From Industry 4.0 to Agriculture 4.0: A Framework to Manage Product Data in Agri-Food Supply Chain for Voluntary Traceability

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Abstract : Agri-food value chain involves various stakeholders with different roles. All of them abide by national and international rules and leverage marketing strategies to advance their products. Food products and related processing phases carry with it a big mole of data that are often not used to inform final customer. Some data, if fittingly identified and used, can enhance the single company, and/or the all supply chain creates a math between marketing techniques and voluntary traceability strategies. Moreover, as of late, the world has seen buying-models’ modification: customer is careful on wellbeing and food quality. Food citizenship and food democracy was born, leveraging on transparency, sustainability and food information needs. Internet of Things (IoT) and Analytics, some of the innovative technologies of Industry 4.0, have a significant impact on market and will act as a main thrust towards a genuine ‘4.0 change’ for agriculture. But, realizing a traceability system is not simple because of the complexity of agri-food supply chain, a lot of actors involved, different business models, environmental variations impacting products and/or processes, and extraordinary climate changes. In order to give support to the company involved in a traceability path, starting from business model analysis and related business process a Framework to Manage Product Data in Agri-Food Supply Chain for Voluntary Traceability was conceived. Studying each process task and leveraging on modeling techniques lead to individuate information held by different actors during agri-food supply chain. IoT technologies for data collection and Analytics techniques for data processing supply information useful to increase the efficiency intra-company and competitiveness in the market. The whole information recovered can be shown through IT solutions and mobile application to made accessible to the company, the entire supply chain and the consumer with the view to guaranteeing transparency and quality.