Project Management Certification Benchmarking Research: 2023 Update[1]

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INTRODUCTION

This is the fifth and the last update to an ongoing research project started in 2010 to benchmark as many globally recognized project management credentials as possible against three independent and external standards. To appeal to Millennial practitioners, the first benchmark was to test against Malcolm Gladwell's "10,000-hour" rule,[2] while the second benchmark was the level of effort as well as the milestones required to earn the Professional Engineers (PE) license[3] in the USA, which we know to be a legitimate professional license to practice issued by the State governments. For the purposes of this paper, the National Society of Professional Engineers (NSPE) and the National Council of Examiners for Engineering and Surveying (NCEES) standards were adopted as the basis for establishing the engineering benchmarks. Where necessary, additional or supplemental references were made to private and commercial pilot licensing requirements to provide context or comparisons.

The original purpose of this research was to:

1. To provide the basis to compare the relative "value" or "worth" of the various credentials based on a true ratio scale.
2. To provide the basis to compare "equivalency" and "value for money" (benefit: cost analysis)
3. To challenge those organizations offering these certifications to "raise the bar" to meet legitimate professional assessment standards.

The purpose of the final installment of this research is to:

1. Summarize the findings of the previous versions and set the stage for someone else to pick up the ball and run with it.
2. Integrate these findings with other research done on defining common job descriptions and the attributes required based on using sophisticated keyword analysis software and;

[1] How to cite this work: Giammalvo, P. D. (2023). Project Management Certification Benchmarking Research: 2023 Update, *PM World Journal*, Vol. XII, Issue III, March.
[2] Gladwell, Malcolm 2018 Youtube Presentation "10,000 Hours Demystified" https://www.youtube.com/watch?v=1uB5PUpGzeY
[3] National Society for Professional Engineers (NSPE) https://www.nspe.org/resources/licensure/resources/faq

3. Given the debates in social media, take the previous information and develop a career path template based on the PMO/Project Controls/Construction Project Management career path options that have evolved in construction since around the end of World War II, for other sectors to reference to see if what has been tested and PROVEN to work in construction can be used "as is" or adapted for use on other sectors.

The driver behind this update is the very disappointing research published by KPMG and IPMA based on 2020 data that showed[4]:

- 52 percent of projects are delivered with stakeholder satisfaction
- 51 percent of projects are likely to meet the original goal and business intent
- 48 percent of respondents feel their organization manages projects and programs effectively or very effectively
- 42 percent of projects are likely to be delivered on time
- 40 percent of projects are likely to be delivered on budget.

Given that Australia is a sophisticated, well-educated country with strong representation from AACE, PMI, IPMA, and their own homegrown AIPM, it is a powerful indictment that after ~50 years of "modern" project management, what these organizations have been advocating is not working and as Henry Ford supposedly told us "If you always do what you've always done, you will always get what you always got." Or how about the supposed quote from Einstein, who told us, "doing the same things over and over again but expecting results being the definition of insanity."

So how much longer is it going to take us to figure out what has been TESTED and PROVEN to work over the 6000+ years humans have been "initiating, planning, executing, controlling and closing" projects and embrace those "best tested and PROVEN" practices, and adopt them or adapt them for use in other sectors?

To recap, here is the exam-based certification scoring model, which was designed to STANDARDIZE as many of the COMMON variables as possible (such as the value of a bachelor's degree) so that only those attributes which served to differentiate one certification or credential from others were included in the total score, which measured the total level of effort to prepare for, prequalify, qualify and earn each credential, "the underlying hypothesis being the more robust and rigorous the process, and the more it looks beyond the ability to pass multiple-choice exams and actually analyzes real-life "deliverables and outcomes, the more likely it is to validate that the person holding the credential is "competent."

[4] AIPM and KPMG Project Management Survey 2020- https://home.kpmg/au/en/home/insights/2020/08/australian-project-delivery-performance-survey-2020.html

1	Rank Order based on PSCOR	Rank order of each credential based on the total Level of Effort required to earn the credential (PSCOR)
2	Organizational Affiliation: Acronym of Credential:	Organization responsible to create and/or manage the credential (i.e. PMI) Trade marked acronym used to identify the credential (i.e. PMP)
3	Required Experience Hours AFTER Bachelors Degree	Total hours required IN ADDITION to a Bachelors or 4 year degree. IF no degree is required then the MINIMUM experience is entered here. If no experience is required this cell is left blank.
4	Bachelors (BDEG)	The standardized value of a bachelors degree is 5,200 level of effort hours total
5	Masters (MDEG)	The standardized value of a masters degree is 1,900 level of effort hours total
6	PhD/DBA (PDEG)	The standardized value of a PhDs degree is 5,160 level of effort hours total
7	Exam Duration in Hours	IF an exam is required, how long is it in hours? If no exam is required, the cell is left blank
8	Level of Effort To Prepare for Exam	How many hours does it normally take the average person to prepare to sit for the exam and have a reasonable chance of passing?
9	TOTAL EXAM Level of Effort	Sum of Rows 7 and 8
10	Exam Difficulty Factor DIF1	IF an exam requires a mix of matching, fill in the blank or rank ordering, a 5% difficulty factor is given to the exam.
11	Exam Difficulty Factor DIF2	IF an exam requires a mix of matching, fill in the blank or rank ordering PLUS short answer essay responses, a 10% difficulty factor is given to the exam.
12	Exam Difficulty Factor DIF3	IF an exam requires a mix of matching, fill in the blank or rank ordering, short answer PLUS long answer essay responses, a 15% difficulty factor is given to the exam.
13	PAPR Level of Effort	For each 2500+ word paper is required, 50 Level of Effort hours is awarded
14	Formal Mentorship (SUPRV1)	IF a FORMAL mentorship/supervised internship or apprenticeship is required, the average or typical level of effort hours is recorded and added to the total.
15	Peer Assessment (SUPRV2)	IF a FORMAL assessment by a trained and/or certified assessor is required, the average or typical level of effort hours to perform the assessment is recorded and added to the total.
16	REQUIRED courses	If there are any courses REQUIRED as a prerequisit to take the exam, those hours are recorded here. (i.e. PMI requires 35 hours before the PMP can be taken)
17	ACTA Level of Effort	Is the average or typical level of effort that the APPLICANT must invest in order to prepare for, apply for and complete all the administrative requirements to become certified
18	TOTAL PSCOR SCORE	This is the total cumulative level of effort in hours added from Rows 3-8 and 10 - 17. (Row 9 is the sum of Rows 7 and 8)
19	RATIO TO ABET PE LICENSE	Ratio of the PSCOR/16,204 Level of Effort Hours to earn the ABET PE.
20	RATIO AGAINST GLADWELL	Ratio of the PSCOR/10,000 Level of Effort Hours identified by Malcolm Gladwell.
21	EXPERIENCE to TOTAL RATIO	Total Hours from Row 3/PSCOR. Assumption being EXPERIENCE is more important than tests.

Figure 1- Scoring Model Explained

Figure 2 below will help to explain in the "Big Picture" how selected credentials are rated or analyzed against both Gladwell's "10,000 Hour" rule, the PE license milestones, and the Level of Effort to become a commercial pilot, understanding that if "we"[5] want project management to earn respect accorded to real professions, that the only way to achieve that is by consistently deliver measurable value to those who use our services.

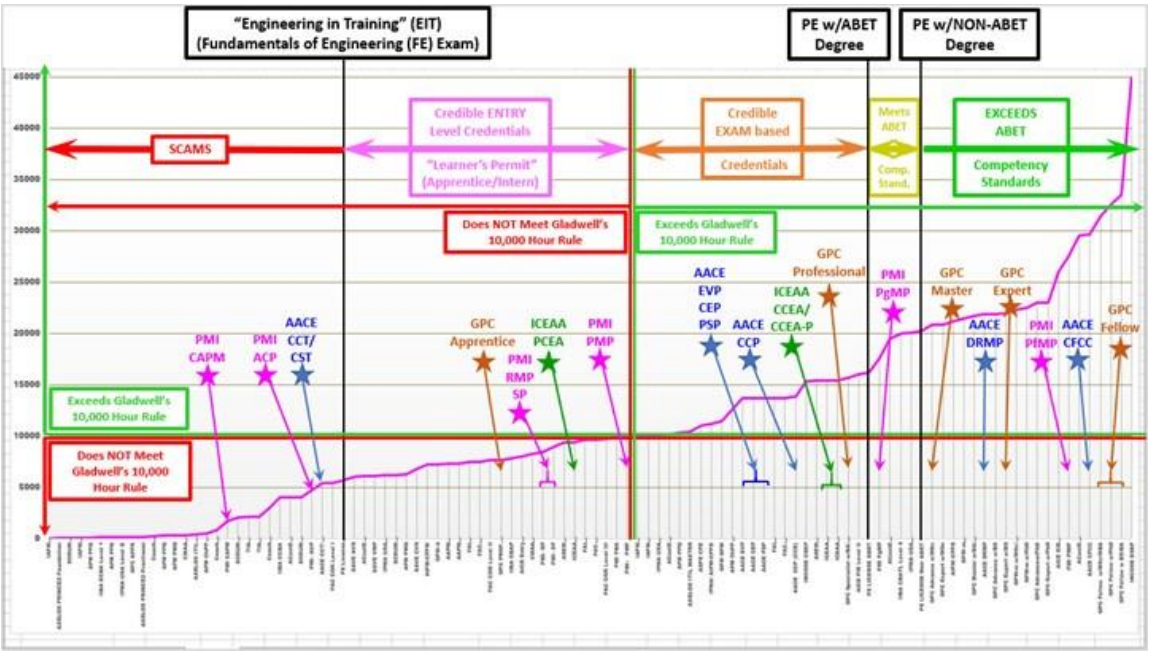


Figure 2- Ranking and Assessment Scoring Model Explained.

[5] The use of "we" in this paper means the author, Dr. Paul D Giammalvo and his research team and partners. https://build-project-management-competency.com/meet-our-team/ and https://build-project-management-competency.com/alliances/

Using the Total Level of Effort (PSCOR from Line Item 18 in Table 1) on the X-axis, we rank the 104 credentials from low on the left to high on the right. Then we superimpose Gladwell's "10,000-hour" rule, which any given credential either exceeds or does not exceed. We will discuss this in more detail, but there is no shortage of concerns with Gladwell's 2008 claims that it takes 10,000 hours to produce a competent anything, a topic which was covered extensively in previous editions of this paper.[6], [7],[8],[9],

JOB DESCRIPTION RESEARCH

As part of a consultancy for the Guild of Project Controls, we ran a pilot research project using sophisticated keyword analysis software on a global sample of "help wanted" advertisements for the following 8 job titles commonly associated with the practice of project management.

1) Business Analyst
2) Cost Engineer
3) Cost Estimator/Quantity Surveyor
4) Forensic Claims Analyst
5) Planner Scheduler
6) Project Controller
7) Project Manager
8) Systems Engineer

The selection process looked only at help-wanted advertisements for CONSTRUCTION companies seeking practitioners with ~10 years of experience, thus meeting Gladwell's 10,000 rule and, at least theoretically, "competent" practitioners.

To summarize the research methodology, to ensure a global representation, both the original pilot and this updated research consisted of a total of 30 job advertisements for each job title, with 5 job advertisements taken from each of the following countries having been randomly chosen by selecting the top 5 which showed up on a Google search for each of the "job titles" above plus "Job Openings" and [Country]:

- Australia (5)
- Canada (5)
- Middle East (5)

[6] Giammalvo, Paul D (2010) Original Publication https://pmworldlibrary.net/wpcontent/uploads/2013/02/PMWJ6-Jan2013-GIAMMALVO-Project-Management-Certifications-ComparedSecondEdition.pdf
[7] Giammalvo, Paul D (2013) 1st Update https://pmworldlibrary.net/wp-content/uploads/2013/02/pmwj7-feb2013- giammalvo-project-management-certifications-compared-updated-featured-paper2.pdf
[8] Giammalvo, Paul D (2015) 2nd Update https://pmworldlibrary.net/wp-content/uploads/2015/01/pmwj30-Jan2015-Giammalvo-Certification-Benchmarking-2015-update-featured-paper.pdf
[9] Giammalvo, Paul D (2016) 3rd Update https://pmworldlibrary.net/wp-content/uploads/2016/12/pmwj53-Dec2016-Giammalvo-Certification-Benchmarking-2016-update-featured-paper.pdf

- United Kingdom (5)
- United States (5)
- Singapore/Malaysia/Hong Kong (5)

These countries were chosen as a globally dispersed sample of countries doing large, complex, and challenging projects AND are most likely to seek globally qualified professional-level talent to staff those projects.

Attributes / Job Titles	Initiation		Planning						Controlling		Closing	
	Unit 2	Unit 7	Unit 9	Unit 8	Unit 5	Unit 1	Unit 12	Unit 11	Unit 3	Unit 6	Unit 10	Unit 4
	Manage People	Manage Planning & Scheduling	Manage Progress EVM	Manage Costs and Budgeting	Manage Contracts	Integrate & Govern	Manage Forensics	Manage Databases	Manage Scope	Manage Resources	Manage Change	Manage Risk / Opportunity
Business Analyst	22.7%	14.6%	17.2%	19.1%	6.5%	6.0%	0.4%	6.3%	1.2%	2.0%	2.8%	1.2%
Cost Engineer	11.2%	10.4%	19.6%	27.5%	13.0%	5.4%	0.4%	3.5%	3.1%	2.2%	2.0%	1.5%
Cost Estimator/QS	16.9%	13.0%	8.5%	24.1%	21.9%	2.9%	0.4%	1.2%	5.5%	4.2%	0.8%	0.6%
Forensic/Claims Analyst	18.4%	10.3%	13.9%	5.2%	12.7%	5.5%	28.1%	1.5%	1.0%	0.9%	1.1%	1.4%
Planner/Scheduler	19.1%	30.6%	23.6%	4.4%	3.8%	8.4%	0.9%	1.3%	1.8%	3.5%	1.1%	1.5%
Project Controller	17.4%	20.0%	22.0%	14.3%	6.2%	8.4%	0.3%	3.1%	1.8%	2.3%	1.9%	2.3%
Project Manager	31.9%	20.9%	14.7%	5.7%	9.1%	4.8%	0.4%	2.8%	3.0%	2.7%	2.2%	1.6%
Systems Engineer	37.7%	14.7%	13.4%	1.4%	7.2%	8.5%	0.0%	5.7%	7.7%	1.9%	0.9%	0.9%
Mean	21.9%	16.8%	16.6%	12.7%	10.1%	6.2%	3.9%	3.2%	3.1%	2.5%	1.6%	1.4%
Median	18.8%	14.6%	16.0%	10.0%	8.2%	5.8%	0.4%	2.9%	2.4%	2.3%	1.5%	1.4%
Standard Deviation	8.7%	6.8%	5.0%	10.0%	5.8%	2.0%	9.8%	2.0%	2.3%	1.0%	0.7%	0.5%

Figure 3- Knowledge Dimensions

The findings from this research showed us that:

- There is little or no significant difference between any of the job titles and what employers need or expect them to be able to do.

- Applying Pareto's 80:20 rule, we can see that 80% of what employers want, regardless of job title, is Managing People (22%), Managing Planning and Scheduling (17%), Managing Progress (17%) and Managing Costs and Budgeting (13%). The total is 80.8%.

- Note that "Managing Progress, which includes Earned Value Management, remains relatively high regardless of whether it was owners or contractors placing the help wanted advertisements.

The other table this research generated is sorted by Modified Bloom's 6 Cognitive Dimensions, indicating that employers expect those hired to ANALYZE, KNOW, and APPLY project data by a significant margin.

	Blooms Levels					
	Level 4 Analyze	Level 1 Know	Level 3 Apply	Level 2 Understand	Level 6 Create	Level 5 Evaluate
Business Analyst	53.8%	12.4%	13.0%	10.7%	8.0%	2.0%
Cost Engineer	27.6%	17.7%	35.4%	8.8%	4.4%	6.1%
Cost Estimator/Quantity Surveyor	19.6%	26.1%	30.5%	18.8%	3.6%	1.4%
Forensic/Claims Analyst	48.9%	15.3%	1.5%	22.9%	7.6%	3.8%
Planner/Scheduler	23.1%	23.1%	30.5%	7.5%	3.8%	11.8%
Project Controller	46.0%	19.4%	4.0%	12.9%	12.9%	4.8%
Project Manager	17.7%	26.5%	14.2%	31.9%	7.1%	2.7%
Systems Engineer	23.1%	36.1%	1.9%	30.6%	7.4%	0.9%
Mean	33.8%	20.1%	18.4%	16.2%	6.8%	4.6%
Median	27.6%	19.4%	14.2%	12.9%	7.1%	3.8%
Standard Deviation	15.2%	5.4%	13.7%	8.8%	3.3%	3.5%

Figure 4- Bloom's Cognitive Dimensions

Again, applying Pareto's 80:20 Rule, employers know what level of cognition they expect from the practitioners they hire.

As this data is now 6 years old and given:

- the growing interest in "big data" and Data Analytics,
- the growing sophistication of keyword analysis software,
- the impacts of Covid, ESG and DEI, and other "woke" topics,

the challenge is for those seeking a Ph.D. or Master's research topic to update this pilot research.

We have long advocated the adoption of the Iowa State Center of Excellence for Learning and Teaching by all professional organizations purporting to represent the practice of the project.

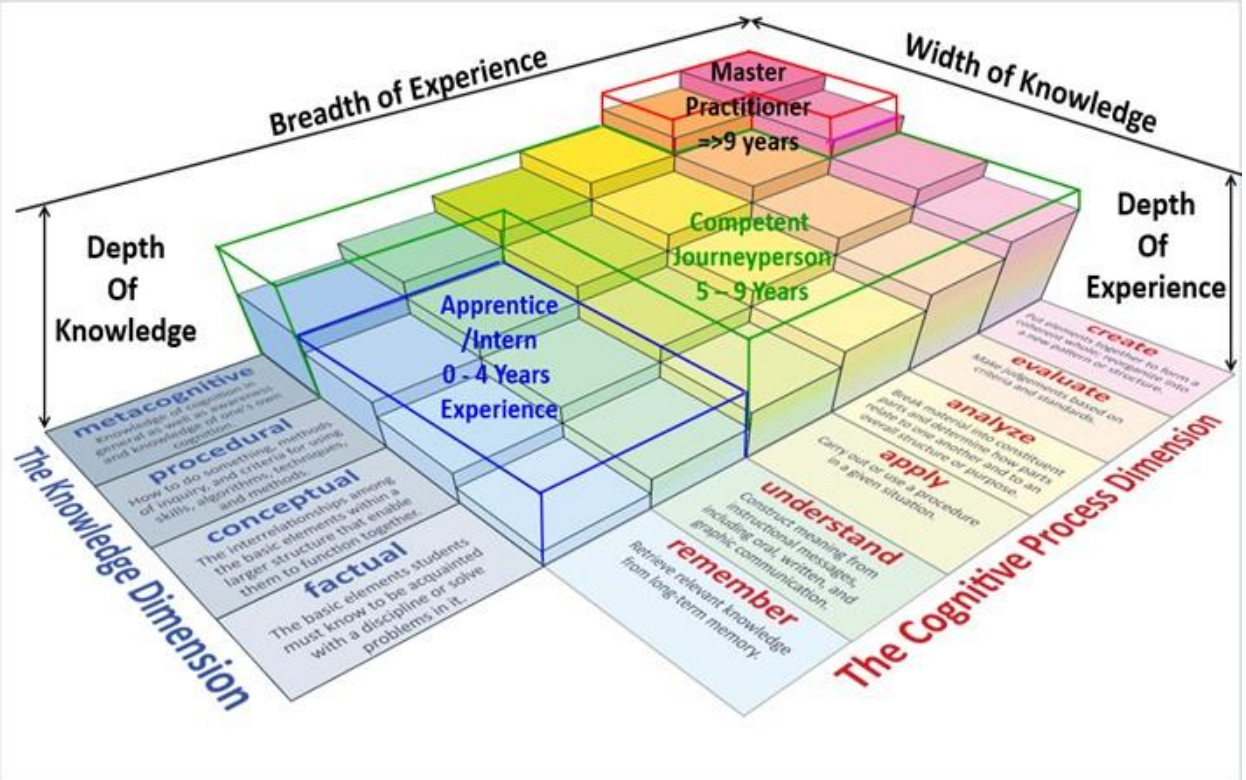


Figure 5- Typical Career Path Evolution[10]

Management. Why? Because if we look at any of the generally recognized professions, as well as the trades, we can see clearly that there is a "normal" career path progression that starts out either as an apprenticeship or internship, usually lasting around 4 years, during which time the "apprentice" or "intern" works under the supervision or mentorship of a senior practitioner.

PMI, in their 2021 10-Year Talent Gap Analysis predicts that "The global economy needs 25 million new project professionals by 2030."[11] What PMI (as well as other professional societies including APM/APMG and AACE et al.) are not clear on is the difference between people whose only claim to fame is the ability to pass multiple-choice exams, while all other trades and legitimate professions require BOTH one or more written exams PLUS a practicum requiring that the applicant demonstrate they are capable of performing the tasks required for a person to be competent at different levels depending upon their years of experience.

As shown in Figure 6, to produce COMPETENT practitioners, we must measure and assess the "WIDTH OF KNOWLEDGE" consisting of four types of KNOWLEDGE- Factual, Conceptual, Procedural, and Metacognitive or Critical Thinking Skills. It is impossible to validate critical

[10] Adapted from Iowas State Center of Excellence in Teaching and Learning "A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives" https://www.celt.iastate.edu/wp-content/uploads/2015/09/RevisedBloomsHandout-1.pdf
[11] PMI (2021). Talent Gap: Ten-Year Employment Trends, Costs, and Global Implications. https://www.pmi.org/learning/careers/talent-gap-2021

thinking skills using multiple-choice questions. To validate critical thinking skills requires open-ended questions and case studies analysis.

We also have to measure the Breadth and Depth of experience. To measure that, we rely on Bloom's Cognitive Dimensions as modified. But not only do we have to measure and validate HOW the applicant applies the 4 Knowledge Dimensions and the complexity or difficulty of the projects he/she is working on.

Another excellent career path comparable to project managers is the career path development required to become a licensed commercial pilot. Based on the 2020 update to our research, coincidently, the level of effort hours (formal education + hours of hands-on experience) matched almost perfectly with earning the Professional Engineer (PE) license at 15,000+ hours and well beyond Gladwell's "10,000-hour" rule which has frequently been challenged. (Note that PMI's PMP falls just short of Gladwell's "10,000-Hour" Rule, thus supporting PMP Founding Father Lee Lambert's published statement that "the PMP was NEVER intended to be a PROFESSIONAL level credential."[12]

Figure 6- Career Path to Become an ATP Licensed Commercial Pilot

WHY IS THIS UPDATE IMPORTANT AND RELEVANT?

As noted earlier, the previous research projects on this topic led to a "work for hire" contract for the Guild of Project Controls to help them design a multi-level competency-based credentialing program along with the supporting Body of Knowledge and other products and services. Figure 8 shows that the Guild developed their peer-reviewed and accepted career path development roadmap for project control professionals for the Guild of Project Control members.

Given the growing interest in "Project Management Offices" (PMOs), which since WWII those of us in Construction have known as "Project Controls," and given there are many formal initiatives to define PMOs, including initiatives being sponsored by Professors and several professional

[12] Lambert, Lee (2018) "To PMP or Not to PMP? That is the Question". https://www.linkedin.com/pulse/pmp-pmp-that-question-lee-r-lambert

societies to enhance their revenue streams by selling training and exam-based certifications for what always has been an integral part of construction project management.

Another area we see the same "exam-based" credentials starting to appear is in the "newly evolving" fields of Data Science, Artificial Intelligence (AI), and Machine learning, much of which relies on the same tools and techniques that we find in applied project management and project controls/PMO analytics. The same fundamental tools and techniques are now being automated.

Unfortunately, we are starting to see the same "professional societies" that made hundreds of millions of dollars selling (largely questionable) exam-based certifications along with their "approved" or "endorsed" training providers now moving in on the latest "flavor of the month"- PMO's and Artificial Intelligence and Machine Learning.

This paper is trying to show why this move towards yet more exam-based certifications is NOT a wise move and how important it is as we move to have artificial intelligence make significant decisions in our lives that BEFORE we rely on people whose only real claim to competency is the ability to pass a 4 or 5-hour multiple choice exam and make certain that the INTELLIGENCE we build into machine learning is, in fact, COMPETENT at what they do. The last thing we need is more "Dunning-Kruger" and "self-appointed "subject matter experts" programming these automated tools.

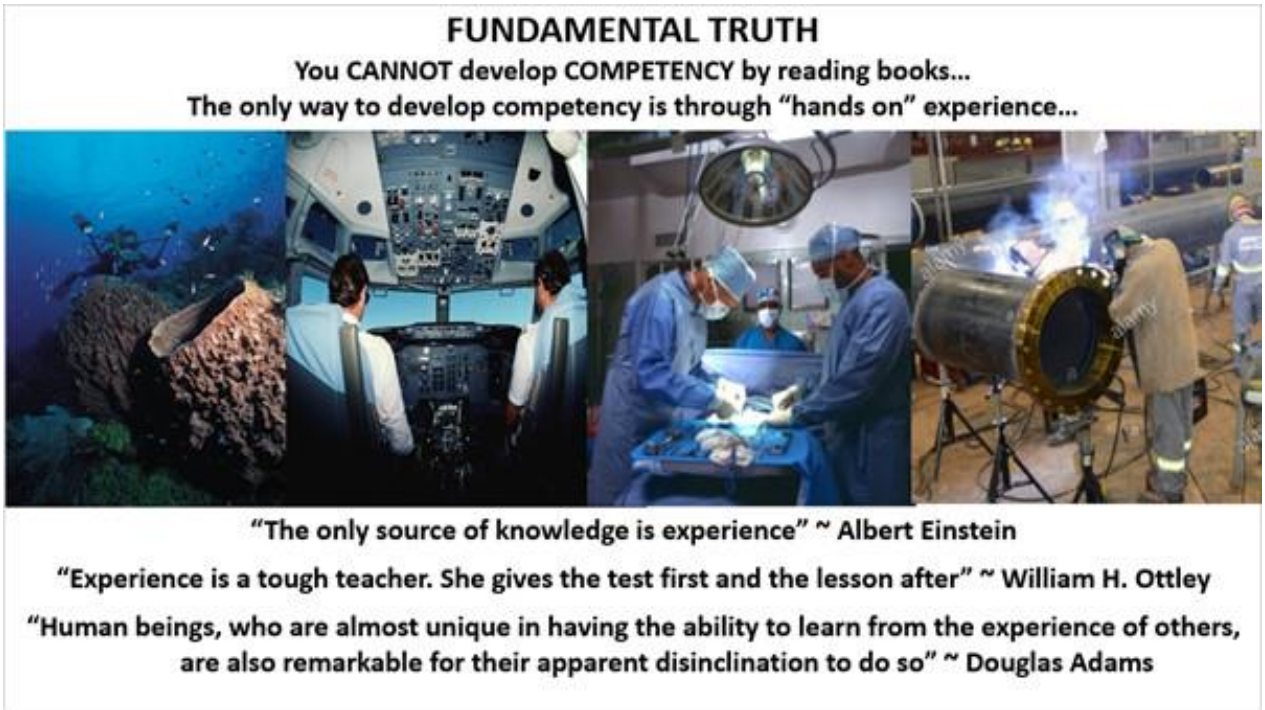


Figure 7- Competency Development Paradigms

"COMPETENCY" (as restated from the Merriam-Webster Online Dictionary is defined as being "the quality or state of being FUNCTIONALLY ADEQUATE when ASSESSED AGAINST A STANDARD.

COMPETENCY is characterized by appropriate and sufficient APTITUDE + ATTITUDE + SKILLS + STRENGTH + KNOWLEDGE necessary to perform the required job.

And as with obtaining your driver's license, it is a two-part process:

1) Pass a WRITTEN examination (usually multiple choice format)

2) Passing a PRACTICUM with the DMV officer puts you through a standard set of activities.

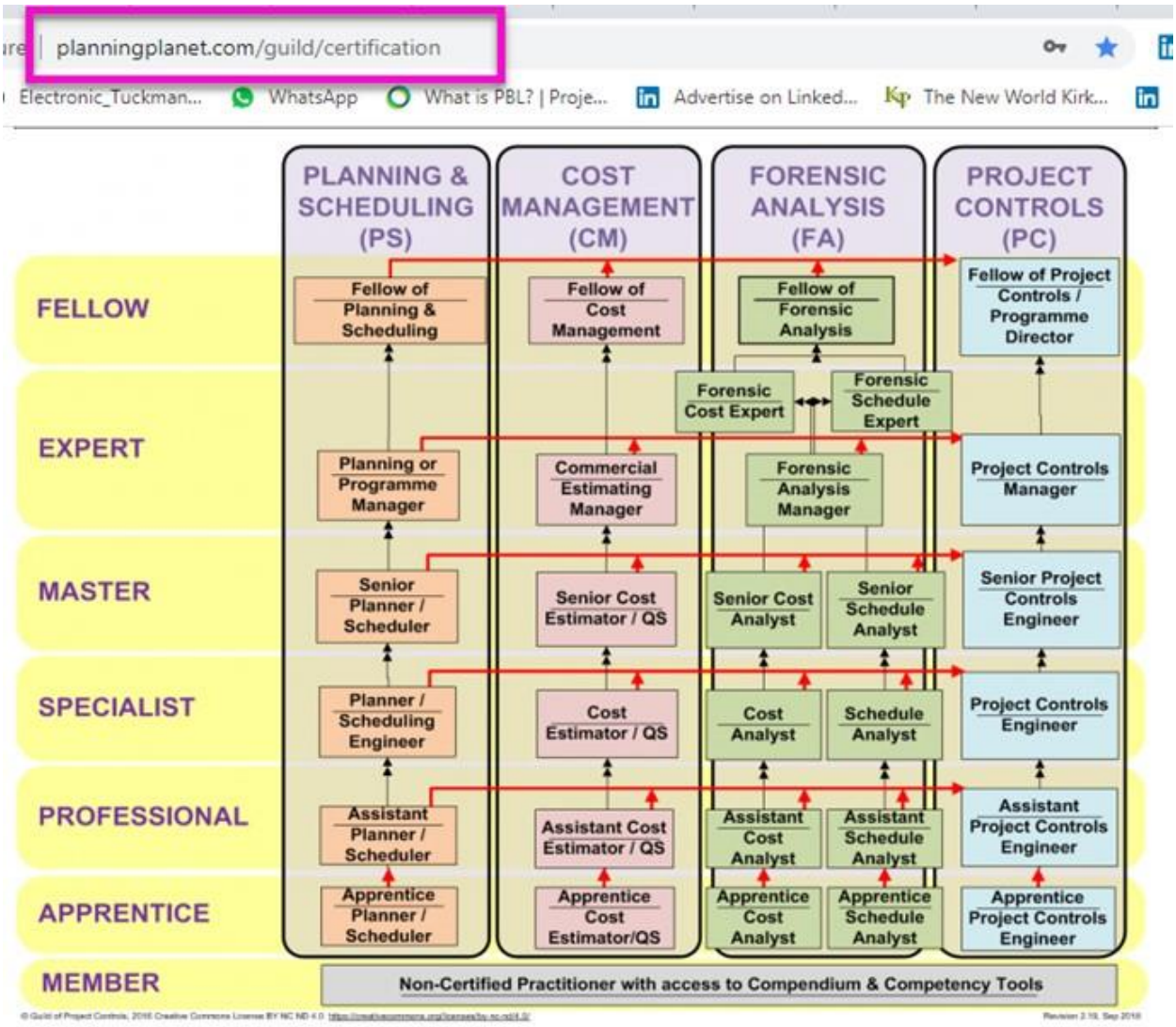


Figure 8- Guild of Project Controls Career Path Matrix

Not clear why, but the Guild has now removed this from their website, and based on the many questions on this topic on Twitter or Linked In, I am updating the work done originally for the Guild and producing a complete version that includes not only what we in construction have long

known as "project controls" but is more commonly referred to today as "Project Management Office" or "PMO."

As construction project management, anywhere between 5 to 10 years of broad and varied experience in "project controls" is a prerequisite to becoming a "project manager" or a "successful" general or subcontractor; I have expanded the work the Guild started then abandoned to include 3 levels of "Project Management."

1 Project Controls/PMO/ Project Management Career Path Options								
Level of Effort (LoE) (In Person Hours of Documented Degrees & Experience) 2		Planning & Scheduling	Cost Management & Budgeting	Forensic Analyst (Claims & Disputes)	Forensic Analyst (Business Case)	Cost Engineer/ Project Controls/ PMO	Project Management	Popular Certifications/ Credentials
Low Range of Logged Hours	High Range of Logged Hours	3 SOC Code- 13-1129 & 13-1121 Typical Job Titles	4 SOC Code- 13-1050 &13-1051 Typical Job Titles	5 SOC Code- 13-1030 & 13-1031 Typical Job Titles	6 SOC Code- 13-1199 & 13-1199 Typical Job Titles	7 SOC Code- 13-1110 & 13-1111 Typical Job Titles	8 SOC Code- 13-1082 & 13-1082 Typical Job Titles	9 [illegible]
10								
> 16,000 LoE Hours		"Planning & Scheduling Manager", "Planning & Scheduling Consultant"	"Cost Estimating or Quantity Surveyor Manager", Cost Estimating or Quantity Surveyor Consultant"	"Forensic Claims Manager", "Forensic Claims Consultant","Forensic Claims Expert Witness"	"Forensic Business Case Manager", "Forensic Business Case Consultant", Certified Public Accountant, Financial Advisor	Cost Engineer/Project Controls/PMO Manager, Project Controls/PMO/ Cost Engineer Consultant	GAPPS CIFTER SCORE >13 GAPPS Global Level 2 Project Manager	AACE CFCC & DRIMP AcostE Incorporated & Certified ARCE-EIE Level 1 INCOSE ESEP IIBA CBATL L4 PMI PgMP & PfMP
> 10,000 LoE Hours	< 15,999 LoE Hours	"Competent" or "Journeyperson Planner/Scheduler"	"Competent" or "Journeyperson Cost Estimator or Quantity Surveyor"	"Competent" OR "Journeyperson Forensic Claims Analyst"	"Competent" OR "Journeyperson Forensic Business Case Analyst"	"Competent" OR "Journeyperson Project Controller"	GAPPS CIFTER SCORE <12 but <13 Global Level 1 Project Manager	AACE CCP, PSP, EVP, CEP APM/APMG CAPP & PPQ ICEAA CCEA & CCEA-P
> 8,875 LoE Hours	< 9,999 LoE Hours	"Senior Planner/Scheduler" or "Planner/Scheduler in Training Level 4"	"Senior Cost Estimator or Quantity Surveyor" OR "Cost Estimator/QS In Training Level 4"	"Senior Forensic Claims Analyst" OR "Forensic Claims Analyst In Training Level 4"	"Senior Forensic Business Case Analyst" OR "Forensic Business Case Analyst In Training Level 4"	"Senior Project Controller/PMO" OR "Project Controls In Training Level 4"	GAPPS CIFTER SCORE <11 Global Level 0 Project Manager "Junior" or "Assistant" Project Manager	APM/APMG PMQ CMAA CCM PMI PMP
> 7,750 LoE Hours	< 8,874 LoE Hours	"Junior Planner/Scheduler" OR "Planner/Scheduler In-Training Level 3"	"Junior Cost Estimator/Quantity Surveyor OR Cost Estimating or Quantity Surveyor In Training Level 3"	"Junior Forensic Claims Analyst" OR "Forensic Claims Analyst In Training Level 3"	"Junior Forensic Business Case Analyst" OR "Forensic Business Case Analyst In Training Level 3"	"Junior Project Controller/PMO" OR "Project Controls In Training Level 3"	N/A	N/A
> 6,625 LoE Hours	< 7,749 LoE Hours	"Planner/Scheduler In-Training Level 2"	"Cost Estimating or Quantity Surveyor" In Training Level 2	"Forensic Claims Analyst In Training Level 2"	"Forensic Business Case Analyst In Training Level 2"	"Project Controller/PMO In Training Level 2"	N/A	N/A
> 5,700 LoE Hours	< 6,624 LoE Hours	"Planner/Scheduler In-Training Level 1"	"Cost Estimating or Quantity Surveyor" In Training Level 1	"Forensic Claims Analyst In Training Level 1"	"Forensic Business Case Analyst In Training Level 1"	"Project Controller/PMO In Training Level 1"	N/A	N/A
<5,700 LoE Hours		"Novice Planner/Scheduler"	"Novice Cost Estimator or Quantity Surveyor"	"Novice Forensic Claims Analyst"	"Novice Forensic Business Case Analyst"	"Novice "Project Controller/PMO/ Cost Engineer"	N/A	AACE CCT & CST IIBA CBDA PMI CAPM & ACP

Figure 9- Update and Expansion to the Original Guild of Project Controls Career Path[13]

In Figure **9.1**, what the author has done is taken the original Guild Model, which is no longer accessible, and EXPANDED on it to include not only what is considered to be "project controls" or "Project Management Offices" (PMO) job titles but UPDATED it to reflect the transition from "Project Controls" or "Project Management Office" positions, into Project Management job titles, which has long been the "traditional" construction career path model in place since the 1950s and remains in place today. Note in Figure **9.10** that the lines separating the various job titles as well as between the levels are both DOTTED and VAGUE. This was done intentionally because rarely are these positions "hard and fast." Each company has its own job titles, roles, and responsibilities, so we do not show the interfaces as solid lines- in reality, they are not. There are considerable overlaps, and even though a person may have a specific job title, his/her day-to-day responsibilities may very well change to include tasks from other functional areas.

In Figure **9.2,** we can see that the author provided you with a common RANGE of "Level of Effort" combination of hours spent earning a degree or other academic training courses COMBINED with hours of experience, there will always be outliers at both ends of the distribution. Also worth

[13] Authors NOTE: If anyone wants this file in Excel format, email pauldgphd@gmail.com and I will send the file to you.

noting is that these values are based on 50+ years of experience in construction and have been peer-reviewed by the Guild content review teams. In other sectors such as IT or Government, the LoE experience requirements, the ratio between formal education and experience, and the distribution of those core competencies may differ (as shown in our Figure 10, the SOC Figure 3), thus warranting further study.

Figure 3.

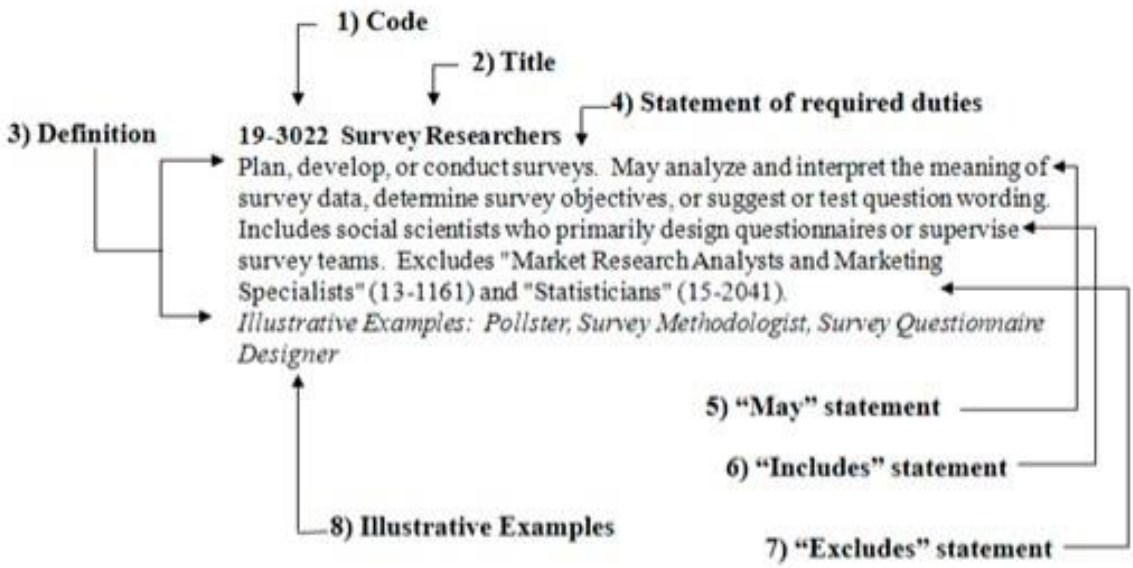


Figure 10- US Bureau of Labor SOC Codes Explained[14]

For Figures **9.3** through **9.8**, because job titles vary so much, we have opted to use the US Bureau of Labor's 2018 "Standard Occupational Classification Codes" (SOC)[15] with the note that for anyone trying to STANDARDIZE your RESOURCE DICTIONARIES, this is the most complete set of job titles and their descriptions we have found and as the codes are published in Excel, it makes it very easy to adopt this standardized job description and coding structures rather than try to devise your own internal codes.

In Figure **9.8**, lacking any "better" reference, we relied on the research done by the Global Alliance for Project Performance Standards (GAPPS) "CIFTER" scoring model to differentiate project managers working on projects of different sizes or complexity.

[14] US Bureau of Labor Standard Occupational Classification Codes (2018) Figure 3, Page 14 https://www.bls.gov/soc/2018/home.htm
[15] US Bureau of Labor Standard Occupational Classification Codes (2018) https://www.bls.gov/soc/2018/home.htm

Lastly, in Figure **9.9**, we tried to identify the certifications from previous versions of this research that, based on the scoring model shown in Figures 1 and Figure 2, are most closely related to each level of experience, as shown in the "PSCOR" (Line Item 18 from Figure 1)

Building on what is shown in Figure 9, in Figure 11, we can see there are two general career paths open to practitioners.

1 Project Controls/PMO/ Project Management Career Path Options

Level of Effort (LoE) (In Person Hours of Documented Degrees & Experience) 2		Planning & Scheduling 3	Cost Management & Budgeting 4	Forensic Analyst (Claims & Disputes) 5	Forensic Analyst (Business Case) 6	Cost Engineer/ Project Controls/ PMO 7	Project Management 8	Popular Certifications/ Credentials 9
Low Range of Logged Hours	High Range of Logged Hours	SOC Code- 13-1120 & 13-1121 Typical Job Titles	SOC Code- 13-1050 &13-1051 Typical Job Titles	SOC Code- 13-1030 & 13-1031 Typical Job Titles	SOC Code- 13-1190 & 13-1199 Typical Job Titles	SOC Code- 13-1110 & 13-1111 Typical Job Titles	SOC Code- 13-1180 & 13-1182 Typical Job Titles	[illegible]
= >16,000 LoE Hours		"Planning & Scheduling Manager", "Planning & Scheduling Consultant"	"Cost Estimating or Quantity Surveyor Manager", Cost Estimating or Quantity Surveyor Consultant"	"Forensic Claims Manager", "Forensic Claims Consultant","Forensic Claims Expert Witness"	"Forensic Business Case Manager", "Forensic Business Case Consultant", Certified Public Accountant, Financial Advisor	Cost Engineer/Project Controls/PMO Manager, Project Controls/PMO/ Cost Engineer Consultant	GAPPS CIFTER SCORE >13 GAPPS Global Level 2 Project Manager	AACE CFCC & DRMP AcostE Incorporated & Certified AICE-EIE Level 1 INCOSE ESEP IIBA CBATL L4 PMI PgMP & PfMP
> 10,000 LoE Hours	= 15,333 LoE Hours	"Competent" or "Journeyperson Planner/Scheduler"	"Competent" or "Journeyperson Cost Estimator or Quantity Surveyor"	"Competent" OR "Journeyperson Forensic Claims Analyst"	"Competent" OR "Journeyperson Forensic Business Case Analyst"	"Competent" OR "Journeyperson Project Controller"	GAPPS CIFTER SCORE =12 but <13 Global Level 1 Project Manager	AACE CCP, PSP, EVP, CEP APM/APMG CAPP & PPQ ICEAA CCEA & CCEA-P
> 8,875 LoE Hours	= 9,999 LoE Hours	"Senior Planner/Scheduler" or "Planner/Scheduler in Training Level 4"	"Senior Cost Estimator or Quantity Surveyor" OR "Cost Estimator/QS In Training Level 4"	"Senior Forensic Claims Analyst" OR "Forensic Claims Analyst In Training Level 4"	"Senior Forensic Business Case Analyst" OR "Forensic Business Case Analyst In Training Level 4"	"Senior Project Controller/PMO" OR "Project Controls In Training Level 4"	GAPPS CIFTER SCORE =<11 Global Level 0 Project Manager "Junior" or "Assistant" Project Manager	APM/APMG PMQ CMAA CCM PMI PMP
> 7,750 LoE Hours	= 8,874 LoE Hours	"Junior Planner/Scheduler" OR "Planner/Scheduler In-Training Level 3"	"Junior Cost Estimator/Quantity Surveyor OR Cost Estimating or Quantity Surveyor In Training Level 3"	"Junior Forensic Claims Analyst" OR "Forensic Claims Analyst In Training Level 3"	"Junior Forensic Business Case Analyst" OR "Forensic Business Case Analyst In Training Level 3"	"Junior Project Controller/PMO" OR "Project Controls In Training Level 3"	N/A	N/A
> 6,625 LoE Hours	= 7,749 LoE Hours	"Planner/Scheduler In Training Level 2"	"Cost Estimating or Quantity Surveyor" In Training Level 2	"Forensic Claims Analyst In Training Level 2"	"Forensic Business Case Analyst In Training Level 2"	"Project Controller/PMO In Training Level 2"	N/A	N/A
> 5,700 LoE Hours	= 6,624 LoE Hours	"Planner/Scheduler In-Training Level 1"	"Cost Estimating or Quantity Surveyor" In Training Level 1	"Forensic Claims Analyst In Training Level 1"	"Forensic Business Case Analyst In Training Level 1"	"Project Controller/PMO In Training Level 1"	N/A	N/A
<5,700 LoE Hours		"Novice Planner/Scheduler"	"Novice Cost Estimator or Quantity Surveyor"	"Novice Forensic Claims Analyst"	"Novice Forensic Business Case Analyst"	"Novice "Project Controller/PMO/ Cost Engineer"	N/A	AACE CCT & CST IIBA CBDA PMI CAPM & ACP

Figure 11 Career Path Alternatives

The **BLUE path** is a very common career path where someone chooses to follow a FUNCTIONAL path, starting as an apprentice or intern and then "moving up the corporate ladder" to become a "Planner/Scheduler" (**11.3**) "Quantity Surveyor" or "Cost Estimator" (**11.4**) "Forensic Analyst" (**11.5**) or "Business Case Analyst" (**11.6**). The **RED path** is more common for those of us who gravitate towards "Project Controls" or "Project Management Offices" (**11.7**) or to become "Project Managers" (**11.8**), and that is to spend some significant (usually 2+ years) amount of time in all four of the functional disciplines, building truly CROSS-FUNCTIONAL competencies. Obviously enough, there are any number of possible combinations and permutations, but for those just starting out in the world of project management, these are the options you will want to consider, understanding that there are very successful practitioners who have chosen NOT to become project managers, but subject matter experts in one or more of the SOC job titles shown in **11.3** - **11.**

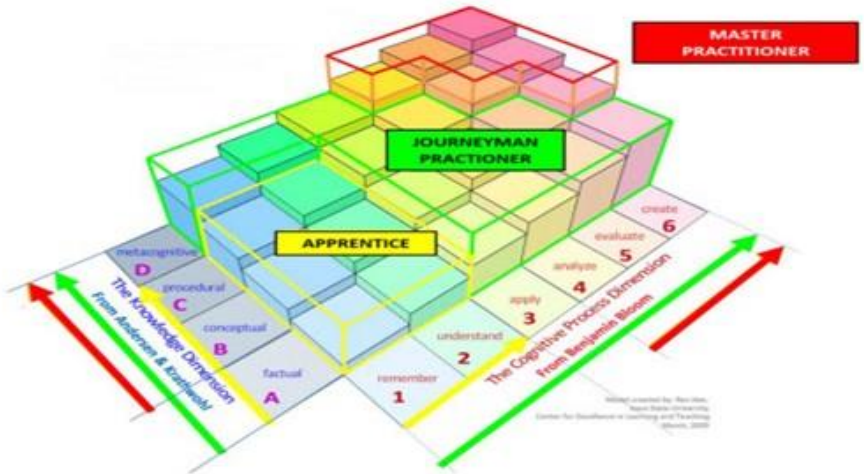
CONCLUSIONS AND RECOMMENDATIONS

It is patently clear that project management is not consistently delivering the "benefits" it can or should. Part of this problem is that for the past 50 – 60 years, practitioners have deluded ourselves into believing that project management is a "profession" for no reason other than wanting the prestige and respect that goes with being a "professional" something.

Given that respect, like trust, cannot be demanded or expected, but must be EARNED, here are the recommendations this author offers to begin to earn the trust of the consuming public and, in doing so, earn their respect which hopefully raises the image of project management to be more of a profession.

1) **IF we want to be respected as professionals, our credentialing process MUST be consistent with other professions.** As Engineering is one of the oldest and most mature users of the project management processes as an asset delivery system, we need to benchmark our academic and credentialing processes to match the following:
    a. Here is a typical Construction Project Management Degree program http://catalog.purdue.edu/preview_program.php?catoid=8&poid=10141
    b. Here is the information on the Fundamentals of Engineering Exam (FE) https://ncees.org/engineering/fe/
    c. Here is the information on the National Council of Examiners for Engineering and Surveying (NCEES) Professional Engineer Exam https://ncees.org/engineering/pe/

2) **All training developed must be based on progressive levels of competency that match what a typical career path development plan would look like as close as possible.**



[6] Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives (Complete edition). New York: Longman.

Figure 12- Career Path Alternatives Summarized from Figure 6

The author highly recommends using the Iowa State University's "Center for Excellence in Learning and Teaching" http://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy-flash-version/ as the basis to develop the CONTENT that needs to be included in each level of certification.

3) **Start to use INDEPENDENT, CREDIBLE, RESEARCH-BASED data to determine what employers are SEEKING in the people they HIRE and PROMOTE and start to design and deliver courses that DEVELOP and certifications that VALIDATE those traits or attributes.** Since 1956, the National Association for Colleges and Employers has published this data. IF our training and certification programs fail to validate what the marketplace is seeking, then what good are they? Pay close attention to the PRIORITIZATION ANALYSIS shown below.

From NACE Research

Attributes that EMPLOYERS are seeking in the EMPLOYEES they hire...

The National Association of Colleges and Employers (NACE) conducts an annual survey to determine what attributes employers are looking for in fresh graduates.

https://www.naceweb.org/about-us/press/2017/the-key-attributes-employers-seek-on-students-resumes/

Research indicates that these same skill sets ALSO apply when considering PROMOTIONS and/or TRANSFERS.

While the order changes from year to year, the 19 attributes remain fairly constant.

	ATTRIBUTE	% OF RESPONDENTS
1	Problem-solving skills	82.9%
2	Ability to work in a team	82.9%
3	Communication skills (written)	80.3%
4	Leadership	72.6%
5	Strong work ethic	68.4%
6	Analytical/quantitative skills	67.5%
7	Communication skills (verbal)	67.5%
8	Initiative	67.5%
9	Detail-oriented	64.1%
10	Flexibility/adaptability	60.7%
11	Technical skills	59.8%

Skills & Knowledge, 6th Edition, Introduction

Handbook of "Best Tested and PROVEN Practices"- Unit 2- https://build-project-management-competency.com/1-4-1-2-unit-2/ Line Items 440 – 594 Figures #22-#28

Figure 13- Top 80% of the NACE "Soft Skills" Employers Seek in the Employees they hire.

These PRIORITIES represent an OPPORTUNITY for training providers and those developing CERTIFICATIONS. GIVEN that these are the skills the marketplace is demanding and GIVEN that they are clearly not getting what they need/want, we need to design these skills into our training programs and validate competency by RESULTS via our certification programs.

These attributes were REAFFIRMED most recently in an article in the February 2023 issue of HBR, "How AI Will Transform Project Management," by Antonio Nieto-Rodriguez and Ricardo Viana Vargas.[16]

4) Adopt PROJECT-BASED LEARNING (PBL) "GOLD STANDARDS."

It is incomprehensible to think that ANY professional society representing project management practitioners could begin to advocate any training programs that are not fully compliant with the 7 attributes of "Project-Based Learning." The hypocrisy that many of the project management societies exhibit is bad enough without adding insult to injury by NOT requiring EVERYONE providing training in support of their credentials to adopt the 7 attributes of project-based learning in their courses and then use those 7 attributes as the basis to evaluate the effectiveness of those providing training under their auspices or endorsements.

Figure 14- Buck Institutes Project Design and Project Teaching Elements[17]

Note that many of the same elements or attributes identified by the NACE research are also addressed in the Project-Based Learning design elements.

[16] Antonio Nieto-Rodriguez and Ricardo Viana Vargas (Feb 2023 HBR) "How AI Will Transform Project Management" https://hbr.org/2023/02/how-ai-will-transform-project-management
[17] What is PBL? (N.D.) https://www.pblworks.org/what-is-pbl

Along with the "Seven Essential Design Elements," PBL also has published the "Seven Project-Based Teaching Practices."

Understanding that PMI supports the Buck Institute's "Project Based Learning" standards, how long will it be before PMI "practices LEADERSHIP BY EXAMPLE" by requiring all their approved or recognized training providers to demonstrate how they meet or fulfill these two sets of standards?

Not only do we need to measure the EFFECTIVENESS of training providers based on their RESULTS, but we also need to measure and evaluate the credentials developed and offered based not on the popularity of the training provider/mentor or on the marketing efforts of the organization but based on the RESULTS those who hold those credentials deliver. Meaning is consistent with the belief that "that which gets measured gets done" training providers should be evaluated by what the graduates of their programs can and do APPLY what they have learned and that those who hold the credentials consistently produce more "successful" project outcomes. If they cannot, then the credibility and "added value" of the credential itself have to be challenged.

5) Adopt the "KIRKPATRICK 4-Level Assessment Model".

For TRAINING PROVIDERS, you need to be adopting the 4-Level Kirkpatrick Training Assessment Model.

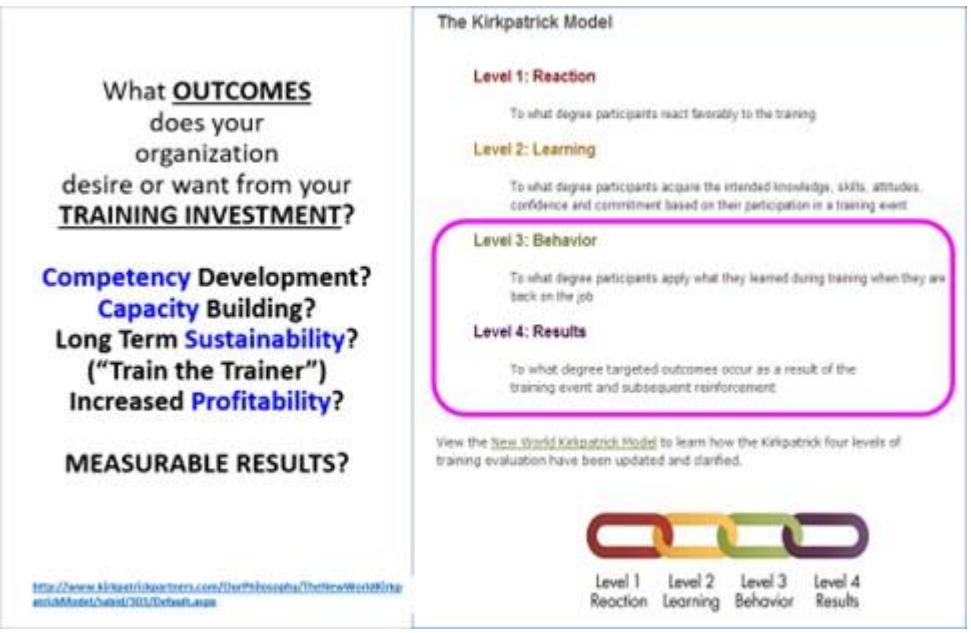


Figure 15- 4 Levels of the Kirkpatrick Method

As professional societies, IF you cannot show that those who hold your certifications can and do produce positive results, then how can you ethically, if not legally, justify or

support any claims that project management is a profession or that those who hold your credentials are in fact COMPETENT at some level?

For professional societies, you should be using the 4-Level Kirkpatrick model as the basis to train, develop, and evaluate your training providers. As they are the front line of your organization's products, the training providers are your best form of advertising.

6) STOP advocating for the use of ANSI 748 C or D as the basis for Earned Value Management-

Back around 2006, Brian Hobbs and Claude Besner published research showing that "Earned Value" was used "from limited to very limited use" and that "S-Curves and Statistical Process Control Charts" experienced "less than very limited use."[18] This was also followed in 2006 in published research by Chance Reichel, who told us, "Unfortunately, it seems as if this phrase or title, "Earned Value Management," is met and greeted with dread instead of the thought of usefulness."[19] Other published research indicates that very few project managers used EVM, at least not as the US DoD advocated it in the Earned Value Management Systems Intent Guide (EIA-748-D Intent Guide.

More recently, Millennial Ms. Shohreh Ghorbani reiterated these same observations in several of her 2021 postings on Linked In. It was also mentioned on at least one occasion by Patrick Weaver in his postings in 2021-22 and was also discussed on several occasions between Dr. Ken Smith, Colonel USAF (Ret), Andrew J. Grandage, Ph.D., Assistant Professor, Political Science, at the Public Affairs Department Western Carolina University and the author of this article during 2022.

[18] 1 Claude Besner, B. Hobbs (2006) The Perceived Value and Potential Contribution of Project Management Practices to Project Success

[19] Reichel, C. W. (2006). Earned value management systems (EVMS): "you too can do earned value management" Paper presented at PMI® Global Congress 2006—North America, Seattle, WA. Newtown Square, PA: Project Management Institute.

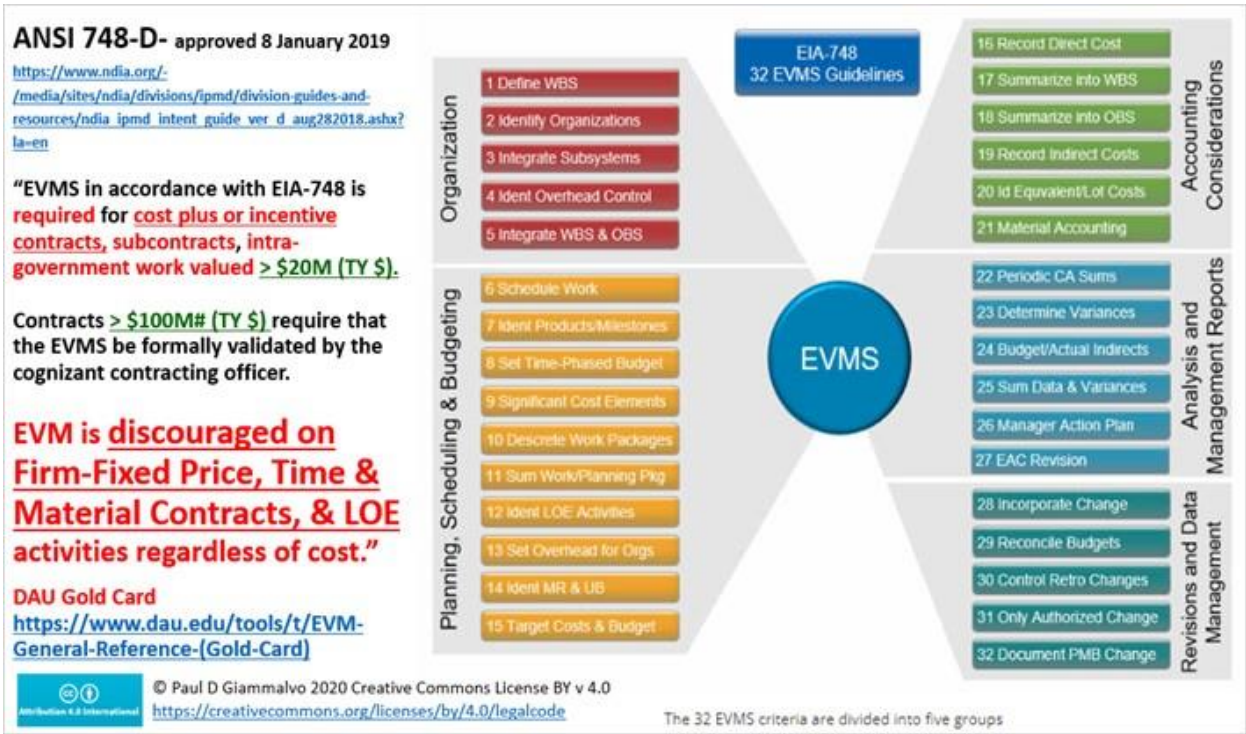


Figure 16- Actual Wording from the DAU Gold Card[20]

Why? Because ANSI 748 C and D was never designed as a PROACTIVE approach to using EVM data to better manage the projects (FUTURE oriented) but was designed to enable the government to AUDIT projects, ensuring that the contractors did not over-charge the government. (i.e., $200 screwdrivers or $300 toilet seats)

So in ~16 years, we have seen no change in a willingness to adopt what we know to be "best tested and PROVEN" practices that have been around for at least 120 years and probably closer to 600?

Currently, a team headed up by Wayne Abba and Dr. Alexandre Rodriguez are trying to create an "EVM Manifesto" with the following OBJECTIVES:

- To develop a message to convey EVM so that organizations feel compelled to embrace it as a core business management practice.
- To devise a strategy to disseminate such a message globally and implement the strategy effectively using tested and PROVEN tactics. (See Omar Bradley)

Developing answers to the following "RESEARCH QUESTIONS":

[20] Wanner, Roland (2019) https://rolandwanner.com/eia-748-and-the-32-evms-criteria/

- "Given that many agree that Earned Value Management is an important and useful tool for owners and contractors to manage their projects, then WHY is it not enjoying more widespread adoption?"
- "What changes need to be made to make EVM more acceptable or "user-friendly" to owners and contractors to make them WANT to adopt it?'

Unfortunately, this effort does not appear to be an open and transparent undertaking, nor does it appear to be consistent with the 5 attributes of the Scientific Method:

- **Empirical Observation**

  The scientific method is empirical. That is, it relies on direct observation of the world and disdains hypotheses that run counter to observable fact. This contrasts with methods that rely on pure reason (including that proposed by Plato) and those that rely on emotional or other subjective factors.

- **Replicable Experiments**

  Scientific experiments are replicable. If another person duplicates the experiment, he or she will get the same results. Scientists are supposed to publish enough of their method so that another person with appropriate training could replicate the results. This contrasts with methods that rely on experiences unique to a particular individual or a small group of individuals.

- **Provisional Results**

  Results obtained through the scientific method are provisional; they are (or ought to be) open to question and debate. If new data arise that contradict a theory, that theory must be modified. For example, the phlogiston theory of fire and combustion was rejected when the evidence against it arose.

- **Objective Approach**

  The scientific method is objective. It relies on facts and the world as it is rather than on beliefs, wishes, or desires. Scientists attempt (with varying degrees of success) to remove their biases when making observations.

- **Systematic Observation**

  Strictly speaking, the scientific method is systematic; that is, it relies on carefully planned studies rather than on random or haphazard observation. Nevertheless, science can begin from some random observation. Isaac Asimov said that the most exciting phrase to hear in science is not "Eureka!" but "That's funny." After the scientist notices something funny, he or she investigates it systematically.

IF we ever want to earn the trust and respect accorded other professions, then these 5 attributes should be the STANDARDS against which all research on "project management" should be developed, including the PMBOK Guide 8th Edition.

7) REPLACE ANSI 748 C and D with the TRUE ORIGINS of Earned Value Management

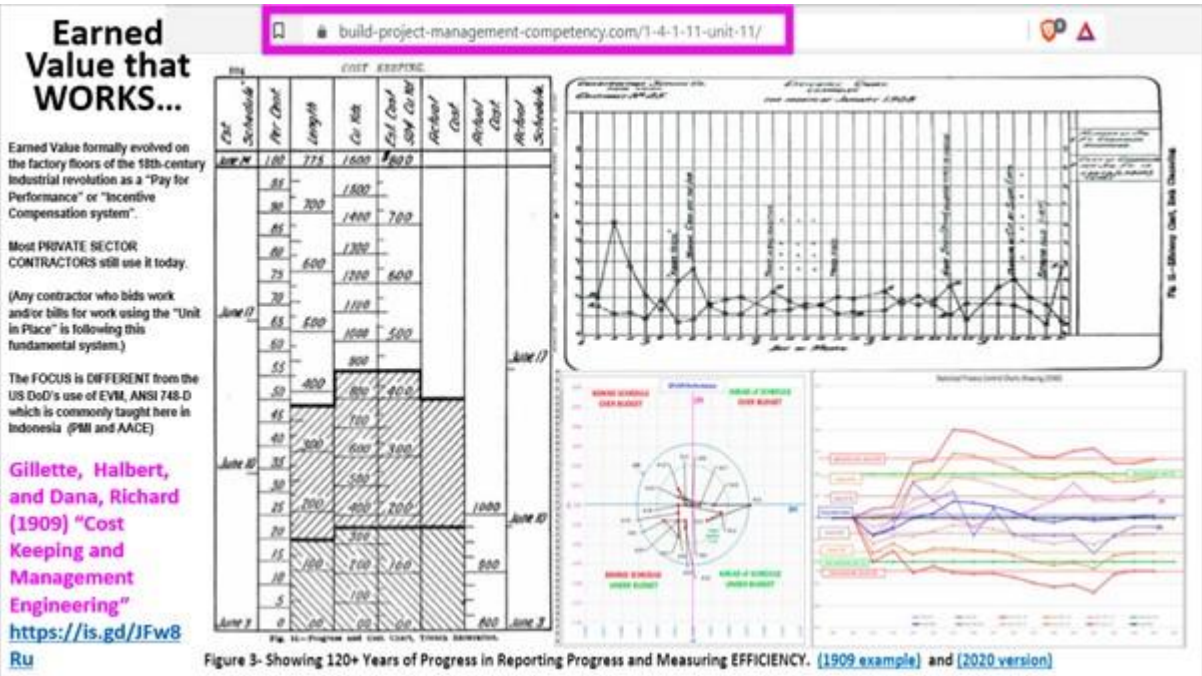


Figure 17- Origins of Earned Value Management as a "Cost Engineering" Function

Earned Value did NOT originate with the US Government as many have been led to believe. The origins of EVM date back to the 16th Century Trade and craft Guilds and were formalized and standardized during the 16th Century Industrial Revolution. This is well documented and explained in Halbert Gillette and Richard Dana's 1909 book "Cost Keeping and Management Engineering," which looks at project management as a "Cost Engineer" or "Engineering Economist" would be expected to do. (When is the Association for the Advancement of COST ENGINEERING (AACE) or the International Cost Engineering Council (ICEC) going to recognize and embrace this fact?)

In this model, the OBJECTIVES are:

1) To track and monitor ACTUAL PERFORMANCE against the ESTIMATED PERFORMANCE regarding both TIME and COST.
2) To REWARD those whose cost and/or time performance is superior, exceeding the original estimate.

3) Use that data to implement CORRECTIVE or REMEDIAL actions to ensure that the actual performance comes as close to meeting the ORIGINAL or BASELINE TIME and COST ESTIMATES.

Support for the Gillette and Dana publication is shown by further research showing the various incentive schemes from the same time frame and cross-referenced by Gillette and Dana. For a more detailed explanation of this process, visit this previous paper. Giammalvo, P. D. (2022). The Origins and History of Earned Value Management – "A Contractor's Perspective"; featured paper, PM World Journal, Vol. XI, Issue IX, September.[21]

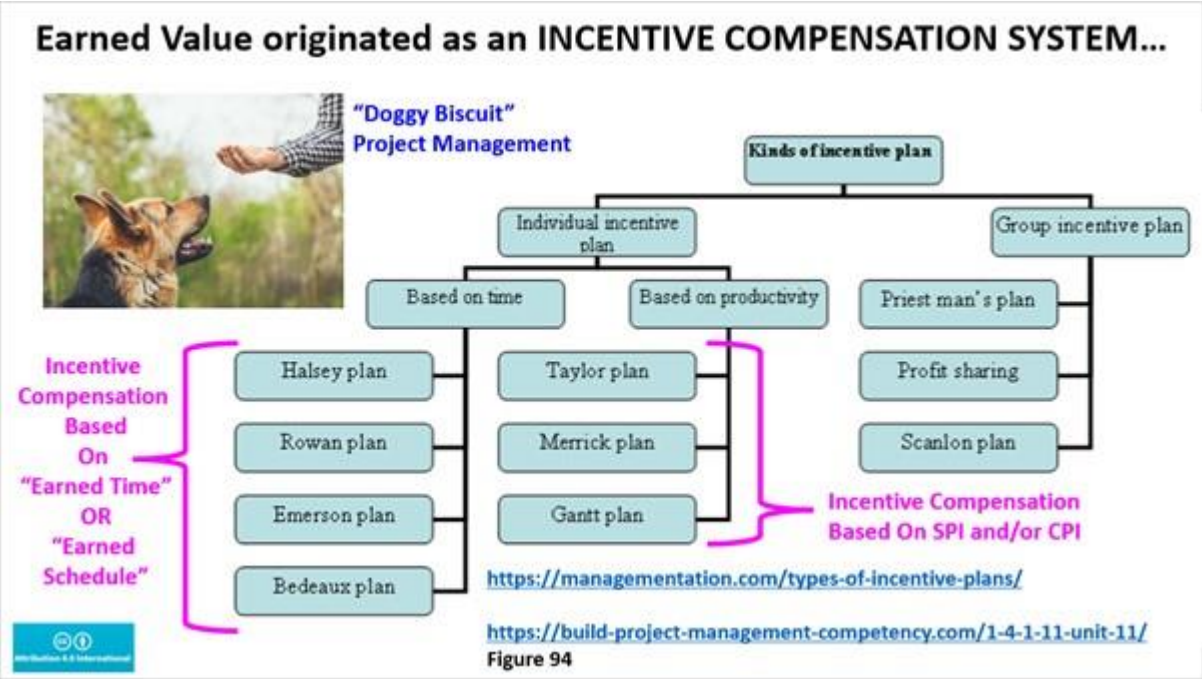


Figure 18- Supporting Evidence that Earned Value ORIGINATED as a "Pay for Performance" or "Incentive Compensation" System.[22], [23]

8) **Address ROOT CAUSE PROBLEMS-**

With the move towards the use of AI, Modularization, Automation, and E-Commerce, unless we FIRST fix the root causes of so many projects running late, over budget, and failing to meet technical requirements, much less delivering the benefits for which they

[21] Giammalvo, P. D. (2022). The Origins and History of Earned Value Management – "A Contractor's Perspective"; featured paper, PM World Journal, Vol. XI, Issue IX, September.
[22] Taylor, Frederick (1911) "The Principles of Scientific Management" https://play.google.com/books/reader?id=qE3CAgAAQBAJ&pg=GBS.PA13.w.1.0.306_27&hl=en
[23] Fayol, Henri (1916) "Administration Industrielle et Generale (General and Industrial Management)" https://play.google.com/books/reader?id=WFp5DQAAQBAJ&pg=GBS.PT2

were undertaken, NOW is the time to address these problems BEFORE we start to seriously automate the project management processes.

Twelve+ years ago, Glenn Butts, Lead Estimator for NASA, published a scathing rebuke of NASA's cost estimating and scheduling practices. As a senior practitioner, not only did he identify the root cause of problems, but he also provided RECOMMENDATIONS as to how to FIX these problems. This was over 12 years ago, and STILL, none of the professional societies, much less the US Government, implemented his recommendations. Why not? Do we or do we NOT believe in the importance of "Lessons Learned."

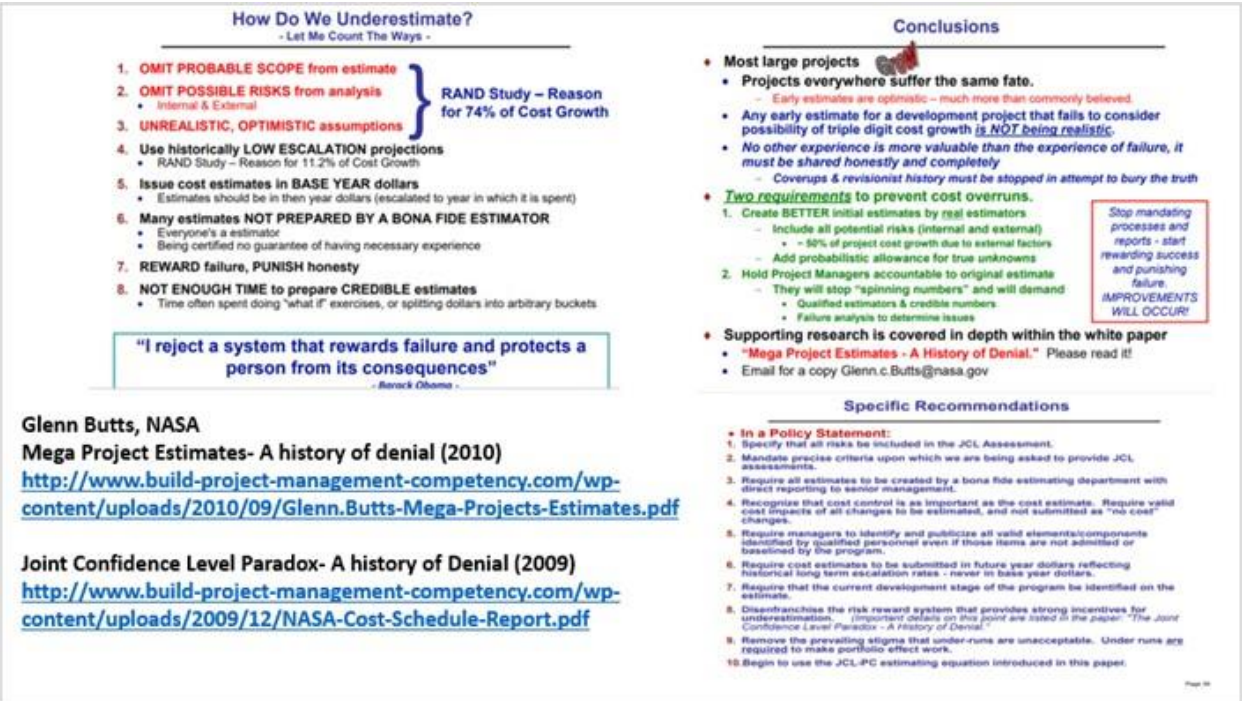


Figure 19- Summary of published research by Glenn Butts from NASA[24]

Another outspoken critique of project management as it is being taught, practiced, and certified today is Professor Bent Flyvbjerg, Oxford University. Bent Flyvbjerg is a Danish economic geographer. He is a Professor of Major Program "Management at Oxford University's Saïd Business School and the first Director of the University's BT Centre for Major Program Management.

Flyvbjerg has created a very unique and REALISTIC "Capability Maturity Model" that reflects the findings of Butts and represents the views of this author as well. With PMI having rewritten their PMBOK Guide 7th Edition, they are not only REMISS but professionally NEGLIGENT not to include the work of both Flyvbjerg and Butts in their update. The same

[24] Butts, Glen (2011) https://www.slideshare.net/NASAPMC/glennbutts-mega-projects-estimates

goes for IPMA, AACE, APMG, and other global organizations claiming to represent the practice of project managers. We cannot stand by and tolerate the malfeasance, misfeasance, and nonfeasance of those in our midst. Until or unless we start to see project SPONSORS, project MANAGERS, and project CONTROLS/PMO technical people in handcuffs doing the perp walk on the 17:00 CNN news and then being tried and convicted then sentenced to serious prison time, we are NEVER going to see any measurable improvement in project success rates. For more, reference Butt's 2010 presentation, Slides #31 and #32.

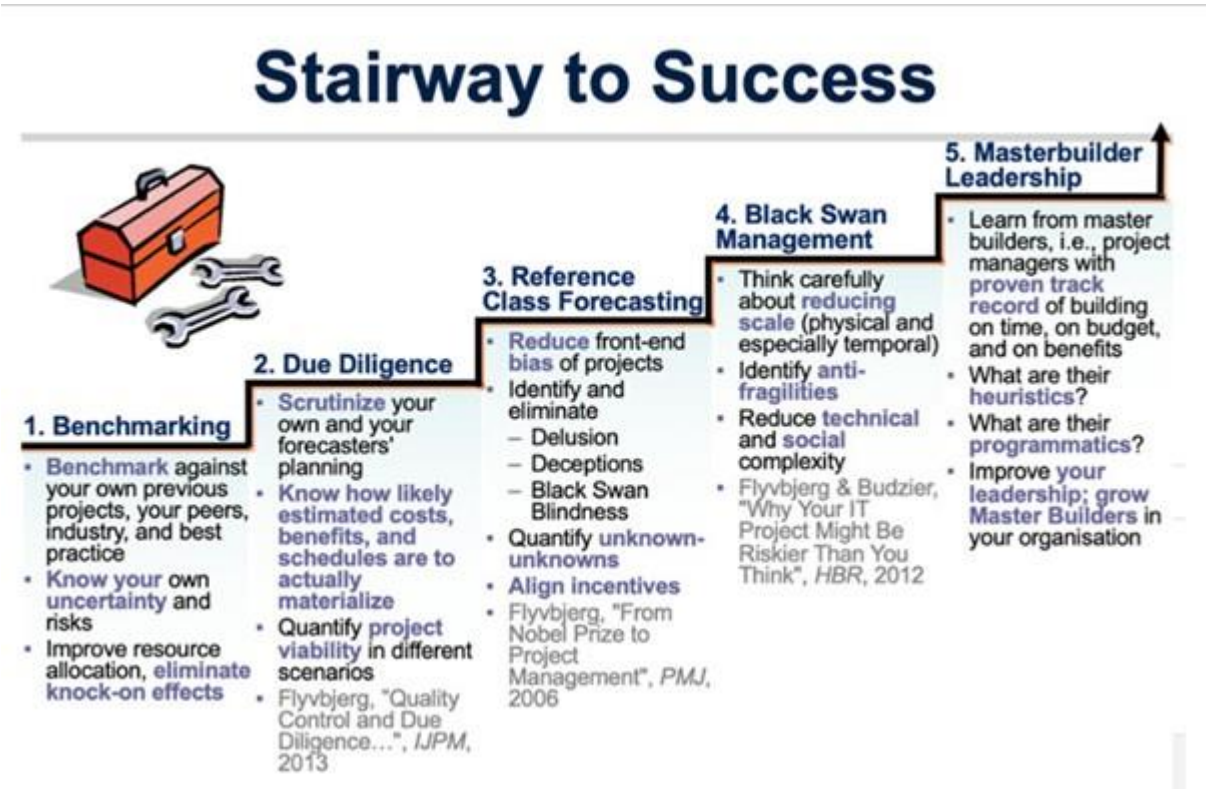


Figure 20- A REALISTIC, RESEARCH BASED Capability Maturity Model by Bent Flyvbjerg (2014)[25]

[25] Bent Flyvbjerg, 2014, "What You Should Know about Megaprojects and Why: An Overview," Project Management Journal, vol. 45, no. 2, April-May, pp. 6-19, DOI: 10.1002/pmj.21409

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Dr. Paul D. Giammalvo, CDT, CCE (#1240), MScPM, MRICS, is a Senior Technical Advisor (Project Management) to PT Mitratata Citragraha. (PTMC), Jakarta, Indonesia. www.build-project-management-competency.com. He is noted for developing and delivering graduate-level, blended learning curricula designed for the mid-career path, English as Second Language (ESL) professionals to develop competency in the local practitioner and build capacity for the local organizations. For 25+ years, he has been developing and delivering Project Management training and consulting throughout South and Eastern Asia Pacific, the Middle East, West Africa, and Europe.

He is also active in the Global Project Management Community by playing a "thought leadership" role for the Association for the Advancement of Cost Engineering International (AACEI) http://www.aacei.org/ since 1991; He has also been active in two IPMA member organizations: The Green Project Management Association (GPM) http://www.greenprojectmanagement.org/ where he served on the Certification Board of Directors for two years and the American Society for the Advancement of Project Management http://www.asapm.org/ for which he served for four years on the BoD as Director of Marketing. He also sat on the Board of Directors of the Global Alliance for Project Performance Standards (GAPPS), www.globalpmstandards.org, Sydney, Australia, and is active as a regional leader. Currently, he is a compensated consultant to the International Guild of Project Controls. http://www.planningplanet.com/guild as the primary author of their "Compendium and Reference" as well as the chief architect of their competency-based credentialing program. http://www.planningplanet.com/guild/certification

He has spent 35 of the last 50 years working on large, highly technical international projects, including such prestigious projects as the Alyeska Pipeline and the Distant Early Warning Site (DEW Line), upgrades in Alaska and the Negev Airbase Constructors, Ovda, Israel and the Minas Oil Field in Rumbai, Sumatra. His current client list includes Fortune 500 major telecommunications, oil, gas, and mining companies plus the UN Projects Office and many other multi-national companies, NGO organizations, and Indonesian Government Agencies.

In addition to 45+ years of hands-on field experience, Dr. Giammalvo holds an undergraduate degree in Construction Management, his Master of Science in Project Management through the George Washington University and was awarded his Ph.D. in Project and Program Management through the Institute Superieur De Gestion Industrielle (ISGI) and Ecole Superieure De Commerce De Lille (ESC-Lille) under the supervision of Professor Christophe Bredillet. "Dr. PDG" can be contacted at pauldgphd@gmail.com.