

AVIATION

We believe best practices
should be even better



CSSI, INC.

Moving Research to Reality

www.cssiinc.com

Improving Safety and Increasing Airspace Capacity

Despite the frequency of air travel and increased congestion of our airways, both civil and military air transportation remain some of the safest methods for reaching a destination. This creates an undeniable challenge for the entire aviation industry: when a system is so safe, what do you do to keep it that way? The answer: you make your best practices airtight. That is our focus at CSSI.

AN EXPERIENCED TEAM OF AVIATION SPECIALISTS

Our team has participated first-hand in the evolution of the aviation industry over the last two decades. We've supported NextGen initiatives that cut flight miles and increase fuel savings. We've developed, implemented and operated safety management systems. We've created newer, stronger safety standards, and we've helped maximize airspace capacity through reduced vertical separation minimum (RVSM) monitoring.

In an era of shrinking budgets and dwindling resources, our aviation specialists design innovative programs that ensure safe operations, while enhancing productivity for federal, state and local departments of transportation, the military and the entire aviation sector.

Our 20-year history has proven invaluable in our work in the Federal Aviation Administration (FAA), where we manage and implement air traffic control systems, business process improvements, human capital initiatives, flight training, and information technology. We are also working with the FAA to transform the U.S. aviation system through its ambitious NextGen initiative.



Driving Performance Today to Meet Challenges Tomorrow

AIRSPACE ANALYSIS AND MODELING

The FAA and other air navigation service providers trust us to analyze airspace conditions – a job where accuracy is paramount. This analysis and modeling involves researching proposed reductions to horizontal and vertical separation minima, implementing near-term airspace changes and ensuring continued safety for airspace separation reductions.

AIR TRAFFIC MANAGEMENT

The CSSI team partners with clients around the world to improve today's global air traffic management (ATM) system; enhance safety, operational and environmental efficiency; and prepare for the expected growth in global air travel. The transformational ATM solutions we develop optimize the worldwide aviation system.

MILITARY AVIATION SYSTEMS LIFECYCLE MANAGEMENT

Our years of aviation research and analysis experience are leveraged every day, as we assist the military with the acquisition, integration, and sustainment of aviation systems. This includes air traffic management systems, C4I, and aerial platforms. We also partner with our customers to optimize air fleet performance versus total cost of ownership.

NATIONAL AIRSPACE SYSTEM INTEGRATION SUPPORT

Our federal aviation expertise enables us to help new airspace users, such as unmanned aerial systems (UAS) and spacecraft, integrate into and navigate the NAS.

SAFETY MANAGEMENT

Our data driven, predictive safety management systems are designed to limit unwanted safety events within corporate operating environments for organizations that embrace principles of proactive safety risk management.



Case Study: Pilots Conduct RVSM Monitoring

CLIENT

National Aeronautics and Space Administration (NASA)

Johnson Space Center (JSC)

BACKGROUND

The International Civil Aviation Organization (ICAO) and its member states implemented RVSM standards as a means to increase airspace capacity and access to more fuel-efficient flight levels. RVSM has now been implemented globally and requires aircraft operating between flight levels 290 and 410 (inclusive) to be RVSM-approved. Monitoring an aircraft's height-keeping performance is an important part of the RVSM approval process and supports the safety assessment and safety oversight function that is required with RVSM implementation. An operator must meet the minimum monitoring requirements for their aircraft as established by their respective state authority to maintain their RVSM approval status.

CHALLENGE

In 2008-2009, NASA determined that the pitot-static system on their T-38N aircraft, which is used to support NASA's astronaut training program, needed further refinement to meet the requirements for RVSM operations. NASA asked CSSI to support the monitoring effort for their T-38N fleet to ensure compliance with RVSM operation standards.

The T-38N is a small, two-person aircraft and therefore the monitoring equipment could not be set up and operated in the same manner as the typical commercial and general aviation aircraft data collection effort. CSSI had to develop a new method to monitor this type of aircraft.

SOLUTION

CSSI brought decades of experience to the table, with pilots, data collection specialists and analysts who created solutions for this unique situation.

Since T-38N RVSM monitoring missions would be flown with a pilot and crewmember/co-pilot, it was necessary to develop a simple installation method for the Enhanced Global Monitoring Unit (EGMU) and data collection

procedure for the crew to perform while operating the aircraft. To enable the crew to collect the data, CSSI provided them with on-site training in the operation of the EGMU.

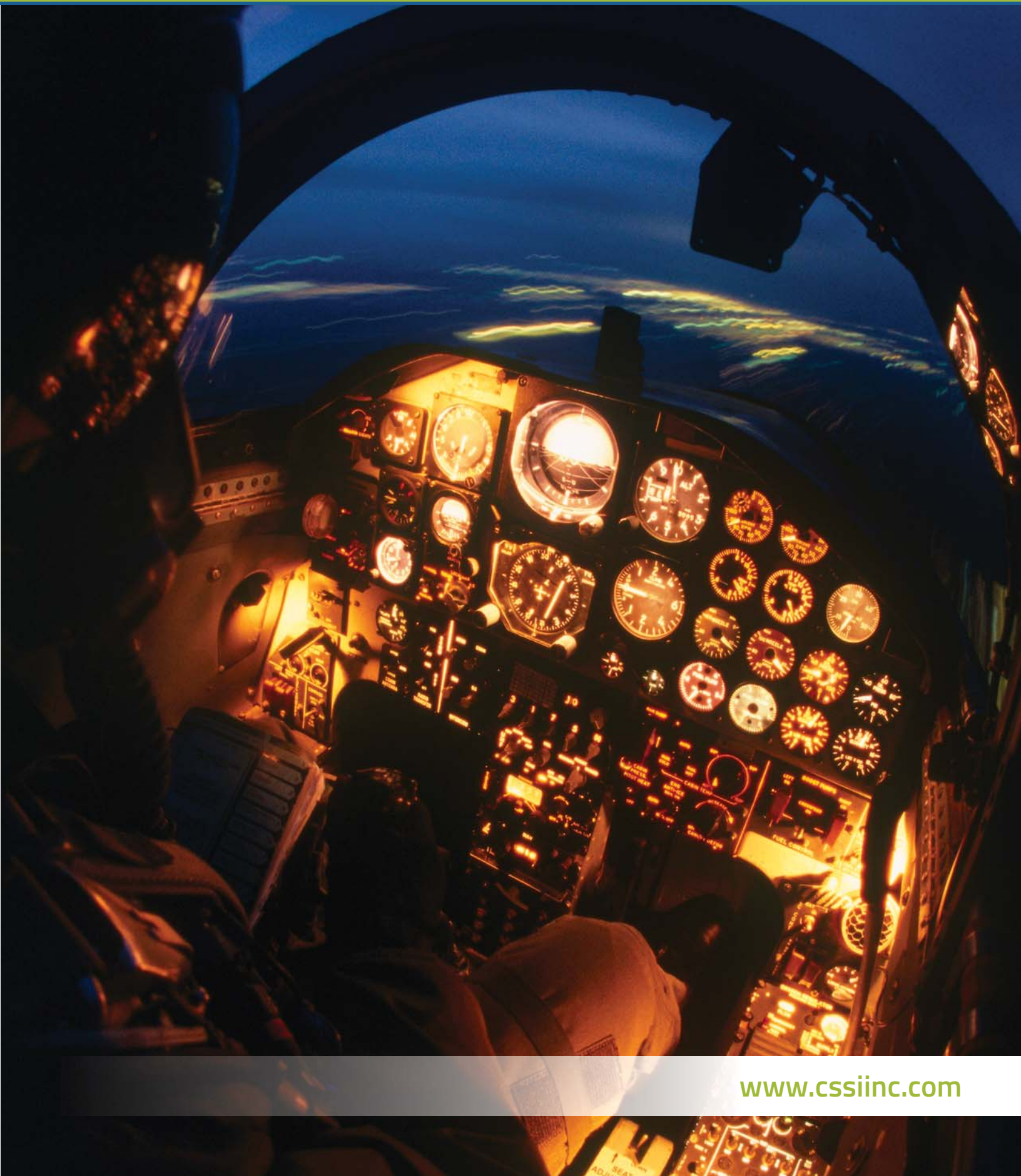
A single EGMU antenna was temporarily placed on the cockpit canopy of the T-38N and the EGMU's receiver was strapped to the co-pilot's leg, allowing easy access to the data collection device while the pilot focused completely on flying the test points since the aircraft does not have an autopilot.

NASA also wanted to be able to compare data samples from two different RVSM altitudes. Because the T-38N aircraft has a limited fuel supply, this meant that the aircraft would have to perform two flight missions to collect the data necessary for post-flight processing.

CSSI performed the post-flight processing of each of the data files collected by the T-38N pilot and transmitted the post processed data to the FAA's William J. Hughes Technical Center for final Altimetry System Error (ASE) calculation.

RESULTS

- In 2012/2013, NASA performed monitoring flights for the T-38N in support of the new long-term monitoring requirement implemented in November 2012.
- CSSI supported more than 50 RVSM monitoring flights for NASA T-38N aircraft from November 2008 through May 2010.
- CSSI supported 40 RVSM monitoring flights for NASA T-38N aircraft from September 2012 through May 2013.
- CSSI's efforts have played an integral role in keeping NASA's aircraft and astronauts safe within the National Airspace System through ensuring that the aircraft's altimetry system meets or exceeds the standards required for continued safe operation in RVSM airspace.



Implementing Market-Leading Ideas

Accomplishments that Speak for Themselves

AIR TRAFFIC SAFETY MANAGEMENT DATABASE

Our team of experts provided safety analysts in the Federal Aviation Administration with a structured database system to manage more than 20,000 air traffic controllers' self-reported, non-attributable safety-related incidents. The database currently houses more than 70,000 incident reports.

ANALYSIS OF ALTERNATIVE AIR TRAFFIC CONTROL OPERATIONAL SYSTEM CONFIGURATIONS

Our data analysts and modeling/simulation experts conducted studies and used fast-time simulation to analyze expected effects of airspace capacity changes and help the client make the right investment decisions to address them.

NEXTGEN WAKE TURBULENCE: RESEARCH AND DEVELOPMENT OF AIR TRAFFIC CONTROL PROCESSES

CSSI developed a standardized lateral offset conceptual procedure based on crosswinds to ensure wake turbulence mitigation en route (WTME). This resulted in wake-safe predictable operations that minimize disruptions to desired track while leveraging existing aircraft equipment within the framework of current air traffic control practices and rules.

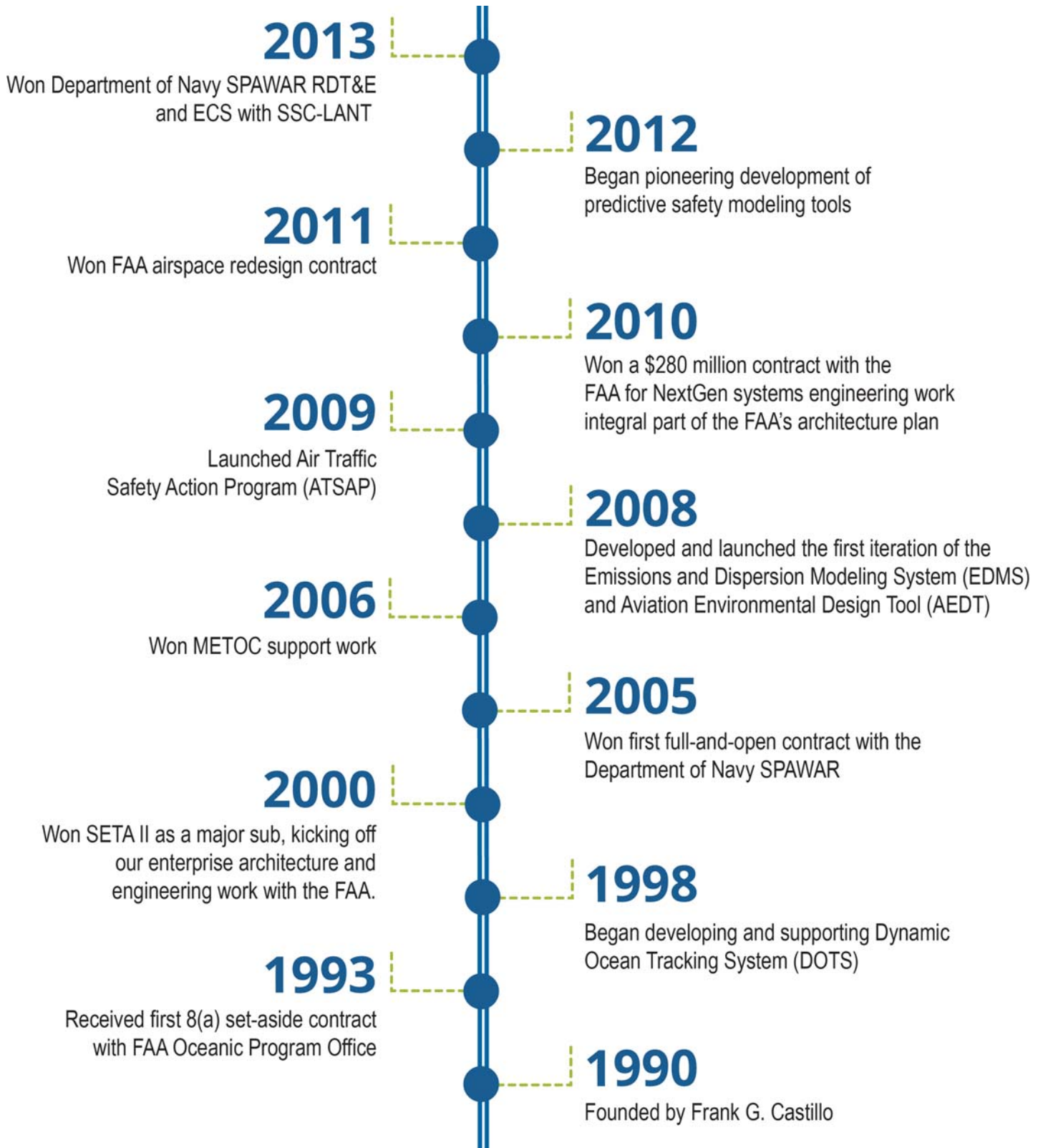
PREDICTIVE ANALYTICS AND DATA WAREHOUSING

For the FAA's Air Traffic Safety office, we are developing a solution to predict future clusters of high-risk air traffic safety indicators and incidents through comprehensive analysis of large volumes of structured and unstructured safety data.

TERMINAL AREA ROUTE GENERATION EVALUATION AND TRAFFIC SIMULATION (TARGETS)

We have been providing support, maintenance and development solutions for the FAA throughout the 10-year lifetime of the TARGETS application. Our prompt and skillful TARGETS specialists have played critical roles in the process of developing and submitting area navigation (RNAV) procedures for aircraft to fly in the NAS. These procedures are important components of the FAA's ambitious NextGen implementation plan.

A History of Partnership



About CSSI

CSSI, Inc. partners with government and commercial clients to deliver engineering, technical and management solutions to complex, high-consequence challenges affecting transportation systems at all levels. Leveraging its deep roots in aviation, CSSI, Inc. pioneers innovative analytics and best practices that produce groundbreaking results to enhance productivity, decrease costs, and improve safety.

Founded in 1990, CSSI, Inc. employs nearly 300 professionals, has offices in five locations and supports clients throughout the United States and globally.

For more information on CSSI, Inc., please visit www.cssiinc.com.



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