

IDS5 Digital ATIS System for AFAS and AAAS Workstations

Description and Specifications

1. **Introduction** – The Digital Automated Terminal Information Service (DATIS) component of the IDS5 DATIS solution is developed by STR-SpeechTech, Ltd (STR) under the name of StarCaster ATIS, and distributed by Systems Atlanta, Inc. (SAI). The IDS5 DATIS solution uses proven StarCaster “speech concatenation” technology, a Text-to-Speech (TTS) process that has become the industry benchmark for superior quality voice output. The system employs the StarCaster TTS technology to provide the ultimate clear, natural voice, essential for critical message broadcasting. The TTS component of the system uses a pre-recorded digitized voice database to produce the high-quality voice output.
2. **Overview** - STR's speech concatenation system, marketed under the brand name StarCaster, was originally designed to meet the complex requirements of weather broadcasting, with a need for rapid conversion of encoded weather text to a natural, high-quality voice that is ready for broadcast. StarCaster is a sophisticated text-to-voice system that has been designed for various PC-based applications. The system uses a pre-recorded digitized Voice Database to produce very high-quality voice output from a text input.
3. **Technical Information**
 - a. Included in the IDS5 DATIS solution is an executable software package with supporting configuration files and a database of digitized audio files containing an extensive vocabulary of weather and airport terms required for ATIS broadcast operation. The text-to-voice component of the system accesses this database to produce broadcast-quality voice output.
 - b. The software also includes a set of pre-recorded standard fixed messages (i.e. Tower Closure, Standby for New ATIS, Contact ATC), as well as site-specific phrases that can be configured according to user specifications.
 - c. The IDS5 DATIS solution provides a high quality, fully automated replacement to manually-produced ATIS broadcasts, 24 hours a day, 7 days a week. The solution can be configured to automatically receive ATIS weather information from any weather data source (e.g., AAAS, AFAS, IDS5, AWOS, ASOS). This weather information is then used to produce voice output for the ATIS Broadcasts, according to user specifications.

- d. The IDS5 DATIS solution automatically generates and updates ATIS broadcasts from encoded text data that are provided by a weather data source. An automatic process first filters the coded weather data to select the weather products required, and then converts the selected METAR and air traffic information from its encoded format to expanded English text. The system then converts the data into an audio stream, which is passed to a radio transmitter. The DATIS solution also controls the transmitter's Push-to-Talk (PTT) system.

4. IDS5 DATIS Hardware Components

- a. Tower: The DATIS Software will be integrated onto the Airfield Automation System (AFAS) or Army Airfield Automation System (AAAS) hardware platform typically located within the ATC Tower Cab. This workstation will provide the user interface to the DATIS solution. The workstation will have manual recording and monitoring capability via supplied microphone and pre-amp.
 - (1). Additionally, a second workstation within the control tower will host a stand-by DATIS software solution in the event of a primary workstation failure. This will facilitate minimal system downtime in the event tower personnel must begin using the stand-by DATIS workstation as the primary means of ATIS creation and broadcast.
- b. Equipment Room: The IDS5 DATIS System's Voice Output Server will be located in the ATC Equipment Room. This server will provide the audio signal and Push-to-Talk (PTT) control to the radio transmitter(s). This equipment will reside in a rack/console consisting of the following:
 - (1). One (1) Transmitter Unit (XMU) ATIS Voice Server. This voice server is a solid-state device that will provide continuous audio output of the DATIS broadcast. The voice server does not require a video monitor or keyboard/mouse input device. Its functionality will be controlled by the IDS5 DATIS workstation in the Tower, which will send voice files and control messages to the voice server via LAN connectivity. Note that the voice server is capable of storing audio files up to 8 minutes in length and that audio output is done at 64 kbit/sec (8 kHz at 8 bit coding).
 - (2). The integration of a DATIS solution with the other ATC components will not result in any degradation of operational systems, subsystems, networks, or facilities.

- (3). All hardware components for the DATIS solution will be commercial off-the-shelf (COTS) items specifically configured for your networks use.

5. **The IDS5 DATIS Solution** - Includes the following features and components:

- a. One (1) Primary StarCaster ATIS software license
- b. One (1) Stand-By StarCaster ATIS software license
- c. Installation Disk with site-specific configuration of software, vocabulary and text conversion rules
- d. Factory-configured, site-specific weather information
- e. Automatic update of ATIS ID letter when New ATIS message is created
- f. Complies with ICAO International Standards and Recommended Practices, including compliance with ICAO formats for TCP/IP and serial connections
- g. Automatic retrieval of weather text data code via IDS5
- h. Automatic conversion of METAR from its encoded format to English text and to natural voice for broadcast
- i. Automatic detection of weather data errors and software tools for manual error correction
- j. Free text entry
- k. Optional call-in telephone access to listen to ATIS message on an analog phone line
- l. Automatic logging of weather data received, weather data errors, start and end time of broadcasts, broadcast contents, and any technical errors
- m. Text of ATIS broadcasts saved to hard drive and/or removable media
- n. Software and hardware for making manual recordings for broadcast, and for audio monitoring of ATIS broadcast before being sent to radio transmitter(s)
- o. Operations and Technical Maintenance Manual
- p. XMU+ and cabling (configured to meet customer's radio transmission requirements)
- q. One-year warranty on hardware and software
- r. Telephone/email technical support for the DATIS solution from Systems Atlanta, Inc. published business hours for covered support/warranty period. Standard warranty/support is Three (3) years.

6. **Graphical User Interface (GUI)** - The English language GUI offers an easy-to-use tabbing design for navigation through the software. A large work area with pull-down lists, selectable buttons and editable text boxes allows the user to create a new ATIS message. The GUI includes access to log files, viewing of current broadcast text and specific weather data items, running technical and diagnostics tests, changing the speech rate and password control. In the 'New ATIS' tab, the user is able to select Field Conditions, NOTAMs, Runways in Use, and Approach Types from editable lists and drop down menus. In the 'Fixed Message' tab, the user can select pre-defined Fixed Messages to use during

Tower Closures or during times of rapidly changing weather instructions to pilots that they must contact ATC for the most current conditions.

7. Contents of ATIS Messages – The DATIS solution will be configured to provide a continuous audio broadcast of meteorological and airport information, including:

- a. Automatic update of ATIS ID letter when New ATIS message is created
- b. Runway in use and approach-type information
- c. Current weather data (METAR or SPECI)
- d. Field conditions
- e. NOTAMs and advisories
- f. All ATIS broadcasts can be continuous, broadcasting 24 hours per day.

8. Automatic Input of Weather Data

- a. Access to Weather Data - The IDS5 DATIS Solution can be configured to automatically receive weather data (in METAR/SPECI format) from AFAS (IDS5 Air Force) or AAAS (IDS5 Army). The IDS5 DATIS Solution will automatically incorporate this weather data into ATIS messages, before they are monitored and approved by ATC personnel.
- b. Verification of Weather Data - By continually receiving new weather data from AFAS or AAAS, StarCaster ATIS obtains the most recently available data for weather products that are to be broadcast.
- c. In order to do this, the system also performs a date/time check of the incoming weather data. This involves checking the time of issue of all filtered weather data in order to prevent current data from being replaced by data with an earlier issue time.
 - (1). Before METAR data can be included in the ATIS Broadcast, the DATIS solution verifies that it conforms to a predefined format. The StarCaster ATIS System complies with ICAO International Standards and Recommended Practices. Any METAR data that do not conform to this format are identified as containing errors. Weather data items that contain format errors are written to a log file, which can be viewed, printed and saved to disk.
 - (2). Technical and broadcast log files are also created automatically, allowing the user to save, review and/or print records of the program's operation. Several standard fixed audio messages are included in the software, such as "Standby for new ATIS message" and "Contact ATC for Current Information"

9. **Recording and Monitoring** - A component of the DATIS solution offers a manual recording feature as a back-up option to the automated voice generation capability. Recording, audio monitoring and audio alarms will make use of the pre-amplifier, microphone and powered speakers that will be connected to the AFAS Workstation in the ATC Tower.
- a. Recording - The ATIS Operator will access the DATIS software on the AFAS or AAAS Workstation in the ATC Tower and then use the data recording operation in the GUI to start the recording. Once the recording has been completed, the operator may monitor it by selecting a playback operation in the ATIS GUI.

Once the recording has been accepted for broadcast, it will be sent to the XMU ATIS Voice Server via CTI (Computer Telephony Interface) through a cross-over cable from the StarCaster ATIS Workstation. The recording will then be incorporated into the broadcast, based upon identifying features that are included with the recorded data.

- b. Monitoring - For monitoring selected weather data items when editing them to correct an error, the same approach is used. When the playback button in the GUI is clicked, a message is sent to the XMU ATIS Voice server, which in turn sends a message to activate playback at the AFAS or AAAS DATIS Workstation.
10. **Correcting Errors in ATIS Weather Data Items** - It is expected that the AFAS or AAAS Workstation will be used for correcting any errors that the StarCaster system detects in the incoming weather data items. The ATIS operator edits the weather data item to correct the error and listens to the message to ensure that it is correct. It is then accepted for use, which makes the weather data item available for broadcast. When a weather data error has been detected, a visual notification is posted on the AFAS or AAAS workstation, and may be supported by an audio alert if required.
11. **ATIS Failure Alerts** - Upon failure of an ATIS operation, a visual indication of the failure is displayed on the monitor at the AFAS or AAAS DATIS Workstation.
12. **Transmission of the ATIS Broadcast** - When the StarCaster Voice Server receives the ATIS audio file from the AFAS or AAAS workstation via the DATIS software, the server automatically starts transmitting the audio data to the ATIS radio transmitter(s). The Voice Server also controls the PTT functionality on the radio transmitter(s).
13. **System Access** - Passwords can be implemented for different access levels to the DATIS solution. The user password can be changed at any time by the user at the AFAS or AAAS DATIS Workstation. The maintenance password can be changed at any time by the Maintenance Technician. Passwords will be case insensitive and will be masked on all

forms of entry, including changing of passwords.

14. Manuals - The IDS5 DATIS solution includes the following manuals:

- a. Operator Manual: This is designed to provide ATC personnel with information required to generate, test and broadcast ATIS messages.
- b. Installation and Configuration Manual: This is designed to provide Technical Maintenance personnel with information required to install and configure the StarCaster ATIS if a stand-alone system.

15. On-site Installation and Training – Systems Atlanta, Inc. provides on-site installation and training for the IDS5 DATIS Solution.

- a. On-site installation includes setup, connection and testing of all equipment components. Integration and configuration of the IDS5 DATIS software interface will also be completed during on-site installation.
- b. Training includes one (1) to three (3) sessions, consisting of approximately 1 ½ days:
 - (1). ATC Training (up to three sessions within an eight hour period) – to provide ATC personnel with user training on the generation, testing and broadcast of ATIS messages. Multiple sessions (approximately 2 hours each) can be done to accommodate shift workers.
 - (2). Technical Maintenance Training (one session) – to provide Technical Maintenance personnel with training on system maintenance

16. Maintenance Contract - SAI standard offering consists of Three (3) years of maintenance support of the IDS5 DATIS System. Annual maintenance includes the following:

- a. Once per support year: Modifications or additions to the voice library as requested. This includes changes or additions to the Field Conditions, NOTAMs/Advisories, Fixed Messages, and other items (e.g., local place names, commonly used phrases or abbreviations). The requested modifications will be delivered via electronic media.
- b. Provide technical support to ATC personnel involving operation or maintenance of the IDS5 DATIS system. This support is provided via E-mail or in response to telephone inquiries during regular business hours (Mon to Fri from 9:00 a.m. to

5:00 p.m. Eastern Time Zone).

- c. Modifications to the StarCaster ATIS executable or DLL (Dynamic Link Libraries) files are out of scope of this Maintenance Support Agreement. The support does not cover any change to the basic program functionality. SAI offers any required modification requests under a separate negotiated contract or task order.
- d. This maintenance contract does NOT cover or include on-site engineering services post-installation.

17. Customer Interaction with SAI Help Desk - Since each IDS5 DATIS solution is specifically configured to meet each customer's requirements, direct interaction will be needed.

- a. A DATIS Information Request Form (IRF) is sent to the customer by email, and is used to determine site-specific requirements. Any questions that the customer has, or that SAI has regarding the customer's responses, are resolved through this form.
- b. Upon receipt of responses from the customer, any new vocabulary, TTS conversion rules and GUI configuration changes are made to create a site-specific copy of the DATIS software. This is part of the initial delivery package.
- c. The customer will have thirty (30) days from date of initial operating capability (IOC) to note, request, or identify changes that are needed with the delivered software solution.
- d. The customer will be given a specific support number, contact information, etc. to reach SAI's Help Desk. Unlimited calls may be made to the SAI Help Desk for support requests, operational questions, technical assistance, etc. However, vocabulary changes are only delivered once annual during each support period.