

Germany

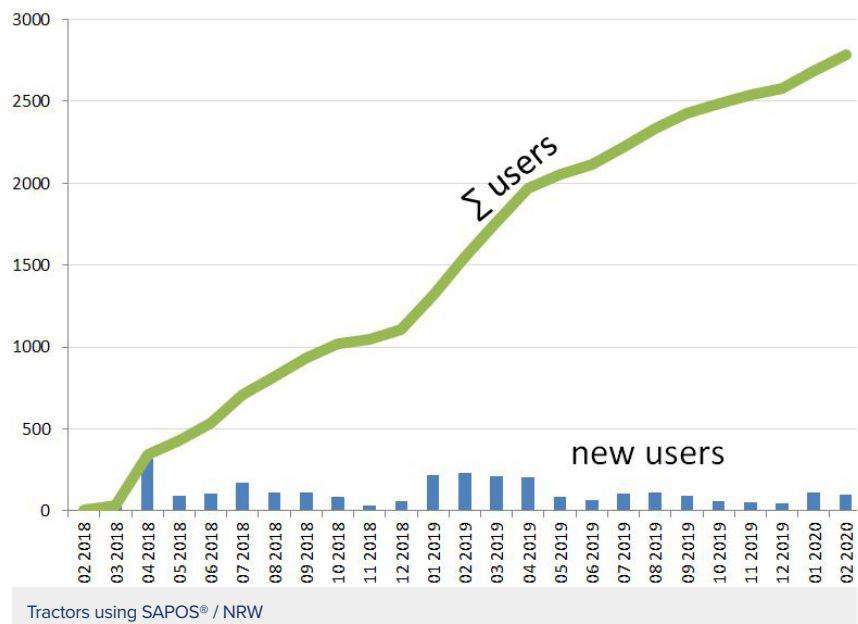
Enabling smarter farming in Germany with open data satellite positioning service, SAPOS®

SAPOS®, the satellite positioning service operated by the surveying authorities of the Länder of the Federal Republic of Germany (AdV), is now available free of charge and being used extensively for smart farming.

The 2017 conference of the agricultural ministers of the German Länder was the starting point for a new SAPOS® user group and the demand for open data with the goal to use SAPOS® for smart farming. As a result, almost all German Länder provide SAPOS® free of charge to the agricultural sector or as open data for all users.

In North-Rhine Westphalia (NRW) for example, SAPOS® became available as open data in April 2018 and today it is used in almost 3,000 tractors. This is a significant change in user behaviour as the agriculture sector starts much earlier in the morning and works even longer than the 'classical' surveying community.

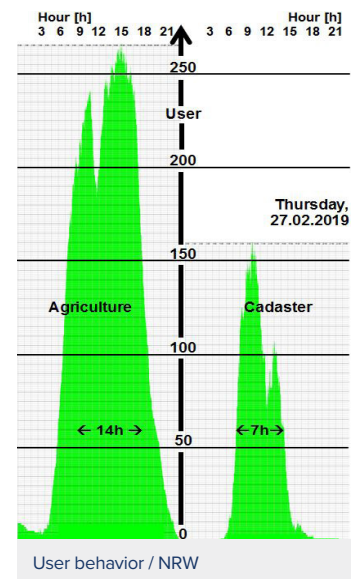
SAPOS® provides the official spatial reference for everyone using modern technology. The service is considered an



infrastructure basic provision and is part of the legal remit of the German authoritative survey with AdV and the BDVI, an association of about 1,300 publicly appointed surveyors in Germany, having an official agreement to use it. SAPOS® has been registered since 1997 and the brand is well-established nationally.

SAPOS® enables users to save a temporary reference station to solve spatial reference tasks more economically and efficiently. It is based on a network of around 270 GNSS reference stations which are operated by AdV.

SAPOS® correction values are available to the user in real-time and for post-processing. This service is widely available with high reliability and comprises three service areas with different properties and accuracies: SAPOS®-EPS real-time positioning service; SAPOS®-HEPS high precision real-time positioning service; and SAPOS®-GPPS geodetic post-processing positioning service.



SAPOS®-HEPS allows a position to be determined with an accuracy of 1 to 2 cm to meet the requirements of legally secure real estate surveys carried out by publicly appointed surveyors in Germany.