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DEVELOPING A FRAMEWORK BASED DATABASE (OR AS A CENTRAL TOOL FOR) MAPPING AND ANALYSING RESEARCH AND DEVELOPMENT ON ICT AND ROBOTICS IN AGRICULTURE AND ENVIRONMENTAL RELATED BUSINESSES

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ABSTRACT New ICT and Robotics technologies are rapidly emerging and can revolutionize future farming through their major impacts on productivity and profitability. Extensive research on ICT and Robotics in Agriculture and environmental related issues is conducted. Unfortunately human and financial resources are fragmented. The objective is to provide a structured framework capable of mapping all relevant research and development within the described research area. First a three dimensional task-technology oriented framework was designed. This structure combines technology (e.g. robotics), with tasks (e.g. milking) and subtasks (e.g. milk quality measurement) within four different scopes: fundamental, applied, innovation and standardisation. This framework was tested and evaluated by 3 working groups of 20 experts. The results indicated that the three axes: task, technology and scope seemed not sufficient to describe the whole research area. Therefore an improved framework was developed. Based on the theory of De Leeuw (2000) the farm was approached as a managing system controlling a process or production system and receiving input from an information system. By extending the task-technology oriented framework with the process-control–information system a useful framework was designed. It will be tested on large scale by implementing it as a free accessible web based database. Researchers on ICT and robotics in agriculture will be asked to add objects such as R&D projects, R&D facilities, publications, products, and environmental administration schemes. The collected information will be classified allowing different analyses. Consequently, the amount of research on each topic can be calculated and analysed to identify duplications, gaps and needs for future research.

Keywords: ICT; robotics, agriculture, framework, database, technology oriented, managed system.