

MEMORANDUM FOR DARPA/ITO

29 Apr 97

Attn: Mr. Jose Munos
3701 N. Fairfax Drive
Arlington VA 22203-1714

FROM: PL/VTMI
3550 Aberdeen Avenue SE
Kirtland AFB NM 87117-5776

SUBJECT: Letter of Support for Management Sciences, Inc (MSI) Phase II SBIR proposal

1. We have followed MSI's SBIR work for developing a toolset using RASSP autocoding to design for fault tolerance, and see a lot of promise in some of our key research projects. I've provided this letter to Ken for inclusion in his proposal package. Please give it top consideration for award.
2. One of the most vexing problems in the development of spacecraft systems is meeting performance targets in radiation environments. Even notwithstanding the radiation effects that can wreak havoc, the general requirement of long-term operation without human intervention is difficult to meet. Many COTS concepts in direct are furthermore rendered useless when combining the high reliability requirement with a radiation effects. As such, fault tolerant solutions are indicated, and adaptive computing approaches offer great promise. We were very impressed with Mr. Blemel's work in embedded prognostics, combined with Utah State University's advancements in operating systems research. It seems especially important in the context that such approaches could be applied to systems we are currently research, especially the Advanced Instrument Controller (AIC).
3. The RASSP autocoders are the right place to automatically add the diagnostic data, footprints, and tests that are needed to manage more vulnerable hardware approaches, including hybrid COTS strategies. The added diagnostics could dramatically reduce cycle time and improve performance significantly. The ability of the operating system to manifest robust, distributed performance literally breathes life into a great variety of powerful network architecture concepts involving our AIC research. We are hoping to directly exploit this research, if funded. We are eager to investigate the performance of such approaches when hosted on the minimalistic control engines (and higher performance nodes), so that our future AIC derivatives can be optimized for more intimate integration of such features. It is a compelling and exciting concept – we've yet to even scratch the surface!. In fact, if it were here today, I'd fly it in the next insertion opportunity.
4. I hope DARPA can award the Management Sciences phase II effort and its options, as this investment will undoubtedly have tremendous payoff for improved space systems architectures. We enthusiastically support this work, and hope DARPA can see fit to select this as a top Phase II candidate.

Manager

cc: Ken Blemel, MSI

JAMES C. LYKE, GS-13, USAF
Advanced Microcontroller Program

JENNIE MURILLO
Budget Analyst, PL/FMBD

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Attachments:

1. PL/VTMI (formerly VTEE) letter, dtd 2 Feb, less Atch 2

1st Ind, NASA/JPL

_____ (date signed)

TO: PL/VTMI

1. We concur with the Statement of Capabilities and request initiation of work.