

Automation of Health Management, Troubleshooting and Recovery in Lunar Outpost

**Qualtech Systems, Inc.**

#### Technical Abstract

The overall Phase-II goal is to develop the technologies and tools that can aid the automation of operation by providing intelligent decision support in situations when a mission plan needs alteration due to an event(s). The effort targets not only developing the algorithms, but also to implement them on QSI's TEAMS platform; this will transition the technologies into a useful tool for the A4O community.

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PM/IDE - An Integrated Development Environment for Planning Models

**Stottler Henke Associates, Inc.**

#### Technical Abstract

We propose to develop a planning model integrated development environment (PM/IDE) that will help people construct, review, understand, test, and debug high-quality planning domain models expressed in the Action Notation Modeling Language (ANML) more quickly and effectively. PM/IDE will enable novice modelers to review and understand models more expediently, so they can learn modeling techniques more efficiently. PM/IDE also will enable experienced modelers to review the models of others more quickly, so they can share modeling techniques and best practices. Interactive graphical displays will enable modelers to describe planning domain models under construction and the plans they can generate to domain experts in order to facilitate more efficient knowledge elicitation and model review. Without PM/IDE, ANML modeling will remain a tedious and difficult task that can be carried out only by the small number of people who have the necessary specialized skills and patience. This, in turn, will severely limit the use of ANML-based automated planning systems. During Phase I, we characterized the planning domain modeling task to identify the types of analyses and decisions that modelers carry out and the kinds of information they review and assess. Based on this understanding of the task, we designed and prototyped PM/IDE capabilities and user-system interactions that help people develop ANML models. During Phase 2, we propose to develop a TRL 7 version of PM/IDE. Our design approach draws upon our experience using a top-down, decision-centered software requirements and design process to develop data visualization and decision support systems.

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