



## AN INITIATIVE TO NATIONALLY PROMOTE AND SUPPORT THE DEVELOPMENT OF LOCAL AND REGIONAL REAL-TIME GNSS INFRASTRUCTURE NETWORKS TO SERVE AS PUBLIC AMENITIES

### ON-GRID

To develop, on the national level, a program to assist locally or regionally driven initiatives in the establishment, maintenance, and operation of real-time GNSS infrastructure networks to serve the widest possible range of public and private sector interests.

*Currently there are no national programs to support development of local real-time networks*

### MACRO-GNSS AND MICRO-GNSS

The general populace is readily familiar with "Marco-GNSS" in the form of consumer type products like handheld recreational GNSS receivers, or car navigation system (i.e. 1-10 meters). 'Micro-GNSS' is engineering and surveying grade positioning (i.e. 1-5cm) that utilizes not only the satellites, but also networks of "earth-sensors", or "Continuously Operating Reference Stations" (CORS). What used to take hours (or days) with conventional methods, can (if properly executed) is done in minutes or seconds.

Typical uses for Micro-GNSS:

- Land surveying, aerial photography, hydrography
- Machine control: automation of grading and heavy construction equipment, structural & robotics
- Mapping: environmental, engineering studies, disaster preparedness, improving GIS
- Asset Inventory: physical plant, roadside, utilities, locates and clearances
- Structural Integrity Monitoring: dams, bridges, buildings, plant, subsidence, deflection.
- Emergency Response: incident mapping, post-event analysis, recovery location, reconstruction
- Atmospheric Data: ionospheric and tropospheric modeling, weather studies and forecasting
- Precise Navigation: snowplows, maritime portage and hazard clearances, Intelligent Transportation Systems, precision agriculture
- Forensics and scene investigation, archaeology, and restoration
- Monumentation: recording and preservation programs
- Scientific studies: tectonic plate movement, timing, orbital, signal ambiguities

*High precision is an affordable reality*

### THE RISE OF REAL TIME NETWORKS - RTN

There are now over 200 real-time networks (RTN), more specifically those providing network corrected services, around the world. A number of these RTN's comprise entire countries or state level divisions therein. In the U.S. by October of 2005 there were about 17 of these networks. As of March 2006, there are more than 30 in the U.S.

### EXISTING NATIONAL POSITIONING PROGRAMS

There are existing programs for lower precision real-time positioning on the national and worldwide level (e.g. NDGPS, HaNDGPS, WAAS, PPP) but these will not likely be able to reach the precision thresholds required for engineering-grade applications. Local RTN are not viewed as a substitute or competition for the national and global applications, on the contrary, local action can contribute CORS data to, and contribute to the success of such programs.

*Local RTN will compliment and contribute to the success of national and world positioning initiatives*

### GEODETTIC REFERENCE FRAMEWORK

A role in a proposed On-Grid program perfectly suited for NGS could be; administration of the program at the federal level, standards, guidelines, geodesy support, and in the case of RTN the establishment of reference coordinates, geodetic monitoring, and perhaps even as broker of data streams between parties.

### WHAT WOULD A PROGRAM LOOK LIKE?

- Local project development plan (utilizing program templates and example business models)
- Local administration of RTN (public, private, coop)
- Standards, guidelines and geodesy services from NGS
- Sponsoring department or agency appropriations guidelines (requests via local representatives for seed money, matching funds, etc)
- Participation in purchasing cooperative(s)