Panel delineates software initiatives' differences

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Representatives of four US software initiative programs—MCC, SPC, STARS, and SEI—defined the differences among their programs and spoke of their common problems and objectives in a panel discussion at the Computers in Aerospace Conference. The conference, held in Long Beach, California, October 21-23, was sponsored by the American Institute of Aeronautics and Astronautics.

The audience was largely concerned with the implementation of the software initiatives: where would the staffing come from, would they compete or cooperate, and what were the programs' motives?

MCC. Johannes Grande, of the Microelectronics and Computer Technology Corp.'s Software Technology Program, told the audience that MCC is pursuing high-risk, long-term projects to bridge the research and implementation gaps between the corporate and academic communities. MCC's targets are software technology, advanced computer technology (such as human interfaces, artificial intelligence, databases, and parallel processing), VLSI circuit computer-aided design, and VLSI circuit packaging.

The software program will focus on requirements for high-level design, which Grande called "the front end of the life cycle," for the complex-system challenges introduced by the Strategic Defense Initiative, the US manned space station, and tactical fighters.

SPC. The Software Productivity Consortium will address near- to mid-term programming issues facing its 13 member aerospace companies (see the report on the consortium below). Jack Foidl, an SPC technical member from TRW's Defense Systems Group, said the SPC intends to develop software development tools to help speed and ease the process.

Its initial thrusts are reusable software, software prototyping, knowledge-based expert-system software development, and software systems engineering (which includes technology transfer, productivity impact evaluation, technology acquisition and exploration, and engineering support).

STARS. The Department of Defense's Software Technology for Advanced Reliable Systems, or STARS, program will assume the role of development shepherd for at least the defense industry. "We believe labor-intensive factors must be turned over to automation. We want to promote an appropriate selection of standards to promote technology," said Clarence Giese, director of the STARS Technical Program Office.

The intent is to create a government software environment across the Department of Defense, the National Aeronautics and Space Administration, the National Security Agency, and the defense industry that covers interface specifications, interface frameworks, generic tools, tool environments, and application tools.

The cost of underwriting a software environment (roughly $150 million) is more than any large company would want to spend, Giese said. "STARS will be a seed of investment that will be placed in industry and hopefully germinate."

SEI. The Software Engineering Institute will work with academia and government on both improved software engineering methods and improved software engineering education, said Mario Barbacci, associate director for project engineering. The SEI is part of the same Department of Defense software initiative that created STARS and the Ada Joint Program Office.

With the existence of two government-supported and two company-supported software initiatives, several members of the audience asked whether there would be any cooperation between the programs and if there would be duplication of efforts.

Because the STARS and SEI programs are part of the same government initiative, there should be no duplication of effort, SEI's Barbacci responded. For the same reason, the two programs will cooperate on appropriate projects, he added.

For the commercial efforts, "the difference is one of time frame," MCC's Grande said. MCC is aiming to develop its prototypes in eight to 10 years, while SPC "is addressing near- to mid-term issues," SPC's Foidl explained.

"MCC is looking for a few revolutionary ideas that may or may not become a reality. We look at SPC as something that is required for MCC to be successful," Grande continued. "No argument," Foidl responded.

Staffing. The panel's moderator, Robert Jones of Hughes Aircraft, asked the participants, "Where do you get the people? Are we biting off more than we can chew?" Barbacci answered, "We're really drawing people from the same pool."

Foidl pointed out that the SPC's participating companies have guaranteed to assign to the consortium a minimum number of in-house people to help staff SPC's 172 positions. However, as Grande said, these same companies are giving people to MCC and STARS as well. At MCC, he said, the companies originally planned to supply 80 percent of the staff. They were talked down to 50 percent, but the actual figure is closer to 20 percent, he added.

Furthermore, Grande continued, "It has been very difficult to get your hands on the irreplaceable, the experts, the very good people in the company." Thus, despite the participating companies' commitments, the initiatives still need to attract large numbers of well-qualified researchers.

The other panelists concurred. At the SEI, the staffing plan calls for the hiring of a new software engineer each week, Barbacci noted. Foidl only half-joked that the SPC was accepting résumés.

Benefits. A member of the audience asked what the benefit was to the companies of participation in the SPC and MCC. "Why share among competitors?" he asked. Foidl responded, "The same thing that causes them to compete: the profit motive." It is cheaper to research cooperatively than to duplicate an effort across several dozen companies, he explained.

However, competition between the member companies will still exist because antitrust considerations have limited the consortiums to research work only. Proprietary information cannot be transferred between the companies and the SPC, Foidl explained.

The result, Grande added, is that each company will have to act on—by itself—the information and technology transferred to it from the SPC or MCC. "The management of it is what will make or break the company."

Foidl picked up the argument by stressing that each company will use the tools differently. "The challenge to the company is to take the promised, guaranteed tool and enhance it for their application in the marketplace," he said. The SPC will *not* support any enhanced versions, so the companies will have to make their enhancements wisely, he added.

The SPC will not extend its efforts to software work outside the realm of the interests of the aerospace consortium's companies. "SPC will not go after SEI or SDI work," Foidl said, because its member companies already compete among themselves for work on programs like STARS and SDI. Furthermore, work

For the government initiatives, competition is not an issue because of the coordination in the Department of Defense. However, STARS's Giese said in response to an audience question, the issue of rivalry and cooperation between the military services involved in the research remains a "delicate" matter. That careful response drew knowing chuckles from many in the audience.