

## An RTN for Idaho?

You may have heard about RTN's, or Real Time Networks but what do you know about them? And specifically, what will an RTN do for Idaho?

The Idaho RTN is a collection of Global Positioning System (GPS) base stations scattered throughout Idaho which will be connected together via the Internet. By connecting base stations, we can do a number of things that were otherwise impossible.

- 1) Users anywhere within the RTN service area (currently much of eastern Idaho) will be able to differentially correct their GPS positions in real-time to an accuracy of 1-2 cm! In addition, users will have access to server resources to post-process field data collected "off-line" to a similar level of accuracy.

RTN's have enhanced the capabilities and cost-benefit of a broad range of activities in every state they have been established; surveying, mapping, precision agriculture, asset inventory, GPS-guided machine-control for construction, and more.

- 2) Another key consideration is the fact that the responsibility for maintaining a geodetic infrastructure is falling on the shoulders of individual states. As another sign of the times, the federal government is no longer supporting "passive" survey control (survey monuments that used to number in the millions nationwide) but instead, the National Geodetic Survey has turned to the much more cost effective "active" GPS control. As other states have learned, their own RTN has become the *de facto* geodetic framework. Every element of infrastructure that is developed, built, repaired or replaced, every utility, watercourse, or resource managed all require geodetic reference.

If Idaho does not invest in its geodetic framework, related survey and construction costs to Idahoans will unnecessarily increase over time.

- 3) As the RTN expands these services will become available across the state, creating an uninterrupted area of real-time coverage. Users will no longer need to depend on having a base station and radio nearby for corrections. Real-time and post-processing corrections will be available for the entire area covered by the network!
- 4) The fact that all base stations are connected together through a server is significant. This alone allows for monitoring the functionality of base stations and tests the quality of each base station's data in a round-robin fashion. Consider this scenario: assume we have 11 base stations participating in the Idaho RTN. Ten of those base stations (stations 1-10) are used to monitor the eleventh. After station eleven's evaluation is complete, a new test will be performed using stations 2-11 to monitor station one, and so on. This continual testing is referred to as **integrity monitoring** and along with regular network readjustments, greatly improves positional accuracy as the RTN operates.

The benefits of an RTN are not only increased accuracy, but a reduction in time to acquire data. In addition, if one considers the propagation effects of increased control point accuracy we can expect to see a parcel framework that fits better, increased positional accuracy of aerial imagery and LiDAR collections, and a reduction of conflicts between surveys.

To implement the Idaho RTN, server software needs to be purchased. The cost of the server software is between \$88,000 and \$103,000 depending upon whether we purchase the software in one payment (\$88,650) or over a three-year time period (\$102,834, or \$34,278 per year). Even if your agency or organization does not use GPS to collect field data, it is beneficial to help fund the RTN server software purchase as you will have access to more highly accurate GIS data in the immediate future and can expect improved product deliveries from vendors or contractors.

Please contact Keith T. Weber at Idaho State University ([webekeit@isu.edu](mailto:webekeit@isu.edu) or 208.282.2757) and join ISU's GIS TRcC, Idaho Transportation Department, the City of Pocatello, ISPLS, and Western States Equipment to help fund the Idaho RTN.

**YOUR RESPONSE ON OR BEFORE DECEMBER 1<sup>ST</sup>, 2012 WILL BE GREATLY APPRECIATED**