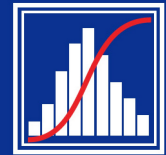


Forecasting Global Transformation

Highlights from the TechCast Project



TECHCAST™

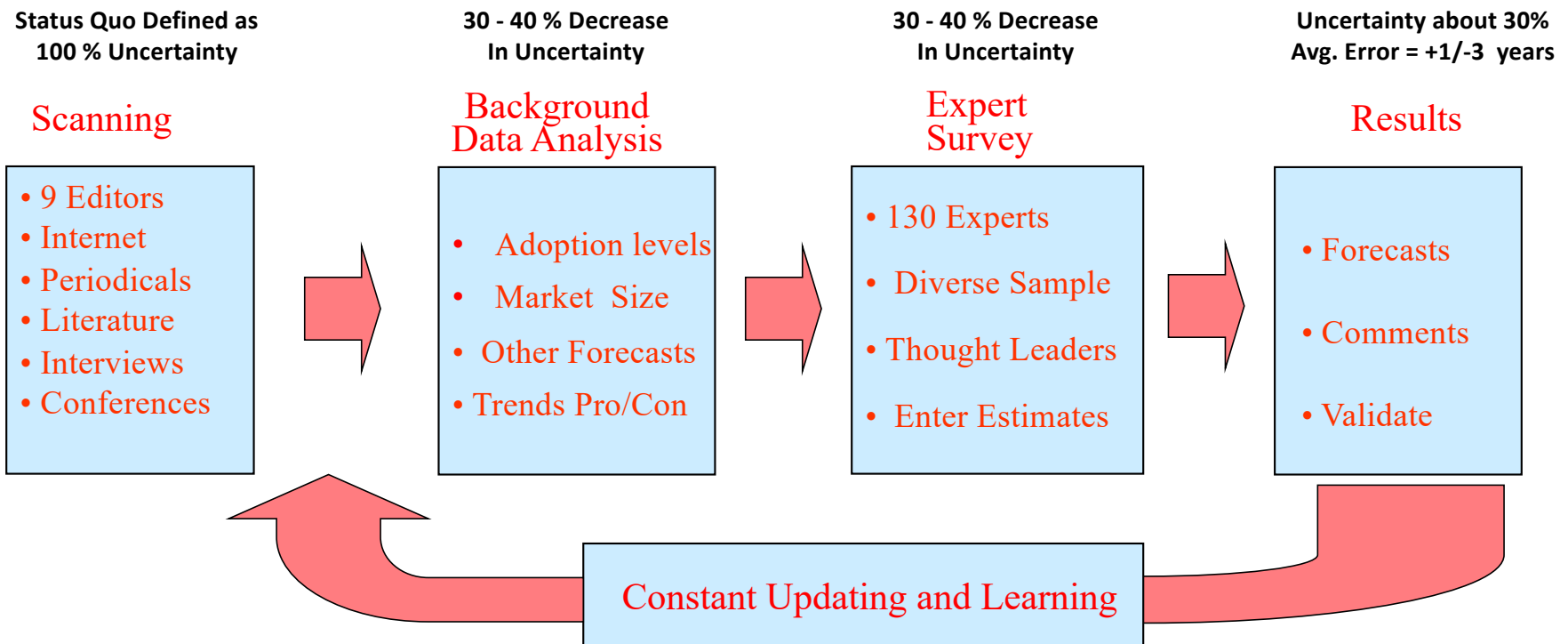
William E. Halal, PhD

The TechCast Project, George Washington University

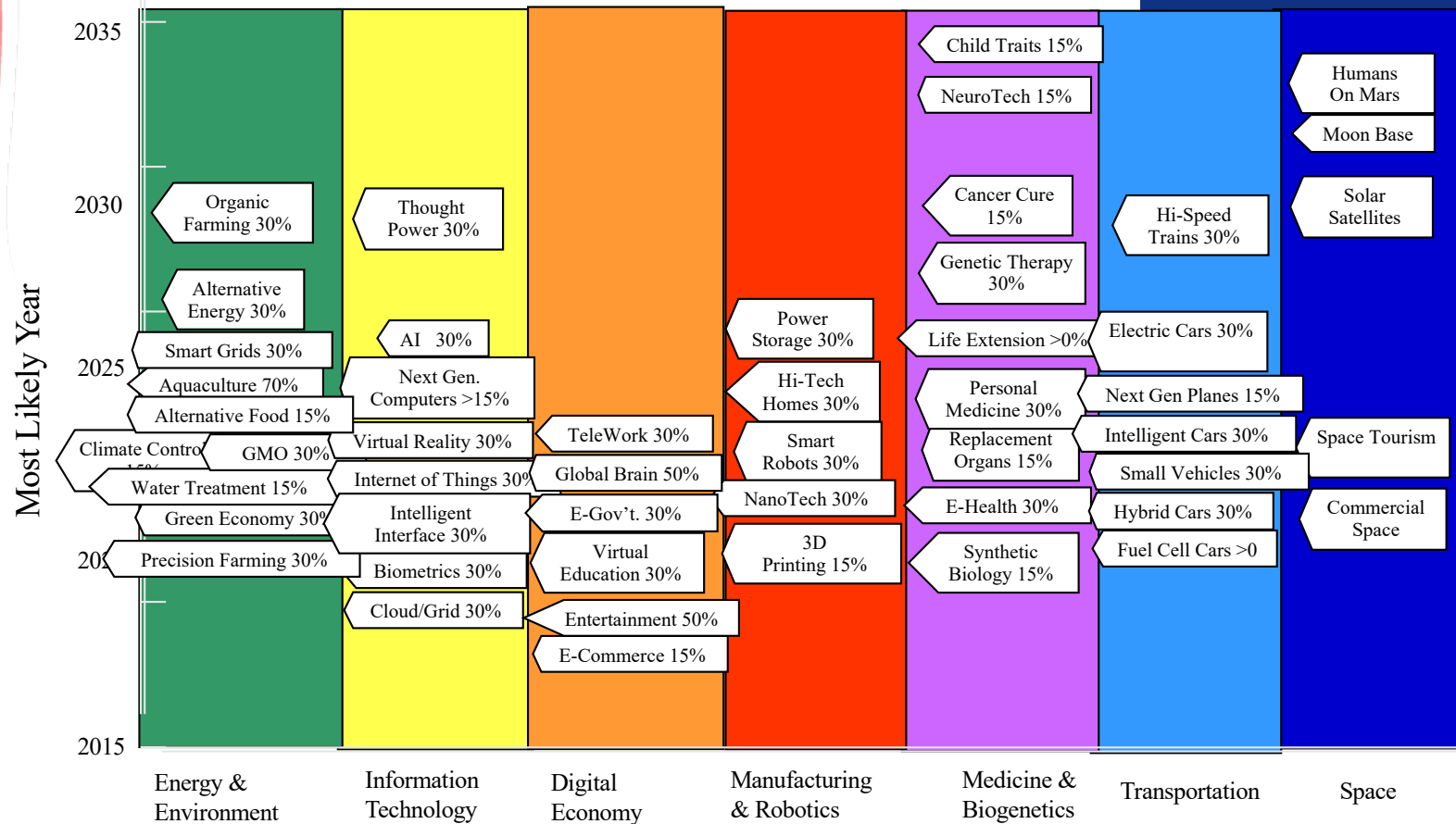
BillHalal.com

TechCast Research Method

Collective Intelligence for Tough Questions



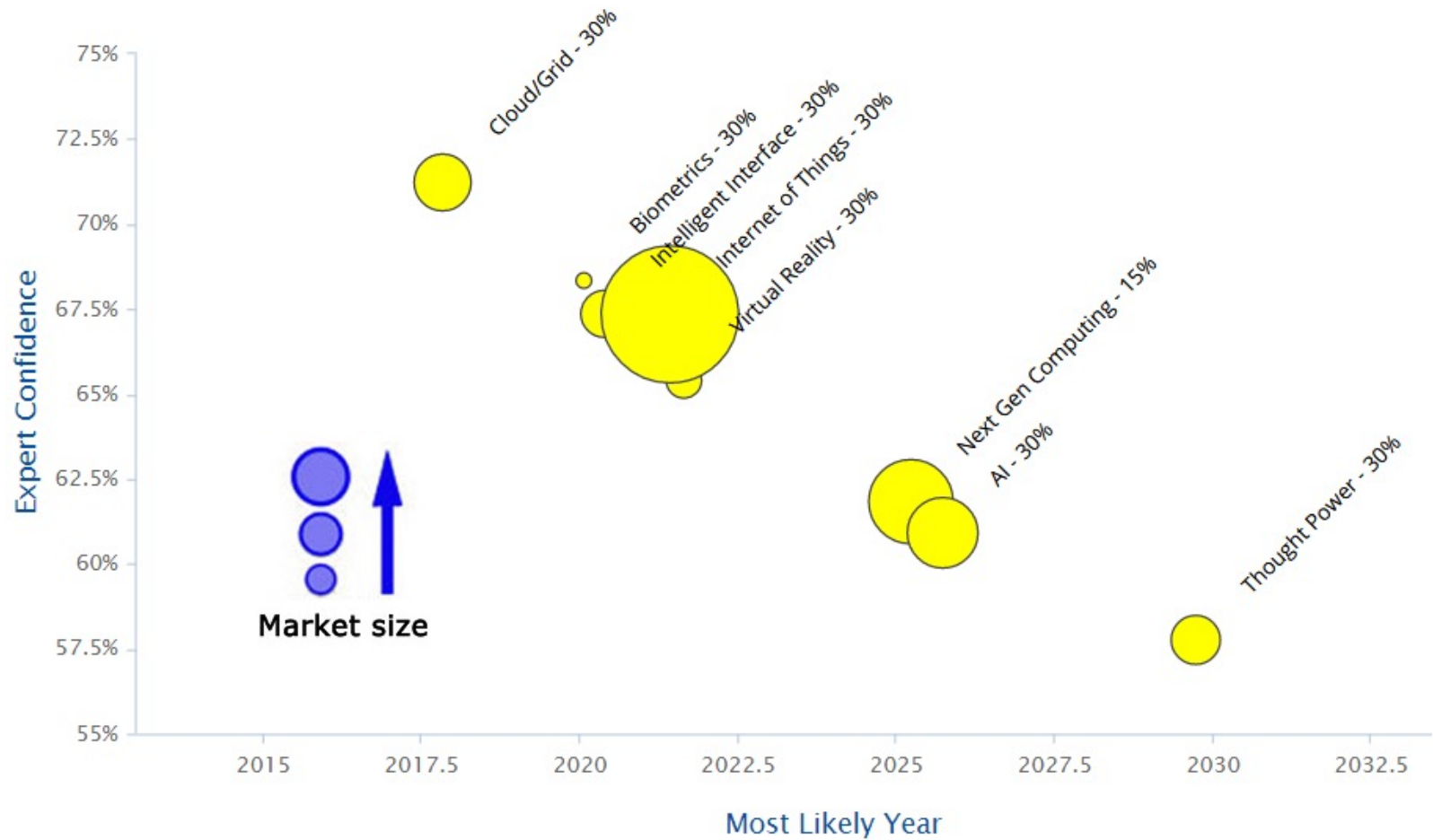
The Technology Revolution



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Strategic Foresight for a Changing World

Information Technology



4/22/21

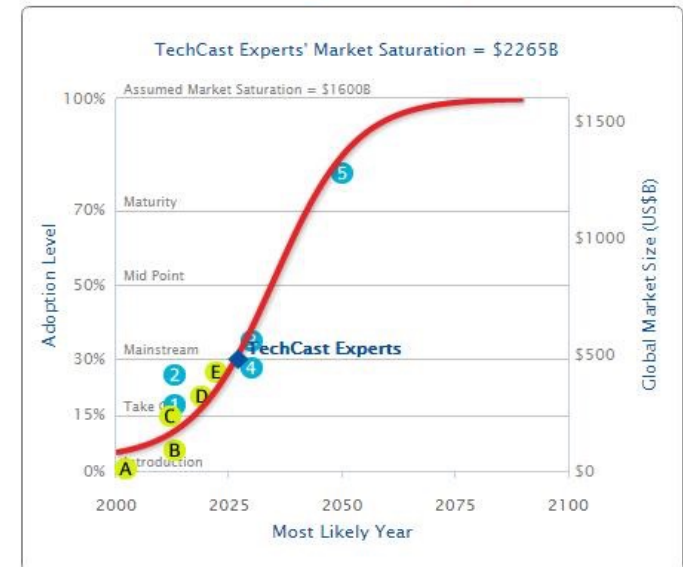
Artificial Intelligence



Highlights from Background Data

- **Tip of the Spear** China & Russia consider AI greatest strategic advantage. Vladimir Putin said: "Whoever leads in AI will rule the world."
- **Intelligent systems** Siri, IBM Watson, Microsoft Bing, Wolfram Alpha, Google, self-driving cars, etc.
- **Ubiquitous AI** GE and IBM building AI systems for health care, power grids, auto traffic and everything else
- **Research** IBM, EU, others simulating the human brain
- **Kurzweil:** \$1000 PC with power of the brain ~ 2025
- **General AI** Speech, emotion, deep learning, robotics, games & simulations, language translation and other mental functions comparable to humans ~ 2040
- **Challenges Abound** AI can be hacked, biased, make dangerous mistakes, hard to understand and control.

Life Cycle Graph



TechCast Forecast: Weak AI replaces routine knowledge work ~ 2027 +/- 3 yrs

Global market saturation ~ US\$ 2,000 Billion

Strategic Foresight for a Changing World

Social Trends

Forecasts of Indicators and Social Impact



Impact

(-10 to +10)

| | | | | | | |
|---------------------|-----|---------------|----|-----------------------|--------------|----|
| Jobs Failure | 10% | unemploy. | -3 | Mature Econ's Grow | 3% GDP | +4 |
| Extremism Rises | | +1 nation | -2 | Social Responsibility | 50% corps. | +4 |
| Water Wars | | 3 wars | -2 | Generation Change | 50% pop | +4 |
| System Failures | | 33% orgs | -1 | Consumerism Grows | 67% GDP | +4 |
| Privacy Dying | | 50% nations | -1 | Sharing Economy | 30% jobs | +4 |
| Urbanization | | 60% pop. | +1 | Environ't. Demands | 33% G20 | +6 |
| Travel Soars | | \$10 T global | +2 | Diversity Spreads | 50% G20 | +5 |
| Fertility Falls | | 1% pop gr | +2 | Working Women | 70% families | +5 |
| Services Dominate | | 50% employ. | +3 | Transparency | 50% govt's. | +5 |
| Devel. Nations Lead | | 5% GDP | +3 | Global Ethics | 30% pop | +5 |
| Legal Pot | | 33% G20 | +3 | Global Graying | 25% pop | +5 |
| Mass Migration | | 20% pop | +3 | Education Expands | 50% college | +6 |

Wild Cards

Forecasts of Probability and Social Impact



TECHCAST™
GLOBAL

Probability Impact

| | | | | | |
|------------------------|-----|----|-----------------------|-----|----|
| ■ Israel Conquered | 2% | -4 | ■ Global Depression | 28% | -3 |
| ■ Asteroid Hit | 8% | -5 | ■ China Falls | 28% | -1 |
| ■ Nuclear War | 9% | -7 | ■ Weather Control | 33% | +3 |
| ■ Alien Contact | 13% | +3 | ■ Solar Storm | 33% | -3 |
| ■ UN Collapses | 12% | -2 | ■ Space War | 33% | -4 |
| ■ Paranormal Proven | 12% | +2 | ■ Cyber Attack | 34% | -2 |
| ■ Peace in Palestine | 14% | +4 | ■ Human Cloning | 36% | +2 |
| ■ Global Pandemic | 16% | -4 | ■ Superbugs | 37% | -3 |
| ■ Bank Nationalization | 21% | +1 | ■ Bio Attack | 38% | -5 |
| ■ Democratic Business | 26% | +3 | ■ Climate Shift | 48% | -3 |
| | | | ■ Singularity Arrives | 51% | +2 |
| | | | ■ Energy Weapons | 58% | -1 |

2030 Most Likely Scenario

Macro-Forecast of Technology, Social Trends & Wild Cards



Sustainability Green business, alternative energy, climate control, smart grids, precision farming. **How bad will climate get?**

Green Transportation Hybrid/electric smart cars, hi-speed trains, next gen aircraft, hypersonic flight, etc.

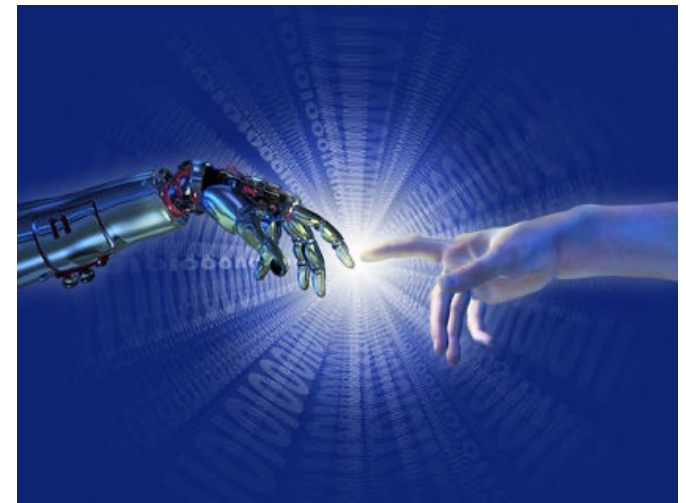
Mastery Over Life Replacement parts, DNA testing, body monitoring, cancer cure, life extension, neurotechnology, etc.

Threats Across the Spectrum Pandemic, climate change, economic recession, inequality, mass unemployment, water, cyber/bio attacks, terrorism, institutional failures, etc.

Higher-Order Values Social responsibility, transparency, environment, diversity, women, generation X, global ethics

Infinite Knowledge and Intelligence E-everything. Global brain. 2nd generation IT (nano, bio, optical, quantum). AI/robotics. Social media. Automation of routine knowledge work. **What Next?**

Beyond Knowledge Consciousness. Global MegaCrisis. Restructuring of institutions.



Strategic Foresight for a Changing World

The Global MegaCrisis



Trend Analysis

- **15 Trends Driving the MegaCrisis:** Pandemic, climate change, economic recession, inequality, mass unemployment, water, cyber/bio attacks, terrorism, institutional failures, etc.
- **7 Trends Resolving the MegaCrisis:** Alt. energy, saturation, knowledge, women, youth, long-term trend

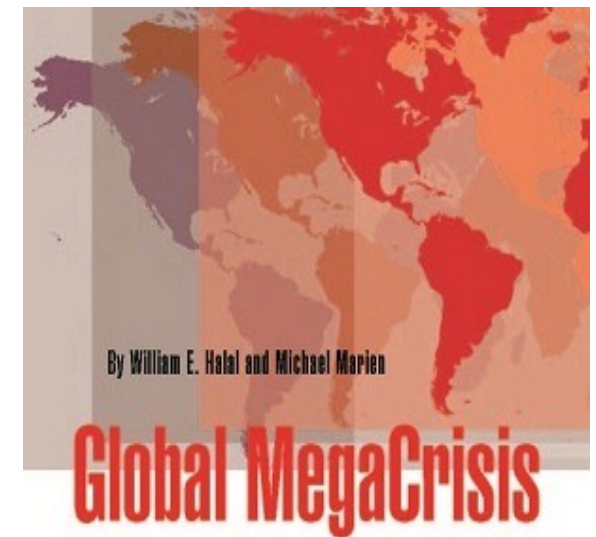
Optimism/Pessimism Survey

- 60-70% Probability of Catastrophe or Disaster
- 30-40% Probability of Muddling Through

Obstacles

Lack of leadership, political will, vision, cooperation, etc.

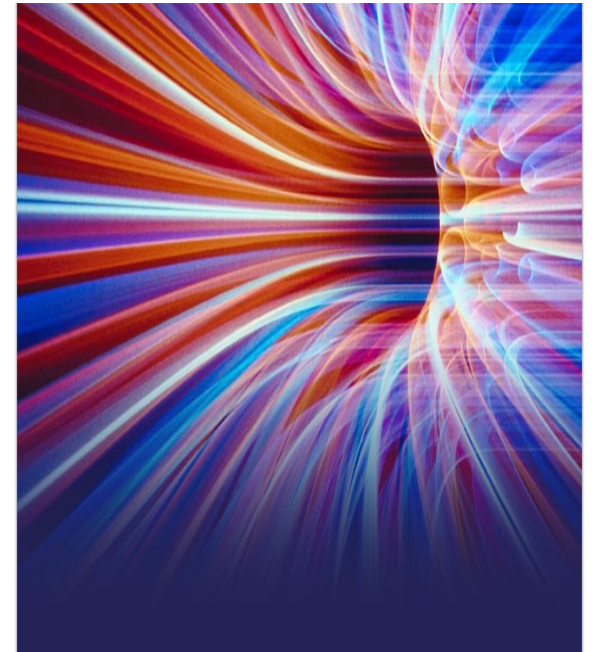
Halal and Marien, *The Futurist*, *Journal of Future Studies*, *World Affairs*



Institutional Change



- **Business:** Stakeholders, collaborative enterprise
- **Government:** Online, managed markets, cooperation
- **Health Care:** Patients vs. profits, no performance data
- **Education:** Distance learning, cost, higher skills
- **Auto Makers:** Mobility, peak car, environment
- **Military:** WMD, cyber warfare, peace-keeping
- **Catholic Church:** Misuse of authority, out of touch





THANK THE END YOU

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