

ATLAS Analysis Papers and Conference Notes

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Abstract. In 2010, the LHC experiment produced 7 TeV and heavy-ions collisions continually, generating a huge amount of data, which was analyzed and reported throughout several performed studies. Since then, physicists are bringing out papers and conference notes announcing results and achievements. During 2010, 37 papers and 102 conference notes were published and until April 2012 there are already 275 papers and 371 conference notes in preparation. This paper presents the ATLAS Analysis Papers and ATLAS Analysis Conference Notes systems, developed to monitor the entire publication procedure up to the final submission and to promote the communication among the collaboration members. The software supports the paper elaboration process, tracking the analysis results status and improvement of the paper initial version, presenting a step-by-step procedure overview and promoting communication among collaborators. Along with the increasing flow of papers and conference notes, one of the issues is the way to guarantee that all members who participate in the analysis studies are aware of not only the discussion deadlines but also of the publication process, which involves 17 steps, split in 3 different phases for papers and 10 steps in 1 phase for conference notes. By sending notifications based on predefined rules the systems inform members to approve each step and provide further information such as the approval conditions and the documents in which the publication is based on. Through the software it is also possible to manage dates and members of the editorial team. The data processing is performed by using the Glance System, the main data retrieval platform used for ATLAS information management.

1. Introduction

In 2011, the LHC has produced almost 6 times as much data as it was initially planned [1]. As a consequence, more and more data is collected by the detectors and made available for analysis by the collaborators. The results of the analyses will then be published as papers or conference notes. The number of published papers has increased from 32 in 2010 to 64 in 2011, and for conference notes, it has increased from 102 to 163 in the same period.

The ATLAS Collaboration has established a complex process for reviewing and approving the papers and conference notes, in order to guarantee a high quality standard for the publications and active participation from collaborators. For papers, the process involves 17 steps, while conference notes go through 10 steps before their approval for publication. For this process to work smoothly, it is essential that all the involved people are always informed of the progress of a submission and all the steps are properly tracked.

This paper presents the ATLAS Analysis Papers and ATLAS Analysis Conference Notes systems, which were developed to manage and monitor the process for elaboration, review and approval of papers

and conference notes. The system presents a step-by-step overview of the procedure and automatically notifies the involved people, promoting communication among collaborators.

In section 2, the existing tools used at CERN to support collaborative writing are presented, and their limitations on supporting the specific process at hand are identified. Afterwards, in section 3, the ATLAS process for reviewing and approval is described in more details. Following, in section 4, the developed systems are explained and illustrated. Finally, section 5 concludes this paper.

2. The publication process

The ATLAS Collaboration has a complex publication process. It aims for a high quality standard in all the published documents and it encourages an active participation from its collaborators. In order to achieve these goals, it was created a Publication Committee and among its functions is to create a publication policy, to oversee the preparation and publication of ATLAS general papers and identify appropriate journals for ATLAS results. There are other important characters in this procedure as well. There are the Editors, the Contact Editors and the Editorial Board. The editors' main responsibilities consist in preparing paper drafts and answering the main comments on a paper, while the contact editors will be chosen among the editors to be in charge of the draft through the process. There is one Editorial Board for each analysis. Its main functions are to monitor the analysis, choose the journal for submission, interact with the editors and the Publication Committee in order to improve the paper's final result. The last main character is the working group convener, who will initiate the process.

According to the ATLAS Publication Committee Home Page, the procedure can be divided in three macro periods of time. In the first one, the group leader will notify the Publication Committee Chair, choose the editors and propose a journal. Then, alongside with the Spokesperson, they will define an Editorial Board. There are some conditions that could cancel a paper publication, like the unavailability of the editors to prepare the draft or of the Editorial Board to oversee and support its course. Once the draft is ready and approved by the Editorial Board, it is released for comments, together with any supporting documents, to the whole ATLAS Collaboration in CDS [2]. The members are then notified by e-mail to post comments. The default period to perform this action is usually 1 week from the day it was released. In the meantime, an open presentation for the collaborators to discuss the paper and suggest modifications is scheduled. This comprises the beginning of the second period of time.

After answering and modifying the draft according to the relevant comments, a second circulation of the paper is set, also called "Final circulation". Once more, the draft is available in CDS where the collaborators can express their opinion. Like the step before, a meeting is scheduled and the paper is presented for debate. If no serious changes are requested, the paper can be submitted for approval by the CERN management. This marks the Final Submission phase. Subsequent to CERN approval, the paper is then submitted to the desired journal and to arXiv [3]. The Editorial Board is in charge until the paper is accepted for publication, being also responsible to report any of the journal's modification requests to the editors.

This process is designed as a workflow. Throughout its steps, the group that is currently in charge of moving the procedure forward is notified by e-mail requesting an action.

3. CERN Tools

CERN has its own set of tools to support data organization, communication and collaboration among its members. This section describe the tools used during the publication procedure and identify the motivation for creating a system that assembles them all.

CERN Document Server [2] It is the official database for all CERN Documents. All drafts and ATLAS papers are submitted there, where members of the Collaboration are allowed to make comments. Supports restricted and public documents.

Indico [4] Tool used to schedule CERN related events, varying in the categories lectures, meeting or conferences. All paper presentations are scheduled using this tool, where they can propose a date

and time as well as define an agenda. Also supports private and public congregations.

CERN TWiki [5] It consists in a tool for web page collaborative writing. Collaborators can update the page by logging in using their accounts independently of their location. As all the tools above, it is possible to create public and restricted pages. The Publication Committee uses this tool to present themselves, inform the users about publication rules and published papers.

E-mails All CERN collaborators are entitled to have a CERN e-mail account and be part of or create e-groups. This feature is specially useful when communicating with large groups. In the publication procedure all deadlines, links and announcements are made using e-mails.

All the tools described are independently involved in the publication process. However, every time a collaborator needs to find a information, they have to search for it in past e-mails or go directly into the desired tool site and search for the information there. Besides, the notification e-mails have to be sent manually, which could lead to human mistakes and delay the physicist work. The motivation for creating this project is to develop a proper Management interface, integrated with the existing tools, that could be used to document all the procedure.

4. ATLAS Analysis and ATLAS CONF Notes systems

The ATLAS Analysis and ATLAS CONF Notes systems support the process of Analysis Papers publications and Conference Notes, respectively. They were constructed in order to model the described process and reproduce its workflow.

To achieve that purpose, both systems are divided in phases which are split into steps. Each step in the system corresponds to a real step in the described workflow. For each one of them the system has to take into account some predefined rules for its approval. An example would be who or which role has the permission to move to the next step. Another important one is which email needs to be sent when the current step gets approved.

Sending automatic emails is a key feature in Analysis Papers and Analysis Conference Notes systems. They are responsible for notifying the next collaborator that it is their turn to perform an action and continue the process. One important part is the email's body. It's written by the coordinators and has to be as flexible as possible, because some rules, links or information are subject to change. An example of the e-mail interface can be seen in Figure 1. With that in mind, an administrator interface was developed to implement this feature. The email is also fundamental to the publication process because it provides further information such as the approval conditions and the documents in which the publication is based on. Some of these are private information and cannot be exposed by the main publication page.

Both systems are very thorough in checking the permissions. There are 7 roles for Analysis Papers system and 8 for Analysis Conference Notes system and each input field has an associated role list. They both share 6 roles: PGC (Physics Group Convener), PC (Physics Coordinator), Pub (member of the Publication Committee), EdB (member of the editorial board), Admin (system administrator) and SuperADMIN (system developer). Beside the roles mentioned above, Analysis Papers has 1 more, SP (Spokesperson), while Analysis Conference Notes has other 2: S1R (Responsible for the first Sign-Off) and S2R (Responsible for the second Sign-Off). Some of these roles are static, i.e, they are the same for all publications (e.g, admin) whereas others are dynamic. The "EdB" is an example of the latter and is addressed to those who belong to the editorial team of that specific publication. The whole editorial team can be entered in the publication's page and edited later, as shown in Figure 2. This is a strategic information, which means that changes in the editorial team is a condition that the other groups involved in the publication process should be informed of. In such occurrences, an automatic e-mail gets then sent with further instructions to be followed.

One last feature to be pointed out is the facility when dealing with deadlines. Since all dates are in the system, there is not much worry in losing them.

Since Analysis Papers and Analysis Conference Notes are intensely used by the collaboration, they receive a lot of modification requests and enhancements describing the way users believe it should work.

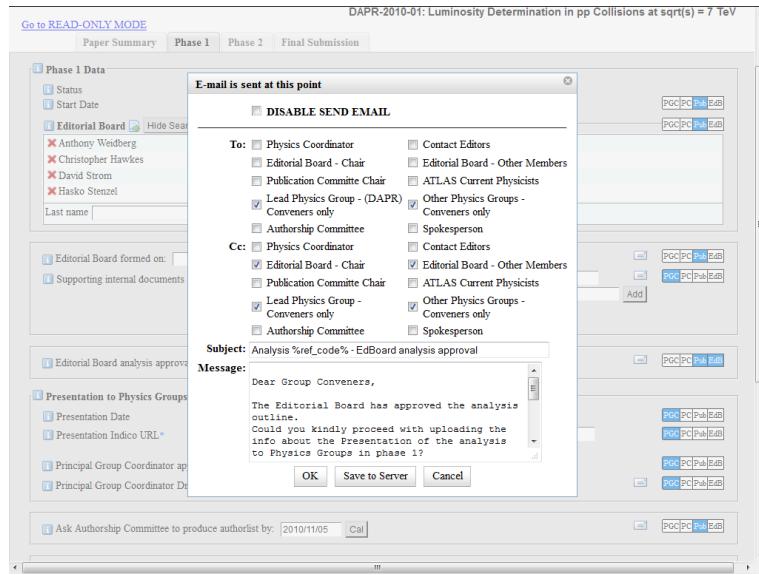


Figure 1. E-mail interface. It is possible to modify the addressees and the message from the default parameters.

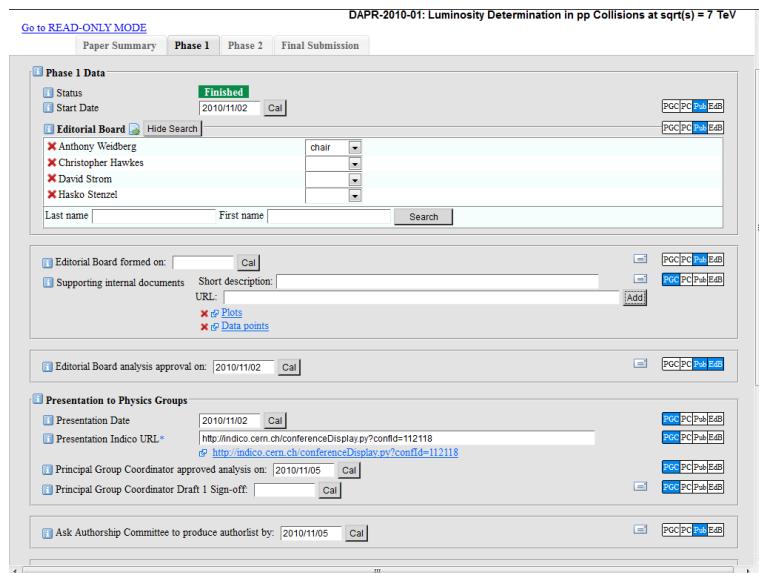


Figure 2. Phase 1 interface. In this phase is defined an Editorial Board and links and dates are set for the first draft presentation.

To handle these tasks the Trac [6] system was chosen as the official bug reporter tool for these systems. With this tool users can assess priorities to their requests and view all tickets the development team is working on.

In order to facilitate the reporting process a shortcut to the Trac system was also developed, as shown in Figure 3. Each system has this plugin integrated with Trac so, as soon as they present with an issue, there is no need for the user who spotted it to submit the reporting ticket through the Trac interface. It can be done by clicking on “Report an issue” button and then describing the problem. This procedure will create and submit the reporting ticket inside the Trac system.

Once a new task is submitted it goes directly to the tasks list, ordered by priority, and as soon as it is accepted by a member of the development team, the reporter receives a notification informing the conclusion estimate time for their request. While the work is in progress, the developer can add links or any other media to help the user track their issue and sometimes take part of the development process.

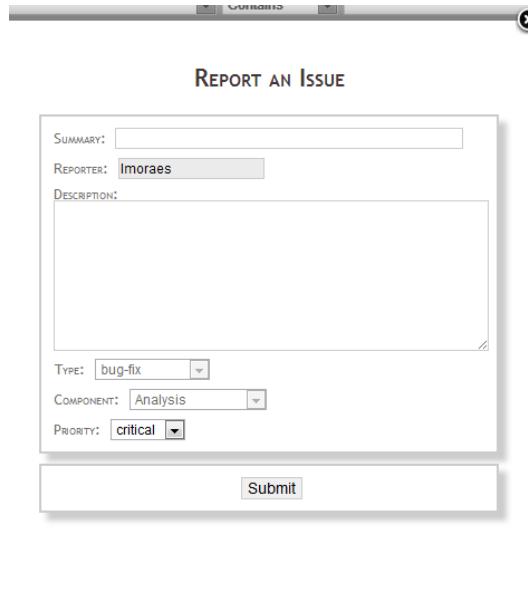


Figure 3. Shortcut to the Trac system. Users can submit errors or requests without the need to enter in another website.

With the information above, it is notable the importance of the Analysis systems and how dynamic they have to be. In order to satisfy this, the right technologies had to be chosen. Server-side coding is accomplished with the PHP language since it is well propagated in other systems of the Collaboration besides being a famous, therefore well tested, language for web applications. The data retrieval platform chosen was Glance [7] a well tested and stable system, since it is been for years the platform used by the ATLAS Management systems. As for client side scripting, the use of the AJAX technology was vital in deploying a fully dynamic and interactive interface. Furthermore, these systems must be highly compatible and cope with the different preferences that users all around the world might have for for operating systems and browsers. The jQuery framework is widely known for minimizing JavaScript compatibility problems and for that reason has also been chosen. The JavaScript language is also used to make dynamic validation of the input data. For example, as the Analysis processes occur following steps, the inserted dates should be in chronological order. Also the links should point to existing pages and most of the fields are mandatory. If these criteria aren't respected the systems warn the user that he should write an appropriate input.

5. Conclusion

As the Collaboration make use of several different tools during the publication process, relevant information used to be spread among different websites and emails. With the development of ATLAS Analysis Papers and Analysis CONF Notes, it was possible for the collaborators to have a reference page where they could search about published and ongoing papers. Both systems support the process of revision, approval and publication of the papers and conference notes. Furthermore, the automatic tracking of the entire publication procedure integrated to an efficient communication among the community of physicists make the publishing workflow clearer and transparent to the whole ATLAS

Collaboration. The input dynamic validation guarantees that all the information entered has a standard quality and that no data is missing.

These systems are being heavily used by the Collaboration. As of April 2012, there are 275 papers and 371 conference notes registered in the systems between published and in process.

Not rarely systems have to undergo subtle or major modifications to account for the dynamic nature of the rules supporting a long-term collaboration. This process can be sped up by transferring such rules from an implicit hard-coded implementation into more upfront and intuitive configuration files. Competent users will be able to read, comprehend and finally edit those files, effectively modifying the system without the need for a detailed understanding of its underlying implementation or having to request it to a developer. Furthermore, the interaction of the development team with users can be optimized by means of a user-support system where users can find answers to frequently asked questions and also follow up on their requests.

6. Bibliography

- [1] CERN Press Office. LHC proton run for 2011 reaches successful conclusion. <http://press.web.cern.ch/press/PressReleases/Releases2011/PR22.11E.html>, October 2011. Retrieved on April 2012.
- [2] CERN Document Server. <http://cdsweb.cern.ch>. Retrieved on April 2012.
- [3] arXiv.org. <http://arxiv.org/>. Retrieved on April 2012.
- [4] Indico. <http://indico.cern.ch/>. Retrieved on April 2012.
- [5] CERN TWiki. <http://cern.ch/twiki/>. Retrieved on April 2012.
- [6] The Trac Project. <http://trac.edgewall.org/>. Retrieved on April 2012.
- [7] C Maidantchik, F F Grael, K K Galvao, and K Pommes. Glance project: a database retrieval mechanism for the ATLAS detector. *J. Phys.: Conf. Ser.*, 119:042020, 2008.