The Technical Side:
The Connected Strategy

With the advent of modern tablets and smart phones, along with numerous fantastic flight planning apps, it's only natural that pilots are wanting some wireless connection between those devices and the modern cockpit. Although simple in concept, there were some significant technical and certification challenges to accomplish this. The terrific news is now there are numerous manufacturers who offer a Connected Cockpit and these add tremendous value to the pilot (and in some cases the mechanic).

Aspen Avionics was first with the "connected panel" concept introduced in 2011, about a year after the original iPad hit the market, as a technology platform that would allow pilots to set up a wireless 2-way connection between your favorite iPad app and the certified avionics in your panel.

The concept got off to a slow start, but thanks to new avionics developments from the majority of avionics manufacturers, this technology is now incorporated into most new avionics upgrades and is available in just about every new airplane coming off the line today.

When first introduced, the connected systems allowed you to keep your active flight plans in sync between your iPad and GPS in the panel, eliminating the need to enter it twice before takeoff, or modify it in two locations while enroute. As the technology evolved, and ADS-B transponders became the new norm, the systems added the ability to wirelessly transmit ADS-B weather and traffic info from the

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panel to compatible iPad apps as well. Engine management and satellite communication can now also be accomplished via the tablet.

There are lots of hardware/app configuration options currently available, and we will highlight a few significant ones here.

Garmin:

Garmin's connected panel systems have grown considerably in recent years, and the fact that they're compatible with both the Garmin Pilot app and ForeFlight has attracted a lot of interest from iPad pilots.

The Flight Stream 510 is the hub and is a tiny MultiMediaCard that creates a wireless bridge between Garmin Pilot and Garmin panel-mount avionics, enabling flight plan transfer, GPS position, ADS-B weather, engine data, traffic, and satellite communications all displayed on an iPad. It is compatible with GTN 650/750, G500/G600, G1000 NXi and G3000. Most significantly, the powerful little card also allows pilots to wirelessly (and quickly) update databases on panel-mount GPSs like the GTN 650/750. Garmin calls it their "Database Concierge" and it's worthy of that name. It eliminates the need of removing cards and taking them home every month to update. The update happens in the background and cross fills to all the other Garmin devices on the internal data highway.

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All flight and engine data is also pushed up to the cloud via the portable device and the flight can be analyzed offline at any time. Garmin Pilot supports both iOS and Android platforms.
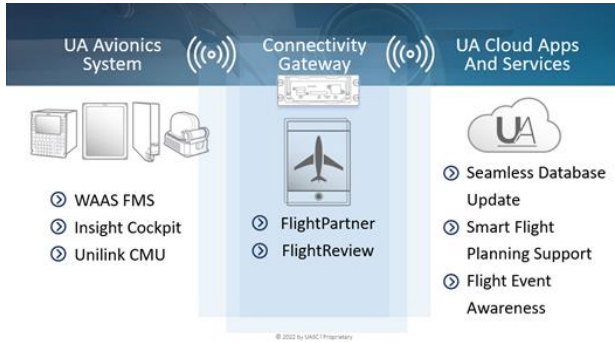
Universal Avionics (UA):

Universal's Connectivity Ecosystem is designed to bring UA Customers a connected, open and data rich environment enabled by Flight Operations, Maintenance and Avionics life cycle support applications. Hosted on an iPad and initially connected to Universal's WAAS / SBAS enabled Flight Management System (FMS) by introducing Wi-Fi enablement of their SSDTU+ module, these applications make comprehensive two-way interactions between the FMS and the apps possible, and the same communication can be enabled between the tablet and UA's cloud-based infrastructure for data analytics.

Flight Partner™ and Flight Review™, represent the first step in UA's goal of creating a Connectivity enabled Ecosystem across its avionics solutions.

- FLIGHTPARTNER supports weather-driven smart flight planning, two-way flight plan exchange with UA's FMS in all phases of flight.
- FLIGHTREVIEW delivers flight performance and safety-related event reporting and insights based on accumulated FMS/ FDR data.

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Collins Aerospace:

Collins introduced their ARINCDirectSM connected flight support services to simplify preparation and reduce crew workload before, during, and after the trip. Using their own iPad application ARINCDirectSM supports the following features:

- Review, file, and adjust flight plans
- Update PIC, SIC, and persons on board
- Access weather and NOTAMs
- Receive flight notifications
- Track active flights
- Secure and private flight debrief for pilots

Summary:

We all know that every mission starts long before you arrive at the aircraft, the ability to check the weather, flight plan and file and then once you arrive at the aircraft, transfer this all up to the FMS cannot be overstated in its value. Once back on the ground and in the comfort of your home, you can do a thorough flight analysis. You and/or the mechanic can do engine trend analysis to catch problems

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early. Finally, ridding yourself of the painful process and updating data cards every month can simplified to a single tap on your FMS. This Connected Strategy makes our jobs less stressful, eliminates human entry errors, and provides a seamless pipeline between time in the cockpit and at home.