

## STATEMENT OF CONSIDERATIONS

### REQUEST BY IBM WATSON RESEARCH CENTER FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER LBNL SUBCONTRACT NO. 6720363; DOE WAIVER NO. W(A)-05-056

The Petitioner, IBM Watson Research Center (IBM), has requested an Advance Waiver of the Government's domestic and foreign rights to inventions made under the above cited research and development subcontract (Subcontract) with the Lawrence Berkeley National Laboratory (LBNL).

The objective of the Subcontract, which is issued by the LBNL on behalf of DOE's Office of Mathematical, Information and Computational Sciences (SC-21), which is part of the Office of Advance Scientific Computing Research (OASCR), is to provide support and lead basic development (i.e. preparing derivative works) on core parts of the K42 code base system.

#### BACKGROUND

IBM's K42 is an open-source alternative to the Linux kernel designed to be a research platform for operating systems and is used as a tool for evaluating hardware. K42 is designed for large shared-memory multiprocessors. Measurements of the important High End Computing (HEC) applications, and benchmarks sufficient to compare these with other operating systems to motivate customization of K42, will be made to illustrate that the full-featured K42 operating system can match the performance of sparse-featured lightweight operating systems.

IBM will be working on three major areas:

- (Area 1) Architecture of a Parallel Operating System

The goal for the project is to design an operating system architecture that works on systems of any size. The operational architecture of large-scale operating systems by extending the K42 research to clusters will be investigated.

- (Area 2) Dynamic Adaptation

Dynamic adaptation will be used at run-time to improve the performance of HEC workloads to improve performance. Components of the K42 HEC runtime will be instrumented so that users can gather information relevant to their application. Tools will be developed to help users interpret this performance data.

- (Area 3) Framework for OS Research

Production of an operating system that selectively gathers performance monitoring information, analyzes it, and when necessary directs the hot-swapping of objects is the end goal. The third major task is to make K42 a platform for general operating systems research available to the general community. The K42 source and binaries will be packaged and distributed in a form that

makes it easy to begin using K42 along with the message-passing libraries needed to run HEC applications.

### THE ALLOCATION OF PATENT RIGHTS

IBM has requested the worldwide rights in all inventions made under this Subcontract. Usually, DOE expects the subcontractor to cost-share the subcontract by at least 20% before granting an advance waiver. However, IBM has already made substantial investment in creating and developing K42, which was developed with IBM funds for high powered computing in research applications. See Appendix A, IBM Petition Answer #6. IBM has funded K42 for over six years. See Appendix A, IBM Petition Answer #7. IBM's expertise in K42 is unrivaled by any public or private entity. See Appendix A, IBM Petition Answer #5. If IBM owns any inventions developed under this subcontract, IBM will have maximum flexibility in achieving optimal commercial utilization of K42 technology. See Appendix A, IBM Petition Answer #9.

In addition, IBM has encouraged development and use of K42 in the scientific community by releasing K42 as Open Source Software (OSS) package by using a standard OSS License (LGPL). See Appendix A, IBM Petition Answer #10. As a condition of this waiver, IBM will continue to offer K42 as an OSS to the extent it includes material created under this subcontract. All derivative works created under this subcontract must be released under the same type of OSS license, which includes the provisions cited in Appendix C. Since the public including the scientific community will benefit from these improvements, DOE will grant IBM's request for worldwide rights in all inventions made under this R&D Subcontract.

IBM has agreed to the standard patent clause (10 CFR 784), which allows the Government to retain a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on the behalf of the Government the subject inventions throughout the world. Therefore, the Government will be able to use the inventions for non-commercial purposes. In addition, IBM has agreed to include a license provision in the subcontract where IBM grants to any OSS licensee the right to use any patents that relate to the OSS. See Appendix D for the clause. It is standard practice for DOE to include a U.S. competitiveness clause where waiver recipient agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States. IBM will be distributing their derivative software under the LGPL license. Therefore, the US and foreign scientific community will benefit equally from this distribution. Further, any patents issued to IBM would be for a software programming method. DOE has already recognized that application of a U.S. manufacturing requirement to OSS is inconsistent with the decision to release the software as OSS. To gain the DOE program benefits of OSS, the software must be widely distributed and available for use. This particular software is not tied to a manufacturing process; so as a practical matter, such a requirement would be meaningless. Thus, the requirement to include a standard US competitiveness clause in the subcontract is waived.

### THE ALLOCATION OF RIGHTS IN TECHNICAL DATA

IBM has requested the right to assert copyright in the software developed under this Subcontract without first seeking DOE Contracting Officer approval. IBM has agreed to DOE's proposed changes to FAR 52.227-14 Rights In Data, paragraph (c)(1). See Appendix B. The standard FAR clause allows the subcontractor to assert copyright in scientific articles and publications. However, the subcontractor must request to assert copyright in all other data, including software. The modifications to this clause will allow IBM to assert copyright in software that will be released as OSS, i.e. K42. However, all other data (non-published data in scientific articles and software that is not OSS) will require DOE Contracting Officer approval before IBM may assert copyright in such data. DOE's dissemination statutes are adequately satisfied with the changes in the clause since the general public will have access to the derivative works of K42 as licensees of the OSS. Finally, it is DOE policy that OASCR funded software be issued as OSS. Therefore, this project clearly supports OASCR's objectives.

### Conclusion

The term of the Subcontract is for an initial 12 months. There are two optional 12 month efforts thereafter. This advance waiver will cover the entire term of the Subcontract including these optional extensions.

Accordingly, in view of the statutory purposes of DOE waiver policy, and the objectives of the OASCR, and in view of the factors to be considered under DOE's statutory patent waiver policy, all of which have been considered, it is determined that this advance waiver will best serve the interest of the United States and the general public. It is therefore recommended that this waiver be granted.

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Gary Drew, Assistant Chief Counsel  
Intellectual Property Law Division  
DOE Chicago Office

Based on the foregoing Statement of Considerations, it is determined that the interests of the United States and the general public will best be served by waiver of the United States' domestic and foreign patent rights as set forth herein, and therefore, the waiver is granted. This waiver shall apply to modifications or extensions, including (but not limited to) the two planned options, of this Subcontract where, through such modification or extension, the purpose and scope of the subcontract has not been substantially altered. This waiver shall not affect any waiver previously granted.

CONCURRENCE:



Date: 1/18/2006

Frederick C. Johnson  
Senior Technical Manager for Computer Science  
Office of Advanced Scientific Computing

APPROVED:



Date: 1-24-06

Paul Gottlieb  
Assistant General Counsel  
for Technology Transfer and Intellectual Property