Contribution ID: **15** Type: **Talk**

FabSat: Prototyping Open Satellite Infrastructures Across the Global Fab Lab Network

Saturday 25 October 2025 14:30 (20 minutes)

In response to the growing need for accessible and distributed space technologies, Waag Futurelab has initiated the development of FabSat—a satellite that can be designed and built using the resources available in any Fab Lab worldwide. Leveraging the global infrastructure of the Fab Foundation, which connects labs through shared tools, skills, and digital fabrication environments, the project explores how space systems can be democratized through open-source and locally producible designs.

The first phase of the project focuses on aligning existing open-source satellite and ground station designs—particularly those under the Libre Space Foundation—with the foundational qualities of Fab Labs: public access to digital fabrication and repositories; adherence to the Fab Charter, a common set of tools and processes, and active participation in the global Fab Lab network.

This phase will test compatibility through collaborative prototyping with Fab Labs across at least one location per continent, mapping regional opportunities and constraints. The outcome will be a pilot FabSat programme designed for Fab Lab experts to implement and validate within their local contexts.

The second phase will scale this initiative across the wider Fab Lab ecosystem by inviting makers to engage with three challenges: constructing ground stations integrated into the SatNOGS network, refining and adapting FabSat designs through new fabrication techniques developed within the community, and prototyping satellite payloads that critically and creatively reimagine the use of Earth's orbit.

By merging open hardware, distributed making, and planetary-scale experimentation, FabSat offers a blueprint for radically inclusive space infrastructure.

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Session Classification: 3rd Session