POWERS OF 2:
A NEW APPROACH FOR MACHINE LEARNING PRODUCT MANAGEMENT

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In the rapidly evolving field of artificial intelligence (AI) and machine learning (ML), managing projects can be as nuanced and complex as the algorithms that power them. Traditional project management methodologies often fall short when applied to the unique challenges of ML projects. Agile practices have been with us for over 30 years and have been very effective for software product development. The Product Backlog with Epics and User Stories have helped teams focus on delivering value to users and building empathy. It has been a great way to align everyone involved in the development of a product. We're much more focused on the user experience. Now, we are entering into a new era that is primarily focused on data, the new currency in artificial intelligence.

In dealing with organizations that have data at the center of their universe, I find that they struggle trying to force-fit techniques from software development into ML. The result often becomes frustration, resentment, and a distain for agile practices. We need to recognize that the goal is never agile, scrum, or user story formats…it's to deliver value…full stop. So, there are several adjustments that need to be made to our techniques that once again in our industry's history, fly in the face of what we've become comfortable with. Yes, it's time to change again!

Some of the adjustments I've seen teams make is in the product backlog. Since the core development involves primarily data, where there isn't a user in the loop, their user stories are about what the engineers/developers need to do. For example, "**As a data engineer, I need to...**". This is what I see as forcing the concept of the user story just to blindly 'comply' with a standard format. The User Story approach was introduced in the late 90's as we were trying to get away from 'system requirements' from big government projects, and get more aligned to consumer product development of software, focused on the user experience.

With the complexity and evolutionary nature of data preparation, model development, deployment, and operations, and the work being highly technical in nature, we need a new way to create a product backlog. The product backlog is a great way to align everyone, keep the focus on delivering value, and improving organizational communications, we just need a better way to populate it.

That's why I'm introducing the Power of 2 approach to creating a product backlog that's custom-built for the intricacies of ML initiatives.

This approach is structured around **four pivotal areas:**

PROBLEMS TO BE SOLVED (P2BS) — PREVIOUSLY PRODUCT GOAL
Start with the end in mind. Define the core objectives that your ML project aims to achieve. Whether it's enhancing user experience, reducing operational costs, or breaking new ground in predictive analytics, your vision sets the direction for everything that follows.

Clearly defining the problem to be solved sets the stage for all subsequent work and ensures that the project's direction is aligned with its ultimate goals. The P2BS should capture the current state (problem statement, people affected); a potential solution approach (data that can be used); and a desired future state. In some of the existing methods for data driven projects (e.g., CRISP-DM, CPMAI), this is the Business Understanding.

AREAS TO EXPLORE (A2E) — PREVIOUSLY EPICS
Once the problem is defined, we break it down into broader work categories, or Areas to Explore (A2E). Each A2E represents a significant area of exploration that contributes to solving the overarching problem.

QUESTIONS TO BE ANSWERED (Q2BA) — PREVIOUSLY USER STORIES
With each Area to Explore comes a set of critical questions that drive the project's research and development. These questions help to focus efforts and ensure that the team is not just doing work, but also seeking answers that are vital to the project's success. So, our user story format changes to a question that we'd like to answer! This will keep everyone curious and engaged, not ticked off about trying to force their work into a goofy format that doesn't align with what they do.

"STUFF" TO GET DONE (S2GD) — PREVIOUSLY TASKS

The final layer translates A2E and Q2BA into concrete tasks that the team needs to complete. This is where we identify the actionable items that move us in the direction of generating learning that enables us to find answers our questions, and probably create more questions. This is the backbone of the day-to-day work that will bring the ML project to life. A good agile practice is to have the procedural Definition of DONE which serves to make sure we are maintaining a good quality level. This is going to be very important moving forward as there has already been a lot of 'data debt' and 'model debt' already created by earlier adopters.

To illustrate this approach, let's look at an example:

EXAMPLE: PREDICTIVE MAINTENANCE FOR MANUFACTURING

P2BS: Reduce Downtime and Maintenance Costs
Objective: Implement a predictive maintenance system that forecasts equipment failures, reducing downtime and maintenance costs.

A2E: Equipment Sensor Data
Focus: Develop a machine learning model that can predict equipment failure based on sensor data.

Q2BA: Key Questions for Model Accuracy

- What patterns in the sensor data indicate an impending failure?
- How far in advance can we accurately predict equipment failure?
- What is the trade-off between prediction accuracy and lead time?

S2GD: Tasks to Build the Predictive Model

- Data Collection Task: Gather and preprocess historical sensor data from equipment.
- Feature Engineering Task: Identify and engineer features from sensor data that correlate with equipment failures.
- Model Training Task: Train various ML models and select the one with the best performance.
- Deployment Task: Deploy the model into the production environment and integrate it with the maintenance scheduling system.

By adopting this structured approach, ML projects can be managed more effectively, ensuring that every task performed is a step toward answering the key questions and solving the core problem. This approach not only organizes work but also encourages innovation and strategic thinking.

As we continue to push the boundaries of what's possible with machine learning, and move it to many more consumers, having a robust product management approach becomes increasingly important. The Powers of 2 approach offers a tailored solution that addresses the unique needs of ML projects, paving the way for more successful outcomes and groundbreaking advancements in the field.

For an easy-to-follow overview that helps translate this approach into practice, refer to the following information sheet.

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MACHINE LEARNING PROJECT STRUCTURE:
FROM VISION TO EXECUTION

In today's fast-paced landscape of machine learning and AI development, organizing projects with clarity and purpose is critical to success. This structured approach breaks down complex initiatives into four pivotal areas. Each layer builds upon the previous, ensuring that the project stays grounded in real business needs while encouraging curiosity, agility, and actionable progress. This framework not only enhances alignment across teams but also minimizes technical debt, paving the way for scalable, insight-driven outcomes.

PROBLEMS TO BE SOLVED (P2BS) - PREVIOUSLY PRODUCT GOAL

Start by defining the ultimate goal your machine learning project aims to achieve and the problem it intends to solve.

- Clearly state the problem and the current state
- Identify the people affected
- Outline a potential solution approach using data
- Describe the desired future state
- Aligns with "Business Understanding" in CRISP-DM or CPMAI

AREAS TO EXPLORE (A2E) - PREVIOUSLY EPICS

Break down the overarching problem into key thematic areas that guide focused exploration and development.

- Define broader categories of work
- Ensure each area contributes to solving the core problem
- Use these to scope work across teams and phases

QUESTIONS TO BE ANSWERED (Q2BA) - PREVIOUSLY USER STORIES

Transform each area of exploration into specific, curiosity-driven questions that steer the project's learning and discovery.

- Replace traditional user stories with questions
- Focus on insight generation, not just execution
- Keep the team engaged and aligned on discovery goals

"STUFF" TO GET DONE (S2GD) - PREVIOUSLY TASKS

Translate questions and exploration into actionable tasks that move the project forward and generate valuable insights.

- Break work into concrete tasks
- Define and follow a Definition of Done
- Prioritize learning outcomes and quality delivery
- Avoid accumulating data and model debt

AI STRATEGY & AGILE IMPLEMENTATION ADVISORY

Turning AI potential into real-world outcomes through strategic alignment, Agile execution, and responsible innovation.

AI isn't magic—it's a value-driven, human-centered transformation. We deliver strategic guidance grounded in over 40 years of experience across software, systems, and organizational development. Designed to drive real outcomes, it combines pragmatic AI strategy, product leadership, and Agile execution with proven delivery practices and emerging technologies to help organizations realize the full potential of AI.

WHAT WE OFFER:

- **AI Strategy & Project Initiation Workshops:** Customized sessions designed to clarify AI objectives, align stakeholders, and structure projects for success using frameworks like CPMAI—before any tools are purchased or models are built.
- **AI Project Management Coaching:** Hands-on training and coaching for Project Managers applying Agile practices to AI initiatives, including webinar delivery through Scrum Alliance, PMI, and other professional channels.
- **AI Adoption Strategy:** Executive-level guidance through AI readiness assessments and roadmap development, with a focus on ethical AI, organizational capability, and outcome-driven alignment.
- **CPMAI-Aligned Frameworks:** Practical application of the CPMAI model to bridge business needs with the technical phases of machine learning design, ensuring structured and scalable AI development.
- **AI Product Development:** Advisory support across the GenAI product lifecycle—from user story mapping to MVP delivery—emphasizing iterative learning and continuous improvement.
- **AI in Regulated Industries:** Strategic planning for responsible AI implementation in sectors with strict compliance requirements, such as healthcare, education, and financial services.
- **AI Project Health Check-Ups:** Mid-flight assessments that evaluate progress, identify misalignments, and deliver actionable recommendations to get AI initiatives back on track.
- **AI Project Rescues:** Emergency support for stalled or struggling projects—combining calm leadership, deep expertise, and diagnostic insight to restore momentum and executive confidence.

WHY PARTNER WITH US?

- No-Hype, Outcome-Focused AI: Actionable strategies rooted in Agile delivery and aligned to real business value.
- Executive-to-Engineering Fluency: Trusted guidance that bridges vision and execution, aligning leadership goals with technical delivery.
- Proven, Cross-Disciplinary Experience: Decades of hands-on expertise in product, process, and people—bringing clarity and momentum to complex AI initiatives.

AGILE & AI EXPERT:

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