Planning Meeting
Oregon Cooperative Real Time GPS Network
Marion County Surveyors Office

Meeting Date: Friday, September 30, 2005
Meeting Location: Willamette Conference Room, Bldg. 1, 5155 Silverton Rd NE Salem, OR
Facilitator: Ron Singh
Note Taker: Scott Branco

Ron Singh, ODOT Geometronics, started the meeting by giving a short review of the previous two partner meetings and having everyone introduce themselves.

Attendees:

Name	Agency/ Business
Armstrong, Mark	OBEC
Bays, Ken	ODOT Geometronics
Bigelow, Mike	EWEB
Cathey, George	City of Beaverton
Clinton, Carl	Clackamas County
Costaggini, Phil	Lane County
Dent, Guy	City of Springfield
de Paz, Annette	City of Newberg
Driscoll, Jon	City of Springfield
Hines, Bob	EWEB
Hoyle, Dixon	NGS
Killian, Jim	Polk County
Matthews, John	Lane County
Reedy, Marcus	David Evans and Associates
Riggins, Mark	Marion County OR
Singh, Ron	ODOT Geometronics

Website for the GPS Network:

Ken Bays, ODOT Geometronics, reported that since the August 31 partner's meeting, ODOT Geometronics has been working with the ODOT webmasters on the development of a prototype web page for the **O**regon Real Time **G**PS **N**etwork (OGN), working with Leica Geosystems and the ODOT Information Services personnel on computer network issues, and also working on siting for the OGN.

Ken Bays gave a presentation on the developing website for the OGN. ODOT Geometronics has had several meetings with ODOT webmasters explaining what we want in a web page for the GPS network. ODOT has given the okay to purchase a non-ODOT domain for the web page, something such as OregonGPSNet.com or OGN.com. The website would still be on an ODOT server and under ODOT control, but it would provide more convenience to the public. ODOT already has precedence for such a domain at tripcheck.com, which is an ODOT website providing travelers with information on road conditions in Oregon.

Ron Singh stated that ODOT's goal was to make this website one of the best websites for a real-time GPS network and to make it a working website that provides more than just static information. Ron wants the website to be a planning and training tool for users of the GPS network.

Scott Branco, ODOT Geometronics, and Doug Sloan, ODOT's Roadway Engineering Webmaster, have already done considerable work on a prototype website. Ken Bays presented a demonstration of how the website will look and work. So far, the website has the following pages:

-**Home** page
-**Alerts and Advisories** page
-**Maps** page leading to station information
-**Station List** with a clickable spreadsheet to sort on several fields of information
-**Products and Services** page with a link to the **RINEX** data
-**Partners** page: minutes of partner meetings, interagency agreements
-FAQ: frequently asked questions
-Contacts
-Links

Partners present at the meeting had the following suggestions and comments on the prototype web page:

1. The look and layout of the web pages were good.
2. They agreed that for the individual reference station pages, a consistent appearance was necessary and they liked our format on the "Station STAY" page.
3. The more pictures the better for a reference station site.
4. We should have a link from our station pages back to the agency with ownership of the particular reference station.
5. Provide a **printer friendly** button available on the web pages.
6. Test all the pages from home using dialup, DSL, and cable to see how the speed works for the average surveyor.
7. On the navigation menu on the left of the page, change "Station Page" to "**Station List**".
8. Make the **Station List clickable** on a column header to sort on that column.
9. Make as few as links as possible for a user to get to and retrieve the Rinex data.
10. Have a **customized data retrieval form** for the rinex data page, i.e., the user can use a form on the website to specify which stations, which days, and what hours they want data for, rather than having to have to download individual hourly files. (This may be something we do later.)
11. Have **24-hr files** available for each reference station. (Note: we can configure the Leica Spider software to put several RINEX file formats up on the web.)
12. Have the alerts and advisories that are sent out to users on a list serve also directed to the webpage.
13. Add a **Support** page to the navigation menu on the left side of the web page.
14. Make the alerts and advisories easy to get to by sub net.
15. Explain the "**cluster**" and "**cell**" concepts of Leica Spider software on the support page.
16. A forum is **not needed** at this time.
17. Post a **site reconnaissance packet** to the website, probably on a slide out menu from the support page. This would be a downloadable packet of information and forms necessary to complete a site reconnaissance report on potential sites for reference stations, i.e., a sky obstruction diagram, a checklist of important items necessary at the site (power, high speed internet). Any of our partners that are going to help recon for new sites could download the packet and take it with them during recon. (See **Action Items** at the end of these minutes.)
18. A login to the web page is **not needed** at this time.
19. Have ODOT put the **prototype page** on the Internet to make it available for further partner comments. (See **Action Items** at the end of these minutes.)

Some of the long term things ODOT would like to do with the website to make it a good planning and support tool for the GPS network:

1. Have the maps **color-coded** to show various "clusters" and "cells" within a sub network.

2. Enable the user to plug in the latitude and longitude of a project and then have the website give the user a report on **what kind of a correction solution** (network, single base, or none) the user can expect for the project.
3. Similar to the item above, provide a tool to find out what kind of **cell phone coverage they can expect** at a location they plan to work.
4. Provide a tool so that users can **report the actual cell phone coverage** they were able to get on a project location. This could help other users.
5. In addition to photos of each station, have an **interactive tool** so that that a user can view many different directions by moving their mouse around, just as if they are holding the camera.
6. On the support web page, post some **cookbooks** with screen saves that demonstrate how to configure various GPS data collectors from different manufacturers to access the network via cell phone and transform the raw coordinates to the user's preferred coordinate projection and datum.
7. Add the **Interactive Map**, an IMS-based map that allows the viewer to zoom in and out and turn various layers on and off.
8. Have the icon for a reference station that is down **turn black** on the network map and have the clusters and cell color coding reflect that station is down.

Ron Singh said that ODOT Geometronics could make changes to the website very fast. If needed, he could readjust Scott's priorities to make it happen.

ODOT Information Services Activities in Support of the GPS Network:

Ken Bays reported on the meetings ODOT Geometronics has had with ODOT Information Services (IS). There have been meetings on July 14 and on September 9 this year. Leica Geosystems participated in both meetings, in person at the former and via telephone at the latter meeting.

ODOT IS is installing Leica Spider 2.0 GPS RTK Networking software on ODOT servers for testing of function and security. They are preparing to order the physical servers (computers) that ODOT Geometronics will need to run all of the necessary modules of Leica Spider 2.0. ODOT IS is evaluating what resources are necessary for them to support the GPS real-time network.

It was agreed at the September 9 meeting that ODOT would use the three Marion County CORS stations as a pilot project to get all systems up and running and the security questions answered satisfactorily. Once Marion County is up and running, it should be easier to bring new stations of partners on line in the GPS network.

It was agreed that ODOT Geometronics would produce a one to two page summary for the IS departments of potential partners. The summary would let IS personnel know just what computer support they would need to provide once partner agreements are finalized. (See **Action Items** at end of these minutes.)

There will be a meeting of ODOT Geometronics, ODOT IS, Leica Geosystems, and Marion County on October 7, 2005; to map out the next stage of IS development of the network.

Station Siting Update:

Ken showed an *updated map* of proposed sites for the three sub-networks: Medford, Deschutes County, and Willamette Valley.

Medford Sub-Network:

ODOT Region 3 (Southern Oregon) surveyors have performed reconnaissance for seven possible reference station sites for the Medford sub-network. They have taken photos at the sites, completed

sky obstruction charts, and furnished ODOT Geometronics with possible geographic positions of the sites.

Jackson County has one Trimble NetRS receiver and they can put it up on a building across from their office in Medford.

Ron Singh will be traveling to Medford the week of October 3 to meet with ODOT Region 3 surveyors, meet with Steve Beecher (Jackson County), and possibly visit some of the possible sites for further evaluation.

Deschutes County Sub-Network:

Mike Berry, Deschutes County Surveyor, reported to Ken that they have installed a site server module of Leica Spider 2.0 software. (The site server module supplies one-base real-time correctors, but not network-based real-time correctors.) Mike is getting data from Redmond Airport and Bend and is able to serve single-base correctors for those two stations via cell phone. He is awaiting assignment of permanent IP addresses to his server so that he can provide correctors to more than one cell phone at a time.

Deschutes County is continuing to work on the siting for three other CORS stations in the county: Sisters, La Pine, and Pine Mountain.

Willamette Valley Sub-Network:

ODOT Geometronics has been talking individually potential network partners in the Willamette Valley Sub-Network. ODOT would like to schedule a meeting of potential Willamette Valley partners soon just to discuss possible sites that partners may own.

Marion County Surveyor Mark Riggins reported that there is a possibility that Marion County would decommission its Woodburn site, thereby losing a home for the NGS COOP CORS reference station he is operating there.

Coordinate System for the GPS network:

There was a discussion on which coordinate system the network would be based upon.
Some counties and agencies use NAD83 (91) and have developed transformation parameters from the latest epoch of NAD83 (CORS). They don't want to constantly change their transformation parameters as the CORS coordinates change with epochs.

Should the network coordinate system be constrained to OPUS coordinates?

No conclusions were drawn or decisions made on the coordinate system for the Oregon GPS network, but it should be decided on before the network is operational.

Dixon Hoyle, National Geodetic Survey state adviser, gave an update on OPUS. He said that OPUS is developing and in the future will probably offer a network OPUS with cross correlations, rapid static support. Dixon said that a lot of the NGS resources are presently going to the Gulf States. Question: will NGS have the resources to continue to support the COOP CORS program.

Partnerships/ Subscribers/ Cost Recovery:

Ron Singh said that ODOT has the money to do what it needs to do to start up the network for this fiscal biennium (ending June 30, 2007) He doesn't envision a need to charge users before January 2007 and we should know the costs of the system better by then.

There was a discussion on what costs need to be recovered to startup, maintain, and upgrade the OGN.

There was also a discussion on how to equitably charger partners and subscribers based upon the contribution to the network. It was felt that partners who donate more resources should have less to pay for cost recovery of the network, i.e., the partner who contributes a sensor, site, and communication link should not have to pay as much as one who donates a site only. It was agreed to study this issue. (See **Action Items** at the end of these minutes.)

The question was brought up as to how to charge for subscribers who contribute nothing to the net but just want to buy a rover and start surveying. The idea of annual subscriptions was generally agreed upon, as it was not felt that anyone would want to mess with shorter subscriptions. Ron Singh and Ken Bays will study the Puget Reference Station Network business model when they visit that network in October. Possible subscription charges by: year, month, receiver, IP address, per hour. A simple price structure was recommended. Possibly a project-based charge would be possible.

Partnership Agreements:

ODOT will post a new version of the Interagency Agreement on the web by October 31.
Potential Partners will have 60 days to respond to the draft version.

OGN Steering Committee:

There was a long discussion as to whether a steering committee was needed for the GPS network.

Ron Singh said he did not want ODOT to be dictating to other agencies and that a committee would give partners input into decisions concerning the web. Some expressed concerns that a committee could become too bogged down and that most partners would go along with ODOT decisions since most of the players have known each other for a long time and have a trust level built up.

Mark Riggins thought the committee would bog down progress and that ODOT needed to do what it needed to do in order to get the network up and running. Mark Armstrong thought that a committee might be necessary to get things up and running, but there was little use for a long standing committee. Mark said listservers have largely eliminated the need for in-person meetings.

Ron Singh suggested that the group consider just what kind of decisions would have to be made by the steering committee, and that might help decide whether a committee was needed. The group came up with the following list:

1. Subscriptions and funding
2. Upgrades: hardware and software
3. Technical Issues
4. Network standards, i.e., Coordinate System
5. Site selection
6. Network expansion
7. Addition of partners
8. Legislative and legal issues
9. Education and outreach

It was generally agreed that there should be a committee at least during the startup of the web. The committee would only make suggestions that would be voted on by all partners. There was some discussion on how to give partners equitable votes. For example, should the partner donating a site only have as many votes as a partner contributing a site, GPS equipment and data stream

infrastructure? It was generally agreed that there be some kind of weighted ballot system that recognized the contribution of the partner.

ODOT Geometronics will send out an e-mail to potential partners informing them we need volunteers for a six person steering committee for the start up of the web. The e-mail will detail just what charge the committee will have. (See **Action Items** at end of these minutes.) The committee would have one person from each sub-net and also a city, a county, and a private representative.

Other Items:

Ron Singh said ODOT Geometronics has purchased two Leica GRX-1200 Pro sensors with choke ring antennas for the northern Willamette Valley subnet and four Leica GRX-1200 sensors with choke ring antennas for the Medford sub-network. He also has 5 older Leica SR-500 sensors that he wants to use in Eastern Oregon, possibly along Interstate 84. This sub-net would be developed after the first 3 are up and running.

There was a discussion on what to name the network. We want the title to be simple enough to have meaning to the average person-on-the-street, yet descriptive enough to differentiate it from other GPS networks such as the COOP CORS. The name "Oregon Cooperative Real Time GPS Network" was suggested. Some suggested that the Real Time might be considered as not necessary and the question was raised as to if the average system knew what the term "Real Time" meant.

In October, Ron Singh and Ken Bays will be visiting the Pierce County, Washington Real-time GPS network, which uses Leica Spider 2.0 software. They will also visit the Puget Reference Station Network (PRSN) in Seattle, which uses Trimble VRS software. The will evaluate the software and operations at each network, and also study the business models of the PRSN.

Ron Singh said that he and/or Ken Bays were willing to come and make presentations at the offices of potential partners in order to educate administrators, county commissioners, etc., on the Oregon Cooperative Real-Time GPS Network.

Action Items:

1. Post prototype web page to ODOT website: Oct. 15, ODOT
2. Post siting reconnaissance packet to ODOT website: Oct 15, ODOT
3. Send e-mail to recruit steering committee members: Oct 7, ODOT
4. Document uses for subscriptions: what costs are we trying to cover with the partnership and subscription contributions: Oct 15, Annette de Paz
5. Develop types and values of contributions of partners: Oct 31, Phil Costaginni
6. Prepare a one to two page document for partner's IS departments listing what they can expect once an agreement is signed with ODOT: October 15
7. Post updated version of Interagency Agreements to ODOT website: Oct 31, ODOT. Agencies would have 30-day comment period.