New geometry viewer in ROOT

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Why?

• Lots of functionality in JSROOT
  – but limited performance
• Eve7 with support of server-sides shapes
  – main server-side code for 3D rendering is there
• Hierarchy browser from RBrowser
  – navigation through nodes hierarchy

• Combine all together and implement geometry viewer
Screenshot
Easy to use

// load geometry

using namespace ROOT::Experimental;

auto viewer = std::make_shared<REveGeomViewer>(gGeoManager);

// select volume to draw
viewer->SelectVolume("CMSE");

// specify JSROOT draw options - here clipping on X,Y,Z axes
viewer->SetDrawOptions("clipxyz");

// set default limits for number of visible nodes and faces
// when viewer created, initial values exported from TGeoManager
viewer->SetLimits();

// start web browser
viewer->Show();

// add to global heap to avoid immediate destroy of RGeomViewer
RDirectory::Heap().Add("geom_viewer", viewer);

// complete example: $ROOTSYS/tutorials/eve7/viewer.C
Browsing nodes hierarchy

• Use hierarchy display from RBrowser
  – scalable
  – load only visible items

• Individual items draw
  – minimal type info

• To do:
  – node/volume/shape info
Search nodes by name

• Show results as:
  – hierarchy
  – highlight in drawing
Configuration

- Visibility level
- Scene lights
- Clipping
- Transparency
- Wireframe
- Axes
- Background
- …
Detector „transformation“
Offline usage

• Only client-side code is preserved
  – ROOT server just prepares data and stores on disk
• Exactly same look and feel
  – not for free, missing server code should be provided by client
• Can be used for outreach

• Example:
  – [https://linev.github.io/geomCMS/](https://linev.github.io/geomCMS/)
Status and plans

• Viewer can be used with any existing geometry
  – ROOT should be compiled with -Droot7=ON

• See tutorials:
  – tutorials/eve7/viewer.C
  – tutorials/geom/webdemo.C

• Plans:
  – integrate into RBrowser
  – support overlaps
  – more details on info page

• Any feedback is welcome!

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