

Should we CHALLENGE or RECALL ISO 21502:2020? ¹

Dr. Paul D. Giammalvo

Just recently, LinkedIn was bombarded by announcements that ISO 21500:2020 was formally released. Reviewing what was published, it appears to be little more than an adoption of many of the latest "buzz words" that pass for project management "knowledge", reflecting a heavy bias towards "agile" project management. Furthermore, given that ISO 21500 was not well received in the marketplace, this author is urging people to take a second look at this standard and at least CONSIDER challenging what this committee produced?

Given we are on the verge of developing and applying "Artificial Intelligence" (AI) to "project management," doesn't it make sense that NOW is the time that we fix anything that is "wrong" with the project management processes or the tools and techniques BEFORE we start to automate anything?

In my professional opinion, ISO 21502:2020 as it currently stands does not reflect reality nor is it based on "Best Tested and PROVEN" practices and therefore, is inappropriate for use as the basis to start to implement "Artificial Intelligence."

THOSE WHO FAIL TO LEARN FROM HISTORY...²

Project management, as it currently is being practiced, is not working in too many if not most instances.^{3 4 5} Far too many projects are finishing late, over budget, with quality problems, and worse yet, the products (=ASSETS) these projects are producing are not delivering the "value" or "benefits" for which they were undertaken.

For 6000+ years, humans have been "initiating, planning, executing, controlling and closing" projects without the benefit of MS Project, or P6 or the PMBOK Guide or PRINCE2, so doesn't it seem reasonable that with 6000+ years of history behind us in construction, entertainment, and medicine, that by now we should know how to "initiate, plan, execute, control and close"

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² George Santayana "Those who cannot remember *the past* are condemned to repeat it"

<https://iep.utm.edu/santayan/>

³ Future of Project Management: Global Outlook (2019) KPMG, AIPM, IPMA <https://www.ipma.world/assets/PM-Survey-FullReport-2019-FINAL.pdf>

⁴ Butts, Glenn, NASA (2010) "Megaproject Estimates- A history of denial"

<https://www.slideshare.net/NASAPMC/glennbutts-mega-projects-estimates>

⁵ Flyvbjerg, Bent Oxford (2011) "Over Budget, Over Time, Over and Over Again: Managing Major Projects"

https://www.researchgate.net/publication/235953357_Over_Budget_Over_Time_Over_and_Over_Again_Managing_Major_Projects

projects "successfully" and in a way that delivers substantially on what the project was undertaken to achieve? Surely in 6000 years, we should have learned SOMETHING!

Seriously, if our Neanderthal ancestors were able to tame fire 300,000 years ago⁶ and our more recent ancestors were able to invent the wheel⁷ about 6000 years ago using nothing more than a "trial and error" method, and around the 12th Century, we formalized the "trial and error" method, and it became what is known today as the "Scientific Method"⁸ which in the past ~1,000 years or so has produced hundreds of thousands of new products and services including the telephone (Bell), the lightbulb (Edison) and Penicillin (Fleming) to name but a few. And reinforcing the observation that we fail to learn from history, our IT colleagues have relatively recently "discovered" the Scientific Method and named it "agile" or "Agile".

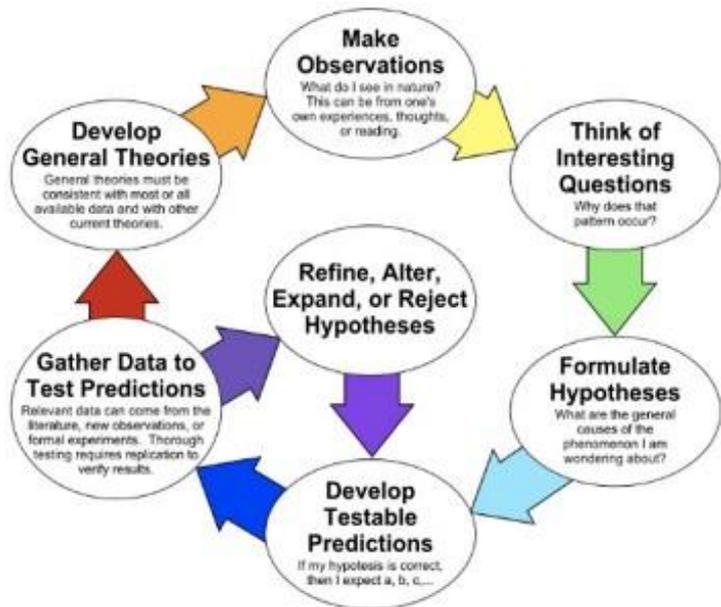


Figure 1- Scientific Method⁹

So, Where to Start?

While references to the fundamental processes, tools, and techniques of "project management" date back to the Old Testament^{10, 11, 12}, much of what we know today as "Modern Project Management" originated on the factory floors of 17th and 18th Century Industrial Revolution as evidenced by the work of Henri Fayol, Frank and Lillian Gilbreath, Frederick Taylor, Henry Gantt and the work of Halbert Powers Gillette and Richard Turner Dana in their 1909 book "Cost Keeping and Management Engineering: A Treatise for Engineers, Contractors and

⁶ History Channel (2018) <https://www.history.com/news/human-ancestors-tamed-fire-earlier-than-thought>

⁷ Gambino, Megan (2009) "A Salute to the Wheel" Smithsonian Online <https://www.smithsonianmag.com/science-nature/a-salute-to-the-wheel-31805121/>

⁸ Scientific Method (N.D) Stanford Encyclopedia of Philosophy <https://plato.stanford.edu/entries/scientific-method/>

⁹ Anchon Magnus (2015)

https://commons.wikimedia.org/wiki/File:The_Scientific_Method_as_an_Ongoing_Process.svg

¹⁰ Geneste, Sophie, (2018) The True Origins of Earned Value Management <https://peworldlibrary.net/wp-content/uploads/2019/10/pmwj86-Oct2019-Geneste-the-true-origins-of-evm.pdf>

¹¹ Taybi, Yasmine (2018) "Is Earned Value Management Consistent with Shariah Law?"

<https://peworldlibrary.net/wp-content/uploads/2019/09/pmwj85-Sep2019-Taybi-is-evm-consistent-with-sharia-law.pdf>

¹² Hu, Bertile (2018) "The History of Earned Value as an Incentive Payment System"

<https://peworldlibrary.net/wp-content/uploads/2019/09/pmwj85-Sep2019-Hu-history-of-evm-through-incentive-plans.pdf>

Superintendents Engaged in the Management of Engineering Construction"¹³. This book is particularly important as it gives the origins of "earned value management" as a "pay for performance" incentive payment scheme, more specifically based on the concept of "earned time" or "earned schedule". This point is worth noting as PMI has recognized the work of Walt Lipske and given him a major award for what amounts to little more than careless or incomplete research, driving home the problems of what happens by failing to look back in history BEFORE we go writing standards or giving recognition or automating our processes, tools and techniques.

This graphic originated with R. Max Wideman in the early to mid- 1980s and the last time the author checked with our Fortune 500 clients, this remains a valid organizational structure today showing the relative levels of DECISION-MAKING AUTHORITY along with the time horizon that each level is responsible for. Despite having originated with Max Wideman prior to the publication of the 1987 or the 1986 PMBOK Guide, it is unclear exactly why this important concept never made it into the PMBOK much less any of the other "BoKs" from other professional societies.

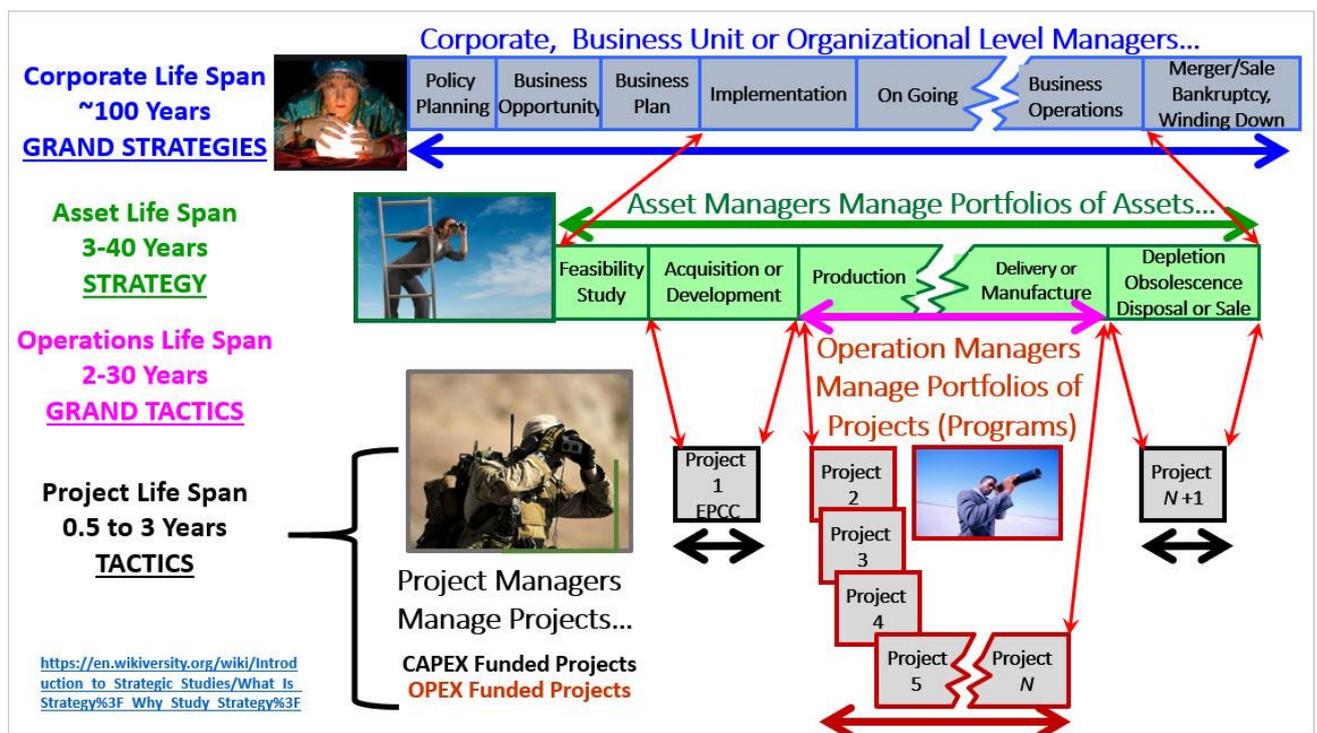


Figure 2- Four "Actors" in the Decision-Making Process Showing Their Time Horizon and Decision-Making Responsibilities.¹⁴

The key question is "Does this graphic reflect the levels of Decision Making and the Roles and Responsibilities in YOUR organization"? If the answer is no, then there is no need for you to read

¹³ Gillette & Dana (1909) "Cost Keeping and Management Engineering: A Treatise for Engineers, Contractors and Superintendents Engaged in the Management of Engineering Construction"
https://books.google.co.id/books?redir_esc=y&id=zO-ADudj-R8C&focus

¹⁴ R. Max Wideman (1985) modified by Paul Giammalvo for Course Materials

further as the conclusions and recommendations contained in this paper depend on validating that this model substantially reflects "reality" in most OWNER organizations?

If you DO agree with what is shown here, then this helps to explain WHY PMI's PMBOK/PMBOK Guide never worked in the 35 years it has been in print. SOMEHOW the role of the Asset Manager got eliminated somewhere between the 1987 PMBOK and 1996 PMBOK Guide.

Assuming that everyone reading this paper can agree that "Lessons Learned" are of significant importance to project managers, why is it that we never seem to go back in history to find out what WORKS and then instead "reinventing the wheel," we identify the "best tested and PROVEN" practices and use those as our starting point? Here again, we have long argued that PMI's "standard" of adopting "those practices used on MOST projects, MOST of the time" amount to nothing more than AVERAGE practices and speaking as a "hard money contractor, where single-digit EBIT margins are the norm, and the competition to win work is BRUTAL, I simply cannot afford to use "average" practices. And this "average" is made worse by the fact that so many projects "fail." Meaning that when we "average" what amount to BAD practices, the average drops even lower?

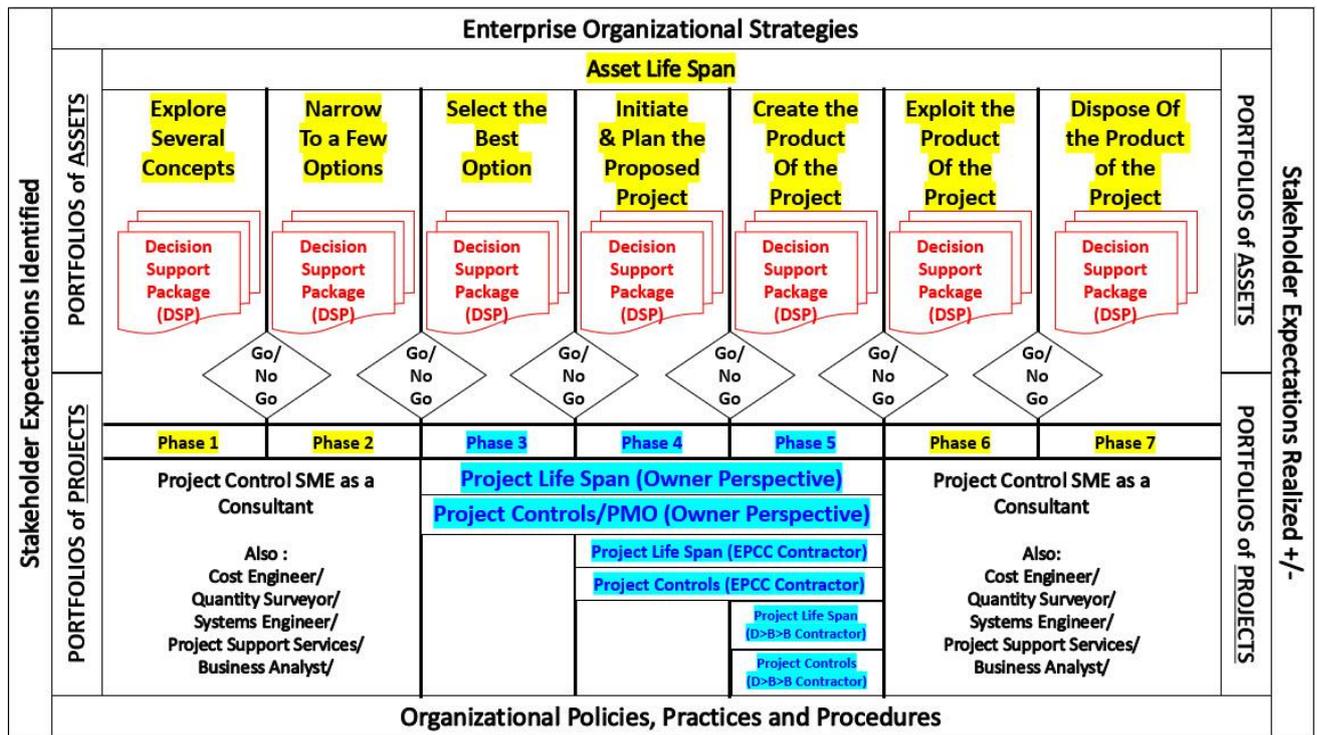


Figure 4- Graphical Representation of the LINEAR version of the Integrated Asset, Portfolio, Program/Operations, and Project Management Methodology.¹⁵

This fully Integrated Asset, Portfolio, Program/Operations and Project Management Methodology we BELIEVE originated around 1955 with either Esso or Diamond Shamrock Oil and attesting to the fact it has been working for the past 65 years, as evidenced by the fact that this

¹⁵ From Author's Training Materials (2020)

model (in one form or another) has been adopted by all the major International and nearly all National Oil companies. So if we have a model that we know for a fact has been working for 65 years, why are we not starting project management standards using a system we KNOW works and then improving upon it?

To the author's knowledge, this tested and proven methodology has only been adopted by two professional societies- AACE with their Total Cost Management Framework¹⁶ and the Guild of Project Controls with their Compendium of Best Tested and Proven Practices¹⁷.

The "problem" with this model from the perspective of the project management organizations instead of being a PROJECT centric model, it is an ASSET centric model. Explained another way, from the perspective of OWNER organizations, the project is nothing more than a DELIVERY SYSTEM designed to "create, acquire, update, expand, repair, maintain and eventually dispose of ORGANIZATION ASSETS. That is, in most owner organizations "projects" are a necessary evil, something to be tolerated because they have to and certainly not a core competency. This is why most large owners CONTRACT out project management using some form of "Turn-Key," "Design-Build" (D-B), or "Engineer, Procure Construct and Commission" (EPCC). Again from an owner's perspective, what is important is not the PROJECT but the ASSET that the project was undertaken to deliver or produce.

THE ASSET LIFE SPAN AND "AGILE" or "TRIAL AND ERROR" or the "SCIENTIFIC METHOD"

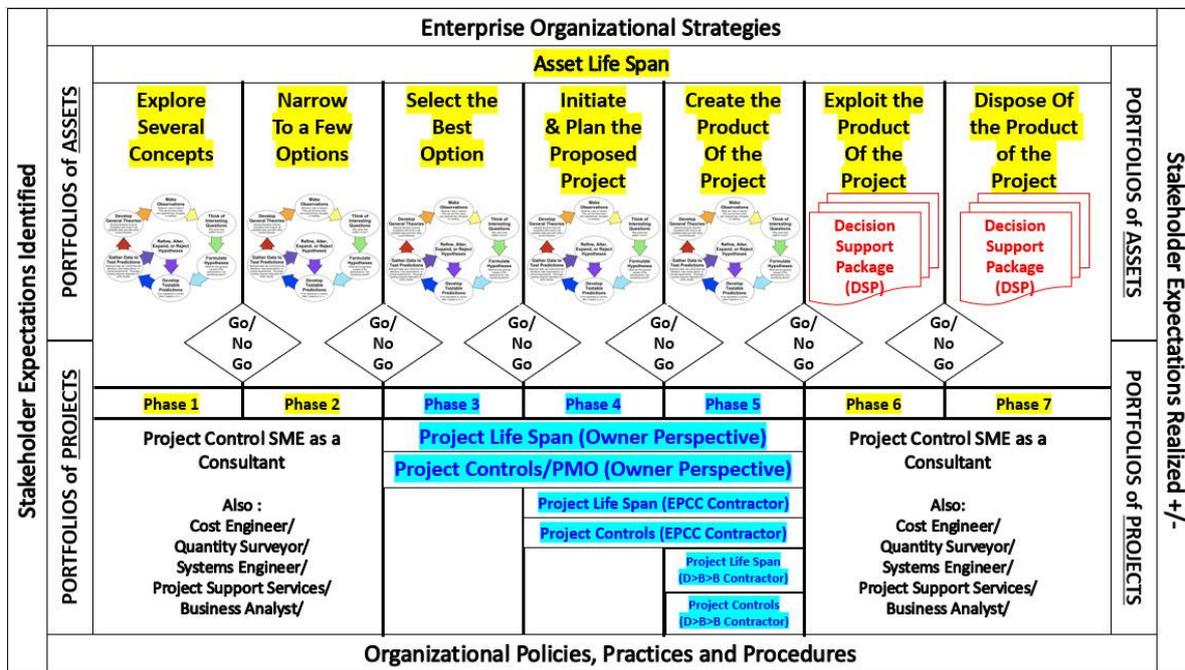


Figure 5- The "Scientific Method" (a.k.a. "Agile) is Not Incompatible with the Asset Life Span.

¹⁶ AACE Total Cost Management Framework- <https://web.aacei.org/resources/publications/tcm>

¹⁷ Guild of Project Controls Compendium of Best Tested and Proven Practices- <http://www.planningplanet.com/guild/GPCCAR-modules>

The only difference between Figure 4 and Figure 5 is that during the PHASE GATE REVIEWS instead of being a relatively linear process, there are more iterations that go into the Decisions Support Packages. (DSP) Worth noting that even in Figure 4, there are often many iterations. What this means is when we look at the Phase Gate process from the perspective of the ASSET life span, the differences between what is often called the "Waterfall" and "Agile" methods becomes even less pronounced. In the oil and gas sector, this iterative process between the Phase Gates has long been known as "Front End Loading" or "FEL".¹⁸

So What is an ASSET then?

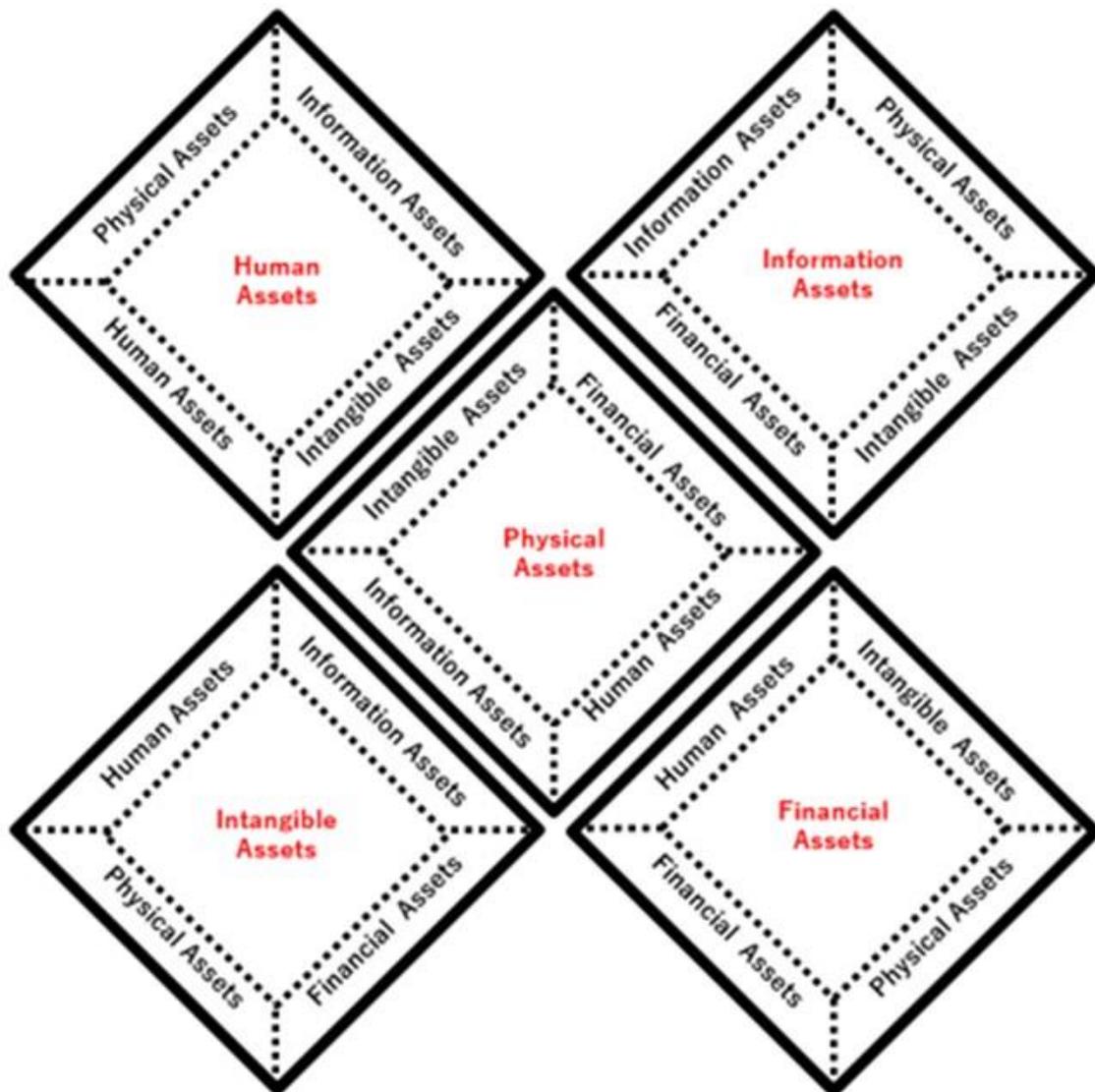


Figure 6- Asset Classifications

¹⁸ Note for more on this topic, go [HERE](#) or Google on the MacCleamy or Paulson Curve or for our IT colleagues, the Boehn Curve. Davis, Daniel (2011) <https://www.danieldavis.com/macleamy/>

Investopedia tells us that an ASSET is¹⁹:

- ✓ *A resource with economic value that an individual, corporation, or country owns or controls with the expectation that it will provide a future benefit.*
- ✓ *Assets are reported on a company's balance sheet and are bought or created to increase a firm's value or benefit the firm's operations.*
- ✓ *An asset can be thought of as something that, in the future, can generate cash flow, reduce expenses or improve sales, regardless of whether it's manufacturing equipment or a patent.*

Thus, regardless of whether you are a CONTRACTOR or an OWNER, projects produce ASSETS from one (or more) of these 5 Asset Classifications. When put into service or operations, the ASSET generates the "value" or the "benefits," not the project. For an OWNER, all projects are COST or INVESTMENT centers. (Cash OUT) thus OWNERS cannot realize value from the PROJECT DIRECTLY. Only CONTRACTORS can recognize "value" or "benefits" directly from the PROJECT, usually in the form of PROFITS (Financial Assets) and/or REPUTATION (Intangible Assets). Contractors may also capture KNOWLEDGE or INFORMATIONAL assets.

What is essential to recognize and accept is that in OWNER organizations:

- 1) ASSETS are normally CONTROLLED and ALLOCATED by FUNCTIONAL or LINE MANAGERS
- 2) It takes ASSETS to be able to "create, acquire, update, expand, repair, maintain and eventually dispose of" NEW ORGANIZATION ASSETS.
- 3) That the functional or line managers need to be willing to "give up" or "share" their "assets" (which are synonymous with resources) if they want the organization be able to expand and grow.

For more on understanding Assets, watch this Youtube video

https://www.youtube.com/watch?v=pLuMX_9WVFg from the Institute of Asset Management
<https://theiam.org/about-us/>

Also download these two documents:

- 1) PAS 55-1 Spécifications- <http://www.irantpm.ir/wp-content/uploads/2014/01/pass55-2008.pdf>
- 2) PAS 55-2 Guidelines- <http://hadidavari.com/wp-content/uploads/2018/03/PAS-55-2-2008.pdf>

¹⁹ Barone, Adam (N.D) Investopedia <https://www.investopedia.com/terms/a/asset.asp>

Why Don't Projects Produce Value or Benefits DIRECTLY for Owners?

Commonly found in all the Agile models but also now appearing in ISO 21502:2020 the process flow charts indicate that for OWNERS projects produce benefits directly. Kik Piney was one of the early advocates for this principle and it seems to have caught on with many others, indicating they don't fully understand the BUSINESS CASE from an owner's perspective as fully or completely as they could or should.

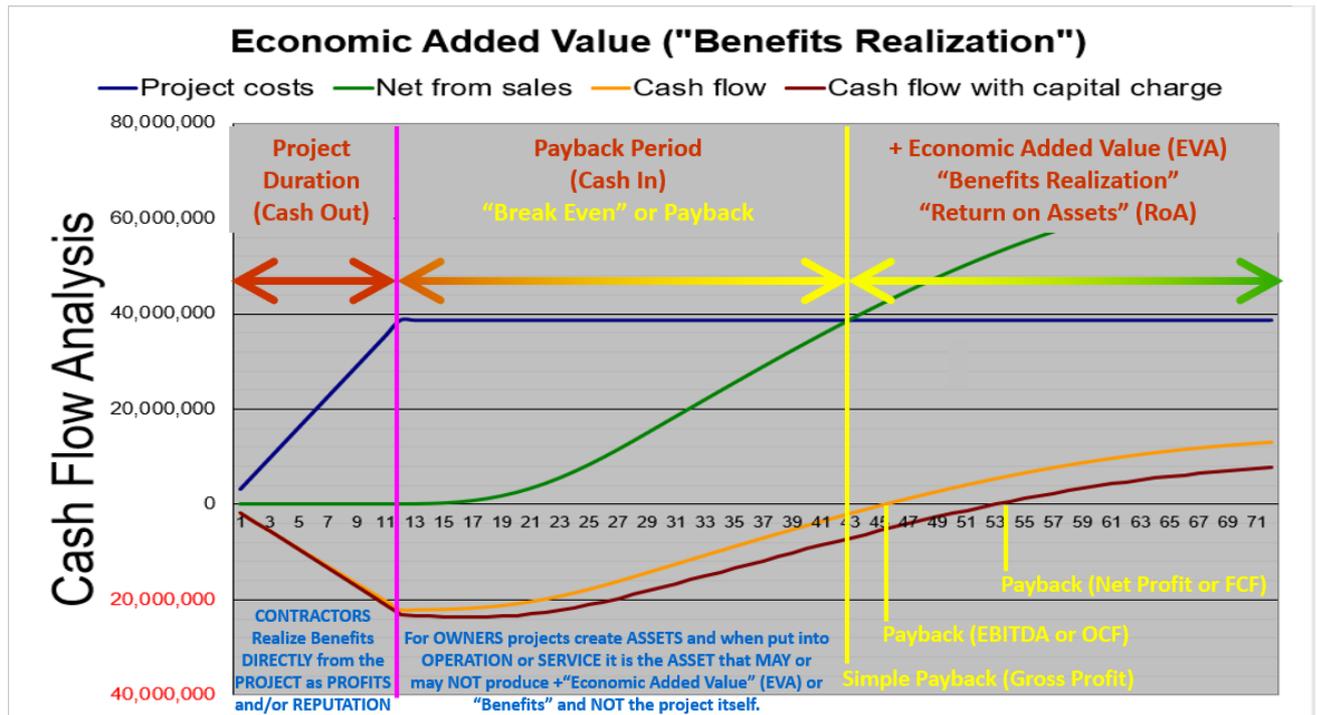


Figure 7 Cash Flow Analysis Showing Investment Period, Payback Period and Benefit Realization Period²⁰

Looking at this from a BUSINESS CASE perspective, (which is the only VALID way to look at any project, whether from the standpoint of OWNER or CONTRACTOR), we can see very clearly there are three "stages" based on the CASH FLOWS from/to the OWNER. During the PROJECT EXECUTION phase or stage, the owner is INVESTING or SPENDING money either INTERNALLY or EXTERNALLY to a CONTRACTOR. ONLY the CONTRACTOR can realize benefits from the EXECUTION of the project, usually in the form of PROFITS and/or REPUTATION or maybe new KNOWLEDGE or INFORMATION. BUT it is only when the contractor turns the ASSET that was created by the project to the owner and the owner puts that ASSET in service or into operations that the ASSET can generate revenue or save money or otherwise make a MONETARY contribution, the objective being for the ASSET to at very least generate revenues, savings or other monetary benefits to the owner to at least cover the INVESTMENT costs. If PMI and the other professional societies required basic Economics as part of the necessary competencies to become a project manager, practitioners should understand this more clearly than they do. It is only AFTER the ASSET "created, acquired, updated, expanded, repaired, maintained by the project" has been put into service or operationalized AND has returned the original investment

²⁰ Adapted from Gary Heerken's "Project Managers MBA"

that we can say that it is adding a net POSITIVE "value" or "benefit" to the organization.

Stated more simply, from an OWNERS perspective, a PROJECT is an INVESTMENT or EXPENSE that creates one or more of the 5 ASSET CLASSES. When put in service or operationalized, the ASSET generates revenue or saves money and IF or WHEN that amount of money equals the INVESTMENT or EXPENSE COSTS, any EXCESS revenue or savings goes to making the organization more valuable.

Is There Any Connection Between PROJECT SUCCESS/FAILURE and ASSET SUCCESS/FAILURE?

There MAY or may NOT be any CORRELATION much less any CAUSAL relationship between the SUCCESS or FAILURE of the PROJECT and the SUCCESS or FAILURE of the ASSET the project produces.

In some cases, the answer is an absolute yes, as we know that being first to market has a major positive impact for a new product. The same with many of the commodities such as oil or gold, where prices fluctuate, it becomes critical to ensure that you are able to get product to market when the commodity price is high and the OWNER organization has the flexibility to "ramp up" and "ramp down" the project pipeline very quickly to account for fluctuations in commodity prices..

Having worked in "Big Oil," we know that there are some 20+ attributes that are included in the tornado or spider-graph sensitivity analysis, and often the COST of a project can actually double before it has a negative impact on the business case.

		The PRODUCT of the Project (the ASSET created by the PROJECT)	
		Succeeds	Fails
The PROJECT Undertaken to "create, acquire, upgrade, repair, maintain, expand and eventually dispose of ORGANIZATIONAL ASSETS"	Succeeds	Project Succeeds Product of the Project Succeeds	Project Succeeds Product of the Project Fails
	Fails	Project Fails Product of the project Succeeds	Project Fails Product of the Project Fails

Figure 8 Project Success/Failure vs. Asset Success/Failure Matrix

The classic example of a project failure and asset success being the Sydney Opera House, which from a project perspective was an ABYSMAL FAILURE- late, over budget, and plagued with quality problems, but the ASSET itself has become the iconic image of Sydney Harbour. This becomes important to understand when evaluating RISKS and OPPORTUNITIES as you have to look at the PROJECT risks/opportunities separate from the ASSET risks/opportunities before combining

them holistically. Is this REALITY covered anywhere in ISO 21502:2020? If not, why not?

How Does Taking an ASSET CENTRIC APPROACH Help Us Understand DELIVERY OPTIONS?

There is a spectrum of 5 "generic" options any organization can choose from to "create, acquire, update, expand, repair, maintain and eventually dispose of ORGANIZATIONAL ASSETS.

This includes not only the various PROJECT delivery options but also includes OPERATIONS as operations also produces ASSETS.

And there are only two primary variables that determine which of the ASSET DELIVERY OPTIONS is appropriate, and those are:

- 1) The degree or percentage of SCOPE or OBJECTIVE that is known at the start of the projects AND
- 2) How tolerant or willing the stakeholders are to accept or even EXPECT CHANGES.

If this is a valid explanation of project management as an ASSET DELIVERY SYSTEM, then why is it not reflected in ISO 21500:2020? Can anyone provide PROOF that this is NOT a valid construct?

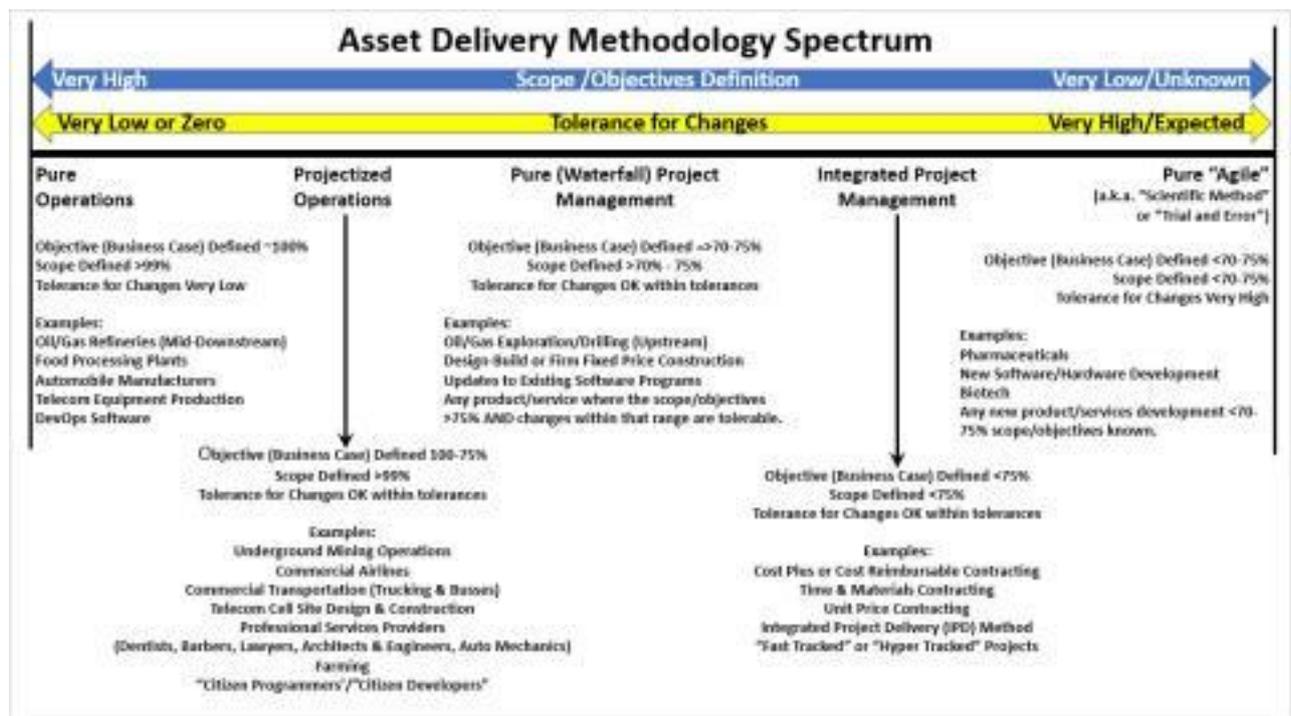


Figure 9- Asset Delivery Methodology Spectrum

For a more detailed explanation of Figure 9, go here- <https://pmworldlibrary.net/wp-content/uploads/2019/03/pmwj80-Apr2019-Giammalvo-Agile-is-not-a-subset-of-project-management.pdf>

As we can see from Figure 9, based on only two relatively easy or simple "tests," we can determine which of the ASSET DELIVERY options is most appropriate under any given set of

circumstances. This approach enables us to apply it to ANY project, not only IT projects but also construction, noting that IPD originated around early to mid-2000 with the US Associated General Contractors (AGC) rolling out what they called "Partnering"²¹ and at the same time, the American Institute of Architects (AIA) introduced their "Integrated Project Delivery"²² (IPD) Approach which applied the "Scientific Method to construction projects.

CONCLUSIONS AND RECOMMENDATIONS

Project Management is broken. PMI is finally admitting that after 35 years, their PMBOK Guide has not worked. ISO 21500, which had PMI's fingerprints all over it, also was not well received in the marketplace and now we have ISO 21502:2020 which is nothing more than a compilation of "sound bites" coming largely from the agile community with little or no reference to what has worked and what has not worked. Why are we so unwilling to look at 6000 years of history and using those "Lessons Learned" come up with a "model" that we know for a fact works? Doesn't everyone agree that this should be done BEFORE we start to automate any process that we are confident they are tested and proven to work first?

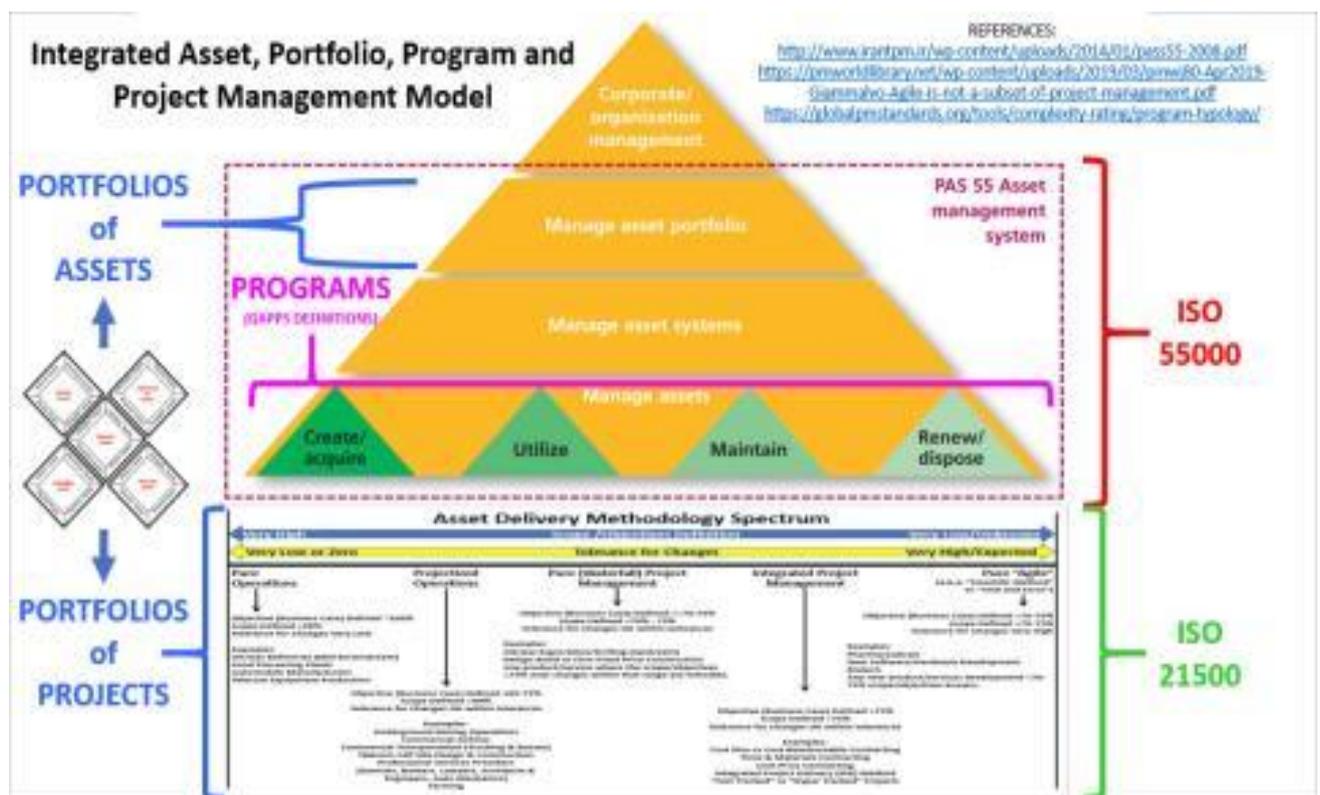


Figure 10- Global Version of the Esso/Diamond Shamrock Integrated Asset, Portfolio, Program and Project Management Methodology

This means we must COMBINE or INTEGRATE ISO 55000 with a totally revised and updated ISO 21502:2020, that is:

²¹ AGC Partnering Partnering Institute (N.D. <https://partneringinstitute.org/about/what-is-construction-partnering/>
²² AIA (2007) Integrated Project Delivery: A Guide” http://info.aia.org/siteobjects/files/ipd_guide_2007.pdf

- 1) Based on what we know for a fact has worked over the past 6000 years
- 2) That recognizes or accepts that there are some "best tested and proven" practices that are UNIVERSAL to ALL projects. (i.e. the use of Standardized, Multi-Dimensional WBS Structures or the use of Range Cost and Duration Estimating)
- 3) That recognizes or accepts that there are some processes, tools or techniques that may not be the same for all sectors or industries and enables or provides for CUSTOMIZATION

For the past 10+ years, two outspoken CRITICS of project management have been publishing their work. They are Prof. Bent Flyvbjerg, Oxford University and Senior Cost Estimator, Glenn Butts, NASA.

Both of them have been publishing not only a list of "root causes" underlying both project and asset failures but they have been proposing "cures" or "fixes" to these problems, which is inconceivable for any standard on project or asset management to ignore.

In 2019 PMI recognized the work of Prof. Flyvbjerg but instead of giving him yet another largely worthless piece of paper, why not RECOGNIZE his contribution by ADOPTING what he has been proposing for the past 10+ years?

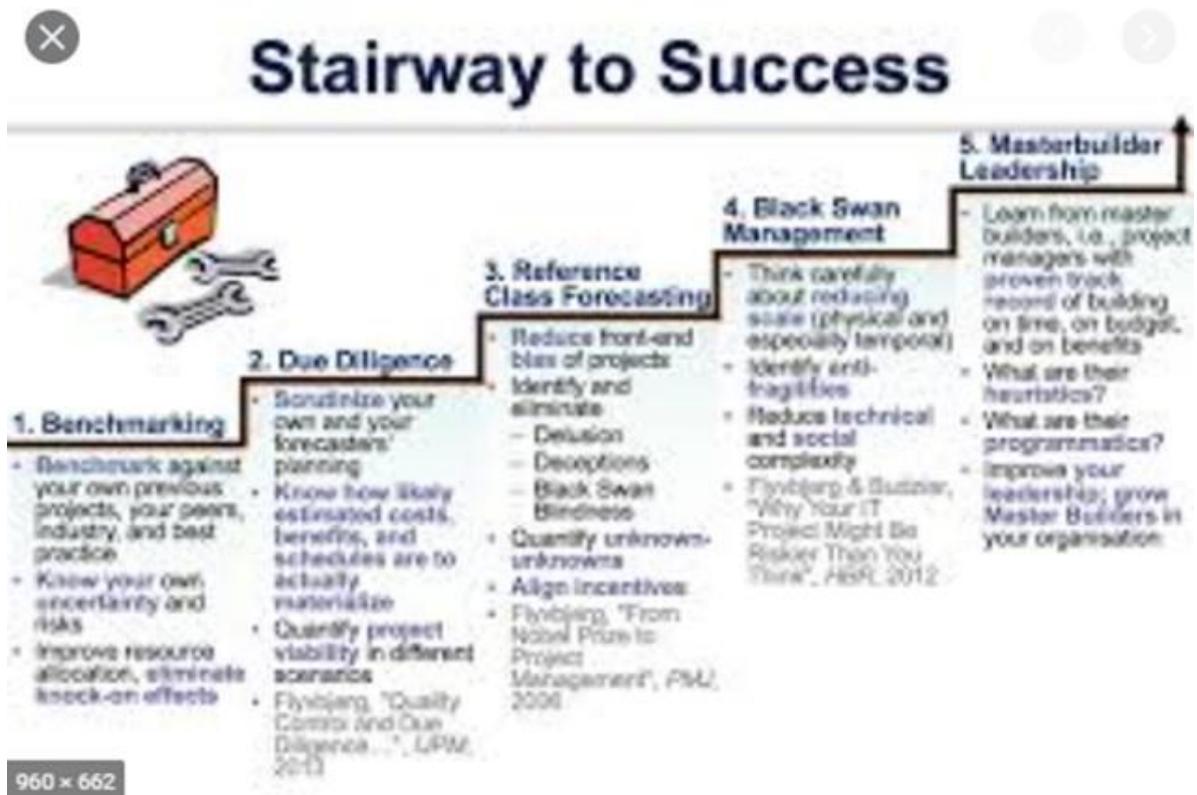


Figure 11- Flyvbjerg's "Stairway to Success"^{23, 24}

IF we want project management to work and BEFORE we start to implement "AI" and apply it to the project management processes, tools or techniques, we need to at least validate his recommendations by incorporating them into ISO 21502:2020.

This same philosophy applies to the research done by Glenn Butts, over at NASA. To their credit, NASA (which for many years has been a strong supporter of PMI under Dr. Ed Hoffman) has finally incorporated his recommendations into the NASA Cost Estimating Handbook²⁵

Here are the recommendations from Glenn Butts that ISO 21502:2020 as well as all other standards, need to adopt and continuously evaluate.

How Do We Underestimate?
- Let Me Count The Ways -

1. **OMIT PROBABLE SCOPE** from estimate
2. **OMIT POSSIBLE RISKS** from analysis
• Internal & External
3. **UNREALISTIC, OPTIMISTIC** assumptions
4. **Use historically LOW ESCALATION** projections
• RAND Study – Reason for 11.2% of Cost Growth
5. **Issue cost estimates in BASE YEAR** dollars
• Estimates should be in then year dollars (escalated to year in which it is spent)
6. **Many estimates NOT PREPARED BY A BONA FIDE ESTIMATOR**
• Everyone's a estimator
• Being certified no guarantee of having necessary experience
7. **REWARD failure, PUNISH honesty**
8. **NOT ENOUGH TIME** to prepare **CREDIBLE** estimates
• Time often spent doing "what if" exercises, or splitting dollars into arbitrary buckets

**RAND Study – Reason
for 74% of Cost Growth**

"I reject a system that rewards failure and protects a person from its consequences"
- Barack Obama -

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Figure 11- Glenn Butts Root Cause Analysis of why projects run late and/or over budget²⁶.

²³ 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
<https://arxiv.org/ftp/arxiv/papers/1409/1409.0003.pdf>

²⁴ Authors Note: For more on "Reference Class Forecasting see Stephen Paterson's Guild Expert Certification Paper "Comparison of 8 Common Cost Forecasting Methods" <https://peworldlibrary.net/wp-content/uploads/2018/01/pmwj66-Jan2018-Paterson-comparison-of-8-common-forecasting-methods-featured-paper.pdf>

²⁵ NASA (2008) Cost Estimating Handbook https://www.nasa.gov/pdf/263676main_2008-NASA-Cost-Handbook-FINAL_v6.pdf

²⁶ Butts, Glen (2010) <https://www2.slideshare.net/NASAPMC/glennbutts-mega-projects-estimates/12>

IF we want ISO 21502:2020 to be of any value as an input to those designing AI systems for PROJECT management and eventually integration into ASSET, PROGRAM and PORTFOLIO management SYSTEM, then we have no choice if we want to see "success" is to address these root cause problems in the ISO standards. (both ISO 21502 and ISO 55000)

About the Author



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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 the development and delivery of 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 oil, gas, mining and telecommunications 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 PhD in Project and Program Management through the Institute Supérieur De Gestion Industrielle (ISGI) and Ecole Supérieure De Commerce De Lille (ESC-Lille) under the supervision of Professor Christophe Bredillet. “Dr. PDG” can be contacted at pauldgphd@gmail.com.