

# **Geospatial Relevance in Dynamic Whole Systems Engineering and Global Governance**

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## **Abstract**

Australia's geospatial community encompasses universities, business, citizen groups, and government. The potential for this community to make a profound difference in the future of Australia, in conjunction with other nations possessing geospatial prowess, will depend upon the willingness to collaborate and target the big challenges facing all nations. The challenges facing all nations are inconveniently understated in current scientific and governance discourse.

Business as usual is the general message shared in the news media with notable alarms for climate change or occasional environmental interesting case topics, e.g., the Great Barrier Reef. The facts are much more alarming beginning with the Global Environmental Outlook-3 (GEO3) presented in 2002 at the World Summit on Sustainable Development. This sober report card on the planet presented failing grades across a range of topics from marine fisheries to forestry. A decade later, in 2012 at the United Nations Environmental Summit on Sustainable Development, the GEO5 report document continuation of alarming negative trends in 86 out of 90 environmentally agreed treaties. These abject failures associated with declining global system of ecosystems goods and services do not bode well for developed or developing nations. Contemplative leaders have recognized that major shifts in the consumption patterns and reverse of overpopulation trends will be required to change the destructive global economic system trajectory.

The advent of geospatial technology, as expressed in the Digital Earth Vision, holds promise for adjusting this trajectory based upon the following potential elements. One element is the demonstrable capacity of earth observation systems and earth systems data to enable citizens and government the ability to measure, map, monitor, and model our earth support systems. A second element is the ability to use advanced engineering models to design sustainable housing and urban systems for the future. A third element is the ability to harness social media to improve the connection of citizens to governance thereby diluting the top down hierarchical model and promoting a community-based shared governance model. Geospatial technology and information is proposed as the critical integrating component of community-based governance. Fully enabled geospatial engineering is proposed as the critical integrating component for sustainable and green construction and maintenance of our urban and transportation infrastructure. Additional dimensions for geospatial technology and information in sustainable development, include banking, agriculture, energy, et cetera, all of which demonstrate significant enterprise improvements or efficiencies in comprehensive designs and operations.

In recognition that the proposed improvements to building a better and more sustainable society will require significantly more application of geospatial technology, it is proposed that collaboration be established to bring into focus a deeper understanding of the nexus for spatial and sustainable engineering. A conceptual outline of the collaborating elements and expected benefiting disciplines has been presented. The concept examines the nexus of the spatial information evolutionary path and that of whole systems integrated engineering.