



SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (SR&ED) EXPENDITURES CLAIM

Use this form:

- to provide technical information on your SR&ED projects;
- to calculate your SR&ED expenditures; and
- to calculate your qualified SR&ED expenditures for investment tax credits (ITC).

To claim an ITC, use either:

- Schedule T2SCH31, *Investment Tax Credit – Corporations*, or
- Form T2038(IND), *Investment Tax Credit (Individuals)*.

The information requested in this form and documents supporting your expenditures are prescribed information.

Your SR&ED claim must be filed within 12 months of the filing due date of your income tax return.

To help you fill out this form, use the T4088, *Guide to Form T661*, which is available on our Web site: www.cra.gc.ca/sred.

Part 1 – General information

010 Name of claimant T661 LTD		Enter one of the following:																																																																														
Tax year From: <table border="1"><tr><td>2</td><td>0</td><td>0</td><td>8</td><td>0</td><td>1</td><td>0</td><td>1</td></tr><tr><td>Year</td><td colspan="2">Month</td><td colspan="2">Day</td><td colspan="3"></td></tr></table> To: <table border="1"><tr><td>2</td><td>0</td><td>0</td><td>8</td><td>1</td><td>2</td><td>3</td><td>1</td></tr><tr><td>Year</td><td colspan="2">Month</td><td colspan="2">Day</td><td colspan="3"></td></tr></table>		2	0	0	8	0	1	0	1	Year	Month		Day					2	0	0	8	1	2	3	1	Year	Month		Day					<table border="1"><tr><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>R</td><td>C</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td colspan="15">Business Number (BN)</td></tr><tr><td colspan="15">Social Insurance Number (SIN)</td></tr></table>		9	8	7	6	5	4	3	2	1	R	C	0	0	0	1	Business Number (BN)															Social Insurance Number (SIN)														
2	0	0	8	0	1	0	1																																																																									
Year	Month		Day																																																																													
2	0	0	8	1	2	3	1																																																																									
Year	Month		Day																																																																													
9	8	7	6	5	4	3	2	1	R	C	0	0	0	1																																																																		
Business Number (BN)																																																																																
Social Insurance Number (SIN)																																																																																
050 Total number of projects you are claiming this tax year: 1																																																																																
100 Contact person for the financial information A. Xxxx		105 Telephone number/extension 555-555-5555	110 Fax number 555-555-5551																																																																													
115 Contact person for the technical information B. Yyyy		120 Telephone number/extension 555-555-5559	125 Fax number 555-555-5551																																																																													

151 If this claim is filed for a partnership, was Form T5013 filed? 1 Yes 2 No

If you answered **no** to line 151, complete lines 153, 156 and 157.

153	Names of the partners	156	%	157	BN or SIN
1					
2					
3					
4					
5					

Part 2 – Project information

Complete a separate Part 2 for each project claimed this year.

Section A – Project identification

200 Project title (and identification code if applicable)
Data warehouse management – Project code 98-0001

202 Project start date
2 | 0 | 0 | 8 | 0 | 3
Year Month

204 Completion or expected completion date
2 | 0 | 0 | 8 | 1 | 1
Year Month

206 Field of science or technology code (See guide for list of codes)
2.02.09

Project claim history

208 1 Continuation of a previously claimed project **210** 1 First claim for the project

218 Was any of the work done jointly or in collaboration with other businesses? 1 Yes 2 No

If you answered **yes** to line 218, complete lines 220 and 221.

220	Names of the businesses	221	BN
1			
2			
3			

The work was carried out (Check any that apply)

223 1 In a laboratory **226** 1 In a commercial plant or facility

224 1 In a dedicated research facility **228** 1 Others, specify **229** _____

Purpose of the work

230 1 To achieve technological advancement for the purpose of creating new or improving existing materials, devices, products or processes. (Go to Section B – Experimental development)

232 1 For the advancement of scientific knowledge. (Go to Section C – Basic or applied research)

Section B – Experimental development

The technological advancements you were trying to achieve with this work were required for:

	Materials, devices, or products		Processes	
The creation of new	235	1 <input type="checkbox"/>	236	1 <input type="checkbox"/>
The improvement of existing	237	1 <input checked="" type="checkbox"/>	238	1 <input type="checkbox"/>

240 What **technological** advancements were you trying to achieve? (Maximum 350 words)

The technological objective of this project was to improve data warehouse management techniques by concentrating on the compression of relational database tables. At the time this work began, numerous database compression methods were available and many of these had been commercialized in larger software applications. However, practically all of the methods relied on data being uniformly distributed and static in nature.

By contrast, the overwhelming proportion of data entering data warehouses could not be assumed to be uniformly distributed and was almost certainly dynamic in character. We assumed that conventionally available data compression methods, such as the loss-less dictionary approach, could be surpassed by developing methods that would exploit the unique properties of those data sets that were not uniformly distributed and were dynamic. A technological advancement was therefore sought in this project through the development of data compression algorithms based on an analysis of the dynamic character and non-uniform distribution of the data sets entering the data warehouse. This work generated new technological knowledge regarding:

- the discovery and use of column value frequency of initial tables rows to create a block-based compression dictionary;
- the use of a table-wide list of most frequent values for the compression dictionary;
- the restriction of query/update/refresh operations to compressed blocks rather than entire tables;
- the organization and control of compression dictionaries in the buffer cache when calls are made to uncompress multiple blocks.

The performance of the various prototypes developed in this work was benchmarked using a number of measures based on CPU utilization and data throughput for operations including parallel load, delete/update operations, full table scan, and table access by row ID. One additional outcome of this work was that the dynamic, non-uniform data compression method developed here actually provided performance improvements for data backup and recovery operations when applied to very large databases in excess of 2.5 million rows (1.3 GB) such as those encountered in data warehouses.

[320 words]

242 What **technological** obstacles/uncertainties did you have to overcome to achieve the technological advancements described in Line 240? (Maximum 350 words)

There were a number of specific technological obstacles that drove the systematic investigations described further.

We were looking for an appropriate methodology of modeling our dynamic, non-uniform data distribution in real data for the purposes of the compression prototypes.

There were no methodologies, techniques, or models available to us to characterize dynamic, non-uniform data. Our review of available techniques revealed in the early phase of the project that we had to undertake investigation leading to the development of a dataset model suitable to reflect in an efficient way our specific dataset characteristics. The second technological shortcoming was that we did not know and we could not find any technique or methodology related to the data compression, which would specifically deal with this data model related to dynamic, non-uniform data. We realized that if we develop a suitable model to characterize dynamic, non-uniform data then we would find no established techniques to be applied to the data compression aspect that would effectively and efficiently exploit the general features of this abstract data model previously mentioned. The effectiveness of each feature had to be verified in terms of data integrity and benchmark performance comparisons. Once a series of candidate compression algorithms became available the subsequent technical shortcomings were associated with the possibility of implementing a dynamic compression technique for dataset additions and/or updates on a batch basis. Finally, we were planning to develop an acceptable and valid methodology of setting up some general rules related to an optimal data table compression-block size applicable to both the initial data set analysis and the dynamic analysis. We felt that such a relationship should exist and we decided to undertake an investigation to be able to prove it. We also realized that such methodology is not readily available so we would have to address this issue and develop a technique potentially leading to determining an optimal data-block size.

[314 words]

244 What work did you perform **in the tax year** to overcome the technological obstacles/uncertainties described in Line 242? (Summarize the systematic investigation) (Maximum 700 words)

Following a review of available software methods and dataset characterization techniques, beginning in March 2008 the first phase of the investigations focused on the analysis of a very large data set (known to be dynamic with a non-uniform distribution) in relational database form. This analysis involved a number of investigations, using selected well-known methods in software engineering, with the aim of creating a generalized model of a data set. This also included the extraction of a number of dataset-specific conclusions regarding row and column correlations and distributions, some of which are briefly outlined above in the technological advancements section. At the end of this first phase we found that a reasonably accurate data set model could be created. This was further tested and the data set model accuracy was verified and validated against several concrete smaller-sized relational databases available to us in the data warehouse.

In the second phase, starting in May 2008, a number of compression methods were developed in prototype forms to exploit the general features of the data model. Each prototype carried a set of specific assumptions regarding how the dataset characteristics might be exploited and each was subsequently verified for integrity and then benchmarked for performance. This benchmarking was done through measures of CPU utilization and data throughput for parallel load, delete/update operations, full table scan, and table access by row ID. In direct support of this work, several test scripts were written to test the compression algorithm. Although the development of these scripts included no significant technological challenge, they were necessary to benchmark the new algorithms and determine the most appropriate solution. The benchmarking results were documented and are available for further review if requested.

The third phase was carried out in June and July 2008. Three candidate compression algorithms were modified to include an implementation of several different dynamic compression techniques for dataset additions and/or updates. Each of these again had the data integrity verified and performance benchmarked, the latter now including update/refresh-specific performance measures. In August 2008, a final prototype was selected for widespread commercial implementation ending this aspect of the experimental development.

During October 2008 the implemented prototype was used to determine whether or not an optimal data table compression-block size could be determined by both the initial data set analysis and the dynamic analysis. However, this work failed to establish that such a relationship existed and was subsequently abandoned, ending the project in November 2008.

As part of this effort the Company engaged an outside contractor for a period of two months to extend the data compression method to a wider range of common data warehouse operations in September 2008. Included in this work was an exploration into use of the implemented compression prototype for data backup and recovery operations. As the result of this work it was found out and further documented that the prototype provided measurable performance improvements when applied to very large databases in excess of 2.5 million rows (1.3 GB) such as those typically encountered in data warehouses. Subsequent investigations revealed that this was primarily due to the construction of the compression dictionary rather than the data blocks.

[521 words]

(Go to Section D)

Section C – Basic or applied research

250 What advancements in scientific knowledge were you trying to achieve? (Maximum 350 words)

252 What work did you perform in the tax year, and how did that work contribute to the advancements described in Line 250? (Summarize the systematic investigation) (Maximum 700 words)

Section D – Additional project information

Who prepared the responses for Section B or Section C?

253 1 <input checked="" type="checkbox"/> Employee directly involved in the project	254 Name C. Zzzz
255 1 <input type="checkbox"/> Other employee of the company	256 Name
257 1 <input type="checkbox"/> External consultant	258 Name 259 Firm

List the key individuals directly involved in the project and indicate their qualifications/experience.

260 Names	261 Qualifications/experience and position title
1 B. Yyyy	M.Sc. Computer Science / Lead Developer
2 E. Bbbb	B.Sc. Electrical Engineering / Programmer
3 F. Cccc	Diploma in Electronics / Data base developer

265 Are you claiming any salary or wages for SR&ED performed outside Canada? 1 Yes 2 No

266 Are you claiming expenditures for SR&ED carried out on behalf of another party? 1 Yes 2 No

267 Are you claiming expenditures for SR&ED performed by people other than your employees? 1 Yes 2 No

If you answered **yes** to line 267, complete lines 268 and 269.

268 Names of individuals or companies	269 BN
1 G. Dddd	222 222 222
2	

What evidence do you have to support your claim? (Check any that apply)
You do not need to submit these items with the claim. However, you are required to retain them in the event of a review.

270 1 <input checked="" type="checkbox"/> Project planning documents	276 1 <input checked="" type="checkbox"/> Progress reports, minutes of project meetings
271 1 <input checked="" type="checkbox"/> Records of resources allocated to the project, time sheets	277 1 <input checked="" type="checkbox"/> Test protocols, test data, analysis of test results, conclusions
272 1 <input type="checkbox"/> Design of experiments	278 1 <input type="checkbox"/> Photographs and videos
273 1 <input type="checkbox"/> Project records, laboratory notebooks	279 1 <input type="checkbox"/> Samples, prototypes, scrap or other artefacts
274 1 <input checked="" type="checkbox"/> Design, system architecture and source code	280 1 <input checked="" type="checkbox"/> Contracts
275 1 <input type="checkbox"/> Records of trial runs	281 1 <input type="checkbox"/> Others, specify 282 _____

Part 3 – Calculation of SR&ED expenditures

What did you spend on your SR&ED projects?

Section A – Select the method to calculate the SR&ED expenditures

I elect (choose) to use the following method to calculate my SR&ED expenditures and related investment tax credits (ITC) for this tax year.
I understand that my election is irrevocable (cannot be changed) for this tax year.

160 I elect to use the proxy method
(Enter "0" on line 360. Complete Part 5 and you do not need to track any expenditure incurred for overhead)

162 I choose to use the traditional method
(Enter "0" on line 355. Complete line 360, and track any expenditure incurred for overhead)

Section B – Calculation of allowable SR&ED expenditures (to the nearest dollar)

• SR&ED portion of salary or wages of employees directly engaged in the SR&ED:			
a) Employees other than specified employees for work performed in Canada	300	+	94,600
b) Specified employees for work performed in Canada	305	+	100,000
Subtotal (add lines 300 and 305)	306	=	194,600
c) Employees other than specified employees for work performed outside Canada (subject to limitations – see guide)	307	+	
d) Specified employees for work performed outside Canada (subject to limitations – see guide)	309	+	
• Salary or wages identified on line 315 in prior years that were paid in this tax year	310	+	
• Salary or wages incurred in the year but not paid within 180 days of the tax year end	315		
• Cost of materials consumed in performing SR&ED	320	+	
• Cost of materials transformed in performing SR&ED	325	+	
• Contract expenditures for SR&ED performed on your behalf:			
a) Arm's length contracts	340	+	32,000
b) Non-arm's length contracts	345	+	
• Lease costs of equipment used:			
a) All or substantially all (90% of the time or more) for SR&ED	350	+	
b) Primarily (more than 50% of the time but less than 90%) for SR&ED. (Enter 50% of lease costs if you use the proxy method or enter "0" if you use the traditional method)	355	+	
• Overhead and other expenditures (enter "0" if you use the proxy method)	360	+	
• Third-party payments (complete Form T1263*)	370	+	
Total current SR&ED expenditures (add lines 306 to 370; do not add line 315) (Corporations need to adjust line 118 of schedule T2SCH1)	380	=	226,600
• Capital Expenditures (see guide for what qualifies for SR&ED) (Do not include these capital expenditures on schedule T2SCH8)	390	+	15,000
Total allowable SR&ED expenditures (add lines 380 and 390)	400	=	241,600

Section C – Calculation of pool of deductible SR&ED expenditures (to the nearest dollar)

Amount from line 400	420		241,600
Deduct			
• provincial government assistance for expenditures included on line 400	429	–	35,115
• other government assistance for expenditures included on line 400	431	–	7,500
• non-government assistance for expenditures included on line 400	432	–	
• SR&ED ITCs applied and/or refunded in the prior year (see guide)	435	–	0
• sale of SR&ED capital assets and other deductions	440	–	
Subtotal (line 420 minus lines 429 to 440)	442	=	198,985
Add			
• repayments of government and non-government assistance that previously reduced the SR&ED expenditure pool	445	+	
• prior year's pool balance of deductible SR&ED expenditures (from line 470 of prior year T661)	450	+	
• SR&ED expenditure pool transfer from amalgamation or wind-up	452	+	
• amount of SR&ED ITC recaptured in the prior year	453	+	
Amount available for deduction (add lines 442 to 453) (enter positive amount only, include negative amount in income)	455	=	198,985
• Deduction claimed in the year (Corporations should enter this amount on line 411 of schedule T2SCH1)	460	–	198,985
Pool balance of deductible SR&ED expenditures to be carried forward to future years (line 455 minus 460)	470	=	0

* Form T1263, Third-Party Payments for Scientific Research and Experimental Development (SR&ED)

Part 4 – Calculation of qualified SR&ED expenditures for investment tax credit (ITC) purposes

The resulting amount is used to calculate your refundable and/or non refundable ITC.

Enter the breakdown between current and capital expenditures (to the nearest dollar)		Current Expenditures		Capital Expenditures	
Total expenditures for SR&ED (from lines 380 and 390)	492		226,600	496	15,000
Add					
• payment of prior years' unpaid amounts (other than salary or wages)	500	+			
• prescribed proxy amount (complete Part 5) (Enter "0" if you use the traditional method)	502	+	111,865		
• expenditures on shared-use equipment (see guide)				504	+
• qualified expenditures transferred to you (complete Form T1146**)	508	+		510	+
Subtotal (add lines 492 to 508, and add lines 496 to 510)	511	=	338,465	512	= 15,000
Deduct					
• provincial government assistance	513	-	49,645	514	- 2,250
• other government assistance	515	-	7,500	516	-
• non-government assistance and contract payments	517	-		518	-
• current expenditures (other than salary or wages) not paid within 180 days of the tax year end	520	-			
• amounts paid in respect of an SR&ED contract to a person or partnership that is not a taxable supplier	528	-			
• prescribed expenditures not allowed by regulations (see guide)	530	-		532	-
• other deductions (see guide)	533	-		535	-
• non-arm's length transactions					
– assistance allocated to you (complete Form T1145*)	538	-		540	-
– expenditures for non-arm's length SR&ED contracts (from line 345)	541	-			
– adjustments to purchases (limited to costs) of goods and services from non-arm's length suppliers (see guide)	542	-		543	-
– qualified expenditures you transferred (complete Form T1146 **)	544	-		546	-
Subtotal (line 511 minus lines 513 to 544 and line 512 minus lines 514 to 546)	557	=	281,320	558	= 12,750
Qualified SR&ED expenditures (add lines 557 and 558)				559	= 294,070
Add					
• repayments of assistance and contract payments made in the year				560	+
Total qualified SR&ED expenditures for ITC purposes (add lines 559 and 560)				570	= 294,070

* Form T1145, *Agreement to Allocate Assistance for SR&ED Between Persons Not Dealing at Arm's Length*

** Form T1146, *Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts Between Persons Not Dealing at Arm's Length*

Part 5 – Calculation of prescribed proxy amount (PPA)

A notional amount representing your overhead and other expenditures.

This part calculates the PPA to enter on line 502 in Part 4. Do not complete this part if you have chosen to use the traditional method in Part 3 (line 162). You can only claim a PPA if you elected to use the proxy method for the year in Part 3 (line 160).

Special rules apply for specified employees. Calculate your salary base in Section A and the PPA in Section B.

Section A – Salary base						
Salary or wages of employees other than specified employees (from lines 300 and 307)					810 +	94,600
Deduct						
Bonuses, remuneration based on profits, and taxable benefits that were included on line 810					812 –	
Subtotal (line 810 minus 812)					814 =	94,600
Salary or wages of specified employees						
850	852	854	856	858	860	
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	
Name of specified employee	Total salary or wages for the year (SR&ED and non-SR&ED) excluding bonuses, remuneration based on profits, and taxable benefits (to the nearest dollar)	% of time spent on SR&ED (maximum 75%)	Amount in column 2 multiplied by percentage in column 3	2.5 × A × B/365 A = Year's maximum pensionable earnings B = Number of days employed in tax year	Amount in column 4 or 5, whichever amount is less	
1 B. Yyyy	90,000	75%	67,500	112,250	67,500	
2 H. Eeee	100,000	10%	10,000	112,250	10,000	
3						
4						
5						
(Enter total of column 6 on line 816)					816 +	77,500
Salary base (total of lines 814 and 816)					818 =	172,100

Section B – Prescribed proxy amount (PPA)	
Enter 65% of the salary base (line 818 × 65%)	820 = 111,865
Enter the amount from line 820 on line 502 in Part 4 unless the overall cap on PPA applies to you.	
(See the guide for explanation and example of the overall cap on PPA)	

Part 6 – Project costs

Information requested in this part must be provided for **all** SR&ED projects claimed in the year.

Expenditures should be recorded and allocated on a project basis.

750	752	754	756
Project title or identification code	Salary or wages in the tax year (Total of lines 306 to 309)	Cost of materials in the tax year (Total of lines 320 and 325)	Contract expenditures for SR&ED performed on your behalf in the tax year (Total of lines 340 and 345)
1 Data warehouse management Project code 98-0001	194,600	–	32,000
2			
3			
4			
5			
Total	194,600		32,000

Part 7 – Additional information

Expenditures for SR&ED performed by you in Canada (line 400 minus lines 307, 309, 340, 345, and 370)		605	209,600
From the total you entered on line 605, estimate the percentage of distribution of the sources of funds for SR&ED performed within your organization.			
		Canadian (%)	Foreign (%)
Internal	600	96%	
Parent companies, subsidiaries, and affiliated companies	602		604
Federal grants (do not include funds or tax credits from SR&ED tax incentives)	606	4%	
Federal contracts	608		
Provincial funding	610		
SR&ED contract work performed for other companies on their behalf	612		614
Other funding (e.g., universities, foreign governments)	616		618
Enter the number of SR&ED personnel in full-time equivalents (FTE):			
Scientists and engineers		632	2
Technologists and technicians		634	2
Managers and administrators		636	
Other technical supporting staff		638	

Part 8 – Claim checklist

To ensure your claim is complete, make sure you have:

- used the current version of this form
- entered the method you have chosen for reporting your SR&ED expenditures in Section A of Part 3
- completed Part 2 for each project
- filed a completed Schedule T2SCH31 or Form T2038(IND) to claim ITCs on your qualified SR&ED expenditures
- filed a completed Form T1145*, T1146**, T1174*** and/or T1263**** including any required attachments, if applicable

To expedite the processing of your claim, make sure you have:

- completed Form T2, *Corporation Income Tax Return* or Form T1, *Income Tax and Benefit Return*
- filed the appropriate provincial and/or territorial tax credit forms, if applicable
- retained documents to support the SR&ED expenditures you claimed
- checked boxes 231 and 232 on page 2 of your T2 return to indicate attachment of Form T661 and Schedule T2SCH31

* Form T1145, *Agreement to Allocate Assistance for SR&ED Between Persons Not Dealing at Arm's Length*

** Form T1146, *Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts Between Persons Not Dealing at Arm's Length*

*** Form T1174, *Agreement Between Associated Corporations to Allocate Salary or Wages of Specified Employees for Scientific Research and Experimental Development (SR&ED)*

**** Form T1263, *Third-Party Payments for Scientific Research and Experimental Development (SR&ED)*

Part 9 – Certification

I certify that I have examined the information provided on this form and on the attachments and it is true, correct, and complete.

165	B. Yyyy	170	
	Name of authorized signing officer of the corporation, or individual		Date
175	RD Tax Professionals		
	Name of person/firm who completed this form		