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NEXUS WG5

Education and Training Activities

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Chair: Dr. Catalina Curceanu – LNF-INFN

Experienced researcher (Director of Research) and spokesperson for SIDDHARTA-2 and VIP-2 Collaborations

Experienced in Education, Training and Dissemination activities: lead Dissemination within EU HadronPhysics-2, 3 and STRONG-2020 projects: organized tens of Workshops, Schools and International Conferences: writes articles for public in 3 countries: organized schools for students and teachers: seminars and conferences in schools, general public: participant in 6 TEDx events and many Festivals



Mission of WP5

- Build a **coherent, international training ecosystem** supporting NEXUS scientific goals
- Enable **knowledge transfer across Underground Laboratories (ULs)** and disciplines
- Strengthen **early-stage researchers (ESRs) and PhD** training through mobility and co-supervision

Strategic role in NEXUS

- WP5 is the **horizontal backbone** connecting WP1–WP4
- Ensures that **secondments → skills → reintegration** are structured and effective
- Supports dissemination, outreach, and long-term capacity building

WP5 Objectives & Philosophy



WP5 Objective (O5.1)

Implement a **training network** covering:

- Instrumentation & low-background techniques (WP1, WP2)
- Modelling, simulation & ML (WP3)
- Quantum science & technology (WP4)

Training philosophy

- **Hybrid model:** online + on-site + hands-on
- Strong coupling between:
 - *Research activities*
 - *Secondments*
 - *Networking & reintegration*

WP5 Objectives & Philosophy



Target groups

- PhD students
- Early-Stage Researchers (ESRs)
- Technical and experimental staff involved in UL activities

Added value

- Cross-disciplinary exposure (physics, detectors, data, ML, quantum)
- North–South & EU–non-EU knowledge circulation

WP5 Tasks & Timeline

Task 5.1 Summer Schools (M1–M48)

- Two **2-week international schools**
 - One Northern Hemisphere (SURF / NEXUS-SURF++)
 - One Southern Hemisphere
- ~20 students per school
- Lectures by world-class scientists
- Focus: underground research, detectors, quantum sensing, theory

Task 5.2 Training & ESR Development

- Hybrid training:
 - Webinars, guidelines, mentoring
 - On-site laboratory training during secondments
- Skills development:
 - Experimental techniques
 - Computational tools & ML (linked to WP3)
 - Best practices in UL research



WP5 Tasks & Timeline

Task 5.3 Project Workshops

- One **project-wide workshop every 2 years**
- Locations:
 - One in Italy (INFN)
 - One outside EU
- Goal: scientific exchange, integration, collaboration

Task 5.4 PhD Co-Supervision

- ≥ 3 -month secondments for PhD students
- Co-tutorship model between institutions
- Strong reintegration & follow-up



Deliverables, Interfaces & Priorities



WP5 Deliverables

- **D5.1 – Report on project workshops** (M45, Public)
- **D5.2 – Report on training activities** (M42, Public)

Key interfaces

- **WP1–WP4:** content, training needs, secondments
- **WP6:** coordination, reporting, dissemination & DCOP alignment

Risks & mitigation (WP5-relevant)

- Delays in secondments → early monitoring, coordination with WP6
- Staff changes → broad involvement, shared training formats

WP5 Priorities (kick-off message)

- Early planning of:
 - Summer schools
 - First workshop
- **Clear communication channels with WP leaders**
- **Make training outcomes visible, measurable, and reusable**

WP5 will ensure that NEXUS is not only scientifically excellent, but also leaves behind a trained, connected, and sustainable community across underground laboratories worldwide

