# OpenGIS Project Document 15-XXX: Activity Plan for an OGC Interoperability Experiment

Title: OGC GeoPackage Elevation Extension Interoperability Experiment (GPKG-EE IE) Activity Plan

Abbreviation: **GPKG-EE IE**

# Summary

This interoperability experiment (GPKG-EE IE) will test a proposed extension to the OGC GeoPackage Encoding Standard (12-128r1). This will be achieved by building GeoPackages and using them in visualization and analysis software. This IE will produce an OGC engineering report that discuss whether the extension is fit for use and adoption by OGC.

An elevation extension is required to store tiled gridded elevation data in a GeoPackage to support a variety of visualization and analysis operations. The proposed extension is based on work documented in “Envisioning an Elevation Extension to the GeoPackage Encoding Standard” (OGC 15-039) and subsequent work performed by the GeoPackage Standards Working Group. The SWG proposes to leverage the existing structure for raster tiles using PNG or TIFF files as the container for the elevation values themselves.

# INITIATOR ORGANIZATIONS

The OGC members who are initiators of this Interoperability Experiment are:

* US Army Geospatial Center (USAGC)
* Image Matters LLC (IM)
* Compusult

Contact information for these organizations is at the end of this activity plan.

# Participant ORGANIZATIONS

Participation is open to OGC and non-OGC members. Participants will be required to make a resource commitment. (OGC and non-OGC members who are not willing to make a resource commitment may register as observers.)

Others non-OGC participants may include:

* US Army Geospatial Research Laboratory (GRL)
* Reinventing Geospatial Inc. (RGi)

# DESCRIPTION

## Objectives

The objectives of the GPKG-EE IE include:

* Evaluate the proposed extension to the GeoPackage Encoding Standard for fitness for exchange of tiled gridded elevation data.
* Prepare an OGC engineering report that presents the results along with a plan for adopting the proposed extension.

## Background

## The GeoPackage Standards Working Group (SWG) has identified a need for the ability to store tiled gridded elevation data in a GeoPackage. This capability will be used to support use cases such as the following:

* Visualization
  + 2D (hillshade, color relief, slope)
  + 3D (supporting changing view angles and level of detail)
* Analysis
  + Viewshed and line-of-sight
  + Cross-country mobility (off-road routing)
  + Site suitability and planning (slope analysis such as helicopter landing zones)
  + 3D geometry representations of features (ground-based, airspace)
  + Terrain association (associating images to mapped locations)
  + Augmented reality training

## Ideally this capability will be relatively easy to implement and will be suitable for a wide variety of computing environments including the mobile/handheld computing environment.

## Experiments

The GPKG-EE IE will perform the following experiments:

* Experiment #1: produce GeoPackages containing tiled gridded elevation data in accordance with the proposed extension.
* Experiment #2: use the GeoPackages to perform visualization and/or analysis operations as described above.

# TECHNICAL APPROACH

The Technical Approach for this Interoperability Experiment is to perform two experiments.

Test data is TBD.

## Experimental #1

The methodology involves:

* Production of GeoPackages using test data that is provided either by the IE or by the participants themselves
* Visual inspection of the GeoPackage database in an SQLite viewer to determine whether the GPKG looks as expected
* Use of an executable test suite to evaluate compliance

## Experimental #2

The methodology involves:

* Loading the GeoPackages into software systems
* Using the software to perform visualization and/or analysis and determining whether the results are as anticipated.

The specific visualization and/or analysis operations to be executed are TBD.

# DELIVERABLES

The documentation listed below will be considered the deliverables for the project.

## Documentation

* The results of the two experiments will be documented. The results will be anonymized in order to avoid embarrassing or giving undue credit to participants. All project documentation will be posted to the OGC Portal. The OGC Wiki will be used as needed.

## Demonstration

* The developed documents will be made available on the OGC portal.
* A live demonstration of the web services will be shown at an appropriate OGC TC meeting.

# SCHEDULE (Tentative)

|  |
| --- |
| **Startup**  Activity Plan submission: September 2015  Anticipated OGC Review Board approval: October 2015 Includes posting for 2 weeks for member comments |
| **Execution**  Planned kickoff date (execution start date): November 2015Includes 30-day Participation Notification period  Biweekly meetings  Planned end date: February 2016 |
| **Wrap-up and Reporting**  GPKG-EE IE Demonstration at OGC TC Washington. March 2016  Final document submission March 2016 |

# RESOURCE PLAN

The Initiative Manager will be Jeff Yutzler (IM) and the Initiative Technical Lead will be Micah Brachman (RGi).

The following resources will be available.

|  |  |
| --- | --- |
|  | |
| *Web Resources* | OGC will provide a project workspace on the OGC Portal. |
| *Staffing* | Each initiating and participating organization will provide adequate staff resources to support their defined responsibilities for the duration of the GPKG-EE IE. |
| *Hardware* | Participants will provide hardware as needed to support the GPKG-EE IE. |
| *Software* | Participants will provide software as needed to support the GPKG-EE IE. |
| *Other Resources* | Participants in the GPKG-EE IE are self-funded. All expenses incurred in carrying out the GPKG-EE IE will be assumed by the participating agencies within their regular line-of-business. |

# INITIATOR ORGANIZATIONS – Contact Information

| ***Organization Name*** | **US Army Geospatial Center** | |
| --- | --- | --- |
| ***Business Contact*** | *Name* | **Joshua Delmonico** |
| *Title* |  |
| *Street Address* | 7701 Telegraph Rd., CEAGC-GA Alexandria, VA 22315-3864 |
| *Email Address* | [Joshua.J.Delmonico@usace.army.mil](mailto:Joshua.J.Delmonico@usace.army.mil) |
| *Phone* | [703-428-7852](tel:703-428-7852) |
| *Fax* |  |
| ***Technical Contact*** | *Name* | **Kevin Backe** |
| *Title* |  |
| *Street Address* | 7701 Telegraph Rd., CEAGC-GA Alexandria, VA 22315-3864 |
| *Email Address* | Kevin.Backe@usace.army.mil |
| *Phone* | 703-428-6505 |
| *Fax* |  |

| ***Organization Name*** | **Image Matters LLC** | |
| --- | --- | --- |
| ***Business Contact*** | *Name* | **Kurt Buehler** |
| *Title* | President |
| *Street Address* | 403 E 6th St Ste 100, Bloomington, IN 47408 |
| *Email Address* | kurtb@imagemattersllc.com |
| *Phone* | (812) 339-9396 |
| *Fax* | N/A |
| ***Technical Contact*** | *Name* | **Jeff Yutzler** |
| *Title* | Engineer |
| *Street Address* | 201 Loudoun Street SW Leesburg, VA 20175 |
| *Email Address* | jeffy@imagemattersllc.com |
| *Phone* | (703) 981-8753 |
| *Fax* | N/A |

| ***Organization Name*** | **Compusult** | |
| --- | --- | --- |
| ***Business Contact*** | *Name* | **Robert Thomas** |
| *Title* |  |
| *Street Address* |  |
| *Email Address* | [rthomas@compusult.net](mailto:rthomas@compusult.net) |
| *Phone* | [+1-709-745-7914 x212](tel:%2B1-709-745-7914%20x212) |
| *Fax* |  |
| ***Technical Contact*** | *Name* | **Chris Clark** |
| *Title* |  |
| *Street Address* |  |
| *Email Address* | [chrisc@compusult.net](mailto:chrisc@compusult.net) |
| *Phone* | [+1-709-745-7914 x259](tel:%2B1-709-745-7914%20x259) |
| *Fax* |  |

# Participant ORGANIZATIONS - Contact Information

| ***Organization Name*** | **Luciad** | |
| --- | --- | --- |
| ***Business Contact*** | *Name* | Bart Adams |
| *Title* |  |
| *Street Address* | Gaston Geenslaan 11, 3001 Leuven, Belgium |
| *Email Address* | [bart.adams@luciad.com](mailto:bart.adams@luciad.com) |
| *Phone* | [+32-16 23 95 91](tel:%2B32-16%2023%2095%2091) |
| *Fax* |  |
| ***Technical Contact*** | *Name* | **Thomas Neirynck** |
| *Title* |  |
| *Street Address* | Gaston Geenslaan 11, 3001 Leuven, Belgium |
| *Email Address* | [thomas.neirynck@luciad.com](mailto:email.thomas.neirynck@luciad.com) |
| *Phone* | [+32-16 23 95 91](tel:%2B32-16%2023%2095%2091) |
| *Fax* |  |

| ***Organization Name*** |  | |
| --- | --- | --- |
| ***Business Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |
| ***Technical Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |

| ***Organization Name*** |  | |
| --- | --- | --- |
| ***Business Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |
| ***Technical Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |

| ***Organization Name*** |  | |
| --- | --- | --- |
| ***Business Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |
| ***Technical Contact*** | *Name* |  |
| *Title* |  |
| *Street Address* |  |
| *Email Address* |  |
| *Phone* |  |
| *Fax* |  |