In this appendix, we describe in more detail the laboratory models used in the analysis described in Chapter Four.

DEFENSE WORKING CAPITAL FUND (DWCF) MODEL

The DWCF model is based on agencies such as the Department of Defense (DoD) depot maintenance program and the Naval Research Laboratory (NRL), whereby the agencies only do work that is requested and paid for by their customers.

DEFENSE RESEARCH INSTITUTE (DRI) MODEL

Conceptually, a DRI is a world-class graduate school that specializes in fields of research important to the Army. Admission is competitive and similar to today’s state and private universities. The graduate students would engage in hands-on research and have thesis and dissertation goals similar to those at most graduate schools. In this scheme, the Army would be able to attract and train highly qualified individuals and offer permanent employment to the most talented. Tenure could be granted to exceptional faculty members, which could facilitate the maintenance of corporate memory.

FEDERAL GOVERNMENT CORPORATION (FGC)

The FGC model is discussed in the main body of the report. The key feature of an FGC is flexibility. FGCs are granted flexibility with re-
gard to otherwise encumbering regulations and with regard to Civil Service rules and federal acquisition and disposal requirements. They are granted freedom from the political forces driving congressional actions. They are allowed to focus on a single product or service and on a limited customer base or constituency by being insulated from the demands of a multimission agency. Finally, FGCs are allowed financial freedoms unavailable to federal agencies. In particular, they can borrow money from commercial sources, they can issue debt in the form of bonds, they can be exempt from local, state, and federal taxes, and they can benefit from “off-the-balance-sheet” status, multiyear federal funding, and exemption from deficit-reduction spending caps.

FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER (FFRDC) MODEL

The FFRDC model is based on MIT Lincoln Laboratory, an entity that provides a predetermined level of engineering services through annual line-item funding in the federal budget.

GOVERNMENT-OWNED/CONTRACTOR-OPERATED (GOCO) MODEL

The Government-Owned/Contractor-Operated (GOCO) model is based on such Department of Energy (DoE) GOCOs as Sandia and Los Alamos, where the facility is owned by the U.S. government but operated by a commercial firm under a contract between the firm and the government.

GOVERNMENT AS A SUBCONTRACTOR (GOV SUB) MODEL

The GOV SUB model is a system in which the government laboratories compete with private industry to perform work on government systems. If the government laboratory is selected to perform the work, it becomes an associated contractor or subcontractor to the prime contractor in charge of the government program.
INTERNATIONAL LABORATORY MODEL
In an international laboratory model, scientists from many nations would work together to perform research of mutual interest. Such an international model would inherently offer a high level of leveraging off international organizations because scientists from different nations would work side by side on the same research in an effort to achieve like goals.

JOINT SERVICE LABORATORY (JSL) MODEL
The JSL model is based on the Armed Forces Radiobiology Research Institute, where the Army, Navy, and Air Force combine resources and jointly perform basic and applied research on technologies of interest to all three services.

OUTSOURCE LABORATORY MODEL
The Outsource Laboratory model is based on the Defense Advanced Research Projects Agency (DARPA), which outsources all its research to contractors and academia and uses highly experienced scientists who are government employees (usually term employees) to provide oversight.

PRIVATE LABORATORY (PL) MODEL
In a PL model, the government has no ownership stake and no control over how the facility/business is operated. Ownership of a PL can range from publicly traded stockholder ownership to complete private-party ownership. Government (Army) research can be conducted through charter statements and/or contractual agreements between the government and the PL.

RESERVE SCIENTISTS AND ENGINEERS (S&E) CORPS MODEL
The Reserve S&E Corps model is a system in which scientists and engineers are registered in reserve corps similar to military reserve corps. When the Army requires expertise in a particular area, mem-
bers of the reserve corps are called upon to perform the services for the government. The S&Es are paid for the services they provide and may receive a fee for being a member of the reserve corps.

INCUBATOR MODEL
A technology incubator laboratory is a lab where an organization, such as the Army, provides basic support services or infrastructure to help fledgling firms develop marketable products. The Army is investing in a firm that it believes is developing a concept that can result in a product or service that the Army can use. The Army can structure incubator agreements for monetary gains and/or priorities in gaining use of the resulting product/service.

VENTURE CAPITAL MODEL
The venture capital model requires the Army to invest in a concept that is not yet fully developed. The money is used to develop the concept into a successful product or service. Such ventures are often clad in some degree of secrecy, and collaborative efforts tend to be limited without an invested monetary interest. When the successful product or service is produced, the investors can receive monetary gains. The Army can receive additional benefits, such as being able to field a system earlier.

VIRTUAL LABORATORY MODEL
A virtual laboratory is a conceptual model, in which S&Es could be located anywhere. The S&Es perform research at local laboratories, are linked via computer and other telecommunication devices, and use these tools to communicate plans, strategies, findings, results, and conclusions, thus enabling them to work together on the same research efforts.