Digitalising the process of RD&I

by David Byrne

R&D and Innovation (RD&I) needs to accelerate in today's world. Climate constraints, social shortfalls, sustainable practices and the rise of "digital" are unprecedented changes and challenges that business are facing today, that require design-thinking, problem-solving, collaboration and strong leadership to overcome.

In years to come, trillions will be invested by governments across the globe to stimulate businesses innovating in their products, processes, technology, organisational structures and business models. By our calculations in ReaDI-Watch, some 80,000 companies across Ireland, UK, Canada & the USA are investing over $450 billion per annum into RD&I, supported by over $30 billion in R&D Tax relief, billions in RD&I grant funding and growing at a Compound Annual Growth Rate (CAGR) of 10% each year.

This huge, unprecedented volume of RD&I investment needs to be directed and managed in industry, in order to meet these demanding and essential changes. As a financial stakeholder in your company, you need to ensure that your team, your organisation, is given the best chance possible to be innovating, evolving and disrupting norms. This can be achieved by establishing a lean & well-structured RD&I function in your business.

Even if managed on a part-time basis, a real-time RD&I function is key to establishing your company's RD&I direction, which is then used to inform and implement the company's commercial objectives. Having a streamlined RD&I function and process enables a company to develop a culture and capability to innovate. It helps with traceability, avoidance of loss of knowledge and duplication of work and improves a company's position for claiming R&D tax credits, drawing down RD&I grant funding and offers potential to use the Knowledge Development Box mechanism.

In this short article, we will offer some introductory insights about directing and managing RD&I investments, winning RD&I supports and ensuring your company is given the best chance possible to sustain its competitive advantage.

How to prepare and submit an R&D Tax Credit Claim

The Irish government provides many supports to Irish SMEs to encourage economic growth, job growth and export development. One of these supports is the R&D Tax Credit Claim. Companies investing in R&D activities may quality for tax incentives under the R&D Tax Credit Scheme and the Knowledge Development Box which are managed by revenue. Full details of the R&D Tax Credit scheme can be found here https://www.revenue.ie/en/companies-and-charities/reliefs-and-exemptions/research-and-development-rd-tax-credit/index.aspx

A company may qualify for the R&D Tax Credit if:

- It is within the charge of CT in Ireland.
- It carries out qualifying R&D activities in Ireland or the European Economic Area (EEA).
- expenditure does not qualify for a tax deduction in another country.

What does it mean for a company in financial terms?

Qualifying R&D expenditure will generate a 25% tax credit for offset against corporate taxes in addition to a tax deduction at 12.5%. This means that companies undertaking qualifying R&D can claim a refund from the Revenue of €37.50 for every €100 worth of R&D expenditure. This is hugely valuable for companies who often use this credit to fund future R&D investment.

What are qualifying R&D activities?

To qualify for the R&D Tax Credit, a company's research and development activities must:

- Involve systemic, investigative or experimental activities.
- Be in the field of science or technology.
- Involve one or more of these categories of R&D:
  - basic research
  - applied research
  - experimental development
- Seek to make scientific or technological advancement.
- Involve the resolution of scientific or technological uncertainty.

We will go through each of the above areas in turn but let us first start with some definitions.

What is R&D?

Research and development comprises creative and systematic work undertaken in order to increase the stock of knowledge of humankind, culture and society and to devise new applications of available knowledge (OECD Frascati Manual, 2015).

An example of R&D is UNICEF and Lego Group have joined forces to form the Responsible Innovation in Technology for Children (RITEC) project, an international research project to explore how businesses and policymakers can create a digital world that prioritises the well-being of children.

What is Innovation?

Stephen Shapiro, founder of Accenture and keynote speaker on Innovation defines it as "innovation is about staying relevant. We are in a time of unprecedented change. As a result, what may have helped an organization be successful in the past could potentially be the cause of their failure in the future. Companies need to adapt and evolve to meet the ever-changing needs of their constituents".

An example of product Innovation is where Lego have been changing the materials of its famous bricks to biodegradable oil-based plastics.

What is Experimental Development?

Experimental Development is systematic work, drawing on knowledge gained from research and practical experience producing additional knowledge, which is directed to producing new products and processes or to improving existing products and processes (OECD Frascati Manual, 2015).

So, to recap with the definitions in mind, to qualify for the R&D tax credit, a company's R&D activities must encompass each of the 5 areas in Fig.1

Software Sector

The software sector has a specific section in the Revenue guidelines (Page 20 and 21) in the link above. For software engineering teams it can be challenging to articulate the technology developed as "qualifying R&D" and distinguish it from the various feature requests, bugs and user stories and other activities that take place. The guidelines state that Software developments using known methodologies in standard development environments using the standard features and functions of existing tools would not typically advance technology and would not address or resolve technological uncertainty. Undertaking routine analysis, copying, upgrading or adaptation of an existing product, process, service or material would not be considered to be R&D activities. Therefore, much software development does not qualify as R&D activity. Qualifying activity pertaining to software can include

- Development of mathematical models or algorithms to achieve a desired functionality goal(s).
- Translating such models or algorithms into code and ensuring that the desired goal(s) can be achieved.
- Ensuring that the application/ process/tool developed will continue to function in different scale environments.
- Ensuring that the application/process/ tool developed will function across a range of Platforms.
- Ensuring that the application/process/ tool developed will integrate as intended with other applications/ systems.

1. Systematic, Investigative or Experimental Activities

- Logical sequence of events
- Structured documentation of work
- Clear start & end date
- Contenmporanous documentation

2. In a field of science or technology

- Natural Sciences
- Engineering & Technology
- Medical Sciences
- Agricultural Sciences

3. One of the following categories of R&D

- Basic Research
- Applied Research
- Experimental Development

4. Scientific Technological Advancement

- Seeks to achieve an advance in science or technology

5. Scientific Technological Uncertainty

- The solution, ot the process to get to the solution is not readily forrseen by an appropriate, skilled ceompetent professional

Fig. 1 The "Science Test" Requirements

Complementing R&D Tax Credits with RD&I Grant Funding

There is a rich ecosystem in Ireland to support companies at every stage of their Innovation journey, whether it is an Innovation voucher if you are just starting out and want to test an idea with third level support (Value €5000) all the way up to a strategic collaborative disruptive technology project which can be funded up to a scale of €5-€7 million euro, there is an option to fit your needs. The most relevant supports for you will vary depending on a number of factors such as the size of your company or the type of research you are considering.

The Knowledge Transfer Ireland (KTI) RD&I funding tool https://www.knowledgetransferireland.com/Research_in_Ireland/Find-RD-I-Funding/ is a starting point to help you identify the right support.

This information in Figure 2 is a useful slide from the IRDG Irish Research and Development Group) that summarises succinctly the different supports you can avail of in Ireland and Europe depending on your specific interest at a point in time

This example in Figure 3shows how the cost of an R&D project can be supported by both grant funding and tax incentives.

Example R&D Project and Net Cost to the Business

Example of how to read R&D Tax Credits & Grant Funding can support a R&D Project

Qualifying R&D project with 20% Grant Aid		
R&D spend of		100
Grant Aid		20
Net Grant Aid		**80**
CT Reduction of 12.5%		(10)
R&D Credit of 25%	(20)	(30)
Net Cost of Performing R&D in Ireland		**50**

Note: Can account for R&D Tax Credit above the profit line

Impact for SME's:

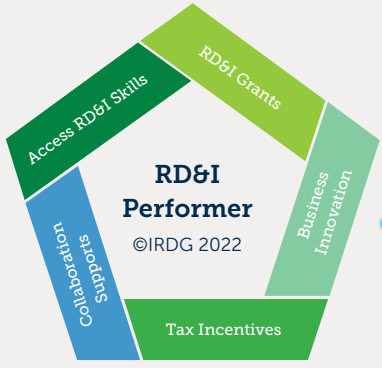
- Boost EBITDA
- Company Valuation

Impact for MNC's:

- Make Irish Site more competitive

Fig.3 How funding supports can support a project cost

Fig. 2 IRDG RD&I Performer



EI/IDA/Údarás na Gaeltachta

- Disruptive Technologies Innovation Fund
- RD&I Grant
- Technical Feasibility/ Exploring Innovation Grant

EU

- Eurostars
- The Green Deal
- EIC Accelerator
- EI Business Innovaton Grant
- EI Capital Investment Initiative
- IDA Business Asset Grant
- EI Small Business Innovation Grant

- R&D Tax Credits
- Knowledge Development Box
- Capital Allowance for Intangible Assets

- Disruptive Technologies Innovation Fund
- Innovation Vouchers
- Innovation Partnerships
- Science Foundation Ireland Spokes Programme
- Science Foundation Ireland Strategic Partnerships
- EU Eurostarts
- Horizon Europe Collaboration Projects
- EU EIC Accelerator
- Inter Trade Ireland Impact

- Enterprise Ireland GradStarts
- Inter Trade Ireland Fusion Programme
- Irish Research Council Employment Based Programme
- Irish Research Council Enterprise Partnership Scheme
- Science Foundation Ireland Industry Fellowship
- Horizion Europe Marie Sklodowska-Curie Actions

Disruptive Technologies Innovation Fund- Call 5 - Potential Funding for Advanced Manufacturing Sector

Overview

The Disruptive Technologies Innovation Fund (DTIF) is a €500 million challenge-based fund established under Project Ireland 2040.

It is one of four funds set up under the National Development Plan (NDP) 2018-2027. It is managed by the Department of Enterprise, Trade and Employment and administered by Enterprise Ireland.

The Disruptive Technologies Innovation Fund is seeing investment in the development and deployment of disruptive innovative technologies, on a commercial basis, targeted at tackling national and global challenges. The fund is driving collaboration between our world class research base and industry as well as facilitating enterprises to compete directly for funding in support of the development and adoption of these technologies and seeding a new wave of start-ups.

Call 5

Call 5 is slightly different to previous Calls 1-4 as it is targeting the Advanced and Smart Manufacturing sector and the development of novel and disruptive innovation in conventional manufacturing operations. This is the first time the fund will focus on a specific sector with the aim of delivering radical enhancement in manufacturing systems or supply chains.

There are several changes to the Fund for this call which are aimed at encouraging applications from this highly important sector in the Irish economy, including:

- Each project must have at least one established manufacturing company in a consortium of three or more project partners, one of which must be an SME and one other enterprise partner.
- All partners must be based in Ireland and be a client of Enterprise Ireland, IDA Ireland, Údarás na Gaeltachta or an eligible Research Performing Organisation (RPO) at the application deadline.
- The type of eligible research is broadened from "industrial research" to include "experimental development", that is, within Technology Readiness Levels 3-9. Industrial Research is planned research and investigation aimed at discovering brand new knowledge. Experimental development is developing and applying research to produce new products and services.
- The aid intensity for a large company is reduced to a flat rate of 40% (down from 50%), while the rate applicable to an SME remains unchanged at 50%.

The deadline for receipt of applications is Thursday, 14 July 2022 (15.00 Irish time).

Please see the DTIF Call 5 Guide for Applicants to learn more about applying for the Fund.

Aligned with this IDA Ireland in partnership with Enterprise Ireland has developed a new national online searchable database to profile Irish based companies and multinational companies that have capacity in disruptive and sustainable technologies. It will allow companies to identify collaborators, partners and providers to help them integrate new technologies into their businesses to address their key challenges and digitalisation agenda. The portal will also allow companies and end users to raise challenges, ask questions, message each other and define collective challenges and opportunities. This portal is potentially a vehicle to find a collaborative partner in relation to a "disruptive" technology idea for a future DTIF fund application

Digitalising the process of RD&I

As we mentioned at the outset of this article, R&D and Innovation (RD&I) needs to accelerate in today's world. A huge, unprecedented volume of RD&I investment today needs to be directed and managed in industry, in order to meet these demanding and essential changes.

We hope that this article has offered some introductory insights about directing and managing RD&I investments, winning RD&I supports and ensuring your company is given the best chance possible to sustain its competitive advantage.

There are not many playbooks that exist which help companies establish & manage and get the best return from RD&I. That's why we built the ReaDI-Watch Platform, which has been described as a company's "Google Maps" for R&D and Innovation by setting companies in the right direction. On ReaDI-Watch, supported by our team of experts, you can digitally establish your R&D and Innovation as a management function in your business. Auto-reports for R&D tax credits, team & time management, grant funding draw-down supports, and RD&I strategy templates & guidance are just some of the features ReaDI-Watch has to offer, which saves time & headaches for teams building a lean & traceable RD&I function. Get in touch today with our team to learn more. https://readi-watch.com

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Founder of ReaDI-Watch, a SaaS solution to assist companies to manage and create value from RD&I.