



American Chamber of Commerce Ireland

**Consultation with Regard to the Formulation of  
a successor to the Strategy for Science,  
Technology and Innovation**

**Department of Jobs, Enterprise and Innovation**

**'PATHWAYS TO GROWTH'**

**April 14<sup>th</sup> 2015**

## Introduction

The priority for the American Chamber of Commerce Ireland is that Ireland remains the global location of choice for US foreign direct investment (FDI) into Europe, and by doing so we retain and attract further investment and jobs.

Since 2010, Ireland has seen the greatest surge of US investment in over a decade. Ireland remains a unique gateway for US investment into Europe. In 2014 Ireland moved to become the largest European recipient of US FDI, and investment flows from the US to Ireland since 2000 have been 6 times larger than those to China. Today, over 130,000 people are directly employed in over 700 US firms in Ireland, accounting for over 70% of all IDA supported employment. Collectively US companies have US \$240b in foreign direct investment in Ireland, representing over 10% of all US investment in the EU.

This investment remains instrumental in helping to create and develop a world class labour force; critical in dispersing technology and innovative capabilities across the economy; and key in expanding the global reach of indigenous firms. Ireland's sustained FDI performance is attributed to Ireland's track record of delivery, flexibility and innovation in a secure and business friendly environment.

The American Chamber of Commerce Ireland conducted a review of the foreign direct investment (FDI) sectors in Ireland which has shaped this submission to the Department of Jobs, Enterprise and Innovation on Ireland's next statement of strategy for Science, Technology and Innovation (STI) policy. That process involved the participation and input of more than 60 globally leading companies in a discussion on Research, Development and Innovation (RDI). It focused on better ways of attracting RDI-led investment, more effective ways of leveraging that investment, and most importantly new ways of securing stronger outcomes for the companies and impacts for Ireland. Strategic recommendations include that there is a policy response to:

- EFFECTIVELY ALIGN INVESTMENT TO SCALE-UP RDI PROJECTS
- DOUBLE IRELAND'S RDI INVESTMENT TO 3% OF GDP WITH A NEW INVESTMENT PROPOSITION
- USE RDI INVESTMENT AS A PATHWAY TO GROWTH BY DEMONSTRATING GLOBAL LEADERSHIP

Ireland's opportunity to lead in RDI will be based on its international Reputation and Credibility. Ireland has winning potential by focusing on excellence, innovation and creating investment certainty. Science Foundation Ireland's (SFI) focus on "Excellence and Impact" is a sound strategy for inward investment.

Investment in RDI must lead directly to Economic Growth by being linked to visible downstream impacts in new technology, new products or new enterprise of scale. A credible public research base exists. Now we must build a Balanced Portfolio of RDI Investments to include applied opportunities of relevance to business and with greater impact on the economy.

To Strengthen the RDI System four significant RDI system imperatives emerge from member consultations including the need to: remove complexity and confusion within the current RD&I system, build ecosystems, increase investment in translation and the application of technological innovation as

well as develop, retain and attract key human capital. Focusing on these imperatives from a policy and investment perspective has broad appeal within the FDI community.

A Challenge-Centric Approach to RDI investment will be critical to achieve societal or economic impacts to sustain political-wide support for public programmes. Investments must be Significant in Scale. Research Prioritization has been useful, but 14 priorities of equal weighting is too many to be competitive on a global stage for an economy of Ireland's size.

Tax Policy remains a key differentiator and attractor for RDI driven FDI and thus Ireland must be strategic in employing competitive tax and grant incentives to drive the required increase in investment. Ireland must be recognized for the Availability of Talent. A credible skills and talent strategy must remain a top priority to maintain an edge, where that factor alone is becoming increasingly important in foreign direct investment decision making for high-value activities.

## MAIN ACTION AREAS

### **REFOCUSING AND IMPROVING THE RDI SYSTEM**

- ACTION: Remove complexity and confusion within the current RDI system by reviewing funding programmes and the related remits of agencies of the state with a view to consolidating investment programmes where overlaps are identified.
- ACTION: Assign dedicated RDI ambassadors to firms to expedite and ease the process of navigation through Ireland's RDI system. This should not duplicate existing agency client relationships but rather, in targeted cases, appoint an existing agency contact to lead all other agencies as a single point of focus for RDI activities and programmes.
- ACTION: Increase investment in specific translation infrastructure to include dual purpose test and demonstration platforms for emerging and breakthrough technologies in new areas of application
- ACTION: Benchmark Research Centres in terms of international scale, reputation for holding the best scientists and engineers and proven leadership in particular domains.
- ACTION: Create centres with more autonomy from HEIs to attract the best scientists and engineers, and to focus on bigger strategic partnerships that support new business i.e. research and innovation.
- ACTION: A new SSTI to map out targets to move towards a more balanced portfolio of RDI investments including additional applied opportunities of relevance to business and with greater impact on the economy
- ACTION: Develop new and prioritised metrics to encourage downstream development activity

### **CREATING A NEW FDI PROPOSITION: FDI V2.0**

- ACTION: Develop a strategy to implement and fund industry-led ecosystems in Ireland focused on translation, application and enterprise development - linking new and existing Accelerators and Incubators to industry clusters.
- ACTION: Ireland should establish and outline a funding strategy for a small number of national challenges to drive alignment of public purchasing, funding and institutional support that leverages established excellence in RDI and the strengths of existing industrial clusters.
- ACTION: Government to initiate an open consultation to establish the focus for flagship programmes to support national challenges to include, the criteria for participation, the terms of consortia engagement and their scale and time horizon. Funding should be based on a strategic partnership model such that solutions coming forward aim to target long term savings, provide for faster service delivery, improve access or give higher quality outcomes for the State/citizen.
- ACTION: Government should conduct a formal review of Ireland's incentives in an international context to win RDI-led investments, to include tax, grant and institutional supports across

Government for Research, Development and Innovation activity within industry to test competitiveness against the top ten alternative jurisdictions for mobile FDI.

- ACTION: Initiate a process to identify and evaluate core areas of scientific research that merit joint public-private investment and can develop into multi-million euro research and development partnerships.

### **DEMONSTRATING GLOBAL LEADERSHIP IN RDI**

- ACTION: Set out Ireland's ambition to raise its investment in RDI to 3% of GDP by 2025.
- ACTION: Set targets to win strategic longer-term RDI investments that will make Ireland significant on corporate technology and research roadmaps aligned to areas of established RDI excellence.
- ACTION: Develop a cross-Government strategy to retain and attract leading talent into the country aligned with our ambition for industrial growth and the development of our education system in response to identified skills demands.
- ACTION: Ireland's personal income tax burden is a barrier to retaining and attracting talent. The American Chamber regards reducing the tax burden on individuals as a key priority and we welcome Government's stated intention to continue to reduce the marginal tax rate.
- ACTION: Continued reforms to Ireland's assignee taxation regime are welcome but should be further enhanced to apply to income tax, PRSI and USC and be increased to 35% of qualifying income. An attractive regime for assignees can help provide the leadership necessary to deliver major RDI projects.
- ACTION: Delivering and maintaining a world class user friendly employment permit regime, improving access to education, and providing a more welcoming environment for globally mobile talent are also part of a more attractive environment.
- ACTION: Ireland's supply of affordable and accessible accommodation is at a crucial juncture and could affect our ability to attract talent from abroad. An affordable health insurance offering will also be essential to ensure that this very important benefit is retained as a key measure to attract and retain talent in companies.
- ACTION: Moreover, it will be important to make sure that the world knows about continuing improvements in our offering. Providing one-stop-shop information on relocating to Ireland will be vital to promoting Ireland.
- ACTION: Ireland should continuously promote the quality of its talent base overseas in key markets for inward investment.
- ACTION: Establish an education-industry forum to evaluate and recommend new and emerging learning and development tools that can be leveraged to inject greater flexibility, responsiveness and impact into the education system

## THE CONTEXT FOR CHANGE

It is clear that all sectors of Ireland's FDI believe that RDI is fundamental to preserving and growing the FDI base. It requires a compelling business proposition to attract this investment to Ireland. That proposition has been competitive, but with global competition intensifying new thinking is required to establish a sustainable winning advantage. Access to intellectual value and a culture of innovation have been important factors in driving high-value FDI flows. Excellence in research has been central to creating intellectual value while innovation in its broadest form across the business value-chain remains a major factor in the competition for FDI. Our members identified clear strengths and shortcomings within Ireland's RDI system. They believe a credible public research base is being established and now there is a need to achieve a more balanced portfolio of RDI investments to include more applied opportunities of relevance to business and with greater impact on the economy.

This shift in balance comes at an opportune time when most industry sectors are facing significant global upheaval and searching for new sources of value and innovation. The business culture in the FDI sector is to "Innovate or Die" and it applies to all sectors, the entire value chain, and to new and established companies. This challenging environment opens the possibility for a new FDI value proposition where Ireland becomes a preferred source of intellectual value and innovation with Ireland's public and private sector partnering with globally focused business to deliver broader value to citizens.

Research capacity on the ground is evolving in a positive way and SFI's focus on research excellence and economic impact has created a good basis for new investment partnerships. It is clear however that Ireland is lagging market leaders in RDI investment with a total spend of 1.58% of GDP - about half of what is required to be a global leader. This level of investment in research funded the development of today's talent pool to support existing RDI; the challenge now is to retain and develop that talent in Ireland and ensure a long term return on that investment for the country. The pursuit of excellence in a globalised world requires that Ireland develop and attract the brightest and best scientists and to deliberately set out to dominate internationally in particular targeted areas of science. Linked to this high-value skills base is the evolution of Ireland's RDI performance as a new opportunity for economic growth.

While SFI policy in this regard is correct, there is a concern within the multinational sector that to be sustainable a fresh approach with greater investment intensity and certainty is required. While Ireland has made great progress in building research and industry collaboration, it must now become systemic and deliver proven partnerships that are recognised as long term and robust.

## REFOCUSING AND IMPROVING THE RDI SYSTEM

### *PRIORITIES IN A CHANGING RDI LANDSCAPE*

The national RDI system has made truly significant advances over the last fifteen years and now is the time to build on Ireland's proven world-class achievements in scientific research. Having ascended the international ranking of scientific research capability – from 36th in 2003 to 20th in 2010 (and based on citations; 1st for Immunology; 1st for Animal and Dairy; 3rd for Nanoscience; 4th for Computer Science and 6th for Materials Science) - there is an opportunity to position Ireland's capability on the international stage

Understanding and addressing the weaknesses and the investment constraints identified by the RDI leaders both nationally and corporately, within all sectors, suggests there is an opportunity to develop a stronger, broader proposition to attract and retain RDI investment.

There is a consensus between industry (including its FDI base) and policy makers that Ireland Inc. must now concentrate on its 'Innovation Ecosystem'. A new and significant investment focused on translation, application development and pre-commercial deployment of innovative solutions is required. This would be possible through the creation and development of vibrant ecosystem that is industry-led. It is envisioned that FDI sectors would participate in two ways:

1. Directly in partnership with leading research centres and/or other companies where excellence is the primary goal of the partnership;
2. Indirectly through participation within the activities of an Innovation Ecosystem, in collaboration with many including, SMEs, Researchers, other FDI, where the structures are people-centric and investment is challenge-centric and all focused on economic outcomes.

There is encouraging feedback from the FDI sector that Ireland has the winning potential internationally by focusing on excellence, innovation and creating investment certainty. RDI gives a unique opportunity to connect FDI, SME and public research sectors to deliver broader economic value. Creating those economic outcomes from the intellectual value of research and opening up an active public-private ecosystem that would collaboratively address global challenges, is seen as a significant objective. Exploring this challenge-centric approach and using the ecosystem to combine the excellence of research with the best of expertise in technology, practice, and brain power, is a suggested first step towards that objective.

The strategy suggested should be to immediately begin to build a robust and vibrant RDI ecosystem and based on its strengths, identify shared pathways (thematic programmes) to take on significant societal (e.g. cost of healthcare) or economic (e.g. sustainable development of natural resources) challenges and achieve world-class outcomes.

## CURRENT RESEARCH FOCUS

SFI's dual focus on "excellence and impact" is recognized as a sound strategy for inward investment. The tangible success at the research level needs to be linked to visible downstream impacts in new technology, new products or new enterprise of scale.

In our review with members it was noted that confusion remains as to the value of some investment programmes and the apparent overlap of some research and technology centres, in particular of smaller centres. Indeed there remains an information gap regarding the full suite of RDI programmes and supports that are available – especially from agencies and funding bodies that would traditionally not engage with FDI on a routine basis. Ireland must not lose RDI investment and employment opportunities to jurisdictions with a less compelling overall business proposition. Other locations are using dedicated and focused resources that act like R&D/investment "ambassadors" to help firms navigate through local complexities and administration, thus enhancing their responsiveness to opportunities. Ireland should respond to these competitive realities.

***ACTION: Remove complexity and confusion within the current RDI system by reviewing funding programmes and the related remits of agencies of the state with a view to consolidating investment programmes where overlaps are identified.***

***ACTION: Assign dedicated RDI ambassadors to firms to expedite and ease the process of navigation through Ireland's RDI system. This should not duplicate existing agency client relationships but rather, in targeted cases, appoint an existing agency contact to lead all other agencies as a single point of focus for RDI activities and programmes.***

While the recent Government Research Prioritisation Plan (DJEI 2012) was regarded as useful, most companies believe that 14 priorities are too many to be competitive on a global stage. Finding a mechanism to concentrate the investment priorities further and scale-up centres to an internationally significant size is seen as an immediate and strategic next step.

Access to state infrastructure has proven useful in the development of new capability and the attraction of new mandates. This unique relationship between the state and industry strengthens investment propositions and gives valuable insights and knowledge to participants. The development and promotion of dual purpose infrastructure (public and private use) and accelerators would be significant in the positive exploitation of natural resources including agriculture, marine, renewable energy and in the development of utilities including energy, communication and other services like healthcare, social protection and training. Incentives to support the development of shared or dual-purpose infrastructure and accelerators should reduce the State's capital expenditure requirement and would draw on the technological capacity of the FDI sector.

***ACTION: Increase investment in specific translation infrastructure to include dual purpose test and demonstration platforms for emerging and breakthrough technologies in new areas of application.***

The SFI Research Centre's programme has successfully increased the participation of international enterprise in research and innovation in Ireland. New initiatives to orchestrate deeper alignment and



impact by setting minimum private/corporate funding requirements seeks to encourage greater centre-to-enterprise collaboration. Multinationals are willing to engage and commit to higher levels of investment such as the recent move to have a 10% cash contribution for new centre programmes. This causes the FDI companies to examine participation more strategically and hence draw them into deeper evaluation of the value from the intended investment/collaboration. We must remain vigilant that the unintended consequences of centres seeking to attract multiple partners to meet the 10% threshold within funding round deadlines does not force centres to broaden their focus, thus reducing the centre's opportunity to create meaningful impact. Such dilution of impact will reduce the very attractiveness of investment in the first place.

It is clear that the main drive of the SFI Research Centre's strategy is correct as they look to achieve scale, focus and be credible on the international stage. Equally, there is a need to create centres with more autonomy to attract the best scientists and engineers, and to focus on bigger strategic partnerships that support their new business (i.e. research and innovation).

***ACTION: Create centres with more autonomy from HEIs to attract the best scientists and engineers, and to focus on bigger strategic partnerships that support new business i.e. research and innovation.***

#### *MORE EMPHASIS ON TRANSLATION AND APPLICATION*

All companies consulted in our review believe that it is critical to achieve societal or economic impact if the investment in RDI is to be sustained at a national level. This impact would also ensure that Ireland's RDI programme is internationally credible and would attract further industry investment.

The acute need for investment in translation was noted by all sectors during the review. It now needs to be established as a strategic priority of policy. Investment in specific translation infrastructure, is necessary to enable valuable research and discovery to impact on new technology or product development in a focused and accelerated manner. Such infrastructure could include dual purpose test and demonstration platforms for emerging and breakthrough technologies in new areas of application. Growth in new industry sectors such as 'smart' cities or oceans should provide the opportunity for smaller technology start-ups to work with larger FDI companies in the provision of innovative solutions with international market potential.

The investment in such infrastructure is a noted requirement in the Food/Nutritional and BioPharma sectors. The success of the Teagasc Moorepark Research and Innovation Centre is regarded by many leaders in the RDI field as significant in the growth of a high value Dairy sector and noteworthy in bringing SMEs and MNCs closer in pursuit of aligned market and product goals. Investment in building capacity within the Pharma sector, and allowing smaller Pharma companies to develop with the support of the international players, has been regarded as vital by our members. NIBRT has been significant in this regard, and while it has not been as noteworthy in the development of new products, the future use of the centre may yet prove to be a substantial translation asset.

It is essential that we develop new ICT technologies and their redesign to nano scale, and Tyndall has been very significant for that advance. While proximity to academic/public research is necessary such

centres would benefit from greater industry-led influence and larger degrees to autonomy to attract and retain talent and to draw higher levels of private investment. It is also an important asset in the applied research and translation of discrete technologies.

Translation capacity requires investment and a supportive policy framework. Examples such as clinical trial infrastructure and capability, needs both investment and a coherent policy approach. This example is a necessary investment if Ireland is to develop its Medical Devices sector. This sector has successfully re-engineered its volume manufacturing activities to focus on high value activities including technology development. The continuation of this success and growth in R&D requires that there is a compelling translation proposition here in Ireland.

It is clear from our member feedback that a focus of the RDI system on Technology Readiness Levels (TRL) 1 – 3 alone has not been sufficient to guarantee outcomes from the research investment made from the public system. A focus on TRL 4-7 will be required with the development of a vibrant ecosystem. Notwithstanding that there were a number of more common challenges within the existing system that required continued focus including a need to:

- Structure a better engagement process between Industry and Academia
- Simplify the IP arrangements between Industry and Academia
- Improve availability of critical skills and specific expertise
- Provide work experience for graduates and postgraduates
- Target outcomes from the research investment
- Focus on the full value stream from research to commercialisation

Feedback from the FDI base confirms that RDI is now a strategic investment across sectors and is vital for companies continued presence in Ireland. It is a fundamental cornerstone in sustaining and growing investment in Ireland. The innovation value created in Ireland, including IP in its various forms, is an important outcome for companies and its value is central to attracting new FDI.

***ACTION: A new SSTI to map out targets to move towards a more balanced portfolio of RDI investments including additional applied opportunities of relevance to business and with greater impact on the economy.***

We support the development of new and prioritised performance metrics for the RDI system to encourage more downstream development activity: Increasing the affinity between parties; better bridging the continuum between the ‘R’ and the ‘D’ in terms of improved quantity and quality of deal flows; rebalancing the level of R&D investment towards the applied end of the spectrum and; improving the balance of senior researchers doing basic:applied research within the system.

***ACTION: Develop new and prioritised metrics to encourage more downstream development activity.***

## **A NEW INVESTMENT PROPOSITION: FDI V2.0**

We have explored the changing FDI landscape in Ireland with our members to understand the value and impact of investing in Ireland. Importantly there is consistent and clear feedback that global competition for RDI is intense and that Ireland's current proposition, while substantial, is insufficient to attract RDI investments of scale.

### *THE CHANGING FACE OF FOREIGN DIRECT INVESTMENT*

Measured by the number of jobs provided, the sustained expansion of the FDI sector's net employment base over the past five years, by approximately 5% per annum, is a testament to the importance of foreign direct investment to Ireland. However there are global headwinds - with intensifying competition for this valuable source of growth and innovation. Other locations are making targeted efforts to improve their investment attractiveness by liberalising trade/commercial activity, being more open to external investment, and improving incentives.

While we support IDA Ireland's ambition to increase employment in the FDI base by +20% (+35,000 jobs) by 2020 – the headwinds are understandably strong. Ireland needs to remain vigilant about maintaining its place in the global value chains of U.S. multinationals. This is critical since the number of "technology and manufacturing-capable" nations is steadily rising, giving multinationals more opportunities to spread and leverage their global operations. This is especially challenging for Ireland's industrial base in terms of realising greater numbers of higher value jobs while maintaining or increasing the number of people employed, given Ireland's cost base, the absorption capacity of its infrastructure, the increasingly capital and intellectual intensity of businesses and the ready availability of future skills.

It is a commonly held understanding that RDI investment can create downstream value in new services or advanced manufacturing outputs locally. It is true that successful RDI investment will create downstream value-add, but equally companies will seek out the best location to develop that value, reflecting the globalization of the world's supply chain. In fact the leadership in most companies in each sector will easily identify their country of choice for "low cost", and indeed for "innovation" and for "tax". What our review suggests is that in most cases Ireland faces challenges to establish its own unique selling proposition on each of the three propositions.

### *A DIFFERENTIATED INVESTMENT OPPORTUNITY*

The Chamber is of the view that there is an immediate need to re-assess Ireland's RDI proposition for FDI. Increasing competition from other countries and the global imperative to 'Innovate or Die', requires a focus on RDI as the primary driver of future growth. The changing inward investment landscape and its changing international context has created both urgency and opportunity. Ireland's success and solid building blocks coupled with a long standing partnership with FDI companies create the basis for a new and stronger proposition V2.0.

Countries that compete for RDI investment, or who are regarded as strong in RDI, all invest circa 3% of GDP in R&D annually. Not surprisingly the USA is ranked first globally for total R&D expenditures amounting to just under 3% of its GDP. From an FDI perspective USA companies regard the USA as their own home “hotspot” for innovation with its internationally recognized clusters and ecosystems. Its significant investment in R&D makes it the largest innovation foundry in the world. It is also home to the most successful pre-commercial technology procurement programme that supports Small Business Innovation Research (or SBIR). That programme invests \$2.5B annually to ensure that federal RDI expenditure in large scale programmes (the 11 federal agencies with large research budgets including education, defence, energy, agriculture and healthcare) activity supports the development of SMEs and Start-Ups. Lessons should be drawn from this.

Other countries like Israel spend closer to 4% of GDP on R&D, and their contribution to the development of new technology and its application is internationally recognized. Interestingly, Israel is focused on attracting and retaining top scientists to ensure its capacity to adapt and respond to future change, with less emphasis on the direct “downstream” economic outcomes but with deliberate aims for indirect and positive spill-over economic impacts. In Asia, both Japan and South Korea are globally ranked in the top 5 and invest approximately 4% of GDP and are increasingly attractive to mobile international research funding .

Finland and Sweden, long regarded for their innovation and ability to create new enterprise, invest about 3% and continue to attract international research investment. Closer to Ireland, both the UK and the Netherlands, who currently invest close to 2% of GDP, are actively targeting this mobile RDI investment using a similar incentive package to Ireland.

Given the intensity of competition for mobile RDI investment, differentiation for ecosystems in the international market will come down to the scale of sustained funding, the credibility of commitments on investments in delivering significant impacts, and the proven ability to give enterprise access to unique resources and infrastructure.

#### *A FIT FOR PURPOSE RDI PROPOSITION*

Many MNCs in Ireland have demonstrated the RDI leadership and technical capacity to contribute to their corporate value chain through modest investments in research and innovation. In many instances subsidiaries have successfully promoted Ireland as a place of innovation, with excellent operational know-how that can create value in new ways and provide access (direct and indirectly) to internationally sought after skills. Accessing the best people with unique skills, a reputation for ‘intrapreneurship’ and proven multidisciplinary experience can be a strategic differentiator.

Building on the reputation of being responsive to change, much of the RDI investment is opportunity driven – in that it is derived through access to a talent pool or the confidence that the skills required can be assembled rapidly in Ireland. It is significant in that it has opened doors to mobile RDI investment and it has built credibility within corporate R&D organisations. The key objective from this point of development onwards is to win strategic longer-term RDI investments that will make Ireland

significant on firm's technology and research roadmaps – with projects that are critical to the plans of technology and strategic planners.

### *THE BUILDING-OUT OF ECOSYSTEMS*

The existence of a recognisable and robust ecosystem is regarded as the greatest gap in Ireland's RDI system. Once believed to be a significant constraint to the development of start-up and smaller enterprises, the evidence from the FDI base shows that larger companies seeking new FDI value, are also looking for a vibrant ecosystem.

International ecosystem Centres or innovation "hotspots" such as the Silicon Fen ecosystem centred on Cambridge University, or the equivalent surrounding MIT in New England or Stanford in Silicon Valley, compete directly with Ireland for RDI investment. Those centres are rich in producing and exploiting IP, and act as magnets drawing-in creative, design and technology expertise around them. But more importantly, they draw people with market knowledge, like entrepreneurs and investors, who regard such ecosystems and hotspots as a foundry for new enterprise, and thus impact. Other forms of ecosystem such as Singapore's knowledge-based industrial clusters concept derive value from large-scale advanced knowledge creation programmes and active public policy support to accelerate the development of new enterprise that is attracting worldwide attention from multinational businesses

FDI seeks out these international ecosystems that attract other technology companies of all sizes and stages of maturity. Companies are increasingly focused on this international landscape and what was once solely the interest of ICT and Technology companies is now increasingly also the interest of other sectors such as Financial Services.

While the value of ecosystems is well understood, the dynamic that causes an ecosystem to function is less so. Combining publically funded research, FDI and indigenous enterprise together creates opportunities for technology transfer, market access and attracting early stage investment. An increasing number of member companies, engaged in RDI, now seek such opportunities as they also focus on the use and application of their research output. Importantly, many of those companies believe that the greatest benefit is the actual serendipity that results from a 'collision' of ideas, knowledge and experience.

Focus and intellectual leadership based on a proven capacity to discover, innovate and create impact, is the hallmark of any successful centre. Creating value from RDI investment in the form of intellectual property (IP), that is necessary for product or service development, is the intended RDI outcome. Other intended outcomes might be less tangible and include:

- a) collaborative research that may have a potential to lead to a new discovery,
- b) create revenue through license or royalty income, or
- c) create research or innovation partnerships that will strengthen RDI capacity

In many sectors companies seek new RDI partnerships that strengthen their market position, test pathways for future opportunity and explore areas that require new competencies for the organisation, often leading to acquisition as a preferred form of growth. While Centres often provide the focal point, the real value sought by the company lies within the less defined ecosystem mixing easy connections and formal linkages between enterprises and research communities that surround a leading Centre. The lack of a vibrant ecosystem is noted and despite Ireland's reputation for networking and ease of doing business, it is felt that much more is required from all stakeholders to make the ecosystem effective.

For Ireland to attract substantial RDI investment it must develop centres of scale. For Centres to succeed they must be recognised to be of sufficient scale, renowned for holding the best scientists and engineers, and have proven leadership in particular domains. Most importantly, these Centres must be surrounded by an ecosystem that is a vibrant bench-mark for others with a celebrated international reputation.

The interest in the development of an industry-led ecosystem in Ireland is focused on translation, application and enterprise development. Encouraging and linking new and existing accelerators and incubators to industry clusters will enable companies to access markets and technology. The FDI community suggests that it requires a much stronger partnership culture between the state and industry to enable multidiscipline teams of people to innovatively address difficult challenges, in Ireland and beyond. The culture must be based on meaningful and trusted relationship focused on a common purpose and a willingness to go forward together. It must be based on respect, trust and generosity so that risk-taking is shared and reward can be long term.

***ACTION: Develop a strategy to implement and fund industry-led ecosystems in Ireland focused on translation, application and enterprise development - linking new and existing Accelerators and Incubators to industry clusters.***

#### **CHALLENGES DRIVING INNOVATION**

There is a considered view across the multinational sector that the effective long term development of each Centre must be 'challenge-centric' – fitting into a mission to address a national challenge through investment with positive socio-economic outcomes, so that its impact is obvious and measurable. Creating internationally significant flagship programmes, that also have a global context, will link and align other RDI investment (public and private) and attract key scientists and industry investment.

***ACTION: Ireland should establish and outline a funding strategy for a small number of national challenges to drive alignment of public purchasing, funding and institutional support that leverages established excellence in RDI and the strengths of existing industrial clusters.***

This development of ecosystems can be accelerated and supported by the development of flagship programmes that give purpose to the collective activities of the system. Such a vibrant and active ecosystem would encourage FDI companies to cultivate and harvest small enterprise and unique sets of talent and capability. There is some interest among the MNC base around the idea of resource

sharing to enable the movement of expertise and experience across the ecosystem between research centres-indigenous-MNC. Supporting career paths to encourage this fluidity of expertise and know-how could make Ireland unique internationally. This form of successful interaction would attract international entrepreneurs and venture capital investors – all contributing to the development of Ireland as an international source of innovation, enterprise and talent.

The successful development of ecosystems on the back of flagship programmes would position Ireland, in partnership with FDI, as the leading global centre of innovation. Hence, the Chamber recommends that Ireland should invest in a small number of ‘grand challenges’ that create national alignment and prioritisation of RDI investment. A funded programme of significance is necessary to attract leading scientists and engineers to Ireland including the top thought leaders from industry partners. Drawing on renowned professionals to solve significant challenges will enable Ireland to become one of the best global innovation locations. This ambition should be a shared common objective of government, higher education and public research, industry and enterprise and the investment community. It should be designed within a policy framework that enables all pillars of government to align to a common approach and a reduced shared set of priorities. The programmes should include flagship projects of scale that excite and attract leading international companies, which are inclusive of indigenous companies and utilize and exercise the national Centres of Research and Innovation. The policy should embed public and private partnership as a means to achieve a reputation for Ireland as an ‘Innovation Island’.

***ACTION: Government to initiate an open consultation to establish the focus for flagship programmes to support national challenges to include, the criteria for participation, the terms of consortia engagement and their scale and time horizon. Funding should be based on a strategic partnership model such that solutions coming forward aim to target long term savings, provide for faster service delivery, improve access or give higher quality outcomes for the State/citizen.***

Attracting the top scientists and engineers, a key priority for SFI, remains at the strategic heart of Ireland’s RDI proposition. Indeed retaining and building this leadership is currently the most important immediate goal for Ireland’s RDI proposition. And key will be Ireland’s recognized competitiveness for the availability of talent. A credible skills and talent strategy must remain a top priority to maintain a competitive edge, where that factor alone is becoming increasingly important in FDI decision making for the types of high-value activities that Ireland has established such a track record in winning and retaining.

Increasing Ireland’s RDI spend, in domains of future importance that will attract the top research and technology brains, is vital to building the value proposition. Providing competitive incentives through tax or grant mechanisms is equally important to retain and attract venture capital and FDI to that value proposition. The careful design of both tax regimes and grant/awards in tandem is now required to win new investment. The resulting FDI and Ireland Inc. partnership will determine when and how Ireland will move to global centre stage and win strategic corporate RDI long term investment.

## *THE NEW INCENTIVE*

Tax policy has not lost its potency as a critical lever to attract FDI investment. It has proven to be an internationally significant attractor that has resulted in high value employment, the development of a supply and technology base, and the creation of internationally significant sectors in ICT, Pharma, Digital Media, Medical Devices, Nutritional Foods, and Financial Services here in Ireland.

Ireland's 12.5% corporate tax rate is a fundamental part of Ireland's tax offering and brand and its certainty is fundamental. This attractive and certain tax policy is a necessary part of Ireland's offering. But it is by no means sufficient. Other aspects to attracting greater innovation-led investment to Ireland include: continued investment in education, the quality of our IP protection regime, including an easy to use and well-organized commercial court system, and incentives for collaboration with public laboratories and universities. These remain an important part of the joined-up thinking that will make Ireland a leading FDI location.

The increasing focus by international companies on exploiting higher value opportunities in the research-to-customer continuum is now critical to contribute to shareholder value. This is likely to result in a new focus, involving a greater attention towards the creation of indirect value from participation within the ecosystem. This increasing participation in the ecosystem can mutually benefit the indigenous and FDI base.

Incentives that attract RDI, such as the R&D Tax Credit Regime, broadly applied, encourages not just the larger companies but smaller companies and research institutes to collaborate in the pursuit of new discovery and application. Further incentives will be required to encourage FDI companies to participate and lead innovation and enterprise development through the translation and commercialisation process and thus must encourage the transfer of IP /technology to the ecosystem. This period, commonly referred to as moving from Technology Readiness Level (TRL) 4 to 7/9, is poorly supported by infrastructure, funding and organisation. Incentives that encourage partnering between large and small companies are required to strengthen the innovation ecosystem. Such partnering helps companies individually achieve global leadership and collectively create a high value economy.

Realistic incentives to encourage inventors, innovators, entrepreneurs and enterprise investors to recycle their investment in pursuit of an expanding RDI system, are necessary. Capital tax is a disincentive to successful entrepreneurs to re-invest and is thereby reducing the investment capacity. This will be further exacerbated if personal tax causes professionals with experience to be attracted away from Ireland or for additional reasons of career progression, quality and standard of life style, or failure to enjoy their success and benefit from it.

Reframing Ireland's suite of innovation tax policy instruments, including the R&D tax credit system, as well as other incentives such as Scientific Research Allowances for direct RDI emoluments, will require a broadening of the RDI investment definition from a tax perspective. The Irish tax code needs to extend its reach beyond a traditional definition of 'research and development' to recognise new sources of knowledge capital and innovation underpinning economic growth and in doing so include the application of technology resulting in service and product innovations.



***ACTION: Government should conduct a formal review of Ireland’s incentives in an international context to win RDI-led investments, to include tax, grant and institutional supports across Government for Research, Development and Innovation activity within industry to test competitiveness against the top ten alternative jurisdictions for mobile FDI.***

The Chamber welcomes the decision by Government to introduce a “best in class” Knowledge Development Box (“KDB”). The novel use of the proposed KDB, capital allowances for IP acquisition or traditional grant mechanisms, to encourage IP development and exchange/use within the ecosystem will be necessary to ensure effective impact. Given the current international tax environment, together with recent changes to aspects of Ireland’s current tax regime, we believe that it is imperative that Ireland seeks to continue to develop the attractiveness of its tax regime in order to encourage US MNCs to own, develop and exploit their intellectual property (“IP”) from Ireland .

#### ***PUBLIC-PRIVATE INFRASTRUCTURE INVESTMENT***

The success of Ireland’s FDI strategy requires a continued investment in infrastructure ranging from advanced laboratory facilities to translation facilities including test and demonstration platforms.

The development of a novel and shared approach to capital investment is suggested as a pragmatic approach in a constrained national context. The successful use of public-private partnerships in the development of civil structures and assets should be examined as a solution in the development of more open RDI infrastructure and assets. Such development would maximize the opportunity for FDI to co-invest with the strategic investment funds of the State and the European Investment Bank.

Providing the incentive to encourage this co-investment and/or direct investment in the ‘public good’ - RDI instruments should be considered as an immediate means of accelerating the development of translation capacity and building a vibrant ecosystem.

***ACTION: Initiate a process to identify and evaluate core areas of scientific research that merit joint public-private investment and can develop into multi-million euro research and development partnerships.***

## DEMONSTRATING GLOBAL LEADERSHIP IN RDI

### *SHARED INVESTMENT GOALS*

The review with the multinational base suggests that achieving in excess of 3% of the GDP target for RDI is a fundamental requirement to attain a global leadership position in RDI. Success in attracting significant strategic investment can only be assured if Ireland is positioned within the top ten global locations for like-FDI. Investment clusters of scale gives credibility, acting like a beacon to attract further international attention.

***ACTION: Set out Ireland's ambition to raise its investment in RDI to 3% of GDP by 2025.***

For Ireland to be internationally significant in an RDI context and to afford that scale of investment it must increase its ambition and change to a shared investment model with enterprise. Our members believe that Ireland should focus on programmes that would take on significant societal or resource challenges. By partnering with industry and co-investing in flagship programmes such a challenge-centric approach would have a European or international impact. Such 'big idea' driven programmes would attract public and private funding, be suited to a collaborative approach, and like all 'big ideas' would attract the 'big brains' of the sector globally.

The introduction of a new shared investment model for RDI that seeks to address grand challenges, through significant flagship programmes, would create a new dynamic in a global RDI market. The attraction of FDI and investment partners to specific consortia, analogous to strategic defence or space programmes in other jurisdictions, would enable Ireland to develop a unique strategic capability in areas such as Health Care, Education, Natural Resource development, and/or Global Financial or Environmental Services.

A focus on a few large programmes would cause a faster and stronger alignment of all actors in the value chain. It would create an associated ecosystem that is industry-led and clearly challenged to achieve specific outcomes and economic impact. This collective focus on impact, and not activity, will give greater clarity to investors and position the research community as a valued contributor and enabler.

This approach will seed new enterprise and start-up technology companies within, and external to, FDI companies. It has the potential to create a vibrant foundry of new technology and solutions to address difficult challenges. Mostly, it will prepare new generations and ensure that the future requisite skills are ever present within Ireland's workforce to meet the changes and challenges ahead.

***ACTION: Set targets to win strategic longer-term RDI investments that will make Ireland significant on corporate technology and research roadmaps aligned to areas of established RDI excellence.***

### *HUMAN CAPITAL IN THE RIGHT PLACE*

Positioning the human capital necessary to sustain and support RDI in a broad set of multi-disciplined skills and competence is a significant challenge. We recognise the positive spill-over impacts in terms of

building industry clusters, reputation and an advanced skills pool for industrial application. We recognise that the State has invested in building up a skills base at level 9+. Presently it is the retention and reorientation of this talent pool (much of it attracted to Ireland from overseas) that will be critical as we seek to reposition this PhD community into industry.

This dependence highlights again a continued challenge to the education system to adequately address the skills needs of Industry and Enterprise. The successful attraction of investment by FDI subsidiaries on the basis of access to valued talent is a significant strength of Ireland's proposition and not to be taken for granted or be over dependent on mobile talent resident only for short periods of time – particularly in the context of strengthening competition within the EU.

Ireland must become a preferred location for the top international scientists and engineers who have the intellectual capacity to lead discovery, invention and new technology development. They must be the core around which Ireland builds its investment in RDI.

The successful translation of that investment, that will create the maximum economic impact, requires that Ireland attract entrepreneurs and investors into the ecosystem. The successful bringing together of all stakeholders in the value continuum must be enabled through the building and scaling of significant centres of research and innovation, with their associated ecosystem. Creating a high impact investment proposition through flagship programmes will create an ecosystem where 'big brains' collide and leaders achieve.

As Ireland's competitiveness is being challenged, the twin approach of maximising productivity and focusing on research-led innovation is crucial to retaining and winning innovation-led investment. Research led-innovation is the cornerstone of our FDI proposition, as is the development and availability of critical high value skills within a broad technology and science knowledge base to support large capital investments in key areas of nano, bio and information technology.

A focus on 'research only' skills and capabilities will not be sufficient. To this end, the development of multi-disciplinary teams of scientists, technologists and engineers must be an objective of research and innovation programmes in Ireland. This capability is necessary to accelerate new FDI mandates/investments, exploit and commercialize research outcomes and compete on the global stage. Specifically the Chamber believes that entrepreneurship is required to drive commercialization and the translation of research into commercial business operations. This is a recognised need within existing FDI companies wishing to extend their research mandates and develop full product P&L capability within Ireland. Our aim should be to build an ecosystem infrastructure that establishes a reputation of having world-class 'know-how' in its targeted niches, created by experienced and talented people working across industry and the higher education sector.

A concentration on leading human capital, the creation of intellectual value, and investment in innovation for purpose, will propel Ireland into a leadership RDI position. A challenge-centric focus on significant societal or economic impact – grand challenges, must be enabled through a broader engagement of government in the development of the next iteration of RDI policy. The policy must

ensure that Ireland has the capacity to supply and attract the intellectual capacity and leadership necessary to attract RDI investment.

***ACTION: Develop a cross-Government strategy to retain and attract leading talent into the country aligned with our ambition for industrial growth and the development of our education system in response to identified skills demands.***

As already noted, there are risks to the economy in over dependence across many disciplines, including research, on mobile international talent. While the attraction of international talent is positive and always desirable the current level of reliance and its sustainability is challenging, thus creating a persistent investment 'flight risk' unless longer term commitments are made to retaining talent. The drainage of this talent base from Ireland to other jurisdictions would jettison a decade of investment.

In a wider context Ireland needs talent. It is the driving force behind the success of businesses in Ireland and what keeps Ireland ahead of the game. For Ireland to continue to compete we must be able to develop, retain and attract leadership and specialist talent in a highly competitive global market for skills. As with the RDI sector - the development of the FDI sector in Ireland is based on leadership potential. We therefore need to be able to develop and attract leaders.

In order to drive this agenda the American Chamber have produced a strategy statement identifying where we can improve and making recommendations for action in the following areas:

***ACTION: Ireland's personal income tax burden is a barrier to retaining and attracting talent. The American Chamber regards reducing the tax burden on individuals as a key priority and we welcome Government's stated intention to continue to reduce the marginal tax rate.***

***ACTION: Continued reforms to Ireland's assignee taxation regime are welcome but should be further enhanced to apply to income tax, PRSI and USC and be increased to 35% of qualifying income. An attractive regime for assignees can help provide the leadership necessary to deliver major RDI projects.***

***ACTION: Delivering and maintaining a world class employment permit regime, improving access to education, and providing a more welcoming environment for globally mobile talent are also part of a more attractive environment. We must also modernise our immigration processes, making them more user friendly.***

***ACTION: Ireland's supply of affordable and accessible accommodation is at a crucial juncture and could affect our ability to attract talent from abroad. An affordable health insurance offering will also be essential to ensure that this very important benefit is retained as a key measure to attract and retain talent in companies.***

***ACTION: Moreover, it will be important to make sure that the world knows about continuing improvements in our offering. Providing one-stop-shop information on relocating to Ireland will be vital to promoting Ireland successfully.***

***ACTION: Ireland should continuously promote the quality of its talent base overseas in key markets for inward investment.***

To support the country's RDI ambition the education system must adjust and respond to the re-alignment required to meet the future needs of the economy. The opportunity to leverage learning and development know-how and integrate this with internationally focused companies resident in Ireland offers the education system here an unprecedented opportunity to address identified future skills deficits. It offers Ireland a unique opportunity to differentiate itself by positioning key future skills and develop pools of available talent through a proactive education policy and flexible technology-led education capability.

***ACTION: Establish an education-industry forum to evaluate and recommend new and emerging learning and development tools that can be leveraged to inject greater flexibility, responsiveness and impact into the education system***

## **PATHWAYS TO GROWTH – STRATEGIC RECOMMENDATIONS**

We believe that effective investment in RDI must lead directly to economic growth.

Further, we believe that the investment instrument itself must form a ‘pathway to growth’ to give focus and alignment to all stakeholders participating in the investment. On this basis we make a number of conclusions and recommendations that will help Ireland become a globally recognized location of RDI.

Our members are of the view that the successful pathway to economic growth is through strategic and increased investment in RDI. This investment must focus on impact and be challenge-centric. It must be of significant scale in an international context.

The strategy of achieving economic growth through innovation must create a new dynamic within Ireland that will be based on a deeper public-private partnership, inclusion through ecosystems, and a concentration of intellectual and enterprise capacity. Our review with members concluded that this would create a substantive, globally recognized ‘Innovation Island’.

Our members recommend that there is a policy response to:

- A. EFFECTIVELY ALIGN RDI INVESTMENT
- B. DOUBLE IRELAND’S RDI INVESTMENT
- C. USE RDI INVESTMENT AS A PATHWAY TO GROWTH

The FDI base in Ireland needs to partner with government and the indigenous ecosystem to achieve this goal so that they can maintain and grow their investment base here. In addition, that they can position themselves strategically within their corporate entities as significant RDI locations that can contribute to shareholder value.

In this context the FDI base seeks to participate in and support government in three recommended RDI action areas including;

- 1. REFOCUS AND IMPROVE THE RDI SYSTEM
- 2. CREATE A NEW FDI PROPOSITION: FDI V2.0
- 3. DEMONSTRATE GLOBAL LEADERSHIP IN RDI

There is complete agreement among our members that Ireland Inc., including its FDI base, must now concentrate on its Innovation Ecosystem. A new approach with a focus on application, development, translation and pre-commercial deployment of new solutions through challenge-centric investment programmes should be immediately considered.

This would initiate and support the creation and development of a vibrant ecosystem that creates a collision of ambition, ideas, and experience, leading to a surge in innovation and a defined societal and economic outcome.

Further, this would support the growth of FDI in Ireland and cause a renewal of investment mandates and an increase in new projects. It would deepen the strategic importance of FDI participation within Ireland's RDI system in two ways:

- A. Directly in partnership with leading research centres and/or other companies where excellence (and not cost) is the primary goal of the partnership;
- B. Indirectly through participation within the innovation ecosystem, in collaboration with many including, SMEs, Research, other FDI, where the structures are people centric and investment is challenge centric and all focused on economic outcomes

We believe that Ireland has winning potential internationally by focusing on excellence, innovation and creating investment certainty. RDI gives a unique opportunity to connect the FDI, SME and public research sectors to deliver broader economic value. Exploring this challenge-centric approach and using the ecosystem to combine the excellence of research with the best of expertise in technology, practice, and brain power, is both a pathway to growth and to the establishment of Ireland as an Innovation Island.

#### *Enhancing Ireland's R&D Capacity*

The strategy suggested should be to immediately begin to build a robust and vibrant RDI ecosystem and based on its strengths identify shared pathways (thematic programmes) to take on significant societal or economic challenges and achieve world class outcomes. The strategic goal for Ireland Inc. would be to attract further public-private investment that would within five to ten years double national spending on RDI to 3% of GDP, and achieve an attractive industry return on investment within that period.

Ireland's FDI sector has proven to be robust and resilient, providing a source of stability for the Irish economy. We share the Government's agenda to focus on growth and job creation while at the same time to restore fiscal balance and stabilise the domestic financial sector. Ireland will only be able to revitalize its economy by creating new jobs in the private sector with a business friendly environment for investment and we believe our suggestions will enhance our attractiveness for new investment to retain and grow jobs in Ireland.

