Reconnaissance for exposure management: why context matters in the AI era

BY RADU VOLOAGA · JUNE 29, 2026

Over the last few weeks, we've explored what AI is changing in security: discovery is faster (Vulnpocalypse now?), volume is higher (Common AI misconceptions debugged!), and the human layer triage (The AI Impact), judgment, and prioritization has become more important, not less (CEO Insights). But there's a deeper implication hiding underneath all of that: most security teams still only learn from "successful outcomes".

In my experience, the majority of researchers, program managers, and security analysts in the cybersecurity sector are talking about AI-generated exploits, autonomous pentesting, and vulnerability discovery at machine speed.

Almost nobody is talking about the layer that makes those systems effective in the first place.

Outside of security, there is a growing recognition that the effective deployment of artificial intelligence depends on the quality of context it operates on. In offensive security, building that context has always had a name: reconnaissance.

Before I dive into the details, let's align on what reconnaissance means in this context. Reconnaissance is the process of understanding a target: what assets exist, how systems connect, where the real boundaries are, and what normal looks like.

Reconnaissance: the foundation

Long before AI entered the conversation, experienced hackers already understood something many defenders did not.

The highest-impact vulnerabilities rarely came from blindly running tools against random targets. They came from understanding how systems behave, identifying unusual patterns, following small clues into unexpected places, and spending time where others did not.

Skilled researchers will recognise this instinctively:

- The host naming convention that hints at an undocumented environment
- Certificate and DNS history that maps how architecture changed over time
- The staging surface that mirrors production and was never meant to be reachable
- The OAuth boundary or SSO redirect chain, where trust between systems is actually stitched together.

None of these signals are vulnerabilities in themselves. But they are context. And context is what turns scanning and generic testing into targeted vulnerability discovery.

The challenge is that this work has historically been invisible. This is all that has been incentivised: the disclosure of vulnerabilities. The significant amount of attacker effort that happens before any report is

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written, the exploring, the observing, the pattern-building, is rarely measured or valued, even though it directly determines the quality of what comes after.

To make this concrete: in a recent program with a global consumer brand, a group of ethical hackers submitted over 17,000 structured recon observations across a 10-day engagement. The analysis surfaced more than 100 internal-facing URLs that were externally reachable, assets that the organization's own security tooling had not flagged. Everyone came from careful, pattern-based exploration that automated scanning does not replicate. The recon preceded the findings. It always does.

AI changes the economics. But not in the direction most people assume.

AI is already accelerating many parts of offensive security. Automated collection, large-scale pattern detection, execution at speed: all of it is becoming more accessible and more capable. That is genuinely useful when the underlying recon approach is sound.

The analogy I keep coming back to: an AI security system without meaningful reconnaissance is like a GPS without a map. It may move fast, but it has no sense of direction or context.

Here is what the conversation tends to skip. **AI not only makes good reconnaissance better. It makes bad reconnaissance more accessible.**

When execution becomes cheap, the volume of exploration grows, including low-confidence exploration. More noise, more false leads, more of the wrong surfaces tested thoroughly while the assets that actually matter get overlooked. Not because researchers are less skilled. Because the friction of execution dropped, and not everyone has matched that with sharper targeting discipline.

This is the failure mode missing from most AI security narratives: optimising for activity instead of relevance or efficacy.

The more interesting question is no longer 'How quickly can AI identify vulnerabilities?' It is 'How effectively can it understand what is worth testing in the first place? '. Because the quality of offensive outcomes is still deeply connected to the quality of the reconnaissance underneath. Speed reveals the quality of your judgment. It does not replace it.

Hackers generate context, not just findings

This is the shift I think the industry is still adapting to.

Every exploration path, observation, and recon signal contributes to something beyond the finding it may or may not produce: a richer understanding of how real attackers interact with modern attack surfaces. That understanding is what makes the best researchers irreplaceable, not because they find vulnerabilities faster than automation, but because they notice what automation overlooks.

- Unusual behaviour.
- Unexpected relationships between systems.
- Subtle inconsistencies that appear insignificant in isolation but become meaningful in context.
- Business logic edge cases that do not resolve to a known vulnerability class.

That type of exploration is difficult to reduce into deterministic workflows, and it is where the highest-leverage findings tend to originate.

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AI excels at scale and speed. Human researchers excel at curiosity, interpretation, and the kind of adversarial creativity that comes from understanding what a product *does*, not just what it *has*.

The future is not humans versus AI in offensive security. It is human curiosity and contextual understanding, amplified by AI. And that division of labour becomes most explicit in reconnaissance, where the human signals feed everything that follows.

Reconnaissance becomes intelligence

One of the more significant shifts happening right now is that reconnaissance is no longer just an operational activity. It is becoming strategic foresight.

Organizations are starting to realise that understanding how attackers explore their environments can be just as valuable as the vulnerabilities eventually discovered.

Most organizations do not lack security data. **They lack an external view of how their environment is actually being interpreted and prioritized by real adversaries.** What repeatedly attracts attention, where exploration concentrates around trust boundaries, what sits quietly unexamined until it suddenly matters. An internal asset inventory is an internal narrative. What adversaries discover and act on is something different. The gap between them is where the most consequential exposures tend to live.

That changes the questions worth asking:

- Which parts of the attack surface draw repeated attacker attention, and why?
- Where are integrations, third-party connections, and identity boundaries becoming focal points?
- Where are we genuinely confident in our coverage, and where are we assuming visibility we do not actually have?

Reconnaissance done continuously by hundreds or thousands of researchers, not episodically as a project phase before testing begins, can predict where the next vulnerability will hit and become the truth layer that answers these questions. The attack surface changes constantly. So does attacker behaviour. A point-in-time snapshot has a shelf life measured in weeks, not years.

The loop from recon, to signal, to outcomes

Over the past few months, I have had the same conversation repeatedly, with hackers, with security leaders, and with teams trying to figure out where human effort still creates advantage in an AI-accelerated world.

The answer keeps coming back to the same place.

The organizations that will build the strongest security posture in the AI era will not necessarily be the ones that automate fastest. They will be the ones that move at the speed of relevance, using context to identify the risks and vulnerabilities that matter before they can be exploited. They will build a continuous loop between human exploration that generates the right signals, reconnaissance that turns those signals into a working model of the attack surface, AI that scales analysis on top of that model, and outcomes that feed back into a better understanding of where the real risk is.

Each part of the loop improves the next. Over time, that compounding effect is the advantage.

The future of offensive security will not be defined only by who builds the best AI models. It will be shaped by who has the richest, most continuously updated contextual understanding of the attack surface being tested.

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Because, regardless of how advanced AI becomes, offensive security still depends on context. And reconnaissance is where that context begins.

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