

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Communications and Satellite Navigation Technology (2)

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DYNAMIC COMMUNICATIONS FOR SMALL SATELLITES USING DISRUPTION TOLERANT
NETWORK CONCEPTS**Abstract**

Disruption Tolerant Networking (DTN) is a pioneering approach to network-based communications, seeking to resolve technical issues for nodes that lack continuous connectivity, which current Internet protocols cannot handle. The technology is being tested by several research bodies, and offers great potential for interoperability purposes.

This paper turns to the field of small satellites and the consequences of the future inception of DTN-based communications in upcoming missions. Possible advantages include increased robustness to delays inherent in space communications as well as performance improvement, with little or no change to current communications infrastructure

To test this assertion, the FAST mission has been chosen as a case study. This mission is a collaboration between the TU Delft and Tsinghua University, and it is composed of two small satellites tasked with performing an analysis of global aerosol data in the atmosphere. After using Java-based simulation, experimental results show the positive effect of the implementation of DTN protocols to perform payload data downlink in heavily disrupted communications environments, while pointing out areas where future work is needed to improve this technique.