Emerging Technologies
Implications for society and risks and opportunities for business

David Smith
Chief Executive
Global Futures and Foresight

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With change comes risk

- Root causes of declines in public companies’ value:
  - ~60% strategic risks.
  - ~30% operational risks.
  - ~10% financial risks.

"the assumptions on which the organization has been built and is being run no longer fit reality." — Peter Drucker
elm.neworldiq.com
Looking back at the future

“interesting toys, but no military value”

Marechal Foch, talking about airplanes in 1911
... and the telephone

“The 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us.”

Western Union internal memo, 1876.

Over 1 billion telephone lines

Over 6 billion mobiles
Ezra Warner of Waterbury, Connecticut patented the first can opener.
Mega trends

1. Globalization
2. Changes in work
3. Demographics & people
4. Technology
5. Consumption
6. Environment

The global population is expected to rise from 6.5bn in 2005 to 7.7bn in 2020 and 9.6bn in 2050.
“The size of the world economy will triple over the next four decades as emerging-market economies wield increasing power”

“World GDP to double within two decades”
Islamic population

- 24% of world population.
- 33% in 2050.
- 37% by 2100.

Pew Research

- Global Takaful:
  - $8.3bn in 2010.
  - $25bn by 2015.

- 1% of global insurance.

$3 trillion Halal market today $30 trillion by 2050

http://www.freeworldacademy.com/globalleader/population.htm
Global ageing by 2050

• Over 60’s:
  – Mature economies - 22% to 33%.
  – Developing world - 9% to 20%.
    • 80% of the world’s over 60’s.
• 25% of China’s people over 65.
• Japan alone has 30% over 60 now.
  – 64 countries will have by 2050.

By the time a person born today is 80, their life expectancy would have gone well past 110.
And we’re living longer lives

- Human life expectancies have the potential to reach 500, or possibly even 1000.

- “In the near future, the next two to four decades, the disease of ageing will be cured.”

Dr. Aubrey de Grey B.A., M.A. and Ph.D.,
University of Cambridge, Cambridge, UK.
Born 20th April 1963

Robert A. Freitas Jr. is Senior Research Fellow at the Institute for Molecular Manufacturing
Health and wellness

We are living longer but not necessarily healthier.

By 2030

- Overweight & obese doubles to 3.3bn.
- Non-communicable diseases to cost £29tn.
- Cancer rates jump 75%.

Record 4m in the UK have diabetes: 90% have obesity-related Type 2 variant
TECHNOLOGY & COMMUNICATIONS

- Paradigm
- Networking
- Mobile
- Shift
- Web
Technology and communications

‘For a list of all the ways technology has failed to improve the quality of life, please press three.’
Alice Kahn.

- Growth of the Internet
- Cloud services
- Social Networks
- Mobile devices
- Big data, predictive
- 3D printers
- AI, Avatars & virtuality
- Augmented reality - Google Glass
- Humanoid robots and transhumanism
Mobile to 2018

- Mobile data traffic growth 61% cagr.
- 66% of devices – smartphones.
- Speeds increase 2.6-fold.
- 15.9 Exabyte's/month. 69% video.
- Functions:
  - Payments
  - Environment
  - Travel
  - Health & wellness
  - Context etc.
Mobile first

- Mobile users surpass desktop users in 2014. Morgan Stanley
- Just 33% of websites are optimised for mobile. Experian

The days of just ‘keeping up’ with advances in mobile technology are over for firms.

PwC

Wearables

- $19bn revenue by 2018.
- $1.4bn in 2013.
- 6% of businesses given these to their staff...
- Next logical step.
- 21% already wear a device or use App to track health.


For businesses implications for systems development, insight and analytics, leadership & competitive advantage.
The mobile consumer in context

- Where am I?
- What am I doing?
- Who’s around me?
- Where am I going?
- What would help me?
  - Where
  - What
  - Who
Social Insurance

- 1.85bn people use social media.
- 70% of firms use social tech.
- $1.3tn pa of new value. McKinsey
- In Germany Friendsurance is a pioneer of social/P2P insurance.
- Personal and commercial.

‘...insuring in self-selecting groups can improve the quality of the risk.’

Gartner

http://www.newmediatrendwatch.com/world-overview/137-social-networking-and-ugc
http://www.economist.com/blogs/schumpeter/2012/06/peer-peer-insurance
Telematics

- Telematic insurance market worth €50 billion by 2020.
- Services provided progressive and increasingly personalised.
- High level of consumer interest.
  - 82% of consumers would try the technology if it lowered their premium. Accenture's 2011 UK motor industry research

By 2017, 75% of new cars in the U.S. could offer telematics for safety & security.

http://www.machinetomachinemagazine.com/tag/telematics-insurance-policy/
http://www.postonline.co.uk/post/feature/2155883/telematics-aggregators-future-motor-insurance
Unmanned Autonomous Vehicles
Driverless cars

- Autonomous vehicles likely 75% of cars on road by 2040.
  The Institute of Electrical and Electronics Engineers
  - Transportation-as-a-service.
  - Renting on hourly rates becoming a viable option to ownership.

The end of consumer automotive insurance?

http://www.bbc.co.uk/news/technology-19726951
Internet of everything

By 2020

• One trillion sensors embedded in humans and machines.
• We will each own 50 internet connected devices.

http://www.industrytap.com/the-hybrid-age/3651
Wellness
Complete health profile

• Genetic profiling.
• Personalised medicine/treatments.
• Proteins in the blood immediately indicate a person’s health.
  – 4,000 blood proteins it can detect 1,100.
  – Current methods detect only 20 to 30 proteins at a time.

http://blogs.dolcera.com/blog/category/biotechnology/
http://blogs.computerworld.com/17991/new_biochip_gives_blood_test_results_in_minutes
Predictive insurance

- 85% of U.S. personal lines insurers are committed to predictive modeling.
- 41% of FS org’s say predictive analytics is more about minimising risk than exploiting opportunities: SAP

Insurance transforms from reactive to a preventative business model
Preventative Apps

• Apps and peripheral devices monitor conditions, submit insurance claims, shorten time underwriter uses to make a determination.

• Two Japanese car insurers co-developed a smartphone app to reduce claims.

• Warns of possible accidents and to establish culpability in the event of a crash.

Artificial Intelligence (AI) - we will interact with it like humans.
- As technology advanced:
  - Fewer human interactions
  - More strategic focus.
- Face & voice recognition that identifies emotional changes.
- Holographic by 2015
- Haptic by 2020

Source: http://www.supplymanagement.co.uk/EDIT/Featured_articles_item.asp?id=16394
Engaged through technology

By 2019

- 3D virtual reality displays,
- Embedded in glasses & contact lenses.
- Primary interfaces to connect with other people, computers, the Web and virtual reality. Kurzweil
- Linking our senses with other people’s senses or machines.
‘Imagine enjoying a court side seat at a game, studying in a classroom of students and teachers all over the world or consulting with a doctor face-to-face – just by putting on goggles in your home.’ Mark Zuckerberg

“When you put on the goggles, it’s different from anything I have ever experienced in my life,”
Mark Zuckerberg
Brain-to-computer interfaces

- Future pilots control their aircraft by merely thinking commands.
- Now demonstrated the feasibility of flying via brain control with astonishing accuracy.

Scientifically viable in 2020; mainstream in 2022; financially viable in 2027
Brain-to-brain interfaces

- Brain interfaces transmit information between people.
  - Allowing the receiving brain to perform tasks without training.

Scientifically viable in 2025; mainstream in 2026; financially viable in 2027
Cognitive computing

- IBM Watson being used at call centres for:
  - Investment advice.
  - Legal advice.
  - Medical diagnosis.

By 2025 it will reduce complexity brought about by enhanced data volumes.
New co-workers

Acroid 1
Shakira 2
Clooney 1
3D Printing

The next trillion $ industry

• A $3bn industry by 2018.
• Airbus - 3D printed planes by 2050.
• First “printed home” built.
• Commercial buildings will follow.
• Transform manufacturing, insurance, distribution, logistics, retailing, food, surgery …

Source: Futurist Speaker, May 2012
"It is the framework which changes with each new technology and not just the picture within the frame."

Marshall McLuhan
Adapt or die?

- Nearly 40% worry that ‘...their organisations will be unable to keep up with technology change and will lose their competitive edge.’
Shifting principles

• Technology overload
  – Not well-equipped culturally and emotionally for so much technology.

• Telemetrics and smartphones

• Precaution
  – Precautionary Principle long-term shift.
  – Technology moves beyond what we can knowingly see and understand.
Shifting principles

• **Market of one**
  – Better analytics, and viral forms of human connectedness.
  – Craft reliable probabilities around small groups - single individual or event.

• **Risk transference**
  – No certainties in future only probabilities.

• **Resolution not compensation**
  – Claims hard to remedy with money-only.
Emerging competition

• From non-banks could erode 1/3 of traditional bank revenues by 2020.
• 89% of insurers say competition intensifies in distribution in 3 years.
• 64% say from non-insurance players - Google, Amazon, Walmart…
Reorientated business models

- Shift from ‘inside-out’ perspective to ‘outside-in.’
- A shift to a world of:
  - Web-based.
  - Decentralised.
  - Front-office-oriented.
  - Mobile.
  - Touch-screen.
  - Consumer-oriented.
  - Co-creation
- Informed by data analysis.

From reactive to preventative

- From:
  - Structured data/tactical decision-making/reactive business model.

- To:
  - Unstructured data стратегическое decision-making/preventive model.

Half expect new sources and techniques in data analytics to be the key competitive differentiator.

PWC survey
The knowable future

• Tomorrow's technology will know what we want before we know we want it ourselves.

• 68% of consumers aren't okay with targeted advertising.

‘…they don't like having their online behaviour tracked and analyzed.’

It’s all about TRUST

Hyper personalisation

- Crop insurance company.
- Crunches mass data from climate models, weather measurements and billions of soil observations.
- 50tb of live data are in its systems.
- Policies for specific plantings.
- Paid on specific events – not on impact.
- Founded by ex-Googlers.

The Climate Corporation

Gamification

- Over 50% of firms will **gamify** their innovation processes by 2020.
- Increasing public participation in **co-creating** products and services.

Work automation

Manual  Clerical  Managerial  Professional

- Technology to automate a third of UK jobs over next 20 years. Deloitte
- 60% of CEOs believe smart machines to be a ‘futurist fantasy.’

Automation could challenge global economic order. It will redefine notions of value, work and employment.

Standardize and personalise paradox

• There is a need to **standardize** processes whilst **personalizing** services/products.

• By 2015, 40% of an org’s work will be ‘non-routine’ up from 25% in 2010.

Gartner
Value shifting outside the enterprise

- Organizations outnumbered by the resources provided by their network.
- Business value from the social world.
  - Crowdsourcing.
  - Open and social supply chains.
  - Open innovation.
  - Co-creation.
  - Social media marketing.
- Virtual teams can lead to increased efficiency and better business results.

Sloan Review (MIT)
The post e-mail era
Adds $1.3tn per year – 66% through collaboration

• Changed the way we live.
  • Social and political processes.
• Change the way we work.
  • Global
  • Work Swarms
• New Management processes.
  • Collaborate around problems.
  • Faster and more creative solutions.

20-25% improvement in productivity of knowledge workers.

http://www.newmediatrendwatch.com/world-overview/137-social-networking-and-ugc
Digital business

• Technology is moving between 3-5 times faster than management. (McKinsey MD Dom Bartoon)

• Just 39% of execs believe their companies have practices to adapt to digital. (Forrester)
Keys to the future

- Innovation
- Skills
- Technology
- Enterprise data management
- Predictive analytics
- Distribution
- Customer centric
- Insight rich
- Process optimised
- Organisational change
- New management thinking
- Flexibility and agility
- Collaborative culture
Potential impact on brokers

• Disintermediation
• Transformation, not extinction.
  – Retail was not killed by the internet, but it has evolved.
  – Intermediaries evolve.
• Insurance is about tailored products, of negotiation and judgment.
  – The domain of the human being.

Potential impact on personal lines

- Greater commoditization
  - Price transparency.
  - Dis-intermediated direct buy.
  - Virtual social community-led bulk purchase.
    - Lead to greater commoditization of personal lines insurance.

- Decreasing profitability
  - The increased number of megacities being built in areas prone to natural disaster could result in catastrophic losses.
Impact on commercial lines

• Business model transformation
  – Real-time data from sensors and devices transforms models.

• Virtual business affinity groups
  – Small business social networking creates virtual business affinity groups:
    • Pool risks.
    • Greater predictable layers of risk.
  – Automated underwriting
  – The talent premium will have a greater impact on commercial insurance.
Impact on Life

• Business model transformation
  – From admin to life engagement.

• Life extending
  – Extended lives.
    • Pool risks.
    • New technologies, remedies.
  – Genetics
  – Proteins
  – Replicable parts
RISK MITIGATION
Management – Leadership balance

- No change
  70-90% management, 10-30% leadership
- Change
  10-30% management, 70-90% leadership

Professor John Kotter
Professor of Leadership, Emeritus at the Harvard Business School
Next Framework: Your people

Manager
- Business Issues
  - Resources
    - Manager
    - Entrepreneur
  - Foresight
    - Leader
    - Entrepreneur

Leader
- Individual Issues
  - Cycles
    - Manager
    - Leader
  - Behaviour
    - Leader

Entrepreneur
- Group Issues
  - Culture
    - Entrepreneur
    - Leader
  - Values
    - Entrepreneur
    - Manager

How?

What?

Why?

## Next Framework | Manager Types

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<th>Leader</th>
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**How?**
- Capability
- Communication
- Values

**What?**
- Cycles
- Behaviour
- Culture

**Why?**
- Resources
- Foresight
- Vision
Next Framework | Leader Types

Entrepreneur
Why?
- Resources
  - Manager
  - Entrepreneur
- Cycles
  - Manager
  - Leader
- Capability
  - Manager

Leader
What?
- Foresight
  - Manager
  - Leader
  - Entrepreneur
- Behaviour
  - Leader
- Communication
  - Leader

Manager
How?
- Vision
  - Entrepreneur
- Culture
  - Entrepreneur
- Values
  - Entrepreneur

Manager | Leader | Entrepreneur
---|---|---
Business Issues | Individual Issues | Group Issues
Resources | Foresight | Vision
Manager | Leader | Entrepreneur
Entrepreneur

Why?
- Manager
- Entrepreneur

What?
- Cycles
- Leader

How?
- Capability
- Communication
- Values

Cycles | Behaviour | Culture
---|---|---
Manager | Leader | Entrepreneur
Leader | Entrepreneur
Entrepreneur

Values | Manager
---|---
Entrepreneur | Entrepreneur
Manager

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CII
Next Framework | Entrepreneur Types

Entrepreneur

Manager
- Business Issues
  - Resources
    - Manager
    - Entrepreneur

Leader
- Individual Issues
  - Foresight
    - Leader
    - Entrepreneur

Entrepreneur
- Group Issues
  - Vision
    - Entrepreneur

Manager
- How?
  - Capability
    - Manager

Leader
- What?
  - Cycles
    - Manager
    - Leader

Leader
- Why?
  - Behaviour
    - Leader

Manager
- How?
  - Communication
    - Leader
    - Manager

Leader
- Values
  - Entrepreneur
    - Leader
    - Manager

Manager
- How?
  - Values
    - Entrepreneur
    - Manager

Leader
- Why?
  - Cycles
    - Manager
    - Leader

Manager
- How?
  - Communication
    - Leader
    - Manager

Leader
- Why?
  - Behaviour
    - Leader
Next Framework: Your organisation

- **Manager**
  - Business Issues
  - Resources
    - Manager
    - Entrepreneur
  - Cycles
    - Manager
    - Leader
  - Capability
    - Manager
- **Leader**
  - Individual Issues
  - Foresight
    - Leader
    - Entrepreneur
  - Behaviour
    - Leader
- **Entrepreneur**
  - Group Issues
  - Vision
    - Entrepreneur
  - Culture
    - Entrepreneur
  - Values
    - Entrepreneur
    - Manager

**Questions:**
- Why?
- What?
- How?
Tomorrow’s successful insurer

- Built for change.
- Innovative.
- Customer-centric.
- Channel fusion.
- Insight rich.
- Process optimized
Imagine it

*If you want to get ahead – you need to look ahead*

Thank you

+44 7932 408901
david.smith@thegff.com
www.thegff.com
www.linkedin.com/in/dasmith
davidsmithgff
gfftv
elm.newworldiq.com

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