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MAIN PRINCIPLES UNDERPINNING THE COLLECTION, USE AND EXCHANGE OF AGRICULTURAL DATA

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This position sets out Copa and Cogeca's views on the main principles underpinning the collection, use and exchange of agricultural data.

INTRODUCTION

Agriculture has moved forward into an era of digitally enhanced farming, where everything that produces data during the various stages of agricultural production can send that information to be collected, processed and analysed. The use of big data could help farmers step into the future of farming and achieve ambitious targets.

A farm produces many types of data that can be classified into different categories, such as agronomic data, financial data, compliance data, metrological data, environmental data, machine data, staff data, etc. These sets of data stem from a wide range of more and more powerful and cost-effective sources, such as machinery, drones, GPS, remote sensing, satellites, smartphones, and so on, and are supplemented by service providers, advisory bodies, public administrative authorities, etc. In addition, other partners in the value chain, such as processors and retailers, are collecting enormous amounts of data about the markets on which farmers sell their products.

The collection and use of data in agriculture is not a new concept; farmers have been doing just that since the beginning of agriculture. What is new however, is the opportunity to develop a data-orientated farming sector thanks to the size and volume of these data, which are growing at an exponential rate. Another novelty is the quality of real-time information obtained at farm level and the technology used to collect, store, use, manage, share, process and communicate data.

Furthermore, these large and complex series of data demand novel and sophisticated data processing systems. Data need to be combined to create value, meaning that the better we exchange data, the less disruptive this will be to current business models and organisations. By layering series of data from a wide range of sources, complex decisions can be made on different levels, such as by the farm, cooperative, input suppliers, public administrative authorities, banks, the scientific community, etc.

The new data-supply chain places informed farmers in a new context and redefines their role in the supply chain, which will enable transformative agricultural business models to develop, leading to cheaper, safer, and better produce. Some experts believe that big data will be the next source of productivity gains and, in combination with other technological developments, could disrupt the agricultural value chain. Big data is being used to improve the functioning of individual farms and the entire value chain by optimising production factors, enhancing transparency throughout the food supply chain, and helping to develop new business opportunities along the entire value chain.

Big data will also make it possible to collect and exchange data at an unprecedented level. In order to tap all of the potential benefits, data are being increasingly shared between farmers, with third parties within the value chain (e.g. input suppliers), and also with those outside of the agri-food chain. Agricultural data are being used for both agricultural and non-agricultural purposes, but the farmer remains at the heart of processing big data, as he/she is responsible for the quality and credibility of data.

This increasing exchange of data is a major challenge for European agriculture. It poses legal questions about privacy, data protection, intellectual property, data ownership, relationships of trust/power, storage, conservation, public data and usability. It also leads to debates on access to data in business-to-business or business-to-consumer situations, machine generated and machine-to-machine data, the compatibility of systems, and so on.

Should data be unintentionally shared with someone who could use it to the disadvantage of the original data owner, any benefits gained would be negated. This fear naturally makes people extremely cautious about sharing their data. Trust and transparency are absolutely key.

Below are Copa and Cogeca's views on the main principles underpinning the collection, use and exchange of agricultural data, which, in our opinion can help release the full potential of big data.

INFRASTRUCTURE, CONNECTIVITY AND INTEROPERABILITY

Data form a fundamental infrastructure in the economy. The farming community believes that developing novel and sophisticated data processing systems to analyse farm data is a priority. In order for the farming community to take full advantage of big data, it is necessary to establish appropriate and robust data infrastructure, e.g. data centres, and services for data to be analysed and stored, as well as create opportunities for farmers to access existing databases. We believe that quality, governance and the organisations involved are all key parts of this infrastructure.

There is still a silo mentality surrounding data infrastructure in agriculture, as there is a serious lack of interoperability and connectivity. **Interconnectivity** will help enhance productivity and increase efficiency, by allowing the combination of farm data with other types of data available; however, it is not clear how well connected the different systems used by farmers really are ("interoperability"). There are different levels of interoperability affecting data, such as technical (the use of data management systems that allows connection with other systems), semantic (the use of metadata and knowledge organisation systems for the description and organization of data, based on existing standards) and legal (the use of appropriate licenses that allow the exchange of data between different systems and providers). Copa and Cogeca underscore the importance of agriculture tackling problems of **interoperability**, i.e. data sets that cannot be connected, heterogeneous data, low-level communication protocols and networks. Interoperability is important in order to fully reap the benefits of such big data trends.

We also highlight the need to promote faster and more reliable rural internet access and wireless capabilities. Furthermore, we call for as much harmonisation of **European standards** as possible, in order to promote interconnection and interoperability and facilitate exchanging information, for instance through platforms providing APIs and an open source reference implementation that ease the development of smart applications in the agri-food sector, like FIWARE. We advocate standardising the terminology and methodology, which would support cross border data transfers and supplement the benefits of big data. The first step in this process would be the definition and description of the specific data types and formats that are described as "agricultural data".

Copa and Cogeca stress the importance of making all technologies, data collection infrastructures and services related to big data accessible to the whole farming community, especially small/medium-sized farmers. We also call on the Commission and Member States to remove barriers that prevent the adoption of precision farming techniques, in particular those linked to complex and fragmented **investment** systems and the **costs** of their implementation. Furthermore, we encourage the Commission to establish EU guidelines to ensure a level playing field across the EU.

It is vital to guarantee free access for farmers and agri-cooperatives to public databases. The European Commission has published a study assessing models of supply and charging for public sector information. This found that where public sector bodies moved to marginal or no costs, or cost-recovery, the number of re-users increased by between 1,000% and 10,000%. It also concluded that lowering charges reduced barriers to market entry and could attract new types of re-user, including farmers and other stakeholders in the food production supply chain. Moreover, we call for close collaboration between farming community and digital farming companies and data scientists to define framework for the access and management of data in order to ensure that the most appropriate big data technologies will be available to the most relevant actors.

TRAINING, KNOWLEDGE TRANSFER AND GUIDANCE

Copa and Cogeca would be interested in contributing to the upcoming "Digital Skills and Jobs Coalition Initiative" that will be launched by the Commission at the end of 2016, in order to underscore the importance of identifying the digital skills that are needed to foster the uptake of digital transformation in rural areas. Providing the right training and education at the right moment will not only help farmers to make the most of these technological opportunities, but will also produce educated digital entrepreneurs and an agricultural workforce that understands their rights and responsibilities in this new digital world.

Farmers and agri-businesses are more likely to share data and engage in a more open data mind-set if it is clear what the potential benefits and risks are. Training and information is essential to better understand the benefits of sharing data and to fully access the benefits that big data can bring to farming.

Networking and exchanging technical developments is crucial and should be promoted. It is important to encourage on-farm innovation and farm-driven research, and sharing the results thereof. It is also fundamental to promote sharing best practices, to make sure that no-one is left behind and that all can make the most of the opportunities and mitigate the risks of a digital economy, in particular, small and medium-sized farms.

It is difficult to negotiate contractual arrangements that involve multiple parties, especially when other issues, such as the protection of personal data, render the matter more complex. Therefore, bearing in mind that technology will keep evolving, it is fundamental for all parties involved in using agricultural technology to engage in dialogue on the opportunities and challenges of technological developments. Copa and Cogeca invite these parties, which are also our partners in the value chain, to engage in dialogue on data principles. This joint effort could shed greater light on contractual relations and provide guidance on the use of agricultural data by the value chain.

REGULATORY FRAMEWORK

Protecting the ownership of farm data is of the utmost importance, but it is much more important to ensure that farmers obtain a fair share of the value generated by farm data. This can be achieved through fair and transparent contracts, regulation, guidance, liability mechanisms and training. It is therefore essential for EU decision-makers to come together to establish a coherent strategy to promote a digital transformation within the EU agricultural sector, working with farming organisations to provide a legal framework that protects the specificities of agricultural data.

The current legal framework underpinning the collection, use and exchange of agricultural data is quite complex and fragmented. In addition, digital developments that we see in agriculture today take place at a tremendous speed. It is thus fundamental to strike the right balance between providing a future-proof regulatory environment that adapts to the changing nature of technological advancements and creating a level playing field, whilst also avoiding excessive burdens and protecting farmers' ownership and control of farm data as much as possible.

Copa and Cogeca expect this legal framework to keep pace with the digital era. Public administrative authorities and all actors must therefore adapt faster than usual and provide the right tools to protect the specificities of the agricultural value chain.

We call on the Commission to ensure that there are clear and unambiguous EU-wide standards and rules. It is of the utmost importance to support innovation in technology and governance by providing regulatory coherence, clarity and room for entrepreneurship. We believe that it is crucial to facilitate the sharing and use of data avoiding the creation of data silos and strengthen the single market in order to help the agricultural business world operate and seize economic opportunities within the largest economy in the world.

Small and medium-sized enterprises (SMEs) often do not have the resources to compete on equal footing with larger companies in contractual negotiations. Nonetheless, small and medium-sized farming businesses must also be able to benefit from these technological advancements. Special attention should be paid to the needs of these farms. This can be done via cooperatives, farmers' associations, contractors and service providers.

PRINCIPLES TO RESPECT IN CONTRACTS ON BIG DATA

Ownership of farm data

Copa and Cogeca believe that data produced on the farm or during farming operations should be owned by the farmers themselves.

The nature of farm data is highly specific. Farm data not only represent the lifeblood of the farm, but are also an emotional subject for the farmer. On the other hand, farm data are also of particular economic import for both farmers and the entire food supply chain. In many cases, and in order to benefit from data powered solutions, “raw” data from individual farms needs to be combined with other types of data provided by external operators, e.g. data service companies.

The nature and means of collecting different data types leads to different levels of ownership and privacy; for example, farm-level data are collected by the farmers themselves and may contain personal data, while remote sensing data are collected using public infrastructures and are not considered private.

All approaches must nevertheless recognise the right of the farmer to benefit from and be compensated for the use of data produced on the farm or during farming operations, and the need to grant the farmer a leading role in controlling the access to and use of data from his/her farm. Farmers are therefore entitled to obtain compensation from third parties that wish to use their data.

Copa and Cogeca acknowledge that data cannot necessarily be owned in the same way as physical assets. It is therefore crucial to set some key principles on access to agricultural data and usage rights. Theoretically, usage rights can be granted to an infinite number of parties, which corresponds to the non-physical nature of data.

Farmers must be informed in a clear and unambiguous way when their data are being collected. The collection, access to and usage of agricultural data can only occur after explicit, express and informed permission of the farmer, via a contractual arrangement.

This contractual arrangement should clearly and consistently specify the most important terms and definitions, such as agricultural data, third party, business partner, etc. Furthermore, all contracts must use simple and understandable language.

Ownership of the underlying rights to derived data

Farmers must benefit from the use of farm data and must give permission for their data to be used and shared with the other third parties with an economic interest, including where decisions are made based on the data. The contract should clearly define the purposes for which the data can be used and how the relevant rights may be used, for instance in combination with other data, how to handle derived data, and so on. It should also include a clause on transparent mechanisms for adding new and/or future uses. Information should only be given to third parties as aggregate data.

The data sets should only be used for as long as is strictly necessary for the relevant analyses to be carried out. In addition, data should only be accessed by those with the necessary qualifications and under no circumstances may be accessed by unauthorised persons.

Access to data, in read-only or fully editable modes, should be strictly audited and any transfer or change to the data (e.g. input, modification, removal) should be fully traceable, e.g. accompanied by metadata about the author.

In fact, sometimes it is impossible to render data fully anonymous. Calculation tools require individualised data, and with current technological advancements and some basic elements, e.g. data size, location, etc., it is easy to trace the data back to its source farm. The data user must use separate analytical databases and remove unnecessary data fields to prevent the data being re-identified.

Farmers should be granted appropriate and easy access and be able to retrieve their own data further down the line, unless the aggregated data is not linked to farmer ownership. Furthermore, farmers should in no way be restricted should they wish to use their data in other systems. Therefore, it's of utmost importance to address the issue concerning the rules of portability of data, which in our views is fundamental for the good functioning of the internal market and will benefit interoperability. We favour the development of common understanding on portability of data.

It is essential for databases to have a protocol with data protection safeguards for individual farmers, which do not allow sharing with third parties, such as insurance companies, advertisers, consumers or the government. Furthermore, data in databases must be kept under a pseudonym and encrypted so that individual farmers cannot be identified.

Farmers should be told how to contact the data collector and user in order to clarify certain points, express his/her point of view, or launch an appeal process to contest decisions or complaints.

Duration, suspension and termination of supply

Contracts should not be amended without the prior consent of the farmer. If a farmer's data is to be sold or shared with a third party, the farmer must be able to agree or refuse this. Farm data can only be sold or disclosed to a third party if the user has secured the same terms and conditions as the previous contract.

Farmers must be provided with the possibility to opt out of the contract and terminate or suspend the collection and usage of their data, provided that the contractual obligations have been met. This must be clearly stated in the contract and farmers should be informed of the consequences of these decisions.

If several different services are on offer, farmers must be able to opt for none, one or some. In order to make an informed decision, the service provider should explain all of the services and features that could stem from the different options.

There must also be the option to remove, destroy or return all original farm data at the farmer's request, including data backups, data media, processing and use requests. In the event of seizure, confiscation, insolvency or settlement proceedings, the farmer should be immediately informed about the farm data being compromised.

Guarantee of compliance with laws and regulation (data protection/sector specific regulation)

Personal data must be collected for a specific purpose and may not be further processed in a way that is incompatible with said purpose. It is fundamental to limit the use of sensitive data e.g. medical or financial data, and the data of vulnerable individuals, to analyses for business intelligence.

The access to and use of real-time information can also be a powerful asset for third parties. Collectors and users of farm data must therefore not use these data for unlawful purposes or take advantage of the data to speculate or for other purposes.

We defend the rights of individuals not to be subject to a decision based solely on automated processing, including profiling, which leads to legal consequences for the person in question or significantly affects him/her. A central question to address is whether the data are being used to make decisions about the farmer and their business. If this is the case, there must be accountability. We would favour appointing a data protection officer, who could play an important role in assuring that farmers' rights be enforced.

Liability

Properly respecting usage rights and tackling liability risks is not always straightforward in contractual negotiations. Managing rights can sometimes become nigh on impossible. It is therefore essential to bring transparency, simplicity and trust into contracts on agricultural technologies.

The two main reasons for not sharing information or even refusing to allow business partners in joint projects to receive data are to protect trade secrets and intellectual property rights. One main issue is being able to guarantee that these two interests, expressed as licensing conditions in the contracts, will be respected.

All actors involved in the data exchange should be made explicitly aware of the essential character of intellectual property protection, and any royalty-free access rights from the outset. This would make it possible to manage liability in terms of ownership, usage and touch points in the data supply chain.

It is fundamental to protect the intellectual property of farmers and agri-cooperatives. It is also important to address the issue of liability and to set well-defined terms thereon in the contract. For instance, farmers are not responsible for the misuse of farm data supplied in good faith, nor for any data collected on the farm via any kind of sensor.

PRIVACY, ENCRYPTION AND SECURITY

Copa and Cogeca believe that all farmers are entitled to keeping their data private. When exchanging data, systems are vulnerable to hacking by both internal and external agents, and/or other threats. It is vital for all parties to have confidence in a digital solution, through for instance a safe IT system and encrypted communications. This is a prerequisite to innovation and growth in a data-driven economy.

The farming community calls on the Commission and Member States to work with private IT companies to come up with robust solutions for **cyber security, encryption and network security** for when data are stored, e.g. in cloud services, or are in transit. It is vital to provide the necessary security safeguards against disclosure, modification, destruction, loss or unauthorised access, at an affordable cost. There must also be protocols in the event of a breach.

We advocate exploring the possibility of developing a data-traceability system with enhanced transparency throughout the food supply chain. Such a traceability platform could be based on industry standards to facilitate interoperability between the participating partners, and could introduce mechanisms for a safe and secure data flow throughout the supply chain (access privileges and restrictions to authorised users).

We are particular concerned about the **improper use of data**. There is a considerable risk that private and confidential information or information on some accepted, proven as safe, and perfectly legal farming techniques, which are politically unpopular, could be misconstrued or taken out of context. This information should only be made available for on-farm inspections and treated confidentially. It should never be made available to the public or other partners along the chain.

Secondly, cloud services are being increasingly used by the farming community. We urge the Commission to create a fair regulatory environment to develop cloud services in Europe in a way that protects the control and ownership rights of the farming community and the security of farm data.

Another important issue to address is the exchange of information and farm data between the EU and with third countries. It is vital to secure these data and create cross-border mechanisms to guarantee data protection and the privacy of the data owners.

RESEARCH AND INNOVATION

Copa and Cogeca highlight that European agriculture produces high-quality and high added value products using profitable, knowledge-based solutions in order to feed a growing and more demanding global population. In our opinion, there is enormous potential to develop new products and services, achieve productive potential and create jobs along the whole agri-food value chain through technology, data powered solutions and innovation. Big data will certainly play a key role here.

The cost of carrying out research and analysing outcomes poses the greatest obstacle for agricultural SMEs. On-farm **research and innovation** is essential to make sufficient financial support for research available and to ensure cooperation and coordination between different sources of funding from different DGs, for instance Horizon 2020 research programmes, EIP-AGRI, Connect, rural development programmes and their operational programmes, etc. This could also enable concrete on-farm research.

Applied research within the agricultural sector is incredibly important and will better achieve its objectives if it involves all actors in the research and innovation process from the very beginning to the final results, especially farmers, cooperatives, forest holders and aquaculture operators. It is fundamental to promote bottom-up, cost-effective technological solutions that can be successfully adopted by small and medium-sized farms, and in particular solutions that facilitate **knowledge transfer** between farmers.

We call on the Commission and Member State authorities to explore voluntary and innovative ways to use ICT together with farmers and agri-cooperatives, in order to simplify controls and make them less costly and less bureaucratic, provided that, data protection and intellectual property rights and the privacy of farmers are respected.
