

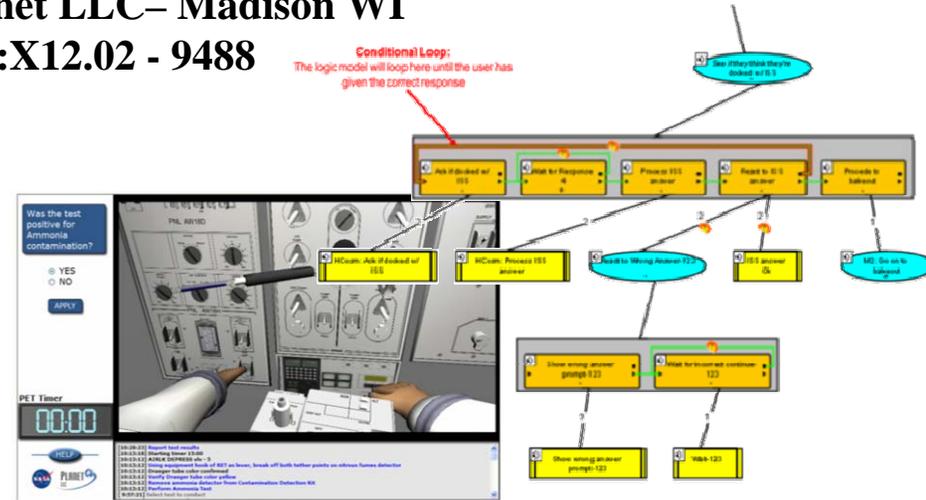
Just in Time Simulation Platform Phase II

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Proposal No: X12.02 - 9488

Identification and Significance of Innovation

Long duration spaceflight and exploration missions will require complex operations and demanding tasks. A better system for creation of intelligent simulations will be needed to prepare future crews for the rigors ahead. The software system proposed will create a method for authoring intelligent 3D simulations for training and operations support without the need for high-level programming. An authoring tool of this type will allow NASA subject matter experts to capture their knowledge and build a simulation from it, or allow developers to create scenario-based simulations for troubleshooting and repair. This tool will also be more cost effective than hardware.



Technical Objectives and Work Plan

The primary objective of the Phase II project is to seamlessly integrate decision-support software into the Hypercosm simulation system and design a user interface for authoring a 3D-based interactive training system. Integration of the logic engine that provides a text-based method to enter intelligent tutoring and response to user's actions is the most significant portion of the work plan. It includes building new application programming interfaces and a custom authoring and communications system. Once the complete system is integrated, it will be tested with the construction of a high fidelity trainer for on a critical EVA or Station support procedure. We will then provide training on the new authoring tool to encourage it's use in next generation developments.

NASA and Non-NASA Applications

Intelligent 3D simulations are ideal for payload or task trainers as a cost effective means to replace paper text-based instructions and training hardware trainer costs. On long-duration missions, they provide intelligent guides for training since astronauts will likely perform off-nominal procedures or actions trained for several years in the past. When embedded in an IVHM system, they also greatly improve the crews' ability to perform rapid diagnosis and repair. Hypercosm has been available commercially for six years, and this work will greatly improve its ability to create the intelligent training applications now in demand by the military, aerospace and commercial maintenance and operations communities.

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