Forward-deployed engineers (FDEs): what they are and how to use them

What forward-deployed engineers (FDEs) are, where the role came from, how they differ from consultants, what they cost and when they are the wrong choice.

Hashir I. Qureshi, Co-founder and managing partner

November 22, 2026 · 16 min read



In brief

A forward-deployed engineer (FDE) works inside a client's business, on its systems and alongside its people, to build solutions people use every day. The role began at Palantir and spread fast as AI became easy to buy and hard to make pay back. This guide covers what FDEs do, how they compare with consultants and contractors, what they cost, and when they are the wrong choice.

Contents

01 What a forward-deployed engineer is
02 Where the role came from
03 What FDEs do day to day
04 Why demand for FDEs is growing
05 How the role is changing with AI
06 FDEs compared with consultants, contractors and in-house hires
07 How to work with FDEs well
08 The costs and limits of the FDE model
09 How FDEs work inside a Business Transformation Office
10 Where Armstrat says no
11 Frequently asked questions

A forward-deployed engineer (FDE) is an engineer who works inside a client's business, directly on its systems and alongside its employees, to build solutions people use every day. FDEs combine technical skill with a working grasp of the business problem, and they are judged by what runs in production and the results it moves, not by recommendations.

In short, an FDE closes the gap between buying a technology and getting a return from it. The role began at Palantir in the early 2010s and spread fast in 2025 and 2026, as AI became easy to buy and hard to make pay back. FDEs are worth using when a problem has to be solved inside your own systems, with a measured outcome and a planned exit.

This guide is for founders, owners, CEOs and leadership teams deciding whether to bring forward-deployed engineers into their business. It draws on McKinsey's explainer on the role, analyst research and the companies building FDE teams, with Armstrat's own engagements as the worked example. Armstrat is a Business Transformation Office (BTO™): a specialized, modern firm that embeds forward-deployed engineers (FDEs) inside your business and focuses solely on delivering outcomes.

01

What a forward-deployed engineer is

An FDE is an engineer assigned to one customer's problem, who builds inside that customer's systems until the solution is in daily use. McKinsey, introducing its explainer on the role, describes FDEs as people who work directly within a company's systems and alongside its employees, combine technical expertise with a deep understanding of business problems, rethink workflows, connect technology to everyday decisions and build solutions people will actually use. The explainer features Holger Hürtgen, Martin Harrysson and Nick Robson. Hürtgen describes the FDE as an engineer first, across data science, data engineering and software engineering, and calls the forward-deployed part the interesting one: working directly on the client's own systems.

Three features separate an FDE from other technical roles.

- **They work inside your systems.** FDEs have access to your data, your software and your people, and they build where the work happens, not in a separate lab.
- **They own the problem from start to finish.** OpenAI's job posting for the role says its FDEs "own discovery, technical scoping, system design, build, and production rollout", and measure success through "production adoption, measurable workflow impact, and eval-driven feedback".
- **They leave something running.** In Hürtgen's description, an FDE works inside the client's system, develops a product and leaves it behind. That is where the role parts from consulting.

That gives a simple test for any engagement sold under the name: when the engineers leave, what will be running in your business? If the honest answer is a slide deck, the work was advice.

The title varies. Forward-deployed software engineer (FDSE), applied AI engineer and deployment engineer describe the same core job. Some job ads write "forward deployment engineer", or drop the hyphen.

02

Where the role came from

The role was created at Palantir, the data software company, in the early 2010s, under the internal name “Delta”. In Palantir’s own framing, quoted by The Pragmatic Engineer, a product developer, or Dev, focuses on “one capability, many customers,” while a Delta focuses on “one customer, many capabilities.” Until about 2016, when it launched its Foundry product, Palantir had more FDEs than ordinary software engineers.

The model then spread to AI companies. OpenAI set up its own FDE team in 2025, starting with two engineers, and had more than ten by that August, The Pragmatic Engineer reported. In May 2026, OpenAI launched the OpenAI Deployment Company with more than $4 billion of initial investment, to embed engineers who specialize in AI deployment inside client organizations. OpenAI also agreed to acquire Tomoro, a firm of approximately 150 experienced forward-deployed engineers and deployment specialists. Salesforce says it tripled its FDE team in six months.

Consulting firms adopted the label too. Deloitte named an FDE practice in December 2025. Looking back in July 2026, Forrester wrote: “At the time, it read as a consulting rebrand with better vocabulary.” Forrester then notes that between May 4 and July 15, 2026, four technology providers committed roughly $9 billion “to putting their own engineers inside their customers’ buildings.” Besides OpenAI, they included Anthropic, whose $1.5 billion enterprise services venture launched in July as Ode with Anthropic, and Amazon Web Services, with $1 billion for a forward-deployed engineering organization.

03

What FDEs do day to day

An FDE takes one problem from watching the work to a solution running in production and in daily use. Most engagements move through six stages.

1. **Watch the work.** Sit with the people who do the task and learn who decides what, which exceptions eat the day and which data people trust.
2. **Put the problem in numbers.** Agree the measure that should move, its value today and how it will be read.
3. **Build quickly and show it.** Put a prototype in front of users within days and change it based on what they do, not what they say.
4. **Make it production grade.** Connect it to the real systems, handle permissions and exceptions, and add monitoring and, for AI, tests that show whether outputs are good enough.

5. **Get it used.** Train the people who will use it, change the process around it and retire the old workaround.
6. **Hand it over.** Document it in your tools, name the owner and step back while the result is measured.

Much of this is not software. Stages one, two and five are about how decisions are made and how people work, so the same pattern fits an ERP rollout, a freight contract or a change in who decides. AI is often part of that work. It is rarely all of it.

04

Why demand for FDEs is growing

Demand for FDEs is growing because AI has become easy to buy and hard to make pay back. The return depends on work only someone inside the business can do: cleaning data, writing down the rules people follow, changing who approves what and getting a new tool into daily use. OpenAI said as much when it launched its deployment company: “building powerful AI models is only part of the work.”

The job market reflects it. Lightcast data reported by Fortune shows job postings for forward-deployed engineers rose more than 1,000% between January and August 2026, compared with the same period of 2025, and more than 4,600% compared with 2023. Broader tech postings grew 13% year over year. The median advertised salary for FDEs was more than $188,000, against roughly $145,000 for traditional software engineers.

The percentages start from a small base, and data providers count job titles differently, so other sources give other figures. The direction is not in doubt. The exact multiple is.

Three forces sit behind the demand. Most AI pilots stall on data, ownership and process rather than on the model, the pattern behind why most AI pilots fail to deliver financial returns. Vendors need their products used, because a subscription nobody uses does not get renewed. And people who can write production code, sit with a finance team and redesign a workflow are rare, so most businesses rent them rather than hire them.

05

How the role is changing with AI

AI is automating much of the preparation FDEs once did and speeding up the build, so more of the job is judgment, testing and discovery work consultants used to own. Salesforce, which built its FDE team from engineering, professional services and

customer success staff, says its FDEs once spent up to 40% of their time on administrative preparation, work it says is "largely automated now." One of its FDE directors calls coding "table stakes".

Three shifts follow.

- **Building is faster, so judgment matters more.** When an agent or a working prototype takes days, the hard part is choosing what to build, what to leave alone and which decision the tool should change.
- **Testing becomes part of the job.** AI outputs vary, so FDEs build the tests and review steps that show whether a workflow is good enough to trust with real customers and real money.
- **The line with consulting is blurring.** In McKinsey's explainer, Nick Robson says the FDE and consultant roles are converging and that a strong consultant often makes a strong FDE. Martin Harrysson notes the difference that remains: a consultant has traditionally been geared to a recommendation, an FDE to implementing technology.

06

FDEs compared with consultants, contractors and in-house hires

The clearest difference is what you keep when the work ends. An FDE team should leave a running system and trained owners. A consultant usually leaves a plan, a contractor leaves work you must maintain, an in-house hire's knowledge stays while they do, and a vendor's team leaves a setup tied to its product.

Compared on	FDE team	Consultant	Contractor or staff augmentation	In-house hire	Software vendor's customer success
What you buy	A working solution inside your systems, tied to an outcome	Analysis and recommendations	Extra capacity you direct	A permanent person's time and judgment	Help adopting the vendor's product
Who does the work	The FDEs, with your people	Your team, after the handover	The contractor, managed by you	Your employee	Your team, with the vendor's guidance
How it is paid	Hourly, fixed scope, or a base fee plus a payment on results	Mostly time or fixed scope, sometimes partly on results	Hourly or day rate	Salary and benefits	Included in the subscription or sold as services

Compared on	FDE team	Consultant	Contractor or staff augmentation	In-house hire	Software vendor's customer success
When it ends	When the agreed exit conditions are met, if they were set at the start	When the recommendations are delivered	When the contract or budget runs out	When the person leaves	When you stop using the product
What you keep	A running system, documentation and trained owners, if the handover was designed	A plan, plus any implementation you also bought	The work produced; the know-how leaves with them	The person and what they know, while they stay	A configuration tied to one vendor

An FDE engagement that ends without a handover leaves a system nobody inside the business can change, which can be harder to live with than a contractor's code because it sits deeper in the business. For the advisory side of this comparison, see how AI is changing what buyers should expect from consulting.

07

How to work with FDEs well

Agree four things before the work starts: the outcome, an owner on your side, real access and the handover. Whether an engagement pays back or becomes a permanent cost is mostly settled by those four.

Agree the outcome first

Name the number that should move, its baseline, the target, the date and the system it will be read from. An outcome such as "freight cost per order down 10% by the third quarter, read from carrier invoices" gives everyone the same finish line. Gartner advises buyers to identify an executive sponsor "accountable for business outcomes, not simply the implementation budget".

Name an owner on your side

FDEs should never be the only people who understand what they built. Pair them with the person who owns the process and with the people who will use the result every day. Put ownership of the code, configurations, prompts and business logic in the contract, in your name.

Give real access

An FDE without access to systems, data and people's time becomes a consultant with a laptop. Grant access through your own accounts, scoped to what the work needs and logged, so it can be reviewed and removed at the end. If security rules prevent that, say so before the work starts.

Design the handover on day one

Write the exit into the plan: what must be documented, who must be trained, what your team must be able to change without help and how FDE hours fall over time. Gartner's advice is blunt: "Execute the exit plan established at the start rather than extending the engagement because internal teams are not ready." Forrester offers a test worth borrowing: "Two years from now, you should count the provider's engineers in your building, then count your own."

08

The costs and limits of the FDE model

FDEs are expensive, and the model has real failure modes.

- **Cost.** FDEs are paid well above ordinary engineers, and every engagement includes weeks spent learning your business before much is built.
- **Dependence.** If the knowledge of how your system works stays with the provider, you end up paying for access to your own logic. Forrester calls the FDE "a temporary prosthetic for a cognitive operating model that has not caught up" that works "the way training wheels work: genuinely, immediately, and on the condition that somebody eventually takes them off."
- **Vendor lock-in.** FDEs employed by a model or software vendor build on that vendor's product. Gartner predicts that by 2028, 70% of enterprises will abandon agentic AI built by vendor forward-deployed engineering.
- **Relabeling.** Gartner also warns of "FDE washing": ordinary consulting and professional services sold under the new name. "Some charge premium fees without the delivery depth, program management, or change management maturity to justify them," says Mukul Saha, a senior director analyst at Gartner.
- **Sprawl.** Every custom build has to be maintained, and a bespoke tool for each problem leaves many systems only their builders understand.

When you need FDEs, and when you do not

FDEs are worth their cost when the problem has to be solved inside your own systems, the result can be measured and someone in the business will own it. Something cheaper will do the job when:

- **The software works as sold.** If a standard installation and the vendor's onboarding will get you there, pay for that.
- **You need a second opinion, not a build.** An adviser costs less.
- **The outcome cannot be measured.** Without a number, nobody can say when the work is done.
- **Nobody in the business will own the result.** What FDEs build will decay soon after they leave.
- **The foundations are not ready.** If the data is unreliable or the process is not written down, fix that first. When the answer to "should we use AI?" is not yet sets out the signals. The free AI Readiness Assessment returns a scorecard in about ten minutes.
- **The need is permanent.** If you will need the capability every week for years, hire for it.

09

How FDEs work inside a Business Transformation Office

A Business Transformation Office is one way to buy FDE work with the outcome and the exit built in. At Armstrat, a partner leads every engagement and the FDE team does the work inside the business, with its people.

The work is not limited to AI. Armstrat's FDEs bring technical skill and operating judgment to five capabilities: business transformation; operations and supply chain; people and organization; growth, marketing and sales; and AI and intelligent automation. AI runs through much of that work. Armstrat is an official partner in eight AI and enterprise platform programs: the Claude Partner Network, the OpenAI Partner Network, the Microsoft AI Cloud Partner Program, the AWS Partner Network Services Path, the Google Cloud Partner Network, ServiceNow, Salesforce and SAP PartnerEdge. Because those programs span competing vendors, the choice of platform can follow the business rather than one vendor's product.

Engagements run in three steps, with the outcome and the exit agreed at the start.

1. **A diagnostic at fixed scope and price.** Two to four weeks inside the business to agree the outcomes, their baselines and how they will be measured, and to find what will move the numbers and what will not.
2. **A base fee plus a contingency paid on results.** The base fee staffs the work properly. The contingency is paid only when the measured outcome is delivered.
3. **The team stays until results hold, then hands over.** The exit comes when the business runs the new way without outside help, with the owners, the measures and the cadence left in place.

Outcome pricing and FDE work fit each other. A fee tied to results only makes sense when the people paid on the result can change the work, and FDEs can, because they work inside the business. It also weakens the incentive to stay: once the result holds and the contingency is earned, a longer engagement adds cost without adding to the result.

Do Armstrat's FDEs build the systems themselves?

Yes, where Armstrat is the right team to write the code, as at the dealership below. In other engagements, the client's own IT team or a specialist agency wrote the code while Armstrat's FDEs owned the specification, governed the build and stayed until the system was in daily use. Client names are withheld, and the results are as published.

- **Building and deploying a system.** At an authorized car dealership, Armstrat's FDEs designed, built and deployed a dealer-owned customer platform alongside the manufacturer's system. A dealership turned about 7,705 past service visits into reachable customers.
- **Leading a client team's build.** With a pre-owned electronics retailer's new IT team, Armstrat led user stories, sprints and governance: 22 custom ERP modules in 37 weeks.
- **Putting AI into daily work.** A professional services firm deployed its first AI workflow within 90 days, after Armstrat narrowed its options to the use cases worth building and stayed with the first one through deployment.
- **Taking a build into live use.** For a founder-led digital marketing agency, Armstrat owned the specification, governed the external build team and stayed through rollout. The agency absorbed $850,000 of new revenue with four net hires.
- **Changing operations.** Freight cost down 18% and $280K a year saved for a $120M multi-channel retailer, with the team staying through implementation.
- **Changing who decides.** A founder-led brand grew revenue from $8M to $18M by redesigning who decides.

A business should not pay FDE rates for code a specialist team can write well. The scarce part of the job is knowing what to build and getting it used. The full case library shows the rest of the work, and the partners who lead it are introduced on the About page. Questions about the work, results and fees can be put to Ask Armstrat, which answers from Armstrat's published sources.

10

Where Armstrat says no

"Honest enough to say not yet" is a working rule at Armstrat. Armstrat will not put FDEs into a business:

- **Without a named exit.** An engagement designed to keep outside engineers in place indefinitely leaves the client renting its own logic.
- **To relabel advice.** If the deliverable is a recommendation, it should be bought and priced as advice.
- **To build what already exists.** If standard software does the job, a custom build is a cost, not an asset. Custom ERP or off the shelf sets out where building pays back.
- **To automate work nobody has written down.** AI on top of undocumented rules repeats the confusion faster. Why AI needs your operating knowledge written down first explains the order.

Because Armstrat does not bill by the hour and part of its fee depends on the result, work that will not pay back is a cost to Armstrat as well as to the client.

11

Frequently asked questions

What is a forward-deployed engineer (FDE)?

A forward-deployed engineer (FDE) is an engineer who works inside a client's business, on its systems and alongside its employees, to build solutions people use every day. The role was created at Palantir in the early 2010s. FDEs own a problem from discovery to production and are judged by adoption and measured results, not by recommendations.

How can we tell real FDE work from rebranded consulting?

Sometimes only the label has changed, which is why Gartner warns of "FDE washing". Ask four questions. Will their engineers work in your systems, with access to change what runs there? What will be running when they leave, and who on your side will own

it? What share of the fee depends on the measured result? Will their hours fall as your people take over? Vague answers usually mean advice under a new name.

How is an FDE different from a solutions engineer, sales engineer or solutions architect?

Solutions engineers, sales engineers and solutions architects usually work before a sale, designing how a product could fit and showing that it can. Professional services teams install a product to a set scope. An FDE works after the decision, inside one customer's business, on whatever that customer's problem needs, and stays until the solution runs in production.

How much do forward-deployed engineers cost, and how is the work priced?

There is no standard rate, and it is rarely cheap. The engineers are well paid: Lightcast data reported by Fortune in September 2026 put the median advertised FDE salary above $188,000. Firms price the work by the hour, by fixed scope or as a base fee plus a payment tied to results. Hourly billing rewards longer engagements, so ask what share of the fee depends on the outcome.

Should we hire FDEs in-house, use contractors or engage an FDE firm?

Hire when you will need the capability every week for years and have a steady flow of problems. Use contractors when you can specify the work and manage it yourself. Use a firm when you need a result soon or the work has a clear end. An AI or software vendor's FDEs build on its own product, which can tie you to one platform. An independent firm can choose the platform to suit the business.

What happens when the FDEs leave?

That depends on whether the exit was designed at the start. A good handover leaves the code, configurations and documentation in your accounts, an owner inside the business and people trained to run and change what was built. Without that, the knowledge leaves with the engineers and the system decays. Gartner advises buyers to execute the exit plan set at the start.

Can a company without its own AI team use forward-deployed engineers?

Yes. The model grew up inside software companies, but a business with no AI or data team of its own often needs it more, because nobody inside can connect a new tool to daily work. What matters is a measurable outcome, a named owner on your side and a problem worth the fee, not the size of your technical team. Plan the handover early, since someone inside must learn to run what is built.

Do forward-deployed engineers only work on AI projects?

No. The role began in data software, years before generative AI. The same model fits any change that has to be built inside a business: an ERP rollout, a supply chain restructure, a new operating model. At Armstrat, FDEs work across business transformation; operations and supply chain; people and organization; growth, marketing and sales; and AI and intelligent automation.

Written by

Hashir I. Qureshi

Co-founder and managing partner, Armstrat

Hashir is Armstrat's managing partner. He runs senior client relationships, sets the firm's positioning and methodology, and decides which engagements Armstrat takes on, and which it turns down. Before founding Armstrat, he led restructuring across retail and supply chain businesses, owning the ERP, the cost structure and the operating cadence that runs across them.

About Armstrat

Armstrat is a Business Transformation Office (BTO™). A partner leads every engagement, and forward-deployed engineers (FDEs) work inside your business across five capabilities: business transformation; operations and supply chain; people and organization; growth, marketing and sales; and AI and intelligent automation.

Engagements are a base fee plus a contingency paid on results, not on documents. We use AI only where it earns its place, and we say not yet when a business is not ready for it.

Continue reading

Business transformation
armstrat.com/services/business-transformation

AI and intelligent automation
armstrat.com/services/ai-intelligent-automation

Operations and supply chain
armstrat.com/services/operations-supply-chain

What a BTO is
armstrat.com/business-transformation-office

Talk to a partner about where your business is stuck.

armstrat.com/contact hello@armstrat.com

Scan to contact us

Not sure where AI fits yet? The free AI Readiness Assessment takes about ten minutes:
armstrat.com/ai-readiness-assessment

© 2026 Armstrat. All rights reserved. This article is general information, not advice for your specific situation. The latest version is at armstrat.com/forward-deployed-engineers.