



# NewZ

July 2012



Featuring ...

The R-map and risk management

Quality Systems Auditing

Process curves

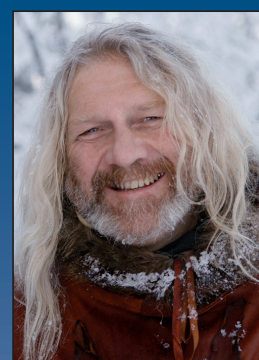
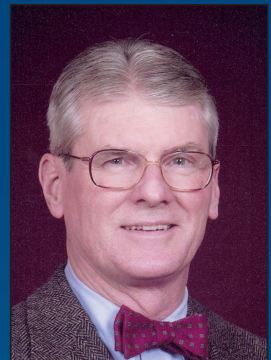
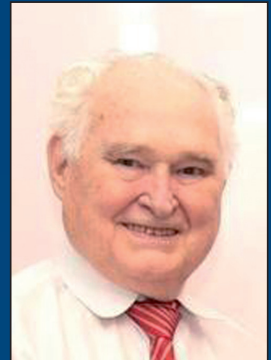
By the numbers

Just whose job is it anyway?

World Business Capability Congress

And more ...

## Introducing ...



## Keynote Speakers, World Business Capability Congress 2012



# In the Q



This month it's all about getting the numbers right and then making decisions, based on those numbers, to reduce risk. In 2004 a boy was killed in revolving doors in a Japanese mall and as a result 45 doors were recalled, leading to the use of the R-map to reduce risk (p.6). And did you know that NZOQ's risk management training provides tools for integrating risk management into your

organisational processes? (p.5)

Many of us think that our business doesn't need to collect data, yet you would be amazed just how much insight those numbers give into your business (p.15). And using a histogram to display your data can help you gain an understanding of your business performance (p.14). If you are an auditor and looking to gain an internationally accredited competence auditing qualification then enrol in the next QSA training course (p.5).

How often have you sat in a meeting and thought, "Didn't we discuss this same thing last year, five, and ten years ago?" Turn off the smart-talk brigade by communicating with RACI and ensure the right level of communication is taking place within your organisation (p.11). And if you are looking to incorporate CSR in your organisation then you need to be a transformational leader (p.13).

We also bring to your attention profiles of some of the keynote speakers at the World Business Capability Congress – from benchmarking to entrepreneurs – this is a great line-up of quality professionals you will want to hear more from (p.3).

My thought for the month: Quality is all about getting the numbers right!

Kind regards

**Lyn Nikoloff**

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learn-share-grow



**Front page: World Business Capability Congress 2012: Keynote speakers, see pages 3-4.**



# World Business Capability Congress 2012: Keynote Speakers

## 5 to 7 December, Auckland

### Developing Business Capability: Rod Oram



Rod Oram was: Landcorp Agricultural Communicator of the Year for 2009; winner (in the individual category) of the Vero Excellence in Business Support Awards 2010; and Columnist of the Year (consumer category), national magazine awards for his columns in *Good*, a consumer sustainability magazine.

Rod has over 30 years' experience as an international business journalist and has worked for various publications in Europe and North America, including the *Financial Times* of London. Currently, he is a columnist for the *Sunday Star-Times*; a regular broadcaster on radio and television; and a frequent public speaker on business, economics, innovation, creativity and entrepreneurship, in both NZ and global contexts.

### Business Excellence Award Administrators (Panel Discussion): Ravi Fernando

Ravi Fernando is a Business Improvement professional with recognised expertise in improvement methodologies and leadership frameworks. Ravi currently works as the Head of Improvement Solutions for SAI Global, leading a team that retains the custodianship of the Australian Business Excellence Framework (ABEF), and who focus their efforts on leveraging the ABEF to develop client capability to achieve sustainable performance.

Ravi also acts as the Awards manager for the associated Australian Business Excellence Awards, which have been celebrating business success in Australia for twenty-five years as Australia's premier business award programme. In this role, Ravi represents the Australian business excellence movement at the Global Excellence Models Council and chairs the annual Australian Business Excellence Conference.

### Business Excellence Award Winners (Panel Discussion): Tony Stallinger

Tony Stallinger is the Chief Executive of Hutt City Council and was part of the team that worked towards the council being awarded gold in the 2011 New Zealand Business Excellence Foundation awards.

Hutt City Council has a diverse range of responsibilities and all its services are delivered under a common purpose: "Work as a team with our communities and partners, to create a better city and stronger community." Tony, and others employed by the Council, takes pride in making a positive difference to the lives of people in Hutt City.

### Leadership: Dr Cyndi Laurin



Dr Cyndi Laurin is the author of bestselling *Catch!* (Berrett-Koehler, 2005) and *The Rudolph Factor* (John Wiley, 2009). She is also a highly sought-after international keynote speaker and the Vice President of Operations for CDMG, LLC (Consumer Data Management Group – a software development company that builds CRM solutions for small businesses).

Cyndi obtained her PhD in Leadership and Organizations from the University of California, Santa Barbara and currently resides in Arizona. For the following ten years she was an Assistant Professor in the College of Business, California Polytechnic State University, specialising in process and performance excellence.

During the past 7 years she has focused on tools and thinking around quality initiatives such as lean, six sigma, and the Baldrige Performance Excellence framework, as well as tenets around leadership, employee engagement, organisational political structures, and reward structures, also known as "The Four Pillars of Organizational Greatness".



**Leadership: Davey Hughes**



Davey Hughes is the founder of Swazi Apparel, Levin. The brand has received global recognition from prominent sports people as being among the very best in outdoor clothing available.

Davey's philosophy in business is simple: ensure business doesn't become just a numbers game. And he is committed to social responsibility, primarily creating meaningful jobs for people in the provinces.

He is also an adventurer, conservationist, bestselling author, and entrepreneur. He is currently filming his upcoming TV adventure series, "Adventures in Wild Places". His biography *Untamed* became a New Zealand best seller.

**Measurement, Analysis and Knowledge Management: Dr Robert C. Camp**

Robert Camp is a leading authority on benchmarking and its use to obtain best practice knowledge and superior performance.



Dr Camp's business career includes DuPont, Mobil Oil, and 23 years with Xerox Corporation. While at Xerox, he created benchmarking programmes and led large-scale benchmarking investigations. He has presented the Xerox benchmarking experience at major events in 29 countries throughout Europe, Asia Pacific, Africa, and the Americas.

He is the author of the best selling *Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance* first published in 1989 and now available in thirteen languages. Together with *Benchmarking: Finding and Implementing Best Practices* (1995) and *Global Cases in Benchmarking: Best Practices from Organizations around the World* (1998), these books share his insight and extensive experience.

**Process Management: Dr H. James Harrington**

Dr Harrington is an international performance improvement guru and business man. Over his long career he has authored over 35 books and developed many concepts; some of the more important ones are: Poor-Quality Cost, Total Improvement Management and Business Process Improvement. He was named Professional of the Year in 2010 and given the title of "The Global Leader in Performance Improvement Initiatives" by the Australian Quality Association.



He is past President and Chairman of American Society for Quality and the International Academy for Quality, is CEO of the Walter L. Hurd Foundation and the Harrington Institute. He is also a lifetime Honorary Chairman of the Asian Pacific Quality Organisation. He has been given many awards for his activities and he has had four awards named after him.

*At the World Business Capability Congress he will be giving a special Keynote Webinar, from his home in the United States, on Streamlined Process Improvement.*

**Strategy: Charles Aubrey**

Charles Aubrey is the former President and currently the Chairman of the Asia Pacific Quality Organisation. He is an Academician and Vice President of the International Academy for Quality. Charles is the Vice President Quality and Performance Excellence and a Master Black Belt at Anderson Pharmaceutical Packaging, a subsidiary of Fortune 500 AmerisourceBergen Corporation Charles.



He received the Harrington/Ishikawa Medal, the Shanghai Magnolia Quality Award, the Yoshio Kondo Research Medal and the Lancaster Medal. He is an Honorary Member of the Argentine Quality Association and the Philippine Society for Quality.

He has authored and co-authored eight books on Performance Excellence. He has published over 100 articles in English, Spanish, Italian, Portuguese, Chinese and Arabic.

**Customer and Market Focus: Professor Robert E. Cole**

Professor Cole is Emeritus Professor at the Haas School of Business and Dept of Sociology at the University of California, Berkeley. He is a long-term researcher on quality improvement, innovation and organisational change in Japan.



He has written extensively on the Japanese and U.S. auto industries and on the prospect for high tech renewal in Japan (*Recovering from Success: Innovation and Technology Management in Japan*, Oxford University Press: 2006). His most recent publication is *What Really Happened at Toyota?* (Sloan Management Review, 2011). His present research focuses on Challenges for the Japanese Software Industry.

**Process Management: Professor Peter Hines**

Professor Peter Hines is the Co-Founder of the Lean Enterprise Research Centre at Cardiff Business School; and Chairman of S A Partners, a specialist consultancy organisation operating in the UK, Ireland and Australia. He is Adjunct Professor at the University of South Australia and has an associate role at LERC.



He has undertaken extensive research into Lean Thinking and Supply Chain Management and pioneered a number of key concepts, widely applied in Europe and Australia, including: Supplier Associations, Value Stream Mapping and the Lean Business System. He has written several books, including *Creating World Class Suppliers*, *The Lean Enterprise*, *Value Stream Management* and *Staying Lean* (first published in 2008 and was the 2009 recipient of Shingo Research and Professional Publication Prize).

**Registrations are now open for this significant congress. For more information and to register online please visit <http://www.worldbusinesscapabilitycongress.com/>**

# Risk Management

15 to 16 August, Christchurch

**Course Developer and Tutor, Ian Hendra responds to an article published in this issue about the R-map and outlines why NZOQ's Risk Management training isn't a nice-to-have, but essential.**

"Give me a lever long enough and a fulcrum on which to place it and I shall move the world," so said Archimedes. I assume he was talking about tools, because you can't do much without them. Risk Management training is worthless unless participants come away knowing about Rudyard Kipling's Six Honest Servants, namely: WHY it's necessary; WHERE it fits in the scheme of things; WHAT it entails; WHEN it needs to be done; WHO is involved in it; and HOW to do it.

The 5 Ws are easy because they are mainly matters of policy; it's the HOW that flummoxes most. The theory is all very well, but putting it into practice is a whole different ball game, and there is much more to it than a heat map matrix and a database that nobody knows how to use. Unfortunately, Risk Management as a stand-alone activity is a self-perpetuating nonsense; Risk Management teams operating in isolation from day-to-day operations are a waste of space and resources.

Managing risk is a core management activity; some say the ONLY justification for having any managers at all. I would add quality assurance to that, but risk and quality are really two sides of the same coin, delineated only by which stakeholders' interests are uppermost at the time. Hence it follows that QA tools can apply to Risk Management and

vice versa. Not only that, but it follows that Risk Management training should be undertaken by any manager whose job it is to apply resources to an activity with the expectation that it will be done in accordance with stakeholder expectations.

Like most current Risk Management courses, NZOQ's includes: ISO 31000:2009 Risk Management - Principles and guidelines, but the NZOQ course also provides tools like some of those covered in ISO 31010:2009 Risk Management - Risk assessment techniques. ISO 31010 is not so well known compared to ISO 31000 and certainly not so well promulgated. And our NZOQ course is concerned also with the glaring anomaly in these ISO standards that the word 'hazard' should be replaced with the expression 'risk source'.

With tools in mind the article in this month's QNewZ, "The R-Map" by Matsumo Koji is noteworthy as it takes basic ISO 31000 principles and applies them, among others, to the safety of revolving doors where risk is aligned with the level of injury sustained from accidents. It's pleasing to see that the R-Map breaks down the conventional 5 x 5 heat map matrix approach into 3 x 5.

This is just the kind of material that makes NZOQ's Risk Management course much better value than many others. So enrol today in the next course to be held in Christchurch.

**To enrol and for further information please contact Tess Stewart, tel 06 351 4407 or [quality@nzoq.org.nz](mailto:quality@nzoq.org.nz)**

# Quality Systems Auditing 2012

23 to 27 July, Auckland (or distance learning option)

**Someone said to me recently that auditing is a 'dead' profession! Far from it, but the scope has changed greatly over the past 25 years or so, writes Tony Stephenson, QSA course tutor.**

Let me elaborate a little; back in 1985 audit courses (and we were the first in the Southern Hemisphere) tended to be dominated by many ex Ministry of Defence personnel who held an 'Inspectors' view of Quality. There was never any great consideration of the overall business set of processes.

So there was a degree of 'shock – horror' when the antipodeans came up with a 'total business approach' to audit training. Our approach looked at quality concepts as they applied to every industry process in manufacturing, and in the last 15 years to the service industries. We were successful because industry accepted that our training was good value.

There are two ways to achieve an internationally accredited competence auditing qualification: distance learning and a two-day face-to-face; or a five-day face-to-face programme.

During the programme you will be taught auditing skills such as questioning and listening, understand the roles



of regulatory and non-regulatory audits as well as second party programmes, and understand right from wrong in a range of industry situations. But wait, there is more... you will be able to add value to an audit or assessment, understand that all businesses manage risks with most quality processes linked to Risk Management, be confident about your audit results, and be valuable to your employer.

The Distance Learning option does not involve complex software; the actual online part of the course includes Skype interviews with your tutors. Distance learning will give you time to think and plan.

We are very proud of what we achieved from NZ back in 1985. And as part of our ongoing refreshment of the programme, additional modules will be available covering Health and Safety, Environment and Food Safety. So if you want to make a difference in your organisation then enrol today in the QSA programme.

**For further information and to enrol on the QSA course please contact Tess Stewart, National Office, Tel 06 351 4407 or [quality@nzoq.org.nz](mailto:quality@nzoq.org.nz)**

# The R-map

**Matsumoto Koji, Products Safety Advisor in Products Safety Technology Centre, Japan presented a seminar at the China Quality Association and the Japan Science and Technology League in June 2010. His address, entitled 'Product safety management and risk plot (R-Map) method', has been translated by Chong Zhao and we bring it to your attention.**

## Revolving door causes death

At 11:30 am on March 26, 2004, the revolving door of the Roppongi Building in Tokyo killed a 6-year-old boy, Mizoguchi. The boy's head was stuck firmly between the door and the column.

This incident had a tremendous impact within Japan, and the media set about investigating revolving door accidents. Their results showed that accidents caused by revolving doors were far more serious than people realised.

Revolving doors were chosen in many modern Japanese buildings to ensure the stability of air pressure and temperature. Between 1994 and 2004, approximately 500 large automatic revolving doors were installed in buildings, causing hundreds of accidents and even, in one case, a death.

The newspaper, 'Asahi Shimbun', published the following data on April 20, 2004 – injuries and deaths caused by large automatic revolving doors included: 1 death (in the Roppongi Building); 23 serious injuries (fractures of the foot or waist); 110 moderate and mild injuries (collision, laceration, and bruises); and 137 accidents with no reported injury.

The Roppongi Building has 45 large automatic revolving doors and within its first year after opening there were 32 crushing and collision accidents, 10 of which required paramedic first aid.

Do these doors need to be recalled, repaired or should the safety risk be ignored? Of the 45 revolving doors in the Roppongi building, should any such problem be rectified?

A Japanese public opinion poll showed that 60% of respondents think that the country's large automatic revolving doors (500 in total) should be recalled, and 40% commented that they should be improved. But for the Roppongi building, almost 100% of the respondents wanted the doors recalled.

The Government made a mandatory recall for all revolving doors in the Roppongi building, preventing the said building from reopening until the revolving doors had been changed to sliding doors. This put an end to revolving door accidents in the building.

However, was a total recall necessary for one accidental death? Couldn't the matter have just been rectified? What else should the government do to allay the public's concerns?

## Using the risk plot method: R-map

The Japanese government purchased a risk plot method (R-Map) in order to create a common, visible platform to help bridge the communication gap. This method creates a common language for disclosure of information and leads

to consensus. For example, one of the key benefits of an R-map is that it can make the government's decision-making more convincing, gives companies a clear reason why their products are being recalled, and brings the public on side.

The R-Map was first set in 2004 by the Japan Science and Technology Development Alliance. This risk management approach is a visible tool based on the life cycle of products

and services, enabling risk assessment to be conducted, and gives an early warning of a possible recall. The R-map uses different aspects of development, design, manufacturing, sales, use and disposal.

It has been adopted by Japanese and international manufacturers of home

appliances, office equipment, medical equipment and parts. Since 2008, some government administrative agencies have begun to use it to monitor 8000 kinds of industrial products. It is being used as a reference for public safety early warning management and it also encourages organisations to reduce risks continually in a competitive environment.

Currently, there are many risk management tools on the market, such as Risk matrix, Pre-Hazard Analysis / risk analysis of the production process (PHA), Fault Tree Analysis (FTA), Failure Mode and Effects Analysis (FMEA), Hazard and Operability / Operation Analysis (HAZOP), Hazard Analysis and Critical Control Point (HACCP), etc.

Developed in Asia, the R-Map has drawn interest from throughout the world and is being promoted by the Japanese government. During the next five years it is anticipated that it will be more widely accredited and used within the international market place.

## R-Map: the method

According to the risk management standard, ISO / IEC Guide 51:1999, safety is achieved by reducing risk to a tolerable level. Tolerable risk is determined by the search for an optimal balance between the ideal of absolute safety and the demands to be met by a product, process or service, and factors such as benefit to the user, suitability for purpose, cost effectiveness, and conventions of the society. There can be no absolute safety: some risk will remain, defined in this Guide as residual risk. Therefore a product, process or service can only be relatively safe.

If there is any risk which hasn't been identified in the stage of product development, we can try to collect and analyse the usage data after release of the products to market. This data can then be fed back to the development stage, thereby providing product safety usage information so the necessary control measures can be taken.

R-Map works for risk management in four steps (see Figure 1).

### 1. R-Map is divided into three areas (see Figure 2)

Area A is the intolerable risk area. If this risk happens during the product development stage, countermeasures should be taken immediately. If there is risk which cannot be reduced then the product should not be developed any further. If the

R-map is a visible tool based on the life cycle of products and services



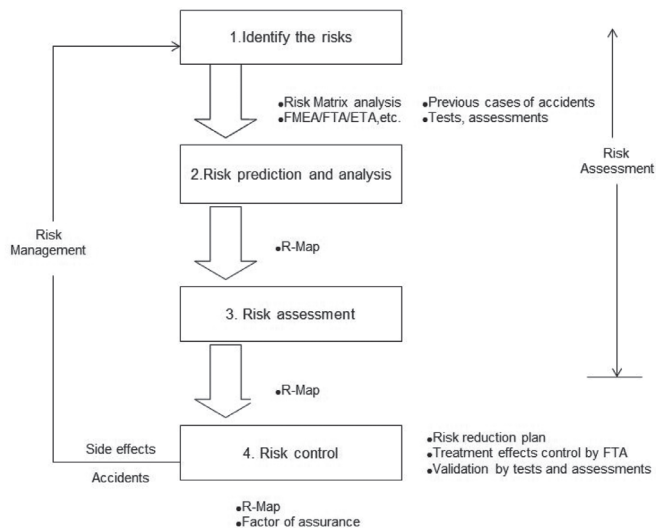


Figure 1: The application of R-Map.

product has already been released into the marketplace, it should be publicly recalled (and repaired).

Area B is the 'As Low as Reasonably Practicable' (ALARP) area. Products developed and produced in this area must not have any risk, except where the technology has beneficial side-effects. The ALARP principle is that the residual risk shall be as low as reasonably practicable; only if risk reduction is not feasible or the cost involved in reducing the risk is disproportionate to the benefit gained, will the risk be tolerable.

Area C is the safety area. In this area, compared with other tolerable risks, there is relatively low risk of harm and frequency. In this area risk can be ignored.

**2. The four characteristics of R-Map method**

1. *Integrated with international safety standards.* The R-map considers the ISO/IEC Guide 51 as the highest requirement and emphasizes practicality in the development process.
2. *There are some universal approaches.* The research achievements of different industries can be applied to any type of product, especially consumer products and production equipment. Its application in component, material and the automobile industries is currently under investigation. For the food, medicine, atomic energy, aviation and other industries, its applicability has not yet been considered.
3. *A common criterion of evaluation is established.* This criterion is established according to the development, manufacturing, sales, use, scrap and other stages. It can also be used throughout the product life cycle. Therefore, based on the PDCA cycle, we can use the R-Map for continuous improvement to the risk management process.
4. *A type of safety identification risk assessment method.* In the development stage, the risk can be identified and reduced until it reaches an acceptable level (safety area).

**3. The degree of hazard**

- Fatal: death, fire and buildings burned;
- serious: serious injuries, hospitalization and fire;
- critical: ambulatory clinical treatment, products on fire and burned;
- mild: mild injuries and burns.

Occurrence Frequency	5	frequently	C	B3	A1	A2	A3	Area A
	4	occasionally	C	B2	B3	A1	A2	
	3	sporadically	C	B1	B2	B3	A1	
	2	rarely	C	C	B1	B2	B3	Area B
	1	very little	C	C	C	B1	B2	
	0	hardly	C	C	C	C	C	Area C
		no hurt	mild	critical	serious	fatal		
			0	I	II	III	IV	

Figure 2: R-Map schematic diagram.

**4. The frequency of risks**

It is important to maintain an annual zero frequency of accidents for each product to ensure a tolerable risk to the public. This means that no matter how harmful it is, 'the highest tolerance of risks to society' is the most important. The frequency values will be different, depending on the industry and age of the product. For example:

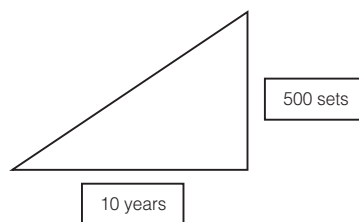
- *Chemical Industry:* 10<sup>-5</sup> (part/facility year) (Uehara 1985), the current safety level target is reduced by an order of magnitude.
- *Image diagnostic medical devices:* 10<sup>-6</sup> (piece/set year). Inside the X-ray image diagnostic equipment, there are high-voltage components in order to produce X-rays. In addition, the X-ray itself has a hazardous energy and should be used under the risk effect standards.
- *Elevators, escalators and large automatic revolving doors:* 10<sup>-6</sup> (piece/set year). This value was developed from the accident statistics and the R-Map made from the results of the public survey.
- *Automotive:* 10<sup>-7</sup> (piece/set year). This value was developed from the R-Map made from vehicle recalls.
- *Daily life consumer products:* 10<sup>-8</sup> (piece/set year). The approximate value was calculated from the analysis of several home electrical appliance recall cases. Since then, the Ministry of Economy and NITE took this value as the reference data for recalls. However, the value for electric car seats and electric bicycles was estimated at around 10<sup>-7</sup>.
- *Important safety components:* less than 10<sup>-8</sup> (piece/set year). Important safety components (parts) found in cars and home electrical appliances shall have more stringent safety requirements than the requirements of the products themselves. The product failure safety design should be considered that even if the parts do not meet the requirements (in fact most of them do not), they will not cause safety accidents. It's very necessary to consider the basic safety for the whole system.

**R-Map application: automatic revolving doors**

Back to the automatic revolving door incident of the Roppongi Building, where survey data was used to create the R-Map based on:

The total unit number of functioning large automatic revolving doors in Japan over a ten-year period was calculated as:

500\*10/2 = 2500 (set•year) (increasing



year by year from SOP to a large number of products running)

**IV** death (the first time in Japan) occurrence frequency:  $1/2500 = 4.0 \times 10^{-4}$  (piece/set•year).

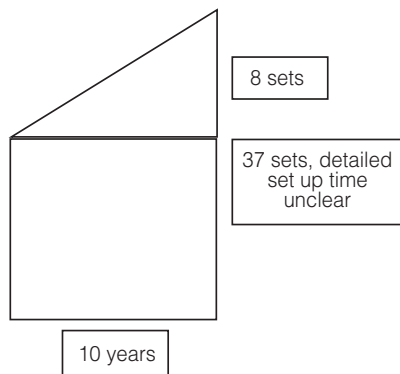
**III** (foot or lumbar fracture) 23 cases, the occurrence frequency:  $23/2500 = 9.2 \times 10^{-3}$  (piece/set•year).

**II** 110 cases of moderate and

**I** mild injuries (collision, laceration, bruise), the occurrence frequency:  $110/2500 = 4.4 \times 10^{-2}$  (piece/set•year).

**0** without hurt: 137 cases, the occurrence frequency:  $137/2500 = 5.5 \times 10^{-2}$  (piece/set•year).

There were 8 sets of doors of the same model in the Roppongi building, and 37 sets of similar models, making a total of 45 sets of doors. The accumulated operating sets can be calculated as follows:  $(37 \text{ set} + 8 \text{ set}) \times 1 \text{ year} / 2 = 41 \text{ set} \cdot \text{year}$ .



**IV** one death, the occurrence frequency is:  $1/41 = 2.4 \times 10^{-2}$  (piece/set•year).

**II** 10 cases of moderate injuries (Emergency Rescue), the occurrence frequency:  $10/41 = 2.4 \times 10^{-1}$  (piece/set•year).

**I** 22 cases of mild injuries (no emergency rescue needed, crush or conflict), the occurrence of frequency:  $22/41 = 5.4 \times 10^{-1}$  (piece/set year).

Based on the R-Map Figure 3 was developed and the revolving doors of the Roppongi Building were identified at the A3 area, and the revolving doors of Japan were at the A1 area in the R-Map. This means that all of them should be recalled. The assessment results of the risk plot are consistent with the public poll results, while the risk plot assessment can make a better projection.

After the accident, on March 30 of that year, the Japanese Metropolitan Police Department conducted a search of the estate management building (Mori Building), and Sanwa Shutter industry – manufacturers of the revolving doors – as they were under suspicion of professional negligence.

A thorough investigation was made of the 'blind' range of sensors installed on top of the revolving door, such as how long it takes from the sensor behaving abnormally to the revolving door coming to a stop, how many such incidents up to that date, etc.

One of the reasons they chose automatic revolving doors for the Roppongi Building was the number of visitors: from April 2003 until September 2003 there were a total of 26 million visitors to the building. This was too many people for two sliding automatic doors as they would always be open. So to save energy, the company selected automatic revolving doors, thus improving the speed of rotation.

The revolving doors have a good seal performance, but this new type of construction equipment still had many technical difficulties and shortcomings. For example, when people or obstacles are crushed by the doors, the doors cannot be stopped or reversed immediately, and there is no buffer device.

In the Roppongi Building, the doors' infrared sensor manual adjustment was located at the top (higher than 130 cm) and bottom (lower than 15 cm) of the doors, so there were some blind corners (the height of the dead child was 117 cm). In addition, the revolving door in that accident was imported from Europe and was modified before use in Japan.

## R-Map identified five requirements to prevent injury

Because of the mall's wind resistance and other requirements, the raw material of the revolving doors was changed from aluminium to stainless steel, which made the doors weigh 3 times more, but the braking and other systems were not upgraded at the same time. After

the accident occurred and the sensor sent an alert, the 2.7 ton door continued its rotation for 25~30 cm. For all these reasons, this led to the tragedy.

After the accident, the Roppongi Building replaced all the revolving doors with automatic sliding doors. All the automatic revolving doors in Japan should meet the requirements of 'The Guide about Prevention of Auto Revolving Door Accident' issued in June 2004 and JISA4721 safety guidance issued in 2005, apart from the recall position outlined in the Japanese administrative guide.

According to the R-Map, Table 1 shows the risk reduction levels and five requirements. Alongside these five points of the R-Map, and in addition to replacing automatic revolving doors with sliding doors, there were a further four major measures to prevent injuries: first, reduce the rotation speed from 80 ~ 65 m/sec to 35 m/sec; second, install a safety rail; third, improve the probe-end, non-contact human sensor and braking system; and finally, conduct operation management and equipment inspection. By these four actions, safety protection combined with the other requirements, much of the risk would be eradicated or minimised.

The issue for public safety management is: How to prevent a recurrence of the tragedy in the Roppongi Building. The first level is to ensure the reliability of the technology. The second level is the framework of the safety management; that is, safety-related data and information collection, the system of regular safety conditions review and internal full-time safety management personnel training. The third level is the basic principle for the safety, which means safety management is the responsibility of top management.

For the management of product safety, there are many examples of risk reduction, such as home lawn mowers exported from Japan to the USA. Although the instruction manual requires the users to wear gloves and protective glasses when they are using the mowers, a few accidents have occurred when stones flicked into the user's eyes. As many users have chosen not to wear or use safety gear in hot weather, the injuries could not therefore be completely eliminated. So Japanese mower manufacturers began to change the design of single-edged blade to double-edged blades, and added facilities for deceleration and used other protective ways to reduce the risks.



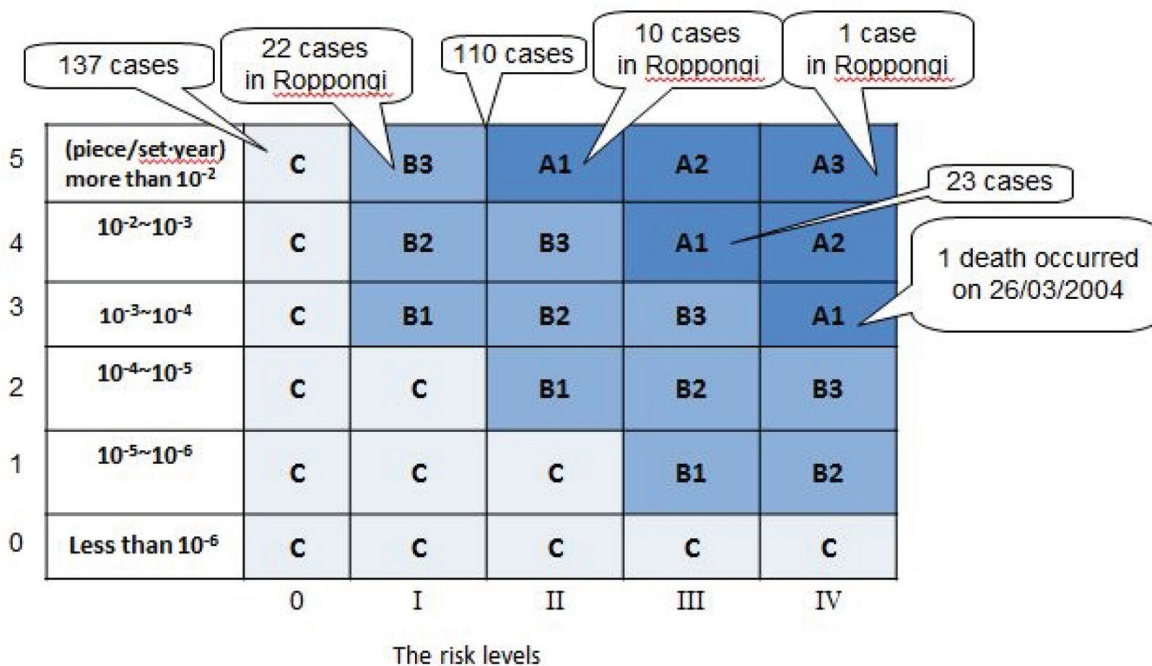


Figure 3: Auto revolving door accidents.

Table 1: Risk reduction levels and requirements.

Risk reduction levels	Contents	Specific measures
1. Risk elimination	Eliminate the risk from the product itself, to prevent that risk from appearing again.	Make sure the impacts of movement, location, thermal, mechanical, electrical, chemical, electromagnetic, sound, magnetic energy, radioactive substances, hazardous substances, microorganisms and sharp edges are controlled to beneath the level which can be damaging to the human body.
2. Risk reduction	<ul style="list-style-type: none"> <li>Reduce the risk of the product itself;</li> <li>Reduce the probability of its being dangerous, or the degree of likely harm, or reduce both.</li> </ul>	<p>A. Reduce the probability of occurrence</p> <ul style="list-style-type: none"> <li>A system design which won't be an immediate danger even if an error occurs (safety protective devices, proximity[sic], multiple).</li> <li>Reduce the probability of misuse (misuse prevention devices, mischief prevention devices).</li> <li>Isolation (entry forbidden, separated protective and operational parts, interlock).</li> <li>Management of safety rates, rated value reduction, use of inflammable materials, important parts and important process.</li> </ul> <p>B. Reduce the level of damage and injury</p> <ul style="list-style-type: none"> <li>Reduce the energy use/production.</li> <li>Reduce the working energy (ground fault protection, filters).</li> </ul>
3. Safety devices/ protective devices	Automatic avoidance and protection before a hazard or danger occurs, or reduce the transmission and amount.	<ul style="list-style-type: none"> <li>Detection of a dangerous condition in the early stage and cut-off (over-current protective devices, a variety of detection devices and other safety protective devices).</li> <li>Protective devices, protective glasses, protective clothing.</li> </ul>
4. Alarm	Automatic detection of dangerous conditions, send advice of risks and safety instructions to the operators.	<ul style="list-style-type: none"> <li>Work on finding the abnormal state through the alarm device.</li> <li>Recognize the dangers and install avoidance from dangerous operations (reduce the speed, emergency stop devices, emergency stop switch).</li> </ul>
5. Instruction manual and notice sign	<ul style="list-style-type: none"> <li>Pre-provision of information about the residual risk.</li> <li>Education and training.</li> </ul>	The notice sign and warning to the users, management and supervisors. Also include education and training.

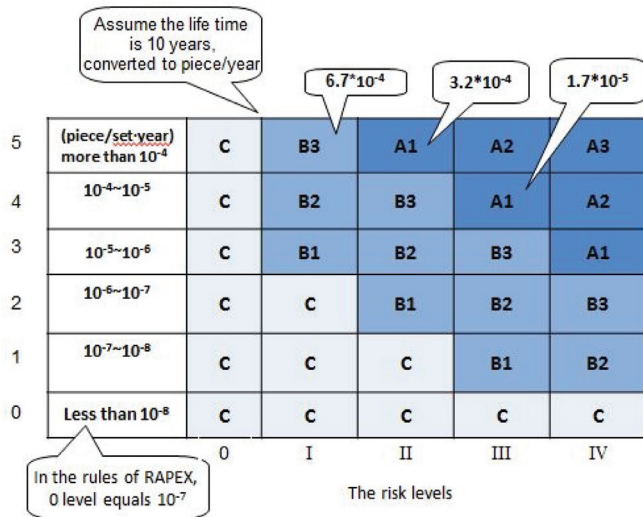


Figure 4: The case of broken metal hammer.

At the early stage of exporting Japanese electronic products to China, there have been some accidents where the fuse in the current protection device melted and the circuit breakers led to fires. Why wasn't the safety fuse protective? After an investigation, it was found that there was voltage instability in some districts in China. The voltage could jump instantaneously to 400 volts (nominal voltage is 220 volts), before the fuse was completely melted. The circuit breakers burned because of the heat accumulation. Canon, Matsushita Electric and other Japanese companies did a large-scale research, and compared the samples (accidents in 100 sets per year) from China, Europe, America and Southeast Asia, etc. The risk was about 1% according to the different usage environments in the parts of the world they had studied and so they changed the design. This was also a classic case in the study of the Japanese R-Map.

### Recall hammers in Europe

One important research use of the R-Map is the Rapid Alert System (RAPEX) for EU non-food consumer products. RAPEX is a rapid alert system used to inform the risk of non-food consumer goods, and is set up according to the 2001 amendment of 'EU General Product Safety Guides' which came into effect in January 2004. It is mainly for the EU Member States and the European Commission to inform them of the situation regarding dangerous products found in the EU market place.

In the 'Risk Evaluation Guides of non-food consumer goods' set by the European Commission, there is a classic case regarding a flat-head metal hammer with a black plastic handle. It will be used here as an example for the Japanese R-Map method.

In this case, the risk of defects related to the loose fix between the hammer rod and the handle (1/5 piece/set•durability period). When normal force was used, once the handle was broken (1/2), the material of the hammer was easily damaged under the dynamic impact (1/10).

For example, suppose a hammer was being used to hit a nail into a wall and the hammer broke because it was not

strong enough (made of an inappropriate material), and a fragment flew into the user's eye and led to blindness. The injury could be described as 'eye injury, foreign matters in one eye: permanent loss of vision (one eye).' Let's illustrate how to estimate the probability of each step and calculate the overall probability according to the hammer which was broken at the time of fixing nails.

**Step one:** Because the material of the hammer was not strong enough it broke when banging a nail into the wall. The fragility of the material could be detected by tests. Based on the report of the fragility level, the probability of the hammer breaking in a lifetime was 1/10.

**Step two:** The probability of a user being hit by a fragment was about 1/10, because a person's upper body was exposed to the debris, and the flight area of the debris was around 1/10 of the hemisphere area in front of the wall. If a user stands close to the wall, his body may occupy a larger place of the hemisphere, and thus the probability of injury will be greater.

**Step three:** The probability of a user's head being hit by a fragment was about 1/3, as the ratio of the head and upper body was estimated to be around 1/3.

**Step four:** The probability of a user's eyes being hit by a fragment was about 1/20, as the area of the eyes was about 1/20 of the head.

The probability of the user's eyes being hit could be calculated by multiplying the probabilities in the above steps: i.e.,  $1/10 * 1/10 * 1/3 * 1/20 = 1/6000$ .

After estimating the overall probability of an injury, we assumed the lifetime of the hammer was about 10 years. So, shall we recall the hammer or do nothing for this model of hammer? The results were the same for the risk map (see Figure 4) and the European Union decision. The risk

sat between recall and critical areas, but the final decision of the EU was to recall all these hammers because of their threat of functional loss to the human body.

A poll about this case was conducted among industrial product safety-related officials in the Ministry of Economy, Trade and Industry, in Japan. Most of the people surveyed thought we should recall the product and fewer than 10% thought improvement was sufficient.

Although the R-Map could not be one hundred percent efficacious on any of the products, this visualization tool allows us to understand intuitively the facts and the real situation. And the basis for making the decisions could be changed, based on the public survey and the numbers calculated by risk tool. In addition, this method is mainly used for after-event control and a judgment based on the data after an accident. However, for new product development – where the probability and consequences of an accident are unknown – its five risk levels can be useful when considering safety-designed measures to reduce risk.

Please note: The author has not reviewed the English translation of his presentation, and it has been edited by Lyn Nikoloff.

# Just whose job is it anyway?

**We are QA guys, aren't we? We are here to help; along with our alter egos, those auditor types? "Yeah, right!" and we actually mean it. So whose job is quality anyway? Are others involved besides us and auditors? Asks Ian Hendra, QNewZ columnist.**



Dr Deming explained that quality is everybody's business, yet how do you make it everybody's business, because it is much easier said than done.

## Familiar tune, perhaps?

Let's go back a bit.....and I doubt my experience is unique, so this is probably familiar to many of you. Over the years I have regularly been in the position where I have been commissioned to produce a set of management system documentation to cover delivery processes and procedures.

First time out it was a set of commissioning inspection routines related to clearance of retention payments for satisfactory installation. Then there were whole sets of documents to meet accreditation requirements for certification bodies. Followed by a corporate policy manual; a stand-alone internal auditing system; a few quality systems and HACCP manuals.


When it came to the work and effort involved, all were the result of in-depth research and downright hard 'yakka'. To me they were all works of art and crystal clear to boot! But only a few have been truly successful...even the documented systems that were backed up with full-blown 4-day training courses had their problems. So what was wrong? We all know that diagrams usually work better than wall-to-wall words (even in law firms!!) and that involving those at the sharp end is essential. Maybe in truth, there's more to this problem.

## Smart Talk Trap...

*Smart Talk Trap*<sup>1</sup> is an article that appeared in the May 1999 edition of the Harvard Business Review. It struck so many chords in so many ways that I have carried the article with me ever since! It starts by bagging words like 'paradigm, holistic, lateral and actualize...' and points out that most of those who use them have no clue what they actually mean.

## The Rewards of Action

In the course of our research into the knowing-doing gap, we met a consultant who was making a proposal to a large U.S. bank that was in good financial shape but wanted to do better. The consultant told us that as he and his team of eager colleagues put their proposal together from data provided by the bank, they came upon reports assembled for the bank by four other consulting firms over the past six years. The recommendations were identical. Why, asked the consultant, would anyone pay for the same answer five times? How crazy is that?

Very. But it is also altogether common. Business-people love to talk, which is fine when it leads to action. When it becomes a substitute for getting things done, shareholders, customers, and employees pay a price – and often executives do, too. The simple fact is, you can't take words to the bank, no matter how smart they sound. But when you close the knowing-doing gap, you discover the rewards of action. 

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HARVARD BUSINESS REVIEW May-June 1999

Figure 1: The rewards of action.

Table 1: RACI Chart

People		Process							
Staff Member	Role	Financials	Take sales orders	Purchasing	Stores	Assembly	Hole survey	Grip testing	Despatch
Rusty Buckettt (Owner)	CEO R	A	R	C	A	C	C	R	
Edna Buckettt	Qa	A	A	C	C	A	R	R	A
Freda									
Buckettt	Sales	A	R	C	C	A	I	I	I
Justin Thyme	Buyer	A	A	A	R	A	I	I	I
Liza									
Dear	Factory	I	A	I	A	R	A	I	I
Thor Krench	Engineer	A	A	A	C	A	I	A	I
Comment		Rusty runs the budget	Everyone can take an order	Not everyone can spend	Limited access	All do this sometimes	Liza handles buckets with holes	Thor handles Bent Grips	Qa can halt despatch



**Table 2: RACI - defining attributes**

Factor	Defining attributes
Responsible	<ul style="list-style-type: none"> <li>• Highest authority with respect to this process,</li> <li>• Authorised to make changes to the process,</li> <li>• Can't delegate responsibility (but can delegate accountability),</li> <li>• Has power to spend money (or someone else is responsible in reality),</li> <li>• Has power to hire &amp; fire (or someone else is responsible in reality),</li> <li>• Required to make sure resources and supplies are available.</li> </ul>
Accountable	<ul style="list-style-type: none"> <li>• Authorised to make sure this process is implemented,</li> <li>• If delegated, may have the power to spend, hire &amp; fire,</li> <li>• Does not have the authority to change the process without consultation.</li> </ul>
Consulted	<ul style="list-style-type: none"> <li>• Has expert information that affects the performance of this process,</li> <li>• Is affected by the upstream or downstream performance of this process,</li> <li>• Must be consulted when changes are made.</li> </ul>
Informed	<ul style="list-style-type: none"> <li>• Needs to understand what this process entails and how it might affect them,</li> <li>• Must be informed when changes are made.</li> </ul>

The article explains how current business jargon is used as a systemic substitute for taking action. "The Rewards of Action" clip is its final paragraph (Figure 1).

One day I was dumbfounded as I watched a silver-tongued mega-salary CEO sign off a top level system manual that he 'owned', without reading. And since that day *Smart Talk Trap* has been right up there as the ultimate treatise on "how not to do it" in my world.

Nothing has changed since 1999, that much is very obvious; I would even go so far as to say that *Smart Talk* is a major contributory factor in the financial mess that international business has become; how else would anyone actually underwrite a mortgage for more than it was worth? And in our backyard much of the documentation we struggle with fits the same kind of mould.

#### Communicate the RACI way

I have found only one way to get real people involved while neutralising the Smart Talk brigade. It is called the RACI chart: Responsible, Accountable, Consulted, Informed (see table 1). To show you how it works, I have used Buckett

Enterprises Ltd<sup>2</sup> and reworked their LULU chart to manage capability and capacity in their world class bucket making business. Table 2 shows the defining attributes in the RACI chart system and implies the consultation processes necessary to ensure that the right level of communication takes place.

#### The outcome

When the RACI chart system works great things happen. The right people become empowered, those who need to know are informed, and the Smart Talkers have no audience. There are clear channels of communication for consultation that works a treat provided there's a will to keep it working. All you need next is a very clear way to describe who does what at the task level...that's where deployment flowcharts come in.....maybe next time....

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# Transformational leadership and CSR

Written by QNewZ columnist, Siham El-Kafafi

The previous two issues of my column provided a blueprint for incorporating a Corporate Social Responsibility (CSR) Strategy in your organisation for the sake of global competitiveness. I then followed this with leadership tools for team building to ensure the successful implementation of CSR within your organisation.

In this column I will be exploring more closely the transformational leadership style to highlight how it is a good fit for influencing employees to believe and engage in implementing CSR strategies. However, this requires the integration of social concerns into the business operations of the organisation.

## Leadership style impacts on CSR implementation

There has been an increased focus on finding out how leaders influence their followers' perceptions of the importance of ethics and Corporate Social Responsibility for the sake of organisational productivity and effectiveness. This has been the motivator for various studies investigating the link of specific leadership styles to follower attitudes toward CSR.

Bass and Steidlmeier (1999) alluded to a certain type of leader who serves their own personal interests (e.g. material benefits, power, status) through the use of reciprocity and mutual altruism as modes of influence and relying on power, rewards, and sanctions of their official position, to influence followers to demonstrate the requisite performance.

Accordingly, I believe such a leadership style will not be useful in engaging employees in CSR development within their organisation.

On the other hand, Judge and Piccolo (2004) and Yukl (2006) confirm that transformational leadership values are deeply engrained in altruism, universal rights and principles that lay the groundwork for enacting the key motivational and inspirational behaviours that drive impressive leadership outcomes in organisations.

## Transformational leaders drive CSR

A transformational leader provides a sense of mission and is able to articulate an inspirational vision.

As a result, I believe that organisational leaders who consider themselves transformational leaders should be able to demonstrate the following behaviours to drive their employees towards an organisation-wide CSR implementation:

- Start initially by developing a collective vision that clearly delineates the salience of multiple stakeholders
- Inspire all parties to look beyond self-interest for the betterment of the organisation and community
- Demonstrate a strong relationship with follower beliefs in the stakeholder view of CSR
- Suggest the involvement of multiple stakeholder groups to enhance organisational effectiveness
- Form collective identity based on values beyond individuals' self-interest that appeal to the needs of stakeholder groups and the greater good of society
- Develop pride and self-esteem for attaining a favourable organisational image.

Accordingly, the key behaviours of the leader would be to provide a sense of mission and be able to articulate an inspirational vision, based on powerful imagery, values and beliefs. Once this is achieved, employees would link their own identity with greater social causes and become motivated to pursue CSR.

## CSR development waves

Once the scene is set, organisational leaders should consider the following CSR development waves advocated by Chapple and Moon (2005):

**First wave:** Community involvement projects and activities which could be exemplified in the organisation's involvement: for example, in building schools, improving child care, fund-raising events.

**Second wave:** Socially responsible products and processes which could include efforts such as reduction of energy use, improve product efficiency and product life cycle.

**Third wave:** Employee relations that describe the extent of the involvement of employees in CSR initiatives.

## CSR activity modes

Furthermore, the organisation should choose the methods by which they decide how to build its CSR activities, which Chapple and Moon (2005) refer to as modes, as presented in the following categories:

**Foundation:** this is usually a non-profit organisation or legal set-up with a charitable purpose. It either donates funds or provides support to other organisations or communities.

**Partnership:** collaborating with other companies or academia on CSR-related projects.

**Codes and Policies:** CSR codes are formulated into formal policies and are considered to be embedded in the organisation's activities and decision-making process.

**Volunteering:** employees' volunteering activities that are concerned with CSR matters.

**Sponsorship:** provision to institutions in the form of monetary donations or funding by the company, but not through its foundations.

## Finally ...

I believe transformational leaders are the right fit for an organisation that wants to benefit and become competitive, develop a good image, gain international exposure, and stay current on the latest development practices through a learning process involving all its employees in CSR practices. All this can be attained through the leader's motivation, direction and assistance in the navigation through the three waves of CSR development, followed by a solid choice of methods to build their CSR activities.

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# Process curves



**The histogram or in its other form, the distribution curve, is a pictorial description of a process, writes QNewZ columnist, Russell Veitch.**

Looking at distribution curves of our processes we can learn a lot about what is happening. They give us an indication of the average score or measurement of the process, the median (most common score) which might or might not be the same as the average. But most importantly, it gives us an indication of the spread or variation in the process.

Depending on your situation you might want to put a lot or little effort into collecting the data to produce a histogram for your processes. It might not be necessary to go to a great deal of effort if it is immediately obvious that there is a great deal of variability in your process. I often encounter businesses who carefully explain to me that this sort of activity is not relevant to their industry as every client is different, circumstances change or the outcomes of their business are random. This might be a good description of their business situation, but perhaps just a statement of the lack of understanding of their processes, or perhaps their many varied processes.

The text book distribution curve is the well-known bell-shaped curve. This is completely symmetrical and the average is the same as the median. The measure of variation is usually measured as the standard deviation or by just looking at the graph, the width of the bell shape (a). This is a good place to start and you will be very lucky if your processes look like this. We can tell a lot about a process from the shape of its distribution curve.

A couple of notes on the standard deviation: 68% of the results will fall within 1 standard deviation each side of the average; 95% of the results will lie within 2 standard deviations each side of the average; and 99.9% of the results will lie within 3 standard deviations either side of the average.

What is important to us are those outliers which usually mean problems to our business – and the more problems, the worse off we are. At this stage I would like to say that if we are measuring results our first concern is for results on the low side. But too good a result can present problems of another kind. That's another topic.

But in practice distribution curves are not always bell-shaped.

Some examples include:

## 1. Sharp and symmetrical

A nice sharp symmetrical curve indicates that the process is well controlled and the results are highly predictable (b). We would normally expect this type of process to be in manufacturing or financial industries where there are many products or transactions and variation cannot be tolerated.

## 2. Broad and symmetrical

A broad symmetrical curve indicates that the process is relatively under control but there is significant variation in the process (intentional or not) which is not a crucial feature of the business (c). I (in jest) suggest this could be in monopolies and government services where the customer must accept the product or service that they receive.

## 3. Skewed and tailing off

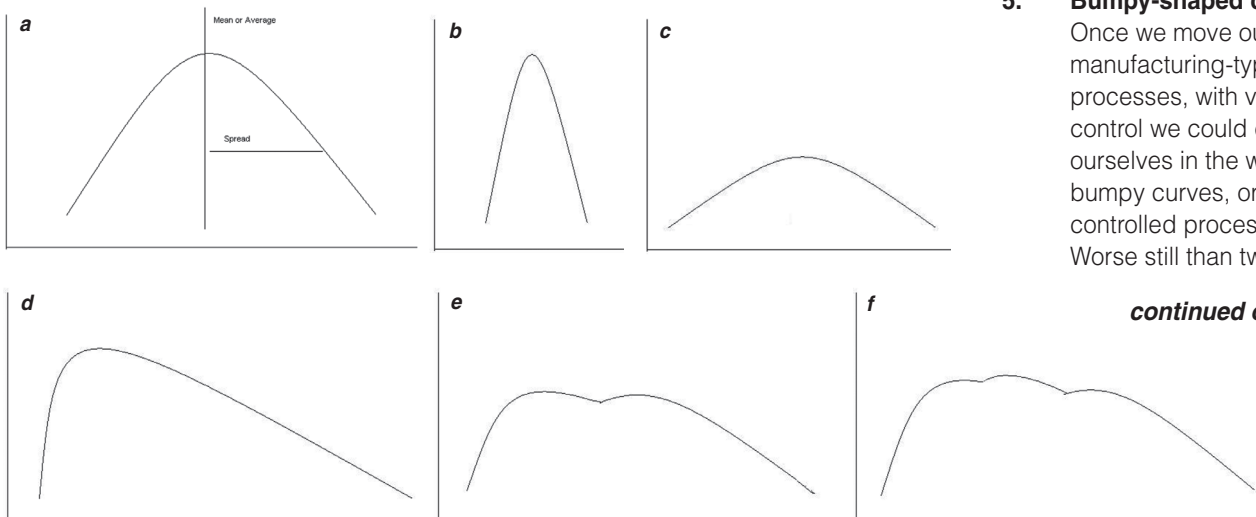
This is a common curve that we encounter (d). It indicates that in general the process produces a predictable result, but from time to time we experience exceptions which are vastly different from normal. With this sort of process customers seem only to remember the bad instances, no matter how infrequent, regardless of the many good services or products they receive. And they seem to remember forever. For this reason this type of process needs an intervention, often an inspection process which chops off the tail. That would be quite OK except that inspection is an expense and detecting low levels of defective products in a population of many good products is a challenge in itself.

## 4. Double peaked

A presence of a double peak is a clear indication that we probably have two processes in operation (e). An example could be day shift and night shift operating differently, products from different suppliers. If you have a clearly defined double peak this should be easy to identify, but often the double peaks merge into each other and we see a rather bumpy-shaped curve. At this stage we would want to have good data on our process to be able to identify and distinguish the bumps.

## 5. Bumpy-shaped curves

Once we move out of manufacturing-type processes, with very good control we could easily find ourselves in the world of bumpy curves, or poorly controlled processes (f). Worse still than two



*continued on page 15*



# By the numbers

**It may be a cliché, but it's still true that you can't manage what you don't measure. But the reverse isn't necessarily true – just because you measure things doesn't guarantee you've got them under control, writes Malcolm Macpherson, QNewZ columnist.**



There are some other truths about number: lagging indicators can lead you astray; some metrics are better than others; if you're using key numbers to drive high performance, ignore averages; and the ones you live and die by should derive straight from your reason for being.

## Leading is better than lagging

You need to know what happened last week, or month, or year.

Lagging numbers are important, but looking in the rear-view mirror is no way to drive a car, and relying too much on historical analysis can also drive you into a wall.

Leading indicators predict future results. In the financial sector, for example, bond yields are a typical leading indicator of the market because traders anticipate and speculate trends in the economy.

Customer satisfaction is often cited as a leading indicator of sales and revenue growth (or decline). IBM in the USA, in its Baldrige-winning heyday, published a long data run showing a close correlation between satisfaction and profitability. Both rose and fell together over more than a decade.

Building permit trends are leading indicators of construction industry activity. Consumer expectations, inventory, and employment statistics may also be leading indicators.

There will be a few that are especially relevant to your workplace or business. Identifying and tracking them will help keep you clear of the shallow water.

## Measure only what matters

Lean champion and prolific writer Bill Waddell (bill-waddell.com) wrote in a 2009 article called 'Show Me The Metrics' that the best way to understand metrics is to view the enterprise as a black box. What happens inside the black box is important only to the extent that it impacts on what comes out of the box, and the only 'things that come out' that matter are quality, delivery and lead time for customers, and profit and cash flow to owners.

*It may be a cliché but its true ... you can't manage what you don't measure*

Doing well according to some metric like productivity is cold comfort to owners of an unprofitable business, or to customers whose shipment is late.

Compensation and performance should only be based on outputs, Bill Waddell said, and subordinate metrics which tell you what is happening internally are not really metrics – they are management tools that provide limited insight into what might affect the real, relevant metrics.

## Choose aspirational comparisons

It's often useful to know what your competition or peers are up to. Benchmarking can be a potent driver of better performance, but not if you use averages, and only if you know how your own business is doing. Systems thinker and professional contrarian, John Seddon says benchmarking can be a fast road to mediocrity, but there are definitive studies – from Xerox in the USA in the '80s and '90s for example – which show that benchmarking can be a critical turnaround tool.

## Integrate and align

The key numbers you gather, publish, and live or die by should reflect your organisation's purpose. The vital few should tell you whether you are delivering your strategy, so they need to be linked to the business drivers that determine your success.

If you run a local authority-consenting operation, for example, you'll be watching the weekly run charts that tell you how long it takes to issue a permit – in customer days – and you'll be watching customer satisfaction. You'll be working with your team to keep key processes running smoothly, and you'll be watching your costs. Why? Because your job is to provide quick decisions, keep applicants well informed (happy), design effective systems, and be cost effective. Those are customer-defined values. Four metrics are all you need, and one – length of time to issue a consent – aligns your outputs to your reason for being.

Finally ... Still unsure about what numbers really matter to you and to your organisation? Do the elevator speech test – if you only had the time it takes to travel 4 floors, and only 4 bullet points, what numbers would you emphasise to explain how well your business is performing?

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*continued from page14*

processes such as day shift/ night shift operating we might have multiple processes such as each operator doing things differently, no standardization of process and even anarchy reigning on your business.

## 6. Erratic-shaped curves

The ultimate in lack of process control is when the shape of the distribution curve for your process changes daily.

Some days it is nice and sharp and symmetrical, other days it is broad, other days it is skewed. The quality of the product or service you deliver is random.

So once we have our distribution curve for our process we can start talking how good our process is. But that doesn't mean it is capable.

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### ISO 9001 - MANAGEMENT BRIEF (half day in-house)

### QUALITY HEALTHCARE PRACTICAL SKILLS

### QUALITY MANAGEMENT PRACTICAL SKILLS

**Expressions of interest to: [quality@nzoq.org.nz](mailto:quality@nzoq.org.nz)**

For further information and to enrol please contact Tess Stewart at NZOQ National Office, Tel 06 351 4407 or [quality@nzoq.org.nz](mailto:quality@nzoq.org.nz)

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