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Achieving Data Rectification with Position Accuracy Improvement

E-NEWSLETTERS

Focus on GIS & Mapping

Mar 30, 2007
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A new buzzword among GIS practitioners is PAI (positional accuracy improvement). Today's extremely precise data acquisition technologies create the double-edged sword of PAI: everyone loves accuracy, but it comes with challenges when dealing with the varied data from different countries, and the enormous investments in datasets and software infrastructure. The commitment to provide accurate, real-world coordinates is the driving force in developing this concept of PAI.

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The availability of more accurate positioning technology creates an opportunity to deliver more accurate coordinates for end users to map their physical features. High accuracy is particularly important in the utility sector. In this sector the location of the digital network data referenced to the underlying geography is sometimes positioned incorrectly in the real world, and this can lead to potentially disastrous consequences for public health and safety. The result is a heightened need for positional accuracy improvement programs using customized processes and user-friendly software.

The History of Accuracy

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The focus to date has been on increasing the positional accuracy of geographical data by improving surveying technologies. Initially, surveyors used chains, theodolites, tapes, telescopes, and spirit levels to carry out their work. Theodolite and leveling were used for measuring height by the measurement of vertical angles, and the spirit level and two graduated staves were used to obtain very precise measures of the difference of height between successive points.

The invention of electronic surveying equipment and global positioning

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systems (GPS) has greatly improved the accuracy and speed of establishing basic mapping control networks, enabling positional accuracy to be fixed within centimeters. Today, electronic surveying techniques have become the norm in the developed world.

There are a number of data accuracies that must be met by the geospatial data, like relative and absolute accuracies and geometric fidelity, to meet the positional shifts in the data. The geographic data used to provide spatial reference must be stable enough to ensure that the reference is not lost over time and needs to reflect the continuous changes in the real world.

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