ai/r

Advisory Brief

Intelligence Architecture for Private Equity and Venture Capital

How ai/r Helps PE and VC Firms Evaluate Intelligence Readiness Across Their Portfolios — and Architect It Inside Their Companies

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Todd Jochem, Ph.D.
Principal Architect, ai/r
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The Gap

Private equity and venture capital firms are under pressure to have an AI strategy for their portfolios. Some are already responding — commissioning decks from the big consultancies, listening to SaaS vendor pitches, asking their operating partners to "figure out the AI thing." Others haven't started yet. Either way, the structural question almost never gets asked.

When firms do engage, the conversation almost always stays at the tool level. Which AI products should our portfolio companies adopt? Can we automate this process? Where can we cut headcount? These are reasonable questions. They're also the wrong starting point.

The real question — the one that determines whether intelligence integration creates lasting value or just generates a temporary efficiency bump — is structural: how does intelligence become part of how a portfolio company actually thinks, decides, and operates? Not which tools it uses. How its organizational intelligence changes.

That's a fundamentally different question. And almost nobody in the PE or VC ecosystem is equipped to answer it. The consultancies are too tool-centric. The SaaS vendors are selling their own products. The operating partners are stretched thin and rarely have deep experience with both the technology and the organizational dynamics of real integration. And very few people in the market understand the robotics and physical-systems dimension at all.

ai/r exists to fill that gap. It works at two levels: helping PE and VC firms evaluate intelligence readiness across their portfolios and investment targets, and helping individual portfolio companies architect intelligence into their organizations at the structural level.

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Two Kinds of Value

ai/r provides two distinct but complementary kinds of advisory work for PE and VC firms.

Fund-Level Advisory: Portfolio Assessment and Pre-Capital Due Diligence

The first is work at the fund level — advising the PE or VC firm itself. This includes portfolio-wide intelligence assessments, pre-investment due diligence on acquisition or investment targets, and ongoing advisory on how intelligence integration is evolving across the portfolio.

At this level, ai/r helps answer the questions that operating partners and managing directors need answered but often lack the specialized expertise to address: Which portfolio companies are best positioned to benefit from intelligence integration? Where are the real margin-expansion opportunities that survive contact with organizational reality? Which acquisition targets have already started building an intelligence substrate, and which are falling behind? For VC firms evaluating earlier-stage companies, ai/r provides red-team assessment of automation-heavy pitches, evaluation of robotics and AI infrastructure claims, and honest assessment of whether a company's technology has a realistic path to integration inside the organizations that will eventually buy or use it.

The deliverable at this level is a written intelligence assessment for each portfolio company or investment target. For portfolio-wide work, this is a structured audit — bespoke to each company's situation, but consistent in format across the portfolio so the firm can compare. Each assessment runs between two and ten pages depending on the company's complexity and the depth required. For some companies, a concise overview is sufficient. For others — particularly those with significant automation or robotics dimensions — the assessment goes deeper. The firm decides where to invest further attention based on what the initial assessment reveals.

For VC evaluation work — red-teaming a robotics or AI company's pitch before investment — the assessment is typically deeper and less structured, reflecting the earlier-stage and special-purpose nature of those deals. Every assessment includes

both a written document and a verbal briefing, with time to answer questions and discuss implications.

What does an assessment look for? It depends on the company, but common dimensions include: How valid is their AI or robotics approach? Where could intelligence genuinely help them differentiate from competitors? If margin expansion is the concern, where specifically could AI increase margins or revenue? How close are they to a true ubiquitous intelligence infrastructure — or how far? And critically: what are the human and cultural barriers that would prevent integration from succeeding, even if the technology is ready?

Company-Level Advisory: Board and Strategic Engagement

The second kind of work is with individual portfolio companies — deeper, longer-term engagement at the board or strategic level. This is where ai/r helps a specific company architect its intelligence infrastructure: examining what the organization actually does, where intelligence can be woven into how it operates, and how to navigate the human and organizational challenges that determine whether integration succeeds or fails.

This is board-level or equivalent work. It involves sitting with the leadership team, understanding the business at a structural level, and providing ongoing architectural guidance as the company moves from scattered AI tool usage to genuine intelligence infrastructure. It's the difference between someone who evaluates the blueprint and someone who helps design the building.

Companies at this stage — particularly those that emerge from a fund-level assessment as high-potential — benefit from having someone in the room who has built and exited companies in the ai/r space, who understands both the technology and the enterprise politics, and who can translate between the strategic vision and the operational reality. That combination is rare.

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What PE and VC Firms Actually Need

Whether at the fund level or the company level, the underlying questions are structural, not software-related. ai/r addresses six dimensions that most advisory approaches miss.

Portfolio-level intelligence assessment. Which companies in the portfolio are best positioned to benefit from intelligence integration? Not every company is equally ready. Some have the data infrastructure, the cultural openness, and the process complexity that makes a substrate viable. Others don't — yet. Knowing which is which, and why, is the first step.

Small and early-stage company evaluation. For VC firms — and for PE firms evaluating smaller acquisition targets — ai/r can red-team automation-heavy pitches, evaluate robotics infrastructure claims, and distinguish genuine structural intelligence from marketing. This is where ai/r's firsthand operational experience matters most. Having cofounded and grown companies in the ai/r space, the principal architect has been on both sides of the equation — building the technology and navigating the organizational realities of getting it adopted. AI and robotics startups often underestimate what integration actually requires of the organizations that will eventually buy their products. ai/r brings that perspective.

Margin-expansion mapping. Where are the real margin opportunities? Not the ones that look good in a slide deck, but the ones that survive contact with the actual organization. ai/r approaches this from the perspective of someone who has built and scaled companies — not from a large-enterprise P&L playbook, but from the founder's instinct for where operational leverage actually lives. Where does G&A drop? Where does productivity increase without proportional hiring? Where can intelligence improve forecasting enough to change how working capital is deployed?

Human and cultural readiness. This is the dimension almost everyone skips — and it's the one that determines whether integration succeeds or fails. AI threatens expertise status, middle management authority, and executive control narratives. If a portfolio company's leadership team is defensive, if its middle management is

politically entrenched, if its culture is resistant to transparency, no amount of technology will overcome that.

Robotics and physical-systems realism. For portfolio companies with physical operations of any kind — manufacturing, logistics, warehousing, field services, fleet management, or any other domain where the digital and physical intersect — the physical dimension matters. Where does robotics integration have real near-term value versus where is it still speculative? What are the capital requirements? What are the safety and liability considerations? Most AI advisors have no physical-systems experience whatsoever. That's a significant blind spot when evaluating companies where intelligence must operate in the real world.

Competitive threat assessment. Smaller, faster competitors can leapfrog established portfolio companies by embracing intelligence early. They move quicker, they don't carry the inertia, and they can build a substrate before the incumbents even have a strategy. PE and VC firms need to understand which of their portfolio companies are vulnerable — and which targets have already started building an intelligence advantage.

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The Intelligence Substrate as Portfolio Strategy

The deeper argument — and the one that separates structural thinking from tool-level thinking — is that intelligence integration is not a one-company-at-a-time problem. It's a portfolio strategy.

A PE or VC firm that develops the ability to assess intelligence readiness, architect substrate integration, and accelerate transformation across a portfolio is building a capability that compounds. Each portfolio company engagement generates insight that informs the next. Patterns emerge across industries and stages. The firm develops an intelligence lens that improves deal evaluation, operational improvement, and exit positioning simultaneously.

Substrate maturity can become a genuine competitive moat for individual portfolio companies. But the moat isn't the software — it's the organizational intelligence built on top of it. The accumulated decision-making patterns, the feedback loops between physical and digital operations, the institutional knowledge drawn from employees and embedded in the substrate. The quicker a portfolio company builds that, the bigger its advantage. And the PE or VC firm that can assess and accelerate that process across a portfolio is operating at a level most of the market hasn't reached yet.

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Who This Is For

On the private equity side, ai/r's work fits best with mid-market and lower middle market firms. These are the portfolios where intelligence integration can most quickly change the trajectory of a company. Mid-market operators are large enough to have real process complexity, real organizational politics, and real margin-expansion opportunities — but nimble enough to actually move. Monolithic enterprises can benefit too, but they carry inertia that slows everything down. The mid-market is where transformation happens fastest.

On the venture capital side, there's no single sector focus. AI and robotics are becoming ubiquitous enough that limiting to one vertical would be artificial. That said, industrial, logistics, and healthcare are key sectors — as are the suppliers of AI and robotics technology to those industries, which is where most startups in this space land. The value ai/r provides to VC firms is not in evaluating the software itself, but in assessing whether a company's technology has a realistic path to integration inside the organizations that will eventually use it.

There's a barbell dynamic at work. At one end are established companies — the old-school operators that could benefit enormously from reinventing themselves using intelligence infrastructure. At the other end are startups building genuinely new products for the market. The startups will natively use AI in their own operations — there's less opportunity to help them there. But evaluating how their

products fit into the larger organizational and industrial ecosystem, and whether their claims hold up under scrutiny, is where ai/r provides the most value on the venture side.

The buyer is typically an operating partner or managing director who recognizes they need specialized expertise in AI, robotics, and organizational intelligence — expertise they don't currently have in-house. At the portfolio company level, the buyer is often the CEO or a board member who wants someone in the room who has built companies in the ai/r space, who understands both the technology and the organizational dynamics, and who can provide honest assessment without a product to sell.

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Engagement Structure

Fund-Level Advisory

The preferred engagement model at the fund level is a retained advisory relationship. The standard arrangement is a monthly retainer of $10,000 for approximately ten hours of advisory time per month, with a minimum commitment of one year. After the initial year, the relationship continues month-to-month.

For firms that want exclusivity — ensuring that ai/r is not advising competing PE or VC funds — the retainer is $35,000 per month on the same terms. Fund-level exclusivity does not preclude ai/r from working directly with portfolio companies or from maintaining other advisory relationships outside the PE and VC space.

Single-project engagements are also available for specific needs — a portfolio-wide assessment, a pre-investment evaluation of a particular target, or a focused analysis of a specific question. These are scoped and priced individually based on duration and complexity, but typically start at $25,000.

Company-Level Advisory

Engagement with individual portfolio companies is structured as a board-level or equivalent strategic advisory position. Compensation is on par with what others in similar positions receive, and typically involves a combination of cash and equity that reflects the depth and duration of the relationship.

Company-level engagements are longer-term by nature. Intelligence architecture is not a project with a start and end date. It's an ongoing structural transformation that requires sustained attention, honest feedback, and the kind of trust that only develops over time.

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What ai/r Brings to the Table

What ai/r brings to this conversation is a combination that is genuinely rare in the market: early autonomy-era robotics experience, real-world deployment scars across physical and digital systems, the perspective of someone who has built and scaled companies from the ground up, and the financial independence to give honest assessments without revenue pressure.

ai/r is not selling a product. It is not trying to expand an engagement into a multi-year implementation contract. It provides clarity, architectural guidance, and honest evaluation. At the fund level, that means structured intelligence assessments the firm can act on. At the company level, that means board-quality strategic guidance from someone who has been in the seat — building companies, deploying technology, and navigating the organizational dynamics that determine whether integration actually works.

ai/r maintains a deliberately small number of advisory relationships. This is by design. Structural intelligence work requires depth, not breadth. It requires understanding the specific organizational realities of each portfolio company, not applying templates. The firms that will benefit most are the ones that recognize intelligence integration is not a technology problem. It's a structural design problem. And structural design requires an architect.

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Todd Jochem, Ph.D. *is the founder and Principal Architect of ai/r (air atelier), a boutique AI-native intelligence architecture studio. He holds the tenth robotics doctorate awarded by Carnegie Mellon's Robotics Institute, cofounded and grew two robotics-related companies in transportation and military robotics through successful exits, and has led teams at every level — from entry-level employees to mid-level managers, research scientists, and young athletes. He brings that full range of experience — technical depth, startup-building instinct, and human-scale leadership — to the question of how intelligence becomes infrastructure inside real organizations.*

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