SPACE EXPLORATION SYMPOSIUM (A3)
Solar System Exploration (6)

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WIDE DISPERSAL SPACE DELIVERED GEOLOGICAL SURVEY SYSTEM FOR EXTRA TERRESTRIAL APPLICATIONS

Abstract

This study presents the requirement for and the merits of a new method for space exploration. Current methods, the use of rovers, stationary landers and satellites to explore Mars have limitations on the range or quality of the information they can return.

This paper describes some examples of past space missions, including their successes and limitations. This is used as a foundation from which can be derived the requirements of an improved method for space exploration.

This new method requires the use of many small probes, deployed over an area of a planet much larger than that covered by conventional landers or rovers.

The primary advantage of this new exploration method is its use of many small devices. These are deployed over a large area, in contrast with the convention which is to use a single large device with increased capabilities, but which can operate only within a single location. The cost in terms of payload mass is equivalent, but allows for the coverage of a much larger area.

A design implementing this new exploration method is created. This design includes a deceleration system, communications and power systems as well as a small suite of suitable analysis tools.

The merits of this new platform are assessed against those past exploration missions described earlier. The primary criteria against which this comparison is made is in regard to the mass of the overall mission and the expected return of information.

From this process it is possible to determine how effective the use of this new platform will be in comparison to those already available.