

CM Trends

December
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ISSUE 29

News and Perspectives for CM Professionals



ANNOUNCING: CM TRENDS 2018
 in
Las Vegas, NV August 27 - 29, 2018
 Configuration Management Seminars, Workshops, And Training

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10th ANNIVERSARY!

CMTrends

S.W.A.T.

Seminars, Workshops, and Training

August 27 - 29, 2018
Las Vegas, NV



10th ANNIVERSARY!

CMTrends

S.W.A.T.

Seminars, Workshops, and Training

You are Invited!

August 27 - 29, 2018 in Las Vegas, Nevada.

You are invited to attend and participate in **CM Trends 2018: Seminars, Workshops, and Training!**

CM Trends will help you to become better able to identify bottlenecks, improve workflow, and reduce mistakes within your organization. By attending CM Trends 2018, you will gain a better understanding of configuration management, including the latest CM topics, trends, industry standards, and corporate experiences. CM Trends does not restrict itself to lecturing about one methodology, but instead exposes you to the full spectrum of configuration management and process improvement through diverse presentations, hands-on workshops, question and answer sessions, talking with exhibitors, and networking.

CMTrends: \$1095
Discounted Class: \$1095
OR Discounted Bundle
(CMTrends & Class): \$1975

This 2.5-day event is great for anyone responsible for configuration management or process improvement within his/her organization. All experience levels and backgrounds are welcome! CM Trends attracts an international array of attendees from both commercial and government organizations. CM Trends' diverse attendance is what makes this event great for networking and learning from others' experiences.

Learn more about CM Trends 2018 at: www.CMPIC.com/configuration-management-seminar
Register now: www.CMPIC.com/registration, 1-434-525-8648, info@cmpic.com

Discounted Post Event Classes

August 29 - 31, 2018 in Las Vegas, Nevada

Every year CMPIC hosts discounted CM certification and training courses to celebrate a successful CM Trends event. These courses (typically \$1295) will be offered at \$1095 to the public. Register now to learn more about one of the following:

Course 6, "SAE EIA-649C Principles & Applications" certification course. This is a new version expected to be released prior to the class start date.

Course 9, "CM Standards & Practices Update" refresher course

Course 15, "Security-Focused CM of Information Systems" certification course

Learn more at: www.CMPIC.com/2018_CMTrends_Classes

REGISTER HERE

10th ANNIVERSARY!

CMTrends

S.W.A.T.

Seminars, Workshops, and Training

Location: Venue & Hotel



All CM Trends 2018 Seminars, Workshops, and Training classes will be held at:

HARRAH'S

3475 S Las Vegas Blvd
Las Vegas, NV 89109
www.harrah.com

Harrah's Las Vegas Hotel is centrally located on Las Vegas Boulevard, and has many shopping, dining, and entertainment options within walking distance.

ROOM RATES: Single/Double: \$89.00 per night plus tax (includes required facility fee) available **Sunday, August 26 - Thursday, August 30, 2018**. Weekend rate before and after this event is **\$159.00 per night** plus tax (includes required facility fee). *This weekday rate is set below the 2018 government per diem rate.*

Make your sleeping room reservations soon. Room block typically fills up early. Email katie@cmpic.com if you encounter any problems making your sleeping room reservation.

INTERNET RESERVATIONS: Visit <https://aws.passkey.com/go/SHCMT8> to book your room online.

PHONE RESERVATIONS: All reservations made via the telephone call center will be assessed a fee of \$15 plus current sales tax, per reservation. This fee will not apply to reservations made via the internet. Hotel Reservations telephone number is 888-458-8471.

**** This group discounted rate and room block will expire on Thursday, August 2, 2018.**

Reservations made after August 2nd will be on a space-available basis at the hotel's current selling rate.

CHECK IN/CHECK OUT: Check in time is 4:00 p.m. and checkout time is 11:00 a.m.

SERVICES & AMENITIES: Complimentary in-room Wi-Fi & hardwired internet access, in-room safe, 14 on-site dining options, spa, swimming pool, monorail access, on-site parking (discounted self-parking rate of \$5/day available during event dates; \$18/ valet).

REGISTER HERE

CM Terminology- Baselines and Configuration Items

By Steve Easterbrook

The definitions of “baselines” and “configuration items” have always been subject to controversy. The term baseline is supposed to represent a starting point for an agreed upon configuration but in some environments it now means whatever the current configuration is. The term “configuration item” was never intended to cover all things under change control (e.g. documents) but in some environments it now means exactly that.

Below we present how various terms have been defined by various sources, over the years, to help our readers decide how to appropriately define these terms for their organization.



Baseline

- (1) base line; noun, often attributive \ 'bās-īn\ - “information that is used as a starting point by which to compare other information” (Source: Any Common Household Dictionary)
- (2) “A baseline is established by agreeing to the definition of the attributes of a product at a point in time, and identifies a known configuration to which changes are addressed.” (Source: SAE-EIA- 649B)
- (3) “Configuration baselines should be established whenever it is necessary in the product life cycle to define a reference for further activities.” (Source: ISO 10007)
- (4) “...specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures...” (Source: IEEE 828)
- (5) “The configuration information formally designated at a specific time during a product’s or product component’s life. Configuration baselines plus approved changes from those baselines constitute the current configuration information.” (Source: CMMi)

CM Terminology - Baselines and Configuration Items (Continued)

Configuration Item

(1) Configuration Item (CI): An aggregation of hardware, firmware, software, or any of its discrete portions, which satisfies an end use function and is designated for configuration management. CIs may vary widely in complexity, size and type, from an aircraft, ship or electronic system to a test meter or round of ammunition. During development and manufacture of the initial (prototype) production configuration, CIs are those items whose performance parameters and physical characteristics must be separately defined (specified) and controlled to provide management insight needed to achieve the overall end use function and performance. Any item required for logistic support and is designated for separate procurement is a CI. (Source: Mil-Std- 480B. Canceled a long time ago. Note this is the earliest definition we could find)

(2) Configuration Item is any hardware, software, or combination of both that satisfies an end use function and is designated for separate configuration management. (Source Mil-HDBK- 61A)

(3) ...entity within a configuration that satisfies an end use function. (Source: ISO 10007)

(4) "A Configuration Item (CI) is a product, or major component in the product structure of a complex product, that provides functions of importance to the end product.

(5) The CI designation is a convenient way to refer to items that have separate requirements specifications, may be separately developed, and are an item to which the effectivity of changes to its components is addressed. Configuration items receive special CM attention: they are usually serialized and are often the subject of design reviews and configuration audits..." (Source SAE-EIA- 649B)

(6) A CI may be defined as anything that has a function in the TMS. ... in addition to system requirement and design documentation. (Source: Federal Highway Administration CM Handbook)

(7) The things within a configuration baseline that you decide to control through configuration management are known as configuration items. (Source: Dept. of Transportation, CM for Transportation Systems)

Now that you have the various definitions... you be the judge.



Steve Easterbrook Steve is the President of CMPIC LLC - the Configuration Management Process Improvement Center. Steve has been working in configuration management for over 30 years. He has 12 years of experience as a Configuration Management manager in government and commercial organizations and another 18 years as a CM educator, lead assessor, and consultant. Steve has taught, lectured to, and consulted with thousands of individuals from hundreds of commercial and government organizations on the subject of CM process improvement.

An Engineer's Journey into Configuration Management: The Importance of Training and Certification

*By Lisa Fenwick,
Vice President of CMStat*

I was very lucky when I graduated college with my BSME. My first job was performing project management for a government contractor. A dream job for someone fresh out of school and I was eager to get going. One day the urgent topic was fluid dynamics, the next day was hardware design, and the following day involved mechanics of materials. I loved the variety and felt competent, especially when the challenge de jour required understanding of the core engineering disciplines I learned in the classroom.

What I quickly discovered was that my engineering degree did not give me the skills to actually document, communicate, and manage the evolution of an engineering design from inception to customer use. As example, my engineering change proposals were frequently rejected because the tools required to perform the retrofit which I had specified were simply not available to those who would make the modification. I learned this the hard but memorable way while on-the-job.

So what major discipline was my college curriculum missing? Configuration management, a subject never mentioned in the engineering education of the time.

At work I was ever so fortunate to have found a generous mentor in CM who would give me all the direction I needed, especially if I approached her at the beginning of my design project, instead of at the end or when in crisis mode. She taught me CM from the middle outwards as she helped guide my design choices based on configuration control and logistics information. She freely shared her deep institutional history of the product along with a customized CM database tool that, oddly, was not available to us in engineering.

I eventually acquired all of the imperfect-fitting jigsaw pieces of the design process for a single product but still had little understanding of how to manage a complete product family, including all the manufactured variants and customer retrofits throughout the product's lifecycle. Yet, the hard and soft skills of how to communicate changes and track configuration control over a widely dispersed organization that did not report to me remained a challenge.

An Engineer's Journey (Continued)

My first formal exposure to CM as a discipline all of its own was to attend a CM certification session. The certification process consisted of attending three classes, over three separate weeks spanning a cold winter. During my training I learned what effective documentation should look like for the recipient, not just the author; how the approval and release processes should be conducted; how to accommodate manufacturing requirements; how to prepare for the inevitable changes to a design long after it left engineering; how to account for and track change implementation; and many other best practices that I would not have to learn the hard way with on-the-job training.



This classroom training made my professional work much easier for me and my reputation as being more dependable for my boss. I couldn't count all the times during those three weeks that I thought to myself "ahhh, so that's why we do this" along with a few "ohhh, that's how I should have done that." Having that larger picture has always been important to me as it is for most engineers who are naturally curious without much incitement. Knowing the "why" behind it was necessary for me to include someone on a change control board, beyond wanting her opinion or good will, was invaluable.

As my career progressed after joining CMstat, understanding and navigating the different, often conflicting priorities of project management, engineering services, quality



assurance, supply chain procurement, and other functions became essential. Our CMstat customers began to expand their view of CM beyond that of an engineering department skill to a more strategic enterprise-wide competency. During this time CMstat's PDMPlus CM software matured as a best-in-class COTS solution that found favor with program managers who needed to quickly stand up a nimble commercial-off-the-shelf CM solution.

An Engineer's Journey (Continued)

When CMstat's product suite grew beyond CM with Deliverables Data Management solutions, more training was required, specifically in the SAE EIA-859 standard for enterprise data management. I enthusiastically attended numerous CM courses to expand my knowledge base. Regular attendance at industry conferences like CM Trends, CMII, GEIA, ACDM, and CIMdata was invaluable. I owe much gratitude to the countless instructors, presenters, customers, authors, and colleagues across the CM spectrum whom I have met over the years at these events.

There are things one learns in engineering school and takes into the workplace. There are many more skills one acquires on-the-job that are necessary to actually perform the job efficiently. Yet, there is so much more to be gained from continuing education, industry associations, standards organizations, and from other practicing CM, DM, and Engineering professionals. Contribution to or participation in standards governing bodies like the SAE G-33 Committee for CM is just one example.

My CM education has not stopped since earning CMPIC's Masters Certification in CM as well as the CMSME designation and CMII-C certification. The knowledge attained from earning these certifications is far more valuable to me than my sizable stash of engineering books or framed diplomas on my walls. They serve as the foundation of trust between my employer and customers, as well as between myself as head of product development and our engineering team. As one of my instructors is so fond of saying, certifications enable us to begin to learn in earnest.

Ms. Fenwick has been employed by CMstat - a leading provider of COTS Configuration Management and Contract Deliverables Management software - in a number of roles for the past 21 years. With a degree in Mechanical Engineering from the University of Maryland and a background in Project Engineering, Reverse Engineering and Configuration Management, she has provided support to various departments including Sales/Marketing, Training, Customer Support, Implementation, and Consulting and is currently the Vice President of Product Development. In the past ten years, Ms. Fenwick has become very involved with new product development and standards compliance. She is a member of the Association of Configuration and Data Managers (ACDM) and holds CMII Certification. She has her CMPIC Master's Certification in Enterprise CM and CM Subject Matter Expert (CMSME) from CMPIC. Ms. Fenwick is also active in the SAE committee for EIA SAE-649 revision.

Computers and Databases

CM Origins Part IV

By Kim L. Robertson

CM Origins Part 3 ended with the SAE G-33 committee sponsored Proceedings of the 12th Annual Configuration and Data Management Workshop and publication of EIA-649. CM Origins Part 4 will explore the origins of the “computer” and “databases”. Let’s start with the use of the word “computer.” It is generally accepted that the first use of the word “computer” appeared in “The Yong Mans Gleanings” published in 1613 by Richard Braithwait. It referred to calculations or computations carried out by trained individuals known as “computers.” By 1897 the definition of “computer” was expanded to include calculating machines. Once calculating machines and calculating methods are included it pushes the historical timeline of the “computer” back to the Paleolithic Tally Stick. One of the best representations of a Tally Stick is the Ishango Bone made between c.20,000 BCE. It is on display at the Institut Royal des Sciences Naturelles de Belgique, Bruxelles. The Ishango Bone was found near the Semliki River Lake Edward between modern-day Uganda and Congo.



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While many of us may not recognize the Tally Stick we do recognize the abacus. The abacus c.2,400 BCE comes to us from the Fertile Crescent and is still in use today. Our current concept of the computer as an analog or digital device had to wait until the Antikythera mechanism c. 125 BCE. The Antikythera mechanism is often credited as being the oldest analog computer. Charles Babbage introduced the programmable analog computer. It was refined by his son Henry in 1888. Analog computers reached their peak usage around 1927 and usage fell off rapidly after 1950. The slide rule developed in the 17th century is the exception and its use was still taught in universities into the 1970s. The slide rule is a mechanical analog computer.

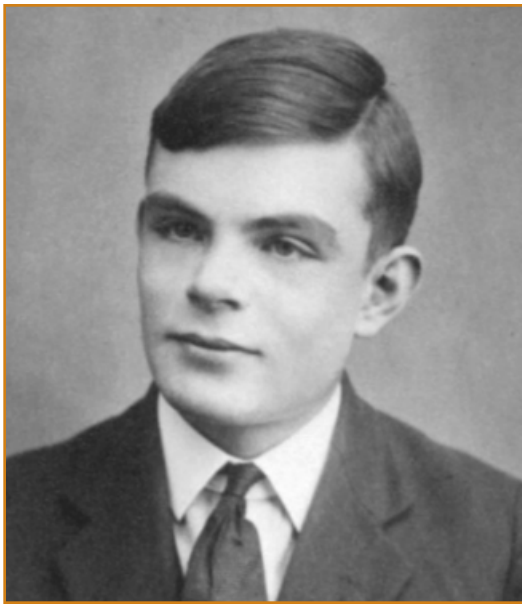
CM Origins Part IV (Continued)

The slide rule is used primarily for multiplication and division, and functions such as exponents, roots, logarithms and trigonometry, but typically not for addition or subtraction. Slide rules came in both straight and circular forms. Circular analog devices continue to be used to this day.

Electronic data processing as we know it today started with the work of Tommy Flowers of the Post Office Research Station, London where “Colossus” the world’s first programmable electronic digital computer was built.



E6-B Flight Computer http://www.mypilotstore.com/my_pilotstore/sep/522

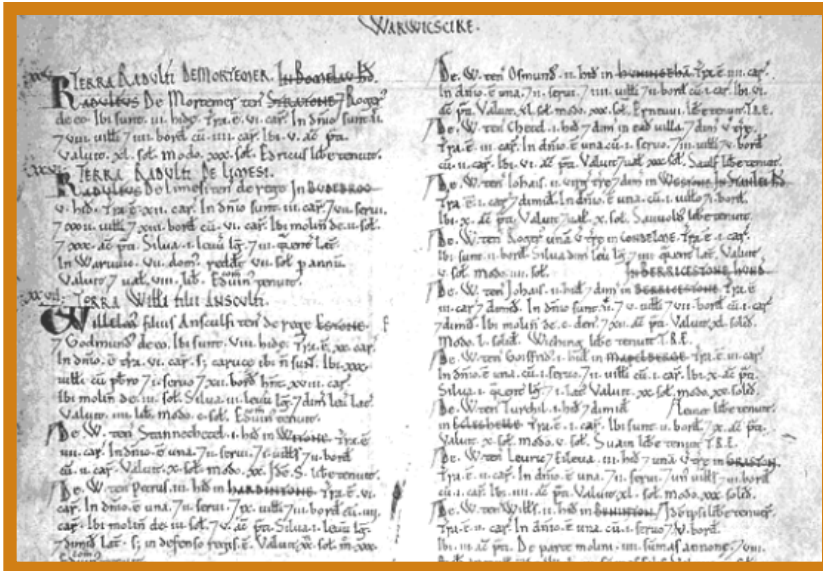


Alan Turing around 1929 – Public Domain

Colossus was used at Bletcheley Park, Britain's main decryption establishment during World War II.

Tommy later assisted Alan Turing at Bletcheley Park where Alan formulated the ground rules for computer science. Alan’s work was showcased in the American movie *The Imitation Game*. One of Alan’s co-workers was Ian Flemming the author of “Chitty-Chitty Bang-Bang” and the “James Bond” stories (James Bond, January 4, 1900 – February 14, 1989, was a leading American ornithologist, an expert on the birds of the Caribbean. His name was appropriated by writer Ian Fleming for his fictional British spy of the same name).

CM Origins Part IV (Continued)



Portion of the Liber de Wintonia for Warwickshire –
public domain

Database technologies on the other hand evolved from the need to store and retrieve information. A database is simply an organized set of data. Elaborate electronic and manual databases have been developed throughout history often taking the form of alphabetized lists, spreadsheets, card catalogues, bin labels for scrolls, tax information, and such. One database that most of us know is the “Liber de Wintonia” aka “Book of Winchester” aka “The Domesday”

book. It was commissioned by William I of England in 1085 to determine what taxes had been owed the crown under

Edward the Confessor. This database enabled William to enforce the crown’s rights after property was re-distributed to his nobles.

Many of us are also familiar with the c.1876 Dewey Decimal Classification (DDC) system used in many libraries. It is a general knowledge organization tool continuously revised to keep pace with knowledge and named after Melvil Dewey, an American Librarian. The DDC pioneered the concepts of relative location and relative index.

Database Management Systems (DBMS) we know today first appeared in the 1960’s. Relational databases became a commercial success with the advent of Entity-Relationships (based on data acquisition rather than logic tables) and Structured Query Language (SQL). By the 1980’s complex objects like those used in Computer Aided Design (CAD) systems Object Oriented Database Management Systems (OODBMS) were available. SQL-92 became the SQL standard and was implemented through ANSI and ISO. ODMG-93 was agreed on as the OODBMS standard. This evolution from coded binary systems to procedural languages to object oriented languages allowed for greater control married with flexible storage, interface and transactional events for complex objects and layered file structures.

CM Origins Part IV (Continued)

Library card catalogs can be cross referenced to enable scientific and other forms of research. With enough hooks in the database (inter-related metadata fields) programmatic data can be analyzed in either a big data or small data context pinpointing trends over the entire product lifecycle. This analysis can reduce fabrication as well as operations and maintenance costs. One fallout of this is that electro-mechanical mechanisms designed to last longer than the maximum operational life of the consuming product may be over designed. Re-design enables substantial savings and greater profitability.

Today any enterprise uses multiple databases. When multiple databases need to communicate, additional complexities are introduced as they may use different metadata field names. This is mitigated through use of Data Exchange and Interoperability (DEI) tables addressed in SAE EIA-836. Directly associate with DEI is the use of a Common Data Schema for Complex Systems (CDSCS) addressed in Technical Report GEIA-STD-927. If a database is well thought out it can be used for data mining not envisioned by the originator. The “Liber de Wintonia” is still used today to pinpoint the location of buildings in archeological digs.



Kim Robertson is a NDIA Certified CM practitioner, consultant and trainer with over 30 years of experience in contracts, subcontracts, finance, systems engineering and configuration management. He has an advanced degree in operational management with a government contracts specialty and is the co-author of Configuration Management: Theory Practice and Application. He can be reached at kim.Robertson@ValueTransform.com

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 - Melbourne area, FL February 27 - March 2, 2018 & March 5 - 8, 2018 - Two Consecutive Weeks!
 - Newport, RI April 9 - 12 & May 7 - 10, 2018
 - North Charleston, SC June 11 - 14 & July 16 - 19, 2018
 - Washington DC area, VA August 6 - 9 & September 10 - 13, 2018
 - Orlando, FL October 16 - 19 & October 22 - 25, 2018 - Two Consecutive Weeks!
- **EIA-649B Principles & Applications Certification, Course 6**
 - North Charleston, SC January 23 - 25, 2018
 - Panama City, FL March 20 - 22, 2018
 - Andover, MA May 1 - 3, 2018
 - Las Vegas, NV August 29 - 31, 2018
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 - North Charleston, SC July 31 - August 2, 2018
 - San Diego, CA November 6 - 8, 2018
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