



PRoViScout - Planetary Robotics Vision Scout

FP7-SPACE-2009-1 Collaborative Project Grant Agreement no: 241523

Project Homepage: www.proviscout.eu starting: Apr 2010 duration: 30 months

D2.3.1 System Design Document

Actual submission date: 2010-11-30

Work package 2 – Consolidation

Lead contractor for this deliverable SSL

Dissemination level: Restricted to other programme participants (including the Commission Services)

EXECUTIVE SUMMARY

The PRoViScout research project aims to develop a framework for autonomous sample identification and sample selection through planetary robotic vision processing by bringing together the European space community and supported by NASA-JPL. Through the on-board autonomous processing of visual data products, science prioritisation and platform control of robotic missions, reductions in the operational cost and increases in return data can be realised. Through PRoViScout a unified and generic approach for future robotic missions in robot vision, on-board processing, and navigation and scientific goal detection will be developed. The project also aims to provide an increase in the public awareness and generate procedures for distributing mission data and information to the scientific community and general public. The culmination of the project will lead to the integration of all the individual components into a single operational system which will be demonstrated at several field demonstrations. The PRoViScout system consists of a vision processing function chain (PROVISC), autonomous tasking, autonomous navigation, autonomous science representative sensor suite, an interface client (PROVIM), navigation, platform control. The scope and boundaries of the PRoViScout system will be based on the Science and mission requirements generated in tasks 2.1 and 2.4.

This document presents a system architecture for the Proviscout based on the these requirements and an existing software/hardware “landscape” provided by the various Proviscout partners. It outlines the basic system decomposition, operating modes, software interface requirements, hardware and electrical architecture. The architecture reflects the design philosophy for the project which seeks to minimise integration efforts in favour of improving algorithmic capabilities in order to advance the autonomous science concept.

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This document does not represent the opinion of the European Community, and the European Community is not responsible for any use that might be made of its content. The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 241523 "PRoViScout".

