



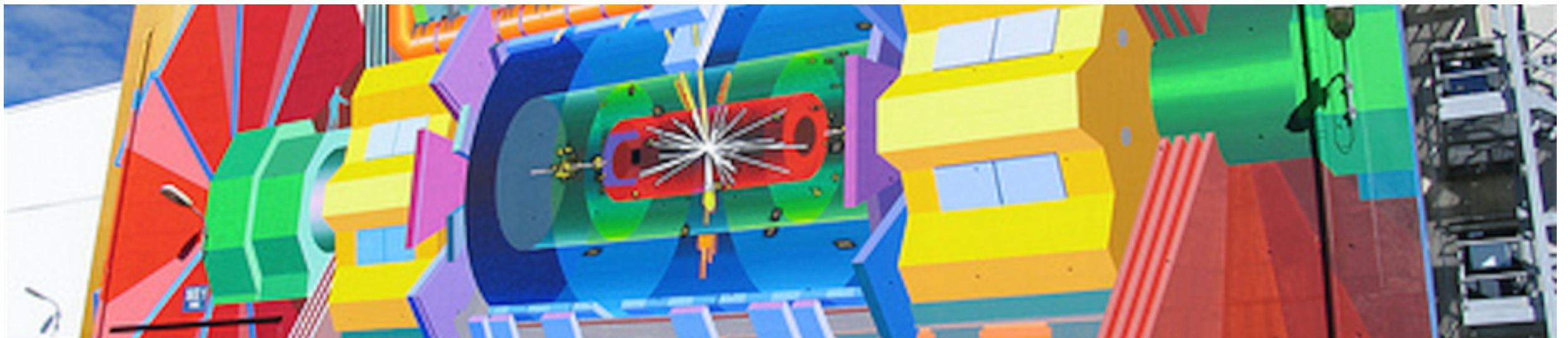
ATLAS Outreach Highlights

Sue Cheatham
on behalf of the ATLAS Outreach Group

South-Caucasus Computing and Technology Workshop
3-7 October 2016 Tbilisi Georgia

ATLAS outreach highlights

- ATLAS public website
- Social media
- Data sonification: Quantizer
- Citizen science projects: ATLAS@home, Higgs Hunters
- Virtual visits to ATLAS control room
- International Masterclasses
- ATLAS open data
- European researchers night at CERN



Goals of ATLAS Outreach

- Share scientific goals and achievements of ATLAS and particle physics
- Encourage support for ATLAS, the LHC and particle physics research
- Fulfil our social obligation, directly through dialogue
- Engage geographically, socially or economically remote audiences
- Attract and retain the next generation of scientists and science educators
- Provide educational resources for science communication
- Train and encourage for the members of our collaboration to communicate

The ATLAS Outreach Group

The ATLAS outreach team is very active, promoting particle physics to a broad range of audiences including physicists, policy makers, students and teachers, the general public and media

The full ATLAS outreach group includes all 3000 members of the collaboration

Public engagement & communication

- acting as guides for visits
- hosting local exhibitions, events or public talks
- giving interviews to local media or writing blogs

Education

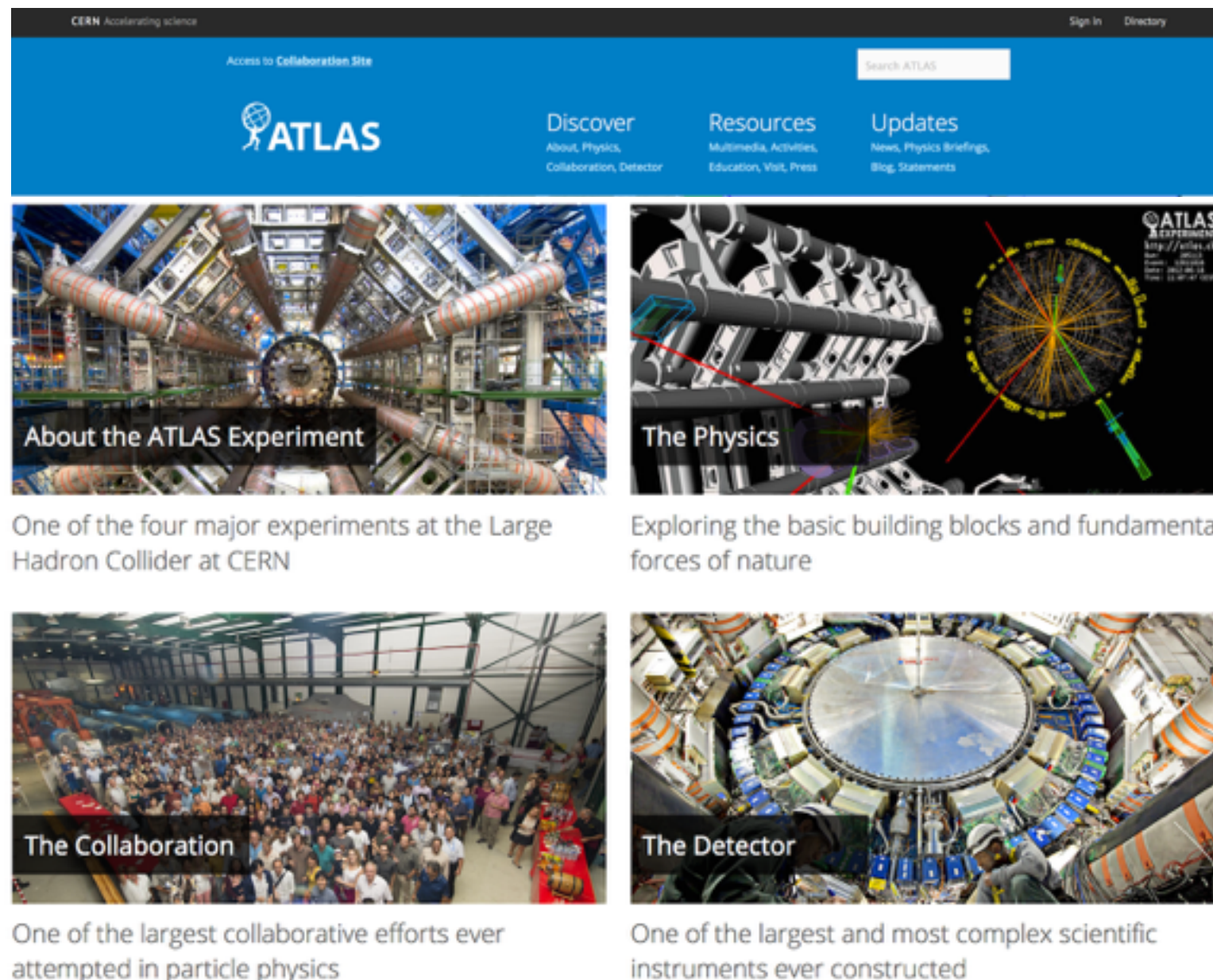
- acting as guides for educational visits and virtual visits
- presenting talks, seminars and masterclasses

Sharing enthusiasm for science and physics

The core outreach group is primarily engaged in developing platforms, content and strategy to facilitate these activities

New public website

- Launched 8 March 2016
- Engage public: news stories, evergreen content and opportunity to learn more about ATLAS
- Core message: ATLAS, Physics, Collaboration, Detector/Technology



New public website

The screenshot shows the new ATLAS public website. At the top is a dark blue header with the CERN logo and 'Accelerating science' on the left, and 'Sign In' and 'Directory' on the right. Below this is a blue navigation bar with 'Access to Collaboration Site' on the left, a 'Search ATLAS' box, and three main sections: 'Discover' (About, Physics, Collaboration, Detector), 'Resources' (Multimedia, Activities, Education, Visit, Press), and 'Updates' (News, Physics Briefings, Blog, Statements). The main content area is divided into three columns: 'Discover ATLAS', 'Resources', and 'Updates'. The 'Discover ATLAS' column features a large image of the ATLAS detector cross-section, followed by links to 'See Live Collisions' and 'Hear Live Collisions', and a list of links to discover more about ATLAS. The 'Resources' column shows a photo of a seminar, a link to 'Higgs Seminar, July 2012', and a list of downloadable materials. The 'Updates' column displays a collage of photos of ATLAS team members, a link to 'An exceptional summer - ATLAS News, 30 Aug 2016', and a list of recent updates.

Discover ATLAS

See [Live Collisions](#) in the ATLAS Detector.
Hear [Live Collisions](#) in the ATLAS Detector.

Discover more about ATLAS:

- [About the Experiment](#)
- [The Physics](#)
- [The Collaboration](#)
- [The Detector](#)
- [Physics Results](#)

Resources

From the Archives: [Higgs Seminar, July 2012](#)

Find and download material:

- [Images, Animations, Video](#)
- [Activities & Games](#)
- [Educational Programmes](#)
- [Visit ATLAS](#)
- [ATLAS Press Kit](#)

Updates

An exceptional summer - [ATLAS News](#), 30 Aug 2016

Other recent updates:

- [Precision measurements with multi-TeV energy jets - Physics Briefing](#), 23 Aug 2016
- [ATLAS highlights from ICHEP2016 - ATLAS News](#), 10 Aug 2016
- [ICHEP results presented with style! - ATLAS Blog](#), 8 Aug 2016

Communicate and educate

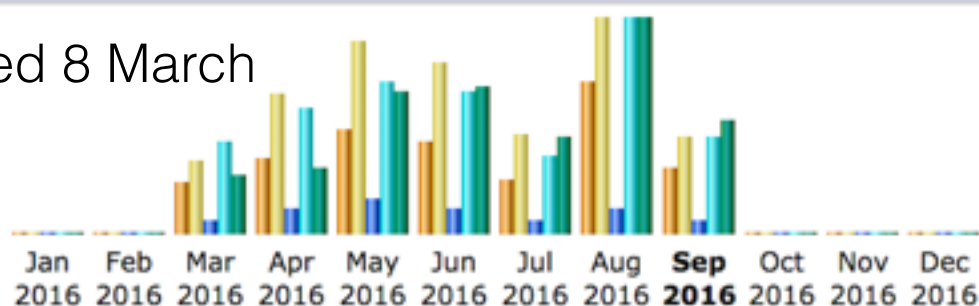
New public website

Summary

Reported period	Month Aug 2016				
First visit	01 Aug 2016 - 00:01				
Last visit	31 Aug 2016 - 23:34				
	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Viewed traffic *	40,703	57,850 (1.42 visits/visitor)	126,502 (2.18 Pages/Visit)	1,054,292 (18.22 Hits/Visit)	69.77 GB (1264.67 KB/Visit)

Monthly history

Launched 8 March

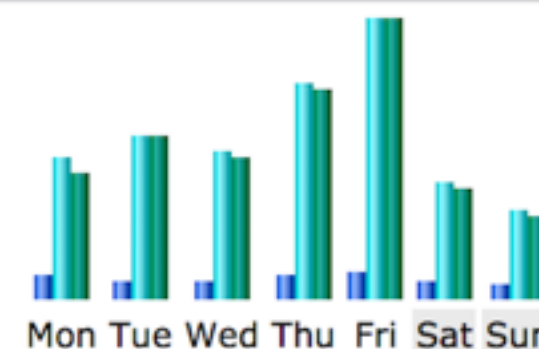


Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2016	72	113	249	3,324	207.06 MB
Feb 2016	70	119	256	3,207	135.18 MB
Mar 2016	13,630	19,825	65,521	452,029	19.16 GB
Apr 2016	20,241	37,831	125,189	618,264	21.36 GB
May 2016	28,255	51,752	169,443	741,043	46.31 GB
Jun 2016	24,447	45,666	123,317	695,444	47.52 GB
Jul 2016	14,296	26,743	69,333	381,833	31.37 GB
Aug 2016	40,703	57,850	126,502	1,054,292	69.77 GB
Sep 2016	17,466	25,960	64,806	472,397	36.71 GB
Oct 2016	0	0	0	0	0
Nov 2016	0	0	0	0	0
Dec 2016	0	0	0	0	0
Total	159,180	265,859	744,616	4,421,833	272.54 GB

Countries (Top 10) - Full list

Countries	Pages	Hits	Bandwidth
United States us	29,454	200,610	15.36 GB
Unknown unknown	21,234	212,676	13.51 GB
Great Britain gb	7,923	69,216	4.51 GB
Republic of Serbia rs	7,624	9,272	248.48 MB
Switzerland ch	7,283	58,912	3.85 GB
Germany de	4,492	58,181	3.97 GB
France fr	4,395	50,248	3.18 GB
China cn	3,223	13,827	810.18 MB
Italy it	3,156	39,599	2.58 GB
Romania ro	2,568	6,887	356.96 MB
Others	35150	334864	21.44 GB

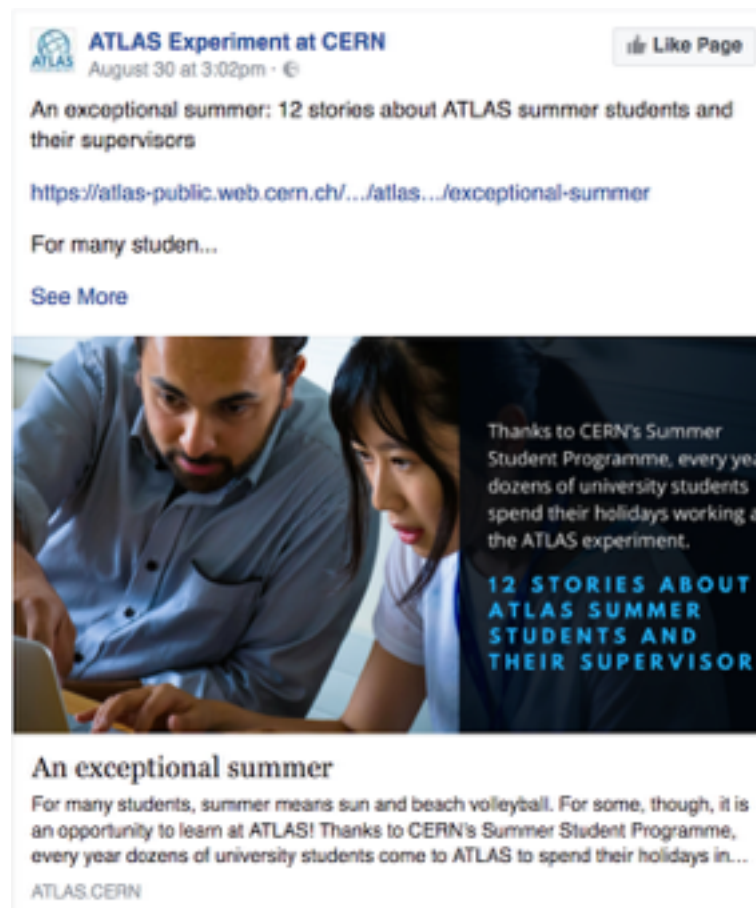
Days of week



<https://web-statistics.web.cern.ch/web-statistics/cgi-bin/awstats.pl?month=08&year=2016&output=main&config=atlas-public&framename=index>

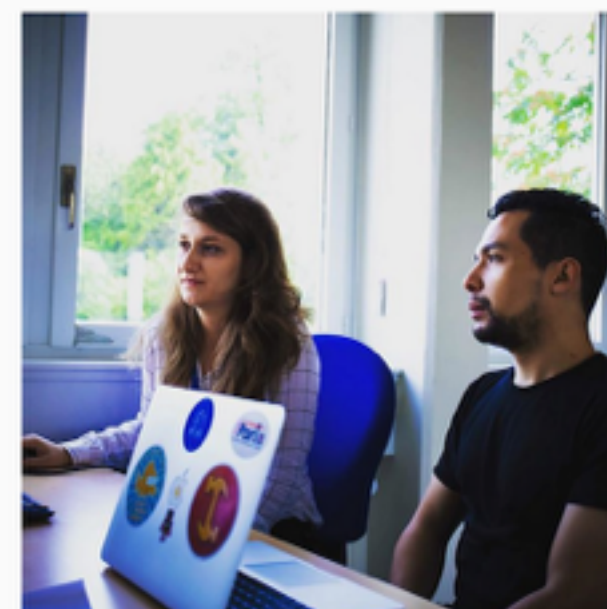
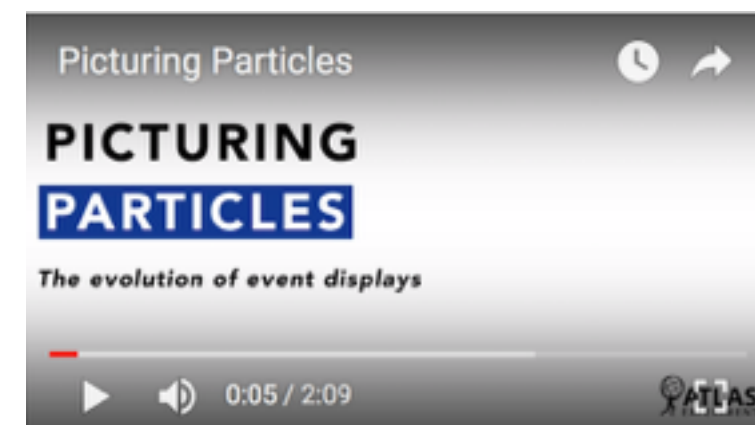


Social Media



Engage new audiences
Connects people with ATLAS
Brings traffic to the website

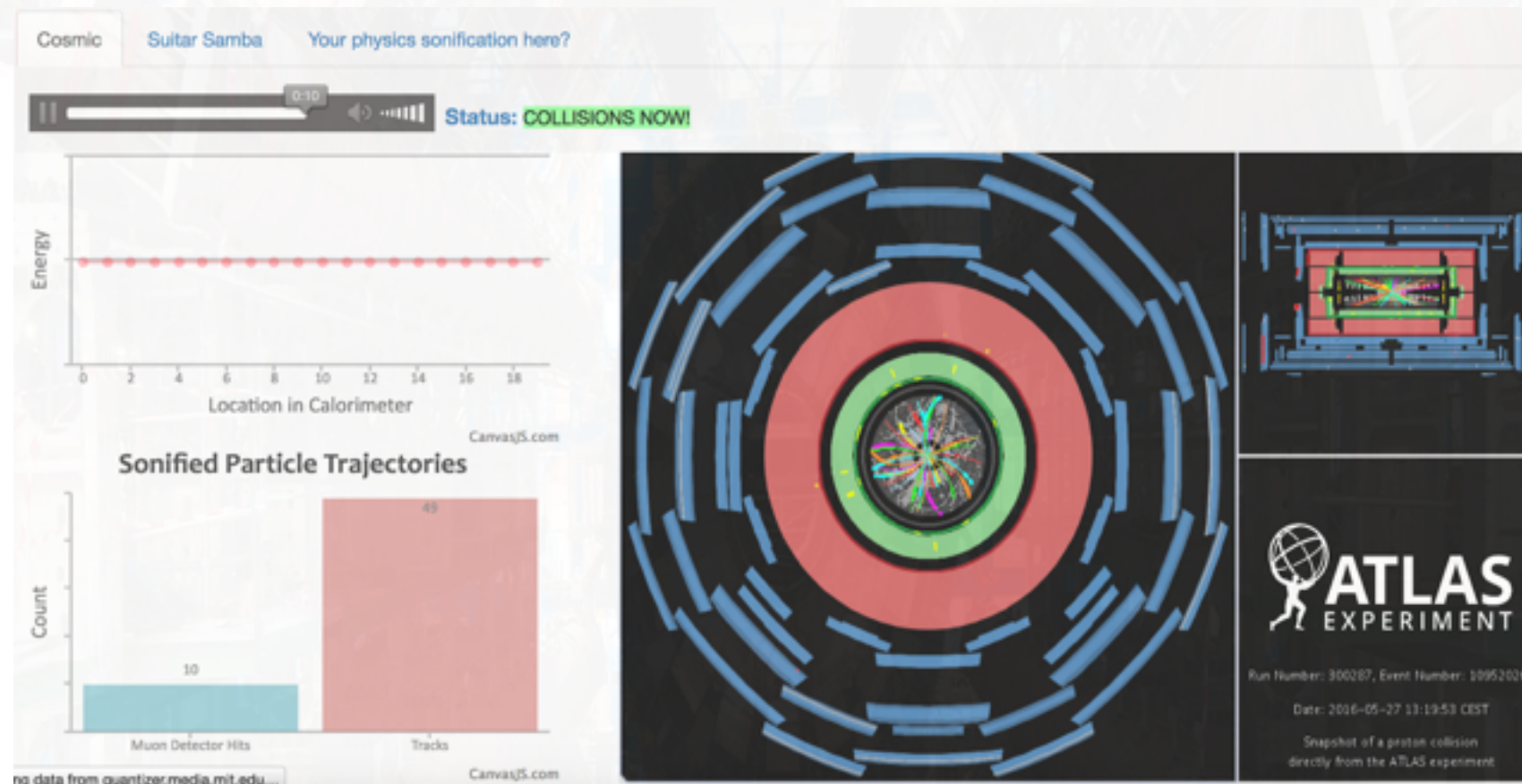
Facebook likes: 20 k
Twitter followers: 39 k
Google+ followers: 123 k





QUANTIZER

high energy physics experienced through real-time audio



Website:

~ 6300 visits
~ 4500 users

Soundcloud:
pre-recorded music
tracks
~3200 plays

Listen to live events

Popularisation of science

Data sonification:

- Property of sound, such as the pitch, mapped to a physical property, such as speed
- Various different software packages available for turning numbers into sounds

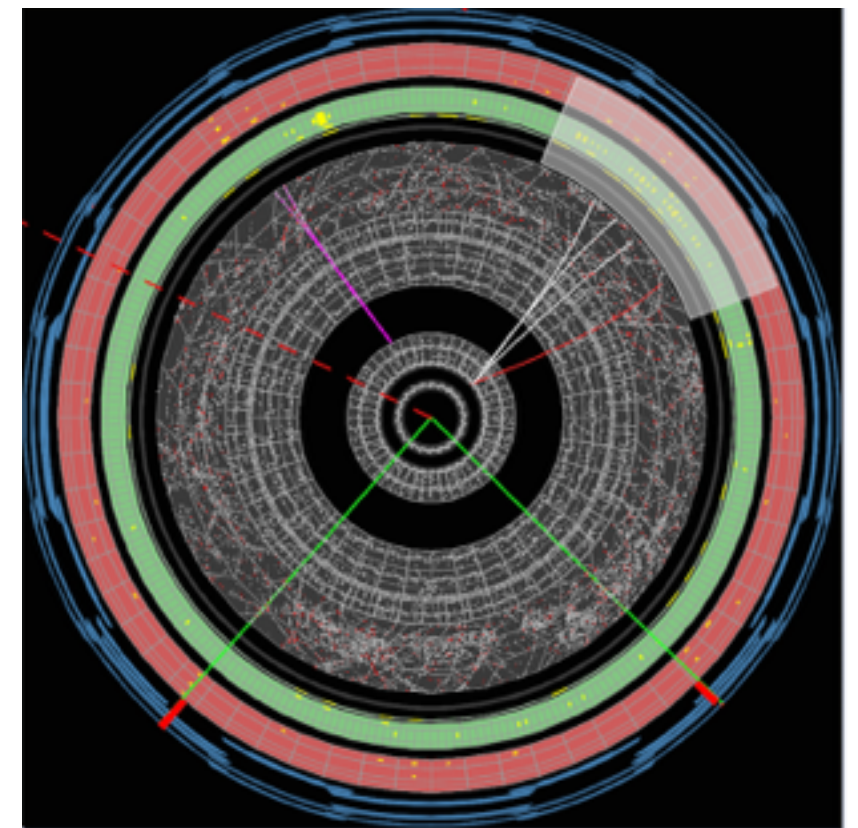
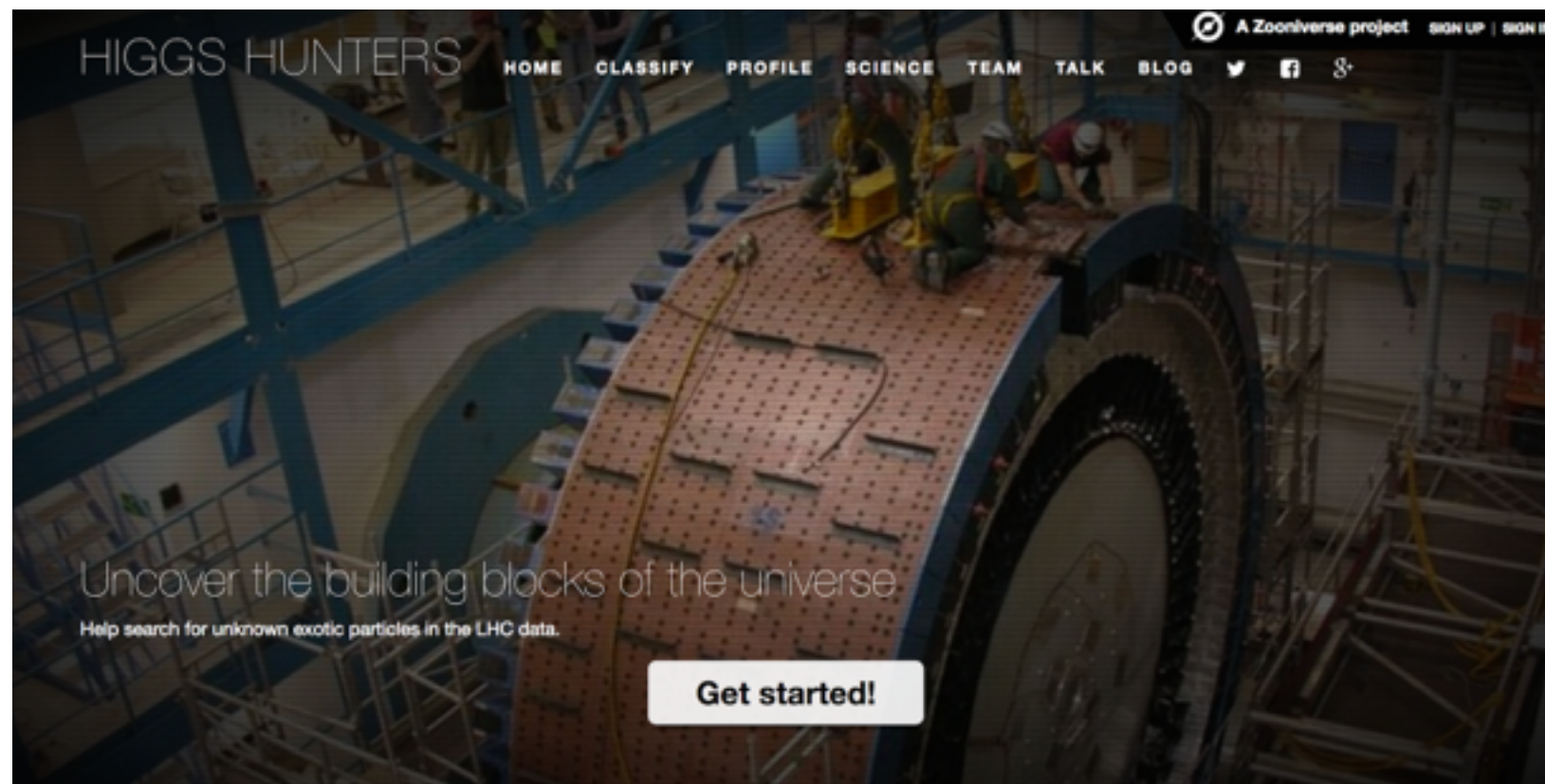
2016 Events:

- Quantizer website launched May
- Computer-Human Interaction Conference May
- Berlin MusicTechFest May
- Live concert Victoria, Canada July
- New Interfaces Musical Expression August
- ICHEP 2016
- Composer Simonne Jones sonification mix

Citizen science project

Higgs Hunters

- A collaboration between Oxford, Birmingham and New York Universities
- The first particle physics venture on Zooniverse, a collection of web-based citizen science projects
- Invites online volunteers to participate in classifying off-centre vertices



- More than 30,000 volunteers from 179 countries participated, classifying 980,000 features of interest on about 39,000 distinct images
- Non-expert volunteers are capable of identifying the decays of long-lived particles with an efficiency and fake-rate comparable to that of the ATLAS algorithms
- Survey of volunteers indicates an appetite for further LHC-related citizen science projects

Citizen science project

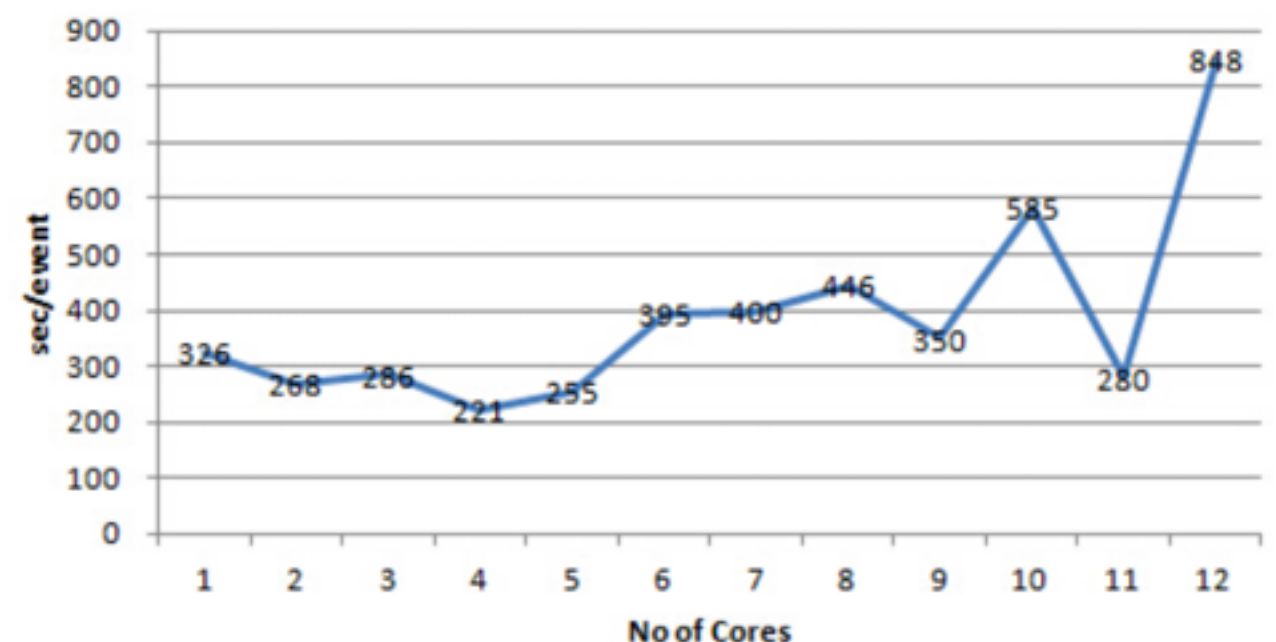


- A research project that uses volunteer computing to run simulations
- No knowledge of particle physics required
- Opportunity for people to show support for science research
- Download program which runs simulation software inside a virtual machine
- Each workunit downloads a small set of input data and runs for ~1 to 2 hours

Multi-core app

- Performance study of ATLAS job statistics based on the jobs from over 1 month period
- Using more cores in one vm saves memory usage
- Using big number of cores can significantly reduce the CPU performance.
- Applicable to all cloud computing platforms, not just on ATLAS@home

CPU Per Event (sec/event)

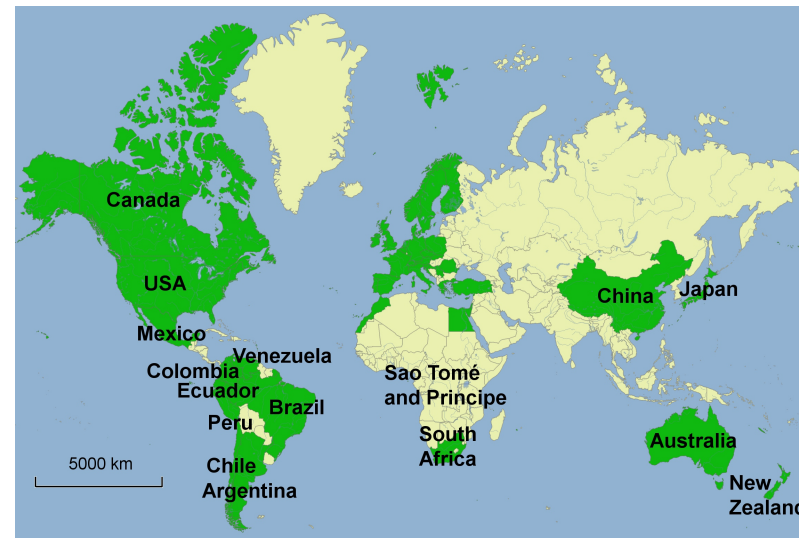
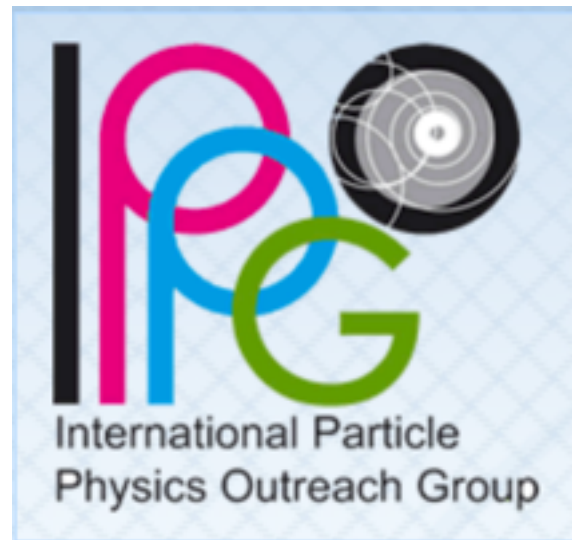


Virtual Visits

- Digital Communications Award 2012
- Virtual visits continue to be popular
- Excellent resource to connect with school and university students
- All languages supported, thanks to CERN based group members who can tune the content to enhance connection with home institutes or countries
- So far in 2016, 39 visits from more than 14 countries



International Masterclasses



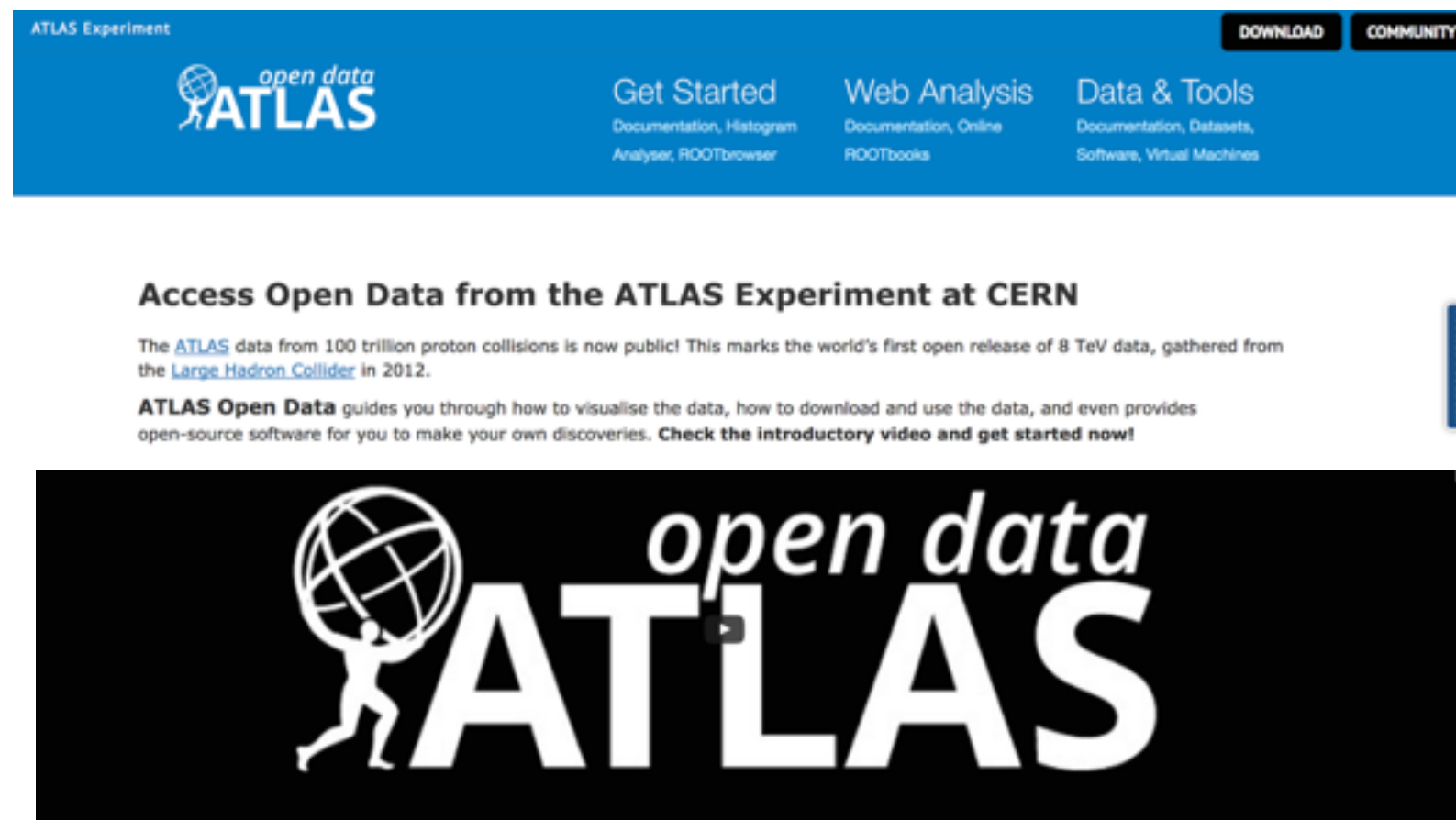
- IPPOG is a network of scientists, science educators and communication specialists working across the globe in science education and public outreach for particle physics
- High school students attend a hands-on 'scientist for one day' session in 1 of 200 centres.
- Long running and consistently popular. Not exclusively ATLAS
- Social media initiative physicsIMC set up at CERN November 2015

2016:

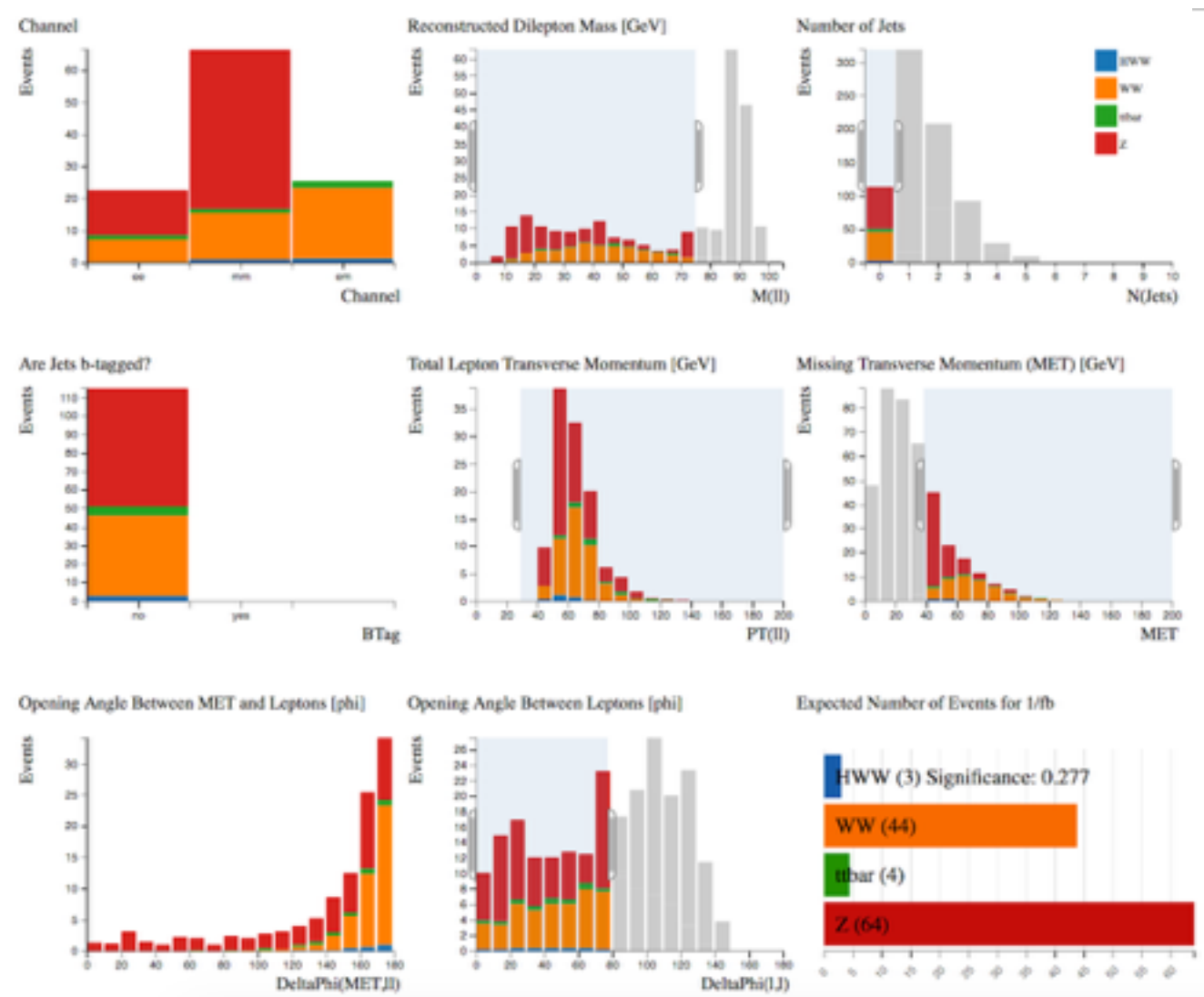
- 46 countries from all continents; Slovenia, Venezuela, Peru, and Argentina participating for the first time
- 228 Masterclasses video conferencing with CERN, of which 125 ATLAS
- 48 Masterclasses video conferencing with Fermilab, of which 15 ATLAS

ATLAS opendata

- Data: 1 fb⁻¹ of 8 TeV ATLAS data released
- Analysis tools for educational use: 3 levels of accessibility
- Documentation for each level to guide the user
- Currently aimed at University students and post graduate researchers
- Forum for questions and feedback



ATLAS opendata



- Data visualisation 4 processes: $H \rightarrow WW$, WW , top pair, Z
- Make cuts with cursor on one variable and immediately see the effects on the other variables
- Expected number of events for 1 fb⁻¹ shown, along with significance of Higgs signal

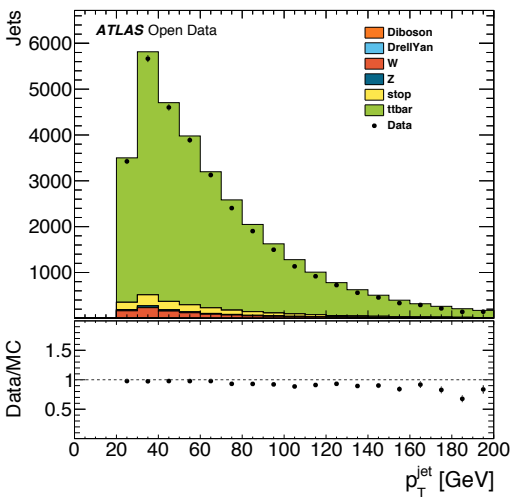
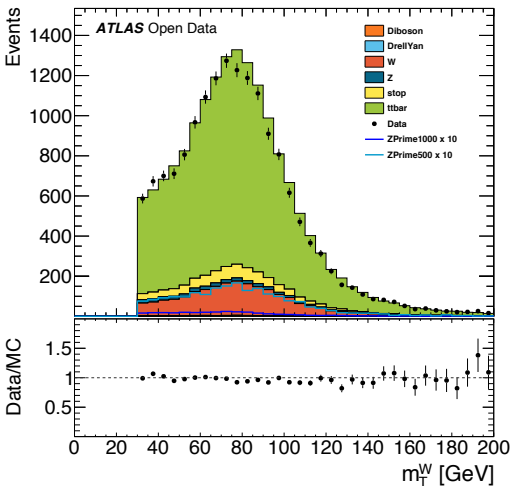
ATLAS opendata

Data

- Data and MC: ROOT tree format
- 1 fb⁻¹ of data from period D
- egamma ~ 33.6 M events + muons ~ 33.8 M events
- Datasets available to be downloaded individually or bulk download
- Also available on the CERN open data portal

Tools

- Analysis software to run and modify
- Seven analyses prepared: H→WW, WW, ZZ, top pair, Z, W, Z'
- Follow analysis steps to produce histograms
- Available in GitHub repository, as zip file or on the CERN open data portal



Set of Data samples

File type	Name	Description	Last modified	Size	# Events
✓	DataEgamma.root	ATLAS 2012 data Egamma-string sample for 2016 open data release	21-Jul-2016 16:00	746,3Mb	7917590
✓	DataMuons.root	ATLAS 2012 data Muons-string sample for 2016 open data release	21-Jul-2016 16:00	619,8Mb	7028084

Set of MonteCarlo (MC) samples

File type	Name	Description	Last modified	Size	# Events
✓	mc_105985.WW.root	Diboson process WW	21-Jul-2016 16:00	64,7Mb	500000
✓	mc_105986.ZZ.root	Diboson process ZZ	21-Jul-2016 16:00	19,8Mb	125000
✓	mc_105987.WZ.root	Diboson process WZ	21-Jul-2016 16:00	69,5Mb	500000
✓	mc_110090.stop_tchan_top.root	Single top t-channel top	21-Jul-2016 16:00	21,6Mb	150000
✓	mc_110091.stop_tchan_antitop.root	single top t-channel antitop	21-Jul-2016 16:00	14,5Mb	150000

Personal Open source Business Explore Pricing Blog Support This repository Search Sign in Sign up

atlas-outreach-data-tools / atlas-outreach-data-tools-framework Watch 2 Star 1 Fork 2

Code Issues 0 Pull requests 0 Pulse Graphs

Python software framework for the ATLAS OpenData project

3 commits 1 branch 2 releases 0 contributors

Branch master New pull request Find file Clone or download

Arturo Sanchez Pineda Adding missing s in documentation to run Plotting code Latest commit 7a27294 on Jul 14

Analysis	First version for ATLAS collaboration review before 2016 release	3 months ago
Configurations	First version for ATLAS collaboration review before 2016 release	3 months ago
Input	First version for ATLAS collaboration review before 2016 release	3 months ago
Output	First version for ATLAS collaboration review before 2016 release	3 months ago
Plotting	First version for ATLAS collaboration review before 2016 release	3 months ago

ATLAS opendata

Virtual Machines to run on any operating system

- Medium Version:

Compressed size ~10.6 GB

Uncompressed size of ~22 GB

Scientific Linux OS 6.7, ROOT v6-07-06, opendata software

Complete set of datasets of the ATLAS release (Data & MC)

- Small Version:

Compressed size ~4.6GB (~11GB)

Scientific Linux OS 6.7, ROOT v6-07-06, opendata software

- NET Version:

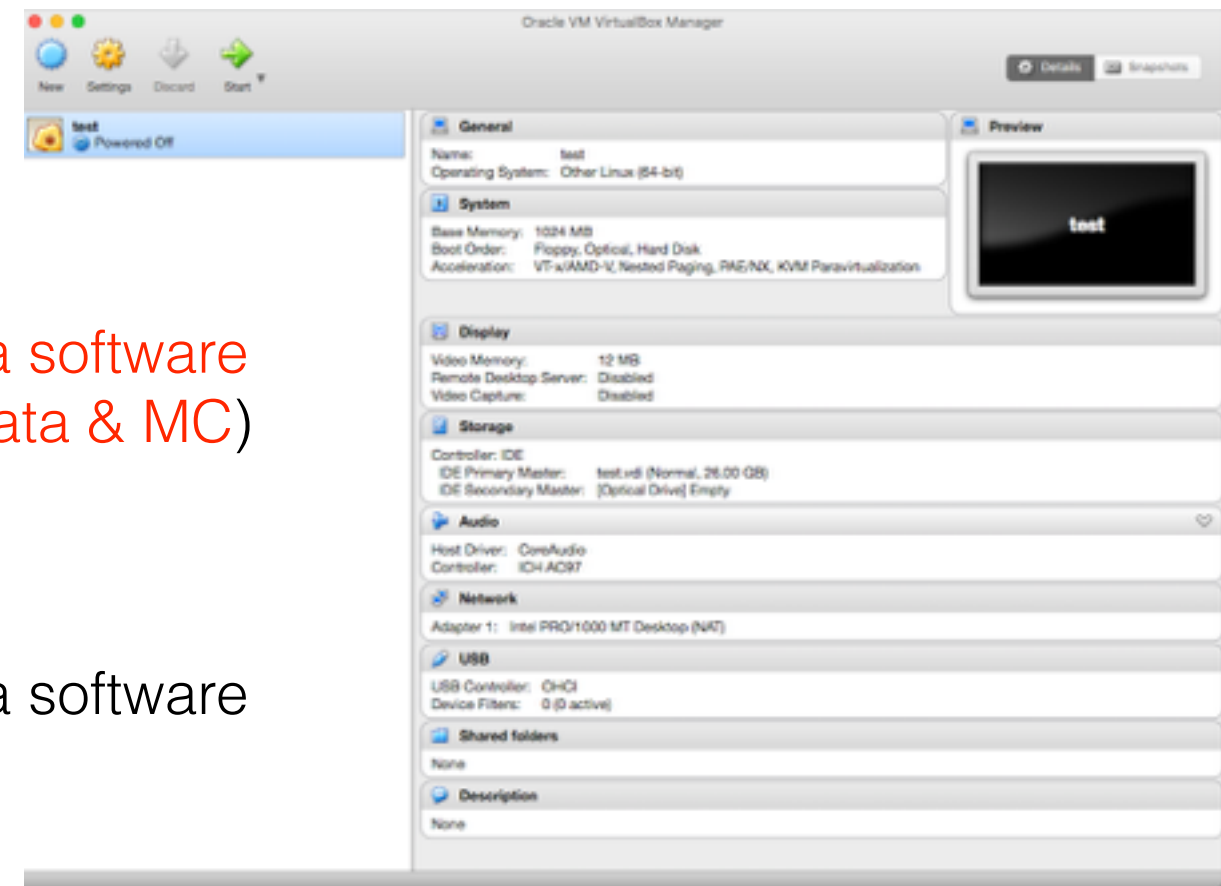
Compressed size of ~5.2GB (~17GB)

It's size will reduce ~40% into the coming weeks

- Micro version:

Compressed size ~1GB (~2GB). Not GUI, expert users

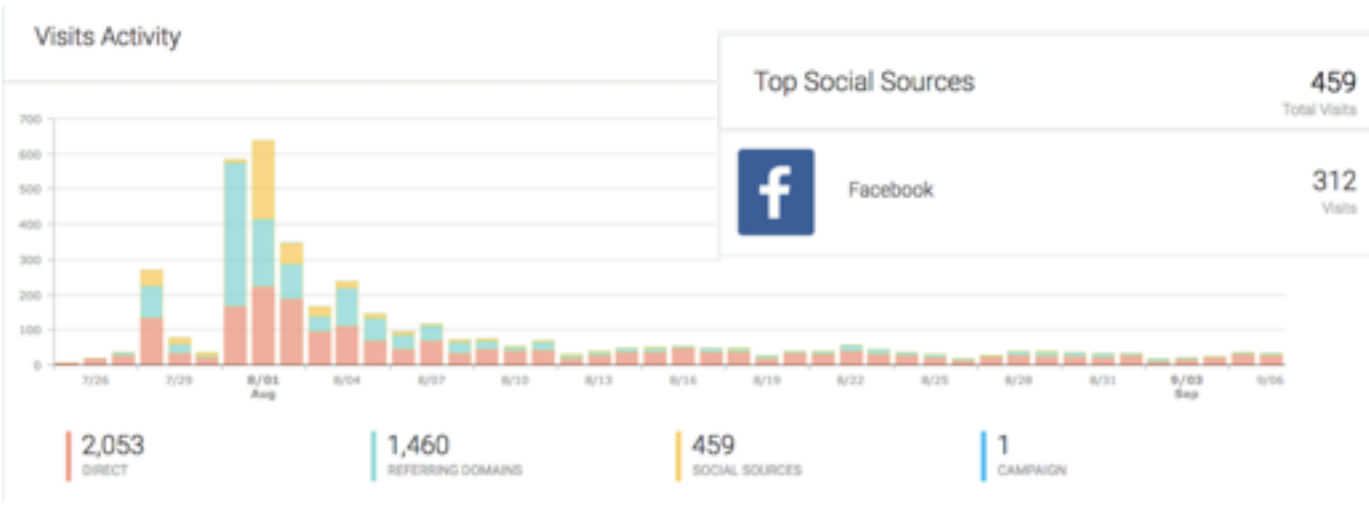
Will be available on USB stick



13 TeV data expected 2017!

ATLAS opendata

- Achieving international impact
- Release peak: will re-advertise when new data or tools available
- Bounce rate and page visit length average for a website



Bounce Rate is the percentage of visitors that abandon the site after the first interaction with the site
40 to 55 % is average

The average page visit ~1 minute



EUROPEAN RESEARCHERS' NIGHT* AT CERN

30 September 2016

- The European Commission's initiative opens hundreds of science sites across Europe to the general public
- 7th year
- Screenings of scientific documentaries and short films
- Guided tours to ATLAS Visitors Centre
- 500-600 visitors from local area

Summary

- Communication is both central and essential to the scientific process
- The ATLAS outreach team is very active, promoting particle physics
- Many outreach platforms
 - Online: webpages, blogs, social media, webcast channels, virtual visits
 - Local: visitor centre, underground visits, local events
 - Remote: Institute events, masterclasses, travelling exhibits
- Broad target audience
 - physicists, policy makers, students and teachers, the general public and media