AN COIMISIÚIN UM ACHOMHAIRC CHÁNACH
TAX APPEALS COMMISSION

165TACD2025

Between

[redacted]

Appellant

and

REVENUE COMMISSIONERS

Respondent

Determination

Contents

Introduction

1. This Determination concerns the appeals of [redacted] Limited ("the Appellant"), brought under section 949I of the Taxes Consolidation Act 1997 ("the TCA 1997"), of assessments of the Revenue Commissioners ("the Respondent") made on 31 May 2016 in respect of the years ending 31 December 2012 and 2013 ("the years in issue").

2. The particular question that the appeal raises is whether the Appellant's expenditure over the years in issue on the development of an "*aggregated service desk*" and portal, through which virtually or remotely accessible services could be availed of by its customers, amounted to "*expenditure on research and development"* under section 766 of the TCA 1997. Over the years in issue, companies were, under this provision, entitled to claim tax credit representing 25% of such expenditure incurred. The virtually or remotely accessible services in question included IT support, project support and remote monitoring management ("RMM") services.

3. In the assessments under appeal, the Respondent, having decided that the Appellant's expenditure on the development of its aggregated service desk did not constitute qualifying R&D expenditure under section 766 of the TCA 1997, refused the Appellant's claim for tax credit in the amounts of €86,011 for 2012 and €117,803 for 2013.

4. It should be noted at this point that the Appellant also appealed assessments for the years ending 31 December 2014 and 2015, pursuant to which the Respondent refused its claims for repayments arising from the same expenditure referred to above. However, during the hearing the Appellant indicated that at that juncture it did not wish to proceed with these appeals and requested that they be dealt with, if necessary by further hearing, after the issuing of a Determination in relation to the assessments for the years 2012 and 2013. In circumstances where the Respondent indicated its agreement to this proposed course of action, the appeals of the assessments made for the years 2014 and 2015 remain with the Commission and stand to be determined separately. As stated above, the years in issue are those ending 31 December 2012 and 2013.

5. In this Determination, the Commissioner sets out relevant background to the appeal, in particular documentary background material, before proceeding to summarise the relevant legislation and guidelines, oral evidence of the various witnesses called by the parties, facts material to the determination of the legal issues arising and an analysis of those legal issues. At the end of the Determination the Commissioner sets out the result of the appeal and a summary of the reasons for it.

6. Before proceeding further, and for the assistance of the reader, it is helpful at this point of the Determination to provide a brief description of certain relevant computing concepts, which appear throughout.

Summary of cloud models

7. Cloud computing is a model that enables users to access off-site computing resources on an on-demand basis, by means of internet connection. In its policy paper entitled "*Cloud Computing: The Concept, Impacts and the Role of Government Policy"* (published August 2014), the OECD cited the following definition given to cloud computing by the United States Institute of Standards and Technology:-

> "*Cloud computing is a model for enabling ubiquitous, convenient on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction*."

8. There are three categories of cloud computing service model. Of these, the one that most individuals will be familiar with in their daily lives is 'software as a service' (SaaS). In essence, the cloud provider gives users access over the internet to web based software applications that run on its physical computer and software infrastructure. Examples of such software applications include Gmail, Office 365 and Netflix.

9. Another cloud computing service model is 'platform as a service' (PaaS). The OECD defines this in the following terms in its aforementioned policy paper:-

> "*PaaS provides users a* […] *platform to deploy their own applications and services. Typically, users rely on programming languages and further tools of the cloud provider to deploy these applications. Cloud users do not manage or control the underlying infrastructure such as networks or operating systems (NIST, 2011), with the service provider managing the virtualisation operations. Suppliers of PaaS use dedicated application programming interfaces (APIs)."*

10. The third cloud computing model, and the one much discussed in this appeal, is 'infrastructure as a service' (IaaS). The OECD defines this in the following terms in its aforementioned policy paper:-

> *"Infrastructure as a service (IaaS) provides computing resources such as processing, storage and networks to the users of clouds, and enables users to leverage these resources through their own implementation of virtualisation capabilities. Providers of these hardware virtual machines offer access to raw computing resources and a high*

degree of flexibility. IaaS users are able to access computational resources (e.g. CPUs), and run operating systems and software on the provided computing resources. The flexibility for users is very high is the IaaS model as there are only few limits on the kinds of application that can be hosted on these services."

11. These concepts, and other computer software and computing concepts are discussed further in the main body of this Determination.

Background

12. The Appellant is a company incorporated in 2011 and is part of the "[redacted] Group". [redacted] Group is involved in the provision of IT managed services, IT project delivery and business outsourcing solutions.

13. The Commissioner heard uncontested evidence that, at least prior to and during the years in issue, the [redacted] Group provided its IT services as a sub-contractor "on premise" to the customers of well-known IT and consulting companies such as [redacted], [redacted], [redacted] and [redacted]. Witnesses who were employees of [redacted] described its brand as being one that was "white label". In other words, in providing on promise support services to customers, [redacted] would not offer the services under its own brand name, but rather would do so under the brand name of the IT and consulting company for which it was acting as sub-contractor.

14. It was not in dispute that the principal activity of the Appellant was, over the period in issue:-

"[…] *the provision IT services through a virtual service desk under the* [redacted] *brand direct to the SME sector in Ireland and the UK. These services provide enterprise quality and affordable IT and business support services worldwide through cloud-technologies and a virtual workforce model."*

15. It was not in dispute in this appeal that in 2012 the [redacted] Group undertook a project in which it took one of its existing IT service products, designed for use by a single client to deliver a single service and, using cloud technology, sought to "*re-architect* [the product] *to address multiple clients with multiple distinct service offerings".* The product in question was the Appellant's envisaged "*aggregated service desk".*

16. This project was, in the first part of 2012, conducted by a company in the [redacted] Group other than the Appellant. However, at some point in 2012, the exact date was not given, the Appellant took over the conduct of the project as well as the expenditure

thereon, including expenditure on the staff carrying out the development work up to that point.

17. The project was carried out by a dedicated team, most of whom were experts in software development. One of the team members, [redacted] was however not involved on the technology side. Instead, she functioned as the project manager and, in so far as this might be taken to be a separate function from her project management duties, reported to a board sub-committee established to maintain oversight of the project. Another person not on the technology side was [redacted], whose function it was to inform the other members of the project team "*what the clients needed in terms of* [the IT support] *service".*

18. In March 2011, in advance of the commencement of the project, [redacted] composed a document entitled "*Research and Development Programme Charter"* ("the Programme Charter")*.*

19. Section 2 of the Programme Charter was headed "*Programme Definition"*. At paragraph 2.1 therein, entitled "*Background",* it was stated that:-

> *"Over recent years* [redacted] *has delivered bespoke online managed services for a number of existing Ireland and UK based customers. Subsequently it has been identified internally that there are opportunities to further develop the existing offerings into aggregated cloud services and to sell to small and midsize business (SMBs) with dedicated market vertical solutions.*
>
> [redacted] *currently has the skills and some of the Intellectual Property (IP) to help build out a cloud solution around the aggregation of vertical IT service solutions. As a result, a decision has been made at Board level to fund a Research and Development Programme specifically focused on building out a vertical support service desk offering to selected vertical markets, and either buying or building specific solutions for those verticals on top of the service desk. Refer to Appendix A and B for graphical representations of proposed solution offering.*
>
> *The new virtual support service business will act as a delivery mechanism for the existing managed services and competency business areas. The new business will leverage the existing back office functions of the group*."

20. At paragraph 2.2, entitled "*Goals and Objectives"* the Programme Charter stated:-

"*The goal of the programme is to build a virtual support service to enable our customers in vertical markets to concentrate on their core competencies. Therefore, the basis of the programme is the implementation of the following vision:*

> *'We will be the leading virtual support service to enable our customers concentrate on their core business'.*

The virtual support service will offer customers in vertical markets a suite of online managed services that they can draw down as required, depending on their business needs and IT strategy.

The key objective of the programme is to build a new business offering virtual support service in conjunction with our customers. The R&D team will be targeted with working with customers to get their perspective when answering the following factual questions:

- *What problem are we solving, or what possibility are we offering?*
- *Why should our customers care?*
- *What makes us unique, different or memorable?*
- *Can we develop services that are easy to use, perform and have required features?*
- *What skills, people, or services are we missing that prevent us from presenting a complete offering?*
- *What is our business model? How do we make money?"*

21. At paragraph 2.3 in the Programme Charter, entitled "*Definition of Virtual Support Service"* it was stated:-

"For the purposes of the R&D programme, a Virtual Support Service is defined as 'the provision of online managed services which will include:

- *Customer support services*
- *IT support services such as*
    - *The management of customer's onsite systems*
    - *The management of a selection of best in class applications through a web portal such as BPOS MS e-mail, Office or Google mail etc.*
    - *The management of a selection of vertical specialist applications through web portals.*

- *Sales support services (This will be a later phase)*
- *A combination of the above services' "*

22. Paragraph 2.4, entitled "*Scope"*, provided, among other things, that the scope of the project was to be based on a business case that "*translate*[d] *into"* various "*workstreams".*[1] At end of this paragraph, it was stated that:-

    "It is important to note that while the scope is based upon the business case, flexibility will be required in order to be responsive to fluid business and customer requirements/opportunities that might arise. As such the scope will change and will be documented via standard change control procedures."

23. Section 3 of the Programme Charter was headed "*Programme Approach".* The first paragraph therein stated:-

    "*The proposed virtual support service will utilise the expertise and experience of the existing business through the development phase, engaging the software development business to build a cloud based platform to deliver this service and the Project Management Office (PMO) to manage the various workstreams defined as part of the R&D team*."

24. Section 4 of the Programme Charter was a diagram headed "*Programme Structure".* At the top was the 'Programme Sponsor', [redacted]. Under [redacted] was the project governance board, which was made up of [redacted], [redacted] and [redacted]. Reporting to the board was the 'Programme Manager who was, as already noted, [redacted]. Her function was, *inter alia*, to liaise with the 'Design Authority', headed by a software developer named [redacted], and report to the board on the progress made by the project team.

25. In relation to the "*Design Authority",* sub-paragraph 4.1.4 of the Programme Charter stated, *inter alia*:-

    "The Design Authority primarily consists of the Chief Technical Officer (CTO) however competency principles will be drawn in from the organisation as required. The key role of the Design Authority is to marshal the capabilities that are required to deliver the

[1] These being: *Programme Management, Audit and Governance; Architecture, Security and Compliance; Infrastructure Environment; Development Environment; Marketing; Business Model and Strategy (including remote working); Virtual Support Service Development Projects (e.g. Tradefacilitate Service Desk); Knowledge Management and Competency Improvement; Corporate Structure Development (including IT Governance); Legal (Data Protection, Licensing, Contract Management and Intellectual Property).*

desired benefits for the programme and subsequently the outcomes from sub projects."

26. Section 5 of the Programme Charter was headed *"Assumptions".* One of these was:-

    "*When fully operational, the IT/Customer service desk solution will be delivered through a portal built by customising Microsoft's CRM tool and making this portal available through Microsoft's Azure Cloud platform (TBC*)."

27. Another one of the assumptions listed in section 5 of the Programme Charter was:-

    "*Service offerings will be developed to have a global reach and where the service(s) is delivered from is in the main irrelevant to the end customer as long as it meets the business need, is always available and provides a quality service*."

28. Section 7 of the Programme Charter set out "*Risks".* Many of these were risks related to business and legal considerations. Some of those specified were, however, at least partly technical in nature, including:-

    "*Customisation and integration risks – significant time and effort spent developing customised service offerings that are not reusable without huge development effort. There may be limited or no integration with other required applications.*

    and

    "Multi-tenancy risks (from technical security perspectives)."

29. It was not in dispute that, *inter alia*, over the years in issue the Appellant's project team carried out work on the development of the 'aggregated service desk', hosted in the cloud, that was intended to provide a variety of services to customers, via a remotely accessible portal. The core services were initially IT support and project management support, though in 2013 the Appellant began work on its RMM. It was envisaged that the customers of the Appellant would be SMBs and that the services provided remotely, which traditionally had been provided by the Appellant 'on premise' using the customers' own IT infrastructure, would be offered to them at a rate that would be affordable to them.

30. The Appellant made a claim in respect of the year 2012 for expenditure on the project that it contended constituted "*qualifying expenditure"* on R&D. In making this claim, the Appellant submitted a document to the Respondent entitled "*R&D Tax Credit 2012"* ("the 2012 claim document") that set out, in relation to the expenditure in question, the "*Project Background and Scientific or Technological Objectives".* Under the heading "*What are we claiming qualifies for R&D tax credits?"* was written:-

"*The creation of a Portal/Platform and Services hosted in the Cloud for delivery to customers worldwide, supported by Service personnel based at our Head Office and working remotely*."

31. Then, under the heading "*What is the history of the Project?"*, was written:-

"*The core business of the* [redacted] *Group is the delivery of managed services for Irish and UK based customers. We partner with larger multinational IT companies such as* [redacted] *and* [redacted] *to provide client site based resources backed by our service management expertise as part of their full outsourcing offering to the end client.*

In 2008 we partnered with [redacted] *to deliver a full outsourced IT service desk to an end client which was to be supported by Microsoft System Centre Service Manager software. Unfortunately Microsoft delayed the release of the software, which created an immediate need to provide a solution. Our technical staff developed such a bespoke solution supported by existing Microsoft technology.*

We identified internally that there were opportunities to further develop this bespoke solution combining our knowledge of IT Outsourcing with emerging technological trends in cloud computing to create a portal and related service desk solution through which aggregated cloud services could be sold.

[redacted] *Group established a group company*, [i.e. the Appellant], *in 2011 to provide a focus to our research into exploiting Cloud Technologies."*

32. The Appellant stated in the 2012 claim document, under the heading "*Scientific or Technological Objectives/Advances:-*

"Are we aiming to solve an issue or achieve a competitive advantage?

Before we undertook our programme there was marketing hype around Cloud but the technology itself was unproven.

Our objectives were;

1. to take what was a bespoke solution for a single client to deliver a single service and re-architect it to address multiple clients with multiple distinct service offerings.

2. to host this portal on a cloud platform to leverage the advertised benefits of resilience scalability and cost savings.

3. to facilitate the secure Delivery of the service by teams of remote workers so as to reduce operating costs.

4. to design and deliver additional services to be delivered through the platform."

33. The Appellant then set out "uncertainties" that it said were associated with the achievement of each of these objectives as follows:-

"*Uncertainties arising from delivering Objective 1*

1. How can we securely integrate two different cloud models (IAAS/PAAS) to [sic] ultimately our solution.

2. How can we facilitate multiple authentication models?

3. How can you get different customer SLA [service level agreement] *contracts and timelines to function from the one SLA engine embedded in ITSS* [i.e. I.T Service Support]*?*

4. How can we facilitate customers to brand their own portal – look and feel?

5. How can we deliver on multi-lingual/localisation needs?

Uncertainties arising from delivering Objective 2

1. *Working on a platform released in 'Preview' mode to validate our Microsoft end to end model.*

   a. Due to lack of SLA, Microsoft would not resolve issues arising – we had to trust we could do this ourselves.

   b. Applications may not technically function on the platform.

2. Within our migration strategy, uncertainty existed around viability of moving large volumes of data to cloud.

3. Connectivity/latency issues could affect application performance once moved to Cloud.

4. Single sign-on and identity challenges between on premise and cloud environment for a client.

5. Validating that no technical security vulnerabilities existed with using Public cloud provider.

6. Technically validating a "roll-back" approach from cloud to on premise/alternative cloud provider.

Uncertainties arising from Objective 3 – secure remote delivery

1. How to integrate multiple datasets to provide the single view required by a Service Centre manager.

2. How to facilitate the SOC agent to automatically recognise from the call received/authentication used which client company the user is calling from so as to enhance the service offered.

Uncertainties arising from Objective 4 – new service lines

1. New service lines to develop – Building a design that not only meets the existing known requirements, but future potential service extensions, which may or may not bring other products, was a constant uncertainty."

34. Other parts of the 2012 claim document were put to witnesses called by the parties in this appeal in examination-in-chief and cross-examination. Its content is therefore referred to later on in this Determination. At this point, however, it should be noted that elsewhere in the 2012 claim document the Appellant set out a description of the work done in that year in relation to each objective. In respect of Objective 1, the Appellant outlined that software relating to its service desk was developed and deployed, resulting in V2, V3 and V3.1 prototype versions of same, which were tested and 'piloted' with a customer. The version updates were, at least in part, the result of customer and service desk team feedback having used the service desk. Work done in the year included a single sign on solution using Microsoft ADFS and transferring the application from physical servers located in a data centre to virtual machines hosted on Microsoft Azure.

35. In respect of Objective 2, namely work on hosting in the cloud, the Appellant outlined that it examined the IaaS platforms offered by different public cloud providers, in particular one called [redacted], before ending up concluding that the only viable option for the hosting of its portal and service desk was Microsoft Azure. The Appellant described difficulties that it encountered in relation to migrating large volumes of data to Microsoft Azure, as well as issues with scalability, as well as the work done to overcome the same.

36. In relation to the work done on Objective 3, "*Secure remote delivery",* the Appellant stated that it encountered difficulties with security in respect of virtual machines (they were the subject of hacking attempts). The Appellant stated that:-

"Soon after we identified the potential breaches and attacks, we mobilised a project to reconfigure all [the ports] and tie down access to the virtual machines by default. These challenges have since been incorporated into the core service offering from Microsoft. This uncertainty as to how to secure resources outside of your core environment,

means we can now help customers secure corporate assets and data, by following up these transformation projects with penetration and vulnerability testing."

37. In relation to Objective 4, "*Design and deliver additional services through the platform",* the Appellant described its attempt to build on its "*basic IT and customer care offerings".* Further offerings included accountancy support and development support services. In relation to the former, the concept was that the product that would be accessible through the Appellant's portal was the accountancy solution offered by the enterprise software company Sage. The Appellant's attempt to offer these additional services was not successful.

38. The Appellant also delivered a claim for expenditure incurred in 2013 that it contended constituted "*qualifying expenditure"* in respect of R&D. In making this claim it prepared a document entitled "*R&D Tax Credit 2013"* ("the 2013 claim document"). Under the heading "*What were the company R&D objectives?"* the Appellant wrote:-

    "*1. Validate the exact workloads for Global organisations where consuming a cloud platform would provide significant cost savings whilst enhancing technical security and reducing risk.*

    2. Develop Cloud First products and service offerings to transform our business from primarily a provider of onsite resources through Tier 1 IT Partner companies to a scalable model offering Cloud first products and services direct to market internationally.

    3. Position the company as a subject matter expert on Microsoft's Cloud platform, Azure.

    4. Identify and resolve technological gaps to facilitate the practical Application of Microsoft Cloud technologies in the SMB sector through developing our own IP."

39. The Appellant gave the same summary under the heading "*What is the history of the Project"* as it did in the 2012 claim document, save that it added:-

    "In 2012, [the Appellant] made significant progress deploying a multi-tenanted technology and cloud platforming service our first anchor tenant [redacted]*, delivering a true 24x7x365 IT Support Service facilitated by our new Service Operations Centres (*[redacted]*) and remote 2nd/3rd Line subject matter experts. During 2013 we continued to evolve and be technically challenged on our core 2012 objectives, but also new objectives and challenges arose in year*."

40. Under "*Scientific or Technological Objectives/Advances",* the Appellant included the same objectives 1-4 as in the preceding year and then added that *"additional"* 2013 objectives were:-

"5. To deliver a repeatable remote monitoring and management (RMM) service of our customers "as is" ICT environment.

6. Design Authority – Creation of a Repeatable cloud transformation Methodology and Technology platform for customers and how to monitor their environments before, during and post transformation."

41. The uncertainties stated to be associated with Objective 5, *"RMM"*, were described in the following terms:-

"Technically this is a very challenging objective, due to the complexity and uniqueness of each customer's ICT environment, however three core uncertainties arose quite quickly, including:-

1. From our experience with our first anchor clients which may have incumbent IT Support suppliers or large in-house support team, they may already have monitoring software in place for ICT estate, whereby having the one piece of physical or virtual infrastructure report to two different monitoring systems at the same time is not officially supported. Multi-homed agents, as the technical term for this challenge, will allow this single network connected device be monitored from more than one management software, however our previously selected standard product System Centre, at the time did not support multi-homed support.

2. As our core strategy involves moving clients to Cloud Platforms, whilst reducing the IT assets to traditionally monitor, this strategy does apply more reliance on other infrastructure components, more specifically the network. Microsoft products, through research and experience, does not provide a reliable way to monitor and track the availability of key nodes within a globally distributed private/managed network.

3. Through learning that we will not have one technology solution to cater for all customers' needs and environmental factors, it quickly became apparent our service agents would need to be proficient and monitor using multiple software/hardware solutions. This would in turn provide challenges to our 2012 objective around multi-tenanted and repeatable service for all our clients. We would need to standardise and automate alerts across all systems into one view."

42. The uncertainties enumerated in the 2013 claim document concerning Objective 6, *"the Design Authority",* was stated to include porting users to the new system, organising backups in the new environment, providing disaster recovery facilities and potentially being without Microsoft support in the event of problems with older editions of Microsoft software.

43. On 1 May 2015, [redacted] of the Respondent wrote to the Appellant regarding its claims for R&D credits for the years in issue. At the outset he stated:-

> "*It was good to meet you yesterday.*
>
> *There were well maintained books and records in place in order to make an informed decision about […] the R&D Tax Credit which was claimed in the 2012/2013 tax periods. In addition, your client was most co-operative and helpful throughout my review."*
>
> *[…]*
>
> *It was useful to speak to* [redacted] *(Chief Technology Officer) in order to understand the nature of R&D activity being undertaken. As stated at our meeting, I am not a technology expert and may need to bring an informed authority to visit the company in order to ensure the activities are undertaken within the spirit of the legislation underlined in S766 TCA*."

44. On 5 May 2016, Professor Michael Brady ("the expert witness called by the Respondent"), of the Computer Science Department of Trinity College Dublin, delivered a report in relation to the Appellant's claims for R&D tax credits for the years in issue ("the 2016 report").

45. In the introduction to the 2016 report, the expert witness called by the Respondent outlined that having been consulted as an expert in the relevant field of science and technology, he composed his report on foot of a site visit at the Appellant's premises, attended by representatives of the Appellant, which occurred on 22 June 2015. He stated that in composing his report he had regard to the 2012 and 2013 claim documents, in particular the objectives set out therein, and certain additional documentation provided after the site visit. In respect of the additional documents he stated:-

> *"Extra documents, listed in the appendix, were provided subsequent to the site visit. It was hoped that they might shed light on the company's activities with a view to identifying R&D activities. I was unable to discern any R&D activity in these documents. The documents do show a company determinately working to provide products and*

services, to develop new lines of business and to plan for the future, but there is no sign of any [R&D] activity."

46. Regarding a letter of 18 December 2014 sent by [redacted] on behalf of the Appellant, the Respondent's expert witness addressed the statement that "*this is new technology with no solutions already known."* In relation to this he stated:-

    "[…] this is not strictly true. It would appear that [the Appellant] was using existing technologies to develop new products and services. In the course of this development work it was exploiting these technologies in novel ways, but in no case that I have seen has [the Appellant] documented an attempt to achieve technological advancement, where that advance was an advance in overall knowledge or capability in the field in question rather than an advance in the company's own technological capability."

47. It is worth observing at this point that this statement represents the crux of the issue between the parties arising in this appeal.

48. Under the heading "*General Comment"* in the report, the Respondent's expert witness stated that in his view the Appellant had failed to substantiate the claims of the conduct of R&D within the meaning of section 766 of the TCA 1997. He opined:-

    "While I can accept that much of the work the company has undertaken is of the form of 'experimental development', I saw no evidence of attempts to achieve technological advancement, where that advance was an advance in overall knowledge or capability in the field in question rather than an advance in the company's own technological capability.

    The documents presented read very much like generalised and often vague descriptions of what had to be developed and why it was needed in a commercial and business sense. The company stated that it was unsure whether it would be able to develop the software and services necessary, but in no case did it identify any specific technological advancements that it should attempt to make. The documents refer to challenges in connection with the development of new features and facilities, but no specific technological advances are listed.

    What is portrayed is a company actively working to develop its products to address present and future needs of its customers and to explore new opportunities. There is a narrative that the company did indeed develop new products and services and entered, or attempted to enter, new markets, but in no case has the company instanced and documented activity that would be considered [R&D] for the purpose of the [TCA 1997]."

49. On foot of the conclusions contained in the 2016 report, the Respondent refused the Appellant's claims for R&D tax credits for the years 2012 and 2013, by way of the making on 31 May 2016 of amended assessments for those years. The Appellant duly appealed the amended assessments by way of the delivery to the Commission of Notices of Appeal dated 30 June 2016.

50. Notwithstanding the lodgement of appeals of the amended assessments with the Commission, it is clear that the parties continued to engage with each other in the hope of resolving the matter outside of the appeals process. On 29 September 2017, the Appellant delivered a reply to the 2016 report ("the 2017 replying document"). At its outset, the Appellant acknowledged "[…] *that it did not clearly outline the technological advancements that* [it] *sought to achieve in relation to* [its] *R&D activities in FY2012 and FY2013 in the original document(s) and supporting references presented."* It then stated that, in its view, the expenditure at issue on the project constituted *"qualifying expenditure"* for the purposes of section 766 of the TCA 1997 on the grounds that the activities undertaken in the course of the project constituted systematic, investigative or experimental activities, in a field of science or technology, falling, in large part, within the category of "*experimental development*". This was so because it was work undertaken that drew on "*scientific or technical knowledge or practical experience for the purpose of achieving technological advancement and which* [was] *directed at producing new or improving existing materials, products, devices processes, systems, or services including incremental improvements thereto."* Moreover, it said the activities in question involved the resolution of scientific or technological uncertainty.

51. In the introductory part of the 2017 replying document, the Appellant stated under the heading "*What problem were we attempting to solve?*":-

> "*The traditional service model for outsourcing IT support would see dedicated service teams from Tier 1 IT service providers such as* [redacted], [redacted] [redacted] *based on each client site, supported by dedicated teams for each client on the provider's site, linked by dedicated leased lines for connectivity between the sites. However, this approach could not be consumed by the SMB sector due to the high cost of set-up and the high cost of providing a dedicated solution for each client.*"

52. In the 2017 reply, the Appellant sought to describe the "tenets" or "building blocks" necessary for it to deliver its traditionally on premise services through the cloud. These building blocks were: an appropriate IT infrastructure platform; remote service support staff organised into 'PODS' based in a specific location, with POD members sharing a language or technology specialty; "*service solutions toolsets that were multi-tenanted",*

and a phone system that converted a laptop to an office thus reducing cost and facilitating POD staff members to communicate remotely.

53. At section 1.5 of the 2017 replying document, the Appellant described the "*overarching technological advancement that we sought to achieve"* as being:-

> "*to design and build Service Solutions that provided the benefits (for example, security of access) obtained from being embedded within the client IT and Applications environment in delivering our services (monitoring, maintaining, patching systems using a structured systematic approach, Project Support Services, end use IT Support) whilst we would not be inside the customer environment and not have control over it, instead connecting remotely*."

54. In the same section of the 2017 replying document, the Appellant stated:-

> "*In seeking to achieve this overarching technological advancement, we sought to achieve the following four advancements:-*
>
> *1. Collaborate with platform providers to create a suitable platform on which to host our offering,*
>
> *2. Build out a Multi-tenanted system for our IT support service*
>
> *3. Extending SharePoint 2013 to transform it from an internal business application into a multi-tenanted project management system which customers could access.*
>
> *4. Creating a scalable, affordable remote monitoring solution for the SMB sector."*

55. Expanding on the first of the aforementioned advancements, the Appellant stated:-

> *"In relation to the selection of potential platforms on which to host solutions, we sought to achieve a technological advancement by collaborating with platform providers to identify and assist them in how their offerings needed to be enhanced to provide us with a fit for purpose platform.*
>
> *[…]*
>
> *By uncovering weaknesses and identifying missing components in these services, our team would contribute to the enhancements delivered by the providers*."

56. Citing such collaboration with the cloud provider [redacted] in relation to client "autonomy" when using their platform, the Appellant stated that achieving or enhancing this:-

"[…] *would be a technological advancement at the time because the offering as presented to us by* [redacted] *was very restricted with full control retained by* [redacted] *engineers over the client environment and there would be no control by the client over certain elements which we saw as essential*."

57. In relation to the "*migration of existing development and test environments*", the Appellant stated that it devised a "novel approach" which would prevent the migration process from failing.

58. Expanding on the second advancement sought to be achieved, relating to the building of a multi-tenanted IT support service, the Appellant stated at page 9 of the 2017 replying document that it involved:-

"*extend[ing] the core functionality of Dynamics CRM 2011 in such a way that allowed it to be multi-tenanted while ensuring that there could be no data leakage between customers. We built a custom security model for the system to allow this to happen*."

59. Expanding on the third advancement sought to be achieved, the extension of Microsoft SharePoint into a project management system for users of its service desk, the Appellant stated that it would do so by "*exploiting the principles of multi-tenanted toolsets and teams of project managers shared across multiple clients".* The Appellant said that achieving this goal involved a technological advancement because it "*required the development of a custom authentication/authorisation engine".*

60. On the fourth advancement, the remote monitoring system accessible through the Appellant's portal, the Appellant stated that:-

"[…] in the SMB client base, we were dealing with a whole host of different customer configurations, with different estate sizes, different types of servers and different monitoring requirements and there was no existing one-size-fits-all solution that would work for these different configurations."

61. The Appellant stated in this regard:-

"*We sought to achieve a technological advancement in creating a scalable, affordable remote monitoring solution for the SMB sector. Our approach involved the creation of toolsets hosted in Azure supported by the development of structured matrices and sample scenarios that would identify the different combinations of technologies that would be required to support different application configurations depending on the customer estate and size*."

62. The Appellant then stated:-

"*We worked with the available applications such as Microsoft System Centre Configuration Manager (SCCM), which were designed to be hosted on a single client environment, but instead sought to operate them on an Azure platform and enable them to be shared across multiple clients rather than be dedicated to specific client environments*."

63. At section 1.6 of the 2017 replying document, the Appellant stated, inter alia, the following in relation to what it saw as relevant "*Technological Uncertainty"*:-

"*At the Enterprise Level, the IT service provider was embedded inside the client IT systems, having installed these systems and standardised the systems to their preferred configuration before accepting them into service.*

Our proposed client base didn't have this level of standardisation, with each client consuming our services having a different IT system profile/set-up. Even within a client, there was unlikely to be standardisation of systems and processes.

Exiting enterprise level solutions were delivered on applications designed to be implemented within a client environment, and monitored/operated from within the environment using a dedicated team. For example, in the case of the [redacted] *delivered by* [redacted] *through* [redacted]*, a dedicated platform was built and operated by* [redacted] *for the client and would be maintained by* [redacted]*. This would not be feasible for SMB.*

We were technologically uncertain if we could replicate the benefit of being embedded in a client environment, by using available toolsets in a different way while being outside the client environment. This was considered a technological uncertainty because it was unknown if this approach would even work. If we succeeded it would have represented a new way of approaching IT services.

When it came to the work on our Project Support Service, what was uncertain was how we would make the system available to customers since SharePoint was designed to be used internally within an organisation and would only work with Active Directory. We wanted to allow customers to use their existing accounts/credentials wherever possible instead of having to create and manage accounts ourselves. When we brought the Project Support Service on stream, offering this flexibility became a real challenge."

64. At section 1.7 of the 2017 replying document the Appellant described the "*R&D Activities Performed"* over the years in question, which it said "*align*[ed] *to the advancements sought"* in: (a) *"platform",* (b) *"multi tenanted IT support",* (c) *"project support system"* and

(d) "*remote monitoring system".* This was, in other words, an attempt by the Appellant to outline the claimed technological advancements that it sought, through the project team, to research and develop over the years in issue.

65. In relation to the first of these, the Appellant stated that in 2011, the year prior to the years in question, it identified Microsoft Azure as their "*cloud platform* […] *of choice".* In the course of 2012, the project team worked on the aggregated service desk using Azure. However, as the platform was then only available in "beta" mode, with no clear SLA committed to by Microsoft for its customers, the Appellant also felt it necessary to explore other cloud providers as possible alternative options.

66. In relation to this exploration of alternative cloud providers, the Appellant stated that, firstly, it availed of an IaaS service offered by a company called [redacted] and, secondly, that provided by a company called [redacted]. The Appellant said that it collaborated with both providers on technical matters, with the effect that their offerings were enhanced. In respect of [redacted]'s offering, the Appellant stated that at the outset its VM provisioning capabilities were sub-optimal and that as a consequence of collaboration the "*provisioning experience dramatically* [improved] *in a future release"*. It said, however, that at some point [redacted] was taken into NAMA, with the consequence that the quality of its cloud offering diminished and this hosting option was pursued no further. In relation to the [redacted] cloud offering, the Appellant stated in the 2017 replying document that there was an issue with VMs not being 'sysprep'ed'. The consequence was that they could not be cloned or moved, a key technical requirement. The Appellant then stated: "*after we discovered the issue we informed them and they brought it into their standard VM build process as a result."* Again, this was said to constitute evidence of a technological advancement, involving uncertainty, that it had sought to be resolve.

67. As regards work on the project involving the beta version of Azure, the Appellant stated that a particular technological advancement that it worked on involved the resolution of security issues arising from the application by Microsoft of "standard security models" to its machines. In essence, virtual machines on Azure were vulnerable to attack by hackers and the cause of the problem was that:-

> *"Microsoft had hard-coded standard firewall port configurations and rules on VMs, which made for easy targeted [denial of service] attacks. Soon after we identified the potential breaches and attacks, we mobilised a project to reconfigure all these ports and tie down access to the VMs by default.*

These changes have since been incorporated into the core service offering from Microsoft. As a result the Microsoft roadmap for the Azure product has tied down security on VMs and their access."

68. At the end of page 13 of the 2017 replying document is a passage headed "*Conclusion of Search for alternative IaaS Platform"*. Therein, Appellant stated:-

    "*Towards the end of 2012, Microsoft released an Azure platform update that looked to be a significant step forward. It involved their Infrastructure as a Service offering which meant VMs could be hosted in Azure. As a result at the start of 2013, we decided to move to Windows Azure for the development environment and started a project to migrate away from [redacted] and into Azure. Prior to this, the functionality provided by Azure was not sufficient to meet our requirements. The IAAS offering in Azure was in Preview in late 2012, it was made Generally Available from April 2013*".

69. Continuing to deal with the R&D that it conducted over years in question, the Appellant said that it encountered "*significant risk and challenges"* in the migration and integration of its exiting digital *"estate"* to Azure. After what it described as an *"iterative process, which involved exploring different options available"* it arrived at a solution that, though "*technically challenging"* was successful. The solution was described by the Appellant as follows in the 2017 replying document:-

    "[…] *our solution was to take a download to a storage device from* [redacted]*, perform a HyperV conversion process and then request an upgrade on our external internet bandwidth speeds, to support a quicker upload experience*."

70. The Appellant then stated "[…] *out of substantial uncertainty we gained a significant technological advancement in the approach to take and how to overcome the pitfalls of migrating to a hybrid IaaS platform*."

71. The Appellant addressed the second aspect of what it saw as its R&D activities under the heading "*Multi tenanted Service Solutions Toolsets".* This, it said, involved taking existing Microsoft software applications, such as Lync and Altigen Max ACT (for online calls and call-centre managements respectively), SharePoint (for project management), Active Directory Federation Services (for managing authentication options), Dynamics CRM (for case management), SCOM, and SCCM, for remote management and Microsoft Office 365 for email making 'single instances' of them capable of use by multiple clients (i.e. multi-tenanted). It said that in so doing it encountered "*specific technological challenges*" in the form of "*client access", "single sign on for multiple service solutions",* and "*client* [not having] *enterprise level standard environments".*

72. In this section of the 2017 replying document, the Appellant dealt in particular detail with its work to multi-tenant its chosen customer support application, Dynamics CRM. It stated that the original "*pilot solution*" was to provide each SMB customer with a separate instance of this application, however this proved to be uneconomic and not scalable as a model. It then opted to "*move to a single* [Dynamics] *CRM 2011 Organisation, for all customers".* This, it said, led to new challenges and uncertainties, the most significant of which was how to separate client data while using a single instance of Dynamics CRM. This gave rise to fresh "*technical challenges*" involving the separation of different clients' data and the need to create a "*new security mode*l" to prevent "*any data leakage".* In this respect it stated that "*a new security model was implemented".* The Appellant said that the latter of these issues was *"the most significant challenge in the 'one Organisation' solution."* However, other challenges and uncertainties that it said it encountered and worked to resolve included "*separation of customers and staff within CRM using Accounts and Business Units"* and "*the SLA engine needed to be updated to allow multiple SLAs within a single Organisation."*

73. At page 18 of the 2017 replying document, the Appellant addressed the third aspect of what it saw as its R&D activities under the heading "*Expanding Access to SharePoint to build Project Support System".* In this regard it stated that in 2013:-

> "*we commenced a project to build a new Project Support solution, to be delivered using cloud technology and exploiting the principles of multi-tenanted toolsets and teams of project managers shared across multiple clients*."

74. It then said:-

> "*The idea behind the new service was to provide customers with a new approach to Project Management, using a blend of Project Managers and Project Administrators to deliver a flexible service that offered customers circa 30% cost savings on the standard Project Management approach. This new service would be underpinned by a portal through which customers would access/manage their projects, SharePoint was that Portal*."

75. The Appellant said that it was unsure how it could make a single instance of SharePoint accessible to multiple customers as it was designed "*to be used internally within an organisation and would only work with Active Directory*." As a consequence, the Appellant "*had to heavily customise how SharePoint handled authentication and external accounts."*

76. Under the heading *"Technological advancement sought",* the Appellant stated:-

"We built a number of components both inside and outside SharePoint which allowed our customers to log in to our system without the need for them to have local Active Directory accounts. This was a significant achievement as there was no solution for this at the time, we had to design and build the solution ourselves from scratch. We were able to allow customers to access our system using what are known as Organisational Accounts or Personal Accounts:

- *Organisational Acocunts*
    - *Local Active Directory (available out of the box);*
    - *Customer's Active Directory (possible with our custom solution)*
    - *Azure Active Directory (possible with our custom solution)*
    - *Office 365 (possible with our custom solution)*
- *Personal Accounts e.g.*
    - *Microsoft Accounts (possible with our custom solution)*
    - *Google Accounts (possible with our custom solution)*
    - *Facebook Accounts (possible with our custom solution)*

The solution involved building the following components using .NET and C# code:

- *SharePoint Custom Claims Provider*
- *Custom WCF Service*
- *Custom Synchronization Timer job*

The main challenges that needed to be addressed in the development of these components to expand the type of accounts the system could handle are highlighted below"

77. The main challenges enumerated in this part of the 2017 replying document were "*Authentication"* and *"User searching".* In this document, the Appellant set out a detailed explanation as to how these were solved.

78. The fourth, and final, aspect of the Appellant's work that it viewed as R&D concerned "Remote Monitoring and Management". In this respect, it stated *"In 2013 we launched a service monitoring and managing our customer's IT estates. We refer to this as Remote Managing and Management (RMM*)."

79. The Appellant summarised the technological advancement that it sought to, and did in fact, achieve as being the creation of:-

> *"a multi-tenanted instance of a SCOM Management Server hosted on Azure, communicating with a gateway server installed on the client's virtual environment*."

80. The Appellant stated that achieving this meant:-

> *"[that] we reduced the number of servers we had to install from five per client to five in total. Each of the servers have a role to perform in monitoring the client estate. We enabled this role to be performed for multiple clients rather than a single client*."

81. The Appellant made the point that Microsoft SCOM now has an "in-built" multi-tenanted capability.

82. The Appellant's 2017 replying document prompted the Respondent's expert witness to compose a supplemental report dated 21 February ("the 2018 report").

83. In the "*Summary"* part of the 2018 report of the Respondent's expert witness, he stated in relation to the 2017 replying document, inter alia:-

> *"The company then presented an overview of the context in which it was operating around the time of the claim. This is not relevant to the evaluation of the activities the company claims to be eligible for R&D tax credit.*
>
> *Following this, the company partly restated the technological advancements sought, the technological uncertainties encountered and the R&D activities performed. A brief conclusion is followed by nine appendices. In general, there is very little technical detail, much of it being couched in general business terms*".

84. In the section therein entitled "*Preliminary remarks",* the Respondent's expert witness, after summarising the Respondent's guidelines on the necessary conditions for claims for R&D tax credits to be allowed, made reference to a concept, coined by the academics MacCormack & Verganti, named *"Platform Uncertainty",* which they described as follows:-

> "*Platform Uncertainty is defined as the degree to which uncertainty exists over the specific design solutions that will be required in a project. The concept is related primarily to the extent of change in the design vis-à-vis the previous version of the product (i.e., whether the product is a derivative product involving only minor changes to the existing design or is a major platform renewal that involves re-examining the architecture of the product)."*

85. The Respondent's expert witness then opined:-

"*Given that uncertainty is an inherent feature of software development, it follows that uncertainty, on its own, cannot be taken as an indicator that R&D activity is taking place. The presence of uncertainty does not necessarily indicate that scientific and/or technological advances are needed.*

Considerable emphasis is placed by the company on the technological uncertainties faced in the development of their software, and the question must therefore be asked as to whether these uncertainties rise above the level of uncertainties that might be encountered in the routine development of software products."

86. The Respondent's expert witness, addressing the four particular technological advancements specified in the Appellant's 2017 replying document, gave his view that numbers 1 and 4 were "*clearly business related aims".* He then stated as an overall view that:-

"*Unfortunately, there is no evidence that an advance in science or technology, being an advance in the overall knowledge or capability in the field of science, was sought, nor is there documentation that would support that assertion*."

87. Regarding the Appellant's evaluation of potential IaaS cloud platform providers, the Respondent's expert witness did not consider that this, or the Appellant's discovery and reporting to Microsoft of certain security issues with Azure met the definition of R&D. Moreover, he did not consider that issues related to the migration of the Appellant's 'IT estate' from on premise to the cloud was a "technological uncertainty" for the purpose of section 776 of the TCA 1997. He viewed the carrying out of this task as one that gave rise to technological difficulty. However, he said the means by which it could be achieved were "well known".

88. In relation to the use of certain "*toolsets"* on a multi-tenanted basis, "*where not traditionally used",* the Respondent's expert witness was of the view that this did not give rise to "technological uncertainty*".* Nor did the Appellant's use of a single instance of Dynamics CRM on a multi-tenanted basis create a "technological advancement". In so far as the Appellant claimed the implementation of a "*new security model",* the Respondent's expert witness observed that no details were provided in relation thereto. As regards the "specific technological challenges" set out at page 18 of the Appellant's 2017 replying document and quoted at paragraph 54 of this Determination, the Respondent's expert witness said:-

"This is a list of difficulties from a business functionality or business process perspective, of the problems that it was hoped the new system would solve. Thus,

perhaps it might be more accurate to refer to these as functional issues with other potential solutions and requirements of the project."

89. The Respondent's expert witness then expressed the view that the Appellant had, in the 2017 replying document, given a business case as to the merits of moving to a "single CRM system". This was, he said, followed by an assertion that a "*new security model* [had been] *implemented',* but no details relating to the same had been included.

90. In relation to the work of the Appellant on SharePoint so as to create a "project support system, the Respondent's expert witness stated that it appeared to him that a key business objective of the Appellant was to enable its customers to log into the proposed new system with their existing accounts and credentials. He then stated:-

    "*Generally speaking it would seem that the company's developers had to have considerable knowledge of how SharePoint authentication worked, and of how to add functionality using SharePoint APIs (Application Program Interfaces) provided for the purpose of enabling, extending and customising SharePoint's operation. To that extent, Microsoft, the manufacturers of SharePoint, could be said to have anticipated the nature of the work the company actually did.*

    In my view developing a competence in and using these APIs does not constitute R&D activity but rather is part of regular software development. The company does not claim that any technological advancements were sought in developing the extra components themselves (e.g. novel forms of authentication). My opinion is that this work as described here constituted regular software development."

91. The Respondent's expert witness addressed the Appellant's work to make multi-tenanted version of Microsoft SCOM, hosted on Azure, which the Appellant said had the benefit that it "*reduced the number of servers that it had to install from five per client to five in total"*. The Respondent's expert witness was of the view that this was not work driving toward an intended technological advancement. Rather it was "*a functional description of an intended or desired outcome of a course of action, i.e. the development of a product."*

92. In December 2018, the Appellant furnished another response to the views of the Respondent's expert witness regarding the nature of the work done on the project and whether it amounted to R&D ("the 2018 reply"). This was divided into three sections, the first being an executive summary, the second containing a "letter of support" from Professor [redacted] ("the first expert called by the Respondent"), and the third outlining "*Clarifications to* [the Respondent's expert's] *feedback".*

93. In the executive summary section, the Appellant stated that in its view "*there has been a misinterpretation of elements of our submission or we have not explained our position clearly enough to demonstrate the novelty and technical advancement[s] that were made."*

94. The Appellant then said in the same section that:-

> *"On re-reading our claim document, we recognise that we may not have clearly and effectively described the concept that we were looking to achieve via our R&D investments. In essence, contextualised as a Design, Build and Operate model, our efforts targeted designing an architecture, which we referred to at the time as an 'aggregated service desk' capable of supporting multiple customers, and delivering a range of services to help companies in the SMB section run their businesses. The aggregated service desk 'design' evolved leading to an Agile based series of developments which facilitated the application of [information and communication technology] and business support services, which we then applied and operated ourselves initially (for selective customers) to validate the concept. Today, this 'aggregated service desk' would typically be referred to as a platform but it is important to note that most of the now well-established platform companies like Uber and Airbnb were in their infancy when we instigated our R&D efforts.*
>
> *The original idea was that these services would focus on support functions such as HR support services, project management services, legal support requirements, IT estate, customers and finance support services. The generic design criteria hinged on a platform that would be flexible, expandable and repeatable to facilitate an end-to-end scalable environment. This 'aggregated service architecture' to our knowledge, did not exist anywhere when we initiated 'Project Nimbus', our R&D project to investigate and build such a platform in 2011. In summary, this was the core technological advancement that we set-out to achieve*."

95. Further on in the executive summary to the 2018 replying document, the Appellant stated in relation to the deployment of its aggregated service desk:-

> "[…] *a public cloud hosting service emerged as the solution that the team finally recommended. This followed a robust debate, where a number of alternatives including the privately hosted option featured heavily. It is therefore paramount to ground any assessment of the R&D activities, at the time, with the immature nature of the technology and the developing nature of 'platform as a service' which ultimately emerged. With respect, we would strongly contest* [the Respondent's expert witness's] *suggestion that the state of technology was irrelevant to our claim of R&D. At the time*

of our R&D activity, public cloud was nascent; for example, today's number two cloud provider, Microsoft, with their Windows Azure platform, first became commercially available with very limited capability in June 2010. Over the years, Microsoft has added features and functionalities that were just not available when we initiated our R&D activity; the Azure Express Route was only added in 2014. Having invested a lot of time, effort, and wider resources to progress the original concept into a design, build and operate entity, any suggestion that the technology landscape should not be a consideration in our claim would be somewhat surprising given the immaturity of the domain at the time."

96. The Appellant took issue in the executive summary to the 2018 replying document with the view of the Respondent's expert that its work did not meet the definition of "*uncertainty*" used by the academics MacCormack and Verganti. In this regard they noted that these persons had also stated: "*The greatest degree of platform uncertainty occurs in 'breakthrough' projects in which the firm* [in question] *has no prior experience or existing design on which to build".* The Appellant asserted that, at the time of the project, it had no pre-existing design to work from. The Appellant then stated:-

"*Furthermore, we would respectfully seek explanation and clarity as to the Professor's distinction between difficulty and uncertainty. For example, what he claims as being difficult, shifting large scale deployments from an on premise data centre environment into the cloud, was actually very uncertain at that time, as to how this might be accomplished or indeed whether it was even possible was unknown at that point. […] In addition, the considerable uncertainty around moving Virtual Machines was the result of the way these had been created (all had the same SIDs). After many iterations and incremental configurations, we eventually developed a solution. Thereafter, in 2014 Microsoft released Azure Express Route which, amongst other things, addressed the issue of moving large amounts of data from an on premise data centre into the Microsoft cloud; however, this was only made available after we had worked on this project in 2012 and 2013."*

97. Also in this executive summary, the Appellant addressed the Respondent's expert's view as to the absence of evidence that the development of a multi-tenanted SCOM required a '*technological advancement.* In this respect it stated:-

"*This capability did not exist in the market at that time and we were forced to design and build one, all the more challenging as there were uncertainties in the technical landscape involved. Through an iterative development process our engineers eventually arrived at a stable technical solution. We subsequently developed a system*

that managed multiple clients from a single instance of the tooling – this was security compliant, which was key to our I.T. supper service into the SMB sector.

Having architected the solution, the technology to achieve the platform was built on the following principles: buy if the technology was available, integrate if there was something available in the market that we could modify, and build if no solution was available."

98. With regard to the supporting letter in the second section of the 2018 replying document, its full content was as follows:-

"I would like to preface my remarks by acknowledging that the context of R&D has changed considerably in the past 15 years. This is reflected in the Frascati Manual (2015) which identifies five key qualifying criteria for R&D:

1. Novel – aimed at new findings not already in use in the industry;

2. Creative – based on original, not obvious, concepts and hypotheses;

3. Uncertain – about final outcomes;

4. Systematic – planned and budgeted;

5. Transferrable and/or reproducible – leads to results that could possibly be reproduced.

In my opinion, all of the above were clearly present in Project Nimbus. I would like to expand on criterion 3 in the list above, 'uncertainty'. Uncertainty is an inherent and unavoidable characteristic of software, as pointed out very eloquently by Fred Books in 1987, due to the invisibility and complexity of the software artefact. Uncertainty was certainly a major factor in this project, as it was not clear how to develop a solution in terms of creating a platform that was technologically viable at the time.

Nowadays, we take for granted new service platforms such as Salesforce.com, Uber and Airbnb. However, these platforms emerged to be surprisingly successful without an initial clearly defined and certain business model. Back in 2012 – 2013, the approach being proposed in Project Nimbus, that of a multi-tenanted, aggregated service desk supporting multiple services and customers on a single platform in the cloud rather than on premise, was novel and ambitious.

Delivering and remotely managing a solution as a multi-tenanted cloud offering rather than on premise solutions was novel, while combining a wide range of support services (IT, HR, finance, legal and CRM) was ambitious. Issues to be resolved included

architectural design, flexibility, scalability, customer security, remote monitoring and management, none of which had ready solutions.

[redacted] *I believe that Project Nimbus would represent a qualifying R&D project in the field of software development. In addition, I believe that this project was seeking to achieve a technological advancement and involved the resolution of technological uncertainty."*

99. The third section of the 2018 replying document contained "clarifications" to the "feedback" of the Respondent's expert witness in his 2018 report regarding alleged technical advancements sought to be achieved as part of the project.

100. In relation to the work done on deciding which cloud platform to use, the Appellant stated that this was necessary because cloud was, in 2012/2013, "in its infancy", at least in so far as IaaS was concerned. The Appellant emphasised that to deliver its service, it needed a cloud infrastructure that was reliable, powerful and one over which it could exercise control so that it could "*make changes, scale up etc without delay or latency*". The Appellant reiterated that it had worked to remedy "security issues" with virtual machines installed on Azure. This had been done by changing "*the default port numbers ourselves and we did that in order to mitigate the risk, but it wasn't until later that Microsoft changed how VMs were provisioned to avoid this potential issue.*" The Appellant also reiterated its claim that there was, at the time in question, uncertainty about how one could move environments into the cloud, especially with regard to virtual machines. The Appellant stated that "*our research highlighted the process to allow this to happen.*"

101. In relation to the work done by the Appellant's project team on the multi-tenanting of "*service solution toolsets",* the Appellant stated in the 2018 replying document that the "main technical challenge" associated with moving to a single instance of Dynamics CRM for multiple clients was "*maintaining that data was restricted to the related customer and* [Appellant] *staff.*" The Appellant said that over time it "*built out the security model to close gaps*". It is clear that this security model involved the creation of code by the software developers on the Appellant's team. The Appellant said that:-

"*The code created around the security model performed a number of key tasks. These key tasks were all critical in making the system multi tenanted, not a dedicated one to one relationship.*"

102. The key tasks included that the CRM be updated to handle the various different SLAs that would be applicable in respect of each user of the service desk. This required that the "*SLA engine"* used in the aggregated service desk be "*updated to take into account what Account (Customer) a case belongs to."*

103. In relation to the work done on SharePoint so as to produce a multi-tenanted project support system, the Appellant took issue in its 2018 replying document with the view of the Respondent's expert, which it characterised as dismissing its work "*based on the use of existing API's."* The Appellant then set out in bullet point form a list of items of work done to "*leverage different mechanisms to authenticate people and organisations*." This included the creation of a "customs claims provider" using custom code. The Appellant then stated:-

> "*The technological advancement here was the implementation of a solution that allowed customers to access our project support service system using their own accounts. The system in question was built using SharePoint 2013 at its core but with a number of custom components which made it possible for customers to access it."*

104. Last in this section of the 2018 replying document outlining technological advancements sought to be achieved, was the Appellant's account of those relating to the development of its RMM. This was described at page 18 therein as being:-

> *"a key element of our IT service which is critical to the overall success and this is another of the building blocks that was required on the path to achieving our "aggregated service desk*."

105. The Appellant then stated:-

> *"We leveraged SCOM from Microsoft alongside other tools to build a solution to allow us to monitor different environments, in a variety of ways, all done remotely. We see this as the technological advancement*."

106. On 6 December 2019, the Appellant produced a "Supplementary Response" to the Respondent ("the 2019 replying document"), which further outlined the reasons for its belief that the work carried out on the project constituted R&D. The Appellant described part of this document as a "position paper".

107. At the outset of the 2019 replying document, the Appellant observed that the Respondent's expert witness accepted that the work carried out on the project was "experimental development". In the view of the authors of the position paper, the core finding of the report of the Respondent's expert witness was not that R&D had not taken

place, but that there was "not sufficient" evidence to support the claims for the years in question.

108. On page 5 of the 2019 replying document the Appellant set out the 'overarching technical advancement' of the creation of a service desk offering aggregated IT, customer support and project management services remotely by means of leveraging cloud technology and existing toolsets and applications. On page 6, under the heading "*Technological Advancement Position",* the Appellant stated that to achieve its objectives, the project team adopted an 'Agile' approach, involving 'scrums' and 'sprints', which was systematic in nature. On page 7, the Appellant included a diagram setting out the components of the service desk, which, when brought together, constituted a "technological advancement". Moreover, it stated:-

> "*With respect to the opinion as to whether there was technological advancement in the work undertaken, our position is that there was no solution available at the time which provided an environment for multi-tenanted accessibility and authentication in respect of the service provisioning that was needed. The work of the team pre-dated the existence of any cloud platforms, with no IaaS solutions and only peer-to-peer solutions being available at the time*."

109. The Appellant then stated:-

> *"[…] we note that the Revenue Guidelines for R&D Tax Credits (Feb 2011 – Section 8.4.2) includes the following point in respect of potential R&D efforts:*
>
> > *'Where a research and development activity is shown to be systematic, investigative or experimental and is undertaken to resolve a clearly defined scientific or technological uncertainty, the requirements of attempting to achieve scientific or technological uncertainty will generally be met.*
>
> *This is a fundamental point in the positioning of our R&D claim, as a lot of the efforts were experimental and investigative – necessarily so to progress the holistic integrated solution."*

110. In section 2 of the 2019 replying document, the Appellant contended that, in seeking to design an "architecture" in the form of an aggregated service desk, capable of delivering services to multiple customers through the cloud, the Appellant faced numerous uncertainties. They cited the "release roadmap" of Azure as highlighting the technological uncertainty involved in the project. This roadmap was released in preview form only in 2008; commercially released in February 2010 in beta form; numerous further releases and updates needed before it became a "stable platform" in 2014. In particular, the

authors of the position paper cited a significant security flaw with Azure relating to the use of "*hard-code standard firewall port configurations and rules on virtual machines which left the platform open to targets DOS attacks*". They also cited the 2011 iteration of "Gartner's Hype Cycle", a graphical presentation, developed by the American research and IT firm Gartner, to represent the maturity, adoption, and social application of specific technologies. This showed cloud technology at the point of the "hype cycle curve" described as "*Peak of inflated expectations".*

111. In the section of the 2019 replying document entitled "Examples of Underpinning Advancements" the authors sought to "*bring together both the technological uncertainties and the resulting technological advancements*". They stated that the Appellant, in order to create its aggregated service desk, selected an "existing workflow enablement platform". This, it seems, was a combination of Microsoft Dynamics CRM and Microsoft SharePoint. They then stated, in relation to technological uncertainties, that:-

"[…] *there were two major technological gaps with the chosen platforms:*

(1) Microsoft Dynamics CRM represented a number of technical issues that can be summarised as follows:

a. Dynamics CRM could only be deployed in a manner that allowed each instance to be associated with a single tenant. This prohibited functional localisation – Dynamics CRM could not support organisations having different workflows or SLAs in the same instance.

b. No ability to segregate data – Dynamics CRM could not support the segregation of customers' data across multiple instances, while still allowing [redacted] *to maintain an aggregated view of the master data to allow for the management and operation of a service desk.*

c. The need to maintain security standard and privacy policies mean Dynamics CRM could not be used as it only maintained a single master dataset.

d. Using a single instance of Dynamics CRM would not be scalable across multiple organisations as workload requirements had the potential to be prohibitively complex to host and manage within a single system.

(2) Even if Dynamics CRM platform could be advanced to support an "Aggregated Service Desk" Microsoft SharePoint could not be connected to Office365 in Microsoft Azure. Without SharePoint being connected to Office 365 customers could not connect to their accounts in a manner deemed acceptable to support a

managed service desk. All of these issues resulted in a significant amount of technological uncertainty that an 'Aggregated Service Desk' solution could be provided that would allow the operation of the [redacted] *managed service desk*."

112. At page 15 of the position paper, its authors set out two technological advances as they saw it. The first was the creation of an "*aggregated service desk bespoke solution, which enabled customers to access multi-tenanted support environments securely and concurrently"*. This was, in their opinion, "*the most significant output of the efforts of the team and represent*[ed] *the development of a support services product which did not exist in the marketplace previously."*

113. In relation to the same technological advance set out in the position paper, it was stated that:-

"In order to facilitate the technological advancement of the Dynamics CRM platform, custom code was written to support the following:

- *A new security model to add extra entities to support multiple SLAs for each customer account;*
- *Update to ensure the SLA engine was updated to take into account to which customer account a case belonged;*
- *Update workflows to send emails to appropriate customers;*
- *Prevent cases being assigned to the wrong accounts;*
- *Update the Portal to connect a single organisation;*
- *Update the retrieving of cases to take the customer entity into account;*
- *Update the Portal to take the customers entities into account;*
- *Update to the security roles to allow a single organisation to have multiple customer entities;*
- *Extend entities to support multi-tenanted service desk view for operators;*
- *Ensure cases were only available to* [redacted] *operational staff and the customer with which they were associated;*
- *Ensure that each case management queue was associated with a specific customer.*"

114. The second technological advance cited by the authors of the position papers as having been sought to be achieved was the "*generation*" of a "*customs claims service using the multi-tenanted platform*". This, it was stated, involved:-

> "[…] *the development of the SharePoint Customs Claims Provider, Custom WCF Service and Custom Synchronization Timer job components as there were no existing solutions that would provide these combined capabilities at that time. Overcoming technical challenges in the areas of authentication, user searching, name resolution and synchronization, the solution was designed to allow our customers to log on to the system without the need to have an active directory account and the authentication features of the multi-tenanted environment were sufficient to address all of the issues with respect to security and transparency*."

115. Appended to the 2019 replying document at Appendix C was an "*Independent evaluation of case"* composed by Professor Antonio Martini, Associate Professor at the University of Oslo ("the second expert called by the Appellant"), whose research has covered the fields of software engineering and management. In this, Professor Martini stated that he had *"reviewed the documents shared during the previous assessment process*". Under the heading "*Considerations",* he stated that:-

> "*An advance in science or technology means an advance in the overall knowledge or capability in the field of science or technology (not an advance in the company's own state of knowledge or capability alone*)."

116. The Appellant's second expert witness then noted the overarching goal of the Appellant to create a cloud-based aggregated service desk offering services to SMBs. He then said that the creation of such a service desk would have constituted a technological advancement as it:-

> "*would substantially improve the services provided to SMBs. Such enterprises would become able to exploit competences from consultants shared with other customers, remotely and on a consumption basis at an affordable cost. Such services provided to small and medium businesses (SMBs). Such enterprises would become able to exploit competences from consultants shared with other customers, remotely and on a consumption basis at an affordable cost. Such services could not have been delivered without using emerging technology such as multi-tenant cloud platform and a revised organizational structure to be compatible with such solution. This means that the company would make such services affordable and available to a part of the society, namely SMBs, increasing their capacity or state of knowledge (and not only the company's own). This can thus be considered a technological advancement.*"

117. The second expert called by the Appellant expressed the view that the work carried out by the Appellant on the project amounted to "experimental development' as defined in the OECD's Frascati Manual (i.e. systematic work drawing on existing knowledge which is directed towards producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed). The second expert called by the Appellant then stated:-

"*In addition, the guidelines state: 'In commercial settings, however, a reasonable cost target is always an objective, and attempting to achieve a particular cost target can require the resolution of a scientific or technological uncertainty', which is the case here for being able to provide the service to SMBs*."

118. On the question of whether the work of the project involved the resolution of scientific uncertainty, Professor Martini referred in similar terms to the Appellant's first expert witness to the Gartner Hype cycle pertaining to the year 2012 and to the 'immaturity' of cloud technology. He also stated:-

"*The uncertainty was related to the usage of technologies such as multi-tenant cloud platform combined with a special organisational structure (employing PODs) that would remotely provide competences to customers. Previously competences would be provided by in-loco experts, while the services provided by the firm utilised the customers' environment. The new solution would provide such consultancy remotely and by not using the customers' environment: such a different approach seems to be subject to a technical and organisational uncertainty, as [the Appellant] could not know if such a combined solution could have worked in practice.*

[…]

The combination of the two independent technologies (technical and organisational) should also be considered as adding a degree of complexity and uncertainty because of the unknown interactions between such technologies. Consequently, the development cannot be considered solely as a software project. In addition, the usage of multi-tenant cloud technology would go beyond what is considered using the standard functions and features of existing tools" not considered R&D activities in the tax guidelines.

By performing a systematic search of available publications during the years (2010 – 2014), the results (some of which are reported here: [1-4]) show that research was being conducted on the topic related to cloud computing in those years, especially

related to multi-tenanted cloud. The papers highlight a number of challenges, especially related to privacy and security still to be solved.

[…]

The fact that researchers were still conducting scientific research, during those years, on the technologies necessary for the company to deliver the service, confirms that the company would very probably not have had access to ready and well-known solutions, which led to technological uncertainty."

119. Professor Martini concluded his analysis by giving his view that the Appellant, in carrying out the project, was conducting experimental development:-

"[…] *directed toward providing substantially improved and affordable services (ASP) to part of the society (SMBs) by developing emerging technologies, thus seeking a technological advancement. Such activities were subject to technological uncertainty due to the combination of PODs organisation and multi-tenancy cloud: the latter was clearly still immature at the time and it was still the subject of academic research."*

120. The Respondent's expert provided a response to the 2019 replying document and appendices on 3 July 2023 ("the 2023 report"). The Respondent's expert witness began by giving a description of some computing and, in particular, cloud computing concepts. He observed that the traditional means of businesses accessing computing services was by having "in house" servers. In the last 20 years however the trend has been for the centralisation of computer services in large data centres, with such services being accessible to many users, including by means of "public cloud" offerings such as Amazon's AWS, Azure and Google. The Respondent's expert then addressed the provision of a software service by means of the cloud. A critical consideration in providing such a service is ensuring the privacy and separation of each customer's data. Achieving this can be done in two ways. Firstly:-

"*One obvious way to do this is to give each of the service provider's clients their own user accounts on the cloud service itself and provide each with their own individual copy (called an 'instance') of the program providing the accounting service. This would take advantage of the very strong safeguards built into cloud systems to protect cloud users from one another. This approach ("multi-instance architecture") is often used, but billing, maintenance and updating can become somewhat problematic. For example, each of the company's clients – and possibly each member of a client's workforce – would probably also have to become clients of the cloud provider as well.*

Another potential difficulty is that sharing information between employees of the same client could become difficult due to the string cloud user safeguards."

121. Another way of achieving the provision of a software service in the cloud to multiple customers is, however, 'multi-tenancy':-

"*Another way of providing the software service is to give all the service provider's clients access to a single instance of the software, running under the service provider's user account on the cloud service. In this scenario, the service provider's clients become 'tenants' within the service provider's user account on the cloud service. Having multiple tenants in one user account is called a multi-tenanted system, and since the computer system is provided by a cloud service, the whole thing is a multi-tenanted cloud service, which is important in this claim.*

A multi-tenanted cloud service has the potential to simplify accounting and service management, and multi-tenancy is considered by many practitioners to be a very important facet of commercial cloud computing. Tenants have software service accounts ('tenant accounts') for tailoring the service to their requirements, for management of their own users, for billing and for administration, among other facilities. Very importantly, since tenants are accessing software running on the same user account on the cloud (the service provider's user account), tenants' data must be protected from access by other tenants. Typically, that protection is based on rights and privileges associated with tenant accounts.

Part of [the Appellant's] claim is that it developed special software to enable tenant accounts to be based, through SharePoint, on various different user identification and authentication systems."

122. At page 5 of the Respondent's expert's 2019 report, he stated in relation to the Appellant's claims:-

" *- No R&D plan was provided,*

- No literature survey was provided,

- Contemporaneous documentation was very limited,

- Some of the activities highlighted as part of the R&D claim (e.g. changing port numbers to evade hackers) was very basic."

123. The Respondent's expert also stated that in its submissions, the Appellant often conflated the development of new software with technological advancement. In this regard, he cited

page 46 of the Frascati Manual, which stated: "*Use of software for a new application or purpose does not by itself constitute an advance".* What was required, he said, was that completion of the software development work must be "*dependent on the development of a scientific and/or technical advance."* This meant, "*an advance in the overall knowledge or capability in the field of science or technology (not a company's own state of knowledge or capability alone)."* Citing the Respondent's own Guidelines on R&D tax credits, he stated:-

> "*advances are typically made through innovation in software architectures, designs, algorithms, techniques or constructs*".

124. The Respondent's expert did not think that this was what the Appellant's project team was working toward.

125. The Respondent's expert then addressed the Appellant's 2018 replying document and its 2019 replying document. At page 8, he sought to clarify that he had not suggested that the "state of technology" at the time of the project was a matter of irrelevance for the purpose of establishing whether R&D was occurring. He expressed the view that the Gartner Hype Cycle was "widely criticised as being methodologically flawed" but noted nonetheless that cloud computing first appeared on it in 2008. Moreover, he said that the concept of cloud computing was "long established" by the years in question. Commercially, Amazon started offering cloud services in 2002 and general could-based computing services in 2006. Microsoft, for its part, made a preview version of Microsoft Azure available in 2008 and it became commercially available in 2010. He observed at page 9 of the 2023 report of the Respondent's expert that:-

> "*A presentation of two case studies using Windows Azure to build multi-tenancy cloud applications was given at the Microsoft PDC (Professional Developer Conference) in 2009*."

126. The Respondent's expert expressed the view that:-

> "*It is reasonable to expect that, as competent professionals working in the field, the staff on these projects would have been aware of cloud computing and multi-tenancy – and of Microsoft's offerings in particular – as far back as 2008/9. Therefore, the knowledge, expertise and tools they needed would fall within the scope of the phrase 'reasonably available scientific or technological knowledge or experience including information which is reasonably available to a company from both internal and external sources*'".

127. In relation to the movement of virtual machines, the Respondent's expert suggested that the difficulty in this regard centred on "*getting a reliable and fast enough connection*". Solving this did not require technological advancement. The SID issue, he said, was a "*configuration problem".* He said "*In my opinion, the resolution of these issues falls squarely within the scope of 'solving technical problems or trouble shooting suing generally available scientific or technological knowledge or experience' and thus does not represent scientific or technological advancement."*

128. In relation to the development of a multi-tenanted instance of Microsoft SCOM, the Respondent's expert re-iterated that the concept of multi-tenancy was well-known. All that the Appellant had done in its replying documents was suggest that its development represented a technical challenge. The Respondent's expert emphasised that the development of software was not "by itself" R&D according to the Frascati Manual. This was so even if there was uncertainty as to how to develop the software. The Respondent's expert made the same observations, moreover in relation both to the Appellant's work on "*multi-tenant service solution toolsets*" and expanding its customers' access to SharePoint.

129. With particular regard to the letter of the first expert called by the Appellant, appended to the Appellant's 2018 replying document, the Respondent's expert witness observed that the first expert called by the Appellant had not referenced any documentary material created by the Appellant in the course of its work to support his conclusion regarding its status as R&D. In particular, no documentation supporting his view that the Appellant had sought to achieve a technological advancement had been identified.

130. The Respondent's expert witness then addressed each of the "clarifications" provided by the Appellant in its 2018 replying document. In relation to the consideration and rectification of security issues concerning virtual machines in the course of exploring cloud host solutions, he said:-

> "*The assignment of services to specific port numbers […] dates back to the 1970s. The problem of probing ports for hacking purposes (e.g. port scanning) dates back at least to the 1990s. Widely used tools, both for probing ports and for dealing with hacking, have existed for a long time.*
>
> *[…]*
>
> *In my opinion, a competent professional working in the field in 2012/2013 – whether working at [the Appellant] or Microsoft – would be expected to be aware of these problems and their solutions*.

131. In relation to the 2019 position paper, and the use of Agile, the Respondent's expert was of the view that the "language and terminology used by the Appellant to describe what occurred during this process :-

> "[Was] *that of developing and building software. There is no mention of resolving technical uncertainties or making technological advancements; this is a description of software development using the well-known 'agile' software development management practices. Figure 3 on the next page is also noteworthy. It states: 'The aggregated service desk on a multi-tenanted platform was the technological advancement we set out to achieve'. In other words, the company claims that, by building a specific piece of business software on a multi-tenanted platform, a technological advancement would be achieved. This is at variance with the Frascati Manual […]*"

132. The Respondent's expert noted that the Appellant was an "*early user of Microsoft's then new Azure technology and tool set."* He then opined:-

> "[The Appellant's] *developers would certainly have had to learn how to use Azure and how to use its tools. In the software development sector, learning new platforms, new techniques, new languages and new systems is routine – to remain a 'competent professional working in the area', professional software developers would have to continually update their skills and expertise.*
>
> *Contrary to [the Appellant's]" assertions, using new technologies is not R&D. Technological advancements are not made simply because new technologies, made available by external providers and vendors, are adopted."*

133. Lastly, the Respondent's expert addressed the evaluation of the case carried out by the second expert called by the Appellant. In this respect, he stated at page 21 of his 2023 report:-

> "[The second expert called by the Appellant] *makes the novel argument ('Considerations', first point) that selling their services to companies such as SMBs increases their (i.e. the companies') capability or state of knowledge, and that this can thus be considered a technological advancement. (It is not clear to whom Professor Martini believes the technological advancement would accrue.) Revenue Guidelines state: 'An advance in science or technology means an advance in the overall knowledge or capability in the field of science or technology (not a company's own state of knowledge or capability alone). The test relates to knowledge or capability reasonably available to the company or to a competent professional working in the*

field'. The use of a product does not mean that the user thereby increases their capability or state of knowledge in the field of science or technology used in its production. Nor does use of a product imply that technological advancements were made in the course of a product's development."

134. The Respondent's expert did not share the view of Professor Martini that it was the supposedly novel business organisation or structure of 'PODs' in combination with the software at issue that constituted a technological advance. The Respondent's expert stated that "*issues relating to business management are among the categories of activity that are not research and development activities according to Revenue Guidelines."*

135. The Respondent's expert did not agree with Professor Martini's view that the Appellant's usage of multi-tenanted cloud technology went beyond '*using known methodologies in standard development environments*'.

136. In respect of the Respondent's expert's observation that mic research was ongoing generally at the time of the project '*on the technologies necessary for the* [Appellant] *to deliver the service'* and that, therefore, '[the Appellant] *would very probably not have had access to ready and well-known solutions, which led to technological uncertainty'* the Respondent's expert stated:-

"Three important points can be made in this connection:

- There was nothing particularly special about the time in which [the Appellant] was working – research [remains] ongoing in this area.

- Potentially relevant research was being undertaken before, during and after the [Appellant's] project began.

- No reference whatever is made to any of this research in [the Appellant's] claim. This suggests that [the Appellant] was engaged, not in R&D, but rather in software development."

137. The Respondent's expert concluded the 2023 report by re-stating his view that the work on the project did not constitute R&D within the meaning of section 766 of the TCA 1997.

Legislation & Guidelines

138. Section 766(2) of the TCA 1997 makes provision for a tax credit for expenditure on certain research and development activities. This section, as it was at the time relevant to this appeal, provides:-

"*Where for any accounting period a company makes a claim in that behalf to the appropriate inspector, the corporation tax of the company for that accounting period shall be reduced by an amount equal to 25 per cent of qualifying expenditure attributable to the company as is referable to the accounting period."*

139. Under 766(1)(a) of the TCA 1997 "*expenditure on research and development"* is defined as follows:-

"*'expenditure on research and development', in relation to a company, means expenditure, other than expenditure on a building or structure, incurred by the company wholly and exclusively in the carrying on by it of research and development activities* […]*"*

140. Section 766(1)(a) of the TCA 1997 also gives the definition of *"research and development activities",* which is in the following terms:-

"*'research and development activities' means systematic, investigative or experimental activities in a field of science or technology, being one or more of the following –*

(i) basic research, namely, experimental or theoretical work undertaken primarily to acquire new scientific or technical knowledge without a specific practical application in view,

(ii) applied research, namely, work undertaken in order to gain scientific or technical knowledge and directed towards a specific practical application, or

(iii) experimental development, namely, work undertaken which draws on scientific or technical knowledge or practical experience for the purpose of achieving technological advancement and which is directed at producing new, or improving existing, materials, products, devices, processes, systems or services including incremental improvements thereto:

but activities will not be research and development activities unless they –

(I) seek to achieve scientific or technological advancement, and

(II) involve the resolution of scientific or technological uncertainty;"

141. The Frascati Manual is a document published by the OECD, which represents an international standard in relation to R&D activities. It was first published in 1963. The content of two editions of the Frascati Manual were cited and relied on in this appeal, 2002 (6th edition) and 2015 (7th edition).

142. The 2002 edition of the Frascati Manual defines R&D as comprising:-

> "*creative work undertaken on a systematic basis in order to increase the stock of knowledge, including the knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications."*

143. In his letter of 10 December 2018, the first expert called by the Appellant cited the "*Five criteria for identifying R&D"* set out in the 2015 edition of the Frascati Manual. These are:-

> *"1. To be aimed at new findings (novel)*
>
> *2. To be based on original, not obvious, concepts and hypotheses (creative)*
>
> *3. To be uncertain about the final outcome (uncertain)*
>
> *4. To be planned and budgeted (systematic)*
>
> *5. To lead to results that could be possibly reproduced (transferable and/or reproducible)."*

144. In relation to novelty, the 2015 edition of the Frascati Manual states at paragraph 2.15 and 2.16:-

> "*In the Business enterprise sector (Frascati Manual sectors are defined in Chapter 3), the potential novelty of R&D projects has to be assessed by comparison with the existing stock of knowledge in the industry. The R&D activity within the project must result in findings that are new to the business and not already in use in the industry. Excluded from R&D are activities undertaken to copy, imitate or reverse engineer as a means of gaining knowledge, as this knowledge is not novel.*
>
> *Novelty could result from a project to reproduce an existing result that finds potential discrepancies. An experimental development project aimed at creating knowledge in support of the development of new concepts and ideas related to the design of new products or processes should be included in R&D.*
>
> *As R&D is the formal creation of knowledge, including knowledge embodied in products and processes, the measurement focus is on the new knowledge, not on the new or significantly improved products or processes resulting from the application of the knowledge."*

145. At the hearing of the appeal, the parties cited parts of the 2002 edition of the Frascati Manual concerning software development. At paragraph 2.2.2 in the Chapter "*Basic Definitions and Conventions",* it states:-

"*Software-related activities of a routine nature are not considered to be R&D. Such activities include work on system-specific or programme-specific advances which were publicly available prior to the commencement of the work. Technical problems that have been overcome in previous projects on the same operating systems and computer architecture are also excluded. Routine computer maintenance is not included in R&D (see Section 2.4.1 for a more detailed discussion of borderline problems between software development and R&D).*"

146. Paragraph 2.4 of the 2002 edition of the Frascati Manual deals with the identification of R&D in particular fields. Paragraph 2.4.1 is headed "*Identifying R&D in software development*". This states in full:-

"*135. For a software development project to be classified as R&D, its completion must be dependent on a scientific and/or technological advance, and the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty.*

"136. In addition to the software that is part of an overall R&D project, the R&D associated with software as an end product should also be classified as R&D.

"137. The nature of software development is such as to make identifying its R&D component, if any, difficult. Software development is an integral part of many projects which in themselves have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. Such advances are generally incremental rather than revolutionary. Therefore, an upgrade, addition or change to an existing programme or system may be classified as R&D if it embodies scientific and/or technological advances that result in an increase in the stock of knowledge. Use of software for a new application or purpose, however, does not by itself constitute an advance.

138. A scientific and/or technological advance in software may be achieved even if a project is not completed, because a failure can increase knowledge of the technology of computer software by showing, for example, that a particular approach will not succeed.

139. Advances in other fields resulting from a software project do not determine whether an advance in computer software has occurred.

140. The following examples illustrate the concept of R&D in software. Should be included in R&D

– *R&D producing new theorems and algorithms in the field of theoretical computer science.*

– *Development of information technology at the level of operating systems, programming languages, data management, communications software and software development tools.*

– *Development of Internet technology.*

– *Research into methods of designing, developing, deploying or maintaining software.*

– *Software development that produces advances in generic approaches for capturing, transmitting, storing, retrieving, manipulating or displaying information.*

– *Experimental development aimed at filling technology knowledge gaps as necessary to develop a software programme or system.*

– *R&D on software tools or technologies in specialised areas of computing (image processing, geographic data presentation, character recognition, artificial intelligence and other areas).*

141. Software-related activities of a routine nature which do not involve scientific and/or technological advances or resolution of technological uncertainties are not to be included in R&D. Examples are:

– *Business application software and information system development using known methods and existing software tools.*

– *Support for existing systems.*

– *Converting and/or translating computer languages.*

– *Adding user functionality to application programmes.*

– *Debugging of systems.*

– *Adaptation of existing software.*

– *Preparation of user documentation.*

142. In the systems software area, individual projects may not be considered as R&D but their aggregation into a larger project may qualify for inclusion. For example, changes in file structure and user interfaces in a fourth-generation language processor may be made necessary by the introduction of relational technology. The individual

changes may not be considered R&D if viewed in their own right, but the entire modification project may result in the resolution of scientific and/or technological uncertainty and thus be classified as R&D."

147. The Respondent's Research & Development Tax Credit Guidelines" (in their 2011 edition) stated:-

"*8.4 Scientific or Technological Advancement*

An advance in science or technology means an advance in the overall knowledge or capability in the field of science or technology (not a company's own state of knowledge or capability alone). The test relates to knowledge or capability reasonably available to the company or to a competent professional working in the field. Where knowledge of an advance in science or technology is not reasonably available, for example, where it has not been published, is not in the public domain or it is a trade secret of a competitor, companies would not be disqualified from claiming the credit where they undertake activities seeking to independently achieve the same scientific or technological advancement. A scientific or technological uncertainty may exist for one company although a competitor has resolved that uncertainty but retained the resulting knowledge as a trade secret or proprietary information. A number of companies may be working to resolve the same scientific or technological uncertainty at the same time. Reasonably available scientific or technological knowledge or experience includes information, which is reasonably available to a company from both internal and external sources. Thus if the solution to a scientific or technological uncertainty is reasonably available to a competent professional working in the field, lack of knowledge by a company due to lack of diligence in seeking that solution or lack of appropriate expertise within the company does not constitute scientific or technological uncertainty.

8.4.1. The Act requires that the activity must seek to achieve as opposed to succeed in achieving scientific or technological advancement. Even if the advance in science or technology sought by a project is not achieved or not fully realised, R&D still takes place. For example, a particular research and development activity may cease or radically change if the advance originally sought becomes available from a scientific journal or newly published patent. This does not undermine the validity of the activity from the perspective of this test. Equally determining that a hypothesis is incorrect may advance scientific knowledge. Similarly, in experimental development, discovering that a certain technological alternative does not work can advance the technological knowledge base. Such a result would not of itself preclude a claim being made for the R & D credit.

8.4.2 Where a research and development activity is shown to be systematic, investigative or experimental and is undertaken to resolve a clearly defined scientific or technological uncertainty, the requirements of attempting to achieve scientific or technological advancement will generally be met. Work carried out in incremental stages, the aim of which is the achievement of scientific or technological advancement and involves resolution of scientific or technological uncertainty will qualify as R & D.

8.4.3 New materials/products/systems. Systematic, experimental or investigative activities directed at producing new or improved materials, products, devices, process systems or services can qualify for the tax credit provided the activities seek to achieve the goals set out at 6 above. However a process, material, device, product, service or source of knowledge does not become an advance in science or technology simply because science or technology is used in its creation. Work which uses science or technology but which does not advance scientific or technological capability as a whole is not an advance in science or technology. Normal technology transfer, or making improvements to materials, products, devices, processes, systems or services through the purchase of rights or licence, or through the adaptation of known principles or knowledge, would not represent scientific or technological advancement. Neither would solving technical problems or trouble shooting using generally available scientific or technological knowledge or experience meet this test. In addition work in the development of a new or improved product will not of itself constitute research and development activities. The work may, for example, entail the resolution of extensive design issues but may not involve a scientific advancement

EXAMPLE

1. A project which seeks to, for example:

(a) extend overall knowledge or capability in a field of science or technology; or

(b) create a process, material, device, product or service which incorporates or represents an increase in overall knowledge or capability in a field of science or technology; or

(c) make an appreciable improvement to an existing process, material, device, product or service through an advance in science or technology; or (d) duplicate the effect of an existing process, material, device, product or service in a new or appreciably improved way through an advance in science or technology (e.g. a product that has exactly the

same performance characteristics as existing models, but is built in a fundamentally different manner), will therefore be R&D.[2]

8.4.4. ***Scientific or technological uncertainty*** *arises in two situations viz.*

a) uncertainty as to whether a particular goal can be achieved or

b) uncertainty (from a scientific or technological perspective) in relation to alternative methods that will meet desired cost or other specifications such as reliability or reproducibility.

If, on the basis of reasonably available scientific or technological knowledge or experience such technological or scientific uncertainty exists, research and development activity would aim to remove that uncertainty through systematic, investigative or experimental activity.

Uncertainty as to whether new materials, products, devices, processes, systems or services will be commercially viable is not scientific or technological uncertainty. In commercial settings, however, a reasonable cost target is always an objective. As mentioned above, attempting to achieve a particular cost target can require the resolution of a scientific or technological uncertainty. Cost targets may require that scientifically or technologically uncertain alternatives, approaches or configurations etc. have to be attempted, although more costly alternatives exist. A scientific advance always resolves uncertainty.

8.4.5 ***Software*** *The OECD Frascati Manual states "for software development to be classified as R&D, its completion must be dependent on the development of a scientific and/or technical advance, and the aim of the project must be resolution of a scientific and/or technical uncertainty on a systematic basis.*

Listing software functions and features at an "end-user" level can rarely describe advancement in technology. Advances are typically made through innovation in software architectures, designs, algorithms, techniques or constructs.

To develop software at the leading edge of today's technologies generally requires the developer to come up with new constructs, such as new architectures, algorithms or database management techniques (i.e., make Technological Advancements), and there are then specific uncertainties as to the viability of these (i.e., Technological Uncertainty). If the software's competitive edge stems from advance in an area other

[2] It should be noted that the subsequent 2015 Guidelines are largely the same in their description of technological advancement, but do not include the "Example" set out in the 2011 Guidelines.

than technology, such as business management, or improvements in financial management techniques, the project is unlikely to be eligible. Almost any software developed for sale is developed systematically and the uncertainties are systematically resolved (i.e., Technical Content)."

148. The Respondent's 2025 Research and Development Tax and Duty Manual states, under the sub-heading "*Qualifying activity pertaining to software*" that "*Agile development methodologies such as Scrum and similar techniques, while not exhibiting the linear nature of a traditional software life cycle, are systematic in nature.*"

Evidence

Evidence of Appellant

Appellant Witness 1

149. The first witness called in the hearing of the appeal was [redacted] ("Appellant Witness 1"), founder and CEO of [redacted].

150. In 1997, Appellant Witness 1 founded [redacted] Group, a group of companies of which the Appellant is a part. The business of [redacted] is to provide IT services under a 'white label' model to the customers of well-known IT companies such as [redacted], [redacted], [redacted], [redacted] and [redacted]. Appellant Witness 1 said that the projects on which it worked on behalf of these companies were "large scale" and involved major customers such as the [redacted], [redacted] and the [redacted].

151. Appellant Witness 1 said that, around 2008, he conceived of the idea that the IT services provided to these large companies on premise, and at great cost, might be provided to small to medium businesses ("SMB's") at an 'enterprise level', much more economically. The concept was that this would be done remotely using an "aggregated service desk", accessible through a web portal, that had the capacity to be "multi-tenanted" (i.e. a single instance of the software constituting the service desk was to be capable of being used by different groups of users). He referred to the main services that it was envisaged would be provided as being IT support, project management support and remote monitoring and management ("RMM"). In addition, it was envisaged that the service desk would provide a development support service, pursuant to which advice would be given to customers about transferring their computer infrastructure from on premise to the cloud, an accounting reporting service and a project support service.

152. He said, however, that in 2008 the concept could not be made reality because "*the infrastructure and capability really wasn't there*". Moving from the provision of such

services ‘one-to-one’ and in person to ‘one-to-many’ in remote fashion gave rise to a “*pile of technical challenges and problems”.*

153. Appellant Witness 1 said, however, that upon taking part in a course for entrepreneurs run by Enterprise Ireland and visiting Stanford University in 2010, he came to the view that the concept was one that was viable and worth pursuing. Thus began what he said was called “*Project Nimbus*”.

154. The project to develop the aggregated service desk hosted in the cloud was initially carried out by a company in the [redacted] Group other than the Appellant. However, in 2011 the Appellant was brought into being as a company dedicated to this undertaking. The [redacted] staff working on the project were transferred to the Appellant to work for it. It would appear from the evidence proffered at hearing that the Appellant took over the running of the project at some stage near the mid-point of 2012.

155. Appellant Witness 1 said that the aggregated service desk was to be “*multi-tenanted”* and was to be accessible by customers anywhere in the world. It was also to be designed so that the staff of [redacted] could “*operate and run*” the services from anywhere in the world. This was to be achieved by the creation of “Pods” of support staff, grouped together according to location and language.

156. Appellant Witness 1 said that a key initial task was to find a cloud platform offering “Infrastructure as a Service” (“IaaS”) on which the Appellant could “[build] *services on top of the infrastructure”.* He said, moreover, that those working on the project were instructed that where it was possible to acquire software that would form the basis of the services, they were to do so rather than build bespoke software themselves. The team were, in other words, to avoid trying to “*re-invent the wheel*”.

157. Appellant Witness 1 gave evidence that in the early stages of the project in 2011, the IaaS cloud service that the Appellant used was that provided by a company called “[redacted]”. It proved, however, to be an unsatisfactory foundation and, in 2012 the Appellant moved to using a Beta version of what was then called Windows Azure and later became known as Microsoft Azure.

158. Appellant Witness 1 gave evidence as to how the project was structured. He said that the board of the Appellant had the final say on whether the project was to be continued and a board sub-committee was established to maintain oversight. Beneath the board committee, and the ‘interface’ between it and those working on the project, was Appellant Witness 2, who was tasked with creating the “programme charter” referred to in the Background section of this Determination. Those working on the project were instructed

that, when working on ideas as to services that might be included as part of the Appellant's aggregated services desk, they were to employ a "*go, park, kill*" strategy. In other words, ideas about services were to be assessed by the team in conjunction with [redacted]. If the idea was viable it was to be given the 'green light'. If it was considered not yet viable but potentially viable at some point in the near future, it was to be 'parked' with the possibility of it being re-visited. Ideas that were considered non-viable were to be killed and forgotten about.

159. Appellant Witness 1 gave evidence that the working methodology used in the project was "Agile", which involved regular "burndowns" and "sprints" to ensure progress. While emphasising that those who were actually part of the project team would be in a better position to explain it, he said:-

> *"So traditionally, you would have project programme management, you would have 'waterfall', a huge big programme designed out from end to end […]. [The Respondent's expert witness] was looking for something, so I am not sure. But you started at 'a' and then you finished at the end of the alphabet and you have a whole programme. Whereas Agile is much more flexible, you have burndowns, you get something working, you try the idea, you test the idea, you know, you're experimenting all the time, and it works or it doesn't work and you may fail, and then you move on to the next thing* […]".

160. Appellant Witness 1 was asked by counsel for the Appellant about the "technical uncertainties" that those working on the project faced in its early stages. In respect of this he said, firstly, that the cloud platform that they had ultimately chosen to be the basis for the aggregated service desk, Microsoft Azure, itself gave rise to problems. It was not, he said, straightforward, to 'build out' services on it. Secondly, he said that a major technical challenge regarding how the multi-tenanted aggregated service desk would work in practice was the maintenance of security. How would the different customers seeking to use it be identified? How would the information of the different customers be kept separate and private? He emphasised that these were problems that had not been answered before in the context of a cloud based IT service delivered remotely. He also said that, as far as he was aware, they were the 'first movers' and nobody else was seeking to do at this stage what they were doing.

161. Appellant Witness 1 said that the team involved on the project initially numbered six people. Further people with expertise were brought in as required from time to time. The team broadly comprised those concerned with "core infrastructure" (i.e. dealing with

servers, laptops etc.), those who could build virtual machines, software developers and those involved in "service management".

162. Asked by counsel for the Appellant about what "technological advancement" the project sought to achieve, Appellant Witness 1 said that it sought to take what was previously a one-to-one relationship and bring it into a "new area."

163. Appellant Witness 1 gave evidence that the Appellant had received an R&D grant from Enterprise Ireland in respect of the work done on the project. He said that this had involved the project being audited by the accountancy firms Deloitte and Ernst & Young.

164. The Appellant was cross-examined by counsel for the Respondent. She began by asking when the name *"Project Nimbus"* was first coined and what work it referred to. In so doing, she observed that it had not appeared in either the 2012 or 2013 R&D credit application documents. Appellant Witness 1 said that it was first coined in 2010 when the concept of an aggregated service desk that was multi-tenanted began to take shape during the "Leadership for Growth" programme in Stanford University. The work done on bringing to reality this idea in 2011, 2012 and 2013 covered this moniker.

165. Counsel for the Respondent asked the Appellant the following questions regarding the 'Agile approach':-

> "*Q: "Am I right in thinking that Agile is normally a method of working in programme development or software development?"*
>
> *A: "Software development and projects and programmes."*
>
> *Q: "But not necessarily a research method."*
>
> *A: "It is a way of working. So when you had the research and you have that set up, then Agile can be…any project you have you can use Agile. It is a methodology. The same as Waterfall, the same as anything else; what you then apply it to is neither here nor there*."

166. Counsel for the Respondent then asked Appellant Witness 1 whether the concept of multi-tenancy was already in existence prior to the periods relevant to the Appellant's claim tax credit in respect of R&D expenditure. Appellant Witness 1 agreed that as a concept it had then been around for a considerable period. He said, however, that the concept in the context of IaaS "*had never been done".* In relation to the novelty of the work being done, he said:-

"[…] *our aggregated service desk was building out core infrastructure and the service desk, and making that multi-tenanted. That's the difference."*

167. Counsel for the Respondent sought to explore this statement further with Appellant Witness 1. She queried whether Appellant Witness 1 agreed that building a "service desk" and providing a range of IT and IT related services through it on a one-to-one basis had been done before. He agreed that it had. She also asked whether the concept of making virtual machines available in the cloud had been realised prior to the commencement of the Appellant's work at issue, perhaps in 2008 or 2009. Appellant Witness 1 was not sure of the answer to this. He did say, however, that the aim of the Appellant's project was to build a multitenancy service of the kind in question *"end to end*" *"in a Microsoft environment."*

168. Appellant Witness 1 agreed with counsel for the Respondent that, in so far as the TCA 1997 was concerned, R&D had to involve the aim of achieving a scientific or technological advancement and the resolution of scientific or technological uncertainty. He said that a combination of factors made the project both one aimed at making such an advancement and resolving such uncertainty. However, the substance of his evidence was that the critical advancement and uncertainty, in his eyes, flowed from the need to make a single instance of a service desk, based in the cloud, offering several different services through Microsoft applications, available to multiple groups of users simultaneously, while maintaining the privacy and security of their data.

169. Counsel for the Respondent asked Appellant Witness 1 about Objective 1 set out in the Appellant's R&D tax credit application document, which stated:-

"*Validate the exact workloads for global organisations where consuming a platform would provide significant cost savings whilst enhancing technical security and reducing risk*".

170. In relation to this, Appellant Witness 1 said that this was back to the idea of building out an aggregated service desk that had not only to be multi-tenanted, but also "global" (i.e. useable by SMBs the world over). He then said:-

"*So the idea was that we try and disrupt and go into that space to disrupt that whole industry, if we could. I mean, [it was] very ambitions, I know, but that's what we were trying to do*".

171. Shortly thereafter in his evidence, Appellant Witness 1 re-emphasised that "*we were trying to build something that wasn't in the market place."*

172. Counsel for the Respondent asked Appellant Witness 1 whether the Appellant went about identifying technological uncertainties that needed addressing at the outset of the project. To this, he replied:-

> "*Did we at the beginning? We identified that we wanted to build an aggregated service desk. I informed the guys not to…if it is available in the marketplace, buy […] the thing, not be wasting time doing R&D stuff; just get the thing built. As we went through it and then when we got grants from Enterprise Ireland, then they said; 'you're doing a lot of R&D, this is great, brand new idea, products etc. etc.' The same from Stanford. Then we started to obviously identify the challenges as we went through it. So the first challenge, when you have that broad opening for the [project team]…is to figure out the platform that this concept will work on that will allow you to expand and globalise, etc. etc. We had to research a while pile of different thing. […] Then you find something that works in its infancy, and you go from there*."

173. Appellant Witness 1 was asked by counsel for the Respondent whether, at the commencement of the work, and prior to the involvement of Enterprise Ireland, he had considered the project to involve R&D. He said that he did and that is what he called the team carrying out the work itself (i.e. the R&D team).

174. Returning to the question of technological or scientific uncertainties, counsel for the Respondent brought Appellant Witness 1 back to Objective 1 in the 2012 credit application document and the five uncertainties related thereto identified in that document. Raising example 4 – *"Facilitate customers to brand their own portal – look and feel"* – she asked whether this could truly be defined as such an uncertainty. In this respect he said that it wasn't a big deal for the Appellant at the end of the day. Asked to address uncertainty 2 – *"How can we facilitate multiple authentication models?"* – Appellant Witness 1 said:-

> "*You're coming into a brand new architecture and you are looking at your aggregated service desk and [you] need to make sure that [you] can bring in, allow people in for a certain length of time, how often they can use the room, to use that analogy once again, and have they the right to use the room […]".*

Appellant Witness 2

175. The next person called to give evidence by the Appellant was Professor [redacted] ("Appellant Witness 2"), a non-executive director of [redacted] since 2006. Appellant Witness 2 is [redacted] Over the

course of the project in question, Appellant Witness 2 sat on the [redacted] board sub-committee that maintained oversight over the project.

176. Appellant Witness 2 gave evidence that the term "Project Nimbus" was the creation of Appellant Witness 1 and came into being around 2008 or 2009. It related to, as noted already, the concept that [redacted] could, drawing on its capabilities as a "white label" provider of outsourced one-to-one IT services, offer the same and additional services directly to SMBs at an economic rate. This could be done by leveraging the cloud and the concept of "multitenancy" using an aggregated service desk accessible by customers remotely.

177. The Appellant said that the Appellant owed its existence, at least in part, to the desire of [redacted] to explore this idea while minimising possible accusations from companies from whom it took outsourced work that it was seeking to compete with them. He said that the advent of the Appellant brought an effective end to the use of the term "Project Nimbus".

178. Appellant Witness 2 said that when Appellant Witness 1 approached the board of [redacted] for finance of the project, it was felt necessary to create a "board of governance" to oversee the project. Appellant Witness 2 sat of this board governance along with two other Directors of the Appellant, [redacted], its finance director [redacted] and [redacted], its Chief Operating Office ("COO"). It met every quarter. The primary person on the project team reporting to it was [redacted], who was the "Programme Director".

179. Appellant Witness 2 said that although he believed in 2011 that the project was an attractive idea from a business perspective, he had doubts that the technology necessary for it to come to fruition was sufficiently mature.

180. Appellant Witness 2 said that: -

> "*I think the expectation was […] we would buy in the necessary components and put them together and deliver on the proposition. And then, as [it] transpired […] that was not the case*."

181. Appellant Witness 2 said that what instead happened was that *"the way forward would be for us to need to build out in a technical sense the capabilities that we would need.*"

182. Appellant Witness 2 said that because of "*a lot of unforeseen challenges",* the project extended for a further two years after the initial expected end date.

183. Appellant Witness 2 was asked about the 'Project Charter'. In this respect he said that the document "*captured the plan for the R&D effort*". He then said that its purpose was:-

> "[…] *really to build some discipline around the programme. What we didn't want was to make money available to a project team and let them then just go off without some sort of structure. So that was the primary reason for, you know, demanding that if the Board was going to agree to fund the R&D project, that there would need to be some sort of governance around that, there would be regular reporting, we meet as a Board four times a year, every quarter, and that before the Board meeting, I and my other two directors, we would meet with* [redacted] *and she would sort of talk us through the progress that had been made in the [preceding] three months*."

184. Appellant Witness 2 said that he could not speak to whether the goal of the project was one that, if achieved, would have resulted in "*technological advancement".* He was not a technologist. He did, however, know that there were technical challenges and his role and the role of the board was to assess, in view of those challenges, the level of funding that should be given to the project.

185. Appellant Witness 2 was asked in cross-examination about the content of slides given as part of a presentation made by [redacted] to the board of governance of the project on 13 January 2012. He accepted that the slide headed "*High Level Plan – 2012"* was at least partly "*business driven".* Items on this included:-

> "*Put new team structure in place", "agree rules of engagement/route to market", "finalise pricing models", "develop strategic partnerships", "minimum four customers by end of year" and "–[the Appellant] web presence and marketing materials in place".* It also included *"road map for further software releases lockdown", "test additional service offerings with customers", "design and implement scalable remote workforce solution".*

186. It was put to Appellant Witness 2 by counsel for the Respondent that the slides in question indicated that any technological challenges that existed in relation to the project were not such as to prevent it from anticipating that it would have the aggregated service desk being used by customers by the year end. Appellant Witness 2 agreed that this was what was expressed as a goal, but that the project goals tended to be overly ambitious. Appellant Witness 2 stated that, as matters turned out, the aggregated service desk was not up and running with customers by the end of 2012.

187. Aspects of the Project Charter were also put to Appellant Witness 2 by counsel for the Respondent. In the section entitled "*Goals and objectives",* it was stated:-

"The key objective of the programme is to build a new business offering virtual support services in conjunction with our customers.

[…]

The R&D team will be targeted with working with customers to obtain their perspective when answering the following fundamental questions as part of a market research:

- What problem are we solving or what possibility are we offering?

- Why should our customers care?

- What makes us unique, different or memorable?

- Can we develop services that are easy to use, perform and have required features?

- What skills, people, or services are we missing that prevent us from presenting a complete offering?]

- What is our business model? How do we make money?"

188. It was put to Appellant Witness 2, firstly, that although the foregoing questions were asked of the team working on the project, they were to be answered in conjunction with customers. Secondly, it was put to him that none of these questions were, in reality, related to technological problems. Appellant Witness 2 agreed that the questions outlined in this part of the Project Charter related to business or commercial matters. They were, he said, questions that needed to be answered to "validate" the vision underlying the project from a business or commercial perspective. He believed that this vision gave rise to technological challenges.

Appellant Witness 3

189. The third witness called by the Appellant was [redacted] ("Appellant Witness 3"), the project manager of the project and the author of the Project Charter. Appellant Witness 3 said that she was a long-standing employee of the [redacted] Group. She had started out as a software test engineer and then progressed to project management, in particular the management of on premise IT projects.

190. Appellant Witness 3 stated that her role:-

"[…] was to get very clear vision and objectives, identify a governance model, put controls in place to mobilise a team and get some idea of how we would achieve the scope through works streams, the breakdown of work streams over a period of a number of phases."

191. Regarding the project's scope, Appellant Witness 3 said:-

> "[…] *I would echo what [Appellant Witness 2] said previously in terms of the scale of ambition for the programme. So I was given 12 months to complete the R&D programme, to achieve the objectives. Well, we weren't able to do that, it was fairly ambitious. Everything that we knew about the programme or what we were trying to achieve was documented within the [project charter]."*

192. Appellant Witness 3 stated that she reported to the board of governance of the project and that those working on the project reported to her.

193. Appellant Witness 3 said that she was not a technologist and, in the main, she was not involved in the technical side of the work on the project. Her role, she repeated, was to give it "*structure and control. To make sure the work that we had outlined in the plan and the charter materialised* […]".

194. Appellant Witness 3 gave the following account of the adoption and use of the Agile methodology on the project:-

> "[…] *when we established the programme it was very much established from a waterfall perspective in terms of a methodology […] there is a start, middle and end, you complete one phase, you get sign-off and you move on to the next. You can see during 2011 we had a huge amount of work to achieve. We were hitting road blocks, some large, some smaller […]. That delayed us moving through the phases. So as a team we were trying to figure out, okay, how do we keep moving and deliver incremental value as we go. So towards the end of 2011 we decided that maybe an Agile approach, which is a software development methodology, that we would apply certain elements of Agile to how we were working, not to all of the work streams, but to certain work streams where it made sense, where we could apply some of the visual aids and tools that are used in Agile, where it is all around iteration, it is around building flexibility, it is very much focused on delivering value, not necessarily documentation. It's about trial and error and if things aren't working out maybe you can pivot and do something differently. It's about leveraging feedback from your customers. So you could develop a prototype that you could demonstrate to customers. If they didn't like the features or some of the functionality, it didn't mean you had to start from scratch, you could change, you could pivot quickly*."

195. Appellant Witness 3 was then asked about the following passage in the 2012 R&D claim document:-

"*One thing remained clear, the only development methodology that worked was Agile, so we needed to refine and improve its effectiveness. We did so via a concept already explained in this document called 'the Wall'. Basically a central vision to understand the status of all elements of a release in build. However, this was not a dynamically linked and automated visual, it was a snapshot in time as to the last modified date, which required management and multiple contributions to keep updated*."

196. Appellant Witness 3 made reference to "The Wall" used by the project team. This was a large whiteboard which the project team used to plan work, including by listing sprint timetables, 'product backlog' (i.e. functionalities that the aggregated service desk was to contain) and illustrate plans for software infrastructure. Appellant Witness 3 said that that The Wall took:-

"*Information from multiple sources to try and build an overall picture of what we were trying to achieve. You have various sprints which are blocks of work that you are trying to progress, certain backlog items*."

197. Appellant Witness 3 said that over the years in issue, the development team worked in "sprints". A sprint was work on a particular aspect or feature of the aggregated service desk that would last a maximum of four weeks. Those working on the project had daily "scrum" meetings at which to plan their work for that day. Those leading the development team would also have weekly "backlog" meetings at which they would discuss work to be done in the future and at which discussions regarding what ideas should be permitted to "go", what ideas should be "parked" and what ideas should be "killed" would take place. Appellant Witness 3 stressed, however, that a detailed description of the Agile methodology and its application on the project was something for the leaders on the development side to give evidence in relation to.

198. Appellant Witness 3 was asked in examination in chief about a presentation that she gave to the board of governance of the project on 13 January 2012. In a slide relating to her presentation, entitled "*Key Achievements"* it was stated, *inter alia*:-

"- *Built a solid prototype solution (V1) positioning the aggregated support service offerings*

- Demo'd V1 to potential customers to gauge interest and elicit feedback

[…]

Results

"Now we can have something we can start to sell – i.e. repeatable scalable solution

Pipeline of opportunities…"

199. Appellant Witness 3 was asked in relation to this by counsel for the Appellant whether this indicated that the Appellant had developed a finished product to offer to customers. She said that this was not the case:-

"*It wasn't a usable solution because it was only built on a couple of virtual machines that we had very limited control over in the Azure platform […] So it was just, I suppose, for us to test that we could […] pull all the pieces together*."

200. Appellant Witness 3 was then asked about the statement that "*now we have something to sell".* She said that this was more positive spin to the board of governance of the project than reality. She also said:-

"*When we showcased this prototype to customers, they were like 'can we have it'. We [said], okay, that's great but we now need to actually build this out properly in a proper development environment. Now we have something that we can start to sell. I suppose it was a bit premature to say we could start to sell, maybe it was more that we can start to build so that we can sell it. I guess that was more just saying that it was validated […] we have a good idea, we didn't know if the customers wanted it, we now [have got] some validation*."

201. Appellant Witness 3 then gave evidence in examination in chief that significant technical challenges faced the project team over the course of 2012, especially in relation to "hype" that surrounded the Cloud. It was, she said, the case that cloud providers, including Microsoft, were offering possible platforms that did not, in reality, allow the Appellant sufficient control to 'build out' its own services in the cloud.

202. In cross-examination by counsel for the Respondent, Appellant Witness 3 was asked about the content of a slide relating to an *"R&D Team Offsite Meeting"* that occurred on 9 June 2011. This slide, which Appellant Witness 3 said that she had composed, stated under "*What does Research and Development Mean?"*:-

"*Investigative activities that a business chooses to conduct with the intention of making a discovery that can lead to the development of new products or procedures, or to improvement of existing products or procedures*."

203. Appellant Witness 3 agreed that the above definition did not make express reference to the project team seeking to make a defined scientific advancement, involving the resolution of a question of scientific or technological uncertainty.

204. Regarding the presentation of 13 January 2012 given by Appellant Witness 3 to the board of governance of the project, which was referred to in counsel for the Appellant's examination in chief, counsel for the Respondent pointed to the presentation slide entitled "*Main challenges".* This stated:-

"*- Difficult to get experienced development resources onboard*

- Initial R&D plans for the year were ambitious

- Translating vision into reality took time

- Cloud Hype

- A lot of confusion in the market

- Research has shown it is mostly smoke and mirrors

- Infrastructure challenges

- Existing production environment not stable

- Network design and implementation issues

- Domain and co-existence migration issues

- Lengthy process for IAAS for dev/test environment

- Required external consultants to assist with Lync voice configurations

- Swamped with new opportunities before we are ready to sell."

205. Counsel for the Respondent observed that from this it was clear that at the outset of 2012, the first year in respect of which credit for R&D was claimed, the Appellant already had customers for its envisaged product lined up. Another slide, planning for "*a minimum of four customers by the end of 2012",* served to underline this. Secondly, there was little in the slide quoted above concerning technological challenges. In respect of this, Appellant Witness 3 replied:-

"[…] *we were coming at it from the perspective of an R&D programme to implement a new business proposition that was very much linked to a technical digital strategy and road map that we hadn't yet envisaged and we didn't know what the landscape was until we started to move through it*."

206. Asked whether the project was a "*very business focused programme",* Appellant Witness 3 said:-

"*Well, I would disagree. There was a business driver for the programme. However, I think I mentioned it before, the business model was intrinsically linked with the IT strategy and the R&D approach. So we couldn't deliver the business model without having the technical strategy that we could deliver, so it was both; what problem are we trying to solve for the customer and how could we actually do that in a digital way…It is hard to separate the two.*"

Appellant Witness 4

207. The next witness from whom the Commissioner heard evidence was [redacted] (*"Appellant Witness 4"*). Appellant Witness 4 was Head of Finance of the [redacted] Group and was called to give evidence regarding the Appellant's expenditure in the years in question on the project.

208. Appellant Witness 4 gave evidence that for the year 2012, the expenditure on the project (less a grant from Enterprise Ireland received in respect of the same in the amount of €205,834) was in the amount of €659,353. He said that, of this, €344,044 was expenditure by the Appellant on the project. The balance of the expenditure on the project in this year, less the aforementioned grant, namely €315,309, was that of the other [redacted] Group entity that carried out the project work until the Appellant took it over in 2012. The Commissioner notes at this point that the Appellant's share of the expenditure, claimed by it to be "qualifying expenditure" under section 766 of the TCA 1997, therefore constituted 52.18% of the overall expenditure on the project in 2012.

209. Appellant Witness 4 also gave evidence that of the expenditure on the project in 2012, €567,216 was laid out in respect of 'staff costs' (i.e. the costs associated with the members of the project team). For reasons that will become apparent from submissions made arising from the evidence, it is necessary to note at this stage of the Determination that the portion of the staff costs attributable in 2012 to Appellant Witness 3 was €68,515 and that of [redacted], €2,131.

210. Appellant Witness 4 also gave evidence that for the year 2013, the expenditure on the project (again, less a grant from Enterprise Ireland received in respect of the same in the amount of €252,516) was in the amount of €471,212. This figure represented the sum claimed by the Appellant for that year as qualifying expenditure under section 766 of the TCA 1997. €547,765 constituted expenditure on staff costs. As in relation to 2012, it is necessary to observe at this point that the portion of the staff costs attributable to Appellant Witness 3 was in the amount of €62,728 and that to [redacted], €6,125.

Appellant Witness 5

211. The Commissioner also heard evidence from [redacted], a software engineer of 25 years' experience, employed by the Appellant ("Appellant Witness 5"). Appellant Witness 5 was the lead software engineer working on the project and the head of the technical side who liaised with Appellant Witness 3. Appellant Witness 5 said that on the back of his work on the project, he became the Appellant's Chief Technical Officer until he left the company in 2018.

212. Appellant Witness 5 said that the project to create an aggregated service desk in the cloud emerged, at least in part, from work that it carried out with a "flagship client", the [redacted], for which it provided on premise and "desktop support" on behalf of one of its "Tier 1" customers, [redacted]. This involved the creation of a "service desk platform solution", created for, and to be used on a self-service basis by, the [redacted]. This service desk was built around Microsoft Dynamics CRM and it was not based in the cloud but on the [redacted]'s own servers. This, Appellant Witness 5 said, constituted the "*germ of an idea".* He then said:-

> "*So I think [Appellant Witness 1] returned from the [Stanford/Enterprise Ireland] programme and I think the emergence of cloud computing became both exciting and a concern for our core business, and [we] wanted to explore what cloud offered us in terms of either risk or opportunity as we move forward."*

213. Appellant Witness 5 said that the project constituted the exploration of this idea.

214. Appellant Witness 5 outlined the objective of the project as being, firstly, the creation of a service desk, on which an aggregation of, inter alia, IT management, project management and remote monitoring services could be accessed, all hosted in the cloud. In particular he said:-

> *"I think where we started was obviously the* [redacted] *solution that we had was a points solution. So how do we lift that out, bring it on to cloud, become the hub of our support services that all our customers could connect in. So moving that from a single instance, single customer scenario, which was deployed on premise in their datacentre through into a hosted cloud multi-tenanted, multi-customer instance. That was one of the first objectives we wanted to achieve."*

215. Appellant Witness 5 clarified that what he meant by a "*points solution"* was a solution or product designed "*directly for that customer and they influenced the scope of what we build* […]".

216. He then said that there was a second objective, "closely linked" to the first. Referring to the state of cloud technology at the time in question, he explained this as follows:-

> "*I think it was hype more so than everyone knew exactly what it could provide. And again in Microsoft they had split levels of maturity on the various cloud platforms they provided starting with Azure for example. Azure was targeted at the developer persona from Microsoft from early years, they launched in 2008. But that was specifically designed to a software developer, web developer persona that would develop dot net applications, connect them to the SQL backend and deploy it quickly to a 'platform as a service' provided by Microsoft on Azure. A developer persona wouldn't know how to build the infrastructure needed to make that scalable, so they are trying to take that complexity away. So you as a developer just code, deploy, forget and it runs for you. Whereas, with us, we wanted to have, as IT experts in terms of both infrastructure and development, we wanted to have a lot more hands-on involvement in how all of those building blocks are assembled on Azure, which is infrastructure on the server side, and that was in its real infancy in 2012, it was pre-beta, totally unproven, no SLAs, no support, and posed many technical uncertainties for us as we moved forward*."

217. Somewhat later in his evidence, Appellant Witness 5 explained PaaS and IaaS in the following terms. He said that PaaS, which Microsoft Azure was originally intended to be, was a cloud offering in which customers, often of a 'developer persona', would be able to avail of the benefits of the cloud providers physical infrastructure, but would not be given the scope to configure that infrastructure. IaaS, by contrast, permitted a degree of configuration of the cloud provider's physical infrastructure, in particular by means of the use of installation of virtual machines. In this respect, Appellant Witness 5 stated:-

> "[…] *infrastructure as a service [allows for] more configuration, you can assemble all the virtual machines together, install whatever [...] you want on those virtual machines and manage it yourself. Microsoft will look after all the hardware and all the big storage units and the power and the heating and the cooling and all that kind of stuff. Whereas platform as a service, you would only be able to deploy [an] app and you have less configuration opportunity*."

218. Counsel for the Appellant asked Appellant Witness 5 how complex a proposition it was to move the service desk designed to be used by the [redacted] from its own infrastructure to the cloud so that it could be used on a multi-tenanted basis by SMB customers. In this regard, he said:-

> "*Let me start with Azure and bring you back to what existed at the time […] we wanted to be able to take a virtual machine, which is, in essence, an operating system that*

exists as software that we could fully control, what's deployed on it, how it's deployed. We needed that level of [control] because as I was saying earlier on, we wanted really to have more access to the infrastructure side of how things were assembled, so we can advise customers in the future, the SMB sector about how they can move to it […] we wanted to understand the technology ourselves, understand it, research it, see where the complexity [lay], and there were many complexities. For example, Microsoft at the time when you deployed a virtual machine to Azure infrastructure as a service would not guarantee that that virtual machine would stay running […] Microsoft […] would pause the virtual machine, update the underlying infrastructure in the background, and then bring your VM back online once all the hardware is back up again. They would do that intermittently under their conditions, you had no control even though you were paying for the service. So there [was] no guaranteed SLA. So that was obviously a huge challenge for us when the whole essence of our support service is that you have an issue, you want to rely on the infrastructure and the service you are connecting to is available, so you can consume that. The SLAs didn't come until later in 2012, and provided huge, huge uncertainty in terms of how we could run an offering on [Azure]. And we had to look at different ways we could introduce other technology maybe, not necessarily public IaaS, but more of what's called co-lo, co-located datacentre, private data centre type offerings that we could have as fail back so we had to rearchitect our solution ourselves to try and accommodate that using non-public cloud offerings."

219. Appellant Witness 5 was asked about the immature nature of Azure, in particular in relation to the installation of virtual machines. Appellant witness 5 said that there were big issues with the reliability of the system:-

"*there was an aspect of whatever you install on top of that VM, Microsoft will not guarantee that would be recovered, i.e. it was stateless. So if you took the VM install an application on it, roll forward a couple of weeks, they do a reset, they'll bring it back to the base image of the operating system including the application that was installed on it. So not only was it just about 'availability', it was about what was actually installed on the VM."*

220. In a nutshell, he said that the problem was that the Appellant could lose all of the work that it had done. He then said that this problem of *"non-persistent VMs*" was "*very challenging to work around".* He then said:-

"Networking was also in its infancy and based on the distributed nature of our architecture, we had you know, we had our own on premise stuff in terms of additional

hardware. We had the private datacentre aspect I was talking about, we had public Azure, so I think in some documentation you can see all these clouds that I would have built in those architecture diagrams to show how distributed they were. Each of those aspects, points of presence, whatever you call them, all need to be connected together securely."

221. Asked by the Commissioner about whether the nature of the technical challenge to which he was referring was getting the different servers being used, i.e. the Appellant's rented private cloud, Azure and their own on premise hardware to communicate with one another reliably, he said that it was.

222. Appellant Witness 5 said that related to this were problems concerning "latency" (i.e. the speed of communication) and connection security. In relation to the latter, Appellant Witness 5 said that "*As soon as we published some of* [the] *virtual machines* [in the cloud] *we got denial of service attacks* […]. He attributed this problem to the use of a standard "hard coded port" on the part of Microsoft on its virtual machines. The problem was, he said, ultimately solved by the Appellant by means of the "*reconfiguration of ports*".

223. Returning to the fact that Azure was available in preview mode only when initially used by the Appellant, Appellant Witness 5 said:-

"[…] *part of our pattern and our architecture was to reuse some of the elements that we used in the* [redacted]*, we didn't have to reinvent the wheel totally again, we wanted to keep the customer at the centre of all our communications and it made sense to use Dynamics CRM in that context. Dynamics CRM was not officially supported as an Azure virtual machine, therefore [the Appellant] had to carry the technical accountability for that being operated or not in certain cases on Azure. The same holds true for SharePoint which became the basis for our project support point* […]"

224. Appellant Witness 5 then said:-

"*So I think, you know, there were a lot of examples of where [Azure/Microsoft] was way behind Amazon at the time. And, you know, I think we did…we searched very lightly Amazon in terms of what was provided, but our attachment was to say Microsoft is the technology stack of choice that we want to target our service offerings for the future, Azure is an emerging stack that we wanted to evaluate, it was closely aligned to the underlying technology*."

225. Appellant Witness 5 gave evidence in examination in chief that the transfer of very large amounts of data as a consequence of the move from on premise to the cloud "*was a challenge"*.

226. Appellant Witness 5 discussed the iterative process employed by the project team in the conduct of their work, which in his view was experimental development. He said that the team had a "*high level vision"* and a working "*ethos"* that involved developing '*proofs of concepts'* (i.e. working on an idea "*without going all the way"*) and then adhering to the process "*go, park, kill",* where ideas or elements thereof were assessed for viability and were either graded "go", "park" (i.e. not to be proceeded with but with but possibly returned to at a later stage) or "kill" (i.e. not to be pursued further). He said"*[…] we wanted to try new things but not spend too much time barking up the wrong trees."*

227. Appellant Witness 5 discussed the Agile approach in the following terms in examination-in-chief:-

> *"We also had agile approaches in terms of how we do things because again, priorities change significantly. You know, new service offerings on Azure, it was like trying to build a foundation that's constantly changing, and we needed to stay responsive to that and, yes, we would have had a backlog of what we thought we needed to do, but that would constantly change. The best way to do that in a systemic approach I think is to use Agile methodologies to carve it into individual pieces of work two weeks at a go, do an assessment at the start about what the scope is, at the end of the two weeks assess what you achieved, reprioritise, go again, and it's that iterative process to get things done*."

228. Appellant Witness 5 said that the project team made use of a whiteboard to set out all of the work to be done on the project, which would be altered as the multi-tenanted, aggregated service desk took shape:-

> "[*There] was a huge board and what we did was we started to put up all the various pieces of what we were trying to try and what advancement we were trying to seek from infrastructure to functional design to the release process about how we might deploy it to the network configuration, to the database, to all the various pieces on one big area that somebody can come and go, okay, what are we doing? That's what we are doing. So it was very analogue, but very iterative, very engaging with the team that you are able to do standups every morning, look at it and say right, are we on track? No, okay we need to change things" we need to slightly pivot and we started there. That became known as 'the wall'*."

229. Speaking along the same lines in relation to the use of the *'Scrum'* project framework, Appellant Witness 5 said it was used to give the project team a sense of direction in their work. He said that the framework was built around work "*Sprints"* spanning two week blocks:-

"*At the start of the sprint, you do your sprint planning. At the end of the sprint, you do your sprint review, what did we do, and then you go again. And then the container for all of that would be in a major release. So you would define that we have a backlog for a release that we think we want to achieve. You would break it down into individual sprints and then you would scrum towards its completion*."

230. In the course of examination-in-chief, Appellant Witness 5 was asked to comment on a printed version of the Wall dating from 21 February 2012. This included 5 graphs mapping progress planned and actually made on 5 separate 14-day sprints relating to "*prerequisites", "incident management", "change management", "SLA engine"* and "*Portal".* No details of the work done on the Sprints was set out. Each of these graphs showed progress on the sprint that fell somewhat short of that projected, which Appellant Witness 5 said was an indicator of the uncertainty and technical difficulty associated with the project work. The Wall also included, at its top left a visual representation of the architecture of its "*IT operations (V2)*". This included boxes representing "*On premise customer IT environment", "DC* – [Appellant] *Production Environment",* "*IaaS pre-production environment"* and "*IaaS Development Environment".* At the bottom left of the Wall was an "*Overall Services Release Roadmap".*

231. Appellant Witness 5 was asked by counsel for the Appellant to give an explanation of the term "architecture" in the context of software. His evidence was as follows:-

"*If you want to build a piece of software, you need to know the foundations on which that software is built, the technology stack, what does it look like? How is it all assembled? How will it be secure? How will it be scalable? How will it be many different things?*

232. Regarding his involvement in designing the architecture underpinning software, he said:-

"*So I used to refer to it as the magic sleep I had as a software engineer, I woke up the next morning and I was an architect."*

233. He then said that he had become involved in a body called the International Association of Software Architects, the aim of which body was to establish "*the right principles and tenets of an architect."* He said this body was established to accredit software architects in much the same way as would be accredited the architects of buildings.

234. Addressing the particular architecture employed in respect of the aggregated service desk, he stated:-

"*So a good reference point, if you are still on the Wall, is the top left where the IT operations diagram shows how distributed the architecture was, Each of the square boxes represent a different environment in which we were either trialling certain concepts in a development capacity or trying to build things in readiness for production, and that's what we wanted to track, that was such a changing environment based on our knowledge as Azure and our knowledge of Azure increased."*

235. He then stated:-

"*But* [the diagram in the Wall] *shows why we were challenged because things were moving constantly. Things were changing constantly. Uncertainty was raising itself quite regularly. And in order to track an architecture in this systemic way shows that there was a constantly changing landscape."*

236. Counsel for the Appellant asked Appellant Witness 5 whether what was being done was an "*infrastructural"* or a "*software design"* project. Was it just "*plugging in software and fixing bugs or doing code or is this a larger project?"* To this Appellant Witness 5 first replied:-

"*The larger project still remained how we deliver, you know, an aggregated set of services…to SMBs in the Microsoft Space, in the Microsoft technology landscape."*

237. In his view the project was an "*architectural advancement in terms of how to assemble those right pieces to achieve that distributed public cloud multi-tenanted aspect for us personally, that's what we were trying to do."*

238. Appellant Witness 5 also observed, however:-

"*But we also developed things right? So you'll hear from* [Appellant Witness 6] *who will talk about IT support service, which was how we made a single instance, single customer configuration of our service desk multi-tenanted, multi-instances on Azure, highly scalable, even though it wasn't officially supported by Microsoft. And project support services, which was SharePoint* […]"

239. He then said:-

"*All of those things needed software development discipline to be able to develop and realise outputs, but a lot of them carried uncertainty into the way we assembled it, I mentioned unsupported by Microsoft."*

240. The Appellant then gave detailed evidence about the distinction between the different forms of cloud platforms, namely software as a service (SaaS), platform as a service

(PaaS) and infrastructure as a service (IaaS). In essence, SaaS is the provision to customers of a software application hosted in the cloud. The example given was Gmail. PaaS is a version of cloud where the provider manages all hardware and software resources to permit the user to develop applications in the cloud. Appellant Witness 5 stated that it was directed at the "developer persona". IaaS is a version of cloud where, in effect, the cloud provider provides computing resources such as storage, network and the capacity to carry out virtualisation (i.e. the dividing of physical computing resources into a series of virtual machines, operating systems, processes or containers). The user thus has the capacity to virtualise its own IT infrastructure and move it from "on premise" to remotely located servers (i.e. the cloud.).

241. Appellant Witness 5 gave some evidence about the history of the Azure cloud offerings and cloud more generally. Windows Azure had initially been developed and offered as PaaS to users only. By contrast, Amazon's cloud offering, AWS, was, from the outset, offered as IaaS. When Amazon's offering achieved a commercial advantage in the cloud space, Microsoft opted, he said, to bring out their own IaaS service, namely Microsoft Azure. This was released in preview form in 2010**.** This was the platform on which the project team carried out much of its work.

242. In examination in chief, Appellant Witness 5 said that there were, across both of the years in issue, 6 key objectives. The first of these was, as he put it in his evidence:-

> "*[…] how do we take something that's single instance for a single customer in a service desk offering that we could build, not just an IT support service, but many support service offerings in an aggregated fashion. That was objective number one, how do we do that? How do we make it multi-tenanted? How do we make it multi-customer support? How do we make it secure?"*

243. The second objective he said was:-

> *"Hosting on cloud...how do we use the various pieces available from Microsoft in Azure as it was going through this transformation from Windows Azure to Microsoft Azure, and as part of that rebrand to include IaaS as a service capability as well as PaaS. What does that mean?"*

244. He then said:-

> *"So we had PaaS in our environment, one of the self-service portals that you would be redirected to was hosted on PaaS. Everything else was IaaS environment. And that was where I think the largest degree of uncertainty started to arise in that objective."*

245. Another uncertainty identified was:-

> "*I said about the virtual machines, the fact that there was no SLA. If you provisioned a single virtual machine with Amazon, for example you would get an SLA on it. Whereas in Azure, you didn't. And then when they did launch SLA support later in 2012, you had two virtual machines and then you had to manage how the failover would happen at an application level between the two, it wasn't automatic in any way."*

246. Appellant Witness 5 gave evidence regarding awards from Microsoft that the Appellant and he personally received as a consequence of the work carried out on the project, which he referred to as "*outputs"* of what they were trying to do. In relation to the Appellant's award, he said that "*We became Azure Partner of the Year for Microsoft. We backed that up in 2013 with the same award.* In relation to his personal award, he stated that that it related to:-

> "*This knowledge that we had acquired around how best to use Azure but still maintain operational excellence and all those good things that you still need to have, and to do things better, faster, cheaper, all these things that customers would only move toward. I won a global award because of that."*

247. Appellant Witness 5 also gave evidence that a further output of the creation of the aggregated service desk by the project team, and in particular his involvement in it, was that he was asked to become an advisor to the Innovation Value Institute ("the IVI"), a "*conglomerate between Maynooth University and Intel.* He said:-

> "[The IVI] *had what they called a Capability Maturity Framework ("CMF"). So what they would do is come into your environment and assess your maturity across your whole IT landscape […]"*

248. Appellant Witness 5 said that in late 2013 the IVI invited him:-

> "*to extend…their IT CMF…to include cloud readiness, cloud architecture, because again it was not really thought of in terms of what is good cloud readiness? How do you start to be ready to say I don't want to do this on my own premise, I want to do it on cloud. How are you ready security wise* […]"

249. Appellant Witness 5 was cross-examined by counsel for the Respondent.

250. Appellant Witness 5 said that he was involved in the drafting of the 2012 and 2013 claim documents, though he stressed that he was not their editor. In relation to the four project objectives enumerated therein (set out in this Determination at paragraph 34), Appellant Witness 5 said that he was happy that they "*fairly reflect the activity at the time".*

251. Appellant Witness 5 was asked about the early customers of the Appellant. He confirmed that the very first customer was [redacted] itself. The next was a company called "[redacted]", which also became a customer and user of the aggregated service desk in 2012.

252. Appellant Witness 5 was asked about the view of the Respondent's expert witness, expressed in his reports, to the effect that there was little, if any, identification of technological uncertainty or technological advances associated with the work on the project. Appellant Witness 5 expressed disagreement with this view. By way of example of technical uncertainty arising, he observed that Azure was "*really immature in terms of the delivery of basic infrastructure* […]"

253. Regarding possible problems in relation to the availability of virtual machines, Appellant Witness 5 agreed with senior counsel for the Respondent that by the latter part of 2012, this issue had been addressed by Microsoft itself in circumstances where its SLA in this respect was 99.95% availability. He said, however, that this SLA did not apply to the applications that were run on the virtual machines and that work had to be done by the project team on how to ensure resilience in this context.

254. Appellant Witness 5 was asked in cross-examination in general terms about record keeping and documenting R&D work done. He referred to the Wall as the primary method of keeping record of what was being done on the project and what problems needed to be solved. Counsel for the Respondent put it to him that the Wall was not a document in the form of a record, rather it was a worklist that changed daily. Appellant Witness 5 accepted this. Appellant Witness 5 was pressed by counsel for the Respondent about the whereabouts of any documentation resembling a technological plan (Respondent Witness 5 characterised the project charter as more of a business plan). In reply, Appellant Witness 5 said that he produced weekly reports in his capacity as CTO. These reports were not part of the documents provided to the Respondent's expert or produced as part of the appeal hearing.

255. Counsel for the Respondent asked Appellant Witness 5 whether there were records kept about the work done and the outcomes of sprints and burndowns carried out as part of the Agile process employed. Appellant Witness 5 gave evidence that such record keeping was not a part of Agile:-

> "*So, the output is not that you create a document to say look at what we did. It's to say did we achieve what we set out to do in the sprint? Yes, no, maybe? What have we rolled into the next sprint? What do we need to reprioritise? So the spirit of Agile is that*

it's not something that generates a piece of paper each time to say this is what we did and this is the plan of record. It's to be agile to the changing software landscape."

256. Senior counsel for the Respondent asked Appellant Witness 5 whether the project team conducted a literature review prior to the commencement of the project, so as to establish the state of the art. Appellant Witness 5 said that there was no co-ordinated literature review, however all members of the team involved on the technical side would have carried out academic research as part of the project. Asked how the project team could have been sure of the relevant state of the art, Appellant Witness 5 answered:-

"*There was no state…there was no knowledge in the market. We were the first people to do this in the way it was being done with Azure in an infrastructure as a service capacity.*

Q: Okay, so it's the fact of using Azure that is the novel aspect?

A: Yes.

Q: And the way in which you combined Azure with other Microsoft products?

A. Yes."

257. Appellant Witness 5 was asked about the uploading of large quantities of data to Azure. It was put to the Appellant that the fulfilment of this operation constituted a technical challenge connected to the speed of broadband then available, rather than a technological advancement arising from a question of technological uncertainty. Appellant Witness 5 did not agree with this. He then said in relation to this:-

"*So at that time we did research many other offerings that would allow you [to] cede that amount of data and this is the flash drive, FedEx model I talked about earlier on that was kind of more prevalent than other offerings and it wasn't in Microsoft. So we had no alternative get data into the Azure datacentre, we had to use this, and it was consistently problematic and it was binary in success, it would either work or it wouldn't, and led to huge, huge delays in effectively validating how we move workloads from on premise to cloud*."

258. Appellant Witness 5 said that these problems were fed back to Microsoft and that:-

"Ultimately, Microsoft responded to this feedback and started to provide this…I forget the name of the service that they used to attach, but the exact service I described about getting a flash drive, that was the only way to reliably do it at the time."

259. In response to a further question from the Commissioner, Appellant Witness 5 said that the solution arrived at by Microsoft, influenced by the feedback provided to it by the Appellant, was the same as that already in use by Amazon in respect of transfers of data from on premise to its data centres powering its cloud services.

260. It was then put to him by senior counsel for the Respondent that a lot of the process constituting what the Appellant argued was R&D involved "*giving* [Microsoft] *feedback and waiting for them to update or improve".* To this Appellant Witness 5 said:-

> "*No. Because we built our own service offerings in our own platform which was independent of that. So we built a Dynamics CRM, SharePoint, multi-tenanted environment on a platform that we could support and deliver services to our customers on Azure. That was independent of all that. So that was us developing, as well as pushing the envelope in terms of how Azure could be used to deploy that platform*."

261. Appellant Witness 5 was asked by counsel for the Respondent about whether its work in relation to the multi-tenanted use of SharePoint amounted to standard software development. To this, he replied:-

> *"No, [our work] resulted in custom components we had to develop using code ourselves to be able to complete that end to end transaction.*"

262. Appellant Witness 5 was asked when it was that the project was completed to the extent that there existed a multi-tenanted aggregated service desk product that could be sold to customers. Appellant Witness 5 said that this happened at some stage in 2013.

263. Appellant Witness 5 was asked about the board presentation made by Appellant Witness 3 in January 2012. In particular, he was asked about the PowerPoint slide wherein it appeared that the project plan was that a "*V1 prototype"* of the aggregated service desk that could be "*demoed to potential customers*" would be ready prior to the end of the year. Appellant Witness 5 said that he had not composed this document. He expressed the view, however, that the prototype to which Appellant Witness 3 was referring was not a version that had the capacity to accommodate multi-tenancy, but rather a single instance version. This was so notwithstanding that a subsequent line on the same slide stated, in reference to the demoing of the V1 prototype and consequent customer feedback, that "*Now we have something that we can start to sell i.e. repeatable scalable solution".*

264. Lastly, counsel for the Respondent asked Appellant Witness 5 about the awards the Appellant and he personally had received from Microsoft in relation to which he had given evidence in examination-in-chief. As regards the Appellant being Azure Cloud OS Partner of the Year, he explained that the purpose of the award was to:-

"*recognise and accredit partners that demonstrate technical credibility and reputation in the delivery of Azure to transform businesses, and I think that is what we received it for.*"

265. As regards the personal award that he received, this was in recognition of "*the merit of the architectural approach we defined for how we moved customers to Azure*".

266. Appellant Witness 5 said that the Appellant's work on the creation of the aggregated service desk was "*constantly referenced in presentations on behalf of Microsoft to other partners about what to do and how to do it.*"

267. Appellant Witness 5 was briefly re-examined by counsel for the Appellant. In answer to a question concerning the methods used to transfer data from on premise to Amazon's cloud offering, he said that, while they were keeping an eye on what Amazon were doing *it was kind of irrelevant in terms of research."* What worked with Amazon's IaaS platform would not necessarily work with Azure.

268. Appellant Witness 5 was asked by counsel for the Respondent to give a summary of the specific things that the Appellant solved in the conduct of the project. To this he replied:-

"*Well the key wins would have been, you know, we proved Azure as the right platform choice eventually after going through all the uncertainty we carried through those 2012, 2013 years. We were able to on board customers to our multi-tenanted platform, and authenticate them using their existing identity providers, and we validated that across multiple customers. We were able to remotely monitor as we performed open heart surgery on those customers' environments and moved them to Azure over multi-years of transformation journey. We became recognised as the industry leader through our awards and our relationship with Microsoft. None of that was Microsoft solving it, that was all ourselves.*"

Appellant Witness 6

269. The next witness called by the Appellant to give evidence was [redacted] ("Appellant Witness 6"), a software developer with [redacted] over the period of the project in question and the "lead engineer" of two of the services forming part of the Appellant's aggregated service offering, namely the IT support service and the project support service.

270. Appellant Witness 6 said that in order to provide these services, the Appellant utilised two toolsets, namely Dynamics CRM and SharePoint respectively. "Out of the box", however, these were only usable by one client per single instance. His task was to carry out work

to them so that they would be transformed "*Into offering[s] for multiple clients that could scale…as we scaled, you know, the people behind it."*

271. Speaking in overall terms about the object of the production of the aggregated service desk, Appellant Witness 6 said "*No one had done this before."*

272. Appellant Witness 6 then explained, in relation to the IT support service, that there were two main components, and that how to combine them was unclear at the outset:-

> *"In terms of ITSS…there [was] really two components, there [was] the Dynamics CRM 2011 element. It is designed for service desk agents. Agents in terms of people, you know, looking after issues, responding to tickets, those kind of agents. They would log into Dynamics CRM 2011, that's the, if you like, back office system we would access.*
>
> *The second component is I think referred to in the documentation as dynamics portal, NDX studios portal, so effectively a website that would talk to this back end system. And that website…that portal was designed for end users to log into. So for example we set it up within our business to allow our employees to access our portal and log tickets, whatever they might be in terms of IT issues. And we did that as part of this, we set it up for ourselves. The uncertainty came in with ITSS in both of those components, in the portal and in the Dynamics CRM 2011 itself, the uncertainty was how can we take this, which was designed as…a system to use within your organisation, and set it up in such a way that the clients' data is separate and secure and when they log into this shared portal, which is the end to end goal, to have one portal which all the clients will access, how could we allow that to happen but still maintain that separation of data, that security piece on top. So that is where the uncertainty came in relation to ITSS*."

273. In respect of the project support service, he said:-

> "*In relation to the PSS, the uncertainty centred around how we can offer SharePoint to clients, these what I refer to as external users outside of our organisation, how we can do that when it wasn't possible out of the box, you know. So yes, eventually we worked out if we build this component, and build this component, and put these different pieces together, we can get to where we needed to be, but there wasn't a step by step guide to follow. We had to come up with the guide. We had to try different things and eventually discovered how we could address that uncertainty, the uncertainty being how do we allow the external clients into this SharePoint 2013 application."*

274. As the evidence of Appellant Witness 6 progressed, he said that the major issue with regard to the project support service was how to arrange authentication and authorisation

of different users of the same instance of SharePoint, while protecting data security. As regards authentication (i.e. establishing the identity of each user), they used a Microsoft product, AFDS. As regards authorisation (i.e. granting an authenticated party permission to do certain acts), the Appellant stated that the task was more complicated and involved the combination of different elements to be built out, namely "*customs claims provider",* a "*WCF service"* and a "*timer job".* What that allowed the Appellant to do was to:-

> "*Keep a database of all the external users...So anyone who wanted to access our system, we kept a database of all those users, what access they should have, what projects they should have access to, or what company they belonged to…we kept that information locally in a database. When they logged in, they authenticated in, the authentication piece worked. The custom claims provider stepped in at that point, worked out…this is John Smith, they belong to company X,Y,Z they are a project manager, they should have access to this and should be able to do that. So we added in to their security token certain claims to say who they were and what access they should have within the system. So that took us from…they could authenticate in but not use the system…to now they can actually see certain information and perform certain actions, which they couldn't do without this element that we built*."

275. Appellant Witness 6 then stated:-

> "*So there's three different elements which we had to…design first, identify if they would work and then we built those out and put them in place, again in order to allow external clients into the system and to use the system. And again, the whole project support service sat on top of all of the elements that we have discussed earlier today in terms of…the infrastructure, VMs and all of that stuff."*

276. Appellant Witness 6 said that, in his view, there was a significant degree of complexity associated with the work to create multi-tenanted versions of SharePoint and Dynamics CRM and it was "*by no means a foregone conclusion that we would get there".* He accepted that in carrying out their work they were using existing technology but he believed that it was being used in a new way. In this regard he said:-

> *"As has been mentioned, there were elements that existed that we used and configured, and there were elements that just didn't exist and we had to build. And in order to…offer our service, absolutely, we…put these things together in such a way that as far as we understood it at the time hadn't been done before.*"

277. Shortly after, he stated that in carrying out work to SharePoint and Dynamics CRM the Appellant was making an appreciable improvement to them.

278. Appellant Witness 6 was cross-examined by counsel for the Respondent.

279. Appellant's Witness 6 agreed with senior counsel for the Respondent that his duties on the project team involved "*discreet elements",* being the IT support service and the project support service.

280. Appellant Witness 6 gave evidence that he and other members of the project team, namely [redacted], [redacted], [redacted] and [redacted] reported to Appellant Witnesses 3 and 5.

281. Asked whether he had carried out a literature review in relation to the state of the art in IT service support and project service support, Appellant Witness 6 said that he carried out online searches to see what other people had done and what other technology was capable of.

282. Appellant Witness 6 was asked about record keeping. He said that their work was not recorded by means of word documents, but it was tracked using a programme called "*Team Foundation Server".* Asked whether this programme created a permanent record of each step taken in the project, he said that there would have been a record of all tasks performed. He could not however say whether that record remained in existence. Asked whether he or anyone else created a written project plan in relation to the IT support service and project support service work carried out, he said he did not recall one.

283. Appellant Witness 6 confirmed in cross-examination that he was involved in the composition of the 2012 and 2013 claim documents and, in particular, the project objectives set out therein. He also stated the Appellant Witnesses 3 and 5 were involved in their creation.

284. He likewise confirmed that he had an input in relation to the 2017 replying document and, probably, the 2018 replying document. He said that he was not involved in the composition of the 2019 replying document as he left the Appellant in January 2019.

285. Counsel for the Respondent then put it to Appellant Witness 6 that based on his direct evidence a lot of what he did seemed:-

> "[…] *to have been directed towards what I might call synergy…putting together two different products and customising them for your particular customer base* […]."

286. Appellant Witness 6 replied in the following terms:-

> "*I think there was an element of bringing components together and integration of available components that was an element. But that, on its own, did not enable us to*

provide the service we wanted to provide, and the system we wanted to provide. So, I don't think it was just…plugging components together."

287. Nor was his work, he said, merely "*customisation*" of existing products:-

"[…] the elements we added on in order to provide the services we wanted to provide wasn't simply customisation…it was more than that. It was, first of all, designing, through trial and error, how could we achieve what we wanted to achieve, and then building components, which, to me, is more than simply customising what was there and available."

288. It was put to Appellant Witness 6 that achieving multi-tenancy of Dynamics CRM, and therefore enabling scalability, did not involve any kind of technical advance. He did not agree with this, stating, with reference to the aggregated service desk that they were producing:-

"[…] in both components on that set up, namely the portal which the end users would log in, and within Dynamics CRM 2011, that environment, within both we had to…rework how it would work with multiple clients. So we had to change both elements…in order to get to the point we could offer this to multiple clients and it would ensure…there was no data leakage, ensure there was security and will ensure the clients will only see the data they needed to see. So I think in terms of technical advancement, it was across both of those elements and the changes we made in both is where I see the technical advancement."

289. Lastly under cross-examination, Appellant Witness 6 gave evidence regarding the project team's creation of a "*custom claims provider".* This he described as a system which allowed information regarding the identity the user behind a "*claim"* to be drawn from one "environment", for example Dynamics CRM, to be used in another, for example SharePoint, to determine what actions they would be permitted to take. He said that Microsoft offered a standard claim provider and the capacity to its customers to build their own by means of code. He said that the novelty associated with the custom claims provider built by the Appellant's software developers was that it had the capacity to deal with the 'claims' of people external to the Appellant. Counsel for the Respondent suggested that this was not a technological advancement, but rather a "standard process". Appellant Witness 6 replied:-

"*What we did is, we took that idea and we took it further than…anyone had previously…let's talk to a different system but that system is going to store these external clients and information about these external users which we're pulling down*

from Azure. So, as I say, there are elements we could leverage, but we had to build, we had to design and build these extra components to basically plug the gaps and allow the system to work as we needed it to work."

Evidence of Experts

First expert called by the Appellant

290. The next witness called by the Appellant to give evidence was [redacted] the Appellant's first expert [redacted]. The Appellant first expert witness is also the Director of [redacted]. He holds a Ph.D. in computer science from [redacted]. Prior to entering professional academic life, the Appellant worked privately in the field of software development.

291. At the early stages of examination in chief, counsel of for the Appellant asked the Appellant's first expert witness about the content of his letter of 10 December 2018, wherein he expressed the opinion that the work conducted on the project amounted to R&D. In this regard he said:-

"[…] there are three key points in this letter I think. The first one is around, you know. The context of R&D has changed I think and that's reflected in the Frascati update. So I guess the traditional view of R&D has been the basic research model of you identify a problem, a technological challenge, you do a literature review to see how has that been addressed and then you take some actions to address those challenges and address the uncertainty and you document all that carefully. It is quite expensive. But I think in the past 15 or 20 years or so that's changed considerably to a model of applied research or experimental development where you are solving a practical problem, you don't always document … you know, you are just solving the problem, you don't always document the process, and you don't do the literature review in that kind of systematic way and so on."

292. The Appellant's first expert witness stated that [redacted] engaged in collaborative research projects with private industry, where each side would put up equal funding. Such projects would involve the composition of "statements of work" specifying the specific technological challenge or challenges being investigated and a summary of the academic literature relating to the state of the art that was reviewed. He then said:-

"*But we do that, you know, because we have to report on progress. If we weren't there, the company would still do the research, but they would not do it in the same way. The*

companies, I do know this, and especially small companies, are surprised at documenting this kind of stuff in a statement of work, because they just get on with…here is a problem, lets address it, let's solve it and they don't document that rigorously, that kind of path to follow, because they are just doing it basically. So I do know that the small companies especially are not familiar with this process of declaring the problem, doing the literature review and so on. They don't operate in that way, but I still think they do research and development."

293. The Appellant's first expert witness expressed the view that this was what had happened in relation to the work on the project carried out by the Appellant.

294. The Appellant's first expert witness then stated that, in his opinion, the work on the project amounted to R&D in circumstances where five criteria identified in the Frascati manual (2015 edition) were present. These were that the work concerned a novel question, that it involved creativity, that its results were uncertain, that it was systematic and that its results were transferable or reproducible.

295. In relation to novelty, the Appellant's first expert witness said:-

"[…] *I don't think anyone disputes that this idea of an aggregated service provision on the cloud rather than premises with security and so on, those different, you know, IT support, remote monitoring and management, project support and so on, HR support, that aggregated service desk, that didn't exist in the cloud at that time, so I think that's generally accepted. So novel, I think no doubt about that*."

296. The Appellant's first expert witness said in examination in chief that the work to engineer a multi-tenanted service desk in the cloud involving, inter alia, the provision of IT, project support and RMM services, was creative because it was "*not obvious how to do that".* He then said:-

"The technologies, you know, Windows Azure, later Microsoft Azure, these technologies were immature and I think that's reflected in Microsoft's comments back on what they were learning from this process as well. So the technology was not mature, it didn't work. I think [Appellant Witness 5] talked about virtual machines lacking persistence so they would lose their memory, lose their state. That was a significant challenge for the company. So you are talking about having to come up with creative solutions for security as well."

297. The Appellant's first expert witness then addressed the question of uncertainty. He stated that certainty was not a question of "*either or. It's not zero or one".* Rather, he said, there existed a continuum of uncertainty. He observed that all software development involved

some level of uncertainty, however that which was at the lowest level involved work on "*familiar technologies".* The highest level of uncertainty involved 'super high uncertainty' where one was entirely new technologies. An example of such a project, he said, was the work carried out by NASA so as to carry out the moon landings. High uncertainty, however, involved "*implementing new technologies for the first time".* This was, he said, what was being done in relation to the creating of an aggregated service desk in the cloud with multi-tenanted applications providing services previously obtainable only on an individual basis on premise. He then said:-

> "*You have a number of challenges. It is not just, you know, the challenges exist in, at a systematic level, you have got to make everything work together. So it's an aggregation of challenges in all kinds of aspects of this*."

298. He then dealt with the question of whether the work carried out by the project team over the years in question was systematic. In respect of this, he said:-

> *"I have been researching Agile for over 20 years. The Agile approach was designed, was developed to combat uncertainty. So it's…the recognition was that if we try to plan everything in advance in a very careful from here to the end of the project management process, that doesn't work in the technology field because you just, you realise quickly that well that's changed completely, we have learned something new here, we have to start again. So you can't plot out mini steps. So the Agile approach is an iterative approach which is based on you plan something in the short-term, maybe a three-week sprint is what it's called and a scrum. You plan for that activity for three weeks. At the end of the three weeks you review progress and then you plan again*."

299. The Appellant's first expert witness said that 99% of software development carried out in the world uses an Agile methodology.

300. Regarding transferability or reproducibility, the Appellant's first expert witness said:-

> "*I believe that was met because [the Appellant] produced a product, they solved problems. I think also their evidence of learnings that Microsoft got from this and I think also the mention of IVI who were keen to get these results into their innovation, technology capable into maturity framework, so there is evidence of a group of, a research group wanting to find out more about this. So I think that speaks to the reproducible part*."

301. The Appellant's first expert witness said that the work done on the project met [redacted]'s own definition of R&D. This was so, he said, on the grounds, inter alia, that [redacted] would have been:-

"very interested in performance management, for example, how you do this in the cloud, you know, load balancing where you want to make sure that there is not latency […] So you want to make sure you can deliver something that works reliably and delivers on time. That would have been a challenge. So you are moving stuff around different servers and virtual machines. We had a group doing performance engineering and who would have been very interested in that topic."

302. Likewise, the Appellant's first expert witness said that the project gave rise to questions concerning "*testing in remote environments"* and security and authentication that would have been of interest to [redacted]. He then said:-

"So to my mind, that what I was saying [in the letter] that this would be qualifying R&D in our context. And that would have… we would have presented this, you know, the results as like you would write up the case study list for example and the lessons learned and so on, so we would have presented that subsequent peer review internationally and we have done that with many of these kinds of work with companies."

303. The Appellant's first expert witness expressed the view that the idea of an aggregated service desk, hosted in the cloud, that involved the use of associated multi-tenanted applications was highly ambitious at the time in question. The Appellant was, in his view, seeking to offer infrastructure as a service. He did not think that what was being attempted was the "application of known principles":-

"No, I don't think it was. You are trying to do things for the first time. So, like, you had to extend principles, so you had to get things to work. It hadn't been done, so, to my mind, that induces uncertainty. It's not just as if it's a large scale project that we do a lot of things. You had to try and get these things to work together, what's the best way to do it?"

304. He then said:-

"*So, I think that was… putting that assemblage together into a system. And often complexity arises […] I suppose you can do these in individual pieces, it's when you try to put it all together and deliver an acceptable performance. So it wouldn't be acceptable to try and do this and then find that it took 25 minutes to authenticate and you had to put different user IDs and passwords ten times along the way. […] You know, I think you could do things, you could…do it technically maybe but it wouldn't be acceptable from a commercial product, satisfactory condition to productise, that is a different challenge […] not just build a prototype, for example, that doesn't really work*

in any production environment. You have to do this at a level which it is a commercially viable product."

305. The Appellant's first expert witness was cross-examined by counsel for the Respondent. She began by asking whether, and if so to what extent, he had a role in composing the Respondent's 2018 replying document. The Appellant's first expert witness said that he could not recall his precise involvement, but believed he had a hand in editing it. He stated that he was not its author, however. He said that he had meetings with the Appellant prior to the composition of the 2018 replying document, which included Appellant Witness 6, Appellant Witness 1 and Appellant Witness 2 and could also have included others.

306. Counsel for the Respondent put it to the Appellant's first expert witness that his letter of 10 December 2018 did not appear to refer to any documentary material produced by the Appellant. Asked what his opinion was based on, he said "*I guess it was in the context of having those meetings with* [the Appellant]." It was further put to the Appellant's first expert witness that though he referred to the project as *'Project Nimbus',* no material from the years 2012 and 2013 produced by the Appellant used this name. He said that the reason that he referred to it as such was in all likelihood because this was the name used by the Appellant in the course of meetings.

307. Counsel for the Respondent asked the Appellant's first expert witness whether his views regarding the work done on the project were referable to any particular period. To this he replied:-

"*Not specifically no. Like, my letter was more about the concept of delivering this product, I guess. So I didn't suggest that it applied to a particular period*."

308. The Appellant's first expert witness said that the views expressed in his letter of 10 December 2018 constituted an evaluation of the concept underlying the project at a "*fairly high level".*

309. Counsel for the Respondent asked the Appellant's first expert witness whether [redacted] had a "standard definition" of R&D". He said that it did not, but that he would define it:-

"*In terms of solving […] applied research, solving a practical, a problem in practice […] that requires, you know, overcoming technological uncertainty at the very least and bringing these technologies together. But we don't have a formal definition*."

310. He was then asked by counsel for the Respondent whether this was the definition he had in mind when giving his view in December 2018 that the Appellant's work on the project amounted to R&D. To this question he replied that the definition of R&D that he had in

mind was that set out in the Frascati Manual, in particular the five criteria set out in his letter.

311. The Appellant's first expert witness was then asked about the 2015 edition of the Frascati Manual, which he had cited in his letter, in particular the content of page 65 concerning software development. This stated at paragraph from paragraph 2.68:-

> "[…] *Software development is an innovation-related activity that is sometimes connected with R&D and incorporates, under specific conditions, some R&D. For a software development project to be classified as R&D, its completion must be dependent on a scientific and/or technological advance, and the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty."*
>
> *2.69. In addition to the software that is part of an overall R&D project (to record and monitor its different stages, for instance), the R&D associated with software as an end product or software embedded in an end product could also be classified as R&D when the R&D criteria apply.*
>
> *2.70. The nature of software development is such that it is difficult to identify its R&D component, if any. Software development is an integral part of many projects that in themselves have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. Such advances are generally incremental rather than revolutionary. Therefore, an upgrade, addition or change to an existing program or system may be classified as R&D if it embodies scientific and/or technological advances that result in an increase in the stock of knowledge. The use of software for a new application or purpose does not by itself constitute an advance*."

312. Senior counsel for the Respondent asked, in particular, whether the Appellant's first expert witness agreed with paragraph 2.70 and, most of all, the final sentence therein. The Appellant's first expert witness said that he did agree that software development giving rise to no uncertainty or advance of a technological kind would not amount to R&D. He said:-

> "[…] *You know, if it's easy to do but it's a new area, but it's just analogous to something […] you apply something in a new area which hasn't been done but has been done in a similar area a thousand times, then there would be no uncertainty resolved. So to my mind technological challenges and technological uncertainty are linked*."

313. Counsel for the Respondent put it to Appellant's first expert witness that in giving this answer he purported to address the condition of technological uncertainty specified in the

legislation, but not that of a required technological advance. With specific regard to the work done on the project, the Appellant's first expert witness said:-

"*I think the advance is at the systemic level, providing something that works reasonably in a commercial environment.*

[…]

So I think the advance is at the systemic level of the integration of these technologies to work beyond just a prototype that […] has no real prospect of being commercially viable. So the viability of doing something like this is a technological advance I think, but it's by bringing technologies together, integrating those technologies…is a technological advance I think. I don't believe it's the use of software for a new application of purpose, I think it's more than that [in this case]."

314. In re-examination, counsel for the Appellant opened the Respondent's R&D Tax Credit Guidelines to the Appellant's first expert witness. In particular he asked whether he agreed with the Respondent's statement at page 20 that:-

"*Revenue recognises that scientific or technological uncertainty may arise at various points throughout a development life-cycle including:*

[…]

- *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*."

315. The Appellant's first expert witness said that he did. Moreover, he said in relation to the first of the aforementioned bullet points:-

"*So I think the first one there, continue to function in different scale environments, I think that is at the heart of this. That's why people would move to the cloud, to get scalability. So it had to function in different scale environments, so that certainly was a sine qua non for this development*."

316. In relation to the second and third bullet points, the Appellant's first expert witness said:-

"*So I guess it would have to…like it started on one version of Azure and moved to, Windows Azure to Microsoft Azure, and I think another platform was tried as well,* [redacted] *or whatever, it didn't work. So it was trying to function across a range of platforms. And I think in relation to the integration part, like that again is, to my mind, is a given here. You had to integrate with other, you know, all the systems had to integrate together I guess. […] so to my mind you had to integrate at a lower level with the Azure platform, at a high[er] level than any other process that went on there. So, to my mind, those are certainly very evident in the offering*."

Second expert called by Appellant

317. The next witness called by the Appellant to give evidence was Professor Antonio Martini ("the Appellant's second expert witness"), a professor of software engineering at the University of Oslo. Until 2011 he worked full-time as software engineer and for about two years after the completion of his Ph.D. in this field in 2017 he carried out intermittent consultancy work and founded his own 'start-up'. The Appellant's second expert witness said that the University of Oslo offers R&D development services to private companies in an innovation scheme funded by the Research Council of Norway. The Appellant's second expert witness said that "*software architecture"* has probably been the main focus of his work as an academic and that he has studied and written on Agile development methodologies. He said that he had published over 100 academic papers, sometimes in collaboration with other academics in other locations in the world.

318. Speaking in relation to the Agile method of working, the Appellant's second expert witness said that its purpose, as opposed to the traditional 'waterfall' method, is to account for uncertainties. Asked whether it is a "systematic approach", he said "*Yes, it is a systematic approach."*

319. Counsel for the Appellant took the Appellant's first expert witness to his report of 4 December 2019, asking him "*what you have considered in relation to this"*. In answer, the Appellant's second expert witness said:-

"*So I was provided with a few documents with both the goals described by the company and some challenges that were found. I also was provided with the, I think it was the assessment by* [the Respondent's expert]*, and, yes that is what I was provided at the time. And also the original document of the case that was submitted in the beginning. And then…the other thing I was…I looked on my own was to look at peer reviewed papers from literature between 2010 and 2014. So I did a systematic search on Google Scholar and I selected some of the most relevant, best papers and then I had reviewed what they were, what they were presenting as open challenges and available solutions*

in multi-tenancy cloud software development. Basically this was my, the body of knowledge that I used to form my opinion."

320. The Appellant's second expert witness then stated that "*in this case my opinion was that technological advancement is providing a solution to a practical problem that didn't have a known solution"*. He said that he arrived at this view having regard to challenges that were documented in "*open literature*". He then said:-

"*it was very unlikely that [the Appellant's] software [at issue] was developed without any uncertainty because uncertainties were clearly highlighted in the literature*."

321. He said that this opinion applied with especial force to issues that would, in his view inevitably, have arisen in relation to the development during the years at issue of mutli-tenancy cloud software applications hosted on IaaS.

322. Counsel for the Appellant asked the second expert called by the Appellant to summarise the "state of play" regarding cloud technology at the relevant time and in particular, "infrastructure" hosted in the cloud. In this regard he said:-

"[…] *cloud service has been around for a while but cloud service, especially for multi-tenants was still in its infancy I would say. So there was a lot of uncertainty at the time that would make developing multi-tenant platform and infrastructure challenging and a lot of things would be unknown. So, for example, in this case…there were many challenges relating to security […] to performance and availability."*

323. He then said:-

"I read that this work required a rearchitecture for providing the service, this multitenant platform, and rearchitecting is a very, it's a very difficult but also a complex job, and one has to basically create a trade-off of many qualities that one wants in the software that is running. Qualities mean, for example, security or scalability or portability or many others. So when one has to architect something, one has to create a trade-off across all qualities."

324. The Appellant's second expert witness expressed the opinion that the available academic literature revealed clear challenges relating to ensuring the security of virtual machines installed on cloud servers. As part of his written report, he appended an academic paper from 2012 by Takahashi et al., *"Enabling Secure Multitenancy in Cloud Computing: Challenges and Approaches",* in which, under the heading "*Application-Layer Security*" the authors identified the areas of *"Secure Data Storing",* "*User Data Isolation"* and *"Authentication and Authorization"* as giving rise to technical challenges. In his oral

evidence, the Appellant's second expert witness further said that the multi-tenanting of platforms normally used in single instance form gave rise to clear problems concerning ensuring adequate performance.

325. The Appellant's second witness also said that the creation of the kind of multi-tenanted service based in the cloud worked on by the Appellant also, based on his review of the available academic literature from the relevant time, gave rise to technological challenges concerning "*caching*" and "*disaggregation*". He indicated, however, that he was not an expert in either of these areas. The Appellant's second expert witness then said, when asked about how significant were the technological challenges faced by the Appellant, that *"*[…] *each of them in itself might be, might mean some of them could be faultable in like, let's say, reasonable time* […]". He then stated, however:-

> "*But if you take together all these issues, together with the fact that one has to include solutions that are affected by these issues, then I would say the amount of uncertainty would be substantial, not minor in my opinion*."

326. He then expressed the opinion that the technical uncertainty relating to issues such as security, performance and availability were not "*ready off the shelf"* during the relevant years. Asked whether "*routine, run of the mill work"* was likely to be enough to address the technological uncertainty that he viewed as associated with the Appellant's project, he stated that it could not.

327. Counsel for the Appellant, bringing the Appellant's second expert witness back to his report, asked whether the work carried out by the project team in the creation of an aggregated, cloud-based, service desk involved, "experimental development". The definition of such development was, counsel said, systematic work drawing on existing knowledge gained from research and/or practical experience, which is directed toward producing new materials, products or devices, or to installing new processes, systems or services, or to substantially improving those already produced or installed. The Appellant's second expert witness said that in his view it was. Moreover, he said that the Appellant's project was not simply a case of utilising existing applications on Azure such as SharePoint or Dynamics CRM. Rather, the Appellant had, he suggested:-

> "*to install the whole infrastructure themselves, it means that it was not…if you use a platform that gives you the infrastructure already, you don't have that variable in the process, let's say. If you have to create infrastructure yourself, then it becomes much more complex. For example, if you have a platform that already takes care of some security issues it is much easier to just use the platform because the security is already taken care of by the provider of that platform. By doing the infrastructure yourself, that*

becomes… that opens a whole number of aspects that one needs to take care of with the development that wouldn't if it was a platform as a service."

328. The Appellant's first expert witness said that, in seeking to create a service desk based in the cloud that could deliver IT and other services off-premise to customers by making various applications multi-tenanted, it was making an incremental technological advance to know systems, products and services.

329. Lastly, the Appellant's second expert witness stated in oral evidence, which evidence was reflected in his written report that, on top of technological uncertainty, there was "*another layer of uncertainty*", namely "*organisational uncertainty*" associated with the use of "pods" of support staff. He stated "*it is not just the software*, […] *you have to think about the who service, how it is delivered."*

330. The Appellant's second expert witness was cross-examined by counsel for the Respondent.

331. Counsel for the Respondent noted that the Appellant's second expert witness had stated in his report that he had "*reviewed the documents shared during the previous assessment process",* but has not identified except in general terms what these were. The Appellant's second expert witness agreed that this was so. He was asked whether he had read and considered the letter of the Appellant's first expert witness prior to composing his own report. He said that he could not recall having done so. The Appellant's second expert witness said, however, that he had received the 2018 report of the Respondent's expert witness prior to composing his own report. He could not remember whether he had received and considered the 2016 report of the Respondent's expert witness.

332. Extracts from the 2023 report of the Respondent's expert witness, were then put to the Appellant's second expert witness. One of these was the statement of the Respondent's expert witness that:-

"[*the Appellant second expert witness] makes the novel argument that [the Appellant] selling their services to companies such as SMBs increases <u>their</u> (i.e. the companies') capability or state of knowledge, and that this can thus be considered a technological advancement. (It is not clear to whom [the Appellant's second expert witness] believes the second technological advancement would accrue*."

333. The Appellant's second expert witness was then asked in cross examination whether, as appeared from his written report, he was of the view that an increase in the knowledge of the Appellant's customers constituted a "technological advancement". He said that it was "in part". He then said:-

"[It's] not the only point I have about the SMB, because I think the other point is about the cost of being affordable, but yes, it's also true that I think they have gained knowledge of a specific service."

334. Asked whether the cost of the service or its commercial viability amounted to a technological advancement, he then said:-

"*If it was any other service I would say no. But given the uncertainties that were there, I would say that's what makes technological advancement.*

[…]

No, within a single service, I wouldn't say it is a technological advancement."

335. The second expert called by the Appellant was asked about his view that the combination of pods of workers and the cloud-based aggregated service constituted R&D. He repeated that the existence of pods gave rise to an "*additional layer of complexity*". He accepted that the use of a pod structure would not of itself be a matter of R&D.

336. Counsel for the Respondent asked the second expert called by the Appellant about whether he viewed a video available on YouTube, cited in the 2023 report of the Appellant's expert witness entitled "*Lessons Learned Building Multi-Tenant Applications with the Windows Azure Platform*". She asked whether this did not show that multi-tenanting of Azure applications was already occurring in 2009. The second expert called by the Appellant did not agree. He said that the multi-tenanted applications shown were prototypes. Moreover, he said that the video concerned setting up a multi-tenanted platform using Azure as PaaS. He said that what the Appellant had to do, create a platform on Azure IaaS using virtual machines and then implementing multi-tenanted applications gave rise to significantly greater complexity than did the work being carried out in the YouTube video.

Expert called by Respondent

337. The Respondent called one witness to give evidence in the appeal, Professor Michael Brady ("the Respondent's expert witness"). From 1980 until 2021, Professor Brady worked at Trinity College Dublin. Initially he did so as a lecturer in the department of computer science and then as Professor. The Respondent's expert witness stated that he was, before his retirement, course director for the main undergraduate programme in computer science. He taught undergraduates, masters students and was supervisor to doctoral students. The courses taught included one on "systems development" and

another on operating systems. He taught Java, C, C++, a computer language called ARM, classical AI.

338. The Respondent's expert witness gave evidence regarding the circumstances in which he came to give his expert reports. He said prior to composing that written in 2016, he was given and read the full documentation provided by the Appellant in support of its claim for R&D tax credits and took part in a site visit at its premises at which the Appellant gave an overview of its operations and the work associated with its claims for the years in issue. All of the documentation then furnished and considered was appended to the 2016 report.

339. Two of the documents provided to the Respondent's expert witness at this stage were the 2012 and 2013 claim documents and their content was analysed by him in his 2016 report and in oral evidence. The Respondent's expert witness observed that both documents were backward looking, in other words they did not constitute contemporaneous accounts of the work done on the project. The Respondent's expert said that it was "*quite clear*" from these documents that the work of the project team involved software development. He said, however, that his focus was on looking for evidence that this software development had the hallmarks of R&D, especially whether it involved the goal of making a technological advancement.

340. The Respondent's expert witness addressed "Objective 1" outlined in the 2012 claim document, namely "To take what was a bespoke solution for a single client to deliver a single service and re-architect it to address multiple clients with multiple distinct service offerings." In his view, this stated objective did not constitute a "technological advance", but rather a description of a "design desire". He said that this desire to adapt the "bespoke solution" created for the [redacted] to serve the needs of multiple clients and provide multiple services:-

> "*could incorporate...I mean it's possible that technological advancements could be necessary or could be undertaken or attempted even in the pursuit of this aim, but it doesn't actually specify any kind of technological aim to me."*

341. He said that the five uncertainties stated by the Appellant to be associated with this objective, in his view, gave rise to "good questions", but it was not apparent that their resolution required any particular technological advance. He said:-

> "*The question that arises, of course, all the time in my mind: Does this require a technological advancement? And if it does, what is it? And what do the company do to actually achieve it?*"

342. The Respondent's expert witness was of the view that there was a lack of evidence proffered by the Appellant to give a proper answer to these questions.

343. Regarding "Objective 2" in the 2012 claim document, namely "To host this portal on a cloud platform to leverage the advertised benefits of resilience, scalability and cost savings", the Respondent's expert witness made the point that cloud platforms were, by those years, already in existence for some time. Issues, for instance, in relation to the migration of large volumes of customer data and connectivity may have presented technical challenges or "practical problems" but the methods by which they could be solved were established. Likewise, issues such as how to arrange single-sign in while maintaining security could have been challenging, but he did not see how the answer to them was outside of the bounds of known processes. The Respondent's expert witness affirmed his view expressed at page 3 of his 2016 report that, while considerable work was necessary to design, prototype and implement the software described, there was no indication in documentary form that it sought to make technological advancements.

344. In relation to Objective 3 in the 2012 claim document, *"To facilitate the secure delivery of the service by teams of remote workers so as to reduce operating costs"*, the Respondent's expert witness again said that a technological advance or advances *may* have been necessary – for instance in respect of remote identification of the particular customer raising a 'case'. However, in his view the Appellant had not demonstrated what these advances were and how they might be achieved.

345. Objective 4 "*To design and deliver additional services to be delivered through the platform"* was, in the view of the Respondent's expert, a "*high level business or design aim".* It did not include any particular description of any technological advancements required.

346. The Respondent's expert witness then explained his analysis of the 2013 claim document, as set out in the 2016 report. Objective 1 therein mirrored its counterpart in the 2012 claim document. The expressed uncertainty associated with this, as arising in 2013, was whether the Appellant could provide its service desk, already in use in single-instance form, and permit it to be used by multiple clients simultaneously and separately, while maintaining the quality of service provided in single instance form. Again, the view of the Respondent's expert witness was that while this was without question a challenging undertaking, the Appellant's documentation furnished to him did not suggest any discernible technological advancement that was required in order for it to happen.

347. Objective 2, which again mirrored that set out in the 2012 claim document, had associated uncertainties in 2013 relating to the need to guarantee a very high level of availability to

those using the cloud-based aggregated service desk and ensuring that one component used in the service desk, Dynamics CRM, could be deployed to conform to SLA requirements. Again, the Respondent's expert witness did not consider that there was evidence that the resolution of such uncertainties was contingent on scientific or technological advance. Addressing the oral evidence of Appellant Witness 5 to the effect that, in order to achieve a "*very high level of availability*" he had decided to run Dynamics CRM in different "*availability sets"* and that customisation of Dynamics CRM was required in order that one copy on one machine be able to deal with the failure of the other, he said:-

> "*None of that was mentioned in the documentation at all… And, indeed, [Appellant Witness 5] didn't detail the changes that were made to CRM 2011 in order to accomplish this fail over handling.*
>
> *So we don't actually know what was done and so we're not in a position to have an opinion as to whether technological advancement was actually required or done*."

348. Objective 3, "*To facilitate the secure delivery of the service by teams of remote workers so as to reduce operating costs"* was, as with 2012, deemed by the Respondent's expert witness to be an objective not giving rise to any technological uncertainty (though he accepted there existed some "functional uncertainty"). He said that as regards issues of remote telephony and internet connection of remote agents, there was no technological advance indicated. As regards the work done on the "*actual arrangement"* of remote workers, done in conjunction with Mary Aitken, cyber psychologist, he did not consider this to have the characteristics of R&D.

349. The uncertainty associated in 2013 with Objective 4 concerned, according to the Appellant, how to achieve true multi-tenanting of Dynamics CRM, whilst maintaining security, integrity and privacy of customer information. The Respondent's expert witness said that in relation to this objective "*no plan or schedule or list of work in respect of technological advancements attempted"* was provided that might evidence the need for a technological advancement to achieve what was sought.

350. The Respondent's expert witness then addressed the new Objective 5, outlined in the 2013 claim document, which was "*To design and deliver additional services to be delivered through the platform."* He observed that, in this context, the evidence of [Appellant Witness 5] *brought the significance of the RMM…into sharper focus."* He then said:-

"*So it appears that one of the themes of [the Appellant] was to become expert in helping companies transform their existing IT infrastructure on to the cloud. So they wanted to become experts in helping companies move their systems to the cloud. So this is distinct, as far I can see…from the aggregated service desk*."

351. The function of the RMM, as he understood it, was to check that the systems and infrastructure migrated from on premise to the cloud continued to function to the level that it had before. From a business perspective the "*strategic significance"* of such a service was apparent to the Respondent's expert. However, he re-iterated what was in his 2016 report: while high level business objectives were listed in the 2013 claim document, and an off-site planning meeting had been referred to, details of a technological advance worked toward were not evident.

352. Lastly, the Respondent's expert addressed Objective 6, namely the "*Design Authority"*':-

"*So what I think…is that the company was gathering the experience that they were having to move their own facilities to the cloud. They were gathering that up, which is laudable, and they were attempting to put it together so that they could offer it…they could use it as the basis for a service that they could offer clients helping them to move their IT systems from real physical machines to the cloud*."

353. Again, it was not clear to the Respondent's expert where, in this task, a technological advancement sought could be found.

354. The Respondent's expert then repeated in oral evidence his view expressed in the 2016 report that the additional documents that he received from the Appellant after his site visit – which were over and above the 2012 and 2013 claim documents – did not suggest to him that R&D was occurring. Rather, they were indicative in his view of a company working to provide new products and services and develop new lines of business.

355. The Respondent's expert addressed the evidence of Appellant Witness 4 to the effect that the aggregated service desk was "*new technology with no solution already known."* He then said:-

"*And that may be true, it may be true that no solutions are known, but what I think he meant was, and what I took him to mean was that no actual finished solutions were in the marketplace. Now to my mind that is quite distinct from saying that the solutions were not there.*

So it would appear from my analysis of the reports and the extra documentation that [redacted] *was using existing technologies, albeit new, to develop new products and services.*"

356. He re-iterated his view expressed in writing in the 2016 report that the Appellant may have been exploiting existing technology in novel ways, but that "*in no case have I seen that* [the Appellant] *documented an attempt to achieve a technological advancement."*

357. The Respondent's expert witness then addressed the content of his 2018 report in his evidence, which amounted to his answer to the Appellant's 2017 replying document. He in effect affirmed that his views expressed therein had not changed. The Respondent's expert witness emphasised that:-

"*software development is riven with uncertainties of all kinds and we know this in computer academia and in industry, we know that many software projects fail. There is quite a high proportion of software projects [that] fail, for various reasons."*

So the big point here, though, is that given that uncertainty is an inherent feature of software development, it's just there, uncertainty on its own cannot be taken as an indicator that R&D activity is taking place…it just doesn't follow."

358. The Respondent's expert witness then said in relation to R&D in the field of software:-

"[…] what you would be looking for is a kind of signal that what was actually going on in the company's work rose above that kind of accepted, so to speak, level of uncertainty."

359. This was, he said, "*where he was coming from"* in his 2018 report.

360. He then noted, as he did in his 2018 report, that the Appellant's 2017 replying document stated that overall technological advancement sought was to design and build software in the form of remote service solutions. This was, he said, "*a bit of an issue*" for the Appellant's claims because "*building software on its own is not considered technological advancement."*

361. Nor did he consider that the four specific technological advances underpinning the asserted overall technological advance actually constituted objectives constituting technological advances. The Appellant's research of possible cloud platform providers that might host their service, and its "collaboration" with some of them so that its virtual machines could be installed on their infrastructure was not, he believed, working toward any technological advance. This was so notwithstanding that their installation involved the transfer of very large amounts of data. Large data transfers were a technical

challenge, but the techniques to achieve them were established. The same applied in respect of addressing security issues arising from the use of cloud. Such issues were, he said in his oral evidence, "solved" issues.

362. The advance described as "*Build out multi-tenanted system for our IT service"* was, again, a design intention but it did not disclose any necessary advance, even if problems might arise in multi-tenanting the specific Microsoft toolsets chosen by the Appellant in the construction of its remote IT service. With particular regard to the successful efforts made to multi-tenant Dynamics CRM, the crucial component for the service desk, the Respondent's expert said that he was not of the view that the use of a single instance for multiple clients amounted to a technological advance. He repeated that while reference was made to the implementation of a "*new security model"* the Appellant's 2017 replying document had not provided any details in relation to this. He said:-

> "*And some code listings were provided in an appendix from which it was not possible to conclude that R&D activity was occurring in that connection. It is simply the code indicates …well, presumably, that some programme development was going on*."

363. The Appellant's expert did not accept that the customisation and addition of certain components to SharePoint so that customers could use the Appellant's installation of the programme and gain permissions to access certain aspect of it revealed any obvious technological advance. In relation to the assertion that "*this was a significant achievement as there was no solution for this at the time",* he said:-

> "*So indeed it may have been an achievement but the question is, for me…whether there was technological advancement required to do this? And I concluded by the way…that there was not*."

364. The Respondent's expert stressed that the skills required to carry out the software development in question relating to SharePoint were considerable. However, he believed that the skill of "*how to add functionality using SharePoint Application Program Interfaces provided for the purpose of enabling and extending and customising SharePoint's operation"* was one that it was reasonable to expect that expert developers, such as the Appellant's, would have.

365. Likewise in relation to the RMM and the multi-tenanting of Microsoft SCOM, the Respondent's expert witness said that the evidence of a technological advancement, namely the reduction in the number of servers needed, amounted to "*a description of the development of a product."*

366. In oral evidence, the Respondent's expert gave his view on additional material appended to the Appellant's 2017 replying document at appendices 5-8 in the following terms:-

> "*[there] was some contemporaneous information, contemporaneous emails concerning problems moving large files containing virtual machines. Again, we're back to this idea…the emails reveal that the company was trying some very simply…well, very basic solutions. So, waiting until the system, the connections would be least busy or asking for more bandwidth, and so on. And to my mind these are definitely not indicative of technological uncertainty or the pursuit of a technological advancement, so they would certainly not be evidence of R&D*."

367. In relation to the documents at appendix 6, he said:-

> "[This] *was some code, some code which will get converted into programmes. It is really impossible to say anything about it except that it is code."*

368. Somewhat later, he said:-

> "*This file, this appendix just shows me that some code was being written, that's all.*"

369. Nor did the "*transformation"* of Microsoft's SharePoint application from an internal business application to one that was multi-tenanted strike the Respondent's expert as a technological advance.

370. The Appellant also gave oral evidence that confirmed the views expressed in his 2023 report. This report addressed the positions set out in the 2017 and 2018 replying documents. He said that a core theme of both replying documents was that the Appellant conflated the fact of the development of new software with the concept of a technological advancement. This was, on occasions explicit (e.g. "*the technological advancement here was the implementation of a solution"* in the 2018 response). This was, he observed, contrary to the content of both the Respondent's Guidelines and the Frascati Manual.

371. With regard to the Appellant's citation of the Gartner Hype Cycle, he observed that it was "*widely criticised as being flawed".* In any event, it was in essence a description of what is "hot" in computing. The reality, he said, was that cloud computing was not new in the years in issue. Amazon had been providing a general cloud computing based service since 2006. He accepted, however, that it was certainly not as developed. A limited preview of Azure in PaaS form had been available since 2008.

372. As regards the question of multi-tenancy in the cloud, the Respondent's expert returned in his oral evidence to what he had found in the course of researching his 2023 report. He had located a YouTube video of two persons at a conference held in 2009

demonstrating solutions for the multi-tenanting of platforms on Azure. He then said that as competent professionals in the field the members of the project team:-

> "*Would have known about Microsoft's cloud offerings, they would have known about multi-tenancy, albeit not on an infrastructure as a service and, because they were getting previews of the infrastructure as a service, a service provided by Microsoft, and the associated development tools and suites…as competent professionals working in the field, they would have had the knowledge, expertise and tools they needed*."

373. In the 2018 replying document, the Appellant had called into question the Respondent's expert's distinction between "*difficulty and uncertainty".* They had done so in the specific context of the challenges faced in moving virtual machines and large amounts of data into the cloud. Again, the evidence of the Respondent's expert was that the difficulties in this context, primarily bandwidth and connection speed, were ones in respect of which there were established technical solutions. Nothing new was done to solve the problems.

374. With respect to the evidence of the Appellant's first expert witness, the Respondent's expert witness repeated in oral evidence that he had not referenced any documentation in arriving at his opinion that the work of the project team amounted to R&D. He observed, moreover, that the criteria that the Appellant's first expert witness had applied in his letter and in his oral evidence did not reflect the working of section 766 of the TCA 1997. He had stated that the project involved work aimed at a technological advance, but had not explained why he believed this to be so with any specificity.

375. As in his 2023 report, the Respondent's expert addressed the "*Feedback"* of the Appellant, set out in its 2018 replying document, in his oral evidence. In relation to the problem of "hacker intrusion", set out in that replying document under the heading "*What Platform to use to Host Solutions?",* he said that the description given in relation to the movement of services between ports to protect them was common procedure and was in no way novel.

376. The Respondent's expert addressed the feedback in the 2018 replying document entitled "*Multi-tenanted service solution toolsets*", which stated "*The technological advancement is once again based on the end to end solution and the uncertainty was would the overall system work or not*". He said that this argument was, yet again, founded on the idea that a software developed to solve a particular issue or problem would ipso facto amount to a technological advancement. He reiterated his view that this was contrary to the guidance issued by the OECD in the Frascati Manual and the Respondent's own Guidelines.

377. The Respondent's expert then proceeded to address the feedback in relation to his views expressed in his 2018 report regarding "*Expanding Access to SharePoint to build Project Support System".* He said, firstly, that the Appellant had been incorrect to view his analysis as being a minimisation of the work done on the grounds that it merely made use of "API calls or callbacks". He repeated that the work done evidenced that the persons involved were expert in working with SharePoint APIs but said that, nonetheless, doing so did not evidence any kind of technological advance. He said that the Appellant's statement in the feedback in the 2018 replying document that the "*Technological advancement here was the implementation of a solution that allowed customers to access our project support system using their own accounts"* was the implementation of the programme.

378. In relation to the RMM, the Respondent's expert stated that the technological advance cited in the 2018 replying document was that "[The Appellant] *leveraged SCOM from Microsoft alongside other tools to build a solution to allow us to monitor environments."* The leveraging of existing tools was not, he said, a technological advancement, at very least on its own.

379. Regarding the "position paper" set out in the Appellant's 2019 replying document, the Respondent's expert said that the first part of this amounted to a description of the "high level brief" given to the project team. It did not disclose any necessary technological advance for its execution and its language "was almost entirely the language of software development", but not necessarily R&D.

380. The Respondent's expert then moved to address the question of the Appellant's use of Agile as a methodology. He recognised that Agile was a systematic methodology for software development that was designed to deal with the complexity of the area. He noted, however that it was "document light". He questioned whether it was an appropriate methodology, at least on its own, for the conduct of R&D.

381. The Respondent's expert then briefly addressed the report of the Appellant's second expert, which was appended to the 2019 replying document. He said that the fact that academic research was being carried on in relation to matters such as security and availability during the years in issue did not mean as a matter of logic that the Respondent's work on them in its context amounted to a technological advance.

382. Furthermore, the Respondent's expert observed that the Appellant's second expert referred to no specific documentation generated by the Appellant in the conduct of the project in reaching his conclusion in his report that it met the definition of R&D. He had cited a total of four references, in the form of academic papers, in his report.

383. The Appellant said that the oral evidence of the Appellant's second witness had not caused him to change his view regarding the absence of R&D in the project teams' work.

384. The Respondent's expert witness was cross-examined at length by the Appellant's counsel.

385. Counsel for the Appellant began by examining the professional qualifications and experience of the Respondent's expert. The Respondent's expert stated that he had been Professor in Trinity College's school of computer science until he retired in 2021. He had, spent all but two years of his professional life in Trinity College, either as a lecturer or Professor. His teaching responsibilities covered undergraduate, Masters and Ph.D. students.

386. The Respondent's expert gave evidence that, in terms of R&D, he had previously been involved in the development of the programming language "*Prolog",* which was developed around the mid-90s, and was, for a period, widely in use. He agreed with the proposition put to him by counsel for the Appellant that, by the time he had examined the Appellant's R&D claim, the language was no longer in widespread use.

387. He confirmed again that in university he had taught digital logic, analogue computing, classical AI and, inter alia, the languages Pascal, C++ and ARM. He did not accept that all of these languages were "historical in nature". One who had an expertise in C++, as did he, would understand the language C#, which was used by the Appellant's project team. He said that, in any event, understanding them was "*fundamental to good computer science."*

388. Counsel for the Appellant asked the Respondent's expert witness about the nature of his research papers listed in his CV. They were, counsel observed, largely "student led". The Respondent's expert did not disagree with this and acknowledged that the primary credit for student led papers rested with the student or students themselves. He said, however, that the papers had been presented at conferences of repute following peer review. Prior to their submission for acceptance, he would have worked with the student authors to amend their work. This did not just involve a review or editorial work by him, substantive work involving additional research had been carried out. He said that this was standard in academia. He said that the last time he published work that was not student led was in 2010. When it was put to him that "*research wouldn't have featured greatly in your career since 2010"*, he replied "*that's fair, yes".* The Appellant's expert was asked about his experience of cloud computing. To this he said:-

"*So I would have used Amazon Web Services in the past, but I would not have developed software, I mean I don't develop commercial software*."

389. The Respondent's expert said that he had provisioned a virtual machine on Amazon's IaaS cloud offering in 2009 or 2010 in single instance form.

390. The Respondent's expert was asked about his understanding of "architecting", which he defined as "configuring a number of disparate systems to work together". He accepted that "I don't have a great deal of experience of that, beyond the usual developing software."

391. The Respondent's expert was asked whether he thought "architecture" in the context of software was a "term of art", to which he said "*not really, no"*. He then said "*I think it can be a sort of slightly grandiose description of putting systems together."* He stated that it was not really a computer term and that he did not come across it often. Regarding grandiosity, he was asked whether he viewed architecture in the form of making "*new software and old software"* work together in this light. He said that he did.

392. Counsel for the Appellant put it to the Respondent's expert that in the Respondent's own Guidelines concerning R&D of 2011, it was stated at paragraph 8.4.5 that:-

"*To develop software at the leading edge of today's technologies generally requires the developer to come up with new constructs, such as <u>new architectures</u>, algorithms or database management techniques (i.e., make Technological Advancements), and there are then specific uncertainties as to the viability of these (i.e., Technological Uncertainty)."* [Emphasis added]

393. Later on in the same passage, it was stated "*Advances are typically made through innovation in software architecture*".

394. Counsel for the Appellant addressed the criticisms made by the Respondent's expert in his written reports and oral evidence regarding what he saw as the lack of proper documenting of the work by the project team. The Respondent's expert witness repeated his view that not only was there a problem as regards his ability to discern the precise nature of the work carried out, in his view work that was not systematically documented in terms of the recording of an objective, results of work and developing hypotheses could not in fact be said to be R&D.

395. Counsel for the Appellant challenged this view that the work of the project team failed to meet the criterion of being "reproducible". The work had resulted in a product comprised of "*a permanent form of programmes and architecting".* The Respondent's expert

observed that this was in fact not the case because the Appellant had not, despite requests being made of it, provided the code representing the work done. He observed, however, that "*it isn't really necessary to see the code to understand the general tenor and description of the work that was done."* In reply to a question of the Commissioner regarding what the code in question would have allowed him to establish, the Respondent's expert said:-

> *"If a particular piece of technological advancement was claimed, then one could…and if one was directed to where it was implemented in the code, one could look at the code to see if it indeed was there. That is basically it*."

396. Counsel for the Appellant asked the Respondent's expert whether, having met with the Appellant's representatives and received documentation from them, he had considered asking for particular further information that might have helped him understand whether R&D was occurring. He said he did not because to do so would, in his opinion, have created an issue in relation to his independence as an expert. He did not consider it appropriate to make the Respondent's case for it, but to consider whether R&D had happened based on what was furnished on foot of a general request for relevant documentary material.

397. Counsel for the Appellant asked the Respondent's expert about the copy of the Wall and, in particular, the burndown chart on its left hand side and the architecture at the top left. The Respondent's expert indicated that he was satisfied that this demonstrated that what had occurred was software development. It did not indicate the implementation of an R&D methodology.

398. Counsel for the Appellant asked the Respondent's expert whether R&D could be discernible from the product. To this he said:-

> "*No, I do not accept that. I do not accept that the result of R&D is the product. The result of R&D will be an outcome which may be incorporated in the product. But the outcome of the R&D is a piece of information, which should be accessible to people and it should be reproducible*."

399. The Respondent's expert did accept that an example of the methodology used to reach the end point of the product was illustrated by the version of the Wall produced by the Appellant and referred to at hearing:-

> "*Q: So you can see there the work is all illustrated by these various charts and burndowns etc. and the architecture is set out there on the schematics."*

A: Yes."

400. The Respondent's expert accepted in cross-examination that the copy of the Wall produced in the hearing displayed, at its top left, a design of a sophisticated software architecture that involved different types of VMs provisioned on cloud infrastructure. The Respondent's expert agreed that there was "*quite a lot of detail"* in this.

401. The Respondent's expert further accepted that he had received material from the Appellant in the form of backlog lists, roadmap documents, the project charter, and screenshots relating to tracking of work done on SharePoint, and what he considered to be a limited amount of code in printed form.

402. Counsel for the Appellant then directed the Respondent's expert to the 2002 edition of the OECD's Frascati Manual, quoting primarily from section 2.4.1 therein. He began by asking him whether he agreed with the following quote at paragraph 136:-

> "*In addition to the software that is part of an overall R&D project, the R&D associated with software as an end product should also be classified as R&D*."

403. The Respondent's expert said that he did.

404. The next passage put to the Respondent's expert was at paragraph 137, where it was stated:-

> "*The nature of software development is such as to make identifying its R&D component, if any, difficult. Software development is an integral part of many projects which in themselves have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. Such advances are generally incremental rather than revolutionary. Therefore, an upgrade, addition or change to an existing programme or system may be classified as R&D if it embodies scientific and/or technological advances that result in an increase in the stock of knowledge. Use of software for a new application or purpose, however, does not by itself constitute an advance*."

405. Breaking this into pieces, counsel for the Appellant asked the Respondent's expert whether he agreed that projects involving attempted incremental advances in technology fell within the scope of R&D. He agreed that they did.

406. He asked whether he agreed with the statement, expressed in the aforementioned part of the Frascati Manual, that an upgrade or change to an existing software programme would fall within the definition of R&D. He said that he agreed with this in so far as the upgrade embodied a scientific advance.

407. Later he referred to paragraph 140 of the same document, which set out examples illustrating the concept of R&D in software. Counsel for the Appellant focused on two, the first being:-

"*Research into methods of designing, developing, deploying or maintaining software."*

and the second being:-

"Experimental development aimed at filling technology knowledge gaps as necessary to develop a software programme or system."

408. In relation to the former of these, the Respondent's expert said that counsel for the Appellant, in putting it to him that the work of the project team fulfilled this definition, was overlooking the key word, namely "*methods".* Research in designing, deploying or maintaining software, as opposed to the methods that might be used to perform these tasks, was not, at least by itself, R&D. It was instead regular software development.

409. In relation to the latter, the Respondent's expert did not agree with the proposition that the work of developing the software in question was directed toward filling any technology knowledge gap. In particular, he did not agree with counsel's proposition that the knowledge gap could be found in "*how to mount VMs* [on IaaS]*".* When cross-examined on the same example, the Respondent's expert made it clear that in so far as the Frascati Manual might be taken to be suggesting that work on filling technology gaps would constitute R&D even where a technological advance was absent, he said that he did not agree with that. It was then put to him that he was adopting an inconsistent approach to the definition of R&D contained in the Frascati Manual.

410. Counsel for the Appellant also put paragraph 141 of the Frascati Manual to the Respondent's expert in which certain activities not amounting to R&D were enumerated. Counsel suggested that none therein met the description of the work carried out by the project team on the creation of the aggregated service desk. The Respondent's expert disagreed, stating that the work could be considered "*adaptation of existing software"* in circumstances where the project was founded on the use of a CRM based service desk initially designed for one customer, to be used in premise.

411. Lastly on the Frascati Manual, counsel for the Appellant put paragraph 142 therein to the Respondent:-

"In the systems software area, individual projects may not be considered as R&D but their aggregation into a larger project may qualify for inclusion."

412. The Respondent's expert observed that the subject matter of this appeal was not "*systems software",* it was "*applications software".*

413. Counsel for the Appellant then put a proposition to the Respondent's expert that went to the heart of his client's case:-

> *"And I must put it to you…you have been looking at [the project] on a granular level as we go along and saying this is a bit of software development and that is a bit of software development, but you're missing the point, that this is, the larger project here is multi-tenanting and making this multi-tenanted and all of the bits, all of the integration, all of that stuff has to be done, that is the picture you should have been looking at*."

414. Counsel for the Appellant suggested that in failing to view the matter using a wider lens, the Respondent's expert had not just erred in his opinion, but had failed in his obligation to the Commissioner as expert.

415. The Respondent's expert disagreed, stating in that forming his view he had looked both at the overall picture and looked at the matter on a granular level.

416. Counsel for the Appellant brought the Respondent's expert to the Respondent's 2011 Guidelines on R&D, starting with paragraph 8.4 in which the concept of a "*scientific or technological advancement"* was defined in the following terms:-

> "*An advance in science or technology means an advance in the overall knowledge or capability in the field of science or technology (not a company's own state of knowledge or capability alone). The test relates to knowledge or capability reasonably available to the company or to a competent professional working in the field. Where knowledge of an advance in science or technology is not reasonably available, for example, where it has not been published, is not in the public domain or it is a trade secret of a competitor, companies would not be disqualified from claiming the credit where they undertake activities seeking to independently achieve the same scientific or technological advancement*."

417. Counsel for the Appellant put it to the Respondent's expert that he surely regarded Appellant Witnesses 5 and 6 as such persons. He said that he did, though he sought to suggest there may conceivably be gaps in their knowledge. On this, counsel for the Appellant pointed out to the Respondent's expert that Appellant Witness 5 had been awarded *"Global Presales Technical Specialist of the Year".* He suggested that Appellant Witness 5 could only be seen as being at the cutting edge of software development, architecture and cloud technology, in particular cloud technology. The Respondent's expert suggested that the award may have been consequent on knowledge gained from

the working on the project, at least in part. He said "*It does not follow that he was a complete expert in everything about Microsoft Azure when the project was underway."*

418. Counsel then referred to paragraph 8.4.3 of the Guidelines in the section concerning scientific or technological advances, entitled *"New Materials/Products/Systems",* which stated:-

> "*Systematic, experimental or investigative activities directed at producing new or improved materials, products, devices, process systems or services can qualify for the tax credit provided the activities seek to achieve the goals set out at 6 above. However a process, material, device, product, service or source of knowledge does not become an advance in science or technology simply because science or technology is used in its creation. Work which uses science or technology but which does not advance scientific or technological capability as a whole is not an advance in science or technology. Normal technology transfer, or making improvements to materials, products, devices, processes, systems or services through the purchase of rights or licence, or through the adaptation of known principles or knowledge, would not represent scientific or technological advancement. Neither would solving technical problems or trouble shooting using generally available scientific or technological knowledge or experience meet this test. In addition work in the development of a new or improved product will not of itself constitute research and development activities. The work may, for example, entail the resolution of extensive design issues but may not involve a scientific advancement*."

419. In relation to this, counsel for the Appellant suggested to the Respondent's expert that "*so in this case they were building on infrastructure, they were providing infrastructure as a service."* The Respondent's expert disagreed with this proposition, stating "*they were not providing IaaS. They were <u>using</u> IaaS"* [Emphasis added].

420. Counsel for the Appellant asked whether he accepted that the concept of multi-tenancy did not exist at the time of the project. This precipitated the following answer and subsequent exchange in cross-examination:-

> "*A: No.*
>
> *Q…for Microsoft Azure?*
>
> *A. No. I mean that idea is kind of meaningless. Because what actually the company was doing was attempting to implement a kind of multi-tenanted architecture on their systems. Now they would take their systems and move them to Microsoft Azure and that's where the multi-tenancy went. Or sorry, that's how the multi-tenancy went from*

their physical systems or whatever it was onto Microsoft Azure. So the idea that Microsoft itself does or doesn't have multi-tenancy in it is kind of meaningless in this case.

Q. I have to put it to you that Microsoft Azure was made multi-tenanted due to the components that were integrated, built on to it by [the Appellant], in this case?

A. Well, that's not…that's a mischaracterisation of what [the Appellant did]. [The Appellant] made a multi-tenanted application and installed it or placed it to run on Microsoft Azure. It did not make Microsoft Azure multi-tenanted."

421. Counsel for the Appellant put it to the Respondent's expert that the "components" that they created, which allowed for the applications and the Appellant's system to "*integrate with Microsoft Azure"* amounted to a technological advancement. To the Commissioner's mind, the reply of the Respondent's expert illuminates the core of the issue:-

"*Well, I dispute the fact that they are technological advancements, that's the first thing. I don't agree with that. They did use Microsoft Azure. They used it both, it seems to me, from infrastructure…they used the IaaS service in Microsoft Azure, starting in preview mode, and they also used PaaS which is the older service provided by Microsoft Azure, they used both of those things. But they used them as clients, that's it.*

So once again, the idea is if you have a computer, a Windows computer and you have stuff running on it, programme, and maybe the programmes interact with one another, as they do in this case, you can move all that onto Azure. And that's it, that's your interaction with Azure, that's it, over, nothing else. Now it is ever so slightly more complicated than that…"

422. Asked by the Commissioner whether there were "technological difficulties" associated with moving a system or programmes to Azure, the Respondent's expert said:-

"*Well, if you were thinking of moving your suite of software from a physical machine to Azure, to a first approximation it should just move, you should just be able to move it across, make a vertical image of it, maybe Sysprep it and put it on Microsoft Azure without any further work. But in practice there will be some difficulties in, maybe, the size of the memory and the disk space and the internet connections and so on…maybe somewhat problematic. But the resolution of those issues would be entirely normal for software developers is my point* here."

423. Counsel for the Appellant then put a set of "*Examples"* of projects constituting R&D, set out in the Respondent's 2011 R&D Guidelines:-

"*A project which seeks to, for example:*

(a) extend overall knowledge or capability in a field of science or technology; or

(b) create a process, material, device, product or service which incorporates or represents an increase in overall knowledge or capability in a field of science or technology; or

(c) make an appreciable improvement to an existing process, material, device, product or service through an advance in science or technology; or

(d) duplicate the effect of an existing process, material, device, product or service in a new or appreciably improved way through an advance in science or technology (e.g. a product that has exactly the same performance characteristics as existing models, but is built in a fundamentally different manner), will therefore be R&D."

424. Asked whether the work of the project extended overall knowledge or capability in the field of science or technology, the Respondent's witness said:-

"*I kind of do yeah. I think it's fair to say that the project was to extend the overall capability in a field of science or technology."*

425. Asked whether the work of the project created a product of the kind set out in example (b) above, the Respondent's expert said:-

"*Yes. I would certainly…which incorporates an increase in overall capability."*

426. The Respondent's witness did not accept, however, that the work of the project involved either (c) or (d) above, on the grounds that neither any "*appreciable improvement"* or duplication of effect were managed "*through an advance in science or technology."*

427. The Respondent's expert then stated that to the extent that the Respondent's 2011 Guidelines suggested that projects of the kind outlined in the example (a) and (b) ipso facto amount to R&D projects, he disagreed with them.

428. Counsel for the Appellant then asked the Respondent's expert about the question of uncertainty, as dealt with in the Respondent's 2011 R&D Guidelines. In this regard he informed the Respondent's expert that the Guidelines stated that scientific or technological uncertainty can arise in two circumstances:-

a) *uncertainty as to whether a particular goal can be achieved or*

b) uncertainty (from a scientific or technological perspective) in relation to alternative methods that will meet desired cost or other specifications such as reliability or reproducibility

If, on the basis of reasonably available scientific or technological knowledge or experience such technological or scientific uncertainty exists, research and development activity would aim to remove that uncertainty through systematic, investigative or experimental activity.

Uncertainty as to whether new materials, products, devices, processes, systems or services will be commercially viable is not scientific or technological uncertainty. In commercial settings, however, a reasonable cost target is always an objective. As mentioned above, attempting to achieve a particular cost target can require the resolution of a scientific or technological uncertainty. Cost targets may require that scientifically or technologically uncertain alternatives, approaches or configurations etc. have to be attempted, although more costly alternatives exist. A scientific advance always resolves uncertainty."

429. The evidence of the Respondent's expert in this context was that uncertainty about how to solve software related problems was an intrinsic part of software development. He accepted that the project team would have encountered uncertainty as to how exactly to develop their system. The critical question though was not to ask only whether uncertainty of a technological kind was associated with their work, but, on a more fundamental level, whether the solutions needed involved a technological advance. He said that they did not and, thus, the work was not R&D. Counsel for the Appellant put it to him that, as competent professionals, it must follow as a matter of inevitable logic that, if the solutions to the problems sought to be solved gave were uncertain, then they could only be solved by a technological advance. The Respondent's expert did not agree with this, calling it a "*logical fallacy".* He said:-

"*But I don't accept that this uncertainty was…sorry, that the resolution of this uncertainty required technological advancement. I think it falls within the remit of competent professionals working in the field."*

430. He expanded on his thinking somewhat later:-

"*So you could imagine a situation where you have competent professionals working in the field, very good competent professionals working in the field who aren't certain how to actually build something. So that seems to me to be the situation here. So you could imagine that kind of a scenario. So those workers, those developers will have to*

actually work out precisely how to resolve that particular uncertainty and move on to develop the product. But it does not follow that that uncertainty requires a technological advancement. They will just have to do some development work to resolve the uncertainty. That's what I believe. I hope that makes it a bit clearer."

431. Counsel for the Appellant then referred the Respondent's expert to paragraph 8.4.5 of the Respondent's 2011 Guidelines concerning *"Software"*:-

"*The OECD Frascati Manual states "for software development to be classified as R&D, its completion must be dependent on the development of a scientific and/or technical advance, and the aim of the project must be resolution of a scientific and/or technical uncertainty on a systematic basis. Listing software functions and features at an "end-user" level can rarely describe advancement in technology. Advances are typically made through innovation in software architectures, designs, algorithms, techniques or constructs. To develop software at the leading edge of today's technologies generally requires the developer to come up with new constructs, such as new architectures, algorithms or database management techniques (i.e., make Technological Advancements), and there are then specific uncertainties as to the viability of these (i.e., Technological Uncertainty). If the software's competitive edge stems from advance in an area other than technology, such as business management, or improvements in financial management techniques, the project is unlikely to be eligible. Almost any software developed for sale is developed systematically and the uncertainties are systematically resolved (i.e., Technical Content*)." [Emphasis original]

432. Having opened this passage, counsel for the Appellant put it to the Respondent's expert that in light of the evidence of Appellant Witness 5 on the construction of the aggregated service desk based on the Azure cloud, it was clear that *"the architecting of this…amounted to a technological advance.*" The Respondent's expert replied that in his view this was not clear at all. In relation to the foregoing paragraph of the 2011 Guidelines, he observed advances involving "*innovation in software architectures"* should be read in light of the part of the same paragraph referencing the "*leading edge"* of today's technologies and the need for "*new constructs, such as new architectures".* He then stated:-

"*So there are many software architectures in existence. Let me think of a few. There is of course completely monolithic architectures where all the software is together. There is client server architectures where you might have, say, a server in a cloud system somewhere which would be developed and it would interact with a client in, say, your phone or your Macintosh. So, say, an internal music playing system might*

be like that. There are other software architectures such as…one that is favoured by Microsoft, indeed, is software orientated architectures, SOAs. There is another architecture which is Micro Services, which is rather current. There are many software architectures.

So if somebody comes up with a new software architecture that would be interesting. And I will give you an example of such a new architecture, which is a bit hypothetical, sadly, but, nevertheless, it would be a new software architecture. So it would be where the components of your software system, your architecture, would be lined linked by what are called predicates…to go back to my idea of logic programming yesterday…that is statements that are either true of false. So that could be used as the basis for a new software architecture. And I believe that that is a reasonable interpretation of the term "new architectures" here. Especially when you look at the next, as I said what follows it…'new algorithms or new database management techniques'".

433. Counsel for the Appellant suggested to the Respondent's expert that this was a "strained" interpretation of what should amount to a technological advance. What was needed in respect of architectures was "innovation" and no more. The Respondent's expert did not accept this. He said it did not follow that the goal of making technological advancements would be involved in a project "*just because they moved from one architectural type to another, it doesn't follow. So one would still have to look underneath to see were there technological advancements made."*

434. Notwithstanding this, when asked by the Commissioner whether he accepted that there had been innovation in software architecture by virtue of the work done on the project the Appellant said no. There was in his view:-

"*a great deal of continuity from the original application, that was developed way back in 2008 through to 2011…there is a great deal of continuity. They all use a Microsoft product call Dynamics CRM. From 2011, they all have a portal, which is web based. So the version in 2011, which I think might be V1, although the documentation isn't completely clear about that. In V2 they use a portal, in V3 they use a portal and in V4 they use a portal. So I think there is a great deal of continuity, in fact, in the architecture of the solution of this product that has been developed."*

435. Counsel for the Appellant put it to the Respondent's expert that earlier in his evidence under cross-examination he had rejected the suggestion that "architecture" was a "term of art". Yet now, he was expressing detailed views on the subject. He put it to him that he was, in effect, changing his evidence. He asked again whether architecture was a "term

of art", to which question the Respondent's expert replied that it was. This was a matter highlighted in legal submission by counsel for the Appellant.

436. Counsel for the Appellant cross-examined the Respondent's expert on his view, expressed in examination in chief, regarding whether Agile was an appropriate methodology for the conduct of R&D. He repeated that in his opinion, Agile was an appropriate methodology for software development but not R&D. Counsel for the Appellant then opened the Respondent's Tax and Duty Manual published in 2021, in which it was stated in relation to "*Qualifying activity pertaining to Software*" that:-

> "*Qualifying activity must be systematic in nature as well as achieving advances. Agile development methodologies such as Scrum and similar techniques, while not exhibiting the linear nature of a traditional software life cycle, are systematic in nature."* [Emphasis added]

437. The Respondent's expert did not dispute that Agile was systematic in nature. Rather, his view was that Agile alone, which he viewed as being in the normal course 'document light' as it was based on face to face interaction, was not a system that lent itself to the creation of reproducible work. Reproducibility was an intrinsic part of R&D. However, as the Commissioner understood his evidence, he suggested that Agile, coupled with detailed and systematic record keeping of activities performed, hypotheses, results and analysis, would in principle be an acceptable method of R&D. He said, for example, that documentation of what had been sought to be achieved on each Sprint, the work done and the results of the work should have been maintained by the Appellant if it was engaged in R&D. This had not been done. He repeated his view that the version of the system that they had implemented failed to meet the criterion of reproducibility.

Submissions

Appellant

438. Counsel for the Appellant structured his submissions by reference to the evidence of the witness called by the parties. He did so by going through each one in turn and referencing parts that were, in his view, of particular relevance in proving the Appellant's proposition that the work of the project team was directed toward making a technological advancement, which work involved the resolution of technological uncertainty.

439. The Appellant's counsel began his submissions by referring back to the evidence of Appellant Witness 1 to the effect that the core concept was to leverage cloud technology to deliver remote IT, project support and RMM services by means of multi-tenanted

applications. He observed that the instruction given to the project team was to utilise existing products in the creation of the aggregated service desk where possible and not "*re-invent the wheel*". Counsel for the Appellant then said:-

> "*I think this is…what [the Respondent's expert witness] latched on to and he said you're only using existing technology…The evidence from the [Appellant's] witnesses here is, we're not just using that technology, the technology was there and we had to integrate our new component that we created with that. And we were doing it on an infrastructure as a service basis. And this is where the battleground is*."

440. Counsel for the Appellant emphasised that the evidence of Appellant Witness 1 was that the aggregated service desk should allow people:-

> "*to work from anywhere in the world, it has to be scalable, repeatable, global and multi-tenanted."*

441. Counsel for the Appellant said that the evidence of Appellant Witness 1 suggested that the biggest area of difficulty arising from this objective was "*making the whole multi-tenanted area work".* There was, he observed, no dispute but that the persons involved on the technical side of the project, including Appellant Witness 1, were highly competent and would have known what the state of the art in relation to multi-tenanting and cloud technology was at the time. Counsel for the Appellant referenced the evidence of Appellant Witness 1 that the essence of the project was:-

> *"taking what we have, making it multi-tenanted…and that means building bubbles of software around it to make it multi-tenanted, to allow you to identify people or taking in the security pieces or anything else, right, and that's what we set out to achieve*."

442. Counsel for the Appellant stated that managing to make Microsoft applications such as SharePoint and Dynamics CRM multi-tenanted was, according to the evidence of Appellant Witness 1, "*a huge leap forward".* The Appellant was, he said, improving existing technology in a *"massive way".*

443. Counsel for the Appellant emphasised that the evidence was that the Cloud platform ultimately chosen to host the aggregated service desk, Azure, was available only in beta form in 2012. While it offered IaaS on which the Appellant could provision virtual machines, there were significant problems with persistence that had to be overcome.

444. Counsel for the Appellant submitted that Appellant Witness 1 had given evidence about the existence of a project methodology. This involved the use of concepts such as "Go, park, kill" and the creation of a "Project Charter", which set out stated project objectives.

It also involved the use of an 'Agile' working method which involved 'Scrums' and periods of work divided into 'Sprints'. Counsel for the Appellant further observed that various witnesses had given evidence about their use of "The Wall". The totality of this was, he said, indicative of a highly systematic approach to the creation of the aggregated service desk product.

445. Counsel for the Appellant submitted that while the evidence was that software was built by the Appellant's team:-

> "*the big picture here is how the systems integrate together. And the bubbles or components…depending on how you want to describe them…is what is important…architecting here, objective No.1, is the overriding big picture*."

446. Counsel for the Appellant argued that it would be a mistake to look at each of the individual tasks in isolation to establish whether the project involved work toward a technological advancement. Counsel for the Appellant then said:-

> *"What might be very simple once you know how it works is not. You have to figure out how this is done and that is the step*."

447. Counsel for the Appellant suggested that the analysis of the Respondent's expert witness was subject to this flaw. He was, counsel submitted, applying 20/20 vision with the benefit of hindsight.

448. Counsel for the Appellant highlighted the evidence given at hearing by Appellant Witness 1 that the work in question was subject to a technical assessment by Enterprise Ireland, which body concluded that it constituted R&D by its own definition. This was, counsel said, relevant context.

449. Counsel for the Appellant did not dwell in submission on the evidence of Appellant Witness 2.

450. In respect of the Project Charter, drawn up by Appellant Witness 3, counsel for the Appellant said that it was not intended to be a technical document. He summarised the evidence of Appellant Witness 3 as being that it was drawn up to give a structure to the project at its outset so that it stayed "on track". She had also given evidence about the use of Agile, 'burndown meetings', the Wall and the existence of "*formal weekly meetings",* including blacklog review meetings. Counsel for the Appellant, returning to the question of the structure of the work done said:-

"*So we have a methodology. And that methodology is clear from the wall and the burndowns and all of that documentation that is being provided, that's accepted as being systematic documentation as well*."

451. In relation to Appellant Witness 5, counsel for the Appellant referred in submission to his evidence that, in designing the aggregated service desk, significant uncertainty arose from the 'immature' nature of the cloud platform with which they were working, namely Azure. Uncertainty also arose on foot of the lack of a defined SLA being offered by Microsoft in relation to the persistence of virtual machines. Though this was in the end solved by the introduction of an SLA by Microsoft, work was done prior to this on the utilisation of private data centre infrastructure as a backup to Azure's cloud offering, lest latter should fail.

452. Counsel for the Appellant then placed emphasis on Appellant Witness 5's evidence regarding the use of Agile, which he said was essential because building the aggregated service desk was like "*trying to build on a foundation that* [was] *constantly changing."* Counsel for the Appellant highlighted that the evidence of Appellant Witness 5 was that the foundation upon which the Appellant was building the numerous parts of the aggregated service desk was changing for two main reasons. First, the team's own understanding of Azure's IaaS cloud platform was expanding as the project progressed and, secondly, the platform was itself evolving on foot of work by Microsoft. Counsel noted that the iterative Agile approach, divided into 2 week sprint segments dedicated to specific tasks, was not only a systemic approach, but the best such approach given the problems faced by the project team. Scrum was, he said, ubiquitous in the software development field.

453. Counsel for the Appellant submitted that the awards received by the Appellant from Microsoft, whereby it was named as its "partner of the year" in 2012 and 2013, and a personal award received by Appellant Witness 5 from the same source concerning "*how best to use Azure"*, were pertinent to deciding the question of whether R&D had taken place. This was far from just being a project that involved "*plugging in software and fixing bugs"*.

454. Counsel made reference to the evidence of Appellant Witness 5 relating to the difficulty of arranging secure access to different "identities" (i.e. customers) for SharePoint and Dynamics CRM. The evidence was that "*heavy customisation"* of these products had to be carried out.

455. Counsel for the Appellant also referred in submission to the evidence of Appellant Witness 5 in connection to the "integration" of the Appellant's aggregated service desk

portal to be used by its customers, which utilised Azure in the form of PaaS, with the infrastructure which used Azure in the form of IaaS. This, he said, gave rise to a high degree of uncertainty.

456. Counsel for the Appellant made reference to the evidence of Appellant Witness 5 to the effect that their work was viewed in the software development industry as being innovative, in particular the statement that*: "It* was *constantly referenced in presentations on behalf of Microsoft to other partners about what to do and how to do it."* He then also laid especial emphasis on the following quote, already referenced above in this Determination, that:-

> "*There was no reference architecture, recommended approach, how to do this with Microsoft technology. So, you know, there was no booklet you could follow. There was no online documentation you could go to and say this is exactly what we need to do this…"*

457. With respect to the evidence of Appellant Witness 6, counsel for the Appellant noted he had given detailed evidence about the work that was done in order to deliver the IT support service and the project support service. The evidence was that work had been carried out to both SharePoint and Dynamics CRM and that, in particular, components had been "bolted on" in order to ensure that they were capable of authenticating and authorising different users of the same instance of software. Counsel for the Appellant drew the Commissioner's attention in submission to the evidence of Appellant Witness 6 that, in his view, this constituted an appreciable improvement to these existing products.

458. The Appellant's counsel then addressed the evidence of the Appellant's first expert witness, beginning by emphasising his professional credentials and qualifications. He then adverted to his evidence about changing practices in software development research, in particular that academic research practices such as literature reviews were not ubiquitous when it came to models of "applied research" or "experimental development" often practiced by those in industry.

459. Counsel for the Appellant observed that the view of the Appellant's first expert witness was that the idea of a service desk providing a range of services remotely to numerous clients by means of the cloud was one that had "*not been done before".* In his view it therefore met the requirement of novelty, as set out in the Frascati manual and, likewise, that of creativity.

460. Regarding uncertainty, the Appellant's counsel observed that there was a stark clash of the views of the experts. The view of the Appellant's expert witness was that there was a

"*high degree of uncertainty"* present in relation to the work done by the project team. This view was founded on his opinion that when the work was occurring, "*multi-tenancy in the cloud was a new technology"* and that the Appellant was "*implementing new technologies for the first time".* Moreover, the Appellant's expert was of the view that it was essential to view the R&D project as one where many pieces had to be made to work together. The uncertainty was "*an aggregation of challenges".*

461. Regarding whether the project teams work was done in a "*systematic"* manner, the Appellant's counsel submitted that the Appellant's first expert was emphatic in his evidence that Agile was not only *a* method for software development research, it was, in effect, *the only* method. Counsel for the Appellant submitted that the view of the Respondent's expert that the approach adopted was inadequate to ground its claim for tax credits for the years 2012 and 2013 suggested that he was *"out of touch with the…research and development world".* He cited his C.V. relative to those of the Appellant as evidence supporting this supposition. Counsel for the Appellant further submitted that it was clear that the Respondent's expert had no background in cloud in the form of IaaS.

462. Counsel for the Appellant said that relative to the views expressed by the Respondent's expert witness, the Appellant's oral evidence on the question of uncertainty was "*much more clearly though out and clearly expressed…and rational."*

463. Counsel for the Appellant also observed that the Appellant's first expert was of the opinion that the work done was transferrable or reproducible, which opinion was illustrated by the "*evidence of learnings that Microsoft got from this"* and also from the interest shown by the IVI in the aggregated service desk.

464. Nor, counsel for the Appellant emphasised, was the Appellant's expert willing to accept that the Appellant's work was merely the application of known principle. Rather, it was the 'extension' of principles.

465. Counsel for the Appellant then submitted that the Appellant's second expert witness was also clear in his opinion that the work done by the project team constituted R&D. He had both academic and practical experience in software development, as well as being someone involved, through the University at which he is a Professor, in offering R&D services to private companies.

466. In the early part of his examination in chief he had outlined that Agile was a systematic approach to software R&D, within the meaning of the Frascati manual. Its particular advantage was that it allowed development to continue even where significant uncertainty prevented progress on one aspect or element of a software development project. There

was, in the view of the Appellant's second expert witness, significant uncertainty associated with the project on the grounds that what they were working on was a "*practical problem that didn't have a known solution". "*Cloud service for multi-tenants, was, moreover, in its infancy and the job of architecting a solution was, based on his analysis of research papers on the topic, highly complex. The Appellant's second expert witness had given his view that it was highly unlikely that the work undertaken involved "*routine run of the mill kind of work".*

467. The Appellant's counsel then moved in submission to the question of the evidence of the Respondent's expert witness.

468. Counsel for the Appellant drew the Commissioner's attention to the views of the Appellant's second expert witness, expressed in writing and in oral evidence.

469. The Appellant's counsel described the view of the Respondent's expert that Agile itself was not a suitable methodology for R&D as "anachronistic" and contrary to contemporary thinking. He suggested that the Commissioner should not accept it as correct. He said that it was likely that this view stemmed from the fact that the Respondent's expert had accepted that he had not been involved in research to any great extent since at least 2010. Nor, counsel submitted, was there much evidence of the Respondent's expert being experienced in cloud computing. He had, at some point in the past, provisioned a virtual machine on Amazon's AWS platform, but had never used Azure.

470. Counsel for the Appellant noted, however, that the Respondent's expert accepted that the Appellant developed new products or services on foot of the work done on the project. This was something that weighed in the Appellant's favour in the appeal.

471. Counsel for the Appellant submitted that the Respondent's expert's evidence that "software architecture" or "architecting" was not a term of art was indicative of his lack of expertise in the area at hand.

472. Regarding the views of the Respondent expert on the documenting of the Appellant's R&D, counsel for the Appellant observed that, while he viewed it as inadequate, he at least accepted that the version of 'the Wall' produced at hearing was illustrative of the methodology used. Furthermore, he did not dispute that the work carried out was experimental development that was "aimed at filling knowledge gaps."

473. Counsel for the Appellant highlighted in submission that the Respondent's expert accepted that Appellant Witness 5 was an expert in software development and that he would have been versed in the state of the art.

474. Counsel for the Appellant then pointed to an admission made by Respondent's expert witness that he said, in effect, meant that he conceded that the work carried out on the project involved a technological advance and was R&D. This was that he agreed with the proposition put to him in cross-examination that the product produced was one (a) that extended the overall knowledge or capability in the field of technology and, (b), "*created a process, material, device, product or service which incorporat*[ed] *an increase in the overall capability."* Moreover, he then accepted that the aggregated service desk was an "*appreciable improvement to an existing process material, device, product or service through an advance in science or technology."* Counsel for the Appellant highlighted that by the Respondent's own 2011 *"Guidelines for Research and Development"* the work therefore constituted R&D.

475. Counsel for the Appellant then also highlighted that the Respondent's expert witness accepted that the members of the project team were "*uncertain as to how to implement* [multi-tenancy]". This, he said, was a further illustration of the fact that, in being of the opinion that their work did not constitute R&D, the Respondent's expert was taking leave of the Respondent's Guidelines and, more significantly, the OECD guidelines on the definition of R&D, set out in the Frascati Manual, which both parties to the appeal were agreed were key to the Commissioner's decision. Counsel for the Appellant submitted that the view adopted by the Respondent's expert was "*restrictive and unreasonable"* and should not be adopted by the Commissioner.

476. Counsel for the Appellant further submitted that the Commissioner in weighing the evidence of the Respondent's expert regarding the appropriateness of Agile as a R&D methodology in its own right had to consider that the Respondent's own Tax and Duty Manual on R&D provided that *"Agile development methodologies such as Scrum and similar techniques, while not exhibiting the linear nature of a traditional software life cycle, are systematic in nature."* He said that this was a further example of the Respondent's expert's departure from contemporary thinking about what does and does not constitute acceptable research practices.

477. Later in his closing submissions, counsel for the Appellant outlined what he saw as the "*nub of matters"* regarding the view of the Respondent's expert that the Appellant's work was not R&D:-

> "[…] *as I understand it…he accepts there is uncertainty. It seems to be…what's the level of uncertainty. And there seems to be a question there, is there enough uncertainty? Because he says all software has uncertainty, it is inherent in it. So there*

is uncertainty. The question is, does the resolution of that uncertainty meet the uncertainty test here? I cannot see why it won't."

478. Counsel for the Appellant submitted that this view was, of course, altogether at odds with those expressed by both of the Appellant's experts. They were of the view that the work done involved a high level of technological uncertainty. Counsel for the Appellant referred, in particular, to the fact that the evidence of the Appellant's first expert witness was that much of the uncertainty was derived from making all of the systems in play work together. He was of the opinion that in no way could the work of the Appellant in this respect be thought of as routine. Managing the assimilation of the systems, furthermore, amounted to, in both the Appellant's experts' opinions a clear advance in the technological state of the art.

Respondent

479. Counsel for the Respondent began her submissions by emphasising to the court that the burden of proving factual matters at issue in this appeal fell on the Appellant. This was in accordance with the law as expressed in *Menolly Homes v Revenue Commissioners* [2010] IEHC 49 and *T.J. v. Criminal Assets Bureau* [2008] IEHC 168.

480. Counsel for the Respondent then indicated, in relation to the criteria set out under section 766 of the TCA 1997 determining what constitutes R&D, that it was not in dispute that work carried out by the Appellant's project team on the creation of its aggregated service desk amounted to "*systematic, investigative or experimental activities in a field of science or technology"*. Nor was there any dispute that the work in question amounted either to "*applied research*" or *"experimental development*". [3] The issue lay, rather, in the requirement under section 766(1) that for any such activities to be considered R&D they must, firstly, "*seek to achieve scientific or technological advancement"* and "*involve the resolution of scientific or technological uncertainty."* Counsel for the Respondent submitted that the work carried out by the Appellant's project team met neither of these mandatory conditions.

481. Counsel for the Respondent then opened several Canadian authorities, which concerned the consideration of whether the activities of various companies availing of R&D tax incentives constituted "*scientific research and experimental development"* (abbreviated

[3] As noted already, the definition of applied research is "*work undertaken in order to gain scientific or technical knowledge and directed towards a specific practical application, or experimental development*". The definition of "experimental development" is *"work undertaken which draws on scientific or technical knowledge or practical experience for the purpose of achieving technological advancement and which is directed at producing new, or improving existing, materials, products, devices, processes, systems or services including incremental improvements thereto.*"

to ‘SRED’). This case law concerning the definition of SRED made clear, she submitted, that it was very similar, if not identical, to the definition of R&D under section 766 of the TCA 1997.

482. The first of these Canadian authorities cited by counsel for the Respondent was *Northwest Hydraulic Consultants Limited v Her Majesty the Queen* [1998] 3 CTC 2520. There, Bowman JTCC enumerated a five-part test, derived from Canadian guidelines drawn up by experts in R&D, which test has been adopted in subsequent judgments of the Canadian Courts, directed at establishing whether SRED had taken place. This first part of this test was as follows:-

> *“1. Is there a technical risk or uncertainty?*
>
> *(a) Implicit in the term ‘technical risk or uncertainty’ in this context is the requirement that it be a type of uncertainty that cannot be removed by routine engineering or standard procedures. I am not talking about the fact that whenever a problem is identified there may be some doubt concerning the way in which it will be solved. If the resolution of the problem is reasonably predictable using standard procedure or routine engineering there in no technological uncertainty as used in this context.*
>
> *(b) What is ‘routine engineering’? It is this question, (as well as that relating to technological advancement) that appears to have divided the experts more than any other. Briefly, it describes techniques, procedures and data that are generally accessible to competent professionals in the field*.”

483. Counsel for the Respondent submitted that this test should be applied by the Commissioner to the instant case.

484. The second part of the test enumerated in *Northwest Hydraulic Consultants Limited* was:-

> *“2. Did the person claiming to be doing SRED formulate hypotheses specifically aimed at reducing or eliminating that technological uncertainty? This involves a five stage process:*
>
> *(a) the observation of the subject matter of the problem;*
>
> *(b) the formulation of a clear objective;*
>
> *(c) the identification and articulation of technological uncertainty*
>
> *(d) the formulation of an hypothesis or hypotheses designed to reduce or eliminate the uncertainty; and*
>
> *(e) the methodical and systematic testing of the hypotheses.*

It is important to recognize that although a technological uncertainty must be identified at the outset, an integral part of SRED is the identification of new technological uncertainties as the research progresses and the use of scientific method, including intuition, creativity, and sometimes genius in uncovering, recognizing and resolving the new uncertainties."

485. Counsel for the Respondent submitted that there was little evidence that the Appellant had, in conducting the project, applied such as process. It had not observed a problem, formulated an objective, identified technological uncertainty and a hypothesis to reduce the same and tested out the hypothesis. The kind of evidence to which she referred was documentary evidence. She accepted that there was "*some oral evidence*" in this regard.

486. The third part of the test in Northwest Hydraulic Consultants Limited was:-

"*Did the procedures adopted accord with established and objective principles of scientific method, characterized by trained and systematic observation, measurement and experiment, and the formulation, testing and modification of hypotheses*?"

487. Counsel for the Respondent submitted that the Appellant had carried out a process under which it had produced no, or at least very little, documentary material demonstrating that there had been measurement and experiment and the formulation, testing and modification of hypotheses.

488. The fourth part of the test in *Northwest Hydraulic Consultants Limited* was whether the process in question resulted in a technological advance, that is to say an advancement in the general understanding or state of the art? Bowman JTCC then said:-

"*By general I mean something that is known to or, at all events, available to persons knowledgeable in the field. I am not referring to a piece of knowledge that may be known somewhere to someone*."

489. Counsel for the Respondent submitted that there was little evidence that what the Appellant had done constituted an improvement in the state of the art.

490. As an overarching point, counsel for the Respondent submitted that record keeping was an essential part of R&D, a point made by the Respondent's expert in his evidence. In this regard, counsel for the Respondent said:-

"I think that if it is not recorded then you can't say it's R&D. Recording is an essential part of the process. So recording has a number of aspects, one is, it's an essential part of the process because without recording there is no reproducibility or transferability;

and the other is, of course…the difficulty of satisfying the onus of proof in circumstances where you don't have the detailed record that should have been kept."

491. With regard to the Agile methodology, counsel submitted:-

"[…] insofar as Agile is a means of managing the workload and managing the project, I don't think there is any difficulty with it, provided you have documentation."

492. Counsel for the Respondent submitted that while Agile was a "*completely appropriate"* approach to take in relation to software development with no R&D dimension, if there did exist such a dimension, detailed record keeping of the work was required.

493. Counsel for the Respondent addressed the question of whether work done by the project team was "*transferrable or reproducible",* in accordance with the conditions set out in the Frascati Manual. In essence she said that, notwithstanding any interest shown in the aggregated service desk by the IVI, "*there is a difference between product and process".* It was the process that had to be discernible. Moreover, in relation to the Appellant's reliance on the production of code as evidence of R&D work, counsel for the Respondent said:-

"*We heard extensive evidence from [the Respondent's expert witness]…about the code and the fact that, first of all, he didn't get very much code, he got some little snippets. But secondly…you can't really work backwards from code to figure out what the process was and the difficulties that emerged along the way and the problems that were overcome. The code really just tells you what the product is. And there is a difference between the product and the process.*

So somebody who has the code, according to [the Respondent's expert witness] is not necessarily going to be able to reproduce the research from that. They will need more information in addition to the code."

494. Counsel for the Respondent then addressed a second Canadian authority in submission, namely *CW Agencies v Canada* [2002] 1 CTC 212. In this case, the appellant carried on the business of marketing tickets in government sponsored lotteries to customers in many parts of the world. In carrying out this activity they found it necessary to attempt the development of an in-house computer system with business objectives for the new system imposing system requirements of "*flexibility, scalability, instant response time, accuracy and reliability."* The appellant had had its claim for tax relief arising in respect of expenditure on the computer system dismissed, with that dismissal upheld on appeal. On further appeal, Sexton JA stated that the appellant had:

"[…] *failed to retain documentation which might have assisted in it discharging the onus to disprove the Minister's assumptions, nor did the Appellant choose to call as a witness any person directly and personally involved in the development process. Rather the Appellant called an expert who similarly was handicapped by the lack of reliable documentation. This expert was compelled, by the absence of a detailed project management plan, to examine the results of the Appellant's work and to arrive at conclusions regarding the problems which he thought must have been faced by the Appellant and the steps taken to solve those problems.*

The Tax Court Judge noted that the failure to call the project manager or some similarly placed person was never explained by the Appellant. It is certainly arguable that an inference could be drawn that the calling of such evidence would not have been helpful to the Appellant

In these circumstances the Tax Court Judge had no alternative but to consider the expert evidence tendered by the Appellant and balance it against the expert evidence called by the Respondent."

495. It is clear that in opening this case, counsel for the Respondent sought to draw a parallel between the manner in which the appellant in *CW Agencies* had run its appeal before the Canadian tax court and how the Appellant had its case before the Commission.

496. Counsel for the Appellant also referred to the case of *R&D Pro Innovation INC v Canada* 2015 TCC 186, in which that court cited the reasoning applied in another case, *Zeuter Development Corporation v The Queen,* 2006 TCC 597, where Justice Little noted that novelty or innovation in a product is insufficient to illustrate a technological advancement rather, it is how these features arise that is important.

497. Last of the Canadian line of authorities cited was *Logix Data Products v* Canada 2021 TCC 36. There, a company had sought and been refused tax relief in respect of the development of roof shingles that functioned on a dual basis as solar panels. In the part of the judgment setting out the court's analysis, Justice Monaghan stated:-

"*At the outset, I observe that the Appellant embarked on a project to develop a new product – a dual purpose solar shingle. But what was the technological uncertainty? Mr Baird described the uncertainty as whether the Appellant could develop a solar shingle that would work will all the components to suit the intended project objective. That objective was to create "a dual purpose, reliable, replicable, solar shingle that would produce the same performance as conventional solar panels, as well as allowing the same cost. Mr Baird said the uncertainty was whether the Appellant could achieve*

that goal. I agree with counsel for the Respondent that this is more in the nature of a design objective, than a statement of technological uncertainty."

498. Counsel for the Respondent said that similar analysis was applicable to the objectives stated by the Appellant in relation to the development of its aggregated service desk.

499. Counsel for the Respondent then addressed the Frascati Manual. She submitted, firstly, that this OECD document, as well as the Respondent's Guidelines, were not statements of the law and were not binding. Where the Commissioner considers parts therein to be at odds with the meaning of section 766 of the TCA 1997, he should disregard them.

500. Counsel for the Respondent observed that in the context of R&D claims, software development was a particularly difficult area. This was so, firstly, because of the fact that it is by its nature difficult for non-specialists to understand and, secondly, because even routine software development bears some of the hallmarks of R&D. In this regard, she said:-

"*What might be called routine or regular software development or ordinary software development…also involves novelty and the resolution of uncertainty. […] That kind of uncertainty…may be of different kinds. And you might remember [the Respondent's expert] referenced the MacCormack and Verganti paper where they talked about different kinds of uncertainty.*

[…]

Now most software development…it certainly involves uncertainty, generally technological uncertainty and its resolution. So it is really the question of technological or scientific advance which doesn't arise with…or which isn't satisfied with ordinary software development."

501. Shortly thereafter, counsel for the Respondent said:-

"So you have this extra test which distinguishes software research and development from mere software development and it is whether you have the technological or scientific advance judged by reference to the state of knowledge in the field at the beginning of the project."

502. Counsel for the Respondent emphasised that, given the technical nature of the subject matter at issue in the appeal, the expert evidence was in her view of central importance. With this in mind, she referred to the judgment of the High Court in *James Elliot Construction Limited v Irish Asphalt Limited* [2011] IEHC 269 and submitted that it was clear from the judgment of Charleton J that the task of the Commissioner in assessing

the evidence of the experts was "*to apply common sense and logic to the view expressed by the experts".*

503. Counsel for the Respondent also cited the judgment in *National Justice Compania Naviera SA v Prudential Assurance Co Limited* [1993] 2 Lloyd's Rep 68 ("*Ikarian Reefer")*, in which the duties and responsibilities of an expert were summarised, in particular that the expert's evidence "*should be, and should be seen to be, the independent product of the expert uninfluenced as to form or content by the exigencies of litigation."* Counsel for the Respondent submitted that inclusion in the Appellant's 2017 replying document of what was headed therein as a "*Letter of support"* from the Appellant's first expert witness in respect of the its R&D credit claim cast doubt on his true independence as an expert. So too did the statement contained in the 2019 replying document, wherein the Appellant included a "position paper" and set out its case, that the Appellant's first expert witness was one of its co-authors. Counsel said that on this basis, Appellant Witness 2 should not, notwithstanding that he had made the standard declaration made by all experts, be considered a true *independent* expert. It had to be taken into consideration in the assessment of the credibility of his evidence.

504. Dealing with the letter itself, in which the Appellant's first expert witness expressed his opinion that the work to create an aggregated service desk amounted to R&D, counsel for the Respondent observed that he referred to the Frascati Manual, but not to the wording of section 766 of the TCA 1997. Nor did he say that he had examined any of the documentation generated by the Appellant's project team. Counsel submitted "*We don't know if he looked under the bonnet in any way."*

505. Regarding the report of the Appellant's second expert witness, counsel for the Respondent observed that, again, what had been furnished was a very brief report that amounted to a very high-level analysis. Although he stated that he had reviewed the documents shared during the assessment process, he had not, like the Respondent's expert, appended a list of them. When cross-examined, he was vague about what documents he had seen and considered.

506. Moreover, the evidence of the Appellant's second witness was that he had done a literature review of peer reviewed papers concerning cloud technology and multi-tenancy, but this, counsel pointed out, had occurred "*much after the event".*

507. In his evidence the Appellant's second expert witness had said that he had read both the Respondent's Guidelines and the Frascati Manual in order to satisfy himself that his understanding of the meaning of the terms "technological advancement" and "technological uncertainty" aligned with the definitions in those documents. He said that

it did. However, counsel for the Respondent submitted that he then stated in his oral evidence that a technological advancement "*is providing a practical a solution to a practical problem that didn't have any known solution".* This, it was submitted, was not an adequate definition for the purposes of section 766 of the TCA 1997. She re-iterated her submission that solving a problem using known techniques did not amount to a technological advance.

508. Counsel for the Respondent then moved to the evidence of the Respondent's expert. She contended that it was clear that all of the experts were eminent persons and submitted that the Commissioner should avoid assessing the evidence as if it were a "beauty contest" of CVs. Counsel for the Respondent described as "*uncalled for*" and "*completely unjustified*" the suggestion put forward by the Appellant's counsel that the Respondent's expert was somehow unqualified to assess whether there was evidence that the project in question constituted a programme of R&D directed to the achievement of a technological advance in computing or software. The Respondent's expert had, she observed, a 40-year career in one of the best computer science schools in the country and, over that time, had carried out research and engaged in the supervision of research.

509. Counsel for the Respondent observed that the Appellant's counsel had, in submission, criticised the Respondent's expert for his "granular approach". She submitted, however, that the reports, though undoubtedly detailed, were from the outset grounded on the Appellant's stated objectives. From there he asked the question whether they gave rise to an uncertainty or advance.

510. Counsel for the Respondent rejected the proposition that the evidence of the Respondent's expert witness involved the application of hindsight. He had first met the Appellant with a view to assessing its claim in 2015 and the first report was completed in 2016.

511. Counsel submitted that, in her view, there had been no real engagement by either of the Appellant's experts with the specific statements in his reports. Cross-examination, furthermore, mainly involved aspects of the Respondent's R&DS Guidelines and the Frascati Manual being put to him. Again, there was little engagement with the specifics of his reports.

512. On the question of documentation, counsel for the Respondent pointed to the 2011 iteration of the R&D Tax Credit Guidelines, wherein it was stated at paragraph 8.1:-

> "*The Act requires research and development activities to be systematic, investigative or experimental in nature. It is expected that activities be to a planned logical*

sequence, generally to a recognised methodology, with detailed records being maintained."[Emphasis added]

513. The Appellant was thus on full notice of the need to document the work that it was carrying out, which it had not done. The critical importance of record keeping had been emphasised in the Canadian courts. It was, they had held, implicit in the definition of SRED that there be detailed documenting of the process. Matters were no different she said in relation to section 766 of the TCA 1997, which fact was further underlined by the following passages in the 2011 Guidelines:-

"*Each project should be documented showing clearly why each major element is required, and how it fits into the research activity as a whole. To build on the results of testing in a systematic way requires the organised documentation of work undertaken by way of experimentation or investigation.*

It is important for a company to maintain dated documents of the original scientific or technological goals of the activity, the progress of the work and how it has been carried out, and the conclusions.

Indicators or measures to be used to determine if the scientific or technological objectives of the research and development activity are met should be identified when forming the concepts for the research and development activity. These measures should also be documented at the early stages of the program. Failure to have such documentation may indicate the absence of a systematic, investigative or experimental approach.

In the event of a claim being selected for examination by Revenue, the adequacy of such records will be considered."

514. In respect of the printout of "*The Wall",* which had been referred to on several occasions at hearing, counsel submitted that this was only a snapshot of one particular date. No further snapshots had been furnished, let alone a full picture of the R&D process from beginning to end. Furthermore, the evidence of the Respondent's witness had been that on that particular snapshot, there was no evidence that he could see of any technological advance sought.

515. The Appellant had, by its own account, conducted regular sprints. Counsel for the Respondent submitted:-

"[…] *if the company had kept a record at the end of each sprint of what had been achieved during that sprint and what the outcome was, again we would have a bit more*

documentation and a lot more evidence of what the company did and what the results were and we would be closer…to a situation in which another professional in the field could replicate the research that was carried out. But we don't have either."

516. The Commissioner was then addressed by counsel for the Respondent on a question regarding the quantum of the expenditure that should be allowed were the Commissioner to find that the project team was engaged in qualifying R&D activities for the purposes of section 766 of the TCA 1997. This concerned the net question of whether two of those on the project team, Appellant Witness 3 and [redacted], were engaged "*wholly and exclusively…in the carrying on of research and development activities".* It was submitted that were they not so engaged, that part of the Appellant's claim attributable to expenditure on their activities would fall outside the scope of the relief available under the legislation.

517. Counsel for the Respondent highlighted that Appellant Witness 3 explained her role in the project in the following terms in her evidence:-

"I first became involved in January 2011. [Appellant Witness 1] had sent out a request through the organisation to form an R&D team. I applied for the role of programme manager, I was interviewed and assigned the role. My first, I suppose, task as programme manager was to interview the board members who started this R&D initiative and also the programme sponsor and other people who had been involved in, I suppose, the idea of [the project] to date. My goal was to find out what they were trying to achieve, what the vision and objectives were, to try and put some structure around that into the project charter, which, I suppose is the main authorisation plan or document for the programme to give approval for it to commence, So my goal was to get very clear vision and objectives, identify a governance model, put controls in place to mobilise a team and get some idea of how we would achieve the scope through work streams, the breakdown of work streams over a period of a number of phases."

518. Counsel for the Respondent observed that when asked by counsel for the Appellant about whether she had any involvement in the "*actual technical research and development",* Appellant Witness 3 had said:-

"*Not necessarily. My role was to give structure and control, to make sure the work that we had outlined in the plan and the charter materialised and to capture risks and issues and actions and decisions and to escalate them appropriately up to either [Appellant Witness 1] or to the governance board. I did get involved at times going out with the team talking to customers, organising workshops, carrying out some desk-based research, if there were surveys to be issued."*

519. Counsel for the Respondent characterised the Appellant's own description of her work in the final sentence of the foregoing passage as being akin to some "*client engagement",* but not R&D.

520. Later in her evidence, Appellant Witness 3 described her role in the project in the following terms:-

> "*My role as the programme manager* [was] *to meet with the stakeholders. You have the programme sponsor* [Appellant Witness 1] *the board members and different members who are involved from a technical and business perspective. We would, as I said, have interviewed them individually. We would have had a workshop, I think if memory serves right a number of workshops to come up with the core objective."*

521. Counsel for the Respondent observed that counsel for the Appellant had, in his closing legal argument, referred to Appellant Witness 3 as the interface between the board and the research team.

522. In relation to the role of [redacted], counsel for the Respondent observed that this was summarised by Appellant Witness 5 in the following exchange with counsel for the Appellant:-

> "*Q:* [redacted]*, ITSM Principal…what does that mean?*
>
> *A: IT Service Management Competency Principal. This is an* [redacted] *role where…our service desk offering, we wanted it to be compliant to standard service management principles of which ITSM was a framework that he ran on site, managed support services with, and so yeah, we as an expert we would have ran why or what service management approach would mean to our service desk, how we would do incident management, how we would do change management, how we could do problem management, what is the right way to do it, so that when we move into a multi-tenanted, multi-customer scenario, it is aligned to some level of methodology or standard in the space."*
>
> […]
>
> *Q: So I am not sure if I have understood you correctly, but am I right in thinking that he was responsible for telling you…telling the R&D group what the clients needed in terms of service and you then had to work out how to provide it?*
>
> *A: Yes, we would have interviewed him about what is the right way for a service desk to operate with that multi-tenanted/multi-customer view."*

Q: So was he involved in the actual software side of it?

A: I can't recall. I wouldn't…I would have interviewed him with some of the requirements in mind and some of the feedback about what we built. Outside of that he wouldn't have been involved in any of the kind of technical hands-on that me or my team would have been."

523. Counsel for the Respondent re-iterated in light of the foregoing evidence regarding the activities of Appellant Witness 3 and [redacted] that what the Appellant was entitled to claim for under section 766 was expenditure incurred "*wholly an exclusively in the carrying on of research and development activities".*[Emphasis added] *"Research and development activities"* meant in the context of this appeal "*systematic, investigative or experimental activities in a field of science or technology"*, being *"experimental development"* or, perhaps "*applied research."* Counsel for the Respondent submitted that it was clear that this was not the whole and exclusive focus of the activity of either Appellant Witness 3 or [redacted]. Counsel for the Respondent submitted, moreover, that the judgment in *Revenue Commissioners v Doorley,* [1933] 1 IR 750 made clear that as what was at issue was a relief from tax, the expenditure of the Appellant on the activities of these persons had to come within "*the letter"* of the legislation. She submitted that it was clear that their activities did not and, should the Appellant find that the project involved R&D, the expenditure incurred by the Appellant thereon should be excluded.

524. Counsel submitted that it was not in dispute that the total expenditure claimed by the Appellant in relation to the activities of Appellant Witness 3 for 2012 was in the amount of €68,515. That claimed for the same year in relation to expenditure on the activities of [redacted] was €2,131 (a combined figure of €70,646). For 2013, the expenditure claimed in respect of the activities of Appellant Witness 3 was €62,728 and that in respect of [redacted] was €6,125 (a combined figure of €68,853).

Appellant's replying submission on expenditure on Appellant Witness 3 and [redacted]

525. Counsel for the Appellant submitted that the work carried out by Appellant Witness 3 and [redacted] was "*systematic, investigative or experimental activity in a field science or technology*", being "*applied research*" or "*experimental development"*. Under section 766 of the TCA 1997, applied research is *"work undertaken in order to gain scientific or technical knowledge and directed towards a specific practical application."* Experimental development is, as has been explained already "*work undertaken which draws on scientific or technical knowledge or practical experience for the purpose of achieving technological advancement."*

526. Counsel for the Appellant submitted that the Respondent was arguing in favour of a "*very restrictive approach".* Counsel observed that although the definition of "*expenditure on R&D"* refers to expenditure "*wholly and exclusively in the carrying on of R&D activities", "R&D activities"* is defined as work "*undertaken…for the purpose of achieving a technological advancement".* This is, he said, broad wording and belied that interpretation argued for by the Respondent. Experimental development work, counsel for the Appellant submitted, did not have to be undertaken by a "*boffin"* for it to be experimental development.

527. Counsel for the Appellant then referred to the Respondent's R&D Guidelines published in 2011. He observed that in respect of R&D carried out in house, these Guidelines stated that credit could be claimed in respect of a claimant's overhead costs such as heat and light on an apportioned basis. He also observed that the Guidelines stated that allowable expenditure would include the cost of:-

> "*Ancillary activities essential to the undertaking of research and development activities such as taking on and paying staff, leasing laboratories and maintaining research and development equipment including computers used for research and development activities."*

528. It is clear that counsel for the Appellant viewed the portion of the Appellant's expenditure attributable to Appellant Witness 3 and [redacted] as being such ancillary activities referred to in the R&D Guidelines.

Material Facts

529. The following are facts material to the determination of this appeal:-

529.1. The Appellant is a trading company involved in the business of the provision of IT support services, customer support services, project management services;

529.2. The Appellant is part of the [redacted] Group of companies, which provides IT services;

529.3. In 2008, Appellant Witness 1, the CEO of the Appellant, conceived of the idea of developing a remotely accessible aggregated service desk hosted in the cloud;

529.4. It was not until several years later however that Appellant Witness 1 considered that cloud technology had progressed to a point sufficient for development work on this concept to commence;

529.5. In March 2011, Appellant Witness 3, a project manager employed in the [redacted] Group, created a document entitled "*Research and Development Programme Charter".* This programme charter related to a project to develop an 'aggregated service desk' accessible to customers remotely, hosted on a cloud platform;

529.6. The project was carried out by a project team mostly, but not exclusively, involved in software development;

529.7. Work on the project to develop this aggregated service desk hosted in the cloud was carried out in the first place by a company in the [redacted] Group other than the Appellant;

529.8. The Appellant was formed in 2011, with its principal activity being the remote provision of IT and other services through an aggregated service desk hosted in the cloud;

529.9. At some point in 2012 the Appellant took over the conduct of the project to develop the aggregated service desk hosted in the cloud from the company in the [redacted] Group that had been carrying it out until that stage;

529.10. There was as of 2011, when the project commenced, no remotely accessible aggregated service desk hosted on an IaaS cloud platform;

529.11. Work on the project was conducted by the Appellant over the years 2012 and 2013;

529.12. The 'sponsor' of the project was the CEO of the Appellant;

529.13. The head of the technical development side of the project was [redacted], who was a software engineer;

529.14. The project's project manager was [redacted];

529.15. One of the functions of [redacted] was reporting to the "board of governance", established to maintain oversight over the project;

529.16. One of the employees assigned to work on the project was [redacted]. The function of [redacted] was to inform the project team of the needs of its clients in terms of IT support;

529.17. The work carried out by the project team in the years in issue involved:-

- Identifying an IaaS cloud platform to use to host the Appellant's aggregated service desk. This included trialling options including platforms offered by [redacted] and [redacted], before selecting Azure as the preferred option;
- Arranging for the migration of IT estate onto Microsoft Azure;
- Addressing security flaws in respect of virtual machines that it had provisioned on Azure;
- Building a multi-tenanted instance Microsoft Dynamics CRM;
- Building a multi-tenanted instance of Microsoft SharePoint;
- Building a multi-tenanted instance of Microsoft SCOM
- Creating a security model for Dynamics CRM;
- Creating a system of authentication and authorisation for SharePoint and Dynamics CRM;
- Creating a custom claim provider.

530. The Appellant made a claim for credit in respect of the expenditure that it incurred in relation to the project for the year 2012;

531. The amount of qualifying expenditure claimed for 2012 by the Appellant was €344,044. The R&D tax credit claimed for that year was €86,011 (i.e. 25% of the claimed qualifying expenditure);

532. The Appellant made a claim for credit in respect of the expenditure that it incurred in relation to the project for the year 2013.

533. The amount of qualifying expenditure claimed for 2013 by the Appellant was €471,212. The R&D tax credit claimed for that year was €117,803.

Analysis

The Appellant's first expert

534. At the outset of this part of the Determination, the Commissioner wishes to address the objection made by the Respondent in relation to the opinion evidence of the Appellant's first expert witness. This objection was grounded on his involvement in the composition of some or all of the replying documents delivered by the Appellant. The Respondent's position at hearing was that the statements made therein, and description given to his letter in which he opined on the nature of the work done on the project as a "letter of

support", called into doubt whether the Appellant's first expert was truly independent. In support of this position it cited the judgment in *Ikarian Reefer.*

535. Having considered the submissions made in this respect, the Commissioner considers that the best course is to focus only on the expert evidence given by the Appellant's second expert witness and Respondent's expert witness. The Commissioner does so on the grounds that, as was noted in *Ikarian Reefer,* and as has since been stated in the judgments of the courts in this jurisdiction, such as in *Donegal Investment Group plc v Danbywiske and others* [2017] IESC 14 and in *Duffy v McGee* [2022] IECA 254, it is essential that an expert's impartiality and objectivity not be in doubt. In reaching this conclusion, the Commissioner is mindful also that he has had the benefit of the opinion evidence given by two other experts in the field and thus not been deprived of the same in making a Determination on the issues arising.

The burden of proof on matters of fact and the application of the relevant law

536. It is appropriate at this point to observe that the burden of proving factual matters relevant to the question of the Appellant's entitlement to R&D tax credit lies with Appellant. This is in accordance with the following analysis of Charleton J in *Menolly Homes v Revenue Commissioners* [2010] IEHC 49, where he held:-

> *"The burden of proof in this appeal process is, as in all taxation appeals, on the taxpayer. This is not a plenary civil hearing. It is an enquiry by the Appeal Commissioners as to whether the taxpayer has shown that the relevant tax is not payable."*

537. This statement of the law regarding the burden of proof and the reasons for it has been reaffirmed on repeated occasions by the Courts in subsequent judgments (see for example *McNamara v Revenue Commissioners* [2023] IEHC 15 and *Quigley v Revenue Commissioners* [2023] IEHC 244).

538. It is worth observing that there is no burden resting with either party when it comes to deciding on questions of law as opposed to fact. As was held by the Court of Appeal in *Hanrahan v Revenue Commissioners* [2024] IECA 113, determining and applying the law to a particular set of facts is a wholly objective exercise.

539. In *Perrigo Pharma International Activity Company v McNamara & Ors* [2020] IEHC 152, McDonald J set out in detail the method by which legislation should interpreted at paragraph 74:-

"The principles to be applied in interpreting any statutory provision are well settled. They were described in some detail by McKechnie J. in the Supreme Court in Dunnes Stores v. The Revenue Commissioners [2019] IESC 50 at paras. 63 to 72 and were reaffirmed recently in Bookfinders. Based on the judgment of McKechnie J., the relevant principles can be summarised as follows:

(a) If the words of the statutory provision are plain and their meaning is self-evident, then, save for compelling reasons to be found within the Act as a whole, the ordinary, basic and natural meaning of the words should prevail;

(b) Nonetheless, even with this approach, the meaning of the words used in the statutory provision must be seen in context. McKechnie J. (at para. 63) said that: "… context is critical: both immediate and proximate, certainly within the Act as a whole, but in some circumstances perhaps even further than that";

(c) Where the meaning is not clear but is imprecise or ambiguous, further rules of construction come into play. In such circumstances, a purposive interpretation is permissible;

(d) Whatever approach is taken, each word or phrase used in the statute should be given a meaning as it is presumed that the Oireachtas did not intend to use surplusage or to use words or phrases without meaning.

(e) In the case of taxation statutes, if there is ambiguity in a statutory provision, the word should be construed strictly so as to prevent a fresh imposition of liability from being created unfairly by the use of oblique or slack language;

(f) Nonetheless, even in the case of a taxation statute, if a literal interpretation of the provision would lead to an absurdity (in the sense of failing to reflect what otherwise is the true intention of the legislature apparent from the Act as a whole) then a literal interpretation will be rejected.

(g) Although the issue did not arise in Dunnes Stores v. The Revenue Commissioners, there is one further principle which must be borne in mind in the context of taxation statute. That relates to provisions which provide for relief or exemption from taxation. This was addressed by the Supreme Court in Revenue Commissioners v. Doorley [1933] I.R. 750 where Kennedy C.J. said at p. 766:

> *"Now the exemption from tax, with which we are immediately concerned, is governed by the same considerations. If it is clear that a tax is imposed by the Act under consideration, then exemption from that tax must be given*

expressly and in clear and unambiguous terms, within the letter of the statute as interpreted with the assistance of the ordinary canons for the interpretation of statutes. This arises from the nature of the subject-matter under consideration and is complementary to what I have already said in its regard. The Court is not, by greater indulgence in delimiting the area of exemptions, to enlarge their operation beyond what the statute, clearly and without doubt and in express terms, except for some good reason from the burden of a tax thereby imposed generally on that description of subject-matter. As the imposition of, so the exemption from, the tax must be brought within the letter of the taxing Act as interpreted by the established canons of construction so far as possible"."

540. The final part of the above quotation of McDonald J concerning the interpretation of a tax relieving provision was one that, as already noted, the Respondent sought to highlight as relevant to the Determination of this appeal.

541. It was contended by the Appellant that the work done by its project team on the project was R&D. This work involved the attempt to create an aggregated service desk, accessible through a web-based portal, hosted in the cloud, providing, inter alia, IT, customer service, project management and RMM services. To recap what has been set out already in this Determination, section 766 of the TCA 1997 provides that in order for the Appellant's project teams activities in 2012 and 2013 to constitute qualifying R&D activities, in respect of which credit may be allowed, these activities must be:-

1. systematic, investigative or experimental activities;
2. in a field of science or technology;
3. involve one or more of the following categories of R&D—
   - basic research,
   - applied research, or
   - experimental development;
4. seek to achieve scientific or technological advancement; and
5. involve the resolution of scientific or technological uncertainty.

542. It is important to note that the Respondent in this appeal did not dispute that the work carried out on the project by the project team, with the exception of that performed by two of its members, was systematic, investigative or experimental activities in a field of

science or technology. Nor did it contest that the work was in the category of "experimental development". Thus, in the view of both of the parties, the Appellant met the criteria listed 1-3 above in its claim for credit for R&D in the years in issue.

543. At hearing, the dispute at the heart of this appeal focused on whether the objectives of the project team involved (a) making a scientific or technological advancement and (b) whether the attempt to achieve any such advancement involved the resolution of scientific or technological uncertainty (namely criteria 4 and 5 above).

544. In addressing this, both of the parties in this appeal referred in their submissions to the OECD's Frascati Manual (both the 2002 and 2015 editions) and the Respondent's R&D Guidelines, published in 2011. The Commissioner notes that neither have the status of law and they do not bind him in the interpretation of what constitutes R&D under the TCA 1997. Nonetheless, the Commission considers both of them, in particular the Frascati Manual which was composed by experts in the field of R&D, to be helpful guidance in determining whether that was the nature of the work of the project team.

545. As noted already, the Frascati Manual (2002 and 2015 editions) sets out that work constituting "*Routine software development"* is not R&D and that:-

> "*Such activities include work on system-specific or programme-specific advances which were publicly available prior to the commencement of the work. Technical problems that have been overcome in previous projects on the same operating systems and computer architecture are also excluded*."

546. The Frascati Manual then sets out that the key question as to whether the development of software is R&D is that its completion is dependent on a scientific or technological advance and that the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty. That the Frascati Manual (again, both the 2002 and 2015 editions of it) references the need for an attempted technological advancement and associated uncertainty underscores its relevance to interpreting section 766 of the TCA 1997.

547. The Frascati Manual also states at paragraph 2.70 that:-

> "*The nature of software development is such as to make identifying its R&D component, if any, difficult. Software development is an integral part of many projects which in themselves have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. Such advances are generally incremental rather than revolutionary."*

Technological advancement (part 4 of the R&D test)

548. Was the Appellant's project team, in working on the creation of the aggregated service desk hosted in the IaaS cloud, seeking to achieve some form of technological advancement, and did the advancement attempted depend on solving matters of technological or scientific uncertainty?

549. With regard to the former of these criteria, the Respondent's R&D Guidelines (both the 2011 and 2025 editions) state:-

> *"An advance in science or technology means an advance in the overall knowledge or capability in the field of science or technology (not a company's own state of knowledge or capability alone*)."

550. In closing legal argument, counsel for the Respondent submitted that the evidence did not disclose that the Appellant was seeking to make any advancement in the conduct of the project. The central tenet of the Appellant's case, by contrast, was that the work of the project team was focused from the outset on building a multi-tenanted software architecture on an IaaS cloud platform and that this objective amounted to an attempt to achieve a technological advance on the stock of knowledge in the IT services sector.

551. In this appeal, Appellant Witnesses 1 and 5 gave evidence that prior to the project they were aware of no aggregated service desk product hosted on an IaaS cloud platform then in existence. Appellant Witness 5 stated in evidence that his understanding in this regard was arrived at on foot of a planned 'environment scan' carried out by the project team at the outset of the project. This oral evidence reflected what was said in the Appellant's replying documents, composed in reply to the reports of the Appellant's expert.

552. In fact, the contention of the Appellant regarding the novelty of its idea to create a remotely accessible aggregated service desk hosted in the IaaS cloud was not one that was contradicted by the Respondent or its expert. On the contrary, when the Respondent's expert was asked in cross-examination by counsel for the Appellant whether in his view the aggregated service desk eventually produced on foot of the work conducted in the years in issue amounted to an "*extension*" of the *"overall capability in the field technology*", he said that he thought that it did. The Respondent's expert nevertheless appeared to suggest that this extension in capability was achieved without any sign of a technological advance having been necessary.

553. This acceptance on the part of the Respondent's expert is a matter of significance. The Commissioner finds that, matter of logic, the Appellant could not in this instance have managed to extend the "overall capability" in the field of software technology without

having sought to make a technological advance in the creation of the aggregated service desk. In the Commissioner's view, the expert called by the Respondent arrived at his view regarding the lack of a technological advance, or the absence of sufficient evidence thereof, by use of reasoning, evident in his expert reports and oral evidence, which was flawed. The flawed reasoning in question was that, as the principle of multi-tenancy was an established concept in its own right prior to the commencement of the project, the aggregated service desk, which involved the application of multi-tenancy to another existing concept, namely cloud computing, was simply the result of the utilisation of "*known methods*". It therefore could not in his view be R&D.

554. The Commissioner finds that this reasoning does not reflect the true state of knowledge and development in the field computing or software present in the years in issue. The Appellant's own software developers, namely Appellant Witness 5 and 6, as well as Appellant Witness 1 and the Appellant's second expert, who was himself a software developer with considerable experience in cloud technology, all gave evidence that cloud technology was in an 'immature' state in the years in question. Although the Respondent's expert called into question the reliability of the "*Gartner Hype Cycle",* referred to previously in this Determination, the Commissioner finds that this measure accurately reflects that in the years 2012 and 2013 cloud computing was in a state of immaturity. Most particularly, IaaS cloud technology was in an immature state, as evidenced by the fact that at that time one of the very few major platforms of this kind were available in preview or beta mode only. The Commissioner does not believe that the Respondent's expert gave sufficient weight to this fact in his evidence.

555. The Commissioner finds that despite the immaturity in IaaS cloud technology, the Appellant managed, through its iterative development process, to leverage the compute, network and storage infrastructure provided by Microsoft on its IaaS Azure platform to construct a scalable and secure system through which previously on premise IT, project management and RMM support services could be accessed by different customers at the one time remotely. This was, in the view of the Commissioner, no small achievement of software development brought about by routine procedures. What was created was a system, comprised of different multi-tenanted applications provisioned on virtual machines constructed by the Appellant that, in the opinion of the Appellant's second expert, amounted to a marked advance on what was in existence up to that point. The Commissioner agrees with this assessment by the Appellant's second expert. The Commissioner also notes that the Appellant's second expert was a person with expertise not only in software development but also software development in the context of cloud technology. In the view of the Appellant's second expert, the Appellant's aggregated

service desk represented an advance on the knowledge available to the *"competent professional working in the field"* in those years.[4] This is sufficient for the Appellant to satisfy the R&D requirement under section 766 of the TCA 1997 that it was seeking to achieve a technological advancement. The Commissioner makes a finding to this effect that is relevant to the Determination of the within appeals.

Uncertainty (point 5 of the R&D test)

556. As has been observed already, however, the question of technological advancement is not the only criterion that needs to be considered in order to establish whether the Appellant's project team was conducting R&D in the years in issue. There is also the question of whether the activities by which this technological advance was made involved the "*resolution of scientific or technological uncertainty."*

557. In the course of the appeal hearing, the Respondent's expert was critical of the use of Agile as an R&D methodology and of the level and detail of the records produced by the Appellant in support of its claims. In so far as the Respondent's expert suggested that Agile was a methodology in itself incompatible with the conduct of R&D, the Commissioner does not agree. It is apparent that in the years in issue Agile was the dominant framework by which software developers conducted experimental development aimed at producing new software. Such was the evidence of Appellant Witnesses 5, 6 and the Appellant's second expert and the Commissioner accepts this evidence as being accurate. Moreover, the acceptability in principle of Agile as an R&D methodology is reflected in the Respondent's own Tax and Duty Manual for 2025, which indicates that Agile development methodologies such as Scrum, used by the project team in this instance, is a systematic technique for the purpose of the legislation.

558. Notwithstanding the use of Agile, the Respondent's expert was critical of the Appellant's level of record keeping on the project, which he said made it difficult if not impossible for him to determine whether there was a technological advance involved and/or whether the Appellant was seeking to resolve questions of technological uncertainty. Whilst it is correct that the project team could and perhaps should have kept more detailed records of their work, the Commissioner finds that the Appellant has nonetheless satisfied the evidential burden of proving that the creation of the aggregated service desk, which constituted a technological advancement, involved the resolution of questions of uncertainty.

[4] The knowledge of the "competent professional working in the field" being the appropriate test for technological advancement, as set out in the Respondent's 2015 R&D Guidelines at page 31.

559. That it has done so is attributable in large part to the evidence given by Appellant Witnesses 5 and 6, who went into considerable detail in their oral evidence about the challenges that the project team's software developers faced in making the aggregated service desk. It is clear to the Commissioner from their evidence that the multi-tenanting of the various Microsoft applications was in the years in issue beyond what was "routine" software development, excluded under paragraph 2.72 of the Frascati Manual from being within the scope of R&D. Appellant Witness 5 and 6 explained that they had to create complex mechanisms, leveraging Microsoft products but adapting by means of software development techniques, for the authorisation and authentication of individual tenants so as to ensure the isolation of the data of each tenant. Their separate assertions regarding the complexity and uncertainty of their work in this context is lent additional credibility by the academic paper of Takahashi et al from 2012, appended to the report of the Appellant's second expert and referred to earlier in this Determination. This makes express reference to the security challenges arising in respect of cloud-hosted multi-tenanted applications, including in relation to authentication, authorisation and tenant data isolation.

560. There were other examples of the substantial uncertainty faced by the project team that were discussed in evidence. The lack of an SLA provided by Microsoft meant the need for exploration of solutions for "failover" by the Appellant, as well as disaster recovery. The Commissioner accepts the evidence of Appellant Witnesses 5 and 6 that the solutions to these problems were far from straightforward. Different methods by which virtual machines containing very large amounts of data were to be uploaded to the cloud were explored in depth. The Appellant carried out customisation of the Microsoft virtual machines in question so that they were less vulnerable to hacking attempts, which customisation measures were later adopted by Microsoft itself. All of this is, the Commissioner finds, is evidence of uncertainty as to how, in 2012 and 2013, the Appellant was to achieve its objective of creating a viable multi-tenanted system that was hosted in the IaaS cloud.

561. In legal submission, counsel for the Respondent relied, as noted already, on several Canadian authorities. One of these, *CW Agencies*, was opened on the grounds that it illustrated why the Appellant should be found not to have satisfied the burden of proof. However, in Sexton JA's analysis in that case of whether the appellant company had met the burden of proving that 'SRED' had occurred in the development of a computer system, he made express reference to the fact that it had declined to call as witnesses as to fact either the project's project manager or anyone else involved in the development of the system. The Commissioner would simply note that this stands in contrast to the approach

taken by the Appellant in this tax appeal, in which it called both the project manager, the programme sponsor and, most significantly, Appellant Witnesses 5 and 6 who spoke to the development work that they performed.

562. Having made this finding, the Commissioner determines that as the objective of the work of the project team was technological advancement, and as the making of the advancement in question was associated with technological uncertainty, the work of those involved in software development on the project team constituted R&D for the purposes of section 766 of the TCA 1997. This is so in circumstances where, as noted already, the parties were agreed that the work of the project team constituted systematic experimental development in a field of technology, meaning that the statutory criteria for R&D listed 1-3 at paragraph 515 of this Determination were met.

"Wholly and exclusively in the carrying on of R&D activities"

563. There are, however, two final issues arising. These are whether the evidence given in this appeal indicates that the Appellant's expenditure made in relation to, firstly, Appellant Witness 3 and, secondly, [redacted], in respect of which the Appellant has claimed credit, was expenditure incurred "*wholly and exclusively"* in the carrying on of "*research and development activities".* This is what is required by section 766 of the TCA 1997 if it is to be "*expenditure on research and development"* in respect of which credit may be claimed.

564. As noted previously in this Determination, "*research and development activities"* means "*systematic, investigative or experimental activities in a field of science or technology*" being, in so far as relevant to this appeal, either "*applied research*" or "*experimental development*". "*Applied research"* is "*work undertaken in order to gain scientific or technical knowledge and directed towards a specific practical application*". *"Experimental development"* is *"work undertaken which draws on scientific or technical knowledge or practical experience for the purpose of achieving technological advancement and which is directed at producing new, or improving existing, materials, products, devices, processes, systems or services including incremental improvements thereto."*

565. It is worth recalling at this point that, in accordance with *Revenue Commissioners v Doorley,* which was referred to above in the quotation of McDonald J in *Perrigo Pharma International Activity Company v McNamara,* it is necessary that a person claiming a tax credit fall "*clearly and unambiguously"* within the wording of the legislation under which that credit falls. The following analysis is reflective of this.

566. The title of Appellant Witness 3 in the context of the project was that of its project manager. From her own evidence, however, it is clear that a part of her function was related to interacting with "*stakeholders*", be they members of the board of [redacted] or potential customers. As regards the latter group, her work was not related to, or at a minimum was not confined to, gaining or drawing from scientific or technical knowledge so as to make an advancement, which is a hallmark of both applied research and experimental development. Rather, it is clear that at least part of her function on the project could be described as being connected to commercial matters, in particular promoting the aggregated service desk as a product to potential SMB customers. Her activities, in other words, included the development of the Appellant's business, not just the development of the product. Indeed, this was a proposition with which Appellant Witness 2 was in agreement when cross-examined (see paragraph 185 of this Determination). The Commissioner finds as a matter of fact that the role and function of Appellant Witness 3 in the context of the project involved the development of the Appellant's business.

567. In relation to the activities of [redacted], the evidence, which is set out at paragraph 518 of this Determination, was that he advised those working on the software development side of the project as to what features should be present in an IT support system. Again, the Commission finds this to be his role as a matter of fact.

568. In this instance, the Commissioner finds that the expenditure incurred by the Appellant in respect of Appellant Witness 3 and [redacted] was not expenditure incurred "*wholly and exclusively in the carrying on"* of R&D activities.

569. As noted, in order for expenditure to fall within the scope of section 766 of the TCA 1997, it is essential that it be incurred "*wholly and exclusively"* in the carrying on of R&D activities. The use of this term sets a high bar. What it means is that if the expenditure in question has some purpose other than the conduct of a research and development activity, being an activity directed to the gaining of new knowledge or making a technological advancement, then it cannot form the basis for a credit claim. The Commissioner reaches this conclusion regarding the interpretation of the phrase wholly and exclusively by reference to the natural and ordinary meaning of the words, this being the interpretive approach approved of in *Perrigo Pharma International Activity Company v McNamara.* This natural and ordinary meaning as defined by the Oxford English Dictionary is, in relation to *"wholly*", "*completely or entirely*", and in relation to "*exclusively*", "*to the exclusion of".*

570. In relation to Appellant Witness 3, the expenditure incurred in relation to her activities cannot be expenditure on R&D given that part of her function did not concern only the development of the aggregated service desk, it also concerned engagement with potential customers and the promotion of the Appellant's business. The expenditure was therefore not *"wholly and exclusively"* incurred in the "*carrying on"* of R&D, whether experimental development or otherwise. From this it follows inevitably that the part of the qualifying expenditure claimed by the Appellant in relation to Appellant Witness 3 must be refused. The precise amount in question is set out hereunder.

571. In relation to [redacted], his activities giving rise to part of the Appellant's claim involved providing knowledge of IT support processes and systems to the others on the project team who were involved on the software development side. He was thus, the Commissioner finds, putting them in a position to carry out experimental development on a new or substantially improved system or process, but he was not involved in that experimental development himself. His activities thus fall outside the scope of what can be claimed under section 766 of the TCA 1997. In making this finding, the Commissioner wishes to re-emphasise that as what is under consideration is a tax relieving provision it is necessary to construe the provision strictly. This is in accordance with the law as enumerated in the aforementioned case of *Revenue Commissioners v Doorley*. The need for the expenditure on the activities carried out by [redacted] to fall "*clearly and unambiguously"* within the scope of section 766 of the TCA 1997 bolsters the Commissioner's view that, as with the expenditure relating to Appellant Witness 3, it cannot be allowed.

572. The net effect of the foregoing findings is as follows. The combined expenditure incurred in respect of the work on the project of Appellant Witness 3 and [redacted] was €70,646 for 2012 and €68,853 for 2013. In relation to 2012, however, it is necessary to take into account that of the total spend of €659,353 (net of the Enterprise Ireland grant of €205,834), of which the €70,646 was a component, only €344,044 amounted to 'qualifying expenditure' forming the basis of the Appellant's claim for R&D tax credit. This represented 52.18%. The balance was, as already noted in this Determination, claimed by another company forming part of the [redacted] Group, which claim is not before the Commissioner for consideration. The consequence of this is that it would not be proportionate to reduce the Appellant's claimed qualifying expenditure by the full €70,646 expended in 2012 in relation to work by Appellant 3 and [redacted] on the project. Rather, the Commissioner finds that the qualifying expenditure of €344,044 claimed by the Appellant should be reduced by €36,863 (this being 52.18% of €70,646). Thus the Commissioner finds the correct amount of qualifying expenditure laid out by the Appellant

in 2012 on the project, which constituted expenditure on R&D, was in the amount of €307,181. In circumstances where the Appellant stands entitled to an overall tax credit of 25% arising from qualifying expenditure incurred in 2012, the overall credit thus allowable in relation to qualifying expenditure laid out in 2012 stands at €76,795.25. The Commissioner finds that the sum assessed pursuant to the assessment under appeal is to be adjusted in accordance with this finding.

573. Matters are more straightforward in relation to 2013 in circumstances where all of the €471,212 expended on the project was claimed by the Appellant as its qualifying expenditure. This led to a tax credit claim in the amount of €117,803 (i.e. 25% of the aforementioned expenditure).

574. The portion of expenditure claimed by the Appellant as relating to R&D concerning the work of Appellant Witness 3 and [redacted] was in the combined amount of €68,853. The Commissioner finds that the amount of qualifying expenditure claimable should stand at €402,359 (this being €471,212 - €68,853). As a consequence of this, the overall tax credit allowable in respect of 2013 stands at €100,589.75. The Commissioner finds that the sum assessed pursuant to the assessment under appeal is to be adjusted in accordance with this finding.

Determination and summary of reasons

575. The Commissioner determines that in 2012 the Appellant incurred qualifying expenditure for the purposes of section 766 of the TCA 1997 in the amount of €307,181, leading to the Appellant being entitled to tax credit for such R&D expenditure in the overall amount of €76,795.25. The amended assessment for 2012 under appeal is to be adjusted to reflect this finding.

576. The Commissioner determines that in 2013 the Appellant incurred qualifying expenditure for the purposes of section 766 of the TCA 1997 in the amount of €402,359, leading to the Appellant being entitled to tax credit for such R&D expenditure in the overall amount of €100,589.75. The amended assessment for 2013 under appeal is to be adjusted to reflect this finding.

577. The Commissioner makes these determinations on the grounds that the work carried out by the project team on the creation of its aggregated service desk, hosted in the IaaS cloud, save for that work conducted by Appellant Witness 3 and [redacted] :-

    1. was systematic, investigative or experimental (which matter was not in dispute) ;

    2. was in a field of science or technology (which matter was not in dispute);

3. involved applied research and/or experimental development (which matter was not in dispute) ;

4. sought to achieve scientific or technological advancement (which matter was in dispute and which finding the Commissioner makes); and

5. involved the resolution of scientific or technological uncertainty (which matter was in dispute and which finding the Commissioner makes).

578. This Appeal is determined in accordance with Part 40A of the TCA 1997 and in particular sections 949AK thereof. This determination contains full findings of fact and reasons for the determination, as required under section 949AJ(6) of the TCA 1997.

Notification

579. This determination complies with the notification requirements set out in section 949AJ of the TCA 1997, in particular section 949AJ(5) and section 949AJ(6) of the TCA 1997. For the avoidance of doubt, the parties are hereby notified of the determination under section 949AJ of the TCA 1997 and in particular the matters as required in section 949AJ(6) of the TCA 1997. This notification under section 949AJ of the TCA 1997 is being sent via digital email communication **only** (unless the Appellant opted for postal communication and communicated that option to the Commission). The parties will not receive any other notification of this determination by any other methods of communication.

Appeal

580. Any party dissatisfied with the determination has a right of appeal on a point or points of law only within 42 days after the date of the notification of this determination in accordance with the provisions set out in section 949AP of the TCA 1997. The Commission has no discretion to accept any request to appeal the determination outside the statutory time limit.

Conor O'Higgins
Appeal Commissioner
9 April 2025