

Ready for a new world

Irish innovation, resilience and partnerships are shaping the future of global business

Under the pressures of the pandemic, businesses around the world had to pivot to implement new strategies and technologies to provide products and services digitally. While this new norm of business is built upon new technology, at its core it's about people and meeting the changed demands of customers and employees.

"By delivering world-class talent and creativity alongside a highly collaborative approach, Irish companies are perfectly set for leading the new business environment," says Sean Davis, director of Enterprise Ireland North America. "Throughout the difficult pandemic experience, we've seen talented Irish industry leaders and their teams step up with innovation to make a positive impact on business communities around the globe, and this effort is not slowing down."



Sean Davis
Director
Enterprise Ireland
North America

Redefining interactions

After nearly two years of working remotely, employees are increasingly expecting technology-driven initiatives from their employers, particularly around how to stay connected and how they work with others. Today, a large cluster of Irish HR and TalentTech firms are helping companies attract and retain employees, enhance performance management, and expand diversity and inclusion in their business.

WorkHuman, for example, is on a mission to make work more personal for millions of people and organizations worldwide. Through its cloud suite of products, companies can strengthen employee performance and connect people on a more positive and emotional level—in tune with how work gets done.

Another Irish company with the mission of improving employee communications is Workvivo. The company developed an employee communication platform to excite, engage and connect entire companies. Its unique approach combines a social network with an easy-to-use employee app.

Diversity, equality, inclusion

In addition to significant shifts in workplace connectivity, current and potential employees now expect to come into organizations where diversity and inclusion are key priorities. In 2020, Enterprise Ireland, the Irish government's trade and innovation agency, launched a new Women in Business Action Plan. This initiative offers a wide-ranging set of actions to support the scaling of women-led businesses, increase startup rates among women, support the recruitment of women as senior managers, and highlight role models and good practices.



Dublin is a renowned hub for technology

Addressing equality issues in the banking sector, Irish companies are providing innovative payment solutions to the unbanked and underbanked. PiPi iT Global has devised a secure and private online payment platform that helps customers spend cash digitally. In particular, it facilitates migrants living and working around the world, who may not have full access to banking facilities, to send money and pay bills internationally, at low cost and in a secure way.

Irish company AID:Tech enables entitlements such as aid, welfare and donations to be digitized, delivered and tracked using blockchain technology, including the distribution of international aid to refugee camps. This solution enables, for the first time, the ability to track a payment from the donation to the recipient. One of its partners, Women's World Banking, uses AID:Tech to deliver their Caregiver microinsurance at scale, ensuring claims are paid simply, quickly and transparently. Women's World Banking is committed to

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Sean Davis, Director, Enterprise Ireland North America

making affordable health insurance schemes available to low-income women in developing markets.

With more banking now being conducted online, transaction monitoring, high-quality risk controls and proactive cyber security are ever more critical. Irish company Daon helped invent many of the mobile device authentication systems in use today, and Fenergo's award-winning digital client lifecycle and regulatory compliance solutions enable financial institutions to create a truly frictionless customer experience.

Internet of Everything

The new business norm not only brings with it new tools and services for employees and customers, but it also brings into businesses a level of insights and actionable data that was simply not possible within the old-school, all-analog world. Today's devices and sensors generate very valuable data at a rate we could have never predicted. Smartphones, smartwatches, tablets and all manner of IoT-connected products, from refrigerators to health monitors,



EquiTrace tracks and stores medical records for horses using a scanner, mobile phone and a microchip

have become globally ubiquitous. Combined with the ready availability of the cloud, we are now a very connected world—and Irish innovation is at the forefront of this connectivity.

Ireland-based Tekelek, a developer of tank monitoring devices, has been particularly successful in leveraging remote connectivity and digital technologies for managing and tracking data and devices—creating new business sectors with new and unique employment opportunities.

Solutions from patientMpower ensure that specialist healthcare teams can remotely monitor patients with respiratory conditions without the need for patients to attend the hospital. The Salaso Health platform is a HIPAA-compliant and secure telemedicine service that allows healthcare providers to con-

tinue patient-centered care remotely, including secure video consultations and live exercise demonstrations.

In agriculture—a sector very dear to Irish culture—EquiTrace creates data management solutions for horse farms and traceability solutions for equine organizations. Herdwatch is working to simplify agribusiness by helping farms eliminate paperwork and make better decisions; ApisProtect brings ground-breaking technology to commercial beekeeping; Iamus is an artificial intelligence (AI) and robotics company that uses machine learning to turn visual, environmental and biometric bird and farm information into actionable data for poultry producers, and Piper Systems uses advanced automation and data technology to improve milk collection, loading and sampling.

Partnership: The catalyst for growth

Today's complex marketplace requires collaboration with a range of partners to provide the best combined solutions for customers. Cloud technologies, advanced data analysis and a proliferation of IoT devices are driving technology integrations across all business sectors. "Around the globe, Ireland is highly regarded for its leading software development in AI, data analytics, augmented and virtual realities, cognitive cloud computing, IoT technology and more," says Davis. "Irish tech companies are forward looking, success driven and work with a global mindset."

As the world's largest venture capital entity by deal count, Enterprise Ireland works with Irish startups to help them start, grow, innovate and win export sales in global markets. Enterprise Ireland partners with entrepreneurs, Irish businesses, and the research and investment communities to create mutually advantageous partnerships between Irish and international companies.

Organizations today are being called upon to navigate increasingly complex social, environmental and technological challenges that they can't solve alone. The shared expertise and knowledge of a well-designed partnership can spark innovation and unlock new opportunities and networks—and Irish businesses are ready to develop the solutions and build the relationships that will help us all succeed in the new world norm.



2021: The sector agnostic evolution of healthcare

Irish companies are partnering with global manufacturing firms and healthcare providers to deliver ground-breaking innovations

The past 19 months have been extraordinarily difficult with significant cost to both societies and economies around the world, and indeed an unprecedented time for the healthcare industry globally. Never before has global healthcare experienced such significant demands and such critical change in such a short space of time. New solutions were needed fast to deal with competing demands—from increased supply of PPE to lifesaving equipment and medicines.

It has also been a period of intense transformation, with healthcare providers adopting new technologies and services to support the race to roll out new vaccines and manage a surge in telemedicine.

In early 2020, digital telemedicine was utilized by roughly 11 percent of patients and clinicians—that more than quadrupled to 46 percent by the end of the year. In the last three quarters of 2020, over \$3 billion of venture capital was invested into digital health, illustrating an enormous pivot within venture-capital (VC) investment and technology adoption. As the world's number-one VC investor by deal count, Enterprise Ireland, the Irish government's trade and innovation agency, has a long history of supporting health technology startups, entrepreneurs and emerging Irish multinationals positioning the country as a leading incubator for medtech innovation.

As a result Ireland has come to the forefront in this transformative time, responding to the pandemic with agility and innovation. According to the OECD, Ireland was ranked fifth in the world for exports of COVID-19 related products and services.

Healthcare's transformation into a multi-sector industry

With the growth of virtual solutions in healthcare came the need for heightened cybersecurity measures to protect patients' confidential data. Cybersecurity within healthcare is becoming an increasingly important topic for public and private healthcare systems globally. As organizations look to bring electronic health records (EHRs) online and upload data to cloud-based systems, information will be accessible by virtually any provider, anywhere, at any time. The solution to protecting this data is investing in innovation.

A pioneering company in this space in Nova Leah, an Irish cybersecurity medtech company. Nova Leah's real-time threat monitoring product



David Corcoran
Head of Life Sciences, Enterprise Ireland USA



patientMpower's solutions enable remote monitoring of patients with respiratory conditions

portfolio is used by many of the world's top medical device manufacturers.

"There's no denying that cybersecurity has now become intrinsically intertwined with healthcare," states David Corcoran, head of life sciences, Enterprise Ireland USA. "But it's also fascinating how the rapid shift to developing virtual solutions for patients—whether that be for appointments, clinical trials or post-treatment monitoring—has led to a more secure, patient-oriented healthcare system as a whole."

The advent of the pandemic was a catalyst for virtualization and digitization. What began as a potential threat to EHRs has turned into a critical leap pad in the overall implementation of digital healthcare.

Irish company HealthBeacon understood that virtual and digital patient monitoring was a growing concern during the pandemic and ensured that they were offering patients and healthcare providers adequate solutions for this. They struck at the right time and have been able to grow rapidly in the last few years. Through their partnership with home appliance giant Hamilton Beach, HealthBeacon was able to deliver a smart injection care management system to provide medication management reminders and track adherence in a secure way. This system includes a new Smart Sharps™ Bin, the world's first and only smart sharps bin cleared by the United States Food and Drug Administration for the safe and convenient disposal of used sharps through the U.S. Postal Service's approved mail-back program.

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"Patients need to trust that the platforms they are engaging with are secure," says Corcoran. "We're seeing a crossover between various sectors to ensure that this happens. Irish advancements in artificial intelligence (AI) have enabled real time, accurate monitoring and analysis while telecommunications have come into play as the infrastructure provider for these engagements to occur in a secure, trustworthy manner."

The decentralization of clinical trials

Another area that has evolved as a result of the pandemic has been the decentralization of clinical trials for patients at different disease states. The drive towards patient safety and ensuring business continuity came up through the pandemic, challenging clinical trials. This brought in the concept of



HealthBeacon creates smart tools for managing medication

decentralized trials, bringing the trial to the patient instead of patient to the trial—a system that was robustly supported by regulators. On the patient side this resulted in a higher uptick in immutability in addition to an uptake in those participating in the clinical trials.

Dublin based ICON is a world-leading contract research organization and global provider of outsourced development and commercialization services to pharmaceutical, biotechnology, medical device and government and public health organizations in order to maximize clinical trial efficiency. Behind every service they provide are the priorities companies and organizations look for—reducing time to market, reducing cost and increasing quality.

A secure supply chain

Few of these advancements would mean as much without a stable and secure supply chain. Recall back in the beginning of the pandemic where there was a lack of PPE, ventilators and even oxygen. This highlighted the exposure that governments and the healthcare industry had to these disruptions but the industry has since put steps in place to tackle this.

“Irish innovation is uniquely positioned to remedy the risks to supply chain disruptions we experienced at a global level this last year,” states Corcoran. “The combination of exemplary Irish innovation with the historically strong cultural ties to the United States allows our clients to understand the intricacies of American companies’ strengths and weaknesses in order to help develop a solidified, stable, sustainable supply chain for all.”

Risk mitigation has become critical and Irish innovators have enabled the use of AI to identify the bottlenecks and be proactive in combating



Global healthcare leaders attend the annual Med in Ireland event



Leading New-York-based healthcare provider Northwell Health has announced a new strategic agreement with Enterprise Ireland

them—it is now about being proactive and not reactive. Irish companies are developing new failsafes to prevent medical supply chain issues from happening again by leveraging their strengths and focusing on innovation and readiness. Global brands such as Microsoft, BMW, CocaCola and many global pharmaceutical companies are using Irish AI-driven supply chain software from Keelvar to take the complexity out of supplier sourcing. Keelvar is the leading global provider of intelligent sourcing optimization.

From colleagues to partners

The healthcare industry is continually evolving, but the last 18 months have taken that evolution to another level. Healthcare has become digitally integrated with medical technology, patient care, and pharmaceutical companies working together with cybersecurity, digital technology and telecommunications companies to maximize provider efficiency and patient outcomes.

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As a result, innovation needs to permeate throughout every industry—and partnerships have proven to be the most effective way to do this. Enterprise Ireland’s strengths lie in just that—developing the necessary partnerships for companies to innovate together. Across the world, Irish medtech companies are partnering with global manufacturing companies and healthcare providers to deliver the next ground-breaking innovations.

As a trusted source of innovation, Ireland’s medtech industry has attracted the attention of leading U.S. and U.K. healthcare partners, such as Northwell Health, AdventHealth, Beth Israel Lahey Health and the NHS. In addition, global medical device companies such as Medtronic, Boston Scientific and Liva Nova are working closely with many Irish companies. These renowned global partners have been impressed by Irish talent, and they look to Ireland to co-develop and commercialize future healthcare solutions.

“Ireland’s vibrant entrepreneurial spirit has made it a critical partner for North American businesses,” says Corcoran. “Irish businesses are at the very center of solution development to meet the toughest challenges the world faces today.”

Get ready for a green future with Irish innovation

A wide variety of future-focused Irish businesses are tackling some of the world’s most important sustainability challenges

Climate change is a threat to all of us. It’s a global problem in need of a global solution. But the last year has taught us that when human will and scientific ingenuity come together—no challenge is insurmountable. Irish green innovators are playing a big part in the race to reach zero emissions by solving complex technical challenges and delivering sustainable and low carbon solutions to make renewable energy viable; reduce energy waste in our cities with smart technology; reduce agricultural waste and make construction cleaner.

Clean technology is sector agnostic and offers opportunities for many industries to minimize their environmental impact. From agriculture to construction, waste management and offshore renewables, Ireland is fast becoming an international clean technology hub. Always future-focused, Irish companies, with the support of the Irish government, are hard at work developing innovations to tackle some of the world’s most important sustainability challenges.

“Countries and organizations around the globe are setting ambitious sustainability goals to become more energy efficient and reduce their carbon footprints,” says Sean Davis, director of Enterprise Ireland North America. “Irish companies offer a distinctive blend of tech innovation and expertise. With these skills and knowledge they can make a real difference in the world.”

The rise in green stimulus packages globally and green public procurement targets within the European Union have incentivized companies to partake in a ‘Green Revolution’. Governments aren’t the only ones investing in cleantech; while venture capital investment in cleantech is no new trend, in the first half of 2021, cleantech funding reached \$64 billion—over \$10 billion more than was invested in the period from 2006-2011.

Ireland is ensuring that it plays an essential role in contributing to a sustainable world and ranks fifth in the MIT Technology Review Green Future Index 2021, an index of 76 countries rated according to their progress towards building a low-carbon future. As a strategic objective, Enterprise Ireland seeks to support clients to reduce their carbon footprint and capitalize on opportunities emerging from the low-carbon transition. To promote cleantech innovation, Enterprise Ireland provides companies with The Green Offer to prepare them for a transition to the low-carbon economy of the future. This program allows companies to receive tailored funding and training services in order to enhance their sustainability practices. Further to this, Enterprise Ireland bridges the transatlantic gap between Irish and North American companies to help ensure mutual collaboration and sustainable growth.

Over the last few years, the environmental impact of the agriculture sector has come to the forefront. EASYFIX, a family owned company for the last



Irish companies are working with industry partners to accelerate the growth of offshore wind globally

25 years, aims to support farmers with their need to minimize their carbon footprint. By engaging with research institutions and universities around the world, EASYFIX has developed a manure technology that has been proven to reduce ammonia emissions by 51 percent while increasing the nutrients necessary in fertilizers such as nitrogen, phosphorus and potassium. As a result, farmers save in artificial fertilizers and reduce their carbon footprint, resulting in higher farm profitability.

Typically, when cleantech is mentioned, the first thing that comes to mind is renewable energy alternatives. While wind energy is the most prevalent renewable energy source in Ireland, Irish company OceanEnergy believes the most valuable renewable energy resource is yet to be harnessed: waves.

OceanEnergy’s wave energy device captures and converts wave energy into electricity by extracting the power from the water’s motion and turning it into electrical energy. Each device produces enough electricity to power 1,000 homes and has the potential to be sent back to the grid or used in other applications.

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Another renewable energy source that Irish companies have been able to harness is offshore wind. This sector is anticipated to grow from 22 gigawatts (GW) in 2018 to 177 GW by 2030, with global investment in the industry quadrupling in the first half of 2020. In 2017, XOCEAN developed unmanned technology and systems to collect the ocean data necessary such as seabed mapping and inspecting subsea assets like cables and foundations to build offshore wind farms. In the last four years, this Irish company has developed partnerships with companies around the world and now operates globally. Its mission: transform ocean data collection by bridging the knowledge gap that lies in 95 percent of the world’s oceans that are unmapped to support the sustainable and economic growth of our oceans.

“Green innovation should not be sequestered to one region,” states Davis “By developing partnerships with the research and innovation ecosystem, international companies and governments, Irish companies are ensuring that their expertise permeates at a global scale enabling industries such as agriculture, construction and transport be more sustainable, making buildings greener, cutting pollution and supporting renewable energy production.”

Investing in a strong pipeline of Irish innovation

Leo Clancy, CEO, Enterprise Ireland, describes why the country's companies are thriving in a fast-moving global environment

As global economies rebound, what is Ireland's outlook for the future and how have Irish businesses responded to COVID-19?

COVID-19 created unprecedented challenges for everyone. However, one positive aspect was that it proved the resilience of Irish companies in the face of extremely difficult circumstances. The onset of the pandemic also coincided with the new U.K.-European Union (EU) trading relationship, which presented new challenges for Irish businesses in how they traded with one of our nearest and most significant trading partners. Yet despite these circumstances, Irish businesses met these challenges with resilience and innovation, and this reflected in our exporting performance in 2020, which remained steady and strong. In 2020, Ireland was the only economy in the EU to grow, with a growth rate of 3 percent, despite the pandemic and widespread shutdowns.

While it has been a very difficult year for companies, many exporting Irish businesses responded to the pandemic by pivoting to meet new demand in response to emerging market needs in areas such as life sciences, digital health and consumer retail. Ireland was ranked fifth in the world for global exports of COVID-19 related goods and services, according to the Organisation for Economic Co-operation and Development. Some of examples of innovative Irish COVID-19 responses are:

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Leo Clancy, CEO, Enterprise Ireland

- **ICON:** a global provider of outsourced drug and device development and commercialization services to the pharmaceutical, biotechnology and medical device industries and government and public health organizations, provided clinical trial services to the Pfizer and BioNTech investigational COVID-19 vaccine program. ICON mobilized a large global team of therapeutic and operational specialists to partner on the implementation of Pfizer's and BioNTech's strategic plan and framework for the monitoring of the trial, which included a high level of remote clinical monitoring and source data verification in addition to on-site monitoring, safeguarding data quality and integrity in the evolving pandemic environment.
- **NearForm:** an Irish software development and consultancy firm, built the world's most widely adopted COVID-19 contact-tracing app, now used by millions across Europe and the U.S. including in New York, New Jersey,



Dublin's dramatic Samuel Beckett Bridge and Conference Centre



Leo Clancy
CEO
Enterprise Ireland

Pennsylvania and Delaware.

- **Daon:** Irish biometric authentication solutions provider Daon has created VeriFLY, a mobile health passport. American Airlines is the first U.S. airline to adopt the VeriFLY technology, providing customers with an easy method of providing results from a negative coronavirus test and other completed documents required for international travel into the United States. British Airways also announced that they are using Daon's VeriFLY app.

Looking to the future, our outlook is positive. Ireland is a small, open economy but one with global reach and a key understanding of what it takes to succeed, not just in market terms but to succeed with people of all cultures and backgrounds. Human factors of partnership and openness will be critical in the coming years.

In the market we are flexible, adaptable, highly innovative and strongly business minded. Irish companies succeed not because they are Irish but because they are excellent. All these attributes will be key to thriving in a global economy that is moving faster than it ever has before.

How important is the U.S. economy and market for Ireland?

Underscoring the robust and diverse economic relationship between Ireland and the United States, a new Bureau of Economic Analysis report from the U.S. Department of Commerce places Ireland ninth in terms of foreign direct investment contributors to the United States economy. Irish investment in the United States is now at \$240.1 billion, up 0.4 percent from the 2020 report. More than 110,000 people are now employed by Irish-owned companies in the United States. Over just the last two years, Irish companies have established an additional 125 new presences in the U.S. market, and I believe that signals confidence about a continued positive trading relationship.

I think the opportunity for U.S. firms to leverage innovative Irish startups that understand U.S. business and culture has never been higher. We have a team of 35 people across North America who are actively building relationships to strengthen these links.

Enterprise Ireland has been named the number one venture capital (VC) investor in the world by deal count. What is your investment strategy?



Dublin Docklands hosts numerous innovative companies

The 2020 global ranking by financial data and private equity investment platform provider PitchBook, placed Enterprise Ireland first in terms of VC investors in global funding based on deal count. We secured this position both globally and in Europe. This ranking is a testament to the role that our agency plays in supporting a strong pipeline of innovative Irish companies.

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Our strategy is to invest in the most innovative Irish companies through all stages of their growth. We also drive collaboration and commercialization of state-funded research to accelerate development of the innovation pipeline.

Through Enterprise Ireland, over the past few decades Irish governments have ensured that Ireland has a robust overall funding ecosystem that fosters innovative indigenous Irish companies. We have committed over half a billion euros in seed and venture capital schemes. This has been crucial in developing a strong pipeline of high-growth, high-potential companies throughout their growth and export journeys.

We have seen the benefits of supporting this pipeline of startups, particularly in areas such as fintech, cybersecurity, digital health and agritech. We have also been focused on women-led startups, and are extremely proud that we support two to three times the global average of women-led businesses.

The pandemic has fast-tracked digitalization across many sectors and businesses; meanwhile, calls for climate action have grown and with greater urgency. How are Irish businesses approaching these challenges?

As we emerge from COVID-19, a key priority for Enterprise Ireland for 2021 and beyond is the transformational change within our client base and, in particular, to help more Irish small and medium-sized enterprises (SMEs) to adapt their business models and invest in research and development, increase adoption of digital technologies, and respond to climate change and carbon-reduction opportunities for future business growth.

Driving capability in the field of digitalization, research and innova-



ICON provided clinical trial services for COVID vaccine programs

tion, and maximizing research and innovation collaboration nationally and regionally, including through the disruptive technologies funding programs, technology centers, and regional technology clusters are all key areas of focus for us.

The Irish government has recently agreed legislation that commits Ireland to halving our greenhouse-gas emissions by 2030 and reaching net zero by 2050. This presents significant challenges for all industries but also presents opportunities for Irish businesses in a wide range of areas. Some examples of Irish companies leading on sustainability include:

In the agritech sector, a key strength area for Ireland, Keenan's advanced diet feeders promote sustainability in farming by reducing waste, maximizing animal feed efficiency and enabling a circular economy.

Staying with agritech, Devenish Nutrition has recently launched their Agrinewal platform to measure and manage carbon emissions at farm level.

CitySwift has created a platform that uses data to strategically improve public transit, making the most sustainable modes of transport more efficient and user friendly.

Ecocem is addressing one of the world's largest carbon-reduction targets, cement, by improving and promoting the use of a greener cement alternative.

OceanEnergy is capturing and converting the power of waves into electricity through unique technology.

This year, Enterprise Ireland launched a new Climate Enterprise Action Fund to help a wide range of businesses to accelerate their planning or take the first step to compete and grow in a low-carbon future.





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**READY
FOR A NEW
WORLD**

Enterprise Ireland

The world's number one VC*

As the world adapts to the new normal, Irish companies are leading the way, helping global industries respond to their most pressing challenges. And as the world's number one VC, Enterprise Ireland is investing in the most cutting-edge Irish companies.

Across the US, our network of advisors are connecting American businesses with innovative Irish partners. Talk to us and get the power of Irish innovation behind your business.

IrishAdvantage.us

*PitchBook 2020 Annual League Tables



The Irish
Advantage