

**Title: Researching Facility Management Industry 4.0/IIoT Solutions Regarding Integrability/Interoperability and Supervision.**

**Scope:** Collaboration with university experts in SCADA, IIoT, Industrial Automation for a research project in the Industry 4.0/IIoT/SCADA domain. One grant will be awarded in the conditions specified in this project call.

**General Objectives:**

- Increasing the collaboration between the company and university researchers.
- Doing research in Industry 4.0/IIoT/SCADA domain for Plant Facility Management.
- Implementation of solutions regarding the Integrability/Interoperability and supervision, concept practical validation.
- Closing the gap between research done in the university and research done by the Plant Facility Management team.

**Specific Objectives:**

- Realizing interoperability studies for local structures. The research will focus on local and global interfacing, the most important component in Industry 4.0/IIoT, to elevate the local legacy structures towards integrability/interoperability. The procedure will focus on the highest hierarchical level in the local structure, but it can descend on the hierarchical levels depending on the context.
- Researching and developing local wrapper/gateway solutions. The research will focus on obtaining interoperability for local points. The solution will target to output the Industry 4.0 flagship protocol OPC UA, but it may target other perspectives depending on identified constraints.
- Researching and developing interfacing structures for the centralizing application. The research will focus on the interfacing within the centralizing application that is desired to be conceived within Node-RED environment. The interfacing will target mainly OPC UA, but depending on the constrains of each local point it may explore other perspectives (e.g. other industrial protocols, RESTful web services, etc.).
- Researching and developing a centralizing application experimental model using Node-RED and Grafana. The research will focus on a centralizing solution

approaching SCADA concepts, and it will target monitoring, trends, database, alarming. Also, the research will focus on a solution to access from the centralizing point the existing web-based remote monitoring structures.

### **Estimated Results:**

- By financing such a project, Plant Facility Management will benefit from the expertise of researchers from the university.
- Plant Facility Management will be able to obtain solutions within Industry 4.0 demands.
- Scientific paper will be published, that will increase the visibility of the research team in Industry 4.0/IIoT/SCADA domain.
- Competence will be formed for the members of the team from the university by increasing the industrial expertise.
- General Conditions for Participation:
- The directors of the projects should be university researchers who have a Ph.D. in Automatic Control/Automation/Computer Science/Electronic Engineering/Electrical Engineering, and who have done relevant research in Industry 4.0/IIoT/SCADA (interoperability, OPC UA, wrappers, gateways, SCADA, etc.) the last 4 years (2017-present).
- The project team will be formed by the project director, and other researchers or Ph.D./master's/bachelor's students from the same university as the project director. There is no restriction on the number of members in the team.
- The competition will be coordinated by the Plant Facility Management team, represented by its group leader.

### **Eligibility Criteria:**

- The directors of the projects should be university researchers who have a Ph.D. in Automatic Control/Automation/Computer Science/Electronic Engineering/Electrical Engineering, and who have done relevant research in Industry 4.0/IIoT/SCADA (interoperability, OPC UA, wrappers, gateways, SCADA, etc.) the last 4 years (2017-present).

- The project theme will be Researching Facility Management Industry 4.0/IIoT Solutions Regarding Integrability/Interoperability and Supervision. Only one proposal can be made by one project director.
- No projects that are already financed by other institutions can enter the competition.
- The project director has the obligation to assure the fact that the project proposal conforms with Legea nr. 206/2004 regarding good conduct in scientific research, development technology and innovation, with subsequent modifications and completions, as well as other ethical legislative regulations specific to the field of research of the project.

#### **Duration:**

- The duration of the project is 12 months, starting from 2021.04.01, until 2022.03.31.

#### **Budget:**

- The budget offered by Plant Facility Management is 12.000 EUR (equivalent in RON), which comes from AMS PSS O TSR FM. As such, each project will have a budget of at most 12.000 EUR (equivalent in RON).

#### **Eligible Expenses:**

- The eligible expenses can be: direct expenses (personnel expenses, material expenses, logistics expenses), and indirect expenses (a maximum of 10% of the total value of the project).
- All the other expenses in the project regarding publishing of the results (conference fees, travel expenses, etc.) will be made from the own funds of the project team or their university.
- Other expenses in the form of hardware/software equipment, if it is decided necessary or important in the project development (under 1000 EUR) that will remain in property of the Plant Facility Management will be covered by Continental.

### **Equal Opportunities:**

- Equal opportunities and gender equality will be ensured for all participants. Applicants must take all measures to promote equal opportunities for men and women in writing and implementation of the financing request and the project. They must aim, as far as it is possible, a balance between women and men for all the positions provided in the project.

### **The Project Proposal:**

The proposal will have the following sections:

- Section A (maximum 1 page), in which the scientific achievements and experience of the project director are presented, which illustrate their ability to independently conduct a research project and highlight how these achievements relate to the project proposal.
- Section B (maximum 4 pages), will contain the following subsections:
- B1. *Scientific relevance*. The choice of the theme of the project will be motivated by framing the problem addressed in the current scientific context. There will be highlighted: the importance of the topic from a scientific and technological point of view, and for the Industry 4.0/IIoT/SCADA domain; the difficulty elements of the problem; analysis of the current state of the art related to the theme of the project.
- B2. *Objectives / Activities of the project*. There will be presented: the concrete objectives of the project and the activities thereof.
- B3. *Results and impact*. The expected results will be highlighted, such as: the realization of models, schemes, new or improved methods, solutions, publication of at least one scientific article on the subject of the project, the aspects related to the impact of the project.
- B4. *Methodology*. The following will be highlighted: the research methods and tools, by reference to the newest approaches in the subject area, as well as how they will be integrated; a work plan in which the proposed activities are detailed over time. The structure of the team in the project will be presented. The research methodology will be presented, specifying, as far as possible, certain intermediary targets. The possible risks of the research and the ways in which these will be removed, will be mentioned. The deliverables will be described.

- B5. *Resources and budget.* The existing necessary resources will be detailed. The breakdown for the estimative hours/team to be paid from the project budget will be highlighted.
- B6. *References.*

#### **The Competition:**

- The project proposal will be sent by the project director, until 2021.03.15, by e-mail to the Head of the Plant Facility Management team, Petru Demian (e-mail: a.b "at" continental.com, where a=Petru, b=Demian).

#### **The Evaluation Process:**

- The evaluation of the projects will be done by the Head of Plant Facility Management team, and all the applicants will receive an e-mail regarding the financing/not financing of their proposal, no later than 2021.03.20
- The projects will start 2021.04.01 and will end 2022.03.31.