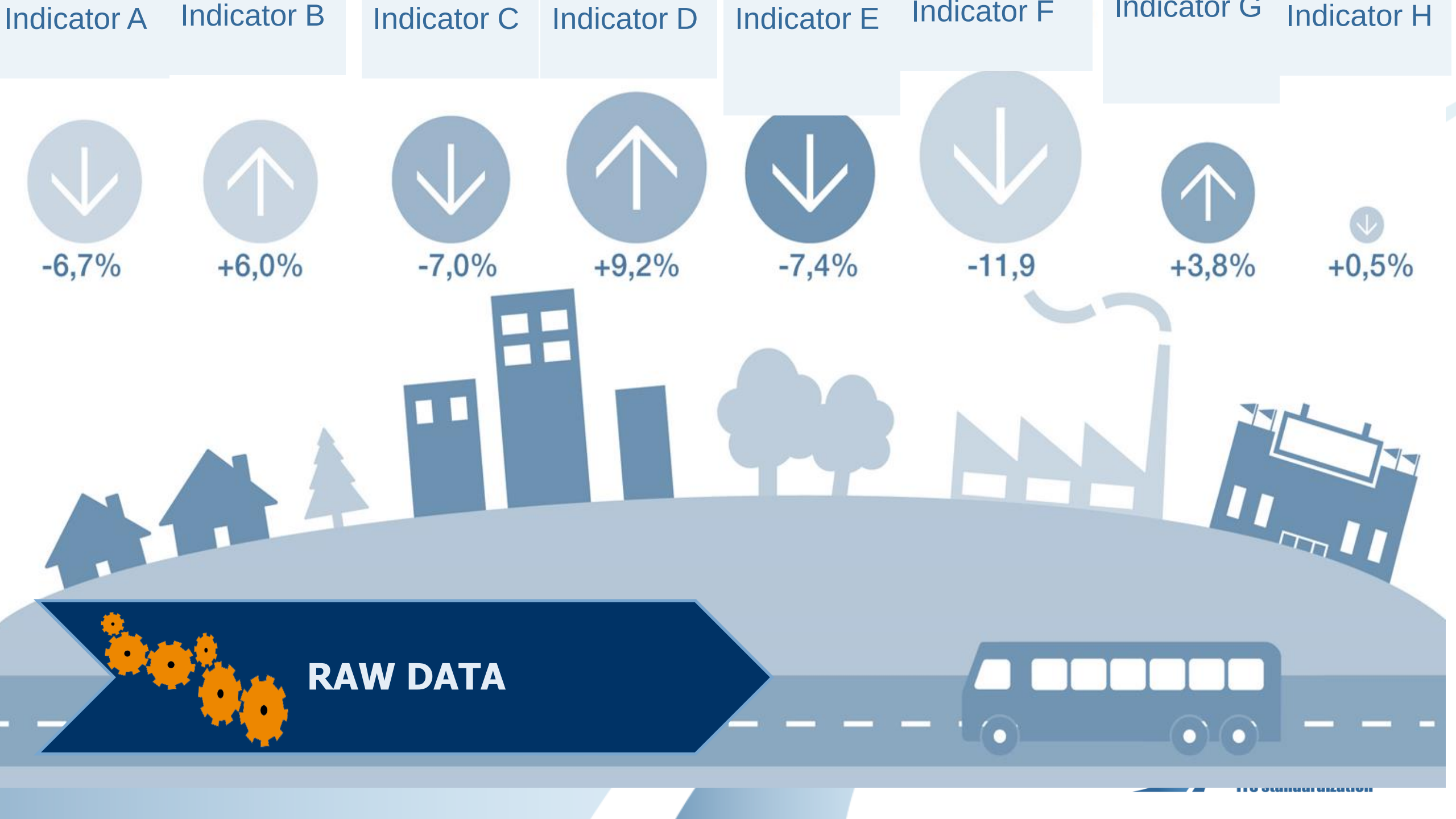
Fix the Point Of Interest

- Graphical interaction with geographical datasets
- Visualisation of data and usage to check STOP_POINT position correctness
- Update of position by drag-and-drop on the map

PT GOVERNANCE AND DATA ROLE

Italian PT Governance scenario




Indicator A
Indicator B
Indicator C
Indicator D
Indicator E
Indicator F
Indicator G
Indicator H
-6,7%
+6,0%
-7,0%
+9,2%
-7,4%
-11,9
+3,8%
+0,5%
RAW DATA

Potential raw data to gather (1/2)

Raw data	Modality of transport	Description	type
Total distance (BUSkm)	**BUS / TRAM / METRO**	Total distance performed - sum of the km of each performed journey	decimal (3 digits) [0, ∞)
Transported passengers	**BUS / TRAM / METRO**	Passengers quantity (Q.)	integer
PTO employee	**BUS / TRAM / METRO**	Employee quantity	integer
Q. of "VEHICLE_JOURNEY" passed at the STOP_POINT (BUS STOP) Monday - Friday	**BUS / TRAM / METRO**	Vehiclejourney quantity	Integer [0, ∞)
Q. of "VEHICLE_JOURNEY" passed at the STOP_POINT (BUS STOP)	**BUS / TRAM / METRO**	Vehiclejourney quantity	Integer [0, ∞)
Q. of passengers drop in vehicle at STOP_POINT	**BUS / TRAM / METRO**	Passengers quantity	Integer [0, ∞)
Q. of passengers drop off at STOP_POINT	**BUS / TRAM / METRO**	Passengers quantity	Integer [0, ∞)

Potential raw data to gather (2/2)

Raw data	Modality of transport	Description	type
Total distance (TrainKm)	**TRAIN**	Total distance performed - sum of the km of each performed journey	decimal (3 digits) [0, ∞)
Total distance (BUSkm)	**TRAIN**	Total distance performed - sum of the km of each performed journey	decimal (3 digits) [0, ∞)
PTO employee	**TRAIN**	Employee quantity	integer
Q. of "VEHICLE_JOURNEY" passed at the STOP_POINT (STATION) Monday - Friday	**TRAIN**	Vehiclejourney quantity	Integer [0, ∞)
Q. of "VEHICLE_JOURNEY" passed at the STOP_POINT (STATION)	**TRAIN**	Vehiclejourney quantity	Integer [0, ∞)
Q. of passengers drop in vehicle at STOP_POINT	**TRAIN**	Passengers quantity	Integer [0, ∞)
Q. of passengers drop off at STOP_POINT	**TRAIN**	Passengers quantity	Integer [0, ∞)

Thanks for your attention !

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