What an Automation Pilot Must Prove Before Expansion

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A successful automation pilot gives us evidence that an application can work under the conditions tested. When the team asks to expand, my first question is how much of that result we can rely on at the next site.

What changes at the next location? Who will keep the system operating? Which benefits will become available, and what must the business spend to obtain them?

Those questions deserve a clear answer before the next investment is approved. A good first installation may justify moving quickly. It may also reveal that the sensible next step is a narrower application than the original rollout proposal.

Start with the work the business needs

Consider a hypothetical company that has tested a robotic workcell and now wants to install it at several other facilities. The pilot team presents completed output, stable operation and a favorable estimate of time released. That makes the proposal worth examining. But which business constraint would the expansion actually resolve?

If the constraint is an overloaded process, additional capacity could matter. If demand is weak, faster processing might have little immediate commercial value. If unreliable inputs cause most of the interruptions, buying more equipment may leave the underlying problem in place. Improving the current process belongs in the comparison.

The U.S. Government Accountability Office's technology-readiness guide examines technology maturity and readiness for integration into larger systems.[1] Its setting is federal acquisition. I take a narrower management lesson from it: describe how the result was demonstrated before relying on it to justify the next commitment. That application to a commercial expansion decision is my interpretation.

Know what the result includes

A pilot report should define the task and the observation period. I would ask for accepted output against agreed quality criteria, the work attempted, and the work excluded. Product mix, operating hours and staffing also belong in the record. Otherwise, a comparison with the existing process can turn on differences that have little to do with automation.

NIST's Performance Assessment Framework for Robotic Systems describes research that relates assembly-task requirements to measures of component and system performance.[2] It supports evaluating performance against a defined task. It doesn't certify a particular commercial installation.

The comparison needs a credible starting point. If the pilot handled a simpler mix or received more support, record that difference. If the old process was measured during peak demand and the pilot during a quiet period, the reported improvement needs qualification.

Keep the exceptions in view. A result that excludes interrupted work can be useful, provided the exclusions are explicit and the business understands how much they matter. An average should not conceal a recurring event that delays a critical order.

Question	Evidence I would request	Decision it informs
What work was completed acceptably?	Accepted and attempted output, quality criteria, period and exclusions	Whether the result answers the actual business need
What help was required?	Intervention reasons, staff time and recovery duration	The support burden of normal operation
What changes at the next site?	Layout, workload, interfaces and staffing differences	How much evidence transfers
Who takes responsibility after installation?	Operational owner, training, maintenance and support arrangements	Whether the business can sustain the result

These are management questions, not a universal acceptance standard. Technical and safety criteria require the relevant qualified specialists.

Examine the differences between locations

Return to the hypothetical workcell. At the first facility, it handles a stable product mix, with an integrator available to resolve problems. The second facility has frequent changeovers and different upstream equipment. Both locations perform an assembly task. That description alone does not establish that the operating requirements are equivalent.

NIST's agility research includes evaluating robotic response to unexpected events, obstacles, failures and environmental variation.[3] For an expansion proposal, I take this to mean identifying what could change at the next site and asking for evidence about those differences. The research program is not proof of any supplier's field performance.

The team may already have suitable evidence. Similar equipment, comparable work and documented support could justify expansion without another full pilot. Repeating a test has a cost, including the benefit delayed while the business waits.

If changeovers are the unresolved issue, I would ask for a bounded test of changeover performance under the intended conditions. The team should state what finding would support expansion and what finding would require redesign. Testing should answer a decision question. Qualified personnel should determine how to conduct it safely.

Price the operation that will actually run

The people around the pilot deserve attention. An integrator's intervention may be appropriate during commissioning. If that intervention remains necessary in routine operation, the expansion plan must account for it.

I would ask who diagnoses a stoppage, who can restore operation, and what support is available on the shifts the business intends to run. If one expert is expected to support several sites, I'd want to see whether that person can cover the workload. Adding installations does not automatically add the capacity to support them.

Configuration matters too. NIST IR 8227 describes a robotic-workcell testbed and comparative procedures for measuring performance impacts of cybersecurity technologies.[4] This supports examining the configuration the business will actually operate. It does not establish a universal performance penalty from security controls. Any material difference between the tested configuration and the proposed operating configuration needs an explanation.

Separate released time from realizable value

Freeing up time is a starting point for the business case. What the business does with that time determines its value.

If employees move to other necessary work, capacity may improve while payroll remains unchanged. If the plan avoids future recruitment or reduces overtime, the saving depends on whether those costs would otherwise have occurred. If it produces additional output, the commercial case needs demand or another justified use for that capacity.

I would not count the same released hours as both a payroll reduction and the labor supporting additional output. Nor would I treat every improvement as a reason to reduce headcount. The benefit may lie in delivery reliability, quality or the ability to handle a workload the existing process cannot absorb. State the mechanism and the evidence for it.

Then include the incremental costs of integration, training, maintenance, software, support and transition. The first pilot may already have absorbed useful development work, so the next installation need not cost the same. Equally, a different interface or operating schedule may add costs that the pilot never encountered.

Management should see what happens if utilization is lower than expected or commissioning takes longer. There is no useful universal payback threshold for this discussion without an actual investment case and the company's capital priorities.

Approve a defined next step

The expansion proposal should identify its operating scope and explain why the evidence supports it. I would want an accountable operational owner and a clear condition for pausing further deployment. A pause is useful when it prevents an unresolved issue from spreading; it should have a route to resolution.

Next step	When I would consider it	Trade-off
Extend to comparable tasks or sites	Relevant conditions match and ongoing support is ready	Earlier benefits, with remaining variation monitored
Fund a focused additional test	One unresolved issue could change the investment decision	Learning must justify its cost and delay
Improve the current process first	A process or data problem is the main constraint	Defers equipment spending while addressing that constraint
Stop or redesign the application	Operating requirements or economics remain unsupported	Avoids further exposure but gives up the proposed benefit

I'd put operations in charge of the acceptance criteria. Finance should review the economics of the next step, with engineering and the relevant specialists assessing integration and operating risks. Who does what will depend on the organization.

Before I approve the next investment, I want to know exactly what we're deploying, what evidence supports it and who will keep it running. If an important uncertainty remains, put it on the table and explain how we'll resolve it before committing more resources.

Sources

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2. National Institute of Standards and Technology. Performance Assessment Framework for Robotic Systems. Created March 21, 2014; updated March 26, 2025. Project description.
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4. Timothy A. Zimmerman, NIST. Manufacturing Profile Implementation Methodology for a Robotic Workcell. NIST IR 8227. May 22, 2019. Publication and abstract. DOI.

Official source pages checked October 12, 2026. The example is hypothetical; no customer outcome or industry-wide success rate is claimed.