SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Satellite Communications and Navigation Technology (1)

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DISASTER MANAGEMENT SCHEME BY MEANS OF NANO SATELLITE AND WIRELESS NAVIGATION SYSTEMS

Abstract

Effective means of communication play a key role in disaster management system. Communication systems fail during disasters because it relies on a centralized controller. Self organized communication schemes without the need of centralized controller servers better during disasters. This paper proposes an adaptive disaster management framework which uses localized tracking mechanism to trigger the operation via wireless link and radio beaconing scheme for satellite communication. The NIUSAT is planned to accommodate a store and forward payload collect data from various gateway points during disasters. In addition to the primary objective, the NIUSAT is proposed to be used as a data reception, storage and forward terminal to receive the data collected from the deployed wireless nodes and up-linked to NIUSAT through transmission gateways located at few places. The collected data is shared with the nearby wireless stations directly from the satellite. The easy deployment nature of the proposed framework helps to trigger the communication among the wireless devices in a disasters environment. Self organized routing scheme tracks the wireless devises and finds the best path connecting the wireless devices in the disasters environment. Cluster based scheme helps to reduce the unnecessary broadcasts and improve the efficiency by reducing network traffic. Non-overlapping clusters are formed using the dynamic cluster creation algorithm. The mobility issues are also handled locally in this routing architecture. The proposed cluster maintenance algorithm dynamically adapts to the topology changes and hence efficiency is not degraded by node mobility.