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INTER-SATELLITE DATA RELAY SYSTEM (IDRS) FOR LEO SATELLITES USING A COMMERCIALLY AVAILABLE GEO SATELLITE SYSTEM

Abstract

The vast majority of commercial LEO satellite missions are supported by networks of a small number of ground earth stations distributed around the globe. Due to the limited number of earth stations and the speed of the LEO satellites, these ground earth stations can only provide intermittent communications services. To date a typical LEO satellite is supported by from one to ten 10-minute long communications sessions, or passes, a day. Thus communications with a LEO satellite is currently unavailable for long periods of time. Further, this limited availability is rigidly set in advance by the characteristics of the LEO orbit and the location of the supporting earth stations.

Building on the global coverage of the Inmarsat I4 geo-synchronous satellite constellation and its BGAN global ground infrastructure, the Addvalue IDRS is an innovative way to provide low-latency, 24/7 cost effective data communications services to support LEO satellite operations with a real-time, consistent IP based data communications service. It will greatly

enhance if not supplant current earth station networks for many LEO satellite missions with on-demand two-way connectivity to LEO satellites, thereby avoiding prohibitively high upfront investment cost and risk to deploy new satellite relay constellations or new earth stations.