# WP2

# A2.1 - Upgrade of the KM3NeT shore station

| | |
|---|---|
| Attività | The activity will consist in the upgrade of the Data Acquisition equipment at the KM3NeT shore station in Portopalo di Capo Passero. |
| Mese di completamento | **20** |
| Unità responsabile | INFN-LNS |
| Intermediate Objectives e Deliverables | IO-2.1 - D-2.1.1 – Report with description of the upgraded shore station. |

# A2.1 - Upgrade of the KM3NeT shore station

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired includes:<br>• a system of optical amplifiers, for the treatment of the optical signals from the underwater infrastructure;<br>• a system of high-performance White Rabbit switches;<br>• an optical monitoring system for the continuous and remote monitoring of the quality of optical signals;<br>• a system of high-performance servers and disk storage for data acquisition and storage. |

# LNS – Attività 2.1

- Principali procurements effettuati
- Restano di avviare alcuni procurement sottosoglia
- Tempi di consegna da verificare, ma non sono attese criticità
- La consegna del deliverable previsto potrebbe subire qualche mese di ritardo
- Qualche variazione nel piano dei procurement è stata necessaria per:
  - Ottimizzare l'utilizzo dei fondi (qualche caso di minore spesa)
  - Evitare variazioni di budget

# A2.2 - Upgrade of the Bari integration site

| | |
|---|---|
| Descrizione attività | The activity will deal with the procurement of the instrumentation needed to a) upgrade the Base Module integration site and b) set up a Detection Unit integration site (so-called Process1, Process 2 and Process3, which consists in integrating the base modules and the optical modules with the backbone of the detection unit and in performing a complete test in dark box of the assembly).<br>The processes needed for this activity can be summarized as follows:<br>identification of the characteristics of the various equipment to be purchased and preparation of the procurement;<br>administrative procedure for procuring all needed equipment;<br>reception and test of the equipment;<br>commissioning of the upgraded integration facility. |
| Mese di completamento | **16** |
| Unità responsabile | INFN-BA |
| Intermediate Objectives e Deliverables | IO-2.2 - D-2.2.1 – Report with the description of the upgraded Bari integration laboratory. |

# A2.2 - Upgrade of the Bari integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the Base Module integration site and for the setting up of the Detection Unit integration site.<br>The main items to be acquired include:<br>• Forklift<br>• PolyJet 3D printer<br>• Fiber Splicing Machine<br>• Fusion machine<br>• Oil-filling machine<br>• Laser source for the test facility<br>• Optical power meter<br>• Digital Oscilloscope<br>• A large volume Dark box<br>• White Rabbit switches<br>• Electro-Optical transceivers<br>• TDK lambda power supply<br>• GPSreceiver<br>• signal amplifier<br>• FLIR T860 thermal imaging camera<br>• Equipment for the mechanical workshop<br>• Equipment for the metrology laboratory |

# Bari – Attività 2.2

- Principali procurements effettuati
- Restano di avviare alcuni procurement sottosoglia
- Non sono attese criticità

# A2.3 - Upgrade of the Bologna Base Module integration site

| | |
|---|---|
| Descrizione attività | The activity will deal with the procurement of the instrumentation needed to upgrade the Base Module integration site at INFN Bologna.<br>The staff dedicated to this activity will identify the characteristics of the various equipment to be purchased in order to meet the quality requirements of the KM3NeT collaboration for the integration of the new design Base Modules. |
| Mese di completamento | **12** |
| Unità responsabile | INFN-BO |
| Intermediate Objectives e Deliverables | IO-2.3 D-2.3.1 – Report with description of the upgraded laboratory |

# A2.3 - Upgrade of the Bologna Base Module integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the Base Module integration site.<br>The main items to be acquired include:<br>micro-optical spectrum analyzer for fiber network testing;<br>fiber fusion splicer;<br>digital oscilloscope |

# Sezione BO – Attività 2.3

**Nota: tutte le procedure sono affidamenti diretti in quanto l'importo è < 139k€**

| | Codice procedura | Descrizione procurement | Stato contrattualizzazione | Data di consegna prevista del materiale | Note |
|---|---|---|---|---|---|
| 1 | 2300 | Strumenti Tecnico Specialistici in convenzione INFN con RS | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (entro 07/11/2023) | Convenzione INFN con RS |
| 2 | 2301 | Attrezzature Ottiche | **Procedura Conclusa** Ordine Firmato | Materiale Arrivato (25/10-07/11 2023) | TD su MEPA |
| 3 | 2302 | Attrezzature Elettriche | ***Emissione Ordine*** Aggiudicata - Det. Di Agg. Firmata | Tutto **entro Aprile 2024** eccetto per 2 «TDK $\lambda$» , **Agosto 2024** | TD su MEPA. Procedura rifatta 09/2023 a per errore fornitore: importo offerta superiore alla base d'asta MEPA |

# A2.4 - Upgrade of the Catania DOM integration Laboratory

| | |
|---|---|
| Descrizione attività | The activity will consist in the upgrade of the DOM integration laboratory in order to increase the production rate.<br>The present DOM integration laboratory located in the INFN CT has a size of about 100 sqm. A new laboratory with a similar dimension will be set up. It will be fully equipped with all the tools and scientific instrumentation in order to proceed with a parallel production.<br>The civil infrastructure, including services, are already exist.<br>The new part will be refurbished to have the main characteristic of such kind of installation (ie. antistatic floor, air control, light screening etc). Moreover, a new space will be renewed to store the DOM produced. |
| Mese di completamento | **14** |
| Unità responsabile | INFN-CT |
| Intermediate Objectives e Deliverables | IO-2.4 - D-2.4.1 – Report with the description of the upgraded Catania integration laboratory |

# A2.4 - Upgrade of the Catania DOM integration Laboratory

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the DOM integration site.<br>The main items to be acquired include:<br>fiber fusion splicer;<br>leak detector<br>data acquisition and mounting and testing tool;<br>material for the refurbishment of the new space for DOM lab integration, including elevator;<br>material for the refurbishment of the storage site |

# Sezione Catania – Attività WP2

- Tutte le procedure sono state completate (Ristrutturazione Laboratorio Edificio 10+ strumentazione necessaria)
- Tempi previsti per la consegna: Primavera 2024
- Capacità ad oggi di garantire il raggiungimento dell'attività: 100%
- Nessuna variante rispetto alla capacità originaria
- Il personale tecnico è stato assunto regolarmente
- Nessuna criticità da segnalare

# A2.5 - Upgrade of the Genova integration site

| | |
|---|---|
| Descrizione attività | The activity will deal with the procurement of the instrumentation needed to upgrade the integration site of INFN-GE.<br>The technical staff dedicated to this activity will identify the characteristics of the various equipment to be purchased in order to meet the quality requirements of the KM3NeT collaboration for the string integration processes. |
| Mese di completamento | **12** |
| Unità responsabile | INFN-GE |
| Deliverables | D-2.5.1 – Report with the description of the upgraded Genova integration laboratory |

# A2.5 - Upgrade of the Genova integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the integration site.<br>The main items to be acquired include:<br>micro-optical spectrum analyzer for fiber network testing<br>vacuum pump<br>fiber fusion splicer<br>sub-nanosecond accuracy switches<br>low latency switch<br>rack PC server<br>DWDM<br>Power supply<br>Mechanical instrumentation |

# Sezione di Genova – Attività A2-5 (WP2)

- **Outsourcing Processo 1 e 2** con accordo quadro sopra soglia (180K) per **20 DU** tramite avviso esplorativo e gara (vecchio codice): fallito (complicazioni di gare PNRR, il colpo finale – i partecipanti della gara non sono riusciti a compilare la domanda correttamente sul portale NOVA PA e sono risultati non partecipanti senza possibilità del soccorso istruttorio).
  - **Outsourcing Processo 1** con accordo quadro sotto soglia (135K) per **15 DU** tramite affidamento diretto. Contrattualizzazione questa settimana. Prima ordine in accordo quadro – inizio di 2024 (riapertura ordini).
  - **Differenza di ~45K (+IVA)** non utilizzabili non critico (costi di overhead)?
  - **Differenza di 5 DU e mancanza di outsourcing di Processo 2 per 20 DU** nella ditta esterna. Non critico (copertura con l'integrazione a INFN Genova).
- **2x server 4-in-1 per test shore station**: (Ordine CONSIP MePa 6/2/2023). Dell ha confermato la consegna ad Italware 15/11/2023. Ora possiamo spingere Italware di spedire il materiale a noi. Critico per il processo 2 e 3: siamo on-track.
- **kit giunzione in fibra ottica e misure di potenza per l'integrazione di DU:** (Contratto 3/8/2023). Ordine deve essere spedito questa settimana. Critico per outsourcing Processo 1 ad ORMET Srl: siamo on-track.
- **Cavo ODI "wet mateable":** (Contratto 4/8/2023). Tempi di consegna in corso di verifica. Non critico (il processo 2 e 3 si fa con il cavo già disponibile a Genova, l'ipotesi iniziale di fare il processo 2 ad ORMET Srl è fallita a causa di problemi burocratici di gare PNRR).
- **Rack+console per test shore station:** (Trattativa diretta MePa, presentazione di offerta 20/11/20230). Non critico (abbiamo un rack temporaneo).

# Sezione di Genova – Attività A2-5

| Descrizione procurement | Stato contrattualizzazione | Data di consegna prevista del materiale | Note |
|---|---|---|---|
| **Outsourcing Processo 1** | Contratto a Novembre | 2024-2025 | Accordo quadro per 15 DU (processo 1), primo ordine in 2024 |
| **2x server 4-in-1 per test shore station** | contrattualizzata | Novembre 2024 | CONSIP MePa – interazione molto scarsa con il fornitore (Italware). Risoluzione dei problemi tramite il contatto diretto con Dell. |
| **kit giunzione in fibra ottica e misure di potenza per l'integrazione di DU** | contrattualizzata | Novembre 2024 | Kit di attrezzatura varia (Delo Srl). Attesa lunga di disponibilità di tutti i componenti da fornitore. Interazione con il fornitore abbastanza positiva. |
| **Cavo ODI "wet mateable"** | contrattualizzata | 2025 | Unico fornitore esterno (MacArtney, Francia). Interazione positiva e alta capacità del fornitore per capire la burocrazia di PNRR (e nonostante tutto ci sono gli errori nella documentazione fornita). |
| **Rack+console per test shore station** | contrattualizzata | A partire da Dicembre 2024 | Virtual Logic – fornitore affidabile. Promessa di fornitura (contatto telefonico). |

# A2.6 - Upgrade of the LNS integration site

| | |
|---|---|
| Descrizione attività | The INFN - Laboratori Nazionali del Sud is one of the DU integration site of KM3NeT. The upgrade of the laboratory consists in the procurements of new instrumentations for the DU integration and tests. This will allow to increase the DU production rate.<br>The activity will consist in the evaluation of the technical characteristics of the instrumentation, the procurements, the<br>The instruments needed are:<br>9 LOMs – the LOM is launching vehicle used to deploy the assembled DU into the seabed<br>1 rotator - This is one of the instruments that is needed to insert the string in the launching vehicle (LOM). The acquisition of this new rotator will allow the assembly of two DUs simultaneously<br>1 test rack – the test rack is used to test optically and electrically the string before the deploying |
| Mese di completamento | **20** |
| Unità responsabile | INFN-LNS |
| Deliverables | D-2.6.1 – Report with the description of the upgraded LNS integration laboratory |

# A2.6 - Upgrade of the LNS integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the integration site.<br>The main items to be acquired include:<br>9 Launchers of Optical Modules (LOMs)<br>One rotator<br>One test rack<br>Mechanical tools for integration<br>Electronics and optics tools for integration |

# LNS – Attività 2.6

- Principali procurements effettuati
- Restano di avviare alcuni procurement sottosoglia
- Tempi di consegna da verificare, ma non sono attese criticità

# A2.7 - Upgrade of the integration laboratories at CACEAP

| | |
|---|---|
| Descrizione attività | The activity will deal with the procurement of the instrumentation needed to upgrade the integration site of INFN Naples at CACEAP (CAmpania CEnter for Astroparticle Physics located at Caserta).<br>It consists of three interventions, each one corresponding to a specific Intermediate Objective:<br>Procurement of the instrumentation needed to upgrade the existing laboratories with the aim of reaching the desired goal of 3 DU ready for the deployment per month. On top of the laboratory instrumentation, to work on parallel on the DU integration 1 rotator and 2 Launcher Vehicles (LOM)s are also needed;<br>Procurement of the hardware and its installation for the realization of a network infrastructure that allows the operation of the laboratories and the data exchange with the data center connected to the KM3NeT experiment<br>Procurement of machine tools and electronics equipment for the realization of mechanical pieces and for the test of electronics components and photosensors. |
| Mese di completamento | **20** |
| Unità responsabile | INFN-NA |
| Intermediate Objectives e Deliverables | IO2.9 - D-2.9.1 – Report with the description of the upgraded technical services in Napoli (mese 12)<br>IO2.8 - D-2.8.1 – Report with the description of the upgraded CACEAP integration laboratory (m. 18)<br>IO2.7 - D-2.7.1 – Report with the description of the upgraded network infrastructure at CACEAP (m. 24) |

# A2.7 - Upgrade of the integration laboratories at CACEAP

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the integration site.<br>Three Intermediate Objectives are planned:<br>Network infrastructure at CACEAP<br>Upgrade of the CACEAP integration site<br>Upgrade of the technical services at Napoli<br>The main items to be acquired for the network infrastructure at CACEAP include:<br>Server+Firewall+Core Switches<br>Local infrastructure to monitor and manage the network<br>Cabling of the whole area 40.000€<br>Cooling of the area where the racks, switches and firewall are located<br>Other instrumentation<br>The main items to be acquired for the upgrade of the CACEAP integration site include:<br>System for the mixing and pouring of the optical gel, and associated working tables<br>Shore station (servers, GPS system, White Rabbit Switches, fibers and son)<br>Electric forklift with 5t maximum load<br>Test bench for BM integration (power supply, White Rabbit, fibers)<br>Climatic chamber customized for fotosensor studies<br>OTDR (Optical Time Domain Reflectometer)<br>Thermal imaging camera<br>Other instrumentation for fiber<br>1 rotator<br>The main items to be acquired for the upgrade of the technical services at Napoli include:<br>5-axis machining centre including equipment (milling machine)<br>Machining centre including equipment (lathe)<br>System for time, jitter and noise measurements<br>3D metal printer |

# Sezione di Napoli – Attività 2.7

- Tutti i procurements necessari avviati
- Tempi di consegna in linea con il programma
- Le attività saranno completate entro i tempi previsti
- Qualche variazione nel piano dei procurement è stata necessaria per:
  - Ottimizzare l’utilizzo dei fondi (qualche gara conclusa a minore spesa)
  - Evitare variazioni di budget

# A2.8 - Upgrade of the Roma integration site

| | |
|---|---|
| Descrizione attività | The activity will be focused on the selection of the instrumentation aimed at an upgrade the electronics laboratory site of Roma Sapienza. This activity will be carried out by the technical staff.<br>The administrative procedures for the procurement will then be started and once the instrumentation is received, it will be tested and set up to complete the upgrade of the lab.<br>The upgraded lab will be an improved and more convenient facility to perform the actions required by the selected work package, specifically addressing the testing activities for the high-reliability power and instrumentation control electronics of the Junction Boxes designed and developed by internal members of the technical staff. |
| Mese di completamento | **14** |
| Unità responsabile | INFN-RM1 |
| Deliverables | D-2.10.1 – Report with the description of the upgraded Roma integration laboratory |

# A2.8 - Upgrade of the Roma integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the integration site.<br>The main items to be acquired include:<br>Fast Signal Digital Storage Oscilloscope<br>Digital Storage Oscilloscope for High Voltage Signals<br>Vector Network Analyzer<br>Power Supply Units (bench/high voltage)<br>Multimeters and Current Probes<br>Electronic Loads<br>Precision Timing Instrumentation (digital delay line and TDC)<br>IT, Networking and Software Licenses<br>Workspace and tooling |

# Sezione di ROMA – Attività IO-2.10 Upgrade of the Roma integration laboratory

- Stato dei procurements:
  - Oscilloscopio fast + VNA (~134k€): consegnato
  - Upgrade Laboratorio (~96k€): aggiudicata
  - Strumentazione elettronica (~63k€): aggiudicata
  - Strumentazione informatica (~6k€): attesa sblocco fondi (si procederà in convenzione)
- Tempi previsti per la consegna: marzo/aprile 2024 (stima)
- Capacità ad oggi di garantire il raggiungimento dell'attività: alta
- Nessuna variazione di necessità di procurement rispetto alla baseline originaria
- Criticità: consegne (e collaudo) successive a programmazione iniziale

# Sezione di ROMA – Attività IO-2.10 Upgrade of the Roma integration laboratory

| Descrizione procurement | Stato contrattualizzazione | Data di consegna prevista del materiale | Note |
|---|---|---|---|
| Oscilloscopio fast + VNA | Ordine firmato | Materiale consegnato | |
| Upgrade Laboratorio | Determina da firmare | Marzo/aprile 2024 (stima) | |
| Strumentazione elettronica | Determina da firmare | Gennaio/febbraio 2024 (stima) | |
| Strumentazione informatica | Si procede in convenzione | Gennaio/febbraio 2024 (stima) | |

# A2.9 - Upgrade of the Salerno integration site

| | |
|---|---|
| Descrizione attività | The activity will deal with three targets at the Salerno site:<br>1) Hosting a DOM integration facility. This implies procurement of the needed instrumentation and tools to integrate Digital Optical Modules starting from their components.<br>2) Upgrading the CLB compass calibration facility. This requires a preparatory phase, during which robots in the shape of automatic compass calibration gimbals will be designed, and a realization stage, during which the robots are to be produced.<br>3) Setting up a facility for CLB firmware testing. This requires GPS signal, White Rabbit switch and photomultiplier signal emulator.<br>The technical staff dedicated to this activity will identify the characteristics of the various equipment to be purchased in order to meet the quality requirements of the KM3NeT collaboration for the DOM integration processes, starting from the expertise already available in the INFN Napoli Section. The same knowledge will help in setting up the CLB firmware testing facility. The goal of making automatic gimbals as robot devices will require an additional design step that will be performed by an external firm. |
| Mese di completamento | **12** |
| Unità responsabile | INFN-NA |
| Deliverables | D-2.11.1 – Report with the description of the upgraded Salerno integration laboratory |

# A2.9 - Upgrade of the Salerno integration site

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the integration site. The activities plan three different targets:<br>Setting up of a DOM integration facility<br>Upgrading the CLB compass calibration facility<br>Setting up a CLB firmware testing facility.<br>The main items to be acquired for the DOM integration facility are:<br>Work benches<br>Fiber splicer<br>Vacuum pump<br>Gel mixer<br>Vacuum-tight chamber<br>Darkbox for testing<br>ESD system<br>Storage shelves<br>The main items to be acquired for the CLB compass calibration facility are:<br>Design and development of an robot-based gimbal<br>The main items to be for the CLB firmware testing facility are:<br>Fibers<br>Switches<br>Connectors<br>Workstation |

# UNISA – Attività 2.9

- Robot calibrazione CLB
  - Prototipo funzionante e dimostrato (20.800€)
  - Fornitura di 3 robot affidata (RdA 124698 – Aggiudicata, Determina a contrarre firmata il 22/10/2023 – 46.800€)
- Tempi previsti per la consegna: 6 mesi da stipula
- Capacità ad oggi di garantire il raggiungimento dell'attività: non si vedono difficoltà
- Variate necessità di procurement rispetto alla baseline originaria: 7.600€ (su questa voce c'erano 60k)
- Criticità: nessuna

# UNISA – Attività 2.9

| Descrizione procurement | Stato contrattualizzazione | Data di consegna prevista del materiale | Note |
|---|---|---|---|
| 3 Robot calibrazione CLB | Determina a contrarre | 31/7/2024 | |
| | | | |
| | | | |
| | | | |

# A2.10 - Setting and upgrade of INFN-BO test benches

| | |
|---|---|
| Descrizione attività | The activity will deal with the procurement of the instrumentation needed to upgrade the Bologna Common Infrastructure (BCI) hosted at INFN Bologna to the new design of the DAQ system architecture and to install a new test bench dedicated to developing and handle user ports dedicated to oceanographic instrumentation that will be hosted on the Calibration Unit of KM3NeT.<br>The staff dedicated to this activity will identify the characteristics of the various equipment to be purchased in order to meet the quality requirements of the KM3NeT collaboration for the construction of the facilities.<br>After the conclusion of this first step, the administrative procedures for the procurement will. After the delivery of equipment, the test bench known as BCI will be upgraded in order to fit the new DAQ architecture. Finally, a new test bench will be established, tested and kept in operation to develop and handle installation of user ports able to be efficient interface with environmental and oceanographic sensors hosted on the KM3NeT Calibration Unit. |
| Mese di completamento | **24** |
| Unità responsabile | INFN-BO |
| Deliverables | D-2.12.1 – Report with description of the upgraded BCI infrastructure, the measurements, when possible, to characterise it and photos. (mese 24)<br>D-2.12.2 – Report with description of the upgraded BLU infrastructure, the measurements, when possible, to characterise it and photos (mese 24) |

# A2.10 - Setting and upgrade of INFN-BO test benches

| | |
|---|---|
| Descrizione strumentazione scientifica | The instrumentation to be acquired is necessary for the upgrade of the Bologna Common Infrastructure and to set up the new Bologna Laboratory for User ports (BLU)<br>The main items to be acquired for the upgrade of the BCI test bench are:<br>electronic boards<br>optical transceivers<br>digital Oscilloscope<br>DC/DC converters<br>switches<br>power generator<br>UPS<br>The main items to be acquired to set up the BLU facility are:<br>WR switches<br>workshop equipment<br>digital oscilloscope<br>Oceanographic tools<br>laboratory tools |

# Sezione BO – Attività 2.10

**Nota: tutte le procedure sono affidamenti diretti in quanto l'importo è < 139k€**

| | Codice procedura | Descrizione procurement | Stato contrattualizzazione | Data di consegna prevista del materiale | Note |
|---|---|---|---|---|---|
| 1 | 21000 | Due Oscilloscopi | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (03/07/2023) | TD su MEPA |
| 2 | 21001 | Infrastruttura White Rabbit | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (01/08/2023) | TD su MEPA |
| 3 | 21002 | Schede Assemblate di potenza | **Procedura Conclusa** Ordine Firmato | **Entro Giugno 2024** | TD su MEPA |
| 4 | 21003 | Infrastruttura di rete | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (19/09/2023) | TD su MEPA |
| 5 | 21004 | Server con GPU | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (12/10/2023) | TD su MEPA |
| 6 | 21005 | Strumenti di monitoraggio ambientale | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (20/09/2023) | TD su MEPA |
| 7 | 21006 | Schede assemblate CLB-PB | ***Emissione Ordine*** Aggiudicata - Det. Di Agg. Firmata | **Entro Ottobre 2024** | TD su MEPA. Rifatta ex-novo 09/2023 a causa di mancata presentazione offerta MEPA. |
| 8 | 21007 | Schede assemblate custom | **Procedura Conclusa** Ordine Firmato | **Entro Dicembre 2023** | Aff. Diretto via PEC |
| 9 | 21008 | Infrastruttura di calcolo 2 server rack in convenzione Consip | **Procedura Conclusa** Ordine Firmato | Materiale arrivato (26/10/2023) | Convenzione Consip |
| 10 | 21009 | Impianti tecnologici laboratorio | **Procedura Conclusa** Ordine Firmato | Materiale installato (16/11/2023) | TD su MEPA |

# A2.11 - Environmental monitoring of experimental site

| | |
|---|---|
| Descrizione attività | Environmental Monitoring Service for the assessment of impacts on the environment due to experimental activities related to the project. The Monitoring Activities (MAs) have been identified in order to respond to the need for a permanent control for a wide-ranging assessment of the mutual interference of the potential effects of experimental activities on the environmental matrix (water and sea sediment) to be carried out in the study area.<br>For this reason, in addition to environmental monitoring activities, a technical-scientific co-ordination action will be carried out to ensure a monitoring strategy able to identify cause-effect relationships of relevant impacts in the areas concerned. Specifically, monitoring activities will be divided as follows: Ante Operam Monitoring Activities (AOMAs) and In Progress Monitoring Activities (IPMAs). |
| Mese di completamento | **30** |
| Unità responsabile | Poli-BA |
| Deliverables | D-2.13.1 – Report with the description of the setup of the environmental monitoring service |

# A2.11 - Environmental monitoring of experimental site

| | |
|---|---|
| Descrizione strumentazione scientifica | The main items to be acquired for this activity are:<br>inductively coupled plasma-mass spectrometry(CP MS)<br>gas chromatography-mass spectrometry) (GC-MS)<br>MINERALIZER ETHOS E-TOUCH Milestone<br>FREEZE DRYER<br><br>Enhancement of the technological systems of the environmental engineering laboratory (600 m2) of DICATECh Poli-BA for the realization of functional testing and support activities for the development of the project (integration site and environmental monitoring) |