



S3 Partnership on Traceability and Big Data

in the agrifood value chain

SHORT REPORT ON THE RESULTS OF THE REGIONAL MAPPING SURVEY

WG Road map

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1. INTRODUCTION

Following the Steering Committee of the Smart Specialisation Partnership (**S3P**) on Traceability and Big Data in the agrifood value chain (**T&BD**), held in Málaga in November 2022, and the numerous networking activities that followed throughout 2023, the partnership identified the need to strengthen its operational effectiveness. In particular, this involves understanding how to fully leverage the added value of interregional cooperation by aligning joint activities with strategic priorities, existing assets, and available capacities.

The Action Plan prepared in 2018 defined the four thematic Working Areas (**WA**), which T&DB S3P members deem more relevant to their respective regional priorities and S3 strategies:

- WA1: Lifecycles of the value chain
- WA2: Smart monitoring of the value chain to improve the overall competitiveness of the agrifood sector
- WA3: Incorporating consumer experience & different operators in food chain decision-making processes
- WA4: Open data, interoperability, data governance and information security, cyber cybersecurity.

A data-gathering process coordinated by the Andalusia region, Spain (the T&BD coordinators) at the end of 2022 provided an updated overview of interregional strategies and expectations. Based on these insights, the partnership established three Working Groups (**WGs**) in 2023, addressing the most urgent interregional priorities: Interoperable Data Integration Platforms, T&BD for the Circular Bioeconomy, and the Roadmap WG. However, it soon became evident that a detailed overview of the concrete assets, competencies, and needs of regional ecosystems was missing. To address this gap, the Road Map WG designed a regional mapping survey targeting three categories of key actors:

- Regional authorities and agencies (**RAs**)
- Business Support Organisations (**BSOs**)
- Research-Performing Organisations (**RPOs**)

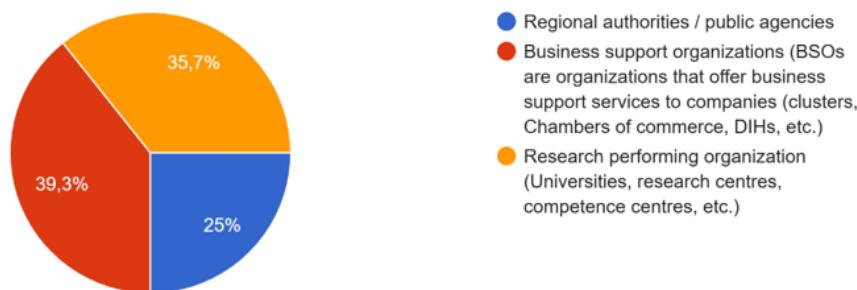
The survey, developed by Fondazione Agrifood & Bioeconomy FVG from Friuli Venezia Giulia Region, with the support of T&BD S3P coordinators, partners, and the Services provided by the S3 Community of Practice (ReScoping and Funding, Finance), was launched in July 2024. This synthetic report summarizes the main findings and provides evidence to guide future actions.

2. ANALYSIS OF RESULTS

2.1. REGIONAL AUTHORITIES AND AGENCIES

Seven RAs (25% of all respondents, Graph 1) participated, reflecting the diversity of the T&BD partnership. Their responses offer insight into funding mechanisms, strategic alignment, operational capacities, and challenges affecting interregional cooperation.

Graph 1. Distribution of the respondents, %:



The survey revealed that authorities rely on multiple funding sources to participate in T&BD activities. Since the partnership does not benefit from dedicated EU funding, direct allocation of regional resources remains the main enabler of participation.

Other sources mentioned include:

- ERDF, used by two respondents;
- Cluster funding, used by one region;
- Local contributions.

A common concern raised by regions is the absence of dedicated co-funding for S3 partnerships, which limits active engagement, reduces human resource allocation, and restricts long-term planning.

Authorities expressed a strong interest in EU programmes supporting cooperation, policy learning, and innovation.

The most relevant ones were:

- Interreg Europe & Transnational Cooperation Programmes (85.7%)
- Horizon Europe: CSA (71.4%), IA (42.9%), RIA (28.6%)
- I3 Instrument (71.4%)
- European Innovation Ecosystems (71.4%)

Although regions are motivated to join EU projects, only one respondent (14.3%) declared willingness to lead proposals, mainly due to limited staff time. Still, most authorities (85.7%) are willing to contribute to writing proposals as partners.

The survey also shows a strong alignment between regional Smart Specialisation Strategies (S3/S4) and T&BD priorities. Regions such as Andalusia and Friuli Venezia Giulia explicitly recognize agrifood digitalization, data integration, and traceability within their innovation trajectories. The Netherlands provided examples of advanced agritech initiatives, reinforcing the thematic relevance of T&BD.

When asked to prioritize the working areas, regional authorities ranked WA4 (open data, interoperability, data governance, information security) as the most relevant, followed by WA2 (smart monitoring), WA3 (consumer experience), and WA1 (value chain lifecycles).

Authorities also identified several bottlenecks affecting participation:

- financial and resource limitations;
- difficulties in articulating clear benefits of S3 participation for stakeholders;
- challenges in engaging companies around shared interests;
- overlapping themes among S3 partnerships;
- time constraints and lack of dedicated staff.

Despite these challenges, all participating regions expressed full support for policy learning activities and the establishment of a Community of Learning.

Respondents highlighted several strong T&BD-related best practices, including Dutch leadership in autonomous greenhouse technologies (RoboCrops, the Autonomous Greenhouse Challenge) and digital testing infrastructures such as Fieldlab 5G. Additional examples include Andalusia's EEN missions, DEMOFARM knowledge-transfer platform, Regions4Food collaborations, the Public Observatory of Prices and Markets, and Italy's IO SONO FVG collective trademark, all reinforcing innovation, transparency, and digitalization in agrifood value chains.

Respondents identified key regional contributors to T&BD, including universities, research institutes, innovation hubs, and agrifood–digital clusters. Notable examples include Andalucía Agrotech DIH and its university network, FVG's Agrifood & Bioeconomy Foundation, Finnish applied sciences institutions, Dutch leaders such as Greenport West-Holland and Wageningen University, and agricultural universities and research centres in Turkey.

2.2. BUSINESS SUPPORT ORGANISATIONS (BSOs)

Ten BSOs (39.3%) contributed to the survey, providing a comprehensive overview of available services, infrastructures, and innovation capacities across European agrifood ecosystems. The respondents include regional clusters, digital innovation hubs, and development agencies supporting technology adoption, R&D, and business growth.

The BSOs offer an extensive range of services to agrifood companies.

Core areas include:

- Innovation support, knowledge and technology transfer, and R&D&I facilitation
- Digital transformation services, including AI, IoT, data management, and cybersecurity
- Networking and open innovation, including consortia building and matchmaking
- Specialized infrastructures, such as training spaces, testbeds, demo farms, and digital twin facilities

Most BSOs are active participants in EU projects. More than two-thirds (72.7%) have consolidated experience in European programmes, although only about half (54.5%) of them feel confident leading large-scale projects. Survey responses show that BSOs are highly motivated to contribute to proposal writing (90.9%), and half are prepared to act as lead writers (54.5%).

Interest in EU programmes is broad, with the following receiving the most attention:

- Interreg Europe (91.7%)
- Horizon Europe (CSA, IA, RIA; 50–66.7%)
- I3 Instrument, Euroclusters, Clusters Meet Regions, Digital Europe (58.3–66.7%)

In terms of key interest areas, BSOs highlighted the relevance of:

- networking and capacity building (100%);
- pilot projects and business-to-business cooperation (81.8%)
- scaling-up and technology transfer (72.7%).

However, BSOs face several challenges that limit their capacity to support agrifood digitalization. The most relevant obstacles include financial barriers (72.7%), limited digital skills among stakeholders (63.6%), cultural resistance to innovation (particularly among farmers, 63.6%), lack of awareness of available technologies (63.6%), and rural infrastructure limitations (9.1%).

Like regional authorities, BSOs strongly support the creation of a T&BD Community of Learning, expecting it to provide training, shared standards on interoperability, and knowledge exchange.

The survey shows that BSOs generally have intermediate to advanced expertise across T&BD's working areas, with particularly strong skills in WA3 (consumer experience) and a solid distribution in WA1 (value chain lifecycles) and WA2 (smart monitoring). WA4 (open data, interoperability, data governance, information security) presents the widest expertise variability, indicating both strong competencies and clear opportunities for further capacity-building.

The survey shows that each region has its own specialization within the agrifood value chain, with most ecosystems dominated by primary producers and transformation companies, and varying involvement of IT, technology, and logistics providers. Regions like Andalusia and Emilia-Romagna display more diversified and innovation-oriented chains, while others—such as Hungary, Galicia, FVG, and France—emphasize strong production and processing capacities, with Finland adding a notable logistics component.

The survey highlights numerous regional best practices in agrifood digitalization and sustainability, ranging from Andalusia's Naturcode and HIBA platforms to Galicia's advanced traceability and market-digitalization tools, Hungary's Regions4Food initiatives, and Italy's strong digital ecosystems in Emilia-Romagna and FVG (including Io Sono FVG, digITagri.eu, and GNSS-based precision systems). Additional examples include France's VALORIAL–LACTALIS innovation partnership and North-East Finland's "clean food" model, all showcasing effective ways to enhance value chain transparency, resilience, and competitiveness.

BSOs expect T&BD S3P to facilitate EU project development, promote interoperability and secure, ethical data-sharing standards, and help address consumer concerns about food safety, transparency, and sustainability. They also highlight the need for accessible training, webinars, and e-learning to support widespread adoption of digital tools in the agrifood sector.

2.3. RESEARCH-PERFORMING ORGANISATIONS (RPOs)

Nine RPOs (35.7%) participated in the survey, representing a diverse mix of universities, applied research centers, and private laboratories. Their contributions highlight the scientific and technological backbone of the T&BD ecosystem.

RPOs expressed a strong willingness to participate in and even lead EU-funded projects (90%). While only half reported substantial experience with EU project management, all respondents prioritized activities related to knowledge and technology transfer (100%). R&D projects (90%), innovation actions and scaling-up initiatives (80%), and collaboration with companies (70%) were considered essential components of the innovation landscape.

Interest in EU programmes focused mainly on:

- Horizon Europe (RIA 100%; CSA and IA 70%)
- Interreg Europe (80%)

The survey also revealed significant scientific and infrastructural assets distributed across participating regions. Examples include experimental farms specialized in agrifood trials, food processing laboratories, agricultural data space demonstrators, 5G testbeds, drone technology centers, high-performance computing resources, digital innovation laboratories, and domain-specific research facilities such as those for olive oil, marine products, or ecosystem modelling.

RPOs collaborate extensively with companies and innovation intermediaries through joint R&D projects, training, technology transfer, pilot testing, and knowledge dissemination. Their involvement spans from regional to international levels.

Respondents strongly endorsed the idea of a Community of Learning and identified priority thematic research areas where they could contribute expertise.

These include:

- big data, predictive modelling, blockchain, and IoT for traceability;
- smart monitoring technologies and precision agriculture;
- development of agrifood data spaces;
- consumer behaviour analytics;
- circular bioeconomy and climate-resilient production;
- AI, machine learning, digital twins, and drone-based sensing.

RPOs assessed the relevance of the T&BD Working Areas in relation to their competencies. WA2 (smart monitoring) and WA3 (consumer experience) received the highest relevance (90%), followed by WA4 (interoperability, 80%) and WA1 (value chain lifecycles, 70%). This distribution confirms that the research community holds complementary capacities that can support the needs of regions and BSOs.

RPOs pointed to several strong best practices in agrifood digitalization and sustainability, including AGROTECH E-DIH as a leading digital innovation hub, ecosystem service models that improve resilience in olive groves, and the CANEMURE project, whose participatory approach resulted in the Northern Ostrobothnia Climate Roadmap 2021–2030.

RPOs expect the T&BD platform to support EU project partnerships, advance interoperable digital tools and shared data standards, and promote transparent, responsible data use. They also highlight the need for accessible training, webinars, and e-learning resources to strengthen regional digitalization capacities.

3. CONCLUSIONS

The results of the regional mapping provide a clear and updated picture of the T&BD interregional ecosystem. They confirm that the thematic priorities of T&BD are strongly aligned with regional innovation strategies and that the partnership gathers a rich mix of complementary competencies across public authorities, innovation intermediaries, and research institutions.

The survey highlights several cross-cutting issues that must be addressed, which are the lack of dedicated funding for S3 partnerships, the need to better communicate the benefits of participation, the limited human resources available within regional administrations, and the partial overlap among thematic areas of different S3 partnerships. Addressing these challenges would significantly strengthen interregional coordination and enhance participation.

At the same time, the survey demonstrates considerable opportunities. The thematic alignment across actors is strong, and many respondents have expressed willingness to lead or contribute to EU projects. Interreg Europe and Horizon Europe emerged as the most suitable frameworks to support collaborative actions.

Moreover, the proposal of establishing a T&BD Community of Learning received widespread support from all categories of stakeholders and appears as a promising tool to build capacities, promote best practice exchange, and strengthen the long-term governance of the partnership.

The mapping exercise confirms that the T&BD interregional ecosystem has solid foundations, strong interest in joint initiatives, and a clear direction for developing future cooperation based on shared priorities, complementary capacities, and European opportunities.