SOSC 2019

3rd International School on Open Science Cloud
Bologna, 16-20 September 2019

Welcome and Introduction

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Welcome to Bologna and to SOSC 2019

- **SOSC** (School on Open Science Cloud) is jointly organized by INFN, University of Perugia and University of Bologna.
- The 2019 edition of SOSC comes to Bologna after the two previous editions in Perugia (2017 and 2018). **Welcome to Bologna!**
- At SOSC 2019, we have 25 students, several auditors from INFN and University staff, international speakers from academia and industry, a now traditional blending among theory and practice, and also the opportunity to attend the ceremony where the Rector Magnificus of the Alma Mater will award Professor Trevor Hastie (Stanford University) the Sigillum of the University of Bologna.
- **A warm welcome to all of you in particular by the Director of INFN CNAF** (https://www.cnaf.infn.it/en/), the INFN National Center for Computer Technology Research and home to the largest INFN Data Center, located right in these premises.

INFN (National Institute for Nuclear Physics) – www.infn.it

- A long tradition in **state-of-the-art distributed IT technologies**, from the first small clusters to Grid and Cloud-based computing.
- INFN is not interested in computing per-se, but as an essential way to **support its research and mission**.
- For the past 10 years, this mainly meant supporting the experiments @ CERN (LHC), although the scope is now widening very quickly to other communities.
- Currently, INFN operates:
  - 9 medium size centers (Tier-2s in the LHC Computing Grid lingo)
  - 1 large Tier-1 center, at CNAF (Bologna) – certified ISO-27001
- All the INFN centers are connected with 10-100 Gbit/s dedicated connections through the GARR network.
- Collectively, our main centers have about 65,000 CPU cores, 50PB of enterprise-level disk space, 60PB of tape storage.

CNAF, a Center for Innovation

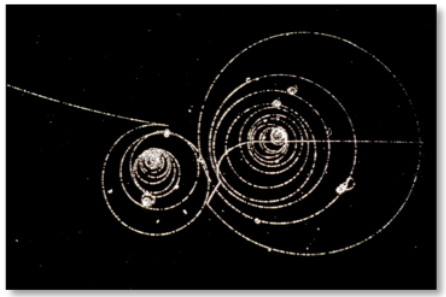
1960 | 1970 | 1980 | 1990 | 2000 | 2010 | 2020

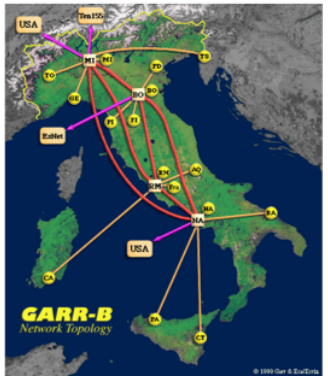
- **CNAF** (**C**entro **N**azionale **A**nalisi **F**otogrammi – National Center for Frames Analysis) is established in 1962 as an INFN Central Facility for the analysis of frames coming from bubble chambers.

- CNAF plans, develops and manages the INFN wide area network, which gradually evolved into the Italian research network, now managed by GARR (1980-2000).

- At the end of the 90s, CNAF realizes the LHC Italian Tier1 Data Center.
- CNAF becomes one of the main actors in the development of Grid World Wide Computing.

- CNAF has a solid Data Center, ISO-27001 certified.
- It offers CPU and storage resources to more than 30 INFN physics experiments, as well as to other disciplines.
- It develops innovative Cloud services oriented to the scientific world, to industry and society.
- It is a key player in technology transfer (through its TTLab) and is active in many projects of national and international relevance.






First installation of the CNAF Tier1 (2003)

SOSC 2019 Logistics (1)

- In order to attend the school, **you must register and check in** at the registration desk. If you have not done so yet, please see **Giulia**, who is taking care of the registration process.
- **Wireless access** is available either via eduroam, or via a special SSID.
  - If you do not have eduroam, contact the registration desk to get your credentials. Note that you **must accept and sign an AUP** (Acceptable Use Policy), in order to connect to the network and use resources provided by SOSC.
- **Coffee breaks** are included in the fee and will be served at mid-morning and mid-afternoon outside this room.

SOSC 2019 Logistics (2)

- Note that **lunch is not included** in the fee.
  - There are several options around here, from vending machines to bars, pizzerias, full restaurants. In any case, please **respect the school timings**, indicated in the SOSC agenda.
- A **social dinner** is organized for **Thursday night**, and **is included** in the fee.
  - However, do make sure you tell us if you will or will not participate to the social dinner.
  - The dinner will start at 20:30 and will be at **Cantina Bentivoglio**, Via Mascarella 4/B, Bologna (15 minutes walking distance from here).

School structure

- Please refer to the **SOSC 2019 agenda** at https://agenda.infn.it/e/SOSC19 for details and for the official timetable. All presentations will be uploaded there.
- The SOSC 2019 overall theme is **Intelligent Systems**, with two tracks:
  - **Statistical Learning, Machine Learning Methods and Applications**
  - **Computing Infrastructures**
- The school is generally structured with **lectures in the morning and hands-on sessions in the afternoon**.

Hands-on

- For the hands-on, you will use **your own laptops and some Cloud resources**. During the first hands-on session, you will get information on how to access the latter (e.g. IP addresses, credentials).
- Note that if you desire to **get snapshots of your work** on the SOSC Cloud resources, you must **tell us** by Thursday at the latest (by default, we won't take any snapshots and your work will be deleted from the SOSC resources once the school is finished).
- In the afternoons, you will work throughout the week on individual projects, which will allow you to enter a real **Kaggle competition** (https://www.kaggle.com/). On Friday, we will award the best three projects with exceptional prizes (almost).

On Wednesday, Sep 18

- On Wednesday morning, we won't have lectures here. Instead, **we shall go to the Aula Absidale di Santa Lucia, via de' Chiari 25, Bologna**, to attend the ceremony where the Rector Magnificus of the Alma Mater will award Professor Trevor Hastie the **Sigillum of the University of Bologna**.
  - Professor Hastie, John A. Overdeck Professor and Professor of Statistics and of Health Research & Policy at Stanford University, is well known for his research in applied statistics, particularly in the fields of data mining, bioinformatics and machine learning.
- **The ceremony will start at 10:30**. Either go directly there, or if you wish we'll walk from here at 9:30 (about 30 minutes walking distance). We have reserved seats for the registered students and auditors of the school.
  - During the ceremony, Professor Hastie will give a ***lectio magistralis*** **on "Statistical Learning with Big Data"**.
  - For more information, see https://eventi.unibo.it/sigillumhastie.
- In the afternoon, we shall be back here for the hands-on sessions.

On Thursday, Sep 19

- On Thursday, lectures in the morning and the first set of hands-on exercises in the afternoon on **Intelligent Infrastructures** are supported by the **EOSC-hub project** (https://eosc-hub.eu).
- EOSC-hub brings together multiple service providers to create **the Hub**: a single contact point for European researchers and innovators to discover, access, use and reuse a broad spectrum of resources for advanced data-driven research.
- The project mobilizes providers from the EGI Federation, EUDAT CDI, INDIGO-DataCloud and other major European research infrastructures to deliver **a common catalogue of research data, services and software for research**.

On Friday, Sep 20

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- On Friday afternoon, we shall have:
  - An overall **SOSC 2019 evaluation questionnaire**.
  - The delivery of a **SOSC 2019 certificate** to the students attending the whole school program.
  - A **final exam**, covering the topics and projects discussed throughout the week. Students successfully completing the exam will get the **Official SOSC School of Computing Diploma**.
  - A **prize-giving ceremony** for the **best three SOSC 2019 projects**.

Let the school start!

- Welcome again to SOSC 2019; we hope you have a fruitful week. Enjoy the school, enjoy Bologna, and do not forget to **have fun**!
- For any further information, see us here, or **email the SOSC 2019 Program Committee** at

  sosc19-pc@lists.infn.it

The SOSC 2019 Program Committee:

- Daniele Bonacorsi, University of Bologna
- Livio Fanò, University of Perugia
- Giulia Grandi, INFN Bologna
- Valentin Kuznetsov, Cornell University
- Mirko Mariotti, University of Perugia
- Davide Salomoni, INFN CNAF
- Luca Scrucca, University of Perugia
- Daniele Spiga, INFN Perugia