GSDM in a Nutshell

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November 20, 2023 – Rev December 13, 2023

Disruptive innovation is a consequence of the analog/digital transition driven by the digital revolution and impacts various segment of society, including but not limited to:

Communications	AT&T, internet, and others
Imaging	Kodak, Xerox, and others
Spatial Data	Google Earth, ESRI, and others

Note – concepts of spatial data are applicable in many areas. But, especially for spatial data, geometry is an underlying foundation that does not change – the fundamental mathematical/geometrical concepts of spatial data are common to both analog data and digital data. However, when abstracting and evaluating the characteristics of spatial data, advantages of using an integrated model for 3-D digital spatial data become apparent. For legitimate reasons, traditional surveying, mapping, and engineering practices have relied upon separate horizontal and vertical datums. The process of "going digital" with spatial data needs to address transition to an integrated 3-D datum. "The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail" is a highly regarded book by Clayton M. Christensen that describes various scenarios. While his big picture views appear to be spot-on, Christensen does not mention the impact of a "foundation level" model for spatial data. See also http://www.globalcogo.com/Dilemma.pdf.

The 3-D global spatial data model (GSDM) is built on the Earth-centered, Earth-fixed (ECEF) coordinate system established, maintained, and updated - first by the U.S. Government and now supplemented by the international scientific community. The ECEF system is quite robust, and the spatial data community worldwide can reasonably expect to rely on permanence of the ECEF system. The GSDM is also "permanent" in that:

- All equations in the GSDM are in the public domain.
- The functional model portion of the GSDM is built on long-standing rules of solid geometry.
- The stochastic model portion of the GSDM is prefaced on proven concepts of error propagation.

In addition, the GSDM is a common foundation for and is compatible with:

- Existing practices in that 2-D and 1-D operations are subsets of 3-D geometry.
- Networks: Baselines and Precise Point Positioning (PPP).
- Digital Twins.
- High-Definition Maps.
- Artificial intelligence (AI) applications utilizing a spatial data component.

Additional information on features and advantages of the GSDM is available at: http://tru3d.xyz.