Platform for Spaceflight Medical Monitoring

Client Business Description

MASSACHUSETTS GENERAL HOSPITAL

◇ Massachusetts General Hospital is the original and largest teaching hospital of Harvard Medical School.

◇ Hospital also serves as a site for principal clinical experience and a number of other clerkships.

Background

◇ Biomedical and environmental monitoring, as well as countermeasure delivery, are key components in any manned spaceflight, including extra vehicular activities.

Challenge

◇ There is currently no in-flight system to integrate the multitude of devices available, to synchronize data streams, or to incorporate countermeasure or therapy delivery capabilities.

◇ Integrated, multi-parameter monitoring devices can help mitigate such difficulties, however they are often designed as stand-alone systems.

◇ Thus, current procedures place substantial time and cognitive burdens on astronauts for data collection and management.
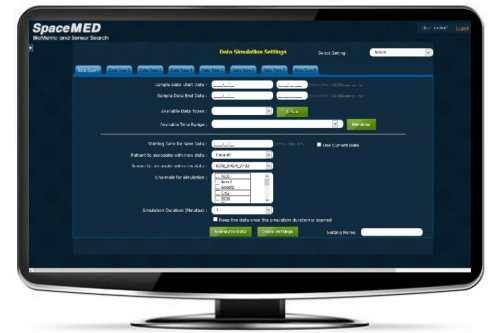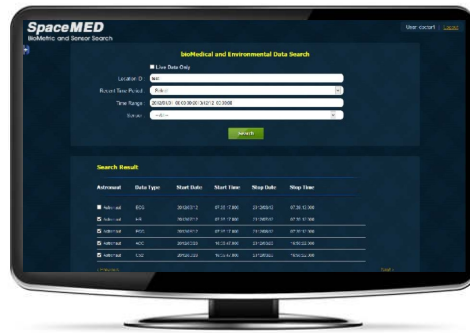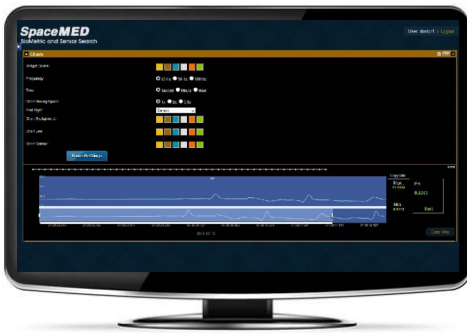
Idea

◇ Design a single platform where numerous wireless, and hence unobtrusive, devices can be connected.

◇ The platform will integrate in-flight data acquisition, consolidation, display, control and decision support, to which broadly distributed existing and future medical and environmental devices, systems and software will be able to connect and interact.

Our Solution

◇ Developed SpaceMed which is conceptually separated into 4 layers: the device, the MEDcomm (data acquisition), the MEDproxy (storage), and the MEDview (interactive display). The Hardware layer for SpaceMed platform consisted of devices like pulse oximeters, EKG, EMG, CO, Respiration sensors.

◇ The MEDcomm supports various communication protocols to enable different types of hardware components to communicate with the SpaceMed platform.

◇ The MEDproxy provides a relational database for data storage to support knowledge discovery and data mining.

◇ MEDview (GUI) provides secure and flexible graphical visualization of collected data.

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