## Summary Sheet

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**Abstract:**

This document defines the local area demonstration 2: e.tourism in Morocco of the METIS project. This document is the initial version and will be refined in the course of the project.

**Keywords:**

Demonstration – MEDA – Local Area – Tourism services – Emergency call

**Project WEB site address:**

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| VF    | 18.07.08 | Final version including:  
- Updating of material,
- Updated schedule,
- Details related to use cases.
Various minor corrections | Sabine Caillault Maxime Dalmas |
1. INTRODUCTION

1.1. SCOPE AND PURPOSE OF THE DOCUMENT

The METIS project [RD1] encompasses a number of demonstrations within Activity C. Among them 4 wide-scale demonstrations are already defined and six local-scale demonstrations are to be chosen among 18 referenced in the METIS proposal [RD2]. This document describes the e.tourism application in terms of principles, partners, technical definition, schedule, demonstration scenarios, results and dissemination.

1.2. APPLICABILITY

This document is applicable to all the demonstrations to be performed in the frame of METIS project.

1.3. DOCUMENT OVERVIEW

Section 1 describes the objectives of the demonstration
Section 2 presents the partners and their respective roles
Section 3 provides the technical description of the demonstration
Section 4 presents the demonstration scenarios
Section 5 provides details on the schedule
Section 6 provides the results that will be obtained and the analysis foreseen

1.4. LIST OF REFERENCES

1.4.1 Applicable Documents

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Table 1: Applicable Documents
1.4.1 Reference Documents

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Table 2: Reference Documents

1.5. ABBREVIATIONS

A
A-GPS Assisted-GPS

C
CMMI Capability Maturity Model Integration
COTS Commercial Off-The-Shelf

E
EGNOS European Geostationary Overlay System
ESTB EGNOS System Test Bed
GPS Global Positioning System

G
GPRS General Packet Radio Service
GSA GNSS Supervisory Authority

L
LAD Local-Area Demonstration (METIS)
LBS Location-Based Services

P
PDA Personal Digital Assistant
POI Point Of Interest

T
TAS Thales Alenia Space

W
WAD Wide-Area Demonstration (METIS)
WP Work Package
2. Demonstration objective

Demonstration objective is to twofold: to prove interest of application in real environment and to assess and demonstrate the added value of EGNOS/Galileo for such applications.

The aim of the e-tourism application is to provide tourists equipped with a PDA phone with both a tourism service and an emergency call.

The tourism application will provide tourists with relevant information such as proximity maps, best routes and itineraries, information on Point Of Interest (POI), telephones and addresses of the places to be visited.

The security service (emergency-call application) will allow tourists, in an emergency situation, to send its location to a predefined number. This kind of service would be of high interest especially in isolated areas or in hiking paths,... A security service needs a high level of quality of service, reliability and availability. Indeed, it requires GPS improved services based on EGNOS and future Galileo.

Demonstrations will take place in Morocco in Marrakech (urban and surrounding areas).
3. PARTNERS AND ROLES

Partners in E.tourism demonstration have been chosen for their added-value related to cartographic aspects and associated service tool.

At this point of time, the partners are:

- CADTECH
- Tele Atlas

3.1. CADTECH PRESENTATION

<table>
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<th>Address/contact</th>
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| Mahaj Ryad, Sect 9, Imm N Mahaj 12, 3 ème étage, Mail Central, Hay Ryad, | • System operator  
|                 | • Installation of mobile equipment  
|                 | • Local partnership organization |

Table 3: Local demo partner: CADTECH

CADTECH is a Moroccan company that was founded in 1995 by three engineers in the domain of geographic information systems and geomatic technologies. A long-time partner of state institutions such as the Moroccan Post, the Civil Protection Department, the Department of Statistics and the agency of Land Conservation to name but a few, Cadtech is today in the middle of expanding and has been able, thanks to the increased added value of its knowledge, to establish partnerships with international companies such as Thales Alenia Space in the fleet tracking systems domain, whilst developing a system for the transportation of dangerous goods and a tourism geolocalisation system. CADTECH is also partner with Khan & Hill in the USA for access to the US market and is in the process of negotiation with groups such as TeleSpazio. CADTECH is in the process of CMMI certification and is working towards entering the Casablanca stock exchange in 2009.

Today, CADTECH employs approximately 20 people and will widen its current team at the beginning of 2008 to cover the needs in human resources for the partnership with Tele Atlas.
3.2. Tele Atlas Presentation

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<td>Tele Atlas</td>
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<td>Office Park Zuiderpoort&lt;br&gt;Gaston Crommenlaan 4 Box 0501,&lt;br&gt;9050 Gent,&lt;br&gt;Belgium.</td>
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Table 4: TeleAtlas

Tele Atlas (FSE: TA6, EUNV: TA), a leading global provider of digital maps and dynamic content for navigation and location based solutions, today announced the signing of a strategic agreement with Cadtech, a Moroccan company specializing in geographical information systems and geolocalization applications, to enable the development of digital maps for Morocco and the North African region. Through the agreement, Morocco will be the first country in the region to be connected directly with Tele Atlas’ European digital map databases, allowing navigation from any point in Europe to this country.

Demonstrating its commitment to consistently enhance and expand its digital map offerings for its partners, including manufacturers of navigation systems and mobile phones, Tele Atlas will work with Cadtech to connect digital maps of Europe and Morocco, a North African country which is currently experiencing very strong economic development.

Through this collaboration between two major industry players, the first version of the database, which will be designed to deliver first-rate GPS navigation services such as personal navigation devices (PND), onboard GPS systems and geolocalization services for the Moroccan market, is scheduled to be available in Q2 2008.

According to Jack Reinelt, COO & Managing Director of Tele Atlas Europe, Middle East and Africa, this new partnership marks an important new stage for the development of Tele Atlas in North Africa, "It is clear to Tele Atlas that Morocco and the North African region have excellent growth potential and represent a strong business opportunity in the coming years. Also, given the proximity to the European continent we wanted to extend our high quality map coverage into this region quickly so that our partners can build this capability into their products. With this agreement, Morocco will enter the digital navigation era and we envision this will be a facilitating factor in its economic development".

Reference: METIS_4120_D-19-LAD2_VF
Version: VF
Page: 11 of 30
4. TECHNICAL DESCRIPTION

4.1. SYSTEM ARCHITECTURE

4.1.1 General architecture

Architecture chosen for E.Tourism is mainly based on:
- CADTECH platform SYG ER LBS,
- TAS services: A-GPS
- Digitized maps (on terminal side and back office) provided by Tele Atlas partnerships with CADTECH.

The system architecture will be as follow:

Figure 1: Pilot System Architecture (1/2)
4.1.2 TAS Enhanced Assisted-GNSS technology

TAS: description of A-GPS technology enhanced with EGNOS data.

Figure 2: Pilot System Architecture (2/2)

Key benefits with EGNOS and Galileo?

- with **Accuracy**
  - down to meters accuracy
- with **Availability**
  - in urban canyon

- with **Quality of Service**
  - with stand alone GPS, there is waranty on the position accuracy
  - with EGNOS, in addition to the fix, I know the area where I’m sure to be 99% accuracy

Figure 3: Enhanced A-GPS and Cell
E2E offer: portfolio

> Products

- **E-AGPS server**: uses EGNO S, offered in >15 responses to operator RFI/RFQ
- **E-AGPS receiver**: discussions for integration with Alcatel, Sagem, LG
- **Gateway (GMLC)**

![Figure 4: E2E offer: portfolio](image-url)
4.2. BACK OFFICE TOOL FOR EMERGENCY SERVICES: SYGER LBS

SYGER LBS is a Web enabled integration platform based on the following standards (JDBC, Oracle Spatial, J2EE, SVG/XML) streamlining the bridging of existing systems and formats and easing the development of custom made LBS/fleet management solutions and their deployment.

SYGER LBS is today totally integrated to the new E-AGPS solution developed by Thales Alenia Space, that offers the GPS precision and communicates of data and information through the GPRS or 3G mobile channel.

It offers all the features all the way from back office to real time mobile applications.

Main features are: Automatic Tracking, Real time Tracking, Fleet monitoring, Logs and reports, advanced mapping system, fencing, alarms and events notification.

![SYGER LBS Display Example](image)

*Figure 5: Examples of SYGER LBS displaying*
4.3. **Pilot Description: Location and Organization**

The pilot will be shared in two phases: one to assess tourist application interests and one to demonstrate emergency services added values.

4.3.1 **Tourist Application**

The site and tourist itinerary covered by the pilot is covering selected Points of Interest:

- One route will be designed with the local partners in order to make sure that the itinerary covers the chosen interesting historical sites,
- At each point-of-interest, a multimedia file will be available for the traveller to read.

![Figure 6: Examples of "Points Of Interest" in Marrakech (Google earth image)](image)

Remark: Images and POI have been placed at random on the map.

Some examples of Points Of Interest (POI) from Marrakech are given under below: tourist information and images.
1st POI: Koutoubia Mosque

The Koutoubia Mosque (Arabic: مكتبة) is the largest mosque in Marrakech, Morocco. The minaret was completed under the reign of the Almohad Caliph Yaqub al-Mansur (1184-1199) and was used as model for the Giralda of Seville then for the Hassan Tower of Rabat.

The name is derived from the Arabic al-Koutoubiyyin for librarian, since it used to be surrounded by sellers of manuscripts. It is considered the ultimate structure of its kind. The tower is 69 m (221 ft) in height and has a lateral length of 12.8 m (41 ft). Six rooms (one above the other) constitute the interior; leading around them is a ramp by way of which the muezzin could ride up to the balcony. It is built in a traditional Almohad style and the tower is adorned with four copper globes.

2nd POI: Menara gardens

The Menara gardens are located to the west of Marrakech, Morocco, at the gates of the Atlas mountains. They were built in the 12th century (c. 1130) by the Almohad ruler Abd al-Mu'min. The name menara derives from the pavilion with its small green pyramid roof (menzeh). The pavilion was built during the 16th century Saadi dynasty and renovated in 1869 by sultan Abderrahmane of Morocco, who used to stay here in summertime.

3rd POI: Djemaa el Fna

Djemaa el Fna (Arabic: جامع الفنا) is a square and marketplace in Marrakesh’s medina quarter (old city). The origin of its name remains unknown: it means Assembly of the dead in Arabic, but as the word djemaa also means mosque in Arabic, it could also mean place of the vanished mosque, in reference to a destroyed Almoravid mosque.
4th POI: Marrakech Museum

The **Museum of Marrakech** is a museum in the old center of Marrakech. The museum is housed in the Dar Menebhi Palace, built at the end of the 19th century by legendary Mehdi Menebhi. The palace was carefully restored by the Omar Benjelloun Foundation and converted into a museum in 1997. The house itself perfectly represents classical Andalusian architecture, with fountains in the central courtyard, traditional seating areas, a hammam and intricate, beautiful tilework and carvings. The museum holds exhibits of both modern and traditional Moroccan art together with fine examples of historical books, coins and pottery of Moroccan Jewish, Berber and Arab cultures. Opening Times [Morocco](http://en.wikipedia.org/wiki/Main_Page).

Information related to POI have been extracted from WIKIPEDIA web site: [http://en.wikipedia.org/wiki/Main_Page](http://en.wikipedia.org/wiki/Main_Page)

### 4.3.2 Emergency services

To simulate emergency service application in isolated environment, a detour from tourist itinerary will be added.

*Figure 7: scenario based on an example of intervention*

*Figure 8: Example of detour in Marrakech surroundings (Google earth image)*
In an isolated area (to be defined), an alarm will be released by the tourist from the terminal by pressing the dedicated button:

- The tourist is automatically put in phone call with the control centre: it allows him to confirm alarm and to give the damage characteristics,
- The alarm is activated in real time on the back office screen with displaying of the tourist location on a map,
- Person from the control centre contact and send dedicated services (emergency, repair vehicle, policy…) according to context.

For the trial, it is not foreseen to operate with real emergency services. The trial will be based on simulated intervention of control centre and emergency services.

The back Office (control centre simulation) will be installed in the conference room especially taken for the final demonstration of e.tourism.
4.4. **Enhancement and Customisation**

As described before, e.tourism pilot is based on software reuse from:

- CADTECH: SYGER LBS (back office side),
- CADTECH: preliminary solutions of e.tourism and emergency applications (in particular, preliminary solutions do not offer cartography displaying on terminal),
- TAS: A-GPS server.

However several technical activities have been planned to put in operation the E.Tourism services. They include software installation, software development, enhancement and customization of applications:

- On terminal: tourism application development based on the CADTECH preliminary solution,
- On terminal: Emergency application development based on the CADTECH preliminary solution,
- On terminal: selection and capture of data related to tourist Point Of Interest,
- On server side: deployment and updating of the A-GPS server in CADTECH premises,
- Integrations and tests at system level.
5. HARDWARE DESCRIPTION

5.1. TERMINALS

The terminals deployed in E.Tourism pilot, are the HTC (model: Artemis). 2 units will be deployed in trial, for Tourist and urgency applications.

The HTC comes preinstalled with the A-GPS software. E-tourism applications will be easily installed and put in operation. The large TFT screen is suitable for LBS application. The operating system is Windows Mobile.

![HTC Image](image)

*Figure 9: HTC*

5.2. BACK OFFICE

A computer (a laptop) will be configured and put at disposal for the back office: for simulation of control center operation.

Computer will be provided by CADTECH for the test phase and demonstration duration.
5.3. SIS AVAILABILITY ISSUE

For e.tourism demonstration, minimum EGNOS signal performances are required. Following image shows that EGNOS availability on Marrakech, where e.tourism demonstration will take place, has the required level for such demonstrations with an average availability higher than 86%.

These performances have been processed from data acquired on the 14th of February 2008, after Nouakchott RIMS installation and put in operation.

![Figure 10: EGNOS availability over area demonstration (Marrakech)](image-url)
6. **Demonstration Scenarios**

The demonstration will cover an itinerary covering two use cases: an urban environment and an isolated area.

The demonstration will take place:

- In Marrakech town center for tourist applications (use case 1),
- In the surrounding of Marrakech for emergency services (use case 2).

### 6.1. Use Case Presentation

- **Use Case 1: Urban Environment**

  To show the interest of the tourism application, the demonstration phase with a tourist urban itinerary will be implemented. The tourists will have the dedicated terminal (HTC – Artemis) with e-tourism application in their A-GPS handheld terminals allowing them to see its position on a map. By simply clicking on the point of interest in its handheld map, the user will have access to the most relevant information related to the point of interest based on historical and cultural information about a given site.

  What we show:

  - From tourist side, on terminal: displaying of location on map, itinerary to reach the point of interest and information related to this point of interest,
  - From demonstration room side: presentation of e.tourism application based on a recorded example and use of the terminal to reach the nearest Point of Interest.

- **Use Case 2: Isolated Area**

  The security application will be implemented in a more isolated area. The tourist, by simply pressing an emergency-call button, will automatically send its accurate location to a predefined telephone number of a local body or entity that will then ensure the search and rescue of the tourist. A confirmation by phone call is activated to avoid most of false alarm for checking and giving useful information in case of intervention.

  What we show:

  - From back office control centre (located in demonstration room): alarm location on map, phone call with the tourist,
  - From tourist side: incident simulation (description), emergency-call button pressing, phone call, confirmation, and simulation of team intervention arrival waiting.
6.2. **DEMONSTRATION STEPS**

For the 2 use cases, two steps are foreseen:

- First step dedicated to acquire EGNOS data for post-processing (data analysis, processing, comparison between EGNOS and GPS only will be described in D20 document). Data will be acquired in typical conditions of the use cases:
  - In urban environment around each point of interest (in Marrakech),
  - In Marrakech surrounding where final demonstration will take place.

- Second step dedicated to real time trial for public demonstration and dissemination. We mainly stress on service added values even if location will be based on enhanced data from A-GPS. Real time demonstration will be as described in paragraph...
7. SCHEDULE

7.1. OVERALL SCHEDULE

Figure 11: Overall demonstration schedule
7.2. **Tasks Breakdown**

The overall schedule is broken down into lower level activities, which are:

- Coordination which corresponds to the coordination of the work, management of partners, preparing procurements, setting up demonstrations and associated public events, dissemination,…

- System setting up which corresponds to all technical activities which are required to set up the technical chain inclusive of the corresponding end to end integration,

- EGNOS added value measurement which corresponds to setting up the appropriate measurement to prove the EGNOS added value vs GPS by actual measurement then to post processing data.

- Demonstration which corresponds to perform the demonstration at all the required locations (urban, surroundings),

- Experience return analysis and dissemination.
8. RESULTS GATHERING, ANALYSIS AND PROCESSING

8.1. RESULTS GATHERING

As part of the demos, it is intended to gather:

- Tourist location on terminal and dedicated information communication (on POI),
- From control center simulation, tourist location and automatic phone call in case of alarm release,
- Protection levels of EGNOS from acquisition campaign (based on post processing).

This gathering will take place during the integration test as well as the demonstration dry runs. Analysis and post-processing will be performed in parallel with the integration to identify problems prior to demonstrations.

8.2. RESULTS ANALYSIS

Analysis consists in verifying the following for Use case 1:

- Tourists are correctly located on the terminal (map representation),
- Information on POI are correct, Information are related to the selected POI, Information are given in real time (after selecting the POI in a list given on the terminal)
- Terminal is easy to start, to use, to get information for a normal tourist.

The analysis consists in verifying the following for Use case 2:

- Tourists are correctly located on the terminal (map representation),
- An alarm is sent to the “control center” when tourist has clicked on the alarm button (on the terminal),
- From control center: tourist location (in case of alarm release) is displayed on a map on back office screen, and an automatic phone-call is activated between tourist and “control center”, a dedicated function allows managing the alarm (change the status, or delete….).
8.3. DATA PROCESSING

Processing will be operated on the EGNOS data gathered during acquisition campaign with the following objectives:

- Characterize EGNOS acquisition in trial environment,
- Illustrate graphically EGNOS impact in the context of trial,
- Assess impact of EGNOS data on the use case 1 (Tourism),
- Assess impacts of EGNOS data on the use case 2 (Urgency).

EGNOS data Gathering

- EGNOS data acquisition is based on EGNOS INSIDE software (that allows to record both EGNOS and GPS data)
- EGNOS acquisition will be planned on typical trajectories used in the 2 use cases in typical conditions (speed, weather conditions for example)
- For selected trajectories, several successive acquisitions (on the same trajectory) will be realized for statistical analysis.

Numerical characterization of EGNOS data

- Statistical analysis (% of availability during acquisition campaign, mean of HPL) on the whole data gathered during campaign,
- Same statistical Analysis versus environment (urban, surrounding, clear area...),
- Numerical comparison between GPS only and EGNOS data (mean distance between recorded points for example).

EGNOS impact illustration (with graphic)

- Global graphical illustration to present the EGNOS acquisition sites in Marrakech,
- Graphical illustration on tourist typical site with trajectory and HPL values,
- Graphical comparison between GPS only and EGNOS,

Conclusion

From numerical and graphical results, a global analysis will be performed detailing EGNOS acquisition performances in Marrakech (availability, continuity, accuracy), describing EGNOS impacts on e.tourism application and giving some recommendations on future applications development.
9. **DISSEMINATION**

The dissemination will be performed mainly by direct invitation of the relevant authorities to the demonstration.

Early in the demonstration process, a page to be included in the METIS web site will be created where high level information of this demonstrations can be found.

In addition it is planned to produce a demonstration summary flyer highlighting the work carried out and that can be made available to the METIS project website as well as a webpage highlighting the results.
END OF DOCUMENT