The enterprise impact of ICT

What are the consequences of information and communications technology on business? What ICT tools rank on the enterprise priority list and which are least deployed? The latest global Business and Information Technologies survey focusing on New Zealand has some answers.

Professor Ananth Srinivasan and Associate Professor Margo Buchanan-Oliver

spotlight

*Business and Information
Technologies Survey •*

THE BUSINESS AND Information Technologies project is a consortium of international units led by a research group at the University of California in Los Angeles. The project tracks the impact of information technologies on business practices globally through a commonly administered survey.

In addition to enabling comparisons about the deployment and impact of IT on a global basis, the survey also tracks changes in such activity over time.

New Zealand participated for the first time this year, through the Centre of Digital Enterprise (CODE) at the University of Auckland Business School, providing a local insight into the use of IT in organisations.

The survey covers technology adoption, transformations in the internal organisation of firms, market facing activity, management of partner relationships and business results arising out of the deployment of IT.

The topic resonated among New Zealand CIOs, as more than 100 ICT executives from across industries throughout the country participated in the survey.

Composition of industry sectors	
Retail	6
Manufacturing	6
Educational Services	9
Government (ex. Education, Healthcare and Transport)	12
Professional, Scientific and Technical Services	26
Wholesale Trade	2
Transportation/logistics	10
Utilities	6
Healthcare	6
Agriculture	9
ICT and media	8
	100

Damian Swaffield, general manager of technology, TVNZ, says business information technology has been an enabler for the key plank of TVNZ's corporate strategy.

"We're in the process of a huge business transformation process, aimed at reaching more New Zealanders in more ways. Using emerging technologies is how we're going to do it," says Swaffield. "Where we were once a television broadcaster only, we are already delivering our content through platforms and on devices where New Zealanders want and expect to find it — on phones, on the web, through podcasts as well as our standard analogue and digital channels. The launch of TVNZ ondemand — our catch-up TV service — was groundbreaking. Within a short time we expect to be offering some highly-innovative products supported by leading edge technology."

For Kevin Drinkwater, chief information officer of Mainfreight, investments in ICT have "finally delivered what Mainfreight has been looking forward to — mobile devices that are robust, cost-effective, fast and on the Windows platform. The capabilities of this technology have seen Mainfreight spend more than $3 million in wireless and mobile technology for our buildings and drivers in the past two years, providing significant benefits to our businesses and our customers by speeding up the process of capturing and making available critical supply chain information."

The New Zealand survey

The University of Auckland's CODE, in collaboration with *CIO*, conducted the survey over three months.

The respondents covered a range of industry sectors and organisations of different size, with the diversity of responding organisations shown below.

Organisational size: Number of IT employees	
Up to 10	28%
10 – 50	43%
50 – 100	6%
Over 100	22%
No Response	1%

Organisational size: Number of employees	
Up to 200	23%
200- 1000	46%
Over 1000	30%
No Response	1%

Titles of respondents	
CIO and other C-level Executives	36
Directors	7
IT/IS Manager	37
Other Manager*	15
Other	5
*For example Business Development Manager, Supply Chain Manager	100

As such, the survey covered a range of organisations in terms of size and a broad cross-section of industry affiliations. In all cases, CODE ensured the person responding to the survey was well versed about the deployment of IT in their organisation.

Here are some of the major findings:
Technology adoption, infrastructure and budget trends
The three most widely deployed technologies are the use of websites and associated e-commerce, storage area networks and network-attached storage, along with wireless networking technologies.

Kevin Bowler, chief executive, Yahoo!Xtra, notes: "It is great to see New Zealand businesses prioritising website development and e-commerce in recognition of the growing importance of the web to consumers. We are seeing through our own research that consumers are increasingly expecting to engage with businesses through their web presence, whether their intention is to find information or to make a purchase online."

The three least-deployed technologies are Radio Frequency Identification (RFID), biometrics and enterprise instant messaging. These technologies also rank as fairly new in terms of organisations that have deployed them (less than two years). A substantial percentage of organisations indicated that these technologies are not applicable in their situation. Interestingly, the use of supply-chain technologies also ranks low in terms of deployment.

Other technologies fairly new in terms of deployment are collaboration tools, business

intelligence and business process modelling. On the other hand, the survey shows ERP-systems, websites and groupware-tools have been in use for more than 10 years.

In terms of future planning organisations are focused on investments in RFID, collaboration tools, business intelligence and enterprise application integration solutions.

As well, budgets for storage hardware, software applications and disaster recovery have increased over the past three years. There were moderate or neutral trends for security, application service provision and service contracting.

Internal organisation

Survey respondents, unsurprisingly, said there is a general rise in demand for IT and collaboration across all organisations. As well, results show IT provides increased control for managers and allows better monitoring of customer facing interactions. Outsourcing is not a significant trend in many organisations, with routine functions such as accounting, finance and customer contact largely done in-house. The small amount of outsourcing that does occur is in the areas of programming and market research.

Tony Lester, chief information officer of Land Information New Zealand, represents an organisation that is heavily reliant on IT. "Using technology in new or increased ways means we can be a smaller, more nimble organisation," notes Lester. "For example, by having an electronic survey and land title registration system, Landonline, LINZ has downscaled its workforce over time. At the same time, technology has meant we could create a national workflow, utilising our workforce across the country to manage demand and also to achieve greater consistency. Technology has also meant we can enable greater access to the wide variety of information LINZ holds."

Customer touch points

While organisations are using multiple ways of maintaining contact with customers, the most popular methods are still face to face contact, the company website, phone and email. At present the least-used methods are computer

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telephone integration, online intermediaries and screen pop-ups.

Customer segmentation

Customer analysis is mainly done through data warehousing, proactive information gathering and demand forecasting. The survey did reveal that a fair number of organisations use statistical data mining and trend discovery technologies.

The least-used methods include neural network analysis and text mining. About a fifth of the organisations do not conduct any systematic customer data analysis, indicating a significant lost opportunity.

Customer segmentation is largely done geographically and through the use of customer portals. However, techniques such as

allowing customers to personalise the website and automated cross selling are rarely used.

CRM function automation

Automation of the CRM functions is carried out largely by the use of Help Desk and Content management technologies survey respondents reported. While respondents said the least-used methods are the use of a complaints management system or through the use of ERP or SCM technologies.

Partner relationships

E-payment, web-enabled communication and EDI technologies are the most widely used technologies among trading partners. These are also the technologies organisations indicated that are already in use or they are adopting them shortly.

As well, the most widely adopted business to business mechanisms are direct purchasing, long-term purchasing contracts and catalogues, respondents stated.

Hubs and exchanges are the least-adopted methods for this purpose.

Business results

Production costs, customer service costs and internal communication costs have decreased with the adoption of IT the survey revealed. There is an overall increase in IT related costs, but this is expected with increasing consumption of IT-related equipment and services overall.

About half the organisations indicated customer buying behaviour, customer expectation and customer satisfaction were strategic areas improved by technology.

Respondents to the survey reveal how deployment of customer facing technology has brought a range of benefits across the enterprise and to their external partners.

Grant Casci, senior consultant, Teleconsultants, say one of the biggest benefits the company reaped through the introduction of ICT solutions is reduced customer churn and increased new business through improved customer satisfaction.

Customers want organisations that are primarily easy to deal with and reliable, notes Casci.

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Lester, Land Information New Zealand: "By having an electronic survey and land title registration system, Landonline, LINZ has downscaled its workforce over time. At the same time, technology has meant we could create a national workflow, utilising our workforce across the country to manage demand and also to achieve greater consistency."

"This comes from two main 'hits'. The first is allowing customers the ability to choose their preferred communications channel, whether that is face-to-face, phone, email, web or even SMS.

The second is providing a consistency of customer experience regardless of the channel chosen.

"This is achieved through the introduction of information management tools (CRM, Knowledgebase's etc) across all customer facing channels. The result is consistent responsiveness, consistent information and consistent results. Just what the customer ordered."

Globalisation

The majority of organisations surveyed indicated that revenues were generated geographically from the Australasian region. However, less than half the respondents indicated they were generated from any other region in the world, with the regions generating least revenue being Latin America and Africa. North America (including Mexico) was the most favoured location for future investment considerations.

Selected detailed information

While the above section features broad observations about the survey results, here some sense of the detail and granularity of the information that was collected is presented in the form of a question and answer presentation.

Current and planned deployment of technologies

What technologies are organisations currently

Technology Trends	
Website and e-commerce	1
Storage Area Networks and Network Attached Storage	2
Wireless network connectivity hardware and software such as Wi-Fi, Wireless LANs, etc.	3
Collaboration and Portal Tools (document management, portal, collaboration, etc.)	4
Business Intelligence	5
Content Management	6
Groupware/Productivity Tools (Lotus Notes, etc.)	7
Enterprise Application Integration and Middleware	8
Surveillance systems	9
Third-party authentication and verification (Verisign, etc.)	10
E-learning	11
Enterprise Resource Planning	12
Operating System – Linux	13
Business Process Modeling	14
Enterprise Instant Messaging	15
Supply Chain Management	16
Digital Receipts	17
Radio Frequency Identification	18
Biometrics	19

Techology Trends

Internal Organisation Structure: Trends on structure due to technology
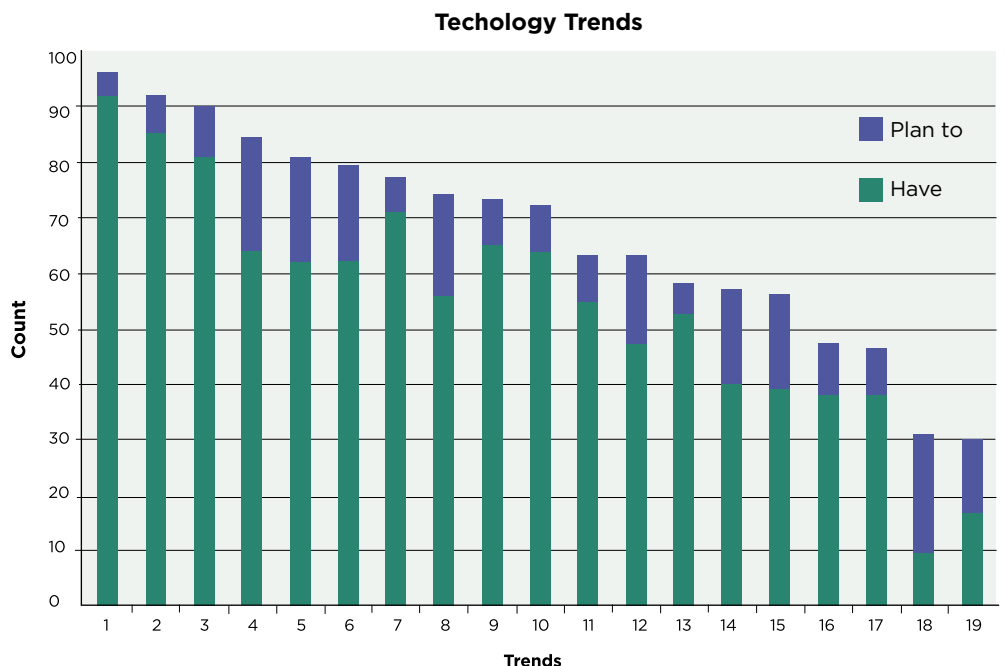
using or planning to use? More importantly, what are they not currently using? In response to this question, the survey covered a range of specific technologies and respondents indicated the status of deployment with respect to each of the technologies mentioned. The chart on page 36 provides this information for each specific technology under consideration. The table at left gives the interpretation of the codes for the trends shown in the chart.

The relatively low level of deployment among the respondents of such technologies as open source (Linux), business process modelling and supply chain management technologies is noteworthy. RFID technology adoption is not happening at the moment, though forward planning about future deployment of technologies like RFID shows an awareness of its importance.

Impact of technology on internal structure
How are organisations changing internally in terms of their structure due to the deployment of information technologies? In order to get a sense of this, the survey referred respondents to some specific examples of organisational change factors. The chart at right presents this information with the key showing what the trends are.

While the results show new tools are being increasingly made available to decision makers, what is revealing here is the relatively low level of impact on things such as productivity monitoring and incentives and the distribution of decision-making authority in organisations.

Customer segmentation
What mechanisms are used by organisations to perform customer segmentation to better understand needs of customers? Traditionally this would help an organisation better target customers for specific products and services. The top chart on page 38 captures this information.

While a substantial percentage of organisations revealed using geography and portals as the preferred tools for customer segmentation, the use of internet access patterns and the personalisation of websites, both of which are widely available as tools for analysis, do not seem to be adopted as much.
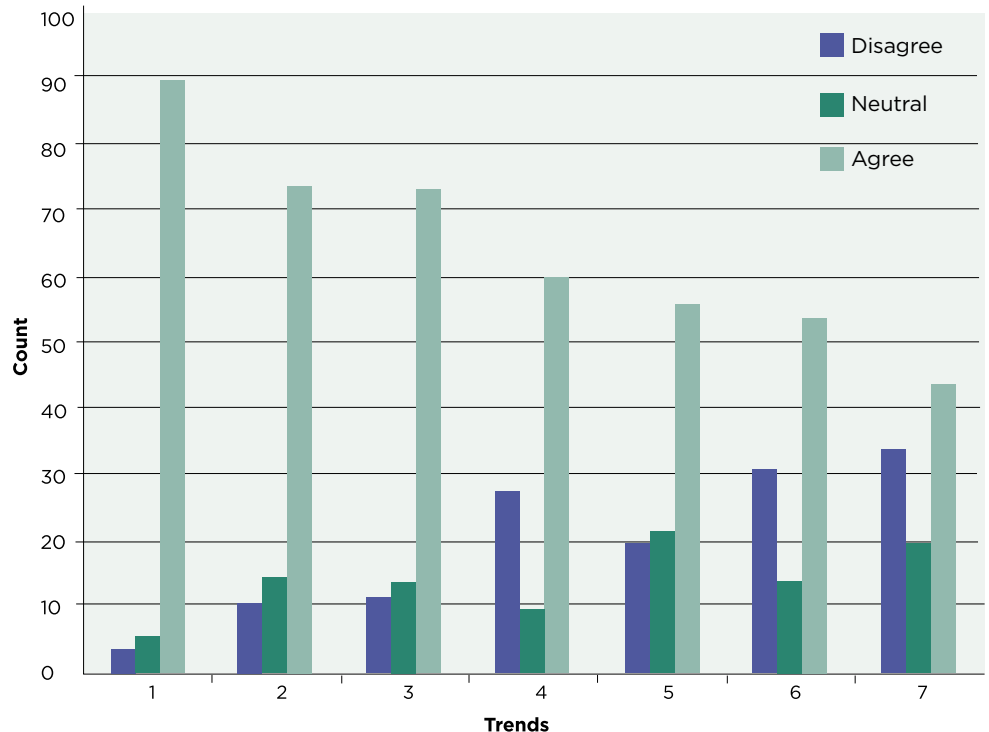
Srinivasan, University of Auckland: "The Business and Information Technologies survey tracks the impact of information technologies on business practices globally through a commonly administered survey."

Strategic areas to have shown improvement
What are the strategic areas of the organisation that have shown improvement due to the deployment of information technologies? The second chart on page 38 presents information with reference to specific strategic areas in an organisation.

Understanding customers in terms of their satisfaction with products or services and their buying behaviours, are indicated as areas of improvement by a majority of the respondents. However, only about 40 per cent of the

Internal Organisation Structure: Trends on structure due to technology in past year	
	Key
New decision-making tools and online technologies are increasingly becoming available.	1
The monitoring of customer-facing interactions is increasing (eg phone calls from/to customers).	2
The span of control for most managers is widening (the number of direct reports to managers increasing).	3
The organisation is becoming more geographically dispersed (eg direct reports to a manager located at different locations).	4
Automated monitoring of workforce productivity is increasing	5
The organisation is becoming flatter (fewer levels in the organisation chart).	6
Incentives are based on monitoring of productivity.	7

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Technologies used for Customer Segmentation
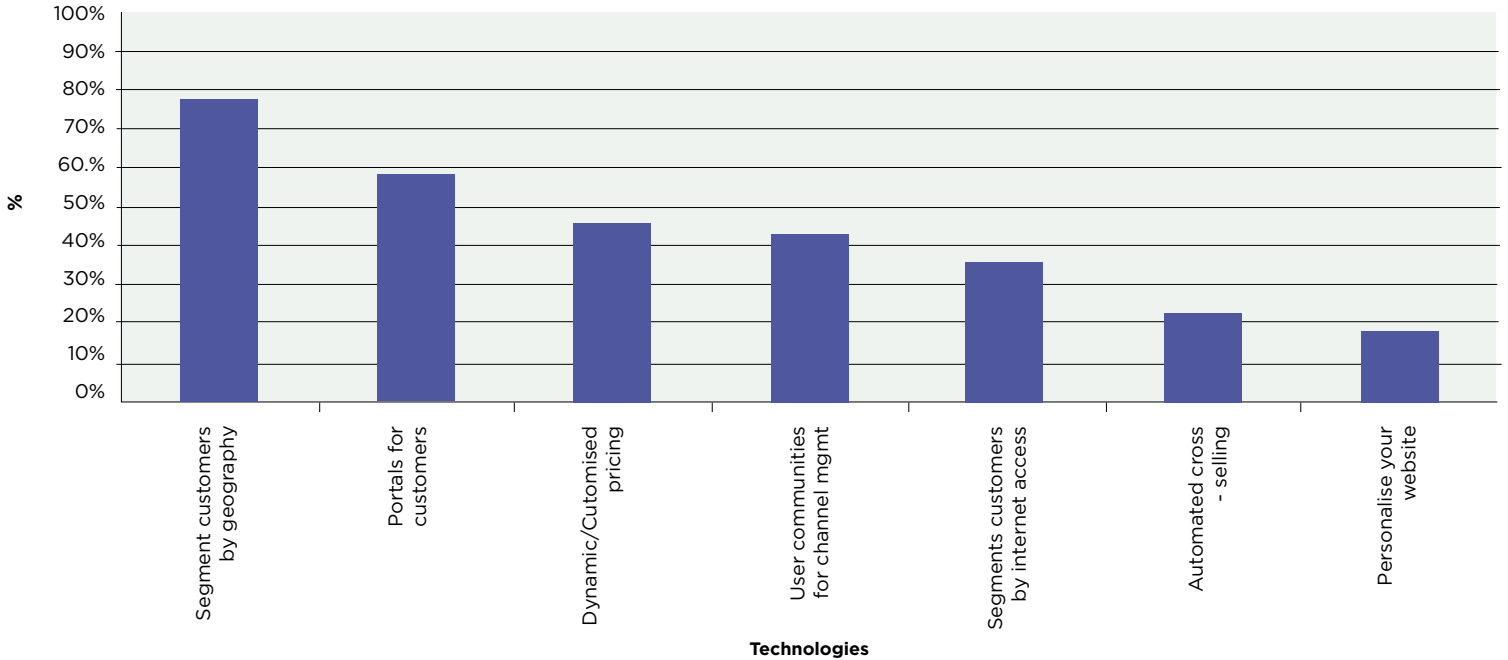
Grainer, Waikato District Health Board: "The automation of functions is an art, as the risks of simply moving work or raising expectations are ever present. However, our major challenge is in finding and using good models of human change management that are relevant to the 2000s and the technology on offer."

respondents indicated that IT provided a better understanding of competitors' products and services.

Mainfreight CIO Kevin Drinkwater says deployment of ICT allowed the company to meet the customers' "insatiable appetite for information on the progress of their goods throughout the supply chain.

"Our ability to provide visibility and velocity of this information, through our portal Main-chain, has lead to the winning of significant new business in the past year. This technology enables customers to make more informed decisions quicker and with less effort. Significant investment is being made in ensuring we can provide much deeper and wider views of this information to our customers, so they can maintain their competitive edge through using our technologies."

Kevin Bowler, chief executive, Yahoo!Xtra, says, "It is great to see New Zealand businesses

Strategic Areas Improved by Technology
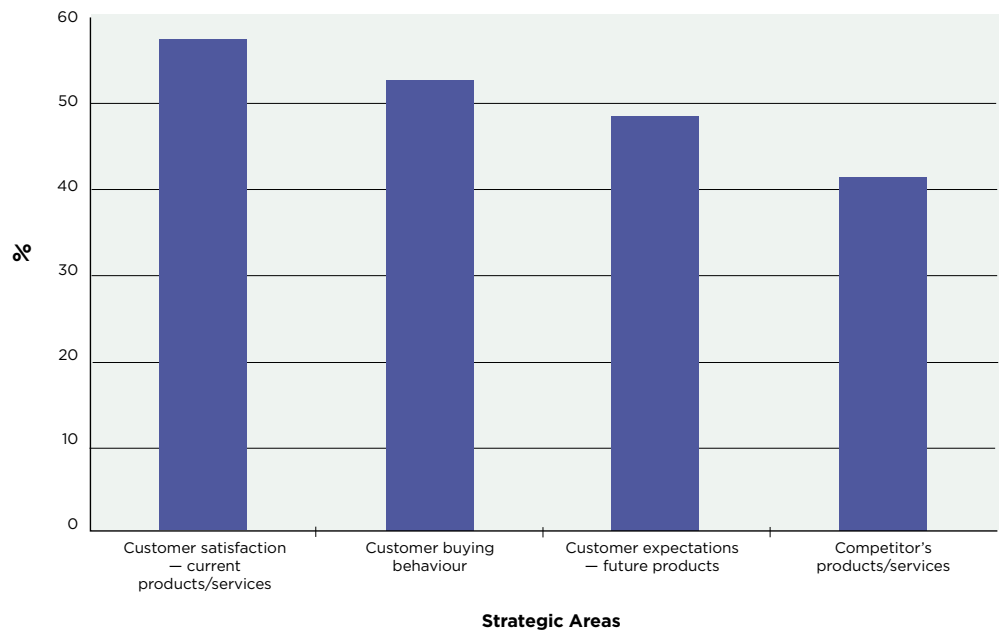
prioritising website development and e-commerce in recognition of the growing importance of the web to consumers. We are seeing through our own research that consumers are increasingly expecting to engage with businesses through their web presence, whether their intention is to find information or to make a purchase online."

Conclusions

The survey provided a critical snapshot of the recent use of IT in organisations in New Zealand and provided some indication of upcoming trends. As part of a global study, this data will provide important input that will contrast the adoption of IT in New Zealand vis a vis other parts of the world. In covering a broad cross-section of New Zealand organisations, the survey provides a picture of what is happening in multiple industry sectors as opposed to looking at a single, technology-oriented sector. Specific industry sector information will vary from segment to segment, though the survey aimed to get a national level perspective on IT deployment.

But, as Alan Grainer, chief information officer of Waikato District Health Board puts it, effective deployment of ICT is always accompanied by people issues:

"The automation of functions is an art, as the risks of simply moving work or raising expectations are ever present. However, our major challenge is in finding and using good models of human change management that are relevant to the 2000s and the technology on offer." ■

The authors are co-directors of CODE, The Centre of Digital Enterprise, a research centre at the Auckland University Business School. CODE studies the adoption of information and communication technologies and how these are transforming individual organisations, national and transnational economies and emerging business models. They were assisted in this research by Helen Lacey, CODE administrator; Christoph Breidbach, PhD student and Jesse Candy, postgrad student.

The Business and Information Technologies Survey will allow New Zealand enterprises to benchmark their IT-related performance with other parts of the world. More details of the results of the global survey and related activities can be found at:
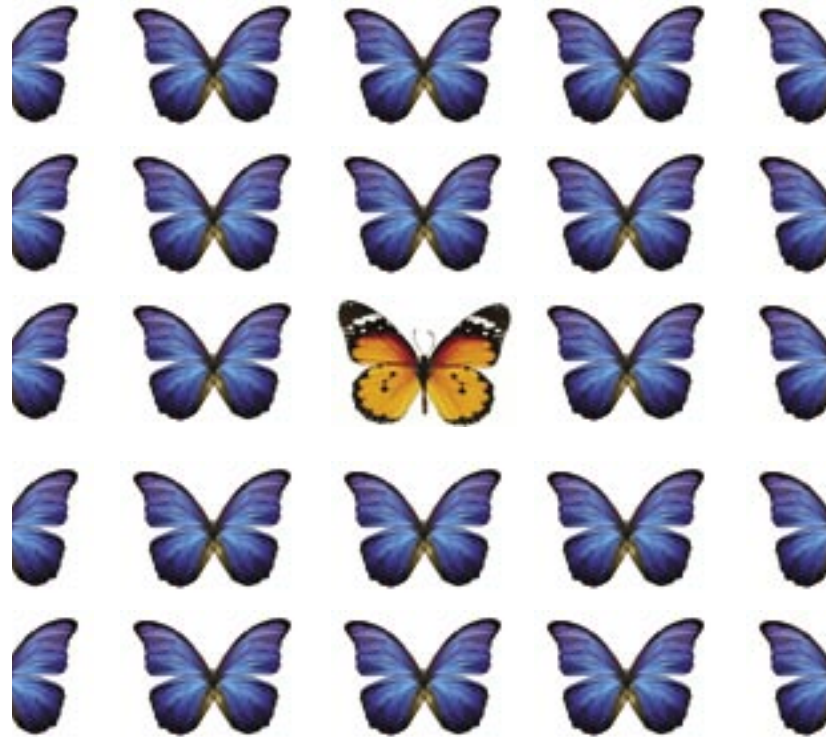
BIT Global Research Network:
http://www.anderson.ucla.edu/x683.xml

CODE website:
http://www.code.auckland.ac.nz/comwebcontent/c_bitsurvey.aspx

GMR2008 Conference
http://www.code.auckland.ac.nz/gmr2008

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