

# A NEW APPROACH TO FLIGHT SIMS

*Technology allows easy and low cost reconfiguring of flight displays to match a variety of equipment. The ability to log the time for currency is priceless.*

By Neil Paton

Pilots typically agree on the importance of maintaining IFR currency and proficiency, but not all agree on how to achieve this. Most concur that the best route to this objective is to spend time in the airplane, and preferably the one you fly most regularly. Furthermore, if the bulk of this time is in actual IMC, then so much the better.

Unfortunately, for most of us, this is becoming more difficult as the cost of flying has risen rapidly in recent times, and there is a great reluctance on the part of many pilots to spend the air time necessary to maintain currency, let alone a high level of proficiency. At six dollars per gallon for fuel even a modest general aviation aircraft runs over 100 dollars per hour to operate.

### A Different Methodology

Flight simulators have long been an option for IFR training and maintaining currency, but in this arena the situation has changed drastically also, and in some respects for the better. In the past, when most general aviation aircraft had a standard six-pack "steam gauge" instrument panel, flight schools could get by with a single flight simulator for most training applications.

In recent years, however, most new aircraft have incorporated glass panel technology, making traditional flight simulator obsolete. Glass panel simulators are available, but have two major disadvantages: 1) they tend to

be expensive—often approaching or even exceeding the cost of the real airplane; 2) glass panels are not all the same, dictating the need for an aircraft specific flight simulator, thus increasing the cost even further.

Concurrent with this move toward glass panel technology, has been the availability of realistic terrain simulation software from companies such as Microsoft, and X-Plane. This, along with advances in high resolution computer imaging technology, and readily available flight controls, has provided the tools for a computer savvy pilot to assemble a very ca-

pable flight simulator for home use. One disadvantage of such a system, is that it is not FAA approved so the pilot cannot log approaches on it, and the instrument panel is not aircraft specific.

### Accommodating Glass

In recent years some manufacturers such as Redbird, Frasca and PFC have introduced capable flight simulators incorporating glass panel technology, but these tend to be expensive, and aimed at flight schools rather than home users.

In 2012 FTS, a small company headquartered in California, announced the availability of a Cirrus flight simulator using X-Plane for the global terrain scenery, and their own software for the instrumentation. The real innovation in this "TouchTrainer" is the use of touch screen technology to simulate the aircraft instrumentation. This enabled panel layouts to be modified relatively easily and quickly without hardware changes, while faithfully



*A "TouchTrainer" configured as a Cirrus for IFR training with two touch screens and a Garmin Perspective panel.*

## WHAT'S NEW



*A Cessna "TouchTrainer" configured with 5 screens. Two touch screens for the Garmin G1000 glass panel and three high resolution screens above for the visual system.*

retaining the functionality of the real avionics.

Glass panel appearance from different manufacturers can be modeled with amazing clarity. The result is that the user can now change from an Avidyne panel to a Garmin G1000 panel (for example) in a few seconds and with no hardware changes. This capability enhances the training experience. Additional aircraft software can also be purchased by the user to enable the system to be modified to simulate a variety of other aircraft, often with minimal changes to the flight controls.

Avionics are changing rapidly, and with the TouchTrainer these new advances can be accommodated with software—no expensive and unreliable hardware bezels need to be swapped.

Another major advantage of this system is that chosen instruments can be disabled by simply tapping the instrument to be made non-functional. A second tap re-enables the non-functional instrument. This

capability makes the training with "broken glass" a simple procedure.

### Obvious Advantages

For the IFR pilot, there is a long list of advantages to practicing on a simulator, particularly in a training environment. These include no fuel cost, injuries or bent metal. The ability to fail specific systems or instruments. Practicing a flight segment or set of tasks repeatedly in day or night conditions, good or poor visibility and over a variety of terrain. A good feature for instructors includes pause, record, and replay of an event to provide training feedback.

From my own experience, probably the two most valuable attributes of the simulator are that one can fly approaches into an unfamiliar airport with the weather set at minimums prior to actually going there. This is particularly important when flying into an airport situated in mountainous terrain such as Jackson Hole, Wyoming or Aspen, Colorado. When you can do this in the comfort of your own home, it makes

the actual flight far less stressful and much more enjoyable—not to mention safer.

The importance of updating the FAA database in the GPS units in an aircraft is required to be legal for all IFR approaches. This is also true in the TouchTrainer as updates are issued every 28 days, and are easily installed by the user—ensuring that the current data are always available. The importance of this cannot be overemphasized as it is unwise to fly approaches with an expired database that differs from the current approach.

Whereas flight simulators had limited ability to faithfully represent the instrumentation in Technically Advanced Aircraft, except at high cost, prices are coming down, and the capability is improving to the point where pilots can consider the purchase of a flight simulator for home use. Furthermore some of them, such as the FTS TouchTrainer, are FAA approved enabling the pilot to log approaches and maintain currency.

Flight schools now have the flexibility to re-configure a simulator to represent a number of different popular general aviation aircraft, and are not forced to purchase a dedicated unit for each type. Training on a flight simulator can be realistic with high resolution visuals and the ability to simulate a wide variety of system and instrument failures in a short time at zero risk.

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