Ada life cycle

To the editor:

I would like to explain the apparent discrepancy between the phase distribution of software effort estimated by the Cocomo model and the actual phase distribution of effort on the Ada AIMP project in Jerry Baskette's article "Life Cycle Analysis of an Ada Project" (January, pp. 40-47).

The article's Figure 6 and Table 5 indicate that the AIMP project devoted 48.9 percent of its effort to design and 27.1 percent to implementation, while the corresponding Cocomo estimates were 17 and 58.2 percent. Actually, the Cocomo effort distribution percentages for an AIMP-type project are preliminary design, 17 percent; programming, 58.2 percent; detailed design, 25.1 percent; code and unit test, 33.1 percent; integration and test, 24.8 percent.

Baskette's design category includes both preliminary design and detailed design, but Cocomo allocates the estimated detailed-design effort to implementation. If the Cocomo detailed-design-effort estimate is included in Baskette's design category, the Cocomo estimates become 42.1 percent for design and 33.1 percent for implementation, a reasonably good match to the actual AIMP percentages of 48.9 and 27.1.

Barry Boehm
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The author responds:

Boehm, Cocomo's developer, is correct. My apologies. It was not my intent to disparage models but to present an Ada project against the backdrop of well-known models. Boehm's corrections give credence to the Cocomo method and strengthen the argument for the AIMP model. With the correct figures in place, the models differ significantly in only the specification and testing phases. This does not affect the article's conclusions.

SDI advocate's view

To the editor:

The Science and Engineering Committee for a Secure World, an organization of more than 100 distinguished scientists and engineers, believes that the Strategic Defense Initiative is a technologically promising approach to defense that is superior to the present policy of mutually assured destruction. We thus believe the SDI program deserves to be pursued vigorously. I thus feel compelled to respond to your report ("Star Wars' Research Feeling Boycott?" March, pp. 94-95).

The article, reporting initially on a year-old statement of a group of scientists who have noted not to become involved in research on SDI, consists of little more than a review of shallow attacks on SDI. Little space is given to supporters of SDI who could respond adequately.

A petition opposing "Star Wars" research was circulated and is reported to have received 6500 scientific signatures (including graduate students). This must be compared with the enormous numbers of scientists and engineers in our country. The National Commission on Scientific Manpower has estimated that there are about a million scientists and engineers in the US. Of this number, 6500 names represents little more than half a percent, and is less than the number of scientists and technicians already involved in SDI.

It is commonly claimed that the computer programs needed for SDI must be error-free and untestable. These charges are typically made on the assumption that one massive computer would handle virtually the entire battle-management requirements for SDI. Actually, the practical approach the Pentagon is pursuing is to decentralize battle management and employ many small computers that operate more or less independently. In this system there is a built-in tolerance for error.

As to testing, many components of the system can be field-tested under "live" conditions—which is more than we do with many other weapons systems. Moreover, computer simulation can be used to check out many parts of the system in a highly realistic way.

One SDI critic in your report asked why the Soviets would believe SDI will work (and thus be willing to negotiate) "when so many American scientists say it won't?" We believe the Soviets know it will work based on their own work and the potential of American technological talent.

Some critics claimed that SDI is an attempt to substitute technology for diplomacy. Actually, it is being pursued as part of an arms-control package that would reduce threatening nuclear weapons while building up peaceful defenses and thus enhance mutual security. Diplomacy alone can never be a substitute for military capability that discourages an aggressor, as we learned so well in 1939-41. In fact, the failure of diplomacy—specifically, the failure of the Soviets to live up to the promises and conditions of the SALT and ABM treaties—is a major reason for the development of SDI.

A truly perfect SDI for all situations is probably not possible, but it is not necessary to deter Soviet planners from ever starting a nuclear attack against the US. That is, and always has been, the fundamental goal of SDI. Far less-than-perfect multiple-layer systems can increase the Soviet uncertainty regarding the success of an attack against key US targets. Analyses show that cost-exchange ratios solidly favor the defense over the offense.

SDI has the potential of thwarting the Soviet Union's growing adventurism that its increasingly superior offensive and defensive military capabilities are enabling it to pursue. SDI can lead to greater security and safety for the US and its allies, and to a more secure and stable international environment.

There are many misconceptions and much misinformation about SDI circulating today. These matters are very complex and cannot be discussed adequately in a letter to the editor. For more information on SDI issues, contact our committee, and for a copy of the Eastport Group's report on SDI and computing, contact us at SECSW, PO Box 76220, Washington, DC 20002.

Frederick Seitz
Chairman
Science and Engineering Committee for a Secure World
Chairman
SDI Organization Science Advisory Board


Real-world coverage

To the editor:

I couldn't disagree more with John Wolf's letter ("Wasted Space?" May) in which he asks that resistance to the Strategic Defense Initiative and other topics be excluded from the magazine.

Software does not exist in a vacuum. Neither should software professionals. Wolf is free to disregard real-world implications if he chooses. Many of us, however, don't share that narrow vision.

Please continue reporting social, legal, political, economic, and ethical implications of software.

Douglas Schuler
AI Specialist
Boeing Computer Services
Seattle

We welcome your letters. Send them to Letters Editor, IEEE Software, 10662 Los Vaqueros Cir., Los Alamitos, CA 90720. All submissions are subject to editing for style, length, and clarity.