INFRASTRUCTURE RESILIENCE

The Work Control Centre as a Resilience Hub: Coordinating 24/7 Airport Facility Response Through Centralized Helpdesk Operations

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Abstract

Airport facilities run continuously, and every fault report, from a jammed baggage belt to a failed chiller or a lift trapping passengers, passes through some form of helpdesk before a technician is dispatched. In many airports this function sits within a work control centre that receives requests, assigns work and tracks completion, yet its potential role in absorbing disruption and coordinating recovery is rarely examined. This paper asks how a centralised helpdesk and work control centre can be organised so that it strengthens the resilience of 24/7 airport facility operations. Thirty refereed journal articles, all dated between 2020 and 2025, are reviewed systematically and integrated across facility management analytics, crisis coordination, resilience engineering and airport operations and synthesised around five themes: request intake and classification, data and performance indicators, situation awareness and digital twins, coordination across teams and organisations, and learning. Two studies anchor the review, one on language-based classification of maintenance requests and one on coordination deficits in crisis governance. The synthesis informs a coordination framework that defines eight core functions of the centre and four operating modes, from normal service to crisis and recovery, with an escalation matrix that specifies triggers, roles, information products and exit criteria. Evidence is supportive for automated request triage and for the value of decentralised yet connected coordination, mixed for digital twins in live operations, and limited for helpdesk-led coordination during airport crises. No primary or proprietary data were used, and the framework is offered as a proposition for empirical testing.

1 Introduction

The helpdesk is the point at which an airport learns that something in its built environment has gone wrong. Calls, messages and automated alarms report faults in lighting, cooling, lifts, escalators, doors, toilets and baggage systems at all hours. Each report must be understood, classified, assigned and closed, and the sum of these small decisions determines how quickly the terminal returns to normal after a disruption. In most large airports the function is concentrated in a work control centre, a room or team that combines the helpdesk with planning, dispatch and monitoring of maintenance work. Despite its central position, the centre is usually treated as an administrative service rather than as part of the airport's capacity to cope with disruption.

That framing may be too narrow. Research on airports increasingly treats them as complex systems in which interdependent supply chains and infrastructures make isolated hardening insufficient (Horton et al., 2022), and climate hazards are now acknowledged as key risks that require airports to respond to events efficiently and recover quickly (Voskaki et al., 2023). A severe weather event, a power failure or a cyber incident at a linked infrastructure produces a surge of facility faults that must be coordinated with airside operations, terminal management, contractors and emergency services (Piekert et al., 2024). The question of who sees the whole picture of facility status during

such events, and who coordinates the response, is a resilience question. It is also a practical one, because the staff who answer requests at three in the morning are often the first to know that something systemic is happening, yet they rarely have the authority or the information to act on that knowledge beyond dispatching the next technician.

This review is anchored by two recent studies. Bouabdallaoui et al. (2020) developed a language-processing model that classified the maintenance requests of a healthcare facility from ten years of records, showing that the manual and time-consuming handling of requests can be partly automated. Platzer and Knodt (2023) analysed coordination deficits between crisis staffs, emergency responders, civil society and political leaders during a major flood, arguing that effective coordination shortens recovery time and thereby reduces the cost of a crisis. The first study speaks to the daily work of a helpdesk; the second to the moment when daily work turns into crisis management. This paper connects them.

The aim is to synthesise recent evidence on maintenance request management, coordination and resilience into a framework that positions the airport work control centre as a resilience hub. The objectives are (O1) to identify, through a systematic integrative review, the capabilities that enable a centralised helpdesk to support resilient facility response; (O2) to appraise the strength of evidence for each capability; and (O3) to propose a coordination framework with defined functions, operating modes and escalation rules. The work is guided by three questions. RQ1: Which capabilities of a work control centre are associated with faster and better-coordinated facility response? RQ2: How strong is the evidence for these capabilities, and how well does it transfer to airports? RQ3: How should the centre change its role and coordination pattern as conditions move from normal service to crisis and recovery?

The paper proceeds as follows. Section 2 sets out the conceptual background, Section 3 explains how studies were found and appraised, Section 4 reports thematic findings, Section 5 presents the framework, Section 6 discusses contribution and limitations, and a brief conclusion closes the paper.

2 Conceptual background

2.1 Helpdesks and work control in facility management

In facility management, the helpdesk receives requests, the computerised maintenance management system records them, and the work control function plans, assigns and tracks the resulting tasks. The quality of this chain depends heavily on data. Requests are typically free text, entered by occupants or call handlers under time pressure, and they are poorly structured for analysis (Marocco & Garofolo, 2021). Maintenance management systems hold large volumes of such records, but the information they contain is often difficult to use for decisions on reliability or planning (Lutz et al., 2023). The centre therefore faces two problems at once: it must act quickly on each request, and it must turn the accumulated record into knowledge.

In an airport, the work control centre usually serves several kinds of customer. Terminal operators report faults affecting passengers, airlines and ground handlers report problems with stands, bridges and baggage equipment, concessionaires report issues in leased space, and building management and fire systems generate alarms automatically. Contracted maintenance providers may run parts of the estate under service agreements with their own response targets. The centre must reconcile these streams into a single queue, decide which requests share a cause, and keep each party informed. Its

performance is usually judged on response and completion times, yet these measures say little about how well it coordinates when many faults occur at once.

2.2 Coordination and resilience

Resilience engineering describes the qualities that let systems maintain performance under surprise, including the abilities to monitor, respond, anticipate and learn, and it seeks enabling conditions that produce these abilities across infrastructure-dependent systems (Yu et al., 2020). Organisational research distinguishes functional, operational and strategic forms of resilience rather than treating resilience as a single property (Hepfer & Lawrence, 2022). Coordination is a recurring enabler. Crisis management can be decomposed into functional areas such as preparation, response, recovery and learning, each with distinct tasks and information needs (Tagarev & Ratchev, 2020). Insurance-centred approaches to resilience compensate losses after the event, whereas coordination-centred approaches seek to shorten disruption itself, which is the argument of the second anchor study (Platzer & Knodt, 2023). For a work control centre, these ideas imply that its resilience contribution lies less in any single tool than in how it links monitoring, response and learning across organisational boundaries.

2.3 Airports as interdependent systems

Airports depend on energy, telecommunications, transport access and many contracted services. Governance of such interdependencies requires mechanisms for cross-sector collaboration, and a study of Swedish critical infrastructure sectors including transport identified nine such mechanisms (Rydén Sonesson et al., 2021). Smart airports increase both capability and exposure, because connected sensors and building systems improve control but open new routes for cyber attack (Koroniotis et al., 2020). Operational resilience has been measured for airport flight operations under severe weather by tracking departure performance through susceptibility, absorption, adaptation and recovery phases (Wang et al., 2022). The facility side of the airport, which keeps terminals cool, lit, accessible and safe, has received much less attention, even though its failures directly affect passengers. When a chiller plant trips on a hot afternoon or a power fluctuation stops several lifts and conveyors, the consequences for passenger flow can be as serious as a flight delay, and recovery depends on how quickly facility teams are mobilised and coordinated with terminal operations.

3 Review method

3.1 Protocol and sources

The integrative format suits this question since pertinent evidence sits in disciplines that use different methods, from machine learning experiments to case studies of emergency response, and since the goal is a coordination framework, not a pooled effect estimate. Searches were run in November 2026 in a large open index of scholarly works, and the records returned were checked against registration metadata held by publishers for identifiers, publication dates and notices of retraction. Query strings combined maintenance request, helpdesk, work order, maintenance management system, text mining, digital twin, facility management, emergency coordination, resilience engineering and airport operations.

3.2 Eligibility and selection

Inclusion required an English-language, refereed journal article dated 2020–2025 that dealt with at least one of the following: the handling or analysis of maintenance requests and work orders; performance monitoring or decision support for facility operations; coordination, communication or learning in emergency or crisis response; or resilience of airports and interdependent infrastructure. Conference proceedings, editorials and records lacking an abstract were set aside. After screening titles and abstracts and removing duplicates, thirty studies were retained. Of these, eleven address facility management data and tools, eight address coordination and learning in emergencies, five address resilience and governance concepts, and six address airports or airport-like operations.

3.3 Synthesis and appraisal

Each study was coded for setting, method, capability addressed and reported outcome. Codes were grouped into five themes through constant comparison. The strength of evidence for each theme was rated as supportive where several studies using different methods reported consistent benefits, mixed where findings were positive but conditional or drawn from one setting, and limited where evidence was sparse, indirect or untested in airports. The ratings reflect the judgement of the author and are reported with their basis in Table 1. No interviews, surveys or operational data were collected, and no proprietary airport records were used.

4 Findings

4.1 Request intake and classification

The strongest body of evidence concerns automated handling of requests. In addition to the healthcare classification model, which reached an average accuracy of 78% on request categories (Bouabdallaoui et al., 2020), text mining of more than twelve thousand requests from a cluster of municipal buildings extracted the rooms where faults concentrated and the building elements that caused most problems (Marocco & Garofolo, 2021). Comparison of several classifiers for assigning work-order records to failure modes showed that the choice of algorithm and preprocessing matters for accuracy (Malan & Jooste, 2023). An unsupervised approach combined temporal association rules with semantic similarity from large language models to reveal links between infrastructure failures from only a few requests, while noting that domain experts must judge which rules are relevant (Lowin, 2024).

For a work control centre, these results suggest that the first step of every response, deciding what a request is about and who should act, can be accelerated and made more consistent. They also show that the request stream is a sensor: clusters of related complaints can reveal an emerging system failure before it is reported through formal channels. The human role does not disappear. Classifiers make errors, and the centre must keep a review step for ambiguous or high-consequence requests. Language also matters: airports serve multilingual staff and passengers, and models trained on one language or one facility may not transfer without retraining. The anchor study's accuracy figure, while useful, indicates that roughly one request in five would still need correction, which argues for automation as an assistant to call handlers rather than as a replacement during the early stages of adoption.

4.2 Data, dashboards and performance indicators

Work orders are also the raw material for performance indicators. A comparison of expert labelling, text classification and other approaches found that reliability indicators can be derived from unstructured work orders, with trade-offs between effort and accuracy (Lutz et al., 2023). In a hospital clinical engineering department, eighteen indicators spanning logistics, technical and equipment management were defined and presented through an interactive business intelligence dashboard (Picozzi et al., 2024). The roll-out of a maintenance management system in a resource-constrained health system showed that a shared asset ontology was the foundation on which reliable records were built (Beniacoub et al., 2021).

Airports share with hospitals the combination of continuous operation, regulated safety systems and many asset types, which makes these studies relevant even though they come from another sector. Drawing on the expertise of facility managers in Saudi healthcare facilities, one study identified causal factors of lift maintenance issues rooted in design decisions, underlining that helpdesk data can inform design as well as operations (Alassafi et al., 2022). The common requirement is a disciplined data structure; without it, dashboards report noise. For resilience purposes, indicators should include not only averages but also measures that reveal stress, such as the size of the open backlog by priority, the share of requests escalated, and the time taken to recognise that several requests stem from a single cause.

4.3 Situation awareness and digital twins

Situation awareness, the perception, comprehension and projection of the state of a system, is the cognitive basis of control-room work. A conceptual analysis of human interaction with artificial intelligence argued that situation awareness offers a useful lens for decomposing that interaction and for addressing tensions in the design of AI tools (Jiang et al., 2023). Digital twins promise to support this awareness. A bibliometric review of 248 articles mapped research on twins for smart facility management (Hakimi et al., 2024); a decision support system built on a twin was implemented for urban facility management (Bujari et al., 2021); and a building twin combined with extended reality devices was used to improve maintenance procedures in smart buildings (Coupry et al., 2021).

Market evidence is more cautious. Participatory action research with facility management practitioners found both opportunities and obstacles to digital twin uptake, pointing to a gap between research prototypes and organisational readiness (Signorini & Pomè, 2025). For airports, collaborative decision-making concepts that extend situational awareness beyond the terminal, for instance by monitoring passenger flows on surface access, show how shared operational pictures can improve resource allocation (Jimenez et al., 2023). The work control centre is a natural owner of the facility layer of such a picture. In practice this means a live view that shows which critical systems are degraded, which work is in progress and when restoration is expected, presented in a form that airport operations can read without specialist knowledge. The situation awareness perspective adds a caution: automated tools must make their reasoning visible, otherwise operators may either overtrust or ignore them (Jiang et al., 2023).

4.4 Coordination across teams and organisations

Evidence from emergency response shows that coordination patterns matter as much as procedures. In a simulated terrorist incident, inter-agency coordination got better as the communication network grew less centralised, and behaviour followed three phases of response, resolve and recovery rather than the two phases assumed in guidance (Brown et al., 2021). In a rescue operation in the high

Arctic, managerial roles and information flows had to be adapted to context, and established command structures did not by themselves ensure effective information sharing (Andreassen et al., 2020). A computational study detected up to 96% of manually identified coordination breakdowns in teams under stress from physiological signals, showing that breakdowns are identifiable transitions rather than random failures (van Eijndhoven et al., 2023).

The flood case at the centre of the second anchor study identified deficits at the interfaces between crisis staffs and their partners and recommended better interface management (Platzer & Knodt, 2023). Airport studies point the same way: early awareness of attacks on linked infrastructures can be used in an airport operations centre for collaborative decision-making (Piekert et al., 2024), and readiness factors identified among airport practitioners in the United Arab Emirates aim to prevent failures at the transition into operation (Al-Mazrouie et al., 2021). Taken together, the evidence suggests that a central hub should not become a bottleneck. Its value lies in connecting teams, sharing a common picture and making interfaces explicit, while allowing field teams to coordinate directly. The finding on breakdowns adds a practical point: supervisors can be trained to recognise the signs that coordination is failing, such as repeated requests for the same information or conflicting instructions to field teams, and to intervene before the breakdown affects restoration.

4.5 Learning and adaptive capacity

Resilience depends on learning between events. An analysis of emergency response operations in the North Sea during three disease outbreak episodes used generic resilience guidelines to identify learning patterns, including the need to coordinate activities, manage adaptive capacity and revise procedures and checklists (Steen et al., 2023). A related case study found that robust coordination, improvisation, transparency and trusting communication were the keys to resilient response, and warned that over-planning can produce inflexibility (Steen et al., 2022). Resilience engineering similarly treats the ability to learn as one of the basic qualities that a resilient system must possess, alongside monitoring, responding and anticipating (Yu et al., 2020). For the work control centre, the implication is that post-event review should be routine, should draw on the request and work-order record, and should feed revisions to procedures, spares and staffing.

Table 1. Evidence matrix for the five capability themes

Theme	Representative studies	Main finding	Evidence rating
Request intake and classification	Bouabdallaoui et al. (2020); Lowin (2024); Malan and Jooste (2023); Marocco and Garofolo (2021)	Text classification and mining can sort requests and reveal fault clusters	Supportive
Data and performance indicators	Beniacoub et al. (2021); Lutz et al. (2023); Picozzi et al. (2024); Alassafi et al. (2022)	Work orders yield indicators once a shared data structure exists	Supportive
Situation awareness and digital twins	Bujari et al. (2021); Coupry et al. (2021); Hakimi et al. (2024); Jiang et al. (2023); Signorini and Pomè (2025)	Twins and shared pictures support awareness, but readiness lags	Mixed
Coordination across teams	Andreassen et al. (2020); Brown et al. (2021); Platzer and Knodt (2023); van Eijndhoven et al. (2023)	Connected, less centralised networks and clear interfaces improve response	Supportive

Theme	Representative studies	Main finding	Evidence rating
Airport crisis coordination	Al-Mazrouie et al. (2021); Jimenez et al. (2023); Piekert et al. (2024); Wang et al. (2022)	Operations centres can use early awareness; facility role rarely studied	Limited
Learning and adaptive capacity	Steen et al. (2022); Steen et al. (2023); Yu et al. (2020)	Routine review and network building strengthen later response	Mixed

4.6 Cross-theme synthesis

Read together, the themes describe a chain from signal to learning. Requests and alarms are signals; classification and indicators convert them into structured information; shared pictures turn information into awareness; coordination converts awareness into action across teams; and review turns action into learning. The evidence is strongest at the start of the chain, where facility management analytics has matured, and at the coordination stage, where emergency research is rich. It is weakest at the junction between them, that is, at the point where a facility helpdesk would need to recognise that routine requests have become a crisis and to change its role accordingly. That junction is what the framework in the next section addresses.

A second pattern concerns centralisation. Facility management studies tend to assume that centralising requests in one system and one team improves control, while emergency studies show that over-centralised communication can slow coordination (Brown et al., 2021) and that rigid plans can reduce flexibility (Steen et al., 2022). The two positions can be reconciled if the centre centralises information but not every decision: it holds the common picture and the authority to reprioritise, while field teams and partners coordinate directly within that picture.

5 A coordination framework for the airport work control centre

5.1 Core functions

The framework places the centre at the hub of a network that connects requesters, maintenance teams, contractors, airport operations, security and emergency services (Figure 1). Eight functions are defined. Intake receives requests from all channels, including automated alarms. Triage classifies and prioritises them, using text classification with human review for ambiguous or safety-related cases. Dispatch assigns work to in-house teams or contractors. Monitoring tracks progress against response targets and watches for clusters that suggest a system-level failure. Situation awareness maintains a live picture of facility status for operational partners. Escalation moves events to higher operating modes under defined triggers. Communication informs requesters, passengers' representatives and partners. Learning conducts reviews after significant events and turns findings into changes. The first four functions are strongly supported by facility management studies; the latter four draw mainly on crisis and resilience research.

The functions are linked. Triage depends on intake data being complete and consistent, monitoring depends on triage codes being reliable, and situation awareness depends on monitoring being current. Escalation is the point at which the centre's routine data are converted into a judgement that conditions have changed, and the quality of that judgement depends on all the preceding functions. Communication and learning close the loop by explaining decisions to those affected and by changing the system so that the next event is handled better. Because the functions are interdependent,

investment in one, for example a new dashboard, yields little unless the upstream data and downstream decisions are also addressed.

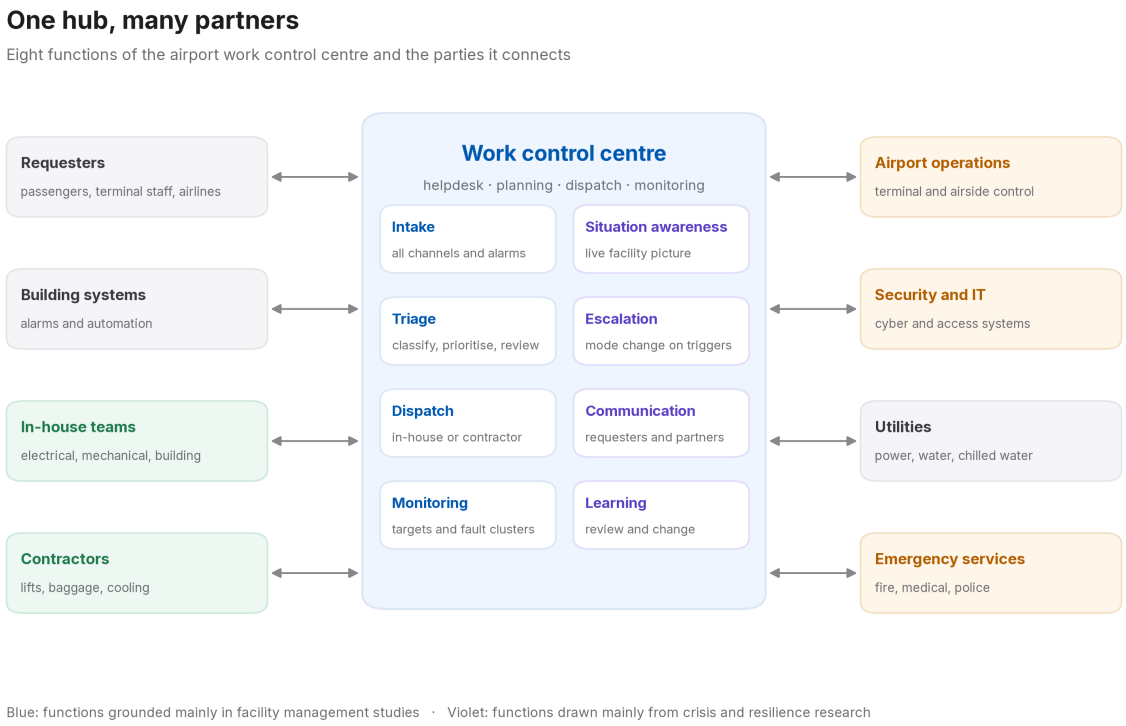

Figure 1. The work control centre as a resilience hub: eight functions linking requesters, field teams and airport partners

5.2 Operating modes

The framework distinguishes four operating modes (Figure 2). In normal mode, the centre manages the routine flow of requests and preventive work against service levels. In heightened mode, triggered for instance by a weather warning, a peak travel period or a partial system outage, it pre-positions resources, increases monitoring frequency and opens a direct line to airport operations. During crisis mode, triggered by a major failure or an incident declared by the airport, the centre becomes the facility cell within the airport's incident structure, maintains the facility status picture, coordinates contractors and prioritises restoration according to operational need. Recovery mode sees it manage the backlog, verify restored systems and lead the review. The phases echo the response, resolve and recovery pattern found in emergency practice (Brown et al., 2021) and the functional areas of crisis management (Tagarev & Ratchev, 2020).

Modes change what the centre optimises. In normal mode, the objective is efficiency against service levels, and requests are handled largely in order of priority and arrival. In heightened mode, the objective shifts to readiness, so that preventive tasks that could reduce exposure, such as checking standby generators before a storm, are brought forward. Crisis mode shifts the objective to restoring the functions the operation most needs, and routine requests may be deferred openly. Recovery mode returns the objective to efficiency but with a deliberate effort to capture lessons while they are fresh.

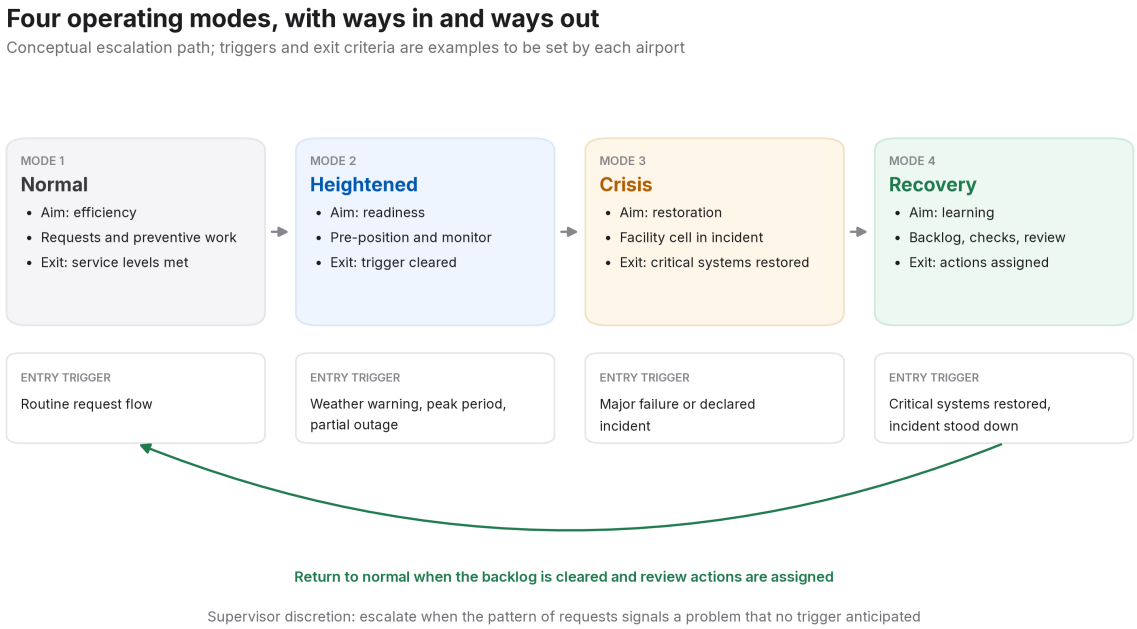

Figure 2. Four operating modes of the work control centre with escalation triggers and exit criteria (conceptual)

5.3 Escalation matrix

Table 2 sets out an escalation matrix that specifies, for each mode, illustrative triggers, the role of the centre, the parties it coordinates, the information products it supplies and the criteria for returning to a lower mode. Triggers and thresholds are examples rather than recommendations and would need to be set by each airport in line with its emergency plan. Explicit exit criteria are included because the evidence on over-planning and inflexibility suggests that teams can remain in crisis posture longer than needed (Steen et al., 2022).

The matrix is deliberately short. A matrix that tries to anticipate every scenario becomes a document that nobody consults under pressure. Four modes with a handful of triggers each are easier to rehearse, and the centre's supervisor retains discretion to escalate when the pattern of requests suggests a problem that no trigger anticipated, for example a slow rise in temperature complaints across several piers that points to a failing chilled water loop.

Table 2. Escalation matrix for the work control centre (triggers are illustrative)

Mode	Example triggers	Role of the centre	Coordinates with	Information products	Exit criterion
Normal	Routine request flow	Manage requests and preventive work against service levels	Maintenance teams, contractors	Daily status, indicator dashboard	Not applicable
Heightened	Weather warning, peak period, partial outage	Pre-position resources, raise monitoring, open line to operations	Airport operations, key contractors	Hourly facility status, risk list	Trigger cleared and backlog normal

Mode	Example triggers	Role of the centre	Coordinates with	Information products	Exit criterion
Crisis	Major system failure, declared airport incident	Act as facility cell, prioritise restoration by operational need	Incident command, security, utilities, emergency services	Live facility status picture, restoration plan	Critical systems restored and incident stood down
Recovery	End of crisis mode	Clear backlog, verify systems, lead review	Maintenance teams, operations, finance	Review report, action log	Actions assigned and backlog cleared

5.4 Governance and interfaces

The centre's authority must be defined in advance. In crisis mode it should have the right to reprioritise all facility work and call on contractor resources without further approval, within limits agreed with finance. Interfaces with airport operations, security, information technology and energy suppliers should be documented with named contacts, a principle consistent with cross-sector governance mechanisms for interdependent infrastructures (Rydén Sonesson et al., 2021). Cyber incidents warrant a specific interface with information security, given the exposure of connected building and airport systems (Koroniotis et al., 2020). Joint exercises with operational partners maintain the network on which coordination depends, as emergency response research recommends (Steen et al., 2022). Competence is the final element of governance. Call handlers need enough technical knowledge to recognise when a request signals a serious failure, supervisors need training in incident roles, and contractors' service agreements should oblige them to participate in heightened and crisis modes, including the provision of surge staff.

6 Discussion

6.1 Contribution

The review contributes a reframing and a framework. The reframing treats the helpdesk and work control centre as a component of resilience rather than as back-office administration. The framework specifies what the centre does, how its role changes across operating modes, and how escalation is governed. It integrates two literatures that rarely meet. Facility management analytics offers tools for faster and more consistent intake, classification and performance measurement (Bouabdallaoui et al., 2020; Lutz et al., 2023; Marocco & Garofolo, 2021), while crisis and resilience research explains why coordination at interfaces shapes recovery (Andreassen et al., 2020; Platzer & Knodt, 2023; Yu et al., 2020). The combination suggests that analytics without coordination improves efficiency but not resilience, and coordination without analytics depends on individual memory.

A further contribution is the explicit treatment of mode transitions. Much of the coordination literature describes how teams behave once a crisis is under way, and much of the facility literature describes steady-state service. The framework draws attention to the transitions between them, where judgement is required and where, on the evidence reviewed, failures of recognition and handover are likely. Defining triggers, roles and exit criteria in advance is a simple way of reducing that ambiguity.

6.2 Evidence strength and transfer to airports

Evidence for automated triage and data-driven indicators is supportive, but most studies come from hospitals, municipal buildings and wind farms. Evidence on decentralised yet connected coordination is supportive across emergency settings, although it rests largely on case studies and simulations. For digital twins in live operations, the evidence is mixed: prototypes are promising, but organisational readiness lags (Signorini & Pomè, 2025). Support for a helpdesk-led coordination role during airport crises is limited; airport resilience studies focus on flight operations (Wang et al., 2022), supply chains (Horton et al., 2022) or climate risk (Voskaki et al., 2023), not on facility response. Transfer to airports is plausible because the underlying problems of high request volumes, continuous operation and multi-party coordination are similar, but it remains untested.

6.3 Implications for practice

Airport facility managers can act on the framework in stages. First, structure the request record with a consistent asset and location taxonomy, since classification and indicators depend on it (Beniacoub et al., 2021). Second, introduce automated classification with human review and monitor its accuracy over time. Third, agree operating modes and an escalation matrix with airport operations and include the centre in incident exercises. Fourth, establish a review routine after every heightened or crisis event. Staffing should reflect the modes: a centre sized for normal service may be overwhelmed in crisis, so surge rosters and remote access for supervisors are part of the design.

Performance management should change accordingly. Alongside response and completion times, airports can track how long it takes to detect a system-level failure from the request stream, how quickly the centre moves to heightened mode after a trigger, and how long restoration takes for the most critical systems. These measures align the centre's targets with the outcomes that matter to passengers and airlines. They also make the case for investment in analytics and training more concrete, because improvements can be observed during each event rather than inferred from averages.

6.4 Limitations

The review has limitations. Thirty studies cannot cover every relevant field, and the selection favoured journals with accessible abstracts. Ratings of evidence strength are interpretive. The framework has not been tested in an airport, and its triggers are illustrative. The review also relied on abstracts and published summaries for its coding, which may understate nuance in the full studies. Several of the strongest studies come from healthcare and municipal estates, and differences in regulation, contracting and security between those settings and airports may limit transfer. Future research should observe work control centres during real disruptions, measure the effect of automated triage on response times, test whether defined operating modes shorten recovery, and examine how contracted maintenance models affect the authority of the centre in crisis.

7 Conclusion

A work control centre sees every facility fault an airport experiences and is therefore ideally positioned to coordinate the response when faults multiply. This review of recent evidence identified five capability themes and proposed a framework with eight functions, four operating modes and an escalation matrix. In answer to RQ1, the capabilities most associated with effective response are consistent intake and classification, structured performance data, a shared facility status picture,

connected but not over-centralised coordination, and routine learning. In answer to RQ2, evidence is supportive for the first two and for coordination, mixed for digital twins and limited for airport-specific crisis roles. For RQ3, the centre should move from managing service levels in normal mode to acting as the facility cell in crisis and leading review in recovery, with explicit triggers and exit criteria. Treated in this way, the helpdesk becomes a resilience hub rather than a call queue.

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