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D 7.1 - REPORT ON TENDERS/PROCUREMENT PROCEDURES FOR INNOVATIVE INSTRUMENTATION

BIM 6

OI 7.1 – ORGANIZATION AND START OF THE PURCHASE PROCEDURE FOR INNOVATIVE EQUIPMENT

WP 7 - STRENGTHENING COMPETENCE AND LEADERSHIP IN RESEARCH SERVICES THROUGH IN-HOUSE RESEARCH

NANO FOUNDRIES AND FINE ANALYSIS DIGITAL INFRASTRUCTURE - NFFA-DI

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28/12/23	bozza	Francesca Genuzio		Giancarlo Panaccione
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Indicatore oggettivo	Valore	Note
KPI 7.1 - Number of tender/procurement processes started	4	

1. ABSTRACT

Deliverable D7.1 - *Report on tenders/procurement procedures for innovative instrumentation* is the result of the monitoring activity of all the procurement procedures planned in WP7, implemented within A7.2 *Coordination of the RI post-commissioning strengthening of skills* led by CNR-IOM. The monitoring activity on the advancement of the procurement process is carried on in collaboration with the NFFA-DI management team, through the continuous exchange of information between the WP7 and the WP1 workgroups.

This report provides an overview on the advancement status at 31/12/2023 of the procurement procedures planned to support the WP7 activities A7.7, A7.14, A7.16, A7.18 and A7.19 i.e. all the activities in WP7 which have specific budget for purchases.

The analysis presented here shows that the 9 procurement procedures programmed so far cover the 87% of the WP7 budget allocated for purchases. Out of the 9 programmed procurements, 4 are expected to be completed by 31/12/2023 and delivered by the first bimester of 2024; other 3 will be most likely finalized by the first half of 2024.

2. MONITORING METHODS

The monitoring of the advancement of the procurement process is carried on by CNR-IOM in close collaboration with the NFFA-DI management team, through continuous data exchange. The collection of the information for this report proceeded through two main complementary routes:

- direct report by the UOs responsible for a given purchase procedure to the NFFA-DI management on the planned activities during the regular meetings of the Executive Board of Directors;
- Detailed information on advancement status of specific purchase procedures provided by the purchase offices and/or research personnel upon periodic request by the CNR-IOM personnel.

Data collected with these two different methods are combined to obtain a complete and coherent overview of the different acquisitions' status.
Even though the purchase monitoring activity is common to many work-packages (in particular WP1, but also WP4 and WP7), and includes all the purchase and recruitment procedures for the entire project, we remark that the data included in this report focus on the purchase procedures linked to the WP7 activities only, as of 31/12/2023.

3. WP7 PROCUREMENT PLAN

The budget estimated and submitted for the WP7 procurement plan is 304.390,00 €.
The following table summarizes how the budget is divided among NFFA-DI partners and UOs according to the project plan:

ACTIVITY	*PARTNER*	*BUDGET ALLOCATED IN PROJECT PLAN*	*INSTALLATION #*	*DESCRIPTION*
	CNR	**272.060,00 €**		
A7.14	CNR IOM	101.260,00 €	3	• Laser equipment • Fast electronics for STM/STS
A7.7 A7.16	CNR IMM-CT	134.200,00 €	2-4	• 1 medium size server (256 cores, 8GB RAM per core, 16 TB total storage in total for the 3 servers) • Productivity Enhancements for 3D profiling tool development
A7.18	CNR SPIN	36.600,00 €	4	• Hardware and software for data analysis and theoretical computation
	POLIMI	**32.330,00 €**		
A7.19	POLIMI	32.330,00 €	3	• Vacuum components (vacuum chamber), electronic instrumentation for the exploratory development of a 2D Spin Polarimeter • Open access publications

All the foreseen purchase procedures have an economical value lower than the threshold set by the Italian procurement code, and thus are being carried out as sub-threshold (<140 k€) procedures (either after market analysis and comparison of the best offers or as procedures with unique supplier); the only exception is the "Productivity Enhancements for 3D profiling tool development" (CNR-IMM-CT), which is included in the public tender for the "APT system" (WP4) as part of the requested components.
As of the 31/12/2023, the partnership has planned 9 procedures divided as follows:

- CNR: 6 planned procedures for a total budget of 244.442,45 €
- POLIMI: 4 planned procedures for a total budget of 22.992,95 €

The detailed situation for each UO is described in the following subsections.

3.1. CNR-IOM

Within the framework of A7.14, two are the main CNR-IOM goals: i) to develop new methods for the atomic scale investigation of transient chemical species, and ii) to achieve the exploratory upgrade of Four Wave Mixing (FWM) techniques and apparatuses.
The instrumentation to be purchased to support the activity A7.14 is listed in the following table:

UO	Purchase description	(Expected) Economical operator	Price (VAT included)	Type of procedure
CNR-IOM	laser beam stabilization kit	MRC system	12.640,42 €	direct award procedure for purchases below 140 k€, after market analysis and comparison of the best offers
CNR-IOM	fast electronics for high-speed image acquisition STM/STS	Elettra	35.380,00 €	direct award procedure with a unique provider (purchase procedure below 140 k€).
CNR-IOM	2 wobble-sticks for UHV transfer	Ferrovac	23.266,20 €	direct award procedure for purchases below 140 k€, after market analysis and comparison of the best offers
TOTAL			**73.642,45**	

Compared to the original plan, the current CNR-IOM purchase costs are sensibly reduced, (by 27.617,55 €, corresponding to the 27% of the initial budget). Part of this cut is intentional, due to an in-depth analysis and consequent revision of the actual purchase needs to achieve the expected scientific goals. A minor part of the cut (approx. 8.000 €) originates instead from the rebate obtained though the market analysis for the "laser stabilization kit". As a consequence, part of the savings was invested in the additional purchase of two wobble-sticks, enlarging further the compatible UHV sample transfer capabilities among the CNR-IOM advanced instrumentation. The remaining currently unallocated budget will be reinvested in the project in the following periods.

3.2. CNR-IMM-CT

The activities 7.7 and 7.16 at CNR-IMM-CT aim at exploring the combined theoretical/experimental approach in their *in-house* research, following three main research lines (7.7), and adopting AI-assisted management of multiple information (7.16).
The following table lists the purchases programmed by CNR-IMM-CT for the achievement of the objectives of these two activities:

UO	Purchase description	(Expected) Economical operator	Price (VAT included)	Type of procedure
CNR-IMM-CT	a fully integrated in situ (within ATP system) heated carousel	CAMECA S.a.s.	109.800,00 €	The carousel is included as a requested item within the negotiated procedure (above 140 k€; title of the published tender: "Instrument for atomic resolution 3D profilometry (APT), including integrated instruments for: plasma cleaning, analysis productivity enhancement, sample preparation")
CNR-IMM-CT	Single server - medium performances	To Be Defined	24.400 €	To Be Defined
TOTAL			**134.200,00 €**	

CNR-IMM-CT purchase plan follows what was planned in the submitted proposal. We note that the purchase dedicated to the "Productivity Enhancements for 3D profiling tool development" (A7.16), proceeds as a requested mandatory component for the instrumentation included in the negotiated procedure for the acquisition of the Atomic Probe Tomography system (WP4, as reported in D4.1).
The purchase procedure for the server (A7.7) is still in preparation.

3.3. CNR-SPIN

The development of exploratory research at CNR-SPIN (A7.18) aims at pushing advanced theoretical approaches to model experimental data, focusing on application of multiscale description of materials showing cooperative phenomena and functional quantum materials. Following the project plan, CNR-SPIN has identified within the electronic platform MEPA the technical characteristics and the economical operator for the purchase of the hardware system necessary to support the development of A7.18, as reported in the following Table:

UO	Purchase description	(Expected) Economical operator	Price (VAT included)	Type of procedure
CNR-SPIN	DELL POWEREDGE R940 Compute Servers	Italware	36.600,00 €	Direct award procedure for purchases below 140 k€, after market analysis and comparison of the best offers
TOTAL			**36.600,00 €**	

3.4. POLIMI

The following table lists the purchases programmed for the achievement of the activity objectives:

UO	Purchase description	(Expected) Economical operator	Prize (VAT included)	Type of procedure
POLIMI	Electromagnet Power supply for Time resolved Polarization Microscope	Calpower srl	8.674,20 €	Direct award procedure for purchases below 140 k€, after market analysis and comparison of the best offers
POLIMI	Electric cables and supply for Time resolved polarization microscope	To Be Defined	2.440,00 €	To Be Defined
POLIMI	Lock-in amplifier Time Resolved Polarization Microscope	To Be Defined	8.247,20 €	To Be Defined
POLIMI	Signal generator for Time Resolved Polarization Microscope	Farnell Italia srl	3.561,55€	Direct award procedure for purchases below 140 k€, after market analysis and comparison of the best offers
POLIMI			**22.992,95 €**	

We note that the usage of the budget allocated to costs for Open Access publications is restrained by the preparation and acceptance of the concerned scientific articles, thus the timing of this expenditure cannot yet be planned.

4. PROCUREMENT PROCEDURES TIMING

Overall, 4 purchase procedures were started by the end of 2023:

- CNR-IOM: fast electronics for STM
- CNR-IMM-CT: in-situ heated carousel for APT system
- POLIMI: electromagnet power supply for Time Resolved Polarization Microscope
- POLIMI: signal generator for Time Resolved Polarization Microscope

The following procedures are planned to start within the second bimester of 2024:

- CNR-IOM: laser stabilization kit (purchase order expected by the end of March 2024);
- CNR-IOM: 2 wobble-sticks for UHV transfer (purchase order expected by the end of March 2024);
- CNR-SPIN: DELL POWEREDGE R940 Compute Servers (purchase order expected by the end of March 2024).

For the remaining purchases, the evaluation of the required technical specification and the market analysis are still ongoing, and we expect to enter the ordering phase within Summer 2024 for the following items:

- CNR-IMM-CT: single server (purchase order expected by the end of June 2024);
- POLIMI electric cables and supply for Time resolved polarization microscope;
- POLIMI lock-in amplifier for the Time Resolved Polarization Microscope.

5. DELIVERY SCHEDULE FOR THE PURCHASED ITEMS

As of 31/12/2023, one of the ordered items was delivered:

- POLIMI: Signal generator for Time Resolved Polarization Microscope

Within the first bimester of 2024 (B7 of the NFFA-DI project), we expect the delivery of the following items:

- CNR-IOM: fast electronics for STM
- POLIMI: electromagnet power supply for Time Resolved Polarization Microscope
- POLIMI: signal generator for Time Resolved Polarization Microscope

The delivery of the heated carousel for APT acquired by CNR-IMM-CT is linked to the delivery and installation of the whole APT experimental system, expected at the end of 2024. For all the other procedures, the expected delivery times are a few weeks from the order.

6. CONCLUSIONS

In the present deliverable, we reported on the advancement of the purchase plan supporting WP7 activities, and related to A7.7, A7.14, A7.16, A7.18 A7.19.
Overall, the procurement plan covers 87% of the programmed budget for WP7.
In general, the actual procurement plan is in line with the one submitted in the proposal; the largest deviation is observed for CNR-IOM and can ascribed to both the need for an in-depth revision of what is actually needed to achieve the expected scientific goals, and to a postponement of such procedures of limited financial impact to optimize the use of resources focusing on the most urgent tenders of highest financial impact. The delay is expected to be reabsorbed in the next period and the potential savings reinvested in the project.
The timing of the purchase procedures can be summarized as follows (in blue the current expectation for the procedures not yet started or completed):

UO	ITEM	B6 Nov-Dec 2023	B7 Jan-Feb 2024	B8 Mar-Apr 2024	B9 May-June 2024	B10 Jul-Aug 2024	B11 Sept-Oct 2024	B12 Nov-Dec 2024
CNR-IOM	Laser beam stabilization kit		Order/ Delivery					
CNR-IOM	Fast electronics for STM/STS	Order	Delivery					
CNR-IOM	2 wobble-sticks			Order	Delivery			
CNR-IMM-CT	Heated carousel	Tender started						Delivery
CNR-IMM-CT	Single server - medium performances				Order	Delivery		
CNR-SPIN	DELL POWEREDGE R940 Servers		Order	Delivery				
POLIMI	Electromagnet Power supply	Order	Delivery					
POLIMI	Electric cables and supply				Order	Delivery		
POLIMI	Lock-in amplifier				Order	Delivery		
POLIMI	Signal generator for Time Resolved Polarization Microscope	Order+ Delivery						