



## **THE UNINTENDED CONSEQUENCES OF “BUY AMERICAN”: HOW HR 1588 COULD STALL COMMERCIAL IT PROCUREMENT AT DOD**

### **Summary:**

If all procurement of commercial information technology products by the Department of Defense were conducted under the terms of the Buy American Act, as would be required under section 828 of the House version of the 2004 Defense Authorization Bill, H.R. 1588, procurement would come to a crashing halt. Even at the current domestic content minimum of 50%, much less under the proposed domestic content minimum of 65% (see § 829 of H.R. 1588), few if any commercial information technology products are capable of meeting Buy American Act requirements. Domestically produced hard drive storage units, displays, semiconductor memory, and even microprocessors, do not exist (either at all or in sufficient quantities) to allow the creation of products that meet Buy American tests. The cost of creating domestic capacity would be formidable, in the billions of dollars over an extended period of time, and the capacity created would not be commercially viable but dependent on defense business. This is exactly contrary to current defense industrial base policy expressed by Congress, which stresses reliance on the commercial industrial base for defense needs.

Leaving aside this issue, reporting requirements that would be established by sections 811 and 812 of H.R. 1588, for both successful contractors and unsuccessful bidders, would drive commercial product suppliers away from defense procurement and make commercial information technology products unavailable to the Department. Data is not required to be kept in the commercial market on the origin of components. In many cases, it is impossible to determine origin; and in some cases, such as software, the origin of components becomes a meaningless construct. Vendors will not risk the high cost of attempting to comply and the penalties for failing to comply if audited. These provisions, drafted in the name of developing a database of all components of defense systems, to highlight “essential” components and “critical” ones not available domestically, will result only in driving commercial vendors from the marketplace and depriving the war fighters of the newest, most advanced technologies available commercially.

Subtitle B of Title VIII of H.R. 1588 must be stricken in its entirety from the final bill in conference.

### **Preliminary Statement**



From smart bombs to battlefield networks to combat theater logistics and all the way to cyber warfare, modern American national defense depends more and more on information technology. This is self evident from not only the headlines in the press, but from the careful study and analysis of the Defense Department's best strategists. This process of defense modernization and transformation depends on the ability of our defense infrastructure to acquire and deploy the latest information technologies from the most efficient commercial sources. Provisions in the House version of the 2004 Defense Authorization bill, HR 1588, would seriously disrupt this process if not halt it altogether, while an alternative, cost-inefficient, domestic technology base was constructed to serve only defense needs at great expense in funding and time. The net long-term result will be less equipment and less technology in the hands of the war fighters.

This is exactly contrary to the major principles of current defense industrial base policy, in which Congress sets forth the goal of reducing, through various reforms, "the reliance of the Department of Defense on technology and industrial base sectors that are economically dependent on Department of Defense business" and encourage, to the maximum practicable extent, reliance on the commercial technology base to obtain defense industrial base objectives. 10 U.S.C. 2501(b). It has long been recognized that a private sector dependent on defense business cannot thrive in the modern economy, unless it can successfully compete for investments. If defense industries are cut off from commercial sources of advanced technology, forcibly disengaged from the global economy and forced to rely on a single customer's requirements for their business, their prospects for independent business success are diminished if not eliminated.

The provisions of H.R. 1588, specifically those of Subtitle B of Title VIII of the bill, accomplish this disastrous result in a number of ways. In terms of the impact on the commercial IT sector, a few specific provisions stand out.

#### **A. Reporting Requirements of Sections 811 and 812**

Section 812 requires the Secretary of Defense to establish a process to identify all items and components within all "military systems" costing more than \$25,000, which are necessary to support national security requirements. The definitions in Section 831 include subassemblies and software in the definition of components. The intent of the process is to identify "essential" components and from those, "critical" components, that Section 813 requires be acquired solely from domestic sources. Section 814, in turn, would support development of new domestic capacity with an investment fund under the Secretary's jurisdiction of \$100 million.



Both successful contractors and unsuccessful bidders would be required to submit lists identifying the country of origin of the components, subassemblies and software in their systems. Whether or not an IT system is eventually deemed “essential” or “critical” under this approach, the reporting requirement itself will stop commercial IT providers from bidding on Defense Department procurements or providing commercial IT solutions to the prime contractors offering more complex military solutions integrating IT into weapons systems of all kinds. At the very least, such list making activity would come at a prohibitive cost to the bidding company. In more cases, this kind of activity simply cannot be done in the commercial marketplace.

### **A.1. Hardware**

A simple but comprehensive example of the problem is provided by the case of DRAMS, “Dynamic Random Access Memory Semiconductors”, the basic working memory chips ubiquitous in electronics, from cell phones and other kinds of telecommunications equipment to personal computers to servers to imaging equipment to a soldier’s battlefield network node and more. The market for DRAMS is global. There are producers in the United States and Europe, as well as Japan, the Republic of Korea, Singapore and increasingly in Taiwan and China. Producers in the United States (even when considered in conjunction with European producers) make high quality DRAMS for their own internal consumption as well as for the merchant market of sales to other companies, but they do not produce sufficient quantities of DRAMS to supply the entire demand in the marketplace. Even some domestic producers fabricate DRAMS in the United States, but send them to foreign plants for “encapsulation”, a high tech packaging process that under ordinary rules of customs law confers “origin” on the place where the packaging takes place. Congress would have to pass special rules, at possible variance with WTO obligations, to confer domestic origin on such DRAMS. It is debatable whether domestic supply of DRAMS for the merchant market, even considering DRAMS packaged outside the US, would meet the demand generated by Defense Department procurements of all information technology products from the simplest to the most complex.

DRAMS come in a wide variety of sizes, speeds and types. Within a range of similar density, access speed and type, DRAMS are commodity products, interchangeable regardless of the origin of their fabrication or packaging. A computer or telecommunications or other electronic equipment manufacturer engages in a qualification process for a new source or a new device (DRAM densities – the amount of information they can hold in “memory” – grow over time), but once qualified, shipments are received from all qualified sellers and used interchangeably. One week, a computer from manufacturer X will contain DRAMS from Korea, the next week, DRAMS from Idaho, the next week DRAMS



from Japan or Taiwan. They simply cannot tell what the manufacturing requirements or the countries of origin of the components will be from week to week.

Many of the markets for components and subassemblies in the electronics business work this way, from passive semiconductors (resistors and capacitors) to circuit boards, whether stuffed with integrated circuits or waiting to be assembled into working electronics "board level" products, from hard drives to display components. There are multiple, interchangeable sources that preclude the manufacturers' ability to create, much less certify, an authoritative list of countries of origin of the hundreds or sometimes thousands of discrete components in a particular computer or telecommunications switch or Radar control unit.

Why not just open the box and look at the components to see their origin? There are some simple reasons why this is not possible. First, some of the components are so small they are not required to be marked with origin under any customs law. Second, other components which may have been properly marked when shipped to the assembly plant have been "transformed" from a DRAM into a memory board or a motherboard, and under standard customs rules, the origin of the components does not have to survive the "substantial transformation." So the location of the board assembly operation may be known, but not the origin of its components. Third, the chain of distribution may be such that importers with some knowledge of the origin are several steps removed from – and unknown to -- the contractor required to certify.

The commercial marketplace simply does not require this kind of knowledge of component origin. To provide it would be prohibitively expensive, if not impossible. This is the first reason for concluding, without any doubt, that commercial IT products will be unavailable to the Department of Defense if the provisions of Subtitle B of Title VIII of HR 1588 are enacted. The reporting requirements will result in the need for establishment of segregated production facilities for equipment dedicated to the Defense Department customer. In many cases, that will simply be uneconomic for the companies involved and the technology will not be made available. When it is available, the cost will be correspondingly huge, turning a commercial enterprise into a customized "one-off" facility.

It is worth pointing out that if DRAMS, under the reporting requirements of sections 811 and 812, were found to be "critical" and new production capacity was needed in the United States, The United States International Trade Commission recently estimated the cost of construction of a new DRAM fabrication facility as exceeding \$2 billion. (See Investigation No. 701-TA-431



Preliminary, USITC Publication 3569, December 2002 at page 15). Defense needs are not economically sufficient to drive this kind of extraordinarily high costs investments in IT fabrication facilities, which is one reason why our nation's defense industrial policy wisely recognizes that it must depend on investment in the commercial sector, not investment in defense-captive industry, and it has to accept the efficiencies that the global commercial sector offers to all buyers, rather than distort markets for such large scale production needs.

## **A.2. Software**

The country of origin of "software", which section 831 includes in the definition of components and subassemblies for reporting, is not a simple matter. Under established customs origin rules, the "origin" of software when it exists as a recording on media is the country in which the recording is made. That is useless as a tool of industrial policy, of course, but it raises the question of why the origin of software should become a matter of origin reporting and what utility such reports might have.

More and more, commercial software applications are developed in more than one country. In many cases, large software developers are setting up global work groups that work on a particular project "24/5" by following the clock across the United States, Australia, Asia and Europe over the course of the work week. At the end of each development engineer's workday, he or she sends the project electronically on to a colleague in the next time zone who works on it through his or her day and transmits it on, etc. The ease of telecommunications transmissions without restrictions across borders makes this possible. The fact that it happens makes identification of "origin" virtually impossible and, in any case, meaningless.

It is certainly true that a great deal of specific software is developed especially for the Department of Defense under secure conditions by American citizens with appropriate security clearances and that the origin of such software is relatively clear. But the trend at the Department of Defense is to rely more and more on commercial software for critical applications, as evidenced by the NIAP program jointly administered by the Department of Defense and the National Security Agency to certify commercial systems for national security applications. The country of origin of many of those commercial software programs are meaningless constructs, at best, impossible to certify, at worst.

The focus of this paper is on the impact the provisions of H.R. 1588 would have on Department of Defense procurement. These provisions, of course, also have an extremely negative impact on the international trading environment and obligations of the United States, as noted in the next section. It is worth



mentioning in this discussion of software, however, that proposing restrictions on software procurement is not an idea that would be limited to the United States, if it were implemented. It was rumored in the mid 1990's that the European Union was considering requiring that software procured for projects that were part of Europe's common defense should be of "European origin". The proposal was discussed in Brussels, but did not see the light of day in proposed regulations. Industry fought it on a number of grounds, including those discussed here. The point is that if the American defense establishment started to have to track software origin with an eye to restricting procurement to software of American origin, it is fairly safe to assume that the European Union might well follow our example. This would result in not just a loss of sales by the US commercial software sector, but also a likely loss of interoperability with European defense systems to our common detriment.

## **B. Buy American "Enhancement"**

Today, much Defense procurement of commercial IT products is conducted under the terms of Title III of the Trade Agreements Act of 1979, 19 U.S.C. 2511 - 2518 (2002), enabling legislation for the international procurement agreement to which the United States is a party, known as the GATT procurement code. It is an international obligation of the United States, embodied in a waiver of the applicability of the Buy American Act, 41 USC §10a-c, to such procurement.<sup>1</sup>

Sections 828 and 829 of H.R. 1588 are intended to re-impose the 1933 Buy American Act ("BAA"), on all Defense Department acquisitions, and increase the percentage of domestic content from 50 to 65 percent. Even without the percentage increase proposed in Section 829, reimposition of the BAA on Defense acquisition would make procurement of commercial IT come to a standstill. Simply put, there is little if any commercial IT equipment that can meet the percentage content requirements of the BAA, whether at 50 or 65%.

The BAA works by separating things into "end items", "assemblies" and "components and materials." Under its terms, at least 50% of the cost of assemblies used to make up end items must be domestic cost of labor and materials. This means US production of the assemblies, which can be made from components and materials of various domestic and foreign origins. Consider as an example, a simple notebook or laptop computer, another almost ubiquitous piece of electronic equipment. The "assemblies" are the major pieces of the computer: the flat panel display, the hard drive, the CD-Rom or DVD drive,

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<sup>1</sup> See Executive Order No. 12260, December 31, 1980, as amended; implementing the GATT Agreement on Government Procurement; and Executive Order No. 12849, May 25, 1993, as amended, implementing an Agreement with the European Community on Government Procurement.



the motherboard, the keyboard and pointer assembly. In the commercial market, many of these may be products of American firms, designed and developed by American firms, but made in foreign countries. BAA – a Depression-era, pre-technological age law – cares nothing for the origin of design or development knowledge, only for the origin of the manufacturing process. It is also true that in the commercial market, however, some of these assemblies simply are not made by American firms anywhere in the world.

These are all global businesses that supply global commercial IT markets. Simply put, there are no flat panel displays made in the United States for notebook computers<sup>2</sup> (or for desktop flat panel monitors, for that matter). There are no hard drives made in the United States, although United States firms are engaged in the market, with production facilities outside the US. The cost of these two components alone may equal 50% of the total cost of components, disabling notebook computers from ever meeting the BAA test. Add to this the commercial reality that the motherboard of the computer will have been assembled outside the US – as is now almost always the case – and the impossibility of meeting the BAA domestic content test is apparent.<sup>3</sup>

These problems cannot be remedied simply by establishing a motherboard assembly facility in the United States, as the legislative provisions would appear to insist? First that is not as simple as it sounds. It may be possible for a notebook computer to meet the test by assembling the motherboard in the United States, but several other non-commercial elements would come into play. To balance out the accounting test of BAA percentages, it might be necessary to

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<sup>2</sup> Some high quality, expensive specialty flat panels are made here for large screen custom applications, some of them for the Defense Department. They are not the same as the Active Matrix LCD's used for notebook computers. Incidentally, if this technology were deemed "critical" under the reporting process envisioned by the bill, establishment of an AMLCD factory in the US would not be enabled by the \$100 million fund the bill establishes for such purposes. Cost of establishing a commercially viable AMLCD factory in the early 1990's was established at over \$500 million by an ITC proceeding and must be more than \$1 billion today.

<sup>3</sup> The other major cost component in a notebook computer is the microprocessor itself. Under customs rules, if an Intel (or other) microprocessor is fabricated in California, but "packaged" in Malaysia, the packaging is considered a high tech "substantial transformation" operation that conveys origin on the semiconductor, resulting in their trading on world markets as "products of Malaysia." Stuffing a motherboard with integrated circuits and other semiconductors, including a microprocessor, is also considered a "substantial transformation" that confers origin on the board and on the computer that results. This permits a perverse result. The "highest tech" of the components are the semiconductors, but under the BAA logic, their origin is unimportant compared to the origin of the board stuffing operation – which is still a precise manufacturing operation, but not nearly as complex and advanced as semiconductor manufacturing. But it is the board stuffing that must be done in the US to satisfy the BAA requirement, not the chip manufacturing. In any case, unless the board is assembled in the United States, the computer is not likely to ever qualify under the BAA.



use the most advanced electronics on that board to increase its relative cost (the fastest most advanced and most expensive microprocessor), while coupling it with a low tech older (cheaper) display and smaller capacity (less effective and useful, but cheaper) hard drive and other electronics in an effort to try to manipulate the cost factors to meet the 50% test. The product will be inferior – less advanced technology, fewer features, etc. – to those available in the commercial market – it will have no commercial market itself – and it will cost more, to take the custom manufacturing process into account. The American line would not be competitive in the global commercial market and so would be of no use other than to produce specialty products for the Defense Department. This would contribute further to increased costs and limit competition in these specialty lines to a few – or maybe even just one – large company willing to sink the cost into the specialty production and able to absorb and manage the higher overhead. In short, even restoring some domestic custom production would not solve the problems raised by the provisions of H.R. 1588, but simply start a downward spiral away from the most advanced technology at ever increasing costs of production, while still using many of the highest tech foreign components.

Other examples could be found of IT products that it will be difficult for the Defense Department to acquire. Modern mass data storage facilities, for example, are of increasing importance to many military missions from logistics to intelligence. Mass data storage equipment, commercially scaled and efficiently priced, amounts fundamentally to large arrays of high capacity hard drives like the ones found in servers and desktop computers. High capacity hard drives are still not made in the United States. It is difficult to see how this technology could ever meet BAA percentage tests.

These results are emblematic of what happens in the broader electronics marketplace if the BAA is re-imposed on Defense procurement of commercial electronics. Of course, as computer and telecommunications equipment move up the scale in size and sophistication toward supercomputing, they tend to have more domestic content and be produced domestically. These advanced systems, however, are complemented by large quantities of high quality commercial computer products at low prices that simply are not going to be available to the Department.

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