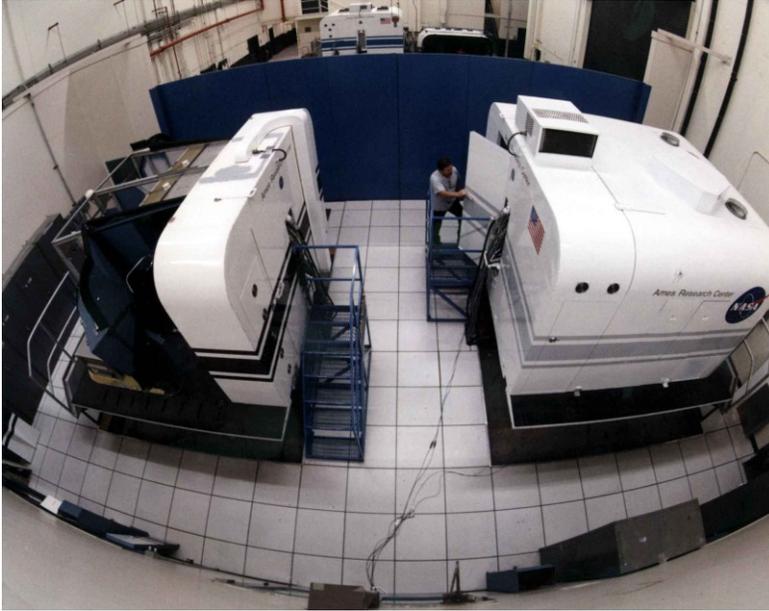


## Draft Statement of Work

SimLabs, at NASA Ames Research Center, is interested in information about fiber optic based video distribution for a research flight simulator complex. The complex includes the Vertical Motion Simulator (VMS), a high fidelity, full motion, flight simulator; and two fixed base research labs, the Interchangeable Cab (ICAB) and Rotorcraft System Integration Simulator (RSIS) labs. The three labs can each support a research flight simulator cockpit. Between the VMS lab and the simulator cockpit is a six degree-of-freedom motion base with 60 feet of vertical travel, 40 feet of horizontal travel, and 20 feet of longitudinal travel.



Simulator cockpit on VMS Motion Base



ICAB Fixed Base Bay with two simulator cockpits



VMS Lab

Video sources produce analog RGB and NTSC video, which can be distributed to any simulator cockpit and/or lab display, and other research and maintenance locations for viewing and recording. Coax cables currently distribute analog RGB video signals at a bandwidth of 125 MHz, with 150 cables to each of the three simulation laboratories, and additional lines to other locations within the building. The video for all simulator cockpit locations is routed from the video source, through a patch panel, a video switching matrix, amplifiers, about 600 feet of cable, to another patch panel in the individual laboratories. Once in the laboratory the video is routed through another set of amplifiers, to a patch panel on the simulator cockpit, and then to the projectors inside the cockpit (see attached drawings). For the VMS

cockpit, after the control room patch panel another 300 feet of cable is carried to the simulator cockpit by one of two catenaries, where another set of amplifiers and a quick disconnect patch panel interface to the cab. The catenary section is a hostile environment for fiber. The cables in the catenary are constantly flexing, there is drop of 75 feet and slippage along the cable tray, and a minimum bend radius of 2.5 inches at one point along the run. A quick disconnect interface for the fibers will be required at the cab. In some cases the signals will have to pass to copper media at the destination.

The replacement system must transmit analog RGBHV and NTSC video at a minimum of bandwidth of 125MHz. The capability to transmit digital video and signals at higher bandwidths is highly desirable.



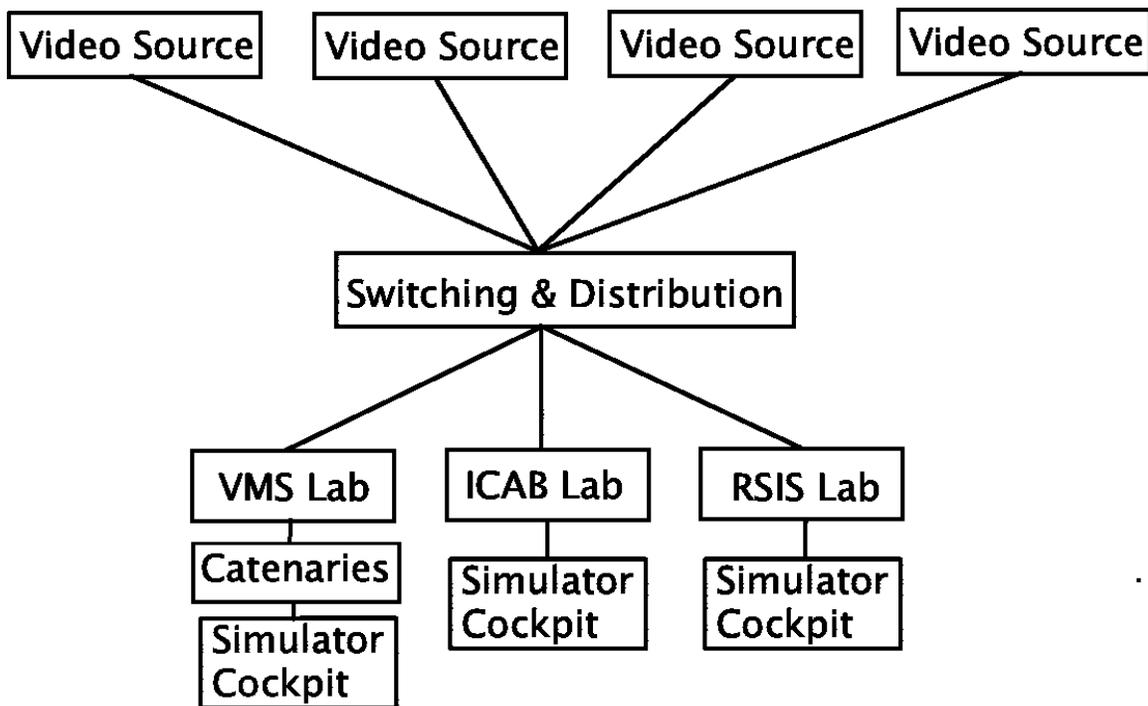
VMS Catenary



Current Quick Disconnect at the Cockpit



Flexible Cable Carrier on VMS Motion Base



Video Distribution Diagram

SimLabs currently has four video switchers with the input/output capabilities listed in the table below. All switches must support a minimum bandwidth of 125MHz, although a higher bandwidth is very desirable. The switching functions could be combined into fewer switch matrices. The switch matrices must be remotely controllable from each of the three operations labs and from a maintenance area.

Switch	Inputs	Outputs	Comments
A	64	64	RGB
B	70	70	NTSC

C	16	30	RGB
D	24	16	RGB

SimLabs is looking for information about replacements for the entire video distribution system, including the coax cabling, patch panels, connectors, video switching matrix, and the amplifiers, with a fiber optic based solution. Respondents are encouraged to provide information on products and/or design or installation capabilities for all or part of the system. If you would like to visit the facility, provide a briefing, or if you have questions please contact:

Debbi Ballinger  
NASA Ames Research Center  
650-853-1072  
debbi.ballinger@nasa.gov