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Infrastructure to Support Future Sensors, Networks, Data Communications and Data Processing for Global Monitoring and On-Site Inspections

Over the past decade ocean observing technology for the scientific community has advanced from expeditionary ship based science and data collection to long time series real time ocean observation. This paradigm shift has been achieved through the installation of significant cabled infrastructure systems. Several research organizations have launched a new era of human discovery within the world's oceans through electrical power and high speed internet connectivity in large portions of the global ocean through systems such as the Monterey Accelerated Research System (MARS), the NorthEast Pacific Time-Series Undersea Networked Experiments (NEPTUNE) system and most recently the Regional Scale Nodes (RSN) system. These underwater network systems allow land-based scientists, engineers, educators, and the public to remotely interact with ocean events as if they were actually in the ocean environment-events. High-bandwidth communications and power is provided to a network of instruments widely distributed across, above, and below the seafloor. This technology can be leveraged beyond ocean science allowing rapid fielding of new sensors, networks and processing technologies improving maintainability, reliability and efficiency of systems and operations. This paper will discuss background of some of the existing systems and how the Preparatory Commission could use this technology in future systems.

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