GPS Positioning Infrastructure

This presentation
• GPS network development stages
• OSi ‘Network RTK’ solution
• Technical challenges
• Using the realtime network
• Future developments / enhancements
• Network RTK - Launch

GPS Network Development Stages

Development Stages
• CIL DGPS active stations (3)
• OSi active GPS network (10)
• OSi Dublin RTK network (4)
• OSNI active GPS network (3)
• Positions computed by Nottingham University to Euref Zero Order Class B standard
• OSi Realtime network addition (2)
• Immanent move of one OSi Dublin active station to Midlands
OSi Dublin RTK Network
- Belfield
- Phoenix Park
- Swords
- Tallaght
- Based on GSM communications
- Launched for beta testing during 2002

OSGM02 Geoid Model
- Joint OSI, OSNI, OSGB initiative
- Converts GPS ellipsoidal heights to orthometric heights
- Accuracy of 4 to 6 cm for Ireland

OSi Network RTK Solution
- Implemented by SIS / Leica GeoSystems
  - GNSMART
  - CR500 dual freq. receivers
  - CRNet
- Properties
  - GSM solution
  - Single number dial in
  - Up to 170 simultaneous users
  - Vendor independent
  - ETRF89 referenced
  - ITM compliant

Software / hardware components and connectivity
Technical Challenges

- Very recent technology
- Communications
  - Maintenance of active GPS stations independent of PSTN/Broadband communications
  - Multiple simultaneous GSM users accessing network solution via a single dial-up telephone number
- Network security & stability

The SIS 'ThruPort' Server

Internal and External DMZ

Using the Realtime Network

OSI experience has shown
- Initialisation time 1-2 mins
- Re-initialisation time 1-2 mins (redial)
- Network extensibility
- Positioning accuracy
  - Planimetric: 3 cm RMSE
  - Height: 7 cm RMSE
**GPS Positioning Infrastructure**

**Using the Realtime Network**

Performance factors outside of OSi control
- GPS signal provided by US Military
- Ionospheric effects
- GSM coverage / stability from Service Provider
- Stability of Eircom PSTN / Broadband communication network

**User Support**
- GPS Instrument Supplier
  - RTK settings
  - Firmware / latest version of RTCM
- OSi
  - Phone: 01-8852 456
  - Website: www.osi.ie

**Future Developments / Enhancements**
- Moving of one Dublin active GPS station to the midlands
- OSi website support message board
- Addition of 3 OSNI active GPS stations
- Second OSi Dublin active station to move to the west

**Network RTK Solution**

**Future Developments / Enhancements**
- 0818 300 500
  - Service Provider – GSM national call rates

**Network RTK Launch**
Thank you for your attention