



A monthly newsletter of the Energy Facility Contractors Group's Project Delivery Working Group

Issue 26

September 2021

Happy New (Fiscal) Year!

Greetings to the growing number of EFCOG PDWG "Practitioners". We find ourselves at the cusp of another fiscal new year...so happy new year to all! I hope everyone has an opportunity to reflect on your organizational and individual perseverance and accomplishments during this extremely unique period of our careers and lives. I also hope all of us take the time to thank others around us for their dedication, and never-ever give-up spirit, in finding a way to always get it done! So hat's off to our talented and amazing members, leadership, and customers as we continue to pursue our important PDWG mission.

This edition of the "Practitioner" will share highlights from our PDWG Project Controls Subgroup (PCSG) meeting held September 20, 2021, provide a look at our "Upcoming Events Calendar" and include another installment of our "It's Not One World" series. So here we go...

Project Controls Subgroup Meeting Highlights

The PCSG meeting was hosted by the PCSG Chair, Lisa Cazalet. The meeting was well attended and included our new Project Management Chair Sam Steiman. PCSG's primary Department of Energy (DOE) customer's Mel Frank and Zac West were in attendance and provided presentations on the "ASU Maturity Model" (Mel), and "DOE Data Tests Update" (Zac). Many of the EFCOG Complex "Practitioners" and DOE-PM-30 staff were in attendance.

The core meeting agenda items included:

- 2021 Annual Plan Update
 - Resources provided to support DOE reviews
 - ASU Maturity Model
 - Guide Updates
 - EVMS Tailored Approach
 - EVMS Tool Implementation Guide
 - 2022 Annual Plan
- Resource Loaded Schedules Team Update (Derek Lehman)
- ASU Model Update (Mel Frank)
- DOE Data Tests Update (Zac West)
- DOE Data Tests Discussion (Babette Langdon/Pam Brooker)

Continued on next page

PCSG Meeting Recap

Continued from previous page

- EVM Tools Overview: (Andrea Gilstrap/Zac West)
 - Best Practices Reports for FY2021
 - Recommendations for FY2022

The full meeting agenda can be found on the EFCOG Webpage at: [EFCOG Project Controls Subgroup Agenda Sept 20 2021.pdf](#)

Mel Frank provided a much anticipated and informative presentation on the "ASU Maturity Model". Below are some of the highlights:

EVMS Research – Initial (2019) Study Aims and Objectives:

- Elevate the worth and utility of the EVMS through unbiased scientific research encompassing survey questionnaires and the statistical analysis of contractors' performance data
- Develop a tailorable EVMS Maturity Model inclusive of EIA-748 compliance requirements that can accommodate the unique missions, program and project types of the DOE, DoD, NRO, NASA, and other CFAs, as well as commercial ventures requiring disciplined scope, schedule, and cost management
 - EVMS is a powerful project management method that is implemented in aerospace, engineering and construction, telecommunications projects where participants have adopted EVM principles in different ways
 - An effective EVMS can position a project for success by meeting its technical and quality objectives on budget and on schedule

- Develop a weighted EVMS Maturity Score that provides insights into implementation risks and opportunities
- As FICO® scores are calculated from many different pieces of credit data in an individual's credit report, an EVMS Maturity Score can reflect the importance of a management process or attribute, individually or collectively during the planning and execution of a project

Problem Statement:

- A major obstacle to obtaining full benefit from the EVMS is the lack of a common definition for its application across diverse work scopes and consideration of environmental factors in its implementation
- A major obstacle for genuinely implementing the EVMS is the stigma that it is more of a regulatory burden where costs outweigh benefits rather than a necessity for managing dynamic work scopes

Continued on next page

The PRACTITIONER

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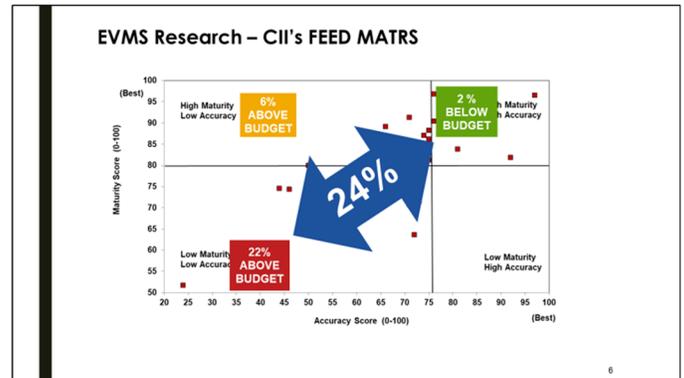
PCSG Meeting Recap

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The study looked at the “What are the most challenging aspects of managing a project/program using the Earned Value Management System (EVMS)...” The results are revealing (see figure at right).

In addition, the EVMS Research leverages off a – Correlative Study (FEED MATRS) where:

- EVMS Research Study will result in a method to **assess the maturity of management processes and attributes which comprise the EVMS and the environment factors** in which the EVMS operates
 - Define the attributes of an effective EVMS at various maturity stages
 - **Define the key enablers and barriers to the effectiveness of the EVMS**
- EVMS Research Study will **leverage the Construction Industry Institute’s (CII) Front End Engineering Design (FEED) Maturity and Accuracy Total Rating (MATRS) methodology as a guide for its work**
 - **CII PDRI consists of 46 engineering design elements and 27 accuracy factors that generates two separate scores: a maturity score and an accuracy score**
- The FEED MATRS methodology lays the foundation for predictable and efficient project delivery through better **Front End Planning (FEP), and has been a CII Best Practice for over 24 years** resulting in project cost savings and project schedule reductions



ASU Maturity Study – Progress to Date

05/08/19	Team kick-off	Dec 2020-Feb 2021	Addressed Maturity comments and developed attribute weights
12/31/19	Completed literature review; conducted and analyzed survey of 294 experts	Apr-Aug 2021	Data collection performance workshops 1, 2, 3, 4 and in-progress workshops
06/30/20	Developed Maturity and Environment draft assessments	Aug 2021-Jan 2022	Software development
Jul-Sep 2020	EVMS Environment Workshops #1,2,3,4	09/15/21	Finalize performance analysis
Jul-Nov 2020	EVMS Maturity Workshops #1,2,3,4	10/31/21	Finalize publications
Aug-Nov 2020	Addressed Environment comments and developed factor weights	11/01/21	Start training
12/08/20	Finalized the EVMS Environment Assessment	01/31/22	Software testing completion
01/21/21	Software taskforce kickoff	12/31/22	NCE project completion

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PCSG Meeting Recap

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IP2M METRR Workshops

Overview of IP2M METRR Workshops

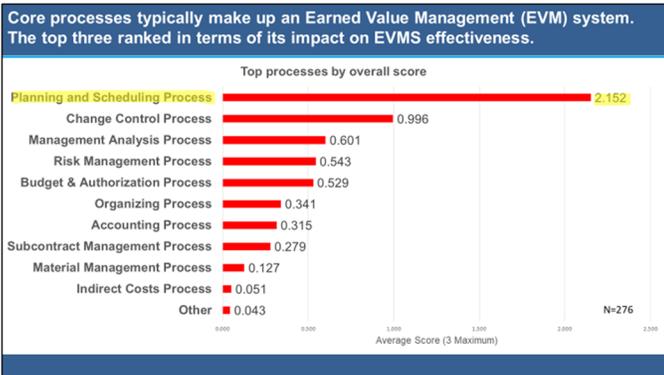
Date:	9-Jul 2020	5-Aug 2020	5-Nov 2020	17-Nov 2020	Total:
Workshop:	Maturity 1	Maturity 2	Maturity 3	Maturity 4	
# of Participants*	12	13	13	18	56
Average years of EVM experience:	19.5				
Date:	16-Jul 2020	12-Aug 2020	10-Sep 2020	15-Sep 2020	Total
Workshop:	Environment 1	Environment 2	Environment 3	Environment 4	
# of Participants*	9	11	13	14	47
Average years of EVM experience:	19.1				
Date:	8 April 2021	19 May 2021	2 June 2021	10 Aug 2021	Total
Workshop:	Performance 1	Performance 2	Performance 3	Performance 4	
# of Participants (# of projects)*	14 (11)	6 (5)	15 (11)	21 (6)	56 (33)
Average years of EVM experience:	19.9				

* + 5 (ASU team and Mel Frank)

- A total of 12 workshops
- A total of 136 data sets collected
- Adjudicated over 1500 comments

11

Core EVMS Processes

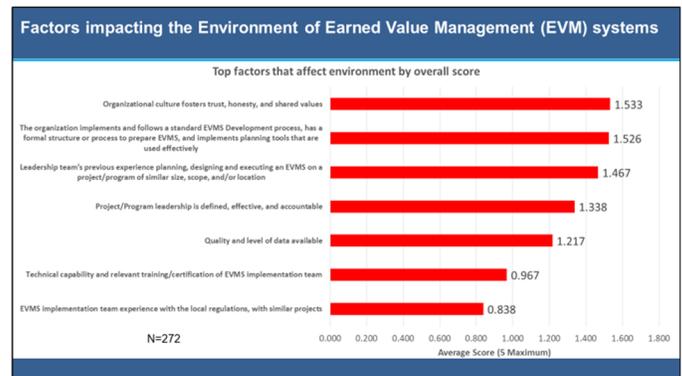


To learn more about the Maturity Attributes and Weightings, go to:
www.energy.gov/projectmanagement/articles/ip2m-metrr-asu-evms-study
[PM EVMS IP2M METR - Dept of Energy-External - MAX Federal Community](#)

A key component of the ASU Maturity Model is the evaluation of EVMS Environmental Factors.

"Factors that influence the degree of confidence in the outputs of the EVM system, associated processes, and deliverables that serve as a basis for effective program/project management and decision making."

Environmental factors may be the single most important aspect of an earned value management system. Whether you have robust and sophisticated EVMS tools or a simple process for managing your EVMS, the successful implementation of either will depend greatly on how EVMS is viewed by the site, program, or project organization leadership and staff. EVMS is a requirement versus belief-based process



Continued on next page

PCSG Meeting Recap

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and there has been a significant effort to scrub the belief, opinion, and interpretation factors from the review and implementation process. An EVMS must be implementable, easy to understand, sustainable, and can demonstrate that earned value is used to inform the program/project management team and stakeholders in successfully completing the mission.

Path Forward

- Continue developing the User Guide
- Continue software development
- Collect more data from team members
- Conduct more in-progress reviews using the tool
- Develop training materials
- Publicize the work
- Position Federal Agencies for EVMS Compliance Reciprocity (OMB Requirement)

Next Steps

- Rethink policies and procedures to promote and administer the IPPM METRR tool
- Maturity and Environmental Factor Templates to become central for determination
- Reimagine the EVMS review process
- Begin with end in mind
- More collaborative / ongoing dialogue / joint discovery
- More automated (develop Turbo Check methodology to administer/collect Maturity and Environmental Factor scores)
- Management focused
- Continue to improve consistency
- Lower cost / smaller footprint
- Update policy and process in ECRSOP
- Refine Metrics and CRC
- Reformat CAR/DR templates

DOE 413.3B Guide updates

- DOE Planning and Scheduling – new guide currently in final review for approval
- DOE Guide 413.3-10A, Earned Value Management System – rewrite and update of guide is currently in initial Department wide review
- DOE Guide 413.3-21, Risk – Limited update incorporating Joint Confidence Levels. Guide is in final review period for approval, closes 9-23-2021.
- DOE Guide 413.3-20, Change Control Management Guide – Update October 2021 incorporating root cause analysis, Over Target Baseline (OTB) and Over Target Schedule (OTS)

PM Standard Operating Procedure Updates

- EVMS Compliance Review Standard Operating Procedure (ECRSOP) – Update underway, revised release expected January 2022.

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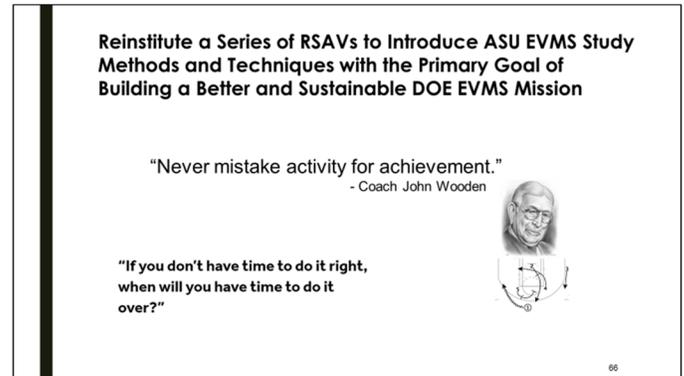
PCSG Meeting Recap

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- EVMS Compliance Review Standard Operating Procedure (ECRSOP), Appendix A Compliance Assessment Guidance (CAG) – Update underway, initial draft being reviewed. Secondary draft due October 2021, release expected by January 2022.
- EVMS Compliance Review Standard Operating Procedure (ECRSOP), Appendix A PM EVMS Compliance Review Checklist (CRC) - Update underway, release expected by February 2022.

Upcoming PM-30 EVMS Reviews Or

- TRIAD – Implementation Review
- Y-12 – Certification/Implementation Review (new contract)
- Y-12 – Certification/Implementation Review (UPF breakout)
- Pantex – Certification Extension/Implementation Review (new contract)
- SRS – Certification Review (SRNS or new contractor)
- WIPP – Certification/Implementation Review (new contract)
- PORTS – Implementation Review
- Others?



The full presentation can be viewed by following the EFCOG PDWG link [here](#).

Comments, questions, feedback, requests for additional information regarding the ASU Maturity Model/ Study or other EVMS related topics are always welcome and can be emailed to [Mel Frank](#) or [Craig Hewitt](#).

The "DOE Data Tests Update" presentation can be viewed at the link [here](#).

UPCOMING EVENTS

- 📅 **2021 EVMP Forum - IPMDAR and PCA Workshops**
October 20-21, UVA Darden Center, Arlington VA
[2021 EVM Practitioners' Forum \(fedpubseminars.com\)](http://fedpubseminars.com)
- 📅 **2021 Decommissioning Strategy Forum**
November 1-2, 2021, JW Marriott Las Vegas Resort & Spa, Summerlin, NV
[2021 Decommissioning Strategy Forum - Choose Registration \(eventscloud.com\)](https://eventscloud.com)
- 📅 **2021 RadWaste Summit**
November 3-5, 2021, JW Marriott Las Vegas Resort & Spa, Summerlin, NV
[2021 RadWaste Summit - Choose Registration \(eventscloud.com\)](https://eventscloud.com)

*Is your data and info **C**urrent, **A**ccurate, **C**omplete, **R**epeatable, **A**uditable and **C**ompliant®?*

Behavior-Based Project Management

Cognitive Moderators

This is an introduction to some of the moderators of rational cognition (thinking). You can think of *cognitive moderators* as elements in thinking that keep your brain from making purely logical and rational decisions. To compare the brain to a computer, a computer takes in inputs, stores the information in its memory, processes it, and sends the outputs from processing. The processing takes place in a linear, logical fashion, computing data without bias or any other impacts to accuracy. Each process is dry, void of emotion, and purely logical. The brain, on the other hand, does not operate like a computer.

The processing of information through the brain is affected by a need to maintain its own survival, as well as maintain the need for perceived survival. The brain is constantly trying to conserve energy, maintain a state of comfort, avoid situations that seem dangerous (real or perceived), and protect itself from challenges to what it thinks is real. This processing keeps it from being completely rational or logical, as its survival is a higher priority than anything else.

We present here an introduction to many of the different ways that pure rationality may be moderated or filtered by the brain. It's important to note that the cognitive moderators are not cognitive biases, but may be viewed as those elements of thinking that cause, moderate, or contribute to, cognitive biases. Every decision has to go through the brain. And the brain is not as logical as we like to think it is. Here are some of the ways your brain moderates, filters, and modifies logic:

Time Pressure

Rushing – Imagine driving at about 200 miles per hour past a road sign. What did the sign say? You probably could not read it. This is what time-pressure can do to decision-making. When you are rushed to make decisions, the brain does not have enough time to consider all alternatives, risks, resources needed, etc. It's like driving past all the potential exits at 200 miles per hour and never seeing other options.

Automatic Thinking (System 1) – Time pressure causes automatic thinking, otherwise known by cognitive scientists as System 1 thinking. Due to a project's time-constraint, personnel on projects experience higher degrees of automatic thinking. The subsequent increase in System 1 thinking causes thinking errors, cognitive biases, reduces creativity, causes a reliance on heuristics (see description below), and impacts decision-making in risk and safety.

Heuristics

Heuristics are the brain's way of automatically referencing information in a split second without having to thoroughly think through a situation. Heuristics are a mental rule of thumb and are kind of like a computer or Google Search engine that provides suggestions of phrases once you start typing in the search bar. The computer is constantly making comparisons as you put in more information. Heuristics are doing the same thing; your brain is constantly indexing what it sees and hears against what it thinks it knows, giving you split-second feedback for you to make a decision. The problem is that heuristics lead to more automatic decisions that can lead to errors.

Continued on next page

Introduction to Cognitive Moderators

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Cognitive Load

Imagine running your computer all day long, and as you go about the day you open more and more programs. You now have MS Word open, Excel open, your email is open, a YouTube video is running, and you are editing photos. Meanwhile, your computer is running all the background programs to keep the computer functioning, such as automatic update programs, the controls for your mouse, watching your battery power, etc. Your computer is bogged down and slow because the Random Access Memory (RAM) is almost completely full. Now the computer cannot run at full capacity and its performance is compromised. Cognitive load in the brain is the same. The more information you put into it throughout the day, the lower and slower the performance.

Decision Fatigue

Similar to cognitive load, decision fatigue is what occurs when the computer between your ears (your brain) is making decisions and loses energy due to those decisions. While cognitive load represents the memory being used throughout the day, decision fatigue is like the computer using that memory to take actions. Each decision, large or small, builds up throughout the day, and every decision is burning calories and using oxygen (about 20% of your body's oxygen is being used by your brain). As the day goes on, your energy for decisions decreases, similar to what happens when you are using your muscles and your arms or legs get tired. And just like a muscle, even small actions can have a cumulative effect at decreasing energy. As decision fatigue increases, the quality of the decision is reduced, which can decrease rationality and logical outputs of the brain, with an increase in automatic thinking, which also results in an increased reliance on cognitive biases to make decisions.

Cognitive Dissonance

This term explains the mental discomfort experienced when someone holds two or more contradictory beliefs, ideas, or values in their mind at the same time, and experiences psychological stress because of it. When two actions or ideas are not mentally consistent with each other, people try to revise them until they become consistent. To explain dissonance, imagine this scenario: you made a plan for a project and handed it off to the project manager to deliver. After the project was delivered, you find that there were major errors in the plan which caused it to finish behind schedule. Because you believed you were good at planning, you now have two conflicting pieces of information that are causing cognitive dissonance: 1) you are a good planner, and 2) you aren't as good at planning as you thought you were. When people experience dissonance, they make a decision of how to disposition it, which results in one of the following actions:

- Accept the new information (not a common disposition)
- Reject the new information
- Discredit the new information
- Minimize the new information

The mental discomfort causes people to make decisions that may not be purely logical or rational. This is because people often make choices that reduce mental discomfort over the decision that is correct. Cognitive dissonance is the cause of many cognitive biases.

Continued on next page

Introduction to Cognitive Moderators

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[Optimism bias](#) is an example of avoiding mental discomfort, where a person holds an unrealistic positive view about the future. Optimism reduces negative views about the future, avoiding the associated mental discomfort. Deliberate ignorance has a similar theme: avoidance of information that causes cognitive dissonance.

Social Pressure

This phenomenon is the cause of many decision errors by humans. Social pressure explains the pressure experienced from others to make decisions that correspond with their will or desires. This pressure can be real or perceived and can be based on social expectations of the culture, organization, or small group within the organization. It can also occur in temporary groups, such as in a business meeting. The pressure from other people causes humans to often make decisions that are not completely logical. For example, in a safety or planning meeting a subject matter expert (SME) may introduce a risk to people in the meeting, but the risk is considered uncomfortable to discuss. Because of the common understanding of the discomfort with discussing the risk, the SME decides not to push the issue and the risk is no longer discussed. However, not discussing the risk did not make the risk go away, it just kept it from being mitigated. In this case, the social pressure increased risk to the project because the pressure decreased the logical decision. Social pressure is also associated with Strategic Misrepresentation, one of the most common causes of optimistic project planning.

Inertia

The inertia human phenomenon explains the tendency for people to maintain a stable state associated with inaction or persistence in a certain direction. Let's use the example of a car in motion. Once the car starts moving forward in a certain direction, the inertia keeps it going. Any steering either left or right introduces friction and causes the inertia to slow the car. The brain operates in a similar fashion. As people start to move in a certain direction in decisions, actions, or mental state, any change in direction introduces friction and discomfort. Because it takes more mental energy to deal with the friction or change in inertia, the brain resists this change. Inertia is associated with [status quo bias](#), and can be one of the causes of resistance to change. Inertia can also be used to improve decision making by setting defaults (such as those found in [choice architecture](#), or [nudge theory](#)) so that the inertia causes people to make better decisions by putting the right decision in the path of movement, either physical or mental.

Psychological Safety

One of the most basic moderators of cognition, and probably the most popular, is the brain's response to threat; most of us have heard of "fight, flight, or freeze." All humans and other mammals are constantly evaluating the environment for threats. Before we lived in civilized towns with a relative degree of safety, humans were more exposed to the elements, to predators, and other dangerous situations. In a dangerous situation the brain is on high alert, and if there is an immediate threat, we respond by fighting the threat, fleeing the danger, or in some cases freezing and not responding (a natural reaction if one did not want to be seen by a predator).

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Introduction to Cognitive Moderators

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Above all, the brain is trying to survive in every situation. And just because we are now in more civilized environments with reduced levels of threat, does not mean the brain has shut off the function of threat detection. It is now just looking for other threats that may be more subtle; in the office, in a conversation with the boss, or in a project team meeting.

Psychological safety can generally be defined as belief that one is safe in the organization to take interpersonal risk. If a team or whole organization does not feel safe that will inhibit performance, learning, innovation, and risk identification, among many other issues. A lack of psychological safety reduces confidence and people feel afraid they will be rejected, punished, embarrassed, or socially ostracized. Psychological safety also significantly impacts the level of trust in the organization. In addition to social pressure, psychological safety can be a cause of strategic misrepresentation. As trust is decreased individuals may not feel safe communicating the realities of duration or cost estimates. As most people know, trust plays a big part in a high-performing culture. The lack of psychological safety is a direct contributor to decreased trust in an organization.

Conclusion

Everything starts with the brain. Everything goes through the brain. Your brain is filtering all information through all of these moderators at the same time, regardless of how logical you think you are being. And of course, our ego will tell us that we are the exception to the rule, and more logical and rational than others. The simple fact of the matter is we are all human, and all of these cognitive moderators apply to all of us. The only way to improve decisions and reduce thinking errors is to be aware of how these impact our thinking and take steps to improve.

— Dr. Josh Ramirez, PhD, PMP, is a project manager in the Washington River Protection Solutions' Earned Value Management System Compliance and Reporting organization

It is Not One World — What We Do and How We Do It Matters

— By Mike Manes

Paul Harvey used to say, "We're not one world." He was right. When I started in the business, it wasn't one world. But that didn't matter to the old guy who owned the place. The only opinion that mattered was that of the owner, and, if you didn't like it, you could leave. That's the way it was. Today we're a more diverse world.

Mark, a friend of mine and the leader of a very successful organization, reinforced that message. He's wise beyond his years. He's not young enough to be my son, but I'd be proud to have him as a younger brother. At a planning session, some of his senior employees went on a rampage about what was wrong with the Gen-Xers and the millennials in his organization and in other companies. When asked his opinion, Mark said, "I think they're bright, creative and very much the future. I think the rest of us are stuck in a rut and only want to criticize the new — we're the past." Did I say Mark was wise?

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It is Not One World

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Then, the other day, I saw an impeccably dressed white-haired gentleman heading into his boutique for another day of selling designer clothes to his upscale clientele. He wore a seersucker suit, white shirt and a colorful tie. He was dapper, or, as they said in the good old days, “dressed to the nines.”

Not two blocks down the street I saw a young man in full urban wear. His pants were hanging to his shoes. He wore a baseball hat that was crooked on his head (either that or his head was off-center for his body). Around his neck hung more gold than my momma, wife and mother-in-law own collectively. He wore shoes that included more colors and probably cost more than all of the shirts in my closet. His look was capped off by a smile and a full “grill.” He was “dressed to it.”

My first reaction was to shake my head, but the wisdom of Mark and Paul surfaced in my psyche. I realized that both the young man and the old must have had some success and some sense of style to dress as they were. Both had dressed perfectly for their audience.

Yesterday, I finally saw “Bourne Ultimatum.” I anticipated a modern-day James Bond, but I saw more action in five minutes than in all the James Bond movies ever filmed. Bourne moved too fast for me, but I realized how bored most of this audience would be with Bond, James Bond. Much of today’s audience is wired by seven hours of video games and three cans of Red Bull. I watched after taking a short nap to make sure I’d stay awake.

We’re not one world.

Success depends on meeting the needs of the niche you’re in. Don’t expect the marketplace to adapt to your style and values and needs — you must meet theirs.

About the Author: Mike Manes was branded by Jack Burke as a "Cajun Philosopher." He self-defines as a storyteller – "a guy with some brain tissue and much more scar tissue." His organizational and life mantra is Carpe Mañana. He maintains www.tomorrowbyintelligentdesign.blogspot.com and www.thewisdomofscartissue.blogspot.com.



Just for Fun: September's Notable Events and Famous Birthdays

1 — Singer Conway Twitty was born (1933), World War 2 started when Germany invaded Poland (1939), TV host Dr. Phil was born (1950), pitcher Masanori Murakami became the first Japanese major league player (1964), Muammar al-Quaddafi overthrew the Libyan government (1969), and the Soviet Union shot down a South Korean airliner (1983).

2 — World War 2 ended as Japan officially surrendered to the Allies (1945), quarterback sportscaster Terry Bradshaw (1948), actor Keanu Reeves (1964) and actress Selma Hayek (1968) were born, and the first ATM opened (1969).

3 — The American Revolution officially ended with the Treaty of Paris (1783), actor Charlie Sheen was born (1965), and a siege in a Russian school ended with more than 300 people dead (2004)

4 — Apache chief Geronimo became the last Indian warrior to surrender to U.S. troops (1886), the first coast-to-coast telecast of a presidential speech was broadcast (1951), swimmer Mark Spitz won a then-record 7th Olympic gold medal (1972), singer Beyonce was born (1981), Google became incorporated (1998), and **Kelly Clarkson won the first American Idol** (2002).



5 — The first Continental Congress convened (1774), Sioux chief Crazy Horse was killed (1877), comedian/actor Bob Newhart was born (1929), terrorists attacked Israeli athletes at the Olympics — the event resulted in 18 deaths (1972), President Gerald Ford survived an assassination attempt (1975), and Katie Couric debuted as the first solo female network news anchor (2005).

6 — Ferdinand Magellan completed the first circumnavigation of the globe (1522), the first military tank was built (1915), and **baseball "ironman" Cal Ripken played in his 2,131st consecutive game, breaking Lou Gehrig's record** (1995).



7 — The U.S. government was nicknamed "Uncle Sam" (1813) and musician Buddy Holly was born (1936).

8 — Singer Patsy Cline was born (1932), Italy surrendered to the Allies (1943), American troops occupied southern Korea (1945), President Gerald Ford pardoned former president Richard Nixon (1974), the Oprah Winfrey Show was televised nationally for the first time (1986), and Mark McGwire broke the major league single-season home run record with his 62nd (1998).

9 — The "United States of America" is named by Congress (1776), California became the 31st U.S. state (1850), KFC founder Colonel Sanders was born (1890), **Esther Cleveland became the first presidential baby born in the White House** (1893), singer Otis Redding was born (1941), a Japanese pilot conducted the only air attack on the U.S. mainland at Mt. Emily in Oregon (1942), and quarterback/sportscaster Joe Theismann (1949) and actor Adam Sandler (1966) were born.



10 — The first-ever DUI arrest was made in London (1897), golfer Arnold Palmer was born (1929), the guillotine was used for the last time (1977), and the grunge era began as Nirvana's "Smells Like Teen Spirit" was released (1991).

11 — Football coaching legends Bear Bryant (1913) and Tom Landry (1924), and actor/singer Harry Connick Jr. (1967) were born, Pete Rose broke the major league record for career hits with his 4,192nd (1985), and "Never Forget" (2001).

12 — Track champion Jesse Owens (1913) and singer Barry White (1944) were born.

13 — "The Star-Spangled Banner" was written (1814), physician Walter Reed (1851), World War 1 general John J. Pershing (1860), and author Roald Dahl (1916) were born, **a four-day riot at New York's Attica Prison ended with 39 deaths** (1971), and rapper Tupac Shakur died after being shot six days earlier (1996).



14 — Theodore Roosevelt became president after the death of William McKinley, who was shot eight days earlier (1901), the Soviet Union sent the first man-made object to the moon (1959), and pitcher Denny McLain became the last 30-game winner in the major leagues (1968).

15 — President William Taft was born (1857), transcontinental mail service began (1858), author Agatha Christie (1890), actor Tommy Lee Jones and director Oliver Stone (1946), and quarterback Dan Marino (1961) were born, **four black girls were killed in a bomb blast at a church in Birmingham, Ala.** (1963), and Muhammad Ali became the first boxer to win the world heavyweight title three times (1978).



16 — The Mayflower departed England for the New World (1620), the Mexican War of Independence began (1810), General Motors was incorporated (1908), blues musician B. B. King was born (1924), the Selective Service and Training Act was signed by President F.D. Roosevelt (1940), and a gunman killed 12 people at the Navy Yard in Washington, D.C. (2013).

17 — The U.S. Constitution was signed (1787), the Battle of Antietam was fought, resulting in nearly 23,000 casualties (1862), actor John Ritter was born (1948), NASA unveiled its first space shuttle (1976), and a peace agreement between Israel and Egypt was signed (1978).

18 — The cornerstone of the U.S. Capitol was laid (1793), and cycling champion Lance Armstrong was born (1971).

19 — President James A. Garfield died from a gunshot wound he received two months earlier (1881), New Zealand became the first country to allow women to vote (1893), **the first underground nuclear explosion was conducted in Nevada** (1957), and TV host Jimmy Fallon was born (1974).



20 — Author Upton Sinclair was born (1878), Chester Arthur became U.S. president (1881), and actress Sophia Loren (1934) and hockey star Guy Lafleur (1951) were born.

21 — France's monarchy was abolished and the First Republic established (1792), and authors H.G. Wells (1866) and Stephen King (1947), actor Bill Murray (1950), and singer Faith Hill (1967) were born.

22 — President Lincoln delivered the Emancipation Proclamation (1862), baseball manager Tommy Lasorda (1957) and singer Joan Jett (1960) were born, the Peace Corps was established (1961), President Ford survived a second assassination attempt (1975), the first Farm Aid concert was held (1985), and **the sitcom Friends made its debut** (1994).



23 — Neptune was discovered (1846), and singers Ray Charles (1930) and Bruce Springsteen (1949) were born.

24 — The Supreme Court was established (1789), Muppets creator Jim Henson was born (1936), and the Honda Motor Company was incorporated (1948).

25 — The Bill of Rights was approved by Congress (1789), TV journalist Barbara Walters (1931), actor Michael Douglas (1944), and rapper/actor Will Smith (1968) were born, and Sandra Day O'Connor became the first female Supreme Court justice (1981).

26 — Composer George Gershwin was born (1898), the first American soldier was killed in Vietnam (1945), West Side Story opened on Broadway (1957), **the first televised presidential debate was held between JFK and Nixon** (1960), and the Baltimore Orioles became the last major league team with four 20-game winners (1971).



27 — Founding father Samuel Adams was born (1722), the Axis powers were formed (1940), and singers Meat Loaf (1947) and Shaun Cassidy (1959) were born.

28 — Painter Michelangelo (1573) and TV host Ed Sullivan (1901) were born, Ted Williams became the last major league player to hit .400 (1941) and hit a home run in his last career at-bat (1960), and actress Gwyneth Paltrow was born (1973).

29 — Nuclear physicist Enrico Fermi (1901), and singers Gene Autry (1907) and Jerry Lee Lewis (1935) were born, Willie Mays made his famous over-the-shoulder catch in the World Series (1954), and Stacy Allison became the first American woman to summit Mt. Everest (1988).

30 — Babe Ruth set the major league record for home runs in a season with his 60th (1927), singer Johnny Mathis was born (1935), the USS Nautilus was commissioned as the first nuclear submarine (1954), actor James Dean died (1955), and the first large-scale antiwar demonstration in the U.S. was held (1964).