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ARIS/SL® schedule loader

Load and store SSIM flight-schedule information

The ARIS/SL schedule loader enables you to load flight-schedule information from a source file and to save the information in the ARIS/SmartBase® database or in the ARIS/SA® slot allocator. The ARIS/SL schedule loader accepts airline-wide schedule files in the format specified in Chapter 7 and airport-centric schedule files in the format specified in Chapter 6 of the IATA Standard Schedules Information Manual (SSIM). The Ascent WorkZone workforce-management system, the SmartAirline Operations Center solution, and the SmartAirport Operations Center solution all rely on accurate flight schedule files loaded and stored in the ARIS/SmartBase database by the ARIS/SL schedule loader.

The ARIS/SL schedule loader provides simple intuitive screens that guide you through the process of choosing a schedule file to import, choosing where to store the schedule file, loading and naming the schedule file, selecting the airport(s) for which the schedule applies, adding probable turn information for the selected airport(s) to the schedule file, and saving the schedule file in the ARIS/SmartBase database. The screens simplify information entry by providing lists of items, in the correct format, to choose from. The summary at the top of each screen enables you to track your progress, and advice blocks display brief explanations about the screen you are viewing.

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What the ARIS/SL schedule loader enables you to do

With the ARIS/SL schedule loader, you can:

- Load and save airline-wide flight schedule files in the IATA Standard Schedules Information Manual (SSIM) Chapter 7 message format in the ARIS/SmartBase database
- Load and save airport-centric Schedule Clearance Requests (SCR) and Standard Movement Advice (SMA) messages marked with action code N in the IATA Standard Schedules Information Manual Chapter 6 message format in the ARIS/SmartBase database
- Load and save airport-centric Schedule Clearance Requests (SCR) and Standard Movement Advice (SMA) messages marked with action codes C, D, E, N, and R in the IATA Standard Schedules Information Manual Chapter 6 message format in the ARIS/SA slot allocator
- View problems in flight schedule files, such as duplicate flight legs operating on the same day and flight records with start dates and/or end dates outside the schedule period, that may prevent the system from loading the flight schedules and that should be fixed before you complete the schedule-loading process
- View problems in flight schedule files, such as airline codes, aircraft type or subtype codes, origin codes, and destination codes that are not defined in the ARIS/SmartBase database, that do not prevent the system from loading the flight schedule files, and that should be fixed so the Ascent Technology resource-allocation products operate correctly
- Select the airport(s) for which the system loads schedule records, and then generate probable turn information for the selected airport(s)
- Save the flight schedule file for the selected airport(s) by appending the file to an existing flight schedule, or by overwriting an existing flight schedule, or by creating a new flight schedule

After you load and save a flight schedule in the ARIS/SmartBase database, you can use the Schedules tool in the ARIS/SB® schedule builder to view and manage the flight schedule. When you load and save SCR and SMA messages, you use the ARIS/SA slot allocator, which works with the ARIS/CA® capacity analyzer, to view and manage the messages.

How the ARIS/SL schedule loader produces accurate schedules

The ARIS/SL schedule loader checks both the syntax and the data validity of the flight records in the source file. The syntax, which is the layout of the fields in each line of the schedule file, controls how the ARIS/SL schedule loader interprets the text of the schedule and translates it into the elements of the flight schedule, such as the flight numbers, start times, and end times. When the syntax of a line is not valid, the system may misinterpret the text elements and produce a faulty schedule.

Data-validity checking ensures that the translated text is meaningful, given the airport, airline, and aircraft type reference information defined in the ARIS/SmartBase database; the framework of the schedule file, such as the season and the type of schedule file; and relationships between flights, such as duplicate flight numbers.

The ARIS/SL schedule loader performs syntax checking as it processes each line of the source file because syntax errors can adversely affect the system's interpretation of the file. The ARIS/SL schedule loader

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performs data validity checking separately, usually after the system has read all the lines in the source file. Representative validity tests include:

- **Aircraft-type codes.** The system checks all aircraft type codes in the source file against aircraft type codes defined in the ARIS/SmartBase database. When an aircraft type code in the source file is not defined in the ARIS/SmartBase database, the system displays a description of the problem.
- **Airline codes.** The system checks all airline codes in the source file against airline codes defined in the ARIS/SmartBase database. When an airline code in the source file is not defined in the ARIS/SmartBase database, the system displays a description of the problem. For records in SSIM Chapter 7 format, the airline code problem is reported for both the arrival flight and the departure flight. (The system processes records in SSIM Chapter 6 format later.)
- **Airport codes.** The system checks all airport codes in the source file against airport codes defined in the ARIS/SmartBase database. When an airport code in the source file is not defined in the ARIS/SmartBase database, the system displays a description of the problem.
- **Flight dates.** The system displays a description of the problem when the start date occurs after the end date; when the start date occurs before the season start date; or when the end date occurs after the season end date. In addition, start date must be one of the operating days specified by the days-of-operation field, and the end date must be one of the operating days specified by the days-of-operation field.
- **Flight times.** The system displays a description of the problem for a SSIM Chapter 6 format turn if the departure time is before the arrival time and the over-midnight indicator is missing or zero. Additionally, the over-midnight indicator is required to be in the range of 1 to 6.
- **Service-type codes.** The system checks each service-type code in a flight leg for validity. If it is not valid, the system screen displays a description of the problem.

When the system processes SSIM chapter 7 format records, the system displays descriptions of problems for all flights in the schedule file because the system performs data validity tests before you select the turn airport(s).

If you store the schedule file in the ARIS/SA slot allocator Inbox/Outbox, the system stores data-validity problems in the Inbox with the schedule. You then have the ability to modify the request to correct the problems.

When you install the system, you determine which types of problems in a source file are serious enough to prevent the ARIS/SL schedule loader from storing the schedule and which types of problems are less serious. When you encounter serious problems, you must correct them in the source file and reload the corrected source file before you can save the schedule. When you encounter less serious problems, you can decide to correct the problems before or after you store the flight schedule in the ARIS/SmartBase database.

How the ARIS/SL schedule loader links arrival flights and departure flights

The word *turn* refers to how an arrival flight links to a departure flight at an airport. For example, an arrival flight may be described as turning, or linking, to a departure flight. Typically, the source file defines some, but not all, turns. Intelligent algorithms in the ARIS/SL schedule loader generate probable turns for a selected

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airport, which enables you to work with a flight schedule prior to the time you receive actual turn information from an airline.

Probable turns are the system's best guesses about turns because the ARIS/SL schedule loader does not split original schedule records into different date ranges to accommodate turns. When the ARIS/SL schedule loader creates a probable turn, the turn is valid for all days of operation that apply on either side of the turn. In contrast, a flight schedule that contains actual turn information splits flight records into different date ranges when linking arrival flights and departure flights to accommodate turns.

The ARIS/SL schedule loader creates four types of probable turns: Explicit, Onward Flight, Transit, and Unrolled. At each step of the turn-creation process, the system considers only the effective dates of flights that are not yet linked.

- An Explicit Turn is a turn already defined in the flight schedule
- An Onward Flight Turn is identified by a field in a flight record in the flight schedule that contains the flight designator of the onward flight
- A Transit Turn links arrival flights and departure flights at the turn airport that have the same flight number and aircraft type
- An Unrolled Turn occurs when unlinked flights remain at the end of the first three steps and the system matches arrival flights with departure flights. For each departure flight, the system finds the most recent unmatched arrival flight that obeys rules for short minimum ground times.

Representative features

Accepts SSIM Chapter 6 and Chapter 7 message formats. The ARIS/SL schedule loader handles airline-wide flight schedule files in the IATA Standard Schedules Information Manual (SSIM) Chapter 7 message format, and New Schedule Clearance Requests marked with action code N in the IATA Schedule Clearance Request (SCR) message format and Standard Movement Advice (SMA) message format (SSIM Chapter 6). It handles airport-centric Schedule Clearance Requests (SCR) and Standard Movement Advice (SMA) messages marked with action codes C, D, E, N, and R in the SSIM Chapter 6 message format.

Checks flight records for syntax and data-validity problems. The ARIS/SL schedule loader checks both the syntax and the data validity of the flight records in the source file and displays the problems it finds. When your organization installs the system, it determines which types of problems in a source file are serious enough to prevent the ARIS/SL schedule loader from storing the schedule and which types of problems are less serious, leaving it to you to decide to correct identified problems before or after you store the flight schedule in the ARIS/SmartBase database.

Links arrival and departure flights to create probable turns in the absence of actual turn information. The ARIS/SL schedule loader enables you to create flight schedules prior to the time you receive actual turn information from airlines. Sophisticated algorithms create probable turns, such as by linking identical flight numbers and aircraft types and by matching arrival flights and departure flights that obey rules for short minimum ground times.

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Provides an intuitive, easy-to-use graphical interface. The ARIS/SL schedule loader's intuitive screens take you from one step to the next quickly and intelligently. For example, when the system requires you to enter information in a particular format, it provides a list of correctly-formatted items from which to choose. When you ask the ARIS/SL schedule loader to do something it cannot do or if you do not give it all the information it needs, the system displays guidance messages that tell you what you need to do to recover from or avoid the problem. You can display the ARIS/SL Schedule Loader User Guide in a window that you can view at the same time you view the screen.

Collaborative decision-making. The ARIS/SL schedule loader supports team decision-making, ensuring all users share a consistent current view of operations. You can discuss possible solutions with other users before you commit to changes.

Web-enabled for cost-effective rapid and wide deployment. You may gain access to the ARIS/SL schedule loader through Ascent's From Touchdown to Takeoff® cloud-hosted service, a secure, highly-available, and readily-expandable platform. When you subscribe to the service, you can gain access Ascent's entire suite of products using a standard browser, such as Google Chrome, directly from your network without the need to install, maintain, and support on-premise hardware and software. Available computing power can be readily adjusted to meet your organization's changing needs, and your solution can be easily expanded to accommodate additional users and to manage additional resources, facilities, and locations.

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Services to help you maximize the benefits of Ascent solutions

Advisory and consulting services. Ascent advises about resource allocation, optimization, planning, scheduling, management, and deployment methodologies; develops cost-benefit analyses; analyzes business processes; and gathers and develops technical requirements and functional specifications.

Project-management services. Ascent's project-management team works closely with you, following time-proven delivery methodologies, and uses face-to-face meetings, teleconferences, web conferences, and email exchanges to keep you informed every step of the way. Ascent believes careful collaborative project management is the key to successful on-time and on-budget deliveries of Ascent's solutions.

Knowledge-engineering services. Knowledge engineering is the process of identifying your business knowledge—the business rules, policies, procedures, preferences, reference information, and requirements that guide the way your organization operates—and then codifying your business knowledge into rules stored in the knowledge base at the heart of the Ascent solutions. Your business knowledge, stored in the knowledge base, determines how the solutions behave. Ascent's knowledge engineers work with you to ensure the solution behaves just as you want it to.

Implementation, integration, and cloud-hosting services. Ascent's implementation team provides system integration and testing services, and develops product extensions, enhancements, and connectivity software for importing data to and exporting data from external systems. Ascent's implementation team also sets up, monitors, and maintains highly secure and reliable AWS hosting environments for the Ascent solutions you rely on, customized to meet your organization's need for redundancy and performance.

Training services. Ascent offers a wide range of user, administrator, trainer, and refresher training classes at your location, at Ascent's Boston, MA, headquarters, and remotely over the web. Ascent also offers operational training services remotely when you begin to use an Ascent solution in production.

Maintenance and support services. Ascent offers maintenance and technical support services for Ascent's solutions around the clock. Ascent provides comprehensive remote support services via telephone, email, web conference, and Internet; software maintenance, such as product updates, patches, and releases; and cloud-hosted environment monitoring, tuning, and switchover. Ascent's web-based ticket system enables you to request service, report problems, track issues day and night, and communicate with the Ascent support team.

Who we are

Since our founding 40 years ago by members of the Massachusetts Institute of Technology Artificial Intelligence Laboratory, Ascent has helped organizations deploy costly resources as efficiently, effectively, and economically as possible. Our highly trained and capable team of technologists, problem solvers, and solution designers has broad domain expertise and substantial experience in artificial intelligence, computer science and engineering, system design, mathematical optimization, operations research, and resource optimization, planning, scheduling, and management. To learn more about how Ascent can help you optimize your resources to greatest advantage, send an email to sales@ascent.com or call our Sales and Marketing team at +1.617.395.4800.

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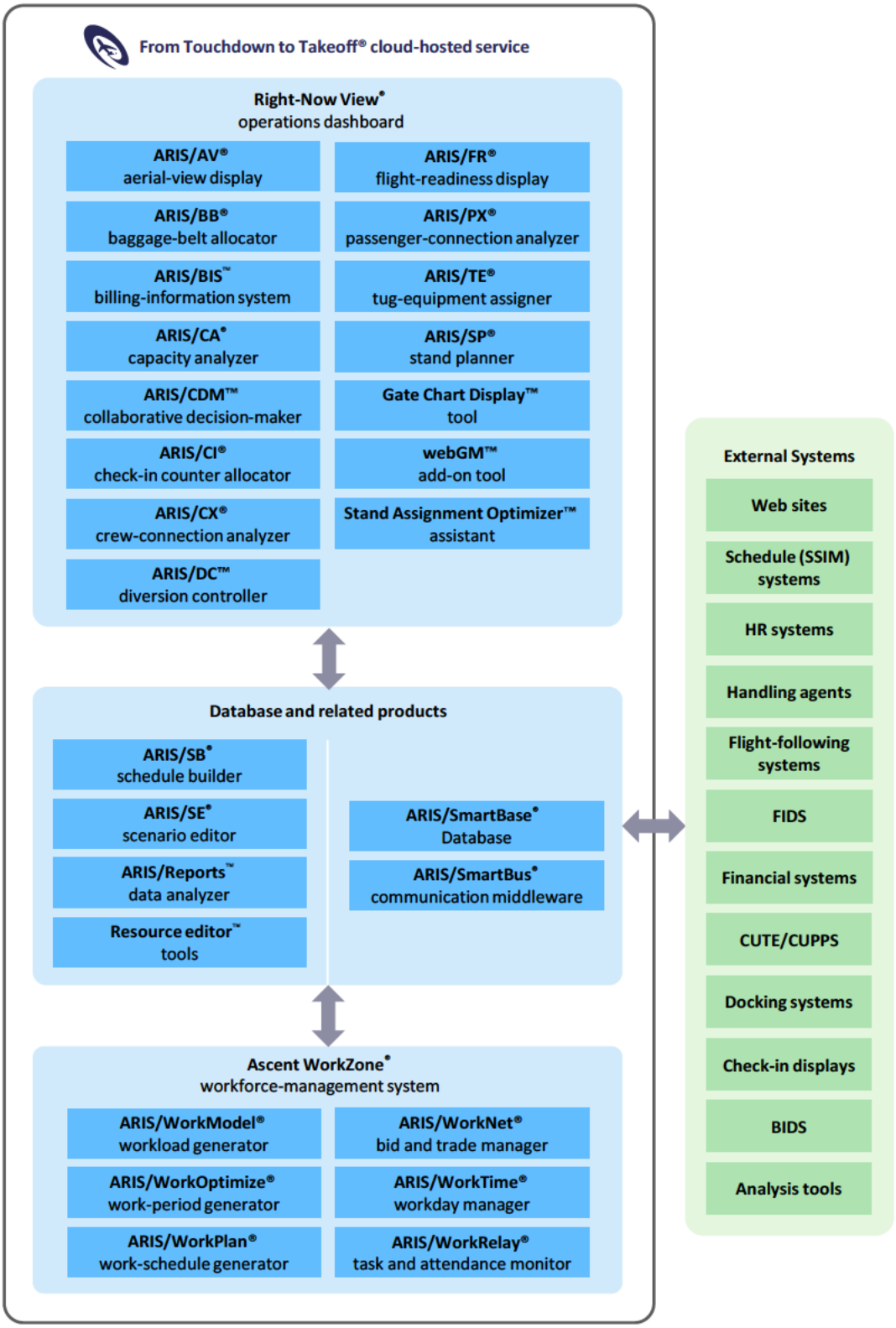
Ascent Resource Information System® solutions



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From Touchdown to Takeoff® cloud-hosted service

Solutions for airline and airport resource optimization, planning, scheduling, and management

A standard web browser, such as the Google Chrome™ browser or the Microsoft Edge™ browser, enables access to Ascent Technology's cloud-hosted solutions. The From Touchdown to Takeoff service requires a minimum resolution of full HD (FHD).

Airport Operational Database (AODB)	Central database
ARIS/SmartBase® database Includes one or more of the following tools:	Integrates, coordinates, disseminates, and maintains planning, operations, and historical information for resource and workforce management
• Location Editor™ tool	Manages the location hierarchy and records used to plan, schedule, and manage workload, workers, and tasks
• Planning Control™ tool	Manages work-schedule planning
• Profile Editor™ tool	Manages passenger-arrival profiles for departure flights
• Reference Editor™ tool	Manages reference-information records that determine how the Ascent Technology products, applications, and tools behave
• Rule Editor™ tool	Manages scenarios, rule groups, and rules for workforce management
• Template Worker Editor™ tool	Manages template worker records used to plan workload
• Update Control™ tool	Manages settings that block external systems from updating information in specified database fields
• User Editor™ tool	Manages user access to the products, applications, and tools
• User Group Editor™ tool	Manages user-group access to pre-set configurations and automated distribution of email and messages
• Worker Editor™ tool	Manages worker-related information and records
ARIS/Reports™ data analyzer	Produces reports based on plan, actual, and historic information
ARIS/SB® schedule builder (with ARIS/LegGen® flight-leg generator and ARIS/SL® schedule loader)	Creates, manages, and distributes flight-schedule and day-of-operation flight information; creates flight legs; and loads and stores SSIM flight data
ARIS/SE® scenario editor	Specifies and manages airport-resource rules and scenarios
ARIS/SmartBus® communication middleware	Enables information exchange between the ARIS/SmartBase database and external systems

Ascent WorkZone® workforce manager	Workforce optimization and management for mission-critical environments
ARIS/WorkModel® workload generator	Forecasts workload based on expected demand
ARIS/WorkNet® bid and trade manager	Worker self-service tool for managing work schedules
ARIS/WorkOptimize® work-period generator	Determines how many workers are needed and when they are needed
ARIS/WorkPlan® work-schedule generator	Creates work lines for full-time and part-time workers
ARIS/WorkRelay® task and attendance monitor	Provides task-assignment information to workers in real time
ARIS/WorkTime® workday manager	Assigns work, breaks, and locations to workers dynamically in real time

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Right-Now View® operations dashboard	Dashboard to plan, schedule, and manage airline and airport resources and operations
ARIS/AV® aerial-view display	Displays real-time aircraft parking-assignment information on an airport aerial view
ARIS/BB® baggage-belt allocator	Plans and allocates baggage make-up and reclaim belts
ARIS/BIS™ billing-information system	Tracks usage-based ground fees
ARIS/CA® capacity analyzer	Plans, analyzes, and manages airport capacity and resources
ARIS/CDM™ collaborative decision-maker	Enables collaborative decision-making with support from Ascent's powerful advanced AI and optimization algorithms
ARIS/CI® check-in counter allocator (with ARIS/IQ® queue manager)	Plans, assigns, and manages ticket counters and kiosks
ARIS/CX® crew-connection analyzer	Shows how flight delays and cancellations affect connecting flight crews
ARIS/DC™ diversion controller	Tracks system-wide flight diversions, providing real-time status of diverted flights to diversion stations
ARIS/FR® flight-readiness display	Provides status of tasks and activities related to arrivals and departures
ARIS/PX® passenger-connection analyzer	Shows how flight delays and cancellations affect connecting passengers
ARIS/SB® schedule builder (with ARIS/LegGen® flight-leg generator and ARIS/SL® schedule loader)	Creates, manages, and distributes flight-schedule and day-of-operation flight information; creates flight legs; and loads and stores SSIM flight data
ARIS/SP® stand planner	Plans parking-position assignments for schedule periods
ARIS/TE® tug-equipment assigner	Manages aircraft tows, assigns tugs to tows, and displays tow status
Gate Chart Display™ tool	Manages day-of-operation parking assignments with manual entry using basic scenarios and rules
Gate Chart Display with webGM™ add-on tool	Plans and manages day-of-operation parking assignments with automated assistance using business rules and intelligent scenarios
Gate Chart Display with webGM add-on tool and Stand Assignment Optimizer™ assistant	Plans and manages day-of-operation parking assignments with automated assistance using business rules and intelligent scenarios, and resolves future parking-assignment problems caused by delays, swaps, and cancellations in compliance with business rules

ARIS, ARIS/AR, ARIS/AV, ARIS/BB, ARIS/CA, ARIS/CI, ARIS/CX, ARIS/FR, ARIS/FW, ARIS/GateView, ARIS/GM, ARIS/IQ, ARIS/PX, ARIS/SA, ARIS/SB, ARIS/SE, ARIS/SL, ARIS/SmartBase, ARIS/SmartBus, ARIS/SP, ARIS/TE, ARIS/Tow Panel, ARIS/WorkModel, ARIS/WorkNet, ARIS/WorkOptimize, ARIS/WorkPlan, ARIS/WorkRelay, ARIS/WorkTime, Ascent Resource Information System, Ascent Technology, Inc. (stylized), Ascent WorkZone, Ascent WorkZone (stylized), From Touchdown to Takeoff, Right-Now View, SmartAirline, SmartAirline Capacity Analyzer, SmartAirline Information Manager, SmartAirline Operations Center, SmartAirline Operations Manager, SmartAirline WorkZone, SmartAirport, SmartAirport Capacity Analyzer, SmartAirport Information Manager, SmartAirport Operations, SmartAirport Operations Center, SmartAirport Operations Manager, SmartAirport WorkZone are registered trademarks of Ascent Technology, Inc., in the United States.

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