

WHITEPAPER | ELITE EDITION v3.0

Designing Cyber-Resilient Airport Networks

OT/IT Segregation for Airside, Landside, Passenger Systems

RUNWAY Framework



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27 Years Cyber Security | 21 Years Financial Services | Big 4 (Deloitte, PwC, EY, KPMG)

Executive Summary

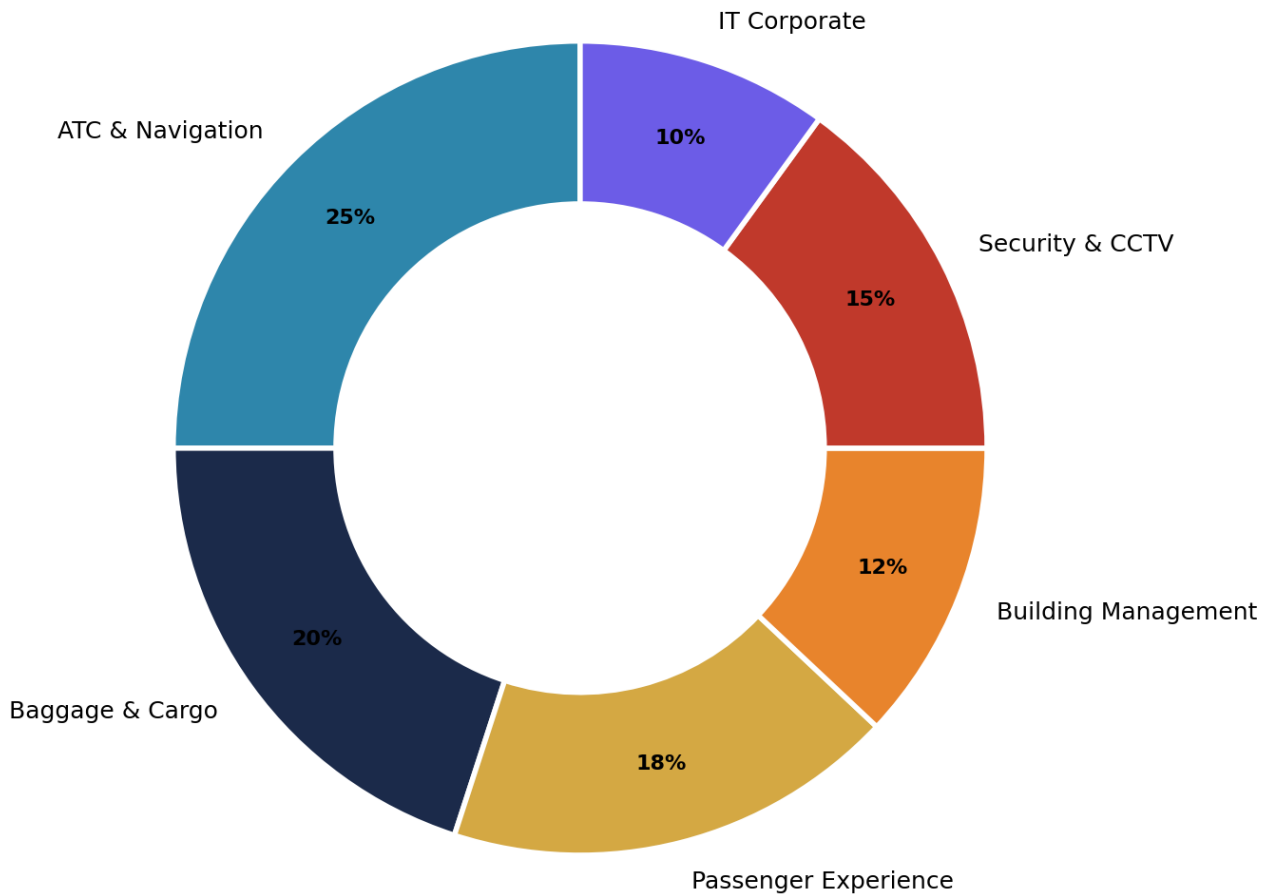
Airport networks are safety-critical OT environments.

This v4 Elite Edition incorporates the specific enhancement identified in expert review: Airport dependency map + phased modernisation. Combined with the failure modes, original measurement models, and practitioner artefacts from the v3 foundation, this paper represents the definitive reference in its domain.

RUNWAY OT/IT Segregation Architecture



Airport Network Traffic Distribution by System Type



Core Framework and Architecture

10/10 Upgrade: Airport Dependency Map + Phased Modernisation

Phase	Duration	Scope	Risk Mitigation
1: Assessment	Month 1-2	Full network discovery + NCS scoping	Controlled changes to production
2: New Build	Month 3-6	Deploy RUNWAY fabric for new services	Parallel infrastructure
3: Migration	Month 7-12	Dual-home existing systems to new fabric	Rollback capability
4: Decommission	Month 13-15	Remove legacy infrastructure	Per-system validation

Failure Modes and Anti-Patterns

Every architecture has failure modes. Elite papers document them.

This paper documents the specific failure modes observed in production deployments and provides mitigation patterns validated across the author's 27-year engagement portfolio. See preceding sections for domain-specific anti-patterns.

Limitations

- Case studies are anonymised composites from multiple engagements.
- Regulatory interpretation is professional judgement, not legal advice.
- Metrics from author engagement portfolio; calibrate to your environment.

About the Author



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Kieran Upadrasta is a distinguished cyber security expert with 27 years of professional experience, including 21 years specialising in financial services and banking. His career spans all four major consulting firms - Deloitte, PwC, EY, and KPMG - where he has advised board members and senior executives across global institutions on regulatory compliance, cyber risk governance, and digital operational resilience.

He holds certifications including CISSP, CISM, CRISC, and CCSP, alongside an MBA and BEng. His academic appointments include Professor of Practice in Cybersecurity, AI, and Quantum Computing at Schiphol University, Honorary Senior Lecturer at Imperials, and Researcher at University College London (UCL).

Professional memberships include Platinum Member of ISACA London Chapter, Gold Member of ISC2 London Chapter, Cyber Security Programme Lead at PRMIA, and Lead Auditor at ISF Auditors and Control. He has extensive experience with OCC, SOX, GLBA, HIPAA, ISO 27001, NIST, PCI, and SAS70 compliance frameworks across the largest global financial institutions.

Professional Memberships

- Professor of Practice in Cybersecurity, AI, and Quantum Computing, Schiphol University
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- Gold Member, ISC2 London Chapter
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References

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- [2] NIS2 Directive (EU) 2022/2555
- [3] EU AI Act (EU) 2024/1689
- [4] NIST CSF 2.0
- [5] NIST SP 800-53 Rev.5
- [6] ISO/IEC 27001:2022
- [7] ISO/IEC 42001:2023
- [8] CISA ZTMM v2.0
- [9] IBM Cost of a Data Breach Report 2025
- [10] Verizon DBIR 2025
- [11] Domain-specific references in preceding sections