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PIANO NAZIONALE
DI RIPRESA E RESILIENZA



Centro Nazionale di Ricerca in HPC,
Big Data and Quantum Computing



Centro Nazionale di Ricerca in HPC,
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WP2.5: Meeting 2/2/2024

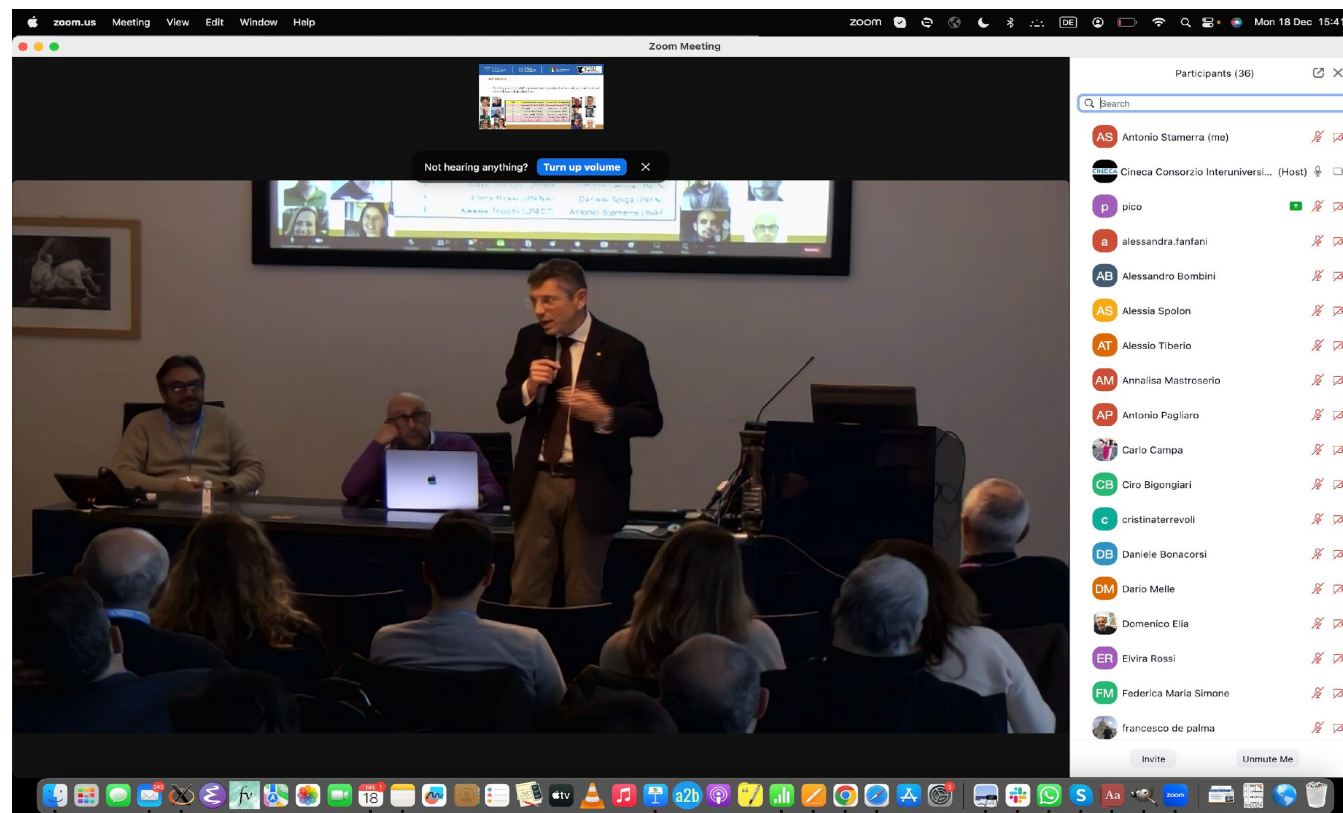
WP5 Leader: Daniele Spiga (INFN – sez. Perugia) & Elvira Rossi (Università Federico II di Napoli)
Contributors: INFN, UNIMIB, UNINA, ROMA1, UNITS, UNIBO, UNIPD, UNIFE

Spoke 2 - End of Year Event

- Spoke 2 received many positive comments for the December meeting
- The general impression is that there is a lot of irons in the fire (perhaps even too much), but now we have to move from the planning phase to the implementation phase
- Excellent impression from the young people!
- News on [ICSC site](https://www.supercomputing-icsc.it/2023/12/20/al-termini-lannual-meeting-dello-spoke-2-di-icsc/):

<https://www.supercomputing-icsc.it/2023/12/20/al-termini-lannual-meeting-dello-spoke-2-di-icsc/>

<https://agenda.infn.it/event/39489/>



Meetings and other news

Updates from the Meetings with Spoke Leaders: <https://agenda.infn.it/category/1783/>

- ✓ 26 Jan 2024: [Diciannovesimo meeting WPLEaders](#) (Status of Milestone 7 (M7) – M7 ends in February 2024):
 - ✓ February 2024 MS7 ends; the Hub will want reports in March; What we promised → Section 2 of the document (already sent for MS7)
 - ✓ Plans for MS8, 9, 10 □ Documents ready for 20th February 2024
 - ✓ Other 2 Innovation grants approved: **SowStain** (Digital Twins for Precision Agriculture) con **UniCal** + altri 11 partner e **SAFE** (Edge AI Anomaly Detection System for Critical Environments) con **UniBO**, Bonfiglioli, Tampieri, SECO
 - ✓ RAC: Resource allocations will begin next week (?)

M7

WP5 – [Architectural Support for Theoretical and Experimental Physics Data Management on the Distributed CN infrastructure]

Expected Targets

- TAR5.6 [Participation to Scientific WP targets]. **KPI**: [Reports on WP5 activities in UC2.1.1, UC2.1.2, UN2.2.1, UC2.2.3, UC2.2.5, UC 2.2.2, UN2.3.6, UC2.6.1, UN2.6.2, UN2.6.3];
- TAR5.7 [Training on Distributed Computing Models]. **KPI**: [Training on Distributed Computing Models executed; agenda and exec summary provided];
- TAR5.8 [ML training opportunity on the Cloud, with WP2 and WP4]. **KPI**: [Training on ML executed; agenda and exec summary provided];

Flagship Projects in which WP5 is involved:

- UC2.1.1: “Multilevel Hybrid Monte Carlo for lattice QCD”
- UC2.1.2: “QCD under extreme conditions”
- UC2.2.1: “Advanced Machine Learning - Flash Simulation and bleeding edge applications”
- UC2.2.2: “Quasi interactive analysis of big data with high throughput”
- UC2.2.3: “Ultra-fast algorithms running on FPGA”
- UC2.2.5: “Validation of event reconstruction code on ARM”
- UC2.3.6: “Pipeline optimization for space and ground based experiments (PSGE)”
- UC2.6.1: “Extended Computer Vision at high rate”
- UC2.6.2: “Enhancing Geant4 Monte Carlo Simulations through Machine Learning Integration”
- UC2.6.3: “AI algorithms for (satellite) imaging reconstruction”

Introductory course to VHDL

4–6 Mar 2024

<https://agenda.infn.it/event/39721/>

Image taken from: <https://smist08.wordpress.com/2023/02/04/introduction-to-fpgas/>

The course is mainly thought for the new personnel hired by means of the ICSC project to work on projects and research activities in the framework of Spoke 2 ("Fundamental Research And Space Economy"), but open to anyone interested within the fundamental physics community.

Lecturers:

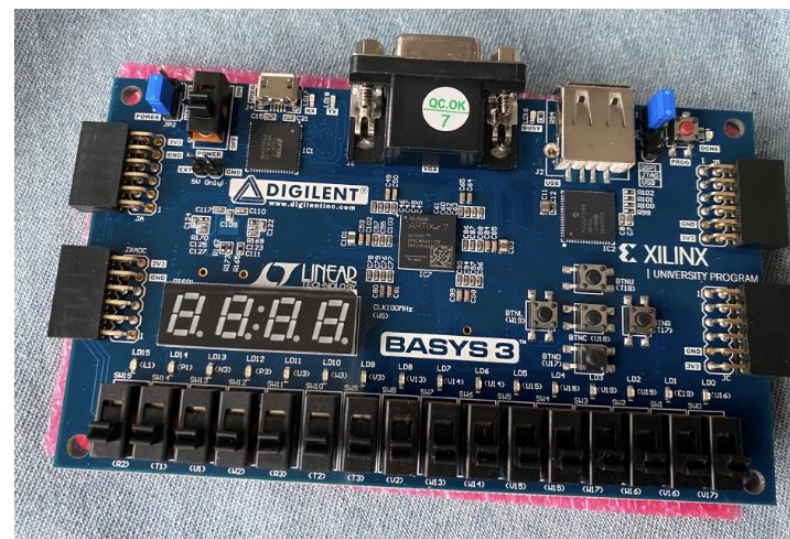
- Andrea Triossi (university of Padova)

Facilitators for the afternoon hands-on sessions:

Connection details to the FPGA servers will be sent by email to the registered people.



Introduction to FPGA programming.



Registration is open

WP5 today's agenda

Biweekly Meeting Spoke2 - WP2.5

Friday 2 Feb 2024, 11:30 → 14:30 Europe/Rome

Description [Link zoom: https://cern.zoom.us/j/64558230980?pwd=azM4YTVzMmxpMW52M0MyV01tOFZzdz09](https://cern.zoom.us/j/64558230980?pwd=azM4YTVzMmxpMW52M0MyV01tOFZzdz09)

11:30	→ 11:55	WP5 news and updates	🕒 25m	✎
Speakers: Daniele Spiga (Istituto Nazionale di Fisica Nucleare), Elvira Rossi (Istituto Nazionale di Fisica Nucleare)				
11:55	→ 12:15	Updates from Naples	🕒 20m	✎
Speakers: Adelina D'Onofrio (Istituto Nazionale di Fisica Nucleare), Bernardino Spisso (Istituto Nazionale di Fisica Nucleare), Gianluca Sabella (Istituto Nazionale di Fisica Nucleare)				
12:15	→ 12:35	Updates from Perugia	🕒 20m	✎
Speaker: Tommaso Tedeschi (Università e INFN Perugia)				
12:35	→ 12:55	Round Table	🕒 20m	✎
12:55	→ 13:05	AOB	🕒 10m	✎
Speakers: Alessandra Fanfani (Istituto Nazionale di Fisica Nucleare), Andrea Bressan (Istituto Nazionale di Fisica Nucleare), Daniele Spiga (Istituto Nazionale di Fisica Nucleare), Elvira Rossi (Istituto Nazionale di Fisica Nucleare), Luca Tomassetti (Istituto Nazionale di Fisica Nucleare), Mattia Bruno (Università di Milano-Bicocca)				

TO DO:

- Quasi interactive analysis of big data with high throughput → documentation and instructions to be added on github and create a common chat to help users.
- Data Management: discussion ongoing on the strategy; more updates in the next meeting