

“Automatic information  
and location by GPS of  
available parking  
space”

INVEST IN SPAIN

“Investment opportunities in the automotive sector in Spain”



GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE ECONOMÍA  
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INVEST IN  
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### I. Introduction

#### Aim:

To solve urban traffic problems through a system of parking assistance for the driver

#### Business scope and technologies:

- List of all the parking places, and installation of occupation sensors in each of them:
  - ⇒ Open spaces (e.g.: in the street)
  - ⇒ Enclosed building (e.g.: underground)
- To connect and visualize the availabilities in real time
- Development of an information exchange system to send useful information to the drivers
- System operation: reservations, pay-per-time
- Development of the payment system (bank transfer)



## II. Technology Description

### Technology for enclosed buildings:

- Placing a sensor in every place (by weight, volume, electric induction, ultrasounds)
  
- Optimum information transmission system: **ZigBee:**
  - low frequency: 868 MHz in Europe, 915 in USA and 2,4 GHz in the whole world (preferred frequency)
  - low rate of information interchange
  - low consumption (battery)
  - System implemented on a network based on mesh, tree or star.
  - Up to 65535 nodes, distributed in sub-network of 255 nodes.
  - Easy insertion in new sensors.
  - A central node acting as Master (receives data from all, processing them and resending them to the drivers)
  - Communication with drivers by bluetooth (nearly all GPS systems by bluetooth)
  
- Enclosed buildings managers must equip their infrastructure with the adequate information transmitter.

## II. Technology Description

### Technology for open spaces:

- Impossible to place a sensor for every parking place.
- Difficult to find out whether a parking place is free/occupied.
- Necessity to place a transmitter in every vehicle sending position and status data.
- Updating a database with the compiled information, determining parking space availability.
- Output information forwarded to drivers.
- Technology comparable with enclosed buildings system.



### III. Current situation of the business in Spain

#### Business situation in Spain:

- Business not developed in Spain.
- Existing technologies:
  - ⇒ “Invenciona Soluciones Electrónicas” developed small modules detecting parked cars, works only in enclosed buildings (with nearby vehicles).
  - ⇒ Dinycon designed sensors detecting parking place status changes, sending the information to the driver’s mobile phone (where is availability), works only in enclosed buildings.
  - ⇒ Worldsensing: Smart parking solution based on wireless technologies
  - ⇒ Systems designed in USA (SpotScout, Sparking by cell phone, ...)

#### Main companies involved:

- KNOSOS (Amper group), Urbiotica, Worldsensing.
- Garmin and TOM TOM for GPS receivers (companies with most extended activity in Spain).

## IV. Evolution forecast, opportunities and strategy

- Fast first step: Vehicle detectors already exist, communication ZigBee and Bluetooth.
- Long second step: necessary to install GPS transmitters in all vehicles to be able to obtain permanently up-to-date and real-time information.
- Opportunity to work with the public sector in the technical development of the protocol, and then in the embedded modules to design in the vehicles.
- Real interest by the driver (gaining time in parking – saving fuel)
- Improvement of the traffic, less congestions in the cities.
- Interest in collaborating with companies specialized in GPS to enter in the market.

## V. Requirements

### ⇒ **Legislation:**

- ⇒ Same framework which regulates the use of mobile phones and other devices inside the vehicle by the driver, interaction with elements which demand to drift away the attention of the driving regulated in the RD 1428/2003:

*"The use during the driving of mobile phone devices and any other mean or communication system is forbidden, except when the carry out of the communication takes place neither using the hands nor headphones, earphones or similar instruments."*

### ⇒ **Economic aspects:**

- ⇒ Requires a complete offer for the driver: cheap and useful.
- ⇒ Integration of the system in the GPS receiver for more comfort.


### ⇒ **Product specification:**

- ⇒ GPS with guarantees of coverage by satellite in nearly all places.



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Taking advantage of this opportunity

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