



3D Web Application for ATLAS Detector

Guram Mikiashvili
Lasha Pataridze



Overview

Application

- The idea
- How it looks like

Boring Technical Stuff

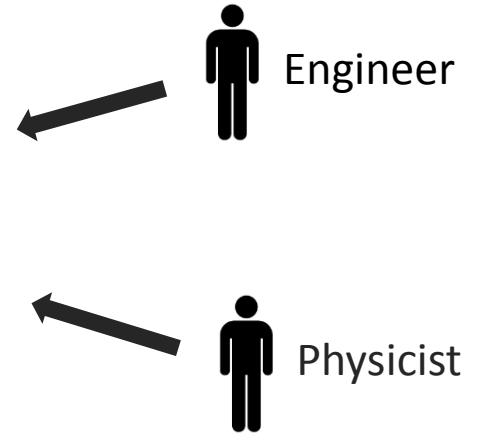
- Research
- “Eureka”
- Geometries
- Problem/Solution

Conceptual design



Application - The Idea

Web app, why, timeline of experiments, ATLAS detector geometry, tracks, material, mass, length, when, where, who



“you, me, them, **EVERYBODY,**
EVERYBODY”

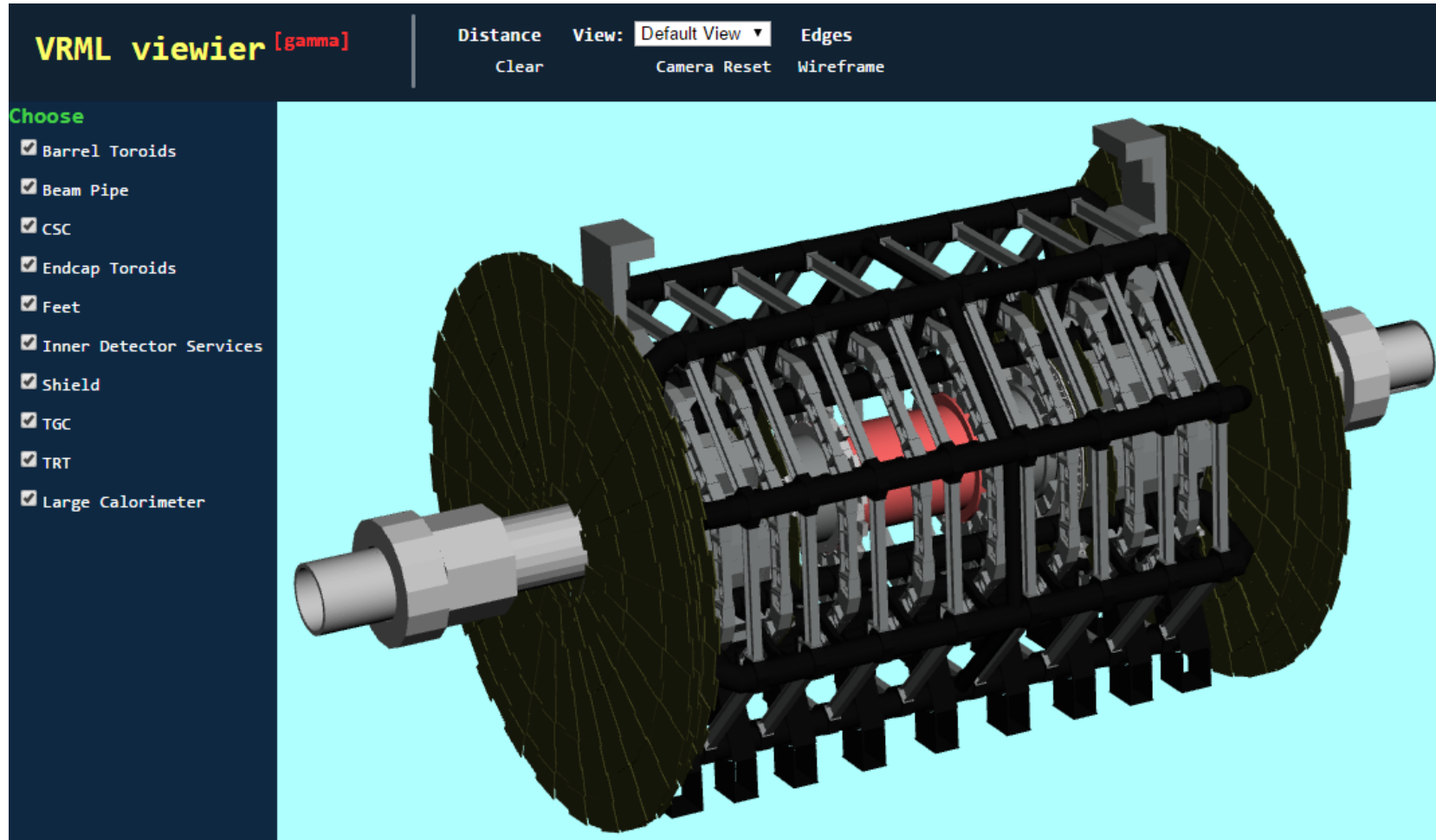


3D Web Application for ATLAS Detector

Guram Mikiashvili, Lasha Pataridze



Application - How it looks like



[Viewer link](#)



3D Web Application for ATLAS Detector

Guram Mikiashvili, Lasha Pataridze



Boring Technical Stuff - Research

We found API, Platforms, engines



Our criteria:

- Supports every OS
- Not Plug-in
- Has a lot of functions
- Performance
- Allows developer add their own functionalities



Boring Technical Stuff – “Eureka”

WebGL

Web graphic library, javascript API



Boring Technical Stuff – “Eureka”

WebGL using examples



3D Web Application for ATLAS Detector

Guram Mikiashvili, Lasha Pataridze



Boring Technical Stuff – “Eureka”

three.js

WebGL based, javascript library, open source

Scenes, Cameras, Geometry, 3D Model Loaders, Lights, Materials, Shaders, Particles, Animation, Math Utilities



<https://github.com/mrdoob/three.js/>

three.js <http://threejs.org/>



3D Web Application for ATLAS Detector

Guram Mikiashvili, Lasha Pataridze



Boring Technical Stuff – Geometries

Now – VRML from SmarTeam

In Future – XML/AGDD



Boring Technical Stuff – Problem/Solution

Problem - Browser kills page after 1.5 million face set

Our Current Solution – Simplify geometry



Conceptual Design:

Application for Development purpose

1. Compare CATIA and XML geometries – measurements, cutouts, overlaps detection
2. XML edit
3. XML debug
4. Mass properties calculation
5. Visualization

Application for Educational purpose

1. Learning ATLAS detector
2. Detailed information about ATLAS detector components
3. When and how ATLAS detector parts were created
4. When and how each component was installed
5. Timeline of experiments
6. Draw and animate tracks
7. Video tutorials for users
8. Virtual tour in ATLAS detector





Thank you for your attention



3D Web Application for ATLAS Detector

Guram Mikiashvili, Lasha Pataridze

