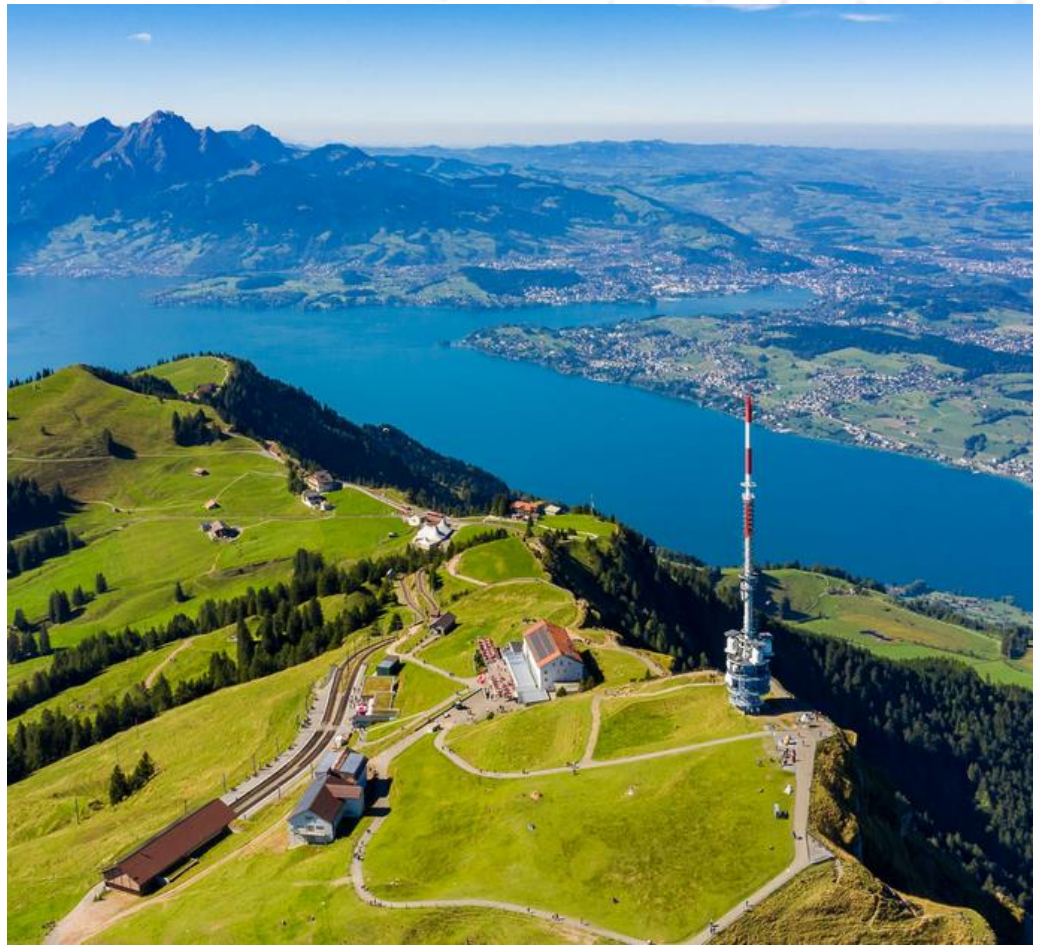
Made in Switzerland – Next generation GEO satellite communication

Emile de Rijk, CEO and founder
SWISSto12

18 June 2024
Swiss Telecommunications Summit

Communications Infrastructure in CH today

- Traditional land-based installations
- Communications by fibre/cable or “point to point” over the air
- State of the art infrastructure
- Dependency on foreign manufacturers
- <u>No sovereign satellite capacity in Space</u>



Global presence of SWISSto12

Headquartered in Switzerland with a global reach

- Founded in 2011, one of the world's fastest growing aerospace companies
- Manufacture Radio Frequency products and the world's first Geostationary SmallSat – HummingSat
- 35+ international patent families
- First growth stage company to sell full satellite system to satellite operators (Intelsat & Inmarsat/Viasat)
- 5,600m² Swiss headquarters and **production facility, with** locations in the **US** and staff based in **Denmark**, **Sweden** and **Spain**
- **Funded by leading European investors including Constantia New Business (CNB Capital), Swisscom Ventures, Swisscanto and Zürcher Kantonalbank (ZKB)**

Proprietary and confidential

HummingSat: a new category in Space

Traditional GEO comms large satellites are:

- Mass: 3,000 to 7,000 kg
- High mission cost: 100's m$
- Build time: >5 years
- Dedicated launch strategy

Whereas...

HummingSat is:

- **~1000kg mass**
- **3-5x cheaper**
- **Shorter** build **2-3yrs**
- **Rideshare launch strategy**
- **Advanced payloads**

Size Comparison:

Traditional Communication satellite
5,540kg
7.7m x 2.7m x 3.4m

SWISSto12 HummingSat
1000 kg
2m x 1m x 1m

HummingSat opens up new, lower cost, agile opportunities for GEO communications

Proprietary and confidential

Applications in Switzerland & beyond

Connecting society / Secure sovereign comms / Cyber resilient

Connecting safety services

SWISSto12 history & milestones

2011

EPFL

Swiss Federal Institute of Technology (EPFL) Spin-off

2015

esa

SWISSto12 establishes itself as a supplier to the aerospace industry by securing its first contracts with ESA

2016

Company moves from "build to print" to **"build to spec"** business model

2017-2018

First contracts with large aerospace companies

2018

Company further **grows in supply chain**, offering subsystems that integrate 3rd party products assembled to its core 3D printed RF products

2019

First **RF** products launched in **space**

Start of the **first US office** in CA

2021

Company **wins first contracts with major US primes**

2022

HummingSat

ESA Supports HummingSat

2022

INTELSAT

Intelsat **orders 1 HummingSat**

2023

Viasat +Inmarsat

Inmarsat **orders 3 HummingSat**

2024

Booked >200m CHF sales to date

2026

Planned launch of first HummingSat onboard Ariane 6

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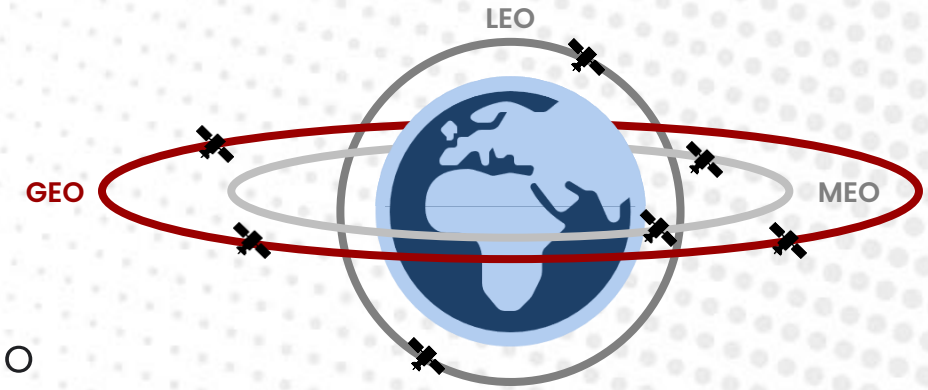
Opportunities of Geostationary Orbit

From geostationary orbit, the satellite appears motionless in the sky to a user on the ground.

Each GEO satellite can cover 1/3 of the Earth

<u>GEO = lowest cost satellite connectivity</u>



Leading satellite telecommunications operators who predominantly use GEO

INTELSAT

Viasat +Inmarsat

SES your satellite company

Key players in LEO

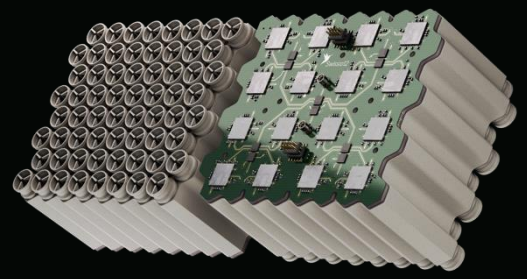
STARLINK

OneWeb

	LEO	MEO	GEO
Worst → Best			
Complexity			
Signal latency			
Antenna cost			
Time to market			

Swissto12

Cutting edge 3D printed RF products



HummingSat:

World's first GEO SmallSat

***Select* top-tier customers**

INTELSAT

Viasat +Inmarsat

THALES

LOCKHEED MARTIN

CH 200M
customer backorders

4 satellites ordered
from global satellite operators

First emerging player
to contract GEO satellites with global satellite operators

Established and growing radio frequency business
serving blue chip OEMs and space primes

>1,000
Products in space

>35
International patent families

>100
Products deployed on aircrafts and ships

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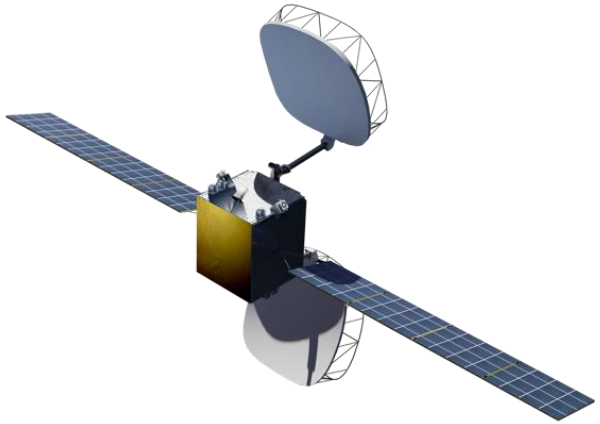
HummingSat use cases

1. **Regional high-throughput satellites (HTS)**
2. **HTS targeted augmentation satellites**
3. **Broadband/fixed satellite service replacement satellites**
4. **Sovereign satellites for secure communications**



CH72B

GLOBAL GEOSTATIONARY SATELLITE MARKET 2022-2031

(Euroconsult 2022)

HummingSat Key Capabilities

- Fits inside a **rideshare** volume (launch compatibility studied with Ariane 6, Falcon 9, MHI H3 & more to come)
- **~ 1000 kg** launch mass
- **~ 2 kW** of payload power end of life
- **~ 200kg** of payload capability
- **Orbit raise** GTO -> GEO capability built-in
- Up to **15 years** missions in GEO
- **HTS, BSS, FSS or advanced payloads** available

Partnership with esa

- SWISSto12 has signed a partnership contract with the European Space Agency (ESA) for the **development of the HummingSat Product line**
- The HummingSat Partnership Project is **currently supported by 9 ESA Participating States**
- **ESA has put in place a dedicated Partnership Project Team with all required expertise to support SWISSto12**
- Activities in the partnership program support a **reusable satellite architecture** for multiple future missions

Signature with Josef Aschbacher, Director General of ESA

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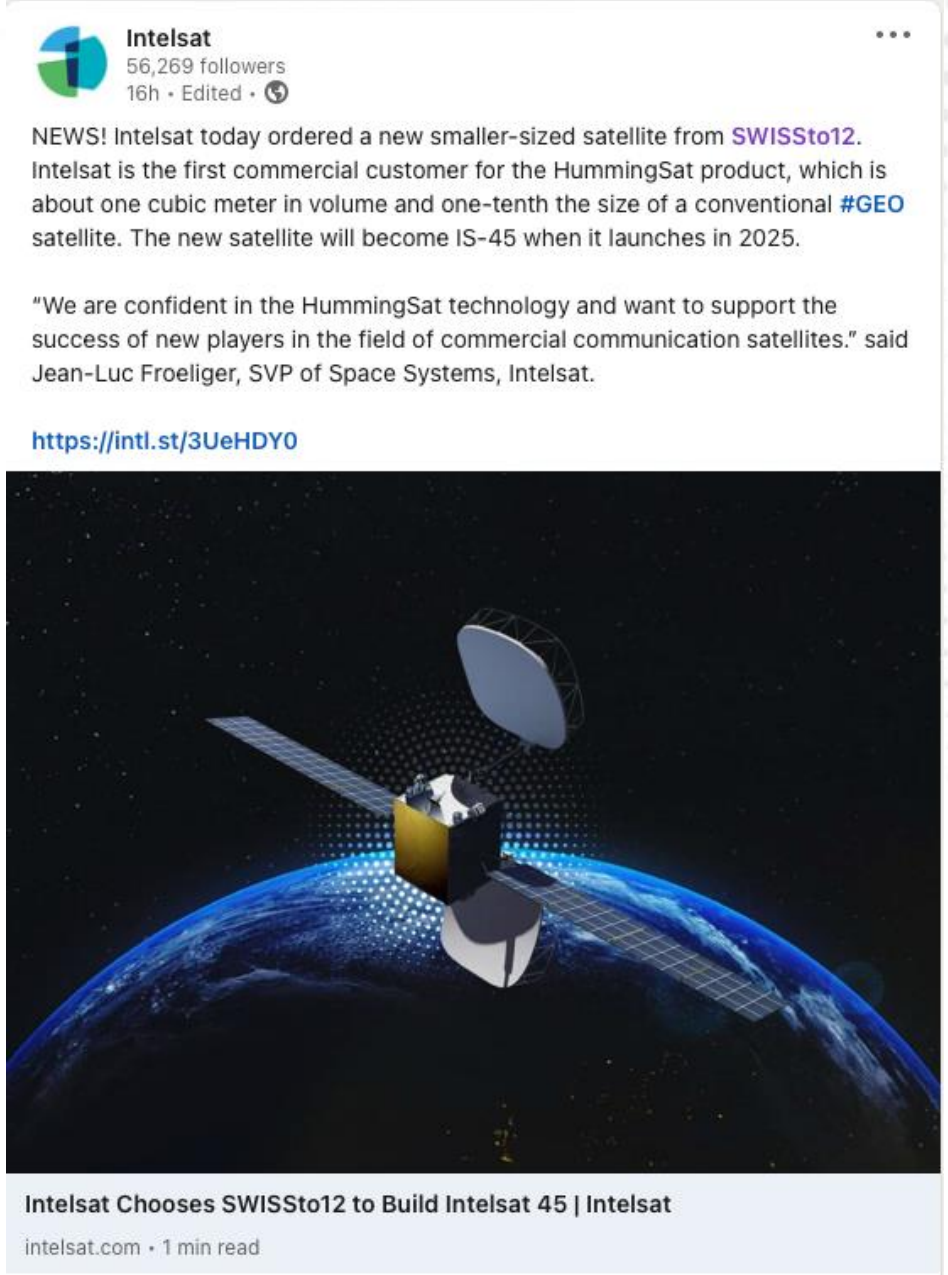
Intelsat Chooses SWISSto12 to Build Intelsat 45

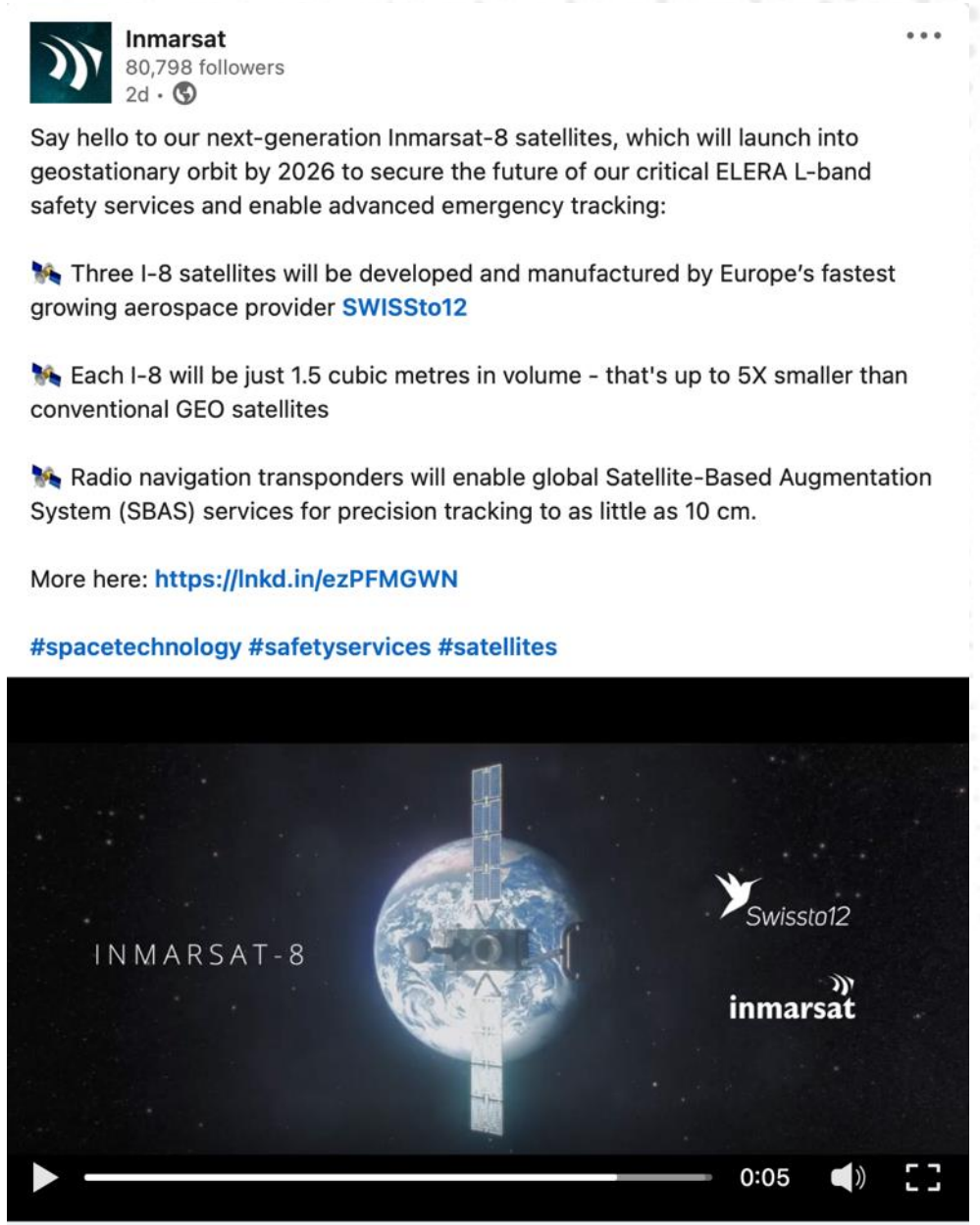
- **Intelsat** is the largest operator of the world's largest integrated satellite and terrestrial network
- **Unprecedented in the industry** for an established satellite operator to choose a growth stage company for a contract of this scale
- **Scheduled to launch in 2026 on Ariane 6**



Proprietary and confidential

Inmarsat (Viasat) Chooses SWISSto12 to Build 3 Satellites: Inmarsat-8

- **Inmarsat** is a world leader in global, mobile satellite communications
- **On ground delivery of 3 satellites in 2026**
- To strengthen Inmarsat's radio-navigation safety services for **1.6 million mariners, 200 airlines, governments and space agencies**



Switzerland in Space: Yes we can!

- Switzerland's space ecosystem is large, diverse and growing fast
- Revenues from suppliers to the space industry in CH > 400M CHF/year
- Switzerland has competencies and industry to deliver satellite missions domestically
- Switzerland must develop more ambitions to lead space programs and develop downstream business cases

Thank you.

SCAN ME