



# Microagent

*Daniele Giannetti*

The MICROAGENT software suite is a mobile application capable of locating stolen mobile devices supporting the JME CLDC configuration and the MIDP profile.

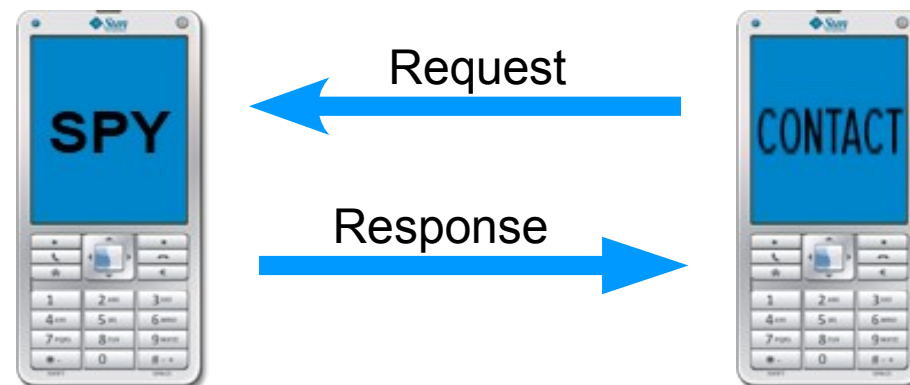
The suite is composed of two MIDlets to be used on different mobile devices:

- SPY MIDlet
- CONTACT MIDlet

The SPY MIDlet operates hidden on a target phone and behave as server by listening from messages coming from a CONTACT MIDlet, a single SPY may serve many different CONTACTS.

The CONTACT MIDlet offers a relatively rich GUI used to manage many different SPIES recorded in a mobile database and offers the SPY location service which triggers the communication with the SPY.

Communication  
Example:





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## SPY MIDlet

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The SPY MIDlet needs to be activated only once on the target device. It is never necessary to reactivate the SPY MIDlet manually till the phone is rebooted (it is recommended to start the SPY MIDlet automatically at startup).

When the SPY MIDlet is first activated, it registers with the AMS push registry service to be automatically reactivated upon reception of an activation SMS. Every time the MIDlet runs because push-activated, it will automatically register again on termination to self-activate when needed.

The received message is first tested against a list of trusted CONTACTs to verify that it is safe to send confidential information to the sender, then the message format is checked to confirm it is a valid activation SMS. Activation messages are received on SMS port 6060 and CONTACT requests are served one at a time. Responses are sent to SMS port 6061 where the CONTACT MIDlet will be listening after a request.

The received message may:

- Command to activate the annoying mode on the device
- Contain a text message to be presented to the thief



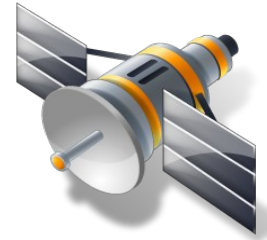
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## SPY MIDlet

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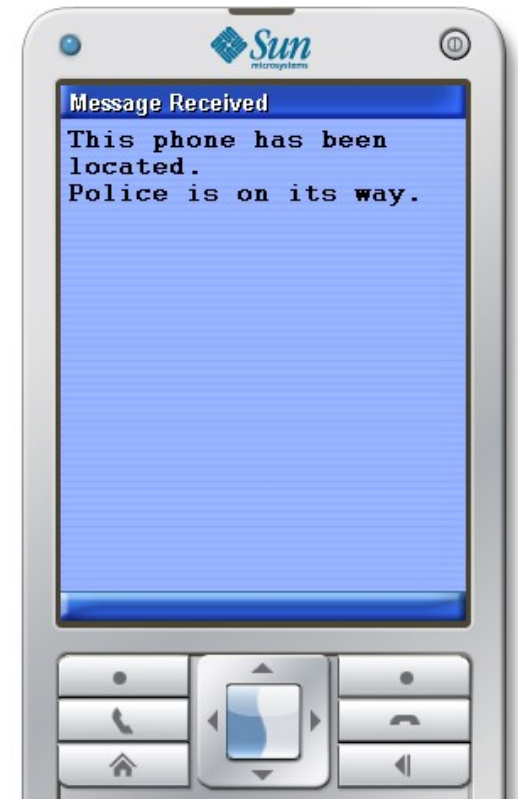
When an activation SMS message is received:

- The location process starts to discover the geographic coordinates of the device, a location provider is selected trying to be as accurate as possible in terms of horizontal position. The resulting coordinates are sent back to the sender of the activation message, if no coordinates could be obtained a confirmation message (ack) is sent instead.



If requested in the activation message:

- The annoying mode is activated on the remote device: it will begin playing an alarm audio track. The MIDlet will try to avoid termination when in annoying mode by registering for timed reactivation each time the AMS tries to destroy the MIDlet.
- The message in the activation SMS is presented to the human user, it may be a warning of some kind or something else. If annoying mode is activated, no direct command is provided to get rid of this message.





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## CONTACT MIDlet

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The CONTACT MIDlet follows a standard life cycle and is used to access location services by sending activation messages to the desired SPIES.

To help managing many different SPIES on a single CONTACT, the MIDlet offers a rich GUI to interact with a SPY persistent storage (a record store).

Using this GUI, SPIES may be:

Added

**Add SPY**

SPY name:  
Daniele Giannetti

Telephone number:  
123 456 789

123

Fill the form and use the 'Add' command

Back Menu

Deleted

**Delete SPY**

- Vittorio Giannetti @ 123456790
- Test SPY @ 123123123
- Daniele mobile 2 @ 111111222
- Daniele Giannetti @ 123456789

Select a SPY and use the 'Delete' command

Back Delete



# Microagent CONTACT MIDlet

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The CONTACT MIDlet also offers the main application functionality:  
SPY location.



The user may choose to activate annoying mode on the remote device and to include a text message. When (and if) the SPY position is effectively presented to the user after the SPY has been successfully queried, he/she may zoom in and out of the picture, those zoom commands will be executed by fetching more pictures from the Google Maps static API. The location operation may be aborted by the user at any time, communication events are notified in an apposite waiting screen.



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Although the application main focus is on locating stolen devices (and eventually persuade the thief to get rid of the phone), it may even be used as:

- Children locator and messaging (if SPIES are installed on their phones)
- Lost items locator (if SPIES are installed on devices packed with the items to be located)
- Animal locator (if SPIES are installed on apposite animal-worn CLDC devices supporting the MIDP profile and equipped with location modules)
- ...

## **NOTE**

If the annoying mode is not requested by the CONTACT MIDlet and a text message does not need to be presented, the user of the device where the SPY is installed should not be aware of being located.

This means that the SPY MIDlet should not warn the user about any of the required operations and never request user confirmation, this is not the default behaviour because an unsigned MIDlet is considered untrusted.

In particular, the SPY MIDlet should have full access to all requested operations and this means that it should be trusted at the same level of the manufacturer's applications.

Microagent MIDlets have not been signed for this project because of the monetary cost of the authority verification.