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**1999 – 2000
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In this issue:

ACDM Officer Elections (form)
Presidents Call for Unity and Action
PDM and DM – Interrelationships and
Interdependencies
Configuration Management Education
Effective Software Configuration Management –
Case Study

Upcoming events:

April – ACDM Officer Elections

From the Office of the President

A Call for Unity and Action

By Kyle Shackelford

Having just returned from both the European Society of Configuration Management and the ACDM Annual Conference, I feel that the profession is poised for a leap into the future, **but only if we can pull together to make it happen.** What I fear happening is that we are letting our differences divide us, at a time when we need to be focusing on the common threads that bind us together. We will not achieve the advancement we seek as a profession, if we splinter into the various factions - configuration management versus data management, software versus hardware, product versus services, aerospace versus medical device, this certification versus that certification, American standards versus International standards. Those issues, while easy to identify and work up an emotional alliance to, do not promote the best interest of the profession. What does promote the profession, is the agreement that there are some underlying principles that bind us all. If we could but energize our efforts behind finding and embracing those basic principles, I believe that we could, and indeed should, make a difference in the way the profession is viewed in the years to come. Ladies and Gentlemen, at no time in our history, have we had the opportunity to shape the future that is before us at this moment. Never before has information and data been in such demand, so easily distributed, and at the same time, so difficult to manage. And who better to devise the solutions to this problem - than us? We must not let this opportunity pass us by. We must not allow our differences to overshadow our common beliefs. We must not remain complacent and trust that someone is taking care of the issues.

It is time to unite and take action!

“But what can I do? I’m only one person,” you may be asking. “Plenty” is the answer. To begin with, **start renewing you knowledge today.** Revisit those basic principles. Read the applicable standards again. Read the standards outside of your field or industry. Attend conferences and seminars. (By the way, if you missed the ACDM Conference - you are all ready behind!) Ask questions. (If you attended the conference and did not come home with at least 2 ideas to improve your processes - you didn’t maximize the opportunity you had).

Next, **share what you learn.** Start a discussion on e-Group. Start an Interest Group (email me - I’ll help you get it off the ground). Write an Article for the Journal. Write a book. Teach a course. Conduct a seminar. Educate your management. There are opportunities everywhere, if you are looking.

After that, **Volunteer.** The best way to predict the future is to shape it and the best way to shape it is to get involved in the decisions that guide that future. Volunteer to help out with the organizations (ACDM and others) that are devolving the solutions and standards. Volunteer whatever time and talents you have to promoting the profession, be that at a local level through an interest group, or a national level as a board member or a committee member or committee chair. If you can type a letter or manage a database, we need you. You can make a difference and after all isn’t your future much too important to trust to someone else.

Help the profession. Help identify areas of commonality. Let the ACDM Board hear from you on issues. Let us know what your interest and needs are. If you are member of some other Configuration or Data Management organization, write or call the management of that organization and urge them to collaborate with the other groups. And finally, drop me a line at kyleshack1@cs.com and let me know what you plan to do.

I’m looking forward to hearing from you,

Kyle Shackelford

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DM Chair Report

PDM and DM – Interrelationships and Interdependencies

By Cynthia Hauer

So your organization is going to (or already has) pursue Product Data Management! Interestingly, the biggest challenge data management professionals usually have is that of “recovery” – that is, how shall we retrofit the requirements that no one asked us for, in advance, to the tool that management has proudly bought for us to use? Recovery involves understanding what we needed, and would have bought to meet those needs, in the first place.

Sadly, most data managers haven’t had the exposure or the power in their organizations to believe that they know the answers to that key question. Of course, they do, but many find it difficult to express their knowledge in terms of software, tool, or vendor requirements.

Being presented with a tool purchase by a management that has not considered the realities of tool and user needs is very common. Unfortunately, many of these purchases are made by those who have the money and the power, and whose greatest corporate mission and investment of time is reading trade magazines. Little wonder, that the tool turns out to be a poor choice, technically.

Worse still, YOU are suddenly the “stuckee”, and the primary user of the tool. Now it will take more time to bail the water out of the boat, than it would have taken to determine the water would be too deep if requirements definition had been addressed at the beginning at the project. Information Management at your organization announces proudly that they can host the tool, on the new server that they bought for the job. Big help THEY are, as usual.

It’s happened again: now that the tool is at your organization, everyone has a sudden flash of brilliance and they now know that “someone else” (YOU) should be the owner and operator of the great, new, expensive tool. Don’t bask in what you think is the glow of success for very long – the glow is really your career, and it’s going up in flames.

And you can’t even tell them that they chose poorly, because it’s going to be YOUR FAULT that the darn thing won’t work, if you do.

Bad scenario, huh? To avoid this untimely and unpleasant outcome, learn about Product Data Management – and define your DM and CM requirements for the tool in advance. Then, pass those requirements on up your line management and ask for involvement in the process and the choice. You are the ultimate stakeholder, after all. Look at it from this perspective: you should at least get to choose your poison!

THIS ISSUE’S INSERT: Bio’s for ACDM Board Nominees and Election Ballot

What: Elect yourself or a respected colleague for a position on the ballot

How: Complete the enclosed form, tri-fold the form, place a stamp in the appropriate place and mail to Sam Packer

When: Election Ballots must be received by **April 23rd**.

~ **!See inserts for details!** ~

VP of Education Report Configuration Management Education

By Dick Carlson

As we spiral through our careers and bounce from one aspect of Configuration Management (CM) to another, many of us desperately try to become smarter along the way by taking various CM-related courses offered by a plethora of training companies. For some of us, such training is not adequate for our needs. If we could go to a college or university and enroll in courses that would eventually lead to a bachelor degree in configuration management or a master's degree along the same lines, this would solve the problem. However, since there really isn't anything like these academic conveniences available in our schools today, what can we do about becoming an "authentic" CM professional?

There are a number of well-written books on configuration management; all are somewhat opinionated on various aspects of change management, planning, and implementation. These books were written by people like you and me who lived in the trenches and breathed CM for very long periods. Each of these "experts" more than likely did their share of grunt work, bending to the demands of management, and yielding to watered down implementation due to funding constraints. So what is it about CM and its disciplines that prevents it from being a major academia? To answer that, we're going to have to peer into the working world's crystal ball and look at some of the functions in which CM is most active. For the most part, I feel the majority of active CM practitioners are involved directly or indirectly with engineering, and thus find themselves supporting the design function. But CM is also deeply entrenched in manufacturing, finance, product assurance, and a number of other functions. While we can all say that CM should be an integral part of any business function, it is nebulous to those who are uncertain of its benefits. For example, in a shop where three cabinet workers are employed, why should CM be implemented? I suppose one could argue that if these cabinetmakers were producing products that were delivered in quantities and to the same customer, one could say that they needed CM to assure consistency and integrity of design. But which one of these guys is going to be the CM guru? And what does he know about CM? Does he even know what CM is about? Obviously, these are not silly questions, because there are thousands of businesses in this same situation. Whose responsibility is it to assure design and product configuration integrity? The ultimate one responsible should be the owner of the design or the management entity charged with the job's overall requirements. This could be the company president, foreman, or one of the cabinetmakers. Do they have the tools to provide adequate configuration manage? Would they know how to use these tools if they had them? Will this add value to the design and manufacturing processes? How do the product and the customer benefit by the implementation of CM?

Everything discussed thus far happens every day in thousands of businesses all over the world. There are no isolated cases. While there are some companies that recognize the importance of planning, identifying, tracking, managing changes, auditing, etc., there are many companies that do not. An interesting aspect to CM is the sheer lack of understanding what the function is all about. In the software world, a developer or group of developers who are charged with retaining proposed and current baselines and legacy code manages CM. They more than likely also perform software builds, serve as system administrators, create backups for disaster protection, document design meetings, promote code, integrate a multiplicity of programs and subprograms, and a wide variety of other tasks. How are these functions different than the functions of a cabinet shop? Night and day I suspect. Are these really the same? Absolutely not! They require "different" levels of education, background experience, interests, and individual learning ability. "All CM practitioners are not the same!" Can this really be true? Does everyone have the education, background, and experience necessary to be "any: kind of CM practitioner? Not really. Not when we consider the immense differences in the businesses, technology applications, and culture. Is CM in software development the same as CM for cabinetmaking? No way!

So how can we as CM professionals expect to be thrown into such a mix and manage these things? Education and background. A software developer could be taught to be a good cabinetmaker, but it may not be practical to teach a cabinetmaker to be a software developer. I build cabinets as a hobby and am pretty good at it. I was a software configuration manager for more than 15 years. Do I implement CM on my cabinetwork the same as I did when I was in the trenches doing SCM work? Hardly! I don't have the time or the resources to do anything of the sort. Do I make mistakes in my woodworking? Yes! Did I ever make mistakes as an SCM practitioner with vast resources and tools? Yes! So what's the big deal? Why shouldn't I be able to levy similar CM tactics in my cabinetwork as I did in SCM? For the most part, it was education and background. I went to the University of Maryland and received a degree. The knowledge I acquired in college was eventually used to help me understand the SCM process. I picked up woodworking knowledge on my own, working alone in woodshops, and in my garage. I learned the hard way too, as I sawed off part of my index finger during the "learning" process.

We all seem to have something in common as CM professionals: we are regarded by many as inefficient, overpaid clerks. This is another problem we as CM professionals face each day. Some of us have become real heroes at work doing great things, while many others just put in an 8-hour day. How can the average CM practitioner become a mover and shaker? For that matter, how does anyone become a mover and shaker? Well, it's not done by being passive. It takes going the extra mile (and then some). It's more than going above and beyond the call of duty. It means certain sacrifices (weekends, family, long hours at the office, etc.). It also means coordination with everyone from management to secretaries, being extremely nosy, being persistent, but most of all, one must be undaunted and absolutely fearless in the pursuit of establishing CM as an important company commodity – one worthy of education and serious attention.

If things don't work out – so what! Like the song says "Pick yourself up, dust yourself off, and start all over again!" and again, and again. When you are always "there", offering product or service quality and integrity, and establishing a reputation as one who is sincere about the benefits of CM, things in your section and your company will begin to change. What the heck does this have to do with education? Well, if the world doesn't recognize CM as a discipline worthy of its claim to fame, then what must be done to change that? E-D-U-C-A-T-I-O-N!!! Yes friends, we're back to education. If the powers that be understand the need for CM education, and they mandated such a notion to management, guess what? We could become educated! Educated in what? Well at first, we are going to have to "educate" the educators – the ones who teach. Next, we are going to have to become better "educated" by finishing our education with college degrees and advanced degrees. Then we are going to have to learn to look at CM in the generic sense – not as applied to the government – not as applied to industry. Then the notion of CM education must be convincingly presented to institutions of higher learning as subject matter that can be taught as a separate and distinct curriculum. Does this sound like a lot of work? Yes! Is this going to take time to implement? Yes! Who will coordinate such an effort? I don't know! Has anyone ever entertained such an insane notion before? Absolutely yes! How can we get such an undertaking off the ground? And when can we stop talking and start doing? Great questions – all of which demand great answers. Whose responsibility is it to get things rolling? Where do we start? Who should lead this effort (or crusade)? Do we have the influence to get things going? Has ACDM been active in educational pursuits? Absolutely!! Can anyone join in and become part of such an important endeavor? Absolutely!! Who in ACDM can be contacted and asked about getting involved? Well for starters, I am ACDM's Vice President of Education, and am a stable source. Feel free to contact me at DCarlson@cybexintl.com. Bill Brummer, leader for ACDM's Configuration Management Education/Certification team, has been undaunted in his efforts to make information about CM education and certification known to CM professionals for years. You can reach Bill at Billbrum@aol.com.

I sincerely hope that I have made sense and that more of you will "get involved" and join the crusade to support CM education both as a vital information source and as a means to an end.

Effective Software Configuration Management Helps Software Take Off

Process-based configuration management aids aircraft builder

By Bob Ventimiglia

The software development team at Lockheed Martin Aeronautical Systems (LMAS) of Marietta, Ga., like many enterprises across the country, is always looking for new and innovative ways to boost marketplace competitiveness. The discipline of software lifecycle management using a process-based configuration management (CM) tool gave us a simpler software development environment in which the business rules are known to all and are electronically enforced.

In addition to other aircraft, the Marietta facility develops and produces the C-130J Hercules. The "J" is the latest version of this commercial and defense transport tactical airlifter. To date, more than 2,100 C-130s have been built in dozens of variations and are flown by more than 60 nations. They carry troops, vehicles, and armaments into battle. They drop paratroopers and supplies. They serve as airborne and ground refuelers. They provide emergency evacuation of disaster victims and humanitarian relief via air-dropped emergency supplies. They provide airborne early-warning systems and maritime surveillance. They have recovered space capsules and worn skis in Antarctica. Surviving the toughest flights, the roughest landings, and the constant pounding of heavy cargo, many of the earliest C-130s are still active today. The C130J Software Development team decided to implement process-based CM after observing its successful implementation on the F-22 program, the Air Force next generation air-superiority fighter. As a result, the tool selected for use on C130J was PVCS Dimensions from Merant. Dimensions provides integrated enterprise level process management, and version, change, baseline, build, and release management functionality.

LMAS initiated this capabilities upgrade because this type of process-based CM enhances productivity and supports a team infrastructure by automating the organizational processes associated with each of the Development and CM functions. Such a system accomplishes this via an advanced process engine, which is integrated into the Dimensions product.

The process engine allows business/project rules and their interrelationships to be modeled and mapped into the system. Change control and authorization policies for application modifications are easily defined. In this way, source files, executables, documents, and almost any object can be managed, cross related, audited, and reported on. This enables the development team to reuse and replicate process models according to the evolving project and enterprise needs.

In such a setup, the process management features of such solutions can be used to define the process life cycle for the configuration objects. Another advantage of such a process engine is that it provides a control plan. This tool offers a graphical user interface for defining user-defined rules and procedures. It helps us manage the software development activities and their related processes. It also lets the development team at LMAS specify roles and assign to team members' responsibilities for building and assembling various parts of the C-130J software products. The challenge we faced was how to cost effectively manage concurrent, parallel development of eight variations of eight C-130J software configuration items while multiple versions of each variation was being flight tested! To complicate matters, a number of the configuration items were safety critical, which required higher levels of management attention and record keeping. Overall, such steps increase the team's accountability. To make this happen, LMAS restructured its development environment. This required delegating more authority and accountability to software developers and allowing them to execute process configuration management, mostly on their own.

We worked toward achieving 100% developer-executed CM. In this way CM practitioners will not have to be involved in day-to-day development activities. The CM practitioners become systems/process engineers concerned with the overall development process and not the day-to-day CM details. They maintain the process and the tools that support it, transferring know-how and expertise to the developers while eliminating the need for a day to day configuration management practitioner. Practically speaking, this means CM activities are performed by the LMAS developers as a by-product of their execution of the development process and their daily interaction with the software development tools and environment. In other words, CM is obtained for free. Communication of development activities amongst team members is another "free" by product of daily use of the process managed development environment. All development and change activity is visible to ALL members of the development and management team at the time the activity occurs.

In change management, for instance, change documents pertaining to defects or change requests are created within the process-based CM system. In addition to detailed descriptions and comments, data is entered into attribute fields to define the specifics of the change or problem, such as its severity or priority. During impact analysis the change document is associated electronically with all of the specific versions of work products which are affected by the change. Once approved for implementation, developers are then allowed to modify the requirements, interfaces, documents, code and/or test scripts impacted by the change document. The system prevents changes from being made to files prior to the change document being approved for implementation. This prevents unauthorized changes from creeping into the development effort, an important business rule that is commonly enforced procedurally, which we are now able to enforce electronically. The developers

update the affected files and electronically associate the updated files with the change request. As a result of this, and the fact that the process-based CM tool fully integrates change and version management, we can prevent the expenditure of effort on verification of a change that has not been completely implemented. Another procedural business rule that we can electronically enforce. A change request cannot be statused as being ready for verification until all of the corrected files have completed their lifecycles. Finally, the changes are verified as being correctly implemented and can be used in a build.

The version management function of the process-based CM system automates the versioning, building, release, and distribution of software across the life cycle. This way, development team members can implement version and revision control of their design and coding. What's more, they, the developers, can conduct build management, release control, maintenance, and traceability. All of our builds are change document driven. Because the process-based CM system knows which specific versions of files containing corrections are associated with a change document, we can use change documents to electronically modify the contents of a baseline. We instruct the tool to create a new baseline by applying a set of change documents to a previous baseline. We then create a build from the new baseline. As a result we have 100% traceability of how files got to be in a build, an important issue with safety critical applications. Version management is also implemented in parallel and concurrently. For this purpose, we use the mechanism of work sets, which include groups of objects. In such a framework of operation, a particular work set, for instance, may be designated for functional changes, while another work set will focus on maintenance or customization. Only the developers assigned to work on that part of the project are assigned roles allowing them to access a particular workset. Developer can also access a list showing the physical directory structure, which displays the version objects. Project team members can work directly against the physical directory structure. And, they can perform version management operations such as extract (check out) and return (check in). Making these activities seamless is achieved via the process workflow and process management capability of the tool, which routes change documents only to those with such a designated role in the life cycle. This prevents unauthorized access to, and change or software work products. We already see significant improvements in the way we allocate our resources over traditional development environments. Approximately 5% of our development staff are needed to implement and support software lifecycle management focused process-based CM. In other environments, as predicted by common software cost estimating techniques, the support staff is typically three to five times higher. Additionally, as we apply continuous process improvement, or CM support requirements continue to decline. The process-based CM solution at LMAS has paved the way for these productivity gains because the new system allows the organization to map and-refine its processes in the software product. The system provides a road map for process improvement. The solution works by providing continuous visibility of the status of the software at any given point in the life cycle. This approach serves to protect the integrity of the applications being developed.

For us, achieving process improvements is critical, as we are now seeking to reach CMM level 4 and 5. Established by the Software Engineering Institute, CMM level 4 represents an organization deriving metrics and CMM level 5 represents an enterprise achieving continuous process improvement and technology change management. Our process-based CM system plays a critical role in helping us reach these two objectives. The system allows the software development environment to eliminate manual tasks. This increases the team's ability to innovate because redundancies have been eliminated and more time is available to concentrate on the creative aspect of the job. Moreover, the process solution allows more than 100 developers to effectively work in parallel in a distributed environment and to coordinate all aspects of their development efforts.

As a result, the process-based CM solution makes a significant difference in the building of the C-130J Hercules safety-critical applications, including the mission computer, bus interface unit, and the ground based data systems, which incorporate maintenance routines and aircraft analysis.

The Federal Aviation Administration (FAA) demands that we maintain strict control over our build-and-change control processes. The process-based CM solution allows us to more easily comply with FAA requirements. In fact, this approach allowed us to pass an FAA SCM audit in 45 minutes, an audit that the FAA expected to take two days to perform! Clearly, such a practice can also benefit commercial manufacturing enterprises because it provides a sure way to achieve quality, speed, and reliability of operations. Such a strategic approach can pay substantial dividends for other manufacturing organizations, which focus on building a wide range of creative and high-quality applications. This approach lets organizations electronically enforce their common business rules across the enterprise.

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Bob Ventimiglia is team coach of the Environment, Tools, and Software Configuration Management Team at LMAS in Marietta, Ga. Ventimiglia previously held the positions of F-22 Environmental Control and Brake System Software Manager, where he managed development and implementation of four software configuration items. Ventimiglia earned both an undergraduate degree in aeronautics and Astronautics and a master's degree in engineering mechanics from New York University.

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NEWS FROM AROUND THE INDUSTRY:

SEC Announces Key Appointments in Compliance Services Division

Contact: Bennett Hazlip (919-863-1966)

(Raleigh, NC) - SEC has reorganized to form two divisions, SEC Compliance Services and SEC Validation Services. Established in 1988 as a validation firm, SEC has expanded in response to the growing need for compliance consulting expertise. SEC provides compliance and validation consulting to the pharmaceutical, biotechnology, and medical device industries.

"With the formation of the Compliance Services division, and the continued growth of the Validation Services division, SEC is better positioned to help our clients meet the regulatory challenges ahead, in the dynamic arena of Electronic Records and Electronic Signatures," said John McKenney, SEC's president.

SEC also announces the addition of two key information technology experts to the firm's Compliance Services division. Phyllis M. Weldon joins SEC as VP of Compliance Services. Ms. Weldon brings over 17 years of experience in pharmaceutical and healthcare information systems, with a focus on the strategic use of information technology, process re-engineering, and systems compliance. Prior to joining SEC, Ms. Weldon served as Chief Information Officer for Duke Clinical Research Institute.

Lisa Olson joins the Compliance Services division as Principal Compliance Consultant. Ms. Olson brings over 25 years of information technology experience, including 18 years in the pharmaceutical industry. Recently, Ms. Olson was Director of System Validation and Compliance at ClinTrials Research. Prior to that she spent 15 years with Parke-Davis, focusing on computer systems validation.

Ms. Weldon and Ms. Olson are both core team members of the PDA Part 11 Task Force, a pharmaceutical industry association that works in conjunction with the U.S. Food and Drug Administration on regulatory issues related to electronic records and electronic signatures.