

Expression of interest

POR CAMPANIA FESR 2014/2020 – Project: OPtical Technology In Marine and medical Applications (OPTIMA) - CUP B63D18000330007 - SURF 17066BP000000001.

Expression of interest for the procedure concerning the development and supply of:

• **Optical Fiber Hydrophones,** and the related interrogation unit, based on the combination of fiber Bragg gratings and optical fiber interferometry

The requested technological support is framed in the context of the research project OPTIMA, that is the "Realization Objectives" OR5 - Acoustic monitoring system at low frequencies and OR4 - System of passive opto-acoustic sensors.

CeRICT scrl intends to make a market survey respecting the following principles:

- Non-discrimination
- Equal treatment
- Advertising
- Proportionality
- Transparency

for the commissioning of the above acquisition through the procedure described in the following paragraphs.

Therefore, the investigation is aimed to acquire the expression of interest as provided by eligible subjects and then define a rank order of those subjects.

The procedure will be open to eligible subjects who responded to "Expression of interest" and after received "Invitation letter" to submit an offer.

REFERENCES

CeRICT scrl, Via Traiano Palazzo "ex Poste" - 82100 Benevento (BN) - Italy Tel: +39 0824 305 520/44 Pec: cerict@pec.it

PROCUREMENT PROCEDURE

The selection of competitors who responded to "Expression of interest" will occur by a budget procedure through the principle of better score.

PARTECIPATION REQUIREMENTS

Eligible subject must satisfy the following requirements established on the complexity and specificity of the service considering that the selected subject has to provide the service respecting the requirements agreed within the time established:

- General requirements: inexistence of the causes of exclusion from participation in tenders;
- Professional eligibility requirements (Registration to Chamber of Commerce or similar institution);
- Financial requirements: total revenues and revenues from activities similar to those indicated in Expression of interest.
 - The main technical and professional requirement is development of measurement systems based on optical





fiber technology.

The company must have experience in developing optical fiber sensing systems and interrogation units. In particular, it is requested the capability to fabricate optical fiber devices exploiting Fiber Bragg gratings and optical fiber interferometry.

• The maximum number of economic operators to be invited to the procedure is eight.

If the subjects/participants have not the mentioned requirements will not be invited to the procedure.

TERM OF OFFICE

The duration of the mandate is 6 months starting from the signature of the contract.

ESTIMATED AMOUNT

The estimated amount is equal to €150.000,00 (one hundred and fifty thousand /00) plus VAT.

AWARD CRITERIA

The selection of competitors will occur by a procedure through the principles of better score. The award criteria will be explained by the Technical and Administrative specification.

CeRICT will award at maximum 100 points as explained below:

- Technical characteristics and quality
- maximum 60 points as established by a technical commission;
- Better price
 - maximum 40 points.

SUBMISSION FORM

Eligible subjects have to send in response to the "Expression of Interest" the following papers:

- The declaration of adhesion to the expression of interest
- The business curriculum of the company signed by the legal representative;
- All relevant documents

All documents must be received by CeRICT scrl:

- By mail to the office of "Via Traiano Palazzo "ex Poste" 82100 Benevento (BN) Italy" no later than 07/02/2019 The envelop bag must bring the reference to the call.
- By PEC to the address cerict@pec.it no later than 07/02/2019.

All explanations requests can be send to cerict@pec.it.

HEAD OF PROCEDURE

The head of procedure is Marco Pisco Tel: +39 0824 305810 E-mail: pisco@unisannio.it

> Dr. Sergio Betti Managing Director CeRICT

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ATTACHED 1

PROJECT ABSTRACT

This industrial research project is sponsored by the company TOP-IN "Optoelectronic Technologies for Industry" which has been founded by MIUR (The Italian Ministry of Education, Universities and Research) under the Research and Competitiveness PON 2007-2013, aimed at the creation of Districts of New High-Tech and /or new Public-Private Partnerships.

The project aims to demonstrate the potential of optoelectronic technology, and in particular the fiber optic based devices, for the creation of novel sensing systems useful for the detection of biological and physical parameters of interest in both marine environment and medical applications.

In particular, optoelectronic sensors will be designed and developed, either as single unit or integrated into multi-parameter detection systems, for the following applications:

<u>Marine environment monitoring</u> and in particular the measurement of physical and biological parameters for monitoring the status of sea waters, the study of marine life, geophysical monitoring, seismic monitoring, volcanic and industrial exploration of the subsoil, as well as monitoring of maritime traffic.

The marine environment is a precious heritage to protect, to keep clean, healthy and productive, by promoting the sustainable use of biodiversity. Often there are many elevated pressures on the marine ecosystem, especially in the coastal strip where it is present a high concentrations of productive activities and thus demand for ecosystem services. To meet the need of reducing the impact on sea waters in their areas of interest, including the Mediterranean, the Parliament and the Council of the European Union have enacted the Framework Directive 2008/56/EC on the strategy for the environment Marine subsequently implemented in Italy by Legislative Decree. n. 190 of 13 October 2010. This Directive requires Member States to achieve by 2020 the Good Ecological Status (GES) for its marine waters, by putting in place a program of measures that require an effective and continuous monitoring of the coastal waters health: the scientific community is thus called upon to provide both design and implementation elements to these needs.

In this context, this project aims to demonstrate (through the creation of a technology demonstrator) the potential of optoelectronic technology and in particular of fiber optic devices for the creation of new sensor systems for the monitoring of marine waters. The fiber optic technology lends itself to the creation of multi-parametric monitoring systems with significant advantages over traditional electric technologies.

In particular, for use in the marine environment, we will study sensors systems for static and dynamic:

- Detection of maritime traffic through passive opto-acoustic sensors,
- Monitoring of static parameters such as temperature
- Monitoring of acoustic wave at low frequencies
- Monitoring the response of marine organisms.

Measure biomedical parameters.

In recent years, advances in the field of materials technology and bioengineering have made possible the introduction of devices capable of measuring many biomedical parameters with better accuracy and rapidity. These devices are used in three application areas:

- The control, including continuous and remote, of patients suffering from particular pathologies, with the purpose of prevention, collection and analysis of data, constant monitoring of vital parameters even in individuals at risk;
- The diagnostic-clinical aspect based on processing of signals of biological origin, or produced by interactions between the human organism and an external agent;
- The analytical-clinical aspect based on the analysis of the effects of the reaction triggered between a fluid (blood, urine, saliva, ...) and a specific reagent.





This experimental research project aims:

- To extend the applications of biosensors, in particular that of the fiber optic biosensors, in the field of diagnostic analysis;
- To demonstrate that the use of biosensors can bring industrial, commercial and scientific advantages in terms of miniaturization of devices, reducing the quantity of reagents, accuracy and repeatability of measurements, rapidity in the availability of results.

The project will focus on a specific case, i.e. fiber optic sensors used for measuring the levels of vitamin D in blood.

The dose examination of vitamin D is very important not only for the diagnosis of diseases such as osteoporosis but also cancer, pulmonary and dermatological diseases. The development of rapid and accurate systems for the evaluation of the assay of vitamin D would thus be a decisive support to the diagnosis and follow-up treatment of various diseases, in cases where it is essential to administering to the patient the proper therapeutic dose and monitor the serum concentration. At same time, from the industrial point of view, the use of biological sensors for the automatic execution of the diagnostic analysis of blood samples is an element of absolute novelty in the market of in vitro analysis. It creates the preconditions for the realization of low-power, highly innovative, miniaturized devices for which, once the testing phase is completed, we wish to develop a business plan associated with the assessment of market prospects.

The research activities will be supported by experiments to verify the suitability of these sensors to be used in various fields of application.

The ultimate goal is to achieve, for the monitoring component of the marine environment, the creation of a demonstrator model consisting of:

- an array of sensors for the measurement of physical and biological parameters in the marine environment;
- a processing subsystem implementing the algorithms of the process relating to the above applications;
- a management subsystem that allows the evaluation of the observed phenomena with an operator supervision.

For the biomedical parameters measurement component we want to create a detection module in laboratory, based on fiber optic biosensors, specialized for the dosage of vitamin D.

