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Bob Endres,
Corporate CAD Manager,
Landrum & Brown

Productivity Soars

Aviation leader designs up to 10 times faster with Autodesk Civil 3D

Project Summary

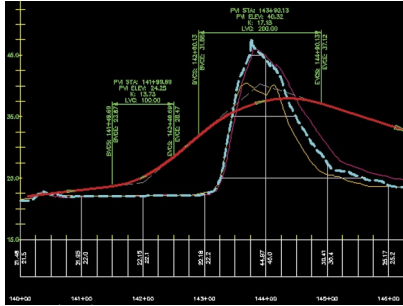
Founded in 1949, Landrum & Brown is the oldest commercial aviation consultancy in the world. Today, the firm delivers a full range of planning services to the Federal Aviation Administration (FAA) and airports, including the design of airports, terminals, and airspace. Because airports and airspaces are highly dynamic, they present a number complex design challenges that firms traditionally address with painstaking—and time-consuming—manual processes. But Landrum & Brown has found a better way; the firm uses the dynamic capabilities of Autodesk Civil 3D to accelerate its design processes. With Autodesk Civil 3D, Landrum & Brown has been able to:

- Create new versions of designs 10 times faster
- Produce multiple design iterations twice as quickly
- Complete complex airspace analysis dynamically
- Build airspace maps in four hours instead of two weeks

The Challenge

In the air and on the ground, airport design challenges even the experts at Landrum & Brown. They must design runways such that multiple air approaches are free from all potential obstructions, such as communications towers, buildings, and freeway overpasses. Even approaches over water must account for the possibility of tall ships. And on the ground, the firm must grapple with rigorous environmental and community review processes. Until recently, Landrum & Brown was forced to depend on a combination of manual calculation processes and tedious redrawing to keep projects moving forward.

"On any given project, we spend about half of our budget doing airspace analysis," explains Bob Endres, the corporate manager of Landrum & Brown's CAD engineering department. "We used traditional GIS software to build maps of airspace, a process that could take weeks, and then ran manual calculations to find optimal air approaches for runways. Designing land components was just as time consuming. On a typical project, we produce multiple versions of every design, and it takes about a week to draw each version."



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The Solution

When attending a demonstration of Autodesk Civil 3D, Endres was immediately struck by its potential to accelerate airspace analysis. The software could quickly build corridors and surface models and change them dynamically. Although many of the surfaces Landrum & Brown modeled were in the air, the principle was the same. Moreover, with its dynamic design capabilities, Autodesk Civil 3D was clearly applicable to more than just analysis—it was the perfect tool for creating multiple versions of designs.

“It doesn’t matter if it’s below-grade, above-grade, or at-grade,” says Endres. “A surface is a surface. With Autodesk Civil 3D, we can upload whatever points we need to build a surface, convert them to dynamic objects in Civil 3D, and begin our analysis or design. We recently created an airspace model from 500,000 points for a major airport in four hours. Before Autodesk Civil 3D, it would have taken two weeks.”

From Nine Days to One

Now, when Landrum & Brown begins an airspace analysis, it gathers the point information it needs from multiple sources, such as the FAA, NOAA, and private data vendors. The analysis team loads the data in Autodesk Civil 3D, and the software converts the data to the correct grid system. The firm then analyzes the data within Autodesk Civil 3D to find runway approaches that avoid obstructions and meet all FAA requirements.

“Before mapping technology, it took about nine days to do the analysis for a single runway,” explains Endres. “With mapping software, we got that to about two days. Now, with Autodesk Civil 3D, we’re reducing that to one day or less.”

In the Air and Underwater

Autodesk Civil 3D has proved particularly valuable on a current project—one that highlights another innovative application of the software by Landrum & Brown. To improve safety on take offs and landings, the airport on the island of Ofu in American Samoa needs to extend both ends of its 2,200-foot-long runway. But the runway is flanked by the ocean on both sides, and an important coral reef lies just below the surface. Landrum & Brown is using Autodesk Civil 3D to produce numerous design iterations of a proposed promontory to extend the runway. The ultimate goal: producing a sound design that minimizes environmental impact.

According to Endres, “We’re using Autodesk Civil 3D to do cross sections and alignments that show cut-and-fill amounts and impact to the reef. We’ve had to do multiple iterations of the design. It would take about a week to do each one manually. With Civil 3D, we have completed many in just a few hours. It’s as much as 10 times faster.”

The Result Months Saved

As Autodesk Civil 3D accelerates the way Landrum & Brown works, Endres sees the measurable impact growing. He says, “We deliver as many as 20 versions of every project. With Autodesk Civil 3D, we will cut the time it takes to do them in half. It will also have an impact on overall project schedules. For instance, a typical environmental assessment now takes about 18 months. Dynamic design capabilities will trim that by as much as two months.”

For more information

Find out how Autodesk Civil 3D can transform your design process and accelerate your project schedules at www.autodesk.com/civil3d