CHANGE AND CONFIGURATION MANAGEMENT GATHERING (by Jenny C. Young, Softool Corporation, 340 S. Kellogg Ave., Goleta, California)

Change and configuration management is considered to be one of the most important topics in the computer software industry today--the Softool Users Group meeting has become a key international forum for the discussion of change and configuration management issues.

The Softool Users Group held its tenth international meeting at the Red Lion Resort in Santa Barbara, Calif., March 20 and 21. Hosted by Softool Corporation, more than 140 industry leaders, Softool representatives and guests attended the two-day event. Attendees represented many different countries, including the United States, Australia, Canada, France, Israel, Singapore and the United Kingdom.

DEC and IBM users of Softool's Change and Configuration Control (CCC®) products made up the larger share of attendees. But there was a substantial number of other users, such as those using Sun Microsystems, Data General, Gould and Harris systems.

The Users Group meeting featured a variety of presentations and discussions. The presentations highlighted users' experiences implementing practical solutions to change and configuration management problems.

Change management controls the changes to individual components within each version of information. Configuration management provides control over complete versions and the relationships of their components to each other. Configuration management also provides the methodology needed to move a complete software product systematically through the various phases of the software life cycle.

Dr. Edward Bersoff of BTG Inc. and Compass Corporation presented the keynote address: "Configuration Management--A New Generation." His talk explored some of the effects that new life-cycle models of software development (e.g., prototypes, reusable software components, software synthesis) will have on software configuration management (SCM).

Bersoff predicted that software costs will continue to rise, with more dollars being spent on systems that do not satisfy user needs, resulting in more widespread use of reusable software and all kinds of prototyping. As the problem continues to escalate, he said, software synthesis will become more practical and new life-cycle models will be introduced.

In response to this changing scenario, Bersoff indicated that software engineers will have to learn these new techniques; software management will have to embrace new life-cycle models to help control costs and better assist their customers; and configuration management will have to find innovative ways to manage the new types of software changes resulting from the alternative life-cycle models.

After Bersoff's paper, Allan Callard and Richard Verdun of the Canadian Navy, and Martin McDonell of Prior Data Sciences Ltd. presented, "Implementation of an Automated Configuration Management Tool at the Canadian Navy's Fleet Software Support Centre, Dartmouth, Nova Scotia." They reported on the implementation of Softool's CCC/DM (Development and Maintenance) turnkey at the Canadian Navy's Fleet Software Support Centre (FSSC).

The FSSC maintains Naval shipborne software on a VAX[™] (VMS)[™] cluster, for use on other target computers. Software, written in a variety of languages, consists of some 500,000 lines of code placed in four CCC change repositories. The issues they addressed are relevant to any large distributed multiapplication software development and maintenance organization.

The authors detailed the following objectives that CCC/DM helped them to meet: change control, tracking all changes to items stored within the CCC repository; configuration control, managing releases (versions) of the operational software; management visibility over the entire change and configuration management process; a means of identifying product components and their various interrelationships; appropriate access for all levels of ACM SIGSOFT

FSSC staff to obtain information relevant to their responsibilities; menu selections specific to individual program requirements and user classes; and the capability to produce audit trails of all changes made as a result of moving from one baseline to another, as well as the re-creation of any historical version at any time.

The next paper was presented by Mickey Rosen of Allied Signal Aerospace Co. Entitled "Adapting CCC in a Business Data Processing Department," the paper focused on how the AiResearch Division of Allied-Signal replaced its library management system with CCC/DM. Rosen explained that several systems were considered but AiResearch perceived CCC/DM as the most comprehensive solution available.

Rosen described the majority of processing at AiResearch as mainframe-based on IBM 3090-400's running MVS/XA. Overall, Rosen reported that CCC/DM has been improving the way AiResearch handles source and providing an automated controlled migration for production load modules.

He outlined the established flow of Business Data Processing projects, from request through approval and implementation, and said that AiResearch was able to preserve this established flow while implementing the new system. He also detailed how CCC/DM is used to support the different functional responsibilities at AiResearch, including: configuration administration, project administration, development/maintenance, quality assurance and emergency maintenance.

Following this paper, Dorothy Huffman of the Jet Propulsion Laboratory (JPL) presented "Configuration Management Experiences: Looking Back." She explained how configuration management was applied to the Space Flight Operations Center's (SFOC) development environment at JPL. Huffman talked about why configuration management has been credited with playing a key role in the success of the Magellan spacecraft.

She noted that JPL chose Softool's CCC primarily because of its availability on several operating systems and hardware, and its ability to store any machine-readable file. In addition, the NASA Scatterometer Experiment (NSCAT) project at JPL uses CCC and demonstrated its versatility.

Huffman detailed how CCC is used to control the SFOC project, which consists of some 600,000 lines of code. The project is resulting in an upgraded operations control center that centralizes flight project support and reduces duplicated capabilities. Huffman explained that its overall goal is to develop a control center design that will make implementation and operations for future flight projects more cost-effective.

"SCM and a CCC Implementation in a DOD-STD-2167 Software Development Project" was presented by Brad Johnston of Magnavox Electronic Systems Company. Johnston described current Magnavox implementation methods, reporting that CCC effectively automates a major portion of the SCM workload.

Magnavox has one dedicated VAX mainframe and 40 Sun workstations. CCC is hosted on the project VAX running Ultrix[™] and is accessible to all project-related personnel with Sun/VAX user and CCC access accounts. Johnston explained that the Magnavox implementation of CCC supports the key SCM functions of documentation, code control and corrective action for a Navy contract stipulating DOD-STD-2167A reguirements.

CCC is used to limit the access of groups or classes of users (e.g., SCM, project engineers, general developers) to specific CCC data structures, and is also heavily used to control Data Flow Diagrams (DFD), which provide graphic information on structured design and analysis activities.

Johnston summed up by saying that CCC has provided Magnavox with a flexible configuration management change control tool integrated to the company's task. He said that CCC has saved Magnavox time and resources while providing uniform SCM practices.

Walter Mahan of Integrated Systems Management Solutions Inc. (ISMS) presented the paper, "Systems Management Methodologies for MVS Environments." The purpose of this paper was to discuss systems management as defined by the collection of systems, procedures, disciplines and standards that maximize the delivery of Information Systems services to its end-user community. Mahan first identified the disciplines of system management, such as problem management, change management, configuration management, request management and project management, and showed how they interrelate.

Second, Mahan told how KINSMAN ", Softool's systems management and decision support system for IBM MVS, supports and automates many of these disciplines. KINSMAN is built on IBM's data management products INFO/Management and INFO/System. According to Mahan, KINSMAN's menu-driven interface enables users to more easily and effectively implement these INFO products.

Finally, Mahan discussed how the integration of KINSMAN with CCC/DM and IBM's INFO/System and INFO/Management provides a solution for both the systems management and software life cycles.

William Bryan of Grumman Data Systems presented "Configuration Management with CCC in an Ada® Environment." In this presentation, Bryan talked about ways of structuring an Ada environment under VAX/VMS and using CCC/DM for controlling the code during an Ada development effort. He pointed out some problems controlling Ada code that arise from such Ada activities as compiling, linking, library structuring and library usage, and explored how CCC/DM can be used to alleviate or avoid these problems.

Bryan considered the various problems that might arise during Ada development. For example, he said that modularity and reusability often provide multiple access for systems and projects to Ada source code and Ada program libraries (APL). According to Bryan, this results in the frequent use of shared APL's. Without CCC/DM, Bryan said that overlapping changes to a compilation unit might occur, and a change to a compilation unit in one APL hierarchy might not be picked up in a sharing APL.

Carlos Caballero of Softool Corporation presented "Software Change and Configuration Management with IBM's DB2." Caballero told attendees that although nearly 50 percent of IBM MVS sites have DB2 installations, less than 5 percent report having DB2 implementations in production. He attributed this situation to the substantial effort and cost of migrating current applications to DB2. Further, he noted that once an application has been migrated, its continued successful performance requires constant attention.

Caballero explained the importance of automated change and configuration management for DB2 migration as well as for successful DB2 production operation. As a solution, he proposed Softool's CCC/DB2, a fully ISPF-driven, interactive application that provides complete change and configuration control for migration to DB2 and normal DB2 application maintenance.

Participants in a number of small group discussions found the exchange of information invaluable. Softool representatives and experienced users led some of the discussions, which covered configuration management issues associated with IBM MVS, IBM VM/CMS, DEC VAX/VMS, UNIX®/ULTRIX, Ada and DB2/SQL environments.

Tom Kingkade of Siltronix Inc. acted as moderator for an animated panel discussion entitled, "Integrating CCC into an Existing Environment." Participants included: Gary Cort of Los Alamos National Laboratory, Elizabeth Cookson of Qronos Technology Inc., Ron Childs of Naval Weapons Center, and Art Blumberg of USF&G.

Copies of the meeting's proceedings can be purchased by sending a check or money order for \$15 to Gail Crivello, Softool Users Group coordinator, at 340 S. Kellogg Ave., Goleta, Calif., 93117.

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