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FOSS4G 2017
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Highlighting Oregon's WildLands

oregonhowl.org

Eagle Cap Wilderness - image by aradbon

“It was once said that if something is not understood, it is not valued; if it is not valued, it is not loved; if it is not loved, it is not protected, and if it is not protected, it is lost.”

Wilderness Connect

Threats to Wilderness From Lack of Public Awareness

DEMO

HOWL's Free and Open Source foundation…

HOWL

CESIUM

jQuery write less, do more.

handlebars

Bootstrap

Chart.js

Masonry

Magnific Popup

webpack

GitHub Pages

Static Hosting
Code & Data

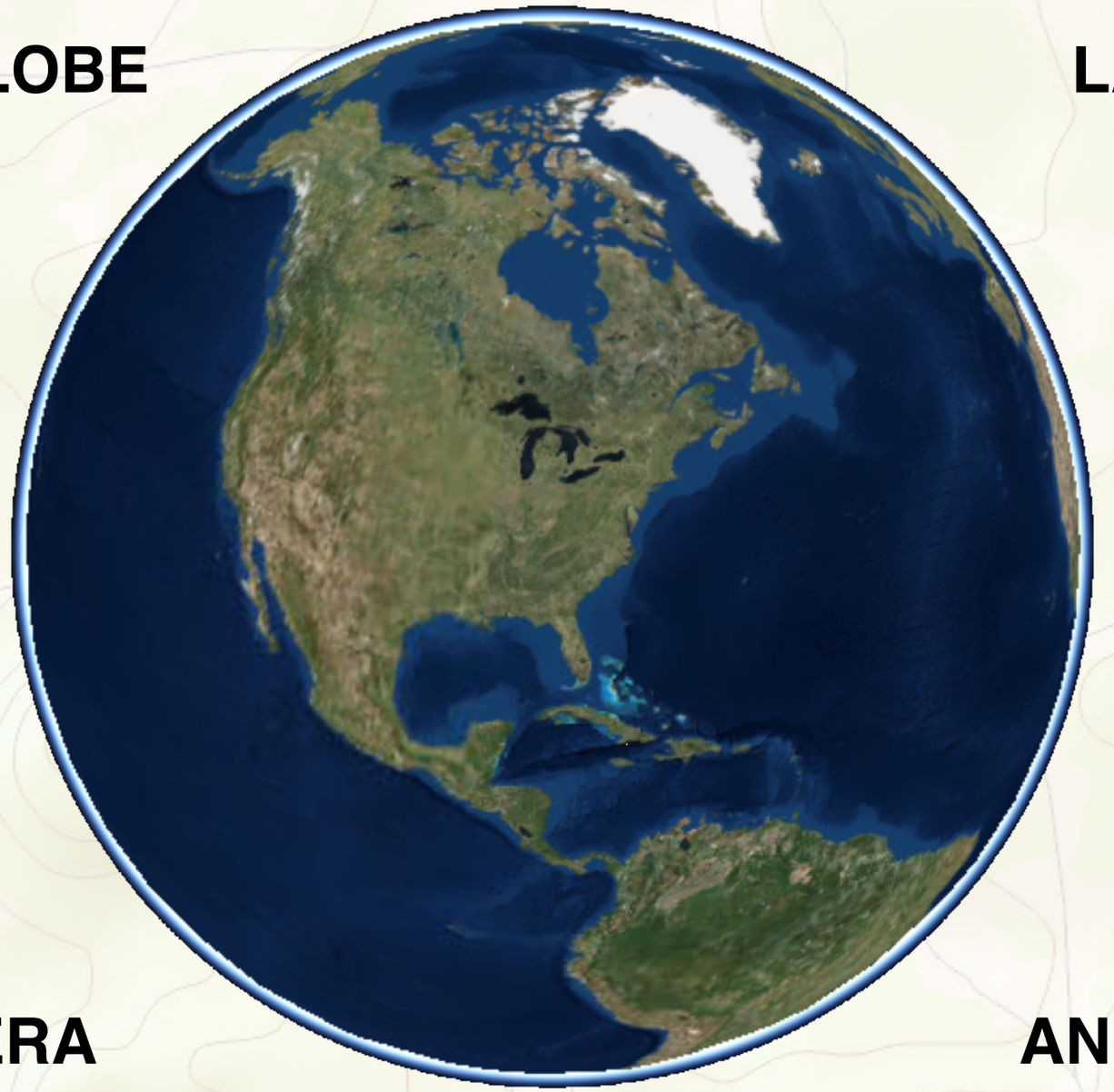
Single Page Application

…sorry, no React

HOWL is built on top of CesiumJS

MAP/GLOBE

LAYERS



TERRAIN

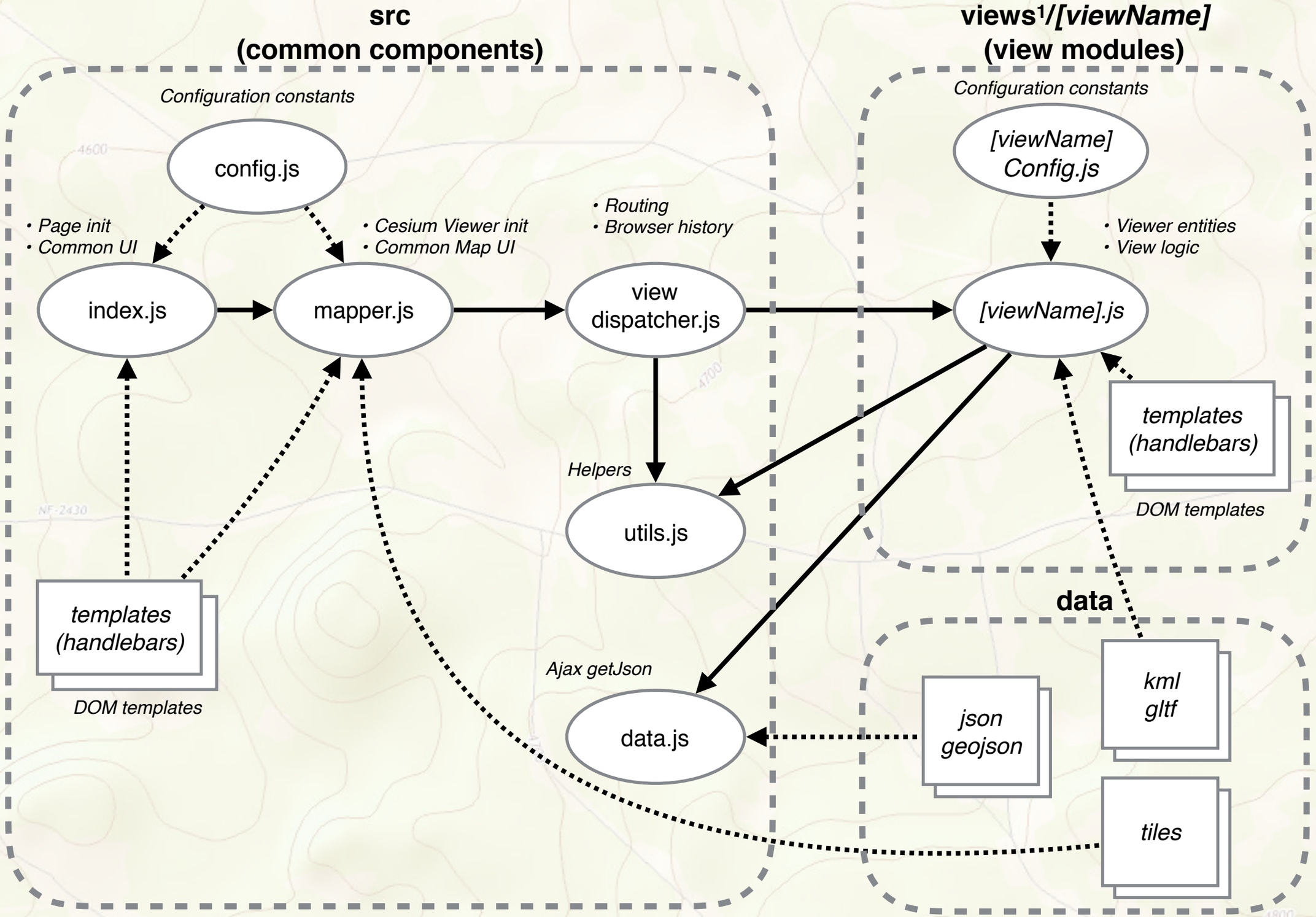
3D GEOMETRIES

CAMERA

ANIMATION

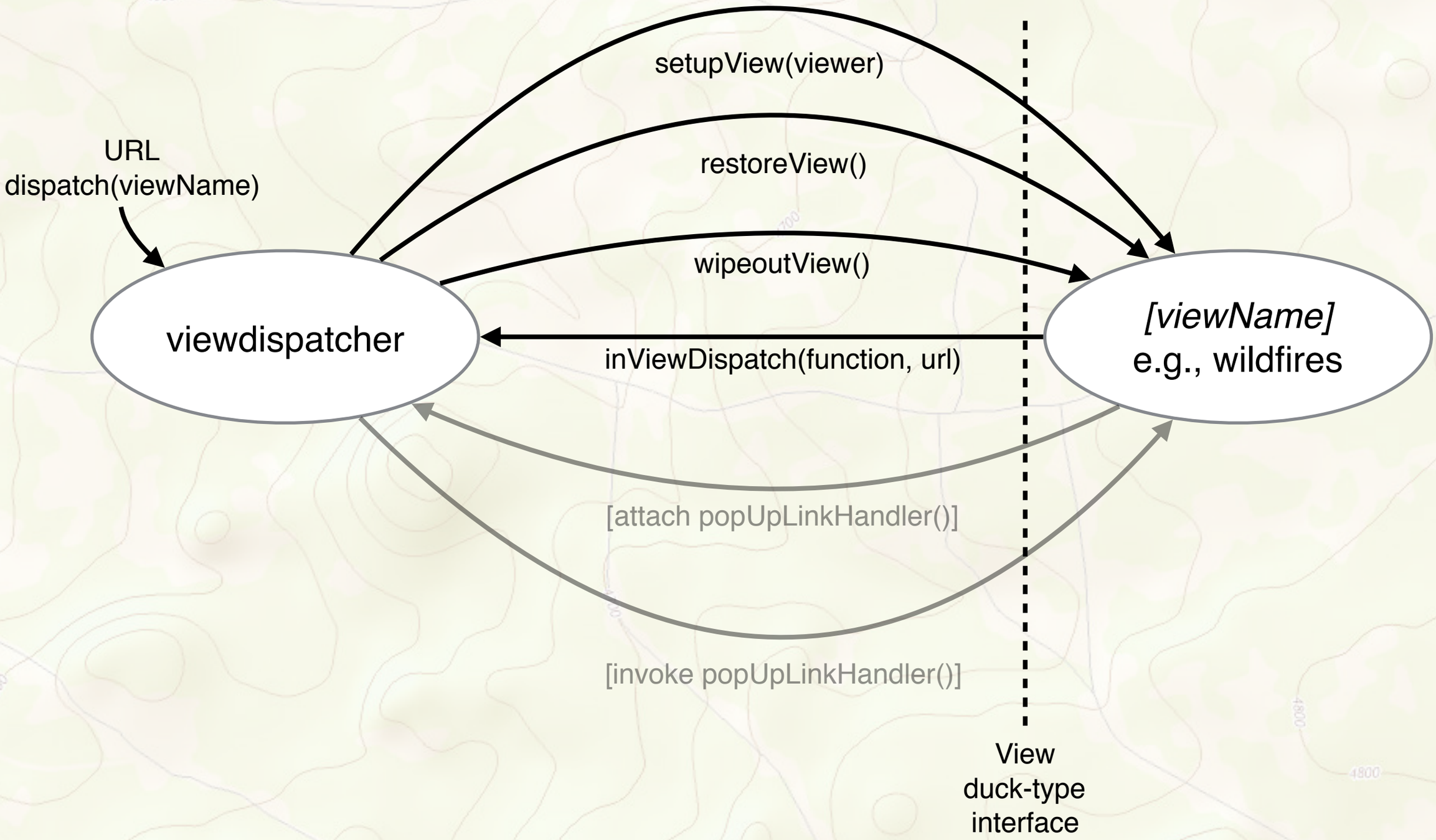
Javascript API, WebGL, No Plugins

HOWL is extensible: ‘spotlights’ ~ mini-apps

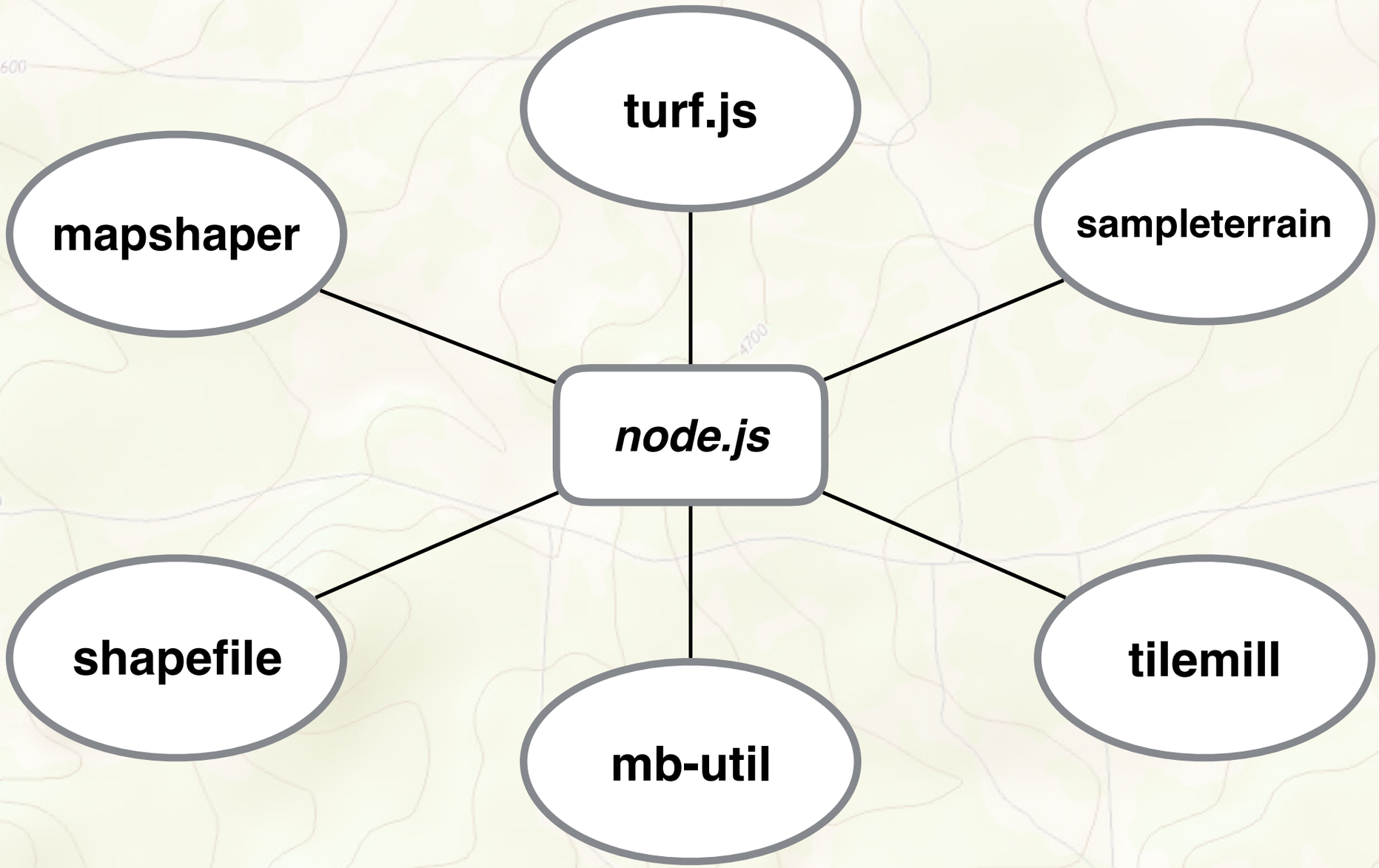


(1) Views implement 'Spotlights'

View Dispatcher handles app inversion of control and manages browser history



HOWL's data prep pipeline toolbox is based on node.js, js libs & command-line utilities



…plus zlib, tar-stream, xml2js, geojson-precision

EXAMPLE 1

Setting up wildfires playback with CZML

In function makeCZMLAndStatsForListOfFires…

```
var mtbsCZML = [
  {
    id: 'document',
    name: 'MTBS',
    version: '1.0',
    clock: {...}
  },
  {
    id: feature.properties.id,
    availability:
    cylinder : {...},
    position: {...}
  },
  {
    ...
  }
];
```

→ Interval, current time, multiplier

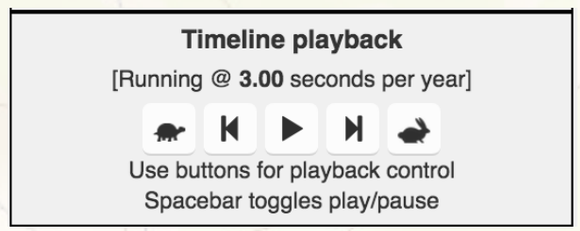
→ The time range of the fire cylinder visibility

→ Cylinder entity definition (color, height, radius)

→ Cylinder entity location

In function setupView…

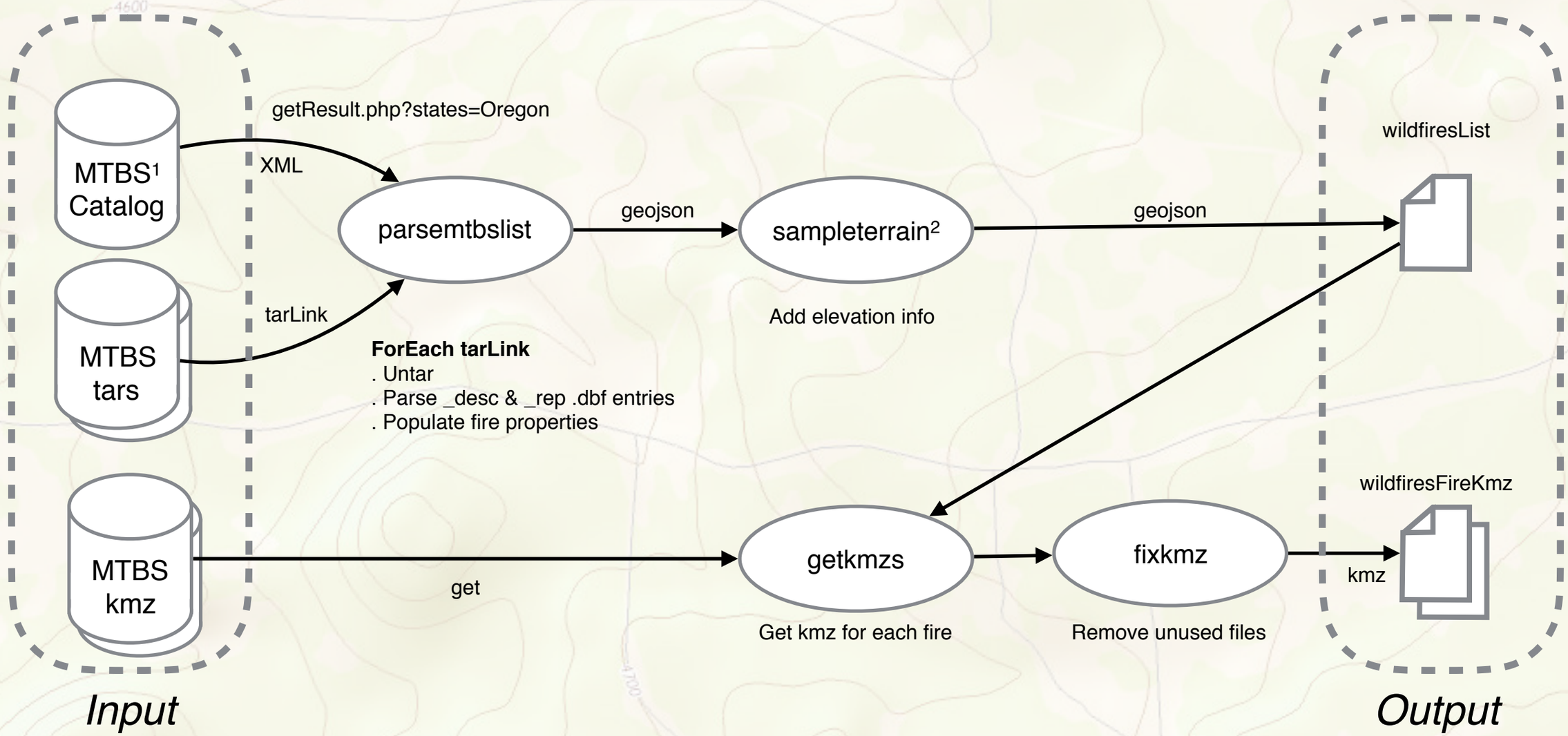
```
Cesium.CzmlDataSource.load
  (statsAndCZML.czml).then(function(ds) {
    _viewer.dataSources.add(ds).then(function() {
      ...
      set up event listeners (e.g., update viewLabel)
    });
  });
```




```
animationViewModel.
  playForwardViewModel.command()
animationViewModel.
  pauseViewModel.command()
```

EXAMPLE 2

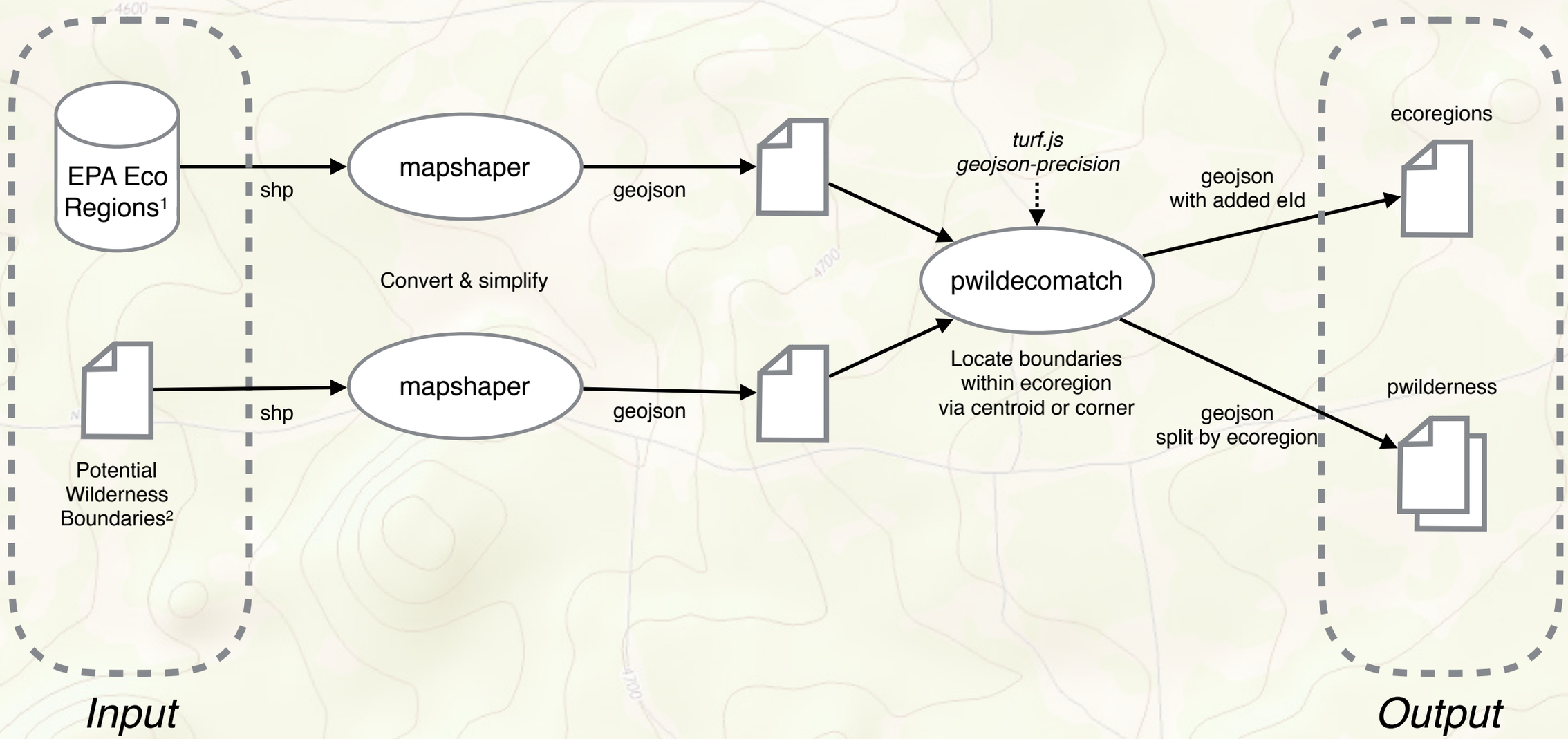
Processing wildfires view data sources



(1) Monitoring Trends in Burn Severity, http://mtbs.gov/mtbs_mysql/dataquery
(2) https://www.npmjs.com/package/sampleterrain

EXAMPLE 3

Processing ecopwilderness view data sources



(1) https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-state
(2) Oregon Wild

Sometimes we need duct tape and bubble gum…

Polyline clamp to ground not supported	✓ Replace with Corridor • … but outlineWidth is in meters vs width in pixels ✓ Adjust corridor width using camera height change listener ✓ Use a step function to reduce flicker
KML image overlay clamp to ground not supported	✓ Load KML data source but show=false ✓ Add SingleTileImageryProvider using KML data source image url and rectangle coordinates
No explicit z-order support	✓ Load entities in z-order • …but changing entity appearance (e.g., opacity) draws on top ✓ SO, pretend to change entity colors in the correct order ✓ e.g., entity.corridor.material = entity.corridor.material.color.getValue()
Geo-located HTML popups not supported	✓ Handle click events and use viewer.scene.drillPick to open popup ✓ Use postRender event listener to track entity window coordinates ✓ Use css translate to move popup

In summary…

- ***Open source is awesome*** - it is like having a huge team on your project!

- ***Open data is awesome*** - your imagination is the limit, but be prepared to bend over backwards!

- ***CesiumJS is awesome*** - it is a very active and super helpful community!

- ***Oregon Wild is awesome*** - they fight to protect our state's wilderness!

Contributions welcome!

I just want to see the spotlights	Just go to oregonhowl.org
I want the author to fix bugs	Create issues on Github: github.com/jimmyangel/howl/issues
I want the author to consider and work on new features	Comment on the blog: blog.rikitraki.com
I want to create my own and/or contribute code	Fork & PR repos: https://github.com/jimmyangel/howl

Find me:
@jimmieangel on Twitter
my blog.rikitraki.com
Cesium booth on Friday @ ~noon

Many thanks to…

- Erik Fernandez of Oregon Wild for his support, feedback and direction
- The MTBS team for their responsiveness and feedback
- The CesiumJS team for their support and encouragement

Thank you!

Backup

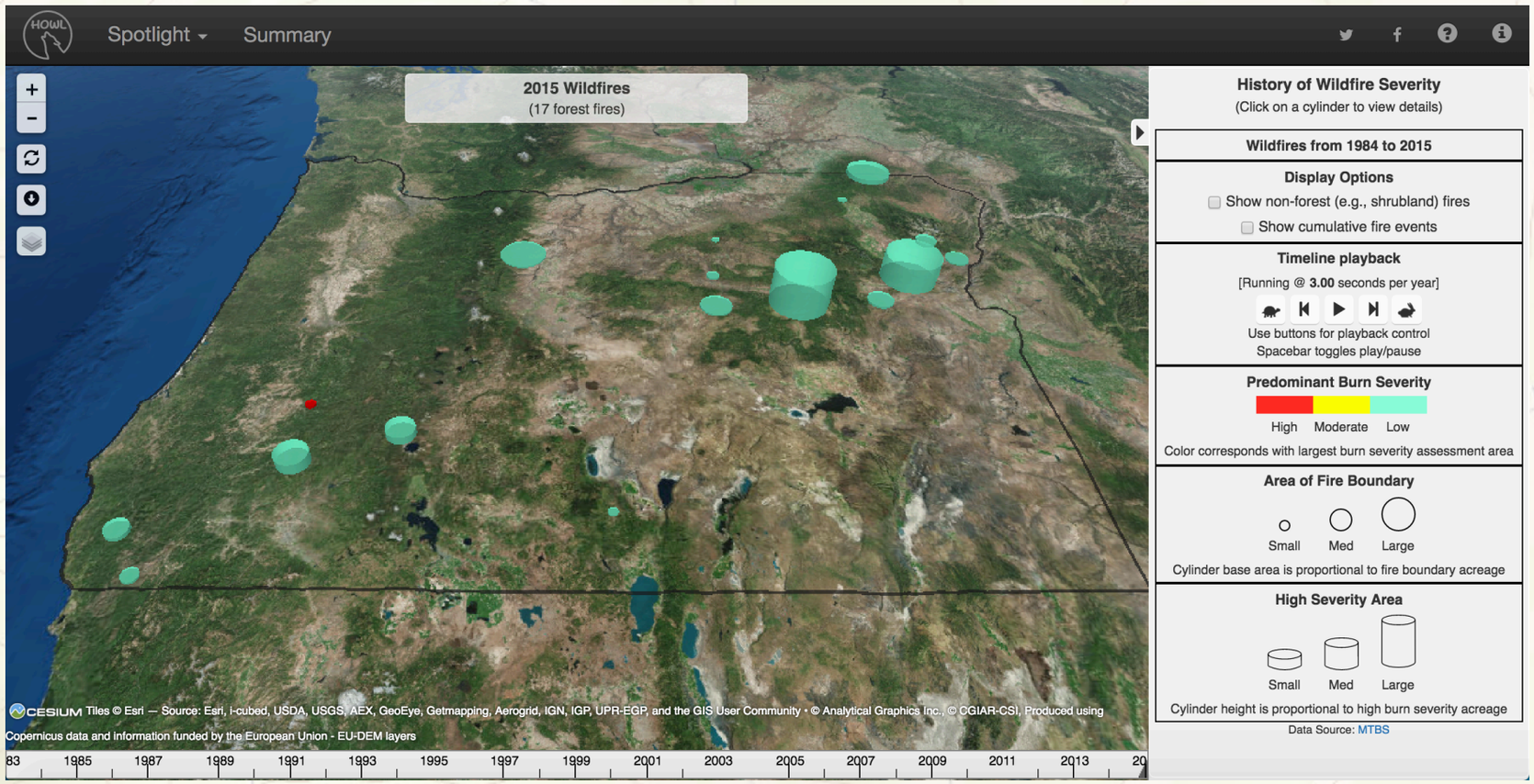
HOWL Concepts
Cards and Spotlights

Photo by the Oregon Department of Forestry

HISTORY OF WILDFIRE SEVERITY

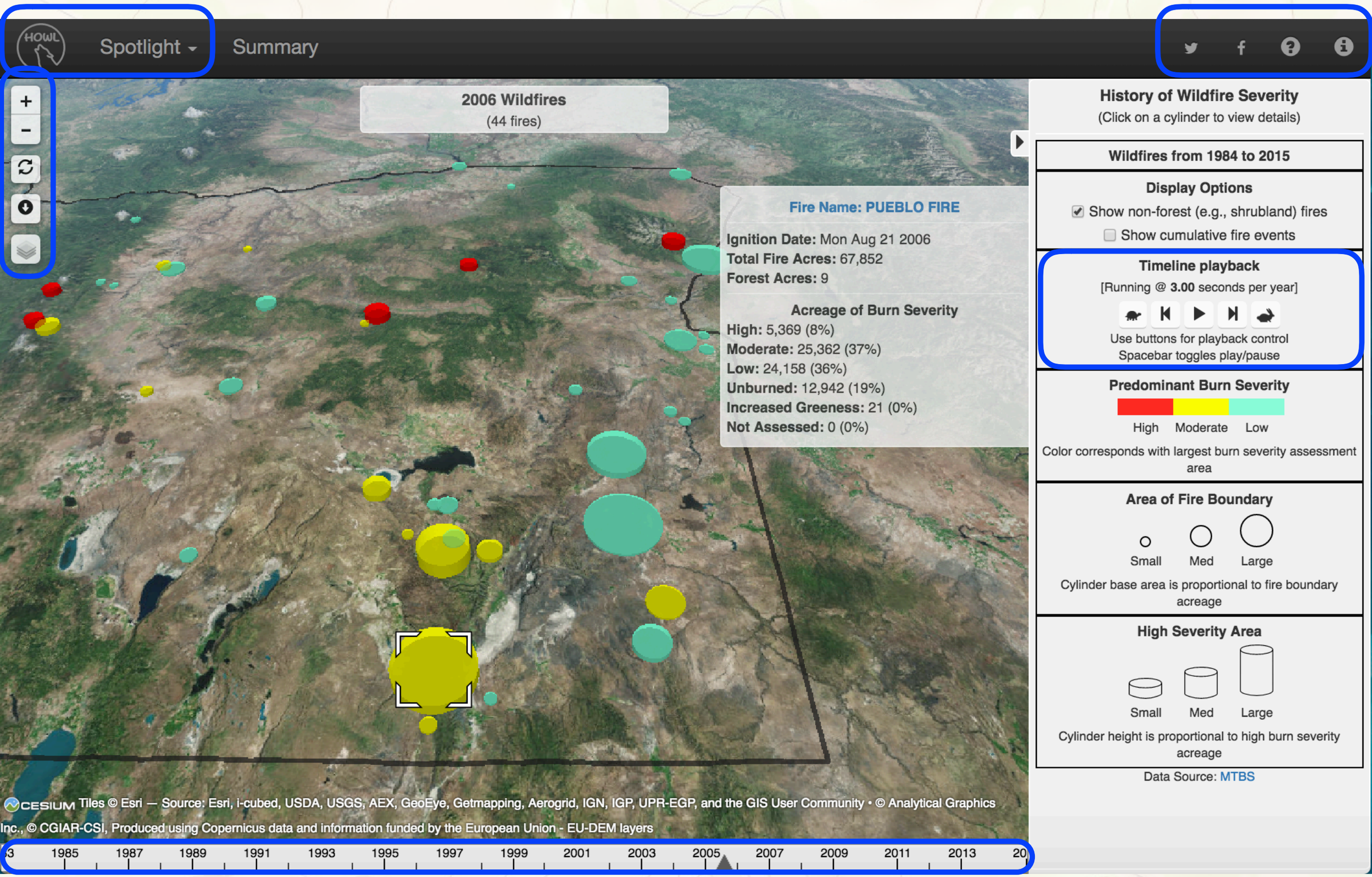
In the Pacific Northwest, fire is a natural part of healthy forests. Since 2004 the Federal Government has been conducting detailed wildfire severity assessments by analyzing before and after LANDSAT satellite images of fire boundaries. This 'spotlight' shows the history of wildfires in Oregon and their severity since 1984.

Home Card

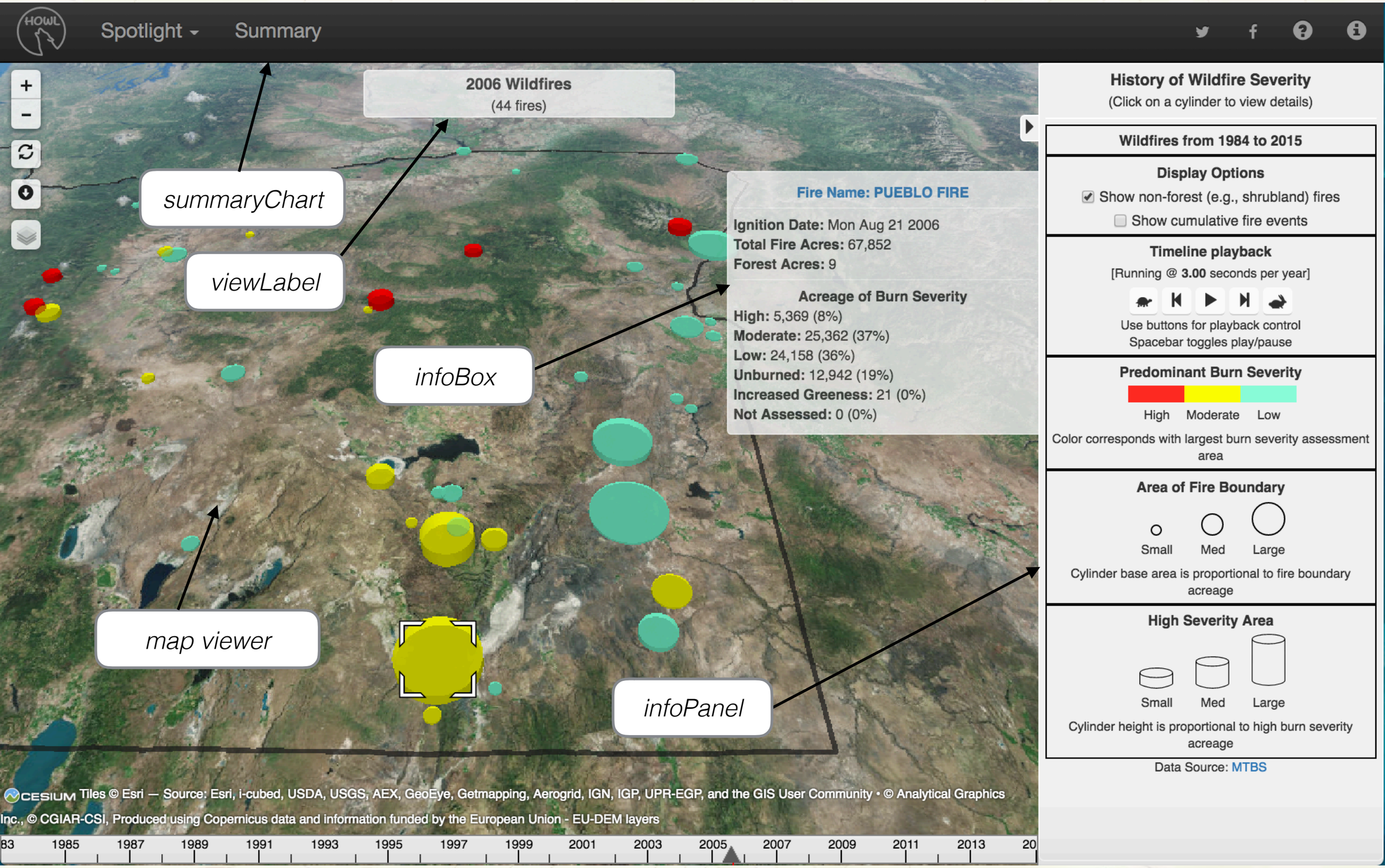


Spotlight

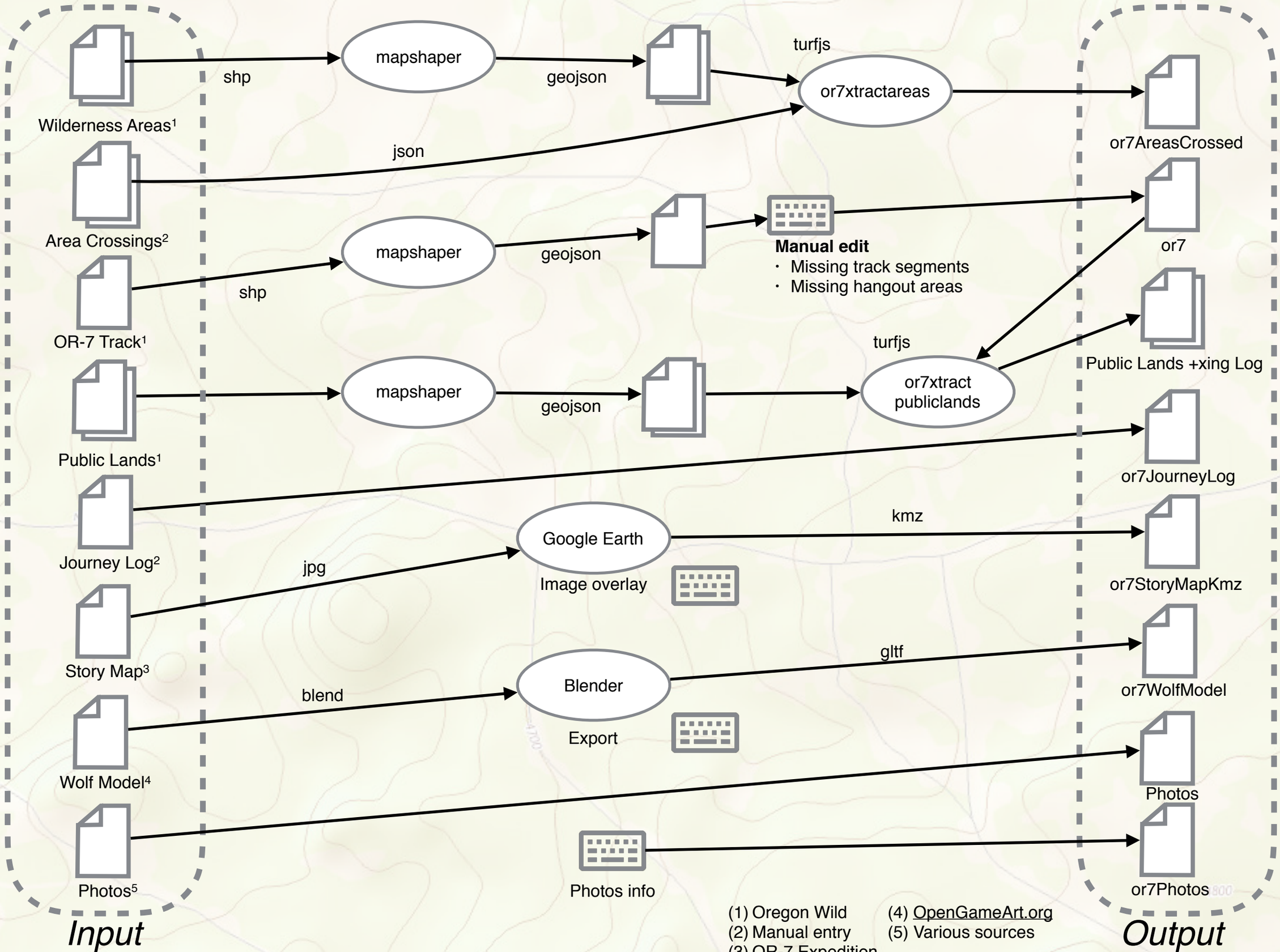
Spotlight's Common UI Elements



Spotlight's Customizable UI Containers

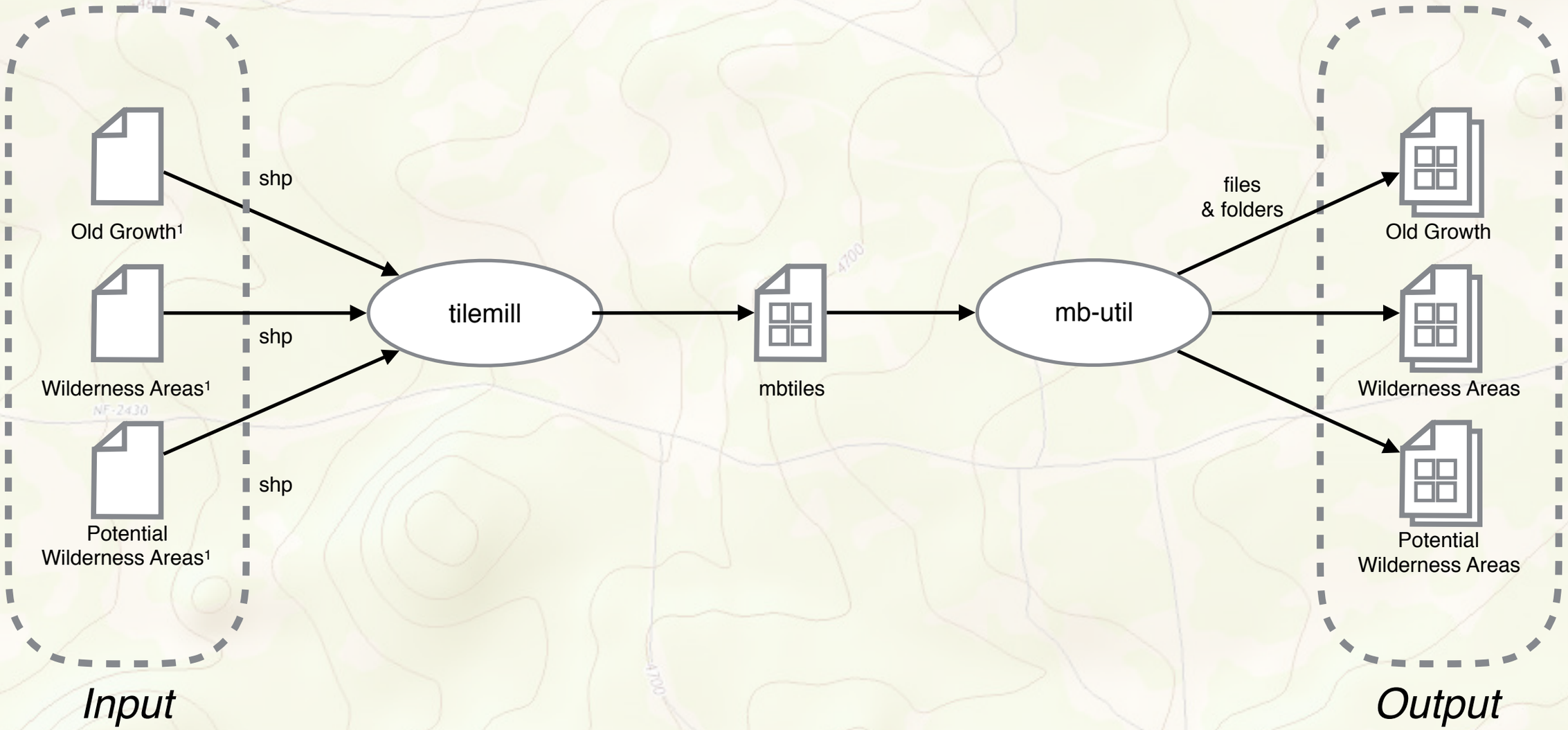


or7 view data sources



(1) Oregon Wild
(2) Manual entry
(3) OR-7 Expedition
(4) OpenGameArt.org
(5) Various sources

tiles



(1) Oregon Wild