EuroCares WP6 Sample Transport/Portable Receiving Technologies- Update to Activities

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The objective of this work is to propose methods for the recovery and transport of Mars or Lunar/asteroid samples from a landing site to the permanent curatorial facility. Initially a review of previous sample return recoveries was performed and compared to current designs for Mars sample return missions. The first part of the work concerns preparations for recovery, including the choice of terrestrial landing and recovery location. After this, a survey of current knowledge of the actual recovery and initial inspection of samples is described, followed by an analysis of international transport logistics to the curation facility. Preparation for recovery has considered sample quantity, sizes, masses and forms ie: rock, regolith, ice, brine and gas. A preliminary assessment of nominal and non-nominal active capsule landing scenarios has been carried out and it is noted that current Mars Sample Return architectures include passive aero shell delivery. Ground recovery of intact and non-intact samples and the possibility/necessity for a portable or on-site quarantine or containment laboratory are discussed. Secure packaging of the sample capsule from landing site to curation laboratory is critical.