

Recommending OGC KML as a ESDS Community Standard

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Purpose

- This is a recommendation to the ESDIS Standards Office (ESO) to adapt OGC-KML as an Earth Science Data System (ESDS) Community Standard

ESDIS – Earth Science Data and Information System

Definitions

- OGC – Open Geospatial Consortium, Inc
 - An international industry consortium of 477 companies, government agencies, and universities participating in a consensus process to develop publicly available interface standards
- KML – Keyhole Markup Language
 - An XML language focused on geographic visualization, specifies a set of features (marks, images, polygons, 3D models, textual descriptions, etc) for display
 - For geodetic reference system, KML uses a longitude/latitude/altitude geographic coordinate triplet
 - XML – eXtensible Markup Language

Short History

- Keyhole, Inc created Keyhole Earth Viewer
- Google acquired Keyhole, Inc in 2004 and rename the product Google Earth
 - Google developed KML for use with Google Earth
- OGC approved KML 2.2 specifications in 2008
- Other projects such as Marble have developed KML support
- Google Earth continues to heavily use KML
- Other vendors provide tools and mapping websites using KML
 - Eg. Blue Marble Geographics, Autodesk, GeoEye, Smallworld

OGC Motivation for KML

- OGC has four main objective for the standard:
 1. An international standard language to express geographic annotations and visualization on web-based maps and earth browsers
 2. Alignments with international best practices and standards enabling interoperability of earth browser implementation
 3. Ensure that OGC and Google work collaboratively and keep the KML community engaged
 4. Ensure proper life-cycle for the standard

OGC KML Features

- OGC KML has become a powerful standard tool to represent and visualize scientific data
- KML allows users to understand more intuitively by visualizing and manipulating spatial data with the use of a virtual globe and merging of multidisciplinary geoscience data
- KML offers the means to display geographic data from a wide variety of sources together in a geospatial context
 - This data includes imagery for the entire globe at varying resolutions that contains a great deal of interpretable visual information

Uses for KML

- KML can be used to:
 1. Specify icons and labels to identify locations
 2. Create different visualizing positions to define unique views of features
 3. Define overlays to attach
 4. Define styles to specify feature appearance
 5. Write descriptions of features, including hyperlinks and embedded images
 6. Organize features into hierarchies
 7. Locate and update retrieved documents from local or remote network locations
 8. Define the location and orientation of textured 3D objects

ESDS Motivation for KML

- NASA ESDS embracement of OGC KML standard allows for two opportunities:
 - reduced costs for NASA and the users
 - broader use of NASA data
- NASA is under continual pressure to operate more efficiently and at the same time engender greater use of its products and services
- OGC KML specifications ¹
 - may extend the reach and use of NASA data to
 - other government departments
 - the general citizenship
 - will lower barriers between internal scientific uses and external applications

1. http://portal.opengeospatial.org/files/?artifact_id=27810

NASA KML Users

- ICESat-2 project is generating KML browse products for MABEL photon-counting LIDAR data
 - Products show the location of the ER-2 aircraft while it is taking MABEL data and geolocated derived surface locations of detected photons
 - http://icesat.gsfc.nasa.gov/icesat2/data/mabel/data/browse/2010-12-08_Dryden/2328/index.html
- OpenTopography Project
 - to deliver large volumes of lidar-derived imagery to Google Earth via network link: <http://opentopography.org/kml>
- NSIDC makes numerous of its datasets available via KML
 - http://nsidc.org/data/virtual_globes/
- SEDAC has close to 300 of raster and vector layers that are available via KML for visualization

Summary

- Recommend to the ESDIS Standards Office to adopt OGC-KML as an ESDS Community Standard