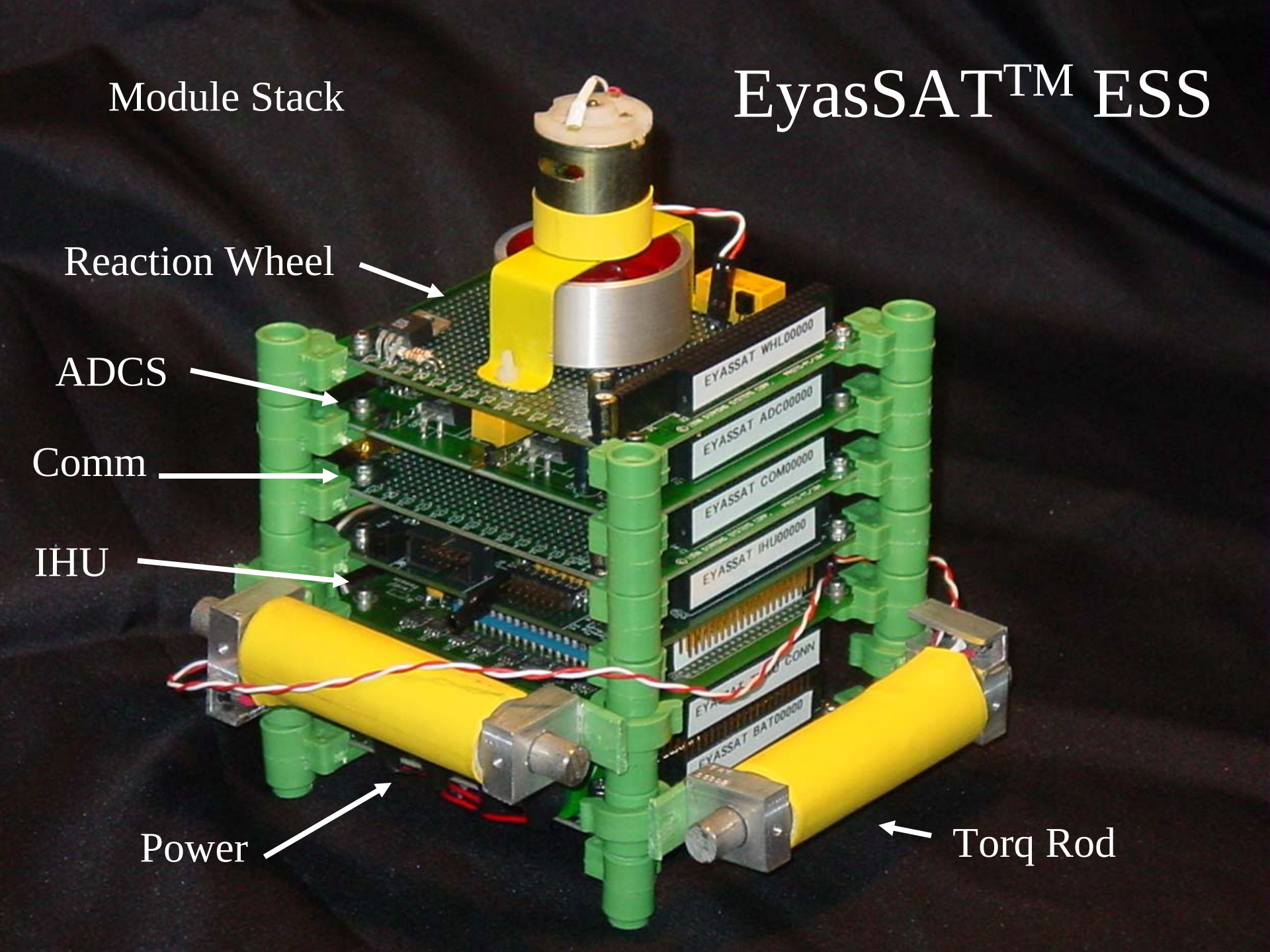
EyasSAT™ Educational Satellite System

Small Sat

2004


Module Stack
EyasSAT™ ESS
Reaction Wheel
ADCS
Comm
IHU
Power
Torq Rod
EYASSAT WHL00000
EYASSAT ADC00000
EYASSAT COM00000
EYASSAT IHU00000
EYASSAT BAT00000

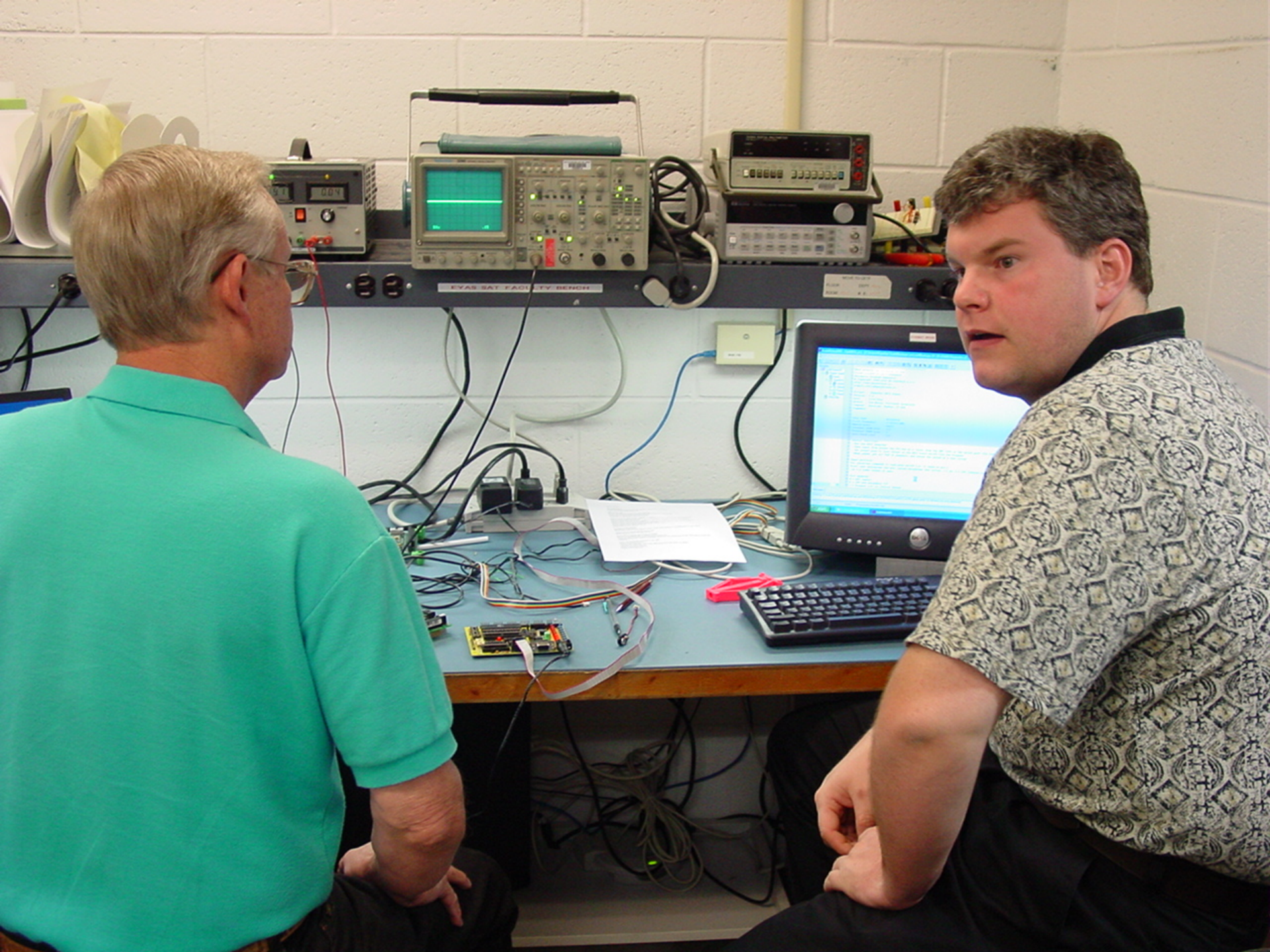
EyasSAT™ ESS

- Satellite ‘kit’ for the lab
- Complete system, satellite and ground


ASTRO-331
"EYAS SAT"
THIS BENCH IS RESERVED FOR ASTRO 331
DURING T1, T2, T5 AND T9
DO NOT REMOVE TEST EQUIPMENT FROM ANY BENCH
WITHOUT PRIOR APPROVAL FROM LAB TECHNICIAN
WHEN YOU ARE FINISHED WORKING, CLEAN BENCH AND
RETURN TOOLS BACK TO TOOLBOX. REMEMBER THAT THERE
ARE OTHERS NEEDING TO USE THESE RESOURCES AFTER YOU

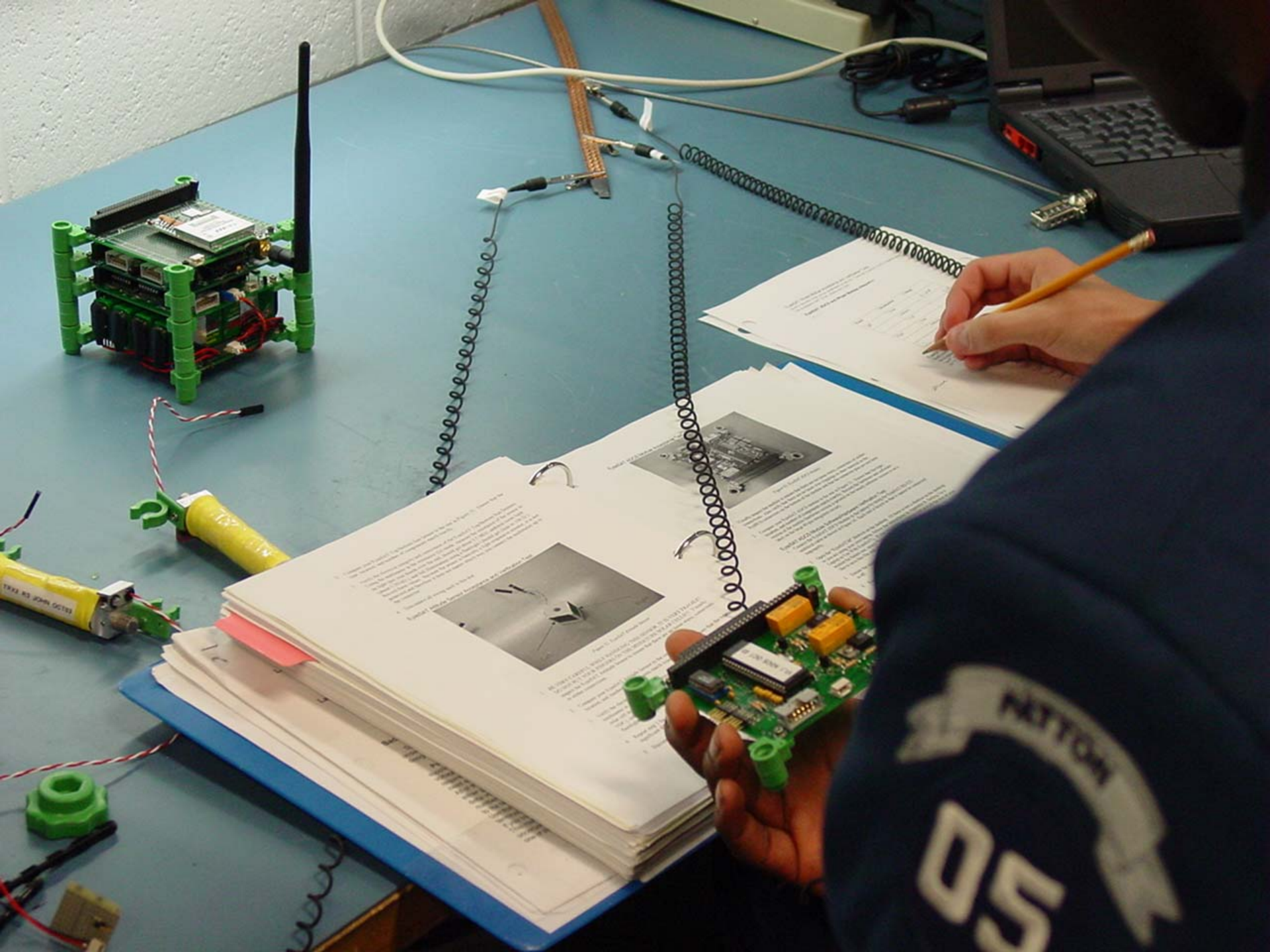
EyasSAT™ Uses

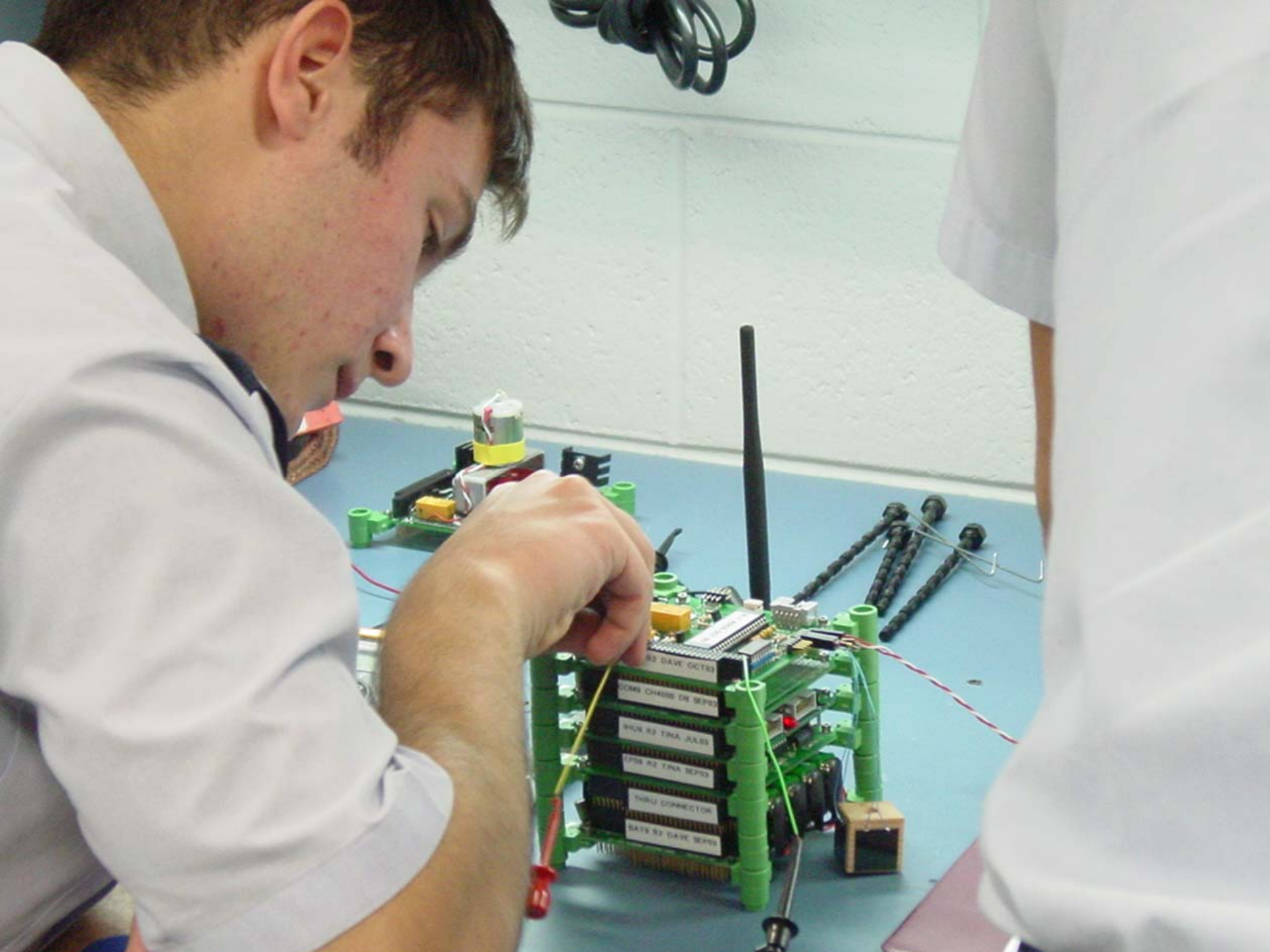
- Demonstrate how satellites work
- Teach how each subsystem works
- Teach systems engineering
- Core units for + experimentation
- Balloon flight ‘shuttle’
- Provide a hands on experience
- Middle school through industry



EyasSAT™ Class Example

- Teach a subsystem
- Do a lab to ‘test’ or ‘accept’ that module
- Teach another
- Do a lab on that module, stack it, test integrated modules
- . . . Test and exercise the whole EyasSAT™
- Final exam: Demonstrate how it works




THRU CONNECTOR

EyasSAT™ Advantages

- Hands on hardware experience
- Complete. All you need is a PC and power supply
- Inexpensive
- No risk to your flight hardware
- Lab exercises provided
- Small and easy to set up in your lab or classroom

More Advantages

- Build your own add-on experiment
  - Use our simple documented interface
  - Plug it in and send the ‘attach’ command
  - See its telemetry in the downlink
  - Command it
- Nothing needs changed in the EyasSAT™ stack
- Up to three add-on experiments at once

Still More Advantages

- Owner/User community shares ideas and lab material on our web site discussion board

What you get

- Stack modules
  - Power/battery (9V bat, 5 and 3.3V switched)
  - IHU (main computer), thermal subsystem
  - Communications (radio)
  - ADCS (reads sensors, controls rods and wheel)
  - Reaction wheel
- Ground station (radio with RS-232 cable to PC)

Included

- Transparent case with
  - Two solar panels
  - Pair of thermal panels
  - Sun sensors top and bottom
  - Yaw sensors on top
  - Sep switch on bottom
  - Enable switch
  - External power connection

Included . . .

- Two torq rods
- Permanent magnet
- Low friction hanger
- Test jumpers and adapters
- Carrying case
- Hardware manual

Another example

- Build an experiment (cold gas thruster)
- Electronics on a board, thrusters on the case
- EyasSAT™ provides power, command/TLM, case, rate gyro, accels, yaw sensors
- Hang it up
- Command your thrusters to yaw it

More EyasSAT™ Ideas

- Two on an air table doing prox ops
- Add an ozone detector and fly it in a balloon
- Build your own ADCS board with sensors and actuators, EyasSAT provides the ‘bus’
- On your own ADCS board write closed loop ACS code and test it

Still More Ideas

- Add a camera and laser pointer and drive it from another room
- Add two more wheels, put it in a ball and do three axis ACS

EyasSAT™ Costs

- Complete core unit including case and ground station: $7,500
- Reaction wheel experiment: $750
- Other experiments: $TBD

EyasSAT™ Availability

- Available now from Colorado Satellite Services LLC

- Yearly Fall and Spring builds
- Order by 1 September, delivery December
- Order by 1 January, delivery April


EyasSAT™ ESS
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