

Steep Road HAPS, The Internet Hot Air Balloon Airs in Indonesia

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Bisnis.com , JAKARTA - To operate in Indonesia, the super aerospace vehicle or *high altitude platform system* (HAPS) is faced with a number of challenges. However, the government is open with telecommunication infrastructure shaped like the hot air balloon.

Previously, a technology company based in England, Avealto, said that they were developing HAPS, which is expected to operate in Indonesia in 2024.

Avealto's HAPS, which is called a *wireless infrastructure platform* (WIP), has a length of about 100 meters and is capable of carrying loads of up to 55 kilograms. WIP can broadcast in 3-5 months stably.

HAPS operates permanently in the stratosphere at an altitude of 18 kilometers to 22 kilometers above the earth's surface. With this altitude, Avealto believes that his activities will not be flights in Indonesia, which are on average at an altitude of 9-11 kilometers.

Avealto also projects that a hot air balloon filled with helium gas and moving with solar power can provide internet services with a coverage of 240 square kilometers for one HAPS. The latency that is presented will be much lower than satellite, with better internet quality.

Regarding Avealto's planned presence of HAPS in Indonesia, Policy Analyst Associate Expert at the Ministry of Communication and Informatics (Kominfo) Adis Alifiawan said Indonesia was open to new technologies. HAPS has advantages that match the needs of Indonesia, as a vast archipelagic country.

"HAPS is good in theory because he has a fixed position. It's just that there are a number of challenges that must be considered, one of which is *timing* ," Adis told *Bisnis* , Saturday (29/10/2022).

He explained the *timing* in question was Avealto's plan to bring HAPS to Indonesia and other countries, and its commercialization.

The next focus of the Ministry of Communication and Information, said Adis, is the price of the capacity offered by HAPS Avealto.

Adis said that hot air balloon-based telecommunication infrastructure had also been developed by Google.

In 2011, Google developed Google Loon. Unfortunately, 10 years later or in 2021, Google parent Alphabet is shutting down the Loon project because commercialization is too heavy and the risk is bigger than expected.



Google Loon/Wikimedia Common

From his personal point of view, Adis sees HAPS as something challenging from an investment standpoint.

“Investors certainly want a return on investment, but that depends on the business model they have created. If conventional, then he will give a high price. In the end, it's not balanced, there are goods, no one buys them,” said Adis.

The next factor that must be considered, continued Adis, is the sustainability of Avealto's HAPS technology. The internet service provided by HAPS will continue to generate demand in the future.

HAPS couldn't deliver the larger number of requests, with the same technology they first came with.

To present the next technology, such as 2G jumping to 3G or 4G, it must be supported by the ecosystem. The HAPS community must have a long roadmap for this technology.

“So don't let it wither easily. You have to have a road map,” said Adis.

In terms of spectrum, Adis said that the government backhaul network has a number of spectrums that can be used for HAPS, including 27.9-28.2 GHz, 31.0-31.3 GHz, 38-29.5 GHz, 47.2-47.5 GHz and 47.9-48.2 GHz.

Then if HAPS as an access network the available spectrum is 1885-1980 MHz, 2010-2025 MHz, and 2110-2170 MHz.

The Ministry of Communication and Informatics is also open if Avealto wants to do a trial first in Indonesia.

Then, the government's last focus is security. Adis said that even though in theory HAPS flies above the plane's altitude, during the process of going up or down, HAPS will pass the height limit of the plane which is at risk of a collision.

In addition, the reliability or reliability of the Avealto HAPS is also questionable. Whether the hot air balloon can be continuously controlled during operation or not.

"So if HAPS is available [commercially], it's cheap enough, then the next thing is to make sure that it's safe," said Adis.

Meanwhile, at a recent HAPS seminar at the Sheraton Hotel, Jakarta, Director of Aviation Navigation at the Ministry of Transportation Sigit Hani said it was necessary to ensure that the implementation of HAPS had no impact on aeronautical/aviation systems or services.

In addition, in-depth studies are also needed to ensure that HAPS is proven to be able to fly at stratospheric heights for a long time

"The critical issue we are facing is the presence of wind in the stratosphere. Minimum stratospheric wind speeds average 30-40 m/s and occur between 65,000 and 75,000 feet depending on latitude. A study is needed on the ability to withstand wind gusts (space weather), related to temporary or total loss of communication," said Sigit.

It is also worth studying that the HAPS platform provides functionality for navigation systems (such as GNSS) and potential use with RPAS/UAS.

AVEALTO BUSINESS

Meanwhile, Secretary General of the Association of Indonesian Internet Service Providers (APJII) Zulfady Syam said the solution presented by Avealto could help distribute the internet in Indonesia. If there is infrastructure above the sky, the internet penetration will be faster.

HAPS, he continued, would also not disrupt the business of internet service providers because later internet service providers could provide the capacity of HAPS managers.

"HAPS can be a solution for rural areas, but for urban areas I still doubt it because urban areas are already well conditioned by fiber optic networks," Zulfady told *Bisnis* in Jakarta.

Member of the Professional Council and Mastel Association Kanaka Hidayat considers that HAPS is an interesting technology. HAPS is a more grounded satellite because it is located below the LEO satellite and remains in position.

HAPS can provide internet in areas between urban and rural areas. Areas not covered by fiber optics and cellular, but not inland areas.

"In a world where the population is rather congregated, HAPS is the area. In a rural area, but has a large and congregated population. There, HAPS is cheaper in terms of financing than satellites," said Kanaka.

He also believes HAPS technology will not interfere with satellite signals. HAPS should have its own frequency, which is different from satellite.

Meanwhile, Avealto Co-founder and CEO Walter Anderson said the plan is for Avealto's HAPS to be tested in England in early 2023, which includes trials regarding security, control systems, radios and so on.

After that, Avealto hopes that in the third quarter of 2023, HAPS Avealto will be able to test flight using a smaller vehicle in Indonesia. Then, in 2024, HAPS can be commercialized with Indonesia as the first market.

"The length of the HAPS for the test flight is 17 meters, while for the commercial one in 2024 it will be 100 meters long," Walter told *Bisnis* in Jakarta.



Founder and CEO of Avealto Walter Anderson when met after the HAPS International Seminar in Jakarta, Wednesday (2/10/2019). Avealto is a UK-based manufacturer of the High Altitude Platform Station (HAPS). - Business/Leo Dwi Jatmiko

Avealto, he continued, would not sell their services directly to the public. Avealto will cooperate with internet service providers, including cellular operators, in providing services to the public.

HAPS Avealto will work the same way as satellite. The difference is in the size and operating altitude of the vehicle, where HAPS will operate at an altitude of 20 kilometers while the satellite, for GEO, will be at an altitude of 36,000 kilometers.

With a lower altitude, HAPS has the advantage of very low latency and better internet quality than satellite.

"We are selling services, not selling HAPS devices. We will operate HAPS," said Walter.

In terms of capacity costs, said Walter, it would be around 30%-50% cheaper compared to buying satellite capacity.

This can happen because the cost of making HAPS is cheaper than satellite. If the manufacture of satellites can reach around US \$ 500 million, HAPS is far below that.

Walter has not been able to tell the cost that must be spent to build HAPS.

Meanwhile, from a security point of view, he said that HAPS Avealto is made of very light materials and gas. HAPS will also fall very slowly to the ground.

"This is very safe for the people who are below. We will always monitor our HAPS so that he doesn't get out of control," said Walter.

As well as conducting trials, Avealto is also in the process of seeking financing to build an aerospace manufacturing plant in England.

Avealto has now succeeded in raising 15% percent of the total funds needed to build a factory.

Walter did not mention the total funds they needed to build a HAPS factory.

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