# ALICE MONITORING IN 3-D

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A 3-D model of the ALICE experiment has been developed and integrated with the Detector Control System. All ALICE subdetectors are displayed in colours, matching their actual DCS state, giving an intuitive overview of the status of the detector.
The tools were developed in WinCC OA environment, using the CERN JCOP Fw3DViewer. The geometry model is based on the ALICE AliRoot definitions, used by the OFFLINE system.
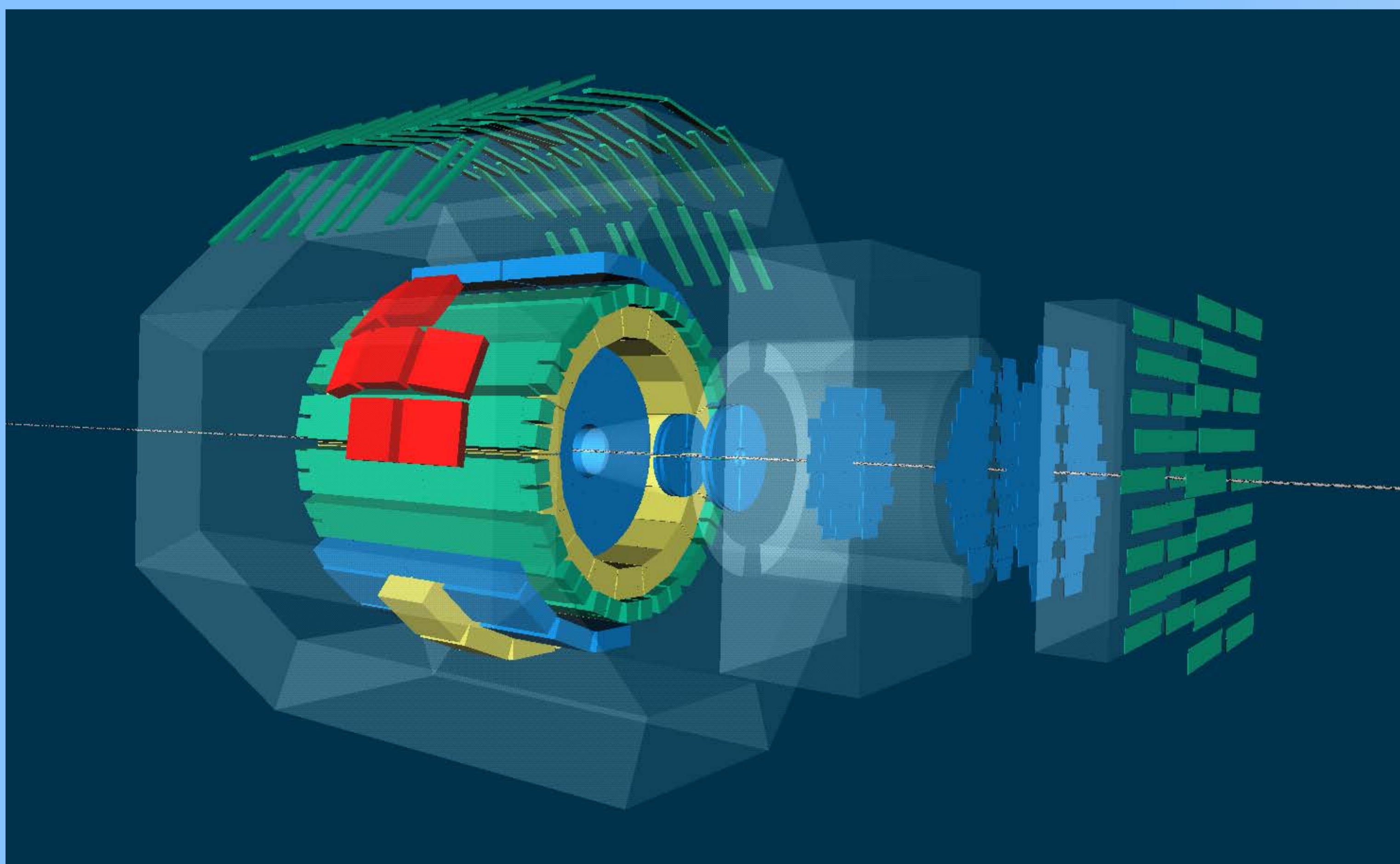
The geometry is based on data extracted from the ALICE OCDB, the ALICE offline database. The data is available as a raw code or in the CERN Root format. XML/GDML detector description extracted from Root/AliRoot is converted in Fw3Dviewer structures with a library developed in WinCC scripting language.

ROOT offline — ALICE OCDB — DAE CAD — TeV — XML GDML
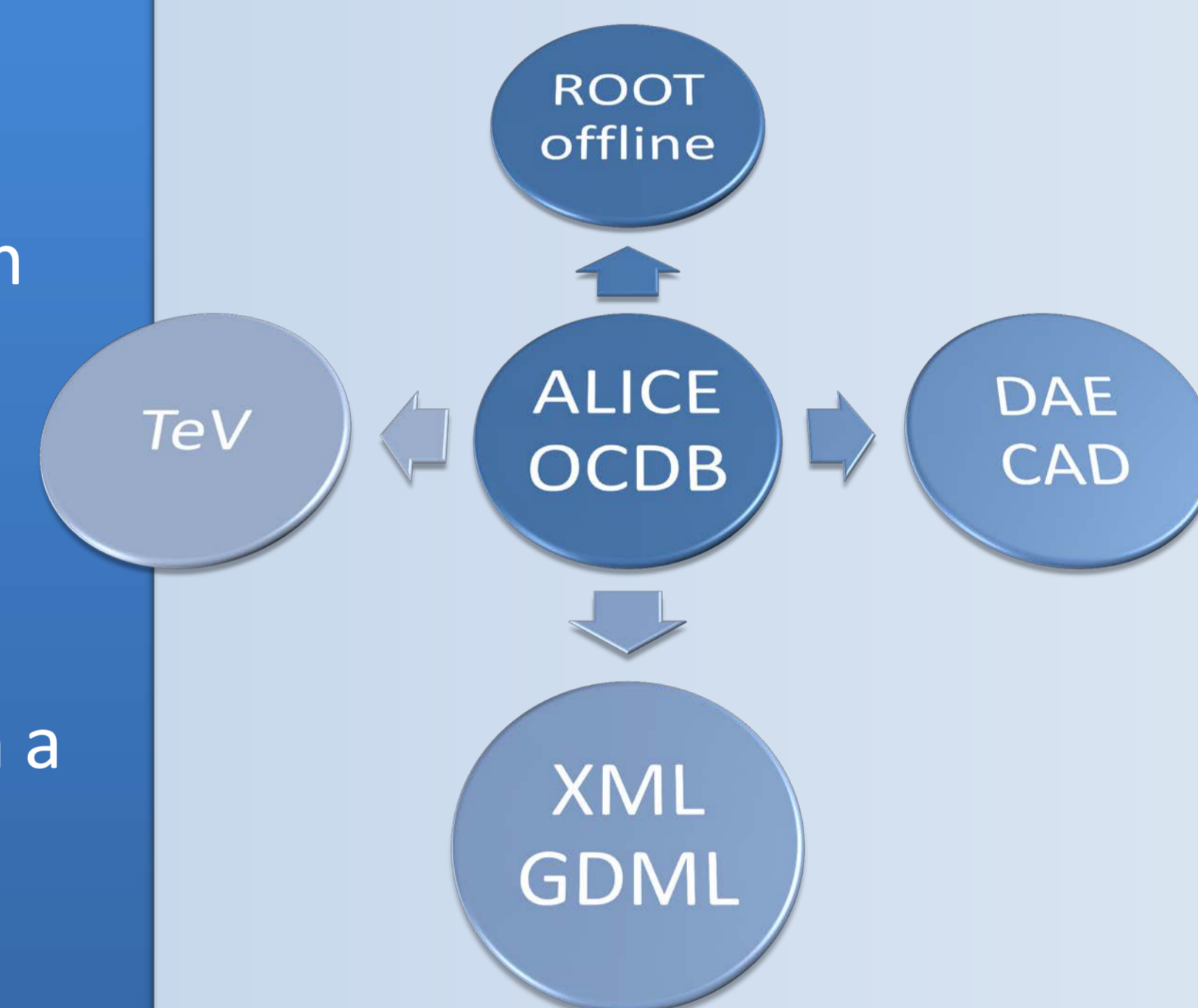
Detector geometry
• Load ALICE geometry in ROOT

Bounding boxes
• Identify and select detector's BoundingBoxes and containers
TGeoVolume * gGeoManager->GetVolume("…");
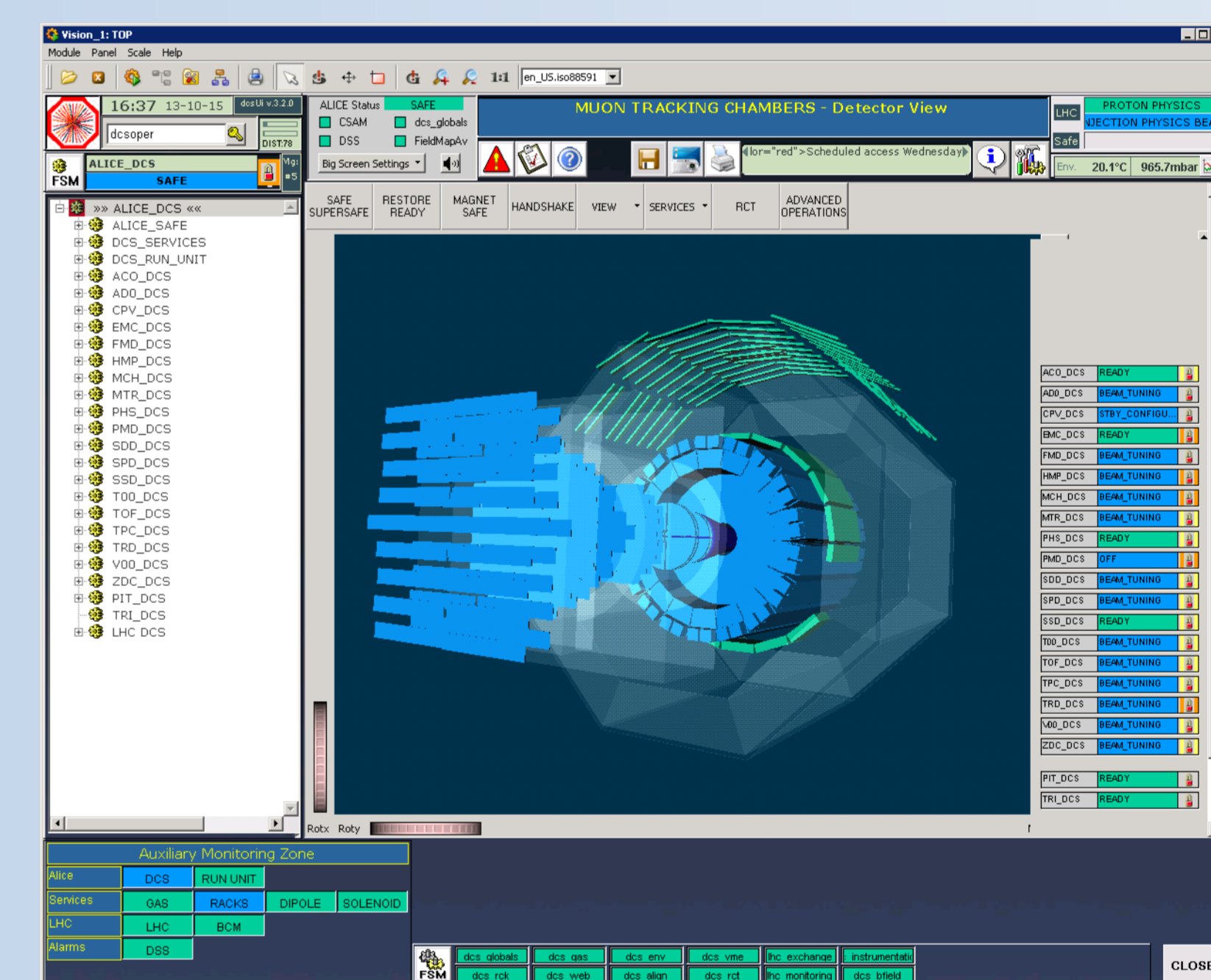
XML GDML
• Export in XML or GDML:
gGeoManager->Export("detector.xml");

WinCC library
• Identify shapes
• Recognize parameters
• Translate in Fw3DViewer

3-D panel
• Load geometry in Fw3DViewer canvas
• Connect shapes to FSM with fwCU_connectState

DCS Operator panel using the 3-D visualization of the ALICE detectors. The colours of individual modules match the colour coding of their current DCS states, as shown on the right side of the panel.
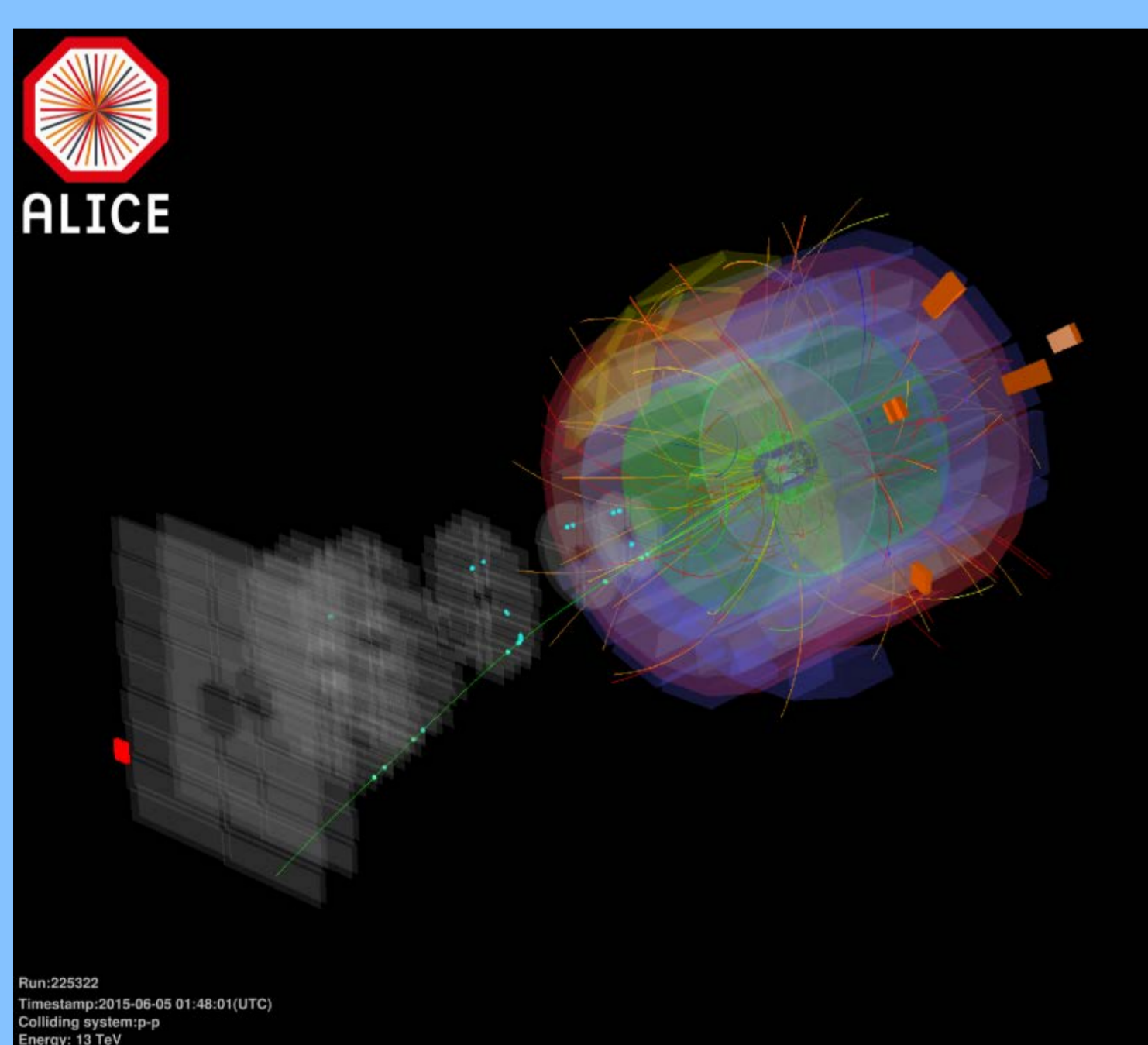
ALICE Event Display providing live visualization of particle interactions with the detectors. The 3-D model is based on the same geometry as the DCS display

The 3-D model is available as part of the operational tools used by the ALICE shift crew. Intuitive display of all detectors and elements, linked to the real detector states, helps the shifter to quickly identify the status of the whole experiment ad its components.
Installed on a large touch screen and powered by the ALICE DCS simulator, the model was made available to the public during the OpenDays at CERN in September 2013. A replica of the operator screen will support the ALICE outreach activities and will be installed in ALICE visitors centre within the frames of multimedia "Magic Windows" project.