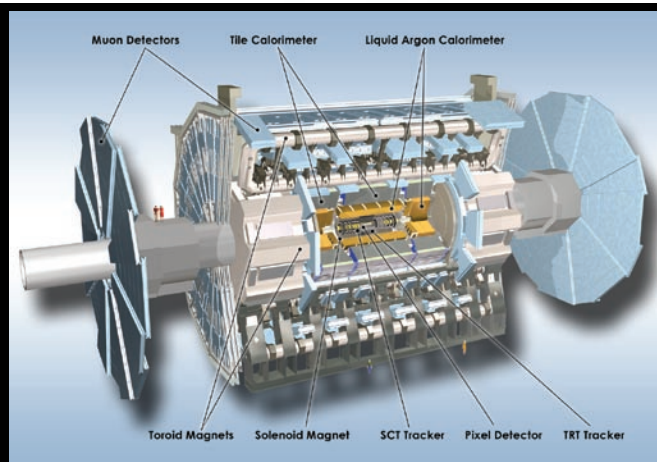


Pictures, videos and full information at:
<http://atlas.ch>



People

3000 scientists (including about 1000 graduate students)
 38 countries
 174 universities and labs

Detector Size and Weight

Diameter: 25 m
 Length: 46 m
 Overall weight: 7000 tonnes
 3000 km of cables
 Weight of ATLAS is same as a hundred 747 jets (empty)
 ATLAS is half the size of Cathedral of Notre Dame de Paris

Precision Measurement

0.001 centimeters (0.0004 inches)

Data Recorded Per Year

The 3200 terabytes of data that will be seen each year are the equivalent of the content in:

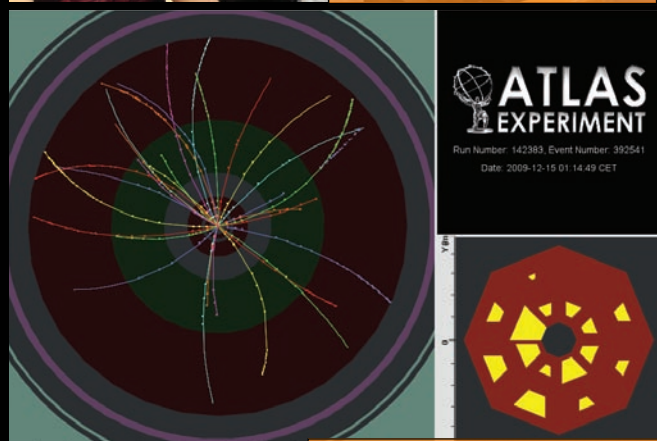
- 7 km (4 miles) of CDROMs stacked on top of each other
- 600 years of listening to songs
- 3 billion books

Construction Cost (material cost)

550 million Swiss Francs



The ATLAS control room, Nov. 2009



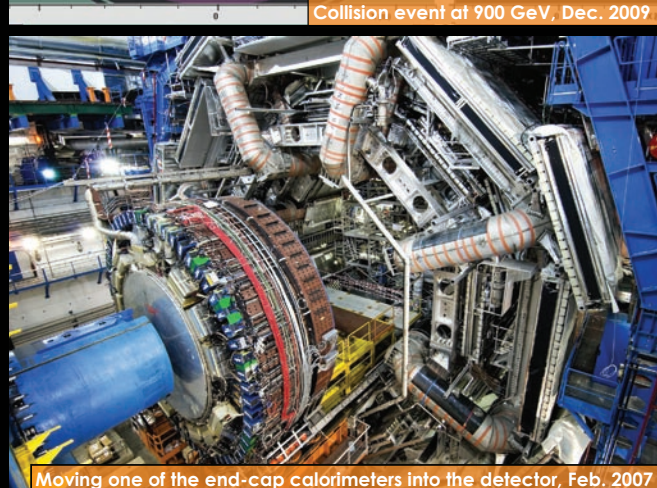
Collision event at 900 GeV, Dec. 2009

ATLAS Cavern

53 m long
 35 m high (10-storey building)
 30 m wide
 floor 92 m below ground

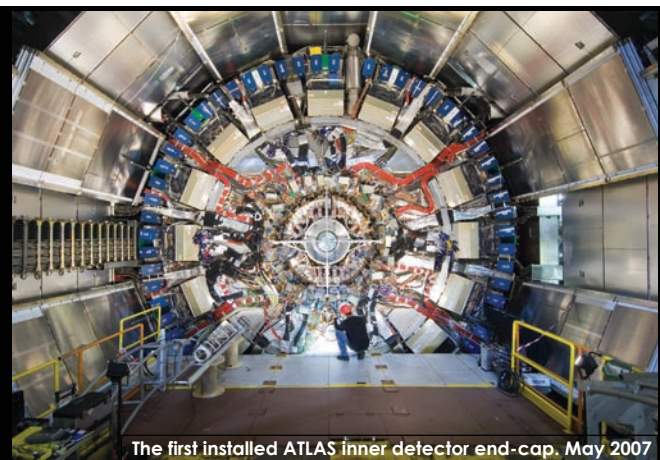
Timeline

Late 1980s	...	The Idea
Oct 1992	...	Letter of Intent
Dec 1994	...	Technical Proposal
1997	...	Construction starting
Jun 2003	...	Installation in the pit starting
Sep 2008	...	First LHC beam
Nov 2009	...	First 0.9 TeV collisions
Mar 2010	...	First 7 TeV collisions
until 2030	...	Data taking

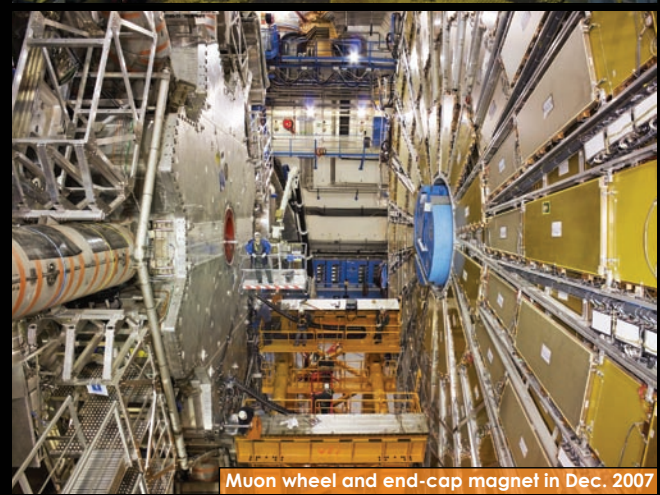


Moving one of the end-cap calorimeters into the detector, Feb. 2007

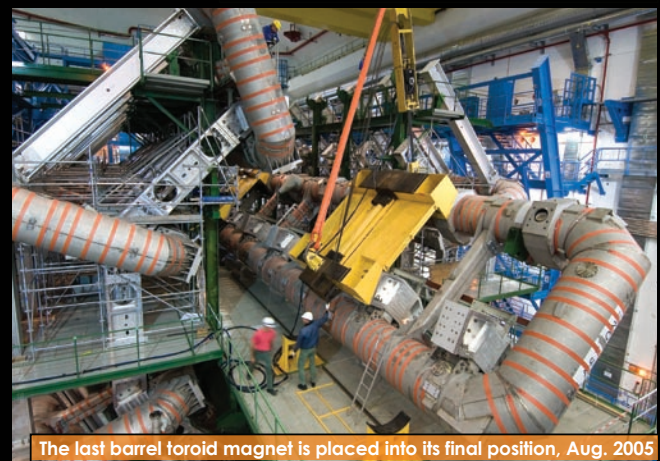
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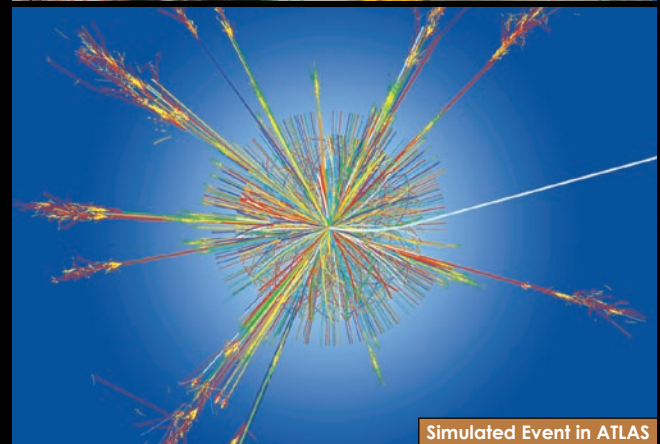
The first installed ATLAS inner detector end-cap, May 2007



Muon wheel and end-cap magnet in Dec. 2007



The last barrel toroid magnet is placed into its final position, Aug. 2005



Simulated Event in ATLAS

The Set of Toroid Magnets

weighs 1300 tonnes and has 1.6 GJ of stored energy.
 This is the same as the energy:

- to melt 64 tonnes of lead
 - of 2000 cars cruising at 100 km/h
 - of the whole ATLAS magnet if it were "flying" at 180 km/h
- 80 kilometers of superconducting cable in magnets

Barrel Toroid Magnets

25 m length; 20 m outer diameter
 830 tonnes weight

End-cap Toroid Magnets

5 m axial length; 11 m outer diameter
 240 tonnes weight each

Collision Events (at full luminosity and at 14 TeV)

When any of the protons collide, the process is called an "event".

Bunches of protons cross 40 million times a second.
 Each bunch contains 10^{11} protons.

About one billion proton-proton collisions per second occur in the detector.

The Trigger and the Event Filter then select for permanent storage about 200 "interesting" events per second.

Typical frequency of producing a Higgs boson that has decayed to two Z bosons each of which has decayed to an electron-positron pair is extremely rare: once in $10^{13} = 10,000,000,000,000$ interactions.

Trigger and Data Acquisition (TDAQ)

If all data would be recorded, this would fill 100,000 CDs per second. This data rate is also equivalent to making 50 billion telephone calls at the same time.

Computing

There are more than 5 million lines of code written for event analysis.

The computing effort uses 3000 online PCs and 100,000 PCs for offline processing and analysis.