

Professional Bio - Martin Dudziak – Comprehensive – STEM-plus-Business-Development including Silk Road Oasis Initiative – 04.July.2020

Martin Dudziak works extensively in critical and intensive-growth areas that involve mutually supportive areas of science and technology. His present focus is upon specific high-demand industrial, financial and social applications, drawing upon his own formal research experience in physics, computing and information science and the life sciences. He is one of the co-founders of the *Silk Road Oasis Initiative* which spans specific areas of healthcare, energy, space, and computing, involving joint-venture applications within China, Kazakhstan, and other countries of Eurasia already linked within contemporary “Silk Road” programs. Presently, Martin is executive director of TETRAD Institute (TI), and he is Chief Executive Officer of Intelligence Renaissance Industries (IRI). He serves as an affiliate special professor with two American universities and one in the EU. He is also engaged as a principal within a US-Canadian private equity investment firm.

Dr. Dudziak is currently engaged as a principal within active projects focusing upon the following areas, all of which are systematically, economically, and organizationally linked together., particularly within Silk Road programs. These include:

- (a) environmental health, safety and remediation/recovery (chemical/radiation/biohazards),
- (b) antimicrobial bioprotection for facilities and equipment,
- (c) mobile medical diagnostic laboratories (MedAtrium) and medical/epidemiological informatics (Eyrie) applicable to public health and especially infectious diseases such as COVID-19 and other pandemic-capable diseases,
- (d) intelligent control for agriculture and energy in rural environments,
- (e) cybernetics and control systems for cooperative robots for agriculture, mining and space,
- (f) innovative methods (Topological Geomorphic Flow Dynamics) for improving analysis and decision-making within the mining and metals industry, based upon new interpretations and heuristics of seismic, satellite and other data acquisition,
- (g) predictive analytics software that can be used to model and predict large-population behaviors,
- (h) novel quantum computer architecture based upon biomolecular computing models and materials,
- (i) business and financial methods for increasing assembly and manufacturing of technology products in regions such as Central Asia

Martin's work includes the development and use of several analytical and predictive technologies (including MEMS-based GC, MS, AA, and other spectroscopy) for use in the identification and prediction of concentrations of a large variety of metals and other compounds/elements within solids, liquids and gaseous samples.

Within the business and financial sector, Dr. Dudziak has an accomplished work history in business planning, development and equity investment for technology-based companies, particularly within international settings. He has worked for and with several government agencies (USA, CA, EU, RU) and for corporations including Intel, ST Microelectronics, Battelle, Lockheed-Martin, Boeing and several entrepreneurial ventures.

Dr. Dudziak's teaching and research spans physics, biomedical engineering, computer science, and specific areas within medicine including infectious and autoimmune disease, virology, and epidemiology. Within IRI, he directs the VESID Project – a novel approach to developing prophylactic

and therapeutic antiviral medicine that will also enhance vaccines and natural antibody response for SARS-CoV-2 (COVID-19) and other viral pathogens.

Within these and prior project and research areas, Dr. Dudziak has been directly involved in diverse technologies including: AI, Bayesian and neural networks, parallel processing, topological models, quantum information technologies, directed acyclic graphs, very large scale MEMS and other sensor networks and data acquisition systems, cybersecurity, virtual and augmented reality, “CBRNE” detection and tracking, and applications within areas directly pertaining to both public health and public safety (e.g., counterterrorism). This work, spanning more than three decades, has been conducted and funded by both corporate and governmental and private foundation sources, in USA, UK, EU and other countries.

Martin's prior work includes supported R&D for BP, Shell, Exxon-Mobil, Total, Lyondell, and others in USA and Eurasia. He has designed and implemented mobile sensing, testing, analytics, and emergency-response services pertaining to trace elements and toxic chemicals within refinery plants and in fields with wells, mines, and processing plants. Present affiliations and collaborators include Cepheid, Novartis, Gilead, Roche, ST, Veredus, Quanterix, and governmental agencies in USA, EU, Russia and South Korea including ESA, NASA, WHO and CDC.

Introductory URLs of interest include: www.tdyn.org, www.intelrenaissance.com, www.tdyn.org/martindudziak.

Teaching, consulting, and joint-venture collaboration are areas in which Dr. Dudziak is open and willing to consider online (remote, distance-based) as well as onsite (travel-based) working relationships, under contract terms, and with potentials for long-term relationships.

Martin has worked extensively over his career to establish strong international and multi-cultural relationships to benefit people in diverse societies and situations of need. He has founded TETRAD Institute, Intelligence Renaissance Industries and other ventures with a goal of creating an environment for creative “STEM” that benefits humanity. This goal is a motivating force for Silk Road Oasis and related ventures today.