

An Asian-Australian Perspective

Professor Ron Johnston
Australian Centre for Innovation

“The nicest thing about not planning is that failure comes as a complete surprise, and is not preceded by a period of worry and depression”

(John Preston)

Australia - The National Enabling Technologies Strategy (NETS)

1. A national approach
2. Balancing risk and reward, paying attention to health and safety issues and regulation
3. Developing measurement capability to underpin regulation
4. Engaging with the public to address concerns, aspirations and understanding of the technologies
5. Using technology for a better future, including industry uptake to address local, national and global problems
6. Planning for the future through foresighting to support policy and regulatory frameworks (NETS Expert Forum)

NETS Expert Forum

- A first in Australia in launching an anticipatory strategy to understand and shape the emergence of new and powerful technologies
- Technology– any extension of human capability
- By its very nature, technology is transformative, though there are long periods of incremental development

NETS Expert Forum Approach

- To build on our understanding of the interactive mutual shaping of technology by context and of context by technology to achieve greater beneficial, and fewer harmful consequences in the establishment of the next generation of technologies
 - This requires, as a minimum,
 - careful characterisation of the new technologies in all their aspects
 - identification of key features that have high hazard potential and support for research to realise an understanding of the possible risks
 - an evaluation of the existing framework of standards, regulations, good practice and education, which were inevitably developed for the previous generation of technologies
 - caution in managing release into the economy, society and the environment
-

Potential Contribution of Enabling Technologies to Grand Challenges

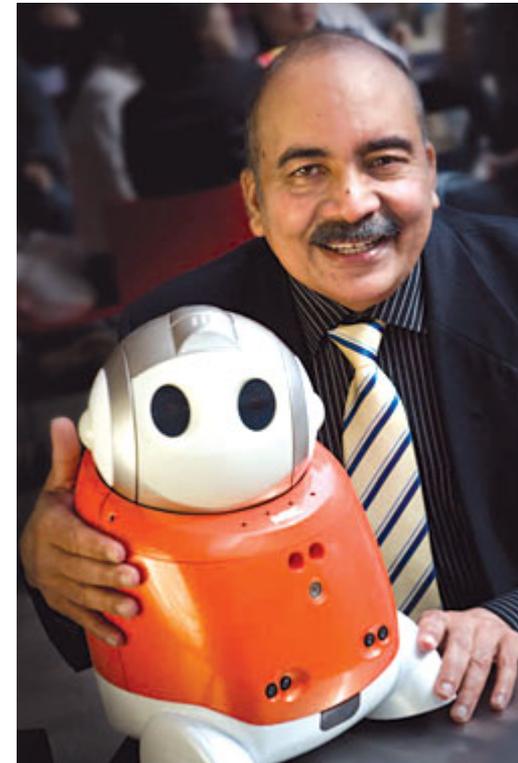
- New treatments for disease including implants and replacements for defective genes, new protective foods, and personalised nutritional and lifestyle approaches to disease prevention
- Expanded e-health system to provide telemedicine and telecare to support the needs of people who are remote from medical centres
- New assistive technologies such as biorobotics, brain-machine interaction or mobility systems may restore function to incapacitated people
- More sustainable farming practices by reducing water and fertiliser use and improving soil health
- Biosecurity - detecting and treating infectious diseases; the generation of transgenic cattle that are resistant to the foot-and-mouth disease virus
- New extraction processing such as biomining
- Growing more food with less water; water-saving systems; use of stormwater, desalination and recycling to reduce reliance on rainfall for water supplies.



Activities carried out under NETS

Planning for the Future

- Enabling Assistive Technologies for Aged Care Workshop
 - How enabling technologies can support older Australians to live independently in the future
 - Areas for policy development were identified
 - more flexible funding models
 - ethical issues
 - community attitudes
 - the need for a multi-disciplinary, cross sector network



FLA in Singapore – Risk Assessment and Horizon Scanning System

COMPLEX

Cause and effect only apparent in retrospect

Probe-Sense-Respond

COMPLICATED

Cause and effect separated over time and space

Sense-Analyse-Respond

CHAOTIC

No apparent cause and effect

Act-Sense-Respond

SIMPLE

Cause and effect observable, repeatable, predictable

Sense-Categorise-Respond

Scenario Planning+ Toolkit and Strategic Futures Network



Monitoring



Defining Focus



Environmental
Scanning



Designing
Strategies



Developing Possible
Futures



Sense-Making

Sources of Resistance to FLA

- ❑ Not limitation of the methods
- ❑ Cognitive failure to anticipate
 - Hyperbolic discounting – discounting future risks
 - Confirmation bias – fit with existing mental models
- ❑ Limited grasp of complexity – focussing on ‘known unknowns’ rather than ‘unknown unknowns’
- ❑ Poor or missing incentives
- ❑ Drive for convergence – surprise free scenario

Lessons Learned at the Centre for Strategic Futures

- ❑ Accept that human cognition has limitations in anticipating strategic surprises
- ❑ Recognise the cost of responding to some strategic surprises can be too high
- ❑ Calibrate strategic thinking responses around the psychological and practical challenges of policy implementation
- ❑ Engage and communicate with decision-makers through policy games (cf war games)
- ❑ Create protected future spaces
- ❑ Expect to be surprised



Challenges

- Complexity and multi-disciplinary nature of the science
- Stakeholder management
- Risk management of health and safety issues
- Ensure new technologies are incorporated

