CAPI Case Management System
Based on Wireless Telecommunications

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Outline

- Introduction WWAN technology
- Use of the 3G telecommunication technology
- Changes in case management system at Statistics Finland
- Additional features of new 3G hardware
- Expected benefits and foreseen risks
- Future scenarios and discussion
Wireless Wide Area Network (WWAN)

- WWAN uses mobile telecommunications network for to transfer data
  - Nearly the same as mobile phone network (GSM)
- Based on third generation (3G) of telecommunication hardware standards
  - Universal Mobile Telecommunications System (UMTS) is most common of the 3G technologies (in Europe)
    - In theory, UMTS supports up to 21 Mbit/s data transfer rates - in practice much less.
  - General packet radio service (GPRS) is a mobile data service for the 2G mobile communication systems (GSM).
    - GPRS provides data transfer rates up to 114 kbit/s
- Price based either on amount of data transferred or on fixed monthly fee
Current status of 3G

- WWAN is originally designed for the new mobile telephones but their use for wireless connection to the Internet increases rapidly.
- In Finland, 3G/UMTS network covers the greatest part of the country and GPRS covers the whole country.
  - Currently fastest available transfer rates are 5 Mbit/s downstream and 2Mbit/s upstream.
- For use with a computer a slot for a SIM card is needed either on mother board, on PCMCII card, or in a connector to UBS port.
Old hardware design
Old arrangements in CAPI case management

- Interviewers had
  - laptop computer (with a modem)
  - landline telephone paid by Statistics Finland
- A tailor-made software for telecommunications
- At office, cases are assigned to interviewers by dividing sample file in separate interviewer files
- Interviewer fetches the dedicated sample file and questionnaire using modem communication
- Interviewer returns data daily using modem connection
Schematic display of technical arrangement

Field interviewers around the country

- Survey installations
- Dedicated samples
- Uploads of completed interviews
- Case transfers

The Internet

Secured data connection over 3G

Demilitarized Zone
Firewall protected SSH-server

Secured ethernet connection

Separator
Blaise databases

Statistics Finland Office

- Survey installations
- Laptop backups
- Application updates
- Interview data copy operations
Building blocks of Case Management System

- Interviewer connection using 3G over the Internet
  - Fixed monthly fee, independent of transmitted data
- Data transmission with Secure FTP (SFTP)
  - Transmitted data are encapsulated to "objects"
- Firewall protected SSH-Server (Linux) on Demilitarized Zone
- SSH-server has Inbox and Outbox for each interviewer
- In Statistics Finland network computer called "Separator" polls SSH-server once in 10 minutes and delivers objects to appropriate places
Organisation in new system

- Interviewers have
  - Laptop computer
  - “Net stick” for WWAN access
- All telecommunication is arranged through the Internet and SFTP
- Cases are assigned to interviewers by inserting interviewer code to each sampling unit in sample file
- Each interviewer fetches the **whole sample file** and the questionnaire
- Interviewer’s user interface creates an interviewer’s view to sample file
- While interviewing, interviewer works off-line
- Interviewer initiates telecommunications session but after that sending and receiving data is automatic
Is it working?

- Time use survey started in mid April on the new system
- All interviews (~10 000) of monthly Labour Force Survey in May were completed without major problems
- The old system will be discarded by end of June
Computer as telephone

- Mobile Connect software includes also a telephone client
  - With a head set computer can be used as a telephone to make and receive calls
- Calls are “normal” mobile phone (GSM) calls (not VoIP or Skype calls)
  - Costs are the same as with mobile phones (not covered by the fixed monthly fee)
- Calling and data transmission are independent
Expected benefits of new technologies

- Faster and more reliable telecommunication
- Fixed monthly cost independent of connection times or amount of transmitted data
  - Overall costs will decrease
    - Considerable decrease if all interviewing is done with computer telephone client
  - New facilities for interviewers
    - Access to Statistics Finland intranet
    - Interviewers are clients to Statistics Finland email system
Potential risks

- Network failures
- Sudden changes in technology
Future scenarios

- Technically case management with WWAN could be designed similar as in a CATI system
  - Storing data real-time in a central data base is possible already (on-line interviewing)
    - Either BlaiseIS or Dep
  - Case assignment to interviewers is more problematic and requires new approach

- Connection between interviewer and office can be arranged using e.g. VPN or Citrix
  - In Citrix system, only picture of screen and key strokes and mouse movements are transmitted, no actual data
The end

Thank you for your attention