Project Proposal

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**HDip in Computing**

(**HDSDEV\_SEPBL\_YR2**)

### Distributed Systems Project

## OVERVIEW

*This document is submitted as an interim submission of CA project of the Distributed Systems module on the Higher Diploma in Computing specializing in Software Development delivered by Yasantha Samarawickrama.*

# Domain description

# *You should best describe the overall purpose of the service, explain the functionalities within each service and overall contribution of the service to the application.*

# *[200 words]*

**(As my student number ends with 8 my project will be smart farm (agriculture).)**

Smart farms are a rapidly growing market due to the latest advancements in remote robotics and AI fields, combined with a growth of remote/ cloud computing services. It goes way beyond smarts sensors and weather forecasts, and it starts to include the use of remote tractors, AI harvester robots (that can also detect weeds and spray pesticides) and remote drones to expand scope of smart possibilities in agriculture. It can use satellite imagery to map regions of farms (for example for remote tractors to operate) and AI for decision-making even regarding crops to be sown*. (Cropin, 2024) (Elsayed Said Mohamed, AA. Belal, Sameh Kotb Abd-Elmabod, Mohammed A El-Shirbeny, A. Gad, Mohamed B Zahran,, 2021)*

My smart farm project implementation/ simulation will consist of services for smart climate for a greenhouse (or rather for many greenhouses), for remote use of self-driving tractors, drones and harvester robots and for field soil irrigation. *Greenhouse* needs specific climate and CO2 levels and light to assure best environment for plant growth. GreenhouseService would take stream of measurements from sensors (temperature, humidity, light, soil, moisture, CO2 level, amount of light) and change climate settings to assure best environment for plants. RemoteVehicles service would allow robots to send their position and receive stream of directions of where to go or what to do (harvest fruit or take measurement etc). SoilIrrigation service gets stream of measurements of soil moisture and send information if watering is needed.

# Service definition and RPC

# *You should explain in detail, with example the request and response for each functionality within the service. Explain in detail the parameters*

# *[300 words]*

# Bibliography

Cropin. (2024, Nov). *Cropin*. Retrieved from https://www.cropin.com/smart-farming

Elsayed Said Mohamed, AA. Belal, Sameh Kotb Abd-Elmabod, Mohammed A El-Shirbeny, A. Gad, Mohamed B Zahran,. (2021). *Smart farming for improving agricultural management*. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S1110982321000582