Innovative Ways to Educate Surgeons in a Changing Time

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Experiential Learning

Time Based
Enhanced by Repetition
Mentor Driven

Competence Based Learning

Curriculum Driven
Sequential Benchmarks
Verification of Competence

Competence Based Learning

Progress at Learners Pace
Must Pass Milestone to Continue
Difficulty in Scheduling
Rotation Disruptions
Utilization of Simulation Experience:
To Advance or
To Remediate Performance

Progress to Competence

Verification of Learning
by Objective Evaluation
Oral or Written Exams

Technical Skill Validation
Simulation Lab
Operating Room

Surgical Resident Training: Hours per Week

United States	80 hours
Canada	72 hours
Ireland	70 hours
Australia	68-75 hrs
New Zealand	72 hours
Taiwan	70 hours
Brazil	60 hours
Great Britain	54 hours

Switzerland	50 hours
The Netherlands	48 hours
Denmark	42 hours
Germany	40 hours
Belgium	40 hours
Sweden	40 hours
France	35 hours
Norway	35 hours

Richard Resnik

"Atlantis"

Simulated Education

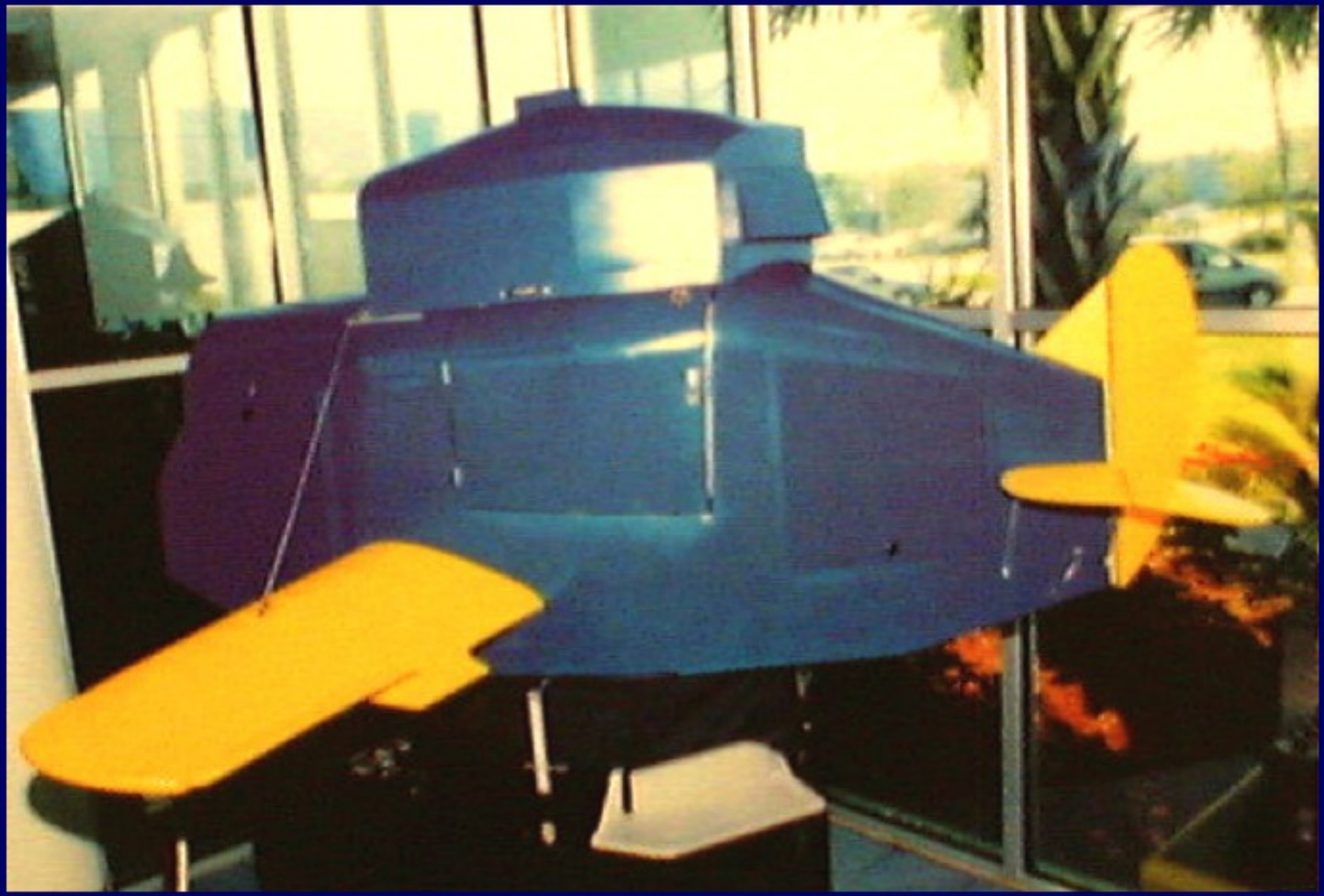
Aviation

Psychomotor Skills

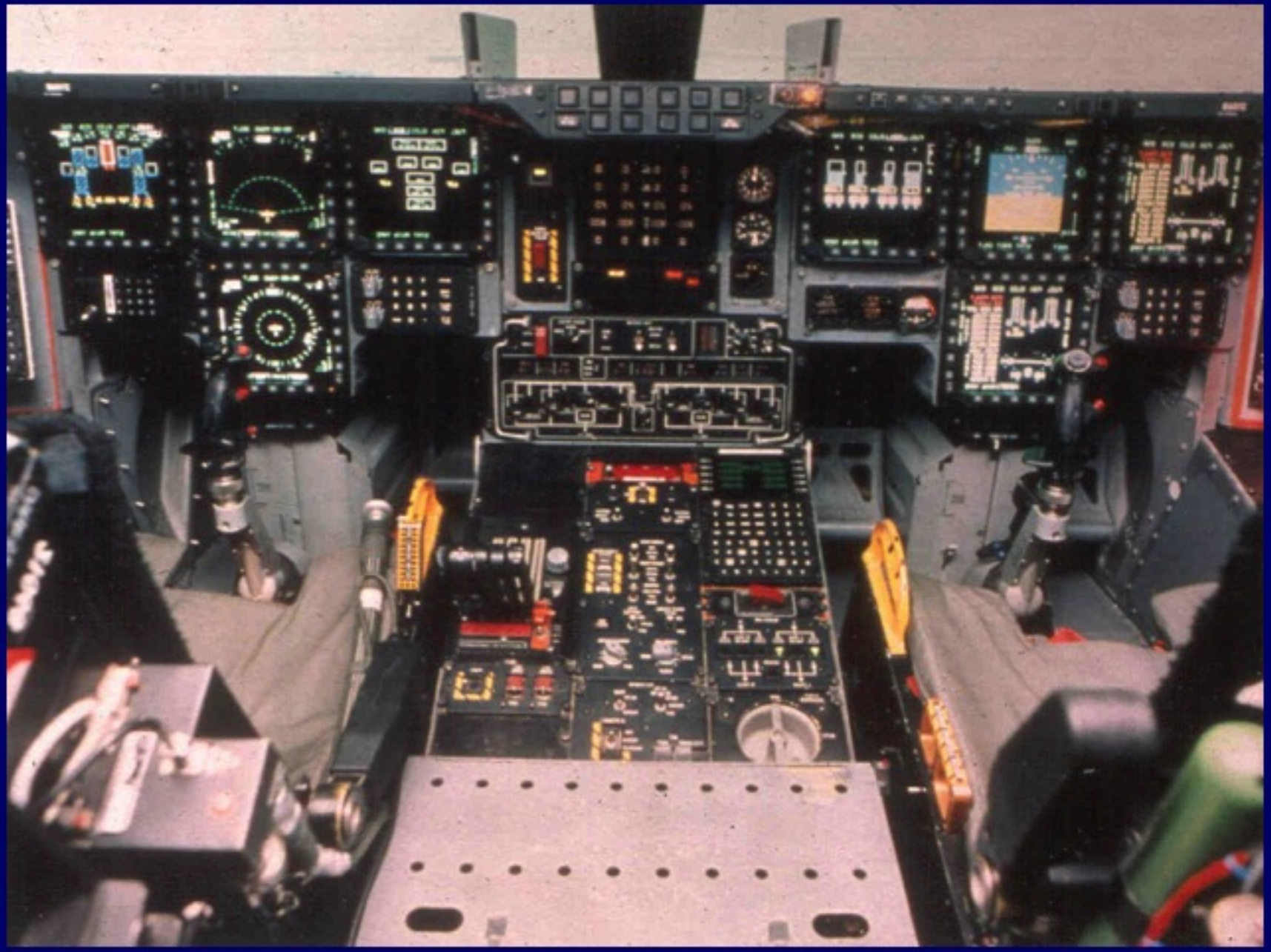
Cognitive Skills

Complex Decision Making

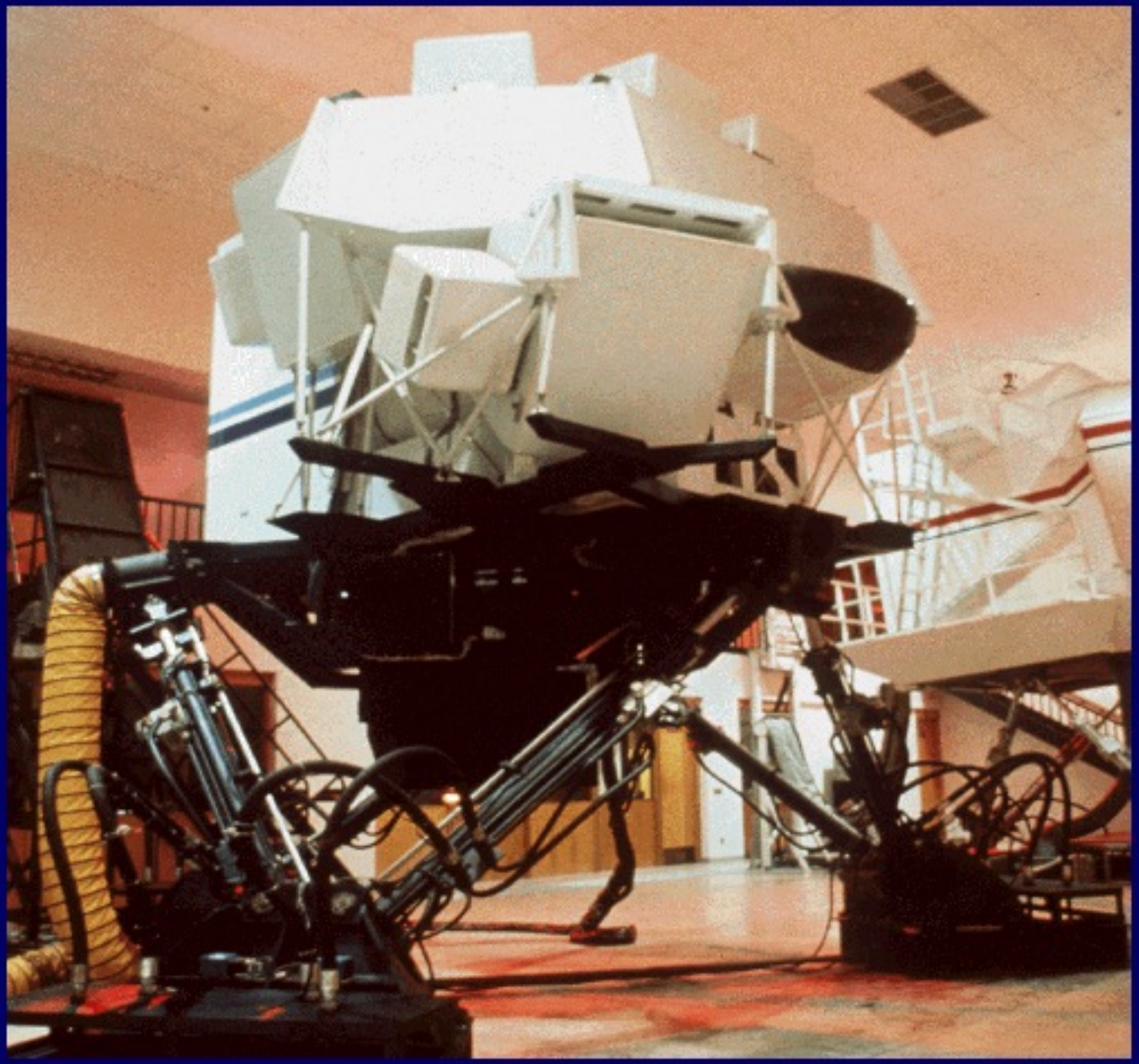
Link Trainer



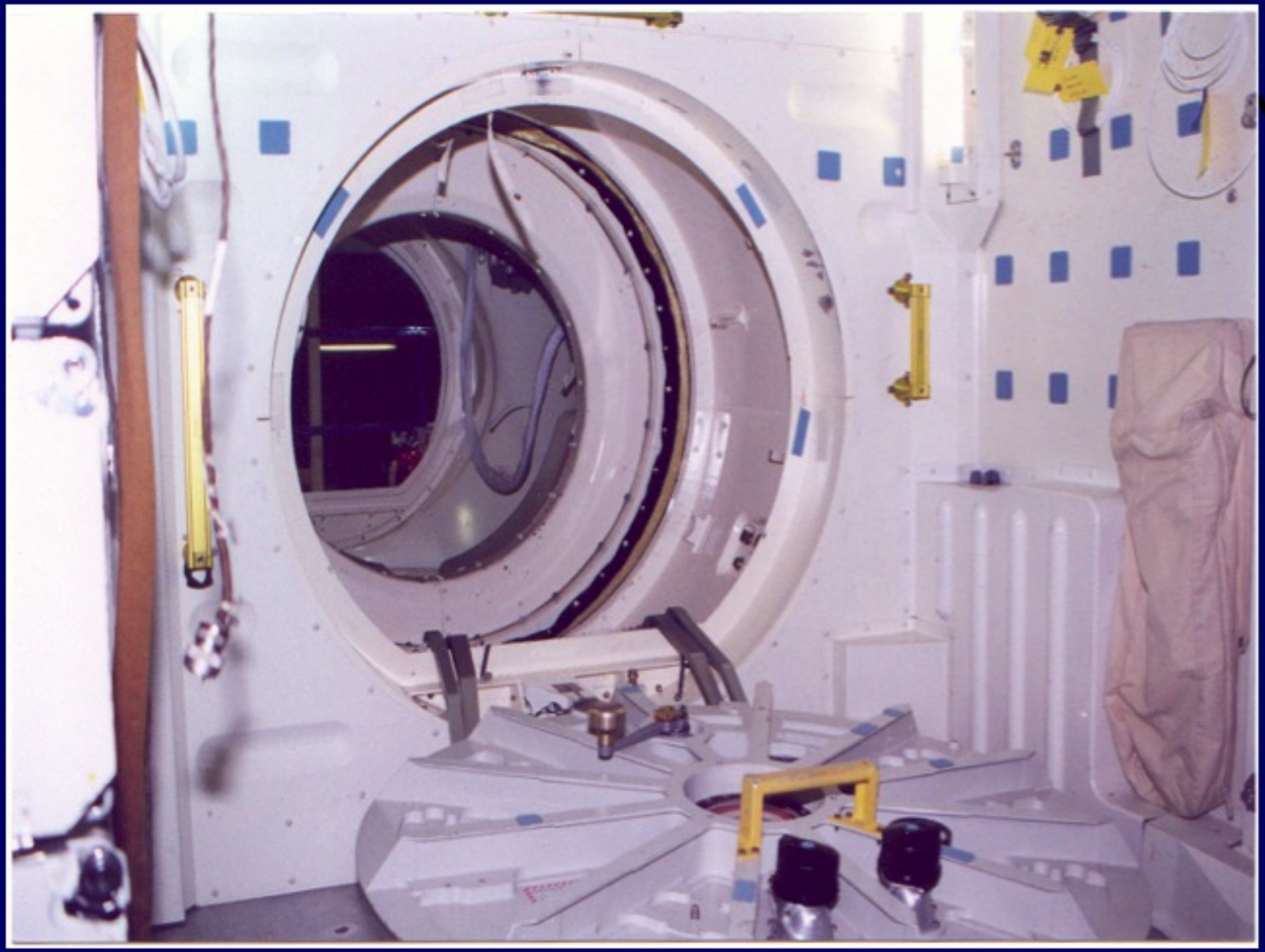
Bomber Simulator



PILOT TRAINING



NASA Deep Space Probe

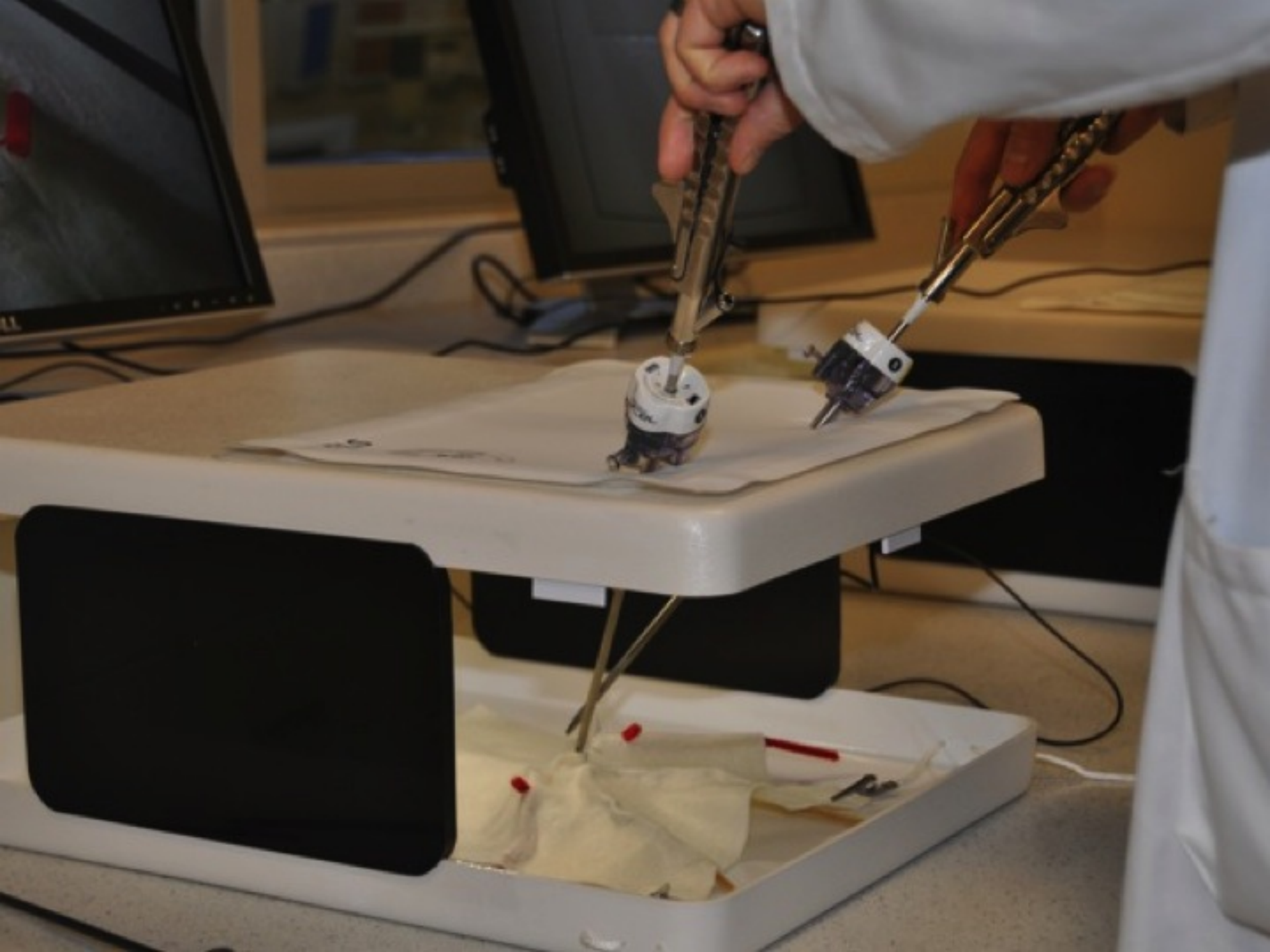


Space Station

COLUMBUS
NODE 2
Space Station...A New Star on the Horizon
Update

Simulation Laboratory

Static Skill Trainers
Dynamic Trainers
Bio Lab Experiences
Practice in the Lab
Perfect on the Patient



SIMULATION CENTER
S85 SIM

80
98
80
36
12

DEVELOPING TRAUMA TEAM COMPETENCY

- Identify all components of a resuscitation
- Identify critical behaviors
- Establish tasks which must be successfully completed
- Develop timeline for completing each task

ALM

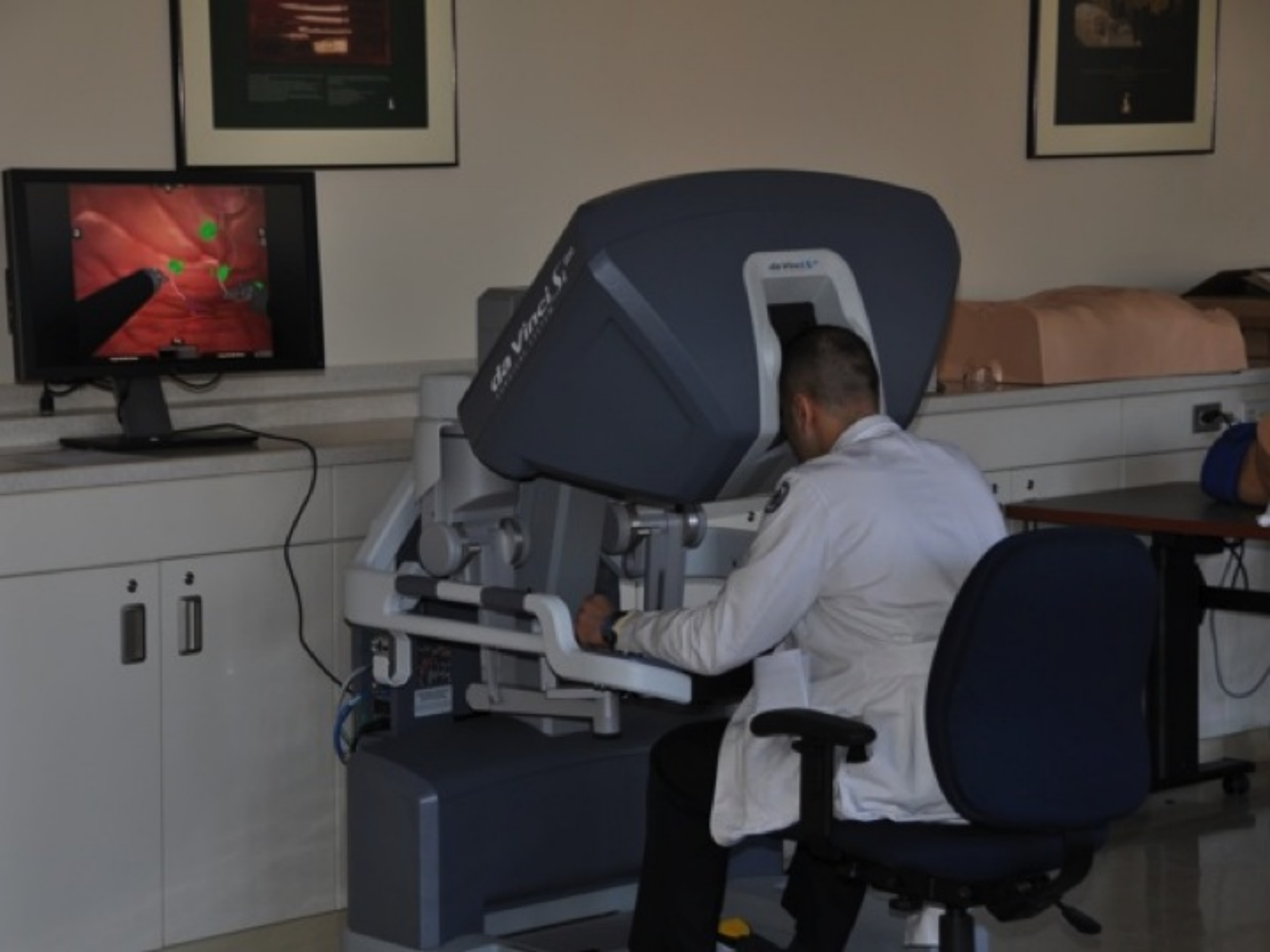
Management of Surgical Airway

Severe neck laceration

Fractured larynx

Disrupted anatomy

da Vinci S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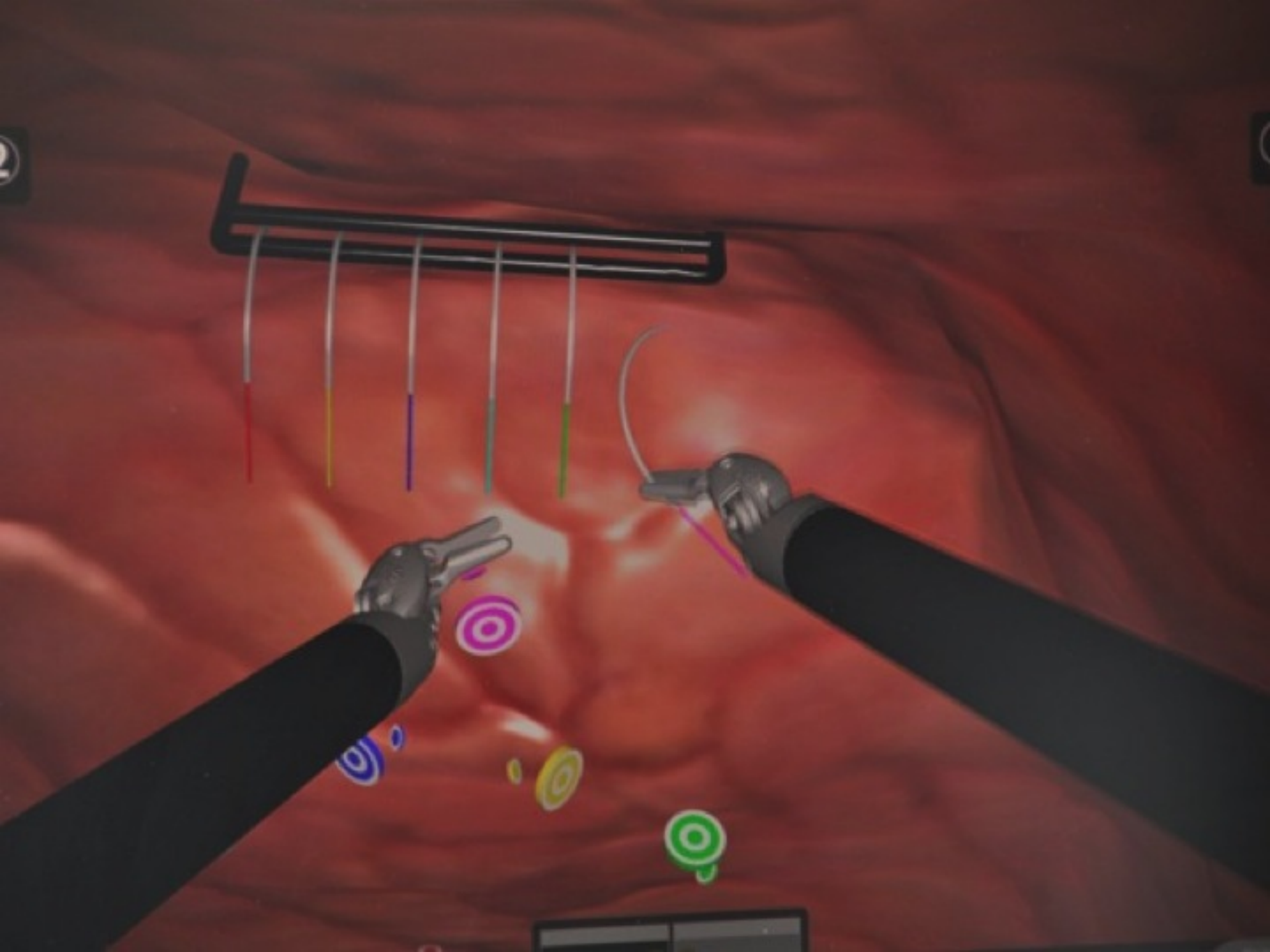

da Vinci Si

1
3

2
1

Training instrument -- Not for human use
Move master grip to match instrument
Move master grip to match instrument
Maryland bipolar forceps
Prograsp forceps

da Vinci Si
SURGICAL SYSTEM

Summary

Paradigm Shift

Practice in the Non Human Environment

Cognitive and Skill Verification

Team Performance

Use of Simulation

Safer, More Effective, Efficient