
CESIUM
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Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP and the GIS User Community

Cesium

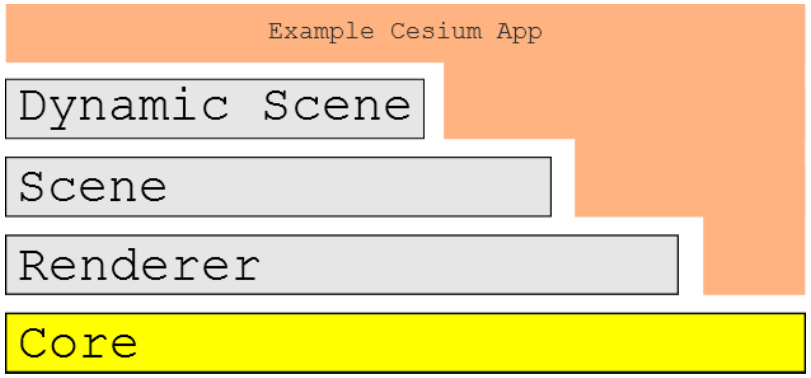
- Our mission is to create the leading web-based globe and map for visualizing dynamic data. We strive for the best possible performance, precision, visual quality, ease of use, platform support, and content.
- JavaScript API based on WebGL.
- One API, three views.
  - 3D.
  - 2D.
  - Columbus view (2.5D).
- Apache 2.0 license.
- More information:
  - Demos: http://cesium.agi.com
  - GitHub: http://git.io/cesium
  - Wiki: http://git.io/cesium-wiki

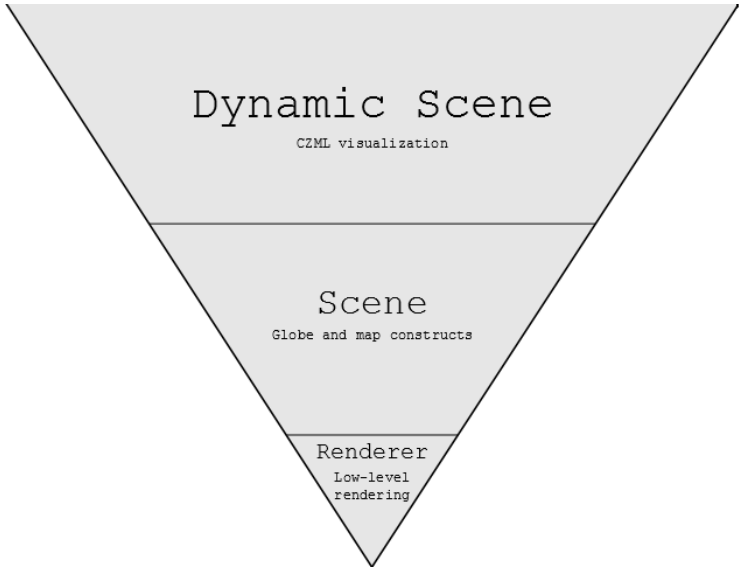
Features

- Dynamic geospatial data visualization.
- Draw imagery from OpenStreetMap, WMS, Bing and Esri.
- Draw polylines, polygons, circles, ellipses, extents, billboards, labels and sensors.
- Cameras.
- Low Level Rendering.
- Geometric Routines.
- Apps and widgets.
  - Timeline widget.
  - Cesium Viewer app for visualizing CZML.
  - Sandbox app for live viewing.

- More information:
  - https://github.com/AnalyticalGraphicsInc/cesium/wiki/Features

Cesium Architecture





- Composed of four layers.
  - Core. All apps use core.
  - Renderer. Small subset of apps use Renderer directly.
  - Scene. Many apps use Scene.
  - Dynamic Scene. Most use Dynamic Scene.

- More information:
  - https://github.com/AnalyticalGraphicsInc/cesium/wiki/Architecture

CZML

- JSON based language that describes dynamic scenes.
- Can be used as a streaming or flat file.
- Extensible.
- It’s an open format, we’d like to submit it as an OGC standard when it’s more mature.
- More information:
  - http://git.io/czml

Content is King

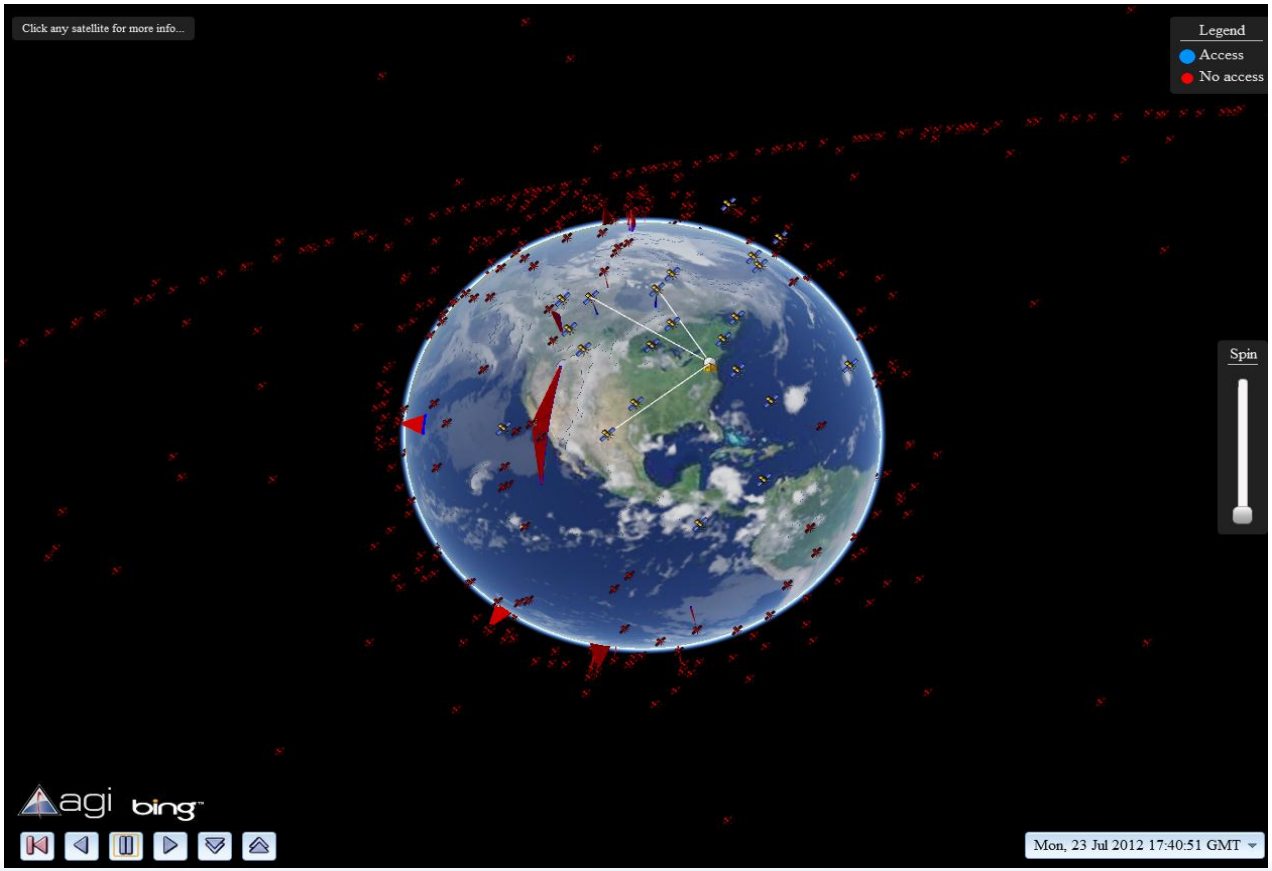
- CZML writer
  - Open source library to create CZML content for use with Cesium.
  - Apache 2.0 licensed.
- Cesium Language Converters .
  - Convert various formats to CZML.
    - KML.
    - ESRI Shapefiles.
    - WebGL Globe JSON.
    - More to come!
- More information:
  - http://git.io/czml-writer

Roadmap

- Streaming terrain. - details
- Imager layers. - details
- Material System. - details
- COLLADA models. - details
- More CZML converters.
  - GML, GeoJSON.
- More information:
  - https://github.com/AnalyticalGraphicsInc/cesium/wiki/Roadmap

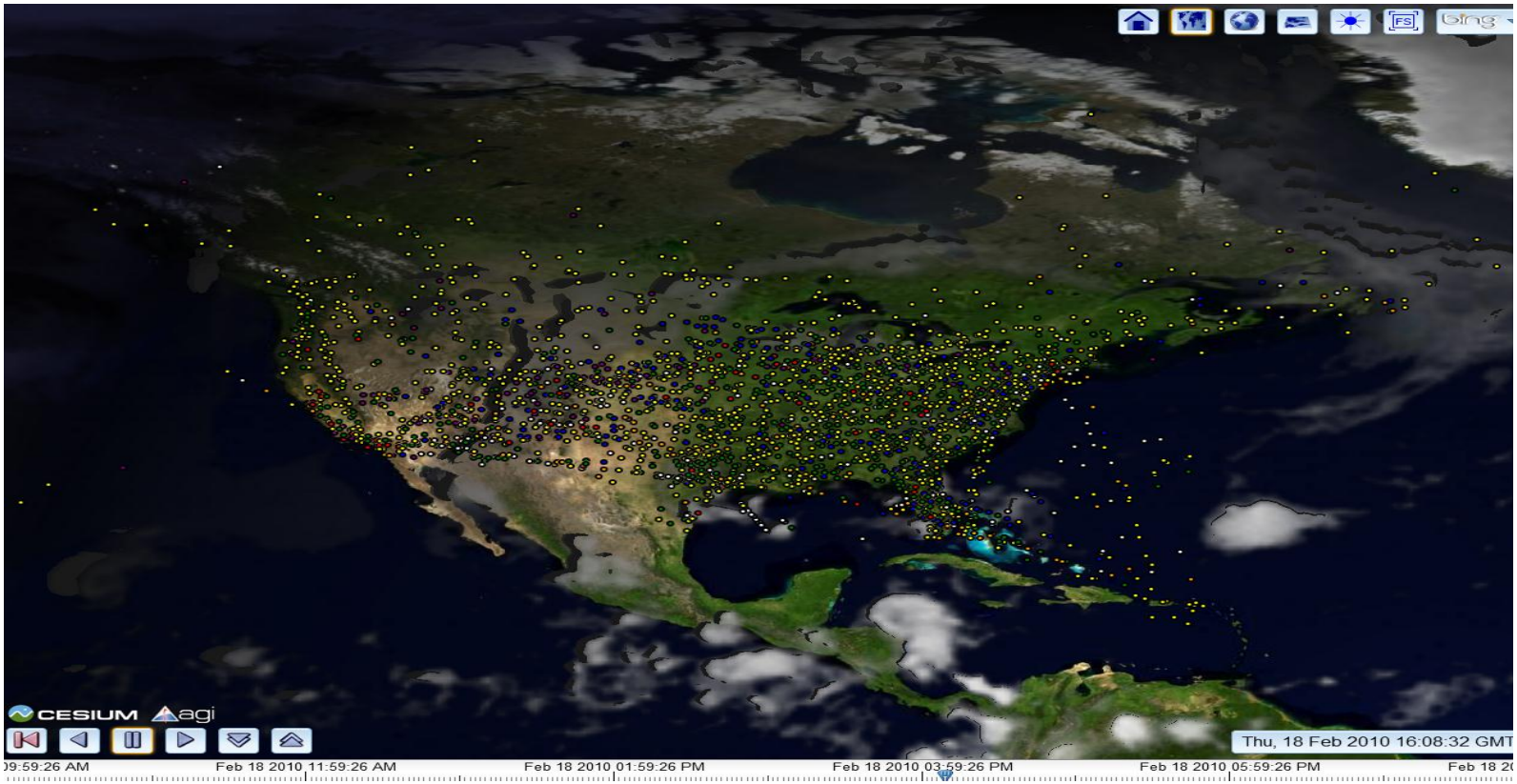
Lots of Satellites

- A Streaming example. Computations are being done on the server and the results are streamed down as CZML to the client.
- http://cesium.agi.com/LotsOfSatellites/



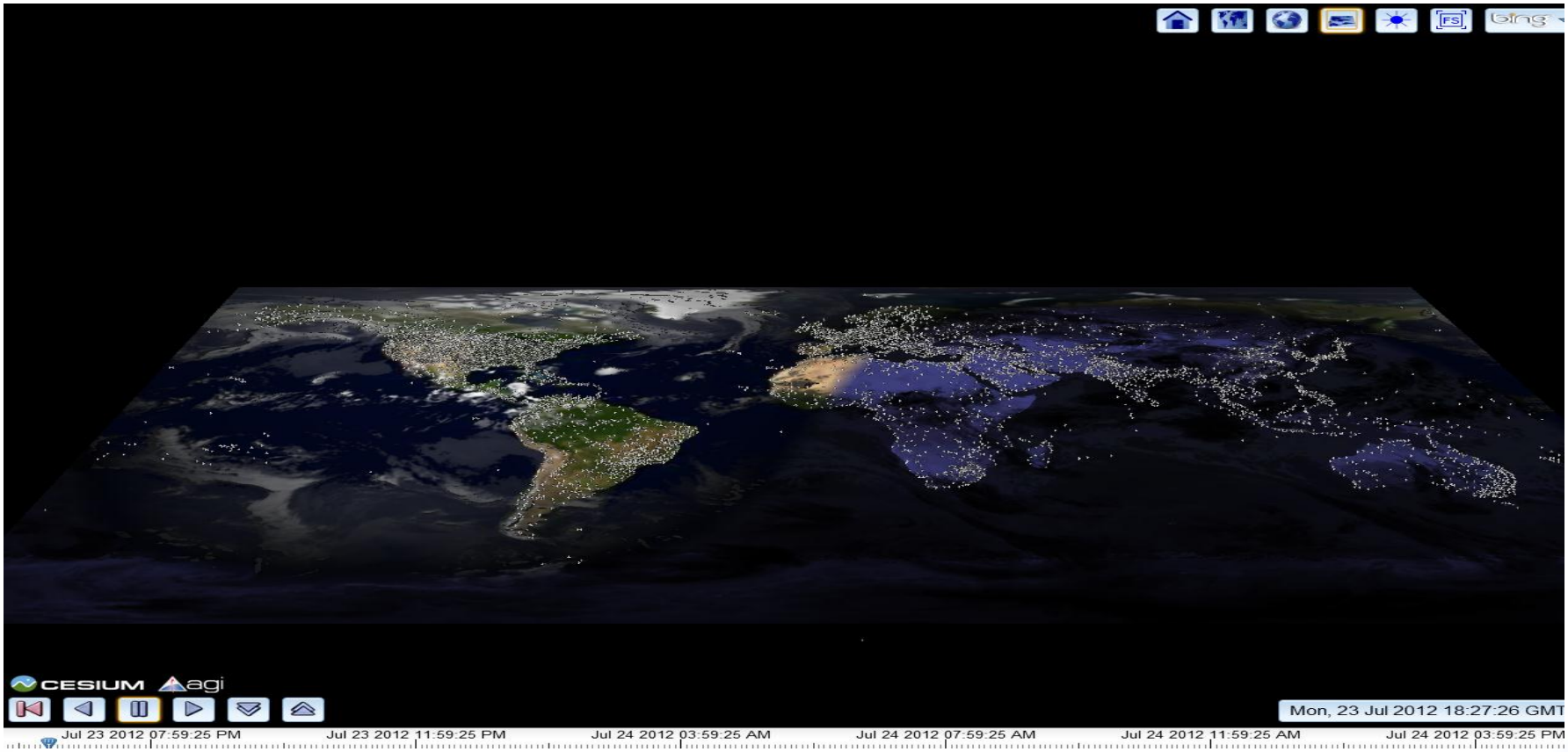
FAA Air Traffic

- File based example made from existing tools.
  - Generated by STK (www.agi.com), converted to CZML using CZML-Writer.
  - http://cesium.agi.com/CesiumViewer/index.html?source=Gallery/FAA.czml&play=1&loop=1



Worldwide Airports

- File based example that used the CZML-Writer converter to convert a KML file.
  - http://cesium.agi.com/CesiumViewer/index.html?source=Gallery/airports.czml



OpenLayers using Cesium

- https://github.com/jktaylor/openlayers
- http://jktaylor.github.com/openlayers/examples/adapters/editingtoolbar.html

Additional links

- Mailing lists.
  - Development.
  - Announcements.
- Cesium Viewer.
- Live coding sandbox.
- WebGL Report.