

The Increasing Dependence on Digital Infrastructure A New Utility?

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A HIDDEN DEPENDENCY?

- The importance of digital infrastructure including data centres to our daily lives cannot be underestimated
- The data centre sector is still relatively new, possibly only 25 years old
- We have increasing service availability expectations for applications supporting both our business and social interactions so dependency is growing rapidly
- However data centres and the critical infrastructure that they underpin are hidden to the vast majority of people

A NEW UTILITY?

- We expect and increasingly require 'Always On' 24x365 services and this is becoming ever more the case
- We therefore need increasingly to consider ourselves a sector that delivers what has effectively become a Utility supporting our business critical functions and the platforms we use for our social interactions and entertainment
- In effect our digital infrastructure including data centres has become a new Utility on which we all depend in the same way as water or electricity and analogous to the telecoms industry in the early 20th Century

THE NEW UTILITY

- It vital that we manage this critical digital infrastructure (including communications and aggregation points (data centres) as a utility infrastructure in a risk free and reliable manner
- As we mature as an industry we increasingly become custodians of national critical systems with potential life safety impacts
- The requirement and expectation for 'Always On' affects the way that we need to build and manage our critical infrastructure

DIGITAL INFRASTRUCTURE IMPORTANCE AND RISK

- It is vital to understand the impact of risk against genuine business requirements for our critical digital infrastructure
- Required by many to be highly available and support 24x365 services yet not currently operated to a standardised or regulated model
- Do SLA's and contracts cover the operational requirements? - NO!

A HIDDEN DEPENDENCY?

- How do we support this increasing yet hidden dependency?
- Hidden and taken for granted yet we require and expect instant gratification!
- How do we achieve the infrastructure reliability that we all now demand?
- The following slides will discuss some of the issues involved in achieving this objective

THE IMPACT OF CLOUD, EDGE, AI, 5G, BLOCKCHAIN ETC

- Roy Amara's Law: "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run"
- The "Hype Cycle": Described as a "peak of inflated expectations" followed by the "trough of disillusionment"
- Let's discuss Cloud, Edge, AI, 5G and Blockchain....

DOES CLOUD HELP?

- Movement to the Cloud appears to solve reliability and availability issues if taken at face value
- Cloud does not solve the problem in the way that many people think and does not inherently offer resilience, without that requirement being factored in
- What SLAs and contracts underpin your Cloud service?
- Do not simply rely on Cloud - It is merely somebody else's data centre.....

DOES EDGE HELP?

- Edge means very different things to different people and organisations
- Edge is something of a marketing term used to describe technology that already exists
- For example CDN Networks have been with us for over 20 years now
- Proximal Processing and Storage will grow though, however this does not mean the death of the traditional core data centre as some have predicted

WILL AI HELP?

- Does AI mean human like intelligence or Machine Intelligence - there is a difference
- What AI does is take the 'Machine out of the Man' and that will have a huge impact in all sectors
- From a digital infrastructure perspective the initial impact is probably in the area of cybersecurity
- We are still a long way from the completely 'Lights Out' Data centre though - At least on the facilities side.....

WILL 5G HELP?

- 5G will certainly improve our digital infrastructure particularly with speed improvement and greater access at the 'Edge' but rollout may well be slower than expected
- The biggest potential difference though is a possible end to the 'Copper Monopoly'
- Reinforcing a seismic shift in the telecommunications industry with large 'unregulated' international players now laying their own cables

WHAT ABOUT BLOCKCHAIN?

- Blockchain is far more than merely cryptocurrency
- It carries an extremely powerful useful audit and transaction logging capability using a distributed public ledger
- Will this impact our digital infrastructure directly? Probably not at this stage but it will certainly affect the services operated upon it

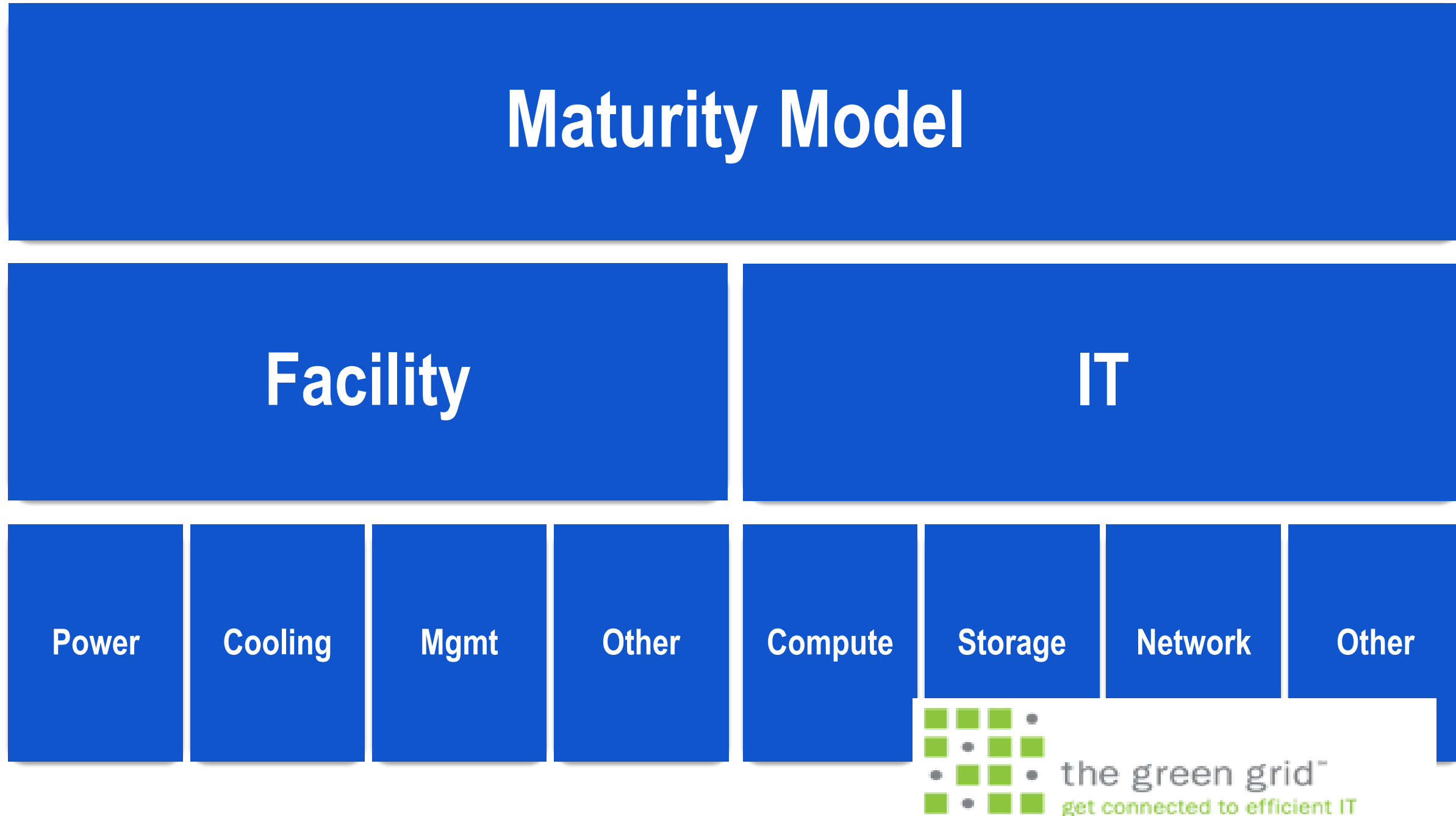
THE IMPORTANCE OF OPERATIONAL MANAGEMENT

- Appropriate operational management by well trained people is key to critical digital infrastructure reliability and availability
- Effective management is vitally important to maintain high availability services yet is often neglected - how many systems are designed for maintenance?
- People assume that infrastructure is automatically operational 24x365, but it is not easy to achieve – it requires significant investment and management effort

THE IMPORTANCE OF COMBINED OPERATIONS

- Many have advocated a combined model over the last decade
- Summed up by Ken Brill's paper in 2006
 'Why IT and Facilities must work closely together'
- Many additional examples call for better teamwork and removal of the separation between IT, Communications, Data Centre Operations / Facilities Management
- The IT/Comms world and the facilities world see and describe things very differently - A Software Defined Data Centre still needs physical buildings and reliable power to operate from!

THE CLASSIC SILOS



THE IMPORTANCE OF COMBINED OPERATIONS

- Currently service delivery is frequently inconsistent, heavily siloed and not aligned or able to share common objectives
- Sustaining service availability and reliability requires integrated critical operations and management to overcome the problems associated with traditional silo driven service management
- There is a need to bring FM discipline and diligence to IT service delivery as well as IT service delivery to the FM World (ITIL)
- We need to break down the silos to combine IT and Infrastructure Management for better understanding and communication

THE REDUCTION OF RISK AND ELIMINATION OF ERRORS

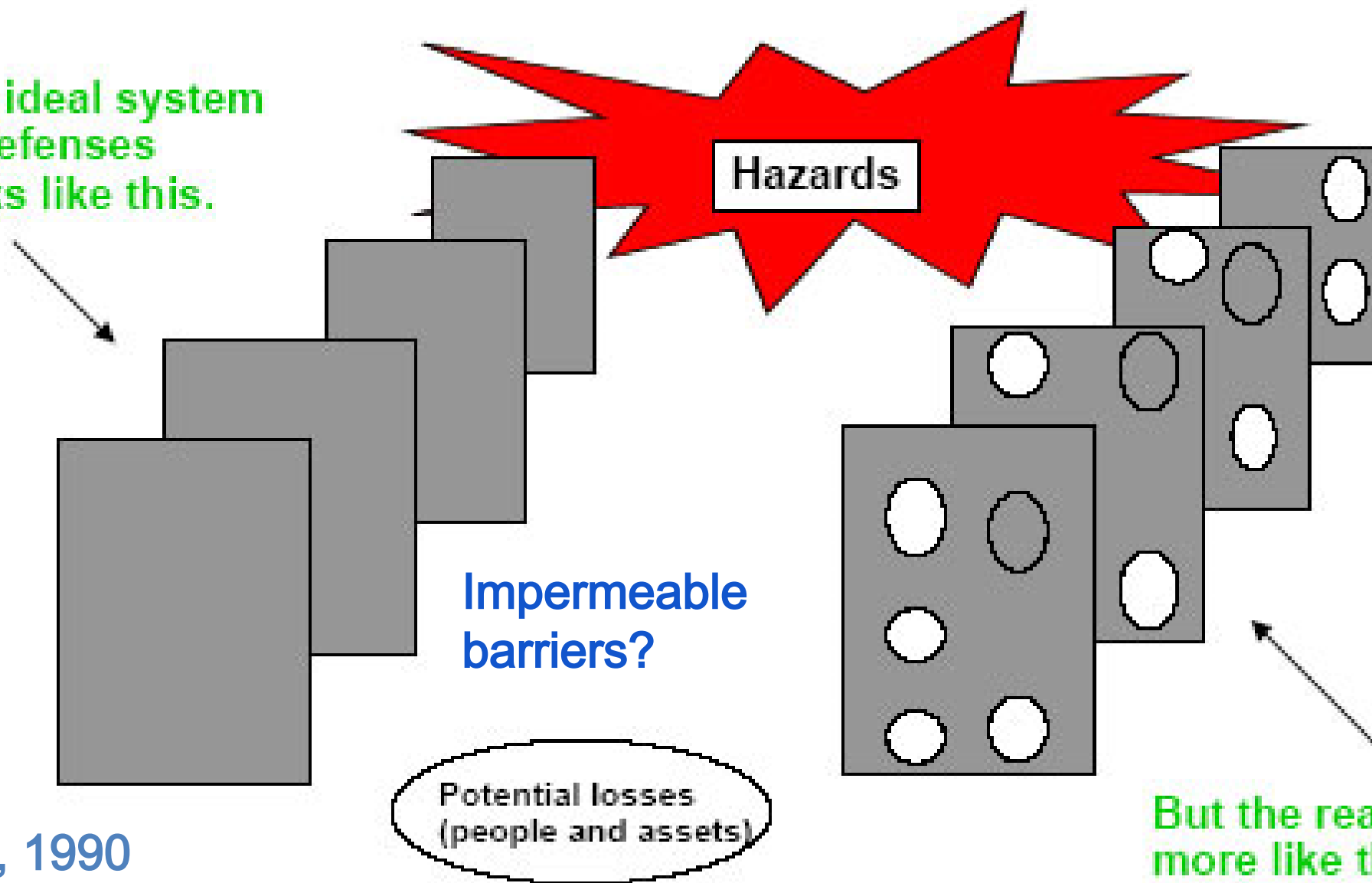
- It is mistakes by people that are responsible for the majority of data centre and digital infrastructure outages...
- People can incur substantial costs and negative brand image when they make mistakes...
- Uptime Institute analysis of Data Centre Failures shows that 73% of incidents are the result of Human Error and are therefore avoidable*
- Other studies produce similar values yet the human element is one that can be addressed relatively easily by effective training

* Based on Uptime Institute™ Abnormal Incident Reports up to 1 July 2010

UptimeInstitute™

THE SWISS CHEESE THEORY OF RISK MANAGEMENT

Our ideal system of defenses looks like this.



Process, procedures and training should be designed and implemented to “plug the holes”

James Reason, 1990

THE IMPORTANCE OF TRAINING

- Training is often misunderstood and not used effectively and yet is essential to the operation of error free and reliable digital infrastructure
- Especially with the pace of change and the skills required for rapidly evolving roles
- We are collectively only as good as the weakest link and one person can quickly undermine the efforts of the many in a critical environment
- We particularly need to train young people to adapt and be adaptable - The career they start will not be the one they finish in

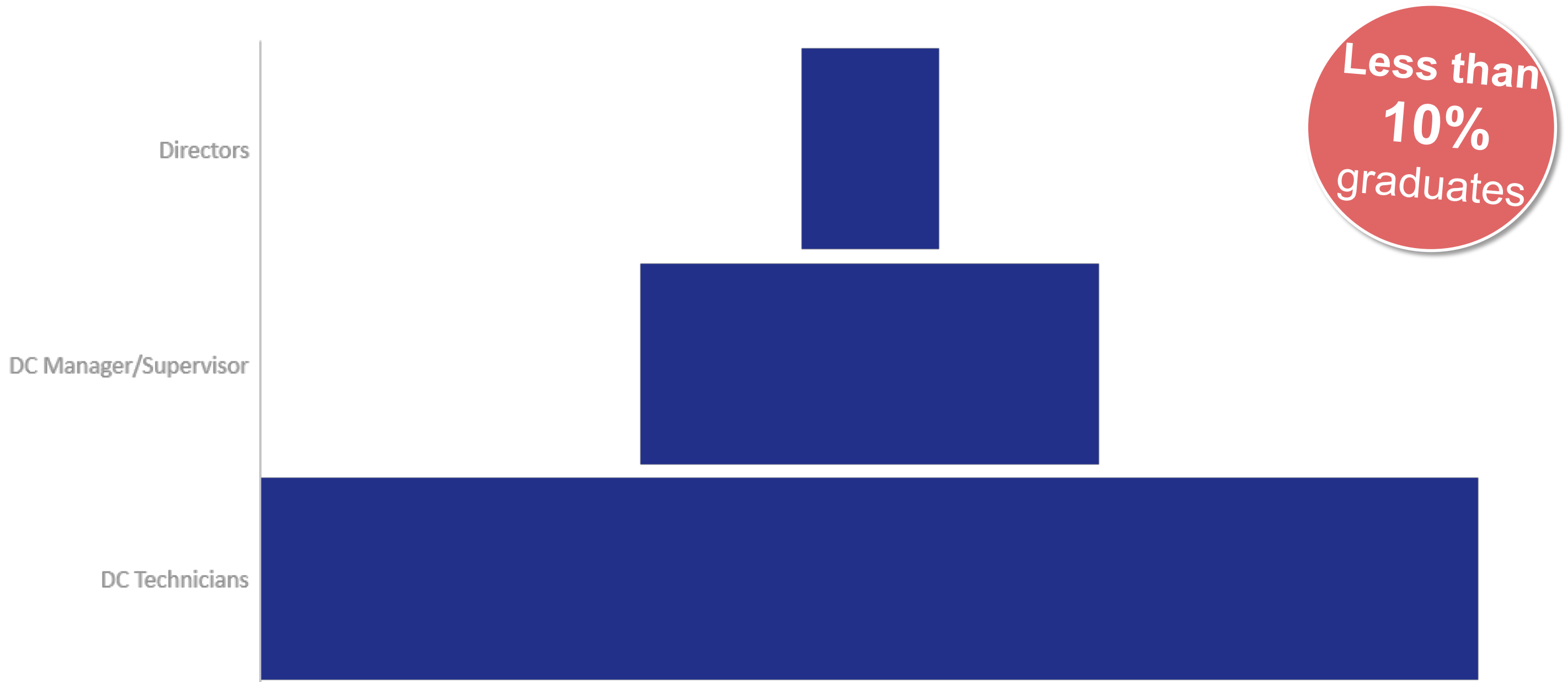
THE BENEFITS OF TRAINING

- Trained and educated staff show more commitment as well as increased morale and motivation
- Training can help overcome both Individual and Institutional issues
- Operational delivery also benefits from greater efficiencies and quality when undertaken by professionally trained employees
- Professional training and resulting increases in quality enhance an organisation's reputation and competitive edge

THE ADDITIONAL BENEFITS OF TRAINING

- Trained staff are much more likely to stay with an organisation and reduce the rate of staff turnover and associated recruitment costs
- An organisation demonstrating a focus on staff development is a more attractive employer to potential new staff
- Professional certifications and industry recognised qualifications act as proof that employees have been trained to a suitable standard
- What happens if you train people and they leave?
- What happens if you don't train people and they stay?

THE DATA CENTRE SKILLS SHORTAGE



THE SKILLS SHORTAGE

- There is a global skills shortage in our sector and a lack of available talent to support our infrastructure requirements
- It is difficult to determine the skills needed across the sector to make new infrastructure reliable and available to all
- Lack of skills in engineering generally is a global issue and there is a worldwide shortage of people with the skills required
- We need to encourage more young people into our sector

THE SKILLS SHORTAGE

- Skills shortage or pipeline issue is real - as a sector we need to “grow our own”
- We compete with other industries – yet they are much more advanced
- On-going people development needs to become a core business activity with people development fully supported at board level
- Finally, as a fast growing sector with critical dependencies we have a duty of care to leave a lasting legacy

Questions?

For more information regarding this presentation please contact:

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