



# THE ADA MANDATE AS A THREAT TO NATIONAL SECURITY

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Federal laws mandate Ada for all defense software systems. This free market distortion is having the opposite of its intended effect - it drives up the cost of defense software development and prevents use of advanced software technologies. In era of declining defense budgets, too high costs resulting from the Ada Mandate will threaten national security.

After ten years, with billions of tax dollars spent on projects mandating Ada, what has happened to the language? I delineate between In and Out of the Mandated world, between people forced to use Ada, versus those free to choose.

By almost any measure of success, Ada has had no impact outside the Mandated world. Compared to C/C++, Ada thrives by a factor of ten to thirty times less. There are fifteen times as many companies and products for the C++ market, twenty times as many C++ job openings, ten times more mention of C++ in trade journals and computer media, twenty times more use of C++ in state of the art technologies (such as artificial intelligence, parallel and multi-processing, object oriented databases, etc.), and thirty times more interest by leading companies in the growing desktop computing world (Microsoft, Lotus, Borland etc.). Ada is as obscure as niche languages such as Lisp, Prolog, Forth, and Smalltalk - even less so if Mandated sales are not counted.

What has caused Ada's poor performance in markets where people are free to choose a language? It can't be its' origin — look at the successes of DoD sponsored VHDL and CALS. Admittedly, success of C and Unix in universities during the 1980's helped C/C++ capture most software arenas, especially with high quality, inexpensive compilers from Microsoft and Borland. With ATT seeding universities with Unix source code, the FSF developing its GNU compilers, and students going into industry and forming companies, C/C++ was guaranteed success. Simultaneously, the Mandated world did nothing.

Yet these races are never over, and there was still a chance for the Mandated world to insure the success of Ada. In light of the Ada Mandate there arose a need to make sure that the free markets created enough Ada programmers, tools and libraries to allow the DoD to cost-effectively develop software.

Unfortunately, the Mandated world ignored the importance of Ada's success in the non-Mandated world and did little to foster its acceptance. The list of failures is

endless. Defense offices such as AJPO did little to make sure that Ada was publicized by Ada contractors wherever possible; Ada compiler vendors did little to market Ada, relying on a small captive market and charging uncompetitive prices; a growing use of other languages by the Armed Services in seeming contradiction of the Mandate (JINTACCS); defection of agencies such as DARPA and the CIA to C/C++ and Smalltalk; failure of large Ada projects such as STANFINS and FAA (even if not due to Ada); suppression of dissent on Ada policies within the Mandated world; little concern from the Mandated world about the growing number of companies losing their money running Ada businesses; boycotting of the commercial software community by large DoD Ada software engineering projects such as STARS and KBASA; apathy towards collecting marketing and economic data about Ada's use and non-use; defense officials never mentioning Ada when interviewed publicly for print; duplicative DoD software reuse efforts such as ASSET, DSRO and VCOE based on faulty economic assumptions (driving commercial suppliers out of business); and lack of intent by large DoD contractors such as IBM to support Ada in their commercial product lines.

So, when the Mandated world should have been fostering Ada use, its' major players, most receiving Ada tax dollars, both ignored making Ada successful in the non-Mandated world, and even worse, undermined Ada's credibility.

What is Ada's future? Many hope Ada9X will allow the Mandated world to make Ada more competitive in the non-Mandated world. This will not happen. Most corporate windows of opportunity are being closed, with C++ and Smalltalk being selected. When Ada9X is ready, it will be too late. Also, it is questionable whether some new features of Ada make it more attractive, or as many are trying to argue, less marketable.

Ada will remain a "obscure", niche language, as the market chooses C++ and Smalltalk. There will be a growing premium to develop software in Ada (as other languages reap the benefit of new tools and products to support their use). This premium will be large enough to drive up defense software development costs so that not all missions can be met, or only in a diminished capacity, as DoD budgets decline — a potential threat to national security.

The Ada mandate distorts the free market mechanisms the DoD is defending in the first place. By protecting Ada from competing with other languages, Ada use stagnates and the Ada industry becomes as inefficient as other industries protected by legislation that distorts the marketplace. Alter defense procurement policies to better factor in long term maintenance and support costs for using any language, eliminate the Ada Mandate or demand more from Ada contractors, stop defense welfare programs such as STARS and ASSET, and do GGM.

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