ECONOMIST ENTERPRISE

Space Economy Summit Europe

May 6th 2026 • Lisbon

Session summary report

From pixels to predictions: unlocking the value of space data with AI

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From pixels to predictions: unlocking the value of space data with AI

The discussion opened with a candid diagnosis: the largest obstacle to commercial uptake of satellite and aerial data is lack of awareness that it exists or of how it can be used. Industry buyers in construction, manufacturing, energy and retail still struggle to see practical uses. The panel argued that artificial intelligence (AI) can bridge the gap between raw imagery and business decisions, but only if organisations become data-ready and redesign their workflows. Agriculture is being used as a test bed, with the Food and Agriculture Organisation (FAO) highlighting how space data could help make 500m small farms visible, financeable and insurable through national data systems.

Awareness is not enough: fixing the last mile from imagery to action

Ronnie Sheth, the chief executive of Senen Group, a management consulting firm, said that large operators in construction, retail and manufacturing remain unaware of how to use geospatial, aerial and space data, despite the obvious applications to their sectors. Ms Sheth described meetings with multibillion-dollar firms that still cannot see the applications of space data, which she called unnerving given their scale.

> “While we hear stories of the more innovative companies using GIS data, space data and aerial data, the general mass of companies are still unfamiliar with space data and how to use it.”
>
> Ronnie Sheth, chief executive, Senen

Charlie Candy, chief revenue officer at Planet, a satellite imaging company, argued that the market had long relied on a small group of doctorate-level experts with the technical skills to extract insight, while the people whose problems those insights could solve work in very different sectors, such as construction or agriculture. Mr Candy said he expects new AI tools to “collapse the gaps” over the next year by letting engineers and analysts, not just specialists, work with the data.

Pressed on market size, Mr Candy said the opportunity is vast, floating the figure of “a trillion dollars”. High-quality data and the speed of AI not only increase the number of potential applications but also “break down the boundaries” and reduce dependence on specialists. Planet collects about 5bn pixels in satellite imagery each day. The quantity is beyond human analysis, which Mr Candy said

underscores the case that machine agents should work with large datasets.

Mohit Ahuja, a strategy and transformation leader at Caterpillar, agreed that "there's a lot of money still on the table". He became interested in space data after the covid-19 pandemic while searching for a digital solution to detect supply-chain shocks early, and argues that suppliers must educate customers on what is currently available and on the types of problems that can be solved using space data.

Lorenzo De Simone, a geospatial technical adviser for the agrifood economics and policy division at the FAO, said that system design rather than technology was the main constraint. As a response, the organisation is building national partnerships, with ministries, statistics offices, space agencies and private firms, to connect earth observation with policies on subsidies, credit and insurance that could support farmers. Mr De Simone said farmers need to be made visible: there are roughly 600m farms globally, of which about 500m are smallholder operations of less than two hectares, yet many are invisible to lenders and insurers. Satellite data, combined with AI, could change that.

> "We're thinking about a world where our end customer is not a human but an AI agent acting on behalf of an organisation."
>
> Charlie Candy, chief revenue officer, Planet

Ms Sheth reframed AI readiness as an organisational transformation rather than a bolt-on, encouraging firms to become "AI native" where possible. She urged firms to identify use cases, then combine space data with operational, market and benchmark data

to support decision-making. She warned most enterprises are not data-ready, and that adopting AI also forces changes to roles, workflows and operating models.

Training AI for smallholders: labels, scale and incentives

Mr De Simone said the use of AI in agriculture requires quality-assured field data and labels at plot level on crop type, productivity and management practices. But this information is often absent. The FAO works with the ESA and Massachusetts Institute of Technology to investigate whether models trained on data-rich places can reliably be transferred to other regions.

To scale to 500m farmers, Mr De Simone suggested improving AI models' capacity to predict outcomes beyond where they are being trained, and involving farmers directly. In Peru, a project linking farmers to a government mobile app invites growers to georeference plots in exchange for access to services such as agronomic advice, subsidies and insurance. By doing so, they contribute to the datasets used to serve them.

The panel then addressed the question of social licence for AI. Ms Sheth said that frequent lay-off headlines and "one-

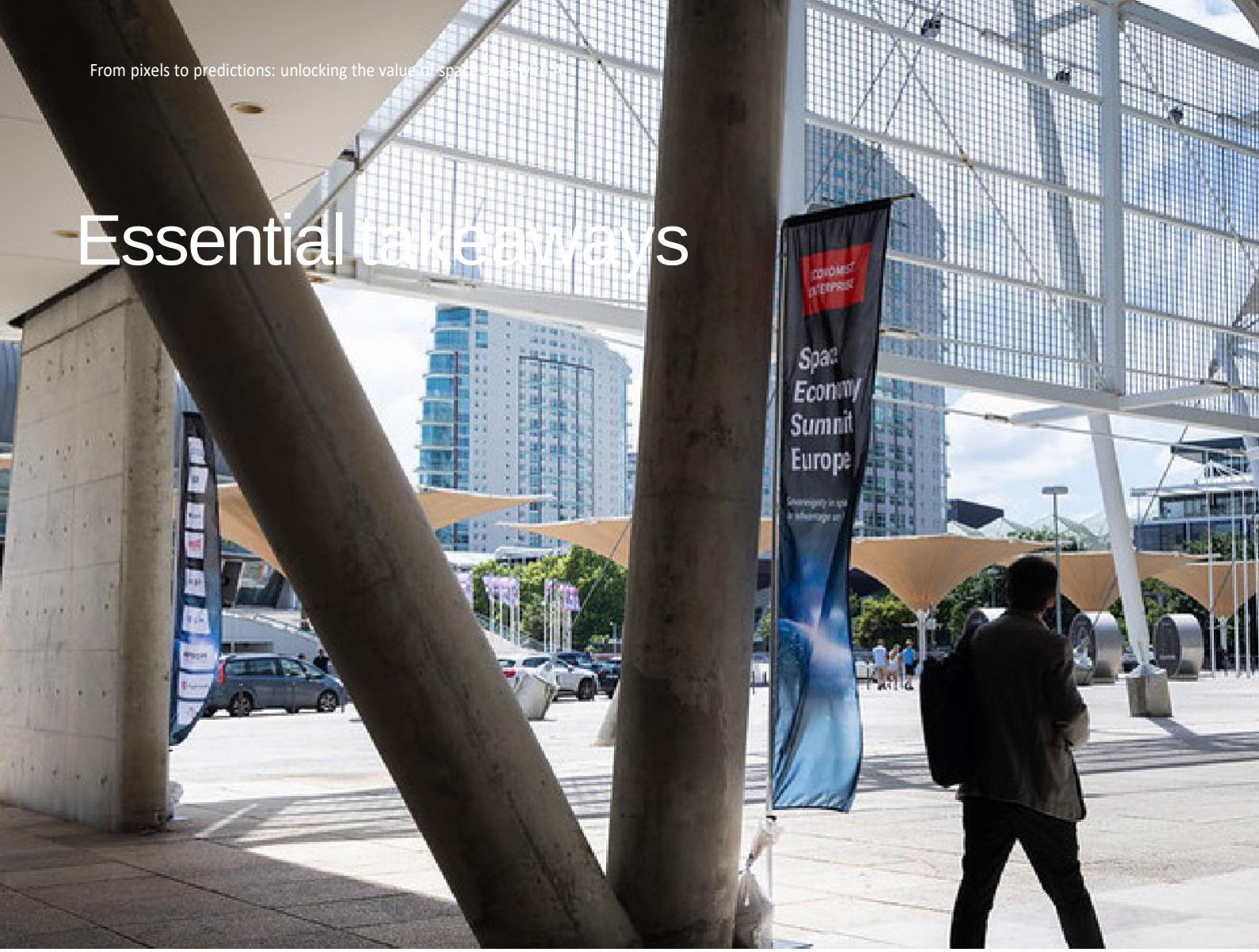
> "It is possible, through incentives, to have farmers provide site-specific data in exchange for access to subsidies, insurance and farmer extension support. The data-collection paradigm is shifting because the farmer has an interest in volunteering the data."
>
> Lorenzo De Simone, geospatial technical adviser, FAO

person team" experiments erode workforce acceptance of the technology. She cautioned against "token-maxing", where firms equate AI productivity metrics with value. Mr Ahuja prescribed augmentation over replacement: AI's real advantage is in performing narrow tasks at scale and covering computational blind spots that human analysts cannot reach.

Data governance surfaced as a concern. Mr Ahuja warned that monetising farmer-level data beyond its stated purpose can quickly expose companies to fines for compliance breaches. Mr Candy added that while Planet's customers typically hold the sensitive data, responsibility is harder to assign than it looks: in Europe, regulators are shifting from penalties to incentives for regenerative practices. But outside mature policy regimes, governance remains uncertain.

The session's moderator pressed Mr Candy on how Planet's public-benefit charter translates into practice. Mr Candy pointed to Tanager, a satellite developed with NASA's Jet Propulsion Laboratory and Carbon Mapper, a non-profit. Tanager carries "the most sensitive hyperspectral instrument in the known galaxy", which is capable of detecting methane emissions at their source. The market for such monitoring remains thin, he said, but public and philanthropic funding is filling the gap, underwriting a service that is not yet as commercially viable as expected.

> "Once a company that owns data starts selling that beyond their application, that is when it infringes on compliance requirements and leads to fines."
>
> Mohit Ahuja, strategy and transformation leader, Caterpillar



Essential takeaways

Commercial use of satellite and aerial data is blocked by a lack of awareness of what exists and what to do with it. Most enterprises still cannot translate imagery into field decisions. The professional gap between technical specialists and end users in fields like agriculture and construction is one bottleneck. AI could help overcome it, but only once firms are clear about the problems they want to solve.

Visible farms are more financeable. Roughly 500m of the world's 600m farms are smallholders that are invisible to lenders, insurers and policymakers. The FAO is building national systems that connect earth-observation data to subsidies, credit and insurance. Peru's farm-identity app shows that the right incentives can draw in the field data those systems need.

Effective adoption of AI-powered geospatial tools requires new ways of working. Organisations can be transformed by starting with use cases, then building data foundations that merge space, operational and market data. While it is possible to use AI to game productivity metrics, real gains require the redesign of roles, workflows and decision-making processes.

Public and philanthropic funding can sustain capabilities where markets have not yet formed. Planet's Tanager satellite, developed with NASA's Jet Propulsion Laboratory and Carbon Mapper, a non-profit organisation, detects methane at the source using the most sensitive instruments available: a sophisticated capability that so far has limited commercial demand.

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