

Alessandro Di Girolamo

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Over the past 15 years I have been an engaging and proactive member of CERN IT, working on a diverse range of projects, from architecting and development of computing frameworks to the integration and operations of the overall distributed computing infrastructure. I assumed several roles and responsibilities in Computing: 3 years ago I was elected ATLAS Computing Coordinator, and one year ago I was re-elected for a second term. I am passionate about enabling a diverse and engaging community culture, bringing people together to collaborate and work towards a common goal. I strive to grow personally and professionally and help others grow. I am married with 3 kids, always struggling for a reasonably balanced professional and personal life: I am a voracious reader of books and a big fan of sports, especially team sports.

Work experience, roles and responsibilities

March 2010 – present: Staff at CERN, Genève, Switzerland

I am a member of the CERN IT Scientific Computing Collaborations Group.

ATLAS Computing Coordinator

Since October 2019 I am the ATLAS Computing Coordinator, a role which involves coordinating and managing teams distributed world-wide in the areas of Offline SW, Distributed Computing, and Databases: more than 250 FTEs working seamlessly to provide cutting edge computing resources for the ATLAS physicists. My core responsibilities are:

- to refine and develop the ATLAS computing model and for long-term planning of the ATLAS computing needs. Part of my responsibility is to report to C-RSG and RRB. I was one of the lead editors of the [ATLAS HL-LHC Computing Conceptual Design Report](#) and the [ATLAS HL-LHC Software and Computing Roadmap](#).
- to assure efficient utilization of ATLAS Computing resources world-wide (250 PB of disk storage, close to 300 PB of tape storage, 500k CPU cores).
- to make sure any ad-hoc request for computing resources is addressed flexibly and in a timely manner by the relevant teams collaborating across the board.

WLCG Team Member

I am part of the WLCG (Worldwide LHC Computing Grid) team. My main roles are:

- Act as liaison between WLCG and ATLAS for computing matters.
- Operational Intelligence: I have initiated the Operational Intelligence activity, where colleagues from different Departments and Experiments work together to leverage machine learning as a novel approach to transforming HEP SW, infrastructures, and operational procedures.
- CRIC: I am co-project leader of CRIC (Computing Resource Information Catalogue). As the ATLAS Grid Information System (AGIS) project leader, I set direction that concluded in bringing AGIS to production several years ago, and allowed us to exploit this successful experience to generalize the tool to be useful for other communities, as CRIC, which is addressing the resource description needs of all the LHC experiments, the WLCG, and is being evaluated by several experiments beyond LHC, notably Dune.
- CTA (CERN Tape Archive): I have driven the ATLAS efforts in piloting the CASTOR to CTA migration. ATLAS was the first experiment to use CTA in production.

- Elastic CERN Tier-0 Extension: I drove ATLAS involvement in the CERN IT studies of Tier-0 extension with external clouds.
- Compute optimization: I proposed realistic workflows for the pilot and the commissioning phases of the CERN IT Batch BEER (Batch on EOS Extra Resources) and backfill projects, novel approaches aiming at improvements in utilization of available resources.
- Sim@P1: in collaboration with the ATLAS TDAQ team I conceived a project to dynamically exploit the ATLAS High Level Trigger farm at P1 during non-data taking periods for Monte Carlo simulations. We shared our architecture design with the CERN Agile Infrastructure project. Sim@P1 is delivering about 100k cores when ATLAS is not in data taking mode.
- FTS3 (File Transfer Service): I co-coordinated the FTS3 deployment task force. My role was to commission the FTS3 service at scale, interacting closely with the FTS3 developers, to plan the transition from FTS2 to FTS3, and to support the experiments to integrate FTS3 with their Data Management systems.
- EOS: In 2011, in collaboration with the EOS (the disk-based storage system developed at CERN) experts, I defined a set of procedures to test new storages at large scale. I co-coordinated the tests and validated EOS for the ATLAS use-case. It was the first production level instance set up: the other LHC experiments, and CERN in general, benefitted from these procedures and our tests results to validate EOS also for their use-cases.

ATLAS Distributed Computing Coordinator

Between March 2016 and September 2019, I was the ATLAS Distributed Computing Coordinator. My main responsibilities were:

- Participate in the decision making process of ADC Coordination to ensure an efficient exploitation of the disk, storage and tape resources.
- Coordinate the development efforts of ATLAS Distributed Computing and the integration of ATLAS Computing systems with WLCG and CERN IT.
- Optimize the person-power participating in the ATLAS Distributed Computing activities.

Highlighting several achievements:

- I have assured ATLAS involvement in a variety of R&D projects, notably CERN Tier-0 extension studies and WLCG (Worldwide LHC Computing Grid) DOMA. I made sure ATLAS has always been pioneering these activities to help the CERN IT with real use cases at scale.
- I have initiated the SW performance understanding forum, where experts from CERN IT and the LHC Experiments come together to optimize HEP SW and thus improve utilization of our computing resources.
- I have initiated a wider engagement of ATLAS with HPC facilities world-wide, and helped ATLAS to leverage these resources.

January 2007 – December 2009: Fellowship at CERN, Genève, Switzerland

I was part of the CERN IT Grid Support group, Experiment Integration Support section.

- I became one of the Distributed Computing experts in ATLAS, ATLAS Manager On Duty.
- I acted as one of the ATLAS VO security representatives. One of our roles was to understand the involvement of LHC VOs in Grid and sites security operations, and react accordingly.
- I designed, implemented and managed the monitoring for Central and Grid services of the ADC using the Service Level Status framework. This infrastructure setup which I developed has been also re-adopted by the other LHC experiments for their central services, and it is still in use.

April 2005 – December 2006: Postdoctoral researcher for INFN in collaboration with CERN

I shared the responsibility for the assembly, integration and testing of the muon detectors of the ATLAS experiment before the installation in the cavern, working as a Project Associate at CERN:

- I led a team of 6/7 people (1 electronic engineer, 2 physicists and 3/4 technicians) to finalize the production, testing and installation of the Level1 trigger electronics for the muon barrel.
- The ATLAS muon barrel has been fully installed into the cavern and has been operational since Spring 2007.

September 2002 – March 2005: Fellowship at INFN, & PhD

During my fellowship at INFN I was also studying to earn my PhD:

- I was the responsible for the MDT (Monitored Drift Tubes) Ageing Test in the Gamma Irradiation Facility at CERN. I worked mainly on site developing the system, collecting data, and analyzing the results.
- I developed a C++ package to calibrate the MDT space to radius relationship. The core of this package has been included into Athena, the ATLAS official analysis software.
- I was one of the researchers in charge of the design, development and analysis of a test of the MDT with a high-energy muon beam under high-radiation background.
- These tests validated the functionality of the muon detectors in an ATLAS-like environment, and I have presented their results in several meetings and conferences.

Education

- November 2004: **PhD in Experimental Physics** – University of Siena
 - Title of the Thesis: Studies on the performances of the Monitored Drift Tubes of the ATLAS detector.
- May 2001: **Laurea** (Master's degree) in **Physics (110/110)** – University of Rome “La Sapienza”
- July 1995: Maturità Classica – Liceo Classico Statale Francesco Vivona, Rome

Skills and competences

- Brings vision, initiates and drives long-term projects.
- Capable of bringing people together, working together towards the common goals.
- Think the big picture of complex, multi-disciplinary projects: define strategic goals and see them through completion.
- Experienced in defining objectives, planning activities, coordinating tasks and verifying results of my own activities and for team collaborators.
 - Project and line manager of a group of collaborators.
 - Team player with leadership charisma.
- Proactive, flexible. Open-minded and pragmatic. High-quality results oriented. Achieving results through several levels of hierarchy. High problem solving skills.

● Information Technology

- IT Operations
- Grid and Cloud Computing
- Distributed data and workload management systems
- SW development: Python and C++
- Code optimization and parallelization
- Compute Accelerators
- Data Analytics, Data analysis and Monte Carlo simulations
- Service monitoring (e.g. ELK, Grafana, collectd, Nagios, Ganglia)

- Detectors and Electronics
 - Project management of commissioning and integration of detectors
 - Detector performances monitoring
- Data acquisition system design, set-up and operation

Languages

- Italian: mother tongue

		Understanding				Speaking				Writing	
		Listening		Reading		Spoken interaction		Spoken production			
English		C2	Proficient	C2	Proficient	C2	Proficient	C2	Proficient	C2	Proficient
French		C2	Proficient	C1	Proficient	B2	Independent	B2	Independent	A2	Basic

(*) Common European Framework of Reference for Languages,
 Levels: A1-A2, B1-B2, C1-C2 from basic user (basic) to proficient user (proficient)

Social skills

- An active, enthusiastic and committed team player both in my personal and professional life.
 - I coach and play volleyball, currently in a team that plays in the Swiss B national league;
 - I also play football in CERN and intra-organisation tournaments.
- I am the Vice President of the CERN Football Club.

Scientific Publications and conferences

A selection of the scientific publications to which I actively contributed are listed below; I am an ATLAS author, a the full list is available in [INSPIRE](#):

- ATLAS HL-LHC Computing Conceptual Design Report; LHCC-G-178
- ATLAS Data Carousel; EPJ Web Conf. 245 (2020) 04035
- Evolution of the WLCG Information Infrastructure; EPJ Web Conf. 245 (2020) 03029
- CRIC: Computing Resource Information Catalogue as a unified topology system for a large scale, heterogeneous and dynamic computing infrastructure; EPJ Web Conf. 245 (2020) 03032
- Sharing server nodes for storage and compute; CERN-IT-Note-2019-001
- Rucio: Scientific Data Management; Comput Softw Big Sci (2019) 3: 11
- A Roadmap for HEP Software and Computing R & D for the 2020s; Comput.Softw.Big Sci. 3 (2019) 1, 7
- WLCG space accounting in the SRM-less world; EPJ Web Conf. 214 (2019) 04021
- CRIC: a unified information system for WLCG and beyond; EPJ Web Conf. 214 (2019) 03003
- Towards an Event Streaming Service for ATLAS data processing; EPJ Web Conf. 214 (2019) 04034
- Operation of the ATLAS Distributed Computing; EPJ Web Conf. 214 (2019) 03049
- ATLAS Distributed Computing: Its Central Services core; EPJ Web Conf. 214 (2019) 03061
- ATLAS Global Shares implementation in PanDA; EPJ Web Conf. 214 (2019) 03025
- ATLAS grid workflow performance optimization; EPJ Web Conf. 214 (2019) 03021
- Evolution of HammerCloud to commission CERN Compute resources; EPJ Web Conf. 214 (2019) 03033
- Overview of the ATLAS distributed computing system; EPJ Web Conf. 214 (2019) 03010
- Memory handling in the ATLAS submission system from job definition to sites limits; J.Phys.Conf.Ser. 898 (2017) 5, 052004
- ATLAS WORLD-cloud and networking in PanDA; J.Phys.Conf.Ser. 898 (2017) 5, 052011
- AGIS: Integration of new technologies used in ATLAS Distributed Computing; J.Phys.Conf.Ser. 898 (2017) 9, 092023
- Analysis of empty ATLAS pilot jobs; J.Phys.Conf.Ser. 898 (2017) 9, 092005
- Benchmarking cloud resources for HEP; J.Phys.Conf.Ser. 898 (2017) 9, 092056
- Evolution and experience with the ATLAS Simulation at Point1 Project; J.Phys.Conf.Ser. 898 (2017) 8, 082012
- Monitoring the delivery of virtualized resources to the LHC experiments; J.Phys.Conf.Ser. 664 (2015) 2, 022013
- The ATLAS Distributed Computing project for LHC Run-2 and beyond; PoS EPS-HEP2015 (2015) 260
- Accessing commercial cloud resources within the European Helix Nebula cloud marketplace; J.Phys.Conf.Ser. 664 (2015) no.2, 022019
- The Evolution of Cloud Computing in ATLAS; J.Phys.Conf.Ser. 664 (2015) no.2, 022038
- WLCG Monitoring Consolidation and further evolution; J.Phys.Conf.Ser. 664 (2015) no.6, 062054
- FTS3: Quantitative Monitoring; J.Phys.Conf.Ser. 664 (2015) no.6, 062051
- AGIS: Evolution of Distributed Computing information system for ATLAS; J.Phys.Conf.Ser. 664 (2015) no.6, 062001
- Integrating network and transfer metrics to optimize transfer efficiency and experiment workflows; J.Phys.Conf.Ser. 664 (2015) no.5, 052003
- Design, Results, Evolution and Status of the ATLAS Simulation at Point1 Project; J.Phys.Conf.Ser. 664 (2015) no.2, 022008
- ATLAS Cloud R&D; J.Phys.Conf.Ser. 513 (2014) 062037
- Design and performance of the virtualization platform for offline computing on the ATLAS TDAQ Farm; J.Phys.Conf.Ser. 513 (2014) 032011
- Towards a Global Service Registry for the World-Wide LHC Computing Grid; J.Phys.Conf.Ser. 513 (2014) 032032
- ATLAS Distributed Computing Monitoring tools during the LHC Run I; J.Phys.Conf.Ser. 513 (2014) 032084
- Automating usability of ATLAS Distributed Computing resources; J.Phys.Conf.Ser. 513 (2014) 032098
- Automating ATLAS Computing Operations using the Site Status Board; J. Phys.: Conf. Ser. 396 (2012) 032072
- AGIS: The ATLAS Grid Information System; J. Phys.: Conf. Ser. 396 (2012) 032006
- Service monitoring in the LHC experiments; J. Phys.: Conf. Ser. 396 (2012) 032010
- ATLAS computing activities and developments in the Italian Grid cloud; J.Phys.Conf.Ser. 396 (2012) 042052
- The 'Common solutions' strategy of the experiment support group at CERN for the LHC experiments; J.Phys.Conf.Ser. 396 (2012) 032048

- New solutions for large scale functional tests in the WLCG infrastructure with SAM/Nagios: The experiments experience; J.Phys.Conf.Ser. 396 (2012) 032100
- Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC; arXiv:1207.7214v1 ; CERN-PH-EP-2012-218
- Commissioning of a CERN production and analysis facility based on xrootd; J.Phys.Conf.Ser. 331 (2011) 072006
- Computing infrastructure for ATLAS data analysis in the Italian Grid cloud; J.Phys.Conf.Ser. 331 (2011) 052001
- The ATLAS Simulation Infrastructure; arXiv:1005.4568; Eur.Phys.J. C70 (2010) 823-874
- WLCG future network requirements; presentation, LHCOPN meeting, Dec 2009
- User support by and for the HEP VOs, EGEE09, Sep 2009
- Update on Global Experiment Operations; presentation, EGEE09, Sep 2009
- Expected Performance of the ATLAS Experiment - Detector, Trigger and Physics; arXiv:0901.0512
- Monitoring of the core Grid services, presentation; EGEE'08, Sep 2008
- The Service Level Status for HEP experiments; presentation, EGEE'08, Sep 2008
- Testing and integrating the WLCG/EGEE middleware in the LHC computing; J.Phys.Conf.Ser.119:062020,2008
- The Level-1 Trigger Muon Barrel System of the ATLAS experiment at CERN; J. Instrum. 4 (2009) P04010
- Strategies for experiment-specific monitoring in the Grid; presentation, 3rd EGEE User Forum, Feb 2008
- The WLCG common computing readiness challenge: CCRC'08; presentation, 3rd EGEE User Forum, Feb 2008
- First cosmic ray results of the RPC commissioning in the ATLAS cavern; Nucl.Phys.Proc.Suppl.177-178:335-338,2008
- Service Availability Monitor for the LHC experiments; presentation, EGEE'07, Oct 2007
- Assembly and Certification of ATLAS Muon Stations for the Middle and Outer Barrel; ATL-MUON-PUB-2007-001
- The ATLAS trigger - high-level trigger commissioning and operation during early data taking; ATL-DAQ-CONF-2007-032
- The ATLAS Trigger - Commissioning with cosmic rays; ATL-DAQ-CONF-2007-024
- Aging studies on atlas muon spectrometer drift tubes; IEEE Trans.Nucl.Sci.52:2971-2976,2005
- Performances of the ATLAS level-1 muon trigger processor in the barrel; Como 2005, Astroparticle, particle and space physics, detectors and medical physics applications, 616-620.
- Effect of the chamber geometry on tracking with BIL chambers; atl-com-muon-2005-022
- Ageing studies on ATLAS muon spectrometer drift tubes, Nuclear Science Symposium, 2004 IEEE, Vol. 1, 16-22 Oct. 2004, p.231-235
- Recent and ongoing Ageing studies for the Atlas Muon Spectrometer drift tubes, NIMA 535(2004) 186-190
- Ageing studies for the Atlas Muon Spectrometer drift tubes, Nuclear Physics B 150(2005)168-171
- Performances of an MDT cosmic test stand: a MC evaluation, atl-muon-2004-014
- Results from the 2003 beam test of a MDT BIL chamber: systematic uncertainties on the TDC spectrum parameters and on the space-time relation, atl-muon-2004-028
- Test results of different groove paths in scintillating tiles for CPR2 detector at CDF, CDF6522
- The CDF Time of Flight Detector, CDF6749, Pub. Proc. IEEE 2003 Nuclear Science Symposium (NSS)
- The CDF-II Time-Of-Flight Detector and Impact on Flavour Tagging, CDF6113, Pub. Proc. 8th International Conference on B Physics at Hadron Machines 2002
- The CDF-II Time-of-Flight Detector, CDF5950, Pub. Proc. 8th International Conference on Instrumentation for Colliding Beam Physics (INSTR02)