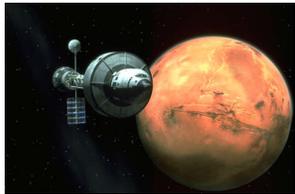


**Crew Medical Interface System (CMIS):
VR And Medicine Integrated For Medical Care On Long-Duration Spaceflight**
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Imagine the following: you are the only medical personnel for a million miles. Your crew of 5 others that you are responsible for are under a heavy workload, the constant stress of potentially life-threatening catastrophe, and high pressure and extreme visibility, all while undergoing serious morphological and psychological transformations that can affect their performance. Your challenge is to keep the crew alive and in peak performance all by yourself because you're more than 6 months away from the nearest hospital and can't even videoconference effectively for a consultation. Fortunately, you've brought the most advanced diagnostic tools in existence and have them wirelessly networked and integrated with environmental and other systems, have an expert system to give you step-by-step instructions with full multimedia movies, anatomical models, and real-time diagnostics, all using intuitive voice commands and tracked instruments. The system is easy to use, lightweight, small in size and power requirements, robust, and highly functional.



crew on-board the International Space Station (ISS) and for future long-duration space missions. It is currently being developed at the National Biocomputation Center at Stanford University, in

This presentation details the Crew Medical Interface System (CMIS)- a Head-Mounted Display (HMD)-based system for interfacing medical and other information to the astronaut

conjunction with the NASA Johnson Space Center (Medical Operations, Countermeasures, and Human Factors) and NASA Ames Research Center (Astrobionics).

This system obtains information from physiological and environmental sensors, clinical devices, video sources and other inputs, transmits their data wirelessly and integrates this data into a central data hub (Medical Communications Instrument Adapter-MCIA). An expert system (Goddess) provides direction for diagnosis and treatment protocols. All this information is then interfaced to the user using a HMD-based wearable computer system (iPaq) with voice input/output (CMIS). Such a system certainly lives up to the moniker of medicine meeting virtual reality, used for a real applications.

The current CMIS prototype system will be presented. This system is a first pass at requirements and technical options for such a system to provide easy and unobtrusive access to relevant medical information on ISS. By utilizing such a system now, we can effectively converge and optimize the future concept of operations, evaluate technical tradeoffs, and obtain real-world use and feedback of a system that will be vital to future manned space exploration. In addition, such a system would also be useful for nonmedical applications including engineering support, increased habitability, and inter-crew communications. Further, terrestrial applications of such technology are also readily evident.

