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Global Command and Control Centre Index

Insights from the frontiers of critical operational intelligence

First edition

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Foreword

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We are entering an era where technology, intelligence and trust define the boundaries of safety and progress. As nations, governments, cities and enterprises adapt to rapid digitalisation, evolving threats and an increasingly complex regional environment, the need for connected, adaptive and insight-driven command centres has never been more critical.

At PwC Middle East, we see technology not only as an enabler but as a force multiplier, transforming the way we protect, govern and respond. Through command and control centres (CCC), we are helping organisations reimagine how critical operations are coordinated and safeguarded in real time. The launch of the first edition of PwC Middle East's Global CCC Index further reinforces this commitment, offering a structured lens to assess CCC maturity and define the frontier of command excellence.

Our focus remains on building operational agility across security, defence and intelligence ecosystems, empowering decision-makers with the right insights at the right time. This transformation is not just about responding to risks, but about anticipating and shaping a secure and intelligent future.

Together with our clients and partners, we are redefining the frontiers of safety and resilience, where human judgement meets technological precision to create a safer, smarter tomorrow.

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01 Executive summary

Command and control centres (CCCs) have evolved far beyond traditional surveillance rooms. They are now the digital nerve centres that keep cities, infrastructure and communities secure and resilient. From policing and emergency management to energy and transport, CCCs enable real-time coordination across critical operations. Yet, most remain trapped at an advanced plateau: Digitally enabled but still reactive, fragmented and under-utilised.

PwC Middle East's Global CCC Index establishes the world's first benchmark for CCC performance, giving CCC stakeholders a blueprint for transformation. Acting decisively on these priorities will enable CCCs to evolve into advanced force multipliers that strengthen safety, security, and resilience. This will deliver the moonshot-level maturity required to meet the demands of the 21st century.

Key findings

- **Maturity levels:** We assessed 20 global CCCs across three maturity levels*: Traditional, Advanced and Moonshot, across geographies and domains to understand their current maturity.
- **Global maturity gap:** Out of 20 leading CCCs assessed, the majority operate at the Advanced level, strong in real-time monitoring and coordination but lacking predictive and prescriptive capability.
- **Recurring issues:** Common issues include fragmented data governance, weak multi-agency coordination, absence of unified concept of operations (CONOPS), operator fatigue and limited artificial intelligence and machine learning (AI/ML) prediction.
- **Moonshot readiness is rare**: Only a handful of centres show early signs of predictive, AI-driven orchestration.

Priorities for business and organisation leaders

- Operational excellence: Strong operating model, cross-agency playbooks, joint simulation drills and AI-assisted operator workflows to combat fatigue
- Technology foundations: Unified operating platforms, AI/ML-driven prediction, preventive operations and maintenance (O&M) and robust cyber/data governance
- Governance and trust: Embedding ethics boards, publishing resilience reports and redefining KPIs to measure prevention, trust and resilience rather than just response time

*Different maturity levels:
Traditional: Foundational, reactive, siloed with fragmented technology stack
Advanced: Proactive, embracing leading technologies
Moonshot: Predictive and leveraging next-gen technologies with AI at its core

02 Introduction

Why is the Global CCC Index needed?

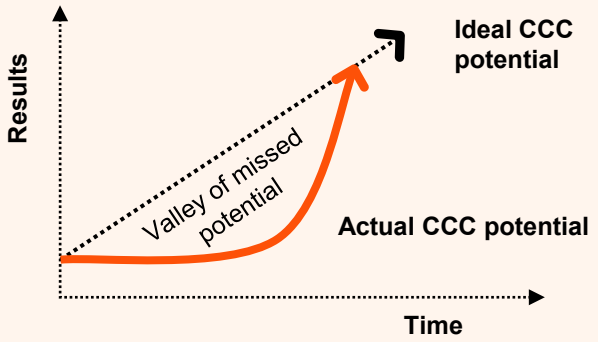
01 The opportunity

CCCs are no longer just video surveillance or CCTV monitoring rooms. They are becoming the beating heart of safer cities, more secure critical infrastructure and more resilient organisations. From policing to energy, border security to emergency response, CCCs orchestrate complex, real-time coordination across vital domains. As cities evolve, CCCs have the potential to become cognitive nerve centres for predictive response, automation and cross-agency coordination.

02 The gap

Most CCCs operate far below their capability due to disjointed systems and limited innovation.

Despite growing investment, many CCCs remain siloed, reactive and manual. As shown in the following graph, they are stuck in a 'valley of missed potential', unable to unlock benefits from AI, integration or existing technologies.



Untapped potential

In the area of law enforcement in the GCC region there is significant untapped potential in analytics, automation and systems integration.

There have been disjoined response mechanisms, weak coordination and inefficient use of resources in a large mega city in Asia.

Absence of a global benchmark:
Without a global maturity model, CCCs are upgrading in isolation with no reference point to guide their journey, with no clarity on where they stand and how to leap forward.

CCC leaders often ask:

- What defines CCC operational excellence?
- Where should CCC's focus next?
- How do we become a global CCC leader?

> The Global CCC Index is not just a benchmark, it is a blueprint for building the next generation of CCCs

03 The response

To address these gaps, PwC Middle East developed the Global CCC Index, the world's first structured framework to evaluate and guide CCC transformation. The index empowers CCCs to:

- Identify operational blind spots
- Benchmark against global peers
- Prioritise innovations across maturity levels
- Accelerate their journey toward Moonshot readiness where CCCs become proactive, data-driven and self-optimising command environments

What is the evaluation framework?

01 Assessment parameters

In this inaugural edition of the Global CCC Index, we have used PwC Middle East's Global CCC Index framework. Here each CCC was assessed under four key areas.

Capabilities and services

Breadth and depth of CCC functions across domains (smart city, CNI, policing, crisis response, entertainment etc.)

Technology

Degree of tech enablement including AI, IoT, digital twin, analytics platforms, integration tools and unified comms

Operations

Effectiveness of SOPs, incident response, cross-functional workflows, real-time adaptability and team coordination

Governance

Decision-making structure, stakeholder alignment, regulatory compliance, KPI frameworks and leadership oversight

02 Evaluation methodology

The PwC Global CCC Index draws on a multi-source, expert-driven methodology where each command control centre was evaluated using quantitative scores (1 to 3 scale) and qualitative reviews across over 40 attributes. The analysis draws on:

- **Extensive desktop research covering over 50 centres globally across sectors and regions.**
- **Complemented by in-depth interviews with subject matter experts, including CCC leads, system integrators, and regulatory stakeholders.**
- **Available, surveys and field-level data were also incorporated to capture ground-level operational maturity and technology adoption insights.**

03 Global CCC landscape

Critical domains for trend analysis

To analyse emerging trends and best practices in CCCs, we have examined CCCs across multiple sectors. By reviewing their operations, technology and interaction models, we aim to highlight innovations and lessons that are shaping the future of CCC's globally. The following domains have been considered for this analysis:

Policing

CCCs that unify law enforcement data, surveillance and emergency communications to prevent crime, protect communities, and coordinate rapid multi-agency response.

Crisis management

CCCs that coordinate rapid responses to major incidents such as floods, fires, etc. protecting people, safeguarding assets and ensuring the continuity of critical services.

Smart city

CCC's that integrate mobility, utilities, public safety and environmental systems to optimise city performance, resilience and real-time service delivery for citizens.

Critical national infrastructure (CNI)

CCCs that monitor and protect critical assets, including utilities and power stations, ensuring operational resilience, regulatory compliance and rapid response to major threats.

Maritime

CCCs that ensure safety, security and operational efficiency across ports and territorial waters through integrated monitoring, data-driven decision-making and multi-stakeholder collaboration.

Smart buildings

CCCs that centrally manage physical security, building management and fire life safety systems, enabling real-time monitoring and coordinated response to protect occupants and assets.

Global CCC front-runners

Across regions and domains, PwC assessed 20 prominent command and control centres to understand how maturity varies worldwide.

Antwerp police CCC
Policing CCC
AI-driven situational awareness and hybrid command

London MetCC
Policing CCC
Integrated command with predictive analytics

Singapore POCC
Policing CCC
Real-time video integration and multi-agency coordination

NYPD CCC
Policing CCC
Real-time crime analysis and tactical support

Mexico City C5
Policing CCC
Integrated surveillance and public safety coordination

Large-Scale Urban CCC
Smart city CCC
Unified transport command and simulation

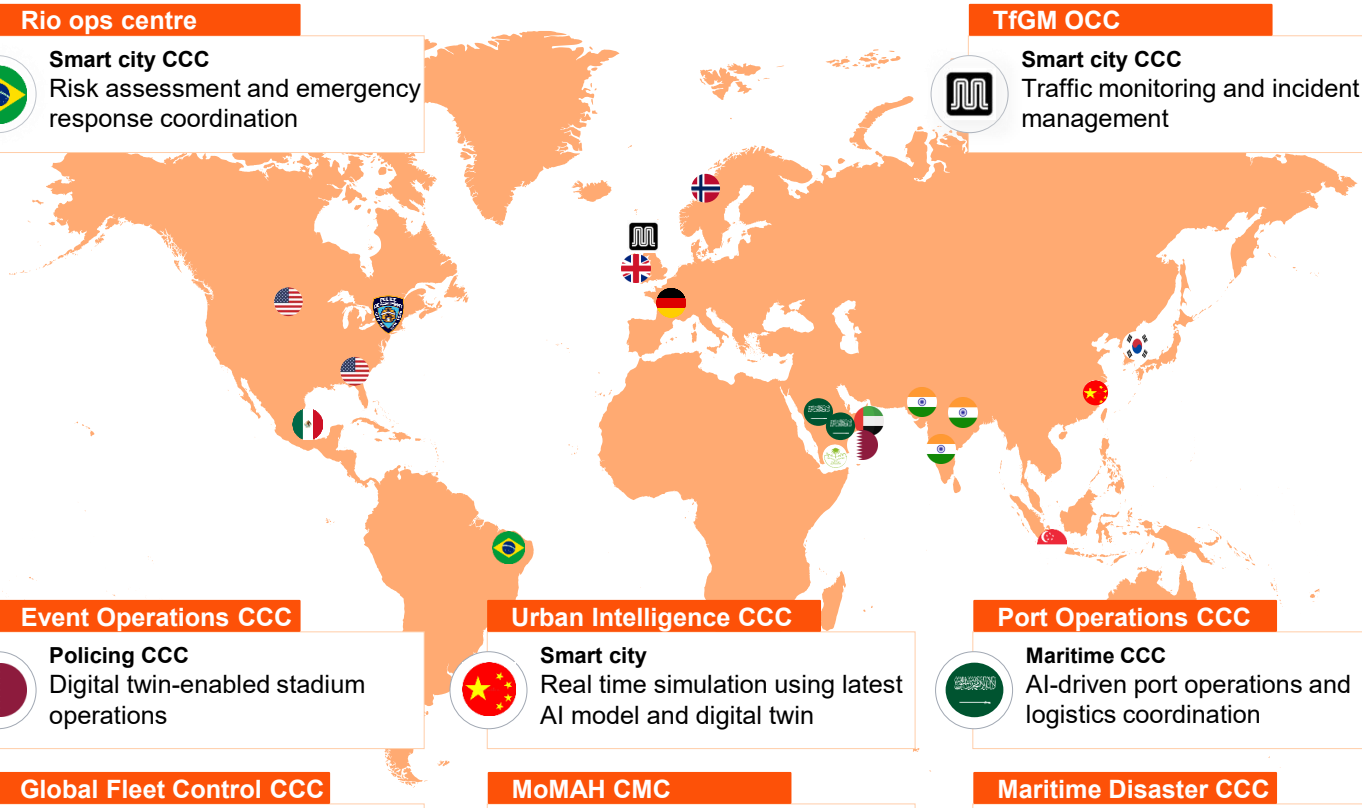
Mumbai Surveillance CC
Smart city CCC
Urban surveillance and incident response

Hyderabad CCC + ITMS
Smart city CCC
Intelligent traffic management and optimisation

Smart City CCC, Saudi Arabia
Smart city CCC
Smart infrastructure and city operations management

Rio ops centre
Smart city CCC
Risk assessment and emergency response coordination

TfGM OCC
Smart city CCC
Traffic monitoring and incident management



Event Operations CCC
Policing CCC
Digital twin-enabled stadium operations

Urban Intelligence CCC
Smart city
Real time simulation using latest AI model and digital twin

Port Operations CCC
Maritime CCC
AI-driven port operations and logistics coordination

Global Fleet Control CCC
Maritime CCC
Real time fleet control and monitoring

MoMAH CMC
Crisis management CCC
Municipal operations coordination

Maritime Disaster CCC
Maritime CCC
Emergency operations and resource coordination

Nuclear CCC
Critical national infrastructure
security planning and risk assessment

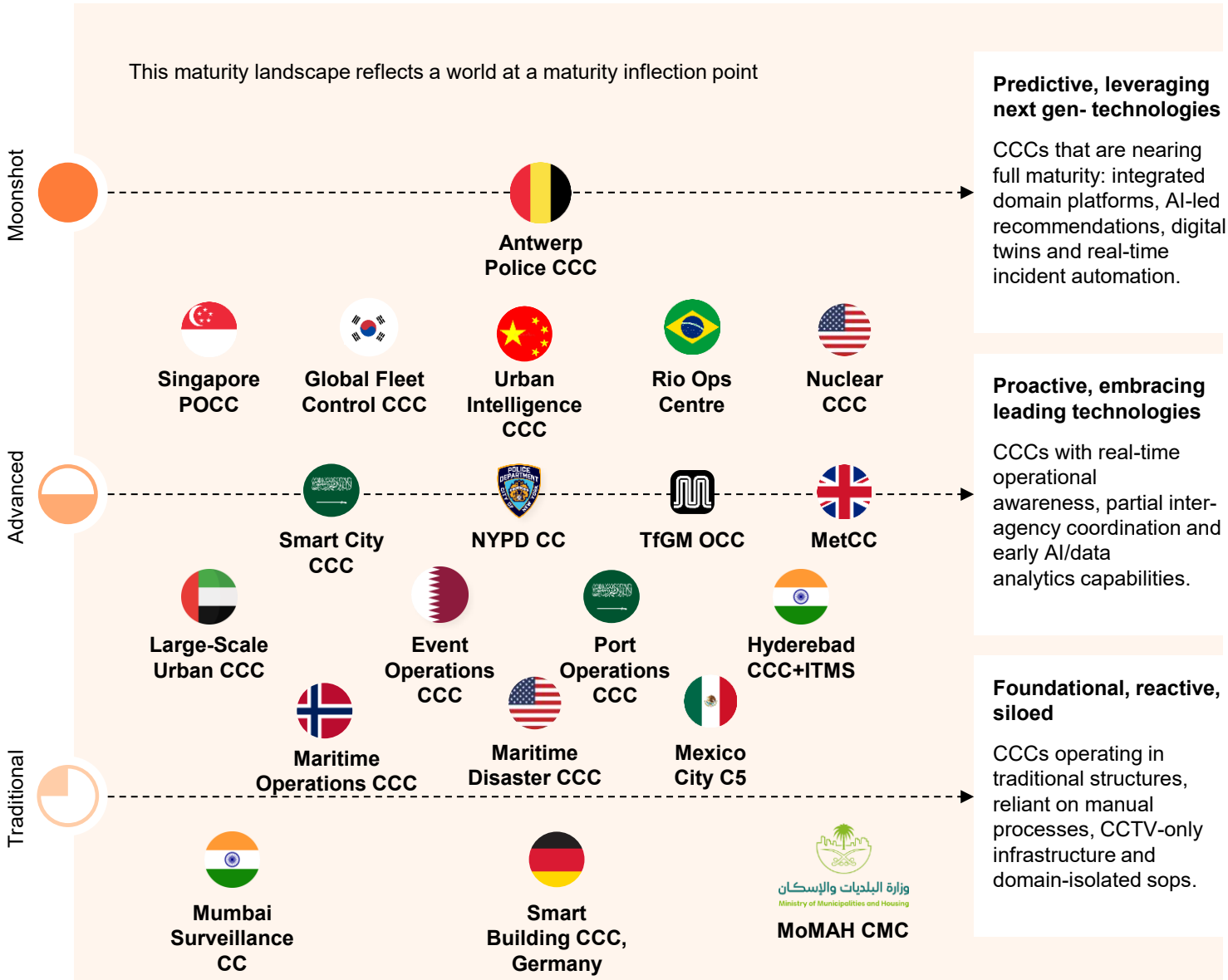
Maritime Operations CCC
Maritime CCC
Autonomous vessel monitoring and control

Smart Building CCC
Smart building management
Unified building oversight and security

Note: Certain citations within this paper have been anonymised to respect confidentiality agreements and non-disclosure obligations Descriptions of specific command centres, organisations, or case studies have been generalised to preserve anonymity without affecting the technical accuracy, analytical integrity, or thematic intent of the paper. Any resemblance to actual entities is purely coincidental.

CCC maturity overview

Using PwC Middle East's Global CCC Index framework, each CCC was assessed across four pillars: Capabilities, Technology, Operations and Governance, to determine its placement on the maturity curve.



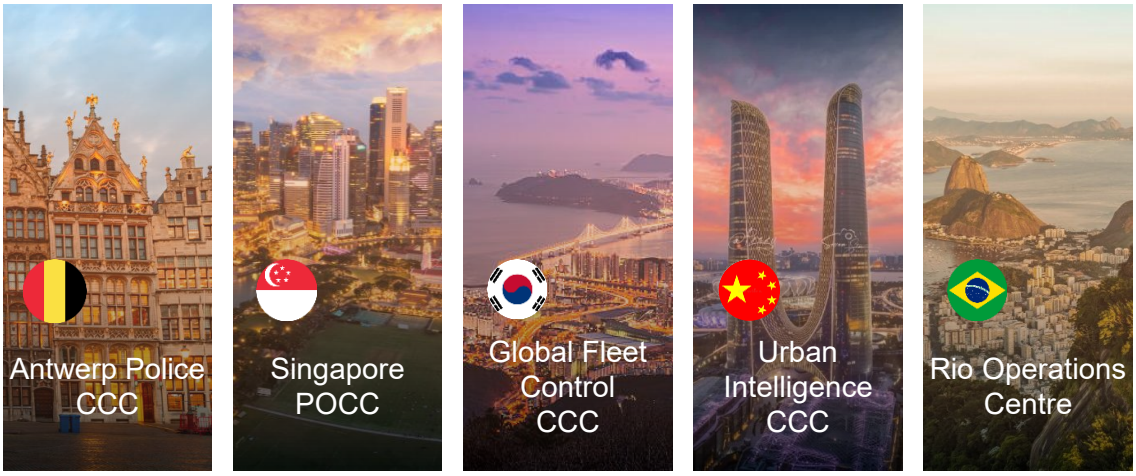
A smaller cluster is stuck in Traditional maturity, limited by siloed systems, minimal cross-agency orchestration, or weak governance.

Most CCCs today remain in the Advanced stage, enabled by real-time monitoring and consolidated data layers but still short of full prescriptive intelligence.

A rare few are pushing into Moonshot readiness, blending AI-enabled workflows, digital twins and dynamic threat response with organisational integration.

Global leaders in CCC

Leading CCCs setting the standard



CCC leaders across the evaluation parameters

Singapore POCC	Singapore POCC
Antwerp Police CCC	Urban Intelligence CCC
Global Fleet Control CCC	UAE's Large-Scale Urban CCC
Urban Intelligence CCC	Antwerp Police CCC
Rio Operations Centre	Smart City CCC in Saudi Arabian giga project

Capabilities and services

Operations

- Singapore POCC
- NYPD CC
- London MetCC
- Antwerp Police CCC
- TfGM OCC

Technology

Governance

- Antwerp Police CCC
- Singapore POCC
- Global Fleet Control CCC
- Rio Operations Centre
- TfGM OCC

What regional and global trends are shaping the CCC ecosystem?

Europe

Evolving from reactive operations to proactive, intelligence-led command

CCCs are integrating AI, predictive analytics and real-time dashboards to anticipate incidents and enable faster, data-informed decisions across multiple agencies.

Middle East and Africa (MEA)

Leading a futuristic, vision-driven, technology-anchored command centres

Centres leverage AI, digital twins and integrated situational platforms to enable predictive management, operational resilience and alignment with ambitious national transformation agendas.

Asia-Pacific (APAC)

Combining structured operations with scalable innovation

CCCs balance disciplined governance with advanced analytics, scenario simulations and automation, blending procedural stability with emerging technological experimentation.

Americas

Maintaining reliability while selectively modernising with intelligent tools

Centres emphasise operational predictability, clear accountability and structured SOPs while gradually incorporating AI assisted monitoring, predictive maintenance and data-driven technologies to enhance efficiency.

How are CCCs evolving across different operational domains?

Policing CCCs are leading with intelligence-driven, multi-agency operations

↑ 66%
reduction in case clearance [1]

- Centres integrate AI analytics, predictive policing and real-time coordination to deliver rapid, city-wide operational oversight
- In some deployments, violent crime case clearance has improved by around 66% when supported by CCCs

Smart city security CCCs are evolving as technology-first urban hubs

↓ 30%
improvement in emergency response time [2]

- Centres leverage IoT, dashboards and real-time monitoring to manage urban systems, while governance and collaboration frameworks continue maturing
- In smart city deployments, emergency response times have improved by around 30% after CCC implementation

CCCs for critical national infrastructure is enabling resilient and cost-efficient security operations

US$130m
annual savings [3]

- Unified platform deployments have demonstrated substantial annual cost savings by improving operational efficiency, reducing capital requirements for security infrastructure and optimising manpower
- For example, US reported savings over US$130m annually for nuclear energy industry via manpower optimisation driven from insights generated from unified platforms

Crisis management CCCs are adopting automated, predictive response systems

↓ 12+
hours faster incident stabilisation [4]

- AI-driven analytics, GIS mapping and integrated sensor feeds within CCC platforms provide real-time situational awareness and predictive incident modelling, replacing fragmented response workflows
- Coordinated command centres have shortened incident stabilisation by over 12 hours and accelerated decision-making through AI-supported prioritisation and resource allocation

Maritime CCCs are leveraging AI and predictive analytics to optimise operations and cut emissions

↓ 15%
drop in CO2 emissions [5]

- CCCs integrate multi-sensor data (radar, sonar, AIS) with AI-driven predictive analytics to optimise vessel routing, berth allocation and traffic flow, reducing congestion and improving turnaround efficiency
- Through AI-driven scheduling and just-in-time coordination, CCCs have enabled optimised vessel routing and port calls, delivering fuel and CO2 reductions of up to ~15%

Smart building CCCs are driving AI-powered predictive operations and integrated building intelligence

↓ 30%
savings in maintenance and repair costs [6]

- By unifying HVAC, lighting, security and energy systems into a single AI-driven command layer, CCCs enable proactive fault detection, faster emergency response and optimised occupant comfort
- Predictive maintenance enabled by CCC-integrated platforms has reduced unplanned maintenance and repair costs by up to ~30%, improving asset reliability and lifecycle

Sources:
1. https://www.police1.com/tech-pulse/criminologist-how-real-time-crime-centres-can-shorten-response-times-aid-investigations
2. https://www.urbanagendaplatform.org/best-practice/rio-operations-centre-integrating-data-and-monitoring-utilities-truly-intelligent
3. AVERT Nuclear Installation product sheet and case studies
4. https://www.imo.org/en/mediacentre/pages/whatsnew-1718.aspx
5. PwC Analysis
6. https://www.energy.gov/eere/buildings/articles/report-delves-impacts-commercial-building-controls-energy-savings

04 Assessment pillars

Capabilities and services pillar: From proactive analytics to autonomous operations (1/2)

This pillar focuses on what the command centre can do and how it delivers value. It includes core functions such as surveillance, emergency response, analytics and public communication. As CCCs evolve, their capabilities expand to include predictive technologies, autonomous systems and integrated service platforms that enhance responsiveness and efficiency.

AI is powering a new era of proactive command centre capabilities

Command and control centres are increasingly delivering advanced AI-driven capabilities, shifting from reactive operations to proactive decision-making. Rather than responding after incidents, they now use video analytics, pattern recognition and predictive modelling to anticipate risks and reduce disruptions. Platforms such as Mexico City's C5 and MoMAH integrate real-time and historical data to forecast traffic and public safety issues, enabling pre-emptive resource allocation and rapid response. Ongoing advances in machine learning and generative AI are further strengthening these services, establishing proactive intelligence as a core feature of future-ready CCCs.

Americas

Leading practice
Mexico City C5
Location: Mexico

AI-enabled cameras, 800+ ANPR sensors and app-driven panic alerts shift the city from reactive calls to proactive dispatch, improving recovery of stolen vehicles and accelerating emergency response.

Asia-Pacific

Leading practice
Singapore POCC
Location: Singapore

Singapore's SGSecure app connects residents directly to operations: they can report suspicious activity with photos and video, receive location-based emergency alerts, and trigger Personal SOS to Police via SMS with approximate location.

Citizen centric service models elevating transparency accessibility and public participation

Command centres are increasingly adopting citizen-centric service models that emphasise transparency, accessibility and responsiveness. Through mobile apps and web portals, residents can report incidents, receive real-time alerts and share feedback on public safety. Initiatives such as Mexico City's C5, which integrates citizen touchpoints and Singapore's SGSecure, with its community engagement app, illustrate this approach. Two-way interaction enhances situational awareness, builds trust and encourages active participation. Future-ready CCCs are set to extend these services with AI-powered chatbots, multilingual support and personalised notifications, making citizens active partners in urban resilience.

Source: PwC Analysis

Capabilities and services pilar: From proactive analytics to autonomous operations (2/2)

This pillar establishes the leadership, policies and accountability mechanisms that guide a command centre's evolution. Modern CCC governance is data-driven, outwardly integrated and self-correcting, enabling decision-makers to monitor, steer and adapt in real time. It emphasises transparency, agility and alignment with the centre's vision and mission, ensuring compliance, stakeholder trust and resilience in dynamic environments.

From reactive operations to an innovative tech aligned future vision

Globally, CCCs are redefining their role, evolving from reactive response hubs to proactive, innovation-led ecosystems. Modern centres now integrate AI, IoT, smart alerting and predictive analytics into their core operations, transforming how cities and institutions anticipate, decide and act. This shift marks a new governance era where technology alignment is a strategic mandate rather than a support function. Examples such as the Antwerp Police CCC and Saudi Arabia's MoMAH Crisis management Centre show how digitalisation [7] and innovation-focused missions are setting new standards for operational foresight. The most advanced CCCs treat innovation not as an enhancement but as the foundation of their long-term strategy.

Europe

Leading practice
Antwerp Police CCC [8]
Location: Belgium

Antwerp Police introduced FOCUS, an AI-enabled system that merges data from about 50 databases into one view and guides officers with real-time risk flags. The platform cut investigation time by up to 30%, with cases where a single address search surfaced a full risk profile in seconds and enabled a safe, immediate arrest.

Middle East

Leading practice
Smart City CCC in Giga project
Location: Saudi Arabia

CCC acts as the cognitive core of the city, focusing on AI-driven decision-making, autonomous monitoring, predictive insights and proactive governance, extending its role beyond traditional incident response

Command centres are becoming catalysts for societal transformation, not just response [9]

CCCs are evolving beyond crisis management to actively shape societal outcomes. Leading centres now drive innovation, inform policy and influence global trends. Saudi Arabia's CCC exemplifies this shift with a vision built on artificial intelligence, smart city integration and proactive governance. Many centres are also embedding sustainability and international collaboration into their core missions. This evolution highlights a wider trend: CCCs are no longer just operational hubs but strategic platforms shaping the future of cities and societies.

Sources:
7. https://preptoolkit.fema.gov/web/cip-citap/templates-and-resources?sort=priority&category=39521026
8. https://www.politieantwerpen.be/
9. https://www.nyc.gov/site/nypd/index.page

Source: PwC Analysis

Systems and technology pillar: Advancing intelligence, integration and predictive capabilities

Command centres are undergoing a major shift in how they operate and deliver impact. Artificial intelligence, automation, system integration and digital twin technologies are turning traditional control rooms into smart, predictive platforms. These trends are global and interconnected. AI enables faster decisions, digital twins simulate future scenarios and integrated systems ensure everything works together without interruption. Cities that embrace these innovations are building command centres that do more than monitor and respond. They predict, prevent and guide action. The result is safer communities and more resilient urban systems.

AI and automation are transforming command centres into smart, predictive engines

Command and control centres are rapidly evolving through the integration of AI and machine learning. These technologies analyse camera feeds, emergency calls and sensor data in real time, enabling faster detection and more informed response. Leading centres such as Event operations CCC in Qatar and Mexico City's C5 use AI-driven platforms for large-scale monitoring, coordination and incident management. Emerging research points towards cognitive systems where AI not only detects events but also adapts and optimises operations over time. This shift from reactive monitoring to proactive, intelligence-driven control establishes AI as a cornerstone of modern urban resilience.

Middle East

Leading practice
Smart City CCC in Giga project
Location: Saudi Arabia

A city-scale digital twin integrates transport, utilities and public safety to rehearse scenarios and automate playbooks. AI predicts disruption from weather, major works and demand spikes, then optimises routing and restoration.

Middle East

Leading practice
Event operations CCC in Qatar
Location: Qatar

AI-enabled workflows fuse camera feeds, event schedules and crowd telemetry to flag risks early and coordinate multi-agency response. The centre uses real-time models to pre-position assets and push targeted advisories to attendees.

Digital twins are shaping the future of smart, predictive command centres

Digital twin technology is emerging as a transformative capability within CCCs. By creating live virtual replicas of cities or infrastructure, CCCs can simulate scenarios, test responses and optimise decisions in real time. Early use cases include traffic simulations in the UAE and global disaster modelling, while advanced projects such as Virtual Singapore aim to build full-scale city twins. These systems combine real-time data from sensors, assets and people to enable predictive and prescriptive analytics. The vision is a cognitive command centre that not only monitors but also models and manages urban dynamics intelligently, turning foresight into action.[10]

Sources:
10. https://www.softdel.com/case-study/cloud-enabled-hvacr-predictive-maintenance-30-reduction-in-maintenance-costs/

Source: PwC Analysis

Governance pillar: Strategic direction and data driven oversight

This pillar establishes the leadership, policies and accountability mechanisms that guide a command centre's evolution. Modern CCC governance is data-driven, outwardly integrated and self-correcting, enabling decision-makers to monitor, steer and adapt in real time. It emphasises transparency, agility and alignment with the centre's vision and mission, ensuring compliance, stakeholder trust and resilience in dynamic environments.

Command centres are moving toward automated, data-driven performance management

Modern CCCs are increasingly adopting data-driven governance to monitor performance and guide decision-making. Instead of relying on manual reports or intuition, they use real-time dashboards, automated KPIs and advanced analytics to track operational and strategic metrics. This helps leaders identify trends, spot inefficiencies and make evidence-based adjustments quickly. Examples such as Mexico City's C5 and London's MetCC highlight the shift towards analytics-led oversight that refines processes and enhances outcomes. The rise of automated performance management reflects a wider move towards intelligent, data-powered governance in modern CCCs.

Europe

Leading practice
London MetCC [11]
Location: UK

London's MetCC is consolidating citywide contact and dispatch across three sites, using unified comms and live KPI dashboards to improve call-handling and deployment, and to meet nationally-reported 999 standards

Middle East

Leading practice
Large-scale urban CCC in UAE
Location: UAE

This CCC uses real-time dashboards, automated KPIs and a consent-based data framework to guide decisions. A governed analytics platform gives secure, self-service access to business-ready data, while net-zero AI compute supports predictive oversight and scenario testing.

Governance in command centres is becoming smarter and more adaptive [12]

CCCs are adopting continuous improvement as a core governance principle. Many conduct structured reviews after major incidents and use lessons learned to refine protocols and training. Some go further, running simulations to test and enhance procedures. Advanced CCCs are also exploring AI tools that analyse incident data in real time, recommend updates and forecast emerging risks. This marks a shift from static oversight to dynamic, learning-oriented governance. By combining human judgement with intelligent systems, CCCs are creating agile structures that adapt to evolving threats and operational demands.

Sources:
11. https://www.met.police.uk/foi-ai/metropolitan-police/disclosure-2024/february-2024/information-role-metcc/

12. https://www.ehangzhou.gov.cn/2025-04/01/c_293162.htm

Source: PwC Analysis

Operational excellence pillar: Embracing innovation, flexibility and partnerships (1/3)

This pillar addresses the organisational backbone of a command centre, including structure, roles and interaction models. It emphasises workforce readiness, collaboration frameworks and operational excellence practices that drive efficiency, accountability and resilience in day-to-day functioning.

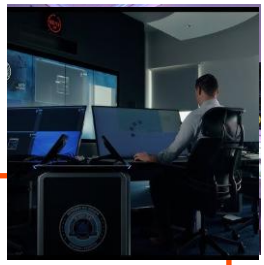
Innovation is becoming a daily discipline in command centre operations

CCCs are embedding innovation into daily operations rather than treating it as periodic upgrades. Many now maintain dedicated R&D units, run internal incubators and collaborate with technology partners to pilot and deploy new solutions continuously. Training increasingly uses VR and XR simulations for high-stress scenarios, while gamified dashboards help boost engagement and performance. Advanced centres also refine analytics models in-house [13] to strengthen detection and response. Forward-looking CCCs see innovation as a core principle, integrating emerging technologies into everyday practice.

Middle East

Leading practice
Large-scale urban CCC in UAE
Location: UAE

CCC embeds innovation into daily operations through dedicated R&D teams, VR/XR training, gamified dashboards and in-house analytics refinement, continuously testing and integrating new technologies.



Europe

Leading practice
Antwerp Police CCC[14]
Location: Belgium

Antwerp's Police CCC features Specialised crisis rooms, media cells and external SME units, while engaging in hackathons and collaborative research with universities to enhance operational capabilities and innovation.

Specialised infrastructure and external collaboration are elevating CCC operations

CCCs are evolving into multi-functional hubs with dedicated spaces for crisis management, media coordination, expert consultation and forensic analysis. Examples such as Antwerp Police CCC showcase investments in infrastructure that enable parallel operations and faster decision-making. Alongside these physical upgrades, CCCs are partnering with universities, startups and global organisations to drive innovation. Hackathons, joint research and pilot programs help test new tools and attract talent, while some centres explore data-sharing models to strengthen smart city ecosystems. This blend of specialised infrastructure and collaborative openness is becoming a hallmark of operational excellence.

Sources:
13. https://preptoolkit.fema.gov/web/cip-citap/templates-and-resources?sort=priority&category=39521026

14. https://www.politieantwerpen.be/

Source: PwC Analysis

Operational excellence pillar: Embracing innovation, flexibility and partnerships (2/3)

This pillar addresses the organisational backbone of a command centre, including structure, roles and interaction models. It emphasises workforce readiness, collaboration frameworks and operational excellence practices that drive efficiency, accountability and resilience in day-to-day functioning.

Omnichannel communication is redefining how command centres share information

CCCs are adopting instant, context-aware communication across multiple channels to ensure rapid, effective information flow. Internally, teams use a mix of radio, phone, email and software alerts for redundancy, while externally, messages reach the public through sirens, SMS, mobile notifications, social media and dashboards. Advanced centres such as Singapore's POCC and Antwerp Police's CCC[15] are exploring AI-driven systems that tailor messages for different audiences. The emerging vision features intelligent assistants that decide who needs to know, what to share and how to deliver it, making communication faster, smarter and more effective.

Asia-Pacific

Leading practice
Singapore POCC
Location: Singapore

Singapore's POCC merges island-wide PolCam video and analytics with hotlines and the SGSecure app to collect, triage and broadcast information in real time, aiding 7,500+ investigations and scaling coverage toward 200,000 cameras to make guidance faster, targeted and trusted.

Americas

Leading practice
Rio de Janeiro Operations Centre [16]
Location: Rio de Janeiro

Rio's COR operates 24/7 with officials from around 30 city departments and connects more than 50 agencies on a unified platform with the Painel Rio geospatial dashboard, an approach reported to reduce emergency response times while improving multi-agency coordination.

Command centres are embracing real-time, tech-enabled collaboration [17]

Internal collaboration within CCCs are becoming faster, more integrated and continuously connected. Instead of relying on linear communication or formal briefings, teams now use shared dashboards, chat platforms and incident management systems to stay aligned in real time. This ensures unified situational awareness and rapid coordination across departments. Advanced centres are also adopting AI tools that enhance collaboration by identifying key participants, surfacing past cases and recommending actions. Whether through digital boards, open-plan control rooms or remote links, the goal is clear: enable seamless teamwork and swift decision-making across the centre.

Sources:
15. https://www.politieantwerpen.be/
16. https://dexl.lncc.br/partners/cor-rio-operations-centre
17. https://www.dubizzle.com/blog/cars/enterprise-command-and-control-ec3-rta/

Source: PwC Analysis

Operational excellence pillar: Embracing innovation, flexibility and partnerships (3/3)

This pillar addresses the organisational backbone of a command centre, including structure, roles and interaction models. It emphasises workforce readiness, collaboration frameworks and operational excellence practices that drive efficiency, accountability and resilience in day-to-day functioning.

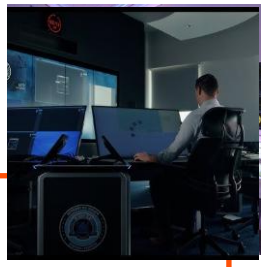
Agile teams are replacing rigid hierarchies in command centres

CCCs are shifting from rigid hierarchies to agile, collaborative team models. Instead of working in isolated departments, many now form multidisciplinary teams that operate side by side or assemble dynamically as needs arise. Rio de Janeiro's Operations Centre, uniting over 30 agencies under one roof, exemplifies daily collaboration and joint problem-solving. Centres such as Mexico City's C5 have strengthened coordination channels to boost responsiveness. Some advanced CCCs also rotate staff across roles to broaden skills and reduce silos. This model accelerates information flow and encourages creative solutions without bureaucratic delays.

Americas

Leading practice
Rio de Janeiro Operations Centre [18]
Location: Rio de Janeiro

Rio de Janeiro's Operations and Resilience Centre brings officials from around 30 city departments together 24/7 under one roof, with crisis and press suites, to plan daily operations and run major events such as Carnival and the Olympic Games



Asia-Pacific

Leading practice
Global Fleet Control Centre [19]
Location: Asia-Pacific

Global Fleet Control Centre uses real-time vessel telemetry, weather and cargo data to give shore teams a live picture of ship performance, enable remote equipment checks and repairs, and drive route and fuel optimisation.

Data-driven decision support and continuous learning

CCCs are embedding data-driven decision support and continuous learning into daily operations. This global shift emphasises predictive analytics, real-time dashboards and simulation-based drills to make responses faster and more adaptive. Centres such as Global Fleet Control Centre exemplify this by integrating AI-powered risk analysis with scenario-based training, using historical and live data to forecast disruptions and optimise resources. By combining human expertise with intelligent systems, these centres create agile operating models that evolve with changing conditions and performance demands.

Sources:
18. https://dexl.lncc.br/partners/cor-rio-operations-centre
19. https://www.kongsberg.com/maritime/news-and-events/news-archive/2024/massterly-opens-remote-operations-centre-norway/

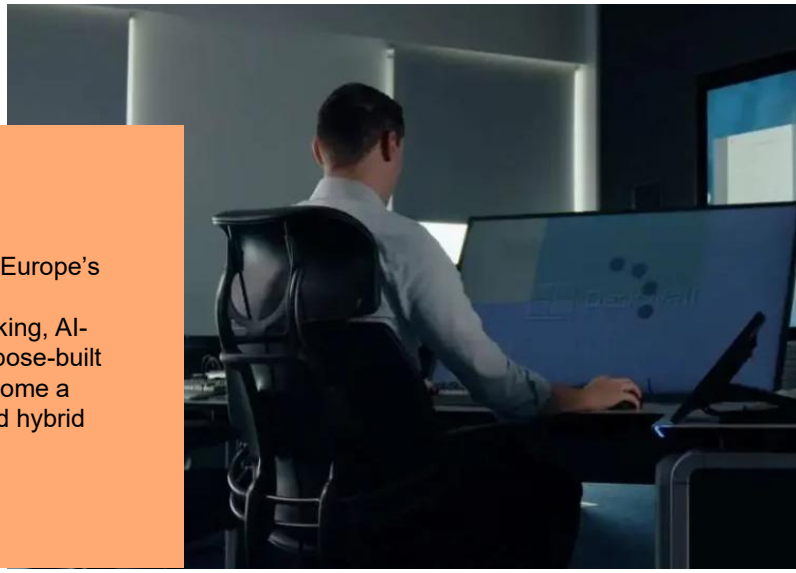
Source: PwC Analysis

05 Flagship CCCs to watch in 2026

Antwerp Police Control Center

Policing

Europe



Overview

The Antwerp Police's control centre represents one of Europe's most advanced urban safety hubs. Situated in the new Berchem HQ, it integrates real-time monitoring, call-taking, AI-enabled analytics and cross-agency coordination. Purpose-built with ergonomic design and agile operations, it has become a benchmark in operator-centric technology adoption and hybrid AI integration.

Key insights

Capabilities and services 01

End-to-end incident management

From handling call-taking (emergency and non-emergency) to dispatch coordination across police, RTIC, traffic and event control units, Antwerp Police CCC delivers seamless end-to-end incident management, reducing silos and accelerating decision cycles.

System and technology 02

Unified digital command

Intergraph CAD and in-house FOCUS platform fuse real-time incident dashboards and field visibility, ensuring a consolidated and actionable command.

Unified platform

A centralised digital platform integrates GIS mapping, dispatch automation, real-time video and mobile field communication, enabling rapid, data-led decision-making across teams.

Operational excellence 03

Agile workforce scaling during surges

12-hour shifts with four-hour jurisdictional rotations, co-operator pairing and beacon-based oversight prevent fatigue and sustain high performance under pressure.

Mobile digital workflows

Patrol cars act as mobile offices with FOCUS, giving officers instant access to key databases for faster, informed interventions.

Governance and interaction model 04

Collaborative incident governance

Pre-defined CONOPS with traffic, emergency and event departments ensures joint action during crises, minimising delays and inter-agency friction.

Ethical AI deployment

Antwerp Police pilots smart cameras under strict privacy and community oversight to balance security with trust.

Singapore Police Operations Command Centre

Policing

Asia-Pacific

Overview

Singapore's Police Operations Command Centre (POCC) sets the global benchmark in tech-enabled policing and integrated command. Purpose-built to support real-time public safety, it combines 24/7 incident command, AI-driven surveillance and integrated multi-agency coordination through its Cubicon II platform, making Singapore the world's safest cities. Its architecture represents a next-generation model for smart, secure and responsive policing. Its evolution from a traditional control room into an advanced, AI-enabled command architecture positions it as a leader in next-generation policing.

Key insights

Capabilities and services 01

End-to-end incident management

POCC delivers a continuum of incident management services spanning emergency call-taking, live surveillance, UAV coordination and tactical deployment.

Multi-source incident intake

Integrates reports via 999, SMS, SGsecure app, I-witness portal and social media to drive real-time situational awareness.

System and technology 02

AI-driven surveillance and search

Advanced AI/ML based video analytics to accelerate suspect detection and anomaly identification, transforming 9,000+ CCTV into a digital nervous system.

Unified platform

A centralised digital platform integrates GIS mapping, dispatch automation, real-time video and mobile field communication, enabling rapid, data-led decision-making across teams.

Operational excellence 03

Scalable response model

The system can instantly route call overloads to other divisions and deploy standby officers across units, creating a resilient, scalable response model for national events and crises.

Simulated crisis training using VR/XR

Operators train in high-fidelity virtual environments, simulating terror attacks, mass events and complex emergencies to sharpen reflexes and decision-making in high-stakes scenarios.

Governance and interaction model 04

Vision-anchored road safety

TfGM's outreach programs engage over 300 schools and colleges, using VR technology to educate young people on safety and behaviour, shaping the next generation of responsible travellers.

Partnership at scale

Collaboration is at the heart of TfGM's model. The centre works closely with emergency services, utilities and community stakeholders to keep the network safe, inclusive and inspiring for future generations.

TfGM Operational Control Centre

Smart city

Europe

Overview

Transport for Greater Manchester (TfGM) operates a 24/7 operational control centre. Managing trams, buses, roads, and the Bee Network, it oversees more than 3,800 CCTV feeds across stations and interchanges. Using AI, mobile data, and drones, teams track passenger flows, optimise traffic and prepare for major events. In the first half of 2025, the centre processed 6,862 operational logs, reflecting its scale and responsiveness. Intelligence units analyse patterns and travel trends to strengthen safety. Working with emergency services and local partners, TfGM ensures the smooth, secure and connected movement of people across Greater Manchester.

Key insights

Capabilities and services 01

Always-on, multi-agency command

The centre operates 24 hours a day, 365 days a year, with police, TravelSafe, intelligence and Resilience teams working side-by-side on the control-room floor.

End-to-end coverage

With real-time monitoring of 99 stops and over 3,800 CCTV feeds, TfGM delivers comprehensive oversight for stations, interchanges and critical junctions.

System and technology 02

Sharper intelligence inputs

TfGM leverages predictive analytics and real-time data to anticipate congestion, optimise traffic signals and improve incident response, making the network smarter and more resilient.

Automated aerial monitoring

TfGM is piloting a drone-in-a-box system under a 5G innovation project, enabling rapid drone deployment for real-time network surveillance and event support.

Operational excellence 03

Seasonal surge readiness

Dynamic resource allocation ensures smooth operations during peak travel periods and major events, minimising disruption and maintaining service reliability.

Adaptive operational model

TfGM evolved from a traffic signal management hub to a 24/7 multi-modal control centre following major incidents, embedding resilience and agility into its core operations.

Governance and interaction model 04

Vision-anchored road safety

TfGM's outreach programs engage over 300 schools and colleges, using VR technology to educate young people on safety and behaviour, shaping the next generation of responsible travellers.

Partnership at scale

Collaboration is at the heart of TfGM's model. The centre works closely with emergency services, utilities and community stakeholders to keep the network safe, inclusive and inspiring for future generations.

06 What's next

Common bottlenecks observed across global CCCs

Even as CCCs evolve from siloed control rooms into digitally enabled command hubs, many continue to face systemic bottlenecks that prevent them from realising their full Moonshot potential. These bottlenecks are not only limited to one domain, but span across operations, governance, ecosystem interaction and technology.

In analysing CCCs globally, common patterns emerged that illustrate why many centres plateau at advanced maturity instead of achieving fully prescriptive, cognitive command capabilities and moonshot maturity.

01 Disjointed multi-agency coordination:

Despite advanced technology, CCCs often falter during crises due to fragmented inter-agency workflows. Coordination gaps remain one of the most common challenges, as many agencies still lack shared playbooks and aligned protocols, leading to delayed communication and inconsistent responses during critical moments.

02 Siloed data governance and ownership:

Many CCCs process vast amounts of sensitive data, yet unclear ownership and weak accountability leave much of it unused. Without unified governance, they remain data-rich but insight-poor, limiting timely decision-making.

03 Absence of a unified operating picture:

Many large CCCs still lack a common concept of operations (CONOPS). Despite extensive sensor and surveillance feeds, they rely on disconnected dashboards that hinder situational awareness and lead to siloed decision-making.

04 Underutilised AI and machine learning capabilities:

While CCCs drive city-wide command and oversight, many workflows remain reactive. With limited use of predictive analytics, most centres still focus on incident detection rather than anticipation and prevention.

Main issues identified across CCCs

05 Constrained network resilience and connectivity:

Maritime CCCs face real-time connectivity gaps, where limited ship-to-shore bandwidth and isolated platforms hinder predictive cargo tracking and threat monitoring.

06 Declining system reliability and maintenance discipline:

Without predictive upkeep, the CCC infrastructure gradually loses effectiveness. Many centres face recurring uptime issues, with reports citing 20-30% of devices being non-functional at times. Poor maintenance also weakens data integrity, reducing the evidentiary value of command operations.

07 Operator overload and cognitive fatigue:

Even advanced CCCs experience operator fatigue driven by prolonged screen time, continuous multi-sensor feeds and manual triage. The result is slower decision-making, increased errors and rising attrition across control teams.

These bottlenecks underscore that CCC maturity depends as much on ecosystem readiness as on technology itself. Without a unified CONOPS, strong governance and predictive intelligence, many centres will continue to operate in reactive and fragmented modes. To move beyond the current Advanced plateau, CCCs must confront these structural gaps to achieve true Moonshot maturity.

What CCC leaders should prioritise in 2026 (1/2)

The next phase of maturity depends on addressing foundational gaps in interoperability, predictive intelligence, operator resilience and governance ethics. By acting on these priorities, CCCs can break out of the Advanced plateau and move towards Moonshot maturity, from reactive control rooms into trusted orchestrators of safety, resilience and foresight.

A Operations and governance priorities: Driving productivity

01 Cross-agency coordination frameworks

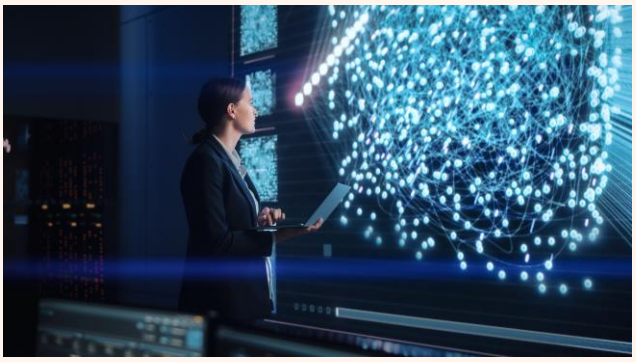
CCCs should plan to move from fragmented coordination to joint operational playbooks and regular simulation drills that bring together police, fire, health, utilities and CNI stakeholders.

02 Redefine success metrics

Replace narrow metrics (response time, call volumes) with holistic indicators: Predictive accuracy, resilience to crisis, inter-agency coordination speed and citizen trust.

03 Strengthen data governance

Define clear data ownership, retention and compliance policies to unlock the full potential of data as a strategic asset. This enables generation of actionable insights, support predictive analytics.



04 Embed governance, ethics and public trust

Set up AI/data ethics boards, publish annual resilience and transparency reports and strengthen public engagement to reinforce legitimacy and trust.

What CCC leaders should prioritise in 2026 (2/2)

The next phase of maturity depends on addressing foundational gaps in interoperability, predictive intelligence, operator resilience and governance ethics. By acting on these priorities, CCCs can break out of the Advanced plateau and move towards Moonshot maturity, from reactive control rooms into trusted orchestrators of safety, resilience and foresight.

B Technology priorities: Building future-ready foundations

01 Unified situational awareness

CCCs must implement unified platform to integrate multi-agency data into one visual and procedural framework, ensuring consistent situational awareness and faster coordination.

02 Embed AI/ML

Implement AI/ML based analytics such as advanced analytics and AI agents to shift from reactive monitoring to proactive response, supporting better allocation of resources and prevention of incidents.

03 Predictive and preventive operations and maintenance

Introduce AI-based diagnostics and IoT-enabled asset monitoring to reduce downtime of critical systems (CCTV, sensors and comms), treating resilience as a core operational metric.

04 Operator wellness

Deploy AI-assisted incident triage to cut cognitive load, while introducing structured wellness programmes, adaptive shift-rotations and CCC training academies to sustain operator performance.

How to participate in the next edition of CCC global index

Next steps
How to participate?

Scan
To access the portal

Are you ready to assess your CCC maturity?

Gauge, evolve and reach for the moonshot. Move from assessment to action. Provide your details to explore how the PwC Global CCC Index can support your next phase of development.

Why participate?

Get your CCC assessed by PwC experts using the world's first global maturity framework for command centres.

CCC maturity score and insights

Understand exactly where your CCC stands today and identify key gaps, improvement opportunities and innovation pathways to elevate from Traditional → Moonshot maturity.
- Use insights to plan targeted investments and CCC transformation.

Global visibility and spotlight potential

High-performing CCCs will be featured in the second edition of the Global CCC Index, gaining visibility among policymakers, innovators and peers worldwide.
- Feature in PwC Global CCC Index Edition 2

Ecosystem collaboration

Gain access to PwC's Fut'VR'e Lab and our CCC leadership community to exchange ideas, challenges and best practices.
- Join a network of CCC leaders shaping the future of urban resilience.

Who should participate?

We invite participation from government agencies, municipalities, private sector and integrators across domains:

Smart cities | Policing | Emergency services | Utilities | Maritime | Border security | CNI

Government and municipal CCCs (e.g. emergency, smart city, transport, policing)	Sectoral CCCs (e.g. CNI, energy, maritime, border security)	Private sector CCCs (e.g. utilities, critical infrastructure, logistics)

07 Appendix

Annexure 1 – Global CCCs considered for study (1/2)

Antwerp police CCC

Policing

Antwerp police CCC serves as the city's central operational hub for policing and public safety. It uses the FOCUS platform, integrating multiple data sources with AI to predict crime hotspots and provide officers with a unified interface for efficient field operations.

Singapore POCC

Policing

Singapore's Police Operations command centre manages national-level policing operations. It integrates live video feeds from the Police Camera (PolCam) network with emergency services, improving situational awareness and multi-agency coordination.

Global fleet control CCC

Maritime

A global shipping operations centre that enables real-time fleet monitoring, integrates performance and safety analytics and provides remote operational support, ensuring optimised routing, fuel efficiency and proactive risk management across the fleet.

Urban Intelligence CCC

Smart city

Urban Intelligence CCC in China is a high-tech hub using AI, big data and IoT to optimise traffic, emergency response and public services through real-time city-wide monitoring and decision-making.

Rio Ops Centre

Smart city

Rio's operations centre monitors citywide risks and emergencies. Using data integration from weather, traffic and hotline sources, it triggers coordinated responses and resource deployment during incidents.

Nuclear CCC in USA

CNI

CCC supports secure nuclear operations. It combines OT/IT convergence, cybersecurity monitoring and 24/7 managed detection to ensure facility resilience and regulatory compliance.

Smart city CCC, Saudi Arabia

Smart city

Saudi Arabian giga project CCC manages the operations of the futuristic city's infrastructure. Using smart building and energy management systems, it monitors performance and automates remediation across critical urban services.

NYPD CCC

Policing

NYPD's Real-Time Crime Centre provides intelligence support to precincts. Integrated camera feeds, licence plate recognition and database analytics enable faster investigations and tactical decision-making.

Mexico City C5

Smart city

Mexico City's C5 command centre integrates city surveillance and emergency operations. It leverages multi-agency communication systems and video analytics to enhance rapid response and public safety management.

Large-scale urban CCC

Smart city

Centre oversees city wide transport operations. It combines real-time control of metro, buses, taxis and marine transit with simulation tools for traffic optimisation and scenario planning during major events.

Annexure 1 – Global CCCs considered for study (2/2)

Event operations CCC in Qatar

Smart city

It centrally manages stadium operations for major events. It leverages digital twin technology to monitor electromechanical, security and communication systems, allowing real-time issue detection and cross-venue coordination.

London MetCC

Policing

London's Metropolitan command centre coordinates emergency responses across the city. It leverages a Computer-Aided Dispatch (CAD) system and data-driven offender analytics to prioritise incidents and pre-position officers for faster, intelligence-led responses

Port Operations CCC

Maritime

Port Operations CCC in Saudi Arabia oversees terminal operations and maritime logistics. Through real-time vessel tracking and container flow monitoring, it ensures safe and efficient port operations.

Manchester transport MC

Smart city

Manchester's Transport CCC coordinates city traffic. Real-time signal monitoring and AI-assisted incident detection help maintain smooth flows and rapid incident responses.

Maritime operations CCC

Maritime

Global maritime operations CCC manages autonomous ships. Using remote-control interfaces, predictive maintenance and navigation monitoring, it ensures safe maritime logistics operations.

Maritime disaster CCC

Maritime

Maritime CCC in USA manages state port and maritime disaster responses using real-time operational dashboards and multi-agency communication platforms

Hyderabad CCC + ITMS

Smart city

Hyderabad's ITMS manages urban traffic flow and safety. Using advanced traffic sensors and control algorithms, it dynamically adjusts signals and alerts responders to accidents or congestion in real time.

European HQ building CCC

Smart building

A smart building management hub that consolidates security, building systems and operational data into a unified platform, delivering real-time situational awareness, compliance monitoring and predictive energy optimisation for a sustainable headquarters environment.

Mumbai Surveillance CC

Policing

Mumbai's Surveillance Control Centre supports citywide public safety. With a network of thousands of cameras, it enables real-time visual monitoring and fast response to traffic and security incidents.

MoMAH CMC

Smart city

Centre oversees city wide transport operations. It combines real-time control of metro, buses, taxis and marine transit with simulation tools for traffic optimisation and scenario planning during major events.

Annexure 2 – CCC ratings across the evaluation parameters

CCC Name	Capabilities and services	Technology	Operations	Governance
Antwerp police CCC	●	●	◒	◒
Singapore POCC	●	●	◒	◒
Global fleet control CCC	●	●	◒	◒
Urban intelligence CCC	●	●	◒	◒
Rio operations centre	◒	◒	◒	◒
Nuclear CCC in USA	◒	◒	◒	◒
Smart city CCC, Saudi Arabia	◒	●	◔	◒
NYPD CCC	◒	●	◒	◒
Mexico City C5	◒	◒	◒	◒
Large-scale urban CCC in UAE	◒	●	◒	◒
Event operations CCC in Qatar	◒	●	◒	◒
London MetCC	◒	◒	◒	◒
Port operations CCC	◒	◒	◒	◒
Manchester transport MC	◒	◒	◒	◒
Maritime operations CCC	◒	◒	◒	◒
Maritime disaster CCC	◒	◒	◒	◒
Hyderabad CCC + ITMS	◒	◒	◔	◒
Smart building CCC	◒	◒	◔	◒
Mumbai surveillance CC	◒	◒	◒	◔
MoMAH CMC	◒	◒	◔	◔

Top 5 CCCs

Top 10 CCCs

Top 20 CCCs

● Moonshot ◒ Advanced ◔ Traditional

Annexure 3 – Assessment questionnaire (2/2)

Category	S.No	S20 category	Question
Capabilities and services	1	**High level capabilities**	How comprehensive are the high-level capabilities of the CCC?
	2	**High level capabilities**	To what extent are the CCC's capabilities aligned with emerging risks and future trends?
	3	**Service delivery model**	How well is the service delivery model integrated with technological platforms and tools?
	4	**Service tiers**	How clearly are the service tiers defined across different levels of priority and urgency?
Systems and technology	5	**Application layer**	Is AI/ML technology integrated into your CCC to perform data analytics and identify predictive insights?
	6	**Application layer**	To what extent does your CCC use automation for incident/event detection and response?
	7	**Application layer**	Does your CCC have monitoring tools in place to track system uptime and performance?
	8	**Delivery layer**	What kind of visualisation tools are used for displaying operational data in the CCC?
	9	**Delivery layer**	Does your CCC use digital twin technology for scenario simulation and predictive modelling?
	10	**Integration layer**	Does your CCC have integration with internal and external systems for data sharing?
	11	**Network/IT layer**	What kind of redundancy mechanisms are in place for critical systems within your CCC?
	12	**Security layer**	What level of cybersecurity measures are in place within your CCC's technology infrastructure?
Operations	13	**Workforce planning**	How responsive is the workforce plan to fluctuating operational demands (e.g., crises or sudden spikes in workload)?
	14	**Workforce planning**	How are future skill needs and gaps anticipated and addressed in the workforce planning process?
	15	**Sourcing**	How diverse and innovative are the sourcing channels used to attract talent?
	16	**Internal stakeholder collaboration**	How well-structured is the collaboration between internal teams and departments?
	17	**External stakeholder management**	How effectively does the organisation engage with external stakeholders?
	18	**Communication management**	How efficient are communication channels within the organisation and with stakeholders?
	19	**Emerging tech adoption**	Select unique capabilities present in the CCC out of the ones listed below 1. Inhouse dedicated R&D Unit 2. Operator Performance Management via Gamification strategies 3. VR/XR based simulated trainings for incident management 4. Inhouse Analytics refinement arm (Video Analytics Marketplace)
	20	**Daily operations**	What is typical operator shift hours?

Annexure 4 – Glossary

AI/ML	Artificial intelligence / machine learning
APAC	Asia-Pacific
C2	Command and control
CCC	Command and control centre
CMC	Crisis management centre
CNI	Critical national infrastructure
CONOPs	Concepts of operations
HQ	Headquarters
IoT	Internet of things
KPI	Key performance indicator
MEA	Middle East and Africa
MoMAH	Ministry of Municipal and Housing (Saudi Arabia)
POCC	Police operations command centre
R&D	Research and development
SME	Subject matter expert
SoP	Standard operating procedure
UAV	Unmanned aerial vehicle
VR	Virtual reality
XR	Extended reality

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