



Automation for Food & Agribusinesses

From
industrial
robots
to
cobots

Planning and
implementing
your
**automation
journey**

Funding and
calculation of
your
return on
investment

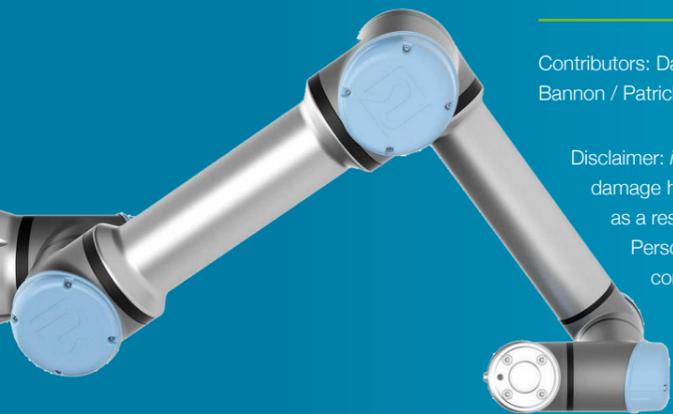


Reliance
Automation

ifac⁺

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Welcome Note



Peter Creighton

For years there has been a misconception that automation is too complicated, and it is too expensive leaving many businesses to think 'perhaps this is not for us'. Things are starting to change.

Reliance Automation aims to bring you tomorrow's technology today. We work hard to ensure excellent value, reliability, and efficiency is consistently delivered no matter the size of the project. We have been working in the Irish food sector for nearly 100 years and have intimate knowledge of food related applications.

Many companies would like to automate to become leaner and more innovative however concern sets in when it comes to funding a project. Reliance is truly delighted to partner with *ifac* who are well positioned to assist with this important area and can actively manage your funding process from start to finish.

The only real cost is time, to explore and assess new automation opportunities that now exist for Irish food businesses so please do not ignore how automation can enhance your business. To find solutions to your manufacturing challenges, contact one of the team through our website www.relianceautomation.ie

Peter Creighton
Managing Director, Reliance Automation



David Leydon

Low margins in the Irish food and agribusiness sector are a constant challenge. We believe that automation is critical to enhancing the competitiveness of Irish firms. Robotics and specifically Cobots have a role to play as businesses look to manage the impacts of Covid-19, Brexit, lean projects and the sustainability agenda within organisations.

This practical publication is aimed at business owners and CEOs who want to use automation to enable them to redeploy their team to higher value work by automating the most repeatable and predictable tasks occurring in the business.

In *ifac* we work with many company owners and senior teams on business transformation. Automation plays a role in these projects. We hope that this publication develops your automation conversation. For some, it might be getting your first cobot on the factory floor making sure to maximise State supports along the way. For others, it will help to bring automation back centre stage at senior decision making level as the drive for efficiency continues. We will work with you to fund your automation projects and advise and guide along your business transformation journey.

We are delighted to have collaborated with Peter and the Reliance Team on this publication.

David Leydon
Head of Food and AgriBusiness, *ifac*

Automation & robotics for SMEs

Many businesses operating in the Irish food and agribusiness sector are turning to automation to help solve staffing shortages, increase productivity, improve product quality and to future-proof their business.

Recent advances in technology means that Robotic Automation is no longer the preserve of the large corporates. The emergence of flexible, cost-effective and safe automation has allowed businesses of all sizes to take advantage of automation for a wide range of production tasks. As automation becomes more accessible, we are starting to see it play a greater role in many lean projects while also having the potential to impact on an organisation's green agenda.

From industrial robots to collaborative robots

Previously, to automate a process with robots, the only option was industrial robots. Industrial robots are what most people think of when they imagine robots; big, heavy, dangerous, and expensive. Industrial robots evolved to satisfy the needs of high-volume production, like those found in the automotive and aerospace industries. While industrial robots continue to be extremely important in certain sectors, over the past decade or so, another type of robot has disrupted the status quo.

Collaborative Robots (Cobots) continue to change the world of automation. Cobots are designed to interact with human workers in a shared workspace. Many tasks previously thought beyond the reach of automation due to cost, size or complexity are now possible even for the smallest of enterprises.

Cobots can work safely alongside people to the extent that a production line may not need to be altered since a Cobot is equipped with independently certified safety systems that detect if they make physical contact with humans. Cobots will stop immediately if light contact is made. Cobots are also much faster to set up and easy to program. The rise of Cobots is also having an impact on leading manufacturers of industrial robots as they respond to customer demand and start to make robots that are easier to program and integrate into existing workflows.

Drivers of automation in the food and agribusiness sector



What can be automated?

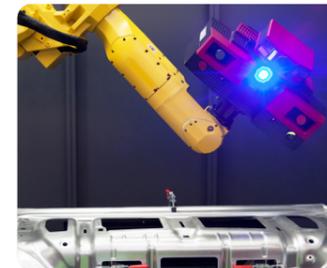
The ideal robot task has two properties:

- **Highly predictable: the task is the same every time, with few deviations.**
- **Repeatable: the task will be performed repeatedly.**

Some of the most common applications of automation for Irish food and agribusinesses include:



Palletising: Loading products onto pallets from the end of a production line is ideal for robots. This is probably the most common use for robots in the food industry right now and one of the easiest to implement. A perfect example of a repeatable and predictable job for a robot to do 24/7.



Inspection: End of line product inspection and quality checks including barcode verification. Robots can do this task continuously, error free and much faster than one of your team.



Packaging: Lifting and transferring products and placing them into packaging. Advancements in **gripper technology** means that robots can now handle delicate items damage free. Advancements in gripper technology also offer cutting edge solutions that will build your business and improve the expected Return on Investment (ROI). Increased throughput, decreased product damage and reduced downtime are benefits that can be expected when handling produce, bakery and protein items with food safe gripping systems.



Tray Handling: The stacking of trays on the end of a line or the feeding of trays into a washer is a monotonous and repeatable process that can be easily automated. A robot can be programmed to pick from racks or stack into racks, freeing up your team to engage in greater value-added activities.



Welding: Agricultural machinery manufacturers often operate MIG welding cells, however, there is a shortage of reliable, skilled labour in this area. Many OEM manufacturers are turning to automation for cell welding so that a single, un-skilled operator is able to manage several cells simultaneously without reducing the quality of the output.

Jargon Buster

Mobile Industrial Robots (MiR)

Many industries need goods transported around their factories, to and from a warehouse, from production to quality control, etc. In most industries this is still being done by hand or with man-powered / driven mechanical help. It's now possible to free up staff with Autonomous Mobile Robots (AMR's). MiR are robotic, manoeuvrable, easy to program and safe vehicles that will transport goods automatically around any facility.



Some of the benefits of MiR include:

- ✓ Safe with people and built to avoid obstacles.
- ✓ Scalability, new robots can be easily added.
- ✓ Easy to integrate. Can be deployed without disruption to existing layout and processes.
- ✓ Efficient in dynamic environments with multiple pick up and delivery points.



Collaborative Robots (Cobots)

Collaborative Robots or Cobots are designed to operate in the same space as humans. Cobots will immobilise with the slightest touch preventing injury to an operator or any person nearby. This eliminates the need for safety fencing or cages, once the required risk assessment has been completed.



Industrial Robots

Industrial Robots is a term used to cover all other robots. Everything from a tiny robot capable of lifting 1kg up to huge machines capable of lifting 2500kg. Industrial Robots also tend to operate at faster speeds than Cobots. These robots will perform repetitive tasks, however, they will always need to be caged off from the workforce, taking up more floor space adding to the costs of a project.



End of Arm Tooling (EoAT)

EoAT are also known as end effectors. EoAT are crucial for unleashing the automation potential of collaborative robots. Automation magic will not be created without at least one EoAT on the end of a robot arm. Put simply these are the tools on the end of the robot's arm which allow it to perform its task effectively.



Robot Integration

Integration is the process of merging a robot, peripherals, and manufacturing machinery into a production system that functions as a single unit. Robot Integration allows robots of all kinds to perform specific manufacturing tasks. Many companies will take on basic integration projects themselves using internal resources. For tasks that are more sophisticated, there are many integration companies available to assist.

Planning and implementing your automation journey

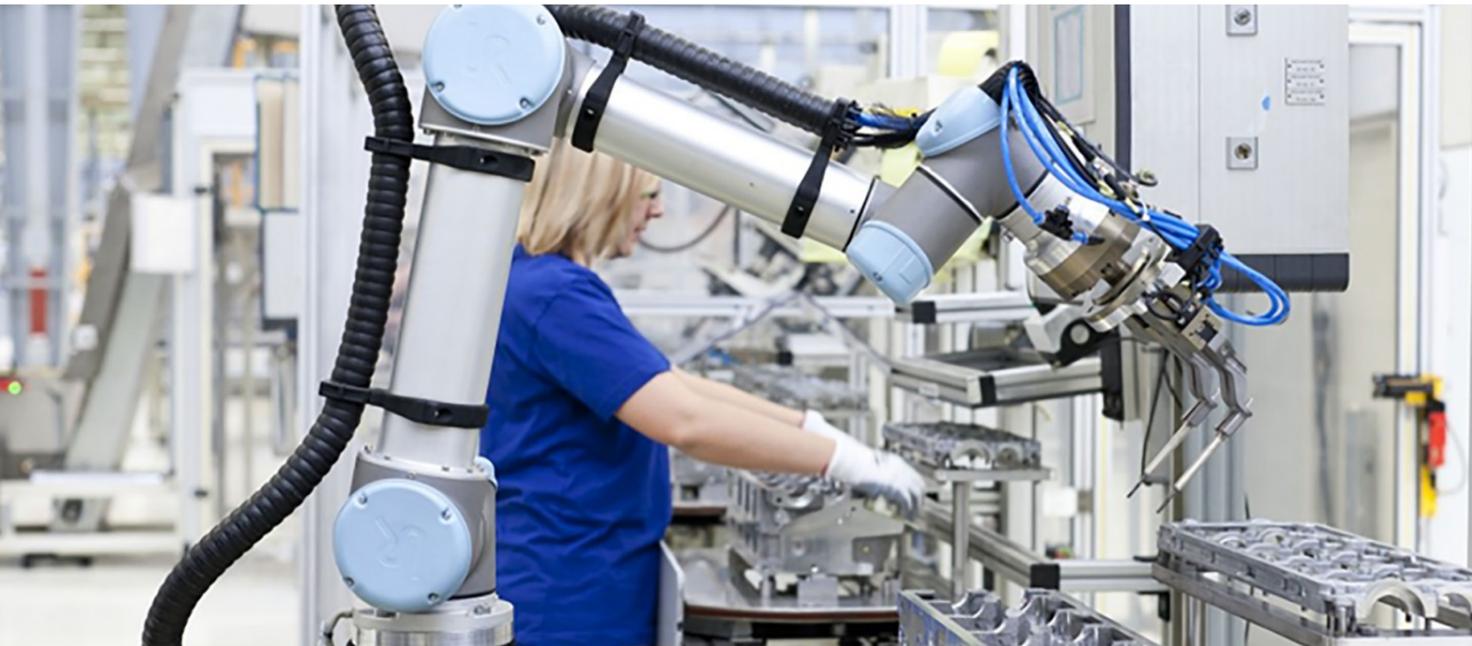


Return on Investment

Return on Investment (ROI) is an important aspect to calculate when deciding if a robotic system is worth an investment. ROI is the amount of time it will take for a robot's production to pay itself back to a company through achieved efficiencies. Typically a good ROI from an automation project will be a payback of under 2.5 years.

Why choose to switch to a robotic system instead of using manual labour?

- A robotic system is usually able to run at 90 to 95% efficiency, while the average person cannot match this efficiency rate consistently as we require breaks, our bodies will become tired throughout a shift etc.
- Robots make far fewer mistakes, especially when performing monotonous and boring repetitive tasks, which is a big cost saver.
- Robots also minimise the risk of human injury through RSI, back injuries etc. Every application requires its own proper risk assessment to be carried out. Provided this is done, there should be no risk to workers that work side by side with robots.
- No recruitment for personnel, no training time lost (safety training etc.)



What do we need to consider when working out the ROI?

Let's take a simple example of a palletising application.

Assumptions:

- Two 8-hour shifts
- 5 days a week, 48 weeks a year
- Each shift having 2 workers palletising 5kg boxes
- One of the operatives will stay on this application to operate the palletisers, remove the pallets etc. and the other operatives are redeployed to more beneficial roles for the business.

Total cost of installing two robots €107,000

- Two end of line, low footprint palletisers, designed, installed and tested.
- These palletisers can stack one pallet up to a height of over 1.75 metres. Once complete, it will then move to stacking the other side while an operator can remove the fully built pallet and replace it with a new empty pallet. This is all without the need for caging off the work area. The only floor space being used by the palletiser is the small central column support, making the solution extremely space efficient.

Average total employer costs per employee: €30,000 each x 4 = €120,000

Break-even = Approximately 20 months (based on 2 x operators being redeployed)

This is a simplified example of a recent application.

Year	System Cost	Maintenance Costs	Operating Costs*	Labour Savings**	Productivity Savings***	Yearly Cash Flow	Cumulative Cash Flow
1	107,000	800	2,600	60,000	6,000	-44,400	-44,400
2		800	2,652	61,200	6,120	63,868	19,468
3		800	2,705	62,424	6,242	65,161	84,629
4		800	2,759	63,672	6,367	66,480	151,109
5		800	2,814	64,976	6,495	67,857	218,965

Other savings could include HR costs, production loss due to sickness/absence etc.

A three-shift operation ROI will be even better again with expected break-even in just over 13 and a half months. With automation, the more you scale, the bigger the potential efficiencies.

* for medium size robot; small robot has 1/10th power consumption and large robot has twice power consumption. Assumes 2% annual inflation in electrical power costs

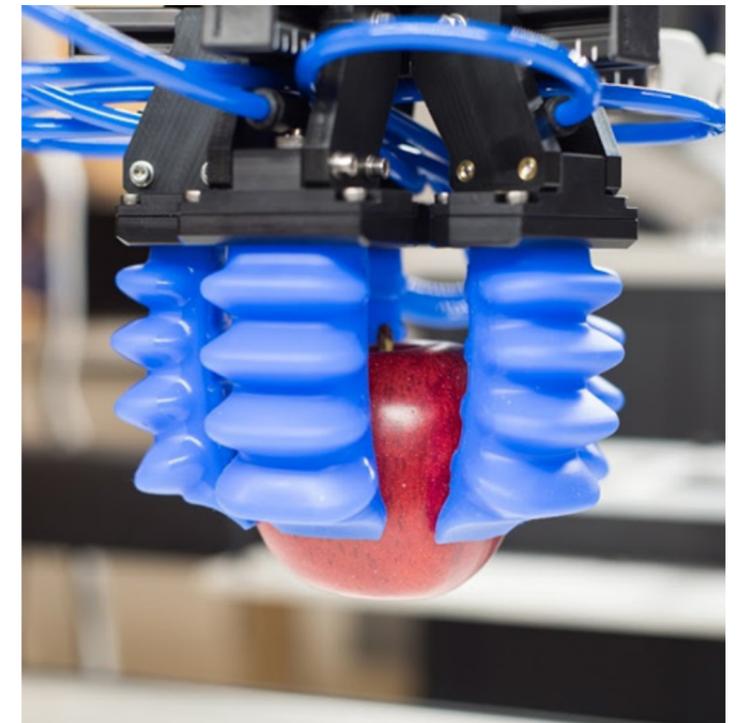
** assumes 1.02% annual inflation cost of labour

*** additional labour required for same output as robot system

It should also be noted that this application can be further automated by removing the pallets by MiR AMR units (see Mobile Industrial Robots on page 6 for further details).

If you wish to test out some scenarios for your own business, you can use this online tool from the Robotic Industries Association to help calculate specific ROI or contact the team at Reliance Automation or ifac for further assistance.

go to site:
www.robotics.org/robotics-roi-calculator



Funding your investment in automation

Deciding on the optimum way to fund a business's investment in automation is an important decision. In this section, we highlight some of the options available.

Grant Funding

Enterprise Ireland (EI)

Operational Excellence Offer

This support has been designed to help companies address the competitive challenges they are facing through funding transformation projects that can include investing in the implementation of new and innovative production methods. Sample projects outlined by Enterprise Ireland include Production Line Redesign and Process Restructuring. The levels of support vary from 10% - 70% depending on the project.

Capital Investment Initiative

This initiative supports EI client companies in investing in new equipment and technology to improve productivity and overall competitiveness. The level of financial support available is to a maximum of €250,000 per company.

Sustaining Enterprise Fund

The Sustaining Enterprise Fund offers funding of between €100,000 and €800,000. As Irish food and agribusinesses deal with macro issues like Brexit and Covid-19, this funding can be used to stabilise cashflow, adapt operations and innovate to meet new customer needs.

Local Enterprise Office (LEO)

Business Expansion Grant (BEG)

For companies who may not fall into the Enterprise Ireland bracket another option to consider is the Business Expansion Grant from your LEO. The BEG supports 50% of the investment or €150,000, whichever is the lesser. The purchase of capital items and the associated innovation costs can be supported under the scheme if successful.

LEADER

For rural businesses, LEADER is an option to consider before investing in automation. LEADER supports enterprises in delivering projects aimed at improving the diversification of economic activity in rural areas. Funding is available to a maximum of €200,000 and is 50% matched funding. For rural food businesses a specialised fund is available under the LEADER Food Initiative.

Údarás na Gaeltachta, Intertrade Ireland and a range of European funds can also support Irish SMEs in the food and agribusiness sector to help automate their businesses.

Bank Finance

Term Loan

A term loan is regularly used to fund automation projects. It ensures that working capital is available for use elsewhere in the business. The useful life of the asset will influence the length of the loan secured. Your banking partner will be looking for key reference points including a business plan, your team and capabilities, cash to cash cycle time and repayment capacity when

According to

James Maloney of Enterprise Ireland...

“

Many companies are looking to increase production cycles through automation, and this scheme provides flexibility in the type of equipment and software, that is eligible for support. In some cases, second-hand equipment under 7 years old is allowed, which is beneficial for an SME company in the early stages of scaling up production.

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Watch-Out



It is important to note that if you are accessing a grant from Enterprise Ireland which includes taking security on the asset, then the asset finance option referenced later, may not be open to you.

making the decision to support you. Ensuring you are aware and have these in place going to a bank will save time and energy.

Asset Finance

Asset finance can be offered in several formats including Finance Leases, Hire Purchase and Operating Leases. A significant benefit of asset finance is that it can give you instant access to new assets that are required to grow your business without having to finance the initial up-front investment. Some providers may even take the seasonality of your business into consideration when assessing repayments.

There are a range of providers of asset finance including but not limited to AIB, Bank of Ireland, CapitalFlow, Close Brothers, DLL and Grenke.

Alternatives

Linked Finance

Linked Finance is an alternative finance supplier who generally offer loans up to €300,000 over a 3-year period. Interest rates vary with a 6% per annum fixed rate available. Interest rates depend on credit grade applied based on your business circumstances, and the term required for the loan. Flender is a similar option to consider.

Employment Investment and Incentive Scheme (EIS)

In some specific circumstances EIS funding has been used to invest in large scale automation of a business which will lead to increased job creation. One recent example saw a company in the sector use EIS funding of €2m to invest in highly specialised processing equipment.

Funding out of cashflow

If you are in a position where it appears feasible to fund your automation project from company funds it is vital to take the necessary steps to ensure this move will not have a major negative impact on cashflow or reserves you may have in place for contingencies. Additionally, the opportunity cost of funding capex from cashflow must also be considered.

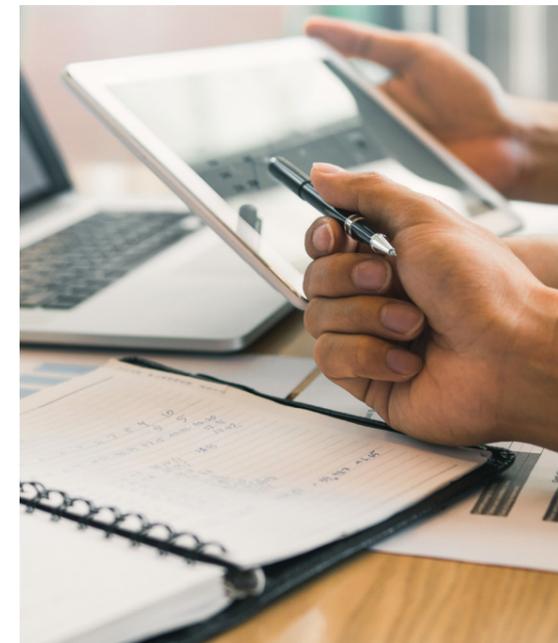
According to

Niall Murphy of AIB Finance & Leasing...

“

If your business needs investment in assets, it's likely that this investment will require significant capital expenditure. Asset finance solutions provide customers with a range of options to assist in the purchase and the repayment of the cost of the asset over its useful life, typically three to five years. We provide tailored solutions for new and used assets ensuring repayments are appropriately matched to the seasonal cashflow of the business.

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In summary

You can work with *ifac* to assess your current financial position and consider different scenarios to fund your automation projects.

“

Overall, there are several options to review when considering the best way to fund the automation investment in your business. Every business will have their own specific needs and will have varying ability in terms of repayment capacity and eligibility for State aid for example. Work with the team in *ifac* or with your own finance team to assess your funding needs and develop the best strategy to fund your automation journey.

David Leydon, Head of Food and AgriBusiness with *ifac*.

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Business process automation

How can automation become more automatic to business leaders?

Automation is not a light switch moment. It is an ongoing process of looking for ways to improve efficiencies within your business. In addition to robotic automation, business process automation should also be considered as part of the growth toolbox for your business. We highlight some of the key areas of opportunity below.



Marketing Automation

Marketing automation focuses on the use of software to save time and to remove repetitive marketing tasks from businesses. One application of marketing automation allows you to test multiple ideas in a process known as A/B testing. Software will automatically compare multiple designs with your target audience and then let their reaction impact the future frequency of promotion thereby optimising for the most engaging content.



Sales Automation

Winning new business can be a complex and time-consuming process. Using sales automation tools like Monday.com or Salesforce.com can reduce some of the gaps that can appear in the sales process and save time by automating data entry. Ensuring that new clients stay happy and remain ongoing clients is where automation tools for Customer Relationship Management (CRM) can help through timely reminders and a centralised location for client details.



Processing Automation

Companies tend to have several software related tasks that are done on a regular basis like daily or weekly updates for team members or clients. These types of processes are repetitive, can be prone to human error and have a predictive element to them. In these scenarios, processing automation can be explored to save time and allow business leaders to prioritise the process outputs and focus on more productive areas for the business.



Supply Chain Automation

We are starting to see a greater application of technology through the supply chain with increasing levels of automation in warehouses e.g. the Ocado Smart Platform, in deliveries e.g. the emergence of delivery bots like Fexco's "Roxo" and even in our homes, with the automated re-ordering technologies that sense when certain products are running low. Businesses need to review their own supply chains and identify potential opportunities for automation.



Accounting & Invoicing Automation

Technology is automating some of the more mundane elements of accounting compliance e.g. XERO have created a simplified way for businesses to track their accounts and issue recurring invoices automatically. These repetitive actions done multiple times on multiple occasions can add up over time for businesses. Adopting a hybrid approach of a robust accounting platform and advisory insight from a trusted accountant can ensure that you get the best result for your business.



In summary

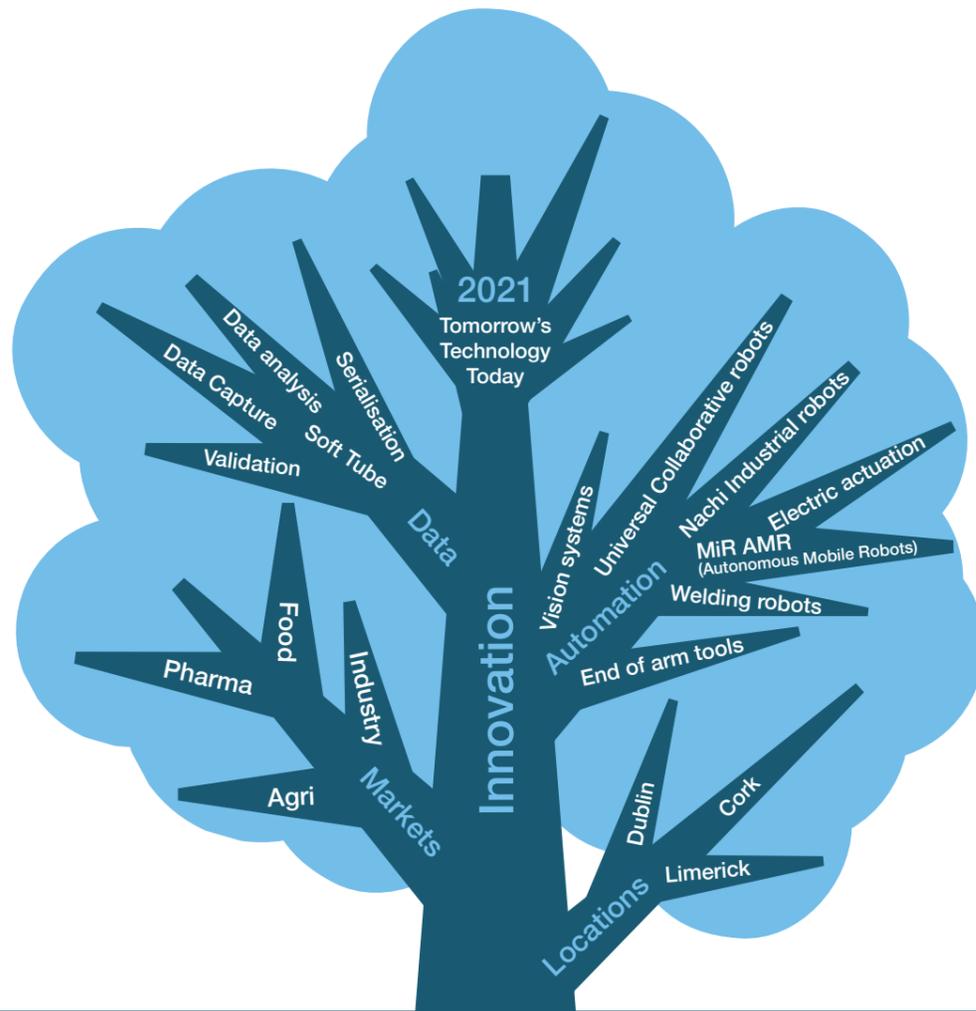
Business owners should recognise the potential of integrating automation wherever possible within their businesses. The change in mindset towards automation may not be so automatic however if you are serious about future proofing your business, automation should not be ignored.

About Reliance Automation

Reliance Automation expands the boundaries of robotic technology by achieving practical and efficient solutions for our clients.

Reliance Automation is a division of Reliance – Ireland’s oldest and leading technical distributor to all manufacturing and food related sectors in Ireland. For nearly 100 years Reliance has been providing a wide range of intelligent solutions that are widely used in large factories, SME’s, logistics, amongst many more sectors.

Our comprehensive range of automation and robotic solutions are designed with the aim to reduce cost, improve efficiency, improve productivity and to help future proof your business cost effectively. We have a large team of specialist technical professionals with the right skill sets to be able to deploy and support the wide range of automation technologies designed to help your business move forward.



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About ifac

Sound advice, independent solutions

We specialise in a number of key areas which provide you with expert advice and services to help your business grow.



Strategic Management



Funding, State Supports and Corporate Finance



Tax Structuring, Succession and Advisory



Research and Development



Commercial Sales and Marketing Strategy



Digital Transformation



Financial Accounting and Tax Compliance



Audit and Assurance



Financial Planning



Employer Services including Payroll

A national team of dedicated experts.

With over 30 offices across Ireland, our clients have access to a national network of expertise across a broad range of sectors - from agribusiness and farming to wind energy and food production. Our roots within each of our communities means we have deep local understanding and knowledge. Contact one of our advisory team today to find out more.



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