Dallas Fort Worth Int’l Improves Diversion Process with New Software
Plagued by the frequent need to divert flights due to severe weather, Dallas/Fort Worth International Airport (DFW) recently harnessed the collective brain power of the North Texas Irregular Operations Network to improve timeliness and predictability for passengers.

The network, which includes all 23 airports in the DFW diversion area, developed a plan to ensure communication, coordination and collaboration between DFW and its diversion airports, airlines and government agencies. The primary goal: to address and mitigate the effects of diversions on passengers. An important part of the strategy was to get all of the airports on the same technology platform to help them make decisions as early in the process as possible.

Leaders at DFW created an internal Irregular Operations Committee, comprised of stakeholders from various sectors. Together, they applied predictive weather software to better understand the convective weather patterns that disrupt operations, and devised plans to prepare for them. The data DFW needed existed, but it was in disparate systems. The team found that when it came to diversions, they didn’t have the right tool to communicate all of the variables with the other airports in the North Texas system in real-time.

“One airport might have as many aircraft and passengers as it can handle, and the pilots wouldn’t know it until they were already on the ground,” says DFW Vice President of Operations Paul Sichko.

While many airports welcome diversions from a revenue standpoint due to added landing fees, concessions sales, gate fees and more, they all want to provide the best service for inbound passengers. And that means operating within their capacity.

“When passengers are diverted, they are still DFW customers,” says Sichko. “We don’t want to overload any of our diversion airports, and we want to make sure all passengers are cared for. Our goal is to spread out diversions for more efficient recovery.”

Rose Agnew, an irregular operations specialist with Aviation Innovations, was working with DFW when Sichko arrived to lead the team; but he already knew Agnew from his 25+ years at Minneapolis-Saint Paul International Airport (MSP). DFW engaged Aviation Innovations to create an effective strategy to plan for diversions and meet Department of Transportation regulations.
The project team was looking for an enhanced communication system and approached PASSUR Aerospace, which was already operating at DFW with software to help manage landing fees. PASSUR offered a collaborative information exchange platform called Airport Communicator, and DFW was intrigued by its chat room, in which airports, airlines, the National Weather Service, and air traffic can all talk to each other.

The team asked PASSUR if it could develop a visual/graphic tool based on the chat room concept in Communicator to help manage diversions and provide reliable diversion management predictive analytics. In turn, the company developed DFW’s idea into a system called Regional Diversion Manager.

“The DFW team felt it was important to take a leadership role and give their passengers the best possible travel experience,” says PASSUR Senior Vice President Douglas Hofsass. “They’re on the leading edge of collaboration with their diversion airports...What makes this different from other approaches is that the main airport (DFW), the airlines and each of the 23 reliever airports have a window into real-time status and collaborate with each other in advance of, during and after irregular operation events.”

**Improving Customer Service**

Before the new system was in place, four of DFW’s 23 possible diversion airports were frequently receiving 50% of its diversions, explains Hofsass. “Part of what was happening was that the airlines and crews were comfortable with specific airports. Based on their fuel capacity, the airlines sent the diversions to the carriers’ preferred airports first. The problem, then, is if other airlines are diverting to that same airport, they can overtax the facility,” he elaborates. “So, if you’re a dispatcher, you can see that one airport has run out of gates and is operating with only four fuel trucks.

And you might look at another airport and find there is plenty of capacity and staff there instead. Now, the airports are constantly updating their respective status so the route planners can see where to optimally divert.”

The Regional Diversion Manager software identifies holdings, diversions in progress and diverted flights from all operators, and also updates the remaining service capacity for each diversion airport.

“The most important aspects are active stakeholder participation and data sharing in real time—executed in a way that everyone benefits,” summarizes Hofsass. “DFW is looking out for its customers. During irregular operations, passengers experience minimal disruption and get to Dallas in a thoughtful way.”

The system uses PASSUR Air Traffic Management automation as a base, supplemented by user updates on mobile devices. As a result, stakeholders stay abreast of new information and have the ability to communicate in real time. Information is visually organized on a graphic web dashboard for live, collaborative coordination.

One can imagine the snare of information that must be untangled across the system when a diversion is in progress. While airports often look forward to taking a diversion, they know that if they don’t have the resources or facilities to handle it, the event will not reflect well on them, explains Hofsass. The new system helps airports determine their readiness and meet regulatory concerns.

“When an aircraft is diverted to an alternate airport, there are revenue and customer advocacy components to consider: fuel, concessions, landing fees, etc. Having a better distribution allows the diversion airports to equalize the revenue and provide good service,” he relates. “In the past, when the airports received too many diversions, they would run out of gates and equipment, and they could not serve the customers properly. Now, operational decision makers can divide total diversion demand among all available regional airports.”

As the system uses advanced data processing and traffic management automation to manage diversions, airports in the North Texas Irregular Operations Network update their capabilities to service diversions accordingly.

“We partner with the air carriers so we know where its assets are—aircraft, crew and passengers—and do our best to get them back here,” says Sichko. “We try to minimize the number of passengers spending the night at diversion airports and safely get people to their destination and as quickly as possible.”

Hofsass considers the new system a great example of collaborative decision making.
A Perfect Storm for Diversion Management

April 2012 is a time that Dallas/Fort Worth International Airport (DFW) would like to forget. That month, heavy storms—some including baseball-sized hail—caused a record 800 flight cancellations and 550 delays.

In 2016, DFW was number nine on the Weather Channel’s annual top 10 list of most weather-delayed U.S. airports (a dubious distinction it has since shaken). In short, the entire metroplex area is highly prone to slow-moving thunderstorms—especially during the summer.

Spring is no picnic either, because that is when convective activity spikes. Convection is the circular motion that occurs when warmer air rises, and cooler air drops. The sun heats up the surface of the earth, and cooler air meets it, creating an upward current. The result can be wind, clouds, storms and other inclement weather.

Not surprisingly, all that bad weather wreaks havoc on the DFW’s schedule. “We’re at a frontal boundary that is conducive to thunderstorms in Oklahoma and Texas,” explains Vice President of Operations Paul Sichko. “There are more diversions from DFW than any other airport in the U.S.”

While some of DFW’s diversions are caused by medical emergencies, mechanical malfunctions or even security concerns, the vast majority are due to the region’s stormy weather.

making: a shared common operating platform with real-time data and informational updates that are actionable in the process. It’s not isolated to a specific group of stakeholders, but open to the community, he explains.

Group Effort

When there is a high probability for an irregular operations event, the PASSUR system begins to generate a plan as soon as flights are identified as likely candidates for diversions. The operations team monitoring the dashboard will know precisely which aircraft is arriving and when, because the system has identified and managed it.

“The new process helps keep things organized,” says Fabio Spino, chief financial officer at Tulsa International Airport (TUL). “Because we have a maintenance base here for American Airlines, we get a lot of diversions, and it allows us to track when we can expect a larger number of aircraft to arrive. It really helps us keep track of emergency situations.”

FAA regulations mandate that before an aircraft departs, a primary and secondary diversion airport must be designated by the carrier. If either changes, personnel at each end must concur. Sichko offers the following example to explain why: American might know it can put eight planes into TUL easily. But Delta might also think it can send several more, comfortably. However, too many airplanes at one diversion site are not manageable.

“This system provides a visual dashboard,” he remarks. “The minute air traffic control changes the destination of the airplane, it counts the number of aircraft on their way to that destination, and indicates in green, yellow and red which sites are available to provide the best service to inbound passengers.

“Now, we can discern the location of aircraft both airborne and on the ground,” he continues. “When an aircraft is approaching the airfield, the FAA would put it in a holding pattern so we had an estimated time of arrival; but we didn’t really know where it was. Regional Diversion Manager allows us to track an aircraft in a holding pattern. We even know its altitude.”

Sichko considers the new system a “living program” and leads an annual meeting of airport and airlines stakeholders to discover how they can improve it. They also have weekly teleconferences. Ideas generated in the meetings are often developed by PASSUR into program upgrades.

Currently, the DFW team is measuring the impact of the new system with multiple metrics: flights recovered, recovery time, number of aircraft that remain overnight, cancelled flights, etc. But above all, passenger safety comes first. Coordinating several different airports, operating philosophies and strategies requires a bit of a culture shift; but all members of the North Texas Irregular Operations Network have put aside their competitive nature for the greater good.

“We have always tried to go above and beyond for any aircraft that lands here,” says Spino. “From a customer service standpoint, a little more notice allows an airport to better organize its staff.”