

Study on Modernizing the General Standard of Operation Specifications for Public Surveys

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SUMMARY

The General Standard of Operation Specifications for Public Surveys (hereinafter GSOS) is provided by the Geospatial Information Authority of Japan (GSI), the national geospatial organization, served as a model for public organizations to conduct surveying and mapping. GSOS has been updated/developed continually by GSI to include new geospatial concepts and technologies and it works well today.

The basis of GSOS consists of outdated technologies such as control surveys using theodolites/EDMs at triangulation points and photogrammetry using film cameras to make paper maps. Although GSOS already embraced newer technologies such as CORS and digital cameras, they are prescribed on the outdated basis. This resulted in making products less accurate by employing modern technologies still under the outdated quality control. In addition, GSOS has become much complicated and difficult to understand because of the inclusion of obsolete and modern technologies together within the same context.

The basis of GSOS should be modernized to make full use of capability of modern technologies and to make GSOS concise and easy to understand by excluding obsolete technologies. On the other hand, most of public organizations still use GSOS without any inconvenience, and if the government provided another “GSOS”, it might appear as double standards.

In this background, we, as a private sector, set up a study group to develop new specifications, contributing to modernizing GSOS. We confine ourselves in putting basis on modern technologies used dominantly today: for control surveys, exclusively use of GNSS, CORS and total stations; for aerial surveys, exclusively use of digital cameras and digital geospatial

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data.

As the first step of progress, we propose control surveys with a simpler structure of two tiers of control points instead of traditional four. The first-tier points are set up by using only GNSS and CORS without reference to any national triangulation points nor pre-existing public control points that are less accurate. The second-tier points are set up by using total stations with reference to the first-tier points. This leads to determining control points accurately to few centimeters.

In aerial surveys, the nominal accuracy of GSOS is almost the same level as the National Map Accuracy Standard of 1947 in USA. In developing new specifications, we aim at the same level as (or better than) the ASPRS Positional Accuracy Standards for Digital Geospatial Data of 2014.

While retaining GSOS which works well today, we will modernize it for the future needs for accuracy.

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