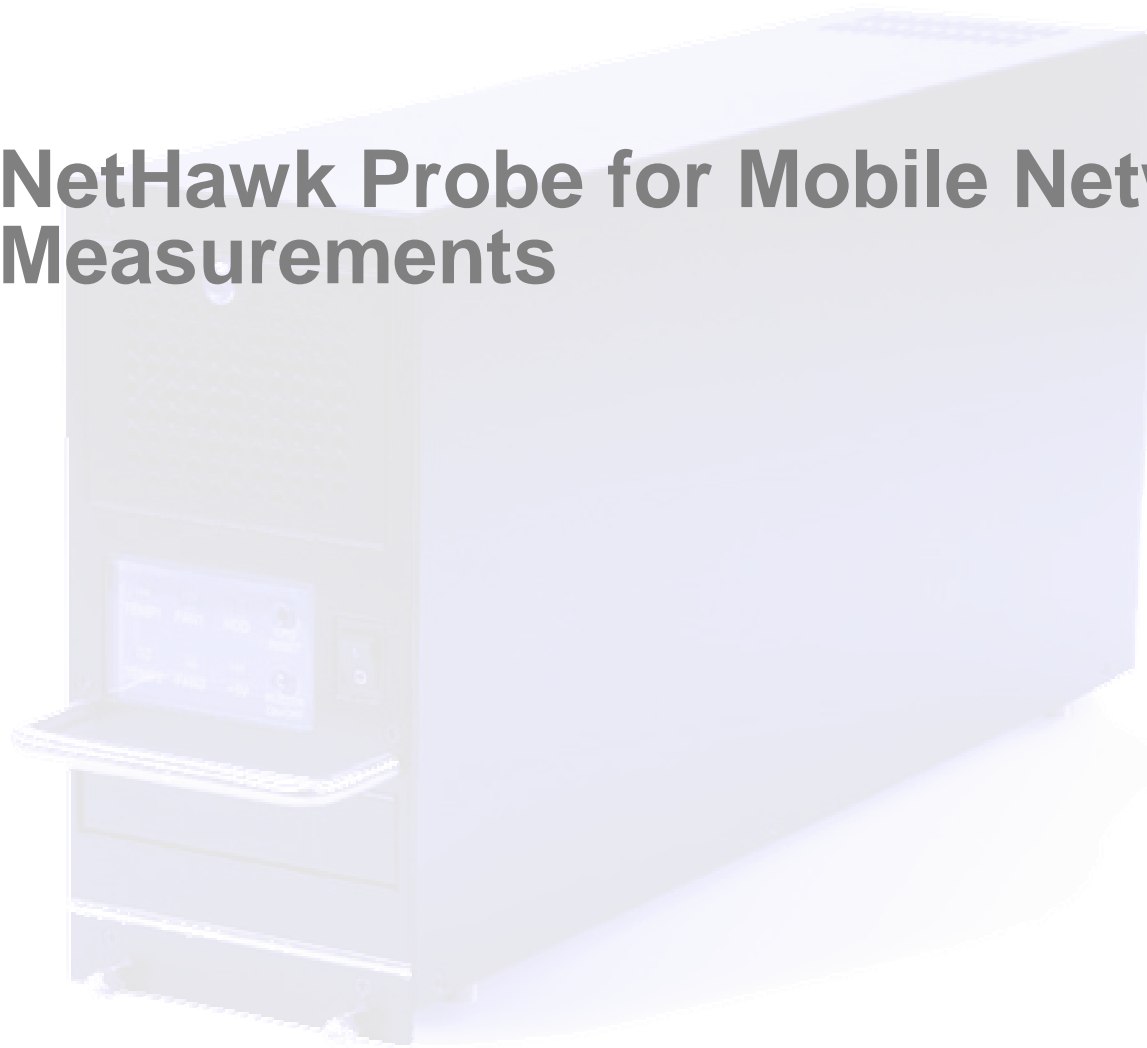




Confidential

# NetHawk Probe for Mobile Network Measurements

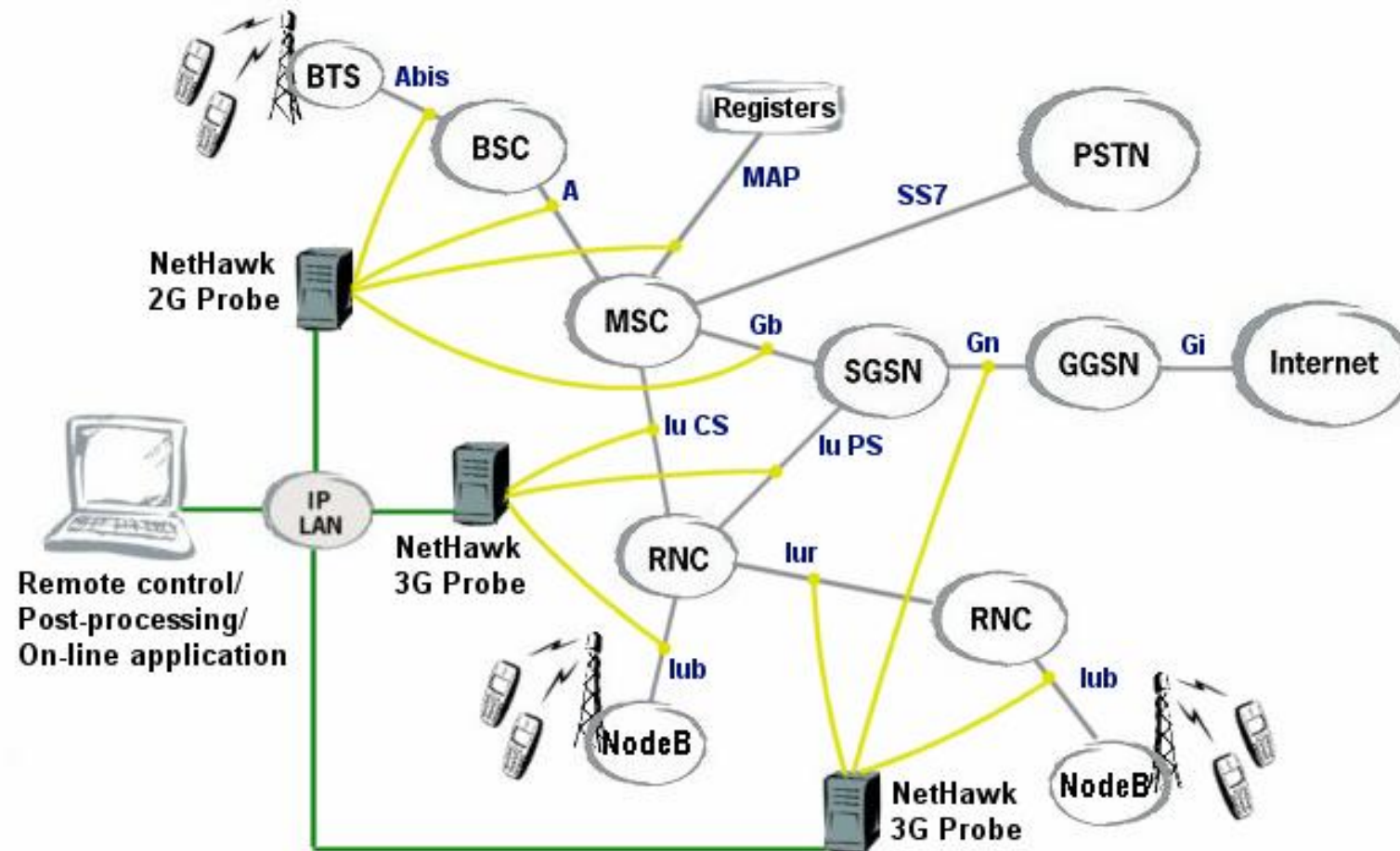




# Contents

- > NetHawk Probe solution
- > Application areas
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- > System components and interfaces
- > Technical details
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# NetHawk Probe Solution



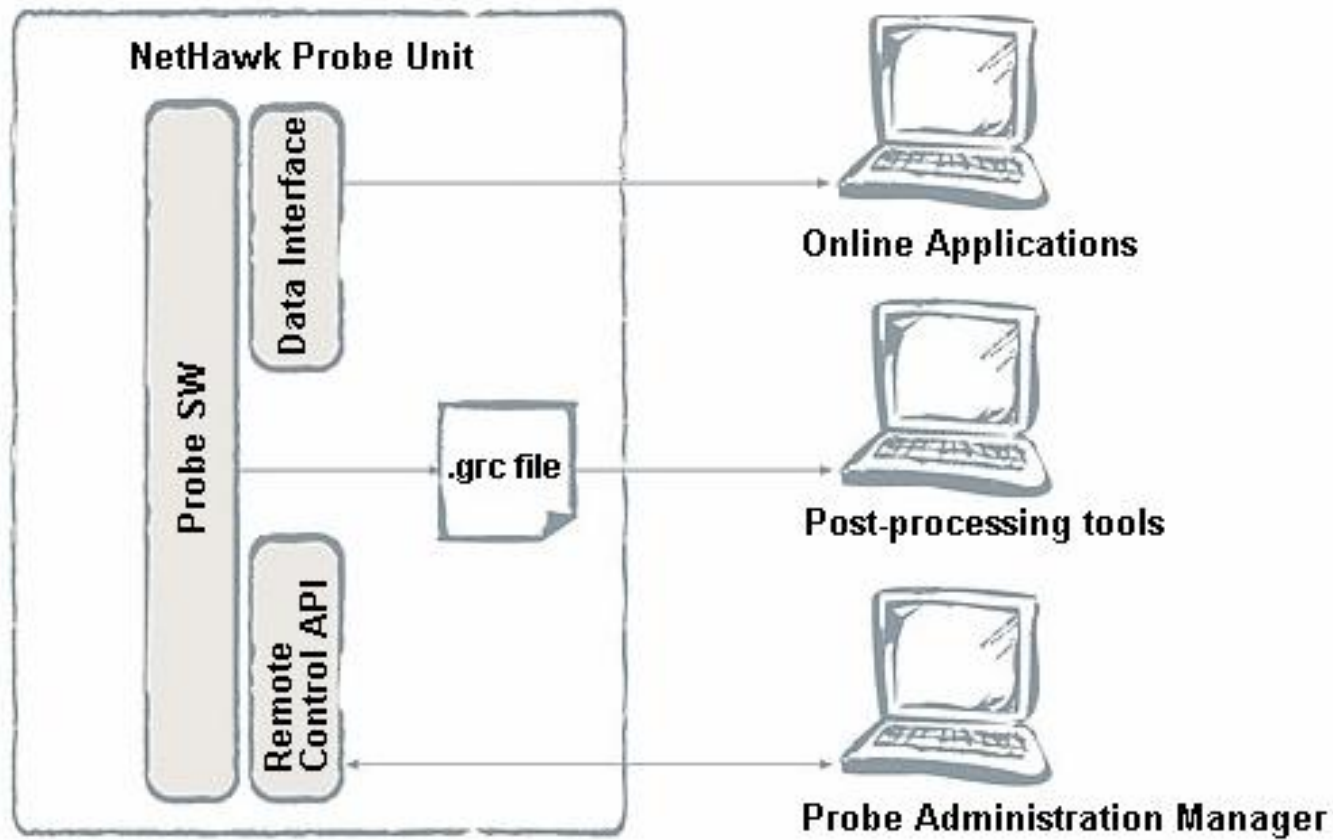
## NetHawk Probe applications

- > Network performance monitoring (KPIs)
- > Radio network troubleshooting and optimisation →
- > Network rollouts
- > Implementation of value-added services
- > Selling the network data to 3rd parties →

## Main features

- > Provides an extensive support for both standard and manufacturer specific protocols.
- > Efficient filtering capability down to low level protocols.
- > Records and pre-processes a control and user plane data in real-time from STM-1, PCM (ATM over E1/T1/JT1) and Ethernet based interfaces.
- > Continuous and periodic/scheduled recordings.
- > Remotely controllable through IP network with NetHawk Probe Administration Manager (PAM).

# NetHawk Probe Interfaces



## NetHawk Probe Unit

- > Compact, rack-mountable PC.
- > Intel Pentium IV processor.
- > At minimum 40 GB hard disk.
- > NetHawk Interface Adapters for E1/T1/JT1 and STM-1 installed inside the chassis on PCI bus.
- > Two built-in Ethernet interfaces, one for remote control, second for network monitoring.
- > Windows 2000 Professional operating system.



## NetHawk 3G Probe

- > Monitoring capacity:
  - Up to three STM-1 links,
  - Up to four ATM over E1/T1/JT1 links,
  - One physical Ethernet link,
  - Concurrently 125 VPI/VCI connections in online.
- > Iub f8 deciphering for control plane (SRB).
- > Dynamic CID allocation.
- > Supported Interfaces: Iub, Iur, Iu-PS, Iu-CS, Gn, Gi.





## NetHawk 3G Probe

> Physical line input combinations:

	A	B	C	D
Number of STM-1 links	-	2	2	3
Number of PCM links (ATM over E1/T1/JT1)	4	2	-	-
Number of Ethernet links	1	1	1	1

## NetHawk 2G Probe

- > Monitoring capacity:
  - Up to 8 PCM links (E1/T1/JT1)
  - 128 PCM connections (timeslots)
  - One physical Ethernet link
- > Gb deciphering
- > Supported interfaces:
  - Abis, A, Gb, Gn/Gp/Ga, Gi, Gc/Gd/Gf/Gr, Gs  
E, SS7



## NetHawk 2G Probe

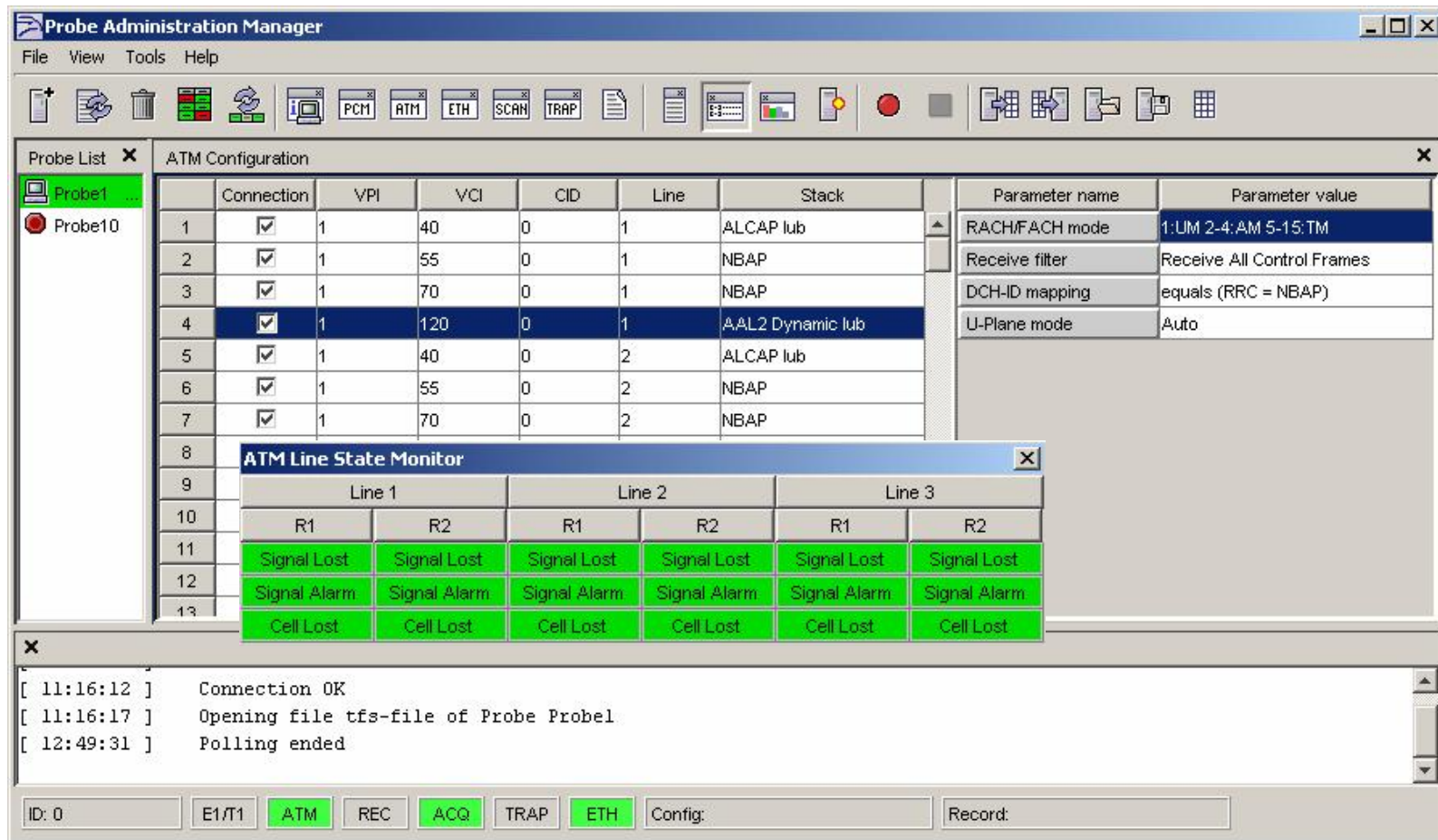
> Physical line input combinations:

	A	B
Number of PCM links	4	8
Number of Ethernet links	1	1

## Probe Administration Manager

- > Remote controlling, monitoring and configuring application for the NetHawk Probes:
  - Recording control,
  - Line configurations,
  - Filtering settings,
  - Probe Unit status monitoring.
- > User-friendly Windows® based graphical user interface.
- > Several users can configure and monitor the Probes from different locations.

# Probe Administration Manager GUI

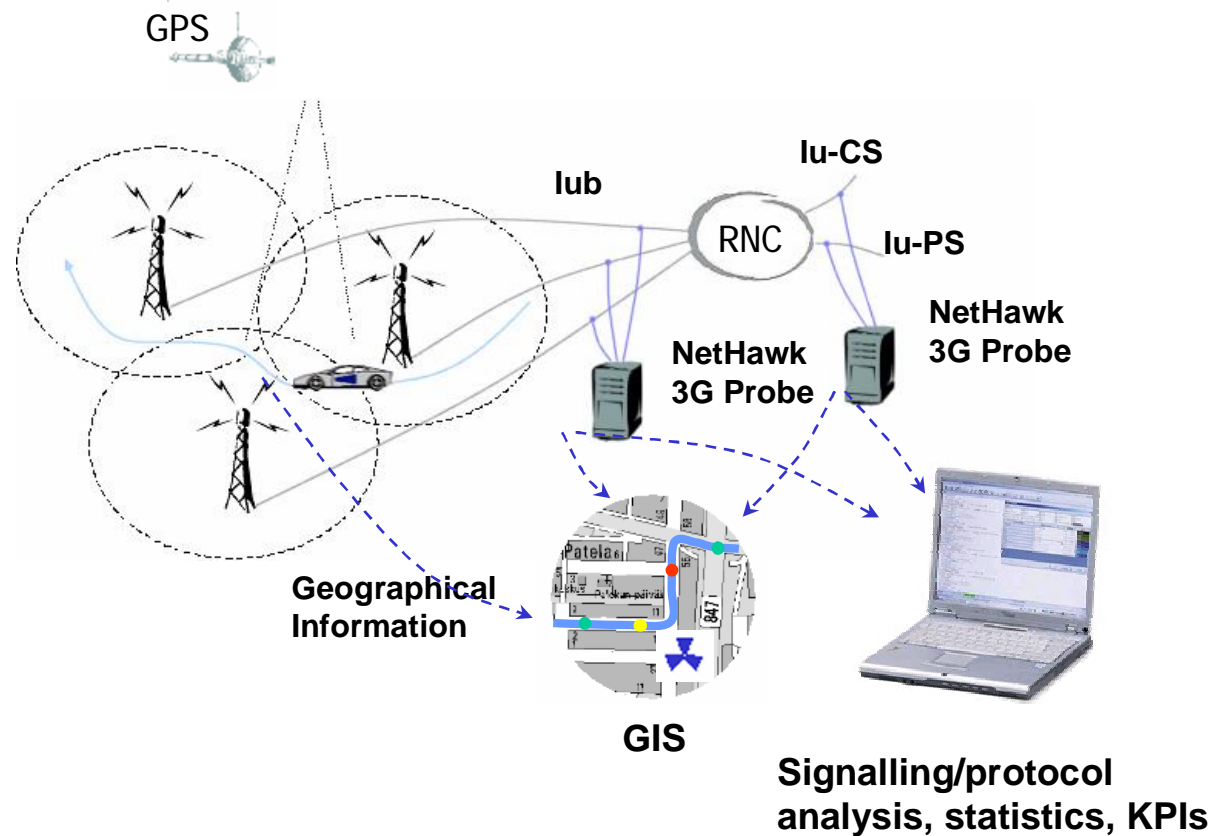


The screenshot displays the Probe Administration Manager GUI. The main window is titled "Probe Administration Manager" and contains a menu bar (File, View, Tools, Help) and a toolbar with various icons. The interface is divided into several sections:

- Probe List:** A sidebar on the left showing "Probe1" and "Probe10".
- ATM Configuration:** A table with columns: Connection, VPI, VCI, CID, Line, and Stack. It lists configurations for lines 1 through 7.
- Parameter Configuration:** A table on the right with columns: Parameter name and Parameter value. It lists parameters like RACH/FACH mode, Receive filter, DCH-ID mapping, and U-Plane mode.
- ATM Line State Monitor:** A smaller window overlaid on the configuration table, showing a grid of status indicators for Line 1, Line 2, and Line 3, with sub-columns R1 and R2. The indicators show "Signal Lost", "Signal Alarm", and "Cell Lost".
- Log Window:** A text area at the bottom showing system messages such as "Connection OK", "Opening file tfs-file of Probe Probe1", and "Polling ended".
- Bottom Controls:** A row of buttons for "ID: 0", "E1/T1", "ATM", "REC", "ACQ", "TRAP", "ETH", "Config:", and "Record:".

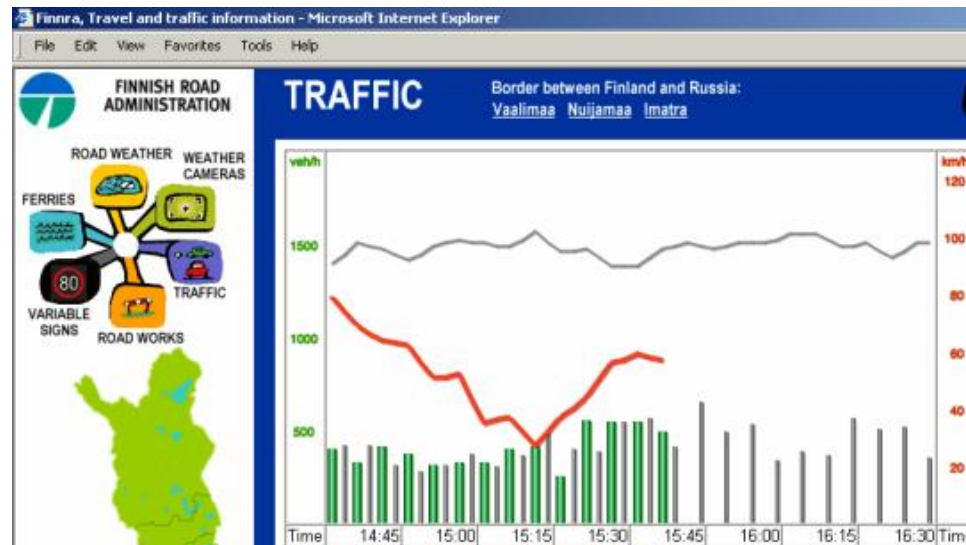
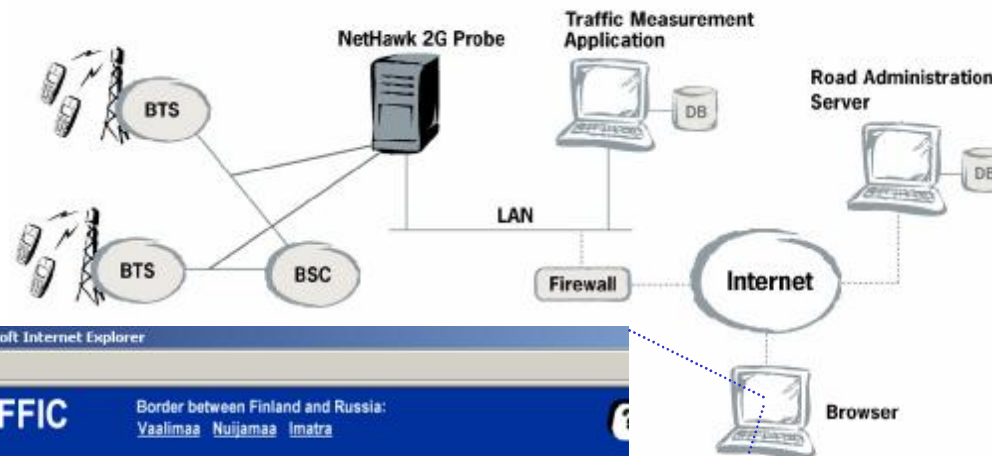
# NetHawk 3G Probe use case

> Optimising and troubleshooting WCDMA network



# NetHawk 2G Probe use case

> Road traffic monitoring



## NetHawk Probe time synchronisation with NTP server

- > NTP server receives accurate time directly e.g. from the atomic clocks aboard the GPS satellite system and sends time adjustment messages to the clients.
- > Probes have NTP client software that adjusts the Probe PC's clock.
- > Synchronisation accuracy is typically about 10 – 20 ms (could be even better).
- > NetHawk does not have a NTP system as a product but it can be purchased separately from a NTP system suppliers.

