Launching operationally complex facilities

Operational Readiness Activation & Transition (ORAT)

Introduction

As construction teams put the finishing touches on a new major facility, how do asset owners and operators have the confidence that all of the moving parts will come together into one cohesive and smooth operation, and live up to the public anticipation from day one?

The launch of a new airport, hotel, hospital, stadium or other public asset is not a new phenomenon. However, many have occurred under considerable stress, with last minute planning and too much left to chance. In our experience, lack of operational planning and testing can lead to delays—or worse—a premature opening that is riddled by incomplete facilities, system failures, poor customer service and ongoing teething problems. With increasing competition pressure and public that are social media savvy, damage to the bottom line can be substantial. Everything needs to work together, and no longer is there the luxury to 'smooth things out' in the months after opening.

The challenge for any business owner or operator is how to manage the change that the delivery of a new facility brings to the business. So how can you manage the integration of people, technology, and assets with the new facility and ensure they are ready to operate from day one? How do you guarantee that everything opens to plan?

ORAT is a proven methodology that manages the transition from a static state of construction completion to a dynamic state of operations.

> *Arup continues to deliver exceptional service for Delta—now in the field of operational readiness—by providing the organization, attention to detail and professionalism necessary to coordinate with both the construction and the operations teams to ensure a successful transition from construction of the first new LaGuardia concourse into an operational environment.*
>
> **Ryan Marzullo, Managing Director of New York Design and Construction, Delta Air Lines**

Overview

There is always a high degree of risk associated with the opening of any new public facility. Operational Readiness Activation & Transition (ORAT) is a methodology that provides a framework for managing the risk of opening a new or substantially upgraded, large/complex operation.

The central purpose of operational readiness is achieving complete readiness, not just construction ORAT. Typical project focus is on construction delivery and completion of a static asset, operational readiness is focused on the dynamic state of a business operation, integrating all of the diverse moving parts into one, cohesive, dynamic operation.

A readiness program, through exercising and testing, also validates the integration points between people, process, facility, and systems, identifying risks and gaps to be addressed long before operational launch. This is the fundamental advantage of the operational readiness methodology in that it ensures operationally complex facilities are ready to operate from day one.

When to use the Operational Readiness approach?

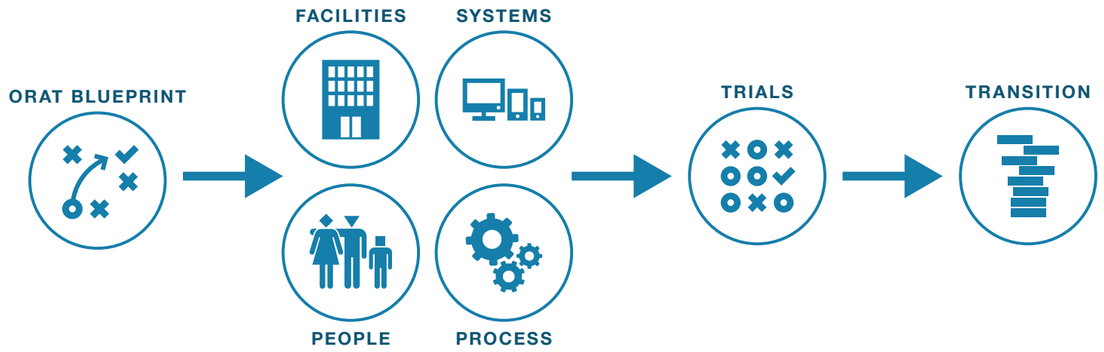
Complex, multifaceted and public projects can benefit through an ORAT approach to managing their opening transitions. For example, we find the ORAT methodology is perfectly suited to projects involving airports, railways, malls, stadiums, hotels, hospitals, major events, and office relocations.

- High scale, high profile, high complexity, high risk launches
- Multiple stakeholders with strong, narrow agendas
- Operations with complex people interactions, including combinations of front and back office processes
- Situations where user behaviors are hard to predict
- Strict safety, security and regulatory requirements
- High customer service expectations

Overview

The process to achieve operational readiness should not be underestimated, especially for operationally complex facilities, involving large and diverse groups of stakeholders, numerous and interdependent systems, and processes. The transition between a static state of construction and a dynamic end-to-end operation requires an integrated plan, bringing together staff, processes, technology, and physical assets.

ORAT programs can run over several months or years depending on the scale and complexity of the project. The following diagram represents the typical sequence of an end-to-end ORAT program.



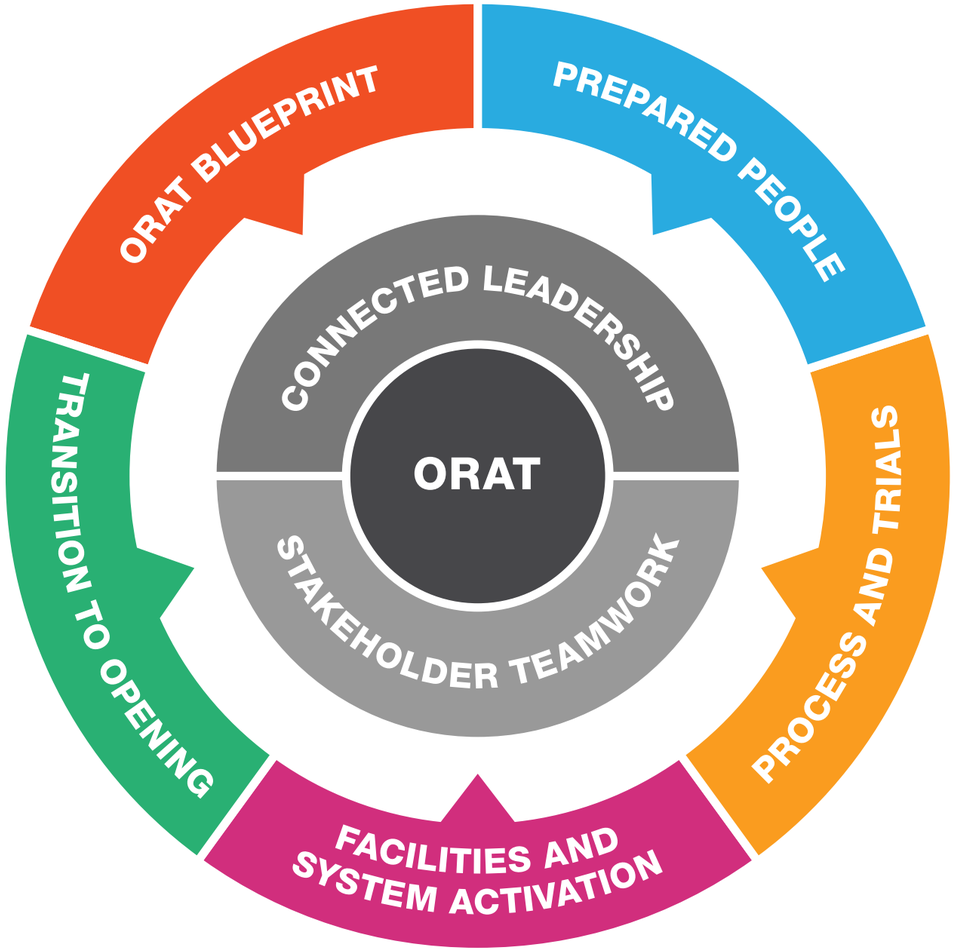
Benefits of an ORAT approach

- An early integrated approach to operational readiness
- Holistic risk management and reporting
- Improved stakeholder relations and issue resolution
- Process definition, improvement, and testing
- Structured staff recruitment, training, and familiarization
- Structured transfer of ownership of the infrastructure to operational stakeholders
- Maintaining business continuity upon migration
- Enhanced customer experience
- An agreement to open at a ‘state and not a date’
- Positive public relations upon opening
- A comprehensive methodology and suite of tools that de-risk the opening of new facilities and assets

Our ORAT methodology

Arup's ORAT methodology is modular, flexible, and allows our clients to choose only those services that they don't wish to fulfil in-house.

Arup's ORAT team play the role of coordinator, facilitator, and leader to bring together diverse groups of stakeholders and lead them towards a common goal. The sheer amount of effort required from stakeholders to complete a huge range of tasks requires a structured, methodical, and disciplined approach.



Our ORAT methodology

Connected leadership

Connected Leadership is a core ORAT function, and is required to integrate the mix of stakeholders and operational elements into one, single activation program. A clear and effective governance structure has been the cornerstone of all the successful ORAT projects that Arup has led. It helps reinforce roles and responsibilities, facilitates timely decision making, and cements a commitment from all to the common goal of a successful transition.

Stakeholder connections

There is real benefit to be derived from knowing that everyone involved in or impacted by the business operation is engaged and invested at all stages. Arup identifies and engages stakeholders early to ensure their needs are established from the outset. This provides the opportunity to influence the design of the facility, eliminates surprises later in the project, and builds confidence in the run-up to transition.

- ORAT delivery structure
- Project management office
- Operational Readiness schedule and critical path
- Independent and real-time tracking and dashboards
- Risk assessment and issue management
- ORAT structure and governance
- Single Point of Contact (SPOC)
- Stakeholder management mapping and strategy
- Stakeholder engagement plan

Our ORAT methodology

ORAT blueprint

Knowing early on what the future operational environment needs to look like allows the business to shift the focus on key areas of operational change and operational risk during the early stages of construction.

The ORAT Blueprint is about setting a project up for success and forms the basis of any operational readiness program. It emphasizes an integrated approach from the start by setting stakeholder expectations early, defining responsibilities, and building a common and holistic view of what needs to be done, by who and by when.

Our ORAT methodology

Prepared people

Preparing people is the most important element of an ORAT project and failure to do so can have a direct influence on delays, disruptions, and contribute to a poor customer experience.

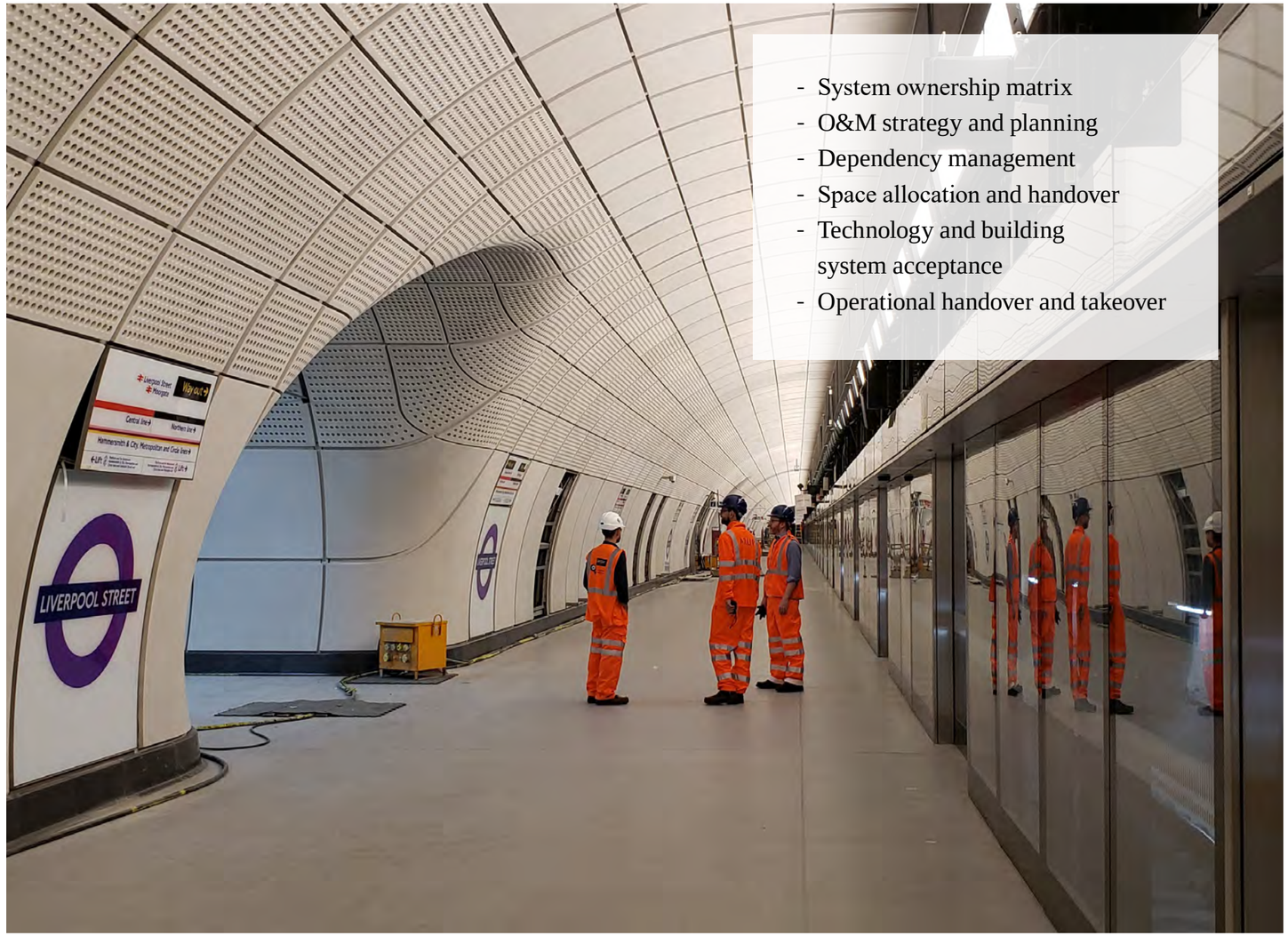
Any new facility relies upon people being confident and competent in their roles and new operating environment, and any misalignment between people, processes, facilities, and systems can be costly. A comprehensive people readiness program will enable the business to deliver the best possible customer experience from Day One.

Our ORAT methodology

Facilities and system activation

ORAT ensures all the physical elements of a facility and all the numerous building and technology systems are delivered to a high quality, and support the operation and user experience. A systematic and transparent approach is key to bring the completion and readiness of all areas together at the right time.

A holistic view of the status of delivery, handover, and acceptance is especially important when multiple teams and third parties are involved. The handover of facilities and systems is never balanced in favor of the accepting party. Therefore this process must be carefully planned and coordinated, making sure stakeholders are assuming responsibility at the right time, and that the transition is smooth and trouble free.



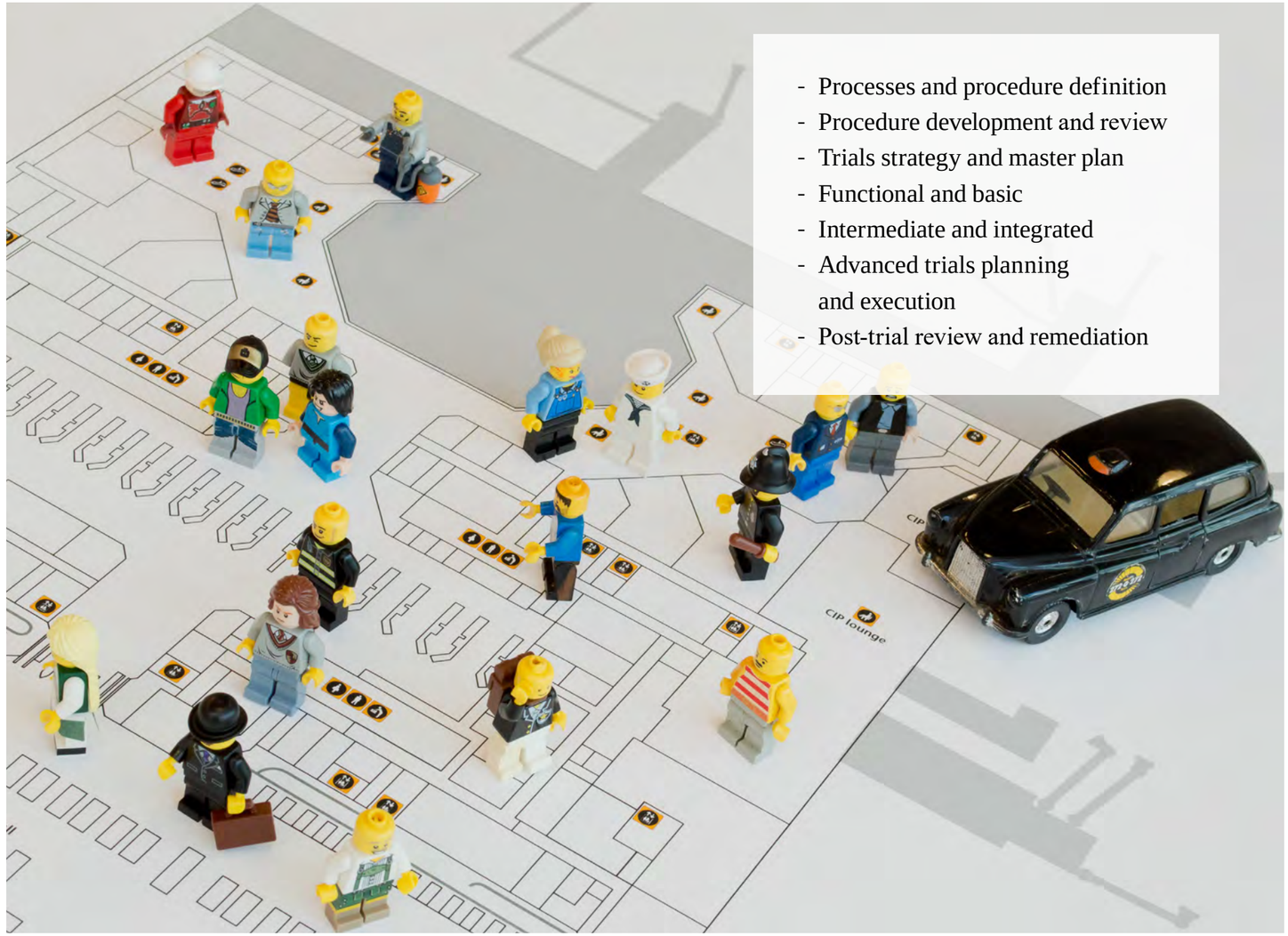
- System ownership matrix
- O&M strategy and planning
- Dependency management
- Space allocation and handover
- Technology and building system acceptance
- Operational handover and takeover

Our ORAT methodology

Process and trials

For any new public facility to operate effectively, the right processes must be in place. Working in close collaboration with operational teams, the agreed set of new or modified processes are developed in progressive detail in preparation for testing, training, and trials. This covers all standard, fall-back, and emergency processes. Trials are often the most critical and visible element of an ORAT Program. Trials are effectively the ‘dress rehearsal’ of the live operation and demonstrate that all moving parts can successfully come together.

We design trials as close to a real-life environment as possible which allows us to identify risks and gaps to be addressed long before opening. A well-designed trials program ensures that, come opening day, management and operational staff are confident, are familiar with their surroundings, and are capable of providing a high-class service.



Our ORAT methodology

Transition to opening

The final element is focused on planning and executing the appropriate transition and opening strategy, that focuses on readiness rather than necessity. This includes gauging the most appropriate date for AOD and building the critical opening countdown based on operational milestones and criteria.

In the final days and hours leading up and including opening day, all hands are on deck. It is imperative to work to ensure that every stakeholder has closed out all pending issues before proceeding to the next stage of the countdown and devote resources to escalating problems or developing alternative solutions.

Beyond opening, there is a need to support the business and ensure tools, skills and documentation are in place to successfully operate, maintain, and manage the facility.

Our ORAT methodology

Five steps to delivering a successful, operationally complex facility.

START EARLY

Developing your plans early gives you the time to verify the design and ensure what is being built will meet your requirements. This will save you money by avoiding expensive, last-minute changes.

SET EXPECTATIONS FROM THE OUTSET

This includes letting stakeholders know exactly what activities they are responsible for and any other areas that will require their input. They need to buy into the process and understand to what they are committing.

ONE VERSION OF THE TRUTH

To keep everything and everyone on track, you need a fully integrated plan which provides honest, up-to-date information and identifies areas that rely on each other.

A RISK-BASED APPROACH

You need a clear understanding of what is going to be new, different or changing, and what is high-risk or critical to the operation. Even if you're short of time, you need to ensure that all high-risk elements have been considered before the launch.

KNOW YOUR CRITICAL PATH

Always have a contingency plan. Things can go wrong—the key is to be prepared. At Arup, we have the experience to transition complex facilities from construction stage to operation. Combining our understanding of the built environment with our clients' operational needs, we align people, processes, technology, and assets to successfully launch new facilities.

Case studies

Local knowledge, global experience

Our global ORAT team work across a diverse array of sectors to ensure that new or upgraded facilities and events operate successfully from day one.

> *These have been challenging times for RFLI in getting our people ready and engaged to take on a new railway. The Arup ORAT team have been instrumental in delivering competent engaged people, with a set of operational exercises developed to deliver a world class railway.*
>
> **Paul Ellis, Operational Readiness Manager, RFLI**

Aviation

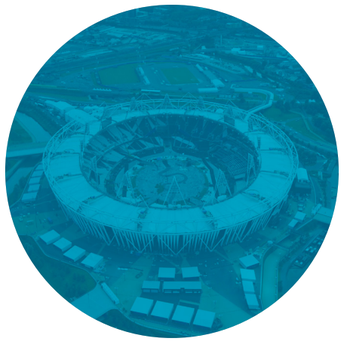
Maritime

Science and industry

Rail

Multi-modal facilities

Healthcare



Government

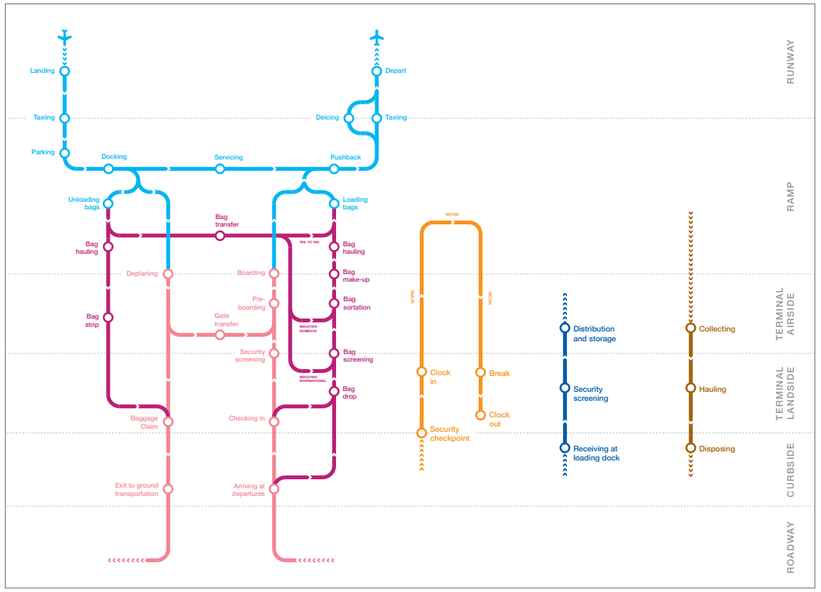
Case studies

Aviation

Delta LGA Redevelopment Project, LaGuardia Airport
Queens, NY

For the first phase of the Delta Air Lines (Delta) redevelopment program, Arup were commissioned to lead operational readiness and support transition. We developed a Concept of Operations, reviewed operational processes, created training and familiarization packs, and planned and executed proving trials and a soft launch.

Delta was assured of the readiness of people and systems across their operations, maintenance and facilities teams, ahead of this phase of Day 1 live operation, which constituted the first step toward the redevelopment of LaGuardia Airport scheduled for completion in 2026.



Terminal 2, Dublin Airport
Dublin, Ireland

As lead consultants on Dublin Airport's Terminal 2 (T2), Arup provided planning, design and project management consulting. The T2 masterplan established high-level design aspirations and principles aimed at ensuring visual coherence; establishing the most effective use of all the facilities for passengers and staff; and providing a high-quality environment that respects and elevates the public realm.

More than 10,000,000 construction man hours were logged while building the program and the workforce on site exceeded 2500 at peak. Dublin's T2 is now the tenth largest airport. It is designed around the needs of customer and can accommodate up to 15m passengers per year.

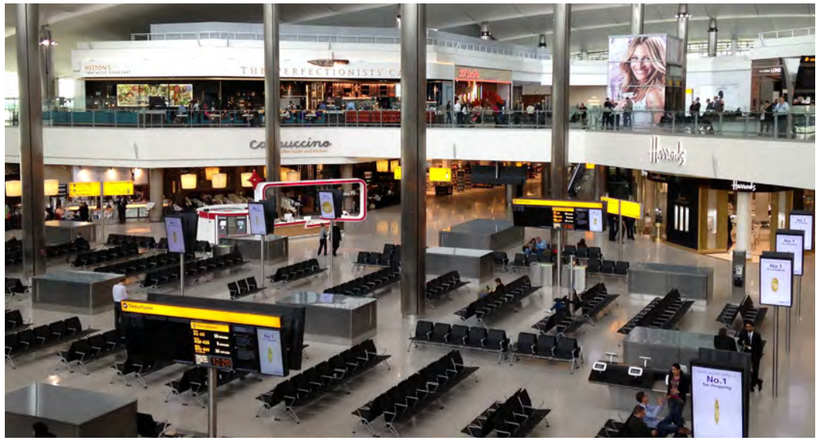
Case studies

Aviation

Terminal 2, Heathrow Airport
London, United Kingdom

Opened on June 4, 2014, Terminal 2, or "The Queen's Terminal," was designed specifically around the needs of the passenger, transforming the traveler experience at Heathrow. Arup worked in partnership with Heathrow's operational readiness teams to trial and test terminal processes and equipment and deliver familiarization training for the 25,000 airport staff working at the new terminal. By the time it opened, the terminal had been tested by nearly 14,000 people and undergone more than 175 trials.

Throughout the project, Arup worked with stakeholders to gain buy in from the wider Heathrow community, and helped to develop and integrate all standard operating procedures for the new terminal. Around 35,000 people worked on the project over its lifespan, with as many as 5,000 people on site at its peak. The Arup project team comprised more than 35 consultants from across Operations Consulting, IT & Communications Systems, Marketing, and Program & Project Management.



Terminal 2 & 3, Dubai International Airport
Dubai, United Arab Emirates

Arup successfully delivered the ORAT program for Dubai International Airport's Terminal 2, which was broken into three complex phases of work and three separate launches. The first two phases significantly expanded the Departures space and upgraded operations. These upgrades included a new check-in, immigration, and departures security areas, a new baggage handling system, and new departures boarding gates, along with associated support facilities. The program culminated in the execution of a large pre-opening terminal trial that simulated point-to-point operation of the terminal's new functions and involved more than 100 staff volunteers. This trial facilitated a successful opening of the third and final phase of the terminal.

For the new Terminal 3, the Arup ORAT team managed every step of Emirates' and Dubai Airport's move into the new facility. Specialist airport technology systems and control rooms were commissioned and tested, and the team engaged with all stakeholders to provide appropriate training, ensuring staff were familiar with the new operational environment prior to launch. The ORAT program not only provided an excellent platform for the stakeholders to prepare for opening but also identified opportunities for operational improvement and corrective actions.

Case studies

Aviation

Terminal 2, Perth Airport
Perth, Australia

Terminal 2 (T2) is the first new terminal to be built at Perth Airport in 26 years and it marks a critical milestone in the Airport's redevelopment program. Working closely with Operations, the Major Projects team, the airlines and ground handlers, the building contractor and the systems integrators, Arup meticulously planned and delivered a coordinated program of trials designed to progressively test building functions. This culminated in the Advanced Trial, which simulated the complete 'end to end' customer experience, from forecourt set down to boarding, based on the peak load of a normal day. Over 250 public volunteers participated in the trial and gave an overwhelmingly favorable response to the new facility.

Two weeks after the Advanced Trial, T2 opened as planned and the first aircraft (a late addition to the schedule providing assistance to those affected by Cyclone Rusty) departed on time for its destination.

Cardiff International Airport Ltd (CIAL)
Rhoose, United Kingdom

Arup was commissioned to provide advice regarding the commercial and operational feasibility of a joint venture between Cardiff International Airport Ltd (CIAL) and the Welsh government. After careful evaluation, Arup recommended that CIAL take over operations at the St Athan Aerodrome, which was being transitioned from military to civil aviation. The Arup team then drafted the CIAL operational and commercial proposals for the JV.

Following the formation of the JV, Arup managed CIAL's transition to St Athan. Delivering the new multi-disciplinary operation entailed project managing 13 workstreams and senior governance; providing risk and decision assurance to control corporate and operational risks; performing a business change analysis to focus operational readiness activities; developing and managing a 500-line requirements register; and scoping for 13 live or desktop operational trials.

Terminal 5, JFK International Airport
Jamaica, NY

Arup worked with JetBlue to develop a plan for a new 26-gate terminal specifically designed for their low fare operations. The objective of Terminal 5 was to create a new low-cost hub that would enable JetBlue to build upon its exemplary reputation for providing superior customer service.

The building was conceived and designed around the customer, not simply around the architectural physics. This non-traditional approach enabled the building to be incredibly efficient in its use of space while delivering a consistently high level of service. To do this, Arup employed customer flow and behavioral models, allowing the team to create a building with a much smaller footprint than a comparable terminal with similar passenger demands. The reduction in building volume used fewer raw materials, less energy and requires significantly less maintenance.

Terminal 2, Mumbai Airport
Mumbai, India

Arup worked with the client to implement robust governance to ensure that everything would run smoothly at Mumbai Airport's Terminal 2, which serves 10 million passengers a year. This approach supported effective, informed decision-making by ensuring that any critical risks and issues identified were escalated quickly. Arup set up a project management office to manage the ORAT process, policies and procedures. The ORAT Team also helped facilitate stakeholder support for a single, integrated plan for making the new terminal operational. Arup provided training and familiarization that ensured all staff knew where to go, what to do and how things work, as well as staged trials that demonstrated that the people, processes, facilities and systems were ready for live operations.

Once the Arup ORAT team was certain that all critical facilities and systems worked as expected, the terminal was ready for migration and the opening day transition. To ensure that everything moved to the new terminal on time, the cutover of operations had to be seamless. Arup specialist consultants from across the globe were critical to the success of the project and were also able to recommend future operational improvements.

Case studies

Maritime

Brisbane International Cruise Terminal
Brisbane, Australia

The South-East Queensland region does not currently have a dedicated cruise facility, which means that all cruise vessels are required to call at Brisbane's main cargo port. To address this issue, the Port of Brisbane is developing a designated International Cruise Terminal facility, scheduled to open in 2020.

Arup developed an Operational Readiness strategy for the opening of the terminal in 2020. This detailed strategy outlined best-practice approaches to governance, training, proving trials, activation and community engagement, stakeholder workshops with the operator and key stakeholders, and implementation of OR works. By de-risking the transition and building capability within the client team, Arup helped assure the client the opening would be successful.

Case studies

Science and industry

Global Pharmaceutical Company
Cambridge, United Kingdom

Arup has been working with the Facilities Management and Transition team of the Global Pharmaceutical Company since 2016 to help them prepare for the transition of over 2000 scientists and staff to a new £1 billion global HQ and R&D center currently being built near Cambridge. Arup is providing a variety of strategic and operational services to support these preparations. This includes engaging with the Facilities Management group to develop an accessible and interconnected suite of process maps, which will serve as a tool for modelling the intentions behind processes. These insights will help form the foundation of vital planning trials and tests in the lead up to day one, as well as support smooth operations after opening.

Braveheart Brewery Relocation
Carlsberg, Germany

Braveheart needed to relocate both people and equipment from a historic site in Holsten to a new brewery. The decision to relocate was made at group level outside of Germany and winning the support of the affected workforce was critical to the success of the project. Arup worked with the Carlsberg and Holsten staff to assess the readiness status and prepare a set of recommendations and actions to bring stakeholders together to work toward common objectives across all functions of the business and deliver the Braveheart program. The Arup team provided direction and support to Braveheart stakeholders and helped to build positive support during what could have been a very difficult transition.

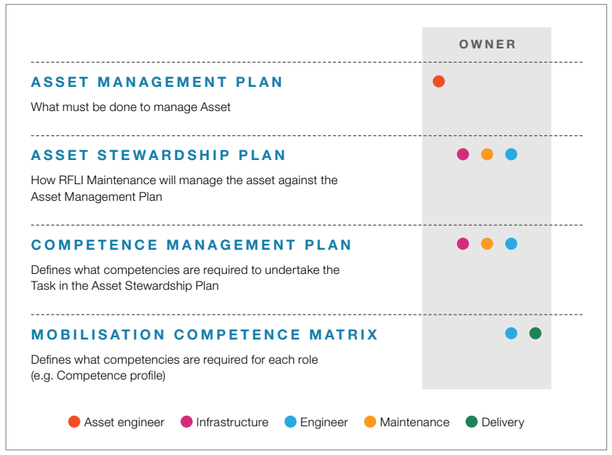
Case studies

Rail

Elizabeth Line (Crossrail)
London, United Kingdom

Part of Europe's largest construction project, Crossrail, the Elizabeth line connects London to the South East. Running under London through 42km of new tunnels, the line spans from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east and serves 41 stations, including 10 new stations at Paddington, Bond Street, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel, Canary Wharf, Custom House, Woolwich and Abbey Wood.

An Arup team comprised of logistics, people & change specialists worked in close partnership with Rail for London Infrastructure's (RFLI) Elizabeth line team, using the ORAT methodology to drive operational readiness activities in challenging times. With deep experience delivering ORAT projects, Arup worked in close partnership with RFLI across the Trials Operations, Control Centre mobilization, Training & Competence, Engagement and Well-Being phases. Arup facilitated trial planning by mapping out and working with RFLI team to prioritize the 109 trials to be delivered. We also designed and delivered a total of 53 desktop trials, involving multiple stakeholders (i.e., MTR-C, London Underground, Network Rail, Emergency Services, TfL Press Office).



Public Transit Authority
Perth, Australia

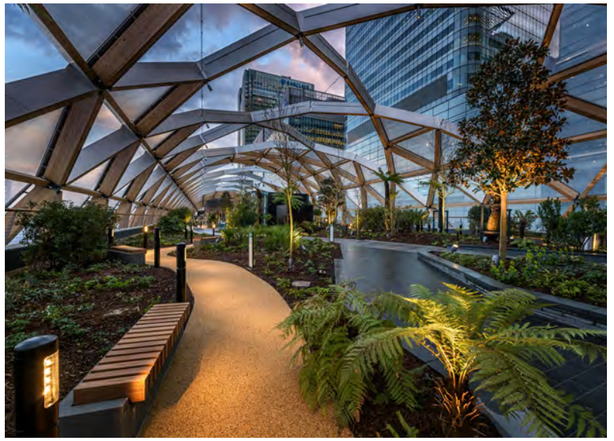
Over the next 30 years, the Public Transport Authority in Perth plans to nearly double the length of its rail network and increase train frequencies from four trains per hour to 24 trains per hour, as well as implement new Automatic Train Control technology. Facilitating this step change in operations requires the introduction of new processes, technology and people. To help ensure success, Arup was commissioned to develop a Future Operating Strategy and Operating Plan, which focuses on six key themes: Colocation, Incident Management, Change, Wellbeing, Passenger Experience, and Recruitment Training and Competence.

Case studies

Multi-modal facilities

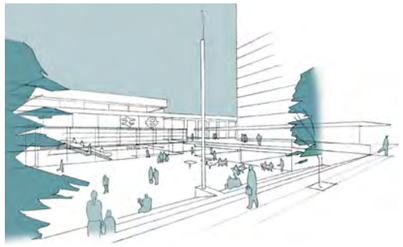
Canary Wharf Crossrail Station
London, United Kingdom

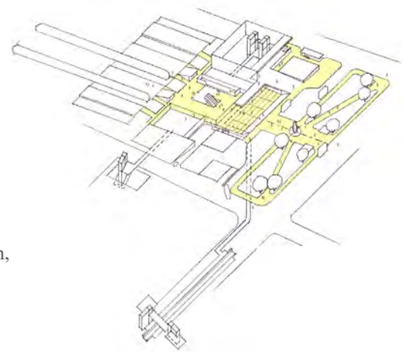
For the past 18 months, Arup has led a significant operational readiness effort in preparation of the opening of the Elizabeth Line. The multi-disciplinary Arup team, includes Occupational Psychologists, Project and Asset managers, Transformational Change, Logistics, Operations and Training specialists. When the team began working, they had two key areas of focus: development and delivery of the strategy for Crossrail's provision of technical training, and development and delivery of the full suite of Operational Readiness proving trials required to substantiate the safety case for the line. Over time, we have been enlisted to provide further support for several areas of the Rail for London Operations, Assurance and Maintenance teams.



Euston Underground Station
London, United Kingdom

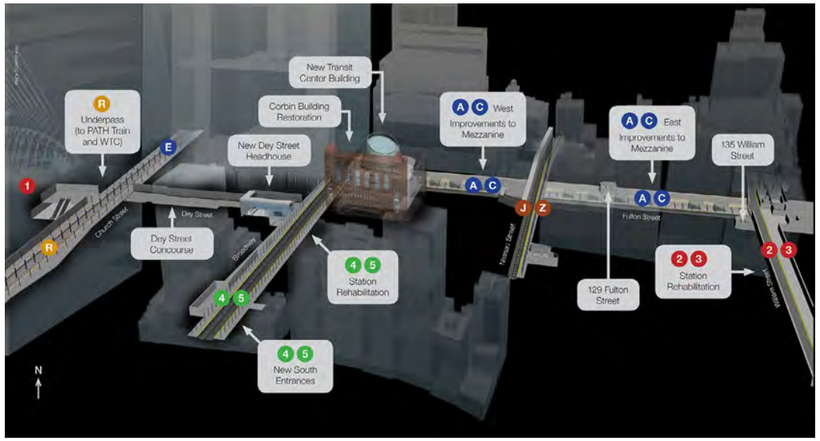
Arup is working as part of the station design team focusing on accommodation, logistics and operations at Euston Underground Station. One of the most challenging aspects of the project is finding ways to deliver a high-end rail experience within a constrained space. In addition to providing vehicle and waste generation numbers, Arup has helped the client address issues related to the complexity of the design and the limited number of connections between key logistics locations and the main station areas by calculating a number of bespoke aspects, including: goods receipt process, timescales for goods and waste collection, retail connectivity and concourse layout, and the number of EV charging points required.





Case studies

Multi-modal facilities



Fulton Center
New York, NY

Threading new passenger connections and systems into a living environment comprising 11 subway lines, construction of Fulton Center was akin to open-heart surgery. Facilitating extensive above and below-ground construction in a dense urban environment was a significant project challenge. Another challenge lay in the need to maintain regular subway service and street access for hundreds of thousands of daily commuters for the project's duration. Arup incorporated operations throughout the design and construction of the project, developing a plan to slowly incorporate facility redevelopment over the 8 years of construction. Both passengers and MTA employees were at the heart of all decisions made throughout the project, paving the way for a successful transition to the new facility.

Abellio
East Anglia, United Kingdom

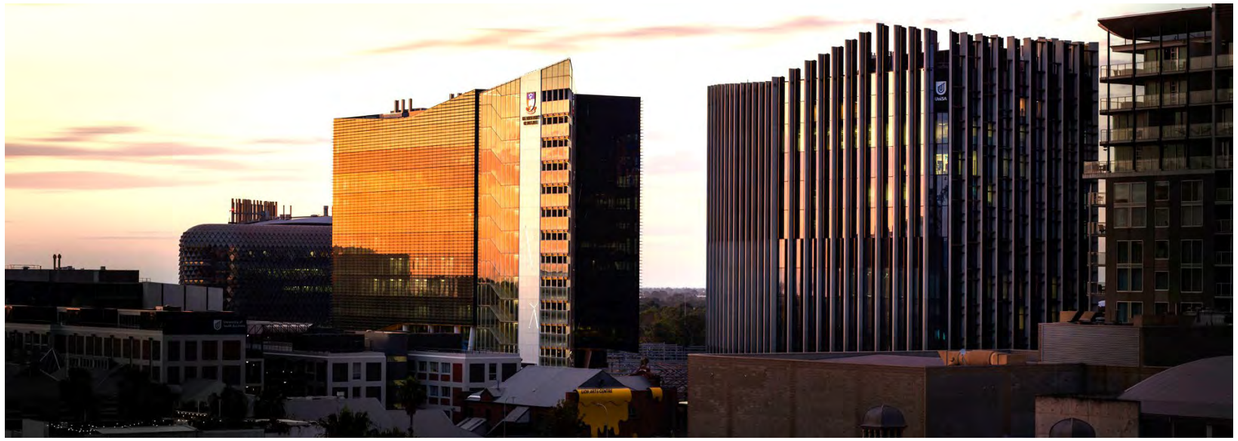
The UK government requires Abellio to create a 40-year asset plan that sets out how much it will need to spend to keep assets at its 133 stations in good condition. Abellio commissioned Arup to develop the asset management policy, strategy and plan. By leveraging an Arup team of human factors specialists and engineers, our team helped Abellio effectively combine engineering and passenger metrics into their plan, enabling them to identify those station assets that most affect the passenger experience and the actions that deliver the greatest benefits.

Case studies

Healthcare

Southmead Hospital
Bristol, United Kingdom

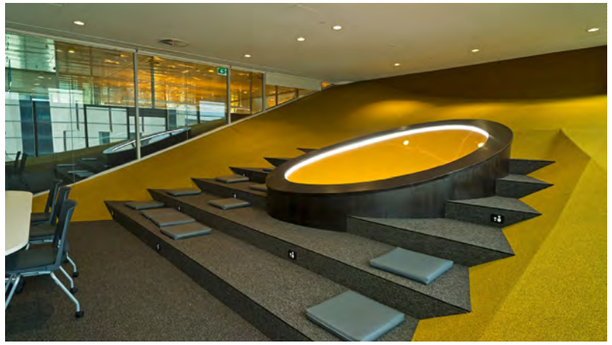
Arup undertook an operational readiness study for the consolidation of two existing hospitals into one new 800 bed hospital. Our work focused on the changes required to inventory management to deal with reduced storage space, a new automated guided vehicle distribution system and limited availability of loading bays. The preliminary study focused on evaluating the levels of inventory and changes required after which we assisted the Trust in reviewing the design proposals for some of the logistics facilities against forecast demand.



Adelaide Health and Medical Sciences Building
Adelaide, Australia

The Adelaide Health and Medical Sciences building (AHMS) is a technically complex, 13,000m² state-of-the-art laboratory, teaching, research and clinical facility at the University of Adelaide. AHMS also houses the Adelaide Dental Hospital and was built with support from the Australian Government. The 13-level building is located in the Adelaide BioMed City precinct on North Terrace, alongside the New Royal Adelaide Hospital, UniSA's Cancer Research Institute, and SAHMRI.

Integration and collaboration are fundamental aspects of the University's s approach to education and research, and the AHMS facilitates this immersive, skills-based learning approach. The building's shared, adaptable learning and social environments promote flexibility, inter- professional learning and encourage collaboration between peers across medicine, nursing, dentistry and health and medical sciences.



Adelaide Dental Hospital
Adelaide, Australia

The new Adelaide Dental Hospital is a SA Health facility distributed over levels 10, 11 and 12 of the new University of Adelaide Health and Medical Sciences Building (AHMS). The 89 dental chair facility forms part of the largest capital works project in the University of Adelaide's 140- year history.

Working in an advisory capacity, Arup took a creative approach to project and program management, responding to the unique needs of the South Australian Dental Service (SADS). Our project managers guided the preparation of the 300+ strong Adelaide Dental Hospital team to relocate and adjust their operations to suit the new facility. The key to the project's success was the development of a strong relationship with the Adelaide Dental Hospital team.

Case studies

Government

Olympics Transport Coordination Centre
London, United Kingdom

The London 2012 Games placed significant additional demand on one of the world's busiest transport networks, which is operated by more than 10 different organizations—all largely autonomous in their operations. Arup was responsible for the organizational design, recruitment and delivery of the new Transport Coordination Centre.

We helped government, transport and media stakeholders prepare for high pressure operations within a radically different environment by performing extensive staff training and stakeholder collaboration across 30 separate stakeholder groups.

Pan-American Games
Lima, Peru

To deliver the Pan American and Parapan American Games Arup staff from offices in the Americas, Australasia, Europe and UKIMEA Region came together to work with the governments of Peru and the UK, engage with local trades and suppliers, and ultimately win the hearts and minds of Lima's local communities. Our role entailed reviewing designs and providing recommendations that added-value. To have an impact on the contractor, Arup had to make sure the client clearly understood the reasons informing our recommendations. The success of the project is a testament to Arup's culture of collaboration.

New Long Beach Civic Center
Long Beach, CA

Arup was responsible for completing an operational readiness assessment and gap analysis of the public facing services provided by the City of Long Beach at City Hall. Arup's ORAT methodology was applied to provide recommendations to reduce redundancy and optimize the way the City delivers services in the new facility.

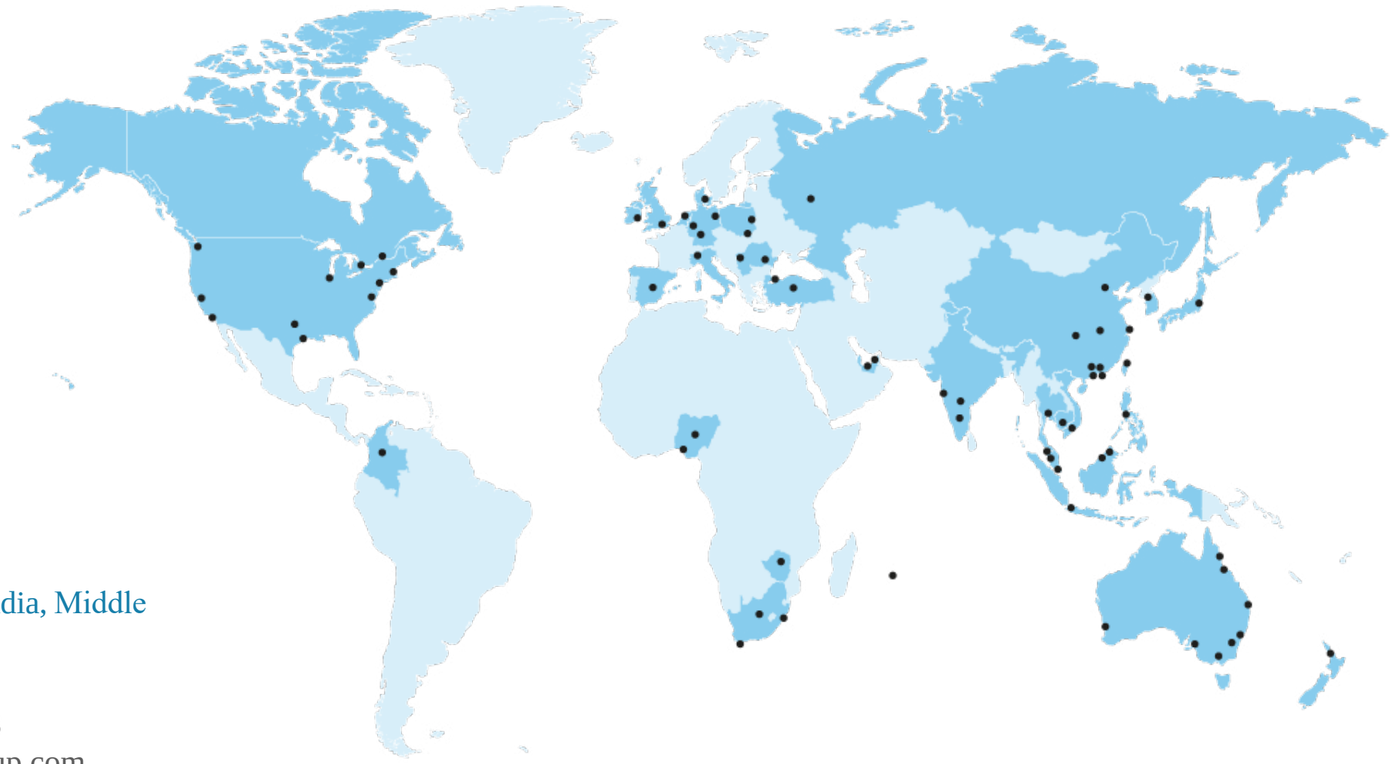
In addition to this, Arup coordinated a series of proving trials in the new facility, which helped to identify issues with newly commissioned systems, wayfinding, acoustics and queue management. Arup also assisted the client's teams in reviewing their current operations and effectively planning and optimizing their operations in the new facility. By testing the processes, City staff were able to ensure that the new Civic Center was ready to service the needs of the public from day one of operations.

Contact

Arup is an independent firm of designers, planners, engineers, consultants, and technical specialists with global experience in transiting complex facilities from construction to operation. Combining our understanding of built environment with our clients' operational needs, we align people, processes, technology, and assets to successfully launch new facilities.

Having a detailed and holistic understanding of a business is elementary to successful, sustained performance improvement. By using a multitude of tools and skills, we ensure that collaboration of clients' operations, physical assets, and company culture together support and deliver organizational goals.

For advice on operational readiness, performance improvement and how to deliver successful programs, please contact:



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