Innovating Science Outreach
Content, Platforms and Strategy Supporting ATLAS Outreach
Communicating Science

Where do we fit in?
Communication is both **central** and **essential** to the scientific process.
Role of Communication in Science

Focus of this Presentation

Communication

Experiment

Information

Resources

Ideas

Decision Makers

Public

Science Community
Target Audiences

With whom do we want to communicate?
Teachers & Students
Goals

What do we want to achieve?
Goals of ATLAS Outreach

1. Public appreciation of the scientific goals and achievements of ATLAS and the field of particle physics

2. Sustained support for ATLAS, the LHC and particle physics research

3. Attract and retain the next generation of scientists and science educators
A Few Unwritten* Goals

- Fulfil our social obligation
  - Directly through dialogue

- Engage remote audiences
  - Geographically, Socially, Economically

- Train the members of our collaboration to communicate
  - For their sake and ours

(*) but equally important
Platforms

...and their content
Outreach Platforms

Online:
- Web Pages
- Blog
- Social Media
- Webcast Channels
- Virtual Visits

Visitor Centre

Underground Visits

Local Events

Local:

Remote:
- Institute Events
- Masterclasses
- Traveling Exhibits
Reader Survey Results

Who are you?

Why are you here?

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**Which of the following best describes your occupation?**

- Educator: 5.8%
- Student: 32.7%
- ATLAS Physicist: 3.3%
- Physicist not related to CERN: 3.3%
- Lab or university staff: 3.3%
- Scientist from other field than particle physics: 9.5%
- Engineer: 17.3%
- Journalist/press: 5.8%
- Member of the public: 15.4%

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**Why have you come to the Atlas website today?**

- To find out about the ATLAS experiment: 47.4%
- To find out about the Higgs Boson: 47.4%
- To find out more about particle physics: 40.8%
- To find out about the LHC: 32.9%
- To find out about the recent announcements: 31.6%
- To find out about the data that’s…: 30.3%
- For multimedia resources: 23.7%
- To find out about ATLAS relationship to CERN: 14.5%
- To see if I can come to visit: 13.4%
- To find resources for my school project: 13.4%
See poster "Remaking the ATLAS Public Web Site"
ATLAS Blog

Notes from Underground: IBL vs Brazil Championship

More from our Notes from Underground blog series by ATLAS members preparing to explore new worlds that higher energy collisions will reveal in the LHC's next run.

Previously in Notes from Underground, Steve Robinson wrote in some detail about the work going on inside the ATLAS Detector, and Clara Nellist wrote about the Inner Detector of ATLAS. Discussing the different types of detection units or fibres (Muons & 3D), I will continue to delve into the exciting work of the inner detector with its brand new Innermost Si-Layer (IBL) and its related parts.

Next year the ILC will start running again at 900 GeV, almost double the previous energy, and the proto-on will be collide together every 25 nano seconds, twice as often as in 2012, thus ATLAS needed a new detector layer nearer to the collision point to help reconstruct the details of each collision. The ATLAS Detector is big (144m long, 25m diameter), and at first it is difficult to believe there would be enough extra space for a new detector but in fact reduction of the diameter of the beam pipe itself was just inserted into ATLAS last month. It was an important and unique piece in that pipe. Next year at the Football World Cup in Brazil, we will see how 11 players will easily insert two or three balls into the goal in a few lera of minutes, but the insertion of the IBL was indeed a more difficult task.

Ahmed made the pit for the pixel services in Jan 2014. Ahmed Bussalis is a Palestinian PhD student at LAL, France, working on planar pixel sensors for ATLAS and the VENUS [visible electrode avalanche] system. After getting his Bachelor degree from An-Najah National University in Nablus, Palestine, Ahmed was awarded a PhD scholarship from the University of Reims and joined Paris Sud at University in France after getting his Bachelor degree from An-Najah National University in Nablus, Palestine. Ahmed is working on planar pixel sensors for the pixel services in ATLAS. He is also involved in the development of the Pixel21 detector for the LHC upgrade and his main research is on the physics of the detector.

Ahmed works as a apprentice to the detector, which has at the very heart of ATLAS, closest to the point where protons are crammed together (the Interaction Point). The purpose of the pixel detector is to track charged particles as they travel outwards from the interaction point, allowing us to make measurements of the electron charge and mass. One method is to see which way they bend in the magnetic field that we surround this part of the detector with. This helps us to identify particles. By following these tracks back towards the interaction point, we can work out when one of the particles was a beauty quark (or a charm quark). We can tell the time, once the 3-quark has been created, it travels a few millimetres before turning into a different particle. One problem is that every time the LHC collides bunches of protons together (40 million times a second as David said last week), it events the ATLAS detector with new particles and our pixel detector gets a lot damaged from all the radiation. Imagine you have a row of ducks at a langoust stall and someone's throwing balls at them. If you hit one, the duck gets moved a bit, or even knocked over. This is what happens when particles (the balls) are bombarding our detector, which is made of a three-dimensional grid of silicon detectors (the ducks). When the...
Social Media

- Why do we use it?
  - Why do we use the web?

- What does it do for us?
  - Creates more work
  - Amplifies signal (and noise)
  - Brings us in direct contact with the public (from our offices)

- How should we use it?
  - Learn
  - Inform
  - Discuss

- Are we using it well?
Social Media

Facebook Page

Google Plus

Twitter

Facebook Reach 20k
Twitter Followers 20k
Google+ Followers 34k
ATLAS Visitor Centre

- Active Part of CERN Visit Circuit
- Presented by ATLAS / CERN Guides
- Interactive Displays, Games, 3D Movie
- Inaugurated in 2008
- 50k Visitors in 2013 (far greater than expectations)
- Complete re-vamping in the works, including possible new building…
ATLAS Underground Visits

Visitors 2013
Total: 15,980

- Public: 14,002 (87.6%)
- VIP: 1,151 (7.2%)
- Media: 827 (5.2%)

+ 2,500 during Open Days
ATLAS Virtual Visits

Since 1 Jan 2013
108 Visits
74 Guides
7 Continents

http://cern.ch/atlas-virtual-visits
ATLAS Virtual Visits

2011: 11 Visits
2012: 55 Visits
2013: 72 Visits
2014: 37 Visits

See poster “ATLAS Virtual Visits: Bringing the World to ATLAS”
Remote Material & Activities

Supporting outreach activities around the globe
Books, Posters, Exhibits, etc.

- IPPY Award 2014!
- Printable format

The Higgs Boson

Le Boson de Higgs

Still working on a store…
International Masterclasses

2014 (LHC)
- 41 Countries
- 183 Institutes
- 239 Masterclasses
- 10,500 Students
- New: Columbia, Ecuador, Chile, Jamaica, Mexico

See talks during next Outreach session

http://www.physicsmasterclasses.org
ATLAS Lego

- Large Model
  - 9500 Pieces
  - 59 large models in the world!

- Build Your Own Particle Detector
  - Challenges young participants
  - Coupled with learning projects

ATLAS Lego Model Distribution

From Sascha Mehlhase

http://build-your-own-particle-detector.org
Supporting Partnerships

Share the fun
Higgs Machine Learning Challenge

Goals: Promote interaction between atlas and the machine learning (ML) community
Outreach geared to computer-savvy people

- Launched in May
- Popular Challenge
  - 700 teams
  - 200 have beaten benchmark
- Coverage by CERN, Others
- We might lose the bet!

https://www.kaggle.com/c/higgs-boson
http://atlas.ch/news/2014/are-you-up-for-higgs-challenge.html
Hangout with CERN

See poster “Hangout with CERN”

CERN Google+, YouTube, Every Thursday at 17:00 CET
Particle Fever

Public Screening for LHCP at Columbia University

Physicists
Marvel Comics

Science partnering Fantasy

Physics to the rescue!
## Links

### Public Web Sites

<table>
<thead>
<tr>
<th>Site</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Home Page</td>
<td><a href="http://atlas.ch">http://atlas.ch</a></td>
</tr>
<tr>
<td>ATLAS Blog</td>
<td><a href="http://atlas.ch/blog">http://atlas.ch/blog</a></td>
</tr>
<tr>
<td>ATLAS Virtual Visits</td>
<td><a href="http://cern.ch/atlas-virtual-visit">http://cern.ch/atlas-virtual-visit</a></td>
</tr>
<tr>
<td>ATLAS Live</td>
<td><a href="http://cern.ch/atlas-live">http://cern.ch/atlas-live</a></td>
</tr>
<tr>
<td>Twitter Feed</td>
<td><a href="http://www.twitter.com/ATLASexperiment">http://www.twitter.com/ATLASexperiment</a></td>
</tr>
<tr>
<td>YouTube</td>
<td><a href="http://www.youtube.com/user/TheATLASExperiment">http://www.youtube.com/user/TheATLASExperiment</a></td>
</tr>
</tbody>
</table>

### Internal Group Web Sites

<table>
<thead>
<tr>
<th>Site</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Sharepoint</td>
<td><a href="http://cern.ch/aos">http://cern.ch/aos</a></td>
</tr>
<tr>
<td>Facebook Group</td>
<td><a href="http://www.facebook.com/groups/182014021854052">http://www.facebook.com/groups/182014021854052</a></td>
</tr>
</tbody>
</table>

### External Resources

<table>
<thead>
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</tr>
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<tbody>
<tr>
<td>IPPOG Database</td>
<td><a href="http://ippog.web.cern.ch">http://ippog.web.cern.ch</a></td>
</tr>
<tr>
<td>CERN CDS</td>
<td><a href="http://cds.cern.ch">http://cds.cern.ch</a> (ATL-COM-OREACH-*)</td>
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</tbody>
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