



Smart Moves: AI in EV

Real-World Magic for Practical Minds Using AI
13 March 2024



Intro

Who's Implementing
AI in EV?



Meet the AI Practitioners

1.1 Amber Young

Physical Scientist - PARS System Co-owner,
DOE Office of PM (PM-30)

1.2 Craig Haseler

DOE PARS Technical Lead, TechSource

1.3 Luis Contreras

President / CEO, AzTech International

1.4 Elias Cooper

Technology & Software Development Lead,
AzTech International

1.5 Tim Fritz (Moderator)

Business Development / Earned Value
Management, AzTech International

Agenda



1.1 Objective

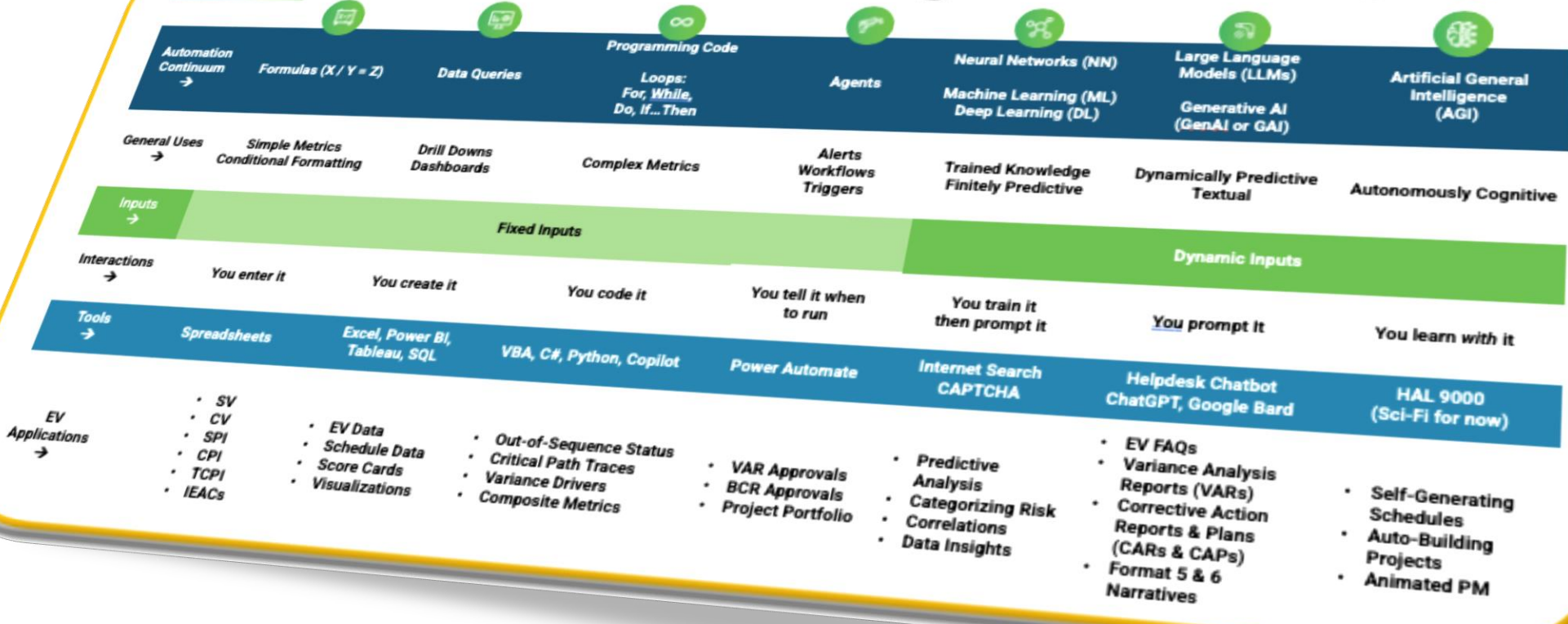
- Practical Application of Artificial Intelligence



1.2 Three AI Use Cases

- Reviews and Assessments
- Analytics and Metrics
- The Future: CARs and VARs

Earned Value & Artificial Intelligence Gold Card





Reviews & Assessments

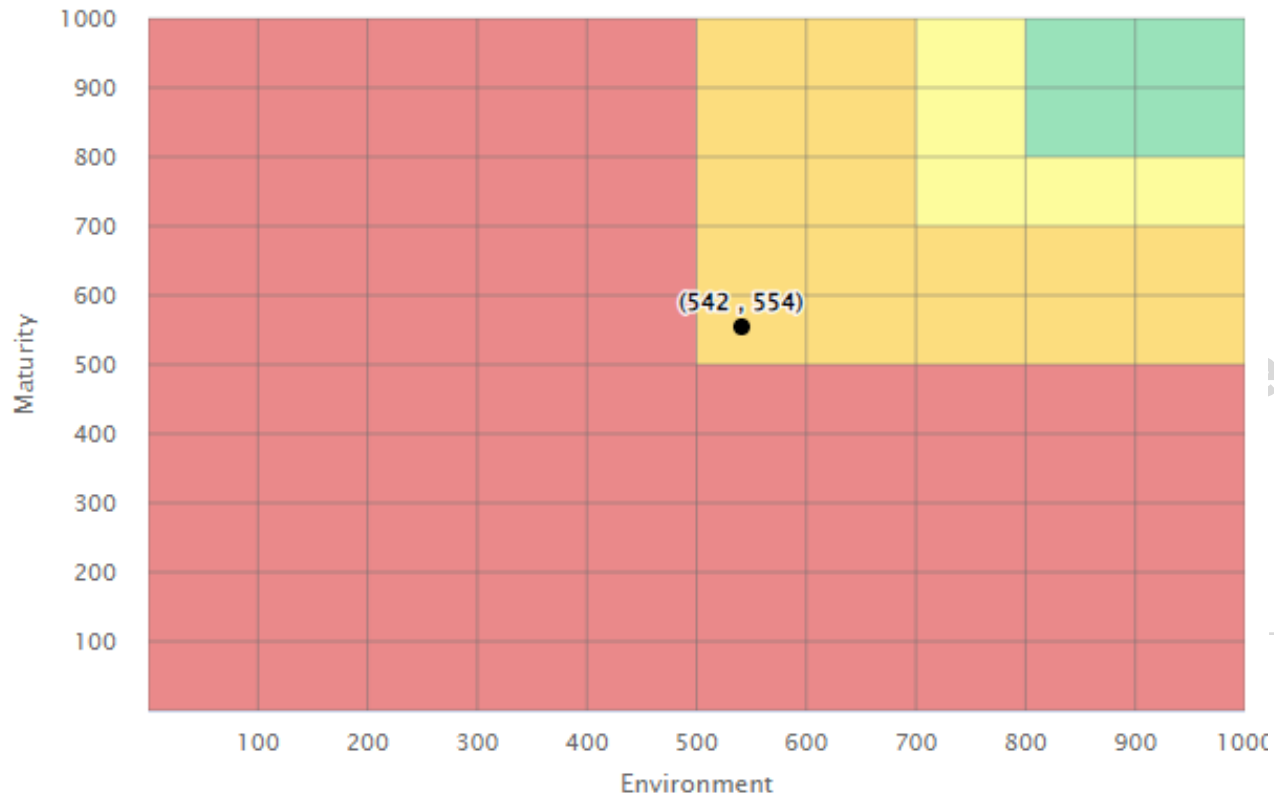
Use Case 1: DOE PM-30 SWOT Analysis



Reviews & Assessments

IP2M METRR:

Integrated Project / Program Management Maturity and Environment Total Risk Rating

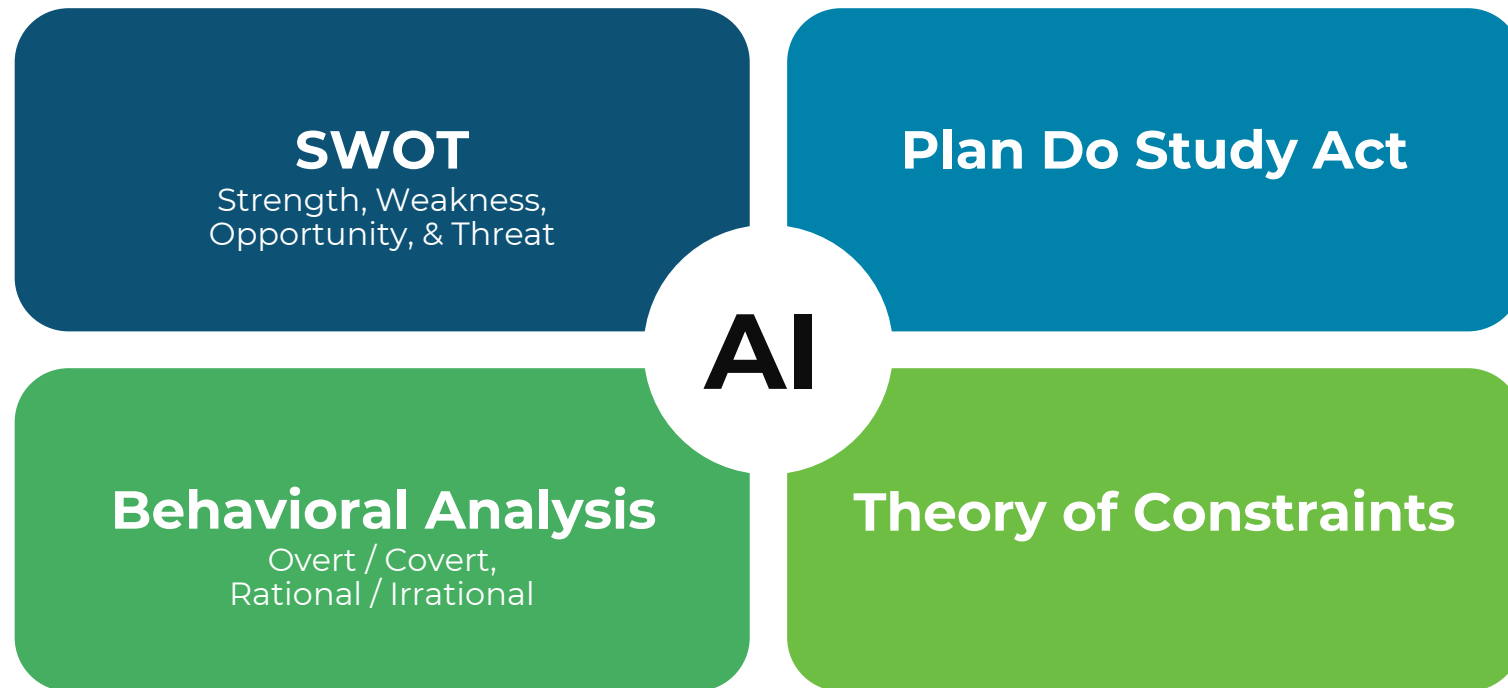


Zone	Range of weighted score	Mean Cost Growth
Green	Environment: 800 Maturity: 800	-0.3
Yellow	Environment: 700 Maturity: 700	+13.7
Orange	Environment: 500 Maturity: 500	+48.2
Red	Environment: < 500 Maturity: < 500	+92.3



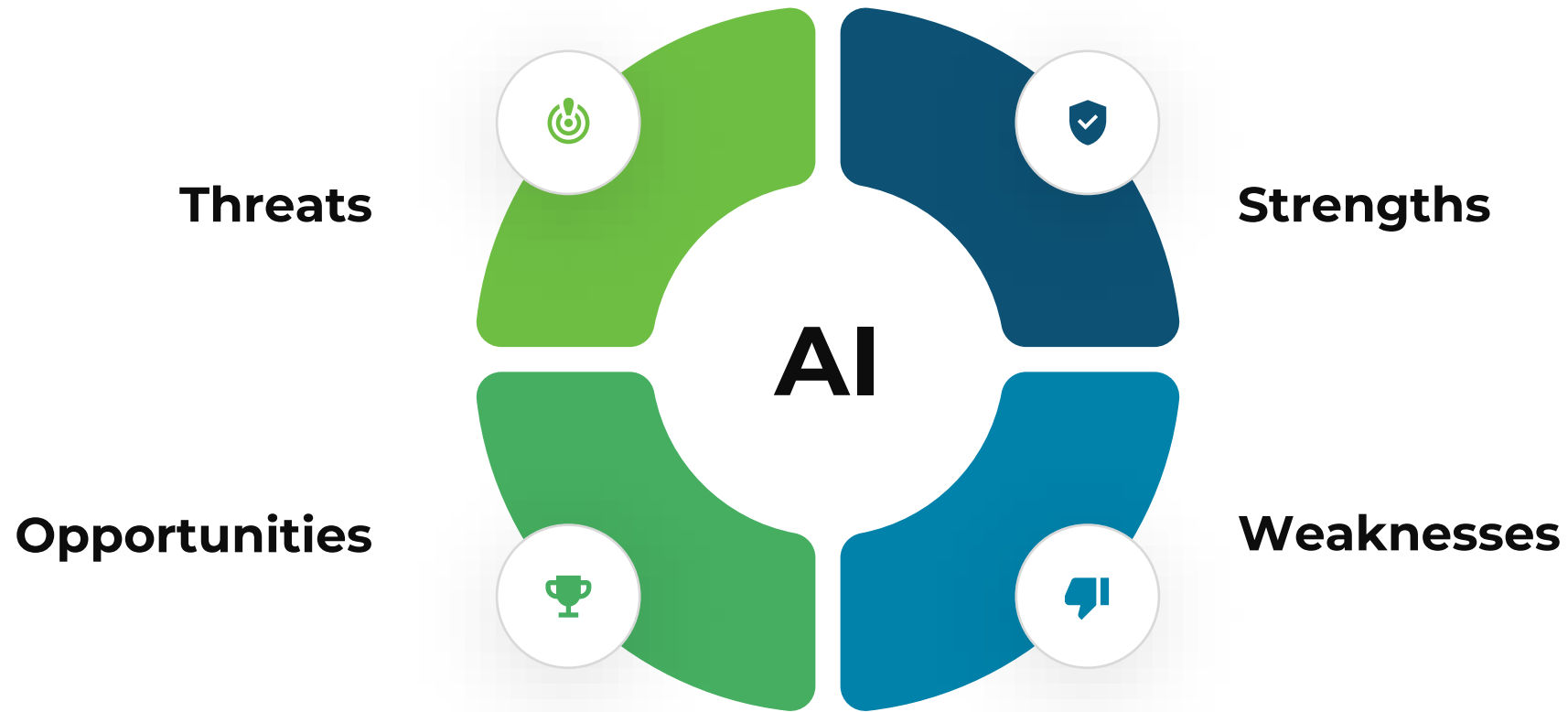
Analyzing Feedback: 1200+ Comments

AI summarizes large quantities of comments into any model:



Reviews & Assessments

Practical application of SWOT Analysis





Reviews & Assessments

SWOT Results:

1	Category	Colu	Statement	Associated Factors	Short Statement
2	Strength	1	Consistent Use and Promotion of EVMS: The project promc	1a, 1c, 2e, 3a	EVMS consistently applied and promoted at all levels
3	Strength	2	Data Accuracy and Trust in Reporting: The project manages	1b, 1d, 3d, 4a, 4e	Reliable single-source data reporting, ensuring transp
4	Strength	3	Effective Team Structure and Collaboration: The pairing of l	1f, 1g, 2a, 2e	Effective mentorship and high team collaboration.
5	Strength	4	Investments in Tools and Technology: The availability and r	1a, 2a, 4a	Commitment to EVMS through regular tool updates
6	Strength	5	Strong Engagement and Participation from Senior Leadersh	1a, 1d, 1e, 2c, 2d, 3e	Senior leadership actively engaged in decision-makin
7	Weakness	6	Communication Issues: This includes a lack of effective day-	1b, 1f, 1g, 3d, 3f	Communication gaps within team and leadership.
8	Weakness	7	High Turnover and Lack of Experience: This includes high lev	1a, 2a, 2b, 4a, 4c	High turnover and lack of EVMS standards familiarity
9	Weakness	8	Inconsistency in Standards and Procedures: This includes in	1b, 1d, 1f, 1g, 2f, 3d, 1d, 4a, 4e, 1d, 3a, 3c, 3d	EVMS standards and procedures inconsistently appli
10	Weakness	9	Issues with Tools and Software: This includes tools and soft	2e, 4a	Tools and software are cumbersome and poorly inte
11	Weakness	10	Workload and Resource Management: This includes unders	2a, 2f, 4a, 4b, 4c, 4d	Team understaffed, leading to overwork and resourc
12	Opportunity	11	Enhancing Communication and Collaboration: This includes	1b, 1f, 1g, 3d, 4f, 2a, 3g, 4c	Improve team communication and standardize repo
13	Opportunity	12	Enhancing Resource Allocation and Staffing: Hiring more st:	1b, 1f, 1g, 3d, 4f, 2a, 3g, 4c	Increase staffing to alleviate workload and enhance E
14	Opportunity	13	Improving Planning and Data Management: Improving the p	1a, 1b, 1e, 3a, 4a, 4e, 2e, 4a, 1g, 2a, 2e, 3d	Optimize planning and data management for better l
15	Opportunity	14	Improving System and Tools Usage: There is a need for bett	1a, 1b, 1e, 3a, 4a, 4e, 2e, 4a, 1g, 2a, 2e, 3d	Enhance tool integration and usage through training
16	Opportunity	15	Improving Training and Knowledge Sharing: There is a need	1a, 1b, 1e, 3a, 4a, 4e, 2e, 4a, 1g, 2a, 2e, 3d	Expand training resources to improve EVMS knowlec
17	Threat	16	Fear of retribution for sharing negative data affecting data	1b, 1d, 1f, 3d, 4e	Retribution fears may compromise data accuracy.

Prompting Guide



Do

- Be Specific
- Experiment
- Be Polite
- Use AI for Ideation



Don't

- Utilize Negative Prompts
- Trust the Models Blindly
- Use Mathematical Problems
- Expect Understanding of Internal Processes & Tools

Prompts Are Key!

Example Prompt

*“You are a professional data analyst working for the United States Dept of Energy (DOE). You are an expert in using Earned Value Management System to understand and analyze complex project data to help deliver project management excellence. You work to take complicated **concepts, ideas, and data** to make it something that's **accessible, understandable, and most importantly: Actionable**. Your goal is to...”*



State background, give model the right “mindset”. >

Repetitive language to guide towards a desired output >

Interrogating Output



- **“In some instances, we feel...”**
- **“I am not convinced the contractors...”**
- **“In general, I don’t feel the...”**
- **“The Program Team Leadership is committed to the use of EVMS.”**
- **“The customer is accepting and works within the principles of EVMS.”**
- **“The site FPD is very supportive and committed to EVMS.”**



- **Unexpected and unwanted results.**
- **Emotive, unprofessional, reductive answers.**
- **Rethink a prompt? Is this the right approach?**
- **Verify output sensible and trustworthy**

Analytics and Metrics

Use Case 2: Data Quality Checks & Walt!





Analytics & Metrics

AI Assisting Data Integrity Quality (DIQs) Checks

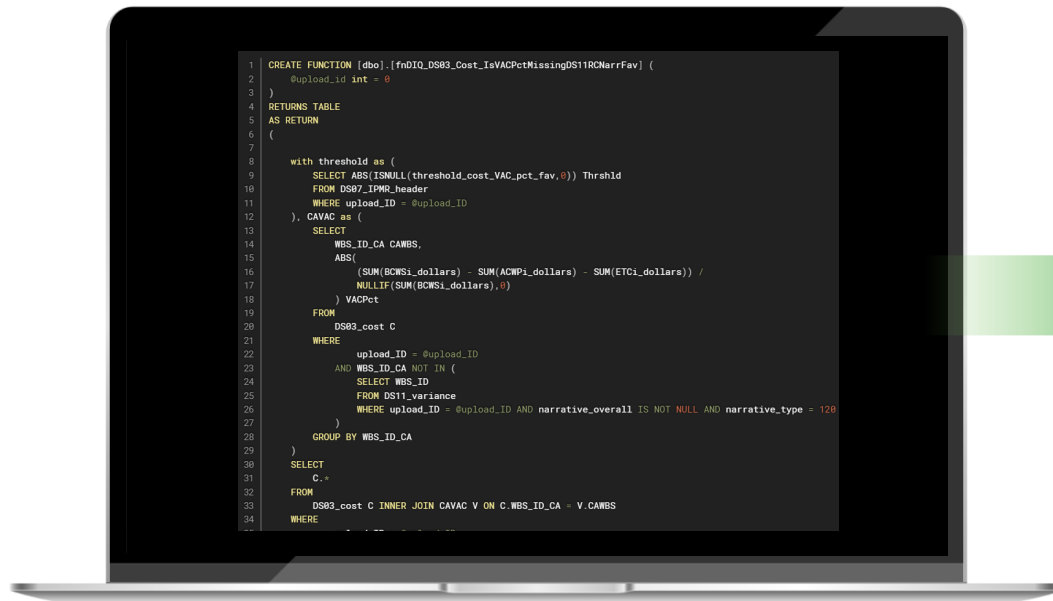
How are we using AI to check data quality, and why?

```

1 CREATE FUNCTION [dbo].[fnDIQ_DS03_Cost_IsVACPctMissingDS11RCNarrFav] (
2     @upload_id int = 0
3 )
4 RETURNS TABLE
5 AS RETURN
6 (
7
8     with threshold as (
9         SELECT ABS(ISNULL(threshold_cost_VAC_pct_fav,0)) Threshld
10        FROM DS07_IPMR_header
11        WHERE upload_ID = @upload_ID
12     ), CAVAC as (
13         SELECT
14             WBS_ID_CA CAWBS,
15             ABS(
16                 (SUM(BCWSi_dollars) - SUM(ACWPI_dollars) - SUM(ETCi_dollars)) /
17                 NULLIF(SUM(BCWSi_dollars),0)
18             ) VACPct
19         FROM
20             DS03_cost C
21         WHERE
22             upload_ID = @upload_ID
23             AND WBS_ID_CA NOT IN (
24                 SELECT WBS_ID
25                 FROM DS11_variance
26                 WHERE upload_ID = @upload_ID AND narrative_overall IS NOT NULL AND narrative_type = 120
27             )
28         GROUP BY WBS_ID_CA
29     )
30     SELECT
31         C.*
32     FROM
33         DS03_cost C INNER JOIN CAVAC V ON C.WBS_ID_CA = V.CAWBS
34     WHERE

```

Analytics & Metrics



```

1 CREATE FUNCTION [dbo].[fnDIO_DS93_Cost_IsVACPctMissingDS11RCNarrFav] (
2     @upload_id int = 0
3 )
4 RETURNS TABLE
5 AS RETURN
6 (
7     with threshold as (
8         SELECT ABS(ISNULL(threshold_cost_VAC_pct_fav,0)) Threshld
9         FROM DS97_IPMR_header
10        WHERE upload_ID = @upload_ID
11     ), CAVAC as (
12        SELECT
13            WBS_ID_CA CAMBS,
14            ABS(
15                (SUM(BCWS1_dollars) - SUM(ACWP1_dollars) - SUM(ETC1_dollars)) /
16                NULLIF(SUM(BCWS1_dollars),0)
17            ) VACPct
18        FROM
19            DS93_cost C
20        WHERE
21            upload_ID = @upload_ID
22            AND WBS_ID_CA NOT IN (
23                SELECT WBS_ID
24                FROM DS11_variance
25                WHERE upload_ID = @upload_ID AND narrative_overall IS NOT NULL AND narrative_type = 128
26            )
27        )
28        GROUP BY WBS_ID_CA
29     )
30     SELECT
31         C.*
32     FROM
33         DS93_cost C INNER JOIN CAVAC V ON C.WBS_ID_CA = V.CAMBS
34     WHERE

```

- What causes this error?
- Why do we check this?
- How do we fix this?



Analytics & Metrics

Human Review is Key: Substantially quicker to review and edit a response



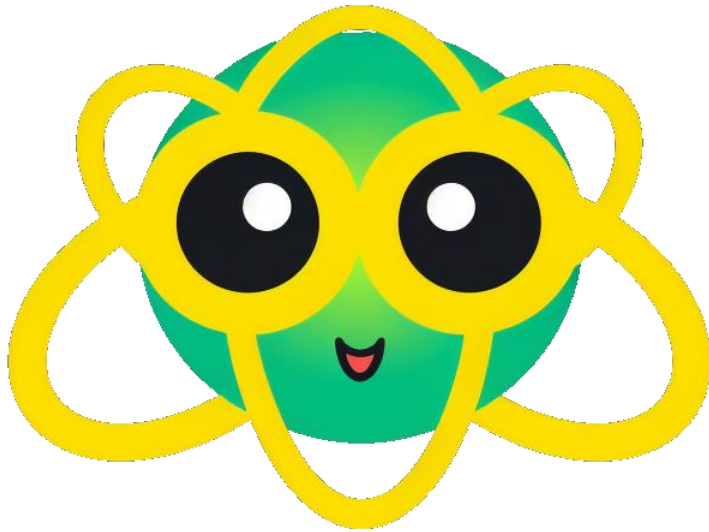
Just the First Tier of Support: Live & available to contractors anytime



AI Scripting – 2 days, 500+ hours saved: No time to spare, AI allowed efficiency



Analytics & Metrics



PARS & WALT



Who's Walt? The personality behind DOE's version of ChatGPT

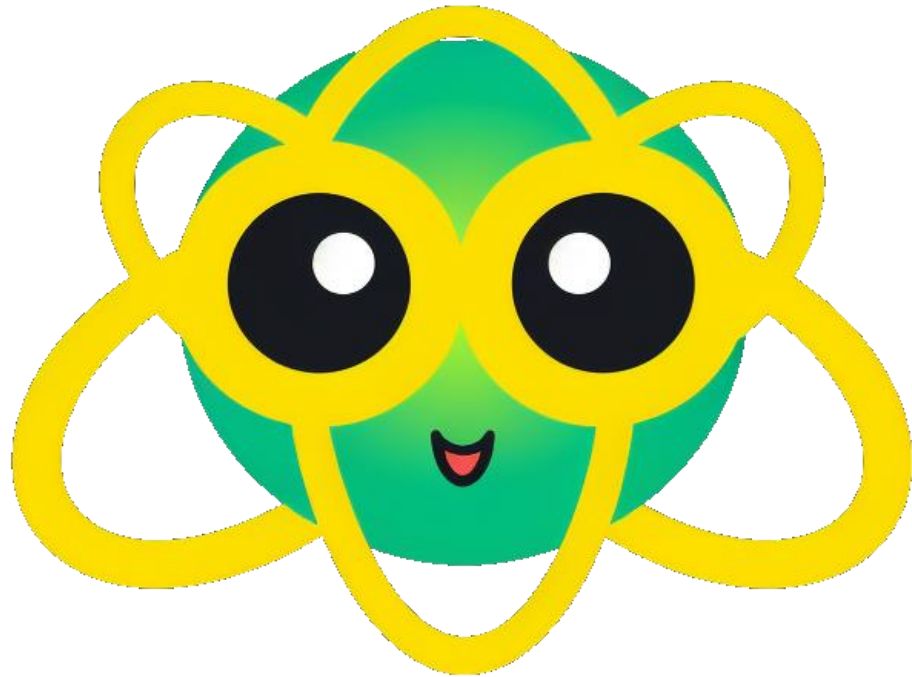


Secure for DOE data, ChatGPT for Government



Used by DOE PM From Leadership to Analysts

DOE Walt Demo





CH

please write an outline for a professional industry newsletter article about the PM-30 development of new data integrity and quality (DIQ) metrics as well the updated compliance metrics new version 5 that is to be released in quarter three of calendar year 2024. not that there are new diq specifications on a wiki page and that there is a new DIQ Report version 0 available now. Note that there is a transition from old data format CSV to new data format JSON occurring now that the DIQ are written against. The new compliance metrics v5 will align to new JSON schema



Title: "Elevating Project Management: PM-30's Innovative Approach to Data Integrity and Quality Metrics"

I. Introduction A. Overview of PM-30's mission and recent achievements B. Introduction to the new Data Integrity and Quality (DIQ) metrics C. Preview of the Compliance Metrics Version 5 release

II. The Evolution of DIQ Metrics A. The importance of data integrity and quality in project management B. The development process of the new DIQ metrics C. Highlights of the DIQ specifications available on the wiki page

III. DIQ Report Version 0: A Glimpse into the Future A. Features and functionalities of the DIQ Report Version 0 B. How the report serves as a precursor to the upcoming changes C. Early feedback and implications for project management

IV. Transitioning to a New Data Era A. The shift from CSV to JSON data formats B. Advantages of JSON for data integrity and compliance C. Strategies for managing the transition effectively

V. Compliance Metrics Version 5: Synchronized with Innovation A. Key updates and enhancements in Version 5 B. How the new compliance metrics align with the JSON schema C. Expected impacts on project oversight and reporting

VI. Preparing for the Release in Q3 2024 A. Timeline and milestones leading up to the release B. Training and support for PM-30 personnel and stakeholders C. Communication strategies to ensure a smooth rollout

VII. Conclusion A. Recap of the significance of PM-30's DIQ and compliance metrics initiatives B. The anticipated benefits for the Department of Energy and beyond C. Call to action for industry professionals to engage with the new standards

VIII. Additional Resources A. Links to the DIQ specifications on the wiki page B. Access information for the DIQ Report Version 0 C. Contact information for further inquiries and support

3/18/2024, 2:48:03 PM

⊗ Stop generating

Send a message.





PARSGPT

User Guide

Release Notes

V. Compliance Metrics Version 5: Synchronized with Innovation A. Key updates and enhancements in Version 5 B. How the new compliance metrics align with the JSON schema C. Expected impacts on project oversight and reporting

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Great, thank you! Let's work together to fill in each section. Please ask me questions on each section that will give you content needed to write one paragraph to two paragraphs for that section. After I answer the questions, please write the paragraph for that section. Let's start with section I and then move to the next. Please start



Certainly, let's begin with Section I. To craft a compelling introduction, I have a few questions:

Can you provide a brief description of PM-30's mission and any notable achievements, particularly those that relate to data management or project controls?

What are the core objectives of the new Data Integrity and Quality (DIQ) metrics?

How do these new DIQ metrics represent an advancement over previous versions?

Could you give a brief teaser about what makes the upcoming Compliance Metrics Version 5 exciting or innovative?

Is there a specific message or sentiment you'd like to convey to the readers right from the start?

Once you provide this information, I'll draft the introduction for the newsletter article.

3/18/2024, 2:51:46 PM

Regenerate

Send a message.



CH

Answers to section 1 questions:

PM-30's Role and Achievements:

Could you provide a brief description of PM-30's mission within the DOE and any notable achievements or recognitions they've received recently? --- PM-30 recently received the DOE Secretary's Appreciation Award in recognition of PM-30- for their exceptional dedication and commitment to project management excellence. Through the development and deployment of advanced analytical tools PM-30 enabled federal project directors and headquarters program managers to perform detailed analysis of cost and schedule performance trends and forecast future performance

How has PM-30 contributed to the advancement of project management practices within the DOE? Importance of DIQ: In your view, why is Data Integrity and Quality crucial for project management, especially within the context of DOE? -- - to follow the EFCOG standard for current, accuratem completel, repeatable, auditable, and compliant (CACRAC) data. bad data in, bad decisions out. need quality data to make informed decisions.

Are there any specific challenges or opportunities that have emerged recently which make the focus on DIQ more pertinent? --- transition to JSON

New Developments Preview: What are the expected outcomes or benefits from the new DIQ metrics and Compliance Metrics Version 5? --- alignment with IP2M METRR, more robust data quality checks.

Is there a specific goal or problem that these new developments aim to address? --- consistent format of data in more robust JSON schema



Section I: Introduction

In the dynamic landscape of project management, PM-30 stands as a beacon of innovation and excellence within the Department of Energy (DOE). Celebrated for their unwavering dedication to project management excellence, PM-30 has recently been honored with the DOE Secretary's Appreciation Award—a testament to their success in enhancing analytical capabilities for federal project directors and headquarters program managers. By enabling meticulous analysis of cost and schedule performance trends, PM-30 has paved the way for forecasting future performance with unprecedented precision.

Data Integrity and Quality (DIQ) are the cornerstones of sound project management. Adhering to the EFCOG standard for data that is current, accurate, complete, repeatable, auditable, and compliant (CACRAC), PM-30 has laid the foundation of informed decision-making lies in the quality of the data input. In a world where "bad data in" can lead to

Send a message. a
can build its future strategies.

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New Developments Preview: What are the expected outcomes or benefits from the new DIQ metrics and Compliance Metrics Version 5? --- alignment with IP2M METRR, more robust data quality checks.

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Section I: Introduction



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Data Integrity and Quality (DIQ) are the cornerstones of sound project management. Adhering to the EFCOG standard for data that is current, accurate, complete, repeatable, auditable, and compliant (CACRAC), PM-30 recognizes that the foundation of informed decision-making lies in the quality of the data input. In a world where "bad data in" can lead to "bad decisions out," the stakes are high. The transition to a new data format, JSON, is not just a technical update—it's a strategic move to ensure that data is more than just numbers and figures; it's the reliable bedrock on which the DOE can build its future strategies.

The upcoming release of the new DIQ metrics and Compliance Metrics Version 5 is set to be a game-changer. These developments promise to align with the Integrated Project and Portfolio Management (IP2M) METRR system, introducing more robust data quality checks and ensuring that the data's integrity is beyond reproach. The goal is clear: to create a consistent format of data in a more robust JSON schema, enabling the DOE to continue its legacy of excellence in project management. As we stand on the cusp of these exciting advancements, the industry is poised to witness a transformative shift in how project data is managed, analyzed, and utilized for the betterment of project outcomes and strategic decision-making.

3/18/2024, 2:52:36 PM

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3/18/2024, 2:52:36 PM



please condense to 1-2 paragraphs, each section should be only 1-2 paragraphs



Section I: Introduction

PM-30, a pillar of project management within the Department of Energy (DOE), has been recently lauded with the DOE Secretary's Appreciation Award, underscoring their commitment to excellence. This division has revolutionized project oversight by equipping managers with advanced tools for in-depth analysis of cost and schedule trends, setting a new standard for forecasting and performance assessment. At the heart of their mission lies the principle of Data Integrity and Quality (DIQ), ensuring that every decision is informed by data that is current, accurate, complete, repeatable, auditable, and compliant (CACRAC).

The impending release of the new DIQ metrics, coupled with Compliance Metrics Version 5, heralds a significant leap forward. These initiatives are poised to synchronize with the Integrated Project and Portfolio Management (IP2M) METRR system, introducing stringent data quality checks and embracing the robust JSON format. This strategic transition is designed to streamline data consistency and fortify the integrity of project management practices, propelling the DOE towards a future where data-driven decisions are made with unparalleled confidence.

3/18/2024, 2:55:35 PM

Regenerate

Send a message.



Analytics & Metrics



Measuring Productivity

Team Usage



02/01/2024 - 02/29/2024



Real Time Users
7 In last 24 hours



Time Saved
20 Hours



Percent Code Written

45%

Percentage of new code written by Codeium for active users



Total Estimated Value Saved

\$2,012 USD

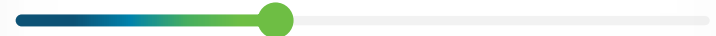
Based on \$200,000 engineer compensation (\$100 / hr)



Completions (7 Days)
811 + 103.8%



Total Users
7 Users



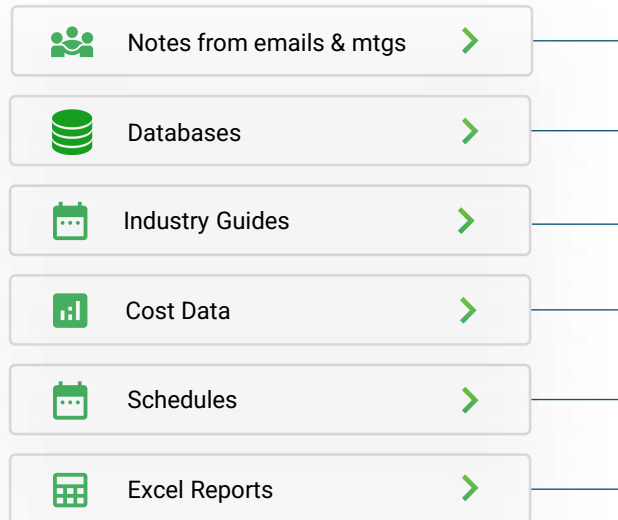
The Future: CARs & VARs

What If...?

CARs and VARs

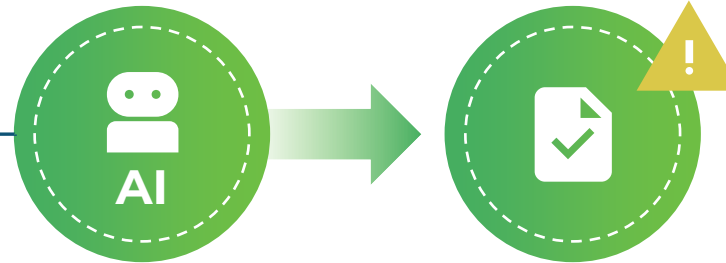
Leveraging AI & Optimizing Reports

Inputs



THE GOAL

A draft report that fills in most of the narrative. Content that is time consuming to initially complete.



DRAFT



This is an 80% solution that needs to be sanity checked by a human and completed



**Q: How can
you use AI in
your work?**



Thank You!

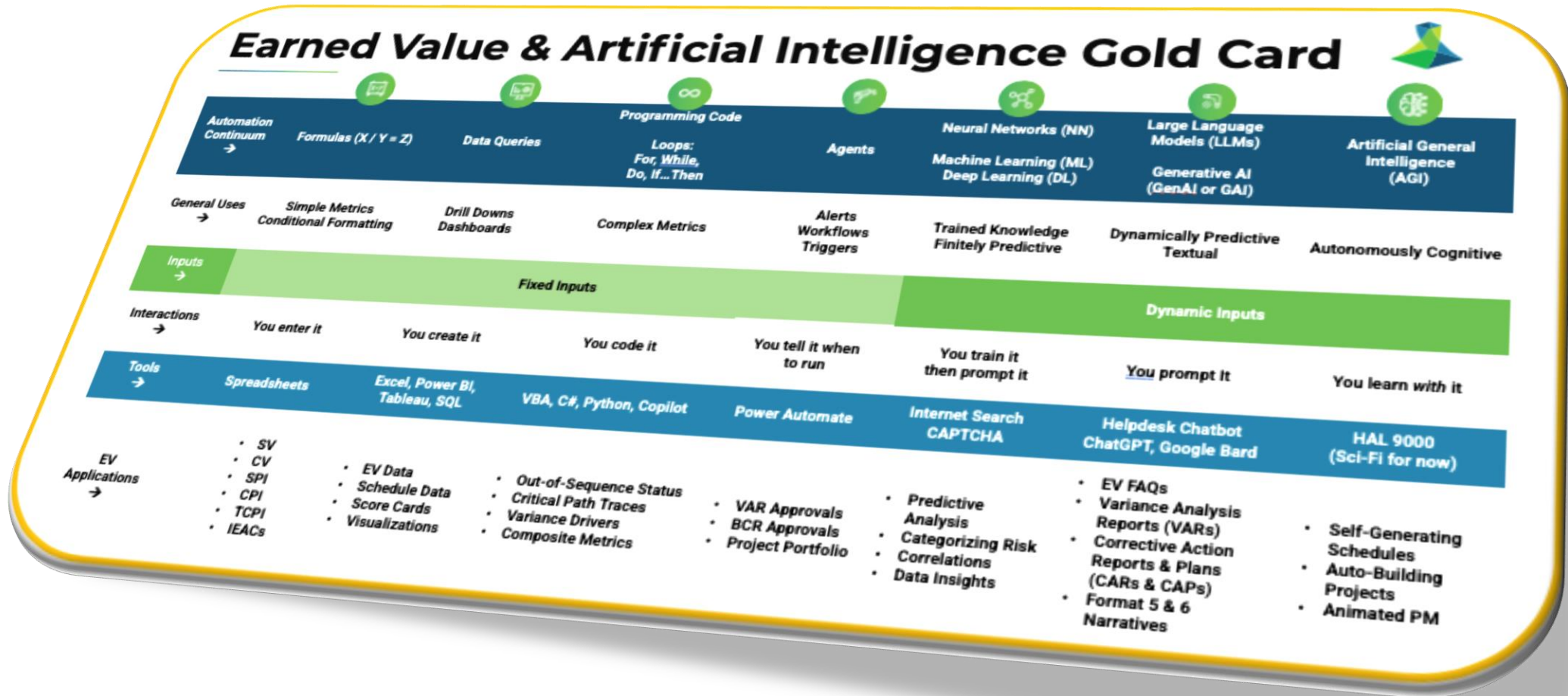
Questions, Comments, Ideas – We love hearing it all!

Connect:

Timothy.Fritz@goAzTech.com

www.goAzTech.com





Ask Tim for the EV & AI Gold Card