## REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blan	2. REPORT DATE March 1996	3. RE	PORT TYPE AND DATES COVERED Final
4. TITLE AND SUBTITLE Review of Virtual Environment Interface Technology			5. FUNDING NUMBERS  IDA Central Research Program (CRP) 9001-512
6. AUTHOR(S) Christine Youngblut, Rob Craig A. Will	E. Johnston, Sarah H. Nash	, Ruth A. Wienclav	v,
7. PERFORMING ORGANIZATION	NAME(S) AND ADDRESS(ES)		8. PERFORMING ORGANIZATION REPORT
Institute for Defense Analyses (IDA) 1801 N. Beauregard St. Alexandria, VA 22311-1772			NUMBER IDA Paper P-3186
9. SPONSORING/MONITORING AG	GENCY NAME(S) AND ADDRESS(	ES)	10. SPONSORING/MONITORING AGENCY
Institute for Defense Ana 1801 N. Beauregard St. Alexandria, VA 22311-17			REPORT NUMBER
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILIT Approved for public rele	ry statement ease, unlimited distribution:	16 July 1996.	12b. DISTRIBUTION CODE  2A
13. ABSTRACT (Maximum 200 word	ds)		
This report reviews current interface technology for use in virtual environments. Visual, tracking, auditory, primary user input (including, for example, glove, body suit, exoskeleton, track ball, and 3-D mouse inputs), tactile, kinesthetic, full-body motion, and olfactory interface technologies are covered. In each case, the relevant human capabilities are discussed, followed by descriptions of some available commercial products and ongoing research and development efforts. This information is used as the basis for predicting how virtual environment interfaces are likely to change in the next five years.			
14. SUBJECT TERMS Virtual Environments, Virtual Reality, User Interfaces, Interface Technology			logy. 15. NUMBER OF PAGES 282
_			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSI OF ABSTRACT Unclassified	FICATION 20. LIMITATION OF ABSTRACT SAR