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# Global S&T Scenarios 2025 Implications for Business

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# Just 25 years ago, there was no...

- Internet, World Wide Web, PCs, or mobile phones
- EU, WTO, ICC, or NATO in Central Europe
- Space Shuttles in orbit or Robots surveying Mars
- AIDS
- Cloned sheep or genetic sequencing for drugs
- Talk of Globalization
- Asymmetrical warfare, and
- ... and most believed that a nuclear WW III would have destroyed the world by now



# What surprises might we see in the next 25 years?

- Stem cells from cows and fish to produce animal protein & meat
- Separate TransInstitutions for Science & Technology, Elderly Employment, Sustainable Development, Human intelligence, etc.
- Nanotechnology to reduce pollution and poverty
- Solar Power Satellites for world's electricity needs without producing greenhouse gases or nuclear waste
- Personalized food, genetic engineering, computer enhanced learning dramatically increases human intelligence
- New forms of life via genetic engineering and AI that achieves awareness and can evolve
- India and China are the axes of the global economy and produce far more millionaires than you are willing to believe
- A global brain emerging from Internet evolving later into *Conscious-Technology*



# Conscious-Technology (*Post-Information Age*)

When the distinction between these two trends becomes blurred, we will have reached the *Post-Information Age*

HUMANS BECOMING  
CYBORGS

BUILT ENVIRONMENT  
BECOMING INTELLIGENT

2030

2010

1990

1970





So, what is the

Global Strategic Landscape

in which business will live in the  
foreseeable future? And how do you  
know your view is adequate?

# EWS General Process





# Millennium Project Nodes...

are groups of individuals and institutions that connect global and local views in:



Nodes identify participants, translate questionnaires and reports, and conduct interviews, special research, workshops, symposiums, and advanced training.



# Millennium Project

## Global Challenges Identification & Assessment

1996-97

182 Developments

15 Issues  
with  
131 Actions

&

1998-99

Distilled Into

15 Challenges  
with  
213 Actions

1999-2004

Global Challenges

- General description
- Regional views
- Actions
- Indicators

2000-2004

State of the Future Index (SOFI)  
National SOFIs for American Countries



# The Global Challenges

1. Sustainable development for all
  2. Sufficient clean water for all without conflict
  3. Population growth and resources brought into balance
  4. Genuine democracy emergence from authoritarian regimes
  5. Policy-making more sensitive to global long-term perspectives
  6. Globalization and convergence of information and communications technologies works for everyone
  7. Ethical market economies reduce rich and poor gap
  8. Threat of new and reemerging diseases, and immune micro organisms reduced
-



# Global Challenges (continued)

9. Capacity to decide improved while the nature of work and institutions is changing
10. Shared values and new security strategies reduce ethnic conflict, terrorism, and mass destruction
11. Changing status of woman improves civilization
12. Organized crime stopped from becoming more powerful and sophisticated global enterprises
13. Growing energy demand safely and efficiently met
14. Scientific and technological breakthroughs to improve the human condition
15. Ethical considerations more routinely incorporated into global decisions?



# S&T Risk Management: Two Schools of Thought

- Bureaucrats can't keep up and regulations drive S&T underground and/or to other countries making things worse
- Since the potential future consequences are so great, global regulation has to be created like IAEA for nuclear S&T
- A strategy acceptable to both schools is possible
- But first two 2025 S&T scenarios...



# Scenario 1: S&T Develops a Mind of Its Own

- Advances in human-machine intelligence accelerated our ability to further accelerate S&T, which moved so fast that governments and international regulations were unable to keep up; science and technology appeared to be taking on a mind of its own
- Massive international S&T cooperative research program on human-computer intelligence
- Gives birth to CyberNow glasses or clothing free as part of employee benefits, rights of citizenship, insurance policies, marketing programs, and credit systems makes continuous virtual reality as user-friendly as breathing
- Self-organizing properties of intelligent software completes the connectivity of humanity
- Mothers wanting high IQ children broke barriers to genetic and other enhancements
- Businesses that used the early brain-computer interfaces prospered and made the mass products for everyone
- IQ corrected like visual capacity
- Customized intelligent personal software agents became integrated with so many systems that it was no longer clear who was giving instructions and who was answering questions.
- Human brains were like little neurons in a global cyber brain.

# Scenario 2: The World Wakes Up



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- Genetically modified the Congo virus kills 25 million in 2021
- This phenomenon became known as SIMAD—Single Individual Massively Destructive
- Global regulatory agencies and mechanisms debated for years were quickly established including technical monitoring and threats of UN Security Council intervention gets countries to terminate dangerous lines of scientific inquiry
- Informant protocols coordinated by the InterIntelligence Commission
- Universal lie detection software integrated into all international transaction systems
- Educational and security systems were connected
- Meme experts, cognitive scientists, epidemiologists, and swarm designers produced accelerated collective intelligence and increased tolerance for diversity with memes like: *Intelligence can be improved like eyesight*; *Ignorance breeds intolerance*; *Stamp out stupidity*; and *Intelligence is sexy*
- Business compliance with new systems prevented liability claims, lowered insurance rates, and helped avoid sudden and global consumer boycotts.
- New businesses grew on the theme of *smart people use smart products and smart products make you smarter.*



# Global S & T Risk Management

- 
- ★ Expert International definitions
  - ★ Build consensus among major S&T countries, then broader global community, possibly leading to treaties and sanctions
  - ★ International S&T organization
  - ★ University education
  - ★ Global S&T Fund
  - ★ Davos-like S&T Forum



# International definitions

Eminent S&T leaders, academies of sciences,  
special S&T interest groups define:

- International risk standards
- Codes of conduct
- Scientific Oath (like the Hippocratic Oath)
- Text for international treaties including possible sanctions and criteria for intervention
- Missions for on-going systems



# International S&T Organization

## Not regulatory, but information systems:

- Networks and Nodes (Academies of Sciences, special interest groups e.g. NNI, risk improvement communities)
- Forecasts, assessments, monitoring of both risk and opportunities
- Risk Data base (facts, informed judgements, conjectures, alternative views about speed, impacts, severity)

# University Education



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Since many thought that only through the training of honorable scientists could risk be managed, universities should require:

- Ethics of science courses to include humanities, medicine, environmental science, ethics, religion, philosophy, global view of human affairs and ... perceive ethical, environmental and social consequences of research and technology
- Code of conduct
- Scientific Oath



# Global S&T Fund

- ★ Fund defensive technologies to reduce risk
- ★ Fund globally important R&D that cannot attract venture capital due to long time prior to return on investment, e.g., non-greenhouse global energy technologies
- ★ Deputizes labs as UN deputizes peacekeeping forces
- ★ Long-term financing via licensing technology



# Davos-like S&T forums

- ★ National S&T Policy Officials
  - ★ National Lab Scientists
  - ★ Corporate R&D Managers
  - ★ University Research Scientists
  - ★ NGO S&T Leaders
  - ★ International S&T Officials
  - ★ Media - news executives, science writers, software designers, TV/radio/movie producers
- 
- A stylized world map in shades of blue, showing the outlines of continents and countries. It is positioned in the background behind the list of participants.



# The Millennium Project

... is a new kind of think tank



# It is Global...

- ↓ Geographically
- ↓ Institutionally
- ↓ Disciplinarily
- ↓ Research focus





... May become a *TransInstitution*



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# MOU's between Nodes and the AC/UNU Millennium Project:

## Government Institutions

Russian Academy of Natural Sciences  
Chinese Academy of Natural Sciences  
Chinese Academy of Social Sciences  
Slovakian Academy of Sciences

## Private Companies in

Tokyo (aerospace)  
Berlin (futures planning)  
Buenos Aires (futures planning)  
Silicon Valley (USA) (venture capital)  
New Delhi (futures, strategy planning)

## Universities in

Prague  
London  
Rome  
Sao Paulo  
Cairo  
Helsinki  
Tehran  
Kodaikanal (India)

## NGOs in

Venezuela (WFS chapter)  
Mexico (new NGO as Node)  
Kuwait (non-profit research institute)  
Paris (futurist network)



# Previous Sponsors

## Corporations

- Applied Materials
- Deloitte & Touche LLP
- Ford Motor Company
- General Motors
- Hughes Space and Communications
- Monsanto Company
- Motorola Corporation
- Pioneer Hi-Bred International
- Shell International

## Foundations

- Alan F. Kay & Hazel Henderson Foundation for Social Innovation
- Amana-Kay
- Foundation for Social Innovation
- Foundation for the Future

## Government Organizations

- U.S. Environmental Protection Agency
- U.S. Army Environmental Policy Institute
- U.S. Department of Energy
- Woodrow Wilson International Center for Scholars
- Kuwait Oil Company

## UN Organizations

- UNDP
- UNESCO
- United Nations University





# Both Content and Methodology



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## 2004 State of the Future

JEROME C. GLENN AND THEODORE J. GORDON



... enclosed CD contains over 2,500 pages of research behind this print edition, plus the Millennium Project's seven years of cumulative research and methods.



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## Futures Research Methodology

Version 2.0

Editors Jerome C. Glenn and Theodore J. Gordon

Introduction; Environmental Scanning; Delphi; Futures Wheel; Trend Impact Analysis; Cross-Impact Analysis; Structural Analysis; Systems Perspectives; Decision Modeling; Statistical Modeling; Technology Sequence Analysis; Relevance Trees and Morphological Analysis; Scenarios; Interactive Scenarios; Participatory Methods; Simulation and Games; Genius Forecasting; Vision and Intuition; Normative Forecasting; S&T Road Mapping; Field Anomaly Relaxation; Text Mining; Agent Modeling (and demo software); State of the Future Index (SOFI); Full-Scale Implementation of SOFI; Multiple Perspective Concept; Michel Godet's Toolbox; Causal Layered Analysis; Integration, Comparisons, and Frontiers of Futures Research Methods.

Over half of the 27 chapters were written by the inventor of the method or by a significant contributor to its evolution.

[www.acunu.org](http://www.acunu.org)

# Building on tradition



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- Globalization requires global perspectives and global foresight for improved strategic thinking.
- By and for businesses, governments, universities, NGOs, international organizations, and consultants



# For More Information

*2004 State of the Future*

*Futures Research Methodology 2.0*

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**<http://stateofthefuture.org>**