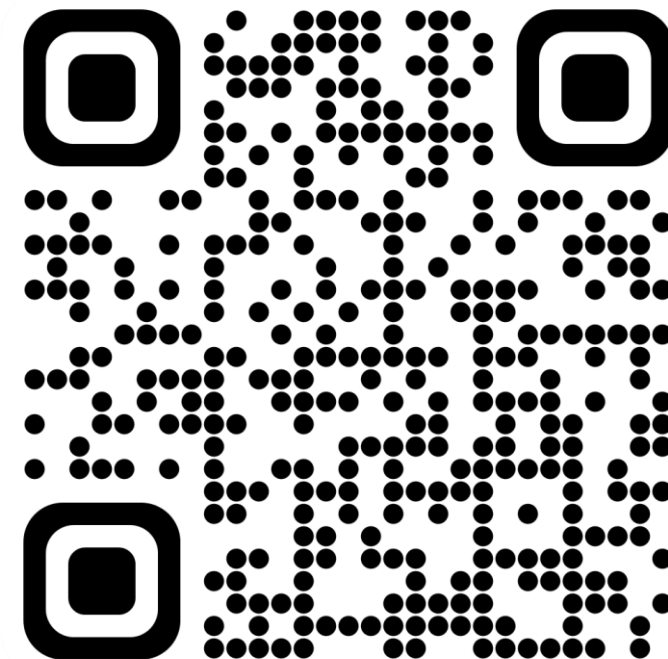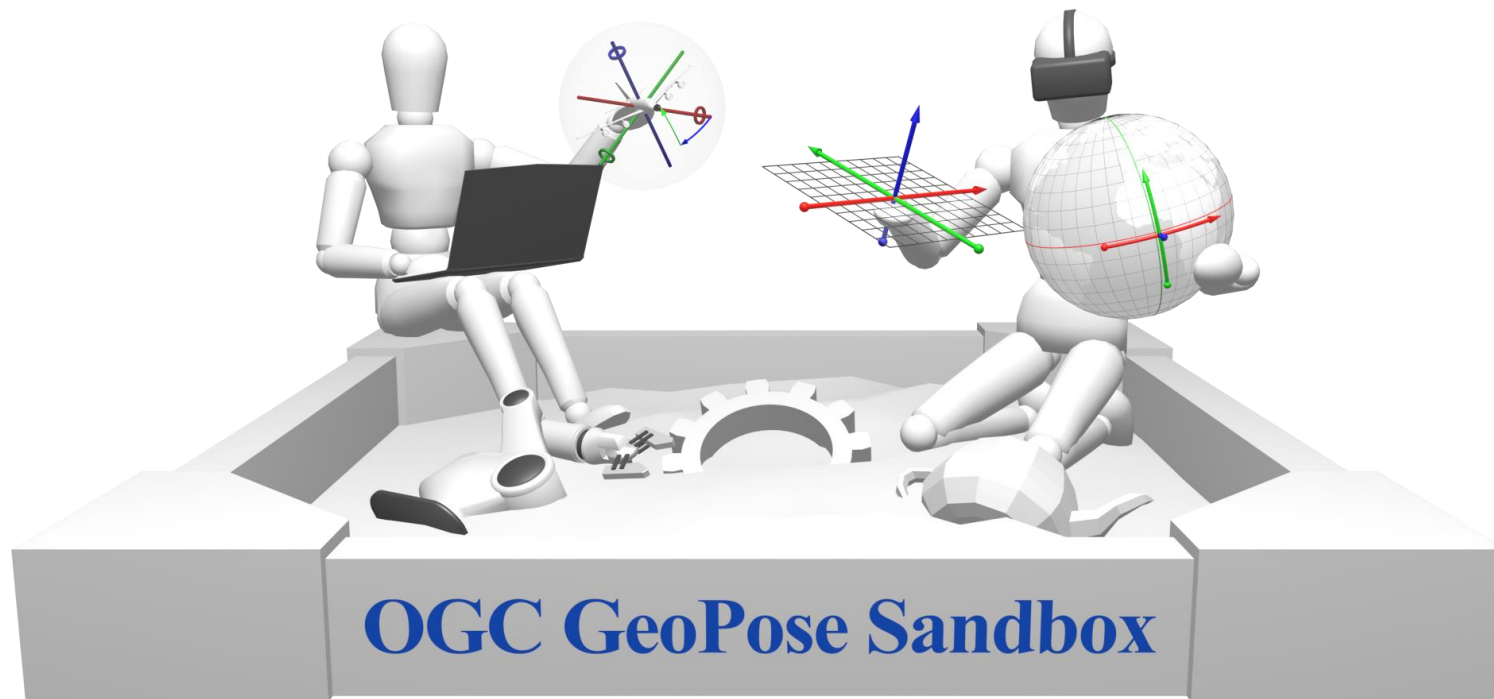# GeoPose Sandbox

October 2023
Open Standards Code Sprint

Mikel Salazar, IFE (Halden-Norway)
October 30th, 2023

GeoPose Sandbox > Download Links

OGC GeoPose Sandbox

GitHub Repository: https://github.com/opengeospatial/GeoPoseSandbox

NPM Package: https://www.npmjs.com/package/geopose-sandbox

NPM Install Command: npm install geopose-sandbox

GeoPose Sandbox > What is it?

Before using the OGC GeoPose Sandbox, it is important to understand what it is (and what the goals behind its creation are):

- **TypeScript Implementation:** An open-source implementation of the OGC GeoPose standard V.1 written in TypeScript/JavaScript, so that its easy to create websites/webapps with it).

- **Developer Sandbox:** This experimental implementation is not intended to be optimized, but to enable the members of the Standards Working group to validate new ideas.

- **Based on Three.js :** While the data structures are platform-independent, for the visualization, this sandbox uses the popular Three.js 3D engine, making it interoperable with many other middleware solutions.

- **Presentation Engine:** One of the goals of this Sandbox is to facilitate the creation of the website for the SWG that enables users to learn about GeoPose by presenting them with several interactive examples.

- **A Work in Progress:** There is still a lot to be done…

GeoPose Sandbox > General Overview

The GeoPose Sandbox project has a fairly common folder structure:

- **builds:** The JavaScript files resulting from the build process, including a folder with the ECMAScript modules generated from the transpilation and several bundle files (both in CommonJS and ECMAScript 2016 formats).

- **docs:** The documentation folder. Right now, the only usable elements is the autogenerated API reference in the "reference" folder.

- **sources:** The TypeScript files with the source code, divided into three parts: data (the classes to handle the data structures), logic (the logic representation of the entities of the scene) and user (to handle the user interaction)

- **tests:** A collection of HTML files with different tests.

- **utilities:** The tools to build and test the code.
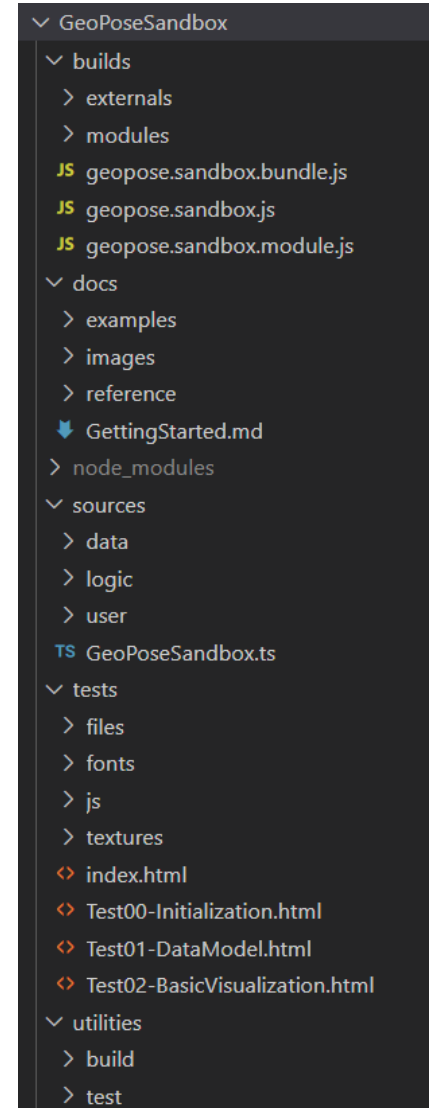
GeoPose Sandbox > Data Model

The current version of the data model is based in the following abstract classes:

- **Pose:** The generic container to describe poses.

- **Frame:** Defines the properties of the 3D frame we are operating on (in the case of GeoPose, WGS84).

- **Position:** The position of the pose relative to the coordinate origin of the space (generally, a translation+rotation transformation).

- **Orientation:** To rotation of the pose (after applying the position-related transformations).

- **Extension:** A simple way to include additional properties to the pose that are not yet defined in the standard (time, color, etc.)

BasicGeoPoseYPR: Pose

+Frame: GeoFrame
  name: string = "Earth WGS84"
  ecuatorialRadius: number = 6378137
  polarRadius: number = 6356752
+Position: GeoPosition
  longitude: number = 30.1
  latitude: number = 61.1
  h: number = 140
+Orientation: YawPitchRollOrientation
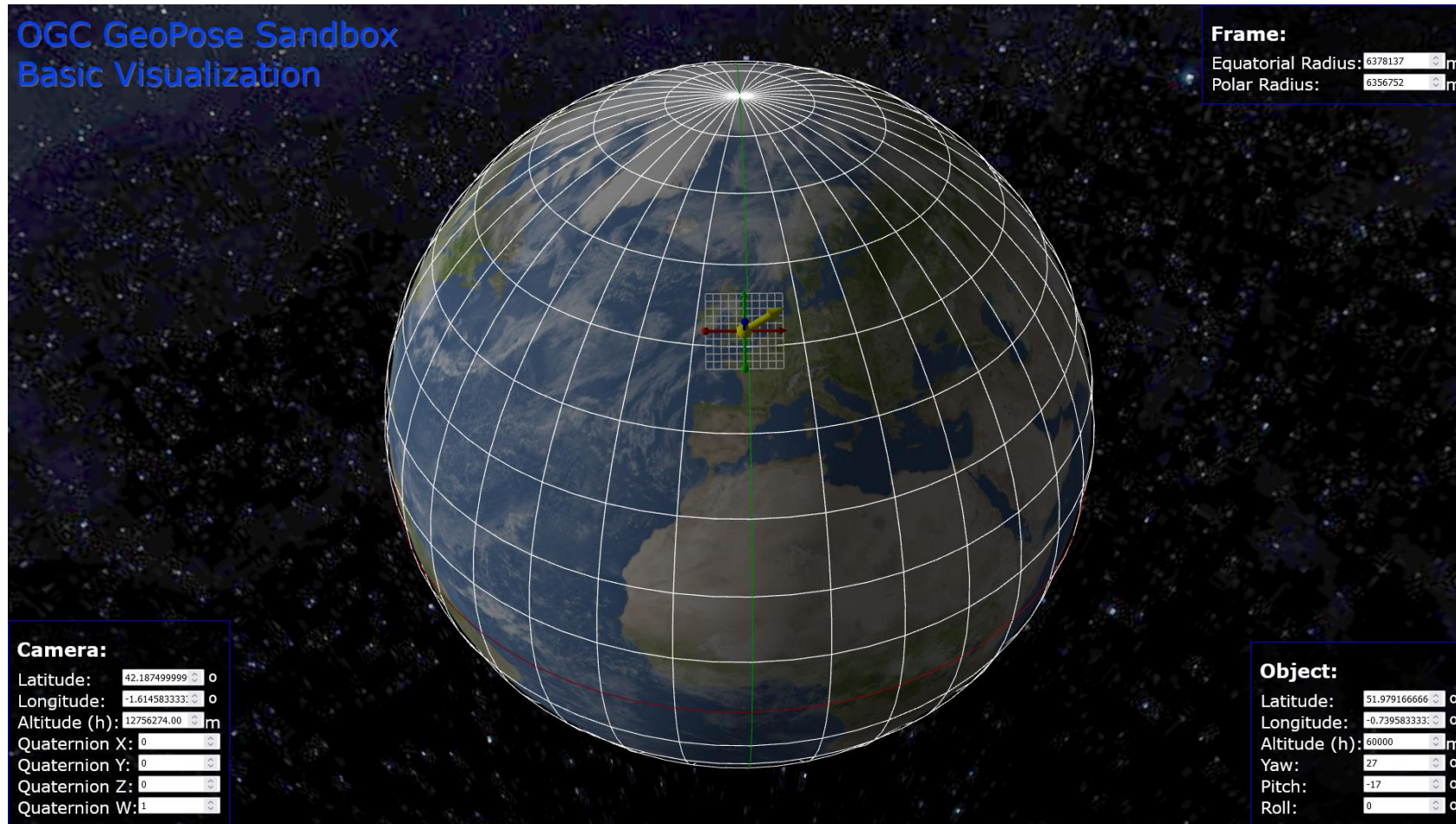 yaw: number = 12
  pitch: number = 0
  roll: number = 2
+Extensions: Extension[]

GeoPose Sandbox > Main Example

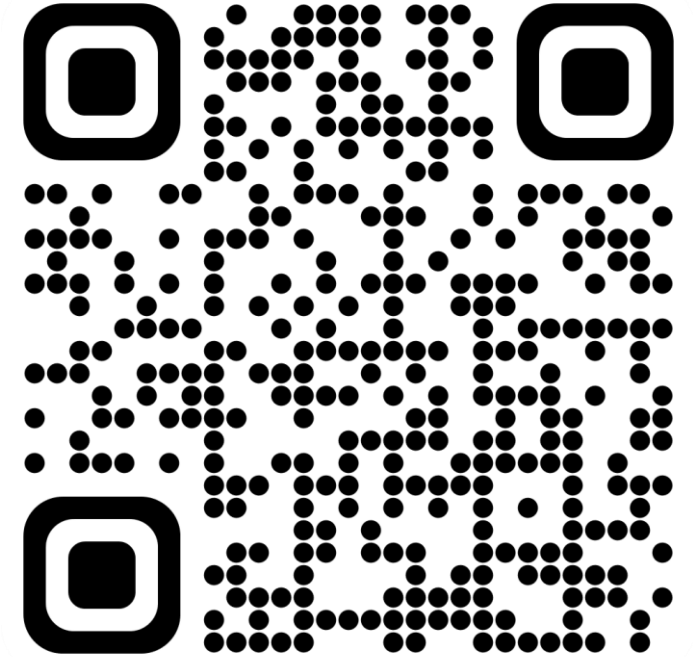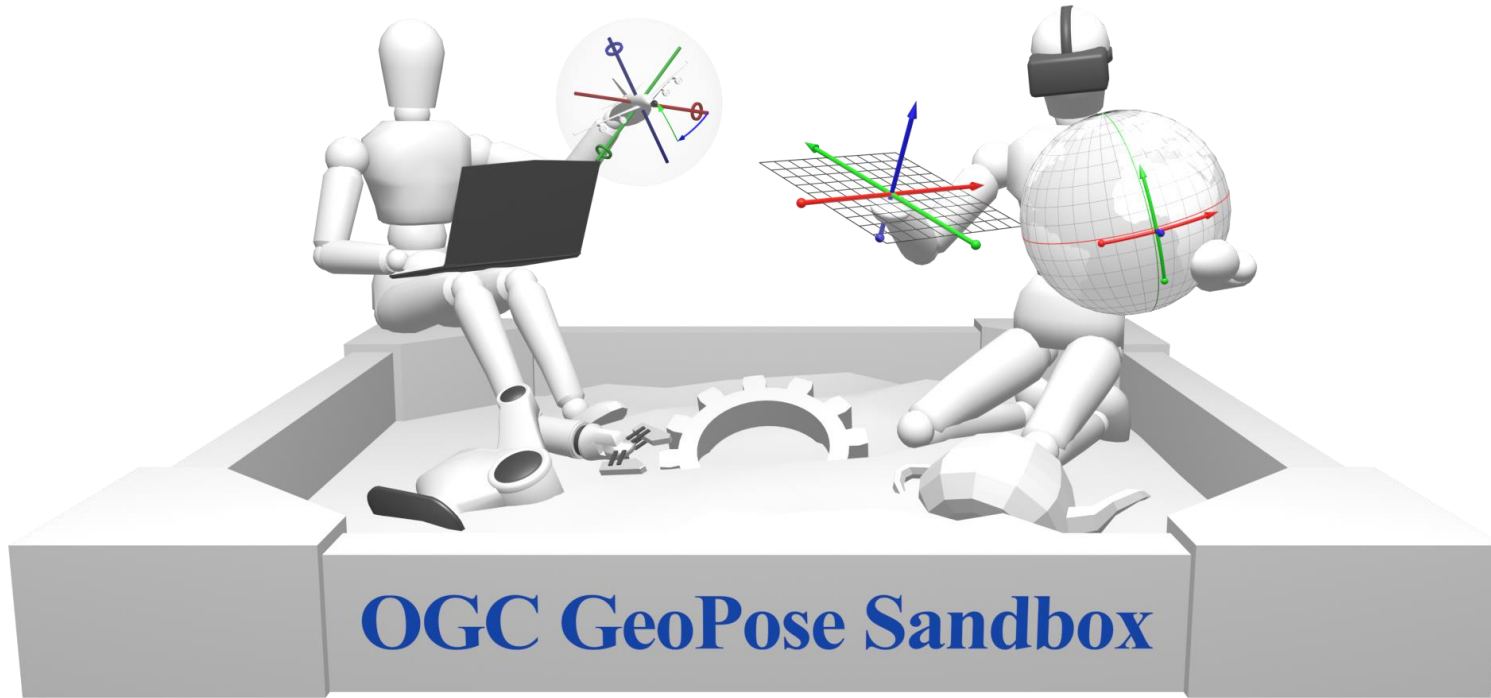The best example of how to use the Geopose Sandbox is the test: "Test02-BasicVisualization.html"

GeoPose Sandbox > Next steps

There are still a long list of TODOs… that can be good ideas for the Code Sprit:

- **Advanced Implementation:** Implementing the "Advanced" targets types requires understanding of CRS and how to parse the

- **OrbitalPose:** To facilitate the collaboration with aerospace engineers, it would be interesting to create the classes OrbitalPose and OrbitalPosition.

- **Better Earth Representation:** Right now, the Earth is represented as a simple sphere, but if we could load 3D tiles or render a proper atmosphere, we could create engaging examples at a "human level".

You are Welcome to Play with Us

OGC GeoPose Sandbox

GitHub Repository: https://github.com/opengeospatial/GeoPoseSandbox

NPM Package: https://www.npmjs.com/package/geopose-sandbox

NPM Install Command: npm install geopose-sandbox