



Consiglio Nazionale delle Ricerche

Istituto di Biometeorologia (IBIMET)

Sede di Sassari

## **ANNEX "D"**

### **TECHNICAL SPECIFICATIONS**

**FOR THE TENDER ON A “PROVISION OF SERVICES IN SUPPORT OF THE RESEARCH AND DEVELOPMENT ACTIVITIES OF THE PROJECT ECOSCALE”, TO BE PERFORMED AT CNR IBIMET IN SASSARI, INSTITUTE OF BIOMETEOROLOGY, NATIONAL RESEARCH COUNCIL OF ITALY (INFORMATION NOTICE N.IBIMET-SS-1-2015 PUBLIC PROCUREMENT).**

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## **ART. 1. INTRODUCTION, OBJECT, AND REGULATORY FRAMEWORK**

The purpose of the “Technical Specifications” document is to regulate, in relation to the technical and administrative aspects, the award of the **“Provision of services in support of the research and development activities of the project ECOSCALE”**.

This procurement is banned under the rules of art. 125 of Legislative Decree no. 12 April 2006 n. 163 "Code of public contracts for works, services and supplies - in implementing Directives 2004/17 / EC and 2004/18 / EC."

## **ART. 2 TECHNICAL SPECIFICATIONS AND IMPLEMENTING RULES FOR THE COMPLETION OF THE ASSIGNMENT**

Within the project "ECO-SCALE - High Resolution Integrated Monitoring of Mediterranean vegetation", the Contracting Authority requires the provision of a service supporting the research and development activities dedicated to the development of a semi-automated software application for the analysis of digital “phenological” images.

Digital images to be analyzed were acquired with a phenology monitoring system projected for Mediterranean shrub ecosystems, based on the acquisition and analysis of high-resolution digital images.

The system is constituted by an equipment for the images acquisition connected to a robotic head that allows the complete automation of the system. The acquisition system consists of a DSLR camera, employing a FX-format CMOS (full frame) sensor (35.9 x 24.0 mm), with 36.3 effective, compatible with a GPS transmission system and equipped with an external HDD.

The system is programmed to monitor a panorama with the horizontal FOV (Field of View) of 227°, the vertical FOV of 36° height. The panorama is composed by 44 individual shots, arranged in 22 columns and 2 rows, with a degree of images overlapping of 30%.

Each single frame is acquired in raw and jpg format, 4900 x 7400 pixel size, horizontal and vertical resolution 72 dpi, 24 bit depth, in average 75 MB per each shoot in the raw format.

Moreover, a digital images time series, acquired by an automated system with technical characteristics similar to that one previously described, will be available. Digital images, with variable length time series, were acquired on a daily basis and from May 2012. The individual shoots have an average size of 30 MB in raw format (10-15 MB in JPG format), horizontal and vertical resolution 72 dpi, 24 bit depth, 5500 x 3500 pixels size. The monitored panorama has the horizontal FOV (Field of View) of 180°, the vertical FOV of 30°, and depth of field of 12 meters. The panorama is composed by 36 individual shots, arranged in 12 columns and 3 rows, with a degree of images overlapping of 30%.

The service supporting the above mentioned activities of the ECOSCALE project must be provided according to the following technical specifications:

STEP 1 – Development of an automatic tool for analyzing the digital images acquired.

The purpose of this step is to proceed to the design of a prototype system for automating the process of extracting the phenological information contained in the recorded digital images, using advanced tools and

techniques. This will be obtained through:

- development of an automated work-flow for the preliminary analysis of the images collected in the field, in order to identify and correct any mistakes made during the process of acquisition and registration of images, and, when possible, to limit their influence in the following stage of data processing;
- development of an application software to perform automated routine analysis for identifying the changes in the color spectra of time series of frames, and calculating specific indices indicative of the physiological status of the vegetation.
- development of a specific tool for the analysis of spectral properties of vegetation (RGB indices, color coordinates) based on the application of statistical methods.

STEP 2 – Study on the potential of the monitoring system applied in other areas of research.

In this phase the potential of the monitoring system used in other areas of application will be evaluated; the staff of the CNR-IBIMET will provide the more relevant technical documentation and scientific literature related to other possible fields of application of interest for CNR IBIMET, to the purposes of evaluating the potential of the integrated monitoring system, and the methods and tools developed for the analysis of the data extracted from the digital imagery.

STEP 3 – Drafting technical-scientific reports and scientific papers.

Technical-scientific reports describing the progress of the work must be written in English and with the support of CNR-IBIMET research staff. Reports must also contain details on the performance of the integrated monitoring system and accurate description of the technical results. The results obtained during the processing of data will be then used for producing scientific papers written in English. This activity will be conducted in collaboration with CNR – IBIMET research staff.

In addition, the award of the contract object of this tender provides for the acceptance, by the participating Companies, of the following specific modalities of execution:

- *Attendance requirement*: presence for at least 4 days every three months at the headquarters of this Institute during the entire duration of the project, and willingness to operationally take part for any need linked to the service object of the assignment, until closing and final delivery of the balance in favor of this Institute by the funding body;
- *Availability*: participation to the project meetings to be held at the IBIMET headquarters or at the experimental site "Le Prigionette" to illustrate the functionalities of the developed system, of the tools and applications developed, and the results obtained.

### **ART. 3 TIMING AND DURATION**

The delivery will be made at the place referred into the article 4 of this "Technical Specifications" document, starting from the day following the signing of the contract and until the closing date of the project, scheduled for 31 October 2016, unless extended.

The supply shall be implemented according to a timetable of work to be agreed with the Contracting Authority, and strictly related to compliance the administrative deadlines expected in the project.



**Art. 4 PLACE OF DELIVERY**

Institute of Biometeorology of the National Research Council, UOS Sassari, Traversa La Crucca 3, 07100 Sassari, Italy.

**Art. 5 OVERALL AMOUNT ALLEGEDLY DUE.**

The overall amount allegedly due is equal to € 25,000.00 (Twenty-five thousand/00), excluding VAT in accordance with law.

The price offered must be understood as being:

- inclusive of all expenses and/or expense, direct or connected, except the tax burden, necessary for the execution of the supply in question;
- fixed and invariable for the entire duration of the contract.

**5.1 Security charges**

This tender does not provide for interfering risks existing in the workplace of the Contracting Authority, where it is expected that the contractor must conduct a marginal part of the activities, in addition to those specific for the activities of the contractor, and, therefore, there are not charges for the safety as for the combined provisions of art. 86, paragraph 3-bis, and 3-ter of Legislative Decree no. 163/2006, and art. 26 paragraph 3 of the Decree N. 81/08. Therefore, for this type of assignment the document for the evaluation of the interference risk (DUVRI, *Documento Unico di Valutazione dei Rischi da Interferenze* in Italian) is not expected to be prepared, as clarified by the Determination of the Authority for the Supervision of Public Contracts for works, services and supplies n. 3 of March 5, 2008.

**Art. 6 FINANCIAL TRACKING OBLIGATIONS**

The contractor assumes all obligations of traceability of financial flows, pursuant art. 3 of Law August 13, 2010 n. 136, and subsequent amendments.

Failure to use bank or postal transfer or other instruments for receipt or payment suitable to allow full traceability of financial flows constitutes grounds for rescission of the contract, in accordance with art. 3, paragraph 9-bis of Law August 13, 2010 n. 136. The contractor agrees to immediately inform the Contracting Authority and the Prefecture - Territorial Office of the Government of the province of Sassari – about the noncompliance in performing the obligations of financial traceability of its counterpart.

**Art. 7 PAYMENT METHOD**

The payment of the contractual amounts will take place in two tranches, each representing 50% of the total amount provided in the same contract for the supply of the service, and will be executed within thirty (30) calendar days after invoicing, and behind the presentation of a report on the activities conducted during the period concerned. The payment of the first tranche will take place by November 2015; the payment of the second

tranche will be linked to the date of delivery of the final financial statement and report (no later than 30 days from the end of the Project).

The payment of the invoice will be made by bank transfer and will be subject to verification of compliance by the contractor, of all the contractual conditions, compliance with the law (eg DURC<sup>1</sup>) as well as in front of the presentation, together with the invoice, of the traceability statement of cash flows.

If not, the payment deadline is suspended until fulfillment of deliverables, unless and reserved all other measures by the Contracting Authority.

In relation to the due payment, expenses for the application of any penalties for late execution will be recovered.

### **7.1 Invoice issuance**

The successful tenderer will issue the invoice showing:

a) header:

ISTITUTO DI BIOMETEOROLOGIA DEL CNR

U.O.S. SASSARI TRAVERSA LA CRUCCA 3

07100 SASSARI

P. IVA: 0211831106

- b) the IGC (Race Identification Code); the UCP (Unique Code Project); (in Italian CIG Codice Identificativo Gara and CUP Codice Unico di Progetto)
- c) the reference to the contract issued by the Contracting Authority;
- d) the rate of VAT as required by law (for established entities and/or identified for VAT in Italy);
- e) the bank account dedicated for payment of the contract.

### **Art. 8 PENALTIES**

In case of failure to meet the terms of delivery specified in Article 3 of this "Technical Specifications" document, the contractor is obliged to pay a penalty equal to 0.3 ‰ (zero point three per thousand) of the contract, net of expenses tax, for each calendar day of following and continuous delay, without prejudice to any further damages and costs resulting from the delay.

The Contracting Authority may compensate claims resulting from the application of penalties, with the amount due to the contractor for any reason without warning, further investigation or prosecution.

The amount of penalties shall not exceed the amount equal to 10% (ten percent) of the overall amount allegedly due by contract awarded, excluding VAT; in any case the Contracting Authority maintains the faculty to proceed with the dissolution of the contract, after giving formal notice to comply, and without the successful tenderer having any right to claim whatsoever.

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<sup>1</sup> The Documento Unico di Regolarità Contributiva (DURC) is a document certifying construction companies' regular payments of social contributions. Based on a single application, DURC is a certificate of the company's compliance with the obligation to pay social security, welfare and insurance contributions.



**Art. 9 RESPONSIBILITY**

The contractor agrees, as of now, to compliance with all applicable laws on health and safety at work, with particular reference to the Legislative Decree April 9, 2008, n. 81, "Testo unico Sicurezza Lavoro" ("Consolidated Security Work") and subsequent amendments.

In view of the above, the successful tenderer:

- a) will be responsible for the work of the staff reporting to it, as well as for all damages to persons and property that the same staff may cause to the Contracting Authority, to its employees, and also to the same contractor, and it is liable to pay the same. The Contracting Authority and all its staff will be considered exempt from any liability relating to the performance of the supply.
- b) is committed, since now, to raise the Contracting Authority and its staff from any harassment or action, with no exclusions or exceptions, which possibly could be moved against them; in particular undertakes to set off the Contracting Authority itself and its staff of what may be required to reimburse to third parties for facts related to the provision of the service supplied.
- c) claims to be in possession of an insurance policy to cover the risks of third-party liability and towards workers employed, valid for the entire contract period.

**Art. 10 COMPLIANCE WITH ALL PROVISION OF COLLECTIVE BARGAINING AGREEMENT (CBA)**

In executing the supply, the contractor is obligated to fully implement all the provisions contained in the National and Local Collective Bargaining Agreement (CBA) for employees operating in the sector object of this tender and in force for the time and in the place where the supply is provided. The successful tenderer must pay, in respect of its employees, all the social security contributions and insurance which belong to the employer, raising the Contracting Authority from any liability.

**Art. 11 TRANSFER OF THE CONTRACT AND SUBCONTRACT**

The successful tenderer will be required to perform by itself in the supply in question. It is not permitted any form, total or partial, of transfer of the contract or the supply, and of subcontracting of the same and the subsequent transfer to third parties of contractual liability, partial or total.

**Art. 12 CONTRACT DISSOLUTION**

The contractor recognizes the right of the Contracting Authority, whether it may occurs even one of the cases provided below, to resolve "ipso iure" the contract pursuant to Article 1456 of the Italian Civil Code by sending notice by registered letter e-mail to the addresses elected by the successful tenderer, without prior formal notice, and the intervention of the competent judicial authorities, as well as the right to award the contract to a third party in damage to the contractor, and without prejudice to the application of penalties, in one of the following assumptions:

- a) if the contractor suspends or discontinues unilaterally, and without valid justification, the execution of the supply;

- b) fraud in the execution of contractual obligations;
- c) if the contractor transfers the contract and / or subcontracts its obligations;
- d) in the case of an arrangement with creditors, compulsory wound up or bankruptcy borne by the supplier;
- e) violation “anti-mafia” legislation;
- f) state of non-compliance of the contractor with regard to all debts incurred during the exercise of their business and the performance of the contract;
- g) revocation, forfeiture, cancellation of any licenses or permits required by rule of special and general laws;
- h) execution of the contract with staff not regularly employed or contracted;
- i) verified non-compliance with the law on the prevention of work accidents, workplace safety and employees’ obligatory insurance, and compliance with collective bargaining agreements. For any reason the contract is dissolved, the contractor will be required to pay compensation for all direct and indirect damages and higher costs borne by the Contracting Authority for the remaining contract period.

In the event of early dissolution of the contract, the Contracting Authority reserves the right to take over, in the course of delivery, the trader that is classified as second on the final ranking list of the tender.

Also the burden of the higher price paid by the Contracting Authority, than that agreed with the economic operator with which the supply is continued, will be borne by the contractor.

### **Art. 13 COMPLIANCE WITH LAWS, ORDERS, REGULATIONS**

In addition to the full and exact compliance with the national and European Union legislation in force, the contractor, except as already expressly regulated in these specifications, is bound to the strict observance of:

- the Accounting Regulations of the Italian State, approved by Royal Decree of 23 May 1924, no. 827;
- the Decree of the President of the National Research Council, May 4, 2005, n. 0025034, published in the Official Gazette of the Italian Republic n. 124 dated 30/05/2005, "Regulations for the Administration, Accounting and Finance of the National Research Council" (in Italian “Regolamento di Amministrazione, Contabilità e Finanza del Consiglio Nazionale delle Ricerche”);
- Legislative Decree no. 12 April 2006 n. 163 and subsequent amendments "Code of public contracts for works, services and supplies in implementation of Directives 2004/17/EC and 2004/18/EC";
- Law of August 13, 2010, n. 136 and subsequent amendments "Extraordinary plan against the mafia";
- Presidential Decree October 5, 2010, n. 207, "Regulations of execution and implementation of the legislative decree 12 April 2006 n. 163 "on the" Code of public contracts for works, services and supplies"

The tender is governed, besides the above provisions, by the rules of the Civil Code as applicable, by those contained in the Letter of invitation, as well as by the “Contract Outline” (Annex E), whose contents the tenderers accept, as of now, without reservations and/or exceptions.





**Art. 14 PRIVACY POLICY**

Under the terms and for the purposes of articles 7 and 13 of Legislative Decree no. 30 June 2003, n. 196 "Code concerning the protection of personal data", the Contracting Authority will collect, record, re-ordering, storage and use personal data, whether by electronic means or not, for the purposes of carrying out the institutional activities of the Contracting Authority, including participation in the procedure of this tender, and the possible signature and management of the contract, and for legal obligations in respect of which the contribution is required. For these purposes such personal data may be disclosed to third parties.

The holder of the processing of personal data is the Contracting Authority.

**Art. 15 DISPUTE SETTLEMENT**

Any dispute that may arise during the course of the contract will be entrusted to the ordinary courts. Competent court will be located in Sassari.