

OFFICE LOCATIONS

With regional offices in Virginia, Florida, Texas and California and satellite offices throughout the United States, Lea+Elliott is positioned to provide a broad range of engineering and consultation services to public transit authorities and private sector clients.

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Lea  Elliott

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Excerpt of 3-D video produced for San Jose Airport by Lea+Elliott and ITspatial.

Airport Clients

Lea+Elliott's professional staff has applied LEGENDS[®] to over 60 airports worldwide. In the planning and feasibility, stages LEGENDS[®] is used to analyze passenger flows through terminal facilities and passenger conveyance systems including security checkpoints, walkways, escalators, queuing areas and station platforms. For passenger conveyance options, LEGENDS[®] quantifies passenger demand and system requirements so that alternatives can be evaluated. During preliminary engineering and final design, LEGENDS[®] enables our planners, architects and engineers to size every system element from substations to maintenance areas. For cost estimating, LEGENDS[®] taps into Lea+Elliott's extensive database of capital and O&M costs to generate budget estimates and cash flow projections.

Public Transit

For public transit authorities, metropolitan planning organizations, freight railroads and other private-sector owners and operators of transit systems, LEGENDS[®] supports feasibility studies and the alternatives analysis process by providing critical operating parameters for various route and technology combinations. In the later phases of corridor planning and environmental analyses, LEGENDS[®] models the details of the locally preferred alternative so that final design can advance into construction. Using both two- and three-dimensional models, operational analysis can be applied to the initial system and decades into the future. In this way, the initial system can be built with enough flexibility to accommodate future needs, thus eliminating costly system modifications and downtime.

For all clients, LEGENDS[®] provides both an analytical and visual tool. As an analytical tool, LEGENDS[®] helps ensure that the best alternative is identified; as a visual tool, it helps the client "sell" the alternative to stakeholders and decision-makers in the greater community.

Enhanced Services

User interfaces can be readily provided so that our clients can run different variations and combinations from their own computers. These interfaces, built using MS Excel or Visual Basic, can be run by transit professionals with little knowledge of modeling. Three-dimensional models can also be created to visualize the actual system design for the owner and key stakeholders. Cutting-edge interactive models allow the user to pick any point in the system and view all system components, effectively putting the user in the picture. In this way, the user can "see" the station design, vertical circulation, passenger interface, and other system elements from virtually any perspective.

SIMULATION AND MODELING

Network Modeling

Concept Development

Alternatives Analysis

Programming

2-D and 3-D Simulations

In-House Training

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Good transit system planning and design are critical for the prospective system owner.

The system must be safe; reliable; cost effective to build, operate and maintain; sufficiently sized for the long term; and a "go" with all decision makers.

With accurate information in the planning stage and with the ability to visualize the system, you will make decisions that are on target.

How can you determine the optimal fleet size for your system, peak-hour demand, power requirements, or size of the maintenance facility? How can you anticipate and mitigate system bottlenecks and ensure a seamless interface with other transit systems? How do you know what size to make the station platforms, or the "right" number of escalators, elevators and stairs to include? How much will the system cost to build and then to operate and maintain on an annual basis? How can you present your system concept to nontechnical stakeholders during the planning and design phases?

By turning to seasoned professionals who understand transit system design from all perspectives and who have developed and successfully applied a powerful and accurate tool to assess and simulate—technically and graphically—critical system components in order to make recommendations that optimize system design.

Lea+Elliott is this kind of consulting firm and our tool is the Lea+Elliott General Dynamic Simulator (LEGENDS®). Assisting airport and transit authorities around the world with the planning, procurement, operations and maintenance issues associated with developing new transit systems and refurbishing old systems, we help clients make smart decisions that ensure cost-effective results. LEGENDS® models are critical to our clients' ability to develop the right project specifications and to convince stakeholders that their choices are on target.



Lea+Elliott has used LEGENDS® for clients from San Jose to Miami, from Amsterdam to Singapore, to assess, analyze and create true-to-life models of large capital projects.

LEGENDS® comprises 6 models.

The basic building block is the **Train Performance Model**, which calculates the performance of a single vehicle or train within the selected alignment.

The **Network Simulation Model** populates the entire system with vehicles or trains and calculates system-wide performance measures so that the fleet size can be determined and track configuration optimized.

The **Platform Model** takes outputs of the prior two models into consideration so that the station platforms and vertical circulation can be sized for peak-hour passenger flows throughout the design life of the system, thus avoiding unplanned station modifications.

The **Power Model** determines the size of the power distribution system for capital cost purposes and annual energy consumption for operations and maintenance (O&M) costing.

System capital cost and required cash flow during system construction are derived from the **Capital Cost Model**. This model is validated frequently and benefits from Lea+Elliott's large, historical database of unit cost data for similar systems.

Likewise, the **O&M Cost Model** accurately estimates all of the O&M cost elements from the "bottom up": staffing requirements for administration, operation and maintenance; energy and utilities consumption; spare parts and consumables; administrative costs; bonds and insurance.

