**Standard Number 161.06**

**Web Mapping Services Publication Standard**

**Effective Date**: September 5, 2014

**Related Documents:**

* Geospatial Policy & Standards Procedure 162.00
* Waiver Process 101.00

**Statutory Authority**

The provisions of RCW 43.105.041 detail the powers and duties of the Technology Services Board (TSB), including the authority to develop statewide or interagency information services and technical policies, standards, and procedures.

These standards apply to state of Washington executive branch agencies, agencies headed by separately elected officials, and institutions of higher education referred to as “agencies” throughout this document. Academic and research applications at institutions of higher education are exempt.

**Purpose**

This standard is designed to ensure Washington State geospatial data are correctly located and aligned with industry standard online mapping tools and web-based geospatial data systems.

They are designed to improve data quality, accuracy, rendering speed and improve the sharing of spatial data on the Web.  It enables consistent online web mapping of geospatial data, based on an industry standard map tiling scheme and projection, with other commercial map services.

**Standard**

This standard applies when building web accessible geospatial services including:

* Cached, web-based map services that will be integrated with similarly tiled services
* Dynamic map services that will be integrated with similarly projected cached and dynamic services

**Cached Map Services**

Agencies should use the following guidelines for a Map Tiling Scheme when developing map caches in support of online mapping applications and services which will be integrated with industry standard map services and made available on the Web.

|  |  |  |
| --- | --- | --- |
| **Tiling Scheme Parameter** | **Guideline** | **Authority** |
| World Coordinate System | Web Mercator Auxiliary Sphere coordinate system (EPSG 3857, ESRI WKID 102100) | ESRI |
| Horizontal Datum | World Geodetic System of 84, with revisions | NGA |
| Map Units | Meters | ESRI |
| Tile Origin | x=-20037508.342787   y=20037508.342787 | ESRI |
| Tile Size | 256 x 256 | ESRI |
| DPI | 96 | ESRI |
| Scale Level and Scale denominator | Level 0, 591657527.591555Level 1, 295828763.795777Level 2, 147914381.897889Level 3, 73957190.948944Level 4, 36978595.474472Level 5, 18489297.737236Level 6, 9244648.868618Level 7, 4622324.434309Level 8, 2311162.217155Level 9, 1155581.108577Level 10, 577790.554289Level 11, 288895.277144Level 12, 144447.638572Level 13, 72223.819286Level 14, 36111.909643Level 15, 18055.954822Level 16, 9027.977411Level 17, 4513.988705Level 18, 2256.994353Level 19, 1128.497176 |  |

**Map Projection for Dynamic Map Services**

Agencies should use the following guideline when producing map services utilizing dynamic spatial data that will be integrated with industry standard map services and made available on the Web.

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Guideline** | **Authority** |
| Coordinate System | Web Mercator Auxiliary Sphere coordinate system (EPSG 3857, ESRI WKID 102100) | ESRI |
| Datum | World Geodetic System of 84, with revisions | NGA |
| Map Units | Meters | ESRI |

# **References**

* Web Mercator, The Standard for Sharing Data on the Web, ESRI
* World Geodetic System 1984 (WGS 84) <https://www1.nga.mil/ProductsServices/GeodesyGeophysics/WorldGeodeticSystem/Pages/default.aspx>
* Surveying and Positioning, OGP Surveying and Positioning Committee.  <http://www.epsg.org>

**Definitions**

**Cached Map Service**– A map service which uses a map tiling scheme designed to support high performance and scalability. Cached map services need to use the same coordinate system in order to overlay in a web client applications.

**Dynamic Map Service** – A map service which renders a map image on demand directly from a live data source.

**Horizontal Datum** – A reference surface against which locations on the earth are described, most commonly using latitude and longitude coordinates.

**Map Cache** – A collection of pre-rendered map images defined by a map tiling scheme.

**Map Projection** – A mathematical model used to transform spherical geographic coordinates on the earth’s curved surface to a planimetric Cartesian coordinate system.

**Map Service –** A service available across the Web which uses standardized protocols including XML and SOAP to transmit map images.

**Map Tiling Scheme** – A specification which defines the coordinate system, scales, geographic extent, dpi, tile size, and tile system origin of a set of hierarchically organized static map images that compose a map cache.

**Web Mercator Auxiliary Sphere Coordinate System**- A world coordinate system used by popular web mapping tools such as Google Maps, Bing Maps, ArcGIS Online, and others

**WGS 84 Coordinate System** – Acronym for “World Geodetic System 1984”.   WGS84 is a commonly used geocentric horizontal datum.

**World Coordinate System** – A Cartesian coordinate system which represents locations on the earth using a single worldwide coordinate grid.

**Contact Information**

For questions about this standard, please contact the Office of the CIO.

**Revision History**

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| --- | --- |
| **Date** | **Action taken** |
| September 5, 2014 | Adopted by the state CIO |
| June 5, 2014 | Adopted by the Geographic Information Technology (GIT) Committee |

**Approving Authority**



Chief Information Officer Date

Chair, Technology Services Board