Cellular positioning: from Received Signal Strength Measurements to the Algorithm

Nico Deblauwe
Vrije Universiteit Brussel
ELEC Department

Presenter:
Mussa Bshara
Vrije Universiteit Brussel
ELEC Department
**Positioning techniques disadvantages**

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Measurement setup

Possible measurement set-ups:

1- Base Station Analyzer
2- Logging devices
3- GSM modems
4- Spectrum analyzer

AND

Custom-built measurement setup

Overview of the measurement hardware: a laptop computer, two Nokia 3310 phones (front and back view), a PCMCIA card for creating extra serial ports, and on the right a DGPS receiver with its connection box.
Overview of the RSS measurement process. Dotted lines mean the flow of data; thick full lines symbolize the flow of RSS measurements.
**BASE STATION DIVERSITY**

Base Station diversity (BSdiv):
The number of different base station locations for which RSS information is contained by the Network Measurement Report.

Idealized tri-sectored cellular network. Cell *a* is the active cell, for the neighboring cells *a* different letter is used for different BS location.
BSdiv overview for Belgium (single frequency (900 MHz) network)

Base station diversity, global overview in an urban environment for a single frequency (900 MHz) network
CONCLUSION

1- Different solutions for measuring the RSS values were shown.

2- It is possible to build an inexpensive and flexible measurement setup.

3- Interpreting these measurements is not obvious. Most of the common pitfalls were uncovered.

4- Using the base station diversity indicator: currently, it is only half of what is commonly assumed to be present, and this should be taken into account.
Thanks!!!