

One year of success for Michibiki in Japan

22nd May 2020

According to a recent survey launched by SPAC ([1])/QBIC ([2]), the Japanese GNSS constellation “Michibiki” run and operated by the Japanese government is performing well since going online in November 2018.

Because it delivers signals from a Quasi-zenith position, Michibiki is also dubbed QZSS ([3]) and offers unique free services such as high accuracy positioning augmentation and short messaging for disaster mitigation. By 2023 Michibiki will expand from a constellation of four to seven satellites, ensuring independent satellite positioning and improved performance with wider coverage of the Asia Pacific region. Discussions have now started on the Roadmap for Michibiki beyond 2023.

QZSS.go.jp

A survey targeting QBIC members and contributing organizations was launched in December 2019 to understand how Michibiki has penetrated the Japanese market after one year of operation, and what are the key challenges and issues for the future of Michibiki.

References:

[1] SPAC (Satellite Positioning Research and Application Center): <http://www.eiseisokui.or.jp/en/>

[2] QBIC (QZSS Business Innovation Council): <http://qbic.eiseisokui.or.jp/council/international-01/>

[3] QZSS (Quasi-Zenith Satellite System): <https://qzss.gp.jp/en/>

Survey results are summarized as follows:

1. Michibiki is headed to a good start (see fig. 1):

- The uptake of Michibiki by business users has dramatically increased during the one-year period as the number of survey respondents has increased.
- More than 10% of business respondents have no plans to use Michibiki yet, which is almost the same percentage result as one year earlier. ***Businesses seem to wait for a better business environment, such as cheaper devices and expected future service improvements brought about by the full constellation of Michibiki in 2023 (see also fig. 5).***

2. The uptake of Michibiki begins in the B2B market segments (see fig. 2):

- B2B market segments which have started using Michibiki services include Survey / Construction / Map / Agriculture, segments which require high accuracy positioning.
- Meanwhile, uptake is lower in Location Based Services and Disaster Prevention and Mitigation. ***Future smartphones equipped with Michibiki unique services such as short messaging functions could be key to activate these segments.***

3. All Michibiki Unique services are gaining ground (see fig. 3):

- High accuracy services including Centimeter and Sub-meter accuracy as well as all Michibiki Unique Services are gaining ground.
- Nevertheless, the number of businesses using commercial RTK-GNSS solutions is still larger, partly because Michibiki performance is not yet as competitive in terms of accuracy and stability.
- The number of non-aviation businesses using Japan's SBAS services (see note 1) is comparable to the number of SLAS users (Sub-meter Level augmentation Service). ***SBAS users are expected to drastically increase with the introduction of high accuracy and high integrity Dual Frequency Multi Constellation SBAS (DFMC SBAS) services, adding authentication services in the near future.***
- Note 1: Japan's SBAS named MSAS has been operated by the Japan Civil Aviation Bureau (JCAB) for aviation users.

4. The key to stronger Michibiki penetration is the provision of cheaper receivers of Michibiki unique services (see fig. 4 and 5):

- The market calls for cheaper receivers with higher accuracy and stability.
- Free, attractive and highly reliable services will spur industry penetration.
- Independent satellite positioning in the near future will encourage Michibiki users.
- ***Japan has taken the initiative to launch discussions at the ICG (International Committee on GNSS) on the interoperability of short messaging for disaster warning and high accuracy services (GNSS-PPP). This is expected to bring down the price of Michibiki unique receivers.***

5. Service reliability is the No.1 priority for business applications (see fig. 6 and 7):

- For Michibiki users, service reliability is the first priority requirement followed by accuracy and stability(fig. 6).
- Future GNSS services are expected to offer improvements in resiliency/signal authentication and anti-jamming measures (fig. 7).
- ***Signal authentication of Michibiki which is planned to start in 2023 is key to drive penetration in the business segment. Technical information about the authentication service should be made available as earliest as possible in order for industries to be well prepared before service launch.***

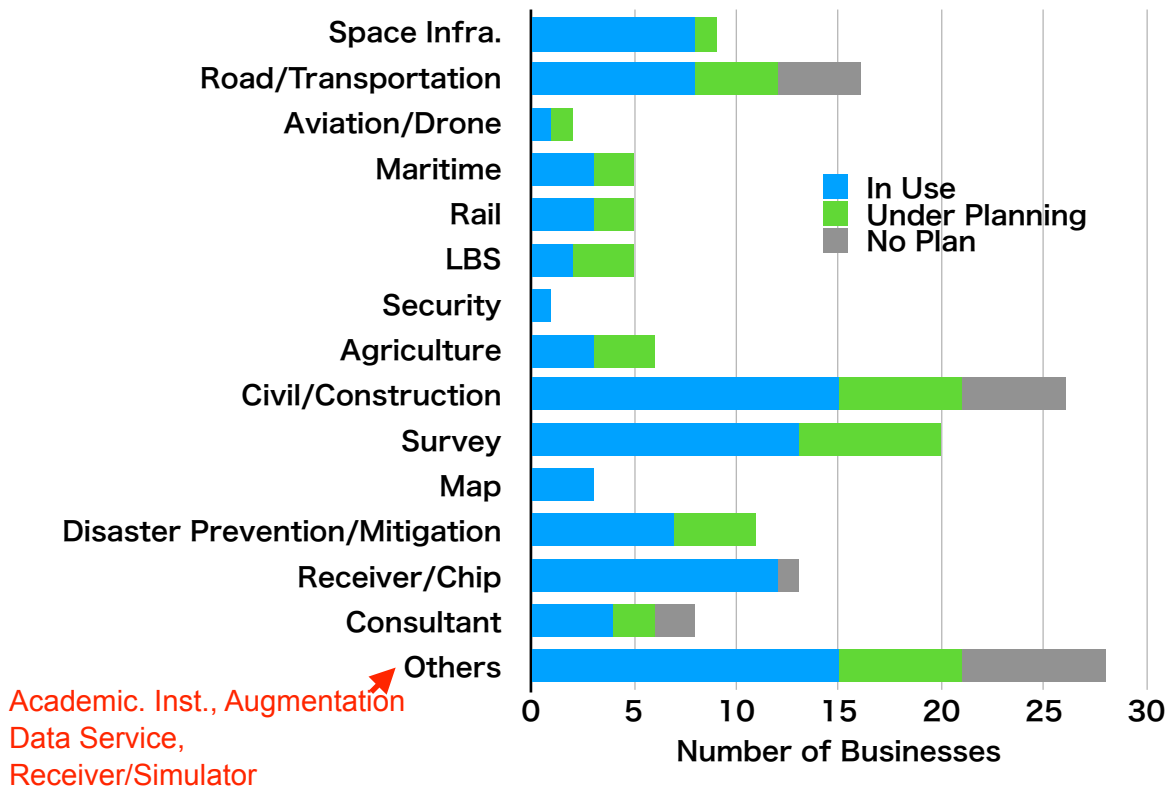
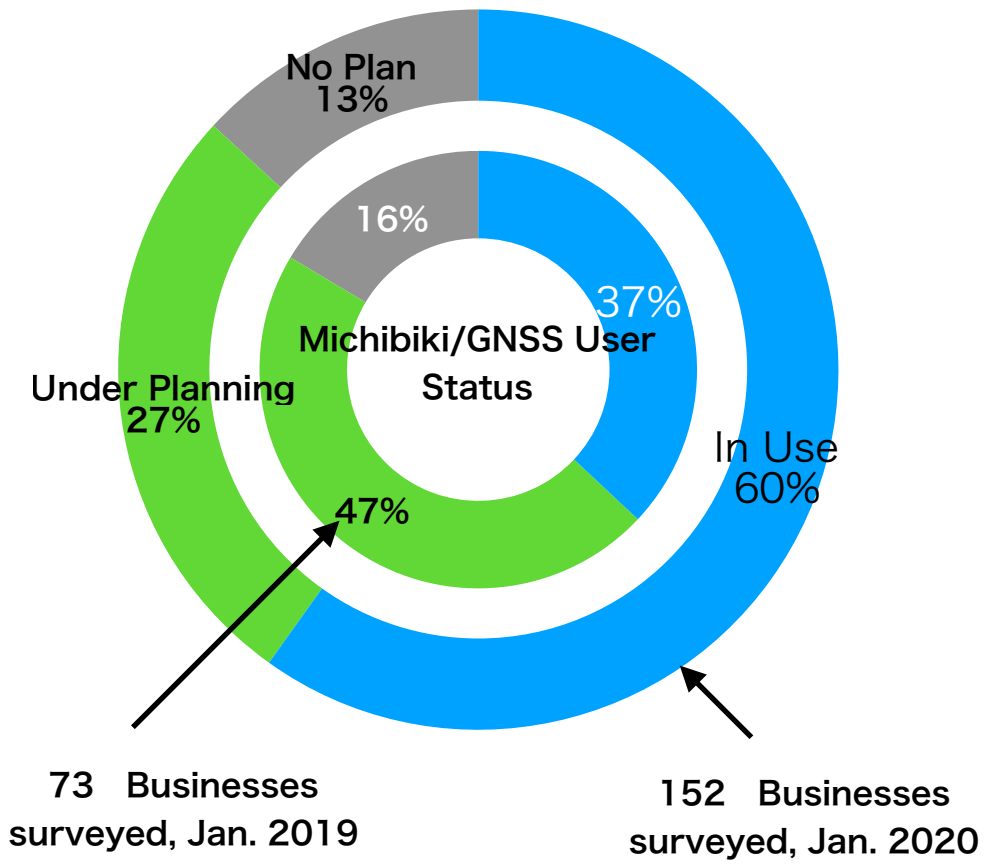


Fig.1 Michibiki One Year Success

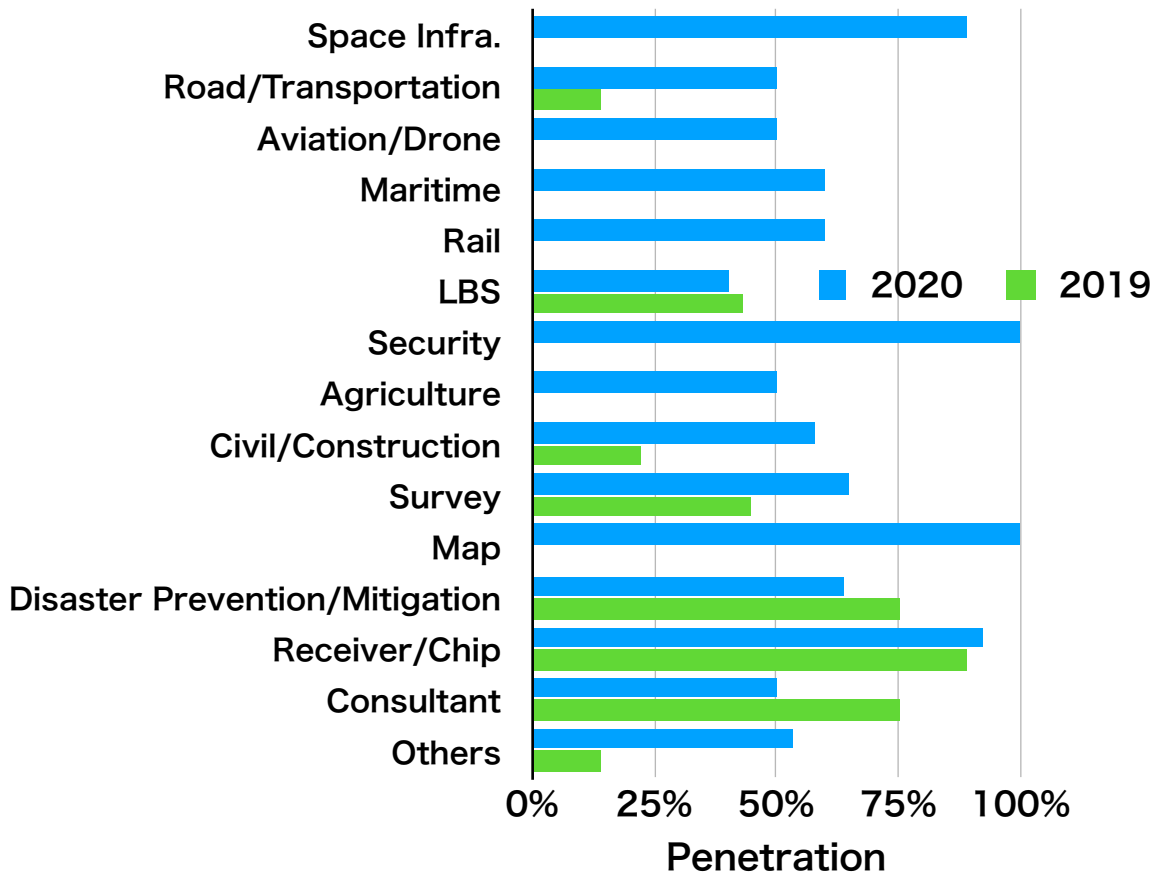


Fig.2 Michibiki Penetration by User Segment

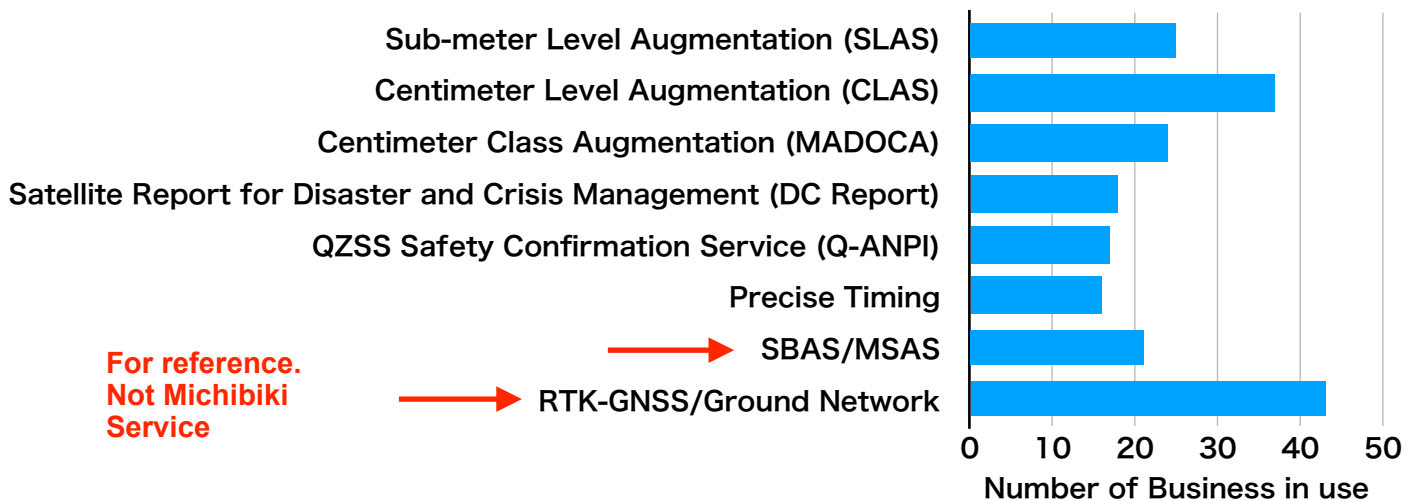


Fig.3 Michibiki Unique Services in Use

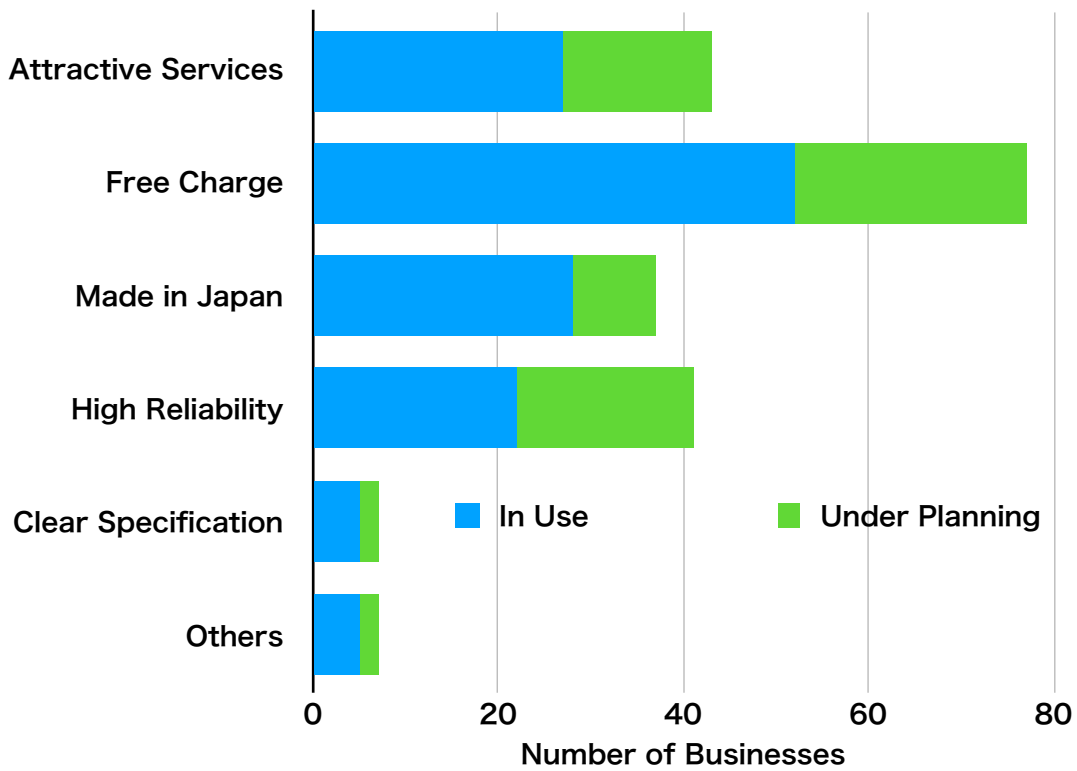


Fig.4 Why do you choose Michibiki?

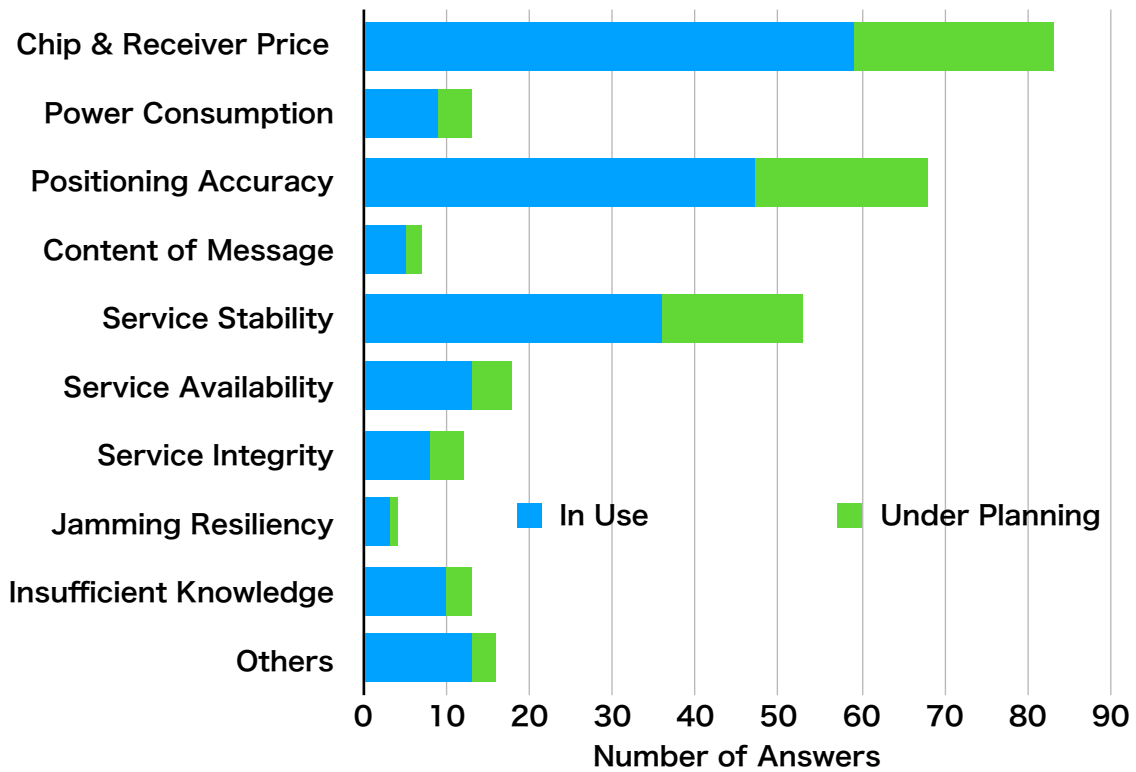


Fig.5 What is the issue for Michibiki Application?

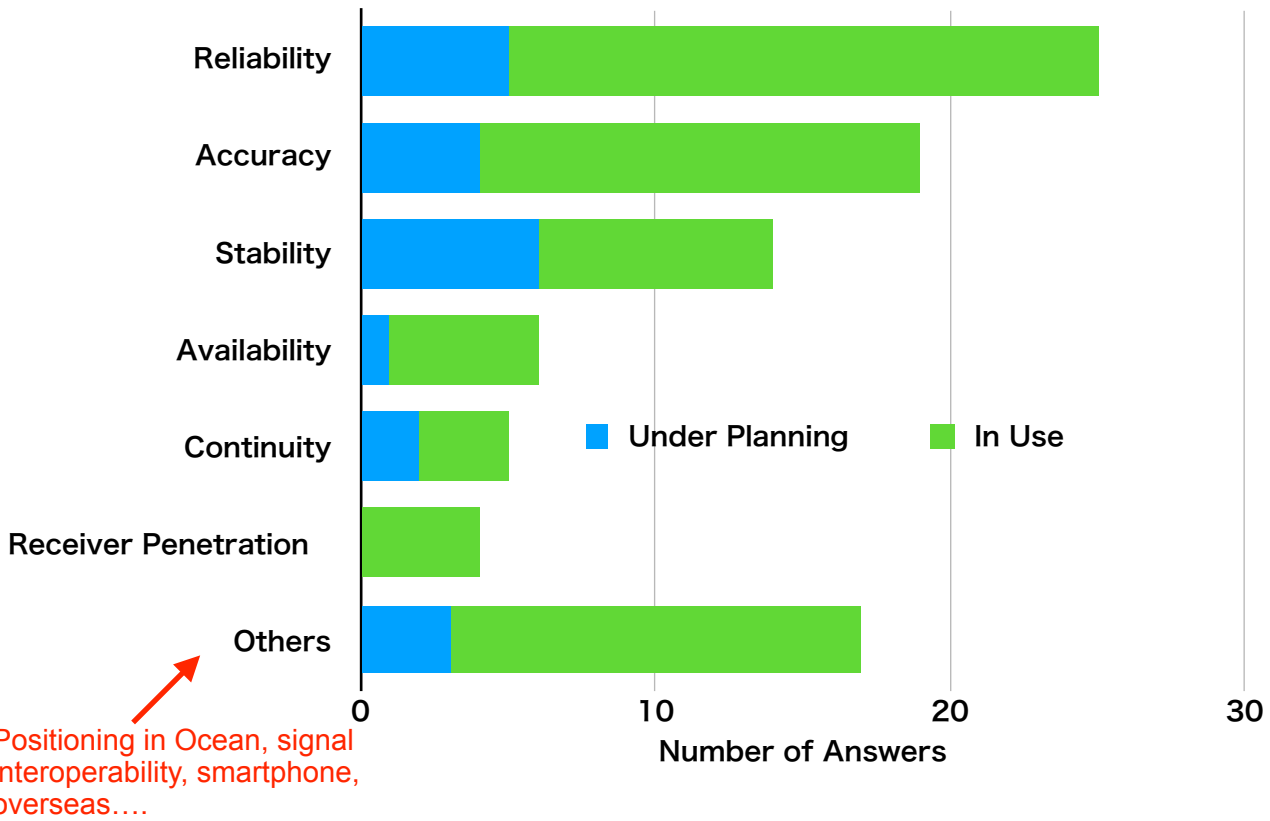


Fig.6 What do you expect 7 satellite Michibiki?

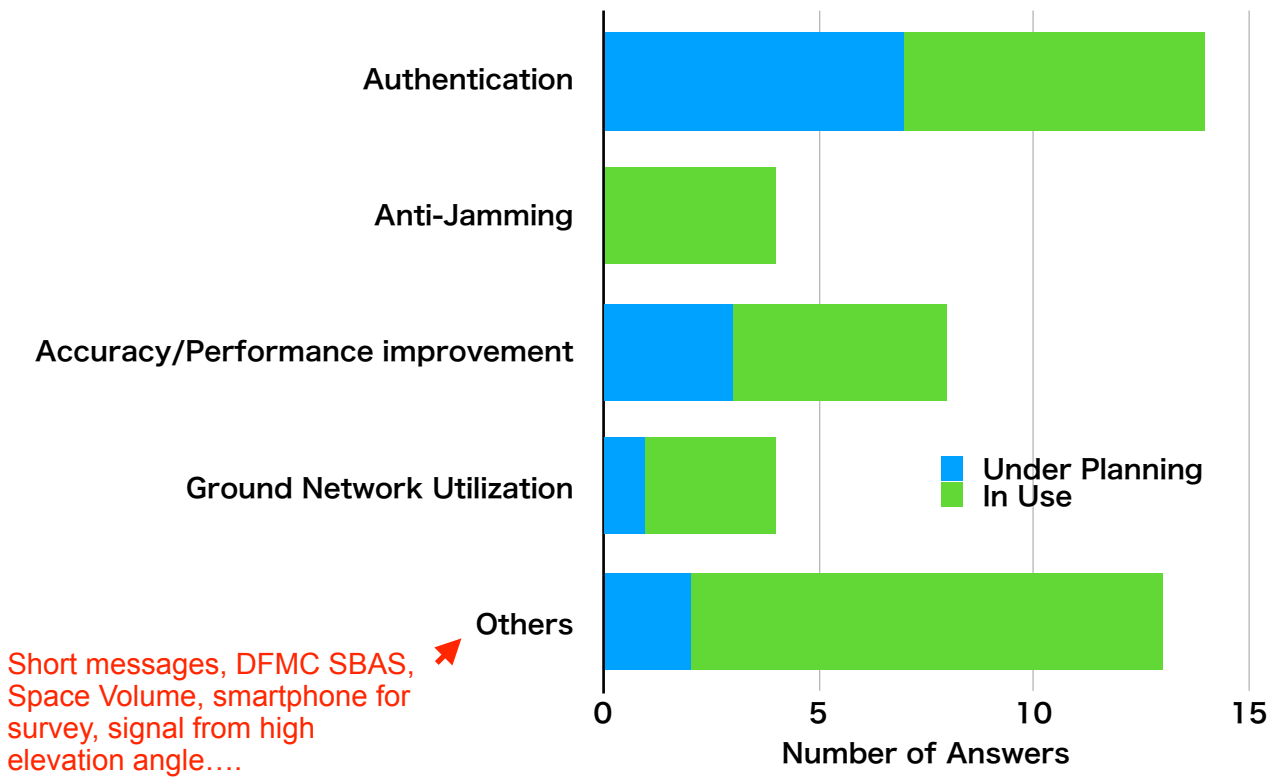


Fig.7 What do you expect for future GNSS?