

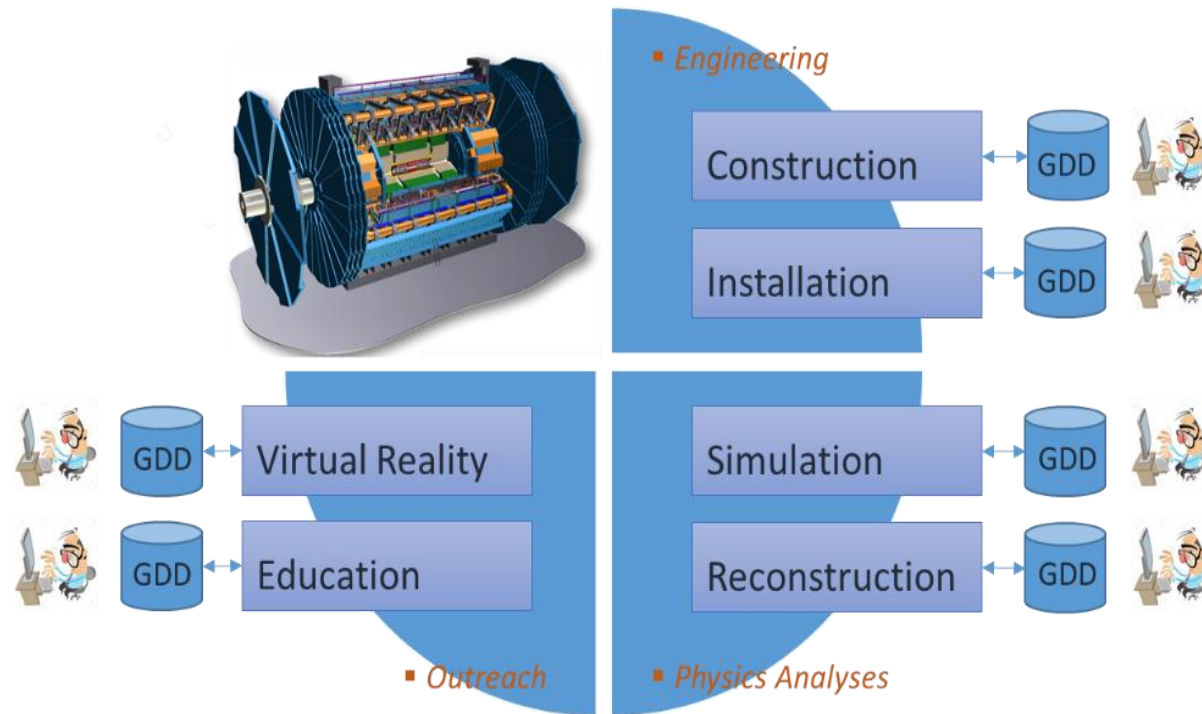
Development of Reference Geometry DB of ATLAS Detector

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Why Reference Geometry

- Geometry descriptions are primary information for Construction and Installation; Physics Analyses, Outreach and Education



Reference Geometry

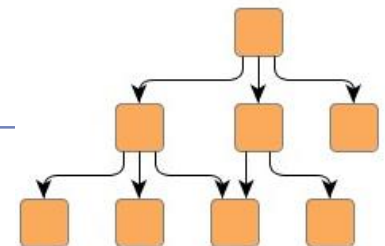
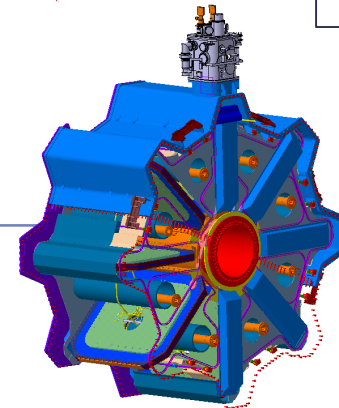


Reference geometry
of ATLAS detector

In one database

Most detailed 3D models

Hierarchically-structured
assembly



Situation in Smarteam by now

1. Not very well structured ATLAS detector models in Smarteam .

→ Have not CATIA structural tree of ATLAS Detector

Have not CATIA structure tree

There are similar models

Identical models

Unknown models, that did not appertain to ATLAS components

Unstructured models - wrong position on CATIA tree



1. Necessary to Create ATLAS Structural Tree

2. 3D modeling and convertation into the Smarteam

→ Most of 3D models are Machine made models

Some models does not exist

Models with conversion fault

Incomplete models

Converted models with wrong name

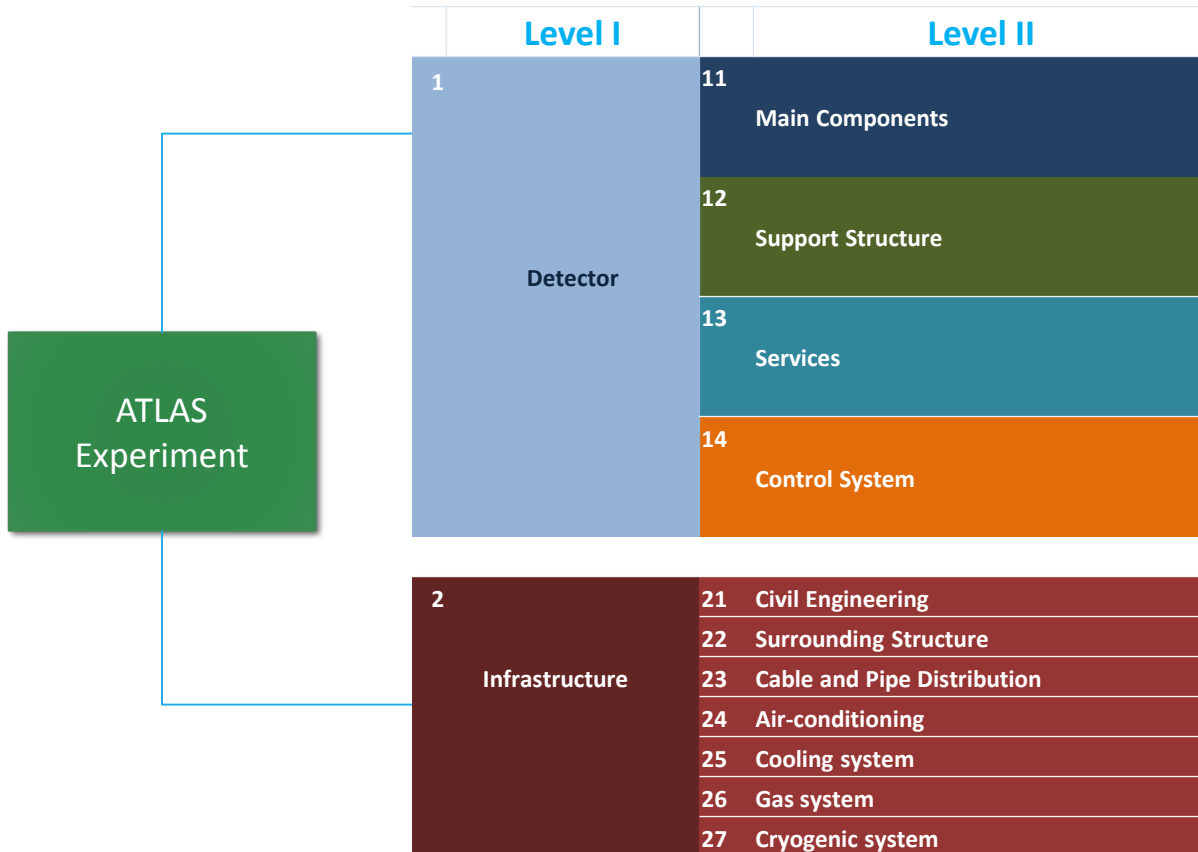
Models with wrong position

Models with unnecessary parts



2. Necessary to reproduce all fault geometries

1. ATLAS Structural tree



Functional decomposition of ATLAS Detector (Level II)

Decomposition resulted in:

- 8-level hierarchy tree
- 207 subassemblies
- 247 components



2. ATLAS detector reproduction To do list

Atlas components		reconstruction	
1	Barrel Toroid,	100%	<i>Finished</i>
2	EndCap Toroid,	100%	<i>Finished</i>
3	Big Wheel MDT Frame,	100%	<i>Finished</i>
4	ECT Tower	100%	<i>Finished</i>
5	Warm Structure	100%	<i>Finished</i>
6	Flexible chain in sector 9	100%	<i>Finished</i>
7	Flexible chain in sector 11	100%	<i>Finished</i>
8	Inner Detector - Pixel	40%	<i>In Progress</i>
9	Inner Detector - SCT	40%	<i>In Progress</i>
10	Inner Detector - TRT	40%	<i>In Progress</i>
11	Calorimetry - LArg	0%	
12	Calorimetry - Tile	0%	
13	Muon Barrel	0%	
14	Muon EndCap	0%	
15	Shieldings	0%	
16	Magnet System - Solenoid	0%	
17	Supports for ECT Toroid	0%	
18	Feets and Rails	0%	
19	MB Access platforms	0%	
20	Cables	0%	
21	Patch panels	0%	
22	Tubes and Pipes	0%	
23	Services supports	0%	

the models reproduced have done for simulation tasks until 2019

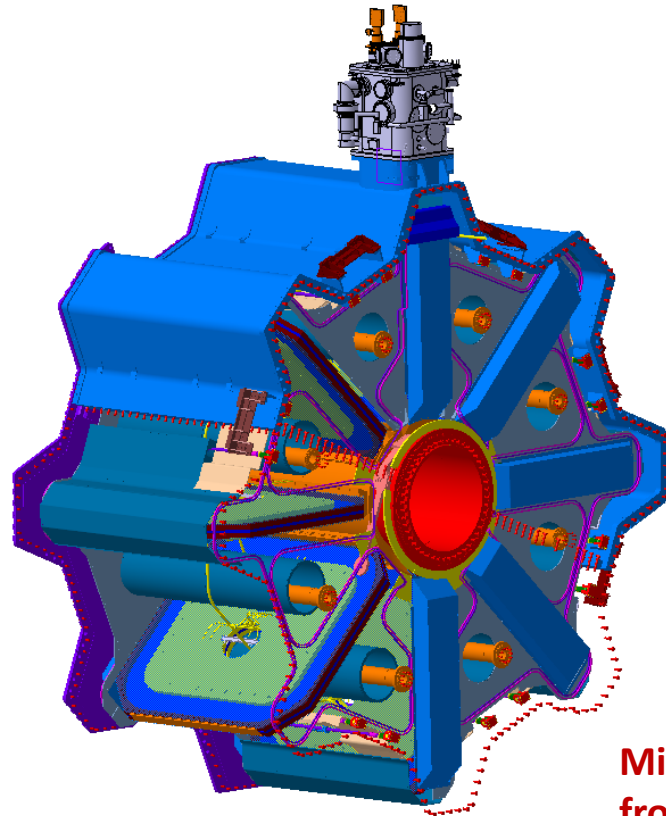
Models reproduction were started from February/2019
Manpower: 2FTE /CATIA designers

Reproduction of Endcap Toroid

Source geometry has been taken from SmarTeam Engineering Database:

Path : ATLAS CURRENT/Detector System/Magnets ATLAS/Toroid Magnets ATLAS/Barrel Toroid Magnet ATLAS/End-cap Toroid Magnet

Model: ST0268528 ECT assembly side C (id: CAD000628534)



Missing parts have been created from CDD Drawings (902 drawings):

		<i>Drawings</i>
ECT	Vacuum vessel	1 Cover 90
		2 Shield 219
		3 Tie Rods 64
		4 Bore Tube 4
		5 Turret 268
	Cold Mass	6 Coil 4
		7 Keystone box 27
		8 Services 135
		9 Supports 13
		10 Joke 12
		11 Tower 30

Thank you
