



The Dual-Lens Product Owner: Bridging Strategy and Engineering in Agile Product Leadership

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Abstract: As Agile product development grows more complex, the traditional responsibilities of Product Owners (POs) have undergone a profound transformation. Once confined to backlog management and acting as a liaison between stakeholders and the Scrum team, today's Product Owner is expected to operate at the intersection of strategic business leadership and technical execution. This article presents the evolution of the PO role in response to mounting industry challenges—such as increased technical complexity, stakeholder fragmentation, the burden of technical debt, and the growing need for data-informed decisions.

To meet these demands, the article introduces the Dual-Lens Product Owner framework, a model that integrates strategic product management with engineering fluency. Unlike traditional Technical Product Owners who often operate within delivery teams, Dual-Lens POs actively shape long-term product strategy, influence system design decisions, and lead cross-functional collaboration with both business and technical stakeholders.

The framework includes a maturity model, actionable practices, and tool recommendations—particularly those powered by AI—to help individuals and organizations assess and elevate their PO capabilities. It also features insights from real-world case studies illustrating both the benefits and pitfalls of technical depth in the PO role. Ultimately, this model promotes a more adaptive, resilient, and outcome-driven approach to product ownership—crucial for thriving in the next phase of Agile evolution.

Keywords: Product Owner, PO, Dual-Lens Product Owner, Strategic Product Owner, Technical Fluent Product Owner, Agile Product Owner, Product Owner Maturity Model, Scrum Product Owner, Technical Product Owner (TPO)

1. Introduction

In recent years, Agile practices have encountered a range of difficulties—many of which have intensified as we move into the future. From stagnant "Zombie Agile" routines to issues with scaling and rising burnout rates, these obstacles are significant. Yet, they also offer a chance to reimagine and strengthen Agile methodologies. One of the most notable areas undergoing transformation is the role of the Product Owner (PO), which has evolved considerably in response to these challenges..

Once a straightforward position focused mainly on managing the product backlog, today's PO operates within a far more dynamic and complex environment. Modern Product Owners are expected to combine strategic thinking, technical awareness, and cross-functional collaboration to deliver value. Their scope of influence has expanded well beyond the Scrum team, making them a key driver in navigating Agile's evolution.

From Traditional to Modern: How the PO Role Has Shifted

The responsibilities of Product Owners have evolved significantly. Below is an overview of the primary areas of change:

1. Backlog Ownership

- Before: POs had sole control over the backlog and made independent decisions.



○ Now: This responsibility is shared with Product Managers and analysts, bringing broader insights but increasing the need for alignment.

2. Prioritization

○ Before: Decisions were often based on gut feeling or simple prioritization models.

○ Now: POs use data-driven, collaborative approaches that incorporate input from UX, business, and tech teams.

3. Stakeholder Engagement

○ Before: The PO was the primary communication bridge between stakeholders and the Scrum team.

○ Now: Stakeholder communication is more distributed across PMs, marketers, and designers, adding richness but sometimes slowing decisions.

4. Strategic Involvement

○ Before: The role focused mostly on operational tasks like sprint planning.

○ Now: POs are involved in aligning the product with long-term business goals and market trends.

5. Decision-Making Approach

○ Before: Relied on anecdotal input or user stories.

○ Now: Decisions are increasingly based on metrics, A/B testing, and analytics to guide outcomes.

6. Collaboration Scope

○ Before: Collaboration occurred mainly within the Scrum team.

○ Now: Cross-functional collaboration now includes marketing, sales, design, and customer support, making product development more holistic.

7. Technical Competency

○ Before: Little to no technical knowledge was needed.

○ Now: A solid understanding of the technical architecture, APIs, and integration points is essential for meaningful participation in product decisions.

8. Data Stewardship

○ Before: Data governance wasn't a core part of the PO's responsibilities.

○ Now: Awareness of organizational data structures and compliance has become critical, as data directly influences product strategy.

Challenges Faced by Modern Product Owners

As the role has broadened, new obstacles have emerged:

- **Ambiguous Boundaries:** Shared responsibilities often blur lines of authority and decision-making.
- **Slower Processes:** With more voices involved, reaching consensus can delay key actions.
- **Strategy vs. Execution Dilemma:** Balancing visionary goals with day-to-day backlog management is a constant juggling act.
- **Increased Dependency on Tools:** POs must become proficient with data analytics tools and testing platforms to remain effective.
- **Complex Product Landscapes:** Managing multifaceted products with numerous dependencies demands advanced coordination skills.
- **Technical Knowledge Gap:** The demand for technical literacy has increased, requiring continuous learning.
- **Data Governance Burden:** Understanding legal and organizational data policies has become essential to ensuring compliance and making informed decisions.

How Product Owners Can Adapt and Thrive

To navigate this complexity and continue delivering value, Product Owners need to develop new strategies and capabilities:

- **Master Data Tools:** POs should become skilled in leveraging analytics, A/B testing, and performance metrics to support data-informed decisions.
- **Use Prioritization Frameworks:** Tools like RICE and MoSCoW can help structure decision-making and ensure stakeholder alignment.
- **Enhance Technical Skills:** Continuous collaboration with developers and investment in tech education will help bridge knowledge gaps.



- **Understand Data Regulations:** Familiarity with organizational data governance structures will support better decision-making and compliance.
- **Build Resilience Through Communities:** Participation in Communities of Practice (CoPs) provides learning opportunities, peer support, and shared solutions to evolving challenges.

Looking Ahead: The Future of Product Ownership

The Product Owner is not being phased out—instead, the role is expanding and becoming more integral to Agile success. As digital products grow in complexity and organizations place greater emphasis on customer value, POs must remain adaptable, strategic, code and data-savvy.

The journey of a PO today is one of continuous growth. It involves staying at the forefront of technological trends, balancing short-term execution with long-term vision, and fostering collaboration across increasingly interdisciplinary teams. For those who embrace this change, the PO role offers not just relevance but the potential to become a central figure in Agile transformation.

2. Engineering fluency Enhances decision-making In product ownership.

Understanding challenges between Product Vision and Its Translation into Technical Strategy

In modern software development, a consistent challenge is aligning product vision with technical strategy. While product managers often focus on innovation and disruption, engineering teams must ground these ideas within the limits of existing technology or seek innovative yet feasible solutions. The misalignment between ambition and technical reality can hinder project success.

Consequences of Misalignment Between Product and Engineering

When the product roadmap and engineering execution aren't synchronized, several issues emerge:

- Unclear ownership and decision-making authority
- Misaligned timelines and feature priorities
- Friction between departments, leading to delays and increased costs

Therefore, technical fluency is not optional but essential for Product Owners (POs). Being technically proficient enables POs to make informed, impactful decisions that directly influence product success. Far from being just a facilitator of business goals, a PO must deeply understand software development processes, Agile frameworks, UI/UX principles, and IT infrastructure to lead effectively.

Understanding Technical Debt and Enhancing Risk Negotiation as a Product Owner with Engineering Fluency

What Is Technical Debt?

Technical debt refers to the hidden cost of choosing quicker, often sub-optimal solutions in software development that later require extra effort to fix or refactor. While it may offer short-term benefits like faster feature releases, this debt accumulates over time, degrading product quality, increasing maintenance complexity, and slowing down future development. Think of it like a messy kitchen—ignoring cleanliness in favor of speed leads to chaos that eventually undermines functionality.

Why Technical Debt Matters to Product Owners

Although technical debt may seem like a purely engineering concern, it's deeply relevant to the Product Owner's core responsibility: maximizing the value of the development team's work. A product riddled with technical debt becomes harder to enhance, test, and maintain, undermining long-term value delivery. As such, POs must understand and account for technical debt when prioritizing backlog items and setting delivery expectations.

How Engineering Fluency Enhances Product Ownership:

1. Informed Decision-Making

Technical knowledge enables POs to evaluate trade-offs between complexity, feasibility, and business value, leading to smarter, faster decisions.

2. Optimizing Value Delivery

Understanding development constraints helps prioritize features that offer the highest customer value within technical limits.



3. Improved Communication with Developers

A shared technical language allows the PO to act as a true bridge between technical and business stakeholders, ensuring alignment and minimizing misunderstandings.

4. Better Management of Technical Debt

While not directly responsible for addressing technical debt, a technically fluent PO can support developers in identifying and prioritizing critical debt, helping maintain product health over time.

5. Realistic Stakeholder Expectations

A technically knowledgeable PO can translate complex development realities into business language, helping stakeholders set feasible goals and timelines.

6. Effective Risk Mitigation

By understanding technical dependencies and limitations, POs can proactively manage risks, avoiding delays and quality issues.

7. Smarter Backlog Refinement

With technical insight, backlog grooming becomes more strategic, enabling more precise estimations and realistic planning.

8. Support for Continuous Improvement

POs with engineering fluency can actively contribute to retrospectives and process optimization, making them integral to team growth.

9. Innovation and Competitive Advantage

By understanding emerging technologies, POs can suggest innovative features and integrations that set the product apart in the market.

10. Team Trust and Credibility

Developers are more likely to trust and collaborate with a PO who understands their technical challenges, fostering a stronger, more cohesive team culture.

Key Technical Competencies for Product Owners Include:

- Understanding of Scrum and Agile development frameworks
- Proficiency in software design and coding principles
- Familiarity with UX/UI standards and product architecture
- Deep knowledge of product backlog management, user stories, and project management tools

Case study: According to data from Zippia, user interface (UI) skills—which include design standards, interface testing, and application design—are among the most in-demand technical skills for POs, showing up in nearly 20% of job listings. This highlights the increasing expectation that POs go beyond soft skills to handle hands-on technical responsibilities.

In summary, engineering fluency equips Product Owners with the insight and tools needed to make sound decisions, improve collaboration, manage technical risks, and ultimately drive product success. The modern PO is no longer just a facilitator but a technically aware leader who bridges business goals and development realities. This evolution underscores the growing need for POs to continuously expand their technical skills to thrive in complex Agile ecosystems.

3. Risks of Overemphasizing Technical Depth as A Product Owner

While a Product Owner with technical expertise can offer valuable insights into development, an excessive focus on technical details may lead to unintended consequences that hinder product success and team performance.

1. Loss of Business Focus

When a Product Owner becomes too immersed in technical aspects, there's a risk of losing sight of strategic business objectives and customer needs. This shift can lead to misaligned priorities and reduced overall product value.

2. Micromanagement Tendencies

Technical familiarity may tempt the Product Owner to intervene in the development process, potentially micromanaging tasks and undermining the development team's autonomy and ownership.



3. Reduced Strategic Bandwidth

Time spent on technical problem-solving can limit the Product Owner's capacity to engage in critical responsibilities such as backlog refinement, stakeholder alignment, and long-term product vision planning.

4. Decision-Making Bias

A technically inclined Product Owner may unintentionally favor solutions that align with their own technical background, even if those choices aren't the best fit for broader product goals or customer outcomes.

5. Narrowed Perspective

Deep technical focus can lead to tunnel vision, where the Product Owner becomes preoccupied with implementation details at the expense of innovation, customer insight, and strategic adaptability.

6. Resistance to Delegation

Product Owners who are heavily invested in technical decisions may find it difficult to delegate responsibilities to developers, limiting team empowerment and slowing growth.

7. Communication Barriers

Overuse of technical jargon or excessive focus on development complexities can hinder effective communication with non-technical stakeholders, affecting transparency and shared understanding.

8. Overreliance on One Role

If the team becomes too dependent on the Product Owner's technical knowledge, it can create a single point of failure—risking continuity and scalability, especially if the PO is unavailable.

9. Reduced Adaptability

A rigid focus on technical solutions may impair the Product Owner's ability to respond swiftly to shifting market needs or customer demands, limiting the product's competitiveness.

10. Burnout Risk

Balancing technical involvement with product management duties can lead to overwork and stress, diminishing the Product Owner's effectiveness and sustainability in the role.

While technical depth can be an asset, Product Owners must strike a balance. Maintaining strategic focus, empowering the team, and fostering open communication with stakeholders are critical to long-term product success. Over-indexing on the technical side risks diminishing the broader impact of the Product Owner role.

4. Case Study: Leveraging an Engineering and Testing Background as A Product Owner

This case study examines the phenomenon of technical professionals transitioning into Product Owner (PO) roles, specifically investigating how prior experience in software engineering and quality assurance influences product management practices. The study addresses a gap in the literature regarding the optimal background composition for Product Owners in Agile environments, particularly in contexts where technical complexity and business strategy must be balanced effectively.

Value Proposition of Technical Expertise in Product Ownership

1. Enhanced Decision-Making Frameworks

The integration of technical knowledge into product decision-making processes demonstrated measurable improvements in requirement feasibility assessment. Technical background enabled systematic evaluation of feature requests through multiple dimensions:

- **Complexity Assessment:** Technical debt implications and implementation challenges were identified proactively
- **Performance Impact Analysis:** Scalability and system performance considerations were integrated into prioritization decisions
- **Testing and Quality Implications:** Quality assurance requirements were embedded into early planning phases

2. Improved Backlog Management Efficacy

Technical fluency contributed to enhanced backlog management through:

- **Decomposition Accuracy:** User stories reflected technical implementation realities, reducing estimation variance
- **Requirement Clarity:** Ambiguities in functional requirements were identified and resolved earlier in the development lifecycle



- **Cross-functional Alignment:** Shared technical vocabulary facilitated more precise communication between business and development stakeholders

3. Stakeholder Communication Bridge Function

The technical background enabled effective translation between business and engineering domains:

- **Requirement Translation:** Business stakeholder needs were accurately converted into technically actionable specifications
- **Risk Communication:** Technical risks were effectively communicated to non-technical stakeholders in business-relevant terms
- **Estimation Facilitation:** Development team estimates were contextualized for business stakeholders

4. Architectural Decision Participation

Technical competency enabled direct participation in system design discussions:

- **Design Review Contribution:** Meaningful input into API design and architectural decisions
- **Technical Debt Advocacy:** Proactive identification and prioritization of maintenance work
- **Implementation Strategy Input:** Contribution to technical approach selection

Challenges and Limitations Identified

1. Strategic Focus Dilution

Technical background occasionally impeded strategic thinking:

- **Implementation Bias:** Tendency to focus on "how" rather than "what" and "why"
- **Over-specification:** Risk of defining solutions rather than problems
- **Tactical Orientation:** Inclination toward immediate technical concerns over long-term strategic objectives

2. Stakeholder Communication Adaptation

Technical communication patterns required conscious modification:

- **Audience Adaptation:** Executive stakeholders required business-focused rather than technically-oriented communication
- **Value Translation:** Technical benefits needed conversion into business value propositions
- **Abstraction Level Management:** Appropriate level of technical detail varied significantly across stakeholder groups

3. Role Boundary Management

Clear delineation of responsibilities proved challenging:

- **Delegation Resistance:** Tendency to retain technical problem-solving responsibilities
- **Context Switching:** Balancing deep technical discussions with strategic planning activities
- **Trust Building:** Establishing confidence in team technical capabilities while stepping back from hands-on involvement

The findings suggest that technical background in Product Ownership creates a dual value proposition: enhanced technical decision-making capability coupled with improved cross-functional communication effectiveness. It also suggests that hybrid technical-business backgrounds may offer significant advantages in complex technical product environments. However, this advantage requires conscious management of potential limitations, particularly regarding strategic focus and stakeholder communication adaptation.

5. Proposed Framework: Dual-Lens PO (Strategic + Technical)

Building upon the case study findings, this section proposes a theoretical framework for understanding and implementing technically-informed Product Ownership practices. The Dual-Lens model integrates strategic product management with technical system understanding to optimize value delivery in complex development environments.

Dual-Lens PO emphasizes the integration of technical fluency into product management, enabling Product Owners (POs) to make better-informed decisions, align closely with engineering teams, manage technical debt proactively, and enhance product delivery sustainability. It aims to connect strategic priorities with technical feasibility and delivery.

Roles & Responsibilities of a Technically Fluent Product Owner

● Technical Contextualization

- Understand system architecture, codebase limitations, and technical trade-offs to inform product decisions.



- **Bridge Between Business and Engineering**

- Translate customer and stakeholder needs into technically viable product goals and features.

- **Backlog Ownership with Technical Awareness**

- Balance feature development with codebase health by including technical debt, refactoring, and enablers in prioritization.

- **Risk-Informed Decision Making**

- Identify and manage risks tied to technical debt, scalability challenges, and legacy systems in the product roadmap.

- **Collaboration in Estimation and Planning**

- Partner with engineering teams during sprint planning and backlog grooming to understand effort, complexity, and dependencies.

- **Tech Debt Stewardship**

- Maintain visibility into technical debt, advocate for its prioritization, and integrate it into product strategy and releases.

- **Tool Fluency**

- Utilize AI-driven tools and platforms to assess code impact, prioritize backlog items, and support transparent decision-making.

Key Practices

- Maintain a balanced backlog of features and technical enablers
- Align strategic roadmaps with technical delivery milestones
- Involve technical leads early in product discovery, not just delivery
- Apply outcome-driven development — focus on results, not just output
- Regularly review product health from both business and technical perspectives

PO Maturity Model for Technically Fluent Product Ownership

To operationalize Dual-Lens PO, it is suggested to use a maturity checklist to help organizations and individuals assess their Product Owners:

- **Technical Fluency**

- Basic: Understands core technical terminology.
- Intermediate: Can discuss design trade-offs and system implications with engineers.
- Advanced: Engages in architecture discussions and understands system-level concerns.

- **Backlog Management**

- Basic: Focuses solely on customer-facing features.
- Intermediate: Includes bugs and some tech tasks in prioritization.
- Advanced: Balances features, tech debt, enablers, and risks in backlog decisions.

- **Collaboration with Developers**

- Basic: Reviews sprint deliverables after completion.
- Intermediate: Participates in estimation and refinement sessions.
- Advanced: Co-creates solution approaches and shares accountability with dev team.

- **Use of Tooling**

- Basic: Relies on manual tracking tools (e.g., spreadsheets).
- Intermediate: Uses platforms like Jira, GitHub Projects.
- Advanced: Applies AI-driven tools for backlog insights, prioritization, and forecasting.

- **Stakeholder Communication**

- Basic: Reports on feature delivery status only.
- Intermediate: Communicates high-level risks and issues.
- Advanced: Clearly articulates tech strategy, scalability concerns, and trade-offs to stakeholders.

- **Technical Debt Visibility**

- Basic: Tech debt is undocumented or deprioritized.
- Intermediate: Logged but rarely acted upon.
- Advanced: Systematically tracked, categorized, and prioritized alongside product features.



● Refinement Practices

- Basic: PO leads grooming sessions solo.
- Intermediate: Developers occasionally participate.
- Advanced: Fully collaborative refinement with designers, testers, and engineers co-shaping stories.

Dual-Lens PO represents a forward-thinking evolution of product ownership—where product value and system health are seen as interconnected. It enables a more holistic, sustainable, and value-aligned approach to product leadership. With this framework, we can move beyond feature factories and evolve into adaptive, technically-savvy organizations that build lasting, scalable products.

6. Technical Product Owner (PO) And Dual-Lens PO

Dual-Lens PO and the traditional concept of a Technical Product Owner (Tech PO) share overlapping traits — especially around technical fluency — but they are not the same. Here's a breakdown of their key similarities and differences:

Similarities Between Dual-Lens PO and Tech PO

- **Technical Fluency:** Both are expected to understand system design, architecture constraints, and engineering implications of product decisions.
- **Cross-functional Collaboration:** They work closely with engineering teams to ensure feasibility and manage dependencies.
- **Tech Debt Awareness:** Both recognize the importance of addressing technical debt and balancing it with feature delivery.
- **Backlog Involvement:** They participate in backlog grooming, refinement, and prioritization, including non-functional tasks.

Key Differences: Dual-Lens PO vs. Tech PO

1. Core Orientation

- **Dual-Lens PO:** Balanced — integrates product strategy with deep engineering systems thinking.
- **Tech PO:** Engineering-leaning — often embedded in development teams or IT delivery.

2. Primary Goal

- **Dual-Lens PO:** Maximize long-term product value through technical sustainability and excellence.
- **Tech PO:** Translate features into technical tasks for short- to mid-term delivery efficiency.

3. Strategic Role

- **Dual-Lens PO:** Contributes to broader product strategy, manages tech debt, and influences team/process maturity.
- **Tech PO:** More focused on execution and implementation within engineering and delivery pipelines.

4. Stakeholder Communication

- **Dual-Lens PO:** Skilled at communicating technical trade-offs to non-technical business stakeholders.
- **Tech PO:** Typically focuses on communication within engineering teams or technical circles.

5. Maturity Model Emphasis

- **Dual-Lens PO:** Embraces practices like cross-functional refinement, tech debt visibility, and backlog balancing.
- **Tech PO:** May not follow structured evolution models or formalized maturity frameworks.

6. Cultural Leadership

- **Dual-Lens PO:** Champions a culture of technical excellence, collaboration, and shared ownership across disciplines.
- **Tech PO:** Often operates within engineering silos with limited influence on broader product culture.

Dual-Lens PO is a modern evolution of the Tech PO concept — it's broader, more strategic, and emphasizes engineering literacy as a product value enabler, not just as an execution requirement. Think of Tech PO as someone functionally effective in technical settings, and Dual-Lens PO as someone who is also strategically effective in aligning engineering with product growth, innovation, and sustainability.



7. Role Of AI In Dual-Lens PO

1. Backlog Prioritization and Risk Analysis

- AI helps prioritize stories based on code complexity, past defect trends, or impact zones (e.g., tools like Athenian, Linear with AI scoring).
- Enables risk-based decision-making by highlighting high-risk or fragile components early in planning.

2. Tech Debt Identification and Management

- AI-powered analyzers (e.g., CodeScene, SonarQube, CAST Highlight) provide:
 - Visualizations of code hotspots
 - Indicators of technical debt accumulation
 - Suggestions for refactoring targets
- Allows Dual-Lens POs to make data-informed trade-offs between feature delivery vs. system health.

3. Metrics-Driven Decision Support

- AI can aggregate and interpret data from version control, issue trackers, and CI/CD tools to:
 - Track team velocity, cycle time, defect rates
 - Surface anomalies or emerging inefficiencies
 - Support evidence-based backlog grooming

4. Documentation and Communication Assist

- Tools like GitHub Copilot, Notion AI, or Mintlify assist with:
 - Writing and updating technical documentation
 - Translating complex architecture decisions into stakeholder-friendly language
 - Maintaining decision logs or tech radars

5. Scenario Simulation and Forecasting

- AI models can simulate the effect of different prioritization choices (e.g., delaying refactoring vs. implementing a new feature).
- Enables what-if analysis for roadmap impact, cost of delay, or quality degradation.

6. Cross-Functional Collaboration

- AI enhances refinement sessions by supplying real-time metrics or code analysis to support balanced conversations between developers, QA, and business stakeholders.
- Reduces opinion-based debates and aligns teams on shared, objective insights.

8. Conclusion

The Agile landscape is shifting. Market dynamics are accelerating, customer expectations are rising, and digital ecosystems are becoming more intricate. In this environment, the Product Owner's success hinges not just on delivering features efficiently, but on navigating trade-offs between business goals and technical feasibility with clarity and confidence. The Dual-Lens Product Owner emerges as a vital response to this need—a professional who can translate vision into systems, ambition into architecture, and strategy into sustainable execution.

By adopting the Dual-Lens mindset, Product Owners are empowered to:

- Make smarter prioritization decisions using both customer insight and engineering input.
- Collaborate more effectively with developers, architects, and stakeholders.
- Advocate for and manage technical debt as a core part of value delivery.
- Leverage AI and modern tools to drive backlog transparency and delivery predictability.
- Maintain strategic focus while understanding the implications of technical trade-offs.

However, the article also cautions against over-indexing on technical depth. When POs become too entangled in development decisions, they risk micromanagement, loss of business focus, and burnout. The goal is not for Product Owners to become engineers, but to be technically fluent enough to engage meaningfully, negotiate confidently, and lead holistically.

As organizations look to scale Agile sustainably, investing in the development of Dual-Lens POs will be critical. This includes building tailored maturity models, fostering Communities of Practice, integrating AI-driven tools, and promoting continuous learning across both strategic and technical dimensions.



In conclusion, the future of product ownership lies in the convergence of business and technology—where POs don't just manage delivery, but shape the product's evolution, resilience, and market impact. The Dual-Lens PO is not just a role—it's a mindset, a capability, and a strategic advantage.

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