



École de gestion

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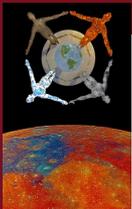
LEADERSHIP



- I. Canadian Foresight Overview
- II. Foresight Synergy Network (FSN);
- III. Telfer Foresight Leaders Forum (TFLF);
- IV. Technology Foresight Collaborative Insights (TFCI);
- V. Proteus Canada & Provocative Scanning

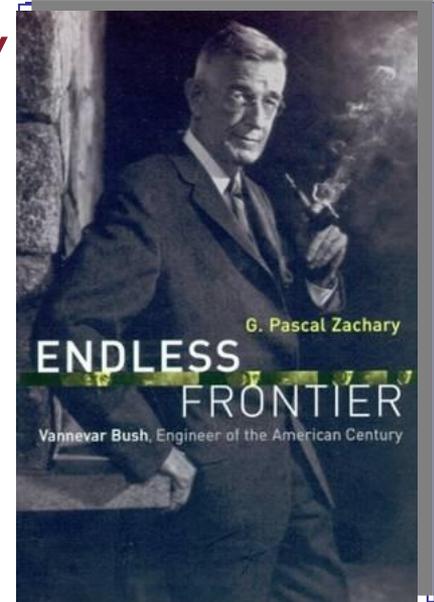
Jack Smith, Technology & Strategy for Business Insight and Foresight

JESMITH@TELFER.UOTTAWA.CA;



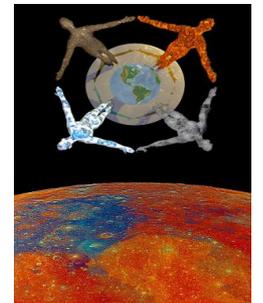
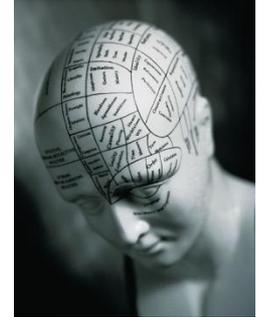
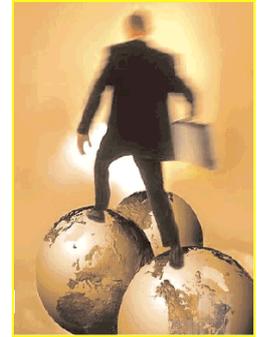
Canadian Foresight Projects Overview

- **Policy Research Initiative - Secretariat-**
 - Canada @ 2017; DM Committees Scenarios on Mid Term Policy Environment'; Clear Space Collaborative Networks Tool;
- **Agriculture & Agrifood Canada**
 - Bioeconomy 2030; Climate Change Impacts; New Delivery Models; Agriculture Policy Framework
- **Health Canada & Ministry of Health Ontario**
 - Preparation for next Health Accord; Scenarios for Health 2030; ICT and New Technologies for Health Care 2030
- **Dept National Defence & Defence R&D Canada;**
Future Security Environment 2015-2025; Disruptive Technologies watch; Soldier System Technology Roadmap
- **Alberta Innovation: Nanotechnology Applications Horizons**
- **Public Health Agency of Canada: H1N1 Scenarios for Pandemic Threat**
- **Canadian Food Inspection Agency:**
Fore-Can ; Foresight for Canadian Food Security



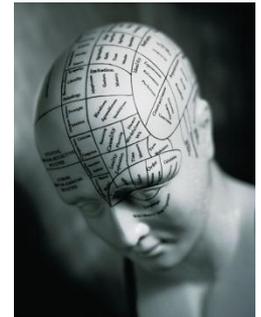
Foresight Networks in Canada

- Foresight Canada
- Millennium Project Canada Node
- **Foresight Synergy Network;**
- Quebec S&T Council
- Canada @ 2017- PRI
- Canadian Institute For Advanced Research (CI-FAR)
- CANARIE
- Alberta Innovation



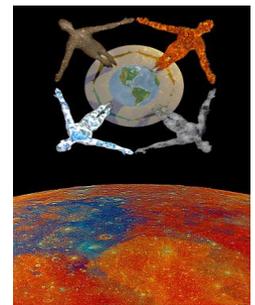
Foresight Synergy Network

- Monthly 2 hour discussions; open to all interested; low admin - wiki website; 150 from business, govt, NGOs and Academe involved';
- Focus on big issues, emergent challenges, best foresight practices;
- Guest speakers from S&T, innovation, policy, global foresight; Canadian practitioners;



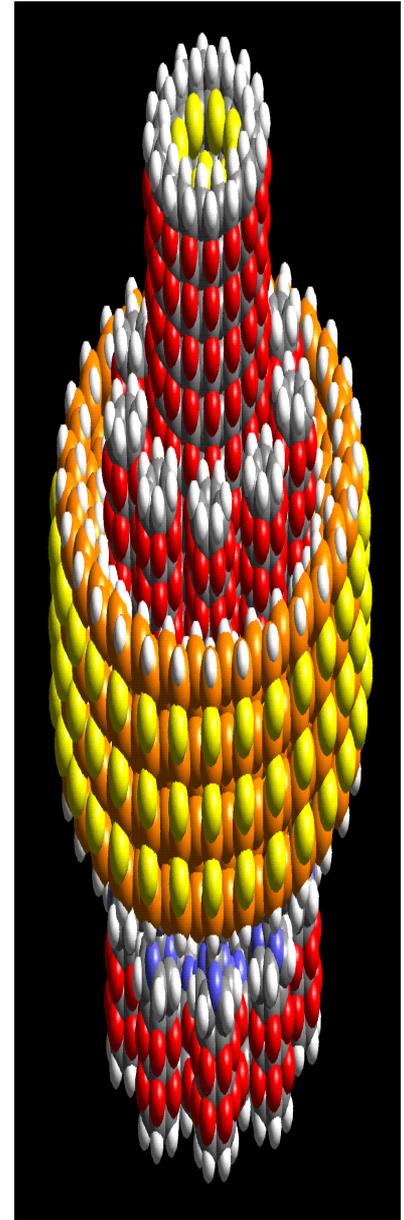
Proteus Canada Institute – Canadian Safety & Security Foresight Initiative

- Not for profit Canada member of the Proteus US-Can Consortium 2003-2010;
- Focus on strategic security, Critical Thinking Game as a foresight tool and new ways of applying Protean Insights and asymmetric preparedness for 21st century threats;



Disruptive, Enabling S&T

- **Customized Materials**: auto design &,engineered and self generated by micro-nano thin film deposition
- **Quantum Computing** :models e.g. memristors, that reach beyond Moore`s law and offer new paradigms
- **Semantic Internet** (data rich & self navigable)
- **Cyber Agents** - sensors for networked intelligence
- **Autonomic Software** :self repair code generation
- **Stand Alone Power** : portable, sustainable energy systems for sensors, robotic weapons, intelligent agents
- **Nanorobotics**, nano medicine, nano electronics and self assembled materials and devices – Smart Dust, linked in colonies
- **Smart Organics:that** upgrade life forms intelligence
- **Visualization, Human-Machine Interfaces** linking brain and machine



Protean Critical Thinking

New Tools for Foresight



- **Proteus is a set of foresight tools premised upon asymmetries** of action, intent and impacts, aimed at exploring unforeseen implications and consequences of actions undertaken under conditions of threat, surprise, disruption and disorder;
- **Proteus has codified the insights into forces, actions with consequences.** As institutions, authorities and empowered individuals seek to re-establish or create new equilibrium situations they effect Protean actions-reactions and power relations by selecting strategies based on Proteus insights – resulting in consequences and adaptive learning.
- **Proteus has developed a gaming platform to enable actors to learn about contingent actions.** *Proteus Critical Thinking* is a game of roles and strategies which has been designed to address complex multi-factional threat, opportunity and renewal situations.

PROTEUS Insights For 2020-

(disrupting Intelligence paradigms)

Starlight: *“Foresight and Uncertainty Management”*

- Today’s technologies and methods tend to focus strictly on events, which have already occurred

Sanctuary: *“They Can Run and They Can Hide”*

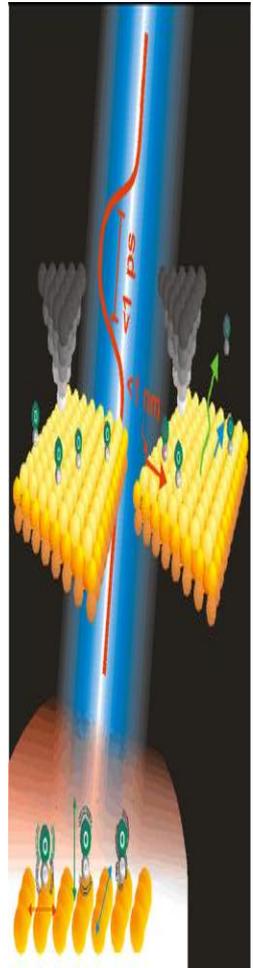
- The ability to hide discrete events and broad trends despite ever-increasing globalization and worldwide connectivity

Sweat the Small Stuff: *“Cyber Beings, Biotech, Nanotech”*

- The double-edged sword nature of cyber technology, biotechnology, and nanotechnology; macro-effects will result

Veracity: *“The Challenge of Truth & Knowledge”*

- In a future of complex, interconnected global networks where the speed, pace, and rate of change challenges the importance of “truth” - authenticity becomes elusive, sometimes irrelevant



Veracity in the 21st Century



Epistemology has held knowledge arises from three sources -- authority, empiricism, and revelation. Our look at these worlds suggests a fourth source: *spontaneous knowledge arising from the use of complex, interconnected global networks. This “new” source of knowledge will be silent on truth or falsehood.*

When knowledge takes on intrinsic value in the global economy “unintended consequences” may result. Under certain conditions, something that is incorrect or false can become an accepted truth. Therein lies the seed of illusion, deception, and -- above all -- change.

Regardless of whether it arises from deliberate attack or from the innocent creation of false impression from mismatched perceptions, knowledge will become one of the most powerful and frightening forces in a globally networked world.

When coupled with shifting 21st Century loyalties and the reality of global perception management, knowledge will make vast, permanent change possible in short order.



Exploring Veracity

- In a world of instantaneous networks, what is false can become true, and what is true can become false. Therefore, the very concept of ground truth is dangerously limiting.
- Some people have a need for truth (whether it exists or not), and someone will strive to profit from being the “arbiter of truth.” Nonetheless, in a complex world, ambiguity is a constant companion and an instrument of power.
- *In the progression from data through knowledge to insight, understanding what is knowable may be more important than differentiating between truth and falsehood.*



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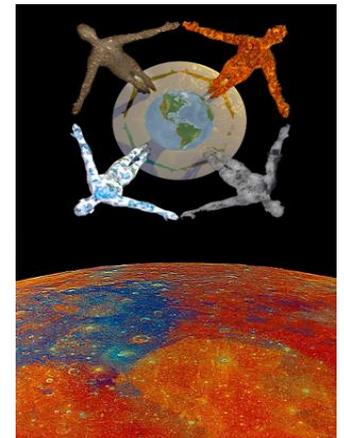
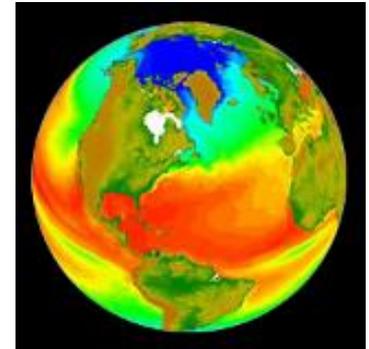
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➤ *Telfer Foresight Leaders Forum*

- A strategic **training and program design** capability hosted by the Telfer Exec MBA facility @World Exchange Plaza;
- Focus on **critical foresight success** factors and being a neutral meeting space for reflective insights and best foresight practices exchange for forward strategic policy and business issues engagement;
- Annual **subscription fee per organization** provides for multiple students, access to selected global foresight projects and experts, several annual 1-2 day workshops;





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➤ ***Tech Foresight Collaborative Insights (TFCI)***

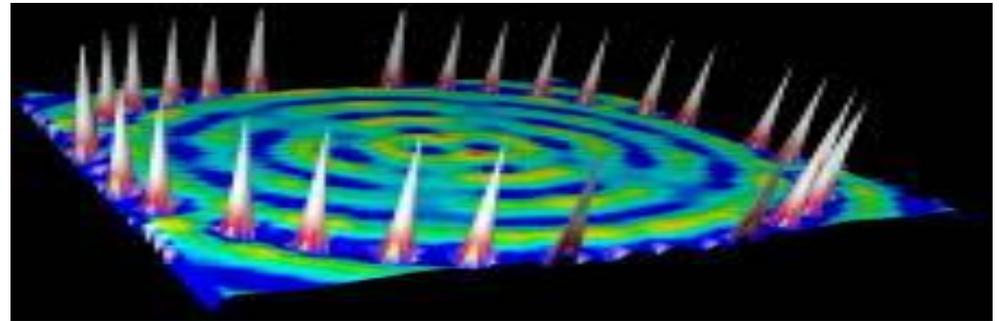
- **A Global Network** of 40 + foresight, policy and innovation experts anchored at Telfer for design and analysis of emergent, complex, persistent - hard problem issues, where strategic foresight , global perspective and other techniques can add value;
- **Prospective Foreign Partners:** e.g. **Asia:** APEC CTF; **UK:** Manchester PREST; **EU:** Xperidox Inc. **US:** Forecasting International; MindSpring.Com; **Global:** Shaping Tomorrow; Foresight Canada-Millennium Project ; Association of Professional Futurists, International Institute for Sustainable Buildings; Australian Centre for Innovation;



Tech Foresight Collaborative Insights – Key Domains

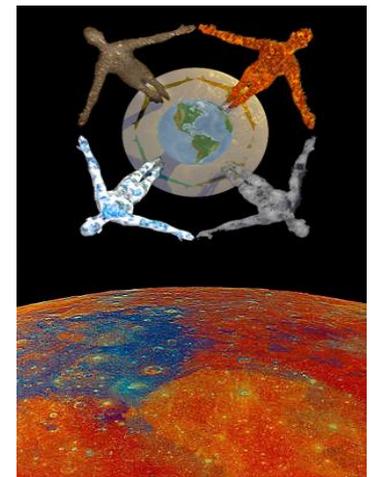
Future Prospects: Analysis/Foresight

1. *Strategic, S&T and Societal Foresight*
2. *Socio-Economic Foresight*
3. *Technology Roadmaps*
4. *Big Picture Horizon Scans*
5. *Scenario Planning & Analysis*



Strategic Planning for Agility in Business and Governance

6. *Strategic Positioning and Business-Government Insights*
7. *Design , Development of Public-Private Partnerships (PPP)*
8. *Competitive and Technical Intelligence for Mission Shifts and Renewal*



Science, Technology & Innovation Policy, Strategy, Priorities

9. *STI Expert Assessment, Systems Design and Analysis*
10. *STI Strategic Performance: Evidence - Accountability Measures*
11. *STI Public -Government Program Performance Evaluations*



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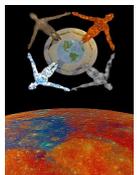
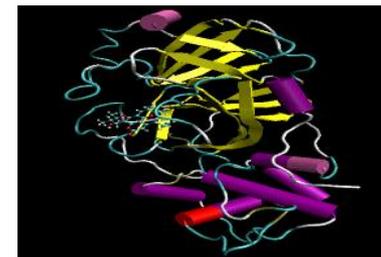
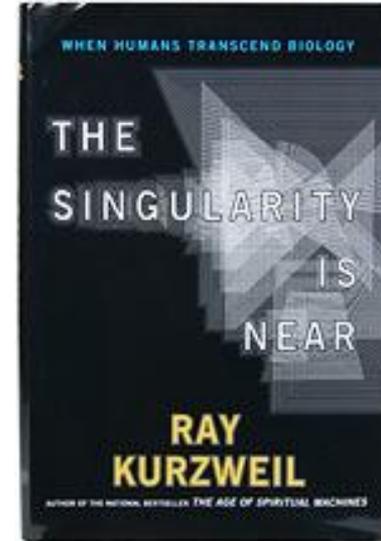
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Tech Foresight Collaborative Insights – Key Expertise Domains

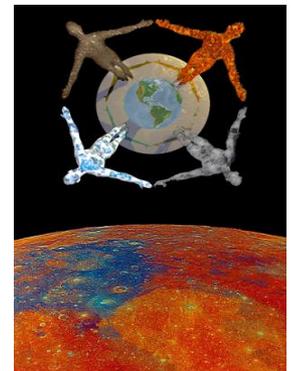
Technology-Sector Strategies & Convergence

- 12. Prospective Applications for Convergence Technologies*
- 13. Low Carbon Society Scenario - Profiles, Transition Strategies*
- 14. Climate Change Dynamics: Mitigation - Innovation – Adaptation;*
- 15. Bio-Health Systems Innovation & Transition Strategies;*
- 16. Strategic Safety and Societal Public and Private Security;*
- 17. Sustainable Development & Natural Resources Eco-Management*
- 18. Green – Sustainable Cities, Buildings and Infrastructure*
- 19. Dynamic Sustainable Systems Modeling for National Strategies;*
- 20. Future of the Internet- Ubiquitous Computing and Ambient Intelligence –Data Architectures*



Provocative Scanning for Technology Timelines, Socio Shaping Dynamics & Prospective Shocks

- Creating future boundaries of the plausible, and contingent capabilities for resilience and agility;
- Viewing S&T foresight as an animator for strategy and a provocateur for next generation innovation policy;
- Technologies are relentlessly transforming our knowledge, information and enabling infrastructures;
- Shocks consideration nudges us toward strategic readiness for the scale and speed of changes that can be anticipated from convergence of ICT with nano, bio, eco and neuro-cognitive science;





Brockman's List for Science 2001-2050

1. **Cybersphere**: information beams, massive data-nets, portable tele-connection & ubiquitous smart networks;
2. **Bio-engineering & bio-robotics**, astro-biology, personal genomics & embryo simulation, artificial life models;
3. **Quantum math & computing**, teleportation computational and emergent complexity;
4. **Search for ETI** and biophilic universes;
5. **Neuro-sentience & convergent cognition** computational pharmacology, neuro-regeneration
6. **Sub-terranean thermophilology & Triphibious flexible transport**
7. **Nano-structural products, sensors**, materials, fabrication and molecular tailoring

