



The **Sun Flight development team** created the entire line of **ElectronicFlight Solutions** computer-based avionics training products

- **Garmin GNS 530/430 Navigation Course**
- **Traffic Awareness TAS/TCAS-I Course**
- **Bendix/King and S-TEC Autopilot Course**
- **TAWS B (EGPWS) Terrain Awareness Course**
- **Lightning Detection Systems (Stormscope, StrikeFinder) Course**

The revolutionary avionics training products were eagerly accepted by the aviation community and raised the bar for all interactive training to follow. To increase overall student understanding and retention, the developers at Sun Flight used an emulation-based, conceptual training environment to create dynamic and comprehensive CD-ROM training products for pilots and technicians. The ElectronicFlight courses employed the most current delivery and feedback techniques gained from top academic adult-learning researchers.

The successful ElectronicFlight Solutions training courses are used throughout the world; training pilots and technicians with the knowledge and skills to properly operate the avionics. Each course has gained initial and recurrent training credit in both pilot and maintenance training programs within the following organizations:

- FAA Wings Proficiency Program
- AEA Excellence Awards
- FAA part-145 repair station recurrent training
- FAA Technician Awards
- FAA Authorized Inspector renewal
- FITS pilot training



Training Methodology

The ElectronicFlight products use a technique called conceptual training, which explains the “why” in a simple and usually graphical format. This allows greater comprehension and easier recall years later when it counts the most—in high workload situations, such as flying.



Using a three-element approach to training; the course teaches,

- 1) the overall concepts behind the operation of the unit,
- 2) the learning of small common tasks that form the building blocks for procedures, and
- 3) plenty of guided practice on specific procedures to strengthen the foundation.

All three of these elements are interspersed throughout the training.

At the very core of the self-paced CBT (computer-based training) program is the ElectronicFlight Complete Learning™ Methodology that focuses on the following basic elements:

- Instill conceptual knowledge, instead of rote memorization
- Implant mental models (a picture imprinted into permanent memory)
- Present the conceptual organization of a system
- Provide requisite knowledge using highly graphical methods
- Reinforce knowledge with targeted practice exercises
- Implement feedback and remedial review when checked for retention

Conceptual Training – Conceptual training explains the theories or overall concepts behind the operation of the specific piece of avionics, explaining the why in a simple and usually graphical format. This allows greater comprehension and easier recall years after the initial training. Conceptual training implants tidbits of information that a pilot forms into a greater understanding of the overall organization. Conceptual training eases frustration and gives a pilot the knowledge to develop a new strategy when needed.



Common Tasks – The second tier of the training teaches common tasks using a building block approach. The pilot only needs to learn a few small tasks that are common throughout the operation of the unit. Additionally, the control philosophy and reasoning behind the use of those tasks is also taught. By learning tasks that are common throughout the operation of the unit, the individual tasks can be combined to form any larger procedure. Therefore, if the pilot knows the reasoning behind the individual tasks, combining those tasks together is easy. No more endless and complicated procedures to learn, and forget, just a few small tasks that are retained in memory much longer.

Guided Practice – The third tier of the training provides the pilot with hands-on experience in the operation of the avionics unit. To combine the conceptual knowledge and common task training into specific procedures, the training provides guided practice sessions. Using on-screen interactive techniques, the pilot can manipulate the avionics controls just as in the real aircraft. All of the necessary controls and displays are placed on a single screen, thus the pilot is able to learn the interplay between multiple control and display units.



A guided practice exercise involves completing a specific procedure while the computer monitors every control input. If an improper button is pushed, immediate feedback prompts for and explains the correct response. Thus, a pilot will learn the proper technique the first time. These guided practice exercises are placed strategically throughout the course in addition to exercises that reinforce basic knowledge. If it's found that the material is not being absorbed, on-screen prompts, or material review, will provide instant feedback for incorrect responses. At the end of the course, a review will determine the comprehension of the material.



Instead of just learning one method to complete a particular procedure, a pilot will learn many methods, because the actual control philosophy, or architecture, is implanted into permanent memory. A pilot will be able to learn how to use the piece of avionics equipment more effectively and completely. Gaining all that the unit is capable of providing, not just the basic functions.

Once successfully completing the contents of a particular topic, a pilot may elect to fly with a knowledgeable instructor who will ensure that the pilot can perform all of the specified flight tasks. Those avionics that are more procedure-laden (ex. GPS), require periodic breaks to apply those learned techniques in a hands-on environment with a flight

instructor. The training programs contain printable lesson plans to guide the pilot and instructor through the various flight procedures.

The CompleteLearning™ Methodology concentrates on the control philosophy to instill the "tools" which give the pilot the confidence to create any procedure on the fly.

Therefore, the training improves on the usual "follow me step by step..." technique so common in teaching aviation in exchange for the better conceptual methods. If the step-by-step procedure is taught for every function, the pilot will probably forget the procedure by the next flight. This has been proven in many studies. This conceptual technique may seem foreign, because it takes more effort to teach and is not borne from the rote recall methods so prevalent in aviation training.

