

# ANALYSIS AND DESIGN OF MICROROVER DELIVERY SYSTEM

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## ABSTRACT

Recently, small mobile surface elements have been considered as interesting payloads to be sent to bodies of the Solar System due to the advantages that they offer with respect to traditional missions; mainly mass reduction. Moreover several excellent designs already exist and are well developed such as the Nanokhod rover developed by vH&S; a 2kg tracked and tethered system suitable for use in a wide variety of locations. Owing to limited dimensions; such microrovers are not autonomous in terms of power and communication. This leads to a tethered concept wherein a lander platform provides communication and power to microrovers. A strong trade-off between autonomy and lifetime prevails.

Nevertheless there is no full mission concept developed for this attractive payload, wherefore this report presents a preliminary system design for a mission to safely deliver microrovers to Mars' surface and provide them the required support to allow their operation in Martian terrain. In order to ensure these objectives, top-level budgets for the lander that supplies payload during surface phase, and the delivery module, which has the responsibility to decelerate Rover System in the EDL phase, are introduced.