

# Didrik Ehrenborg

CEO Ehrenborg Networks AB

-15 year' s experience GPS, Sync, Timing

-Telecom, Military, Broadcasting, IT,  
Financial, Transport.

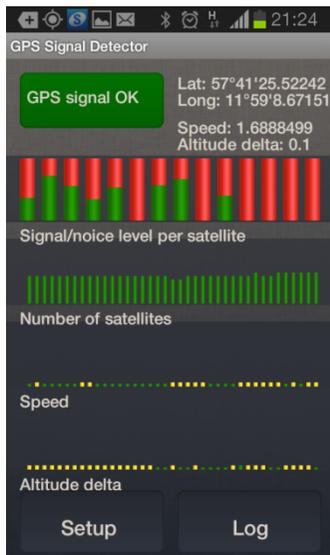
[didrik@ehrenborg.com](mailto:didrik@ehrenborg.com)

+46 730 866 566

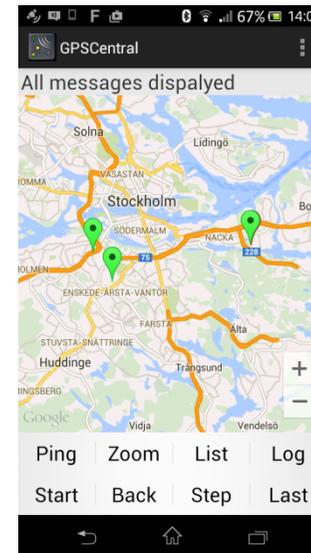
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# Crowd-Sourcing Interference Detection Capability

## GPS Signal detector



## GPS Central

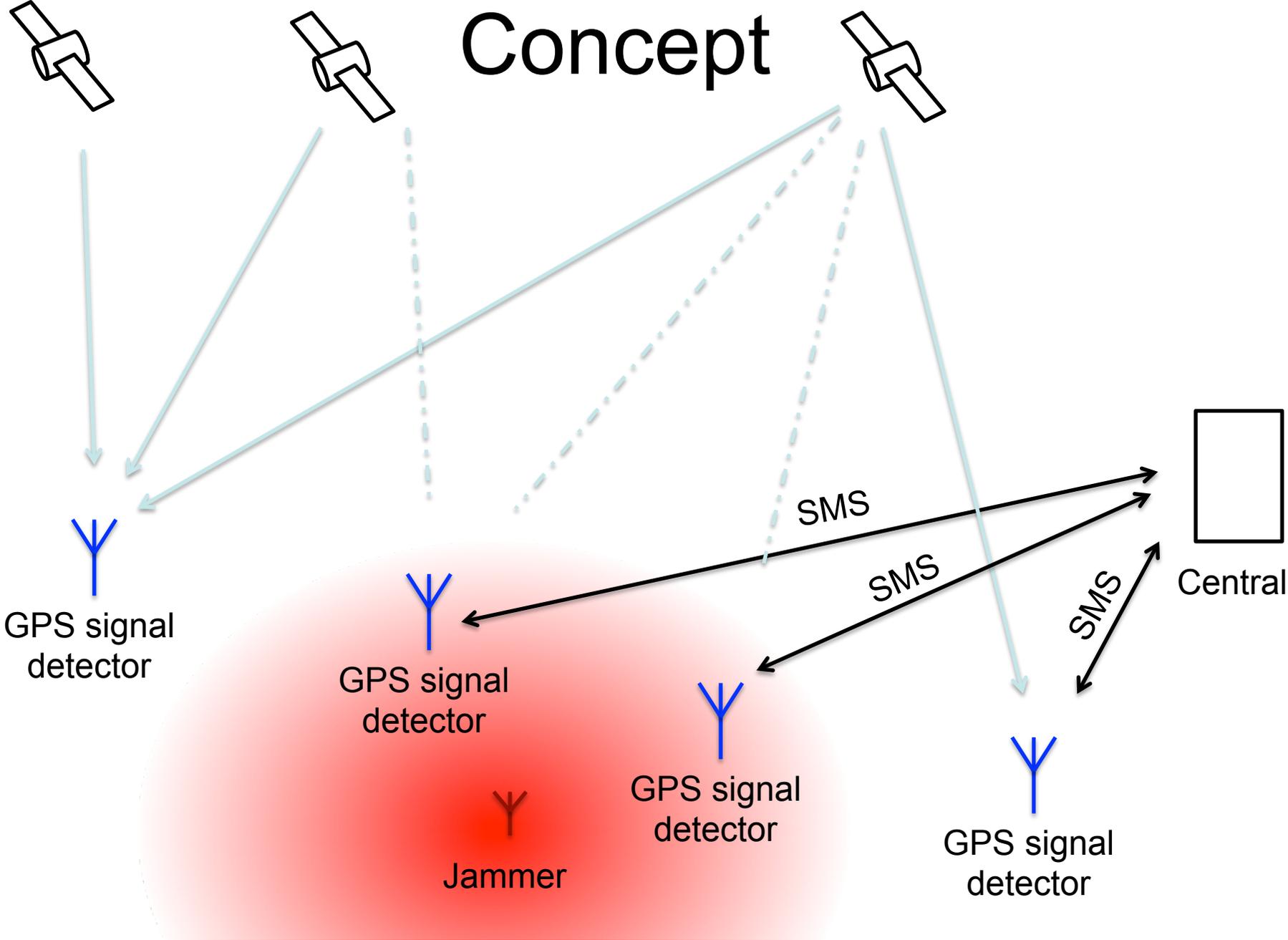


# GPS jamming

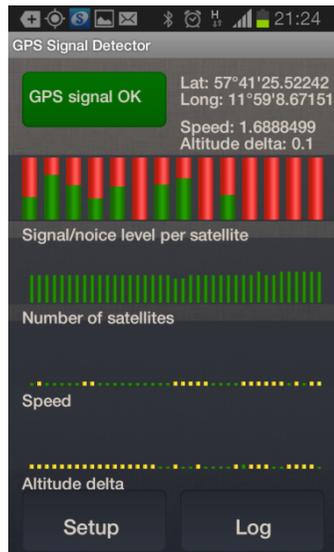
- Newark 2009
- Gothenburg Port 2010,
  - Container crane jammed
- Blekinge 2011
  - Storage for stolen goods.



# Concept



# GPS Signal Detector



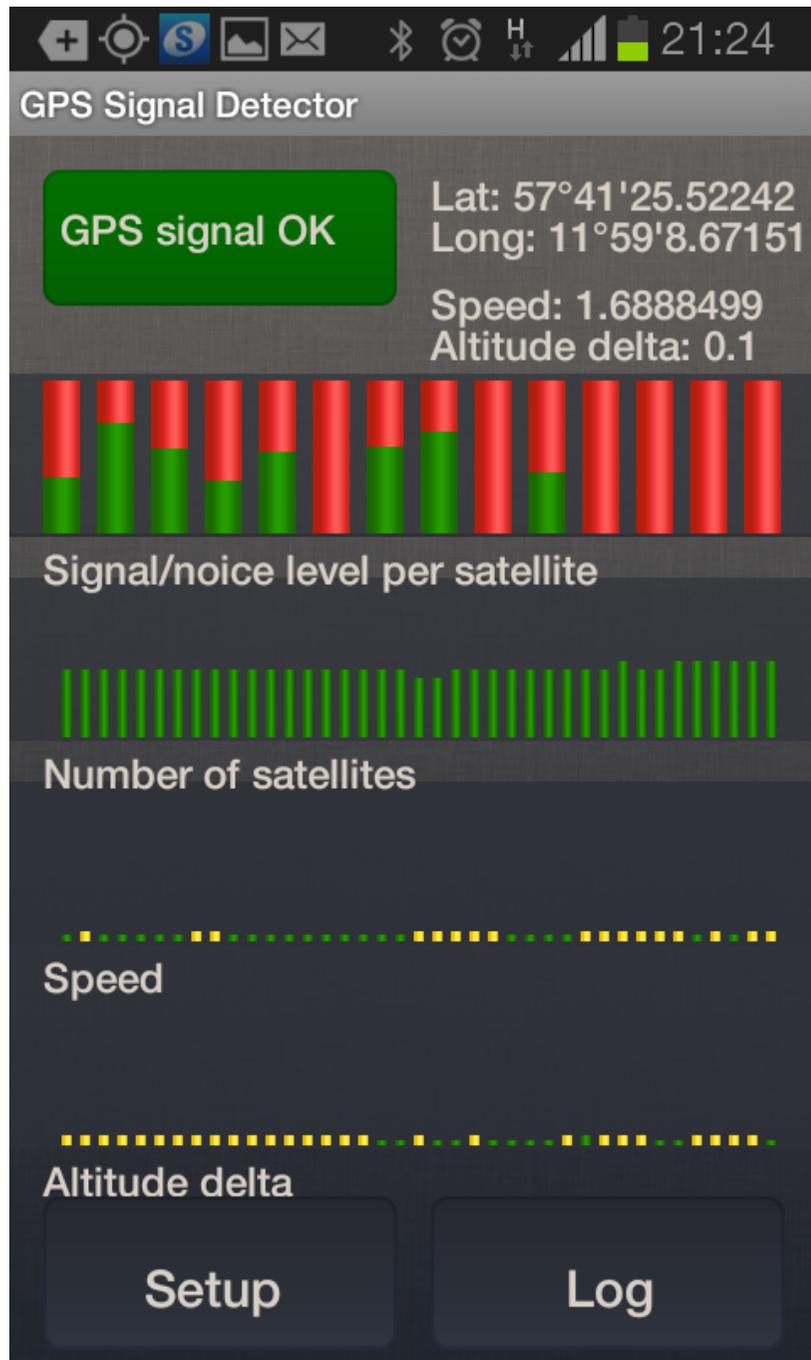
This APP should work on a standard Android smart phone with GPS.

Tested by FOI present at ION

<http://www.ion.org/gnss/sessions.cfm?sessionID=59>

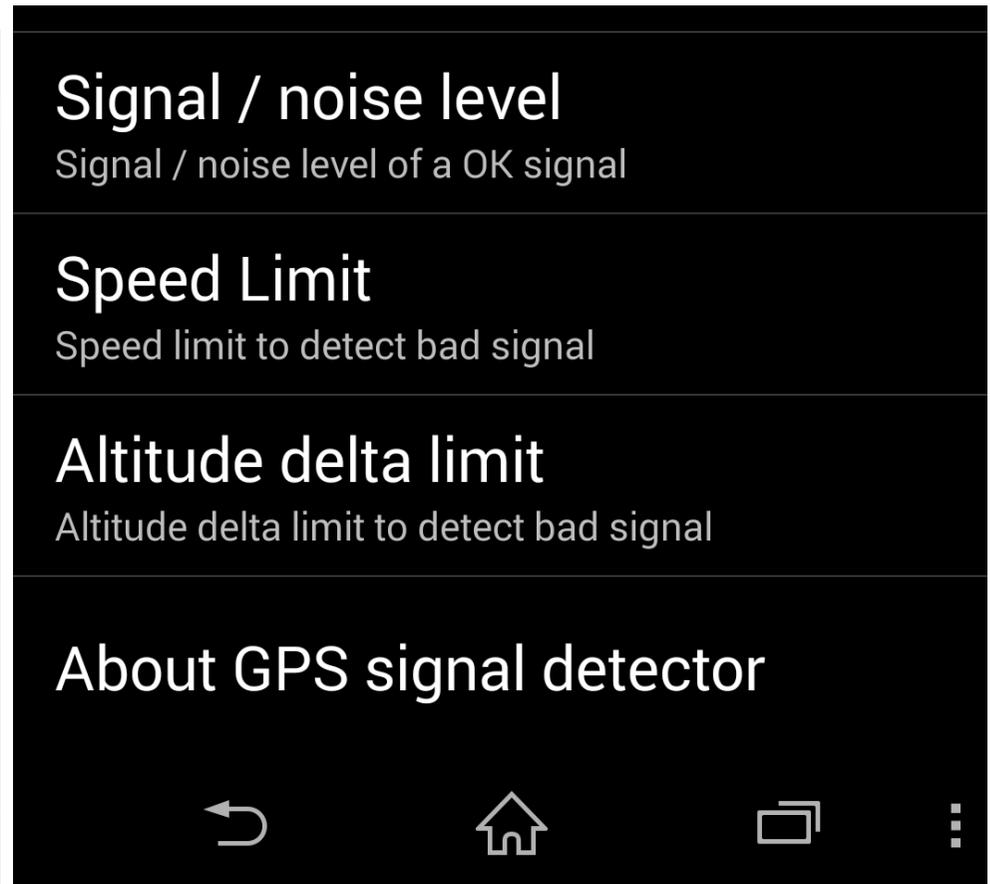
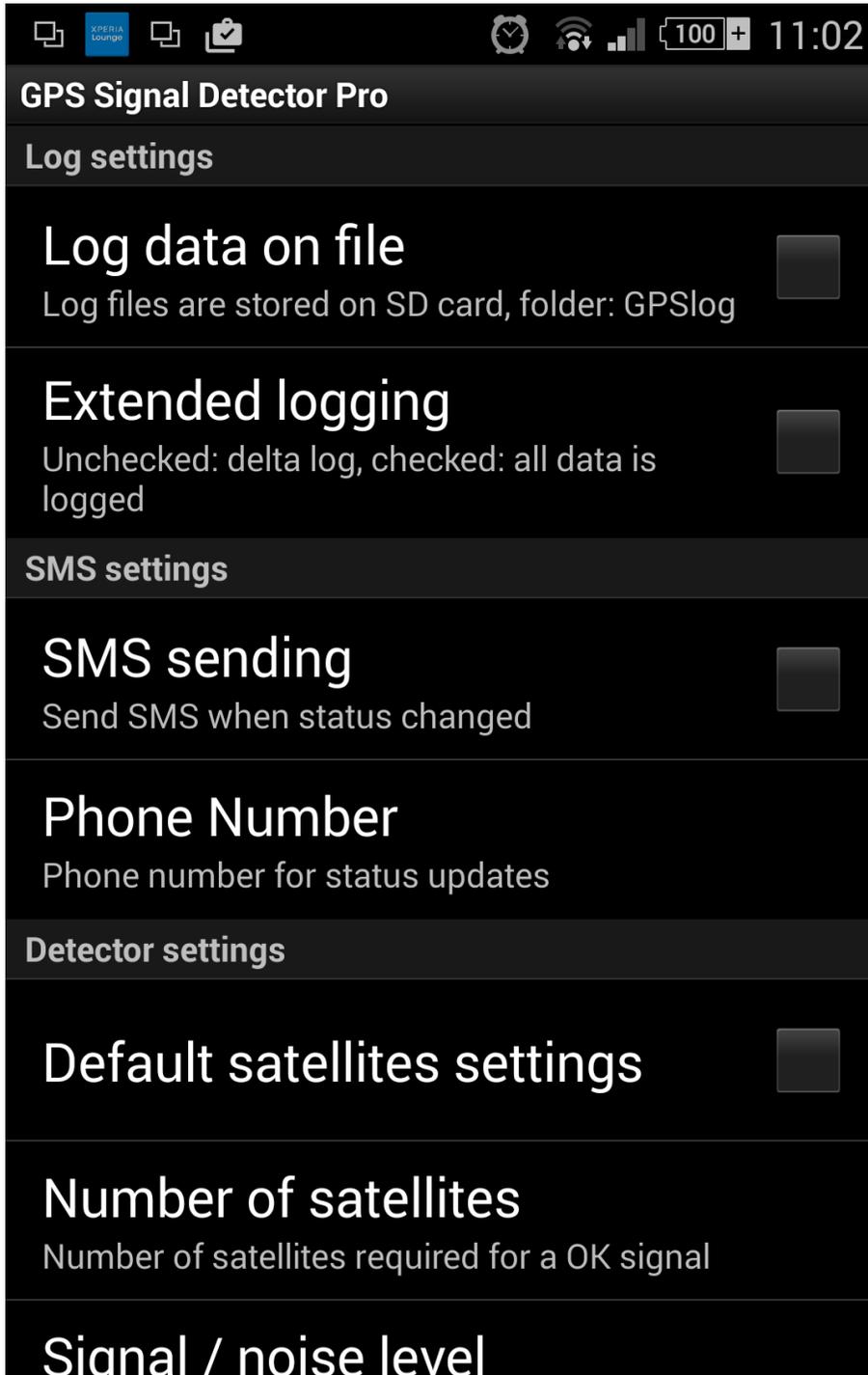
<http://www.ion.org/gnss/abstracts.cfm?paperID=806>

We were suprised that this APP can be compared to the 10.000 Euros units.



# GPS Signal Detector

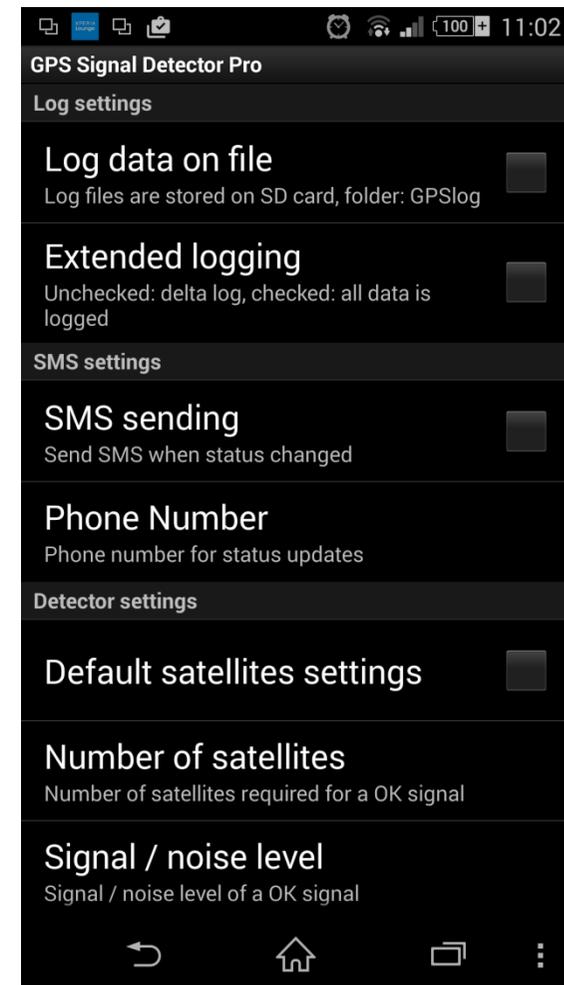
You can set the alarm level for SMS.



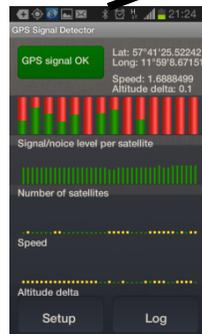
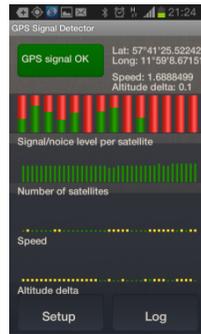
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# Configurability

- Logging level
- SMS sending – receiving number
- Number of satellites required for an unjammed signal
- Signal/Noise level (have to be configured depending on GPS unit in device)
- Speed and altitude alarm levels



# GPS Central



GPS Central

All messages dispalyed 4

Solna Lidingö

Stockholm

SÖDERMALM NACKA

75 228

ENSKEDE-ÅRSTA-VANTÖR

FARSTA Älta

STUVSTA-SNÄTTRINGE

Huddinge Trångsund

Vidja Vendelsö

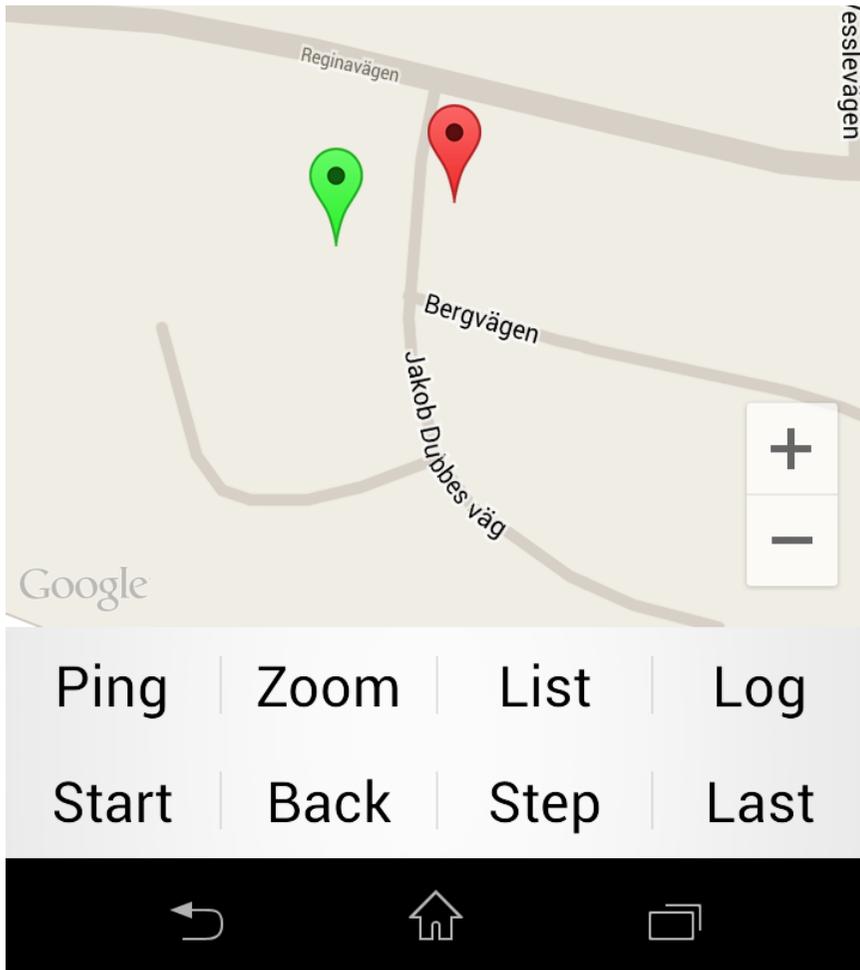
Google

+

-

Ping Zoom List Log

Start Back Step Last



- Now we can see what is happening.
- Run faster mode to track.
- Only run situations.

# Long time testing

- Mobile unit on car. Too many false stickers because of bridge, garage and roof tops.

So we cancel the mobile unit.



You must know the spot has enough free space to get this to work.

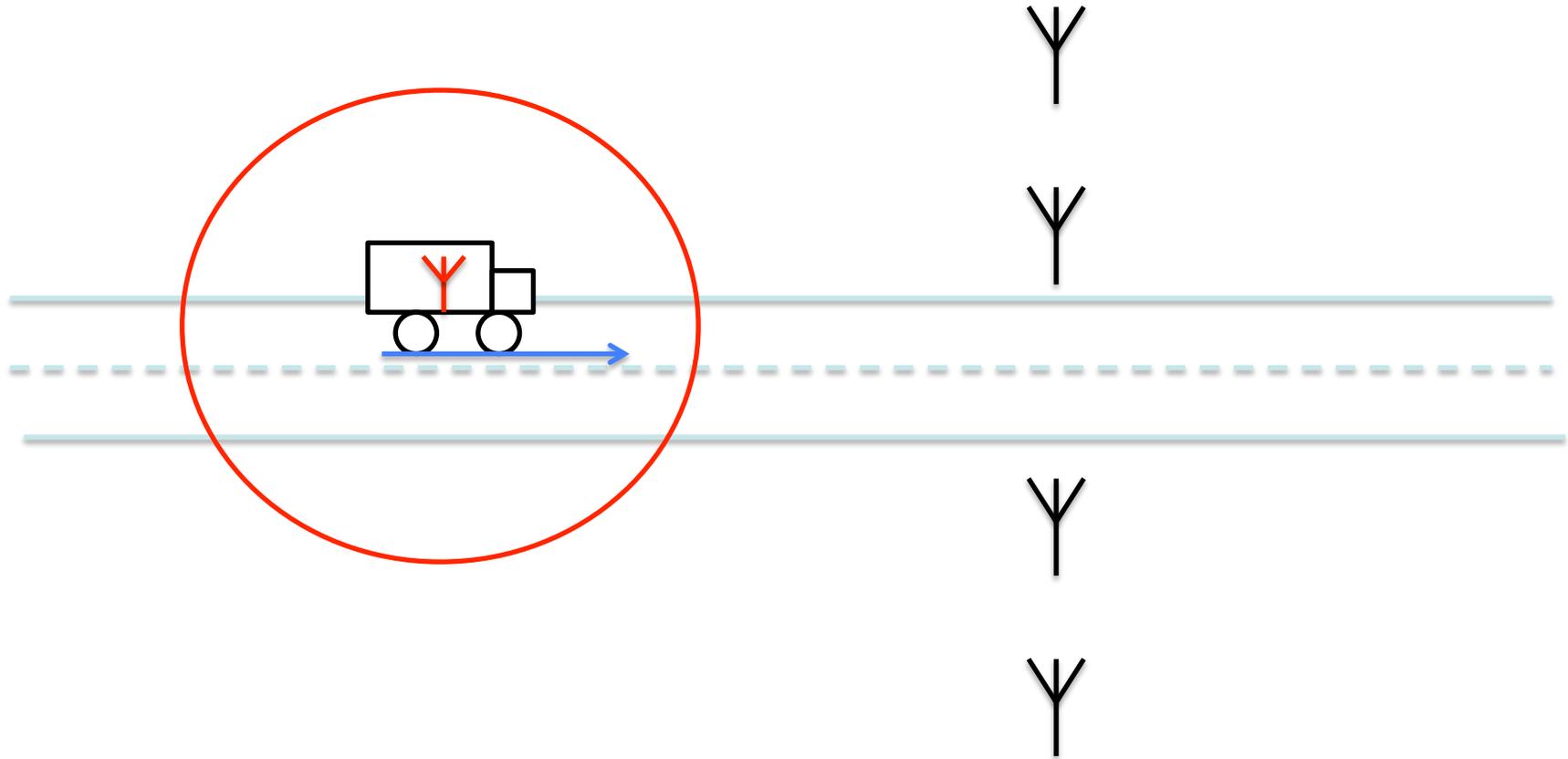
# Long time testing of fix pos

- Some Android phones makes false stickers, this is a cause of reboot, backup.
- GPS module inside the Android is different between each other, so we find that bigger Android has better GPS module. So we need to compare the unit between each other.

# Mobile operators

- Mobile operators, cause false sticker because they think a phone which is not moving is a lost phone. So they send out signals to reboot the phones.

# Future; build a trap



# Future build area scanner

- Get a map where you can see the jamming area.

# What we need

- Jammer to measure the APP with different phones.
- Long time measuring of different phones.

# Thanks

The time is out of  
joint. O cursèd spite,  
That ever I was born  
to set it right!

Hamlet, Shakespeare

Didrik Ehrenborg

