Report to the President on <u>Developing Open Source Software for High End Computing</u>, September 11, 2000

Transmittal Letter to the President

President's Information Technology Advisory Committee

September 11, 2000

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The Honorable William J. Clinton
President of the United States
The White House
Washington, DC 20500

Dear Mr. President:

The President's Information Technology Advisory Committee (PITAC) is very pleased to submit the second report in the series of follow-ups to our February 1999 report to the President, Information Technology Research: Investing in Our Future. Open Source Software for High End Computing highlights our recommendations for a research strategy that uses open source software development as the new model for answering America's high end computing software needs.

In our February 1999 report, we noted with concern a growing national vulnerability based on the inadequacies of the current system to build reliable and secure software while the diversity and sophistication of the software base becomes increasingly pervasive in society. The PITAC believes the open source development model represents a viable strategy for producing high quality software through a mixture of public, private, and academic partnerships. This open source approach permits new software to be openly shared, possibly under certain conditions determined by a licensing agreement, and allows users to modify, study, or augment the software's functionality, and then redistribute the modified software under similar licensing restrictions. By its very nature, this approach offers government the additional promise of leveraging its software research investments with expertise in academia and the private sector.

In the attached report, we focus exclusively on software development for

high end computing (sometimes referred to as high-performance computing or supercomputing) because of its critical importance to U. S. national security and science and engineering research. Our 1999 analysis revealed that while there were a number of high end applications ripe for exploration, the field was in need of substantial innovations in application-development software, algorithms, programming methods, component technologies, and architecture.

The report makes three recommendations. First, the Federal government should aggressively encourage the development of open source software for high end computing. Adopting this recommendation will require a technical assessment of the software needs for high end computing as well as an innovative management plan and funding model for supporting this development. Second, a "level playing field" must be created within the government procurement process to facilitate open source development. Third, an analysis of open source licensing agreements is needed, with an ultimate goal of agreeing upon a single common licensing agreement for open source software applications.

Exploring alternative software development models for high end applications will allow the Nation to make significant progress towards addressing the growing national need to ensure software development practices and techniques which will result in reliable and secure systems. We are encouraged to see some high end computing and reliable software development research topics among the priorities in your proposed FY2001 budget for Information Technology Research and Development. However, we urge you to implement the strategy outlined in our report in order to strengthen the effectiveness of federal investments and policies in this arena.

Thank you for the continued opportunity to advise you on these and other important issues for America's information technology-driven economy.

Sincerely,

Raj Reddy, Ph.D.   Irving Wladawsky-Berger,
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