

in FY 2002, boosting its capacity to respond to bioterrorism threats, including nearly \$100 million for anthrax and other bioterrorism research and R&D facilities upgrades. Health and Human Services (HHS) agencies make up the largest part of the counter-terrorism R&D portfolio with \$451 million in FY 2002. The DOE receives \$78 million for non-proliferation R&D, to develop improved detection technologies for bioterrorism and nuclear agents, and an expanded research effort on potential nuclear terrorism. \$70 million in emergency R&D funds goes to the Environmental Protection Agency (EPA), for both R&D and facility projects, including security upgrades at EPA laboratories, drinking water vulnerability assessments, and anthrax decontamination work. The Department of Transportation (DOT) also saw emergency funding of \$64 million for aircraft safety technology R&D, and \$45 million for aviation system security technology research. For details see: <http://www.aaas.org/spp/dspp/rd/ca02emer.htm>

#### **The Federal Science and Technology (FS&T) Component of the R&D Budget**

The Office of Management and Budget (OMB) introduced FS&T criteria in the FY 2002 budget request as a means of comparing the Bush administration R&D funding to the Clinton Administration's special "21<sup>st</sup> Century Research Fund," (these budgets are part of total R&D funding). FS&T is a comparable special fund of the Bush Administration, i.e., a collection of selected R&D and non-R&D programs that emphasize basic and applied research and the creation of new knowledge or technologies, including some S&T education and training activities. The FS&T budget rises by 11.1% in FY 2002 to \$52.4 billion, and most of this increase is due to a 15.7% increase to the total NIH budget, although there are increases for all FS&T programs - for details see: <http://www.aaas.org/spp/dspp/rd/capre02tb.htm#tb4>

#### **B) S&T Structure in the United States in 2002**

The S&T structure in the USA is dominated by industry, in terms of applied research, and the Federal Government, in terms of basic research. However, in terms of those performing R&D, industry dwarfs all others at 76%, but a majority of the basic research is performed by Federal Government laboratories and universities. Industry still performs most of its own research, although there has been a trend for industry to increase its collaboration with universities, particularly for basic research, but industry often finds setting up projects with universities non-trivial. In the 1990's, industry also spent considerable funds and energy on forming consortia to perform high-risk research, which had significant support and funding from some federal departments in the early 1990's. However, this trend has been reversed, as government considered this funding to be "corporate welfare". Collaborations do continue at a reduced level, and in many cases they have been immensely successful. Of the *four principal economic sectors*, the non-profit institution sector contains such entities as Howard Hughes, Johns Hopkins and Battelle, institutions that provide niche research areas, although in the overall picture, they are a small percentage of the US R&D total.

Although industrial research dominates the funding scenario, the S&T structure in the USA is led by Federal Government S&T funding. Industry looks to government to lead high-risk research (mostly basic), which is leveraged by industry matching funds. The activities of the major US Government S&T funding departments and agencies for FY 2002 are as follows:

**Department of Defense (DOD) R&D totals \$50.1 billion.**

DOD's basic research ("6.1") totals \$1.4 billion, while applied research ("6.2") totals \$4.2 billion. Universities perform more than 50% of DOD's basic research and about 20% of DOD's applied research. There is a separate \$461 million appropriation for congressionally designated medical research, including \$150 million for breast cancer research. The Defense Advanced Research