CREST
CENTRE FOR RESEARCH AND EVIDENCE ON SECURITY THREATS

UNIVERSITY OF PORTSMOUTH

Building Management Systems: Organisational Security, Context, and Convergence

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Real World Context

- Increased connectivity of physical systems.
- Implications of attacks
- Groups interested in targeting such systems *(Symantec, 2019)*
- Number of incidents increasing *(Symantec, 2019; Ponemon Institute, 2018)*
- Added complexity for organisations
  - Know the attack surface? *(Ponemon Institute, 2018)*
  - Resources? *(Ponemon Institute, 2018)*

Real World Context

DDoS attack halts heating in Finland amidst winter

KIM ZETTER SECURITY 05.06.13 06:30 AM

RESEARCHERS HACK BUILDING CONTROL SYSTEM AT GOOGLE AUSTRALIA OFFICE

KIM ZETTER SECURITY 03.03.16 07:00 AM

INSIDE THE CUNNING, UNPRECEDENTED HACK OF UKRAINE'S POWER GRID

05 Target Hackers Broke in Via HVAC Company

FEB 14

Cybersecurity

Mysterious '08 Turkey Pipeline Blast Opened New Cyberwar

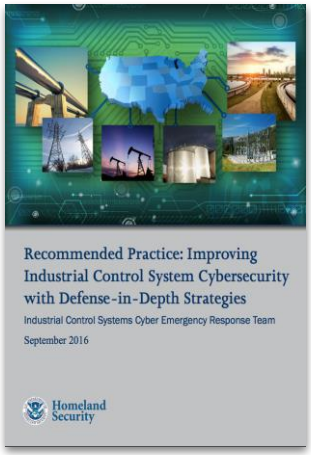
Convergence

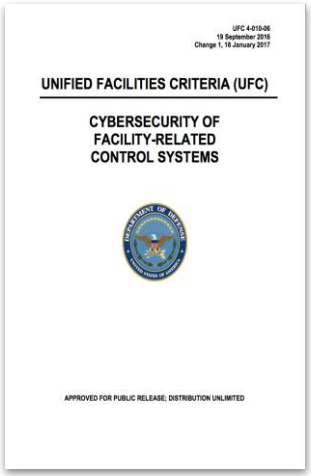
- Integration of security resources *(Tyson; 2007)*
- 57% security professionals think this is important or useful *(Dorey, Willison, Sembhi; 2012)*

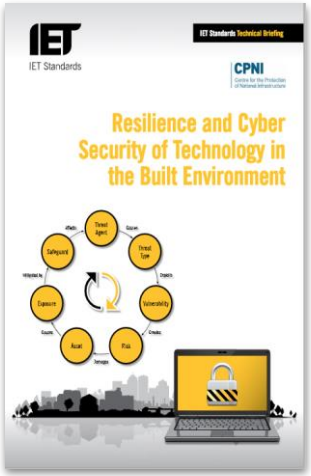
Benefits	
	➜ Cross training and communications *(Slater, 2005)*
	➜ Visibility and alignment with the business *(Ritchey, 2018)*
	➜ Prioritisation of vulnerabilities *(Willison, Sembhi and Kloet, 2012)*
	➜ Synergy of mission, efficiency and costs *(Ritchey, 2018)*

- But what type of convergence?
- How do organisations adopt a convergence approach?

Practitioner Guidance



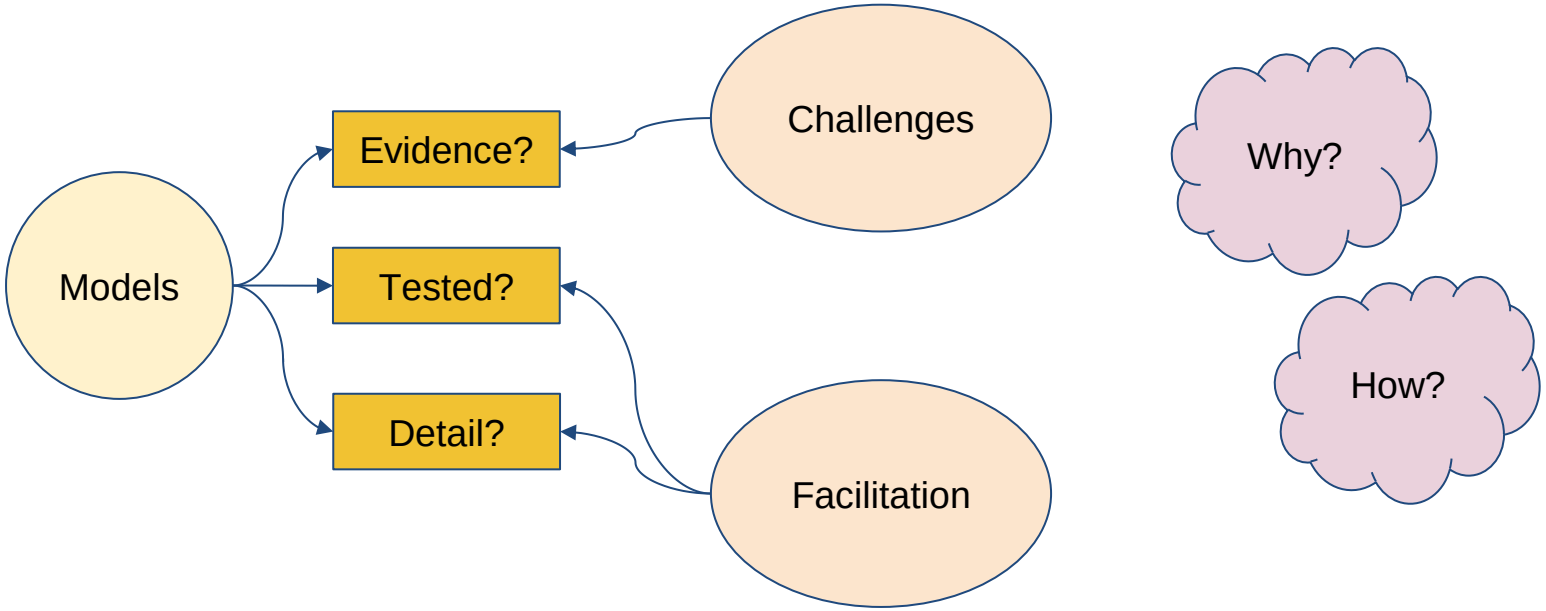




- Validity of suggestions
- Correct level of detail
- Narrow technology focus
- Complexity and overload
- Convergence?

Research Literature

- Models and frameworks
  - 3 structural converged solutions *(Rahman and Donahue, 2010)*
  - Model aligning processes *(Aleem, Wakefield and Button, 2013)*
  - Framework from risk frameworks *(Kamp, 2016)*



Initial interview study

- 5 interviews
  - 3 face to face, 2 telephone
  - Operating a converged security function
  - Variety of organisations
  - 45 minutes to 1 hour 40 minutes
- Transcription and thematic analysis

Preliminary findings

Convergence strategies

Structure: Overarching function
Operation: Forums, meetings, job design

Reach of security

Cyber, physical, personnel…
...business continuity,
...operational resilience,
...incident management

Security as a consultancy

...enabler not naysayer
...understand the business
...security service to business
...communicating security

Championing the approach

...vision
...skills to sell the idea
...set the culture

Conclusion

- Attacks exploit the gaps between security disciplines;
- Converged security widely advocated as a way of addressing this;
- Little information to assist organisations;
- Need to consider broader context;
- Preliminary findings provide some indicators of how convergence works;
- More research is needed to explore this further.

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Any questions?

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