

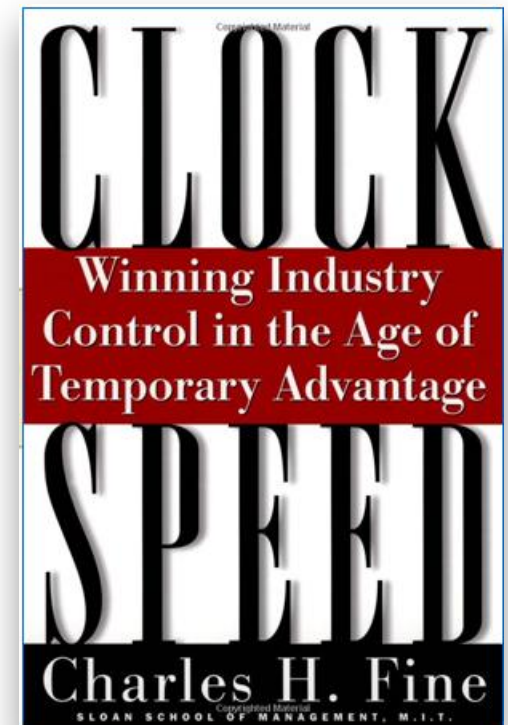


## **Risk Clockspeed:** An Introduction to Risk Clockspeed

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- The term 'Clockspeed' came from the preoccupation people had in the early days of Personal Computing in the rate at which the CPU in a computer was 'clocked' as this gave a subjective measure of how powerful the computer was
- Charles Fine took the term for his book 'Clockspeed' in 1998
  - He was addressing the cycles of manufacturing. Industrial Clockspeed
  - He suggested all industries have a cyclic speed dimension and consequentially some run faster than others
  - He proposed that slow clockspeed industries had an opportunity to learn from faster ones
  - He argued that 'Competitive Advantage is transitory' and that Competitive Advantage needs to be continually refreshed



- Risk Clockspeed was coined as a term in 2006 through this research and was used in a published paper in 2007 and held up to be:
  - **The rate at which the information necessary to understand and manage a risk becomes available**
  - Two main classes:
    - **Slow Clockspeed Risks** are those where a sufficient amount of thinking time is available (*'Sufficient' is context related*)
    - **Fast Clockspeed Risks** are at or close too real time
    - The **Risk Clockspeed Window** is the range between how well organisations can deal with Fast Clockspeed Risks and Slow Clockspeed Risks and still function effectively

..if you distinguish between calculable and non calculable threats, under the surface of risk calculation new kinds of industrialised, decision produced incalculabilities and threats are spreading within the globalisation of high risk industries, whether for warfare or welfare purposes.

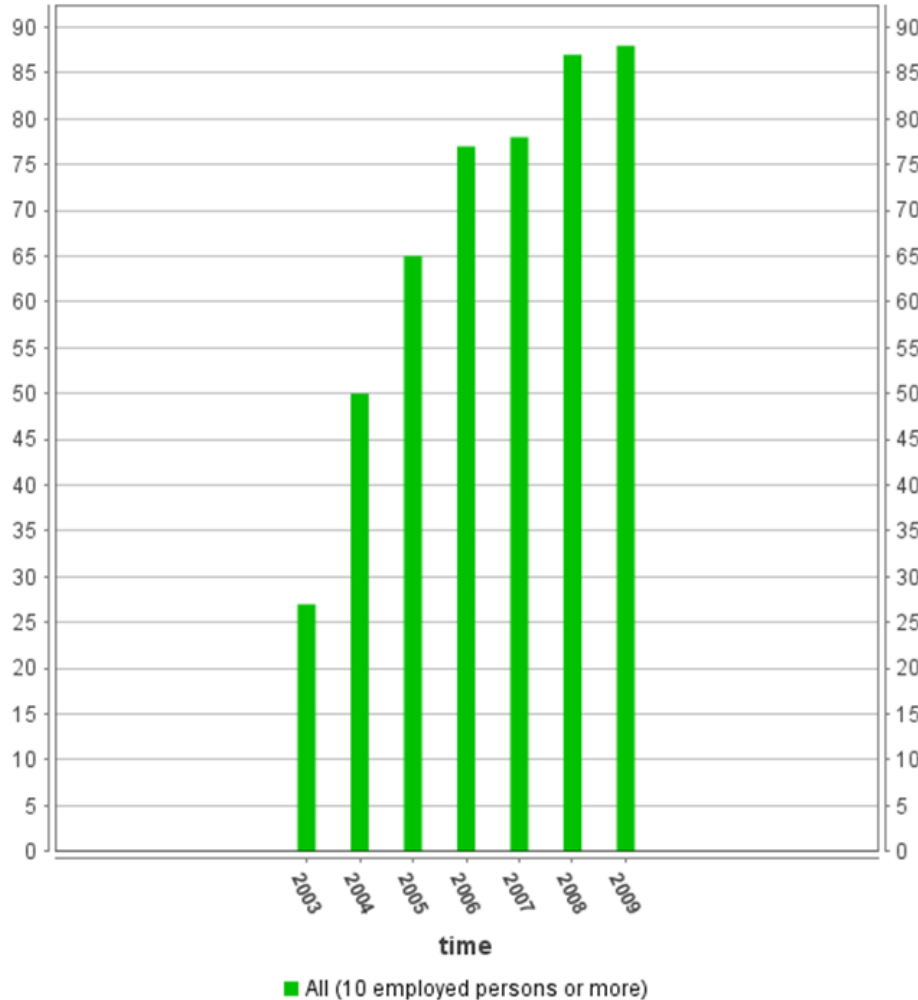
*Ulrich Beck: Risk Society: Towards a New Modernity 1992:p22*

## Why is Risk Clockspeed Important?

Societal and Business Pressures

# The Rise in Industrial Clockpeed

Enterprises having a broadband connection

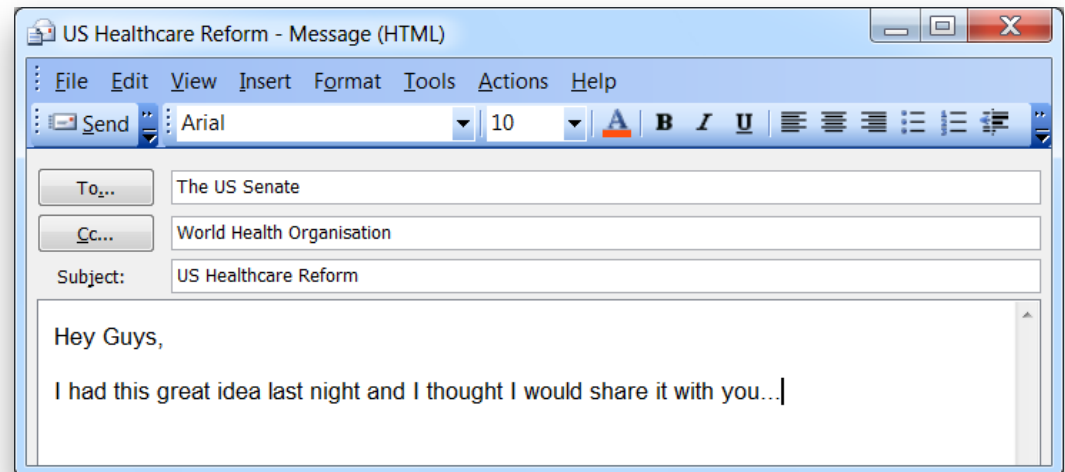


- One result of Charles Fine's Industrial Clockpeed work was a wider appreciation of the increasing pace of the Socio-technological life style we now lead.
- The graph shows the growth in Broadband Connections in the UK for organisations employing 10 or more people

(Source: Euro Stat based on 2010 update)

Barack Obama was  
photographed using a PDA.  
The photograph appeared in  
the Daily Telegraph

- How much important  
business is conducted at the  
speed of light through email  
or from the train through the  
keypad of a PDA?



# Challenges for Risk Management

From 'Hands Wanted' to the 'Knowledge Economy'  
No longer is the commodity that we trade in  
dependent on low skilled labour undertaking simple  
mechanistic tasks

# Challenges for Risk Management

How to explain the new concern with risk? It is partly a public backlash against the great corporations. A generalised concern for fairness has started us on a new cultural phase. The political pressure is not explicitly against taking risks, but against exposing others to risks.

Douglas 1994: 15

*Had an Accident in the last three years which wasn't your fault?*

We make sure you get every everything you deserve




*“Major crises – from Challenger, Bhopal, Tylenol or Chernobyl to Exxon Valdez and Braer – are no longer exceptional events. Indeed the risk of crisis is even becoming structural as large networks become more complex, more vulnerable and more independent..”*

Borodzicz 2005: 75  
citing Lagadec 1993:45

# Challenges for Risk Management

Welcome to the world of high-risk technologies. You may have noticed that they seem to be multiplying and it is true. As our technology expands, as our wars multiply, and as we invade more of nature, we create systems-organisations, and the organisation of organisations – that increase the risks for operators, passengers, innocent bystanders, and for future generations. Perrow 1984: 3

Truth is, we are all called on to make more decisions and make them quicker, in situations with greater complexity and in a world which is much a less forgiving place.



**It's all to do  
with the way  
we think!**

## **Why is Risk Clockspeed Important?**

The way people think and act

- LaPorte and Consolini's work on High Reliability Systems  
Working in Practice but not in Theory:1991

- People make decisions
  - Rationally (Cognitively)
  - Associatively (Intuitively)
  - Using Heuristics (Rules of thumb that reduce the amount of thinking we have to do)
  - That are always biased
- And the time we have to think about the information, along with the importance of the decision and the familiarity with the situation has a big influence on the balance between Cognitive or Associative modes
- Our first reaction to every risk, when freshly uncovered, is Associative. We ‘feel’ before we rationalise. (Slovic, Finucane et al. 2004)
  - So if time is lacking, this may be our only reaction

***There is no dearth of evidence in every day life that people apprehend reality in two fundamentally different ways, one variously labelled intuitive, automatic, natural, non-verbal, narrative and experiential, and the other analytical, deliberative, verbal and rational***

*Seymour Epstein, 1994.*

# Experiments in Decision Making

The way people think

How much money is shown in this picture?





$$\begin{array}{r} + \quad 500 \\ \quad 50 \\ \quad 10 \\ \hline 560 \\ \hline \end{array}$$

## Reading :Associative or Rational?

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the frist and lsat ltteers are in the rghit pclae. The rset can be a taotl  
msee and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the  
huamn mnid deos not raed ervey lteter by istlef, but the wrod as a  
wlohe.

Amzanig ins't it?

*See Grainger, J. and C. Whitney (2004).*

- **Associative (Experiential, Intuitive)**
  - Based on patterns and 'affect' tags. Images with labels stored in the brain
  - Fast acting
  - Based on pleasure and pain
  - Influenced by readily recalled past events
  - Highly committed actions
  - Do not 'know' how you arrived at the decision
- **Rational (Analytical)**
  - Slow and mentally intensive compared to Associative
  - Characterised by conscious and often repeated appraisal of 'the facts'
  - Always about future action (responses to Slow Clockspeed Risks)
  - Often shared (Social construction of worldviews)
  - Can explain how you arrived at the decision
- **People can slip from one mode to the other so easily, it goes unnoticed**
- **Risk for Risk**
  - Fast Clockspeed Risks requiring Associative thinking outnumber Cognitive risks.

Math's is hard... Let's go shopping?  
Talking Barbie:1992

**Thinking is hard work.**

Heuristics and Bias

- Set aside the controversy Barbie caused and the plastic doll makes a good point. It can take a lot of time and brain power to process all available and important information from scratch
  - Do you remember learning to drive?
- Humans have developed a few ways of reducing that processing workload
  - Associative thought as demonstrated
  - Heuristics
    - Stereotypes
    - Rules of thumb
- Heuristics can lead to good decisions taken quickly or really bad decisions taken quickly
- Bias
  - All the decisions we make are biased, if only by the way we perceive information

- **Kahneman & Tversky**
  - Judgement Under Uncertainty: Heuristics and biases
  - **Representativeness**
    - If with problem A, I carry out action B, but if problem C looks too much like problem A there is a high probability I will again carry out action B.
  - **Anchoring**
    - Latching onto a figure and making adjustments, even if that original figure was wrong
  - **Availability**
    - Recency and mental distance
      - Having witnessed many serious accidents, people drive slower
- **Biases**
  - The smoker who questions the side effects of medicine
  - The 'bungy jumper' who complains that the warehouse is dangerous because one of the 10 lamps has blown
  - The campaigner for coal power stations over Nuclear power
    - Paul Slovic: The Perception of Risk
  - The group decision to 'press ahead anyway'

All models are wrong, but some are useful.

George Box: 1976

## Models of Risk Management

Organisations in context: Risk Clockspeed in Action

- Just before 12.52 on the 17<sup>th</sup> January 2008, a Boeing 777 aircraft was making a normal decent into Heathrow airport
- Around 50 seconds before touchdown, the crew noticed there was an unprecedented loss of power on both engines.
- At 27 Seconds before touchdown, the Co-pilot noted that the airspeed had dropped below the 135 kt mark which is the accepted minimum for safe landing.
- When the speed had dropped to 127 kt, the automatic 'Airspeed low' warning sounded, which is a safety feature of this aircraft to protect against human error. In this case however, it just reinforced the criticality of the situation and a few seconds later, Captain Burkill reduced from FLAPS 30 to FLAPS 25.
- The aircraft touched down 330 m short of the runway **but** 110m inside the perimeter fence of the airport.
- The action of Captain Burkill is cited as the reason why the aircraft did not land on Hatton Cross Station or the Petrol Station that was close by



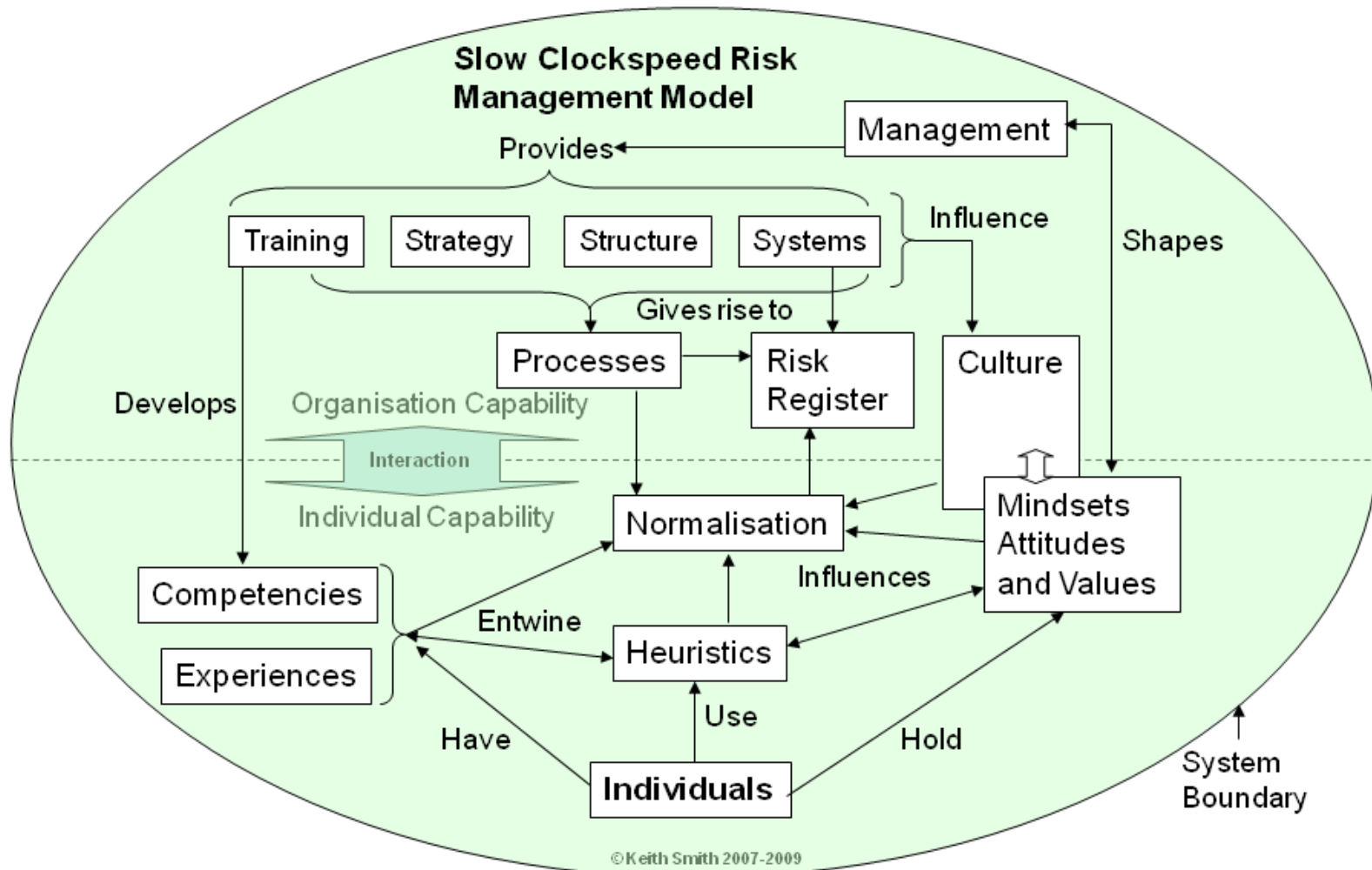
# Key Features of the BA038 Case

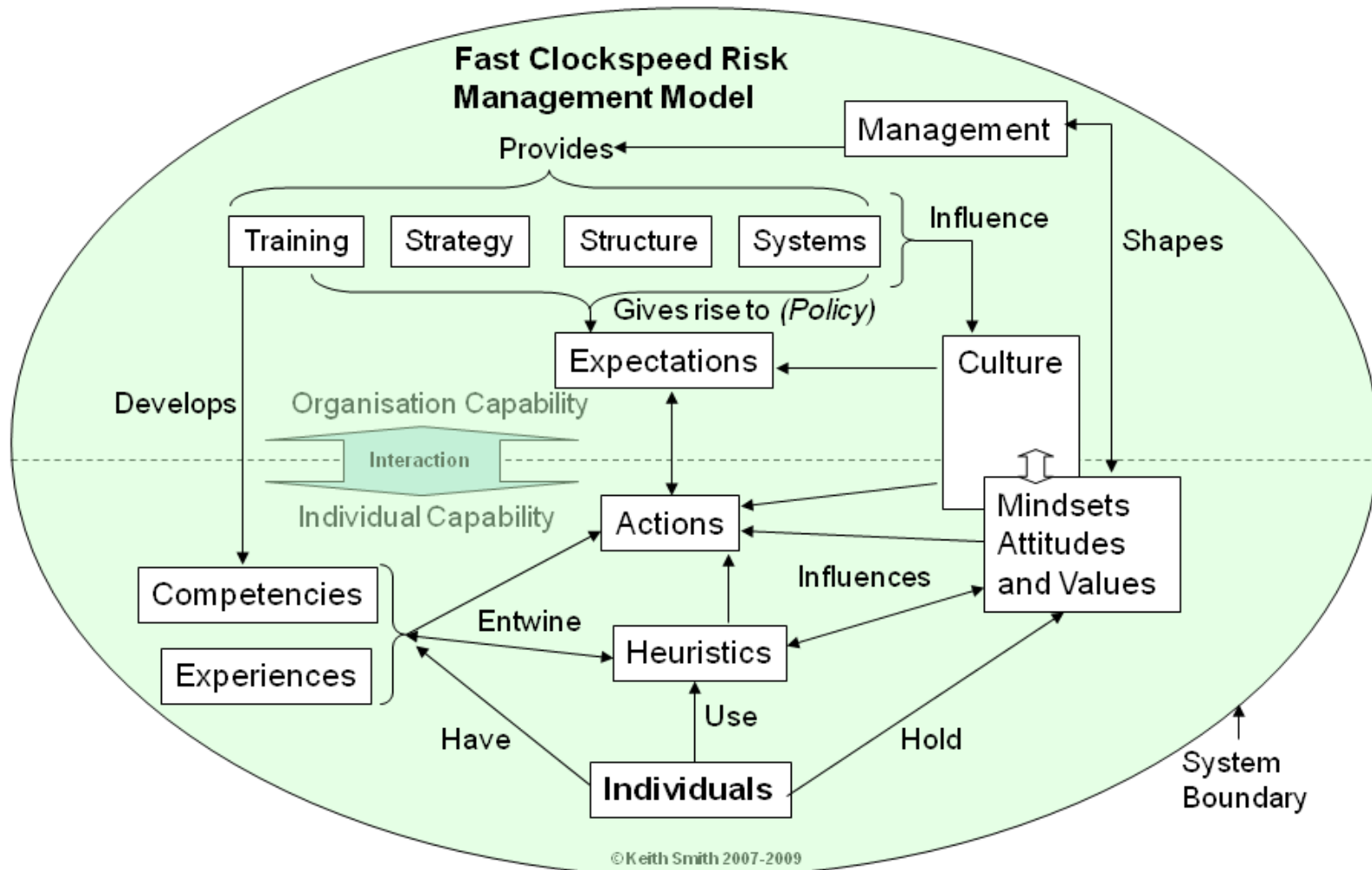
- Pilots are not trained to deal with emergency situations of this type, this close to the ground
- Between the discovery of the emergence situation and touchdown, the aircrew had seconds to assess the situation and implement mitigation actions
- Captain Burkill's action was counter to the normal action when airspeed is dropping dangerously low, which is a situation considered at cruising height.
  - Capt Burkill actually changed the flaps to reduce drag at the cost of increasing the likelihood of a stall.
- Ten seconds before touch down, the aircrafts stick shaker started to operate warning of an impending stall, from which the aircraft would simply fall out of the sky
- Conversation in the cockpit was almost non existent. The Co Pilot had the controls and Captain Burkill was assessing the options



*\* The 'Upset Aircraft Guide' indicates that the crew should exchange Potential Energy (Height) for Kinetic Energy (Forward motion). In other words Dive.*

- Being able to explain how people learn to manage risks which are outside that from normal experience?
- Being able to place heuristics into an organisational context?
- Being able to explain how Captain Burkill could keep a cool head and come up with a viable solution?
- *Being able to add value to your current risk management programme by incorporating Fast Clockspeed Risk Management thinking and techniques into your organisation?*





- One consequence of Risk Clockspeed thinking is the recognition of a 6<sup>th</sup> 'T' in the famous 'T' model of pure strategies
  - Treat
    - Do something about the risk
  - Transfer
    - Shift the problem to another owner
  - Terminate
    - Do it a different way to avoid the risk
  - Tolerate
    - Accept the risk
  - Take
    - Embrace the risk
- And perhaps....
  - Translate
    - When the information to manage the risk is available very early or even present at the time the risk is uncovered. Translate it into either an issue or a non issue. Don't leave it on the risk register

# The Risk Clockspeed Invitation

- Consider Risk Events that will be managed real time (Fast Clockspeed Risks) as Risks and bring them into your risk management programme
- Mark Fast Clockspeed Risks separately in the risk register as they will need to be investigated and managed quite differently to the Slow Clockspeed Risks
  - Investigated by cultural and systems based enquiry
  - Managed by expectations which also should be recorded in the risk register .(*How else would you gain insight into the control environment?*)
  - Managed through the Clues and Cues we expect to be present at the time of decision (*Again, recorded and managed within the risk register*)
- Consider mitigation through the management of the context and culture in which the decision will be made
  - Be prepared to engage with people over the situations that give risk to Fast Clockspeed Risks
  - Consider actions to modify those situations to increase the likelihood of the right decision being made
  - In critical cases: Consider training and performance evaluation through simulation
- Don't try and process out Associative Decision making, engage with it and incorporate it within the risk management framework

- We don't live in a world where risk management programmes can be indifferent to the way people make decisions (*any decision with consequences*)
  - Engaging with risk through Risk Clockspeed is as much a cultural change as it is a process one
  - People are more autonomous these days and will resist processes that appear to restrict freedom. And some risk management programmes are built on that restriction premise
- Risk Clockspeed is the natural risk management partner for the empowered workforce
  - I firmly believe a well structured Risk Clockspeed dimension to a risk management programme will
    - Provide more control over the risk profile of an organisation
    - Be more inviting and less threatening to the organisations workforce
      - Increase the embedding of a risk management culture
    - Increase the performance of the organisation as a well made Fast Clockspeed decision carries little overhead
    - Deliver substantial bottom line benefit
      - Risk Management is a source of competitive advantage

- In an increasingly fast industrial clockspeed world, where we have 'lean' workforces, making more decisions, in less time within a framework of increasing complexity, we will have more Fast Clockspeed Risk errors.
  - Processing errors
    - Banks
    - Mail order
    - Utility companies
  - Professional's making mistakes
    - Hospital treatment failures
  - Systemic problems
    - Child protection
  - Everywhere....
- I think organisations now have a choice to make



- Beck, U. (1992). Risk society: towards a new modernity, Sage.
- Borodzicz, E. P. (2005). Risk, Crisis and Management. Chichester, New York: John Wiley & Sons
- Box, G. E. P. (1976). "Science and statistics." Journal of the American Statistical Association **71**(356): 791-799.
- Douglas, M. (1994). Risk and Blame: essays in cultural theory. London, Routledge.
- Epstein, S. (1994). "Integration of the cognitive and the psychodynamic unconscious." Am Psychol **49**(8): 709-24.
- Fine, C. H. (1998). Clockspeed:: Winning Industry Control in the Age of Temporary Advantage, Perseus Books.
- Grainger, J. and C. Whitney (2004). "Does the huamn mnid raed wrods as a wlohe?" Trends in Cognitive Sciences **8**(2): 58-59.
- Kahneman, D., P. Slovic, et al. (1982). Judgment Under Uncertainty: Heuristics and Biases, Cambridge University Press.
- LaPorte, T. R. and P. M. Consolini (1991). "Working in Practice but Not in Theory: Theoretical Challenges of" High-Reliability Organizations". Journal of Public Administration Research and Theory: J-PART **1**(1): 19-48.
- Slovic, P. (2000). The Perception of Risk. Risk. London, Earthscan.
- Slovic, P., M. L. Finucane, et al. (2004). "Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality." Risk Analysis **24**(2): 311-322.

## Helping with the research

- If you would like to help me with this research, please..
  - Send me examples of where you have seen Risk Clockspeed issues arising in your organisation
    - Successes and failures
  - Send me information about situations you have encountered, where this approach may have helped with understanding the problem

**thanks,**

**Keith Smith**

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