



## Dependency aspects of a hospital department safety case

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## Introduction

- Increasing dependency on diagnostic services (and the medical devices they use)
- Interfaces not clear, communication loose
- Several incidents where:
  - Errors in diagnostic labs undetected, affecting hundreds of patients (false but plausible test results)
- Therefore, we need to understand these dependencies and mitigate against them
- Implications for department safety case but also for medical devices used outside that department
- Interdependency analysis can be used to identify them and support a claim about their identification and mitigation

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## A hospital department safety case

- Claims over:
  - Staff
    - Competency, training etc
  - Situational awareness
  - Operations
  - Medical devices but also...
  - Dependencies on other departments
- This talk will present an example analysis of an emergency department safety case

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## Background

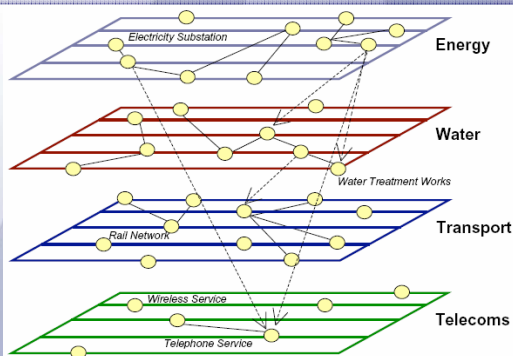
- "Interdependency analysis" in Critical National Infrastructure (CNI)
- Focus on:
  - Identification of dependencies
  - Analysis of cascade failures
  - Improvement of resilience

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## Dependency and interdependency analysis



In Pitt review, 2008, adapted from [Pederson, Dudenhoeffer, Hartley and Permann (2006)]

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## Preliminary interdependency analysis (PIA)

- Developed by Robin Bloomfield, Adelard and CSR, City University for EC project IRRIS
- Work in progress...
  - ASCE Schema
  - Plugin to produce "interdependency matrix"
  - Plugin to map assets and organizations to Google earth
    - ◆ (irrelevant but interesting)

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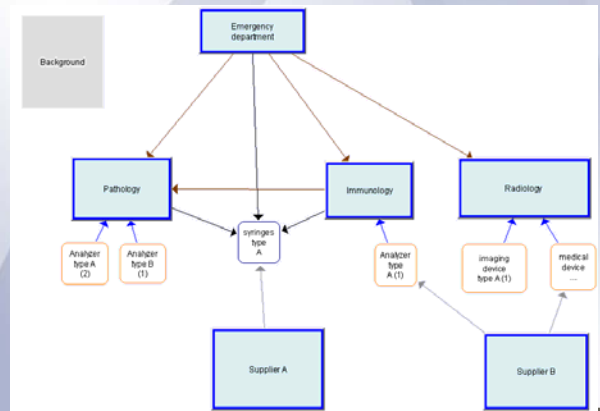
## Dependencies of an Emergency Department



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## PIA for ED dependencies on diagnostic services



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## Dependencies on diagnostic services

- Claims over:
  - Availability of service
  - Timeliness of response
  - Accuracy of results
- But also:
  - Error handling
    - Detection
    - Reporting
    - Investigation
    - Control and resolution



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## Claiming mitigation of dependency hazards



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## Summary and conclusions

- A hospital department safety case would require the identification and analysis of dependencies, and especially dependencies on diagnostic services
- Such analysis also has implications for *medical devices* used outside the department, and their *suppliers/manufacturers*
- Such an activity would require multi-departmental collaboration
- Preliminary Interdependency Analysis (ASCE-supported) work in progress...

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## Questions?

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