

Questionnaire

Date: April 2, 2015

TO: Each U.S. State DOT and/or State CIO

FROM: Earl F. Burkholder, PS, PE, F.ASCE eburk@globalcogo.com
Global COGO, Inc. www.globalcogo.com
P.O. Box 3162 (575) 532-6185
Las Cruces, NM 88003

RE: Handling/using spatial (survey/mapping) data

I need your help in preparing material for a Second Edition of "The 3-D Global Spatial Data Model" published by CRC Press in 2008. See – www.globalcogo.com/SecEd.html

The 50 state DOT's are major users of spatial data for many applications. The purpose of this inquiry is to solicit feedback from DOTs relative to using spatial data – specifically information on the coordinate systems and data being used in various applications.

A similar questionnaire was sent to all state DOT's in early 1990's and meaningful feedback was obtained from 46 out of 50 DOT's. If I did not thank you before, I offer my sincere thanks now. I will be very pleased if I can get a similar response to this inquiry.

The question now is really the same as it was 25 years ago – how does your organization handle the difference between grid distances as obtained from state plane coordinates and horizontal ground distance as measured on the ground, with GPS, or remotely? Note, the "local coordinate system" of 25 years ago is now called a Low Distortion Projection.

Previously, I sent a copy of "Design of a Local Coordinate System for Surveying, Engineering, and LIS/GIS" to provide [context](#) for my inquiry. Details of that paper are still relevant.

However, much has transpired since then. Several items of note include:

- Results of the previous DOT questionnaire are documented in Appendix III of a paper, "Using GPS in True 3-D Coordinate System," published in the ASCE Journal of Surveying Engineering, February, 1993, Vol. 119, No. 1. Copies of that article are available from ASCE and from many/most engineering libraries.
- GPS, scanning, remote sensing, drones, and satellite imagery are now used routinely.
- Spatial data are now digital and 3-D. See <http://www.globalcogo.com/challenge.pdf>
- I wrote a book, published by CRC Press in 2008 on "The 3-D Global Spatial Data Model: Foundation of the Spatial Data Infrastructure." Given changes since then a second edition is justified. And, the grid/ground dilemma is still an issue with many.

I would be very pleased with a response by May 1, 2015 to the questionnaire posted at: www.globalcogo.com/response.doc

Questionnaire Response

Date: _____

TO: Earl F. Burkholder, PS, PE, F.ASCE eburk@globalcogo.com
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FROM: _____

RE: Input to your effort to develop material for a Second Edition of "The 3-D Global Spatial Data Model: Principles and Applications"

This response is from the perspective of (feel free to share with colleagues):

_____ The Survey/Geomatics/Design Division of _____
_____ The Chief Information Officer (or equivalent) of _____

We are _____ are not _____ familiar with the response we provided 25 years ago.

We have _____ have not _____ read Appendix III of the ASCE paper cited in the questionnaire.

We are _____ are not _____ familiar with Low Distortion Projections (LDPs).

Multiple answers are acceptable below. Routinely, state plane coordinates (SPC):

Are _____ are not _____ used for _____

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We do _____ do not _____ use coordinate systems other than SPC for design/construction.

We allow _____ do not _____ allow our contractors to use machine control in construction.

We are _____ are not _____ satisfied with the survey control/coordinate system that we use.

We have _____ have not _____ studied/considered use of an integrated 3-D coordinate system.

Ideally, if we could, we'd like to use a system that: _____

Comments: _____
