

WHY YOU NEED IN-HOUSE COLLABORATIVE ROBOT EXPERTISE

The Foundation to Building a Collaborative Robotics Training Program

Lean Robotics: Simplify Robot Cell Deployments



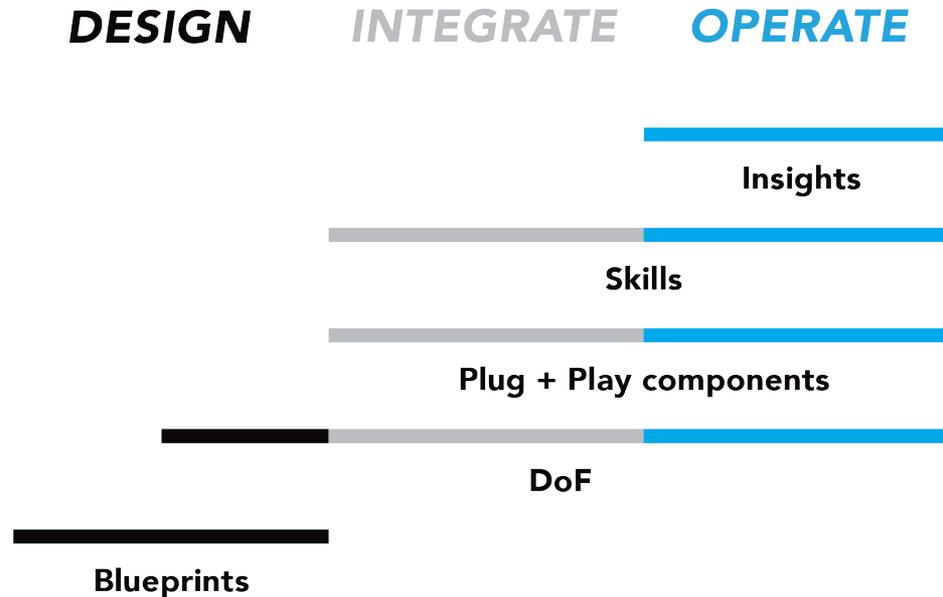
Whenever you ask if robots could work in your factory, the answer you receive is always a hesitant “It depends.” It depends on your factory, your team, which robot you choose, what you want it to do... and a whole lot more.

If you're a first-time robot user, how can you get started? How do you get from your initial idea to a productive, working robot? And if you've already got a few robotic deployments under your belt, how can you scale up your robotics efforts throughout your factory—or across multiple factories?

The answers can be found in **lean robotics: a methodology for simplifying robotic cell deployments.**

Lean robotics is a systematic way to complete the robotic cell deployment cycle, from design to integration and operation. It will empower your team to deploy robots quicker and more efficiently than ever before.

Lean robotics divides robotic cell deployments into three phases: Design, Integrate and Operate.



Robotiq's library of eBooks covers the different phases of the robot cell deployment to ensure that you have access to tips from robotics experts all along.

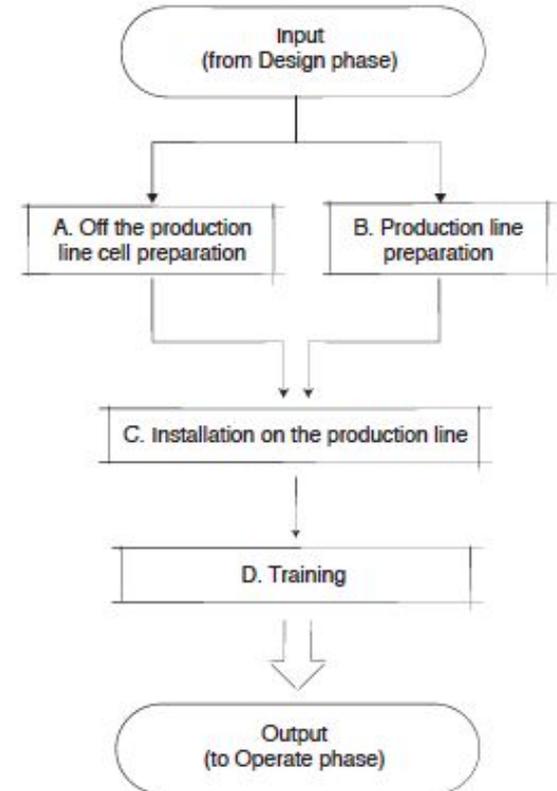
Learn more about Lean Robotics on leanrobotics.org.

This Ebook Covers the Integrate Phase

INTEGRATE

The integrate phase consists of putting the pieces of the robotic cell together, programming it, and installing the cell on the production line.

you start the integrate phase with the cell design in hand and the equipment ready to be assembled. At the end of the integrate phase, you'll have a working robotic cell on your production line, ready to start creating value for its customer.



WHAT IS IN-HOUSE ROBOTICS EXPERTISE?

In-house robotics expertise means having members of your team who are trained in robotics. There are two ways to achieve this:



Through
recruitment



Through
Training

In this workbook, we will focus on training the current workforce. Even if you choose the option of recruitment, you may struggle to find applicants with the right robotics training for your exact business needs as there is currently a skills shortage in robotics. Training is likely to be part of every move to in-house expertise, even with new recruits.

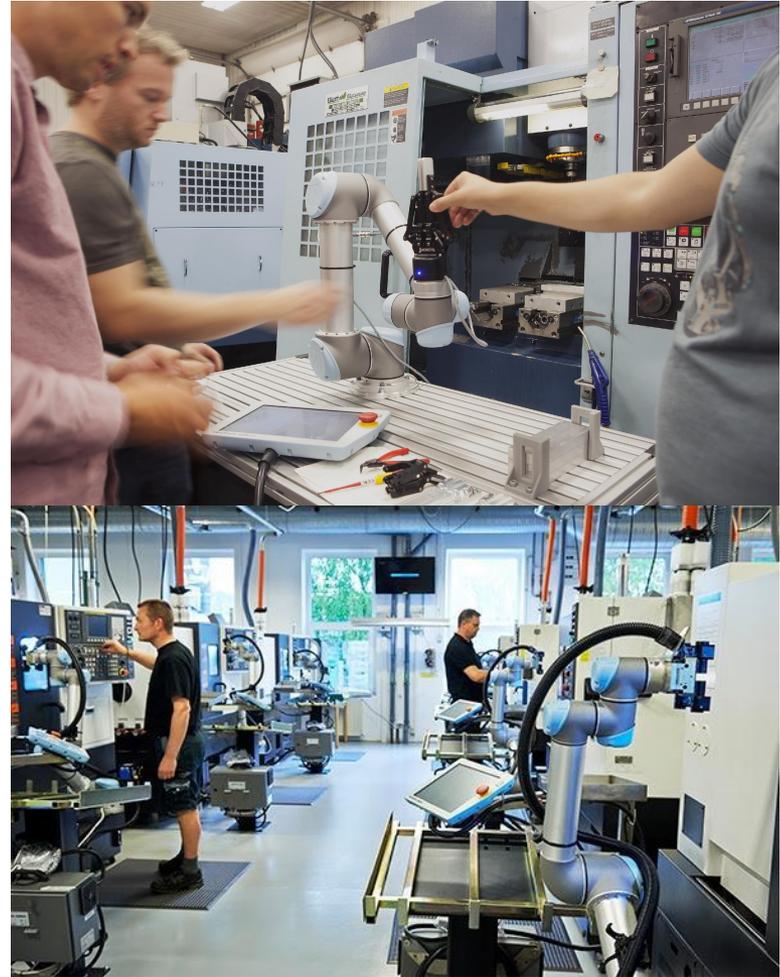
THE ALTERNATIVE TO IN-HOUSE : OUTSOURCING



The alternative to in-house expertise is outsourcing. This involves hiring a contractor (known as a robot integrator) to design and install the robotics system for you. Good integrators will have deep knowledge of the technology and continually re-educate themselves on the newest developments within automation. However, the advent of collaborative robotics — which are very easy to program — means that this option is not as necessary as it was in the past.

INTEGRATORS & IN-HOUSE ROBOTICS EXPERTISE

- Traditionally, in-house expertise was a big move for manufacturers. Industrial automation can get very complex and the training required would have been restrictive for small businesses. Automation solutions were usually permanent after the initial integration, so the benefit of having robotics experts on-staff did not match the high investment.
- Integration companies are often specialized in one or two areas of industry, such as end-of-line packaging solutions, automation for food processing systems, materials handling and fabrication, farming automation, or robot vision. For traditional automation, this specialization was very valuable to manufacturers. It was very unlikely that in-house training could match the skills and expertise of such specialized integrators.





As a result of this, there have traditionally been several barriers to in-house robotics expertise. Some of these barriers were:



High initial cost of automation solutions.



Low flexibility (or more correctly "agility") of automation solutions.



Complexity of automation solutions.

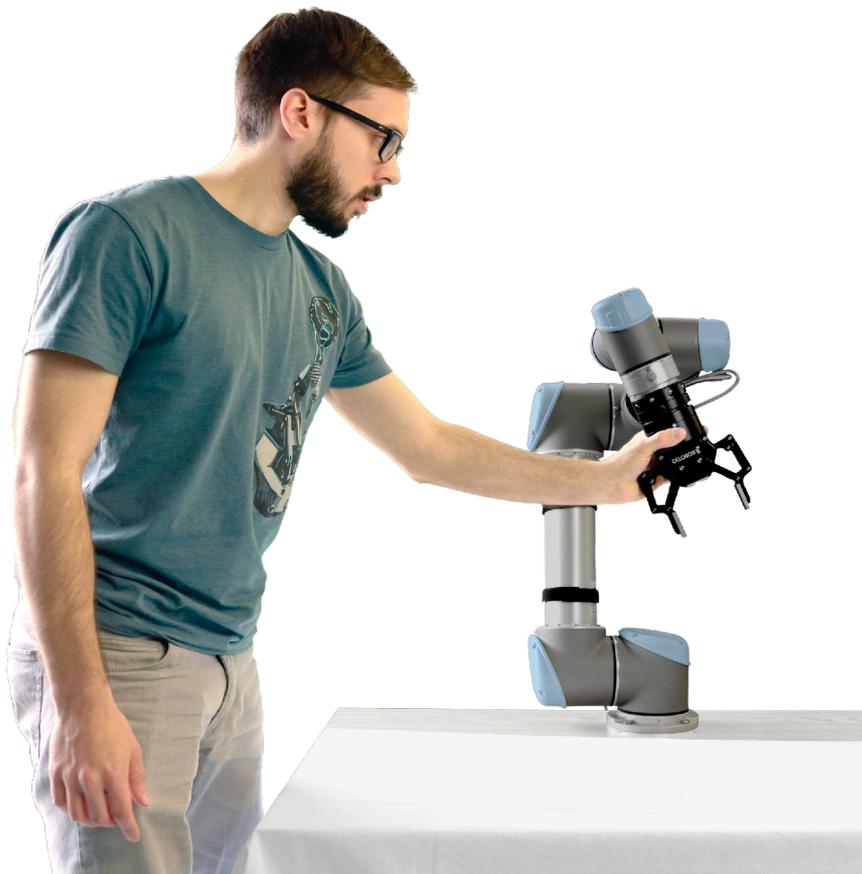


High degree of domain-specific expertise required.

Automation technology has developed a long way in the last decade and it is becoming much easier to integrate. Even so, these barriers are still present when we are talking about traditional industrial robots.

Collaborative robots are a whole different story.

COLLABORATIVE ROBOTS REMOVE TRADITIONAL BARRIERS



The advantage of collaborative robots is that they are easy to program. This means that integration is easier than with industrial robots.

Here are some of the advantages of collaborative robots:

- Significantly lower costs compared to traditional robots.
- High flexibility and agility.
- Simple automations can be programmed by anyone, even by children.

Suddenly, the restrictions to in-house robotics expertise have been removed.

With collaborative robots, you can gradually train your workforce to program robots, starting with simple programs and working your way into more complex tasks. As the workforce becomes more proficient with robot programming, they are able to tackle more delicate automations.



COLLABORATIVE ROBOTS REMOVE TRADITIONAL BARRIERS

- There is very little collaborative robots expertise with integrators
 - Collaborative robot projects tend to be smaller than traditional robot projects, which makes them unattractive to integrators
 - Collaborative robots are still relatively new technology - everyone is learning how to use them!
- Consider this example:
 - P&G chose to build in-house expertise because there was none or little cobot knowledge with their outsourced partners





COBOTS DISRUPTED INDUSTRIAL ROBOTICS

- Collaborative robots have changed the face of industrial automation. Robotic automation is no longer only an option for mass market manufacturers.
- In the past, the investment was huge, setup times were huge, equipment costs were huge, disruption to the business was huge... everything was huge, including the robots.
- Then, in 2008, the industrial robotics industry made a big change: it started thinking small. Universal Robots launched the first ever collaborative robot, the UR5.
- In the last decade, businesses like yours have started to realize that robotics are a real possibility. For starters, the initial system costs are significantly cheaper — think \$50k all-included compared to \$250k for an industrial robot. However, cost isn't everything. The biggest advantage of collaborative robots is their flexibility and agility: you can quickly and easily move them from one task to another.
- There is only one thing that might stop you from getting the most from collaborative robots: lack of robotics expertise.

.....BUT THEY DID NOT (REALLY) COME WITH A MANUAL!

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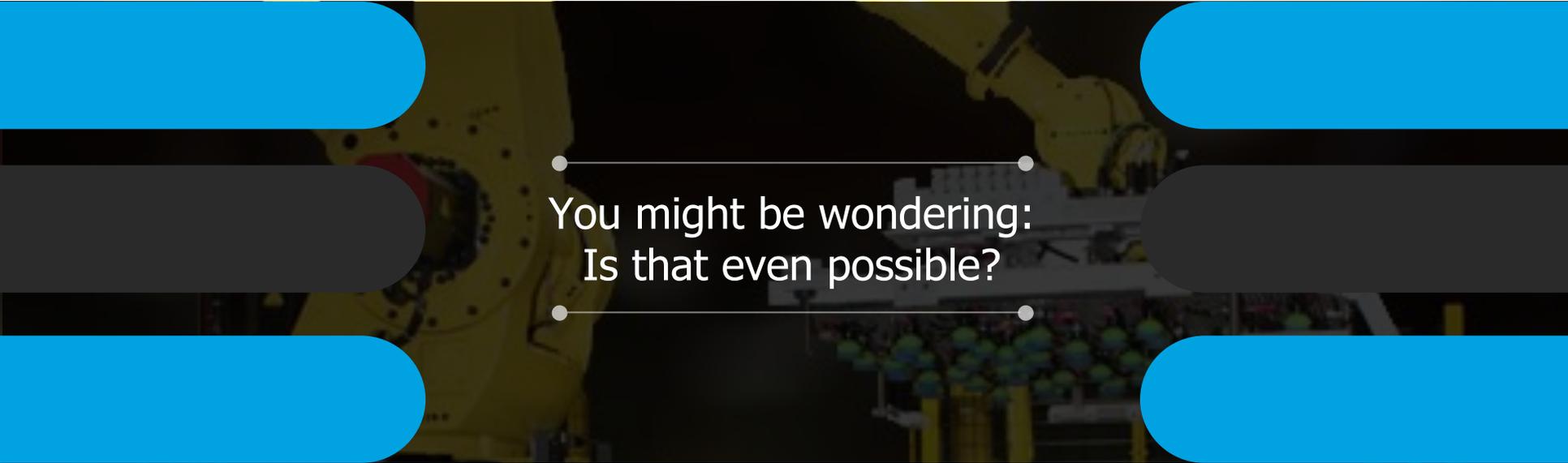
LACK OF ROBOTICS EXPERTISE IN YOUR BUSINESS?



Collaborative robots are easy to program. This is obviously great, but it also leaves you with a business dilemma: Do you want to train your workforce in robotics?

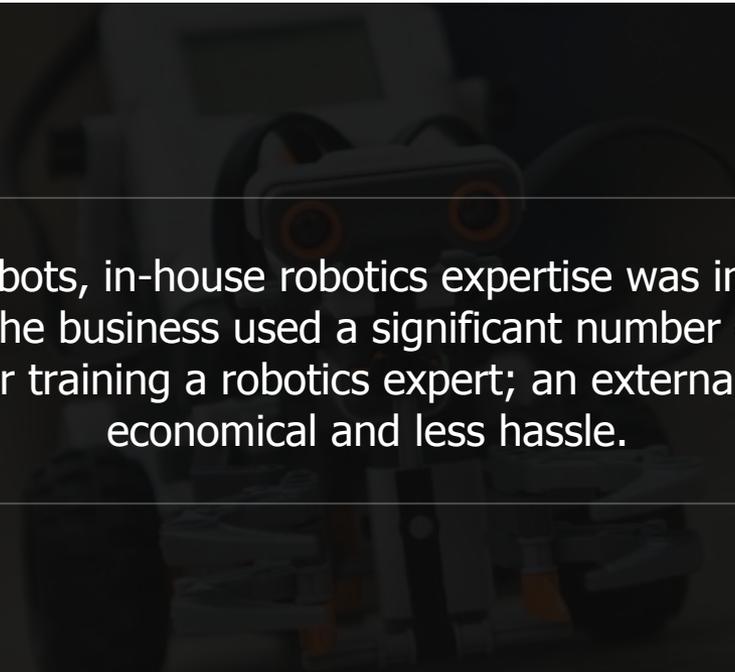


LACK OF ROBOTICS EXPERTISE IN YOUR BUSINESS?

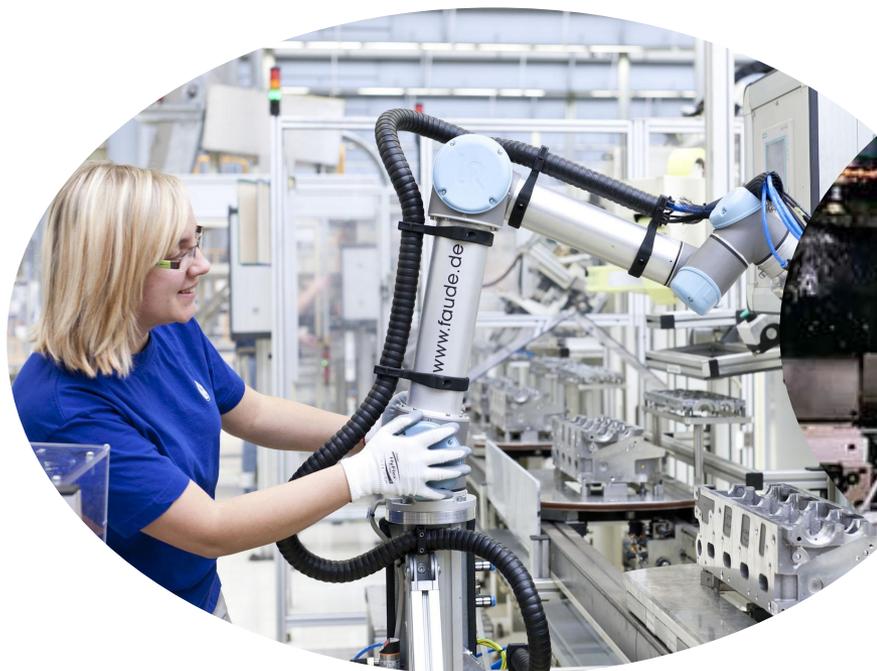


You might be wondering:
Is that even possible?

IT'S NOT LIKE TRADITIONAL INDUSTRIAL ROBOTS

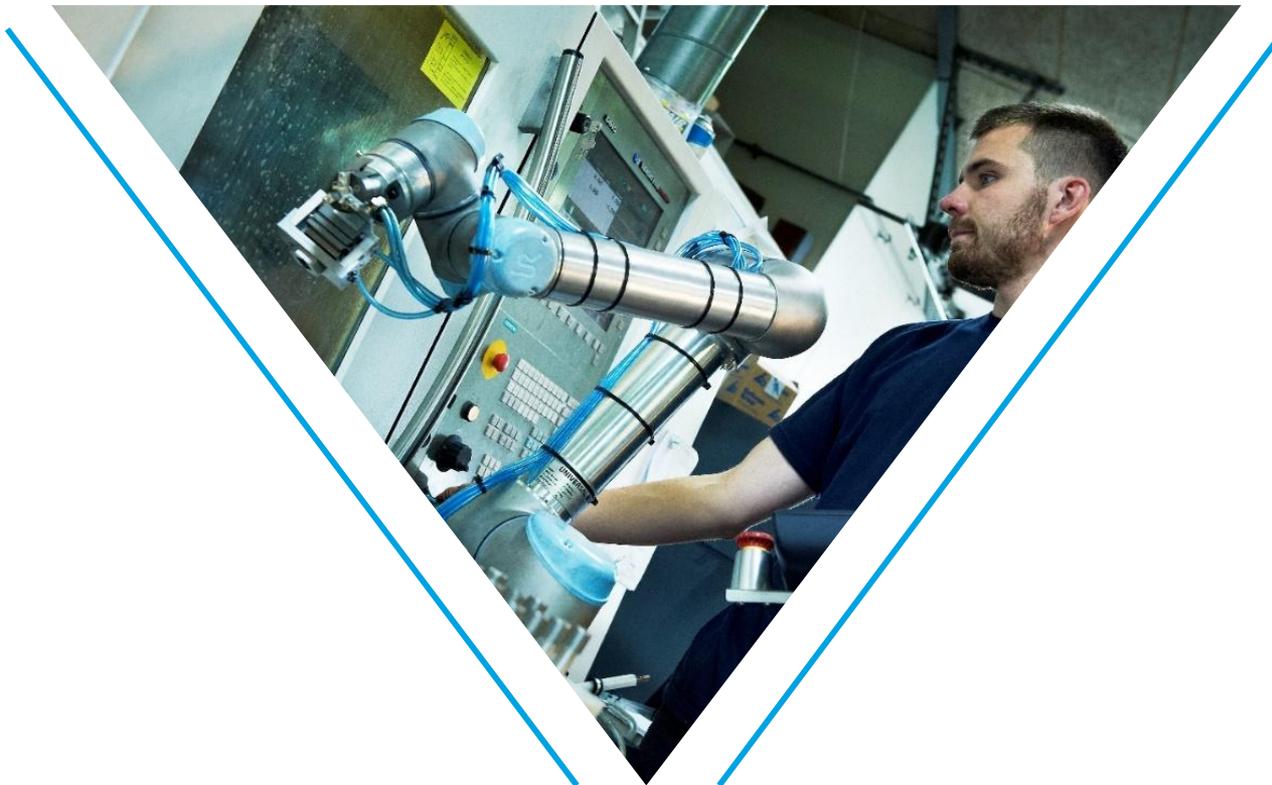


With industrial robots, in-house robotics expertise was infeasible for most businesses. Unless the business used a significant number of robots, there was little sense in hiring or training a robotics expert; an external integrator was more economical and less hassle.



Collaborative robots require much, much less training than traditional robots. Technologies like ActiveDrive even allow you to program a robot with no training at all. This means that you can get started using collaborative robots right away, with only a basic introduction to the robot — no specialist expertise required.

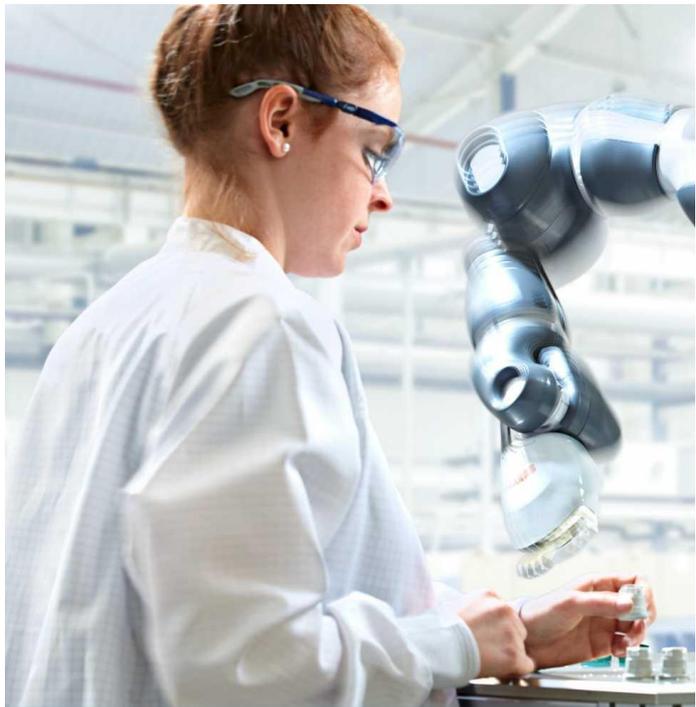
.....BUT ADVANCED COLLABORATIVE ROBOTS SKILLS MUST BE LEARNED



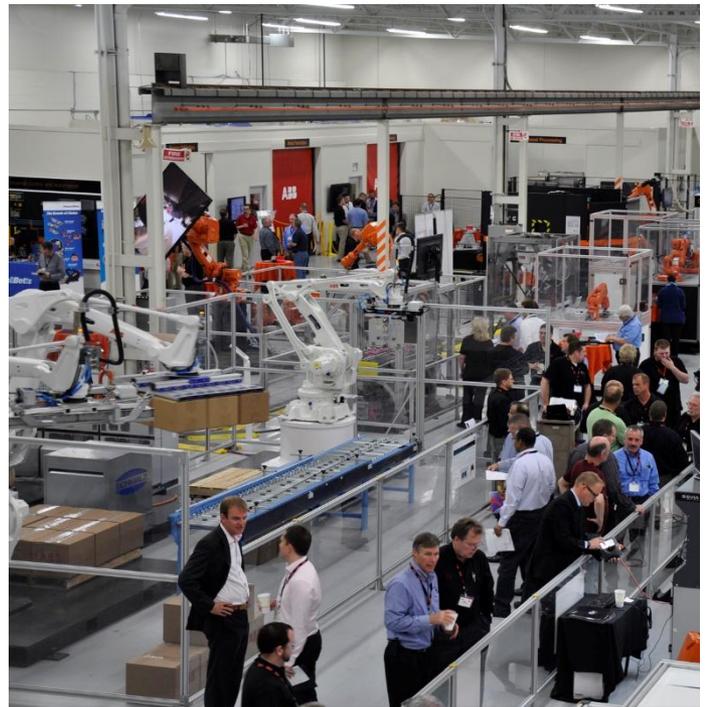
However, as your workforce gets more familiar with the robot, you will eventually want to use it for a task which needs extra robotics expertise. You might want to integrate extra sensors into the robot or use advanced gripping strategies. When that happens, you will be faced with the following question:

SHOULD WE OUTSOURCE TO AN INTEGRATOR OR TRAIN THE WORKFORCE?

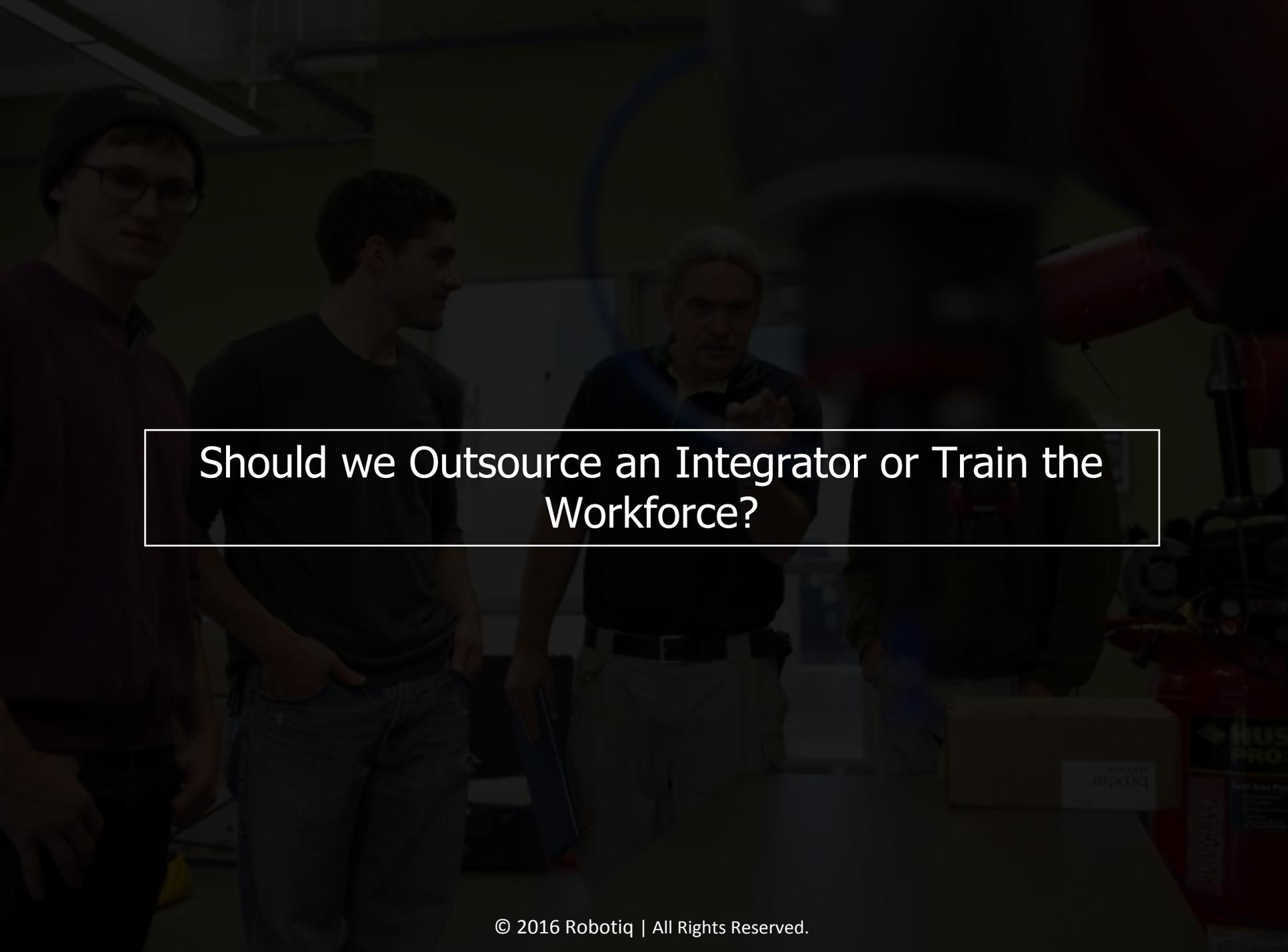
You have two options when you come across a task which is beyond the current skills of your workforce:



Outsource an external integrator to perform the advanced integration.



Train your workforce to be able to perform the integration.

A group of people, including a man with glasses on the left and a man in a blue shirt in the center, are standing in a factory or industrial setting. A red robotic arm is visible on the right side of the image. The background shows industrial equipment and a whiteboard.

Should we Outsource an Integrator or Train the Workforce?

Cost is usually the first consideration when comparing two solutions. However, keep in mind that it might not be the most important, even though it is "the bottom line."



In-House Expertise

Training costs

Extra personnel costs

Lost work hours due to training

Travel costs to off-site training



Outsourced

Work cost

Travel costs, for contractors to your site

Contract writing and legal costs

Costs incurred by later changes to contract and work scope

IN-HOUSE VS OUTSOURCED : FLEXIBILITY

One of the biggest advantages of in-house expertise is flexibility, which also happens to be one of the main advantages of collaborative robots.



In-House Expertise

Easy to alter robot application or change track completely

Chance for more dynamic solutions, as a trained workforce continually forms ideas on how to improve the robotic application



Outsourced

Can change integrator if your needs are not being met.

Outsourced company may be able to react quicker to changes in scale of work.

Fixed-cost outsourcing can lead to financial flexibility in other areas of the business



The quality aspect of robotic integration refers to whether the robot performs as expected



In-House Expertise

Workers have vested interest in the idea, which can improve their drive towards quality

Quality control can be easier, as it is managed in-house

Can maximize use of the robotic technology as workers understand its capabilities



Outsourced

Deeper knowledge of robotic technology within the outsourced company.

Changes to robotic setup could incur extra costs and bad will between the businesses. As a result of this, benchmarking mechanisms are vital to ensure that robots function according to specifications.

IN-HOUSE VS OUTSOURCED : CONTROL

Maintaining control over process is at the core of many businesses. Outsourcing inherently means giving up some of that control to another company.



In-House Expertise

Higher level of control over the integration
(could be great but maybe not)

Smaller confidentiality risks, as proprietary
information is maintained within the
company

You are not financially tied to the well
being of another company, as you are
with outsourcing, which makes your
business more stable



Outsourced

The outside perspective on the task
could lead to a better robotics
Solution

Potential loss of managerial control regarding
how the job is carried out

The reputation of the outsourcing company
could affect your business's reputation, in
either a positive or negative light.



IN-HOUSE VS OUTSOURCED : CONVENIENCE

Collaborative robots are a very convenient form of automation, and both insourcing and outsourcing can extend this convenience.



In-House Expertise

Very convenient as there is practically no delay or administrative burden to re-integrate a robot to a new task

Robot integrators in the workforce are always in-the-loop about changes to the process, so can give input and even preempt changes to the robot programming



Outsourced

Convenient in the sense that you do not need to retrain employees if you want to use the robot for a more advanced task, you can simply call up the contractor.

The wider knowledge-base of contractors makes it simpler to research new robotic technology options.

SHARE YOUR THOUGHTS!



Reach out to our automation Pros on [DoF](#), our community, and discuss the pros and cons of in-house VS outsourced expertise.



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Cheat Sheet:

The in-house robotic skills you need based on your robot application. This sheet will outline robotics skills to prioritize, based on the process you're looking to automate first.

Sync

Blog Posts

There are many benefits to choosing to develop in-house expertise, which we have covered in the blog post series which accompanies this workbook.

- [In-house vs Outsourcing: How to Source Robotics Expertise](#)
- [Four Reasons To Develop In-House Robotics Expertise](#)
- [In-House Robotics Expertise: How to Tell if it's Working](#)
- [Moving to In-House Robotics Expertise: What to Expect](#)

These yet to come on the [blog](#):

- Is In-House Robotics Expertise Enough?
- What Does Robot Training Involve?
- How Robotics Training Helps Create New Applications

At Robotiq, we free human hands from repetitive tasks.

We help manufacturers overcome their workforce challenges by enabling them to install robots on their own. They succeed with our robotic plug + play tools and the support of our automation experts community.



Robotiq is the humans behind the robots: an employee-owned business with a passionate team and an international partner network.



LET'S KEEP IN TOUCH

For any questions concerning robotic and automated handling or if you want to learn more about the advantages of using flexible electric handling tools, [contact us](#).

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WHY YOU NEED IN-HOUSE COLLABORATIVE ROBOT EXPERTISE



Learn more about:

- Traditional Barriers to in-house robotics expertise
- Collaborative robot remove traditional barriers
- Lack of robotics expertise in your business
- Outsourcing an integrator or training the workforce

[Module 1 >>](#)