



*The Cirrus TouchTrainer™*

# The TouchTrainer™ Team

by Neil Paton

**H**ow, you might ask, could a software engineer from the United Kingdom (UK) and a semiconductor process engineer from California, team up to become co-founders of a successful flight simulator business? As you might guess, the common bond here is they are both Cirrus owners; and at one time, both flew out of South County Airport in Santa Clara County near San Jose, Calif., where they saw a need for improved flight simulators for general aviation.

Carl Suttle, the software engineer, has over 30 years of experience in the design and production of both military and commercial flight simulators, starting in the UK with the F4 Phantom and other aircraft. Eric Paton, the semiconductor process engineer, graduated from CalPoly San Luis Obispo and Purdue, and worked for AMD in the Silicon Valley for almost 10 years, doing research on advanced computer chip processing. Both are avid Cirrus pilots, and enthusiastic about advanced flight simulator technology.

One of the key features of avionics for aircraft today, is that glass panels have replaced the traditional "steam gauges." The rapid acceptance of glass panel technology has complicated the flight simulator business, enabling the divergence of details in design between different manufacturers. In the old steam gauge era, all six packs were pretty much the same, so a flight school could get away with a standard layout for a flight simulator, and whether a student was flying a Cessna, a Piper, or

a Beechcraft, the instrument panel layout had a lot in common. Even the early Cirrus aircraft had a six pack, and apart from the side stick and the MFD, they were pretty similar to other aircraft. As we all know, that situation did not last long after Cirrus introduced first the Avidyne PFD and then the Garmin Perspective.

About five years ago, Eric and Carl saw an opportunity where changes in avionics could be achieved with software changes, requiring only the click of a mouse rather than hardware changes, to try to the physical layout of each panel. The seeds of a new company they called FlyThisSim LLC (FTS), were thus planted. Initially, they worked with several existing flight simulator manufacturers, and were successful in providing software compatible with the high-resolution monitors that were becoming available. They found that graphics could be presented on a high quality monitor in such crisp detail, that one could almost imagine they were looking at a real Garmin 430W, G1000, or Avidyne EX 5000.

The next step was to release software, called SimAVIO (Simulated AVIONics) to the flying and simulator enthusiast community, so that customers could build their own flight simulator using commercially available computer hardware. They did this through their web site ([www.flythissim.com](http://www.flythissim.com)), and have sold thousands of copies of SimAVIO for various aircraft.

Carl and Eric were still not satisfied, however, as they saw a need for a turnkey, low-cost flight simulator that could





Carl Suttle In the cockpit.

be sold to both individual pilots and flight schools. They were well aware of the recognized benefits of an aircraft-specific flight simulator, and knew that there was a long list of advantages, particularly in a training environment. These include:

- You fly, but don't burn fuel.
- If you crash, there are no injuries and bent metal.
- The ability to fail specific instruments.
- You can practice a flight segment or set of tasks repeatedly.
- The capability to make it day or night, light or dark, and good or poor visibility.
- You can replay an event to provide training feedback.
- The capability to pause in mid-flight.
- You can fly in the desert, over water, over high mountains, in urban areas, and in geo-specific areas all on the same day.
- The ability to practice approaches into unfamiliar airports.

Knowing these advantages and observing that an affordable flight simulator for technically advanced aircraft was not available, Eric and Carl resolved to develop a system based on their software.

About a year ago, they sold their first "TouchTrainer" to a Cirrus owner, based on the same high resolution graphics, but using touch screen technology to enable the pilot to

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*Eric Paton, in Alaska, where he flew with his SR20 a couple of years ago.*

manipulate all the avionics controls in much the same way as they function on the real hardware. Touch screens were unheard of in the flight simulators at the time, but the outlook for incorporating them was encouraging.

The team was fortunate that the airmen certification branch of the FAA responsible for flight training devices gave them some hope, since touch screens were rumored to become cockpit devices in the near future. If touch screens could be used in the cockpit, then they could be used in a flight training device. The argument was – to what extent would this be possible and still satisfy the FAA.

Clearly the TouchTrainer did not meet the pertinent FAA requirements, but there was a possibility. The team believed it was a much more valuable device, partly on account of the ability to change configuration with the click of a mouse. Educated early adopters and potential customers agreed, but the majority of pilots who would like to own training devices saw FAA approval as a mark of quality. After selling and continuing to develop Cirrus TouchTrainers for several months with the continual support of several COPA members, Carl and Eric decided to see what the FAA would say. They traveled to Washington D.C. with the TouchTrainer. What followed was pleasantly different from what they expected.

They presented their case to an educated, enthusiastic and positive audience at the FAA, who already understood the problems of TAA low-cost simulation. The result was that although the touch screen technology was not strictly compliant to AC-61-136, the relevant regulation, the FAA had the power to allow deviations from the specification for technically advanced and innovative solutions. They asked the team to write them stating what deviations from the specification were needed. The TouchTrainer group was informed shortly afterward that approval would be given.

This touch screen innovation greatly enhances the training experience, as the functionality of all the switches, buttons and knobs, is almost identical to that on the real aircraft.



The FAA recognized this as an important innovation in flight simulator design by approving the TouchTrainer as a Basic Aviation Training Device (BATD) for Cirrus SR20/22 aircraft in March 2012. FAA approval means that the student or pilot can log time toward a private or instrument rating and toward maintaining instrument currency. The system features unique use of two touch screens for all controls except primary flight and engine controls.


Unlike other low-cost BATDs, the TouchTrainer enables fully coupled GPS WAAS approaches with LNAV, LNAV+V and LPV, to be practiced along with the standard ILS approaches. Approaches are based on the current FAA database, and can be updated every 28 days.

The Cirrus factory recently endorsed the TouchTrainer as the preferred flight simulator device when Travis Klumb, the Cirrus Flight Training Manager, stated "The FTS TouchTrainer is a very good, aircraft-specific systems, avionics, procedures, and IFR recurrent trainer for Cirrus Analog, Avidyne and Perspective aircraft. Using the device is an excellent and affordable way for all Cirrus pilots to maintain currency and improve decision making."

As the business grew, Carl and Eric began to show their product at

shows such as AirVenture 2012 at Oshkosh, and the AOPA convention in Palm Springs during the fall of 2012. At both venues they saw a most enthusiastic reception, not just from Cirrus pilots, but also from the general flying community. As a result, they are now busy releasing TouchTrainers for Cirrus, Diamond, and other aircraft. They recently received FAA approval for the Cessna version, and expect approval soon for other aircraft.

With all this potential new business, they opened a manufacturing facility in San Luis Obispo, where Eric now resides with his family. This, along with new approaches to manufacturing some of the critical components, will enable FTS to meet the growing demand for their innovative products.

What the future might hold for FTS is anybody's guess, but for certain, it should be full of exciting innovations that will make the flying experience safer for all of us. 

About the Author: *Neil Paton is a propulsion systems and materials engineer, having spent more than 40 years in the aerospace industry. He consults to several companies and the U.S. government on these topics and resides in Thousand Oaks, Calif. with his wife and his 2001 Cirrus SR20, which he bought new.*



*Eric at the TouchTrainer manufacturing facility at San Luis Obispo.*

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