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To: spaceinternetworkshop@listserv.gsfc.nasa.gov  
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Subject: Abstract for First Space Internet Workshop

## FILE MANAGEMENT IN SPACE

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### Purpose

We propose that the user interact with the spacecraft as if the spacecraft were a file server, so that the user can select and receive data as files in standard formats (e.g., tables or images, such as jpeg) via the Internet. Internet technology will be used end-to-end from the spacecraft to authorized users, such as the flight operation team, and project scientists. The proposed solution includes a ground system and spacecraft architecture, mission operations scenarios, and an implementation roadmap showing migration from current practice to the future, where distributed users request and receive files of spacecraft data from archives or spacecraft with equal ease. This solution will provide ground support personnel and scientists easy, direct, secure access to their authorized data without cumbersome processing, and can be extended to support autonomous communications with the spacecraft.

### Problem

In current practice, the science user is often "distant" from spacecraft science data. The ground system and operations team act together as a "middleman" that receives and processes the raw data before the end user sees the result. Science teams are often co-located with the spacecraft operations center at great expense to give the science team better and quicker access to the raw spacecraft data. Retrieval and reconstruction of spacecraft data on the ground is a significant cost and source of complexity in the ground system. Modern spacecraft are already equipped with a random-access Solid State Recorder (SSR) onboard, capable of supporting a file system, but is presently used primarily as a FIFO buffer.

Bottlenecks in the SSR to ground system and ground system to science data user communications limit the flexibility and operability of the old architecture. Currently, the contents of the SSR is typically dumped during each contact. On the ground, the data are captured, logged, stored in history files, and processed depending on their nature. The housekeeping data from the SSR is subsequently processed for user telemetry

complexity and data processing support required, and reduces the need for custom applications to handle and process spacecraft data.

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