

**Agro-Knowledge Integration: Developing a FAIR data science approach for adding value to the agricultural supply chain. Diego Torres, Mario Lezoche, Cesar Collazos, Victor Codocedo, Regina Motz, Leandro Antonelli, Herve Panetto and Alejandro Fernandez**

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Farms are the engine to support rural employment making a considerable contribution to territorial development. Even though they have always been considered a cornerstone of agricultural activity in the European Union (EU) and in Latin America, this sector most often suffers from very low efficiency and effectiveness, sensitivity to weather, market disruptions and other external factors. Two different problems in knowledge sharing are present in this domain. First, the various interoperability regulations between the countries. Although some efforts are done to bypass this problem, like the EU-Mercosur signed in the summer of 2019, the different process semantics implemented in each region are a serious threat to the fulfillment of the process interoperability. Another problem is that in most of the cases, the knowledge transferred from generation to generation is paramount from a cultural point of view, but most of the time, it does not answer to the needs nor the requirements of the agri-food value chain. We aim at creating the core technology for a knowledge hub that integrates and aligns international regulations in agricultural activities, such as FAO's best practices, and possibly the last-born EU-Mercosur regulations with the local restrictions, such as national policies, allowing the small farmers to access, in an easy way, a wider market through the certification of the practices and products. In order to develop this core technology, we propose to deploy various methodologies and tools working on the domains of knowledge formalization, domain alignment and visualization. The domain of formal representation allows for the semantic alignment of rules and restrictions from different institutional regulation bodies. Simultaneously, we will propose a model for incoherence detection letting us to highlight contradictory regulations. Those knowledge atoms and constructs will be represented through some visualization information interfaces according to the users' needs. The methods and tools that will be employed are at the same time the pillars from the multi relational data mining (MRDM), the artificial intelligence (AI), the knowledge formalization (KF) domains, but will extend the interoperability properties of those domains to become a new interesting and valuable tool for the presented problem. This abstract is issued from an accepted Stic-AmSud project that was elaborated during the secondments of the RUC-APS project.