OL3

A unique mapping library

camp tocamp FOSDEM'15

Introduction

- New version of OL
- Version 2's been around since 2006
- Development began in 2013
- Complete rewrite!

Goals

- Feature-complete library
- More consistent API
- Smaller builds
- Push the limits of vector rendering
- Use Computer Graphics technologies (WebGL & Canvas)

« Maps as Graphics »

Positionning

OpenLayers 2

Leaflet

OpenLayers 3

CESIUM

WebGL Virtual Globe and Map Engine

OpenWebGlobe

Features

- Map rotations
- Animations
- Local/custom projections
- Arbitrary tile grids (WMTS)
- Various data providers and formats (OSM, BingMaps, WMS, GeoJSON, KML…)
- Image effect/pixel manipulation
- « Complex vector »
- …

Example #1 (Rotation, Animation, Vector)

« Draw early, Draw often »

For good rendering quality:

- Vectors redrawn at each animation frame
- While interacting and animating
- (Hopefully) At 60 fps!

Performance challenge!

Let's look at the techniques used...

#1 Batching

Minimize data processing and manipulation:

- Style calculations
- Geometry simplifications
- R-tree lookups
- Object creations

⇨ Replay batch during animations/interactions

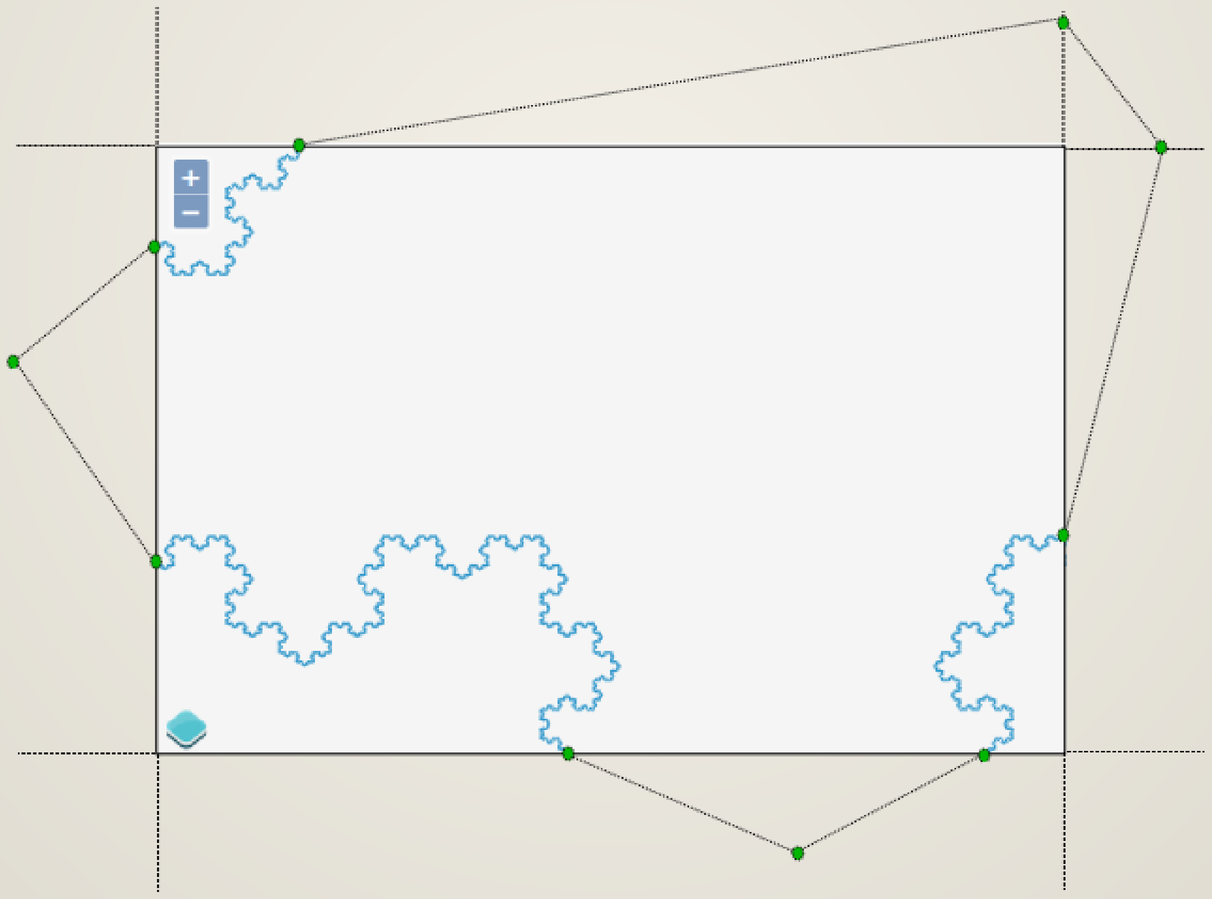
#2 Geometry Simplification

- Douglas Peuker (lines)
- Quantization – to maintain topology (polygons)

(Also allows for better rendering quality)

#3 Over-simplification

Over-simplification and clipping for the parts that are outside the viewport.



Example #2 (Complex and large features)

Hit Detection

Principle: redraw a subset of the scene in a small and off-screen canvas, and test if there's a color.

Example #3 (Hit Detection)

Support for Hit Detection for raster layers is about to be merged...

Roadmap

- Draw lines, polygons and text with WebGL
- Support tilted/perspective views
- Finish online build tool
- Improve our CommonJS/distribution story
- Improve the doc
- Continue with the Cesium integration (ol3-cesium)

⇨ Code sprint in April...

Tilted view prototype

Example #4 (Tilt)