Visions of colonies on the Moon and Mars, and long-distance ultra-long-duration voyages beyond the solar system, have been the subject of research and finally progress toward implementation, including several new programs within USA, EU, Russia, and China underway in recent years. A brief recap of projects including visionary efforts is presented as the basis for addressing how space-centric development, both the technology and especially the socioeconomic alliances to do so, can serve in the near-term to address current critical concerns and issues facing our society as a whole and as a nation. One concrete project underway is presented as an practical example that can be followed by more.

How may research and technology originally conceived to serve exoplanetary ambitions be employed, today, to address critical challenges on Earth from such seemingly diverse but highly-intertwined threats? Of the latter, climate fluctuations and cycles, antibiotic resistance by most common deadly bacteria, and the viral spread of extremism as embodied by the ISIS Phenomenon are among the most outstanding. There are ways to build for the far-future by focusing first on some close-at-home applications.

“How survival of humans in deep space travel and transition to exoplanetary regions may be critical for the long-term of humanity, but sustaining civilization on Earth is a first-priority ingredient.”

We examine one project underway involving teams of faculty and students in USA, Russia, Brazil. BRIICS2020 applies a collection of novel medical, energy, agricultural and social-science advances to serving community needs in regions that are socially at risk of destabilization and conflict growth. Improvements in mobile, modular, wearable systems and social interaction networks is a path showing promising results with communities today. The environment for refining tools that can be used in distant, isolated space habitations is one that produces benefits today for families and communities, reducing tension and conflict, and simultaneously increasing economic viability for future investment and commitment to the Very Long-Term of space-based colonization and more.
SPEAKER BIOGRAPHY

Martin Dudziak is a physicist working within the international community on projects bringing together multidisciplinary educators, researchers, and the private sector, principally through consortium programs that involve universities and entrepreneurial/incubator-stage businesses early in their technology lifecycles.

His background includes research and teaching at universities and medical schools in USA (VCU, MCV, JHU, Vanderbilt) and in other countries (Moscow, St. Petersburg, Oxford). His corporate career spans research and management at ST Microelectronics, Battelle, Intel, and several small businesses in the biomedical, physics and artificial intelligence sectors. His own research track is principally in theoretical physics and mathematical modeling of large nonlinear complex systems.

Currently he is acting director for the Institute for Innovative Study (private, nonprofit research), engaged in developing a multinational program that brings new "CBRN" capabilities into the "Internet of things" for benefits to community public health and sustainable healthier agriculture, involving faculty and students in USA (Michigan), Brazil, Russia and the EU.