

Review

Practical documentation of qualifying research activities for the SR&ED tax credit

Jamie Nickerson*, Adam Rogers, Amber Farrington and Anne Nguyen

Swanson Reed - Specialist R&D Tax Advisors, Canada.

Received 10 August, 2018; Accepted 21 November, 2018

The Canadian tax program for Scientific Research and Experimental Development (SR&ED) is a crucial component of Canadian economic policy as it encourages domestic companies to engage in risk-taking initiatives through tax incentives such as credits. While the SR&ED program has evolved over the decades, the SR&ED Five Questions have established the principal criteria that determine the eligibility of an SR&ED claim. The key take-away points of this paper are that the Canada Revenue Agency is progressively becoming more particular and stringent when reviewing SR&ED claims and in light of this trend, documentation is becoming ever important in the substantiation of SR&ED claims. Although not required with submission, documentation provides taxpayers with evidence to support their claims in the case of a CRA or court challenge. In the event of an audit, a taxpayer must prove that its SR&ED activities are eligible and meets the “Five Question Test.” As this paper argues, recent case law has shown the importance of clear and relevant supporting evidence, especially documentation, in substantiating that an SR&ED project meets the Five Questions criteria.

Key words: Tax, taxation, research and development, accounting, incentive, tax credit, canada, scientific research and experimental development.

INTRODUCTION

The Scientific Research and Experimental Development (SR&ED) Tax Incentive Program rewards Canadian taxpayers for engaging in research and development (R&D) activities within Canada. All Canadian businesses, regardless of size and industry, are eligible for the program, provided that the R&D work conducted meets the requirements of the SR&ED definition as outlined in subsection 248(1) of the Income Tax Act. This defines SR&ED as a “systematic investigation or search that is carried out in a field of science or technology by means of experiment or analysis” (Canada Revenue Agency, 2017).

SR&ED tax incentives have historically offered extensive benefits to Canadian taxpayers, encouraging domestic innovation and business growth. However, like Australia, the U.S and the U.K, the Canadian Government is currently under pressure to increase tax revenues while maintaining constituent satisfaction and local business support. As such CRA has been cleverly using the judicial system to defend its increasingly more narrow definition of SR&ED expenditure by using the often vague and ambiguous substantiation issue. In recent years, a number of court cases have been handed down in favor of the Government on the basis that the taxpayer did not

*Corresponding author. E-mail: j.nickerson@swansonreed.ca.

have sufficient documentation to substantiate an SR&ED claim. It is now generally accepted that that CRA will deny SR&ED expenditure or activities where a taxpayer has not kept clear and relevant documentation.

OVERVIEW OF SR & ED CRITERIA

To qualify as SR&ED, a research activity must satisfy the following five questions (Tax Court of Canada, 2017):

- (1) Was there a technological risk or uncertainty that routine engineering or standard procedures could not remove?
- (2) Did the person claiming to do SR&ED formulate hypotheses specifically aimed at reducing or eliminating that technological uncertainty?
- (3) Is the procedure adopted in accordance with the total discipline of the scientific method including the formulation, testing, and modification of hypotheses?
- (4) Did the process result in technological advancement?
- (5) Was a detailed record of the tested hypotheses and results kept as the work progressed?

The Canada Revenue Agency (CRA) strongly emphasizes the importance of keeping supporting evidence to substantiate SR&ED claims and ensure eligibility (CRA, 2015a). As of 2013, a penalty of \$1,000 per SR&ED claim was incorporated into the *Income Tax Act*, if requested information on a tax preparer's claim form was found missing, incomplete, or inaccurate (CRA, 2015b). Evidently, it is essential that tax preparers are diligent in providing the necessary documentation in support of their SR&ED claims. Taxpayers can benefit from the SR&ED Tax Incentive Program in two ways:

- (1) SR&ED expenditures can be deducted from income for tax purposes
- (2) Taxable income, as calculated under Part I of the *Income Tax Act*, can be reduced using the SR&ED investment tax credit and remaining credit may be refunded in some cases.

Canadian-controlled private and other corporations, individuals, trusts, and partnerships are all eligible for the SR&ED investment tax credits (ITC), although there are different credit rates depending on the nature of the taxpayer. For eligible SR&ED expenditures that do not exceed \$3 million, Canadian-controlled private corporations are eligible for a 100% refundable ITC at a rate of 35% of expenditures. For amounts that surpass the \$3 million threshold, Canadian-controlled private corporations are eligible for a non-refundable ITC at the basic rate of 15% of expenditures. In some cases, these corporations could earn a 40% refundable ITC at the basic rate of 15% of expenditure amounts that exceeded the \$3 million threshold. Individual proprietorships, trusts,

and other corporations can earn an ITC at the basic rate of 15% on eligible SR&ED expenditures. For individuals and trusts, this amount is refundable whereas it is non-refundable for other corporations. Since a partnership is not a taxpayer, partnerships' ITC amounts are calculated at the level of partner and then allocated to eligible members. In sum, all business types in Canada have the potential to benefit from the SR&ED tax incentive program.

CASE LAW

The CRA uses documentation as a key means of determining and, in some cases, challenging technological eligibility of a claim for the SR&ED program. According to a Canadian Advanced Technology Alliance (CATA) report, the federal government reduced innovation funding by \$4.7 billion between 2009 and 2016 (Canadian Advanced Technology Alliance, 2016). Yet, companies engaging in SR&ED should be not be discouraged by this reduction in funding since they can still access the benefits of SR&ED credits, provided they are able to properly substantiate their SR&ED claims. While the CRA does not offer strict guidelines as to what can be used as supporting evidence, recent legal cases emphasize the importance of accurately and clearly documenting SR&ED activities. If substantial evidence cannot be presented when requested, the SR&ED claim will likely be dismissed.

In 1997, a landmark ruling in *Northwest Hydraulic Consultants Limited v. The Queen* (Tax Court of Canada, 2017) stated that "technological advancement" was synonymous with "advancements in general understanding". From this ruling, the "SR&ED Five Questions" test was established to determine the eligibility of an SR&ED claim. It maintained the utility of detailed records of hypotheses, tests, and results in providing sufficient evidence of SR&ED and strengthening an SR&ED claim. *Joel Theatrical Rigging (JTR) Contractors (1980) Ltd. v. and The Queen* (TCC, 2017) discussed the criteria of scientific eligibility. In this case, JTR contested the CRA's refusal of its SR&ED projects. Their claim had been rejected on the basis that it did not meet the "scientific eligibility" criteria. The court sided with the CRA, finding that JTR's projects did not fall under this category. The court stated, "To constitute SR&ED, a particular project must address a problem or a type of uncertainty (typically described in the jurisprudence as 'technical risk or uncertainty' or 'technological uncertainty') that cannot be resolved by routine engineering or standard procedures (TCC, 2017)." The court provided some of the following arguments when determining scientific eligibility of SR&ED activities:

- (i) The project did not appear to be carried out by

competent professionals with technical diplomas or experience in mechanical or hydraulic design. "...the research teams did not include any professional engineers or researchers who held a university degree in engineering...(TCC, 2017)"

(ii) There was a lack of testing that formed one or more hypothesis. The judge used the definition: "...a hypothesis is a statement to be tested by an experiment or a trial (TCC, 2017)."

(iii) There was a lack of a thorough experimental process. For example, during trials, the rate of the curtain's descent was not measured:

"It seems that if the scientific method had been used (that is, if there had been systematic observation, measurement and experiment), Mr. Marineau and his colleagues would have determined the precise weight used in the experiments and would have precisely measured the duration of the descent in each experiment so that they could determine whether, as they moved from one experiment to the next, the duration of the descent was increasing or decreasing (TCC, 2017)."

As such, it can be inferred that a project with an identifiable hypothesis (even if implicit) and at least some level scientific thoroughness, such as a process of measuring, can distinguish a systematic scientific investigation from a "trial and error" process. Proper record keeping could have distinguished the systematic process from random "trial and error" by clearly outlining hypotheses and potential designs, results from testing and experiments, and modifications to original designs based on testing results. In the case of JTR, the research team failed to keep records tracking the progression of work. They did not know even the exact weight of the curtain or the duration of the experiment, and the lack of documentation meant they could not prove that their work fulfilled the criterion of "scientific eligibility".

In *Jentel Manufacturing Ltd. v. The Queen* (TCC, 2011), Justice D'Arcy dismissed the case of Jentel on appeal on the grounds that their claim for the SR&ED credit did not prove technological risk or advancement. In this case, the court found that none of Jentel's activities constituted eligibility for SR&ED. Justice D'Arcy's ruling asserted two important points:

(i) Jentel had indeed provided evidence by means of sufficient documentation and records showing they had undertaken a "systematic investigation";

(i) However, although it was established that Jentel had undertaken a systematic investigation, there was no documentation or evidence to prove that it was undertaken with technological uncertainty to achieve technological advancement.

The failure of the Jentel case was largely due to the taxpayer relying on a SAF (Statement of Agreed Facts), which is a record of facts agreed upon between the

taxpayer and Crown, so there is no need for evidence to prove the facts later on. However, the SAF limits the amount of information that can be interpreted by a presiding judge. This heavy emphasis on the SAF as opposed to other forms of documentation cost Jentel a favourable outcome from the trial (TCC, 2011).

On the one hand, in special circumstances, oral testimony could also suffice as evidence in defending a claim when there is a noticeable absence of documentation. In 1998's *RIS Christie v Canada* (Canadian Legal Information Institute, 1998) case, Judge J.A. Robertson ruled in favour of the taxpayer on appeal, noting that while the taxpayer lacked adequate documentation, the oral evidence provided by expert witnesses in subsequent investigations was sufficient to prove the existence of technological advancement and thereby confirmed that SR&ED had taken place. Similarly, in *ACSIS EHR (Electronic Health Record) Inc. v. The Queen* (TCC, 2016), a taxpayer appealed the disallowance of the SR&ED credit and used the testimony of four witnesses in support of the appeal. The Tax Court of Canada ruled in favour of the taxpayer despite their documentation not being as detailed as generally required because of appropriate oral testimony provided.

As Justice Archambault stated in *116736 Canada Inc. v. The Queen* (TCC, 1998) stated:

"However, the Act and the Regulations do not require that such written reports be produced in order for a taxpayer to qualify for the deduction of such expenditures: it is possible to adduce evidence by way of oral testimony. Whether the Minister or a judge could conclude that the activities purported to have been carried out by the taxpayer were actually carried out then becomes a question of credibility."

These cases assert that oral testimony can offer viable support for an SR&ED claim, if the evidence meets the SR&ED Five Questions. This entails that witnesses who provide the evidence must be credible, namely either technical or scientific experts in their field, and must prove that the project encompassed technological uncertainty and resulted in advance. Moreover, to prevent the risk of an initial unfavourable claim outcome and avoid a subsequent challenge, which may be more costly than the worth of the SR&ED claim itself, taxpayers are encouraged to engage in the practice of record keeping and documentation to substantiate that they have met the SR&ED criteria. At the same time, documentation does not inherently guarantee a successful SR&ED claim. Rather, as recent case law suggests, the quality of the documentation is also important, particularly that it must be clear, eligible, and relevant in relation to the SR&ED Five Questions.

In *Maritime-Ontario Freight Lines Limited v The Queen* (TCC, 2003), Justice Sarchuk ruled against the taxpayer Maritime-Ontario. He stated that not only are the

requirements of a proper and detailed scientific experimentation to be backed up by detailed records (subject to independent verification), an acceptable level of documentation should also clearly describe the processes and how the final details were arrived at. Here, Justice Sarchuk stated that the submitted documentation was unintelligible, not only to the court, but also to any party like the CRA, and thus did not constitute supporting evidence.

In *Mac & Mac Hydrodemolition Services Inc. v. The Queen* (TCC, 2017), Justice David E. Graham ruled against the taxpayer's appeal on whether the expenditures of Mac and Mac qualified as SR&ED expenditures. Although Mac and Mac kept sets of notes, which described the testing of various parameters, there were no notes confirming any mention of a scientific hypothesis and details were vague. Mac and Mac did not provide adequate documentation demonstrating a systematic process of hypothesis formulation, testing, and results analysis, thereby failing to fulfil requirements of the SR & ED Five Questions. In the appeal's ruling, Justice Graham noted, "while evidence of the outcome is important, it is critical to technological advancement that the rigours of adherence to the scientific and experimental method are kept on a detailed and concurrent basis with the conduct of the experiments (TCC, 2017)."

These cases reveal that supporting evidence, whether in the form of documentation or oral testimony, must corroborate the SR&ED criteria in order to ensure a successful outcome of an SR&ED claim or challenge. Supporting evidence must also be accurate, thorough, legible, and clear when substantiating a claim, particularly in demonstrating adherence to the SR&ED Five Questions.

ANALYSIS OF CRA GUIDANCE AND CASE LAW

As the RIS Christie and ACSIS EHR cases demonstrate, documentation is not required in every circumstance. It is arguable however, that clear and relevant documentation does help to solidify a SR&ED claim, the CRA or the courts should contest it. Failure to keep detailed and articulate documentation proved to be a downfall for Maritime-Ontario and Mac and Mac, as their documents were dubbed "unintelligible" and "no notes mentioning of any hypotheses." When keeping records, it is important to ensure they are clear and concise to be devoid of any such doubts.

The CRA notes that the following points are grounds for contestation if they are not addressed fully when carrying out an SR&ED project (CRA, 2015a):

- (i) The scientific or technological objectives of the project are not clear.
- (ii) The scientific or technological advancement is not clear, or appears to be standard practice for that industry

within the claimant's business context.

(iii) A systematic investigation or search through experimentation or analysis is not apparent.

(iv) The nature and extent of the work conducted in the tax period is not clear.

(v) Some of the claimed work does not appear to be included in the definition of SR&ED in subsection 248(1) of the *Income Tax Act*.

(vi) Some of the support work claimed does not appear to be commensurate with the needs, or directly in support, of the SR&ED work.

(vii) It is not clear how the use or amount of the claimed materials relates to the claimed SR&ED.

These specific guidelines were overlooked by the taxpayer in the JTR case, who was found to have conducted minimal testing, lacked consultation with certified experts in the field, and had no detailed records or documentation to show a thorough experimentation process. The same can be said for the Jentel case, where the taxpayer could not adequately prove with documentation that there was technological uncertainty to achieve technological advancement within its SR&ED project.

CASE STUDY

Qualified Research Activities (QRAs) and Qualified Research Expenses (QREs) are the two parts that make up the SR&ED Tax Credit. The purpose of this case study, using a fictional company, LawBot, Inc., is to determine what does and does not qualify as eligible activities and expenses, in light of the CRA's "Five Question Test".

LawBot, Inc. is a developer of streamlined, business-focused solutions using data analytics and machine learning. It aims to advance the functionality, utility and efficacy of software solutions by employing Data Analytics and Artificial Intelligence (AI) strategies. In the tax year being claimed, LawBot, Inc. undertook research activities to develop a new legal search engine using machine learning. Historically, search engines used in the legal industry have been cumbersome, difficult to use, counter-intuitive and inefficient. LawBot, Inc. sought to streamline the legal research process by introducing machine learning, allowing for faster retrieval of information more accurately and reliably. The four stages of product development undertaken in this project are outlined in Table 1.

ANALYSIS OF ACTIVITIES

Figure 1 outlines the relationship between technological information (L) discovered by LawBot, Inc. over the time (T) of the project. It is also worth mentioning that Figure 1 is contrasted to Table 1.

Table 1. Software development activities for LawBot, Inc.'s projects.

S/N	Activity	Description
I	Research of existing technological information (ineligible activity)	Idea to develop a web-based, comprehensive legal search engine using machine learning and Artificial Intelligence is conceptualized. Gap in the existing legal research market is identified. This stage consists of literature reviews of machine learning methodologies, consumer surveys, and researching past technologies that may offer similar, albeit limited, functionality.
II	Economic evaluation (ineligible activity)	Before continuing with its projects, LawBot, Inc. identifies the risks associated with its developments. The company will decide whether to continue with the projects or terminate them based on its economic evaluation and risk assessment.
III	Prototyping and trialing (QRA)	LawBot, Inc. engages in a systematic process of experimentation where it undergoes an iterative development process. This involves developing one or more hypotheses drawn from academic research. As LawBot, Inc. is one of the first companies to apply machine learning for the legal industry, the company must test and trial theories developed from academia to determine if they are effective and applicable to LawBot's niche industry. From these theories, LawBot develops a model to train the algorithm to retrieve legal information quickly and accurately. The model is tested and evaluated. From testing results, it is found that there are limits to the suggestions found in academic practice. The model is modified and refined according to performance, processing speed, relevancy, and consistency. Further testing is conducted to improve the model with changes made to the algorithm and methodology. Since machine learning is under-developed and given the limitations in existing academic research, LawBot is able to advance the technological knowledgebase from its experiments.
IV	Commercial production (ineligible activity)	Latest design is accepted and the software is ready to be passed on to consumer markets. This phase also requires maintaining the software, as it is never a perfect, final product; the coding will change to keep up with new and advancing legal developments as well as long term maintenance of the database.

Over the course of its software projects, LawBot, Inc. encountered four progressive information stages:

- (1) Point L0 = LawBot, Inc.'s technological knowledge before the project commenced;
- (2) Point L1 = research required before ensuing the software project;
- (3) Point L2 = through a systematic process of experimentation, the knowledge gained through LawBot's prototyping and trialing activities, that is, testing, analysing, hypothesizing, modeling, simulation; and
- (4) Point L3 = the information that was culled from LawBot's prototyping and trialing.

Activity I: Research of Existing Technological Information
Because this activity refers to existing technology and the building of a knowledgebase rather than the generation of new knowledge, this first activity is not considered a QRA.

As shown in Figure 1 from point L0 to L1, LawBot, Inc. gained technological insight due to its research. However, given that the nature of this research is not new or groundbreaking, it does not qualify as a QRA as outlined by the CRA. Although this activity does not qualify as a QRA, documentation may be generated, thus it can later be used to substantiate a claim should an audit be conducted by the CRA.

Activity II: Economic evaluation

As outlined in Figure 1, this activity does not qualify as a

QRA. Economic evaluation and risk assessment is not an activity that generates new technological information, but simply refers to business objectives and thus cannot be classed as R&D as it does not meet the "Five Question Test".

Activity III: Prototyping and trialing

Due to the experimental nature of the prototyping and trialing period, LawBot, Inc.'s activities during this stage meet the CRA's "Five Question Test". New knowledge is generated and technical advance is achieved. Expenses incurred during this stage of the production process can be eligible for the SR&ED tax credit.

Activity IV: Commercial production

Commercial production, the passing of the software to consumer markets, does not generate new technological information or involve experimentation, thus does not meet the CRA's "Five Question Test," and therefore cannot to be classed as a QRA.

DETAILED ANALYSIS OF THE ACTIVITIES AND MEETING THE "FIVE QUESTIONS"

Out of the four activities mentioned in Table1, only one qualifies as a QRA: Activity III, Prototyping and Trialing. This analysis will detail how LawBot, Inc. met the CRA's "Five Part Test".

1. Was there any technological risk or uncertainty which

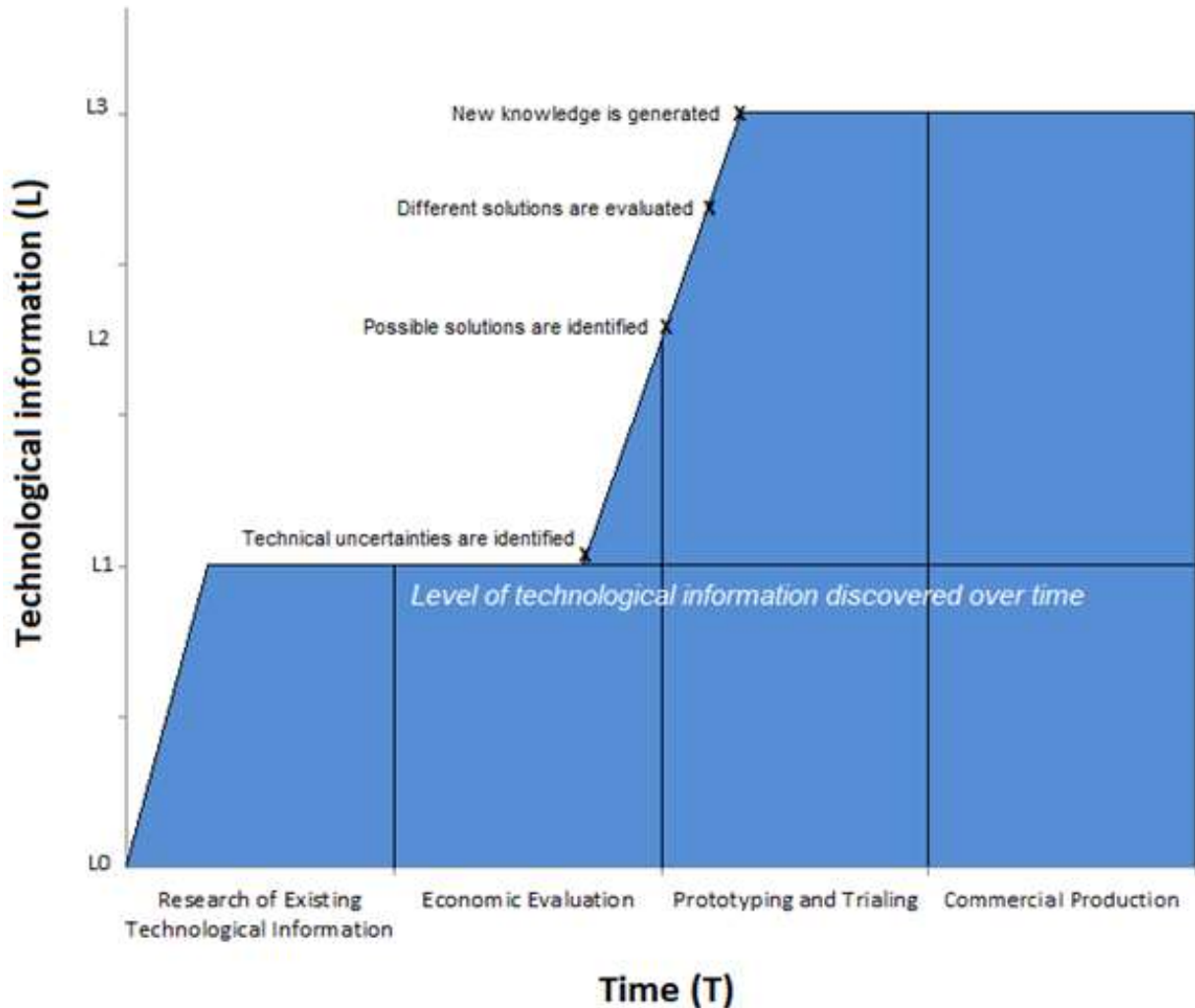


Figure 1. Progression of technological advancements vs. product development activities.

routine engineering or standard procedure could not remove? In Activity III, Prototyping and Trialing, the process of developing software solutions using data analytics and AI was not straightforward and encompassed technological risk. While a growing field, AI methodology currently exists more so in theoretical research papers than real-life business applications. Given that most of AI is theory, there was no guarantee that the outcomes suggested in theory could be applicable in real-world contexts. Routine engineering and standard procedure testing were not sufficient to eliminate the technological uncertainties surrounding LawBot's software solutions. It was determined that, to eliminate uncertainties, LawBot, Inc. had to engage in a systematic process of experimentation and testing.

Documentation

The purpose of documentation for this stage is to

establish the existing industry benchmark or knowledgebase, and to substantiate how the company's activities advance or go beyond this benchmark. Documentation for this phase of software development included literature reviews, background research, and development plans to name a few. Although these forms of documentation are not related to QRAs, they could be used in the event of an audit.

2. Did the person/business claiming to do SR&ED formulate hypotheses specifically aimed at reducing or eliminating that technological uncertainty?

LawBot aimed to develop a comprehensive legal search engine that was more accurate, reliable, and intuitive than what currently exists on the market. This involved the formulation of hypotheses specifically aimed at reducing uncertainties related to feasibility, methodology, and design. From research, brainstorming, feasibility studies, and analyses, LawBot identified the best design options that will undergo testing and evaluation. During

this stage, exact technical uncertainties and risks are determined whilst potential solutions or hypotheses are developed.

3. Is the procedure adopted in accordance with the total discipline of the scientific method including the formulation, testing and modification of hypotheses?

The projects that were undertaken by LawBot, Inc. did meet the requirements of the scientific method, that is, formulation, testing and modification of hypotheses. The company's formulation of hypotheses was spurred from its research of already existing, but limited, technologies (Activity I). The company, from the outset, wanted to develop a legal search engine, and had to implement the elements of the scientific method since no comparable software existed anywhere in the market. In order to create tangible software products, hypotheses were formulated based on the academic and theoretical research. Once the projects were dubbed as financially sound (Activity II), testing of the hypotheses then ensued. This included testing and retesting codes and algorithms, which ultimately lead to the modification of the hypotheses in order to produce products (Activity III) that were to an acceptable industry standard before they could be released to a mass market (Activity IV).

Documentation

Documentation for this phase is imperative to substantiating the SR&ED claim. Documents must be able to demonstrate the existence of technological uncertainties and risks and the progression of work to eliminate these uncertainties. The exact documents will vary from industry to industry. For example, tangible evidence of SR&ED activities could include conceptual sketches, various screenshots over time, images of prototypes during testing, email correspondence between technical personnel, meeting notes, and others. To substantiate QREs, timesheets, invoices, general ledgers, and other accounting information may be used, provided the personnel and supplies are directly related to the experiments.

4. Did the process result in technological advancement?

In reference to Activities I to III, the generation of new knowledge increases as time progresses, thus LawBot, Inc.'s project lead to technological advancement. To develop its software solution, the company had to start with researching technological information that already exists. Upon discovering that AI is mostly theoretical and is a new concept, very few examples of comparable products existed in the market, especially for legal research. The limitations of existing technologies and gaps in the technological knowledgebase were therefore identified. This progressed to Activity II, whereby the company considered the economic risk, viability, and potential profitability before committing to the project.

Once the project passed the company's economic evaluation, LawBot proceeded to Activity III during which hypotheses were formulated, tested, and modified. Advance was achieved at this stage since new knowledge was generated from experimentation and testing. The technological advancement relied on the principles of the hard sciences, particularly engineering and computer science. After the experimentation process is complete, commercial production of the legal search engine is carried out.

Documentation

Technological advance can be substantiated from records that describe the project's objectives and the experimentation process. This includes electronic project boards showing progress at all stages of work, design documents of source code, testing protocols, and other project records. Documentation is key to identifying technological advance because it can prove and confirm the existence of progress and new knowledge gained from experimentation, including failures and successes.

5. Was a detailed record of the tested hypotheses and results kept as the work progressed?

As work progressed on its software projects, LawBot, Inc. was able to keep various detailed records of the hypotheses that were tested, as well as the results of its testing. This information is critical, particularly if the company were to be audited by the CRA. For example, as the work progressed, the company saved the following: literature reviews, background research, project records, design documents for system architecture and source code, conceptual sketches, testing protocols, results or analysis from testing/trial runs, development plans, screenshots of various build versions/final version, records of resource allocation, invoices, and electronic project boards showing progress at all stages of LawBot, Inc.'s software development. As shown by various examples throughout this paper, culling various project documents can be critical to the survival of an R&D project in the event of an audit to substantiate that the projects carried out do qualify as SR&ED.

CONCLUSION

The SR&ED tax incentive program is an enduring part of the Canadian government's commitment to fostering innovation and economic growth. To ensure a taxpayer can reap the benefits of the program, it is highly recommended that proactive steps are taken to collect clear and detailed records of any SR&ED project. Although the CRA does not provide explicit guidelines in regards to supporting evidence required for an SR&ED claim, it is evident that sufficient documentation can provide invaluable assistance in the case of an audit

