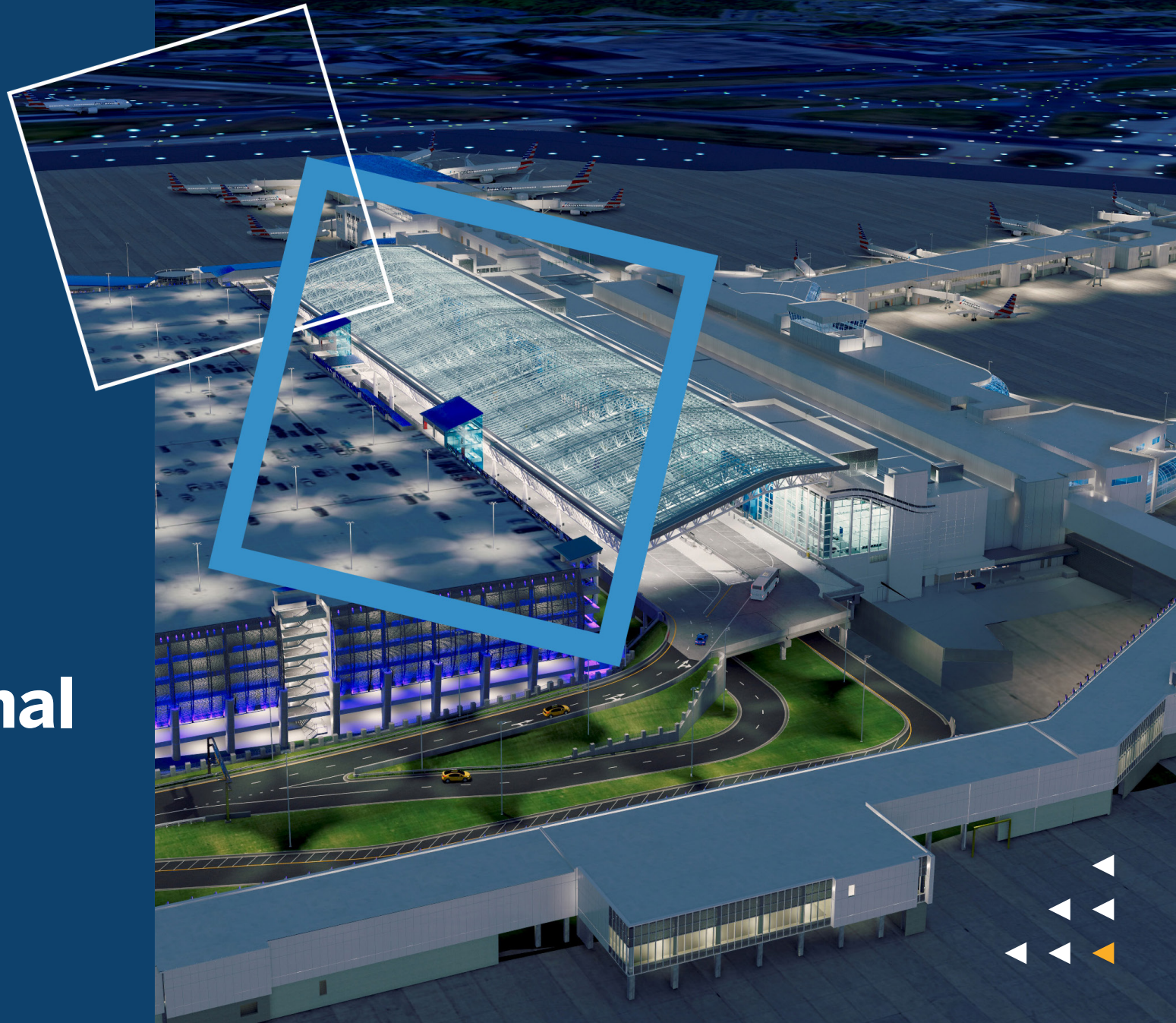




CASE STUDY

Charlotte Douglas International Airport

Digital Transformation
for a 10-Year Expansion





Aiming to be an “airport of the future,” Charlotte Douglas International Airport is using digital workflows to save time and money while delivering safer, sustainable infrastructure.

Charlotte Douglas International Airport (CLT) is one of the top 10 busiest airports in the world, serving more than 47 million passengers annually, with over 700 daily flights. To keep pace with the growing number of travelers and address the need to modernize outdated infrastructure, CLT is undergoing a monumental expansion. This 10-year capital improvement program—initiated in 2016 and expected to cost \$3.1 billion—includes new terminal roadways, an expanded terminal and lobby, more gates, and a fourth parallel runway.



CLT: Fast Facts

- + One of the world's busiest airports
- + More than 47 million travelers annually
- + More than 700 flights per day
- + More than 500,000 aircraft arrivals and departures annually

Destination CLT: 10-Year Expansion

- + 366,000-square-foot terminal lobby expansion
- + Various concourse expansion projects
- + Terminal renovations
- + Elevated roadways
- + Third parallel runway
- + Fourth parallel runway
- + New air traffic control tower

The need to deliver these new assets successfully and operate them efficiently while continuing to maintain and operate existing airport assets has led CLT to look for ways to maximize effectiveness through digital transformation.



CLT is using two Trimble solutions:



Trimble e-Builder, a digital project delivery software that helps manage the airport's capital improvement program



Trimble Cityworks, a GIS-centric enterprise asset management solution that supports maintenance activities in the office and in the field

These solutions are playing a crucial role in the airport's success to date, helping to streamline workflows, eliminate data and communication silos, and foster cost-effective project and asset management. Using these solutions helps CLT save time and money while also improving the safety and efficiency of its airport operations.





Enhancing Project Delivery Through Digital Workflows

CLT adopted Trimble e-Builder as its digital project delivery solution to support the airport's capital improvement program and manage its construction projects.

One of CLT's goals was to use Trimble e-Builder to "improve procurement and construction workflows and project and document management across the organization," noted David Tamir, Trimble e-Builder Project Manager for CLT.

Prior to the adoption of Trimble e-Builder, the airport's procurement and construction workflows and associated data were predominantly tracked via disconnected spreadsheets and paper-based applications. As a result, project data was often siloed and workflows were disjointed, leaving the airport vulnerable to data loss and wasted labor hours.

Charlotte Douglas International Airport is now able to track program activities, manage project finances, complete change order requests, submit requests for information (RFIs), and more—all in one place.

Trimble Geospatial

CLT's Use of Trimble Geospatial Technology

In conjunction with Trimble's solution for digital project delivery, CLT is using Trimble geospatial technology—including **Trimble SX10 Scanning Total Station**, **Trimble DiNi Digital Levels**, and **Trimble data collectors**—to collect precise measurements for surveying, staking, and construction activities. These Trimble solutions help ensure that the design and construction process of the expansion project is safe, accurate, and efficient.





Trimble e-Builder has reshaped CLT's procurement and construction workflows by centralizing project information into a connected data environment (CDE), providing greater transparency and program visibility. This, in turn, helps key stakeholders keep track of project activities and logistics. CLT is now able to track program activities, manage project finances, complete change order requests, submit requests for information (RFIs), and more—all in one place.

CLT has further expanded its use of Trimble e-Builder to support a wide range of processes spanning multiple departments, including finance, legal and regulatory, business and revenue, human resources, and more. As part of this digital transformation, the airport has created more than 50 new processes that cover the entire lifespan of construction projects. Some of these processes include ensuring planning documents align with the overall project scope through the design intent review (DIR) process, managing procurement by executing the master commitment process (MCP), tracking and forecasting account-level costs, and predicting cash flow.

"While Trimble e-Builder's sweet spot is construction, it's really built to manage the lifecycle of an owner's construction project," said Tamir.



A new terminal lobby canopy will add a modern silhouette to the airport's exterior.



CLT's Use of Trimble e-Builder

- + Procurement process
- + Construction workflows
- + Document management
- + Project tracking
- + Cost management



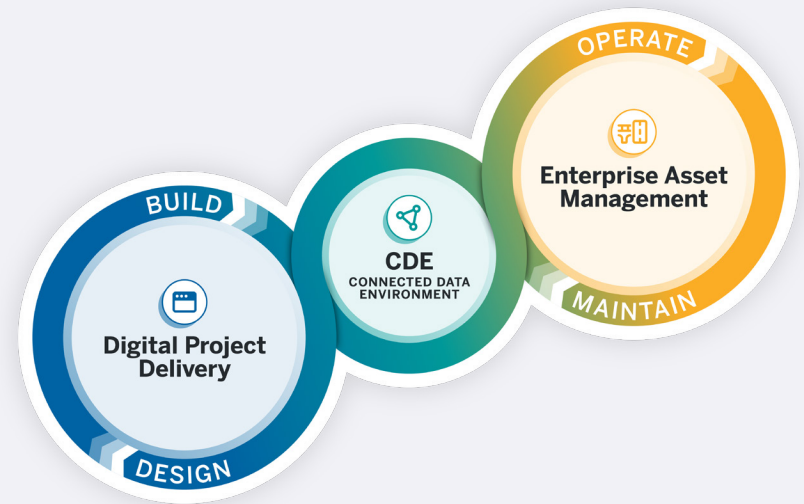
Maximizing the Effectiveness of Airport Asset Lifecycle Management

CLT's mammoth expansion project is just one piece of its future-focused vision. The airport continues to advance its digital transformation by implementing enterprise asset management technology to operate and maintain thousands of landside and airside assets. An asset lifecycle management approach is especially important as the airport builds new assets and revitalizes aging assets.



Construction will provide a modernized Concourse A with plenty of natural light.

What is Asset Lifecycle Management (ALM)?



Asset lifecycle management is the process of connecting all phases of the asset lifecycle—Plan and Design, Build, Operate, and Maintain—using a single source of accurate data across integrated workflows that streamline the handoffs from one team to another.

[WATCH THE ASSET LIFECYCLE MANAGEMENT VIDEO](#)



Trimble Cityworks serves as CLT's enterprise asset management system, helping to ensure airport infrastructure is efficiently maintained and airport operations are conducted in a safe and sustainable manner.

Using customized service request templates in Trimble Cityworks, CLT performs essential daily inspections and keeps a detailed record of operations and airport events. Teams use Trimble Cityworks to inspect and track everything from runways and terminals to emergency and security incidents such as medical calls, arrests, and more. Having an asset management system provides CLT with a simplified inspection and reporting process as well as a more organized environment to store data.

Using Trimble Cityworks, CLT has established an effective preventive maintenance program. Asset management activities are filed as work orders and often stem from observations made during routine inspections. These work orders are automatically sent to the correct department to be completed. This connected workflow helps the airport proactively maintain the integrity of its infrastructure assets, improving their overall performance and lifespan.



Having an asset management system provides the airport with a simplified inspection and reporting process as well as a more organized environment to store data.



CLT's Use of Trimble Cityworks

- + Asset management
- + Operations and maintenance
- + Inspections and compliance
- + Emergency and incident tracking
- + Work order management



Looking to the Future: Continuing Innovation

As a forward-thinking, growth-oriented organization, CLT aims to be “an airport of the future.” Together, Trimble e-Builder and Trimble Cityworks are helping CLT to realize this vision by fostering asset lifecycle management—from design and construction through ongoing operations and maintenance.

Since adopting Trimble e-Builder, CLT has completed a number of massive projects, including extensive expansions of Concourses A and E, the expansion of the East Terminal, the construction of a new elevated roadway, and more. More projects are in the planning phase or currently underway.

Together, CLT’s innovative approaches to digital project delivery and enterprise asset management are improving project and operational efficiency, enabling project and asset oversight, increasing stakeholder collaboration, increasing data transparency, and ultimately empowering CLT to serve the public with safer, longer-lasting, and sustainable airport infrastructure.

Charlotte Douglas International Airport aims to be “an airport of the future.” Trimble solutions are helping to realize this vision by fostering asset lifecycle management.

Learn how other airports are successfully implementing digital transformation and airport asset lifecycle management. Read **[Making the Connections: An Owner’s Guide to Airport Asset Lifecycle Management](#)**.

GET THE GUIDE





Learn More

For more information about strategies and solutions for airport asset lifecycle management, visit assetlifecycle.trimble.com.

All photos courtesy of Charlotte Douglas International Airport.
© 2023 Trimble Inc. All rights reserved.

