COMING! NEW, MOBILE-FRIENDLY NAUTICAL CHART DATA FOR MOBILE DEVICES

An introduction to the new, mobile-friendly geopackage data format standard.

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Abstract

This brief introduces how NGA will meet the growing demand for nautical chart data in a mobile-friendly data format. Sailors, soldiers, and airmen will be able to see their current GPS location on top of Digital Nautical Charts, Electronic Navigation Charts, and other geospatial data in the new, mobile-friendly, geopackage data format on their tablets and smartphones in an unconnected or low bandwidth environment. This new data format standard facilitates multiple map layer interoperability by overcoming significant hurdles that mobile technologies encounter with the existing potpourri of data formats and standards. Hydrographers who desire to make their data usable in a mobile environment should examine using the geopackage format.

Background

Sailors can view their current GPS location displayed over digital navigation charts on their mobile tablets or smartphones to assist in navigation (situational awareness only) where an Electronic Chart Display and Information System (ECDIS) is unavailable, such as on small vessels and launches.

The low or no internet connectivity in a maritime environment requires storing chart data on the mobile device and having an efficient syncing process to update that data. Geospatial data is offered in a potpourri of formats. Many of these formats are not mobile-friendly because they are storage hogs and/or require computationally intensive data transformation processing to achieve interoperability between different file formats, data schemas, and coordinate systems. This can dramatically slow performance on mobile devices. And, some data formats are not compatible on all platforms (iOS, Android, Windows). There was no data encoding standard that addressed all types of geospatial data across traditional computing platforms or assorted makes of mobile

handheld devices until the modern, evolving, open source, geopackage data standard came along.

In 2014, the new Open Geospatial Consortium (OGC) Geopackage Encoding Standard was approved. It defines allowable content and schema for geospatial data. It is essentially a SQLite relational database that is platform independent. It can store multiple map layers (raster tile pyramids and/or vector points, curves, areas) in one geopackage file enabling users to view and exploit their data in a standard format at predefined zoom levels.

The NSG Geopackage Implementation Profile is an extension that refines the OGC geopackage standard for the US Government. It is an emerging standard expected to be mandated by 2018. It narrows the allowable spatial reference systems, and defines standard pixel sizes, zoom levels, and tiling schemes. The result markedly enhances map layer interoperability, performance, and data syncing efficiency in a low bandwidth environment.

In 2017, NGA will release much of its Foundation geospatial data to its customers in the mobile-friendly geopackage data format, to include nautical charts. Geospatial data providers catering to mobile customers, such as Digital Globe, are beginning to offer their data in geopackage format. Software developers, such as ESRI, have begun to include the ability to load, display, edit, and save geopackaged data.   Hydrographers who desire to make their data usable in the mobile environment would do well to explore utilizing the geopackage format.

Useful geopackage links:

www.geopackage.org   OGC Geopackage home page

www.geopackage.org/spec/   OGC Geopackage Encoding Standard

http://www.opengeospatial.org/projects/groups/geopackageswg

www.github.com/opengeospatial/geopackage   The GeoPackage Working Group accepts public comments and suggestions via GitHub.

Twitter - #geopackage

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