

# INTEL-IRRIS

Intelligent Irrigation System for Low-cost Autonomous Water Control  
in Small-scale Agriculture



Intel-Irris



# Intelligent Irrigation System for Low-cost Autonomous Water Control in Small-scale Agriculture



## The INTEL-IRRIS coding challenge with IIWA



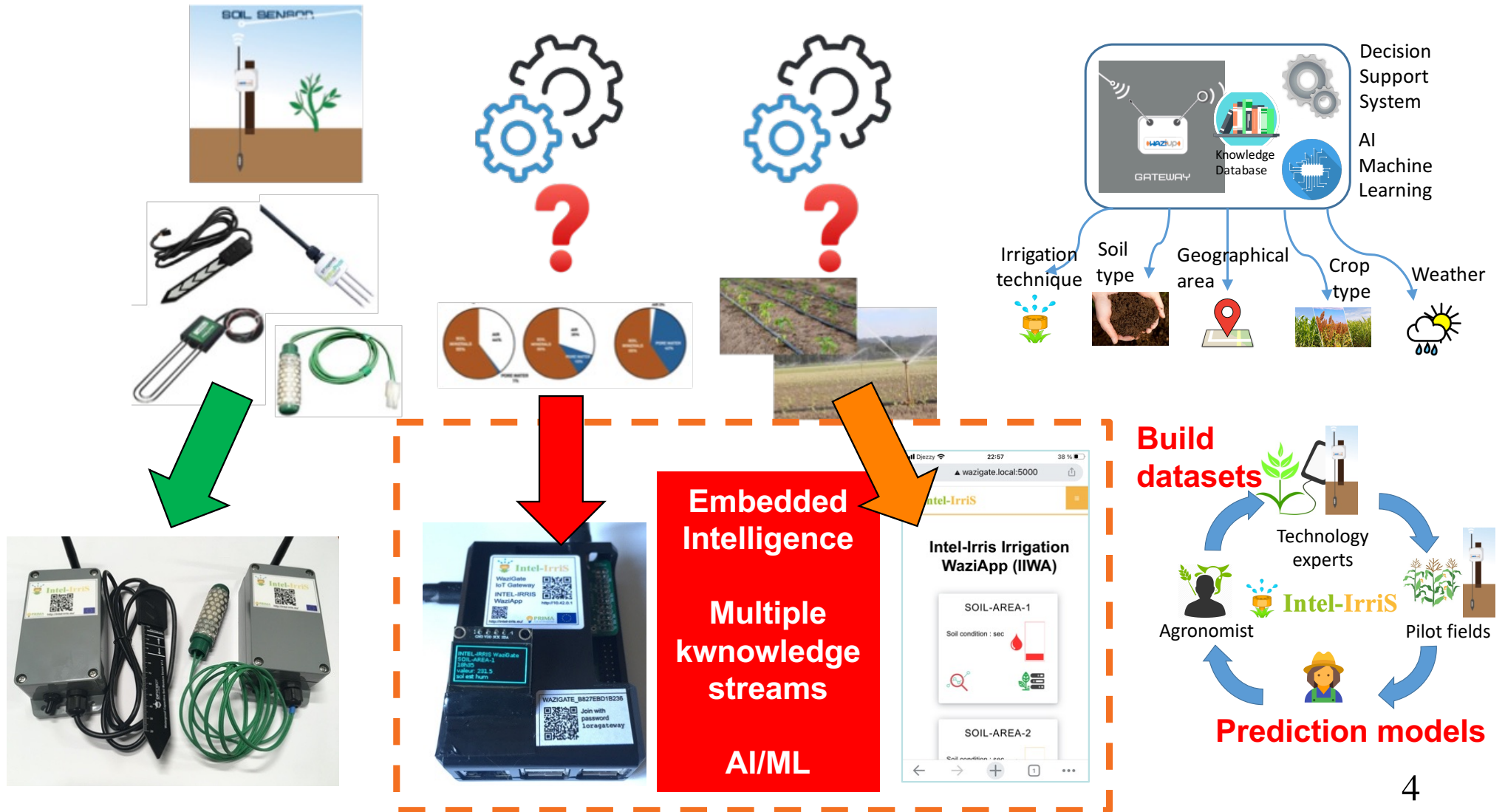
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# Overview

- ④ INTEL-IRRIS is a project to build an autonomous system to optimize irrigation targeting smallholder farms
- ④ The INTEL-IRRIS starter-kit consists of a soil humidity sensor device and an IoT gateway to collect data
- ④ The INTEL-IRRIS Irrigation WaziApp (IIWA) is an embedded application running on the INTEL-IRRIS IoT gateway itself
- ④ IIWA is the core of the "**intelligent Irrigation in-the-box**" & "**plug-&-sense**" INTEL-IRRIS approach
- ④ Its objective is to enhance the irrigation indication by applying sensor calibration models with soil/plant/weather parameters
- ④ **This INTEL-IRRIS coding challenge is open to developers to improve the IIWA application**

# INTEL-IRRIS: the big picture



⦿ Dashboard, Device Manager and Sensor Configuration

DEVICE ID	DEVICE NAME	SENSORS
6428b0b8...	SOIL-AR...	1 capacitive
6428b0b9...	SOIL-AR...	1 waterm...

# What is the coding challenge?

- ⦿ Competitors will propose improvements on the IIWA application
- ⦿ Several contribution coding categories are defined
  - ⦿ Category 1: User Graphical Interface
  - ⦿ Category 2: Calibration of sensor data
  - ⦿ Category 3: Processing & transformation of sensor data
  - ⦿ Category 4: Integration of agriculture data & knowledge
- ⦿ The current IIWA code is available, competitors can use it as a skeleton to propose improvements
- ⦿ It is written in Python+Flask with some HTML/JavaScript code
- ⦿ The code can be run on desktop computers: Windows, Linux and MacOS operating system are supported

# Organization

- ⦿ Competitors can be organized in team and a team contact person must be designated
- ⦿ Competitors must send an email to national contact persons listed at the end of this document
- ⦿ The initial mail must indicate
  - ⦿ The name and affiliation of all team members
  - ⦿ The team contact person
  - ⦿ The coding category the team will be working on
- ⦿ The coding challenge will end on July 31st, 2023
- ⦿ Team can register until July 1st, 2023

# Technical instructions

- ⦿ The current IIWA code for the coding challenge can be downloaded from GitHub repository  
<https://github.com/CongducPham/PRIMA-Intel-IrriS-IIWA-challenge>
- ⦿ Competitors can optionally fork the repository
- ⦿ **Read installation instructions in build-local folder**
- ⦿ **Use a desktop/laptop computer to develop IIWA improvement,** although IIWA will normally be run on a RaspberryPi
- ⦿ Propose, develop, test and document the improvement
- ⦿ Avoid as much as possible complex software dependencies that may limit the genericity of the contributions
- ⦿ However, if the whole dependencies can be easily installed locally it can be accepted

# Internet connectivity or not?

- ⦿ As INTEL-IRRIS mainly targets an autonomous system for smallholder farms, relying on Internet connectivity to get access to resources on Internet should be avoided
- ⦿ However, for the coding challenge, contributions relying on Internet connectivity can be accepted provided that they do not represent the main improvements

# What should be submitted?

- ① Team must submit the following items
  - ① The complete code of the new & improved IIWA application
  - ① It can be a .zip archive or a link to a GitHub repository
  - ① The code must be self-contained so that it can be run & tested by the jury members on their desktop/laptop computer
  - ① A report in .pdf explaining the technical improvements and what they bring to the IIWA application. The page limit is 15 pages, including figures and screenshots
  - ① A short video showing the main improvement on the IIWA application
  - ① A special attention must be made to clearly indicate what open-source code have been used and integrated into the main IIWA code if this is the case (it is not necessary to list well-known open-source libraries needed as dependencies for the contributions)

# Important dates

- ⦿ Start: now
- ⦿ Team can register until July 1st, 2023
- ⦿ End: July 31st, 2023
  - ⦿ contributions must be submitted by mail

# Contact persons

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