Infrastructures & Dataspaces for Citizens: Agritech, Food Logistics and Urban/Rural Ecosystems Global Forum Madrid 2025 (brief summary and key takeaways)

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The panel explored how digital infrastructures and data spaces can help societies navigate a world marked by accelerating complexity, where agriculture, food logistics, and urban–rural ecosystems are increasingly intertwined. The discussion began by situating these transformations within a broader systemic shift: globalization, climate instability, demographic pressures, and automation have produced tightly coupled socio-technological systems in which small perturbations might generate large and sometimes unexpected consequences. Traditional governance structures, because they are fragmented, sector-bound, and slow to adapt, struggle to cope with this complexity surge. This is where data-driven infrastructures and interoperable data spaces emerge as promising tools.

First, Juanjo Hierro and Fernando Alvarez, highlighted how cities and public institutions can build open, federated digital infrastructures to orchestrate heterogeneous flows of data. FIWARE's open standards and Madrid's digital transformation strategy exemplify how interoperability and modular architectures reduce silos, enabling public administrations to respond more effectively to real-world complexity. Then, Alfonso Martos Berlanga presented the developments of the Ministry of Transport and Sustainable Mobility of Spain, to improve the logistic while reinforcing sustainability. Their interventions demonstrated that urban and regional ecosystems must be treated as integrated systems, where IoT, context management, and predictive analytics support better coordination across sectors.

Antonio Jara then expanded the perspective by showing how European data spaces, combined with Small Language Models (SLMs) and Digital Twins, provide a foundation for trustworthy, sovereign, and actionable AI. By interconnecting initiatives such as Geo4Water and BeatTheHeat, data spaces begin to address the friction that currently prevents multi-stakeholder collaboration. His emphasis on usability, ROI, and plug-and-play adoption underscored that infrastructures must be not only technically coherent but socially workable.

The historical depth was added by Sébastien Grappe, who showed that agriculture has always been shaped by its information infrastructures. Today's digital platforms extend this

evolution by connecting previously isolated data spheres, turning invisible environmental and health externalities into legible and actionable information. Platforms like FieldView or John Deere Operations Center exemplify how incumbents now act as market orchestrators, enabling, if properly governed, more sustainable and systemic forms of coordination.

Finally, Pascal Poitevin and Dolores Ordóñez highlighted the agricultural sector's urgent need for adaptive tools capable of reducing uncertainty. Farmers confronted with climate shocks, geopolitical instability, and market changes need both better decision-support tools and collective, cross-sectoral data governance. Data spaces, such as those deployed in CEADS or Data4Food, enable precisely this: shared information, value creation for farmers and citizens, and alignment between food systems and sustainability objectives.

In conclusion, the panel demonstrated that digital infrastructures and data spaces are not technical add-ons, they are governance instruments crucial for steering complex systems. They must be designed for interoperability, inclusion, sovereignty, and resilience so that urban and rural futures can be shaped collaboratively rather than reactively.

Key Takeaways

Interoperability is foundational: open standards, modular architectures, and data spaces reduce fragmentation and unlock collective intelligence.

Data sovereignty and trust are essential: without clear governance and sovereignty, data spaces cannot support long-term resilience or public value.

Human-centered infrastructures are necessary: technologies must enhance agency, dignity, and community leadership, not undermine them.

Agriculture needs anticipatory tools: climate uncertainty and market volatility demand real-time, data-driven decision support.