CMTrends

News and Perspectives for CM Professionals

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Healthcare Website Observations

by **Leo Clark**
CMPIC LLC

The Healthcare.gov website roll-out has raised concerns about Software Development maturity to a large number of Americans, most who never thought about web development before. I would like to focus on one aspect of the concerns - Software Inventory levels.

It has been reported that large portions of the website's source contained "placeholder" code. Depending on the Development Environment you are using, some of the syntax is provided for new software components. The custom parts of the code are identified with "placeholders". Sometimes the placeholder text is "Place source code here" or "TBD" for "To Be Determined". The Healthcare.gov website had Latin script, sometimes used as a text placeholder.
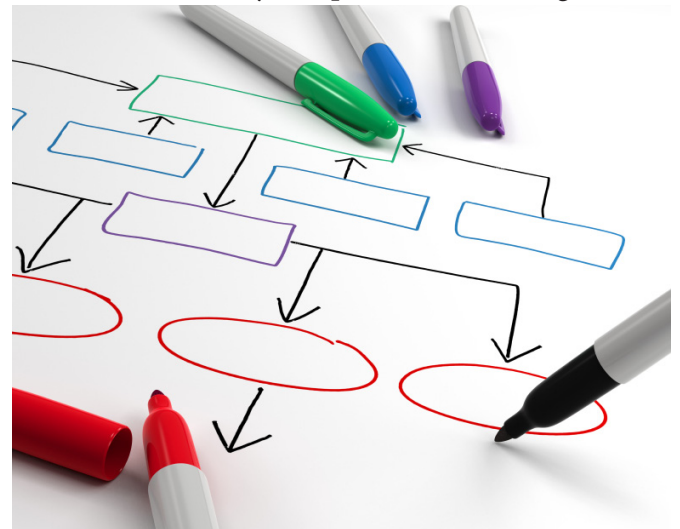
If you use the "View Source" tool in your browser, you can find "Lorem ipsum…" embedded in the website code.

In a hurry to meet deadlines, developers overlooked essential components that had been included in the design, but never completely constructed.

Outside of the lack of a simple text search for "TBD" or "Place source code here", this discovery sheds light on a more disturbing aspect of software development and even software department management.

In an effective Configuration Management process, organizations use a Configuration Structure to define the necessary components of a configuration.

This series of Parent-Child relationships, or an expanded Bill of Materials, identifies the essential ingredients of a 100% conforming end-item.

The structure then helps developers identify the necessary design documents for each item. Following the design decision, organizations can create the necessary process information to construct each item.

A 100% conforming Parent level item can only be manufactured from existing, conforming Children level items. If the Child item is missing, or the Child item is wrong, the Parent item has no possibility of being right. It would be foolish to authorize spending organization resources to construct end-items from an incomplete pick list or a pile of non-conforming parts.

For example, it is a waste of time and money to authorize building a printed circuit board assembly if the inventory levels for a necessary 75 ohm resistor shows that there are none in the parts bin. It would be foolish to build an automobile if there were no glove compartment doors anywhere in the building. A drought in the parts supermarket guarantees that the end-item will be non-conforming.

Somewhere in the business process we should find evidence that procuring or producing the item was authorized. The Purchase Order or Shop Order should reflect that delivery was made or work was performed. The process should generate additional evidence that the item was received into inventory and the inventory levels incremented. Project management tasks should have actioned from "in-process" to "completed". Time and attendance records in the ERP should account for resources expended. Lot numbers of the uniquely identified component should have been advanced. There should be evidence of quality checks performed and results recorded.

None of this appears to have happened in the Healthcare.gov roll-out.

In some organizations, software development determines its own production schedule. The very people who require authorization and management will carelessly govern the software design, construction, manufacturing, and deployment rather than use their multi-million dollar ERP, PLM, ALM, Logistics, Inventory, and Project Management system that the organization had spent years implementing. The results speak for themselves.

Of course, I am talking about an effective, comprehensive Enterprise-wide Configuration Management process. This is the advantage to treating software as another component in a configuration. If you use non-repeatable processes, one for hardware and a different process for software, you may experience these types of problems. Following those non-repeatable processes may be close to the heart of the problem.

Leo Clark has over 15 years of CM and related QA experience and ten years with the Institute of Configuration Management. He has taught configuration management to thousands of students and consulted on CM, SCM and QA implementations for over 100 companies. Leo has consulted with PDM/PLM software tool providers to improve workflows & functionality, and taught and consulted extensively on SPC, CIM, DNC, MES, ERP, preventive maintenance. He is the author of numerous articles, papers and presentations on SCM, SPC and management methodologies. Leo is a graduate of Marquette University, CMPIC Certified, CMIIC, CM Lead Assessor Certification, U.S. Marine Corps, member ACDM, and ASQ.

LEO CLARK

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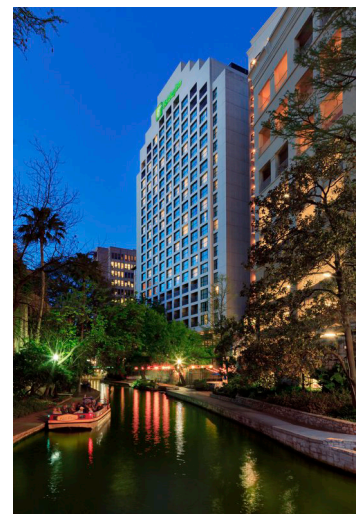
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Have I Told You About My 3 Shrimp?

Balancing the IDMS Systems with International Stakeholder Needs CM

by Jon M. Quigley & Kim Robertson

Value Transformation LLC

A Rocky Start

Sean Ironist, Genesis Test Equipment's new vice president of finance rapped softly on Akio's open door, "Got a minute?"

Akio took off his glasses, "Sean, come in. How can I help you?"

"Mike appointed me to lead the effort to evaluate an Integrated Data Management System (IDMS) that would combine our finance, contracts, engineering, supply chain, mission assurance production, inventory control, and CM systems. Quite frankly I am against it. I've visited each of the other VPs to get their take on how well their present system is working and you are last on my list."

Akio studied Sean's face as he talked. "It sounds like you have already determined the answer before starting the evaluation," Akio said. "I'm sure you understand the impacts of staying with the current best of breed approach vs. an integrated system."

"Of course I understand the impacts," fumed Sean. "Moving from what we have now means a disruption in operations and near term profitability. I can't allow that to happen."

"Ah, so your mind is made up and you do not know the real reason behind Mike's request," Akio laughed. "From a company perspective, Data is our greatest resource after people. I am sure that you studied the French economist, Jean-Baptiste Say, during your formative years. In the 1800s he coined the term entrepreneur. In the classical sense it means one who shifts economic resources out of an area of lower into an area of higher yield. It is core to the success that Genesis has had so far."

Akio continued, "We had hoped that you would start by determining what each of the VPs saw as the advantages of staying with the current best of breed approach and then weigh that against the yearly cost of maintaining the system as well as upgrading it to meet with our need for a stronger automation of status accounting activities."

"Status of accounting activities?" asked Sean. "I've never heard the financial reporting and tracking of monthly and quarterly forecasts called that before."

"Configuration Status Accounting is one of five traditional CM activities. Throughout the Configuration Management process, a great deal of data is generated. The sheer volume of data presents a challenge and it must be collected, recorded, crossed linked, and stored. This process is compounded by the fact that this data evolves and changes over the life cycle of the product. Configuration Status Accounting is the business activity that allows for effective collection, storage, and maintenance of the data. This data includes financials related to

the non-recurring portion of the product as well as recurring costs. Your financial data is part of the whole business infrastructure. The functions of each of our VPs area of responsibility are interdependent. Genesis Information Technologies, information management, and knowledge management fall under CM."

Sean looked at the floor, "So CM runs things here and not finance … that will take getting used to."

"Not exactly," laughed Akio. "CM does manage the information infrastructure but we are all part of the company ecology. Let's get lunch and I'll explain it in a different way. You may like it, I thought of it while we were talking."

Three Little Monks

Sean shrugged; his face was dark as they made their way to the cafeteria. As he waited for the chief to prepare his fillet of salmon Akio heard him mutter, "Finance should be in charge. Without us this company couldn't survive."

As Sean started to eat and Akio sipped his Red Miso Akio smiled, "Let me tell you about my three little shrimp."

Sean continued to look glum and ate deliberately.

"I have three small shrimp living a life of quiet contemplation in a sealed aquarium. It is called an EcoSphere. Inside is a mix of microorganisms - three small shrimp, algae, and bacteria. The idea grew out of research done at NASA's Jet Propulsion Laboratory."

"I worked at JPL," said Sean perking up.

"It is very ingenious," continued Akio. "The algae absorb carbon dioxide and produce carbon and oxygen. The microorganisms and bacteria breakdown the waste from the shrimp that the algae uses for food and my three little shrimp eat the food and produce waste and carbon dioxide. All I have to do is make sure it doesn't get it too hot or get too much light. Too much light causes the algae to take over and it eats up all the nutrients. Too much heat and the shrimp, microorganisms, and bacteria die."

"So it is like a smaller version of what they attempted with Biosphere2 at the University of Arizona," mused Sean.

"Exactly," replied Akio. "Many problems we face here at work become clearer if you just think about my shrimp. Genesis operates best when our business ecology is in balance. Some things we do to ourselves, which is internal to Genesis. Others things, like the way light and heat impact the internal balance of the EcoSphere, are external, like statutory requirements and external stakeholder's interests."

"Why don't your shrimp overpopulate the Eco-Sphere?"

"They are monks. That is why they live a life of contemplation," laughed Akio.

Starting Over

The next morning Sean stopped by VP of Mission Assurance's office. Vicki looked up from her laptop with raised eyebrows, "Back again I see. Have you come to tell me that nothing is going to change or are you now on a vision quest?"

"I'm on a vision quest," Jacob said meekly. "Sorry for coming across like I did. I'd like to start over with you and the other VPs. I never learned about this kind of a company at school."

"Don't let it throw you," Vicki replied. "None of us did and humility is good. If our company is not in balance it will cost us millions. It may comfort you to know that we discussed who we thought would be the best person to take this analysis on. Hands down, you were the choice of Mike's central staff."

Jacob cheered up, "Well that's comforting … I think. What do you need in the way of data to do your job?"

"Let's start at the back end and I think you will get the picture," Vickie answered. "We need to know that each product at the delivered unit level meets the functional and physical requirements we have documented. Any variance to the requirements have to be known, documented, and approved. Including authorized part substitutions."

Jacob frowned, "I understand what a variance is. Why do you say that authorized part substitutions are variances?"

"Would you agree that the product is defined by the released product structure and that every unit produced should look and behave exactly like every other unit produced down to the lowest level part?"

"I guess so."

Vicki smiled, "Since this is the case the release of either a company approved part substitution list or a program approved part substitution list is really the first approved minor variance from the 'as designed product baseline'. It allows the use of parts not included in the product structure."

"OK, I get that. So, it includes authorized part substitutions."

Hooks in the System

Three weeks later Jacob stood in front of Genesis Test Equipment's executive committee and summed up his findings, "So you see it is all about having the right hooks in the system to be able to access the data pertinent to the operation of each of our various functions. Currently, we use what is known as a best-of-breed approach where each VP was allowed to choose the program they thought gave them the best solution to their own issues. These systems share information via a common data

backbone using an ever changing Canonical Model as described in ANSI/EIA-836. I say ever changing as each vendor makes updates to their products which may entail a complete reprogramming or movement from a machine to a web based version. This churn consumes resources that could be applied to improving the integrity of our critical data, assuring that when someone searches for information they can do it quickly with a better than 50 percent chance of finding it."

"Where did you get the number," asked Peter Olsson

"It is not from my research but from Thomas Redman. His work is documented in the book 'Data Driven' and indicates that about 30 percent of every day is spent looking for information and that only 50 percent of the time are they successful."

Mike took a sip of his cold coffee and smiled, "Jacob, please lend Peter the book when you are done with it. Go on."

"When we normalize the costs of the best-of-breed systems over the next five years based on the last five's trend and compare it with the cost of an integrated 'self-contained' IDMS is around seven percent more expensive."

Peter chimed in, "So I get to stay with my current system for supply chain. That's all I need to know."

"I am not recommending that course of action," Jason replied. "My conclusion is that it is actually better for Genesis in the long run to move to the integrated IDMS approach. I did a secondary analysis of our various levels of data as it applied to the business base and our market strategy. If we don't make the common mistake of trying to adapt a new IDMS to our established practices, but, instead, adapt our practices to the tool, we can eliminate over half of our procedures and the audit costs associated with them. This more than offsets the costs of acquisition and implementation of a new system, the associated annual audit costs, simplifies our supply chain functionality, and simplifies our supply chain functions as well. After the first year's learning curve, I believe we could reduce our direct, overhead, and G&A costs significantly giving us a market position the competition will find hard to beat. Direct labor costs go down as the data hooks between

system elements are embedded in IDMS and do not have to be established on a case by case basis. Overhead costs are reduced as we have a single solution supplier and reduced non-integrated mirrored servers for disaster recovery. G&A costs go down as programing to maintain the data dictionary and update data transfer protocols between best of breed vendor application are no longer required."

Jacob looked around the room. Some of the key players were smiling others looked crestfallen.

"Thank you, that was well done," Mike said. "I know that many of you are worried about the implementation rollout due to experiences you may have had elsewhere. I also know that most of you have worked very hard to meet continuous improvement goals. What has happened along the way is that our original 120 documents in our document hierarchy comprising 300 pages at ISO certification a decade ago evolved into a set of policies, plans, processes, procedures, and handbooks that has an index that is 120 pages alone. While Jacob was doing his analysis for this meeting I did one of my own. I found that 80 percent of our hierarchies are related to the care and feeding of the best of breed approach. It was what we needed at the time but it no longer serves our needs. At this point I'd like to turn the meeting over to Akio."

Akio walked to the podium, took off his glasses, flashed one of his most mischievous smiles and asked, "Have I told you about my three little shrimp?"

Jon M Quigley PMP is a product development expert with more than 20 years of experience and a founder of Value Transformation LLC. Value Transformation LLC provides training and consulting on a range of product development topics. Jon has multiple advanced degrees and certifications, as well as US patents secured. He has co-authored or contributed to seven books. He can be reached at Jon.Quigley@ValueTransform.com.

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The Big Cheese
Dealing with Deviations

by Rick St. Germain
CMPIC Canada

Sunday Afternoon

I use Sunday afternoons to get caught up on that pesky paperwork from the past week. I know I shouldn't be bringing work home, but I'm just too busy during the week for anything but emergency stuff, and there's plenty of that. So on Sunday afternoons, I grab a cuppa joe and head off to the den, closing the door for some peace and quiet.

Out of the corner of my eye, I see the door slowly open. A small figure slips quietly through the slit and glides up onto the chair in front of me.

That would be my seven-year-old daughter, our resident apologist and champion of the oppressed.

"What do you want, Megan? Daddy's busy."

"I want to be with you, Daddy. What are you doing?"

I glance up to see her looking intently into my face.

Sigh. "I'm doing paperwork from the office, sweetie. Sort of like homework."

"I finished my homework on Friday so we could be together all weekend", she says, expectantly.

"Wow, that's pretty smart. But I still need time to finish this, sweetie, it's important."

Undeterred, she continues: "What's so important, Daddy?"

Maybe if I go technical, she'll get bored and leave me in peace. "I'm filling out a Deviation Extension Request for a run of parts we'll be making next week."

Her scrutiny of my face intensifies, reading me like a book. She knows I'm trying to snow her. "What's a Deviation, Daddy?"

Well, so much for techno-babble — she's too sharp for that. I'll drop it a notch to her level.

Deviating from the Recipe

"Let's go to the beginning", I offer. "We make equipment for our customers, people who tell us what they want, just like you do when we ask what you want for breakfast — that's what we call Requirements. Got that?"

Megan nodded enthusiastically.

"We have really smart people called Engineers who figure out what we can make to satisfy those requirements. They tell us in words and pictures how to build those things for our customers. Okay so far?"

"Like a recipe for pancakes", she beamed.

"Yes… yes, very good. Something like that, but much bigger." A huge grin lights up her face.

"Then our group, Manufacturing, takes that… aaah… recipe and we make the things the way they told us to. Mostly."

Her smile evaporates, replaced by a wrinkle of concern between her delicate eyebrows. "Why 'mostly', Daddy?"

"Well, sometimes we can't make things exactly the way they told us. Maybe we don't have the exact parts they want us to use, or it's too hard to make them that way. So we do it another way, the way we want. But before we do that, we have to ask permission to do it our way. That's what a Deviation is — asking permission to do it the way we want."
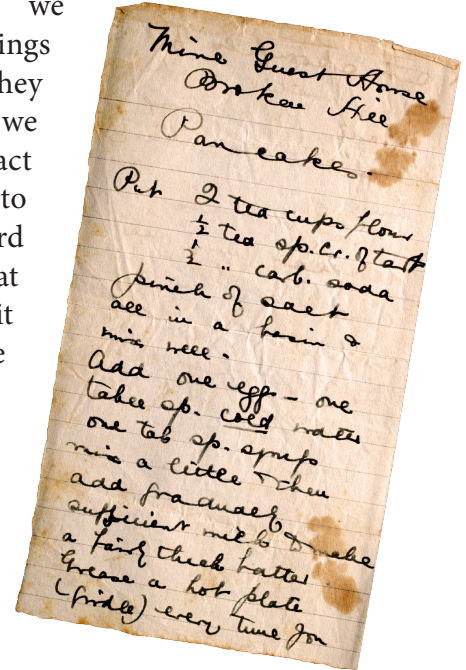
Emboldened by her puzzled look, I add, "Isn't that just like what you do at school — ask your teacher permission?"

Deep Yogurt

"No, Daddy," she states ominously, "Teacher always wants us to do what she says. If we don't, she sends us to the corner or makes us write lines on the blackboard."

"Aaahh… well, at our plant", I offer quickly, "we promise to do it our way only for a little while, like a week or until the parts come in. If we want to do it longer than that,
we have to ask permission again — that's a Deviation Extension, like the one I'm working on now. Make sense?"

"Why don't you just ask the people to change what they're asking you to do, Daddy? If your way is better, why don't you ask them to change what they wrote down so everyone will know? Then you wouldn't need to write those silly Deviations on weekends — you could play with us instead."

Um, yes. Clever girl. Why is it so warm in this room?

"Well it's not quite that simple, sweetie. We don't have time to do all that when we're busy — we write a Deviation instead because it's much faster and easier to get approved. We don't have to go through the work of changing all the things that tell us what to do. We only have to say what we're doing different. Pretty smart, huh?"

She cocked her right eyebrow upwards, suspiciously, a mirror image of my wife. Uh-oh. When did she learn how to do that?

"Daddy, if you only tell people what you're doing different, they'll never know what's wrong and they won't be able to fix it. Keeping that to yourself because you're too busy or it's too much work to change it — that's wrong, Daddy."

Busted! By a seven-year-old. My own flesh and blood.

The Big Cheese

To dodge the next bullet, I decide to go on the offensive. "Well if you're so smart, Missy, how would you do that at our plant, huh? Tell me that."

"I'd put a mouse in charge" she asserts, matter-of-factly.
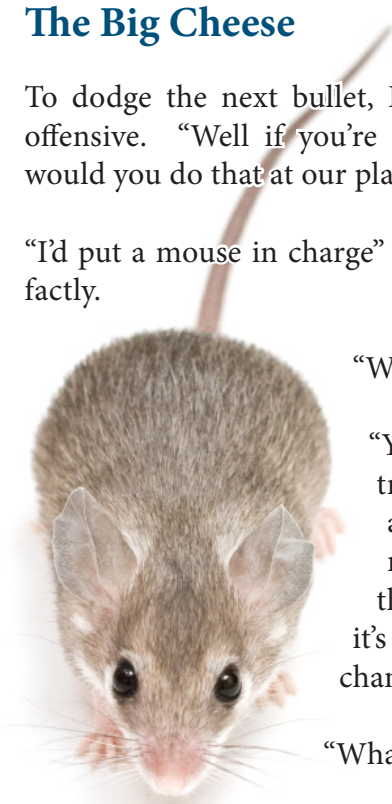
"What?"

"Yes, mice always tell the truth and work together as a family. They'd never keep things to themselves just because it's too much work to change it."

"What?"

"And you could pay them in cheese, too — mice aren't interested in money."

"WHAT?"

"Stop saying 'What?', Daddy. A mouse would make people work together — she'd never let people do what you're doing."

"Now see here, young lady" I spat out, reeling from the shock of her offensive. "You can't go replacing the plant manager with a mouse — he's an important guy! He knows a lot more than a mouse does about making things. Who do you think would get the documentation done? Who would review it? Who would do the scheduling and optimizing?"

Aware that I might be getting a bit overzealous, I throttled back to something she could relate to: "Who would give us those pretty printouts of scrap parts that you use for drawing pictures on the back? Huh? Tell me that."

"Mice, maybe", she said, totally unfazed. "They are pretty smart. You sure haven't been able to catch the ones in our basement with those nasty spring-things you got from the hardware store that breaks their necks. I showed them the instructions and now they stay away, so they know how to read."

An amused snort from the doorway alerted me to the presence of my wife, grinning like a Cheshire Cat. She can smell weakness and came to witness the kill. I shot her a pleading glance to r e s c u e me from
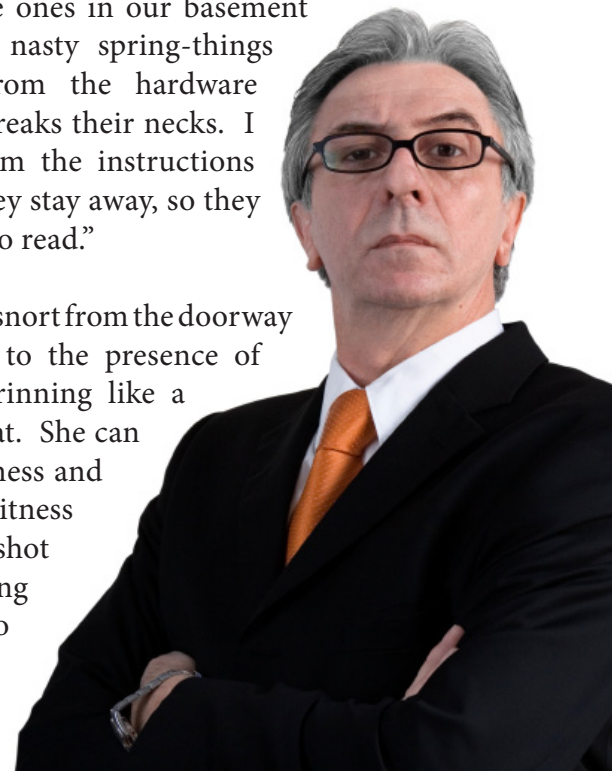
Megan's verbal onslaught. She just cocked her right eyebrow upwards and smiled sweetly.

Truce

In the end, Megan and I reached a truce. In exchange for domestic harmony and avoiding a coup to install a rodent as Plant Manager, I agreed to replace all our mousetraps with humane ones. Megan would carry each mouse from our basement to its "house" in the field beyond our back yard where she would release it.

At the plant, we negotiated a more streamlined change process that worked so well that the number of deviations (and deviation extensions) dropped dramatically.

For my birthday, Megan gave me a pencil with stickers of little mice on it, running up and down. It had a yellow eraser on the end that looked like a block of swiss cheese. In our plea bargain, I promised to use this pencil to write any future deviations for our plant.

There it sits, ready, on my desk. I haven't used it yet.

Hey, who moved my cheese?
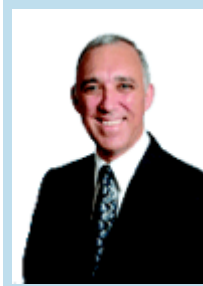
Rick St. Germain is a CM researcher, consultant, trainer, and coach with over 25 years experience in implementing military and commercial CM processes for both hardware and software. He is President and Managing Director of Nouvella Consulting Services based in Ottawa, Canada, and is Chief of Canadian Operations for CMPIC Canada. He can be reached at rstgermain@rogers.com

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