

Air Traffic Controllers Can Focus on Safety with New Technology

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Air traffic controllers manage a multitude of responsibilities that all demand that each task they perform be done to perfection. With such stringent requirements for timely and error-free performance, the demand placed on air traffic controllers is enormous. There is an urgent need to make the air traffic controllers' jobs as harmonious as possible, so that they can focus on their primary task, safely managing the arrival and departure of air traffic. This white paper describes how technology can help to simplify the air traffic controller's job, ensuring more efficient use of time, and therefore improving upon air traffic safety.

Manual recordings of Automatic Terminal Information Service (ATIS) broadcasts can be time consuming and tedious, and tend to interfere with the flow of the controller's primary duties. Unpredictable weather makes the job more demanding, as controllers are constantly pulled away to update the ATIS message. A way to quickly and reliably update ATIS information as runway and weather conditions change would allow the controllers to put their time where it counts: air traffic safety.

Robust, easy-to-use technology is readily available to rapidly integrate weather data, runway conditions, field conditions and NOTAMs into an automatic ATIS message, allowing the air traffic controller to create a clear and consistent message while at the same time reducing the risk of errors that may occur when making manual recordings of ATIS broadcasts. Creating manual recordings is time consuming, and when weather conditions are changing rapidly, manually updating the ATIS

with a new recording several times per hour puts even more demand on the air traffic controller's time. With advances in the production of broadcast quality text-to-speech, coupled with sophisticated methods of assembling the automated ATIS message, manual recordings become a thing of the past. Now, when weather or runway conditions change, a new ATIS message can be generated in only a few seconds. And with advances in the quality of text-to-speech, the ATIS message is broadcast to pilots in a clear and natural voice that is consistent with every broadcast. Delivering an understandable message to pilots means that the pilots are much less likely to call the ATC tower for clarification, therefore creating more time for the controller to focus on air traffic management. Overall, automated ATIS message generation using broadcast-quality text-to-speech is the most efficient and reliable way to create ATIS messages that pilots can easily understand.

The technology that best exemplifies the ability to quickly deliver a clear, consistent ATIS broadcast is STR-SpeechTech's StarCaster ATIS system. StarCaster ATIS has an easy-to-use interface that allows the controller to rapidly select ATIS information and quickly generate the ATIS message. The intuitive user interface design not only rapidly creates the new ATIS message, but also reduces the risk of human error. Unlike competing systems, the StarCaster technology also creates the ATIS broadcast without compromising the quality of the ATIS message.

Growing rapidly in popularity as a reliable solution for ATIS broadcast generation with the US Military, StarCaster ATIS systems have been installed in

over 70 US Air Force and US Army towers at this writing. Recently, two StarCaster ATIS systems were installed in Tikrit and Al Taji, Iraq, as a part of the US effort to hand air traffic control responsibilities over to the Iraqi government. StarCaster ATIS systems were selected for the latter two installations because they immediately resolved the urgent need to generate ATIS broadcasts using a natural English voice, which is not easily accomplished when the air traffic controller's native language is not English, the language of aviation. While the controllers may be versed in "Aviation

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English", this is often difficult to understand when used for creating a recorded ATIS broadcast. In contrast, StarCaster's consistent and natural English voice ensures that there is very little increase on the cognitive processing load that pilots are faced with during arrival and departure operations.

The StarCaster ATIS system may also be configured to broadcast the ATIS message in both English and the regional language. Several systems have been installed in Latin and South America broadcasting the ATIS in both English

and Spanish. Recently, a new system was installed in Mexico City (MMMX) that broadcasts the ATIS message first in English and then in Spanish on the same channel, with both broadcasts making use of

SpeechTech's broadcast-quality text-to-speech technology.

As reported by a Captain of USAF Airfield Operations, "The StarCaster Digital ATIS system is highly reliable; we never have problems using StarCaster ATIS and it never fails. This product greatly enhances our air traffic controllers' ability to do their jobs and improves flight safety." Customers like this USAF Captain find that StarCaster ATIS is the right solution to increase efficiency and safety in their ATC tower. With the improved efficiency

and reduced error that results from using the system, the air traffic controllers are able to focus on air traffic safety, and be confident that pilots have heard and understood the ATIS message.

The StarCaster ATIS system is capable of operating 24 hours a day, 7 days a week, and can even be used to broadcast current weather conditions during tower closure. All software and hardware components of the StarCaster system are COTS products. It may be set up as a single workstation in the control tower, or with multiple remote operator workstations that are

connected to the StarCaster ATIS host computer, which may optionally be configured for dual hot standby operation for added security. Weather data input may be received from any type of weather feed (AWOS, AFTN or AMHS, for example), and the ATIS message is output to a remote voice server that connects to the radio transmitter. The voice server may also be configured for redundant operation, is easily connected to the transmitter, and provides push-to-talk (PTT) control of the broadcast if required. See Figure 1.0 for a block diagram of the StarCaster ATIS single workstation configuration.

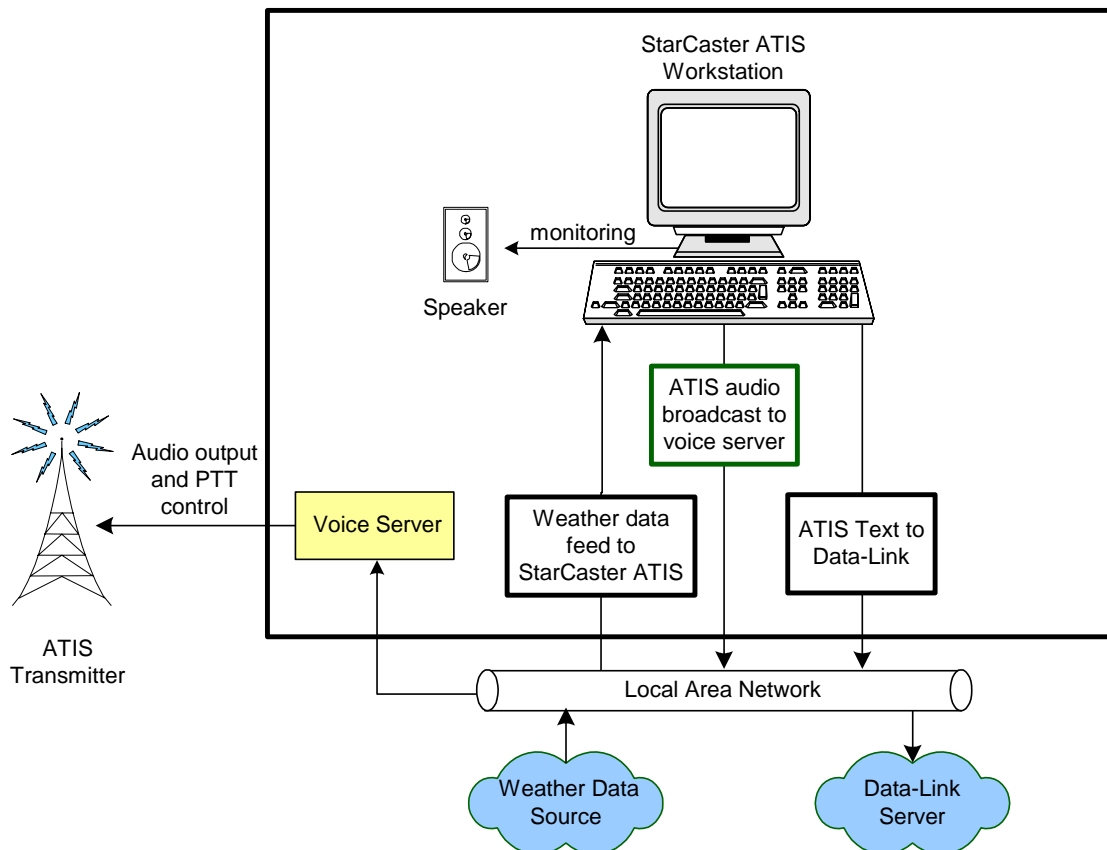


Figure 1.0: Block diagram showing StarCaster ATIS in a single workstation configuration.

Another significant advantage of the StarCaster ATIS system is that it is easily integrated with a Data-Link service, allowing the text of each newly created ATIS to be up-linked to ACARS-equipped aircraft. Supporting either SITA or ARINC Data-Link systems, StarCaster ATIS can be configured to respond directly to Data-Link requests from the aircraft, or can simply send the new ATIS to an existing Data-Link server. For the control tower, the most cost-effective solution for this service is to include a small routine on the StarCaster ATIS host computer that accesses the newly created ATIS text and sends it to ARINC's Data-Link server by secure internet connection. From there, it is up-linked to the ACARS-equipped aircraft when the aircraft requests the information.

With increased Air Traffic Controller efficiency comes saving money on operating costs. Allowing ATC controllers to focus on air traffic safety creates a return on investment (ROI) for the StarCaster ATIS product that is more than double the cost of the ATIS system in a one year period. Each year that the StarCaster ATIS solution is operating, the ROI is an average of \$90,000 per year¹. See Figure 2.0 for a graph of the StarCaster ATIS ROI during the first two years of operations. The StarCaster ATIS system also adheres to ICAO and WMO recommendations and standards, making it the most cost-effective solution for ATIS broadcasting on the market.

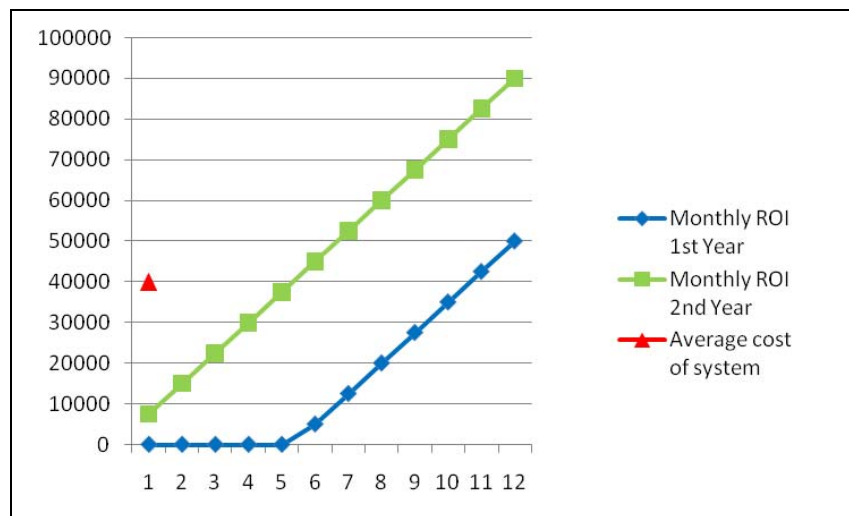


Figure 2.0: ROI in the first two years of StarCaster ATIS operation. The average cost of the system is fully recovered in less than 6 months, resulting in an ROI of \$50,000 in the first year of operations, and \$90,000 in subsequent years.¹

¹ Numbers calculated using StarCaster ATIS ROI Calculator: With tower operations 365 days a year, labor costs of \$80 per hour, and an average of 1.5 ATIS messages created per hour.

Summary

For managers of air traffic control towers who need a reliable method of generating ATIS messages that pilots can easily understand, StarCaster ATIS is a patented, award-winning system that provides clear and consistent ATIS broadcasts. Using an efficient user interface and a natural quality text-to-speech system, ATIS messages are created without the human error or lack of clarity that occurs when making manual recordings. Unlike competitors who require the controller to break from key air traffic control duties for 5 minutes or more each time a new ATIS is needed, StarCaster ATIS quickly generates ATIS messages in about 30 seconds. The StarCaster ATIS system is supported by automatic integration of weather data into the ATIS message, optional client/server and/or dual hot standby configuration, an easily installed hardware interface to existing radio equipment, optional automatic transfer of the ATIS text to Data-Link, and installation, training and product support.



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