

The Fast Future Bulletin August 2009



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A. Welcome to issue 4 of 'The Bulletin'

The Bulletin is a monthly(ish) newsletter produced jointly by Rohit Talwar of Fast Future and Ian Pearson of Futurizon. In each issue we provide short views on key topics and issues shaping the future.

To book Rohit or Ian for a speech, or to discuss your research and consulting needs please contact us at rohit@fastfuture.com or idpearson@gmail.com

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B. A Gentle Reminder

We are currently running a survey on 'jobs that don't yet exist' – looking at the roles that could

be created over the next 10-20 years as a result of advances in science and technology.

This is just a gentle reminder / nudge / plea to all our readers to spend a few minutes taking the survey and to encourage all you friends, colleagues and contacts to do so as well. The survey closes at midnight on August 20th. Full details are presented in section D below.

C. Future Security Issues

As we look beyond the current downturn, we believe that security is going to raise its head as a multi-dimensional issue for nations, organizations and individuals. Over the next few editions of the bulletin we will explore a number of critical aspects of these future security threats.

In this issue, we start by focusing on two increasingly important and somewhat overlooked dimensions of the security challenges associated with information and communications technology – policy and hardware threats. These will have impacts at every level in society from securing personal information through to protection of the data that is the lifeblood of national economies and critical infrastructure.

Policy-based threats

Perhaps counter-intuitively, we believe that overzealous organisational security policies could be an ever-increasing and potentially serious source of risks and threats in their own right. Human nature drives employees to attempt to bypass procedures that get in the way of doing their job. If they want to access something forbidden by a security policy, they are likely to step outside of the secured domain by using their own equipment, or by being devious. In the extremes, staff can end up doing a lot of their work on their own equipment rather than use that provided by the organisation. For example, we recently met the marketing department of a major global consumer products company which is not allowed to download the many daily attachments sent to them by their various agencies. Productivity and efficiency is seriously hindered as staff have to download the documents on their personal emails at home and then ask the IT department to load them onto the network for their colleagues to review. It can take 48-72 hours before the marketing team can all have access to a key document.

As a result of these everyday workarounds, employees' work may be conducted substantially outside the influence of any security controls that exists. A wiser approach is to work with the employees to understand the nature of their work and interactions with the outside world. This allows us to establish a cooperative policy that staff will adhere to willingly - instead of trying to impose one that they are likely to be tempted or compelled to ignore or bypass.

Additionally, if a policy is too tight, but staff are nevertheless forced to follow it by some means, it might have the result of reducing performance and productivity. If it is too hard to do the job, it will take longer or not happen at all. This is obviously a threat to the wellbeing of the organisation, making it unproductive, uncompetitive and possibly threatening its existence. A policy designed to protect a company should clearly not threaten the ability of the company to function efficiently by impeding the ability of staff to do their jobs well.

A more sensible security policy is one that provides strong protection for key intellectual property and essential systems, but is more flexible in other areas. Staff should be trusted to do their jobs responsibly, with good management and if necessary, disciplinary procedures to encourage compliance with 'common sense' and good business practice. Given greater freedom and clearly sensible boundaries, most employees respond with responsible behaviour.

Hardware based threats

Concern is beginning to increase because most virus protection applications only check for software based viruses. However, it is possible to build increasingly dangerous hardware based

attacks, using what are known as 'field programmable gate arrays' (FPGAs) to build custom hardware that interface directly with other equipment and bypasses software virus security checks. Although this is seen as a relatively new phenomenon, it is likely to grow as a problem, driven by improvements in design tools and the increasing availability of powerful, yet small devices.

Another hardware threat arises from the deliberate introduction of malicious algorithms into the hardware during the design or manufacturing processes. It is quite possible to design hardware that achieves all its legitimate requirements but which also has hidden circuitry that only comes into play when a particular instruction is received or a specific set of circumstances arises. These viruses can go undetected because hardware testing can only make a finite number of tests while there are an infinite number of ways in which these 'back door' viruses can be added invisibly into circuit designs.

To make the problem even more difficult to address, circuits that appear to be quite innocent might also be part of a larger malicious circuit or algorithm that is only triggered when other devices or software applications are brought into play. Such jigsaw approaches can be impossible to test for. These 'sleeper circuits' could already be waiting in millions of machines, only coming into play when the final piece of the jigsaw is introduced via accessing a superficially benign web site or an otherwise innocent-looking email.

The next hardware based threat to consider is that posed by personal data storage devices. Memory sticks are improving rapidly in capacity. Although at home, people may have large volume of music or video files that would not fit on today's memory sticks, they are able to store all the files a typical employee uses in everyday office work. They present an obvious and direct security threat if employees use them to store confidential data, since they are easily lost, forgotten, or left in someone else's USB port. They are also a good vehicle for viruses to cross between machines, though most virus management software attempts to protect against such problems. Some large companies prevent their computers from accepting memory stick connection because of this, but they are also disadvantaged because they lose all the benefits that memory sticks bring. This is a good example of a trade-off between work flexibility and risk management. As memory sticks continue their increasing penetration into every area of our lives, it will become necessary to have security policies that accept this use and work around it.

Miniaturisation is the next and growing area of concern. Ongoing technology advances are making it increasingly possible to do very sophisticated things with tiny gadgets. Putting a microscopic surveillance device into a piece of office equipment might allow signals to be intercepted and recorded during printing or scanning tasks. Then could they sit quietly until their owner removes them for subsequent downloading. Such miniaturisation will make corporate espionage easier. In fact, as devices get smaller and smaller, there will come a time where 'smart dust' (nanoscale electronic sensors and computing devices) becomes so tiny that individual devices could be too small to be seen by the naked eye, making it almost impossible to detect them. Since such devices could be largely passive, and only respond to particular types of signal, they might be hard to detect even electronically.

Finally, every year, new devices will appear that add to the range of potential gadget-based threats. We are only a few years away from being able to incorporate almost any kind of IT function into small pieces of jewellery. For example, by 2015, it is likely that a small electronic lapel pin will be able to act as a personal wireless web site/blog/ego badge. These devices will broadcast information about their owner into the nearby space and interact with badges worn by other people for social or business networking purposes. It might simultaneously act as a phone, processor, tracker, security badge, music player, video camera and perhaps many other things too. Size and shape will be no constraint on function in the future. Staff will not expect to have to leave personal devices like this behind when they go to work. So companies will

have to build security systems that can cope with very high levels of personal electronic functionality, with all the potential for malicious presence on those devices.

D. Jobs that don't yet exist

Fast Future is currently undertaking a short study and survey on the kinds of jobs that will be created in 10-20 years' time through advances in science and technology.

We would really appreciate it if you would take a few minutes to read the list of 20 future job descriptions below and then take the survey at

www.zoomerang.com/Survey/?p=WEB229HP2J3ALX

You can answer as few or as many questions as you want. We will send a copy of the final report to everyone who completes the survey and leaves their email address.

We will donate \$1 to children's charities for every survey respondent.

Closing date for responses - August 20th 2009. We hope you'll enjoy taking part.

1. *Body Part Maker*

Due to the huge advances being made in bio-tissues, robotics and plastics, the creation of body parts - from organs to limbs - will soon be possible, requiring body part makers, body part stores and body part repair shops.

2. *Nano-Medic*

Advances in nanotechnology offer the potential for a range of sub-atomic 'nanoscale' devices, inserts and procedures that could transform personal healthcare. A new range of nano-medicine specialists will be required to administer these treatments.

3. *Farmer of Genetically Engineered Crops and Livestock*

New-age farmers will raise crops and livestock that have been genetically engineered to improve yields and produce therapeutic proteins. Works in progress include a vaccine-carrying tomato and therapeutic milk from cows, sheep and goats.

4. *Old Age Wellness Manager / Consultant Specialists*

Drawing on a range of medical, pharmaceutical, prosthetic, psychiatric, natural and fitness solutions to help manage the various health and personal needs of the aging population.

5. *Memory Augmentation Surgeon*

Surgeons that add extra memory to people who want to increase their memory capacity and to help those who have been over exposed to information in the course of their life and simply can no longer take on any more information - thus leading to sensory shutdown.

6. *'New Science' Ethicist*

As scientific advances accelerate in new and emerging fields such as cloning, proteomics and nanotechnology, a new breed of ethicist may be required. These science ethicists will need to understand a range of underlying scientific fields and help society make consistent choices about what developments to allow. Much of science will not be a question of can we, but should we.

7. *Space Pilots, Architects and Tour Guides*

With Virgin Galactic and others pioneering space tourism, space trained pilots and tour guides will be needed, as well as designers to enable the habitation of space and the planets. Current projects at SICSU (University of Houston) include a greenhouse on Mars, lunar outposts and space exploration vehicles.

8. Vertical Farmers

There is growing interest in the concept of city based vertical farms, with hydroponically-fed food being grown in multi-storey buildings. These offer the potential to dramatically increase farm yield and reduce environmental degradation. The managers of such entities will require expertise in a range of scientific disciplines, engineering and commerce.

9. Climate Change Reversal Specialist

As the threats and impacts of climate change increase, a new breed of engineer-scientists will be required to help reduce or reverse the effects of climate change on particular locations. They will need to apply multi-disciplinary solutions ranging from filling the oceans with iron filings to erecting giant umbrellas that deflect the sun's rays.

10. Quarantine Enforcer

If a deadly virus starts spreading rapidly, few countries, and few people, will be prepared. Nurses will be in short supply. Moreover, as mortality rates rise, and neighborhoods are shut down, someone will have to guard the gates.

11. Weather Modification Police

The act of stealing clouds to create rain is already happening in some parts of the world, and is altering weather patterns thousands of miles away. Weather modification police will need to control and monitor who is allowed to shoot rockets containing silver iodine into the air - a way to provoke rainfall from passing clouds.

12. Virtual Lawyer

As more and more of our daily life goes online, specialists will be required to resolve legal disputes which could involve citizens resident in different legal jurisdictions.

13. Avatar Manager / Devotees - Virtual Teachers

Avatars could be used to support or even replace teachers in the elementary classroom, i.e., computer personas that serve as personal interactive guides. The Devotee is the human that makes sure that the Avatar and the student are properly matched and engaged.

14. Alternative Vehicle Developers

Designers and builders of the next generations of vehicle transport using alternative materials and fuels. Could the dream of underwater and flying cars become a reality within the next two decades?

15. Narrowcasters

As the broadcasting media become increasingly personalized, roles will emerge for specialists working with content providers and advertisers to create content tailored to individual needs. While mass market customisation solutions may be automated, premium rate narrow casting could be performed by humans.

16. Waste Data Handler

Specialists providing a secure data disposal service for those who do not want to be tracked, electronically or otherwise.

17. Virtual Clutter Organizer

Specialists will help us organise our electronic lives. Clutter management would include effective handling of email, ensuring orderly storage of data, management of electronic ID's and rationalizing the applications we use.

18. Time Broker / Time Bank Trader

Alternative currencies will evolve their own markets – for example time banking already

exists.

19. Social 'Networking' Worker

Social workers for those in some way traumatized or marginalized by social networking.

20. Personal Branders

An extension of the role played by stylists, publicists and executive coaches –advising on how to create a personal 'brand' using social and other media. What personality are you projecting via your Blog, Twitter, etc? What personal values do you want to build into your image - and is your image consistent with your real life persona and your goals?

Please share your thoughts on these jobs by taking the survey at <http://www.zoomerang.com/Survey/?p=WEB229HP2J3ALX>

E. Rohit and Ian on the road

If you'd like to meet with us on our travels, in the next few weeks Rohit will be speaking in London, Reykjavik, Manchester, Helsinki, Amsterdam, Paris, Monaco, Lucerne and Prague. Ian will be speaking in Copenhagen, London and Oxford.

F. What is the Bulletin?

The Bulletin is a response to requests from our respective clients and contacts to provide a monthly update of our current thinking on what's happening in the world around us and what could shape the future we're moving into. To book Rohit or Ian for a speech, or discuss your research and consulting needs please contact us at rohit@fastfuture.com or idpearson@gmail.com.

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G. Forthcoming Dates for your Diary

This is a selection of 'future focused' events that we think could be of interest. Those marked with an R or an I are ones where Rohit or Ian are speaking and / or chairing the event.

September 3rd - 1st European Impact Angel Investing Summit, Geneva, Cost 100 Euros (members), 300 Euros (non-members) www.go-beyond.biz

September 14th- 15th (R), Driving Sustainability - The Future of Sustainable Transport Technology, Reykjavik Iceland. Cost - 69,000 Icelandic Krone (US\$550)

September 18th - 20th (R), Get Inspired - International Association of Facilitators European Conference, Oxford, England. Cost - IAF Members £592.25 / Non Members £649.75

September 21st (R) - Rise! - A debate for association leaders on the future of associations and

association events, QEII Centre London, 17.30 - 19.00. Free for association leaders. email barbara.blow@tfigroup.com

September 22nd – 25th (R), The World Youth and Student Travel Conference, Manchester England. www.wystc.org

September 24th (R) - ASSOCIATION NEXT: Surviving the downturn and securing the future! Executive Lunchtime Masterclass, Brussels. 15 Euros. Email ndevolder@kelleneurope.com

October 14th-16th (R), Visioning 20.20 – Escaping the Age of Stupid, 5th European Futurists Conference, Lucerne, Switzerland. Cost €1040 - 20% early bird discount for bookings before August 15th

October 21st -24th, Poptech 09 – America Reimagined, Camden Maine, USA. Cost US\$3,500

November 5th- 6th (R), Courage! – 7th Annual European Food Service Network CEO Conference, Cologne, Germany.