About PASSUR

Our mission is to improve global air traffic efficiencies by connecting the world’s aviation professionals onto a single aviation intelligence platform, making PASSUR an essential element in tackling the $30 billion of current system-wide inefficiencies.

We are an aviation intelligence company that makes air travel more predictable, gate-to-gate, by using predictive analytics generated from our own big data to mitigate constraints for airlines and their customers.

The largest connected, global aviation customer network includes thousands of individuals, over 125 airlines, over 60 airports, over 200 business aviation organizations, and the US government.

The largest surveillance and data network of its type in the world includes terabytes of data from sensors, including aircraft, all over the world.

- We’ve been storing flight, airspace, aircraft, and airport data—hundreds of parameters, thousands of updates (every 1.0–4.6 seconds)—for over 10 years, in hundreds of locations.
- We have over 180 company-owned surveillance sensors, covering hundreds of airports and their airspace.
- We integrate and fuse additional data sources—government flight plans, en-route tracking, surface tracking, satellite-based aircraft positional updates, onboard aircraft positional updates, airline flight status data, and airport gate and status data.

Here are a few examples of how PASSUR facilitates data-driven decisions made by our experienced customers, who help make a difference to everyday travel:

1. 53% of all US domestic commercial flights are managed with PASSUR predictive analytics for predicted arrival times by using years of archived data and real-time airspace analysis, allowing airlines and airports to always be ready for the aircraft. This capability reduces gate “unmet,” helping connections of people, crew, and bags, and getting the plane ready for its next departure. (If not, passengers are more likely to wait at the gate for the door to open, bags don’t get to their destination, or connections are missed.) This single capability could save one airline over $15 million each year.

2. We maximize airspace, runways, and gate usage by using predictive analytics to determine how airports should be configured to get the most out of their capacity. (If not, decisions are less likely to be data driven but instead based on experience only, resulting in fewer planes landing during busy times of the day.) This single capability could save one airline over $12 million each year.

3. We help airlines, airports, and air traffic control prioritize departures to maximize capacity and minimize delays by helping to ensure that all three stakeholders work in unison with the most accurate, timely information. (If not, departures push back from the gate whenever they’re ready, creating blocked gates and extended taxi delays.) This single capability could save one airport and its airlines over $15 million each year.
Airports today are expected to be full partners with all other key aviation stakeholders in order to:

- Ensure a disruption-free, predictable, safe, and environmentally responsible flight experience for passengers.
- Provide a cost-effective operating environment that contributes to profitable growth for airlines.
- Respond to and mitigate major onboard delays and passenger terminal congestion caused by diversions, cancellations, weather events, and other incidents.
- Capture all revenues from all flights; assure their airline partners that fees are levied fairly, transparently, and efficiently; and explore new avenues of activity-based revenue.

The surface operation of an airport is one of the single biggest opportunities for gains in efficiencies, cost control, passenger experience and goodwill, and environmental stewardship. PASSUR’s airport solutions enable airports to embrace this opportunity fully, confidently, and proactively.

- **PASSUR Integrated Traffic Management (PITM)**
  (including Surface Management, Surface Metering and Sequencing, Flight Predictability, and Diversion Management)
  Lets airports manage their operation systemically, as part of an integrated flight lifecycle and an integrated national system, on the same operating platform used by the major airlines.

- **PASSUR Airport Connectivity and Collaboration**
  Allows airports to become full partners in the daily management of the national airspace, linking an individual airport to hundreds of other airports and airlines in real time.

- **PASSUR Integrated Fee Management (PIFM)**
  Gives airports and airlines the assurance that all billable weight is being captured, that the cost of the airfield is being distributed fairly and equitably, and that the process is transparent, automated, and standardized.

- **PASSUR Airport Environmental Compliance**
  Allows airports to fulfill their obligation to be good neighbors by allowing them to take the lead on noise and emissions reduction initiatives.
SUMMARY
Surface constraints and bottlenecks are costly in terms of fuel burn, emissions, schedule integrity, and passenger goodwill. In emergency situations (severe weather, accidents, security incidents), the airport surface requires maximum visibility and status updates from the airport operator to its key stakeholders. PASSUR Surface Management provides critical situational awareness, visibility, alerts, and decision support—enabling the airport to keep its stakeholders aware of the status of the operation and availability of key resources.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
PASSUR Surface Management improves the efficiency and safety of operations through situational awareness, complete surface surveillance, and decision support.

WHAT MAKES IT UNIQUE
PASSUR Surface Management is seamlessly integrated with terminal and en-route flight tracking for true gate-to-gate flight and airspace visualization—including affordable, high-reliability surface surveillance tailored for the commercial requirements of airlines and airports, not the safety requirements of Air Navigation Service Providers (ANSPs). Beyond flight tracks, it includes dashboards of key performance metrics, information tables, alerts, and predictive analytics to enable true “management by exception.”

KEY METRICS IMPROVED
DOT tarmac delays and optimized diversion management
- Fewer long-onboard delays (tarmac delays)
- Reduced risk of DOT three-hour and four-hour fines
- Accommodate diversions quickly with available gates

Emergency support
- Status of runways, taxiways, aircraft, and airport vehicles
- Availability of gates and remote parking

Maximizing use of existing infrastructure
- Track the efficiency of surface transit times; pinpoint areas that are creating bottlenecks
- Track airport infrastructure and resource usage (runways, taxiways, alleyways, ramps, throats, gates, remote parking, etc.) in relation to use and lease agreements, investment decisions, and maximizing the use of existing infrastructure

Gate availability and gate management
- Fewer gate holds
- Lower fuel burn/carbon emissions
- Better bag/passenger connections
- Fewer obstructed pushbacks
- Improved on-time performance

Deice dwell time
- Fewer minutes spent in deice queue (into deice pad and after deicing)
- Reduced risk of secondary deicing
- Fewer delay minutes on departure
- Reduced fuel burn related to deice queue (pre and post)

WHAT THE AIRPORT WILL DO DIFFERENTLY
Airports can proactively help manage some of the most disruptive operations, including extended onboard tarmac delays and diversions. Airports that directly manage gates and/or ramps will have visibility into gate occupancy, availability, and use—in real time and for planning and analysis. And in critical situations, like severe weather, accidents, and security incidents, airport operators will have heightened situational awareness and decision support/response capabilities.

INDUSTRY USE
- 60% of daily flights at airports with surface tracking are managed on PASSUR Surface Management.
- 12 major North American airports manage surface operations on the PASSUR platform.

SNAPSHOT CASE STUDIES
Seasonal benefits, first winter of PASSUR Surface Management at two major US airports:
- $2.7 million savings to the airlines from:
  - Reduced secondary deicing
  - Reduced fuel burn
  - Fewer diversions

At-a-glance view of key airport and terminal airspace metrics, allowing on-the-fly changes to optimize unused capacity—reducing delays and taxi-out fuel burn, and prioritizing high-value flights.
SUMMARY
Uncoordinated arrival and departure sequencing at constrained airports with today's "first-come, first-served" policy creates unacceptable delays and disruptions, and ignores airline and airport business objectives. PASSUR Surface Metering and Sequencing enables airports to maximize the use of existing resources and demonstrate proactive, forward-thinking management of the operation on behalf of airlines and travelers.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
PASSUR Surface Metering and Sequencing allows airlines and airports to prioritize high-value flights, reduce the number of aircraft waiting to take off, and order arrivals and departures to most efficiently use gates.

WHAT MAKES IT UNIQUE
With the most deployments in the most diverse number of configurations in North America, PASSUR has led the industry in the development of departure metering and sequencing solutions designed to optimize commercial operational and business priorities. PASSUR solutions offer unmatched accuracy in forecasting demand and capacity, ensuring that the metering and sequencing programs are optimized for anticipated conditions.

KEY METRICS IMPROVED
- Schedule integrity for high-value flights
- Fewer minutes of delay
- Fewer minutes of taxi-out fuel burn
- Lower fuel costs and emissions
- Reduced risk of DOT tarmac delay fines

Deice dwell time
- Fewer minutes spent in deice queue (into deice pad and after deicing)
- Less secondary deicing
- Fewer delay minutes on departure
- Reduced fuel burn related to deice queue (pre and post)

WHAT THE AIRPORT WILL DO DIFFERENTLY
Typically, airports are the sponsoring organizations for airport-wide metering programs. These programs range from simply providing the license to the service, to actively participating in aspects of the metering program (e.g., monitoring performance), to actively managing the slot program itself.

WHAT THE AIRLINES WILL DO DIFFERENTLY
Using PASSUR’s collaborative metering and sequencing software, airlines can coordinate with air traffic control (ATC), ground operations, and all other airlines to maximize the available gate, ramp, runway, and departure fix capacity.

INDUSTRY USE
This program, pioneered by PASSUR in North America, is now in use at several of the largest North American airports.

SNAPSHOT CASE STUDIES
Annual benefits from PASSUR Departure Metering at a major US airport:
- 14,800 hours total reduced taxi time
- $11 million savings in fuel costs
- 48,000 tons reduced emissions
SUMMARY
Many types of complex, expensive operations—like diversions or severe weather events, accidents and security incidents, or planned large movements—can only be managed if the key stakeholders are communicating and collaborating in real time, using the most up-to-date common operating platform. PASSUR Airport Connectivity and Collaboration ensures that the airport’s voice, input, and perspective are reflected in the management of the national airspace.

PASSUR’s solution addresses one of the key missing pieces in connectivity and collaboration: the two-way flow of accurate, timely, and complete information between airport operators and airlines.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
The PASSUR Airport Connectivity and Collaboration platform allows airports to communicate and coordinate with airlines and other key stakeholders to ensure that operations are optimized with airport-critical information that is otherwise unavailable.

WHAT MAKES IT UNIQUE
Airports provide detailed updates on airfield, terminal, and other information not communicated in traditional NOTAMs from a single platform that reaches all key stakeholders worldwide—and receive updates from their airline stakeholders on the same platform from one authoritative source. No other single platform unites all key stakeholders in real time with the same breadth of information, timeliness, and industry adoption.

KEY METRICS IMPROVED
- Timeliness of airfield and airline updates
- Reduced tarmac delay fines and incidents
- Operational metrics directly affected by the lack of timely updates, including:
  - Secondary/repeat deicing
  - Delays or cancellations at the upline airport
  - Diversions

WHAT THE AIRPORT WILL DO DIFFERENTLY
Airports update all stakeholders from a single entry point on the PASSUR platform, both NOTAM and non-NOTAM information.

INDUSTRY USE
This program, pioneered by PASSUR in North America, is now in use at 26 airports. A more basic version of the program is used by an additional 75 North American airports. The platform is also the conduit for collaboration and coordination with 125 worldwide airlines through the IATA help desk at the FAA command center.

SNAPSHOT CASE STUDIES
- During the Chicago ATC fire of 2014, diversion management was coordinated with the airlines on the PASSUR platform in real time. As a result, although there were 89 diversions from ORD, they were spread out among 34 airports—and no single airport received more than 11% of the diversion total.
- Airports received the first alert of that event on the PASSUR platform—before any other official source.
- Minneapolis–St. Paul (MSP) reported reducing multiple, repeat outbound communications by 66% during large weather events in the first year of implementing the program.
**SUMMARY**
Inaccurate Flight Predictability (Estimated Times of Arrival/ETAs and Estimated Times of Departure/ETDs) lead to poor connections for passengers, baggage, and crews; inefficient use of aircraft and gates; and poor turn-time performance. The PASSUR ETA provides the industry’s most accurate gate-to-gate flight arrival predictions, allowing an entire airport system to optimize all existing business and operational processes, no matter what the weather.

**HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM**
Airports and airlines today integrate the PASSUR ETA into their key operational systems, including flight, gate, reservation, and baggage systems—as well as their passenger-facing websites.

**WHAT MAKES IT UNIQUE**
The PASSUR ETA is based on proprietary algorithms, fed by multiple data sources in real time, including live and historical flight position and airspace performance information from the network of PASSUR surveillance systems.

**KEY METRICS IMPROVED**
- Flight information display systems
- Staffing and readiness, especially Customs and Border Protection (CBP) for international arrivals
- Passenger, bag, and crew connections
- Number of gate holds/gate unmets
- Gate swaps
- Timely arrivals of “Meeters and Greeters” at the terminal

**WHAT THE AIRPORT WILL DO DIFFERENTLY**
All of the airport’s existing processes, workflows, and systems that depend on ETAs are optimized—with no training required and no new software to learn.

**INDUSTRY USE**
Over 50% of US passengers know exactly what time they’re arriving at an airport because their airline runs on the PASSUR ETA.

**SNAPSHOT CASE STUDIES**
- More than 10 internal airline studies have independently validated the PASSUR ETA as the most accurate platform available over any other source.
- A major US airline reduced the number of “unmet aircraft” (aircraft that arrive at the gate with no service teams to deplane them) at its largest hub from more than 12 per day to essentially zero.
- An airline hub director reported that his entire operation was running more optimally immediately upon implementation of the PASSUR ETA.

**FLIGHT PREDICTABILITY**
The unique PASSUR Extended Estimated Time of Arrival (XETA) powers PASSUR Flight Status Monitor (P-FSM)—true inbound demand to determine the exact adjustments needed to preserve schedule integrity, prioritize high-value flights, and proactively manage connections (and reduce congestion, disruptions, delay minutes, cancellations, and diversions).
Diversion Management

SUMMARY

- Diversions are an expensive, chronic, and disruptive element of flight operations, costing US carriers at least $300 million annually for domestic flights alone.* With the PASSUR Diversion Management solution, airports are proactively notified of holding and diversions—status, location, duration—in advance of any other source, so they can proactively manage the customer, operations, and regulatory demands triggered by diversions.
- A diversion is not a single, discrete event but rather a set of cascading actions that cause severe disruptions to airline schedules, major costs, and significant passenger frustration and ill will.
- PASSUR’s solution provides the unique capability of alerting to airborne holding as soon as it begins—information previously unavailable to dispatchers, ATC coordinators, and flight crews—enabling a range of preventive/proactive decisions to minimize the impact of holds.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM

PASSUR’s independent tracking, alerting, and statusing of holding and diversions enables airports to be proactive when preparing to accommodate diversions to the airport to prevent extended onboard tarmac delays, facilitate quick diversion turnaround and recovery, and prepare staffing and other resources for flights that were diverted from the facility and recovered back to the original destination.

WHAT MAKES IT UNIQUE

PASSUR’s Diversion Management program is part of an integrated suite that reduces costs and constraints gate-to-gate, powered by the largest commercial traffic management surveillance network in the world. It provides the data granularity, completeness, and precision needed to create predictive, real-time, and postoperational visibility into diversions.

KEY METRICS IMPROVED

- Long onboard tarmac delays
- Diversion turn
- Diversion recovery

WHAT THE AIRPORT WILL DO DIFFERENTLY

- Prepare for inbound diversions
- Help to handle landed diversions expeditiously
- Prepare Customs and Border Protection (CBP), terminal facilities, ground transportation, and others
  - Staffing and infrastructure resources
- Alert stakeholders to diversion capacity and current status

* Derived from industry benchmark cost ranges for narrow-body domestic diversions only; based on DOT ASQP annual reported diversions from top 10 US carriers, US to US diversions only.

ELEMENTS OF THE SOLUTION

- Diversion Management module
- Tarmac Delay Management module
- Surface Management module
- Connectivity and Collaboration platform

INDUSTRY USE

- This solution is used by airlines to manage holdings and diversions for 25% of the flights in the NAS (and increasing).
- 12 major North American airports manage surface operations on the PASSUR platform.
- 100+ airports manage major events and disruptions on the PASSUR Connectivity and Collaboration platform.

SNAPSHOT CASE STUDIES

- During the Chicago ATC fire of 2014, Diversion Management was coordinated on the PASSUR platform with the airlines in real time. As a result, although there were 89 diversions from ORD, they were spread out among 34 airports—and no single airport received more than 11% of the diversion total.
- A major Northeastern airport that uses PASSUR Diversion Management reports that it regularly receives alerts to inbound diversions in advance of FAA flight plan changes or airline advisories.

Prevent or optimize diversions, reduce fuel burn, and stay ahead of upcoming congestion and delays through a unique dashboard that monitors and notifies airports of holding and diversion activity nationwide.
SUMMARY
Landing fees can represent over 20% of an airport’s annual revenue, yet PASSUR audits of more than 20 airports show that between 1% and 4% of their landed weight annually remains uncollected. The PASSUR Integrated Fee Management program provides assurance and validation that all fees owed are being captured and assigned to the right airlines through a completely independent, data-driven, detailed review of all operational activity that makes up the airport’s landing fee revenue.

- When airports do not collect all of the landed, billable weight, the reporting airlines collectively pay more to make up the difference.
- For airports, the program provides faster revenue capture, fiduciary accountability, revenue predictability, and more efficient and fair service to airline stakeholders.
- For airlines, the program ensures that they pay only their fair share and nothing more; that their individual fees could go down while the airport collects all that is owed; and that the time and effort required to manage their fees are reduced.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
PASSUR’s solution provides unique data independence, accuracy, and reliability—combined with proven reporting, audit, and billing services—to give airports and airlines the assurance that all billable weight is being captured, that the cost of the airfield is being distributed fairly and equitably, and that the process is transparent, automated, and standardized.

WHAT MAKES IT UNIQUE
- Independent data, with tail number captured per flight, from PASSUR's proprietary fused flight, airport, and airspace surveillance network and databases
- Years of historical information about flight and fleet activity
- Proven, mature, and evolved data processing, reporting, and fee management tools

KEY METRICS IMPROVED
- Complete capture of billable weight
- Reduction in total landing fee costs to individual airlines
- Fewer and smaller midyear corrections, revisions, and “true-ups”
- Quicker and more timely fee collection

WHAT THE AIRPORT WILL DO DIFFERENTLY
- Eliminate reliance on airline “self-reported” landed weights each month
- Post a standardized, automated monthly landing fee statement for each carrier online
- Complete and issue invoices for landing fees within the first few days of the month

WHAT THE AIRLINES WILL DO DIFFERENTLY
- Use the same standardized, automated system at all airports
- Reduce the frequency and magnitude of revised payments due to “true-ups”
- Pay only their fair share, while ensuring all others are paying theirs
- Stop submitting landing counts and landed weight self-reports

INDUSTRY USE
- More than 36 airports currently use the PASSUR Integrated Fee Management program, representing over $1 billion in landing fees managed on the platform.
- System-wide, an average of 33% of all daily scheduled landings are managed on the PASSUR platform.

SNAPSHOT CASE STUDIES
- PASSUR audits of 22 airports showed that they capture 1%–4% more landed weight using the PASSUR solution compared to their current processes, which translates directly into a 1%–4% reduction in landing fees paid by airlines.
- One mid-sized Midwestern airport audit showed a weight capture loss in two months totaling $157,000 (1.7%) in landing fees—primarily from diversions and non-scheduled activity.
- One mid-sized West Coast airport showed it had missed billing 780 flights over two months, primarily cargo and charter, resulting in a landing shortfall of 5%.
Environmental Compliance

SUMMARY
To comply with noise abatement requirements and address the growing demand for reduced greenhouse gas emissions, airports need access to an unprecedented volume, quality, and timeliness of flight, airspace, and airport surface operations data and a whole new range of solutions. PASSUR noise abatement data solutions, used by the leading noise operations monitoring system providers and dozens of airports, offer the industry’s only independent source of accurate, detailed, and reliable flight, airport surface, and airspace data.

PASSUR’s surface management programs—throughput optimization, chokepoint analysis, and departure metering and sequencing—provide proven emissions reduction solutions.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
Independent data, unique data fusion and processing, and the industry’s leading surface taxi-queue optimization programs and tools enable airports to meet and exceed expectations for noise abatement and emissions reduction.

WHAT MAKES IT UNIQUE
Independent data from PASSUR’s proprietary fused flight, airport, and airspace surveillance network and databases, with tail number captured per flight, provides granularity, precision, and accuracy to support the stringent demands of noise abatement programs. PASSUR’s unique arrival and departure flow rate predictions, along with airport configuration predictions, enable airports to select the optimal rate for surface management programs to ensure the shortest possible taxi queues and lowest fuel burn.

KEY METRICS IMPROVED
- Noise compliance, including enforcement of runway usage rules and guidelines
- Accurate response to public noise inquiries
- Reduced carbon emissions
- Shorter taxi queues

WHAT THE AIRPORT WILL DO DIFFERENTLY
- Manage public expectations, complaints, and presentations with the most accurate information
- Dispel erroneous claims of noise violations through superior data, allowing airports to focus on actual noise issues
- Contribute proactively to reduced greenhouse gas emissions

INDUSTRY USE
- 22 airports use PASSUR data feeds in their noise operations management systems.
- With the most deployments in North America in the most diverse number of configurations, PASSUR has led the industry in the development of departure metering and sequencing solutions designed to optimize commercial operational and business priorities.

SNAPSHOT CASE STUDIES
- In an independent study at one major Northeast airport, the PASSUR Surface Departure Metering program was shown to reduce greenhouse gas emissions by 48,000 tons annually.

MIT STUDY FINDINGS:
48,000 Fewer Metric Tons of CO₂ from Departure Metering
PASSUR Intelligent Query (P-IQ)

SUMMARY
Airlines and airports have multiple opportunities to adjust their plans by making different decisions and choices throughout the day to ensure that their operation is delivering the greatest efficiencies, revenue, and cost savings.

PASSUR Intelligent Query (P-IQ) enables airlines and airports to segment their most important operational objectives, and then automatically alerts and notifies them to actions they can take to achieve their goals.

HOW PASSUR SOLUTIONS HELP TO ADDRESS THE PROBLEM
P-IQ allows users to extract from a mass of data a set of clear options to make a different decision that will have a measurable impact on specific priorities, like on time departures, connections, or deice times (among many others).

It is a capability that automates and streamlines opportunities for efficiency gains, revenue optimization, and cost savings on a daily basis. In the past these opportunities were hidden from view because neither the data nor the query capability nor the alerting platform was available to the end user.

WHAT MAKES IT UNIQUE
- PASSUR’s Flight, Airport, and Airspace databases, together with the fusion of PASSUR’s Air and Surface Radars, customer data, FAA data, and multiple additional industry data sources. There is no comparable database or capability.
- The PASSUR Aviation Intelligence Center of Excellence—our team of subject matter experts with extensive backgrounds in airline, airport, ATC, and business aviation operations. These team members have created a rich baseline of “save scenarios” within the P-IQ tool, based on their detailed knowledge of the industry and of the National Air Space.
- PASSUR’s team is also available to work with customers to expand on the baseline scenarios to quickly identify new, specific metrics appropriate to each customer’s needs.
- The P-IQ software fuses the unique PASSUR data and subject matter expertise into a powerful new engine that enables and prompts the user to identify multiple new metrics that represent efficiency and cost saving opportunities.

KEY METRICS IMPROVED
The first version of P-IQ is focused on Surface Management metrics and opportunities, including:
- Preserving on-time scores, such as reportable DOT metrics like A14/D0
- Optimizing delay programs (opportunities to prioritize one delayed flight over another, “SWAP Opportunities”)
- Optimizing turn times (by resolving gate conflicts)
- Prioritizing departure sequences (through notifications of flight “ready state”)
- Deconflict surface bottlenecks (through notifications of deice queues and extended taxi times)

Future releases will include, among others, opportunities to:
- Optimize fuel costs (e.g., tankering opportunities)
- Preserve connections (bags, passengers, crew)
- Avoid crew timeouts (FAA Crew Rest notifications)
- Streamline weight and balance closeout

WHAT THE AIRLINE WILL DO DIFFERENTLY
Airlines will be able to identify opportunities for optimization related to specific flights throughout the day, which correspond to their specific operational and business priorities. For example, users will be alerted to lists of flights that are at risk of missing A14 or D0, but can be managed to preserve their on-time status.

P-IQ allows the user to access pre-set metrics designed by PASSUR’s subject matter experts (in consultation with our customers), to create lists of flights that meet specific windows of opportunity to take action to achieve a desired operational objective.
Features and functionality may change based on new requirements. PASSUR invests continuously in research and development and intellectual property, which is reflected in an active patent program. A list of awarded patents can be found on www.passur.com.

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