

Reconfiguring Avionics Support

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Airlines counter obsolescence in flexible support solutions.

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Avionics support is changing as airlines take delivery of new aircraft with the latest digital avionics while continuing to deal, in many cases, with the older systems on the legacy equipment they continue to fly. And, as new-generation avionics become increasingly sophisticated, the OEMs are less likely to make highly proprietary data available to their customers, making repairs outside the OEM service network less of an option.

At the same time, OEMs are facing their own challenges with respect to life-cycle support because off-the-shelf maintenance support templates can no longer comply with each airline's specific operational requirements.

“It may take several vendors, now, to provide all of the required software and other equipment in order to configure an airplane for RNP (required navigation performance) operations,” says Randy Reeves, [Southwest Airlines](#) ' manager of avionics engineering. "As a result, it is the airline that needs to be the watchdog for a system of this kind, and that makes it impractical for an outside vendor to provide total oversight."

He adds that an additional layer of complication arises when the unknowns of the next-generation air navigation system (NextGen) are factored in. “NextGen is in the forefront of every airline's planning, but we are all in a difficult position with avionics, because the [FAA](#) has not provided us with a clear path. Otherwise, we would have a better grasp of [the equipment] we would need to comply with NextGen, and a better picture of the support options that would be offered,” says Reeves.

This means that today, airlines are demanding more of a say and greater emphasis on flexibility with respect to avionics life-cycle support.

“The increasingly sophisticated technology of avionics should not be the determining factor for considering an outsource maintenance management/support contract,” cautions Mitch Klink, chairman of the Arinc Avionics Maintenance Conference (AMC). “The airlines have always stressed that cost-effective life-cycle management of components starts with designing components for affordable maintainability.”

In that regard, Klink reports that the OEMs, themselves, are resisting performing piece-part repairs down to the circuit card level, classified as Level III maintenance. This, he says, is due to the technology, expense and technician training required to develop effective circuit card test and repair capability. He adds that until the OEMs price replacement circuits so low that it is cheaper to replace than repair them, “we need to be



Randy Reeves, Southwest Airlines' manager of avionics engineering, says it can take several vendors to provide the software and equipment necessary to configure an aircraft for required navigation performance operations.

Credit: Southwest Airlines

able to perform Level III component repairs. This has been a point of contention raised at the Avionics Maintenance Conference over the past few years, and the airlines need to keep the OEMs motivated to control costs instead of taking the easy way out.”

Another concern involves parts availability for aging fleets, which has prompted more airlines to insist on support agreements addressing component obsolescence.

“Today's avionics support packages must be negotiated with a certifiable upgrade or new parts solution if the component is no longer available,” advises David Seymour, [US Airways](#) ' senior vice president of technical operations. The airline, he reports, is running into this issue on its remaining seven [Boeing 737-300s](#) and 40 [737-400s](#) . (All of its -300s are slated for lease return this year, along with 12-14 of the-400s).

Closely related to this, says Seymour, is a growing trend toward maintenance agreements that include shop visits—at no additional cost—for hardware and reliability related software upgrades, performed during the warranty period under a service bulletin. This, he explains, is why more customers are opting for extended warranties.

“The traditional warranties were about three years, but now, you're seeing 5-7-year agreements, with greater coverage,” says Seymour.

Greg Albert, [Honeywell](#) 's vice president of airlines, agrees. He points out that the typical length of a long-term service agreement with an avionics OEM today is five years, and includes more service bulletin work. That could include agreements to extend system commonality across fleets as new aircraft are delivered while older ones remain in operation.

“Let's say an airline's fleet averages 5-10-years old, but, at the same time, they are ordering new aircraft,” Albert notes. “That airline would want the avionics supplier to help them reach a point where they will have the same avionics systems throughout the fleet, with respect to technology and maintenance support.”

As an example, US Airways is now retrofitting a GPS package on all of its older model [A320](#) family members, originally delivered prior to the system's introduction. The airline is installing the components, while the suppliers—[Rockwell Collins](#) and [Thales](#) —are providing the engineering diagrams, drawings and equipment. The carrier and the avionics OEMs are working with [Airbus](#) to certify the retrofit.



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This is illustrative of the market's new reality: The turnover rate of avionics systems, due to technology changes, is far greater than that of the aircraft on which they are installed. That, says Scott Gunnufson, vice president and general manager of service solutions for Rockwell Collins , is impacting service agreements.

“Airlines, today, want to know that the OEM will provide a very reliable upgrade map to includes upgrades mandated by regulatory authorities, as well as those that are not mandated, but pertain to greater functionality, reliability, efficiencies and safety,” says Gunnufson.

According to Albert, airlines also want “a greater amount of administrative ease” from the avionics OEMs; they are requesting fewer time and materials quotes and more longer-term, flat rate, or hourly service agreements. “This is a slow evolution, but we are convinced that it will become the standard,” he says. “It is being broadly accepted across the industry, and certainly is a trend that has evolved within the past five years.”

Along this line, Seymour points out that as airlines focus more on their own core business of transportation, they are asking more of their vendors to design support packages tailored exclusively to their operational needs.

“Whenever we issue an [request for proposals] (for maintenance support), its structure is based on our experience to date and lessons learned. I would suspect this is true for most other carriers today,” he says.

But as Seymour explains, that means increasingly dealing with the OEMs.

“It is becoming more difficult and costly for independent MROs that are not OEM-licensed to break into the avionics support market, not only because of the test equipment they need to purchase, and training involved, but because of the issues concerning technology sharing. Over the last several years, we've been pushing our avionics more into the total package world, and we are seeing the avionics OEMs adapting to the needs of the airlines,” says Seymour.

Customization- But even customized plans are not without cause for concern, points out AMC's Klink.

“As a prospective provider of a management plan, I would certainly try to customize a potential customer's support model to best fit their operation. But from the airline side, I would expect to see a transparent and seamless process that ensures I have no service interruptions [delays/cancellations] at an affordable price. The sticky part of these types of arrangements is agreeing on what the remedies are if and when things hit a snag,” says Klink.

Even customized plans are moving toward what Gunnufson terms “network-asset support programs.” For the regional airline market, carriers draw assets from the OEM- or MRO-owned pool for a fee per flight hour.



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For long-haul carriers, hybrid plans are becoming popular, in that they combine a fee-per-flight-hour with the pay-when-needed concept, within a single program. The pay-when-needed portion grants the airline access to a rotatable pool that is not covered under the cost-per-flight-hour plan .

“The fee per flight hour gives the carrier a core level of support,” says Gunnufson. “By adding the separate rotatable pool access in which the parts are paid for when needed, it means that the parts can be stocked at select locations at certain times of the year. This gives the airline more flexibility.”

Guy Lapointe, the principal manager and Rockwell Collins France's service center in Blagnac, says that access to spares pools is becoming more common in support contracts with European carriers, as they put greater emphasis on turn times. But support contracts tend to differ between smaller carriers and legacy European airlines.

“The European legacy carriers usually have in-house repair capability on Airbus or [Boeing](#) aircraft and so they're interested in fixed-price support. Smaller airlines and startup carriers tend to be under single support contracts with MROs—rather than OEMs—which are negotiated on a flight-hour basis,” says Lapointe.

While avionics support packages still seem to be largely between the airline and the avionics OEM-owned or licensed repair facility, the commercial airliner manufacturers may be changing the game through programs such as Boeing 's GoldCare and Airbus 's Flight Hour Services. “Incorporating the avionics OEM support programs into their own support packages—on a seamless basis—is now increasingly offered by the commercial, as well as the business aircraft. OEMs,” Gunnufson notes.



Rockwell Collins' global support network includes about 80 locations. *Credit: Rockwell Collins*

But not everyone may benefit from comprehensive OEM support contracts, especially if the operator is flying older aircraft. And this is giving rise to niche specialists.

Niche Specialists - “The avionics OEMs are moving more into the support of newer systems, and leaving the legacy avionics repair market to companies like ours,” says Ray McKay, director of Calgary-based [Western Avionics](#), which focuses mainly on older regional jets and turboprops.

“For newer equipment , we've really become a customer point of contact with the OEM sales and service departments, basically handling exchanges of boxes,” he says.

McKay points out that the company's customer base tends to operate on strict budgets, which usually preclude flat fees or payments per flight-hour. “They come to us when we are needed, such as for a component repair or annual recertification,” says McKay.

Western Avionics , he reports, also procures out-of-production parts for legacy aircraft, which he admits can be a challenge.

“We do a lot of business with Beech 1900 operators, and we're finding that flight displays, autopilots and other mechanical systems are becoming more difficult to find. If we see some value in a repairable component, we will buy that item, repair it and put it into our inventory for exchange, resale or lease. Our spares [department] has been buying fleet-size lots of various components for this purpose.”

Ontic Engineering and Manufacturing in Chatsworth, Calif., also sees opportunities with legacy aircraft electronics support. It purchases the manufacturing rights of parts that no longer are in production or are about to be phased out, according to President Peg Billson.

Some of those parts are still in demand even on new-production aircraft, citing the fuel gauge system for the [Boeing 777](#) and the [Airbus A320](#), recently acquired by Ontic from [GE Aviation](#) . Ontic is emulating the OEM model by offering long-term sustaining contracts, which now account for 30% of its customer base. Priced by flight hour, and incorporating warranties similar to those of the OEMs, the contracts include provisions for overhauls and spares.



Ontic Engineering and Manufacturing purchases the manufacturing rights of parts that are no longer in production or are about to be phased out. *Credit: Ontic Engineering and Manufacturing*



“Typically, the contracts are for five years, with some differences based on the needs of the airline , and the type of aircraft they operate, “Billson explains. “We believe that it only makes sense that more of our customers will opt for long-term contracts, especially as OEM support for the older systems wanes.”

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