

ATLAS Virtual Visits: Bringing the World to our Detector

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Abstract. The Virtual Visit service run by the ATLAS Collaboration at CERN has been active since 2010. The ATLAS Collaboration has used this popular and effective method to bring the excitement of scientific exploration and discovery into classrooms and other public places around the world. The program, which uses a combination of video conferencing, webcasts, and video recording to communicate with remote audiences, has already reached tens of thousands of viewers, in a large number of languages, from tens of countries across all continents. We present a summary of the ATLAS Virtual Visit service that is currently in use and present a new system that is being installed in the ATLAS Visitor Centre. In addition, we show the reach of the program over the last few years.

1 Introduction

Visits to the ATLAS detector [1] or ATLAS Visitor Center at CERN, whether in-person or virtual, are an important component of the collaboration’s outreach efforts [2]. Virtual Visits [3] in particular are a way to bring the excitement of scientific exploration and discovery to the general public. They are “virtual” in that the visitors are not physically present at CERN, but the guide is on-site with a video camera to show the audience around, as if they were walking with him/her. When the ATLAS cavern is accessible, the Virtual Visits take place underground and the visitors can see the detector and its surroundings from various angles. During periods of LHC running, the Virtual Visits take place at the surface in the newly remodelled ATLAS Visitor Center, which provides the visitors with a view of the ATLAS Control Room. Typically, the guide uses a phone and a tripod for filming and connects to the group via Zoom. In certain instances, the visit is also livestreamed to other platforms such as YouTube. The most common audiences are students and teachers, from primary schools to universities, but other types of audiences include individuals and distinguished guests of CERN. In addition, Virtual Visits have been used in the context of science festivals, such as the New York Science Festival and WOMAD’s “World of Physics”. These visits were especially popular during the pandemic, as they are easy to set up for a fully virtual audience.

2 Booking System

ATLAS Virtual Visits are booked via an online form [4], where information about the origin, language, and context of the visit is collected. This information is useful for the guide, but

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also for the ATLAS Collaboration in order to compile statistics, as seen in Sect. 3. One of the goals of the Virtual Visit program is to reach audiences all around the world, therefore the ATLAS Collaboration puts in considerable effort to find a guide who speaks the language requested by the visitors. The booking form also contains an optional field for requesting a specific guide. This can be used when an ATLAS guide has a special connection with the group, such as being an alumnus of the school requesting the visit. This helps make the visit more impactful, since the audience can more easily identify with the guide.

3 Statistics

Thanks to the booking form described in Sect. 2, statistics about Virtual Visits are recorded. Of particular interest are the number of visits per year, the country of origin of the booking, the language of the visit, and the number of participants. These are found in table 1 for the years 2022 and 2023. As can be seen from this table, the ATLAS Collaboration has averaged about two Virtual Visits per week in 2022, and has reached more than 30 countries. These are located in all continents apart from Antarctica: North America, South America, Europe, Africa, Asia, and Oceania, see figure 1 for a more detailed breakdown. The most common language for Virtual Visits remains English, but others include Italian, Spanish, French, Portuguese, Japanese, Greek, Turkish, Swedish, and Slovak. In 2022, 45% of Virtual Visits were conducted in a language other than English.

Table 1. Statistics for ATLAS Virtual Visits in 2022 and 2023.

Year	Visits	Countries	Languages	Max. participants
2022	121 (66 underground)	35	8	~200
2023	87 (40 underground)	32	12	310

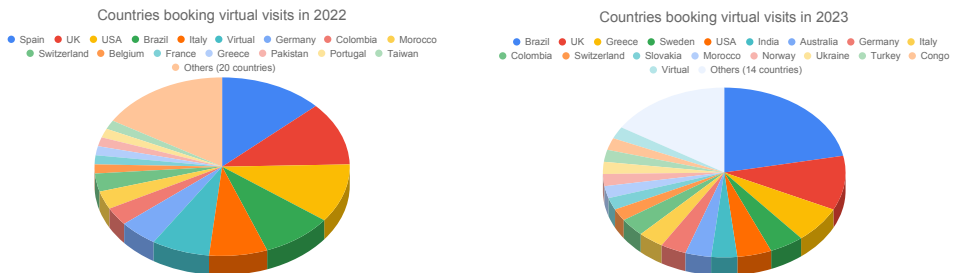


Figure 1. Countries of origin of ATLAS Virtual Visit bookings in 2022 (left) and 2023 (right).

4 Reaching wider audiences

Typically, booking an ATLAS Virtual Visit requires a group of 10 or more visitors. This works well for organized groups such as schools, but does not give much opportunity for individuals to participate. To address this need, the concept of “Open” Virtual Visits was initiated in 2021. In this case, a different registration process is used instead of the usual booking form, allowing anyone to sign up on their own. Open Virtual Visits are advertised beforehand mainly through social media (Facebook, Instagram, TikTok, ...), but also through

platforms such as the CERN Alumni Association, or simply by word of mouth. Seven Open Virtual Visits were conducted in 2021 and six in 2022, including three in languages other than English. The response from the public was very positive: each visit had about 30-50 participants, with a wide variety of ages and backgrounds, from parents with their children to retired CERN employees. Guides also noticed a high level of engagement from these audiences, who were eager to interact with ATLAS physicists. More details about specific feedback received can be found in Sect. 5. Some of these Open Virtual Visits were also livestreamed to YouTube or TikTok to allow people who were unable to join the visit live to experience it at a later time. At the time of writing these proceedings, one of these YouTube videos has reached 5,000 views [5].

5 Feedback

Visitors often send feedback to their Virtual Visit guide after the event to share their impressions, which are overwhelmingly positive. The most common reaction is that the visitors felt inspired and that the Virtual Visit increased their appreciation for physics, and in some cases even fueled a desire to pursue studies in physics. In addition, visitors often found the presentation fun and engaging, especially when the guide dedicated a large fraction of the visit to answering audience questions. Some visitors have also commented that they felt like they were actually present in the ATLAS cavern, which is exactly the goal of the Virtual Visit program. Because of these positive experiences, some groups book Virtual Visits on a regular basis.

6 ATLAS Visitor Center

When the ATLAS cavern is not accessible, Virtual Visits take place from the ATLAS Visitor Center (AVC), a picture of which is shown in figure 2. Although the guide cannot take the virtual visitors close to the detector, there are other benefits from being in the AVC. First of all, it is adjacent to the ATLAS Control Room, which can be visible from the AVC through a “switchable glass” that can be made transparent or opaque. This gives the guide the opportunity to talk about how control room shifts are organized, a topic that visitors find very interesting, but that does not always come up during underground visits. The AVC also contains exhibits, such as various detector components and a LEGO model of ATLAS [6], which the guide can show the virtual visitors. In the future, a built-in video system will be installed in the AVC so that guides will no longer need to rely on a phone and tripod, thus improving the quality of the image.

7 Conclusion

Through the Virtual Visit program, the ATLAS Collaboration has been able to introduce many visitors to the detector and the work that ATLAS physicists do. In particular, visitors from all over the world are reached thanks to multilingual guides and platforms such as Zoom and YouTube. Positive feedback has been received throughout the years, and the ATLAS Collaboration continues to improve the Virtual Visits program for an even better experience for guides and visitors. Readers interested in booking a Virtual Visit can do so by following the link provided in [4].



Figure 2. ATLAS Visitor Center, from [7].

References

- [1] ATLAS Collaboration, JINST **3**, S08003 (2008).
- [2] ATLAS Visits webpage: <https://atlas.cern/Discover/Visit>
- [3] ATLAS Virtual Visits webpage: <https://atlas.cern/Discover/Visit/Virtual-Visit>
- [4] Virtual Visits booking form: <https://atlas.cern/discover/visit/virtual-visit/request>
- [5] Livestream of a Virtual Visit: <https://www.youtube.com/watch?v=50V0SyASvKI>
- [6] Lego model: <https://build-your-own-particle-detector.org/models/atlas-lego-model/>
- [7] Picture of the AVC: <https://cds.cern.ch/images/CERN-PHOTO-202108-106-8>