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THE WORLD FIRST DTN COMMUNICATIONS EXPERIMENT IN THE LUNAR ORBIT USING  
KOREAN PATHFINDER LUNAR ORBITER(DANURI)

**Abstract**

The Korea Pathfinder Lunar Orbiter (KPLO), or Danuri, is the first Korea robotic lunar probe expected to carry out a lunar observation mission at a nominal orbiting altitude of 100 km from the Moon. The KPLO spacecraft consists of the main body of the orbiter, propulsion systems, tracking systems, three communications antennae, two solar arrays, and six payloads. The Delay/Disruption Tolerant Network Payload (DTNPL) is a space internet device developed by the Electronics and Telecommunications Research Institute (ETRI) of Korea. DTN is a type of interplanetary internet that is designed to handle delays and disconnections that occur frequently when utilizing internet technology in space. DTN is a method modified to fit the space communication environment by adding Bundle Protocol (BP), a store-and-forward function that is not present in the existing terrestrial internet. DTN technology is an internationally standardized technology and will become a major means of communication network for future space exploration. The technology demonstration includes CCSDS File Delivery Protocol (CFDP), Asynchronous Message Service (AMS), and Bundle Streaming Service (BSS). Network nodes for space internet technology demonstration are located in KPLO, NASA, KARI, and ETRI. The four seasons ETRI campus photos will be used for the demonstration of file delivery. A real-time streaming of K-pop band BTS' 'Dynamite' MV from KPLO is one of the technology demonstrations of Bundle Streaming Service. If the technology demonstration is successful, the DTN communication technology is expected to be used in Korea's lunar lander mission in the 2030's.