# Graphic Applications And 3D Objects

## > 3DHOP

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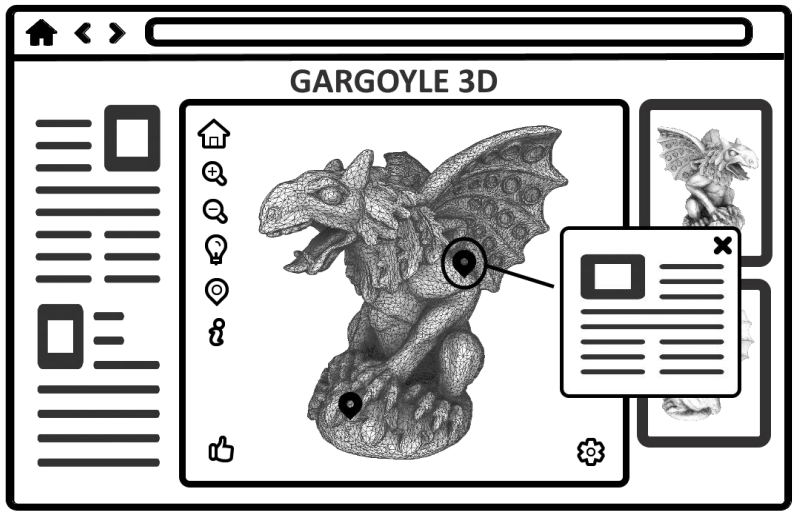
# Defining The Workspace




The term Web3D defines the presence of 3D data on the web…

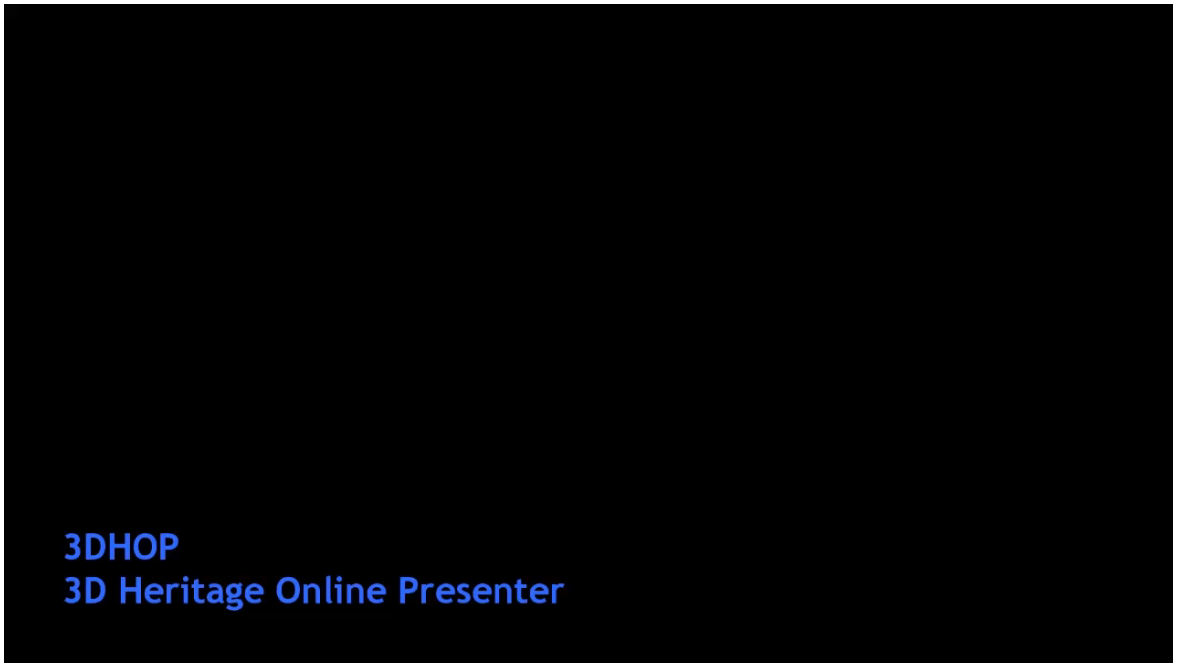
However, with this word we don’t mean just a geometry rendered in a dark box on a webpage!

Nowadays Web3D indicates 3D content fully integrated in the web ecosystem…

# 3D Heritage Online Presenter

Or in one word…

…3DHOP



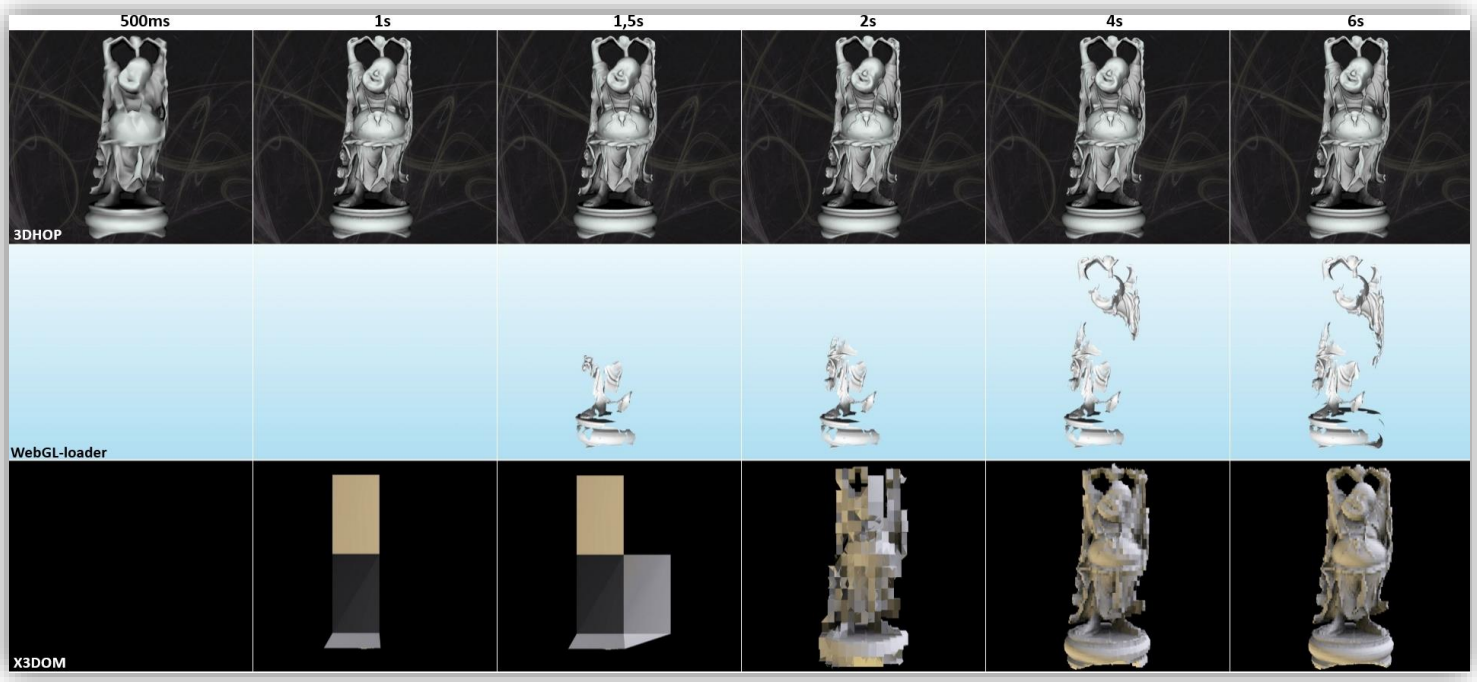
# Main Features: Data Handling

3DHOP provides performing Web handling of high-resolution 3D datasets (big size, huge complexity) like the ones coming from real world acquisitions

Thanks to a multi-resolution view-dependent approach designed for Hi-Res 3D, 3DHOP enables the exploration of very large models with low bandwidth requirements

3DHOP efficiently handles both meshes and point clouds, supports both color per vertex and multi textures, and provides model compression

# A Performance Comparison




Web rendering of a 1M triangles mesh on a 5Mbit/s Internet access, using 3DHOP Nexus, the Google WebGL-loader and the X3DOM binary POP Buffer Geometry approach

# Main Features: Scene Setup

3DHOP is easy to use, especially from the point of view of people not having a background in CG programming

It adopts a modular structure and a development paradigms oriented to the declarative setup

```
function setup3dhop() {
  presenter = new Presenter("draw-canvas");

  presenter.setScene({
    meshes: {
      "Gargoyle": {
        url: "models/multires/gargo.nxs"
      }
    },
    modelInstances: {
      "Model1": {
        mesh: "Gargoyle"
      }
    },
    trackball: {
      type: TurnTableTrackball,
      trackOptions: {
        startPhi: 0.0,
        startTheta: 0.0,
        startDistance: 2.5,
        minMaxPhi: [-170, 170],
        minMaxTheta: [-10.0, 50.0],
        minMaxDist: [0.5, 3.0]
      }
    }
  });
```

# Main Features: User Interaction

3DHOP provides intuitive, configurable and interchangeable user interaction schemes

It includes several different trackballs, provided in the distribution as a separate file for making it easier to use them as codebase

A set of higher-level interaction components are also included in the viewer interface (light tool, picking and measurement tools, sections tool)

# Main Features: Media Integration

3DHOP is a framework fully integrated with the webpage.

It provides a series of components useful in connecting with the rest of the webpage logic:

- Camera Automations
- Visibility Controls
- Hot-spots and Picking

# Main Features: Accessibility

3DHOP wants to be accessible at different levels.

Developers with limited programming skills may use the framework using one of the following strategies:

- Zero configuration: using the provided defaults;
- How-To: modifying tutorial examples;
- Templates: editing gallery examples.

In projects where a specific solution is needed to fully exploit the data and to reach the communication goals, 3DHOP may be seen as a codebase.

# Aims And Limits

3DHOP is NOT a silver bullet… It is a very focused tool:

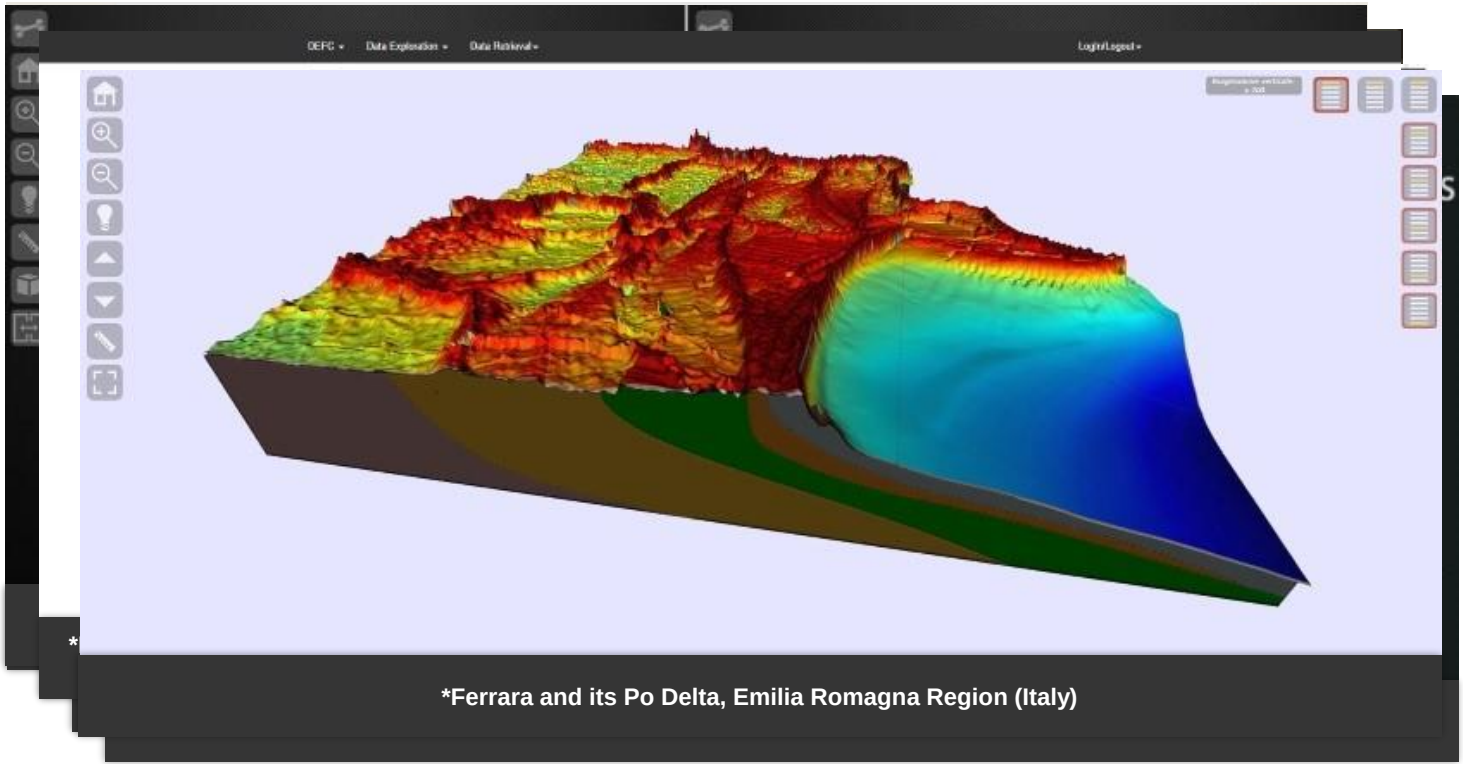
- SIMPLE scenes made of COMPLEX objects, not COMPLEX scenes made of SIMPLE objects;
- Works very well with “triangles/points soups” models, but not so much with structured, CAD-like models;
- Designed for FAST development and deployment, limits on the complexity of visualization schemes;
- SIMPLE and IMMEDIATE interaction, impossible to make games;
- Easy to use, but still requires HTML editing and JavaScript programming;

# 3DHOP Out In The Wild

3DHOP is not just a research demonstrator! It is a fully qualified solution:

- Official website (3dhop.net) with tutorials, gallery of examples, code documentation, downloadable packages, contacts, etc.
- Official GitHub repository (github.com/cnr-isti-vclab/3DHOP) for source code (open source with GPL license) archiving and collaborative development.
- Official direct channels aimed at technical support (info@3dhop.net) and at audience engagement (two active social network profiles).
- Currently used in a lot of real world projects…

# Third-Party Projects

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# Thank you! Questions?

References

- 3DHOP – 3D Heritage Online Presenter
  http://3dhop.net

Contacts


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