

## **Titan Airship Explorer**

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Saturn's moon Titan is considered as one of prime candidates for detection of the extraterrestrial life. A unique combination of dense atmosphere (more than four times that of the Earth), low gravity (six times less than on the Earth) and small temperature variations makes the Titan almost ideal for studies with aerobots. Moreover, since the methane clouds obscure all the surface the low-altitude aerial platforms are the only means that can provide global mapping the Titan surface at least in visible and infrared. The major challenge is extremely cold atmosphere (~90K). Remoteness from the Sun makes the nuclear energy the only practical source of power. Remoteness from the Earth (~10 A.U., two-way light-time ~160 min) imposes restrictions on the data rates and makes impractical any meaningful real-time control. Superpressure powered aerobot (airship) and inflatable rover (Aerover) are prime lighter-than-air (LTA) platforms. The aerobots can be used for *in situ* studies of the surface while landing (aerover) or winching down an instrumented surface platform (powered aerobot). The aerobot will use electric drive propeller and autonomous/Earth assisted control for access to a desired destination point. Airship point design is provided. Requirements and possible means of navigation, control, data acquisition and communications are discussed.