**Oregon Geographic Information Council (OGIC)**

**Framework Data Development Program**

For the 2013 – 2015 Biennium

**Imagery Proposal**

**Project title:**

**Imagery Improvement Project**

**Contact information**

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**Project duration and end date**

 August 2013 through December 2014

**Geographic extent of project**

Statewide

**Amount requested**

$120,000

**Project narrative**

This project includes a number of items designed to significantly improve the State’s capability to provide access to statewide orthoimagery and Lidar data via the Oregon Imagery Explorer. The included items are:

(1) the addition to Imagery Explorer of the NAIP 2012 orthoimagery

(2) adding an additional cache level to Imagery Explorer for several of the imagery epochs

(3) improving the compression of all imagery epochs to reduce storage size

(4) increasing the storage capacity available to Imagery Explorer to accommodate local imagery

(5) evaluating and fixing projection issues with Lidar-derived data currently in Imagery Explorer

(6) seed funding for at least one additional Lidar data capture

**NAIP 2012 Orthoimagery via Imagery Explorer**

* The 2012 NAIP imagery will be processed and delivered as 4-band, one-meter imagery to the same specifications as the 2011 NAIP imagery project. The Digital Ortho Quads (DOQ) will be seamed together to make a statewide mosiac which will be projected from Universal Transverse Mercator (UTM) to the State Standard Coordinate system (EPSG 2992) and then split into 30,000 foot tiles using the same index as the previous project. The deliverables will facilitate the insertion of the 2012 imagery into a web imagery service. The resulting orthoimagery product will be served via the internet by Oregon Imagery Explorer.
* This data is the core data layer of the Imagery FIT, and follows five previous statewide orthoimagery projects in Oregon.
* The statewide NAIP orthoimagery will be made available via Imagery Explorer to the public, as well Federal, State, and local agencies, and includes modifying the user interface.
* The project will be conducted under contract to an imagery vendor experienced in processing and delivering statewide imagery projects.

*Deliverables:*

* + Approximately 1.6 TB, 3447 tiles, of 1-meter 4-band 2012 orthoimagery, GeoTIFF format, in the state standard Oregon Lambert (EPSG 2992) coordinate system.

*Project Timeline:*

* + October 2013 – Establish contract between GEO and contractor
	+ November 2013 – Approve sample imagery deliverable.
	+ December 2013 – Receive final project deliverables
* Agencies in Oregon have processed this type of imagery many times in the past and the contractor selected for this project will have the appropriate capacity to process and deliver the imagery according to the timeline above.
* This project is a continuation of the ongoing maintenance of the orthoimagery FIT theme dictated by the temporal nature of imagery. Similar projects are anticipated on a three year cycle corresponding to the NAIP orthoimagery cycle of 2009, 2012, 2015, and 2018.
* Imagery projects of this size are routine data maintenance in scope and can be handled by GEO and other agencies as a part of normal data acquisition and distribution.

*NAIP 2012 Orthoimagery Budget Breakdown*

* Costs

Contract imagery processing $15,000

Providing imagery via Imagery Explorer $25,000

**Total $40,000**

* Estimated in-kind match

USDA NAIP $ 1.2 million

DAS GEO Staff Time $4,000

ODF Staff Time $2,000

**Additional Imagery Cache Level for Imagery Explorer**

* The orthoimagery served by Imagery Explorer is cached at several scales that correspond to zoom levels at which the imagery can be viewed.
* This project will add another cache for the 2005 and 2009 imagery, which will also impact the “Best Of” imagery on Imagery Explorer that makes use of the 2009 imagery. Another cache will provide the ability to zoom in further on these two imagery data sets.
* Both the 2005 and 2009 imagery were originally processed as half meter imagery, so an additional cache level is possible. For the other imagery epochs, an additional cache level is not possible.
* This project will increase the ability to zoom into the 2005 and 2009 imagery and will improve the usefulness of that imagery significantly.
* The project will involve expansion of the storage space in the Amazon cloud, and will also involve some effort on behalf of Esri to create the appropriate caches.

*Deliverables:*

* + Increased cache level for the 2005 and 2009 imagery, available via Imagery Explorer

*Project Timeline:*

* + October 2013 – Establish contract amendment with Esri
	+ November 2013 – Develop caches and make available via Imagery Explorer

*Additional Imagery Cache Budget Breakdown*

* Costs

Additional storage space $15,000

Development of cache levels $5,000

**Total $20,000**

* Estimated in-kind match

DAS GEO Staff Time $4,000

**Improved Compression for Imagery Explorer**

* All of the imagery available through Imagery Explorer was compressed using the best technology available to Esri at the time the pilot project was initiated.
* Other compression technology is available through Amazon and other companies that will likely improve the compression ratio, without degrading the imagery.
* An improved compression ratio would save us money over the long term for storage costs.
* An improved compression ratio would also allow us to take on more imagery without increasing our costs.
* This project will evaluate the potential for the use of a different compression technology.

*Deliverables:*

* Evaluation of new compression technology to improve the compression ratio for all imagery available through Imagery Explorer.
* If new compression technology could improve the compression ratio, all imagery will be re-compressed using the new technology and will replace the current imagery.

*Project Timeline:*

* October 2013 – Establish contract amendment with Esri
* November 2013 – Evaluate new compression technology
* December 2013 – Re-compress all imagery and replace current versions on Imagery Explorer if new technology improves compression ratio.

*Improved Compression Budget Breakdown*

* Costs

Evaluation of new technology $2,500

Re-compression of existing imagery $7,500

**Total $10,000**

* Estimated in-kind match

DAS GEO Staff Time $2,500

**Increased Storage for Local Imagery and Lidar in Imagery Explorer**

* A number of local governments have made requests to have their aerial imagery stored by GEO and made available through Imagery Explorer.
* This local imagery was created at a higher resolution than the other imagery currently available through Imagery Explorer and would be very useful for state agencies and others.
* There will continue to be more Lidar available through the Oregon Lidar Consortium.
* GEO would need to increase its imagery storage capacity to accommodate local imagery and additional Lidar data.
* This project will also involve modifying the user interface to provide access to the imagery, as well as adding the local imagery to the “Best of…” imagery offering in Imagery Explorer.

*Deliverables:*

* Local imagery from various cities made available through Imagery Explorer.
* Additional storage space for hosting local imagery and more Lidar data.
* Modified Imagery Explorer user interface to accommodate local imagery offering.

*Project Timeline:*

* October 2013 – Establish contract amendment with Esri
* November/December 2013 – Gather local imagery
* Add additional storage space to Amazon cloud environment
* January/March 2014 – Process local imagery, add to “Best of…” imagery on Imagery Explorer and modify user interface appropriately.

*Increased Storage for Local Imagery Budget Breakdown*

* Costs

Process local imagery, add to Imagery Explorer $10,000

Additional storage space for local imagery $20,000

**Total $35,000**

* Estimated in-kind match

DAS GEO Staff Time $5,000

**Evaluate and Fix Lidar Data Issues in Imagery Explorer**

* There are four Lidar derived products available through Imagery Explorer. Esri processed a significant amount of Lidar data we provided to them and made it available through the application.
* Several issues have been discovered with the Lidar data in some parts of the state. It appears that this may be the result of differences in the production specifications and methodologies for various Lidar projects.
* This project will evaluate the issues discovered with the data and recommend solutions.
* This project will also implement the recommended solutions, assuming the problems are in fact a result of differences in the original product specifications and methodologies.

*Deliverables:*

* Evaluation of Lidar data issues and recommended solutions.
* Production of re-processed and corrected Lidar data for those areas where issues have been found.

*Project Timeline:*

* October 2013 – Establish contract amendment with Esri
* November/December 2013 – Work with DOGAMI and Esri to evaluate data issues
* January/March 2014 – Process Lidar in areas at issue and replace in website.

*Lidar Data Corrections Budget Breakdown*

* Costs

Evaluate Lidar issues & recommend solutions $2,500

Reprocess and replace Lidar data $7,500

**Total $10,000**

* Estimated in-kind match

DAS GEO Staff Time $5,000

**Seed Capital for Additional Lidar Project(s)**

* There are a number of proposed Lidar projects that could be initiated if a bit of seed capital was available to prompt other partners to collaborate.
* Even though the proposed amount is small, it is likely that others will chip in similar or greater amounts that will cause the total spend on Lidar to substantially exceed the initial seed investment.
* DOGAMI does not have cash to use as seed capital this biennium.
* This project will provide cash to DOGAMI to use as seed capital for one or more Lidar projects.

*Deliverables:*

* Agreement with DOGAMI on use of cash as seed capital for Lidar projects.
* Additional Lidar derived products data to be added to Imagery Explorer.

*Project Timeline:*

* October 2013 – Establish agreement with DOGAMI for seed capital

*Additional Lidar Project(s) Budget Breakdown*

* Costs

Agreement with DOGAMI for seed capital $10,000

**Total $10,000**

* Estimated in-kind match

DAS GEO Staff Time $2,000