



Tracer ARB Updates – Application for the ATLAS Fact-Sheets



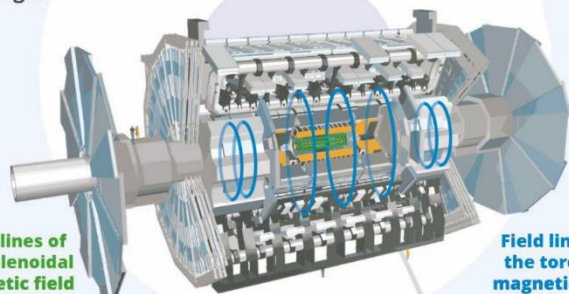
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MAGNET SYSTEM

ATLAS uses two different types of superconducting magnet systems – solenoidal and toroidal. When cooled to about 4.5 K (-268°C), these are able to provide strong magnetic fields that bend the trajectories of charged particles. This allows physicists to measure their momentum and charge.



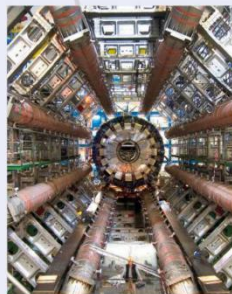
CENTRAL SOLENOID MAGNET

The ATLAS solenoid surrounds the inner detector at the core of the experiment. This powerful magnet is 5.6 m long, 2.56 m in diameter and weighs over 5 tonnes. It provides a 2 Tesla magnetic field in just 4.5 cm thickness. This is achieved by embedding over 9 km of niobium-titanium superconductor wires into strengthened, pure aluminum strips, thus minimising possible interactions between the magnet and the particles being studied.

TOROID MAGNET

The ATLAS toroids use a series of eight coils to provide a magnetic field of up to 3.5 Tesla, used to measure the momentum of muons. There are three toroid magnets in ATLAS: two at the ends of the experiment, and one massive toroid surrounding the centre of the experiment.

At 25.3 m in length, the central toroid is the largest toroidal magnet ever constructed and is an iconic element of ATLAS. It uses over 56 km of superconducting wire and weighs about 830 tonnes. The end-cap toroids extend the magnetic field to particles leaving the detector close to the beam pipe. Each end-cap is 10.7 m in diameter and weighs 240 tonnes.



<https://atlas.cern>
<https://8th.io/vem2j>



1. It is crucial that the software is tested to work on every standard browser/OS combination before we can consider anything officially delivered, and perhaps before we go further and expand the number of pages covered – **Done!**
2. It would be good (as you mention is being explored by your team) to speed up the performance of loading, but in particular the performance when running, if at all possible – **Done. Now it takes just 8 seconds to start**
3. On the first animation you showed: we propose that you delete the wall of the cavern, as it blocks the view of the detector – **Done. Cavern walls become transparent**
4. On the second animation: the human walking through the magnet creates a bit of a strange impression, especially with the field lines — perhaps they can simply be near the detector, on the ground? – **Still thinking what is better**
5. On the third animation — as you mentioned — the magnetic field lines are incorrect. The lines as shown on the sheet itself are however correct, so the animation should be modified to follow exactly what is shown on the sheet – **Done!**

~~I. Performance:~~

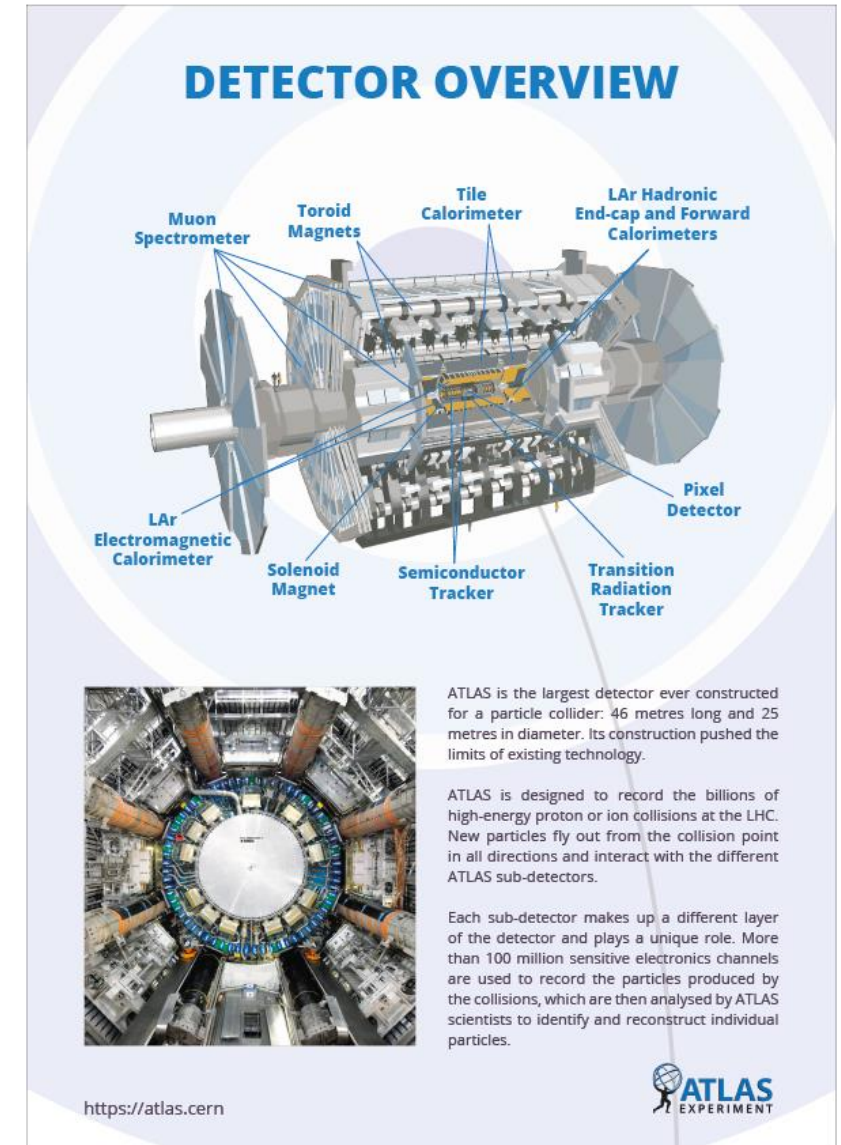
- ~~▪ Simplify geometries and reduce number of facets as much as it possible to free up the GPU load~~
- ~~▪ Reduce size of scenes to make download faster. For the moment 3 scenes presented above have ~46Mb size and it took ~20 seconds for downloading~~

II. Replace 8thWall commercial library with the own one (time consuming) – Still the issue

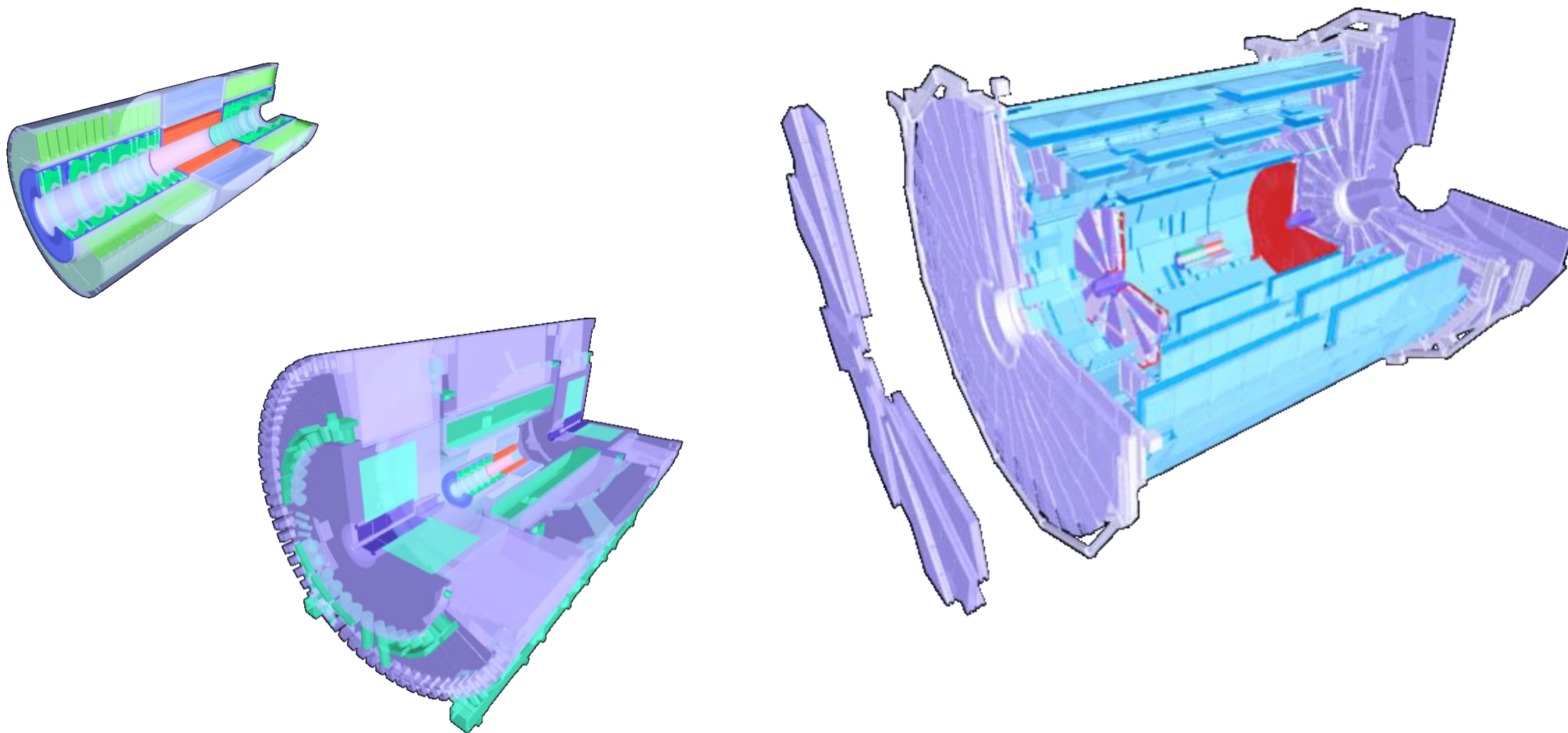
~~III. Find the ways for better cohabitation of the gyroscopic control with the touch control (many of the RD work)~~

We have several ways to proceed:

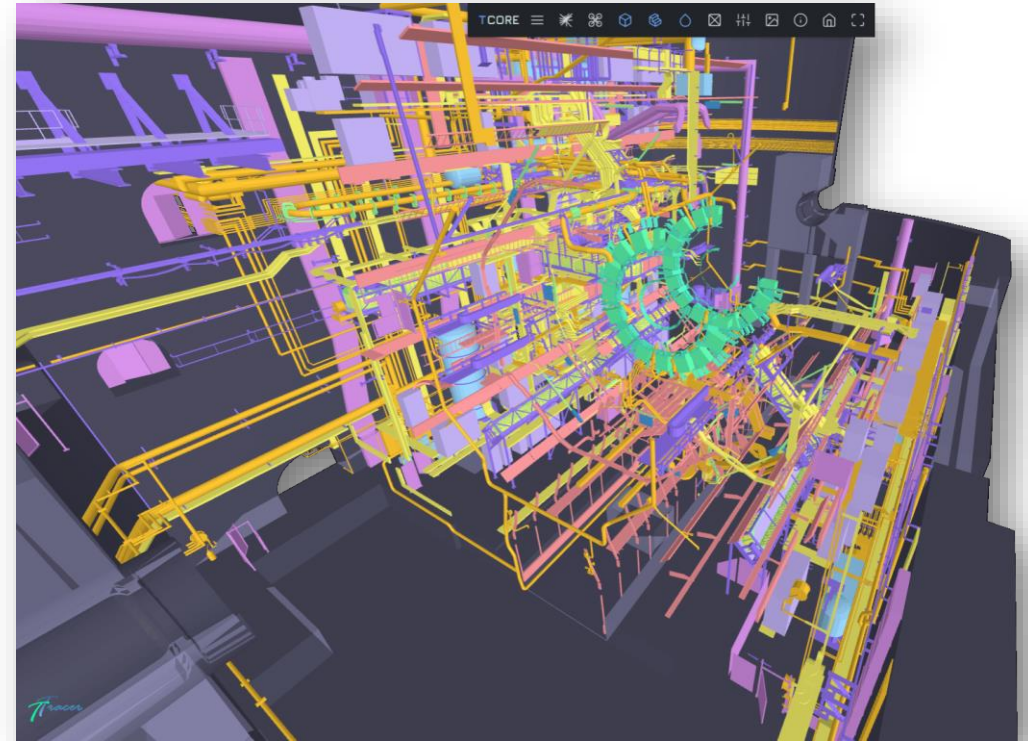
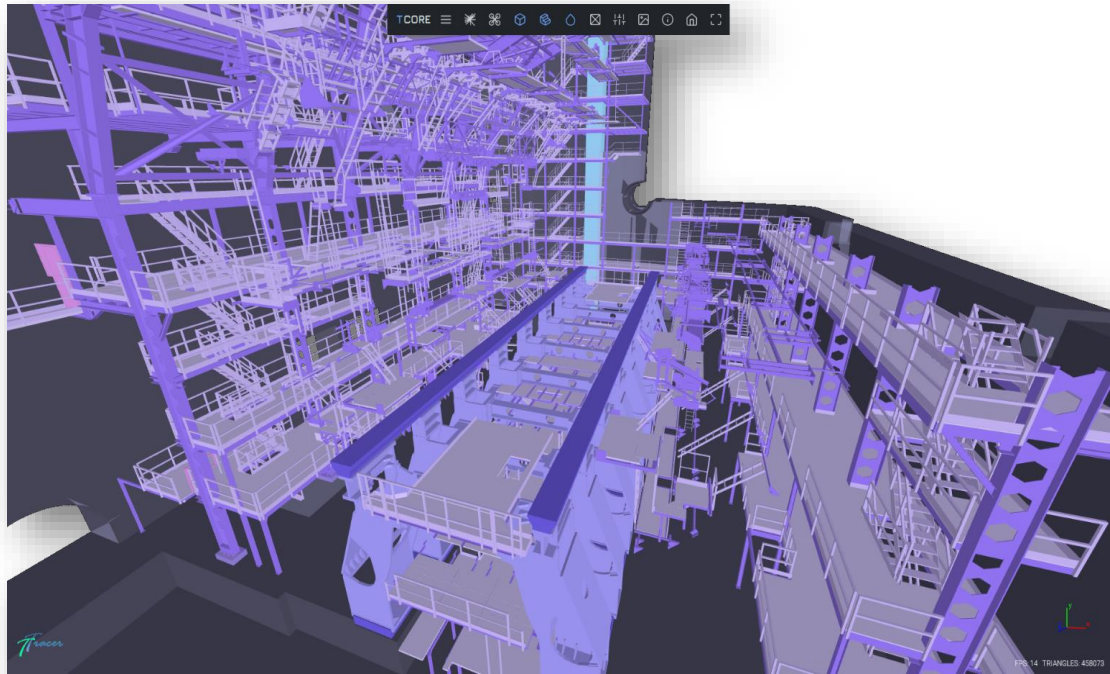
1. Add different anatomy of the detector grouped by the subsystems
2. Provide different scenarios – for instance, cavern with just platforms, or with only the services, etc.
3. Add animated assembly/disassembly 3D scenes



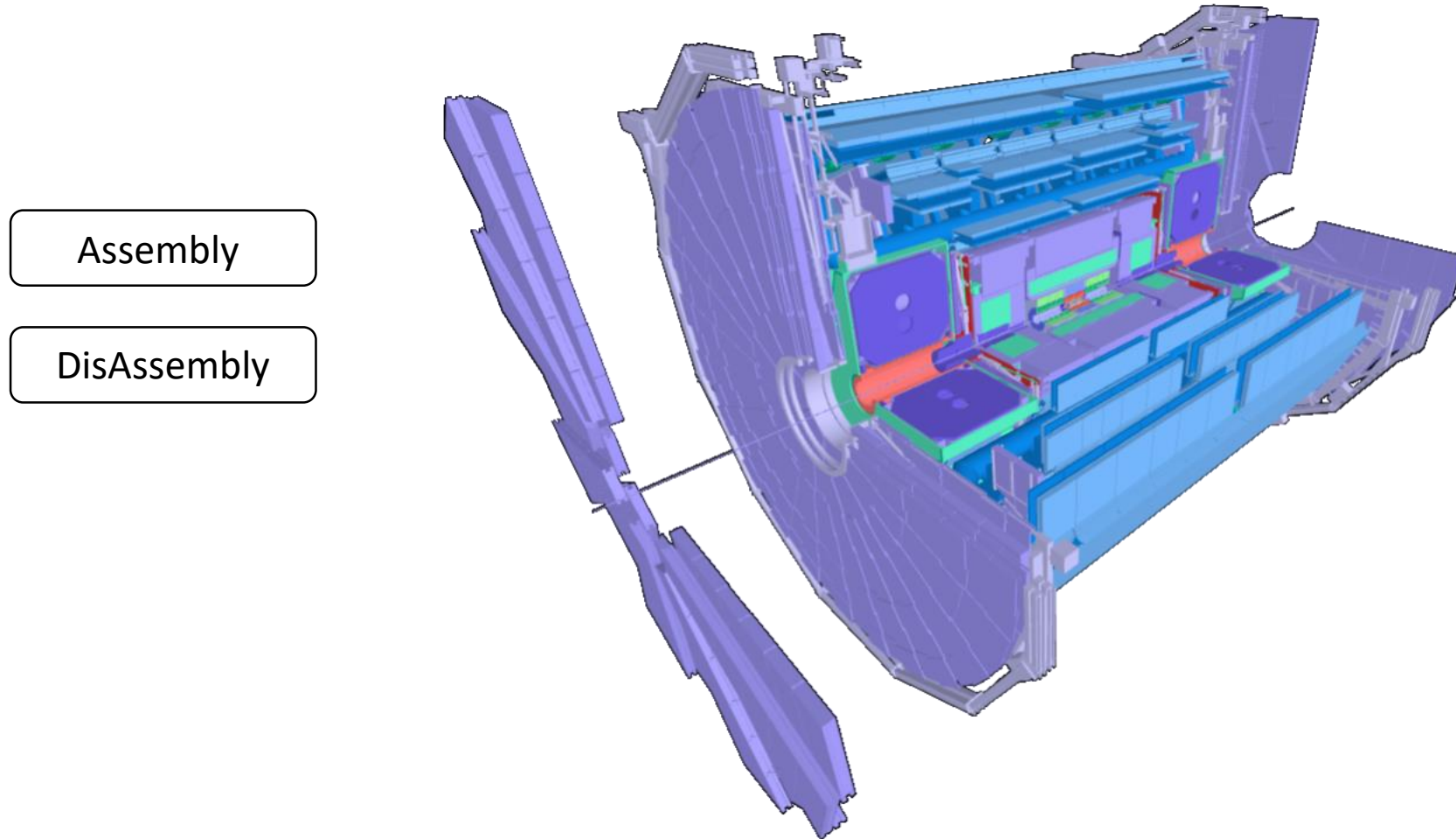
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Thanks!