



Smart Ambulance Solution



# Altair CAD Ambulance Management

Empowering Emergency Management





## Unified Ambulance Solution Components

Emergency Call Taking

Criteria-Based Medical Dispatching

Ambulance Fleet Management

Patient Transfer Service Management

ePCR + HIS Integration

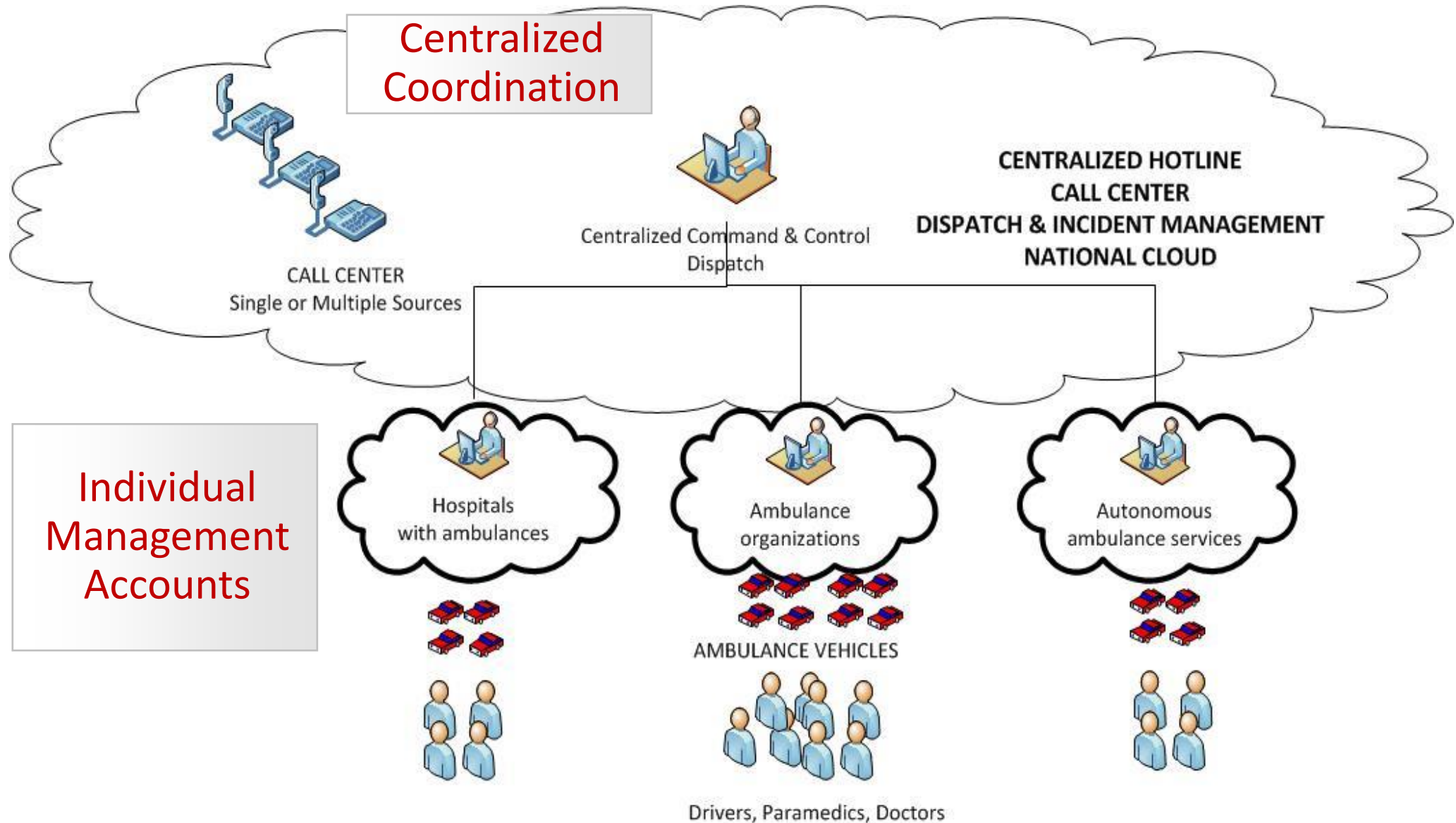
mHealth & IoT

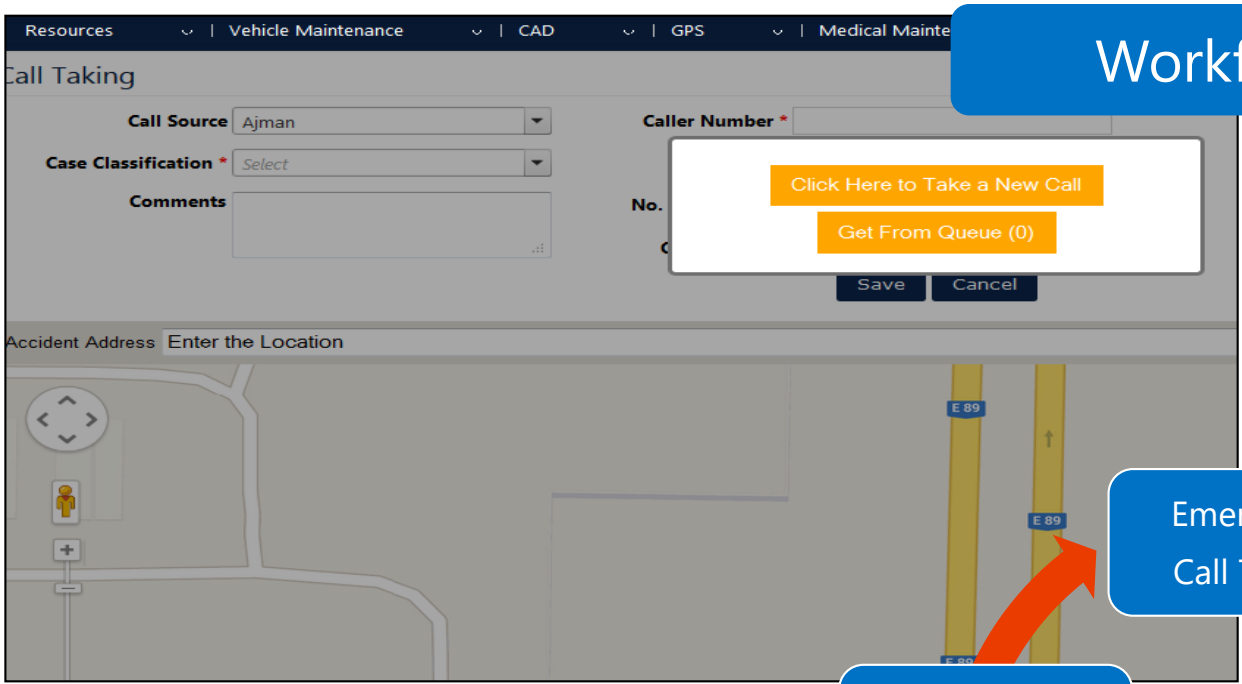
Business Intelligence and Performance Management

Citizen App – Complaint Management- Inspection Management



# Private Cloud Architecture "National Cloud"



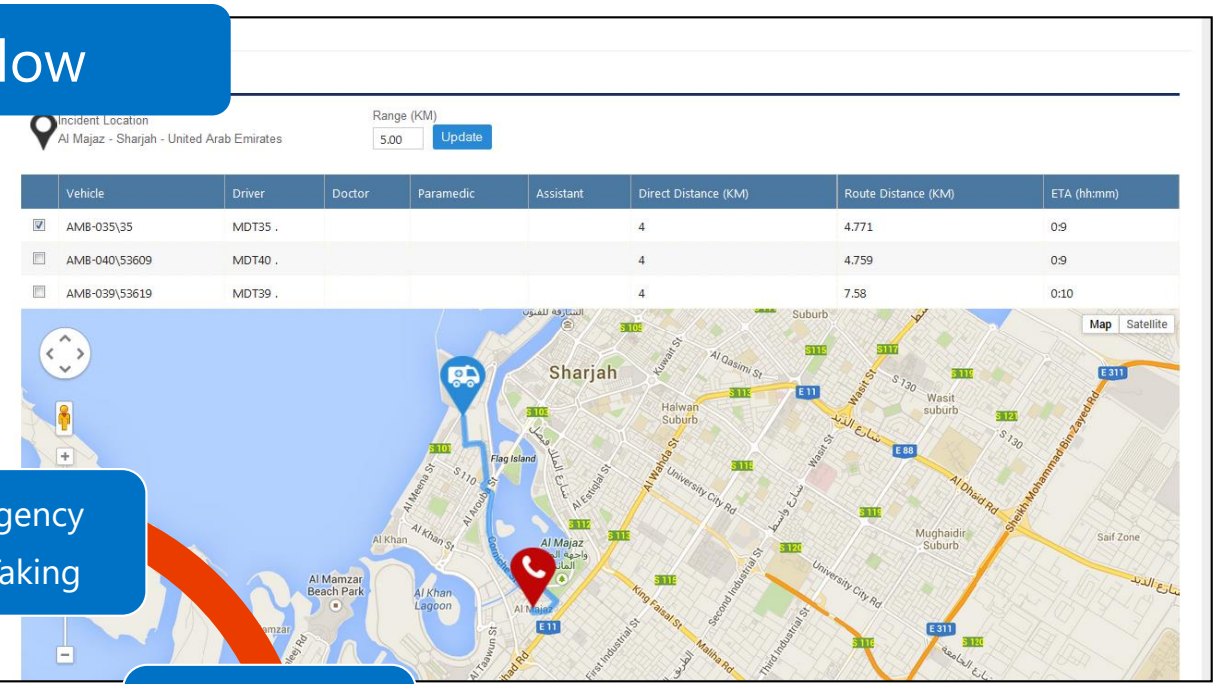


# Workflow

Emergency  
Call Taking

Performance  
Management

Fleet  
Management



Automated  
Dispatching

Real Time  
Communication



## Communicate

Receive Dispatch Order

Acknowledge

On move

On Scene

Left Scene

Close Incident

## Navigate

## Organize

# #1 - Call Taking - Medical Questionnaire

Resources

Vehicle Maintenance

CAD

GPS

Medical Maintenance

Reports

Control Panel

Call Taking

Call Source

Ajman

Case Classification \*

Select

Comments

Caller Number \*

No.

Click Here to Take a New Call

Get From Queue (0)

Save

Cancel

Accident Address

Enter the Location

Find

Map

Satellite

# CBD Patterns

- EMD Triage Program
- Dispatch Criteria Classification
  1. Collect Signs / Symptoms
  2. Triage Algorithm
  3. Response Protocol
  4. Guidelines
- Simple configuration of patterns and standards
- Level One Criterias:
  - Code Red MEDIC** – Medic unit with basic life support unit – lights & siren, traffic violation
  - Code Red BLS** – BLS unit responds with lights and siren, traffic violation
  - Code Yellow BLS** – BLS unit responds obeying speed limits and traffic laws.
  - TRP (Telephone Referral Program)** – Transfer calls from dispatch to consulting nurseline.
  - Transfer Services** – Redirection

## Typical Caller Interview Questions – Example Questionnaire:

- What is the emergency?
- What is the address?
  - Are you at location?
  - Where are you?
- Are you the patient?
  - Who needs help?
- Is the patient conscious?
  - Can he/she talk?
  - Can he/she respond?
  - Can you wake him/her up?
- Is the patient breathing normally?
  - What does the breathing sound like?
  - Is the chest rising and falling in normal pattern?
  - Is the stomach going up and down in normal pattern?
- How old is the patient (adult/child/baby)?
- What is the phone number you are calling from?
- What is the caller's name?

## Examples of CBD patterns:

### A. Classification - Abdominal Pain

#### 1. Dispatch Criteria:

##### i. Medic Response:

1. Unconscious, non-responsive to verbal or touch
2. Sign of shock, syncope when sitting/standing
3. Vomiting red blood with sign of shock (syncope when sitting/standing)
4. Black tarry stool with sign of shock (syncope when sitting/standing)

##### ii. BLS Red Response

1. Pain with vomiting
2. Abdominal/back pain, no sign of shock
3. Flank pain/back pain (kidney stone)
4. No info available from RP
5. Upper abdominal pain age > 50
6. Indigestion

##### iii. BLS Yellow Response

1. Groin Injury
2. Back/side/groin pain – non-ambulatory

##### iv. Nurseline TRP

1. Pain unspecified
2. Chronic back pain – ambulatory
3. Side pain – ambulatory
4. Groin pain – ambulatory
5. Back pain – previous injury – ambulatory
6. Urinary catheter problem

In standard the system supports 26 classifications with around 20-30 dispatch criteria for each. Classifications and dispatch criteria are configurable based on customer's standard operating procedures.



# #2 - Real-Time Criteria Based Dispatch

Dispatch

Route

Ticket Details



Incident Location

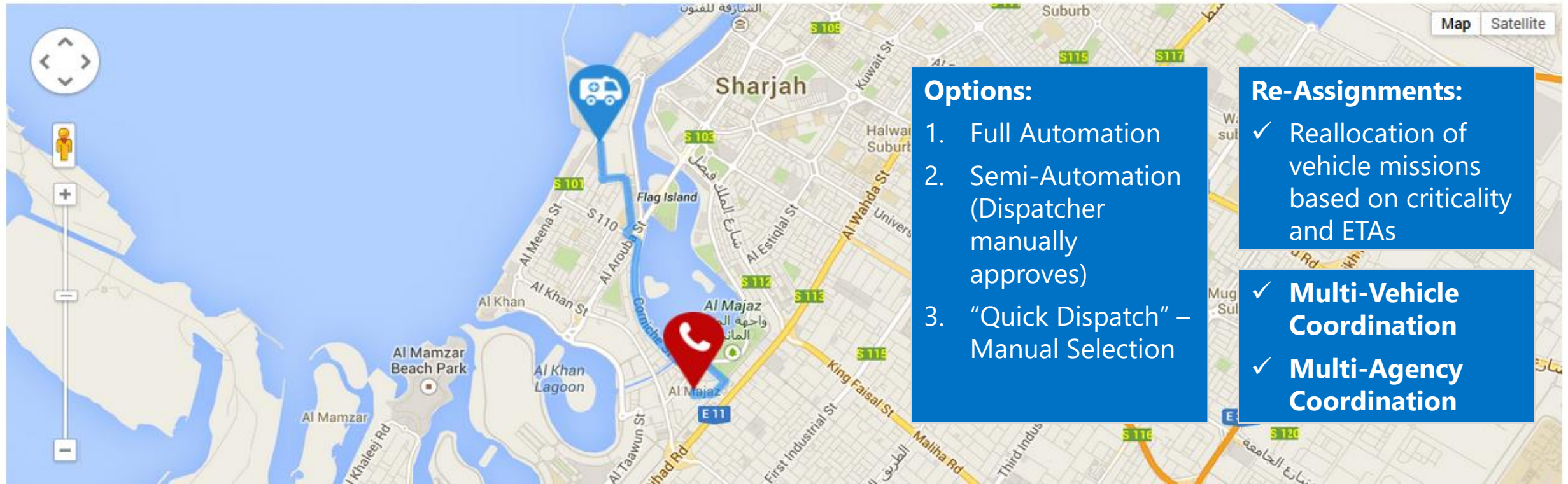
Al Majaz - Sharjah - United Arab Emirates

Range (KM)

5.00

Update

	Vehicle	Driver	Doctor	Paramedic	Assistant	Direct Distance (KM)	Route Distance (KM)	ETA (hh:mm)
<input checked="" type="checkbox"/>	AMB-035\35	MDT35 .				4	4.771	0:9
<input type="checkbox"/>	AMB-040\53609	MDT40 .				4	4.759	0:9
<input type="checkbox"/>	AMB-039\53619	MDT39 .				4	7.58	0:10



## Options:

1. Full Automation
2. Semi-Automation (Dispatcher manually approves)
3. "Quick Dispatch" – Manual Selection

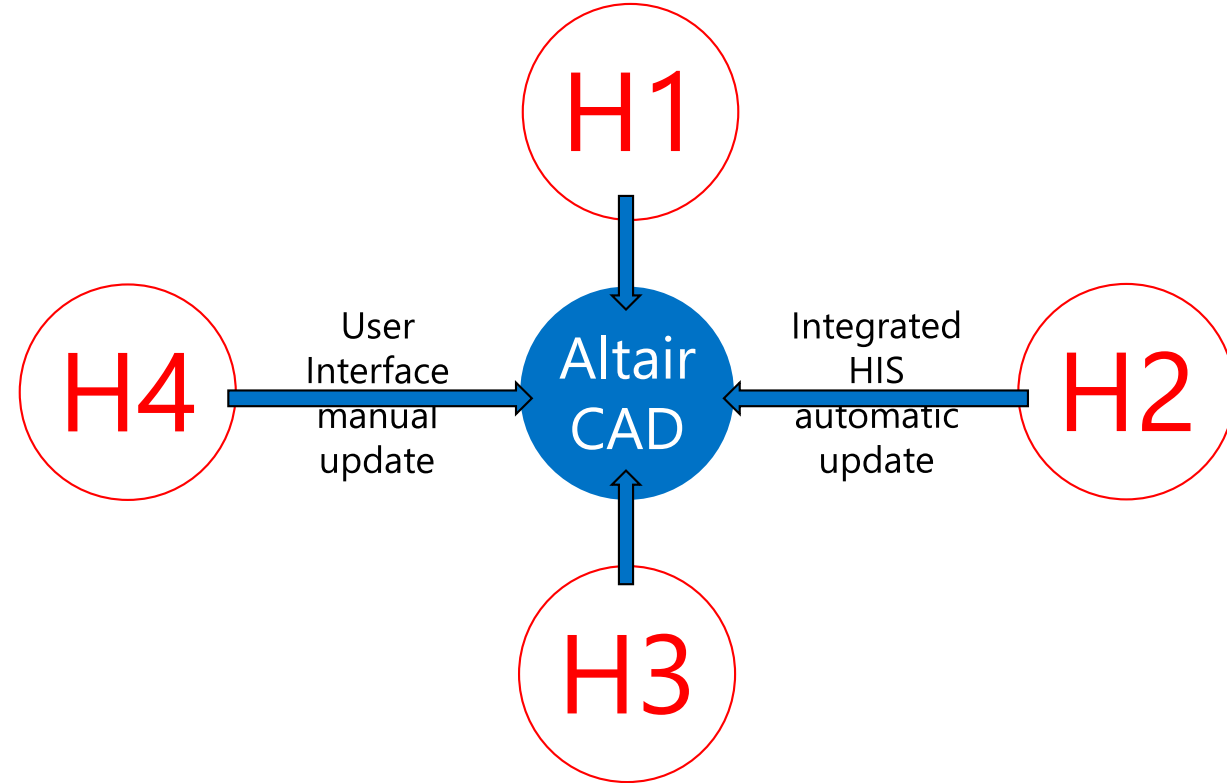
## Re-Assignments:

- ✓ Reallocation of vehicle missions based on criticality and ETAs
- ✓ **Multi-Vehicle Coordination**
- ✓ **Multi-Agency Coordination**





## Target Destination Hospital / Facility Integration with HIS



### Hospital Capacity

- ✓ Available beds, equipment, and readiness for case pulled from HIS system or via User Interface for hospital
- ✓ Facility suitability is plugged into the CBD-algorithm for optimal destination selection
- ✓ Driver is directly navigated to nearest suitable facility

# Smart Driver Tablet

MDT mounted inside ambulance vehicle

## Objectives:

1. Minimization of response times
2. Efficient incident management
3. Decision support
4. Navigation
5. Quick access to information
6. Accurate performance management

The image shows a black tablet device with a handle and a 'Motion Computing' logo. The screen displays a software interface for ambulance dispatch. At the top right is the 'Altair' logo. The interface includes fields for call sign, date, time, incident ID, response code, and dispatch code. A map of Sharjah is shown with a location pin. To the right of the map are fields for 'CHIEF COMPLAINT' and 'TYPE'. Below the map is a 'STATUS UPDATES' section with a table of buttons for 'Acknowledged', 'On Scene', 'Transfer to', 'At Hospital', and 'Request Clear', each with a timestamp.

**AMBULANCE CALL SIGN** NA031 **DATE OF CALL** 23-Mar-14 **TIME OF CALL** 21:20

**INCIDENT ID** 20140623-0003 **RESPONSE CODE** Red **DISPATCH CODE** 12M7

**LOCATION NAME** International School of Quality and Excellence

**CHIEF COMPLAINT**  
Sudden onset of worst headache ever

**TYPE**  
Head/Neck

**LATITUDE**  
25.3575224

**LONGITUDE**  
55.3918648

**STATUS UPDATES**

Acknowledged	On Scene	Transfer to	At Hospital	Request Clear
21:22	21:27			



# Incident Monitoring and Status Tracking

Resources

Vehicle Maintenance

CAD

GPS

Medical Maintenance

Reports

Control Panel

Incident Dashboard

From

08/03/2014 00:00

To

08/03/2014 23:59

Ticket #

Select

Vehicle Code

Select

Driver

Select

Search

Unassigned	1
Assigned	1
Ack	0
Arrive Location	1
Left Location	0
Reach Facility	0
Cancelled	26
Finished	42
Closed	0
No. of Patients	45
Total Number Of Transporters	18
Total Number Of Tickets	71
Total Time	51:08:00
Longest Trip Duration	02:55:00
Shortest Trip Duration	00:08:00

Ticket Number	Accident Address	Driver	Vehicle Code	Date	Status
3	41st street city a khalifa			21/01/2014 13:35:47	Unassigned <a href="#">Dispatch</a>
2	الهرم, الجزيرة, مصر			12/01/2014 16:58:15	Unassigned <a href="#">Dispatch</a>
1	الهرم, الجزيرة, مصر			12/01/2014 15:39:21	Unassigned <a href="#">Dispatch</a>
4	Khalifa City A - Abu Dhabi - United Arab Emirates		WV1ZZZ7HZ8H108381	22/01/2014 17:16:54	Assigned <a href="#">Live Track</a>
5	Khalifa City A - Abu Dhabi - United Arab Emirates street 50	عماد محمد علي خديري	WV1ZZZ7HZ8H108381	22/01/2014 18:05:16	Assigned <a href="#">Live Track</a>



# Executive Tablet Application

Smart KPI tablets in the hands of executives and decision makers



# Altair

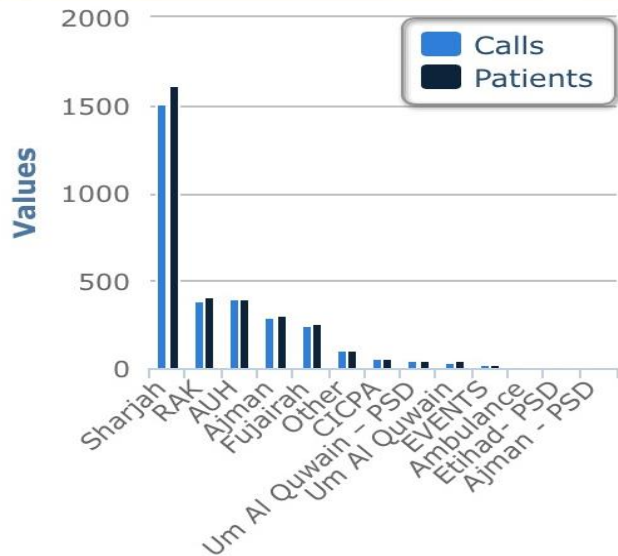


CAD - Executive App

NATIONAL AMBULANCE







Settings Details

Incidents VS Patients

From : 2014-06-01

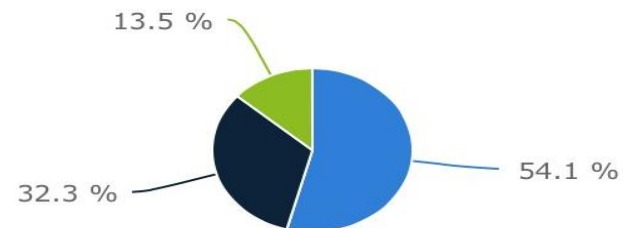
To : 2014-06-30

Settings Details

Incidents Status

From : 2014-06-01

To : 2014-06-30



Settings

2014-06-30 12

2014-06-30 11

Total Call Number

68

Max Response Time

35 Min

Max Dispatch Time

20 Min

Dispatch Time Avg

1 Min

Arrival Time Avg

6 Min

Transport Time Avg

28 Min

Details

Incidents per case classif...

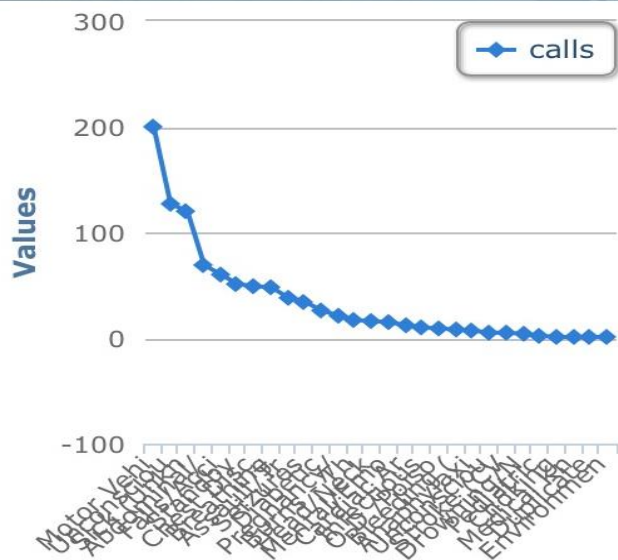
From : 2014-03-30

To : 2014-06-30

Details

Map

Date : 2014-06-30



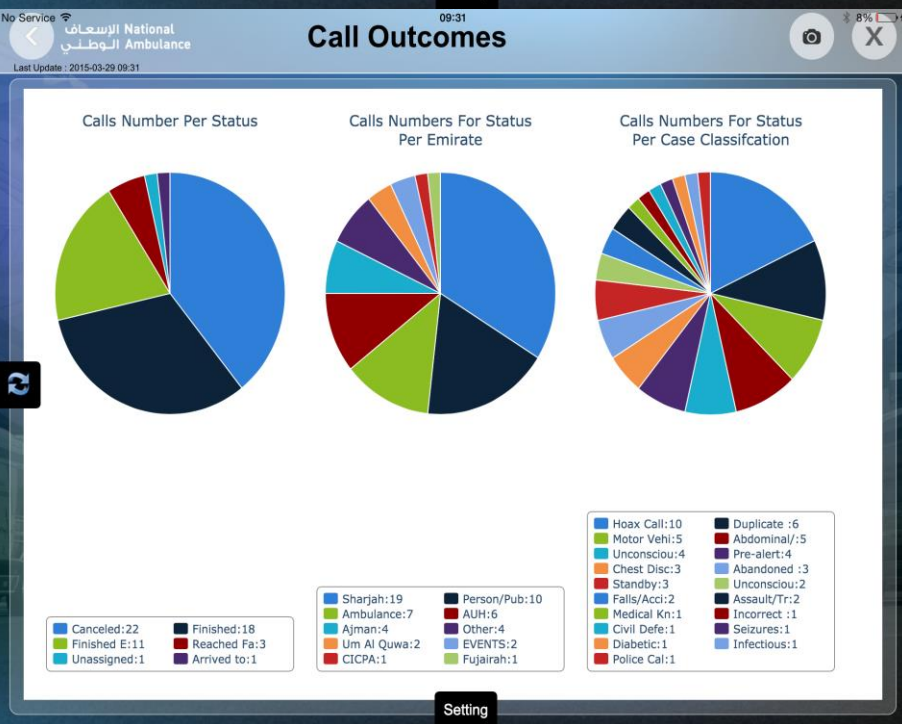
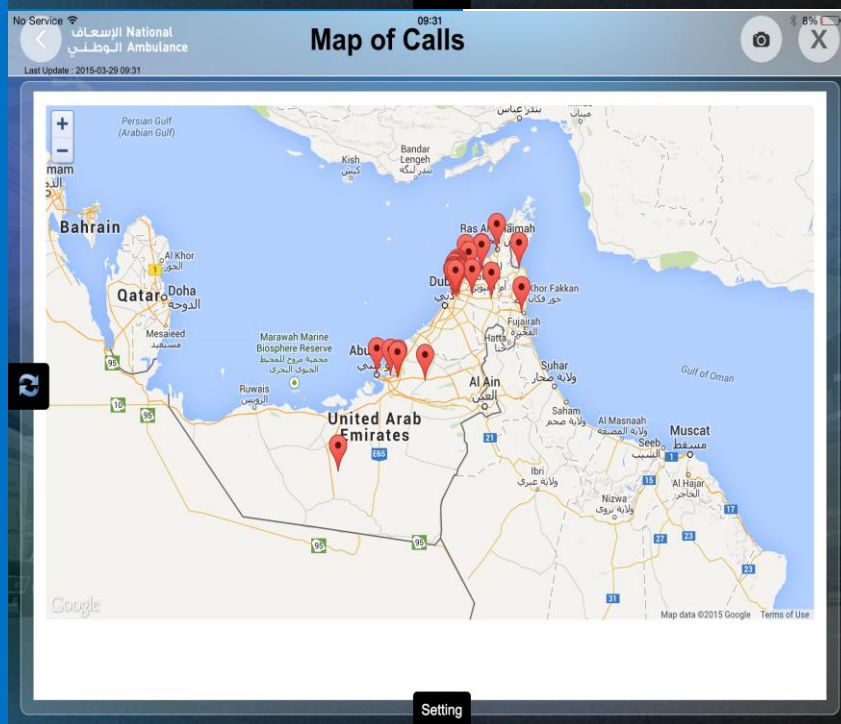
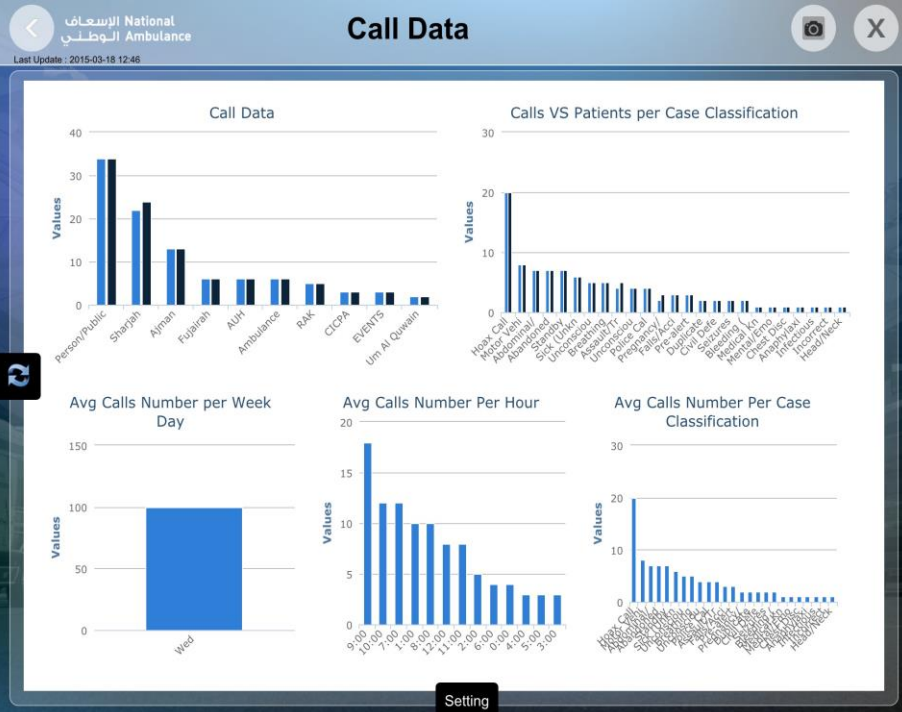


# Business Intelligence

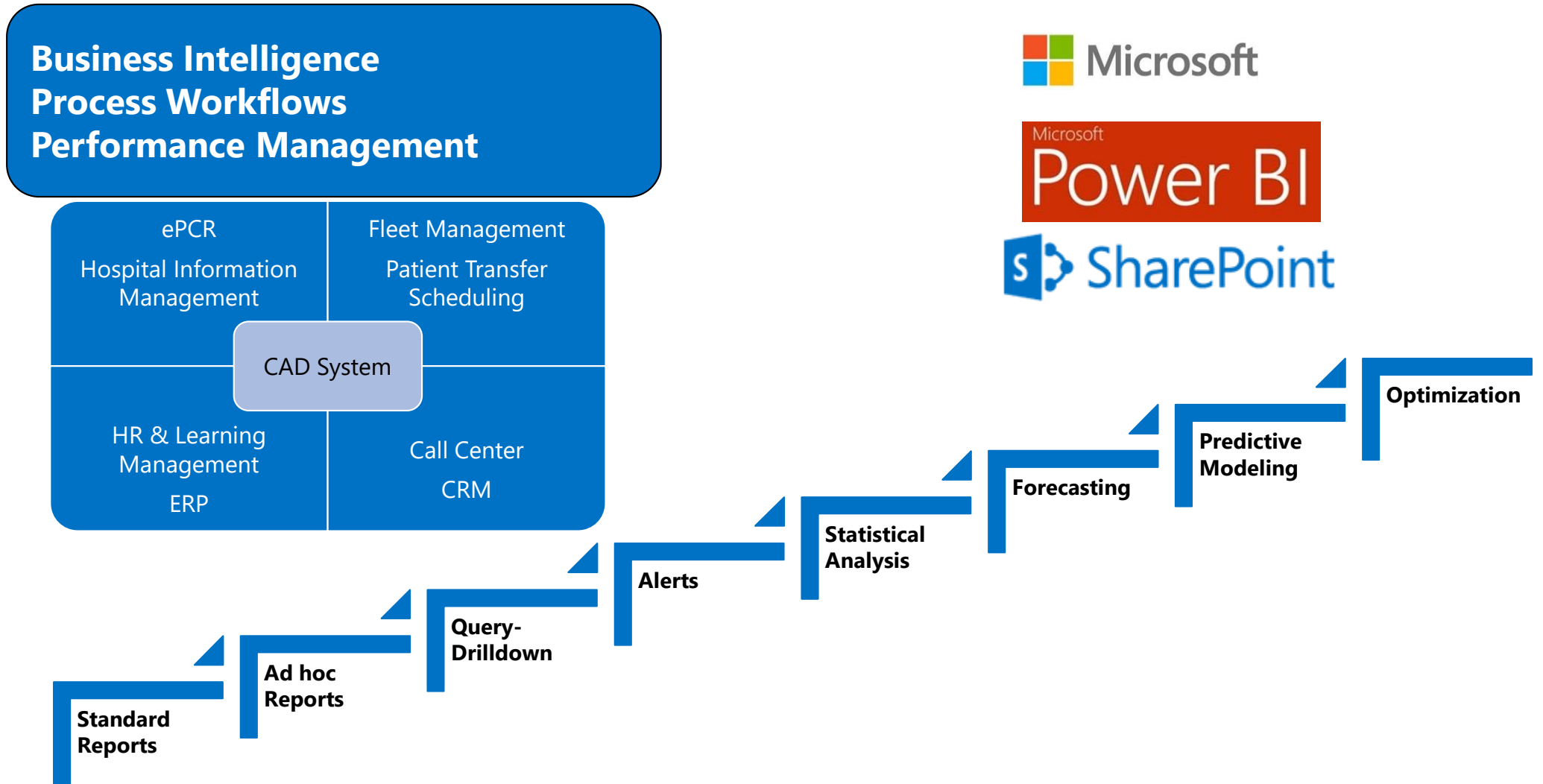
Empowering Emergency Services with intelligent reporting and predictive analysis



# Standard Reporting



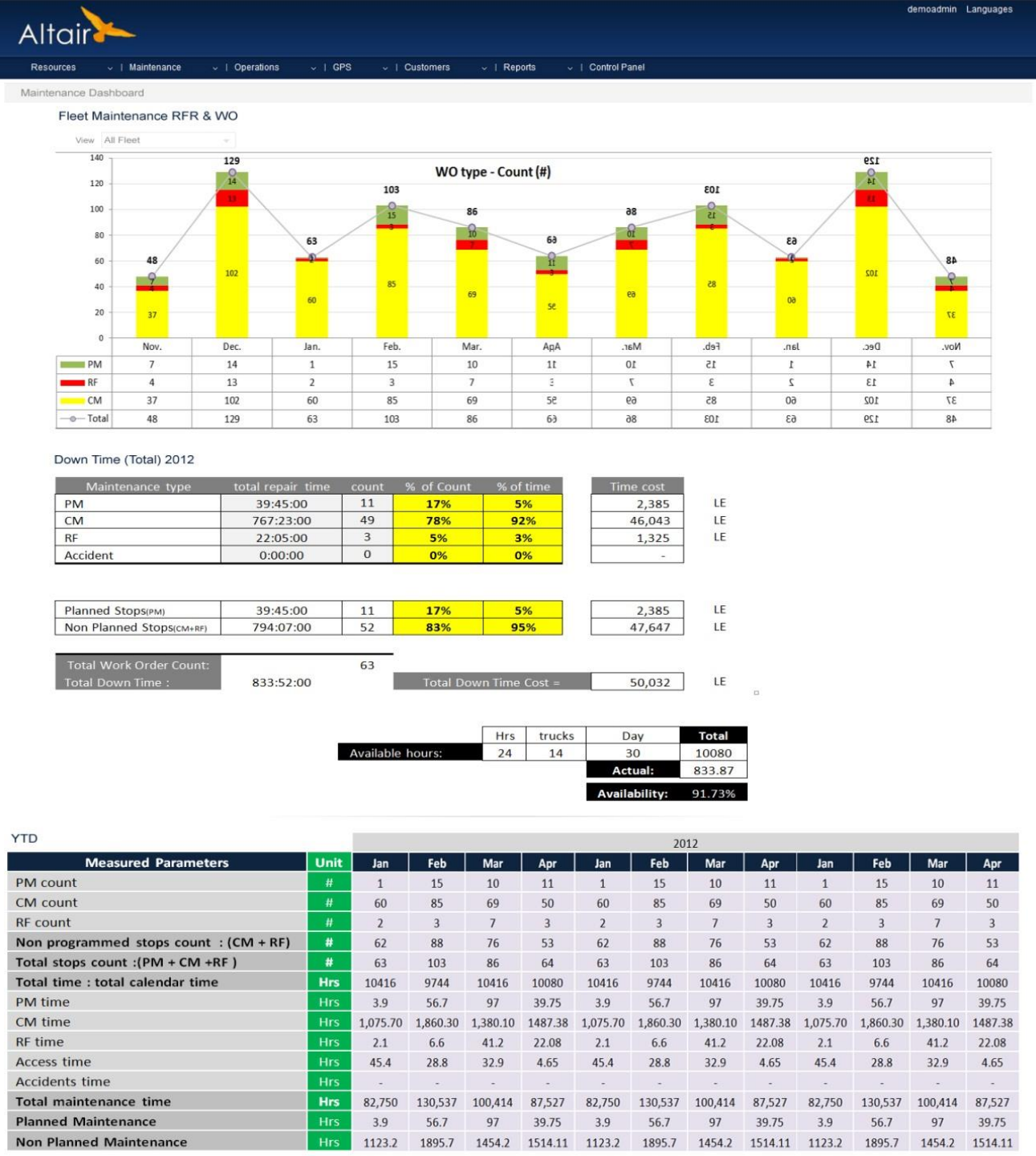
# Cross-System Business Intelligence Roadmap Implementation Service





# Management Dashboards

- Trend Analysis
- Bottleneck Analysis
- Optimization Analysis
- Statistics
- Down / up time analysis
- Performance Analysis including Time to Respond and Quality of Service



# Management Dashboards

- Training Recommendations
- SLA Adherence
- Skill Sets

## Recommended Training Based on Performance

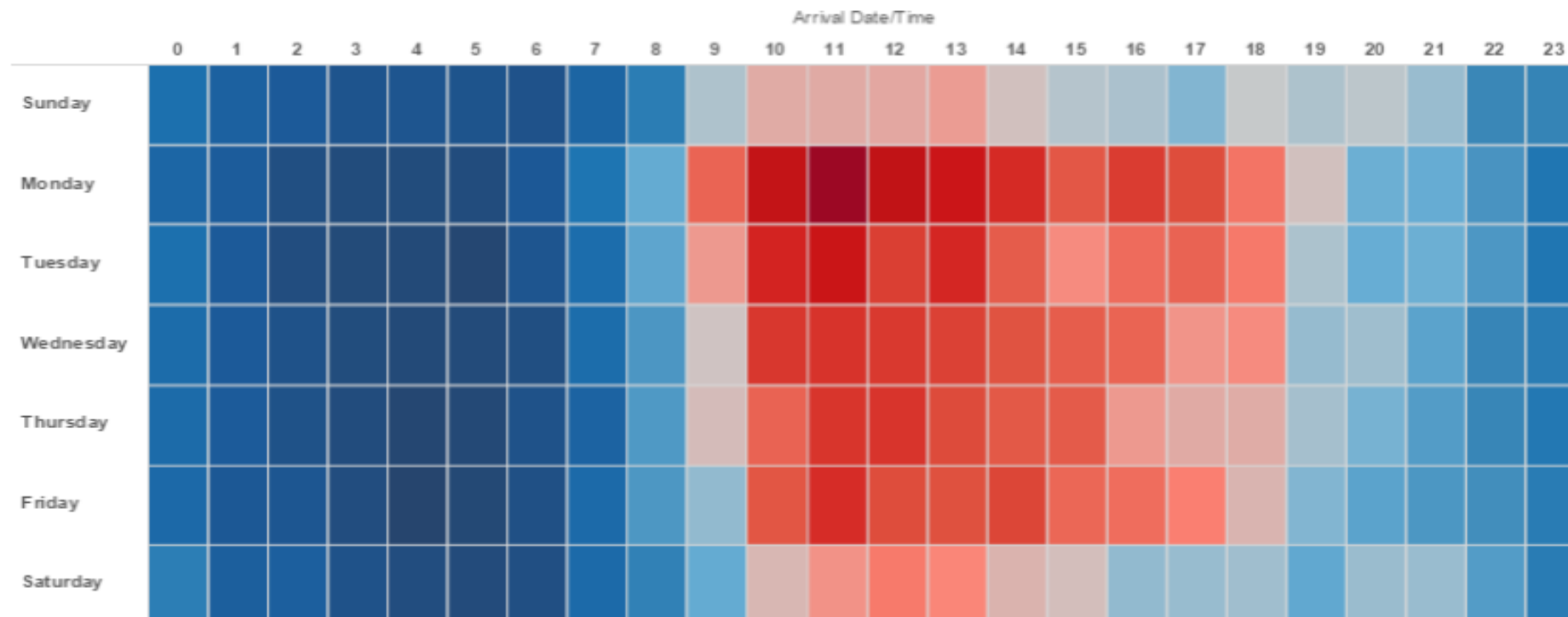
Employee	Recommended Training	
Dave	Course L	●
Eman	Course X	◆
Heba	Course D	◆
Howard	Course K	●
James	Course A	●
Jennifer	Course B	●
Khaled	Course K	●
Kim	Course A	◆
Marc	Course A	●
Marwa	Course B	◆
Marwan	Course D	◆
Medhat	Course L	●
Menna	Course A	◆
Mohamed	Course B	◆
Robin	Course C	●
Sara	Course L	●
Stewart	Course A	◆
Tarek	Course A	●
Ted	Course L	◆

## Team Adherence to SLA

Occupation	Team Member	
Call Taker	Diaa	●
	James	●
	Jennifer	▲
	Kim	◆
	Mohamed	●
	Omar	▲
	Robin	▲
	Stewart	◆
	Tarek	▲
Dispatcher	Eman	●
	Heba	●
	Marc	▲
	Marwa	●
	Menna	▲
	Sara	●
Driver	Dave	▲
	Howard	●
	Khaled	◆
	Marwan	◆
	Medhat	▲
	Ted	◆

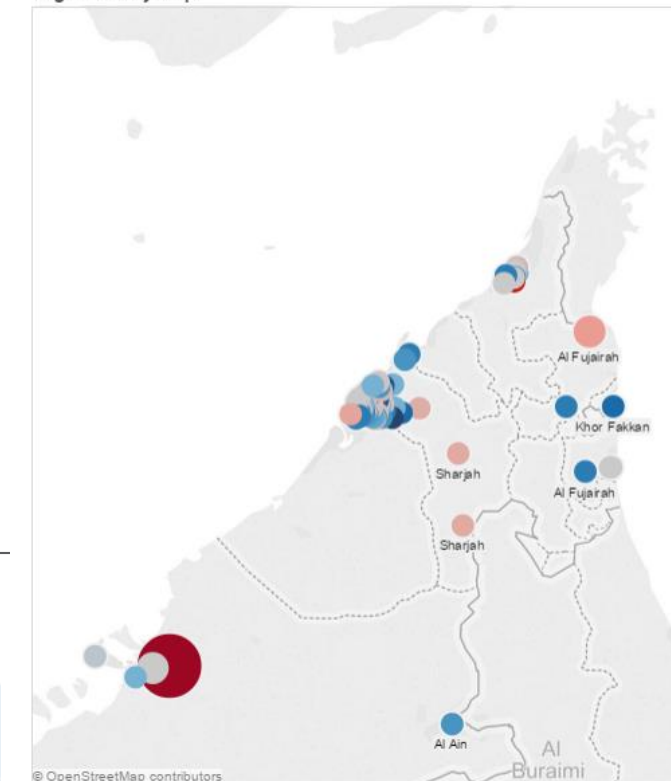
# Heat Maps

When do most calls take place? [Click to Filter](#)



How does call volume fluctuate over time? - All

Region Safety Map



© OpenStreetMap contributors

Response Time in Minutes



Monday, April 11, 2011	289	Abc
Monday, September 26, 2011	288	Abc
Monday, March 07, 2011	282	Abc
Monday, May 23, 2011	281	Abc
Tuesday, July 05, 2011	281	Abc
Monday, December 19, 2011	280	Abc
Monday, August 15, 2011	279	Abc
Monday, February 07, 2011	276	Abc
Monday, February 14, 2011	276	Abc
Monday, June 06, 2011	276	Abc
Monday, November 28, 2011	273	Abc
Tuesday, July 26, 2011	272	Abc
Wednesday, August 03, 2011	272	Abc



# Patient Transfer Services

1. Reservations:
  1. Call Center
  2. App
  3. Web Site
2. Ambulance Booking Engine
3. Fleet Scheduling
4. SMS Notification to customers
  1. Reservation confirmation number
  2. Thank you for using the service
  3. Ambulance is on the way
5. Post service satisfaction survey



# Patient Transfer Services Module

	Ticket No	Patient	Patient Mobile	Transfer Time	Source	Destination	Assigned Driver	Assigned Vehicle	Transfer Category	Created At	Transfer Reason	Status	Change Status	Allocation Type	View On Map
	167	adel test	0101010932020	07/05/2014 13:18:50	Alkoses health center		Driver 1	demo_5	Full Day Trip (8 hr - 120 KM)	07/05/2014 13:15:12		Assigned	<a href="#">Change Status</a>	Auto	
	168	Noura	342432	07/05/2014 13:30:00	City Health Center	Burj Khalifa - Dubai - United Arab Emirates	Driver 2	demo_8	One Way - Airport	07/05/2014 13:27:11	gffhgf	Assigned	<a href="#">Change Status</a>	Manual	
🚨	169	Amany	3223424	07/05/2014 13:33:59	Al Qasimi New hospital	Department of Ajman Medical Zone	<a href="#">Assign Driver</a>		Safe Ride	07/05/2014 13:47:04	testtt	Unassigned		Manual	

**Source** Alkoses health center  
**Source referral doctor info**  
**Name** ahmed  
**Email** Ahmed.me@co.com  
**Phone** 01039023902902  
**Destination** Home  
 Enter a location 🔍  
**Patient Name** adel test  
**Mobile** 0101010932020  
**Transfer Time** 7/5/2014 13:18  
**Transfer Reason**  
**Ticket Status** Assigned  
**Assigned Driver** Driver 1  
**Assigned Vehicle** demo\_5

**Schedules**

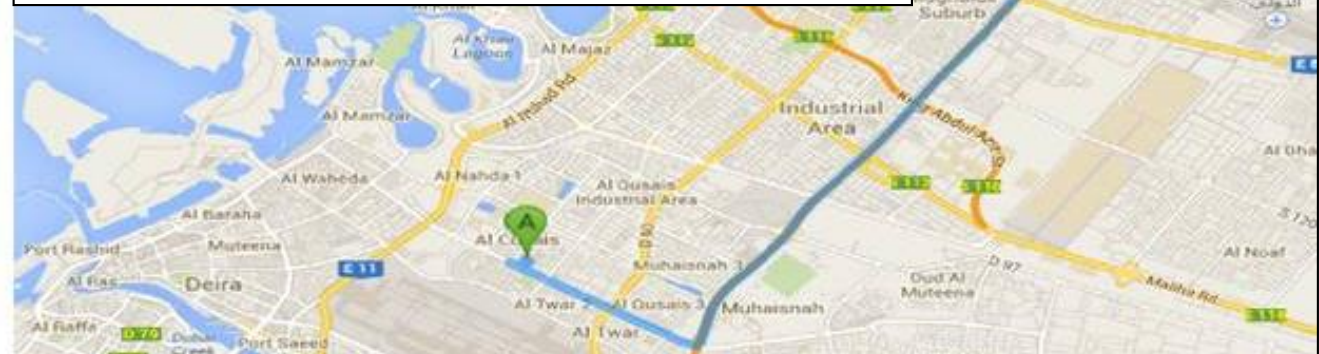
From 7/5/2014 14:56 To 8/5/2014 14:56 Vehicles Drivers

Select All (10)  
 ● Driver Test (2) [demo\_0]  
 ● Driver 1 (3) [demo\_5]  
 ● Driver 2 (5) [demo\_8]

Search

Today		May, 2014	
Sun	Mon	Tue	Wed
27	28	29	30
4	5	6	7
11	12	13	14
18	19	20	21

● Driver Test  
 ● Driver 1  
 Show more...



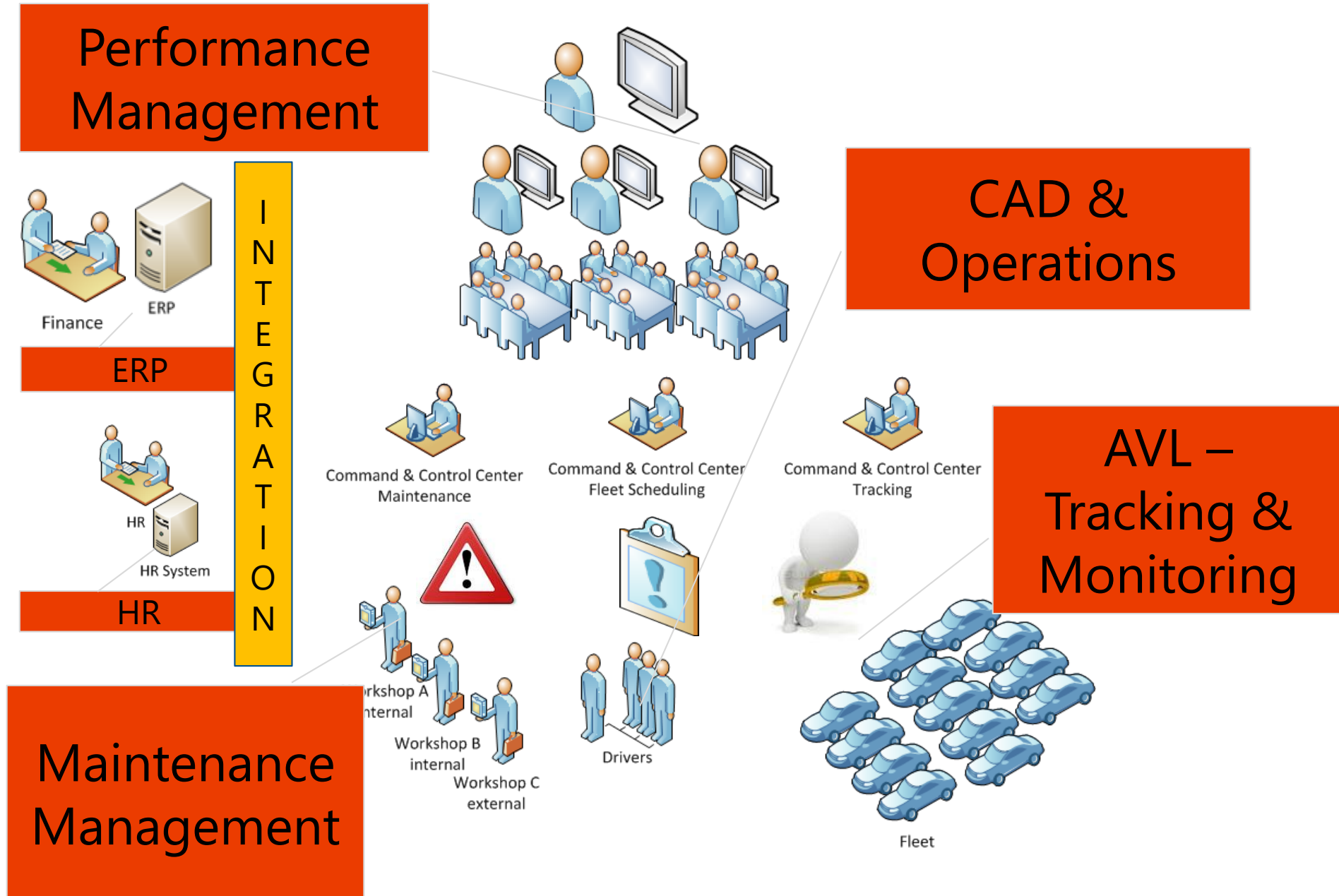
# Fleet Management Capabilities

- Vehicle Information Management
- Vehicle Tracking
- Vehicle Telematics and Sensor Data Collection
- Fleet Maintenance Management
- Medical Equipment Maintenance Management
- Crew Rostering, Scheduling and Shift Management





# Fleet Management



# Vehicle Master File

Altair

Resources | Maintenance | Operations | GPS

Current Status

Active Work Orders  
Routes / Schedules  
Missions &  
Dispatching Orders

Issue Operation Work Order  
Create RFR  
Edit Vehicle  
Allocate Staff  
Delete Vehicle

Management Information

Region / department

123abg127654  
Pickup, Mercedes, 2005  
Dubai, UAE

Available

Vehicle Dashboard

0 4 2 6 5 0 Update Mileage

Odometer/mileage, oil, fuel, battery, temperature

Violations and Alerts

Driver & License Information

Driver: Ahmed Mohamed  
76554--  
License: License Number ( Ends in 3/4/2012 )

Current Location

Shiekh Zayd Rd, Dubai  
Status: Moving  
Track Now

Live Location  
Jump to Monitoring module

Allocated zones (dynamic rules)

Maintenance quick statistics

Preventive & Corrective Maintenance Schedule & Status

SIM Card  
Number: 10010224  
Provider:  
Device Co:

Tracking Unit information

Crew Rule

- Driver  
- Driver companion

Crew Structure Rules

RFR in 2012

	Normal	Accident
January	5	0
February	2	0
March	0	1
April	5	0
May	8	0

Geofences

- ☐ Nacr City
- ☐ Maadi
- ☐ Maadi

Preventive maintenance

Next PM: 12-01-2013  
Last PM: 12-06-2012

October 2 0  
November 5 0  
December 0 0

Transporter code, plate no., or group

Add to view

5 Seconds

Screen Settings, Geo-fencing, Landmarks



Quick Filter & Search

Select Type

Address To Go

Map Satellite Hybrid

# Live Vehicle Tracking

Map Panel

Driver Details, Fuel Details, Sensor Details, Assigned Work Order, Speed Chart

Zoom into vehicle

Timestamp

Fleet Panel with live data

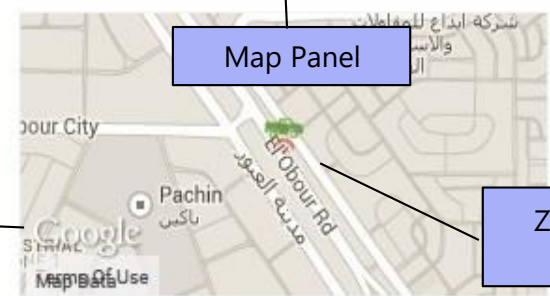
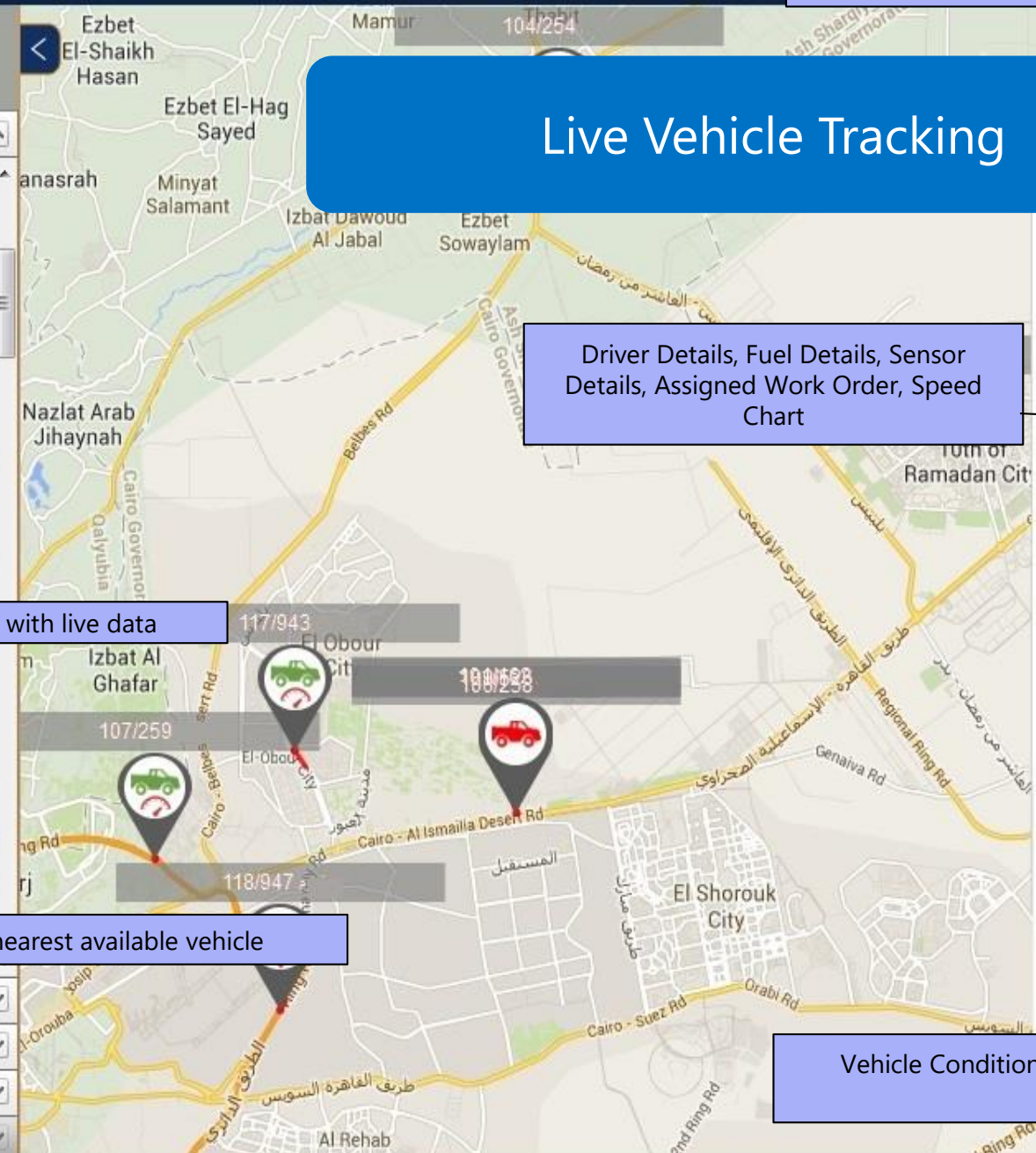
Coordinates & address

Find nearest available vehicle

Vehicle Condition, Odometer/mileage level, real-time sensor data, RPM/fuel level/temperature/...

Quick Access via Vehicle Track Panel

Vehicles	( 8 )	Clear
<input checked="" type="checkbox"/> 104/254	Speed : 86	Fuel Level : 68%
<input type="checkbox"/> 105/257	Speed : 20	
<input checked="" type="checkbox"/> 106/258	Speed : 0	Fuel Level : 100%
<input checked="" type="checkbox"/> 107/259	Speed : 81	
<input type="checkbox"/> 108/396	Speed : 0	Fuel Level : 0%
<input checked="" type="checkbox"/> 109/526	Speed : 0	
<input type="checkbox"/> 110/548	Speed : 0	
<input type="checkbox"/> 111/632	Speed : 0	
<input type="checkbox"/> 112/634	Speed : 0	
History		
Nearest Transporter		
Geofence		
Landmarks		

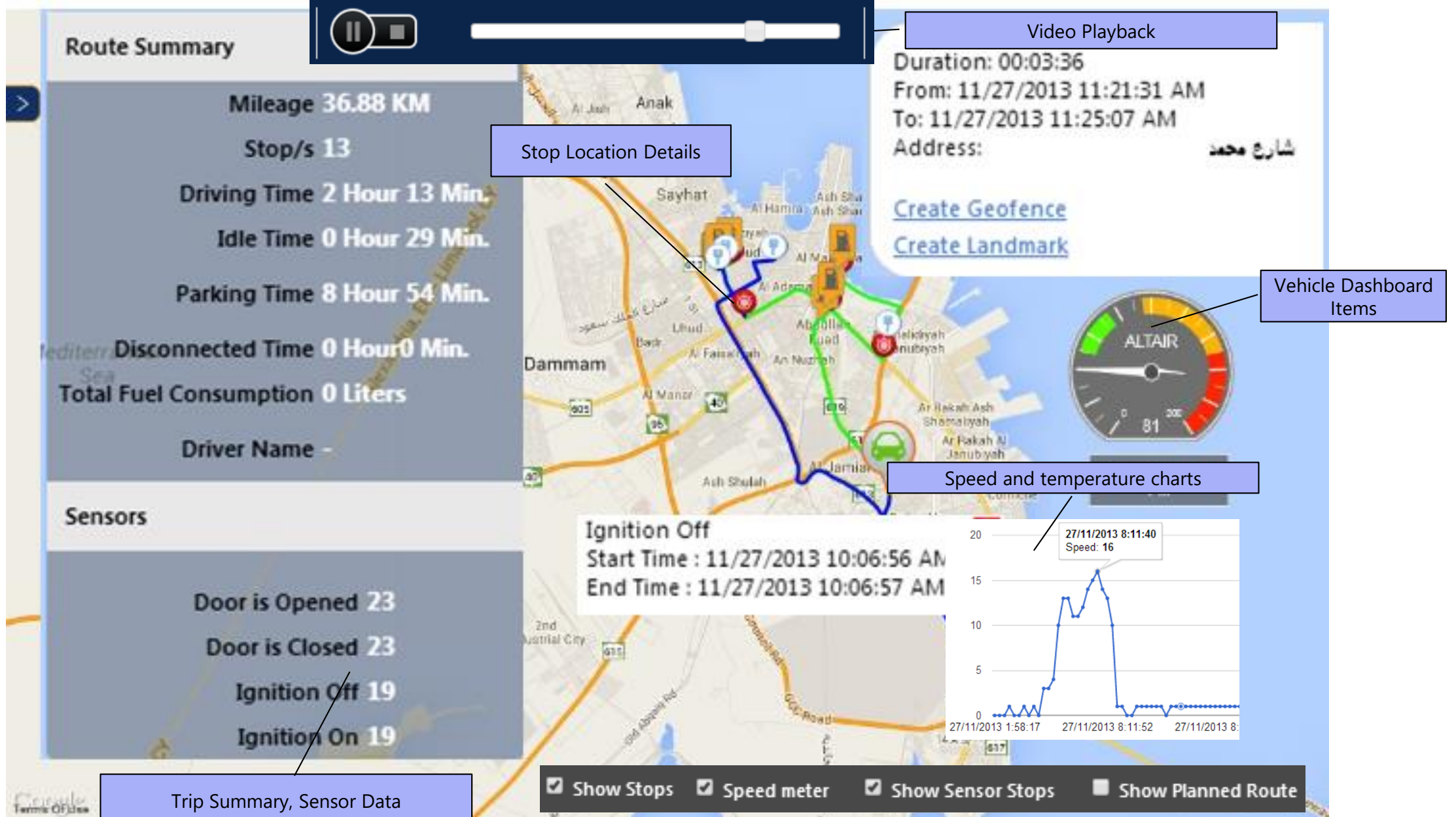


Last signal received	7 December 11:05
Code	117/943
Driver	Assign Driver
Speed	90
Temperature	NA
Longitude	31.4628832
Latitude	30.1928992
Address	ميدان مينا
Fuel Level	100%
Fuel exhausts after	NaN KMs
Fuel Consumption	0.0
RPM	0
Odometer	839191
<a href="#">Create New Geofence</a>	






Code	Plate No.	Group	Branch	Driver	Mobile	Latitude	Longitude	Address ▲	Odometer	Battery Status	Last signal received	Ignition Status	Speed	Status	Show On Maps	Switch Engine OFF/ON	Reverse Engine Status
001	11	سياحة	main branch			30.0744416	31.2672576	Live Fleet Status Streams									
002	36	lafa test	main branch			29.8116064	32.0782112				02:23:35 PM	Ignition	0		View	No Items Available	No Items Available
003	837		main branch			29.7133024	31.4090176	Address Not Available Now	13174.1	Connected	27-11-2013 07:06:22 AM	Ignition Off	73		View	No Items Available	No Items Available
005	35	lafa test	main branch			29.8108192	32.0796608	Address Not Available Now	13291	Connected	27-11-2013 03:12:01 PM	Ignition Off	0		View	No Items Available	No Items Available
007	70	رحلات	main branch			29.8102912	32.0796192	Address Not Available Now	14880.1	Connected	27-11-2013 03:14:27 PM	Ignition Off	0		View	No Items Available	No Items Available
008	90	رحلات	main branch			29.81027			12.1	Connected	27-11-2013 03:15:25 PM	Ignition On	0		View	No Items Available	No Items Available
011	96	رحلات	main branch			29.81088			9.4	Connected	27-11-2013 03:13:05 PM	Ignition Off	0		View	No Items Available	No Items Available
012	70	رحلات	main branch			29.81174			1.4	Connected	27-11-2013 03:11:54 PM	Ignition Off	0		View	No Items Available	No Items Available
013	01		main branch			29.81059			7	Connected	27-11-2013 03:13:20 PM	Ignition Off	0		View	No Items Available	No Items Available
014	51		main branch			29.81036			6.7	Connected	27-11-2013 03:14:34 PM	Ignition Off	0		View	No Items Available	No Items Available
015	7	رحلات	main branch			29.81048			8	Connected	27-11-2013 03:13:32 PM	Ignition Off	0		View	No Items Available	No Items Available

# Fleet Movement History





# Ambulance & Medical Equipment Maintenance Management



Work Order - #12345 In Progress  



 Transporter Code / Plate Number

[Work Order Info](#) **[Maintenance Tasks](#)** [Check In-Out List](#) [Attachments](#) [Charges/Billings](#)


RFR Code 10 - 01 - 2011  

Driver *Driver Name* Requested By *Requester Name*

Images  

Files  *file name*  *file name*


**Problem(s) Details**

Problem Type *Electrical* Severity *Hight* 

Description *Problem Description*

Notes



Spare Parts

Problem Type *Electrical* Severity *Hight* 

Description *Problem Description*

Notes

Spare Parts

RFR Code 10 - 01 - 2011  

[Add RFR / Problem](#)

## Full Maintenance Lifecycle

- ✓ Corrective & Preventive Maintenance Management (auto-scheduled by km / time / engine hours)
- ✓ Maintenance Planning, Scheduling and Checklists
- ✓ Need for Repair Management (levels, accidents, severities)
- ✓ Work Order Management, Workflow & Order Tracking
- ✓ Dynamic vendor / workshop workflow management
- ✓ Management of internal workshops / labor and 3<sup>rd</sup> party suppliers including 3<sup>rd</sup> party system access to receive and update orders

## Maintenance Macro- and Micromanagement

- ✓ Vehicle / asset downtime monitoring
- ✓ Accident and driving misbehaviour overviews
- ✓ Track workshop / supplier performance, faults and down times, expected finish times
- ✓ Compare planned schedules to actuals
- ✓ Work Order Ticketing and 3<sup>rd</sup> party workshop accounts
- ✓ Spare parts management
- ✓ Cost Centres (spare parts, labour, contracts)
- ✓ Tire & Battery Management



Thank you