

World's first re-programmable commercial satellite set to launch

The European Space Agency will on Friday launch the world's first commercial fully re-programmable satellite, paving the way for a new era of more flexible communications.

Unlike conventional models that are designed and "hard-wired" on Earth and cannot be repurposed once in orbit, the Eutelsat Quantum is based on so-called software-defined technology that allows users to tailor the communications to their needs -- almost in real-time.

"When a satellite is launched, demand and markets can change over time," Elodie Viau, the agency's telecommunications and applications director, told AFP recently. "A satellite that is not 'fixed' and can adapt to customers gives us better prospects."

A successful launch would pave the



way for mass production of the satellites, which have so far been one-offs. The Quantum will be part of the payload for an Ariane 5 rocket due to launch from the Guiana Space Centre in Latin America between 21:00 and 22:30 GMT on Friday.

In addition to the Quantum, to be operated by Paris-based Eutelsat, the rocket will also deploy a conventional satellite for Brazil's Embratel. Because it can be reprogrammed while orbiting in a fixed position 35,000 kilometres (22,000 miles) above the Earth, the Quantum can respond to changing demands for data transmission and secure communications during its 15-year lifetime, ESA said.

The 3.5 tonne Quantum model has eight communications beams, each of which can be modified to change its area of coverage and also the power of the telecommunications signal it emits. Using software made available to the customer, these changes can be made "in a matter of minutes", according to Eutelsat.

This means the satellite can be used to provide mobile coverage for moving objects such as aircraft or oceangoing vessels, or to provide coverage after a natural disaster or for one-off events. And at a time of growing concern over digital security -- as well as the possible weaponising of space -- Quantum is able to pinpoint the origin of signals "emitted with or without malicious intent" and take action to remedy the interference, Viau said at a press briefing on Thursday.

The Quantum will cover a large geographical area from West Africa to Asia for 15 years.



Astronomers seek evidence of tech built by aliens

An international team of scientists led by a prominent Harvard astronomer announced a new initiative Monday to look for evidence of technology built by extraterrestrial civilisations.

Called the Galileo Project, it envisages the creation of a global network of medium-sized telescopes, cameras and computers to investigate unidentified flying objects, and has so far been funded with \$1.75 million from private donors.

Given recent research showing the prevalence of Earth-like planets throughout the galaxy, "We can no longer ignore the possibility that technological civilisations predated us," Professor Avi Loeb told reporters at a news conference. "The impact of any discovery of extraterrestrial technology on science, our technology, and on our entire world view, would be enormous," he added in a statement.

The project includes researchers from Harvard, Princeton, Cambridge, Caltech and the University of Stockholm. It was announced a month after the Pentagon released a report about unidentified aerial phenomena, which stated that their nature was unclear. "What we see in our sky is not something that politicians or military personnel should interpret, because they were not trained as scientists, it's for the science community to figure out," said Loeb, adding that he hoped to increase the project's funding tenfold.

Apart from studying UFOs, the Galileo Project wants to investigate objects that visit our solar system from interstellar space and search for alien

satellites that might be probing Earth. Loeb refers to such research as a new branch of astronomy he calls "space archaeology," intended to complement the existing field of the Search for Extraterrestrial Intelligence (SETI), which mainly probes for alien radio signals.

These endeavours will require collaborations with existing and future astronomical surveys, including from the Vera C. Rubin Observatory in Chile that is due to go online in 2023 and is eagerly awaited by the scientific community.

The 59-year-old Israeli-American has published hundreds of pioneering papers and collaborated with the late Stephen Hawking but created controversy when he suggested an interstellar object that briefly visited our system in 2017 could have been an alien probe sailing on solar winds. He laid out his arguments in scientific papers and the book "Extraterrestrial: The First Sign of Intelligent Life Beyond Earth," which placed him at odds with many in the astronomy community.

The new project is accordingly named after Italian astronomer Galileo Galilei, who was punished when he provided key evidence for the Earth not being at the centre of the universe. The project's co-founder Frank Laukien, a visiting scholar at Harvard's chemistry and chemical biology department, declared himself the "resident sceptic." But he said that, rather than dismissing the ideas outright, it was necessary to "agnostically record and interpret the data according to the scientific method."

Elon Musk's Neuralink raises over \$200 mln from Google Ventures, others



Billionaire entrepreneur Elon Musk's brain-chip startup, Neuralink, has raised \$205 million in a funding round led by Dubai-based venture capital firm Vy Capital, with participation from Alphabet Inc's Google Ventures, the company said on Thursday.

Neuralink aims to implant wireless brain computer chips to help cure neurological conditions including Alzheimer's, dementia and spinal cord injuries and fuse humankind with artificial intelligence.

The company released a video in April showing a male macaque playing a videogame "Mind Pong" after getting chips embedded on each side of its brain.

"First Neuralink product will enable someone with paralysis to use a smartphone with their mind faster than someone using thumbs," Musk tweeted in June.

EDITOR'S NOTE

A very different beginning

As I write this note, I have lost count of how many days it has been since we've resorted to home-office. It takes a toll on your mental health, and I can't begin to imagine what a different world it must be for those who are just beginning their careers. How does it feel to start your professional career in an uncertain world, stuck at home? Hear from our guest author this week in centrefold.

As for the rest, we are back this week with your comprehensive August Netflix viewing guide. For Shift, we gush about the Renault R5 Turbo. For Bytes, we dive deep into the 'Metaverse'.

That's it. Hope you have a fantastic weekend!

Zarif Faiaz, *Sub-editor*

TOGGLE

Editor and Publisher

Mahfuz Anam

Editor (Toggle)

Shahriar Rahman

Team

Zarif Faiaz

Nahaly Nafisa Khan

Graphics

DS Creative Graphics

Production

Shamim Chowdhury

Published by the Editor from Transcraft Ltd, 229, Tejgaon Industrial Area, Dhaka on behalf of Mediaworld Ltd., 52 Motijheel C.A., Dhaka-1000.

"The device is implanted flush with skull & charges wirelessly, so you look & feel totally normal," he added. Valor Equity Partners, Craft Ventures and Founders Fund also participated in the series C funding round. Co-founded by Musk in 2016, San Francisco-based Neuralink will use the funds to take its first product, N1 Link, to the market, and for research and development.

Musk has a history of bringing together diverse experts to develop technology previously limited to academic labs through companies such as Tesla Inc, SpaceX and Boring Co.

SpaceX, a private space company, said in an amended regulatory filing in April, it had raised about \$1.16 billion in equity financing.