SME GROWTH NEEDS REPORT

SOUTHERN REGION, IRELAND

SME CLUSTER GROWTH
EMPOWERED ENGINEERING

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

www.**SMEclustergrowth**.eu

CONTENTS

SME CLUSTER GROWTH
EMPOWERED ENGINEERING

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

01

INTRODUCTION TO THE REGION

The 'Region' for the purposes of the SME cluster growth project is the 'Southern Region' as shown in Figure 1 below, which is comprised of nine counties: Cork, Kerry, Limerick, Clare, Tipperary, Waterford, Wexford, Carlow & Kilkenny (the province of Munster plus three additional counties from the province of Leinster). This definition is consistent with the corresponding European regional definition

For Munster Technological University's (MTU) purposes, and within the Southern Region of Ireland, the focus of the SME Cluster Growth project is indigenous engineering-manufacturing SMEs (meaning companies with their head office registered in Ireland; and not multinational corporations (MNCs) either foreign or domestic), that are engaged in discrete manufacturing. This definition includes companies making customer-specified bespoke products, either singly or in batches, as components for their customer's final end-product; or as equipment to enable their customers to manufacture their products, e.g. automated robotic assemblies.
It also includes those making final finished products for sale via either business-to-business (B2B) or perhaps business-to-consumer (B2C) transactions. It also includes companies in the IT sector insofar as they manufacture / sell hardware. It excludes bulk manufacture of products for B2C sales and companies primarily focussed on software products. The nature of the companies according to this definition means that they are often being managed by the original founders and business owners, or their direct descendants, i.e. their own offspring. The founders typically start the business organically with a particular relevant skillset, some experience, and perhaps in an opportunistic manner due to circumstances that may present an initial customer(s). They are typically not spinouts from Higher Education Institutes (HEIs), in particular. As a general rule, their sales are B2B almost exclusively; and the foreign direct investment (FDI) manufacturing MNCs – as well as native MNCs / large companies – have been an important market.

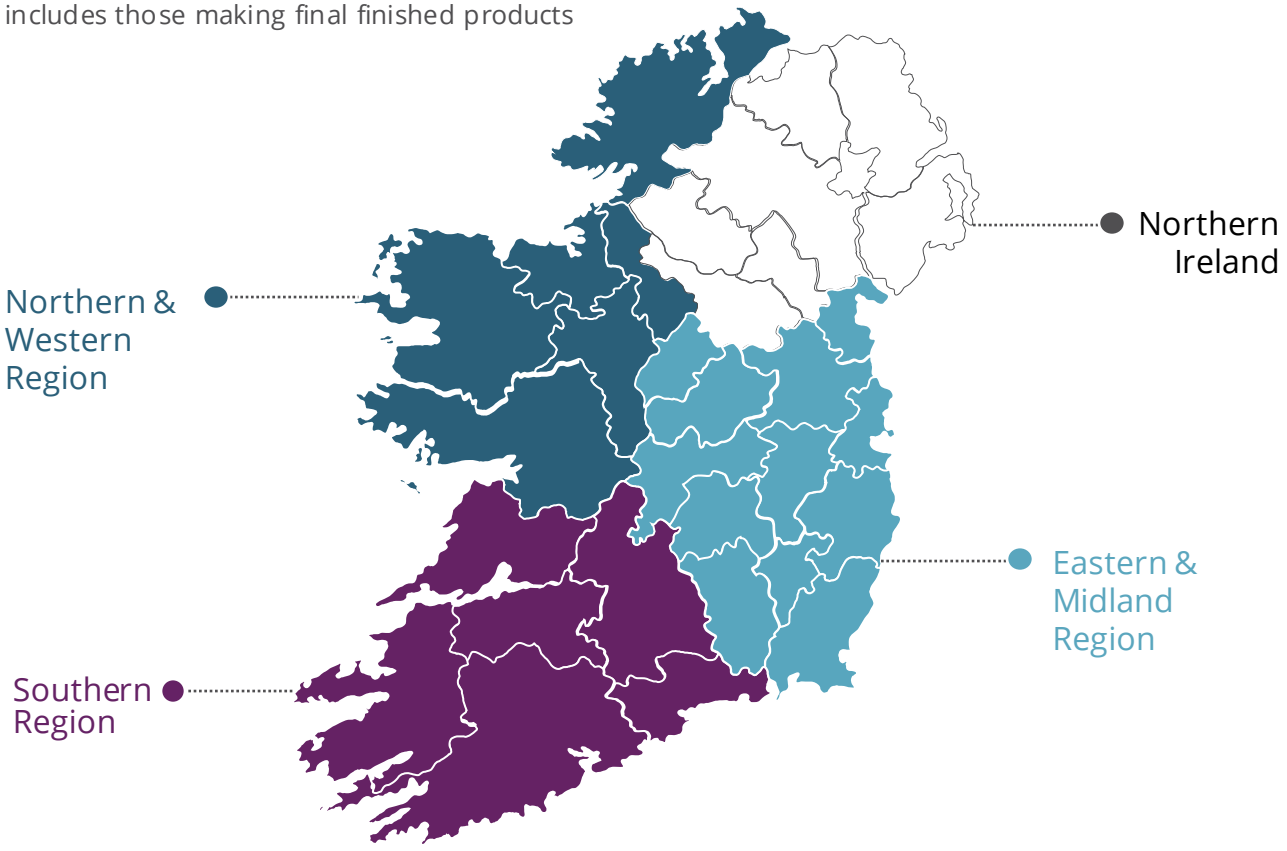


Figure 1 Ireland's Southern Region Source: (WDC, 2019)

02

NATIONAL CONTEXT

Ireland is a relatively small country in the European context, both in size (c. 84,400 km2) and population (4.76m). (Central Statistics Office, 2017).

It is also peripheral, located at the western edge of Europe, and is an island nation. The main language of daily business is English for the majority of the people

Ireland's economy is relatively open and relies heavily on foreign direct investment (FDI) by international companies as a vehicle for creating employment, increasing exports, and stimulating the domestic economy. Ireland has pursued a highly effective, multi-decade policy of attracting multi-national corporations (MNCs) to establish centres of operation in the country. This has been supported by a highly stable policy of 12.5% corporation tax for manufacturing companies, despite multiple changes of government.

Therefore, as of 2021, Ireland hosts significant numbers of MNCs from several key sectors, for example: bulk pharmaceutical manufacturing, biopharma, med-tech, IT manufacturing, and software/cybersecurity. A deliberate policy has been pursued, of targeting higher added-value sectors, in recognition of, and responding to, the loss of traditional lower-value manufacturing to lower-cost economies, e.g., in the textile sector. In addition, Ireland has a mature group of indigenous MNCs in sectors such as dairy and food, building products, and aviation.

The Irish Government has a broad suite of strategies, plans and policy documents spanning timeframes up to 2040 relating to job creation, education and training for skills development, priority research areas, etc, that are relevant to the needs of industry, including engineering manufacturing SMEs – the focus group for the Ireland element of this project.

03

CLUSTERS IN THE REGION

IDENTIFICATION

National Clusters/Networks: IBEC and its sectoral groups

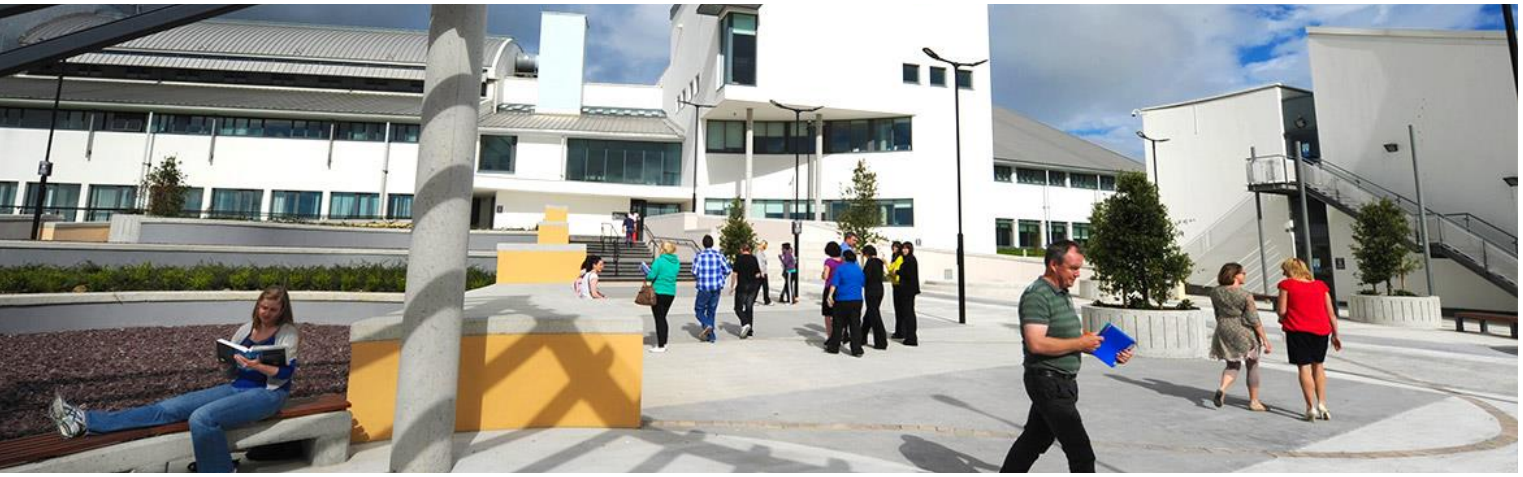
The Irish Business and Employers Confederation (IBEC) is an independent, non-government, national-level, membership-based representative body that maintains it 'is Ireland's largest and most influential business lobby and representative group', and claims that their members employ 'over 70% of private sector workers'. IBEC's role is to 'lobby government, policymakers and other key stakeholders with evidence-based policies designed to positively shape business conditions and drive economic growth.' It operates six regional offices around Ireland, as well as an office in Brussels (Irish Business and Employers Confederation, 2021).

IBEC organises its members into 39 groups and 'trade associations' by industry sector. These can be manufacturers, suppliers or subcontractors that are involved in the sector, not necessarily 'engineering' companies perse.

Relevant groups include:

- The Engineering Network: a broadly defined sectoral group; around 110 members nationally.
- MedTech: for companies involved in the medical technology sector; around 250 members nationally, circa 110 in the Southern Region.
- Polymer Technology (Plastics): includes companies with a diverse range of manufacturing technologies and product types; around 230 members nationally, circa 60 in the Southern Region.

Based on input from its membership and research, IBEC publishes sectoral reports and analyses and examines trends, identifies perceived gaps in government policy and points out future skills needs of industry.



Southern Region Clusters/Networks

Emerald Aero Group is a very active cluster that formed with the purpose of business internationalisation in the aerospace sector and consists of 11 separate engineering manufacturing companies. The members have created a collective ethos and brand and market their services as a unit, attending trade shows and engaging business-development 'pathfinders' in the UK and US. It is centred in the Limerick-Shannon area of the Southern Region but has members from around the region. Enterprise Ireland has provided grant funding for the group to assist in its marketing activities. Contracts have been secured in the US, China, India, the Philippines and throughout Europe. (Emerald Aero Group, 2021)

The **LINC (Limerick North Cork) Engineering Network** is a group of c. 41 companies of different types under the broad heading of engineering – i.e., not exclusively manufacturing. Its Steering Committee also includes representatives from Local Enterprise Offices (LEOs) and Regional Skills Fora. It aims to give members 'a platform to access knowledge, information, key skills, contacts and collaboration opportunities' to help them develop, grow and scale their businesses within their chosen markets (LINC Network, 2021).

Engineering the South East cluster was launched by the Ireland South East Development Office (ISEDO) in 2019 to promote companies working together to address skills needs, promote careers in engineering and advance the engineering capabilities of the region. The cluster has the backing of five Local Authorities, IDA Ireland, Enterprise Ireland, and Engineers Ireland and works with education providers in the region including Waterford Institute of Technology. (ISEDO, 2021)

A similar **Southwest Engineering** cluster is at formative stages at time of writing.

National Industry Associations

Precision Turned Parts Manufacturers Association of Ireland (PTMA) is a national trade organisation established in the 1990s, consisting of 35 ordinary members, 15 technical members and 5 associate members. The PTMA mission is to further the growth and development of the precision turned and machined parts industry in Ireland. It is an active association which runs quarterly meetings addressing various aspects of the members' businesses, such as quality standards, safety, marketing, technical research and development, and training and development of staff. It also provides networking opportunities for its membership. The PTMA is affiliated to the Syndicat International du Decolletage (PTMA, 2021).

The PTMA collaborates with Limerick Institute of Technology, regarding relevant precision engineering course development and delivery, and other training courses to meet the needs of the industry.

Engineers Ireland Mechanical & Manufacturing Division Engineers Ireland is a membership-based professional body that provides engineers the opportunity for career development, knowledge-sharing, and networking. The Mechanical and Manufacturing division is a group for members working in mechanical engineering and manufacturing in a broad range of industries (Engineers Ireland, 2021).

Other Clusters/Networks

There are a range of other clusters and associations that are less directly related to engineering manufacturing but that do play an important role in the overall networking ecosystem. These include:

Irish Small and Medium Enterprise association (ISME): ISME is an independent representative association for small and medium enterprises of all kinds. It provides a dedicated HR advisory service, general business advice and support on a range of relevant topics such as Brexit, finance, COVID-19 and resources including guides, FAQs and templates. It has more than 10,500 members (ISME, 2021).

Chambers of Commerce: organised into local branches by city or town, and open to all businesses; and the nationally organised America-Ireland Chamber of Commerce that caters to the generally larger US companies with operations in Ireland such as seen in the pharmaceutical sector (Chambers Ireland, 2021).

IT@Cork: a regional members-based cluster of companies in the IT sector, with around 200 members in the southwest of Ireland. It is a member of the European Cluster Collaboration Platform (ECCP) (IT@Cork, 2021).

Energy Cork: a regional industry-driven membership-based cluster of companies in the broad energy sector, with c. 90 members (Energy Cork, 2021).

Cyber Ireland: a national membership-based industry cluster, for both MNCs with Irish operations and Irish SMEs focussed on cybersecurity issues; hosted at MTU in Cork (Cyber Ireland, 2021).

Miscellaneous autonomous **Business Networking** groups that organise by invitation only. These are generally not very relevant to engineering manufacturing.

CLASSIFICATION

Clusters and Associations with an engineering focus

Ireland has several networks that are relevant to engineering. Some are organised at a national level while others are region-specific, including some very active clusters in the Southern Region

04

ROLE OF ENGINEERING SMEs WITHIN THE REGIONS

MAPPING

Ireland's Industrial Development Authority (IDA Ireland) attracts major Foreign Direct Investment (FDI) by Multi-National Corporations MNCs into Ireland, targeting higher-added value and emerging high-technology sectors.

This has led to a large presence of major MNCs in Ireland, with the associated spin-off demand for products and services from domestic industry sectors of all kinds – including to a very significant extent, the domestic engineering manufacturing sector.

Following from this, from an industrial perspective, the Southern Region is characterised by the presence of the following – which is not an exhaustive listing:

- MNCs in a major pharmaceutical/biopharmaceutical industry cluster
- A major presence of MNC Medical Technology companies
- A cluster of Information Technology (IT) companies, both FDI and indigenous
- A concentration of major indigenous companies, chiefly in the food and drink sector companies, including dairy products
- A significant number of polymer technology/plastics companies;
- Building products companies; and
- An engineering manufacturing & robotics SME sector that has developed a synergistic relationship with the larger companies above.

The IDA describes manufacturing in Ireland as follows:

'Manufacturing is a significant contributor to the Irish economy, directly employing almost 260,000 people and representing 34% of GVA (Gross Value Added). It has a significant regional impact with 84% of all manufacturing employment located outside of Dublin (87% of IDA client manufacturing employment). The industry is undergoing major disruption and transformation, due to the emergence of new production and digital (Industry 4.0/I4) technologies which has been further accelerated given the impact of the COVID-19 pandemic. In addition, manufacturers are challenged with increased global competition, heightened pressure on competitiveness and a need for greater supply chain agility.'

(Industrial Development Authority, 2020a)

For SMEs in the engineering manufacturing sector, growth is primarily organic in nature, and is measured in increased turnover or employment levels. Such companies typically feature ongoing high levels of capital investment, to acquire and maintain the most up-to-date technology for machining equipment and for expansion of physical premises, among other things.

Growth mainly occurs through increasing the customer base, expanding service offerings, and broadening the customer base into new sectors. It is rare that acquisition or mergers take place with such companies in Ireland, in which the original SME is the lead entity. When it does occur, an SME of this type typically becomes an acquisition target, for a company based in the UK, US or Germany, for example. In some cases, companies have consciously decided to target specific industry sectors, such as the medical technology sector, due to their perceived resilience during economic hardship.

Product development has been attempted by engineering manufacturing companies in Ireland, typically with the support of Enterprise Ireland, with the ambition of increasing export sales and boosting growth. These attempts have typically involved collaboration with Higher Education Institutes (HEIs) such as universities or institutes of technology. However, this strategy has had mixed results to date, for various reasons, including technical difficulties, the level of distraction to core operations, under-estimation of the barriers to scaling and marketing new products, and lack of sufficient market demand for product ideas.

Revenue for engineering manufacturing SMEs is dominated by B2B sales in private contracts, not public. Markets served are typically domestic initially, growing to international sales as companies expand – but some companies remain serving only the domestic market. It is rare that a company is exclusively internationally focussed.

The customer base of engineering manufacturing companies in Ireland usually features large MNCs or perhaps large domestic companies as well as smaller domestic customers. Some companies also undertake subcontracting with other such SMEs, for example SMEs that collaborate in clusters. At least one cluster undertakes joint marketing internationally, targeting the aerospace sector.
Engineering manufacturing SMEs are typically owned and managed by founders, or second-generation members of the founder's family. It is rare that externally recruited CEOs are installed by first generation founders, even though the company may have grown to a scale that warrants such a move.

Characteristics of Growth

Engineering Manufacturing SMEs (EM-SMEs) in Ireland display a common set of characteristics.

They are often:

- Founded by a single or 2 experienced people (usually men) from a technical background – who fulfil many or all the senior functions for the business unless or until growth forces change
- Owned and managed by the same people for a long period of time
- Family-owned i.e., second generation managers/owners are offspring of the first-generation founders
- Light on formal management or structures– small boards of directors and no Non-Executive Directors
- Staffed by long-serving technical personnel, at senior level especially
- Connected to local/regional HEIs for graduate recruitment– but heavily reliant on in-house training to develop specialised skills
- Clients of Enterprise Ireland or LEOs, and take advantage of the available supports to a greater or lesser extent
- Either actively engaged in, or aspiring to engage more in, networking and collaboration with peers in the industry
- Highly dependent on a small number of key customer relationships for the majority of their commissions
- Obliged to continuously upgrade or expand expensive equipment, to remain at the cutting edge of technology, productivity, and profitability – all of which are vital to winning contracts.

Reliant on contracts for once-off or small batches of products/deliverables – and do not have 'product lines' for sales of items in higher numbers.

INTERACTION WITH OTHER SMES IN THEIR EFFORTS TO GROW

Collaboration between Stakeholders

In terms of Southern Region engineering manufacturing SMEs (EM-SMEs), the main stakeholders are described in Table 1 below. 'Stakeholder' in this context is taken to mean active (or potentially active) actors that are/could be involved in collaboration, support and/or benefit from the sector's member companies. Many state-sector stakeholders are organised on a national level – Ireland's system of government is highly centralised – but with regional offices acting with greater-or-lesser levels of autonomy. They are not listed in any particular order and broader societal stakeholders are excluded.

STAKEHOLDER	DESCRIPTION: NATURE, ROLE, COLLABORATION
Indigenous Engineering Manufacturing SMEs	Members of the industry sector, with primary interests in their own growth and success, and hence high levels of collaboration with customers, by nature of the sector. Level of collaboration with each other varies markedly. Some are very active in joint-marketing clusters and engage in subcontracting with each other on an as-needed basis. Others have minimal interaction with perceived competitors. Collaboration with HEIs varies also, particularly regarding research and innovation.
MNCs / Large companies	Significant customers of EM-SMEs, collectively driving demand for EM-SME services. Can act as incubators for entrepreneurs considering starting an EM-SME. Can act as competitors for talent. Collaboration takes place continuously in terms of co-designing and delivering bespoke items of equipment, as part of a contract, and in workshops via organisations such as the Regional Skills Fora to identify skills gaps for HEIs to target.
Enterprise Ireland	The Irish Government's most significant national agency for supporting and promoting Irish business to grow, develop and internationalise – which has a restricted definition i.e., indirect sales abroad are not counted. They collaborate directly with businesses and other major stakeholders such as HEIs via sponsoring Technology Gateways, Local Authorities, IDA, LEOs, etc. They provide advice, access to leadership training, and financial support of many kinds, as well as networking introductions into international markets.
Industrial Development Authority (IDA Ireland	Ireland's agency for attracting FDI. They collaborate with all major stakeholders. A key agency in delivery of certain infrastructures such as a nationwide network of Business & Technology Parks; and the new Advanced Manufacturing Centre in the Southern Region, which is targeted at increasing collaboration and upskilling of the manufacturing industry.
Local Enterprise Offices (LEOs)	A network of business-support offices based with Local Authorities, providing advice and financial support for domestic companies of smaller scale or who are not aiming to export.
Irish Business and Employers Confederation (IBEC)	A major advocate and lobbying organisation for Irish-based businesses of all types and scale. They organise and maintain industry sector networks/trade associations, carry out policy research and represent business. There are a number of IBEC associations that contain EM-SMEs.
Higher Education Institutes (HEIs)	HEIs include traditional Universities, Technological Universities and Institutes of Technology. They provide courses to levels 6-10, collaborating with industry to tailor courses to current needs, for external review of examinations, work placement and ongoing workforce development. HEIs collaborate with other stakeholders such as IDA to promote Ireland to FDI companies and Enterprise Ireland to host Technology Gateways.

STAKEHOLDER	DESCRIPTION: NATURE, ROLE, COLLABORATION
SFI Research Centres	A network of topic-specific research centres, that are each a collaboration between research groups from different HEIs around Ireland. Funding is contingent on industry collaboration and cash contributions for the research projects. Several are directly relevant to the manufacturing sector.
Irish Manufacturing Research (IMR)	A national centre for promoting collaboration between industry and HEIs, as well as providing access to equipment and facilities for new product development by manufacturing industry, etc.
Technology Gateways	A network of c. 16 centres of applied research and innovation based at Technological Universities and Institutes of technology, each one focussed on a particular industry sector or topic. Core funding is provided by Enterprise Ireland, contingent on achieving industry collaboration, for example cash input to research projects, which can itself also be match-funded by EI in many cases.
Local Authorities	Responsible for delivery of local services and promotion of economic activity in their areas. Direct discretionary spending is limited by their restricted revenue-raising powers – capital projects of any significant scale are funded from central government resources, for example. They act as advocates and collaboration enablers for industry as well as hosting the network of LEOs.
Chambers of Commerce	Chambers are organised on a local basis e.g., by city or town, and represent businesses of all kinds and sizes. They advocate for the business needs of local areas, and nationally.
Regional Skills For a (RSFs)	A government-run network of regional offices that support and promote collaboration between industry and HEIs in the area of skills needs, workforce upskilling, new course development, etc. Both SMEs and MNCs participate and avail of their services.
Skillnet Ireland	Maintain 73 networks of businesses for skills training of all kinds and provide funding for courses to meet industry needs. The company networks themselves take the lead to organise the networks. This structure & method facilitates a level of collaboration between companies from similar sectors.
Enterprise and Training Boards (ETBs)	ETBs run courses and train people in skills and trades under the Further Education & Training (FET) umbrella, predominantly to level 6 as pertains to industry needs. Traditional apprenticeship training falls under ETBs, for example, for machine operators/fitters.
ISME	ISME represents SMEs of all types in Ireland. Smaller in scale than IBEC.
Precision Turned-parts Manufacturing Association (PTMA)	PTMA represents a subset of engineering manufacturing companies in Ireland and is organised on a national basis. It maintains links with international associations.
Emerald Aero Group	An engineering manufacturing cluster of SMEs in the Southern Region that has organised itself formally with Enterprise Ireland support for joint marketing and tendering into international markets. Its members engage with HEIs such as University of Limerick, as well as RSFs, to develop courses for its needs.

Table1: Ireland's Southern Region: Stakeholders in Engineering Manufacturing SMEs' success

GOVERNMENT SUPPORTS

Project Ireland 2040 and the National Development Plan 2018-2027

The Irish Government has adopted a range of strategic plans and initiatives that have a bearing on or support engineering manufacturing, to a greater or lesser extent. Project Ireland 2040 sets out the over-arching vision of the future development of Ireland and is comprised of two principal documents, The National Planning Framework (Government Publications Office, 2018a) and the National Development Plan. (Government Publications Office, 2018b).

The National Development Plan sets out National Strategic Outcomes. Outcome 5 is 'a strong economy, supported by Enterprise, Innovation and Skills' (Government Publications Office, 2018b), which will be achieved (in part) by 'investing, through the National Development Plan, in making places attractive for enterprise investment, developing deeply rooted sectoral clustering driven by effective collaborations and built around investments in Higher Education and Further Education and Training (FET)', as well as by 'supporting entrepreneurialism and building competitive clusters in strategic sectors and activities' (ibid). The SME Cluster Growth project speaks directly to and is aligned with this Strategic Outcome and the type of measures that are planned to achieve it.

Enterprise 2025

Enterprise 2025 is a government policy on supporting and developing businesses and the business environment in Ireland. It was originally published in 2015 and was revised in 2018 to address significant changes in the external environment that have been recognised as potential threats to the Irish economy including Brexit and impending changes in global corporate tax regime, among other threats (Government Publications Office, 2018c).

Two of the revised priority areas are to

1. 'increase the emphasis on developing our Irish owned enterprises' for increased business resilience, productivity and quality jobs; and
2. 'harness the distinctive characteristics of our foreign and Irish owned enterprise mix through collaboration and clustering'.

In parallel, there is an emphasis on positioning Ireland to the forefront in disruptive technologies, such as through the Disruptive Technologies Innovation Fund and on identifying and addressing regional skills needs. In overall terms, the strategic priorities and action areas set out in Enterprise 2025 constitute a strong policy foundation for future initiatives to support enterprises such as in engineering manufacturing.

Future Jobs Ireland

Future Jobs Ireland is the Irish Government's 'new economic pathway to ensure that Ireland is well placed to prosper in a rapidly changing global economy' (Government Publications Office, 2019a). It established 5 Pillars of action, with corresponding Ambitions and Deliverables.
Under Pillar 2, Improving SME productivity, ambitions include improving leadership and management skills in SMEs and strengthening linkages between SMEs and multinational enterprises, and Ireland's tertiary education institutions.

Specific deliverables include (ibid):

- Increase SME take-up of Enterprise Ireland (EI) and LEO productivity supports
- Develop a new investment funding facility to assist indigenous Irish companies in scaling their businesses
- Encourage the growth of clusters where enterprises can grow and help each other and deepen linkages between foreign and Irish owned businesses

Under Pillar 3 Enhancing skills and developing and attracting talent, ambitions include providing high quality and timely education and training responses to evolving enterprise and skills needs, encouraging lifelong learning and upskilling, and fostering participation in apprenticeship and traineeship programmes.

Specific deliverables include:

- Promote flexible training options
- Match training to the skills needs of workers and enterprises
- Provide training in emerging technologies
- Develop a programme for SMEs taking part in training and upskilling for the first time'

These measures represent concrete policy actions to support SMEs in Ireland, in ways that are particularly relevant to engineering manufacturing companies

GOVERNMENT SUPPORTS

Ireland's Industry 4.0 Strategy 2020-2025

Ireland's Industry 4.0 Strategy 2020-2025 is 'a key output of Future Jobs Ireland' (Government Publications Office, 2019b). It addresses 'supporting the digital transformation of the manufacturing sector and its supply chain', and as such is directly relevant to the engineering manufacturing sector.

The central goals of this policy document include:

- To stimulate firms to adopt and build capability in Industry 4.0 technologies
- To stimulate firms to harness the new opportunities enabled by Industry 4.0 technologies.
- To facilitate the current and future workforce to develop the skills to deliver the Industry 4.0 transformation and exploit the new opportunities arising in manufacturing and supply chain firms through Industry 4.0 technologies

To advance the goals of the plan, under Theme 1, a central coordinating role will be played by a new entity – 'Future Manufacturing Ireland', to 'ensure coherence and optimal delivery of RD&I supports across centres with a dedicated focus on advanced manufacturing/Industry 4.0.'

Theme 2 of the plan, on Awareness and Understanding of Concepts, includes Strategic Action 3 to 'support the activation of enterprise-led Industry 4.0 clusters including through the use of the Regional Innovation and Technology Clusters Fund.' This establishes a concrete policy basis in Ireland for the type of cluster-driven approach envisaged by the SME Cluster Growth project.

Theme 3 is Exploring and Planning, whose actions 'aim to support firms to undertake 'hands-on' exploratory work on Industry 4.0 technologies and systems and to help firms to develop their own Industry 4.0 roadmaps and strategies for implementation, while Theme 4 is implementation of firm-level Industry 4.0 Strategies, aimed at providing supports to firms that want to invest in Industry 4.0 capabilities, including skills development. Actions under these themes will support SMEs, particularly in manufacturing, in adapting to the new threats and opportunities arising from digitisation.

National Advanced Manufacturing Centre

As part of the implementation of Ireland's Industry 4.0 Strategy, at the time of writing the first component of a new National Advanced Manufacturing Centre (AMC) is under construction in Limerick, in the Southern Region of Ireland. The AMC concept consists of core components (IDA, 2020a):

Digital Factory, currently under construction, with key elements

- Showcase – for practical examples of Digital Transformation, and its benefits
- Physical Production – representative physical deployment of digital technologies
- Digital Control – including digital twin of the production environment, analytics, etc
- Interface Layer – integrating physical and digital environments

Industry Space, with secure sandbox for trialling technologies and processes Vendor Space, for display, testing and collaborating with industries on technology development. Skills Space, for training in relevant skills.Mixed Use Space, for supporting business, education, training, and administration

National Skills Strategy 2025

In 2015, the Irish Government published its National Skills Strategy 2025, with the vision that 'Ireland will be renowned at home and abroad as a place where the talent of our people thrives…' through the quality, strength, relevance and effectiveness of education and training, the workforce, and the use of skills and technology – all to enhance social prosperity, wellbeing and the economy.

Its aims include:

- 'Education and training providers will place a stronger focus on providing skills development opportunities that are relevant to the needs of learners, society and the economy.
- Employers will participate actively in the development of skills and make effective use of skills in their organisations to improve productivity and competitiveness.
- We will support an increase in the supply of skills to the labour market.' (Government Publications Office, 2015)

GOVERNMENT SUPPORTS

Higher Education Authority (HEA) Programmes

The HEA has a statutory responsibility for the effective governance and regulation of the higher education system in Ireland, including for apprenticeships. Its objectives include 'the enhancement of teaching and learning, the promotion of equity of access to higher education, the enhancement of institutions' responsiveness to the needs of wider society…' (Higher Education Authority, 2021).

In addition, it directly funds programmes designed to enable access to further upskilling by both employees and unemployed people via courses from six weeks up to two years in duration, including the following:

- Springboard & ICT Skills (11,259 course places in 2021)
- Human Capital Initiative (HCI) Pillar 1 (1,869 places in 2021)
- and the Jobs Stim/0ulus programme of July 2020 (the 'July Stimulus'). (ibid)

Action Plan for Apprenticeship 2021 – 2025

In the Irish context, an apprenticeship is 'a programme of structured education and training which formally combines and alternates learning in the workplace with learning in an education or training centre' (HEA, 2021). There are 60 apprenticeship programmes available in Ireland, with 19,630 participants in 2020, ranging across 15 business/industry sectors, and from level 5 to level 10 (Professional Doctorate). Most have a duration of four years and provide at least 50% workplace-based learning. In the areas of Electrical and Engineering, there are a total of 20 programmes currently available, including in areas of high demand in engineering manufacturing, such as toolmaking. An additional 53 programmes are in development or planned; and funding is projected to be €200m for apprenticeships in 2021 (Government Publications Office, 2021).

In 2021 the Government published the Action Plan for Apprenticeship 2021-2025, which involves a major restructuring of apprenticeship delivery in the state, to create a single more flexible and responsive system (ibid). The plan calls for a new National Apprenticeship Alliance of all stakeholders and a new National Apprenticeship Office to coordinate programme delivery.

Agencies Responsible for SME Growth

In Ireland, the agencies that are primarily responsible for SME growth are the Local Enterprise Offices (LEOs) and Enterprise Ireland (EI). For businesses located in officially recognised Irish-speaking areas of the country, Údarás na Gaeltachta provides a service that is approximately parallel to these other two agencies.

Enterprise Ireland aims to foster growth in companies that are generating export sales, at least in part. It can be viewed as the primary agency for the SMEs that are the focus of the current project. It administers State schemes to provide companies with grant funding for many purposes, including but not limited to research and innovation, key person expansion, international market development and leadership development. It maintains a network of representatives in selected international markets that are important to Irish companies seeking to expand. (Enterprise Ireland, 2021).

Local Enterprise Offices are intended to cater to smaller or early-stage companies and/or companies that are focussed on the domestic market. These are organised on a Local Authority basis, with offices in County or City Council premises. LEOs have the authority to disburse limited grant funding to companies, for example on a 50% basis for new market development (Local Enterprise Offices, 2021).

Údarás na Gaeltachta operates in a number of Gaeltacht areas of the Southern Region, mainly in Cork, Kerry and Waterford (Údarás na Gaeltachta, 2021).

GOVERNMENT SUPPORTS

SPECIFIC SUPPORT IS PROVIDED FOR SMES TO GROW INTERNATIONALLY

Enterprise Ireland

The majority of supports for Irish SMEs to grow internationally are provided by Enterprise Ireland. The nature of the supports offered is quite varied, and continually evolving.

Advisors

Enterprise Ireland maintains a team of Development Advisors (DAs) who are organised into industry sectors, and by stage of company growth. A company that is seeking to grow and particularly to export internationally, may apply to become an EI client. Once accepted, the company is assigned a DA by EI, who acts as the company's main contact point for advice, guidance and making connections to other EI supports. In addition, EI maintains an international network of advisors and offices in a number of key export territories such as the UK, USA and EU. These provide country-specific guidance and introductions for EI clients seeking to internationalise.

SME Supports

The following lists the range of measures aimed at supporting SMEs, including for internationalisation and growth. Refer to (Enterprise Ireland, 2021) for details.

Market Research and Internationalisation Supports: Strategic Planning Grant, Strategic Marketing Review, Market Discovery, Digital Marketing, Enter the Eurozone, Excel at Export Selling and International Selling Programme with TU Dublin (formerly Dublin Institute of Technology).

Supports for Product, Process or Services Development: Business Innovation Offer, Exploring Innovation Grant, Agile Innovation Fund, RD&I Fund, IP Strategy Support, Strategic Planning, Innovation Vouchers, Innovation Partnership, EU Funding, and Innovation 4 Growth Programme.

Management Team development: Mentor Grant, Strategic Consultancy Grant, Key Manager Grant and the Go Global 4 Growth programme, with Dublin City University.

Productivity and Business Process Improvement Supports: Green Offer, Lean Business Offer, Capital Investment Initiative Fund, Business Innovation Offer, Operational Excellence Offer, Building Information Modelling, GradStart

Company Expansion Packages: Job Expansion Fund, Tailored Packages

GOVERNMENT SUPPORTS

OTHER SUPPORT FOR SMES

A Network of Regional Skills Fora (RSF) was created as part of the Government's National Skills Strategy to support enterprise development via structured engagement on the skills agenda. The Fora provide an opportunity for employers and the education and training system to work together and co-create new education programmes within HEIs and to help meet the emerging skills needs of their regions.

The Fora provide:

- a single contact point in each region to help employers connect with the range of services and supports available across the education and training system
- more robust labour market information and analysis of employer needs to inform programme development
- greater collaboration and utilisation of resources across the education and training system and enhancement of progression routes for learners
- a structure for employers to become more involved in promoting employment roles and opportunities for career progression in their sector.

In 2020, 60% of RSF engagements were with SME companies and 42% were with manufacturing sector companies. There are 3 Fora within the project's Southern Region: South West RSF, South East RSF and Mid West RSF (Regional Skills Fora, 2021).

STRUCTURAL RESOURCES

IDA Business & Technology Parks

The IDA lists 30 Business & Technology Parks available nationally for companies to locate their operations. Of these, nine are in the Southern Region, located in County Cork (Cork City, Kilbarry, Carrigtwohill & Fermoy), County Waterford (Waterford City & Dungarvan), County Kerry (Tralee); Wexford town and Kilkenny City, with a total area of 315 hectares (Industrial Development Authority, 2021a).

Shannon Group

Shannon Group owns and manages a suite of six Industrial Business and Technology Parks in the western part of the Southern Region, including in Shannon Duty Free Zone, Ennis Co. Clare, Limerick and Tipperary. In particular, Shannon Duty Free Zone hosts a large cluster of FDI companies, and over 100 companies in total, on a campus of 240 hectares. The National Technology Park, Limerick: opened in 1984, is co-located with University of Limerick on 260 hectares, hosting 'over 80 global multinational subsidiaries, Irish technology companies, R&D institutions and support services' (Shannon Group, 2021).

Industrial Resources

The IDA acts as the major agent in attracting FDI to Ireland, with considerable success. Therefore, there is a strong suite of foreign and indigenous MNCs with operations in Ireland, including within the Southern Region, in several sectors; one third of these operations have been in Ireland for over 20 years. These include pharma, biopharma, medtech, aerospace, food & drink, and IT. In terms of global MNCs most relevant to engineering manufacturing, Ireland hosts 14 of the top 15 Medical Technology companies, all 10 of the top 10 Pharmaceutical companies, 8 of the top 10 Industrial Automation companies and 9 of the top 10 US Technology companies (Industrial Development Authority, 2020b).

These companies act as significant sources of work for Irish SMEs, including in engineering manufacturing. In terms of regional impact outside of Dublin, key metrics for IDA client companies are below (Industrial Development Authority, 2021b).

- Directly employed 145,000 people in 2020
- Additional indirect employment supported: 116,000
- Payroll annual spend €7.9bn
- Spend on Irish services €2.7bn, and €2.2bn on Irish materials in 2019.
- In-house R&D spend €1.3bn in 2019.

Knowledge Management

Ireland has a rich ecosystem of scientific and research assets that industry, especially manufacturing industry, can avail of. The Southern Region is particularly well served by this ecosystem. The most significant of these are described below

Science Foundation Ireland (SFI) Research Centres

SFI funds a network of 16 research centres, each one addressing a specific topic or sector. These are established as collaborative efforts between multiple HEIs, with industry participation and industry part-funding of projects being a crucial requirement. SFI Research Centres make 'important scientific advances, enhancing enterprise and industry, training students with critical, in-demand skills, supporting regional development, and enhancing Ireland's international reputation.' (Science Foundation Ireland, 2021)

Research centres most relevant to engineering manufacturing include:

- I-FORM research centre for Advanced Manufacturing, with a mission to shape the future of manufacturing through high-impact research into the application of digital technologies to materials processing.
- CONFIRM research centre in Smart Manufacturing, with a mission to transform industry to become leaders in Smart Manufacturing.
- AMBER research centre for Advanced Materials and BioEngineering Research
- CÚRAM research centre for Medical Devices

Irish Manufacturing Research (IMR)

IMR emerged from an initial pilot of two complementary projects from 2010-2014. In their own words: 'Irish Manufacturing Research is a leading Research and Technology Organisation providing a portfolio of research, training, and consultancy services to Industry across 4 thematic pillars: Digitisation, Sustainable Manufacturing, Design for Manufacturing, Automation and Advanced Control. IMR's vision is to enable manufacturing of all sectors and sizes to be leaders in the world of advanced manufacturing so that they can compete and thrive in the global economy.' (Irish Manufacturing Research, 2021).

IMR has established an advanced Additive Manufacturing (3D printing) research centre in the National Technology Park in Mullingar. This centre helps Irish companies to 'assess the potential of component fabrication using additive manufacturing, as well as evaluating the introduction of this technology in their manufacturing operations'.

Under Future Jobs Ireland, test beds for 2 new areas will be developed: Collaborative Robotics (Cobotics) and Augmented/Virtual reality (AR/VR), providing additional key resources for Irish industry to 'help increase manufacturing productivity and innovation, and provide training and reskilling in these new advanced technologies' (Government Publications Office, 2019a). IMR has over 100 staff, and 200 member companies in its network.

Enterprise Ireland's Technology Gateway Network

Enterprise Ireland Technology Gateways 'work in partnership with Institutes of Technology and Technological Universities across Ireland. The network consists of 16 specialised Gateways and three sectoral clusters, the Technology Gateway Network delivers innovation expertise and solutions for Irish industry'. (Enterprise Ireland, 2021b)

The Network enables companies of all types to access expert R&D personnel and facilities, to develop working prototypes of new products or services or improve existing ones for business and industry. Through the Network, companies can benefit from financial support from Enterprise Ireland such as the Innovation Voucher scheme, Innovation Partnerships and the Agile Innovation Fund. The Network was set up in 2013 as a response to the financial crisis; since then, over 3,560 Irish companies have used the Network, completing more than 5,000 innovation projects.

Some of the more relevant Gateways for engineering manufacturing companies include:

- The MET Gateway, based in the Galway-Mayo Institute of Technology, develops advanced, industry focused solutions in MedTech, Engineering and Lifesciences sectors.
- The APT Gateway is based at Athlone Institute of Technology and provides polymer technology solutions for companies in the medical, composite, recycling and pharmaceutical sectors.
- The Nimbus Gateway, based in MTU Cork, develops Internet of Things (IoT) and Cyber Physical System prototypes for a broad range of companies, connecting everyday objects and systems and making them smart (Enterprise Ireland, 2021b).

IDA National Advanced Manufacturing Centre (AMC)

Ireland's Industrial Development Authority (IDA) recognises that the manufacturing industry is 'undergoing major disruption and transformation, due to the emergence of new production and digital (Industry 4.0/I4) technologies…' It is recognised that 'transitioning Irish industry to the next generation of manufacturing is vital to ensure that Irish entities remain viable and globally competitive in future markets'. To date, Irish manufacturers 'have been challenged in their adoption of I4 technologies' (Industrial Development Authority, 2020a).

To address these impacts and needs, IDA Ireland is leading on the delivery of the Ireland's national Advanced Manufacturing Centre (AMC), which will 'support manufacturing companies to create value from the deployment of digital technologies and the digitisation of their manufacturing operations, by collaboratively researching and solving defined industry problems at latter stage TRLs' (ibid). It is intended that the AMC 'will contribute to supporting the retention and creation of jobs in the Irish manufacturing sector and will support the enhancement of Ireland's value proposition for manufacturing investments' (ibid).

The AMC is a strategic national priority and is aligned with the Irish Government's Ireland's Industry 4.0 Strategy 2020-2025. According to the IDA, the AMC 'will serve the national discrete manufacturing base within Ireland and is intended to:

- De-risk the access to trialling and accelerate the adoption of new I4 technologies within the discrete manufacturing base,
- Provide a collaborative environment for the adoption of emergent industrial technologies relevant to the future of manufacturing,
- Provide industry training in emergent platforms to upskill the workforce in line with future production skills needs.' (ibid)

The first key enabling component for the AMC will be 'The Digital Factory', which is under construction, with a target completion date of Q4 2021.

HEI ROLE

Produce Human Resources

Ireland's education system consists of primary level to age 12-13, secondary level to age 18-19 with final 'Leaving Certificate' examinations and a variety of third level institutes. Third level consists of higher education institutes such as traditional universities and institutes of technology (IoTs) as well as colleges of further education, regional education and training boards (ETBs) and other government agencies for training of apprentices in traditional trades.

The IoTs were established by the government in the 1970s specifically to address the technical talent needs of emerging industries in Ireland, such as the pharmaceutical sector. More recently, the government has adopted a policy of merging IoTs into larger entities and broadening their remit as Technological Universities.

Regarding company growth, there are arguably two complementary types of talent required, technical and business-related. The Southern Region's HEIs have a particularly strong tradition of linkage to the broad engineering and manufacturing sectors.

Southern Region HEIs – selected description and course snapshot (not comprehensive)

Project Participant: Munster Technological University (MTU): MTU was formed as a merger between Cork Institute of Technology and Institute of Technology Tralee in January 2021 – both originally established in the 1970s. MTU has a large industry-focussed curriculum, adhering to National Framework of Qualifications (NFQ) levels 6-10 including International academic and practice leaders in external outreach to industry via its Extended Campus unit. MTU is a member of five Science Foundation Ireland Research Centres MTU also hosts Ireland's cybersecurity national industry cluster.

The relevant technical courses via the Faculty of Engineering & Science at MTU are mechanical and industrial engineering, process and chemical engineering, control and automation engineering, electrical and electronic engineering and computer science, among others. Some sample business-related courses via the Faculty of Business and Humanities are finance, leadership & strategic planning and organisational development.

Other HEIs: the following HEIs are based in the Southern Region, and collectively with MTU provide a comprehensive range of engineering and business-related courses and programmes, from NFQ level 6 to level 10. These include relevant skill sets for jobs such as precision engineering machine operators, control & automation technicians & engineers and advanced manufacturing.

- University College Cork (UCC)
- University of Limerick (UL)
- Waterford Institute of Technology (WIT)
- Carlow Institute of Technology (Carlow IT)
- Limerick Institute of Technology (LIT)

SOLAS

SOLAS is 'the State agency tasked with building a world class Further Education and Training (FET) sector to fuel Ireland's future.' It produced a strategic plan for the sector called Future FET: Transforming Learning - The National Further Education and Training (FET) Strategy. This strategy recognises the role of employers in FET (Solas, 2019).

Education & Training Boards (ETBs)

The national ETB network offers Further Education and Training (FET) to people over 16, up to NFQ level 6, including apprenticeships and short traineeships that involve learning 'on-the-job' as an integral part of the training. ETBs are the main route for training relevant trades-people for engineering manufacturing (e.g. CNC machine operators) in Ireland. Courses are run via partnerships, often with IoTs for the academic elements. The ETBs are structured on a county/sub-regional basis; the ETBs in the Southern Region are Cork; Kerry; Limerick & Clare; Tipperary; Waterford & Wexford; Kilkenny & Carlow. The most recent significant publication is the Action Plan for Apprenticeship 2021-2025. Professional apprenticeships are now recognised as an important vehicle for training technical personnel in relevant disciplines, leading to some blurring of boundaries between traditional and work-based learning. (ETBI, 2021)

HEI ROLE

Skillnet Ireland

Skillnet Ireland is a business support agency of the Government of Ireland, with a mandate 'to advance the competitiveness, productivity and innovation of Irish businesses through enterprise-led workforce development'. The Skillnet mission is to 'facilitate increased participation in enterprise training and workforce learning in Ireland' (Skillnet Ireland, 2021). Skillnet Ireland operates by creating and funding training through Skillnet Networks. Each such network includes businesses from a similar industry sector or from a similar geographical area. Through their 73 Skillnet Business Networks and 55 partner industry bodies, Skillnet Ireland allocates funding to these groups of businesses with similar training needs, so they can deliver subsidised training for their teams.

Skillnet partners with around 55 industry bodies that are either sectoral or geographically based, using a networked and partnership-based approach that enables enterprises to lead training design and delivery, ensuring the training delivered is highly relevant to industry needs. Skillnet Ireland operates on a joint investment model, where Government grants are combined with contributions from enterprises, thus reducing costs and other barriers for businesses. The definition of skills is very broad, ranging from specific, vertical, technical or digital competencies through to horizontal or 'transversal' skills aimed at business owners and leaders.
In 2020, Skillnet Ireland delivered 9,110 courses and training programmes worth a total value of €51.2m to 81,895 people in 21,695 companies. Just over 50% of companies were 'Micro', i.e., less than 10 employees while SMEs comprised 43%. The manufacturing sector had among the lowest participation rates, at 7% of companies and it is notable that only 11% of participants were classified as 'Technician' or 'Skilled Manual' workers. These statistics raise the question as to whether the manufacturing sector is benefitting to the best extent from Skillnet courses.

Financial and Policy Resources

Sources of finance for engineering companies are:

- The Strategic Banking Corporation of Ireland (SBCI) (see below)
- Company self-financing, from operating cash flows e.g., for capital investment
- Owner-founder cash injection
- Traditional bank finance.
- Enterprise Ireland grants

SBCI

The SBCI was established in 2014 to act as a state development bank, offering low-cost credit to Irish SMEs, while 'driving competition and innovation in the Irish finance market'. It offers a range of products including Future Growth & Brexit Loan schemes, and COVID-19 loans and credit guarantee schemes (SBCI, 2021a). According to its Annual Report for 2020, total funding provided nationally was €836m to 7,639 SMEs (average €109k per loan), of which the manufacturing sector received 9%. In overall terms, 72% of the beneficiaries used funds for investment in growing the business (the balance being for working capital). In 2020, around 42% of SBCI loans were to companies in the Southern Region (SBCI, 2021b).

Other Covid-19 related supports

During the current COVID-19 pandemic, there are also a range of additional supports for businesses and employees aimed at ensuring company and personal survival while the impact of the crisis is being managed, such as the Small Business Assistance Scheme. However, these are exceptional in nature given the circumstances, and are not detailed here.

CHALLENGES/ BARRIERS

Challenges / barriers

Economic crises such as the financial crash of 2008-2012 and the COVID-19 crisis of 2020-2021 result in major setbacks to growth. Orders can be depressed, revenue reduced, and staff layoffs required. Cash reserves are depleted. Supply chains are disrupted and costs increase.

Access to adequate numbers of suitably skilled staff is a consistent theme in terms of challenges to EM-SMEs. While long-term retention rates for personnel are high, companies rely heavily on in-house training of their workforce, irrespective of the origin and education of their employees. Competition for skilled personnel is high, especially with MNCs and companies collaborating with HEIs to source good candidates even at the early stages of undergraduate programmes.

Brexit is impacting EM-SMEs through supply chain disruption, increased transport and tariff costs, and market disruption. The full extent of the damage from Brexit is only emerging at time of writing.
Transport costs due to the need for shipping places an inherent disadvantage for companies competing with continental businesses.

Engineering SMEs often face a constant need to upgrade expensive machining equipment, which imposes capital costs, a need for access to finance, and if the company is growing, this creates a need for additional floorspace as well.

EM-SMEs are often heavily reliant on contracts for bespoke equipment – as opposed to generating revenue from product lines that can be manufactured in larger numbers and exported. There appears to be a difficulty for such companies in Ireland in successfully developing and marketing such products.

There appears to be a ceiling to the growth that is achievable before an expanded management team and a more formal structure becomes necessary. Adapting the company's structure and methods requires changes of mindset and locus of control, often among the founders who are also the CEOs. This acts as a barrier to transition to further stages of growth. For example, it is commonly the case that the marketing and sales functions are underdeveloped compared to the technical functions. Adopting and adapting to digitalisation is a challenge for EM-SMEs.

CHALLENGES/ BARRIERS

Drivers.

Drivers for growth are highly linked to the ambition, ethos and characteristics of the senior company personnel – the founders / owners, and CEOs. Typically, ownership is private and consists of a small number of individuals.

Factors include the desire to excel in a technical sense, meet chosen revenue targets, increase remuneration, support loyal staff and their families and to build a legacy.

Key Success Factors

Key success factors for SME growth in the engineering manufacturing sector are:

- Strong leadership – typically owners and founders who have the appropriate technical background and experience, personal resilience, commitment and resourcefulness, and the ability to see and exploit market opportunities. Cultural factors are very important, especially having a customer service mindset at a leadership level.
- Strong senior team – typically a capable crew of technical staff who have been with the company for a long period of time i.e., in excess of 10 years.
- Availability of skilled workforce – there is a constant effort involved in sourcing and training suitable technical staff. Collaboration with HEIs is most often aimed at this objective.
- Access to finance is a key requirement for EM-SMEs, for ongoing capital investment in the business.

The more successful EM-SMEs have engaged with a fuller range of government supports, especially from Enterprise Ireland, including for leadership development, internationalisation, and strategic market planning.

Engineering Manufacturing SMEs in Ireland have derived benefits from clustering for joint marketing, pooling of production capability and capacity, and internationalisation of their businesses.

However, authorities such as IDA Ireland recognise that disruption lies ahead for the manufacturing sector, and that advanced manufacturing, digitalisation and Industry 4.0 concepts must be embraced by the sector to ensure continued success (IDA, 2020a).

05

THREATS TO IRISH SMES

Apart from the current impact of Covid-19 on human health, there are currently a number of additional immediate threats to Irish SMEs, arising from the external environment. International corporation tax regime changes: a global agreement, championed by the US, has been reached to reform the rules on MNCs' corporate taxation, that may erode the attractiveness of Ireland for FDI by MNCs.

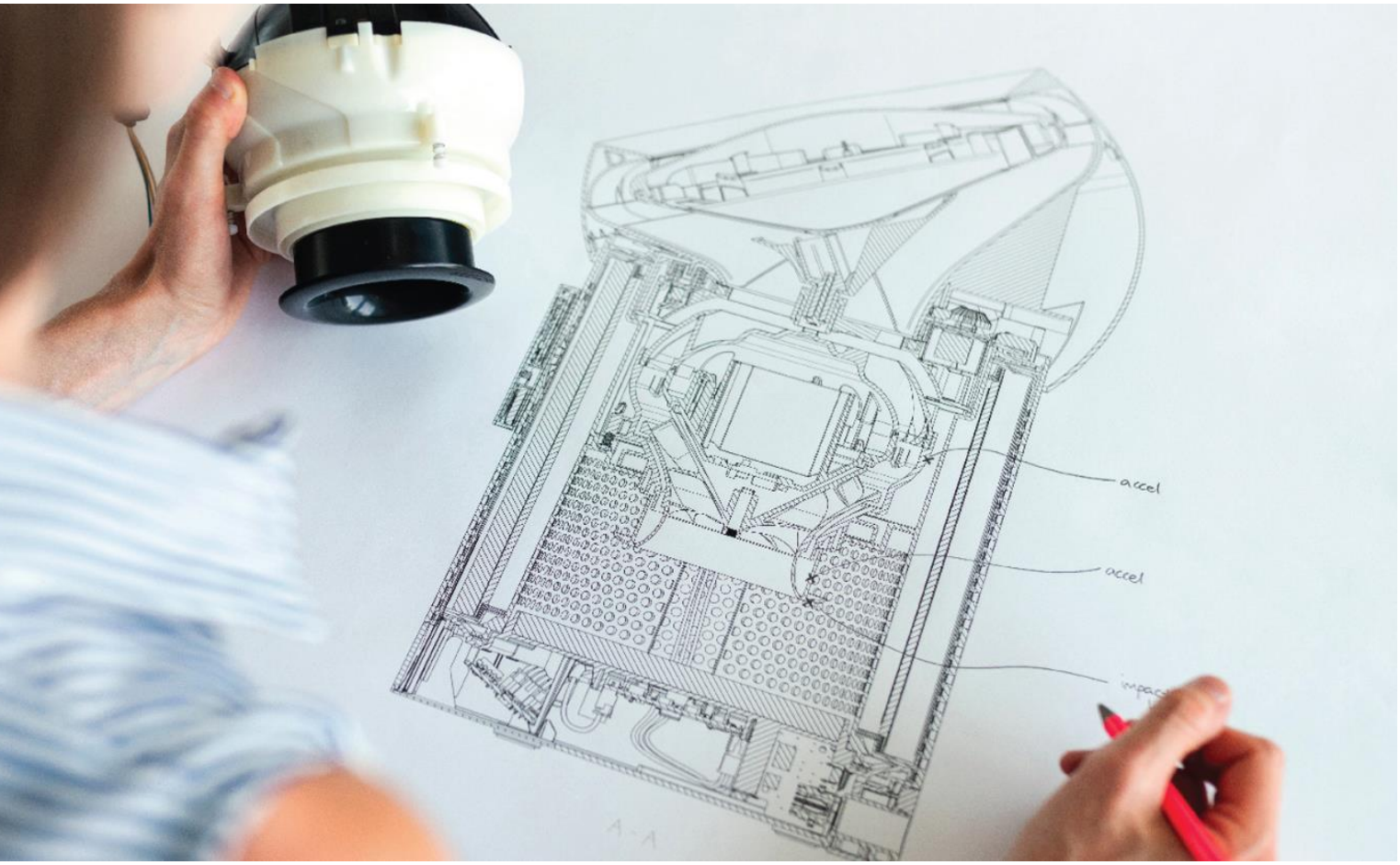
Brexit: Traditionally, Irish SMEs depended heavily on supply chains and markets in the UK. The emerging difficulties and delays due to Brexit are driving disruption to the usual suppliers, markets and logistics arrangements, with increased volumes of higher-cost freight shipments via direct ferries to mainland Europe, as opposed to using the UK 'land bridge'.
COVID-19: Supply chain problems have also emerged for manufacturing companies as one impact of the COVID-19 pandemic of 2020-2021. These manifest in higher prices for raw materials and components; as well as delays in procurement

CLUSTER COUNCIL MEETING

MUNSTER TECHNOLOGICAL UNIVERSITY, 21ST SEPTEMBER 2021

Cluster Council Membership

The SME Cluster Growth project's Cluster Council for Ireland – Southern Region has been formed. The membership to date is listed in Table 1 below, including the name and type of organisation represented. Additional members are expected to confirm their participation in the coming weeks, particularly industry representatives (e.g. Emerald Aero Group, the Precision Turned-parts Manufacturing Association, Irish Business and Employers Confederation, Small Firms Association, etc); as well as relevant State bodies responsible for promoting industrial development and SME growth and innovation (e.g. Enterprise Ireland, Industrial Development Authority).



Firstname	Surname	Organisation	Type
Andrew	Lynch	IMR	Applied Research Centre
John	Fitzgibbons	Cork ETB	FET
John	Cassidy	Waterford & Wexford ETB	FET
Matt	Cotterell	MTU Head of School	HEI
Michael	Loftus	MTU VP	HEI
Felicity	Kelliher	WIT	HEI
Kieran	Delaney	Fit4FOF	Related / Relevant Project
Paul	Healy	Rubicon	Incubator
Siobhan	Bradley	RSF Southwest	Regional Skills Forum
John	Gleeson	CONFIRM	SFI Research Centre

ACRONYMS:

CONFIRM:
A Irish research centre for Smart Manufacturing

ETB:
Education and Training Board

FET:
Further Education & Training

Fit4FOF:
Fit for Factories of the Future

HEI:
Higher Education Institute

IMR:
Irish Manufacturing Research

MTU:
Munster Technological University

SFI:
Science Foundation Ireland

WIT:
Waterford Institute of Technology

AGENDA FOR INITIAL DISCUSSIONS

1. Introduction to SME Growth Project
2. Perceptions of main challenges for engineering manufacturing SMEs
3. Cluster Council's role
4. Indicative timeline for the work

Notes on Discussions

Introduction to SME Growth Project. Due to members' time constraints and coordination obstacles, initial meetings were held individually via Teams or Zoom. It was found that this method allowed a better opportunity for individual member briefing to be given, and feedback to be received.

A general briefing on the project was provided, namely that the project is based on the evidence-based proposition that SMEs do better when they collaborate with each other in clusters; and when they make broad use of the skills, resources and collaboration opportunities available through Higher Education Institutes (HEIs). The project's focus area is the engineering manufacturing SME sector, more specifically in our case, the discrete engineering manufacturing sector in the Southern Region (although we are hoping to generate impact on a national scale).

Progress in Ireland to date was outlined:

- Online survey of 50 Irish engineering manufacturing SMEs completed (which represents a very positive 50% response rate of those invited to participate); results are being compiled
- 10 Case Studies completed and written up, from Irish-owned discrete engineering manufacturing SMEs in the Southern Region
- 3 Expert Interviews completed and written up
- Desktop research completed & now being compiled into an overall Synthesis Report by the relevant work-package leaders

Perceptions of main challenges for engineering manufacturing SMEs

Insights from the Irish Case Study and Expert interviews were outlined and discussed with the members, to help establish a basis for the council's future role. These included: Companies interact with HEIs to secure new personnel, including offering undergraduate work-placements, apprenticeships and engineering internships. Some companies take an active role in designing new courses to address their needs, in collaboration with relevant departments in HEIs.

However, significant challenges in securing skilled technicians trained to high level: almost all companies reported this as a limiting factor on their growth. Some cited lack of coordination among training organisations. Attracting new apprenticeship entrants to toolmaking / to become machine operators is a major challenge. Pandemic-related difficulties placed significant strain on some companies: loss of business and restricted operations in manufacturing plants. Very mixed views on the benefits of cluster collaboration: some regarded it as very positive and achieved market penetration internationally; others had deliberately avoided it due to fear of competitors stealing their business.

Overall a negative experience of product innovation, both with HEIs and when done independently: the number of companies who tried to develop new products was small; those that did so did not use the supports available to them correctly in some cases; and in all cases the innovation failed to achieve a market launch – even when a working technical solution was created. Digitalisation poses significant challenges, both in terms of production automation, but also in business processes: some companies reported having 'wasted' large sums of money, and creating internal disruption, when they tried to implement sophisticated ERP systems.

Several companies reported having engaged with Enterprise Ireland's suite of training and support programmes for senior business leaders – including peer-to-peer workshops and networking – with generally positive outcomes reported. This appears to be an area of strength in Ireland. All companies reported very tight constraints on their time: most perceive they are too busy to engage meaningfully with many external support measures (even though the value of Enterprise Ireland's programmes is recognised).

Cluster Council's role

The nature of the Council's role was discussed, in light of the particular environment in Ireland. It was noted that there is a large range of organisations and support measures available for SMEs in Ireland. Many of these are represented by members of the council. It was agreed that there is a need to ensure the measures the council pursues will be targeted for maximum effectiveness, and to avoid duplication of existing services. There is also a need to ensure SMEs recognise the value proposition of the project – and the council – from the outset: we need to be sure we are adding real value in ways that are different and meaningful. In that way, we will have the best chance of getting real engagement with the SMEs we are targeting.

Therefore, it is perceived that the council's work will take place in 2 phases. Phase 1 will identify and design the specific measures to be taken, taking into account the Irish context, the insights generated to date, and informed by the range of expert stakeholders on the council. Phase 2 will implement the measures decided. One task will be to identify an enduring structure / host organisation for the Cluster Council.

Indicative timeline for the work

- Phase 1 of the work will take place over the initial 12-24 months approximately, depending on the speed of achieving its objectives.
- Phase 2 will commence immediately thereafter.
- Meetings will be held Quarterly.

06

REFERENCES

Central Statistics Office (CSO) (2017). Census 2016 Summary. Available at https://www.cso.ie/en/media/csoie/newsevents/documents/census2016summaryresultspart1/Census2016SummaryPart1.pdf

Chambers Ireland (2021). Website available at https://www.chambers.ie/

Cyber Ireland (2021). Website available at https://cyberireland.ie/

Education & Training Boards Ireland (2021). Website available at https://www.etbi.ie/about-etbi/further-education-and-training/

Energy Cork (2021). Website available at http://www.energycork.ie/index.php/about/

Engineers Ireland (2021). Website available at https://www.engineersireland.ie/Mechanical-and-manufacturing

Enterprise Ireland (2021a). Website available at https://www.enterprise-ireland.com/en/funding-supports/Company/Esetablish-SME-Funding/

Enterprise Ireland (2021b). Website available at https://www.technologygateway.ie/

Emerald Aero Group (2021). Website available at https://emeraldaerogroup.com/about/

Government Publications Office (2015). National Skills Strategy 2025. Available at https://www.regionalskills.ie/imagelibary/regional%20skills%20-%20national/publications-/publications-pdf/national-skills-strategy-2025.pdf

Government Publications Office (2018a). National Planning Framework. Available at https://www.gov.ie/pdf/?file=https://assets.gov.ie/166/310818095340-Project-Ireland-2040-NPF.pdf#page=1

Government Publications Office (2018b). The National Development Plan 2018-2027. Available at https://www.gov.ie/en/policy-information/07e507-national-development-plan-2018-2027/

Government Publications Office (2018c). Enterprise 2025. Available at https://enterprise.gov.ie/en/Publications/Publication-files/Enterprise-2025-Renewed.pdf

Government Publications Office (2019a). Future Jobs Ireland. Available at https://assets.gov.ie/6827/6cbfd223cf354f04ac1d7266032effdb.pdf

Government Publications Office (2019b). Ireland's Industry 4.0 Strategy 2020-2025. Available at https://enterprise.gov.ie/en/Publications/Publication-files/Irelands-Industry-4-Strategy-2020-2025.pdf

Government Publications Office (2021). Action Plan for Apprenticeship 2021 - 2025. Available at https://www.gov.ie/en/publication/0879f-action-plan-for-apprenticeship-2021-2025/

Higher Education Authority (2021). Website available at https://hea.ie/

Industrial Development Authority Ireland (2020a). RFI for Advanced Manufacturing Centre (AMC) Technology Stack & Services (2021). Available at https://irl.eu-supply.com/app/rfq/publicpurchase_docs.asp?PID=171161&LID=193008&AllowPrint=1

Industrial Development Authority (2020b). Available at https://www.idaireland.com/newsroom/publications/ida_facts_about_ireland_2019

Industrial Development Authority (2021a). Website available at https://www.idaireland.com/how-we-help/property

Industrial Development Authority (2021b). Available at https://www.idaireland.com/about-ida/driving-recovery-and-sustainable-growth-2021-2024

Ireland South East Development Office (ISEDO) (2021). Website available at https://irelandsoutheast.com/2020/12/10/engineering-the-south-east-2/

Irish Business and Employers Confederation (2021). Website availabe at https://www.ibec.ie/influencing-for-business?ppc_keyword=ibec%20ireland&gclid=CjwKCAjwo4mIBhBsEiwAKgzXOFLgOe8ad2CvQX9vMqxDitksinTFLAJE-e435YmT5sPu3y8qdJ4OKxoCRBoQAvD_BwE

Irish Manufacturing Research (2021). Website available at https://imr.ie/

Irish Small and Medium Enterprise Association (ISME) (2021). Website available at https://isme.ie/

IT@Cork (2021). Website available at https://www.itcork.ie/

LINC Network (2021). Website available at https://www.lincnetwork.ie/

Local Enterprise Offices (2021). Website available at https://www.localenterprise.ie/

Precision Turned Parts Manufacturers Association of Ireland (PTMA) (2021). Website available at https://www.ptma.ie/about/

Regional Skills For a (2021). Website available at https://www.regionalskills.ie/rsf-statement-of-activity-2020-4.pdf

Science Foundation Ireland (2021). Website available at https://www.sfi.ie/sfi-research-centres/

Shannon Group (2021). Website available at https://www.shannonproperties.ie/technology-parks/

Skillnet Ireland (2021). Annual Report 2020. Available at https://www.skillnetireland.ie/wp-content/uploads/2021/07/Skillnet-Ireland-Annual-Report-2020.pdf

Solas (2019). Future FET: Transforming Learning - The National Further Education and Training (FET) Strategy. Available at https://www.solas.ie/f/70398/x/64d0718c9e/solas_fet_strategy_web.pdf

Strategic Banking Corporation of Ireland (2021a). Website available at https://sbci.gov.ie/

Strategic Banking Corporation of Ireland (SBCI) (2021b). Annual Report 2020. Available at https://sbci.gov.ie/reports#

Údarás na Gaeltachta (2021). Website available at https://udaras.ie/en/

Western Development Commission (WDC) (2019). Available at https://wdcinsights.wordpress.com/2019/09/27/regional-spatial-and-economic-strategies-the-final-steps/