H.F.I. is an engineering company specialized in radio communication. H.F.I. develops proprietary products to interface radio with telephone, intercom, building management systems, ... and setups radio networks for industrial sites, campus, security companies, car parks, ...

One of H.F.I. specific applications is radio management of car parks. This can be quite simple, for example radio coverage of a car park, or more complex when several car parks of a town are connected to a management center, or when miscellaneous additional functions are supported thru the radio system (remote control, lone worker protection, ...). For example, the 30 car parks of Lyon town are connected in a large radio network, and such radio networks have been built in several other towns in France.

H.F.I. offers solutions to interconnect several sites within a town with a global radio network, but other solutions become now available. The outside radio interconnect can be done by a RoIP (Radio over IP) solution: in each car park, the base radio station used to interconnect can be replaced by a M-ARM RoIP unit.

Main features of the car park radio system :

1 : Radio coverage of the car park

2 : Connection of the local car park radio network with the global town radio network (car park interconnect)

3 : Lone worker alarm detection when a worker is in a car park:
- **Panic Button:** When pressed a message is sent to colleagues and an emergency control center
- **Man Down:** This feature will raise an alarm if the radio remains motionless or in a lying down position for a certain amount of time (about 1 minute, tunable). A pre-alarm is transmitted (sound), and if the worker corrects the radio position, the alarm process is stopped. Else, when a second time-limit is elapsed, a distress call is automatically transmitted.

    The **GPM-DATI,** on reception of this call, successively:
    o Forwards the call to a security company
    o Makes phone calls from a list of dial numbers until it receives a positive acknowledge

4 : Lone worker alarm detection when a worker is alone in the control center room. A radar detects motionless condition (about 10 minutes) in the room, and a voice synthesis message is sent to the portable radio "pre-alarm lone worker". If the worker moves, then the alarm process is stopped, else after 10 seconds, the distress call is initialized to the security company.

5 : Connection of the intercom system with the radio network, with identification of the calling station
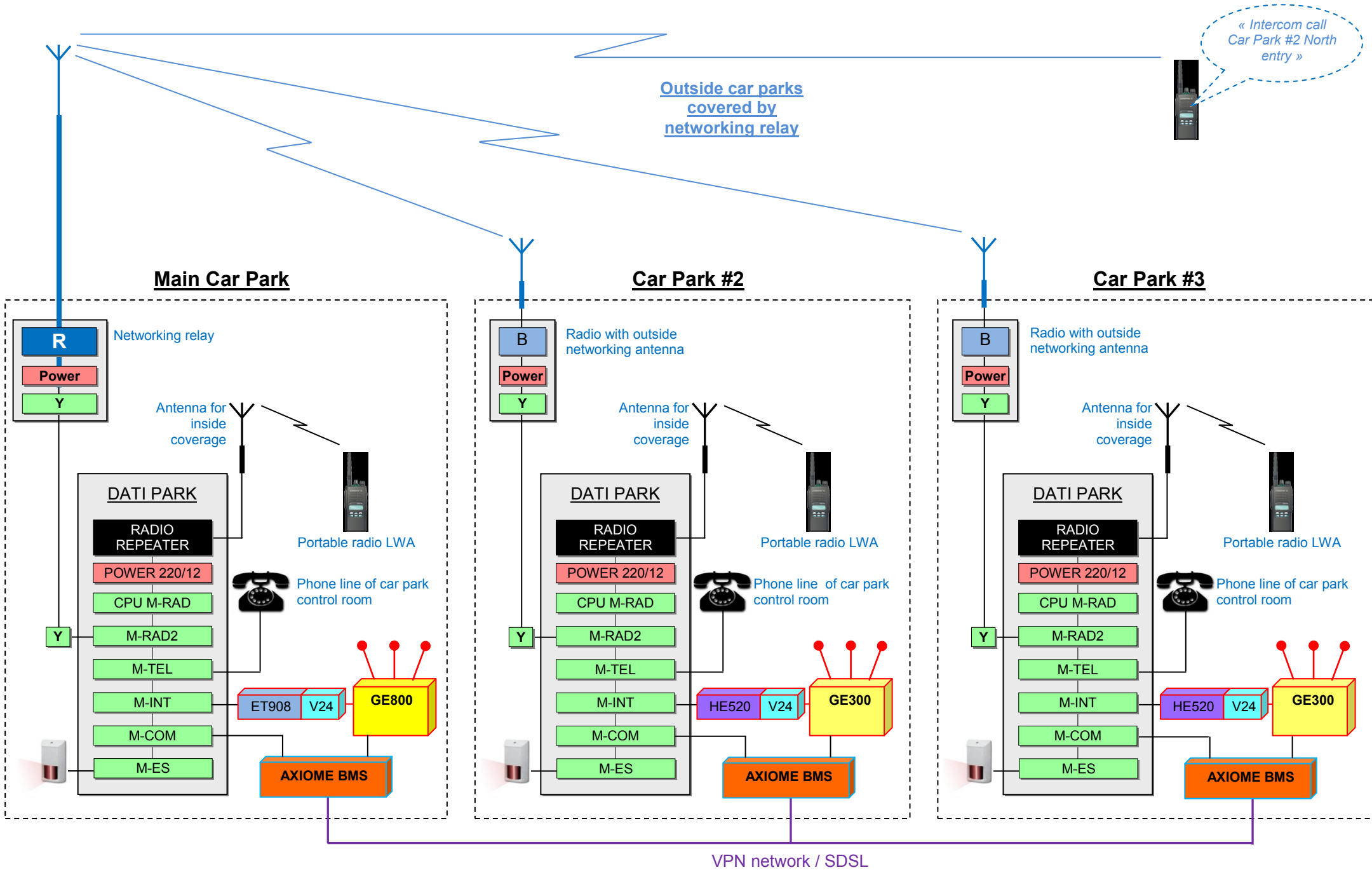
6 : Remote control of the car park gates with the portable radio

7 : Connection of the phone with the radio

8 : Transmission of technical alarms from the building management system using voice synthesis messages (fire detection, air, ...)

9 : Indoor geolocalisation (use RF800 beacons and optional portable radio additional board)

HFI Parking Management System using PMR radio with support of lone worker alarm
DETAILED SCHEMATIC OF A TOWN MULTIPLE CAR PARKS NETWORKING

« Intercom call Car Park #2 North entry »

Outside car parks covered by networking relay

Main Car Park

R — Networking relay
Power
Y

Antenna for inside coverage

DATI PARK
- RADIO REPEATER
- POWER 220/12
- CPU M-RAD
- M-RAD2
- M-TEL
- M-INT
- M-COM
- M-ES

Y

Portable radio LWA

Phone line of car park control room

ET908 | V24 | **GE800**

AXIOME BMS

Car Park #2

B — Radio with outside networking antenna
Power
Y

Antenna for inside coverage

DATI PARK
- RADIO REPEATER
- POWER 220/12
- CPU M-RAD
- M-RAD2
- M-TEL
- M-INT
- M-COM
- M-ES

Y

Portable radio LWA

Phone line of car park control room

HE520 | V24 | **GE300**

AXIOME BMS

Car Park #3

B — Radio with outside networking antenna
Power
Y

Antenna for inside coverage

DATI PARK
- RADIO REPEATER
- POWER 220/12
- CPU M-RAD
- M-RAD2
- M-TEL
- M-INT
- M-COM
- M-ES

Y

Portable radio LWA

Phone line of car park control room

HE520 | V24 | **GE300**

AXIOME BMS

VPN network / SDSL

The radio system is built with HFI Din modular hardware:
- M-RAD : radio interface control
- M-TEL : telephone interface
- M-INT : intercom interface
- ...

HFI CUSTOMER BASE INCLUDES: