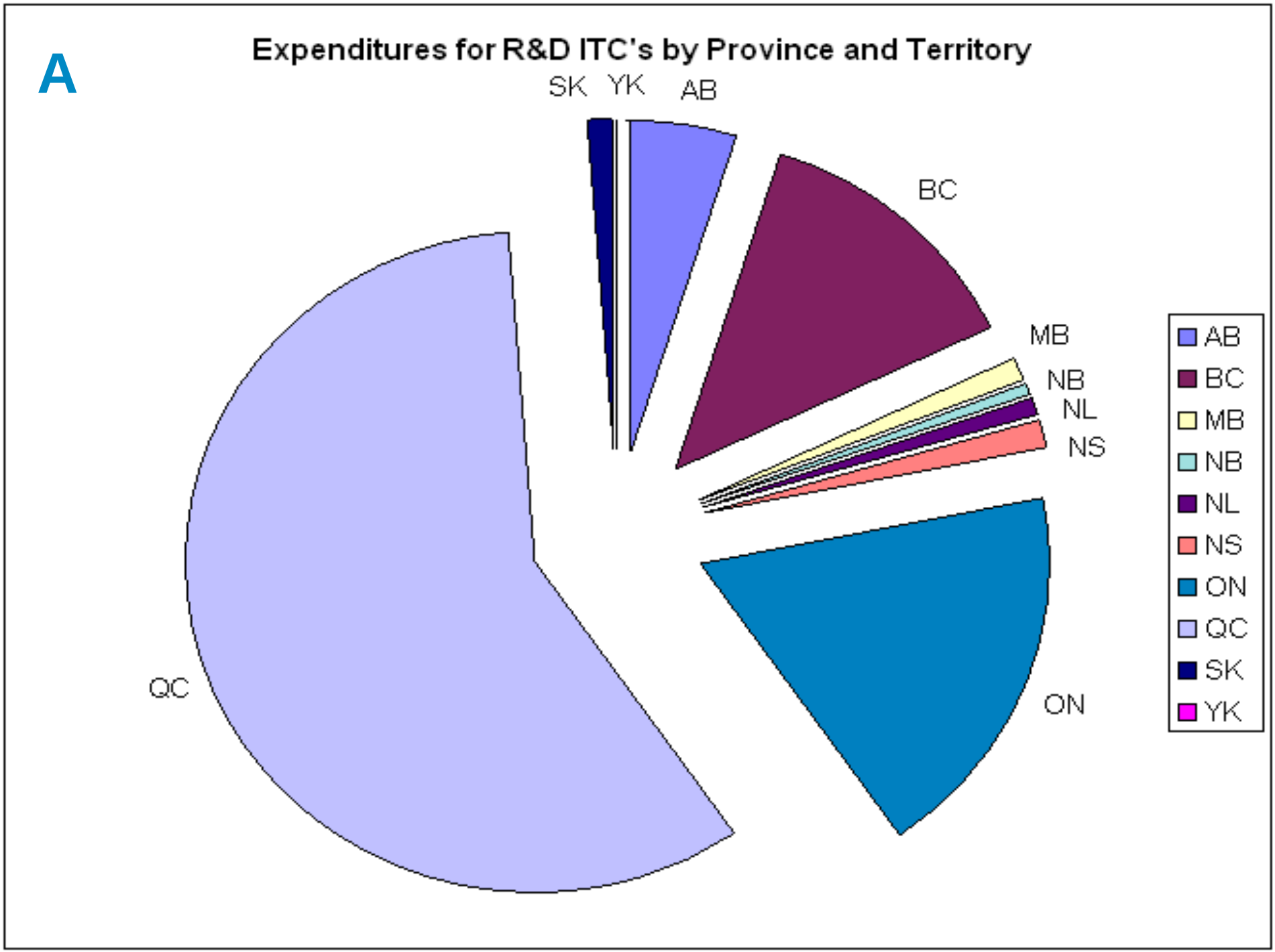
SR&ED
Scientific Research & Experimental Development Tax Credits

Crash Course - 2016

A

Budgeted Expenditures for R&D Tax Credits		
	2008 Expenditures	
Federal	**($ Millions)**	
Earned & Claimed in Current Year	3,000	
Claimed Current Year but Earned in Prior Years	1,655	
Earned current year but carried back to prior years	100	
Total	**4,755**	**4,755.0**
Provinces / Territories		
AB	60	
BC	150	
MB	15	
NB	4.6	
NL	12.1	
NS	14	
ON	215	
PEI	0	
QC	689	
SK	12	
YK	0.2	
NWT	0	
NV	0	
Total		**1,171.9**
Total Expenditures in Canada		**5,926.9**

A


Expenditures for R&D ITC's by Province and Territory
SK
YK
AB
BC
MB
NB
NL
NS
ON
QC
AB
BC
MB
NB
NL
NS
ON
QC
SK
YK

A

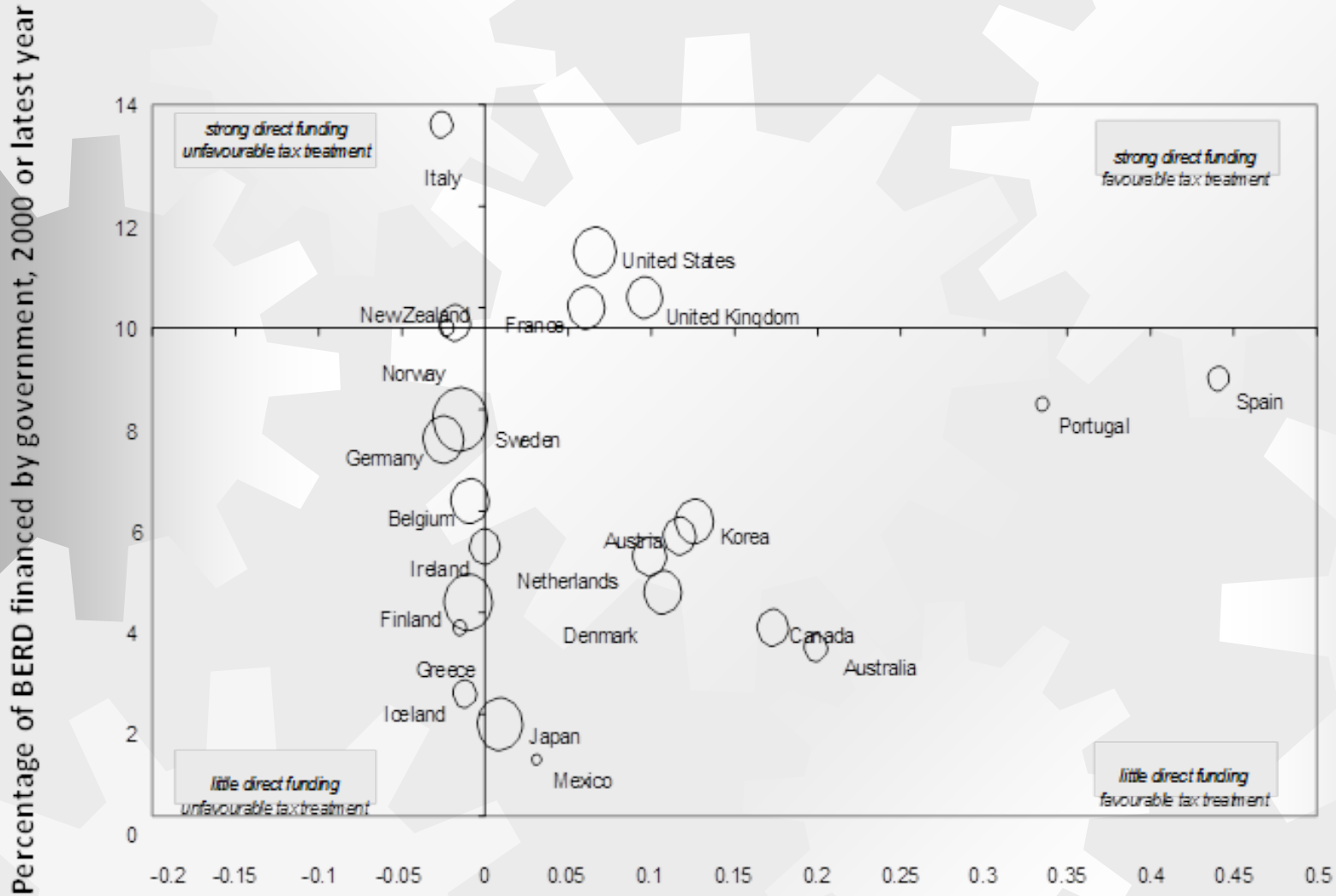
Credits Earned by Rate

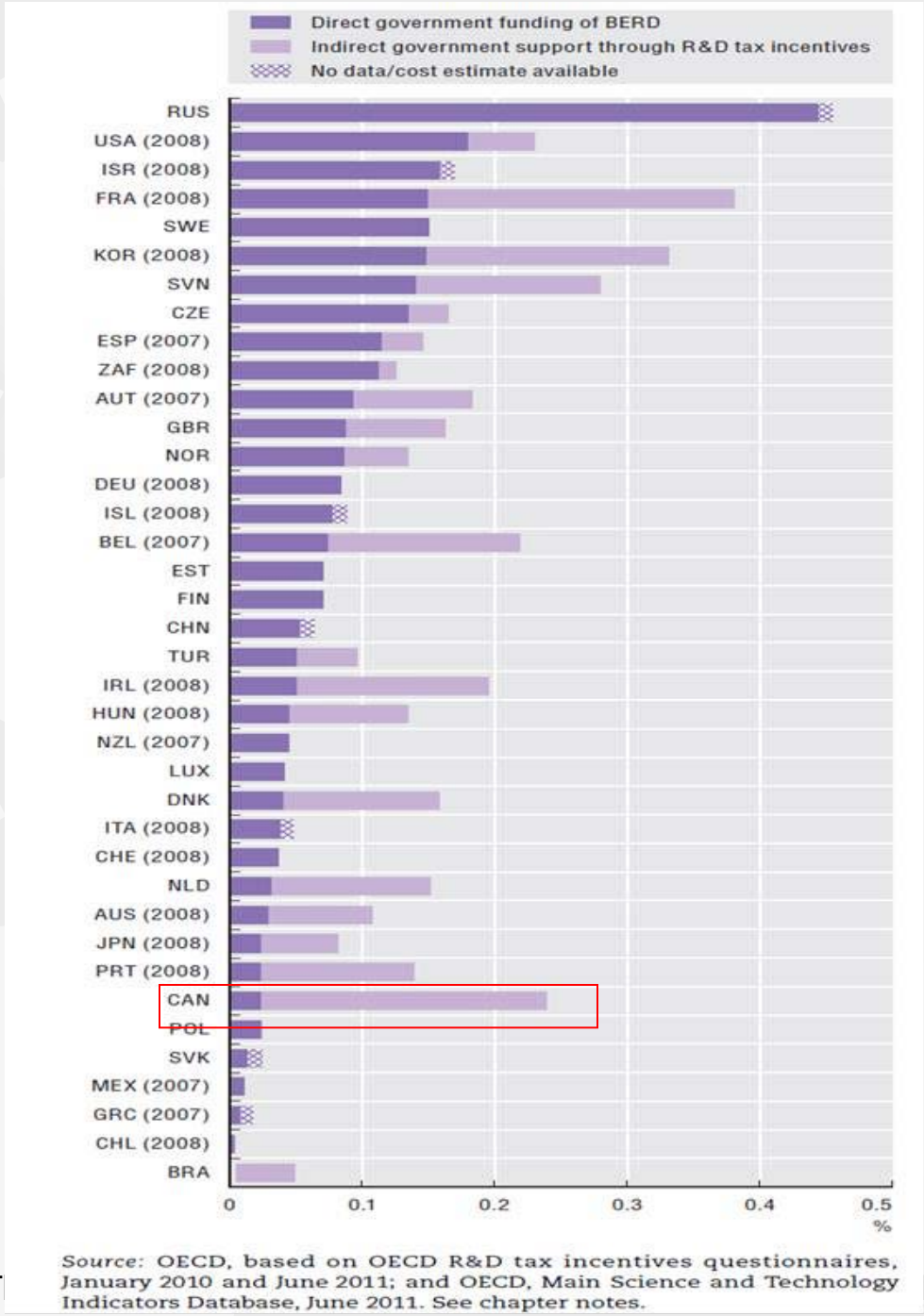
	By Value of Credits - $ millions			By Number of Corporations			
	Earned at 35% rate	Earned at 20% rate	Total credits earned	Earning at 35% rate	Earning at 20% rate	Earning Both 35% & 20% rates	Total corporations earning credits
2002	865	2,397	3,262	11,603	4,133	325	16,061
2003	954	2,238	3,193	13,418	4,309	339	18,066
2004	1,083	2,271	3,354	15,295	4,051	339	19,685

SR&ED claim intake	Year end Mar 31, 2015		Year end Mar 31, 2014		Variance	
Office	Claims	ITC's	Claims	ITC's	Claims	ITC's
National	23,137	$ 3,856,342	25312	$ 4,361,819	-8.6%	-11.6%
Hamilton	3085	$ 381,022	3492	$ 571,217	-11.7%	-33.3%
Toronto	3854	$ 607,852	4115	$ 701,446	-6.3%	-13.3%
Toronto West	1329	$ 260,569	1354	$ 287,765	-1.8%	-9.5%
Ontario	8268	$ 1,249,443	8961	$ 1,560,428	-7.7%	-19.9%
Montreal	3379	$ 790,398	3648	$ 795,622	-7.4%	-0.7%

Source: CRA Redbook

International comparatives





Source: OECD, based on OECD R&D tax incentives questionnaires, January 2010 and June 2011; and OECD, Main Science and Technology Indicators Database, June 2011. See chapter notes.

B - International definition of an R&D project

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

  - Source: Frascati Manual 2002, paragraph 135

B - SR&ED legislation - eligibility

Canada - *Income Tax Act* defines SR&ED as

- **"systematic investigation** or search, that is
- carried out **in a field of science or technology,**
- **by** means of **experiment or analysis and** that is:"

a) Basic Research

b) Applied Research

c) Experimental Development *

advancement *for the purpose of* **creating new, or improving existing**, **materials, devices, products or processes**

B - 7-8 types of supporting SR&ED activities – "if commensurate with project needs"

d) Eight areas of supporting work:

- Engineering
- Design
- Operations Research
- Mathematical analysis
- Computer programming
- Data gathering
- Testing and
- (Sometimes - Psychological Research)

B - SR&ED does NOT include

- **commercial production, market research** or **sales promotion,**
- **quality control or routine testing,**
- **social sciences or the humanities**,
- aesthetic or **style changes, or**
- Claims filed > deadline (18 months from year-end for corporations).

IRS Four part test (USA)

- IRS code 41(d)(1)
- **Technological in nature – then:**
  - **Permitted purpose (discovering information)**
  - **Elimination of uncertainty**
  - **Process of experimentation**

B - Eligible Research Fields

INCLUDE:

1) Natural Sciences
2) Engineering & Technology
3) Medical & Health Sciences
4) Agricultural Sciences

DOES NOT INCLUDE

- Social Sciences
- Humanities

B - CRA SR&ED Guides

- Consolidated CRA SR&ED policy papers(s)
  - Released December 19, 2012
  - Replace former IT's, IC's & APP's
  - Do NOT represent change in policies

Additional Manuals for Reviews

- RTA (Technology) &
- FR (Financial)

B - CRA Eligible SR&ED project

"**Set of interrelated activities** that:

- 1. Attempt **technological advancement**
- 2. to overcome **technological uncertainty,**
- 3. Pursued through **systematic investigation by qualified individuals.**"

B Phase 1: The Square
Define "Standard Practice"

What is known?

TEMPLATE - THREE COMPONENTS OF AN SR&ED PROJECT – STEP 1:

		FORMAT:	ITEM:
MAX: 350 WORDS	**I)**	**A) LIST**	**State of Existing technology: Benchmarking methods & sources for citings**

WHAT?

	Number of	
i)	_____	Internet / Google Searches
ii)	_____	Articles
iii)	_____	Patent searches
iv)	_____	Competitive methods
v)	_____	Similar in-house technologies
vi)	_____	Potential components
vii)	_____	Queries to experts
viii)	_____	Other

B) TABLE **Performance Objective(s) (up to top 5)**

		Benchmark 1	*Benchmark 2 …*	*Benchmark 3 …*
i)	Existing performance	_____	_____	_____
ii)	Unit of measure	_____	_____	_____
iii)	Objective	_____	_____	_____
iv)	*Result (III B i)) **	_____	_____	_____

Notable quote

"He who asks a question is a fool for 5 minutes. He who does not ask a question remains a fool forever."

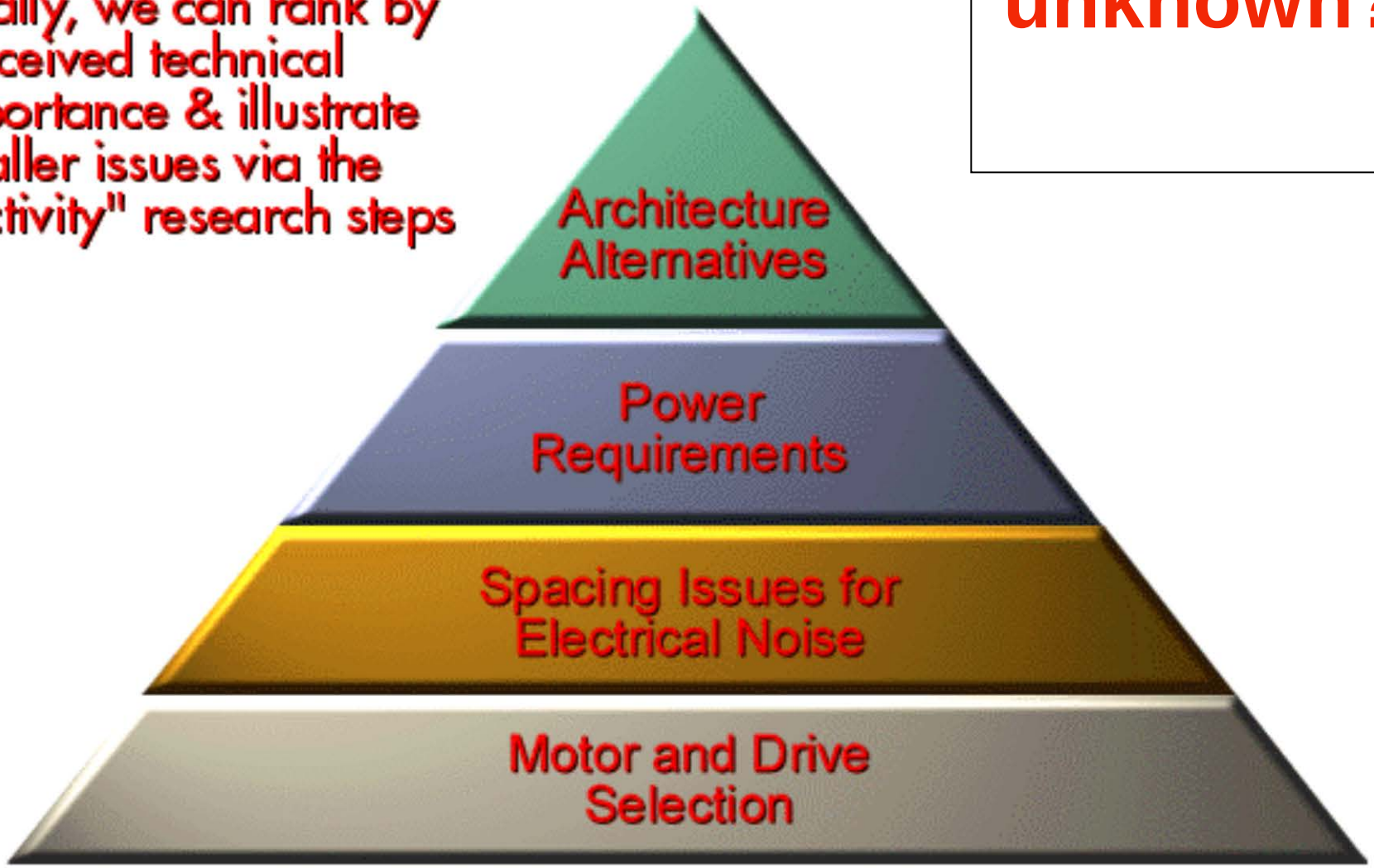
- Chinese proverb

B

Phase 2: The Triangle Technical Uncertainty (TU)

What is unknown?

Ideally, we can rank by perceived technical importance & illustrate smaller issues via the "Activity" research steps



TEMPLATE - THREE COMPONENTS OF AN SR&ED PROJECT – STEP 2:

MAX: 350 WORDS **II) LIST** **Technological Uncertainties (up to top 5 variables)**

i) _____ *Variable 1*

ii) _____ *Variable 2 ….*

iii) _____ *Variable 3 ….*

WHY?

Notable quote

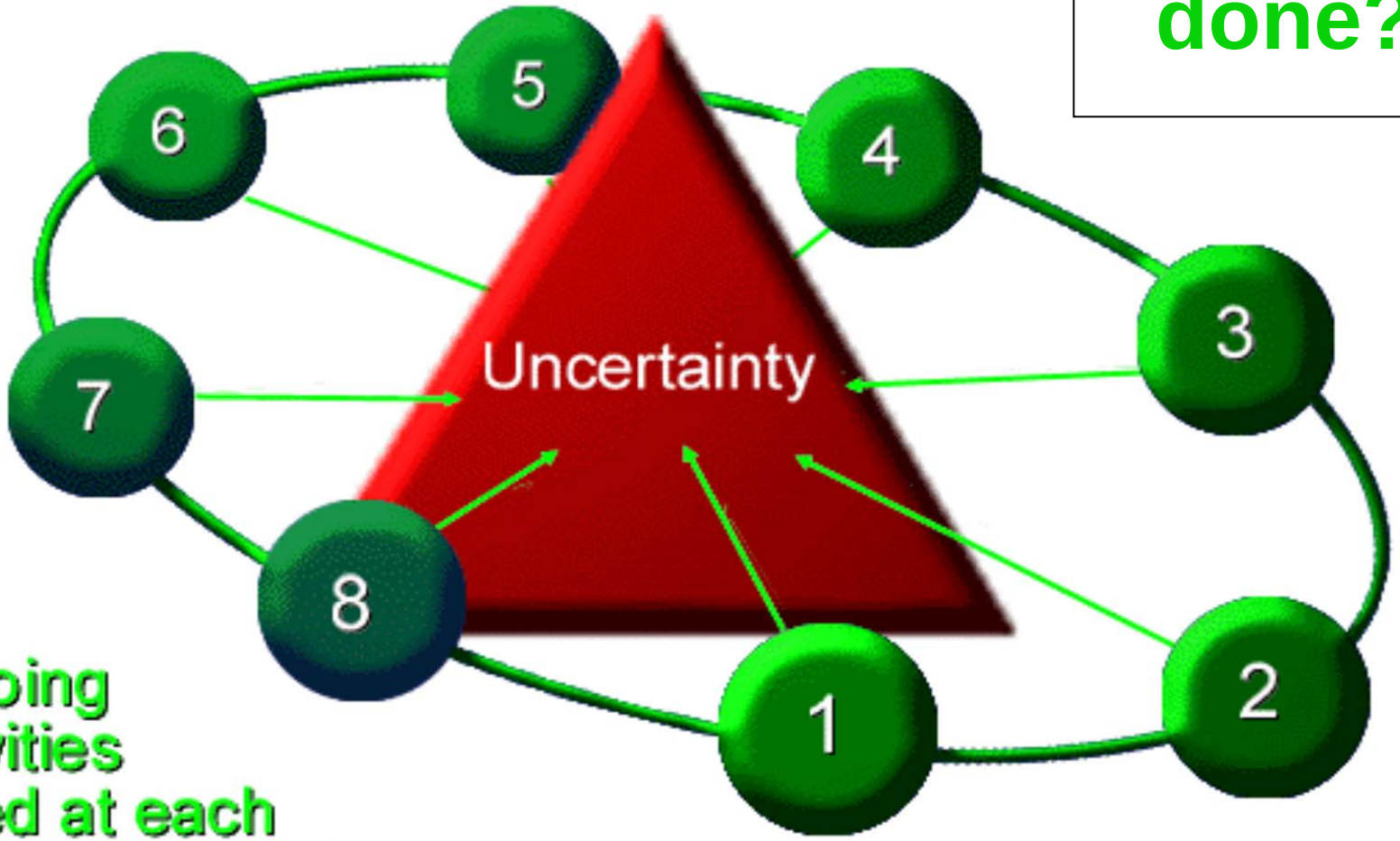
“They always say time changes things, but you actually have to change them yourself.”

- Andy Warhol

B

Phase 3: The Circle of Ongoing Investigation

What was done?



Ongoing Activities aimed at each major uncertainty

TEMPLATE - THREE COMPONENTS OF AN SR&ED PROJECT – STEP 3:

MAX: 700 WORDS

III A) LIST **Experimentation method (for EACH activity)**

Number of

i) _____ Alternatives analyzed or simulated (Theoretical)

ii) _____ Process trial runs (Physical or software)

iii a) _____ Complete prototypes (Physical or Software releases)

iii b) _____ Revisions to prototypes (in III a)

WHO, WHEN, WHERE & HOW?

B i) TABLE **Results - tie to performance objective benchmarks TABLE I B) above ***

B ii) LIST **Conclusions - compare Results to expectations & explain via Variables LISTED in II) above****

B iii) LIST **Technical documentation retained (list of 12 items per CRA T661 form)**

* + Software Industry - should clarify total lines of code: written vs. scrapped during current period

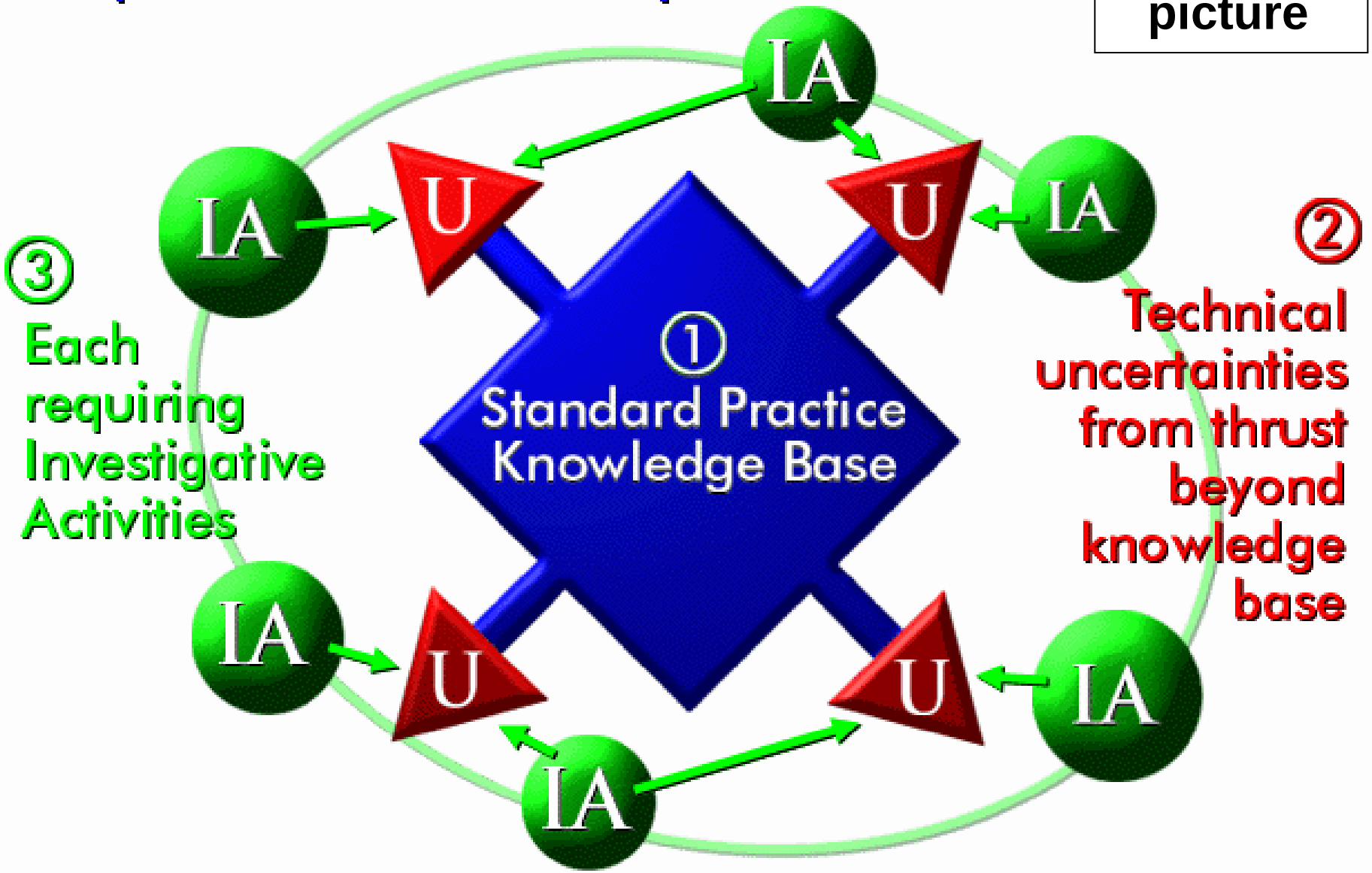
Notable quote

“The more original a discovery, the more obvious it seems afterwards.”

- Arthur Koestler

B The Realm of Experimental Development

The complete picture



RDBASE.NET International SR&ED template

I		**OBJECTIVE BEYOND STANDARD PRACTICE**	**Recommended documentation**	**GOAL: prove to Government (CRA, IRS, patent office)**
	i)	**State of Existing technology**	State benchmarking methods & sources	Limits of information available to someone "skilled in the art."
	ii)	**Objective(s)**	Top 5 measureable "Objectives"	Quantifiable Objectives beyond known limits
II		**TECHNOLOGICAL UNCERTAINTIES**	Top 5 "Variables" for experimentation	Formulate "test matrix" to test hypotheses
III		**EXPERIMENTAL ACTIVITY**	Defined by tax year*	
	i)	**Experimentation method**	Number of alternatives tested & how?	Justify sample sizes
	ii)	**Results**	Correlate to "Objectives"	Provide basis for Conclusions
	iii)	**Conclusions**	Correlate to "Variables"	"New knowledge" illustrates "Technological Advancement"

rocess

Notable quote

"If GM had kept up with technology like the computer industry has, we would all be driving $25 cars that got 1000 MPG."

- Bill Gates

“Defining the SR&ED project” Tax Court vs. CRA Guidance

CRA SR&ED Guidance – the consolidated document

- Role of the TCC vs. expert witness
- Tax Court outlines the SR&ED process
- Defining the “Scientific method”
- SR&ED project eligibility – TCC vs. CRA requirements

Project template (simple view)

- Step 1a): Ensure proper definition of existing knowledge at the outset
- Step 1 b): Quantification of objectives vs. standard practice
- Step 2: Correlate experiments to hypotheses
- Step 3a): Ensuring work was done “systematically”
- Step 3b): Clarifying the “technological conclusions / advancements”

CRA SR&ED Guidance – the consolidated document

December 19, 2012 the CRA released a consolidated document to replace all prior

- Interpretation Bulletins (IT's)
- Information Circulars (IC's) &
- Application Policy Papers (APP's)
- related to SR&ED credits.

While the CRA claims that it

- does not represent any new policies
- they do provide clarification on certain issues &
- remove ambiguities among former documents.

Perhaps the most significant "new" analysis is an attempt to correlate;

- The CRA's 3 component eligibility criteria to
- The 5 criteria used by the Tax Court of Canada / Scientific Method

Notable quote

"There is nothing wrong with change, if it is in the right direction"

- Sir Winston Churchill

CRA Eligible SR&ED project

"Set of interrelated activities that:

1. Attempt technological **advancement**
2. to overcome technological **uncertainty**,
3. pursued through **systematic investigation** by qualified individuals."

Note: "Technological Advancement" & "Systematic Investigation" are the only of these terms used in the Income Tax Act.

SR&ED definition – Income Tax Act

Canada - *Income Tax Act* defines SR&ED as

- **"systematic investigation** or search, that is
- carried out **in a field of science or technology,**
- **by** means of **experiment or analysis and** that is:"

  a) Basic Research

  b) Applied Research or

  c) Experimental Development *

* ***"Technological advancement"*** *for the purpose of* ***creating new, or improving existing, materials, devices, products or processes***

Tax Court – SR&ED requirements & 5 step process

Landmark SR&ED tax case of **Northwest Hydraulics - 5 questions:** basis for evaluating SR&ED projects:

1. Is there a **technical risk or uncertainty**?

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 the **technological uncertainty**;
   d. the formulation of an hypothesis or **hypotheses** designed to reduce or eliminate the uncertainty;
   e. the methodical and **systematic testing** of the hypotheses.

3. 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?

4. Did the process result in a **technological advance**, that is to say an advancement in the **general understanding**?

5. Although the Income Tax Act and the Regulations do not say so explicitly, it seems self-evident that a detailed **record of the hypotheses, tests and results be kept**, and that it be kept as the work progresses.

TCC - Role of the “expert witness”

RIS Christie : role of the scientists in determining SR&ED eligibility

- “What constitutes scientific research for the purposes of the Act is either a **question of law** or a question of mixed law and fact to be **determined by the Tax Court of Canada**, not expert witnesses, as is too frequently assumed by counsel for both taxpayers and the Minister.

- An expert may assist the court in evaluating technical evidence and seek to persuade it that the research objective did or could not lead to a technological advancement. But, at the end of the day, the **expert’s role** is limited to providing the court with a set of **prescription glasses through which technical information can be viewed** before being analyzed and weighed by the trial judge.”

Tax Court provides additional "process" suggestions

Landmark SR&ED tax case of Northwest Hydraulics

- Judge's Question #2.
- "Did the person claiming to be doing SR&ED 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 the technological uncertainty;
  - d. the formulation of an hypothesis or hypotheses designed to reduce or eliminate the uncertainty;
  - e. the methodical and systematic testing of the hypotheses."

RDBASE.NET International SR&ED template

		Recommended documentation	GOAL: prove to Government (CRA, IRS, patent office)
I	**OBJECTIVE BEYOND STANDARD PRACTICE**		
i)	**State of Existing technology**	State benchmarking methods & sources	Limits of information available to someone "skilled in the art."
ii)	**Objective(s)**	Top 5 measureable "Objectives"	Quantifiable Objectives beyond known limits
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III	**EXPERIMENTAL ACTIVITY**	Defined by tax year*	
i)	**Experimentation method**	Number of alternatives tested & how?	Justify sample sizes
	Results	Correlate to "Objectives"	Provide basis for Conclusions
ii)	**Conclusions**	Correlate to "Variables"	"New knowledge" illustrates "Technological Advancement"

WHAT INFORMATION IS REQUIRED	HOW TO PROVIDE INFO.
Scientific Method **Oxford Dictionary**	**RDBASE SR&ED project -** **5 Steps**
1. Define a question	**Step 1b):** Objectives > Standard Practice
2. Gather information and resources (observe)	**Step 1a):** Define Standard Practice (SP)
3. Form an explanatory hypothesis	**Step 2:** Correlate research to Uncertainties
4. Perform an experiment and collect data,	**Step 3a):** Work done "systematically"
5. Analyze the data	
6. Interpret the data and draw conclusions that serve as a starting point for new hypothesis	**Step 3b):** Clarifying "technological conclusions"
7. Publish results	Recommended but not required for SR&ED projects
8. Retest (frequently done by other scientists).	
Note: The iterative cycle inherent in this step-by-step methodology goes from point 3 to 6 back to 3 again	Provided via steps 2 & 3

WHAT INFORMATION IS REQUIRED		HOW TO PROVIDE INFO.	Author's Commentary: HOW to meet all requirements
Tax Court of Canada (TCC) 5 SR&ED eligibility Questions	**CRA intepretation** 3 Criteria	**RDBASE SR&ED project -** 5 Steps	
1. Was there a scientific or a **technological uncertainty**—an uncertainty that could not be removed by **standard practice**?	**2.** Scientific or technological **uncertainty**	**Step 1a):** Define Standard Practice (SP) **Step 1b):** Objectives > Standard Practice & **Step 2:** Correlate research to uncertainties	The TCC question **contemplates the first 3 steps** of the RDBASE SR&ED project structure.
2. Did the effort involve formulating **hypotheses** specifically aimed at reducing or eliminating that **uncertainty**?	**3.** Scientific & technical **content**	**Step 2**: Correlate research to uncertainties	**Hypotheses** require **"variables"** for experimentation. These create the basis for the **"controlled experiments"** required by the tax court.
3. Was the adopted procedure consistent with the total discipline of the **scientific method**, including formulating, testing, and modifying the hypotheses?	**3.** Scientific & technical **content**	**Steps 1-5: Specifically 3a):** Work done "systematically"	The **"scientific method"** is an internationally accepted definition which the **Tax Court of Canada has adopted** despite **resistance** by the **CRA**. Arguably the **"scientific method"** contemplates **all 5 steps** of the RDBASE SR&ED project structure.
4. Did the process **result in** a scientific or a **technological advancement**?	**1**. Scientific or technological **advancement**	**Step 3b):** Clarifying "technological conclusions" = advancements	**"Technological advancement" is the "conclusion"** after **ALL 5 steps** to be performed. The **tax courts** (correctly) recognize this is a "**result**" but the **CRA** still requests this as the **first step** of the reporting process.
5. Was a **record of** the hypotheses tested and the **results** kept as the work progressed?	**3.** Scientific & technical **content**	**Step 2:** Correlate research to uncertainties **Step 3a):** Work done "systematically"	**Documentation of experimentation** is required by both the "scientific method" & the CRA's "content" criteria.

Notable quote

"The uncreative mind can spot wrong answers but it takes a very creative mind to spot wrong questions."

- Anthony Jan

Step 1a): Definition of existing knowledge at the outset

Northwest Hydraulics

- CRA position (all work SP)
  - "work described … refers to standard devices and processes, which are routinely used in similar design situations all over the world."
- Tax Court Position
  - "It was the innovative combination and alignment of [these] factors that makes this project unique."

Author's commentary:

The Northwest Case illustrates how CRA officials may deny claims on the basis the project

- appears to be "routine engineering"
- without providing support for their position but
- identification of "variables" for experimentation
- provide adequate evidence for the TCC

- US / IRS directives – perhaps CRA can adopt?
  - Patent safe harbour
  - Rebuttal presumption
    - IRS must demonstrate within common knowledge if denied

Step 1 b): Quantification of objectives vs. standard practice

- Sass Manufacturing
  - “Systematic investigation connotes the existence of controlled experiments and of highly accurate measurements and involves the testing of one's theories against empirical evidence.
- Northwest Hydraulics
  - "Most scientific research involves gradual, indeed infinitesimal, progress.”

Step 2: Correlate experiments to technological uncertainties (hypotheses)

- CW Agencies
  - "The word **hypothesis** in this context is normally considered to mean a provisional concept which is not inconsistent with known facts and serves as a starting point for further investigation by which it may be proved or disproved objectively."
- Maritime Ontario Freight Lines
  - "A **hypothesis** is a tentative assumption or explanation to an unknown problem and, as a rule, this requirement is met by the existence of a logical plan devised to observe and resolve the hypothetical problem."

Identifying “key variables” within “hypotheses”

- Northwest Hydraulics
  - “I **do not think** that **conventional engineering** would be **adequate to deal with the variables** and the uncertainties that were inherent in the major disruption and diversion of the flow of the river resulting from the construction”
  - Technological uncertainty is something that exists in the mind of the specialist such as the appellant, who identifies and articulates it and applies its methods to remove that uncertainty.”

Additional definitions of "scientific hypotheses"

- From Wikipedia, the free encyclopedia
  - For a hypothesis **to be a scientific** hypothesis, the scientific method requires **one can test it**.
  - Scientists generally **base** scientific hypotheses on **previous observations** that cannot satisfactorily be explained with the available scientific theories.
  - Normally hypotheses have the form of a **mathematical model**.
  - A **working hypothesis** is a provisionally accepted hypothesis proposed for further research.

Author's commentary: Evidence hypotheses via "test matrix."

- This would require the researcher to:
  - Identify the key variables which he/she believes explain the performance
  - Benchmark variables vs. existing models to predict their interaction
  - Rank the variables in order of significance
  - Test the variables to further understand shortfall of the existing models

Step 3a): Ensuring work was done "systematically"

- Sass Manufacturing
  - Scientific research must mean the enterprise of explaining and predicting and the gaining knowledge of whatever the subject matter of the hypothesis is.
  - This surely would include repeatable experiments in which the steps, the various changes made and the results are carefully noted."

Step 3a): Ensuring work was done "systematically"

- Rainbow Pipeline
  - "What may appear routine and obvious after the event may not have been before the work was undertaken.
  - What distinguishes **routine activity** from the methods required by the definition of **SR&ED** …. is **not solely** the adherence to **systematic routines**, but the adoption of **the entire scientific method,** with a view to removing a technological **uncertainty** through the formulation and **testing of** innovative and **untested hypotheses**."

Step 3b): Clarifying “technological conclusions / advancements”

- Rainbow Pipeline
  - “The rejection after testing of an hypothesis is nonetheless an advance in that it eliminates one hitherto untested hypothesis.
  - Much scientific research involves doing just that. The fact that the initial objective is not achieved invalidates neither the hypothesis formed nor the methods used.
  - On the contrary it is possible that the very failure reinforces the measure of the technological uncertainty.”

COMMON DOCUMENTATION PROBLEMS

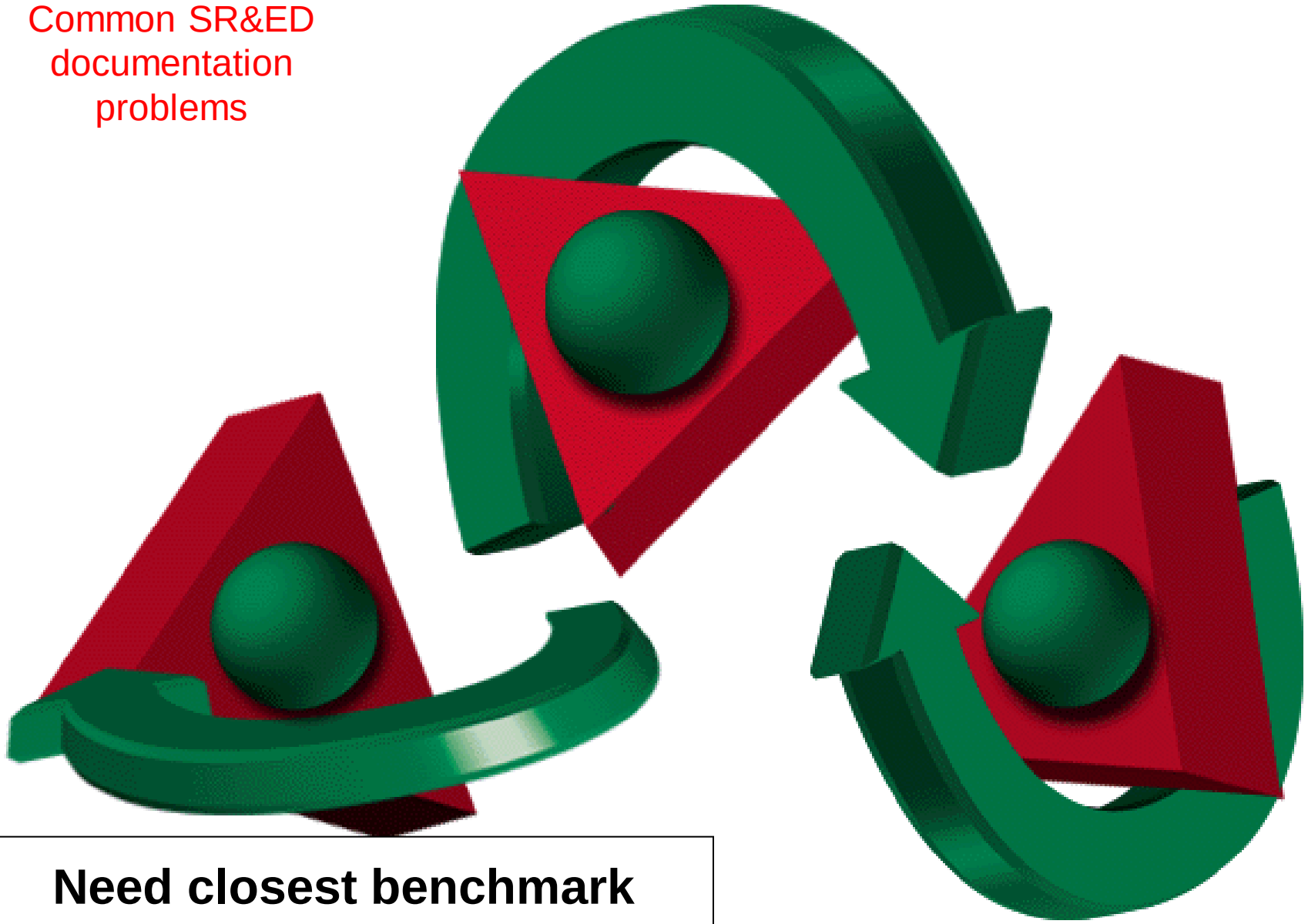
Optimal implementation:

- Willing contributions of “investigators”
- Ability to identify and rank the relative significance of technical uncertainties
- Ability to provide “conciseness and brevity” by focusing on significant technical issues

C

1 - No Standard Practice

Common SR&ED documentation problems



Need closest benchmark

C

2 - Routine Engineering

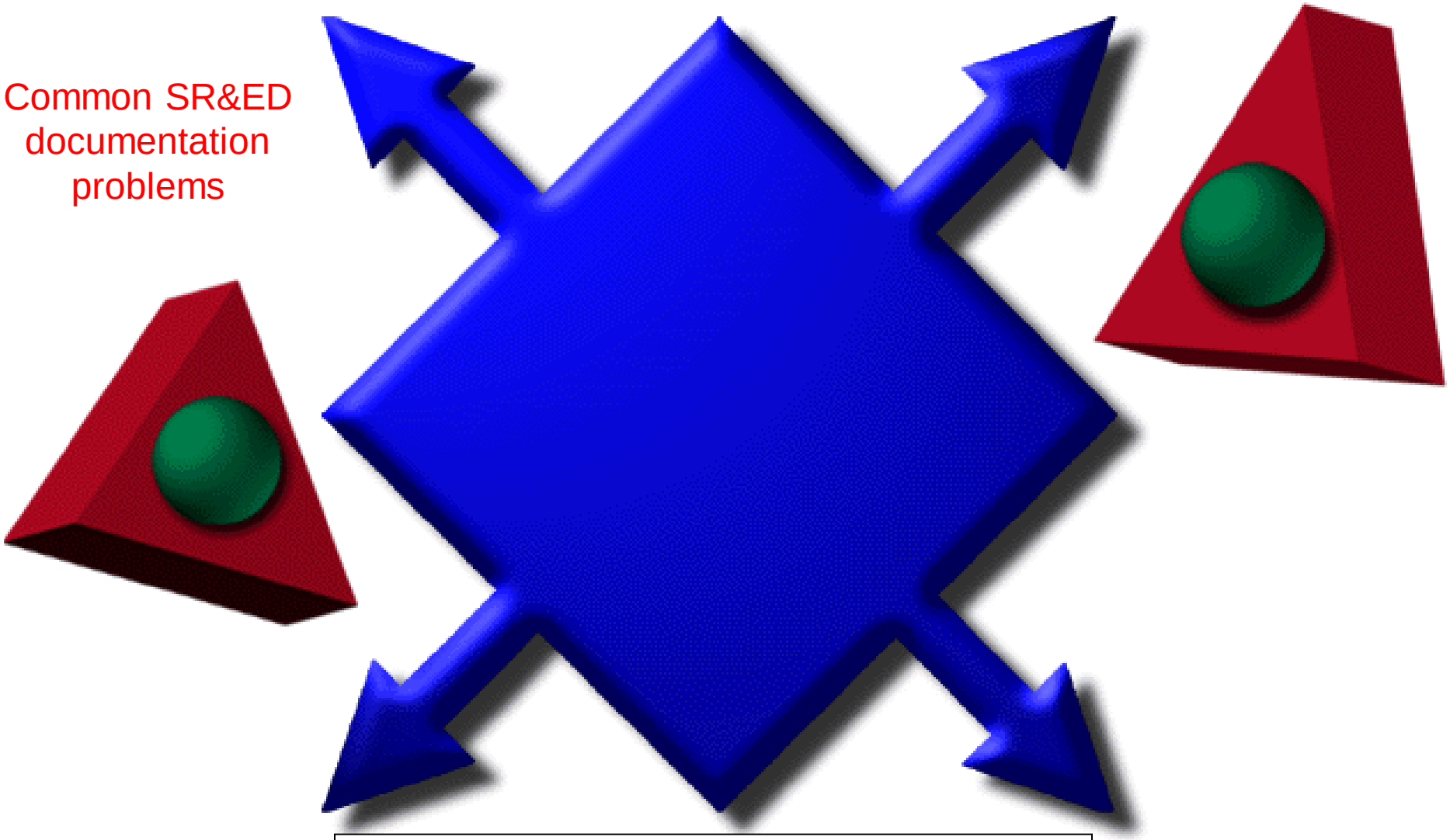
Common SR&ED documentation problems

Work must correlate with uncertainties

C

3 - Activities Beyond Qualifications

Common SR&ED documentation problems

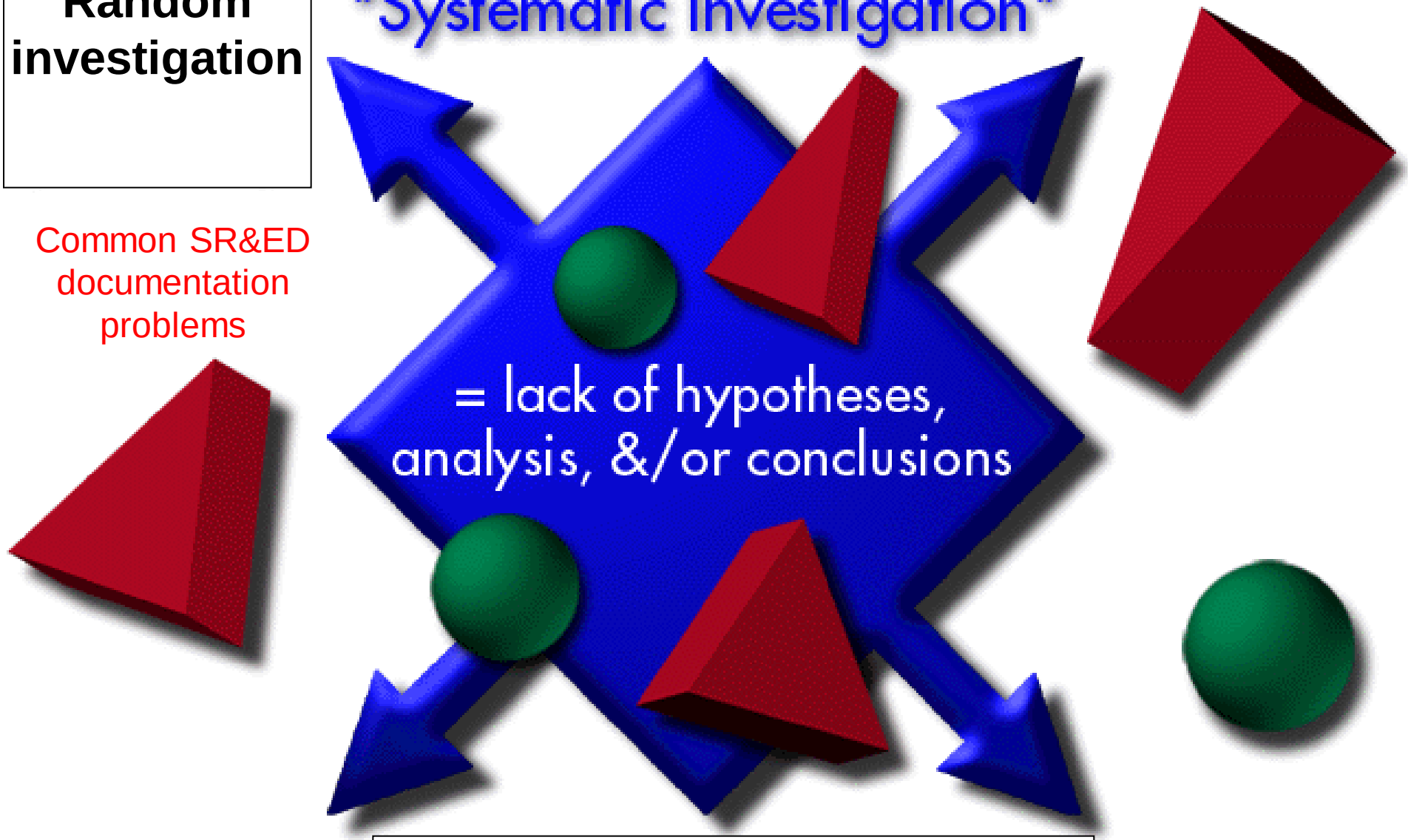


Need experience in EACH field of science

4 - "Trial & Error" vs. "Systematic Investigation"

“Random” investigation

Common SR&ED documentation problems



Need to keep evidence of experiments

Notable quote

“I couldn't repair your brakes, so I made your horn louder.”

- Steven Wright

Edison Phonograph = Scientific Uncertainty

Edison Light Bulb = System Uncertainty

SR&ED – “light bulb” lessons

- American inventor Thomas Edison is credited for “inventing” the lightbulb
- Reality = story of “incremental innovation”
- In 1810, British chemist Humphry Davy invented the “electric arc,” a precursor to the light bulb.
- A series of innovations followed

SR&ED – “light bulb” lessons

- 1860s, race for “commercially viable” light bulb
- 1874 - 2 Canadians, Woodward & Evans patented nitrogen-filled light bulb
  - lasted longer than others BUT no financing
- 1879 - Thomas Edison - successful in obtaining major financial backers
  - continued experiments &
  - bought patents Woodward & Evans + others

C - Key criteria summary

Summary ensuring:

- **a) Benchmarks**
- **b) Activities vs. Uncertainties**
- **c) Conclusions**

1401 - Miniature Printer - TAX CASE (6379249 Canada Inc.)		
BENCHMARKS	**ACTIVITIES BY YEAR**	
Internet searches: 100 Articles		
Patent searches: 14 patents		
Patent searches: 14 patents		
Competitive products or processes: 5		
Similar prior in-house technologies: 54	2015	
Potential components: 7 products	03-Jan	04-Jan
Potential components: 50 products	New print driver	Moisture analysis
OBJECTIVES	**RESULTS**	
Battery life: 20 pages	22	
Jam rate: 1 jams/1,000 sheets	27	
Ambient humidity limit: 95 %		92
Media thickness upper: 0.1 mm	0.09	
Media thickness lower range: 0.05 mm	0.04	
Speed (pages per minute): 5 ppm	5	
felt medium life: 20 1000's / pages	18.5	
Overall reject rate: 0.1 %	4	
Cost : 80 $	83	
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**	
1 - Variables cited in tax case		
clutch plate surface area & use of ridges		
degradation)		
moisture vs anti curl mechanism		Y
slip clutch		
static versus dynamic load	Y	
	METHODS	
Analysis	400	
Trials	70	1200
Prototypes		
Lines of code		
	COSTS	
Hours	1100	300
Materials $	14000	
Subcontractor $		

1500 - Engineering - Tax Case (Northwest Hydraulics)			
BENCHMARKS	**ACTIVITIES BY YEAR**		
Internet searches: 21 Articles Patent searches: 5 patents	2015		
products	01-Jan	02-Jan	03-Jan
products / processes	sediment & water	works	Low Flow channel
OBJECTIVES	**RESULTS**		
Decrease Bed load Deposition: 50 %			60
Reduce Downstream scouring: 80 %			71
Minimize Production cost: 23000 $			25000
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**		
water levels			
structure			Y
spurs			Y
scour protection scheme			Y
settling basin geometry			Y
weir, sluiceway, headgate, ejector			Y
	METHODS		
Analysis	63	55	
Trials		4	18
Prototypes		2	3
Lines of code			
	COSTS		
Hours		450	570
Materials $		22000	
Subcontractor $	50000		

1501 - Software R&D - International Guidelines (OECD)		
BENCHMARKS	**ACTIVITIES BY YEAR**	
	2015	
	01-Jan	02-Jan
(none)	activities	activities
OBJECTIVES	**RESULTS**	
GIS: x new theorems & algorithms : x advances in generic approaches : x		
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**	
Problems		
level of o/s's, prog languages &/or tools		
	METHODS	
Analysis Trials Prototypes Lines of code		
	COSTS	
Hours Materials $ Subcontractor $	700	

1502 - Software - TAX CASE (ACSIS)	
BENCHMARKS	**ACTIVITIES BY YEAR**
internet searches: 20 Articles	2015
products	01-Jan
	Activity 1
OBJECTIVES	**RESULTS**
CPU Hardware limitations: 100 MHz	150
Fault tolerance: 99.5 %	99
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**
1 - Technological uncertainty	
node and master behaviour	Y
sequences and subscriptions	Y
	METHODS
Analysis	450
Trials	19
Prototypes	
Lines of code	
	COSTS
Hours	1200
Materials $	
Subcontractor $	

Notable quote

““Innovation is the ability to convert ideas into invoices.”

- L. Duncan

CRA DRAFT project examples released Sep 2014

- 1301 Pump redesign
- 1302 Oil seed extraction process
- 1303 HVAC - How cost constraints affect a project
- 1304 Greenhouse management strategy - INELIGIBLE
- 1305 Glue development - Hypotheses formulation example
- 1306 Food development - INELIGIBLE TRIAL & ERROR
- 1307 Potato peeler - WHAT IF SCENARIOS
- 1308 Hockey stick design - SAMPLE SIZE
- 1309 Chemical formulation - DATA COLLECTION SCENARIOS
- 1310 Electronics – SR&ED vs. business portion of the project

C – CRA draft projects Sep 18, 2014
Example #1: 1301 Pump redesign

Case 1 – Technical problem

- A chemical company is developing a new process for producing one of their chemical products. One of the components of the process is a series of pumps. However, the pumps started corroding after six months rather than after the expected life of 10 years.
- The pump supplier was contacted about the problem. They carried out an investigation and traced the problem to an intermittent leak in a filter that allowed corrosive liquid into the unit. The problem was corrected by replacing the filters in the pumps.
- In this scenario, the problem with the pumps in the new process was technical and not technological.
- The technical problem was resolved using standard practice (the company's trouble-shooting procedures) to find the cause of the corrosion and the problem was solved by replacing the filters.

Case 2 – Technological uncertainty – pump redesign

- Consider a **different scenario** where a set of pumps fails after six months rather than after the expected life of 10 years. The pump supplier was contacted about the problem. They investigated by following their trouble-shooting guide and found that the failure was due to a leak in the seal on the shaft of the pump, which allowed corrosive liquid into the unit.

- They replaced the seals in all the pumps, but the pumps failed again after six months. Again, the pump supplier found that the cause of the failure was the same.

- They investigated further and discovered that the temperature of the shaft after a prolonged period of operation exceeded the maximum recommended operating temperature of the seal material.

- They also found that the failure of the seal was partly caused by the design of the seal on the shaft as well as the material used for the seal. Under prolonged operation, the seal failed and allowed the corrosive liquid into the unit.

- Once the cause of the problem was discovered, the supplier began an experimental development project to find out which of several redesigns of the seal and seal materials would be compatible for the operating environment of the pump.

Case 2 – Technological uncertainty – pump redesign (ctnd.)

- Data on the behaviour and physical properties of the seal materials at much lower temperature ranges were available from the manufacturers. However, there was no information or data available on the corrosive behaviour of materials or their physical properties at the elevated temperatures in the environment that the pump is operating.

- The supplier undertook a series of experiments to investigate the material behaviour and seal design.

- In this scenario, the pump supplier faces technological uncertainties (design of the seal and material behaviour at operating conditions) and undertook experimental development work to resolve them.

Conclusion

- This example illustrates the difference between a technical problem that can be resolved by applying practices, techniques, or methodologies that the company knows about or that are available in the public domain, and a technological uncertainty that requires experimental development.

1301 - Pump redesign

Benchmarks: Internet searches: 5 Articles
Similar prior in-house technologies: 1 products /
Potential components: 1 products

Objectives: Maximum operating temperature: 250 Deg C
PUMP COST: 500 $

Uncertainty: 1 - CRA illustration of technological uncertainty

Key Variables: seal designs (shapes, thicknesses, angles), seal materials

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 110 alternatives Process trials: 45 runs / samples Physical prototypes: 3 samples ... prototype revisions: 44 revisions	Maximum operating temperature: 220 Deg C (78 %)	seal materials	0.00	0.00	0.00	2013

1302 Oil seed extraction process - TU

- This example shows that technological uncertainties may arise from limitations in current technology, and technological uncertainty exists when it is not known whether a given result or objective can be achieved or how to achieve it based on generally available scientific or technological knowledge or experience.

Example

- The current technology of extracting oil from oilseeds is based on a batch process, in which seeds are crushed, conditioned, and flaked.

- The residue after removing the oil consists mainly of protein-rich flour and seed coats with some trapped oil. This residue (or meal) is then ground and the remaining trapped oil is extracted with a solvent. The solvent is recovered from both the meal and the extracted oil by toasting and distillation. The meal is generally sold as an animal feed product.

- The main limitation of the current technology is that the meal is a mixture of the protein-rich flour and seed coats. Seed coats have no nutritional value, and are visually undesirable as a potential ingredient in foods for human consumption. Also, the conditioning and flaking at 80-100°C harms the nutritional value of the oil and the flour.

- Therefore, there is a need to develop a low-temperature oil-extraction process, including separating protein-rich flour from seed coats, to produce a protein-rich product suitable for human consumption.

- The specific technological problem is how to separate the seed coats from the protein flour at low temperature. It is difficult to physically separate seed coats and protein flour because they have very similar physical properties and the protein flour is firmly bonded to the seed coats.

1302 Oil separation (ctnd.)

Conclusion

- Though there were several technologies available to separate solid particles with different physical properties, no effective low temperature technologies were available to separate solid particles with very similar physical properties where the particles themselves were bonded together.
- One technology which had been tried at a small scale was ultrasonic maceration. However, since there was no publicly available information on the use of ultrasonic maceration for this particular type of oilseed, the operating parameters needed to test the technology were not in the public domain.
- Also, it was not known whether the continuous process needed on a large scale, including the ultrasonic maceration and simultaneous solvent extraction, could be developed.
- There was technological uncertainty in developing a continuous method to process oilseeds at low temperatures because no one knew whether the objective could be achieved and how to achieve it.

1302 - Oil seed extraction process

Benchmarks: Internet searches: 5 Articles
Competitive products or processes: 1 products
Similar prior in-house technologies: 1 products /

Objectives: Extraction temperature : 50 Deg C
COST OF MACHINE: 75000 $
RECLAMATION EFFICIENCY: 70 % recovery
OIL PURITY: 98 %

Uncertainty: 1 - Scientific & system uncertainty

Key Variables: effects of ultrasonic maceration, key operating parameters ** - EXPAND, solvent extraction method **- EXPAND

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 154 alternatives Process trials: 7 runs / samples Physical prototypes: 1 samples ... prototype revisions: 17 revisions	Extraction temperature : 60 Deg C (66 %)	effects of ultrasonic maceration key operating parameters ** - EXPAND solvent extraction method **- EXPAND	0.00	0.00	0.00	2013

1303 HVAC - How cost constraints affect a project

- This example shows that cost targets are not technological uncertainties, but a technological uncertainty may arise by trying technologically uncertain paths to solve a problem to meet the cost targets.

Example

- A company wants to develop an air recirculation system for energy-efficient homes that will permanently remove carbon monoxide. A key component of this system is a module in which carbon monoxide (CO) is converted to relatively harmless carbon dioxide (CO2) at room temperature.

- A process is available that uses a tin oxide and platinum catalyst to convert CO to CO2 at room temperature, and the company could develop a product based on this process. However, the high cost of using this process will make the selling price of the product out of reach for consumers.

- There are other methods to convert carbon monoxide, but they are not effective at room temperature. A key requirement is that the module must operate at room temperature.

- To achieve the project objective (a room-temperature carbon monoxide remover), the company has to develop an inexpensive process that operates effectively at room temperature.

- The technological uncertainty relates to how to convert CO to CO2 at room temperature that does not use the costly process with tin oxide and platinum.

1303 HVAC – cntd.

Conclusion

- Although the cost target by itself is not a technological uncertainty, a technological uncertainty may arise from the need to avoid using a costly process, even though that process is known to work.
- The required cost target is also the motivation or reason for the company to undertake work to remove this uncertainty.

1303 - HVAC - How cost contraints affect a project

Benchmarks: (none)

Objectives: Cost: 200 $ / unit
Minimum conversion temperature: 20 Deg C

Uncertainty: 1 - Convert CO to CO2 at room temp

Key Variables: how to convert CO to CO2 at room temp

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 25 alternatives	Cost: 180 $ / unit (120 %) Minimum conversion temperature: 23 Deg C (80 %)	how to convert CO to CO2 at room temp	0.00	0.00	0.00	2013

1304 Greenhouse management strategy - INELIGIBLE

- This example shows standard practice, which means applying known techniques to a new situation where it is reasonably certain that the technique will achieve the desired result.

Example

- After testing a newly developed plant variety, a greenhouse grower feels that there is a chance for commercial success and attempts to find the optimum conditions to maximize production.
- Depending on the zone size that can be controlled in the greenhouse, anywhere from 2 to 10 acres is planted with the promising variety.
- The grower monitors the growth of the crop and, depending on its performance, makes adjustments to guide the crop to optimal production. These adjustments are often called the “development of cultural management strategies or crop husbandry strategies.”
- However, greenhouse growers are aware of optimization techniques for factors such as lighting, temperature, CO2 and humidity. Also, developing and implementing management protocols for controlling nutrient levels, de-leafing, thinning, and other operational practices are familiar to them.

1304 Greenhouse management strategy (cntd.)

Conclusion

- These well-known and practiced techniques are standard in this industry, as growers are reasonably certain that the techniques, data, and procedures, when applied in this case, would work.
- So, although the grower may not be certain of the specific parameters, determining them using these approaches is part of the standard practice of this industry.
- In this case, there is no scientific or technological uncertainty in determining the optimum conditions to maximize production of a new plant variety.

1304 - Greenhouse management strategy - INELIGIBLE

Benchmarks: Internet searches: 1 Articles
Patent searches: 1 patents
Competitive products or processes: 1 products
Similar prior in-house technologies: 1 products /
Potential components: 1 products
Queries to experts: 1 responses

Objectives: YIELD / ACRE: 120 KG

Uncertainty: 1 - Greenhouse optimization

Key Variables: CO2, humidity, light, nutrient levels, temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Crop husbandry	(none)	(none)	CO2 humidity light nutrient levels temperature	0.00	0.00	0.00	2013

1305 Glue development - Hypotheses formulation

- This example illustrates the concept of formulation of a hypothesis to resolve a problem.

Example

- The research and development (R&D) department of a company was asked to come up with a solution to improve the bond strength of their premier glue product to compete with another product.
- The R&D chemist who was assigned to the project recently came across a published research paper whose authors had used an additive (acting as bonding agent) to increase the bonding strength of two chemicals that belong to the same class of materials as used in the company's premier glue product.
- However, the conditions (temperature, pressure, humidity) under which the authors used the additive were quite different than those used by the company in manufacturing the glue. The chemist carried out further searches in both scientific and technical publications on the use of this additive but found nothing more.
- There was no way of predicting whether the additive would work in enhancing the bond strength of the glue considering the conditions under which the glue was manufactured.
- The chemist hypothesized that, based on the similarity of the chemical properties of the glue ingredients and the two chemicals used in the research paper, the use of the new bonding agent in the manufacture of the glue under the right conditions should increase the bond strength of the glue.

1305 Glue development - Hypotheses formulation

Conclusion

- This example simply illustrates the concept of a hypothesis—an idea, consistent with known facts, that serves as a starting point for further investigation to prove or disprove that idea.

1305 - Glue development - Hypotheses formulation example

Benchmarks: Internet searches: 5 Articles
Competitive products or processes: 1 products
Similar prior in-house technologies: 5 products /

Objectives: BOND STRENGTH: 600 KG
COST / LITRE: 30 $

Uncertainty: 1 - Additive effects & formulation

Key Variables: additive - amounts, timing, humidity, pressure, temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 25 alternatives	BOND STRENGTH: 650 KG (150 %) COST / LITRE: 30 $ (100 %)	humidity pressure temperature	0.00	0.00	0.00	2013

1306 Food development - INELIGIBLE TRIAL & ERROR

- This example shows that when a series of tests are executed without any systematic plan and no attempt is made to analyze the results from each test, it is considered trial and error. Such work is not scientific research and experimental development (SR&ED).

Example

- A company that has been involved in preparing food products for several years wanted to develop a low-calorie pocket pizza product.
- They proceeded by attempting to create the low-calorie pizza based on their knowledge of preparing standard pizza products.
- In their first attempt, they used different amounts of sauce, reduced the amount of cheese, and replaced the regular pepperoni with low-fat turkey pepperoni, without changing the layer structure of the pizza. This attempt was considered a failure because the low-fat pepperoni burned during cooking.
- The next series of attempts involved preparing and testing a different order of layering the ingredients. This attempt also failed because the large size of the pieces of pepperoni led to undercooking.
- The third attempt reduced the size of the pepperoni pieces by half. This attempt was somewhat successful, but still not good enough.
- The fourth attempt reduced the thickness of the low-fat pepperoni pieces. This fourth attempt was considered a success and the company proceeded to commercialize the product.

1306 Food development - INELIGIBLE TRIAL & ERROR

Conclusion

- The only lesson learned from each attempt was that it failed. There was no work at any stage to analyze the results from each trial and take corrective action based on the results.
- In other words, there was no planned approach, including identifying a technological uncertainty, formulating a hypothesis to eliminate that uncertainty, testing the hypothesis, analyzing the results to draw conclusions, and carrying out more experimentation, if needed.
- The work described in this example is trial and error.

1306 - Food development - INELIGIBLE TRIAL & ERROR

Benchmarks: (none)

Objectives: (none)

Uncertainty: 1 - Business vs. technological uncertainty

Key Variables: ingredient selection, order of ingredients, size / shape of ingredients

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Trial & error development process	Process trials: 4 runs / samples	(none)	ingredient selection order of ingredients size / shape of	0.00	0.00	0.00	2013

Notable quote

“Everyone has a photographic memory; some just don't have film”

- Steven Wright

1307 Potato peeler – WHAT IF SCENARIOS

- The following example shows how creating new materials, devices, products, or processes, or improving existing ones, can be achieved with or without technological advancement.

Examples

Case 1

- The basic design of the potato peeler has not changed for more than 100 years. A company decided to develop a novel peeler by adding a phosphorescent substance to the plastic handle so that it would be easier to find in a dark kitchen drawer. There was no change to the shape of the handle or to the blade. Adding the phosphorescent substance did not entail any change to the molding process and did not affect the physical properties of the handle or the performance of the peeler. While this was a new product, there was no technological advancement in creating this “glow-in-the-dark” peeler.

Case 2

- The same company wanted to develop a new potato peeler with the same blade but wanted to modify the handle to make it easier to use. The new handle would be larger, easier to grip, and less likely to slip in the hand of the user.
- This would be achieved by making it softer yet rigid enough to retain its shape, and its surface would have to be rough enough to prevent it from slipping in a wet hand. It would also have to be dishwasher safe.
- The company found that their requirements could not be satisfied with any plastic that was available at the time. They decided to try to use a new polymer.

1307 Potato peeler – WHAT IF SCENARIOS

Case 2 (cntd.)

- In developing the new handle, they encountered difficulties in the injection molding process. Using the new polymer in their existing molding process did not produce a handle with the desired physical properties.
- The company found that the working temperature for the new polymer had to be much higher than what the current molding process was designed to operate at.
- Eventually, a new injection molding process had to be developed that used the new polymer to produce the product that had the desired physical properties.
- The acquired know-how to develop the new injection molding process represented a technological advancement for the company.

Conclusion

- New products hit the market every day. This example shows that creating a new or innovative product does not necessarily mean that SR&ED work was done.

1307 - Potato peeler - WHAT IF SCENARIOS

Benchmarks: Competitive products or processes: 5 products
Similar prior in-house technologies: 3 products /
Potential components: 12 products

Objectives: Dishwasher safe: 1200 # cycles
COST: 1.5 $/UNIT
Profile roughness (Rp): 1 micro inches
Area Roughness (Ra): 1.5 micro inches

Uncertainty: 1 - Technological uncertainty- Case 2

Key Variables: adaption of injection molding process, optimal polymer material, working temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Case 1 - INELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013
2 - Case 2 - ELIGIBLE	Analysis / simulation: 47 alternatives Process trials: 11 runs / samples Physical prototypes: 1 samples ... prototype revisions: 4 revisions	Dishwasher safe: 1200 # cycles (100 %) COST: 1.3 $/UNIT (140 %) Profile roughness (Rp): 2 micro inches (0 %) Area Roughness (Ra): 1.4 micro inches (120 %)	adaption of injection molding process optimal polymer material working temperature	0.00	0.00	0.00	2013

1308 Hockey stick design - SAMPLE SIZE

- The following example illustrates the concept that only the amount, size, extent, or duration of work that is necessary for and directly in support of the basic research, applied research, or experimental development work undertaken in Canada is eligible.

Example

- A company produces field-hockey sticks in large numbers to supply the world market. The production stage of the sticks mainly consists of a machine that accepts pre-cut lengths of timber and produces the cut forms for further processing.

- The company started a project involving experimental development work to integrate an advanced scanning and laser cutting technology to cut and rasp hockey sticks in a single machine.

- Based on statistical analysis and their in-house knowledge of the existing machinery, the company determined that 500 sticks from the cutting and rasping machine would generate sufficient out-of-tolerance sticks to test and validate, with 95% confidence, that the development could be considered complete and successful.

- The company, on receiving a large order, produced 2,000 sticks.

1308 Hockey stick design - SAMPLE SIZE

Conclusion

- In this case, the testing and data collection associated with cutting and rasping the first 500 sticks is commensurate with the needs and directly in support of the SR&ED work.

1308 - Hockey stick design - SAMPLE SIZE

Benchmarks: Internet searches: 5 Articles
Similar prior in-house technologies: 1 products /

Objectives: TOLERANCE: 0.3 mm
PRODUCTION RATE: 3.5 units / minute
REJECT RATE: 1 %

Uncertainty: 1 - Design

Key Variables: LASER POSITION, TYPE OF SCAN

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Design - eligible test size	Process trials: 2000 runs / samples	TOLERANCE: 0.3 mm (100 %) PRODUCTION RATE: 4 units / minute (133 %) REJECT RATE: 2 % (0 %)	(none)	0.00	0.00	0.00	2013

1309 Chemical formulation – DATA COLLECTION SCENARIOS

This example shows that it is the purpose of the work, rather than the nature of the work, that distinguishes support work from excluded work.

Example

- In a chemical plant, one of the daily duties of a lab technologist is to take samples from various points throughout the process, perform various analytical tests, and then enter the results into the plant's database. This database is used by many facets of the organization to monitor, optimize, and control the process.

Case 1

- A research chemist for the company accesses the plant database and uses the data in a research project (assume that this is an SR&ED project). Although the data collected and entered into the plant database is useful to (and used for) an SR&ED project, the data collection and testing performed by the lab technologist are done routinely and not specifically for the SR&ED work.

- In this case, the daily data collection and testing are considered routine data collection and routine testing and cannot be claimed as part of the SR&ED project.

1309 Chemical formulation – DATA COLLECTION SCENARIOS

Case 2

- A research chemist is carrying out an SR&ED project. Much of the data being used again comes from the plant database. Here, however, the researcher also asks the lab technologist to collect specific samples and run specified tests over and above the work that the technologist routinely performs on a daily basis.

- For this particular research work, the chemist uses both the data and the results from data collection and testing that the technologist carries out specifically for the chemist's research project are directly in support of SR&ED.

- However, the data collection and testing the technologist performs on a daily basis, as in case 1, are routine data collection and routine testing and are excluded from the SR&ED project.

Conclusion

- This example shows how the same type of work—collecting and analyzing samples in a commercial process—may or may not be SR&ED work depending on the purpose of the work being done.

1309 - Chemical formulation - DATA COLLECTION WHAT IF SCENARIOS

Benchmarks: Similar prior in-house technologies: 1 products / **Objectives:** (none)

Uncertainty: 1 - Technological Uncertainty **Key Variables:** (none)

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Case 1 -INELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013
2 - Case 2 - ELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013

1310 Electronics – SR&ED vs. business portion of the project

- This example shows that an SR&ED project usually occurs as a subset of a company project.

Example

- A company wanted to develop an improved electronic product by incorporating a specific component that would add a new functionality.
- The company prepared a project plan including budget, created a new cost centre, and allocated staff to work on the project. The company then proceeded with the technological feasibility study, preparing the technical specifications, designing, building the prototype, testing, and making the final incorporation of the component into the product before starting the commercial production, marketing, and sales.
- In this case, the company project encompasses all the activities from initial idea to final product launch.
- During development, a problem arose with the size of the new component in relation to the size of the existing product. Knowledge of miniaturization in the field of microelectronics was required to fit the new component into the existing product. The company did not possess that knowledge.
- As a result, the company contracted out the miniaturization work. The contractor performed SR&ED work on behalf of the company. The work succeeded in reducing the size of the specific component so that it would fit into the current product.
- Once the specific component was successfully developed, it was incorporated into the existing product without any difficulty and the rest of the development was accomplished by standard practice.

1310 Electronics – SR&ED vs. business portion of the project

Example (cntd.)

- Once the specific component was successfully developed, it was incorporated into the existing product without any difficulty and the rest of the development was accomplished by standard practice.

Conclusion

- In this example, the SR&ED project encompasses the work done to miniaturize the specific component, which is a subset of the overall company project.

1310 - Electronics - defining SR&ED portion of total project

Benchmarks: Similar prior in-house technologies: 1 products / Queries to experts: 1 responses

Objectives: Component size: 25 cm 2

Uncertainty: 1 - miniaturization

Key Variables: (none)

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Mininaturization design	Physical prototypes: 5 samples ... prototype revisions: 28 revisions	Component size: 21 cm 2 (180 %)	(none)	0.00	0.00	0.00	2013

D – Project costs & descriptions

Summary of
Costs by project &
Project descriptions
Started in
2014: #1401 &
2015: # 1500-1502

Direct Cost Summary

R&D Base demo

Dec 31,2015

Project				Employee Wages		Subcontractor Costs		Material Costs		
Number / Name		Timeline		Specified	Other	Arms-length	Related	Consumed	Transformed	Total
Canada										
Ontario										
1401	Miniature Printer - TAX CASE (6379249 Canada Inc.)	2014-01	2015-09	266,949.15	0.00	0.00	0.00	0.00	14,000.00	280,949.15
1500	Engineering - Tax Case (Northwest Hydraulics)	2012-01	2016-10	0.00	58,252.12	50,000.00	0.00	22,000.00	0.00	130,252.12
1501	Software R&D - International Guidelines (OECD)	2014-01	2016-10	0.00	32,627.12	0.00	0.00	0.00	0.00	32,627.12
1502	Software - TAX CASE (ACSIS)	2015-01	2016-06	63,559.32	0.00	0.00	0.00	0.00	0.00	63,559.32
				330,508.47	90,879.24	50,000.00	0.00	22,000.00	14,000.00	507,387.71

1401: 6379249 Canada Inc. – Miniature Printer design - WIN

- FACTS/ISSUE:
  - The company filed successful SR&ED tax claims for its 2007 and 2008 taxation years to develop a new printer.
  - At the end of 2008, 200 printers were released onto the market for sale.
  - After its commercial release, company investigated customer complaints by testing 50 printers & determined paper coming out of the printer curled & battery stopped after five to ten pages printed.
  - In 2009, they undertook a new SR&ED project with respect to the printer and claimed a **SR&ED ITC** of **$103,628 in 2009 & $49,688 for its 2010** taxation year

6379249 Canada Inc. – Printer design - WIN

- The Minister took the position that at the time of **commercial production**, there were no longer technological uncertainties with respect to the printer. In addition, the work performed on the printer during the 2009 and 2010 taxation years was routine engineering.

6379249 Canada Inc. – Background of the claimant

- Mr. Raja Tuli, the Chief Executive Officer (“CEO”) graduated in 1988 from the **University of Alberta in computer engineering.**
- He **holds approximately 100 patents in** different technologies, software and mechanical designs & **nine patents in the field of printing technology.**
- Before developing the miniature printer, he had previously designed and developed printers and slip clutches, which are components of printers.

6379249 Canada Inc. –

Background of the government reviewer & expert witness:

- Mr. Wierzbica has a doctorate in electrical engineering and technology, metrology from the University of Technology in Warsaw, Poland.
- After immigrating to Canada in 1980, Mr. Wierzbica became a member of the Order of Engineers in 1981. He was employed for almost 20 years by Canadian companies in the high tech industry.
- At Escher-Grad, Mr. Wierzbica, as Vice-President, Engineering successfully developed, with a team of engineers, a low cost photoplotter. A photoplotter is a printer used primarily for the production of PCB's (printed circuit boards).

6379249 Canada Inc. –

Background of the government reviewer & expert witness:

- In 2000, Mr. Wierzbica joined the directorate of SR&ED of CRA as policy advisor. Two years later, Mr. Wierzbica was promoted to the position of National Technology Sector Specialist for information technology, in Ottawa.
- In that capacity, Mr. Wierzbica advised Research Technology Advisors (“RTA”) on a national basis on CRA’s policies with respect to the SR&ED and also assisted RTA’s in their work, also on a national basis

6379249 Canada Inc. –

CURRENT CLAIMS - REJECTED FOR 2009 & 2010

- With respect to the 2009 and 2010 years, Mr. Wierzbica stated that if Mr. Tuli, the appellant's technical expert, considered the attempted functionality accomplished in 2008, and accordingly released the printer onto the market, the technological uncertainty at the system/printer level had been resolved and could no longer exist in 2009 & 2010.

- Issue: What is the point of commercial vs. experimental production?

6379249 Canada Inc. –

WIN – problems > release still eligible SR&ED

- Before ruling the judge commented,
- "Mr. Tuli is recognized as the world's leading expert with respect to miniaturization of hi-tech equipment. Mr. Wierzbica admitted in cross-examination that Mr. Tuli was the "**number one expert"** in the field of miniaturization of hi-tech equipment such as the printer.
- During his testimony, **Mr. Tuli clearly stated that, in his view, technological uncertainties existed in 2009 and 2010** at the system/printer level. The paper was still curling and the battery died out too rapidly. Mr. Tuli stated that these were the same technological uncertainties that had been encountered in 2006 and 2007.
- Mr. Tuli stated that existing standard engineering procedures were not available to competent professionals in the field to solve the technological problems with the printer. **If they had been available, the printer would be functioning by now.**

6379249 Canada Inc. –

WIN – problems > release still eligible SR&ED

- In my view, Mr. Wierzbica (expert witness for CRA) put too much emphasis on the commercial release of the printer. In doing so, he ignored an essential element, namely, that, concretely, the printer did not function and had to be removed from the market.
- During cross-examination, Mr. Wierzbica stated that if the printer had not been commercially released, the project would most probably have been accepted for 2009 and 2010.

Printer design – review & rewrite

- **Implications / lessons ?**
  - Integrate Prior Art Search

Notable quote:

“They condemn what they do not understand.”

- Cicero

1500: Northwest Hydraulics (Landmark Case) Develop divide wall for diversion dam

I) OBJECTIVE: modifying & improve existing hydraulic models

DEPARTURES FROM STANDARD PRACTICE

- Reduce bedload
- Reduce downstream scouring
- Reduce cost

NWH - Project #1500

II) TECHNOLOGICAL ADVANCEMENTS/UNCERTAINTY:

- Optimal method to sense & control temperature
- Variables: geometry for upstream training dikes & spurs, alignment & shape for the intake structure vs: weir, sluiceway, headgate, ejector; scour protection scheme, settling basin geometry

III) SYSTEMATIC INVESTIGATION

Activities 1-7: integrating variables / component

- 1- Baseline Testing, 2 - Upstream training works, 3 - Low Flow channel, 4 - performance of canal intake, 5 - Log Passage, 6 - stilling basin downstream of weir, 7 - settling basin

1201 - NW Hydraulics (1998 TCC Case) Develop divide wall for diversion dam

Benchmarks: Internet searches: 21 Articles
Patent searches: 5 patents
Competitive products or processes: 1 products
Similar prior in-house technologies: 3 products /

Objectives: Decrease Bed load Deposition : 75 %
Reduce Downstream sourcing : 99 %
Minimize Production cost: 25000 $per unit

Uncertainty: 1 - Geometry to address sediment & water levels

Key Variables: alignment & shape for the intake structure, geometry for upstream training dikes & spurs, scour protection scheme, settling basin geometry, weir, sluiceway, headgate, ejector

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Baseline Testing	Trials: 59 runs / samples	(none)	(none)	229.00	0.00	0.00	2013 CS
2 - Upstream training works	Analysis / simulation: 1	(none)	(none)	689.00	9,600.00	7,100.00	2013 CS
3 - Low Flow channel	Trials: 175 runs / samples Physical prototypes: 14 samples	(none)	(none)	124.00	0.00	0.00	2013 CS
4 - performance of canal intake	Analysis / simulation: 2500 alternatives Trials: 160 runs / samples Physical prototypes: 5 samples	Decrease Bed load Deposition : 80 % (120 %)	(none)	637.00	0.00	0.00	2013 CS
5 - Log Passage	Trials: 7 runs / samples	(none)	(none)	258.00	0.00	14,100.00	2013 CS
6 - stilling basin downstream of weir	Trials: 875 runs / samples Physical prototypes: 4 samples	(none)	(none)	483.00	0.00	0.00	2013 CS
7 - settling basin	Trials: 58 runs / samples	Decrease Bed load Deposition : 75 % (100 %) Reduce Downstream sourcing : 99 % (100 %) Minimize Production cost: 25000 $per unit (100 %)	(none)	280.00	0.00	3,460.00	2013 CS

1501: Software R&D International Guidelines (OECD)

Typically Eligible activities (Frascati Manual paragraph 140)

- R&D producing new theorems & algorithms in the field of theoretical computer science.
- Development of information technology at the level of operating systems,
- programming languages, data management, communications software software development tools
- Development of Internet technology.

Typically Eligible activities

- Research into methods of designing, developing, deploying or maintaining software.
- Developing 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 program or system.
- R&D on software tools or technologies in specialized areas of computing

Typically Ineligible activities

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.

Typically Ineligible activities (ctnd.)

- Converting and/or translating computer languages.
- Adding user functionality to application programs.
- Debugging of systems.
- Adaptation of existing software.
- Preparation of user documentation.

1502: ACSIS EHR - Software (increase stability)

Facts:

- Adapt its existing EHR technology to overcome Belize infrastructure challenges

Issue(s):

- Evidence of advancement & systematic investigation

Relevant legislation and analysis:

- ITA 37 & 248(1)

Analysis

- Available open source replication solutions different purposes & connectivity structures
- how to exchange to other nodes > changes queued from extended dis-connectivity
- Approaches had to be formulated to
  - transport data
  - preserve & merge changes to records
  - multiple databases
  - multiple locations
  - frequent interruptions

Ruling & Rationale

- WIN – No open source solutions
- According to the judge;
  - “Since an appropriate replication solution was not available,
  - undertook experimental development
  - to create technology
  - mimic stable communications infrastructure.”

Long term implications

- lack of detail on specific activities
- Minor to moderate significance

ACSIS EHR - Software
Sample project outline

1501 - Software - TAX CASE (ACSIS)	
BENCHMARKS	**ACTIVITIES BY YEAR**
internet searches: 20 Articles	2015
Competitive products or processes: 10 products	'1-1
	Activity 1
OBJECTIVES	**RESULTS**
CPU Hardware limitations: 100 MHz	150
Fault tolerance: 99.5 %	99
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**
1 - Technological uncertainty	
node and master behaviour	Y
sequences and subscriptions	Y
	METHODS
Analysis	450
Trials	19
Prototypes	
Lines of code	
	COSTS
Hours	1200
Materials $	
Subcontractor $	

ACSIS – increase in legal fee reimbursement to 95% - WIN

Facts:

- filed Motion to increase cost award from 50% to 100%

Issue(s):

- circumstances to award full legal costs?

Relevant legislation and analysis:

- Tax Court of Canada Rules (General Procedure) Rule 147 &
- Tax Court of Canada Act

Notable quote:

“We're still in the first minutes of the first day of the Internet revolution.”

- Scott Cook

E - Eligible costs & tax credits

Qualified expenditures include Canadian:

- Wages,
- Materials,
- Subcontractors,
- Overheads, and
- Capital equipment

Expenditure pool & tax credits

E - Tax credits

- Basic federal (20%/15%>2013)
  - Corporations, GP's & individuals
- Enhanced credits (E-5)
  - Phase outs – income & capital
  - refundability
- Provincial incentives (E-14)

E - Investment Tax Credit Rates - CCPC

- 35% ITC rate on all qualified expenditures up to the expenditure limit
- 20% ITC rate on all qualified expenditures in excess of the expenditure limit

E - Investment Tax Credit Rates

Individuals and Certain Trusts

- ITC rate - 20% on all qualified expenditures
- Refundable - 40% of both current & capital ITC

Corporations (other than a CCPC)

- ITC rate - 20% on all qualified expenditures
- No refund

All Other Taxpayers

- ITC rate - 20% on all qualified expenditures
- No refund

E - Expenditure Limit

- Generally $3,000,000
- Adjusted for short taxation years
- Pro-rated among associated corporations

- Reduced because:
  a) taxable income of previous taxation year exceeds business limit ($500k)
  b) taxable capital (retained earnings) greater than exemption (generally $10M)

E - Calculation of the Corporations Expenditure Limit for the Year

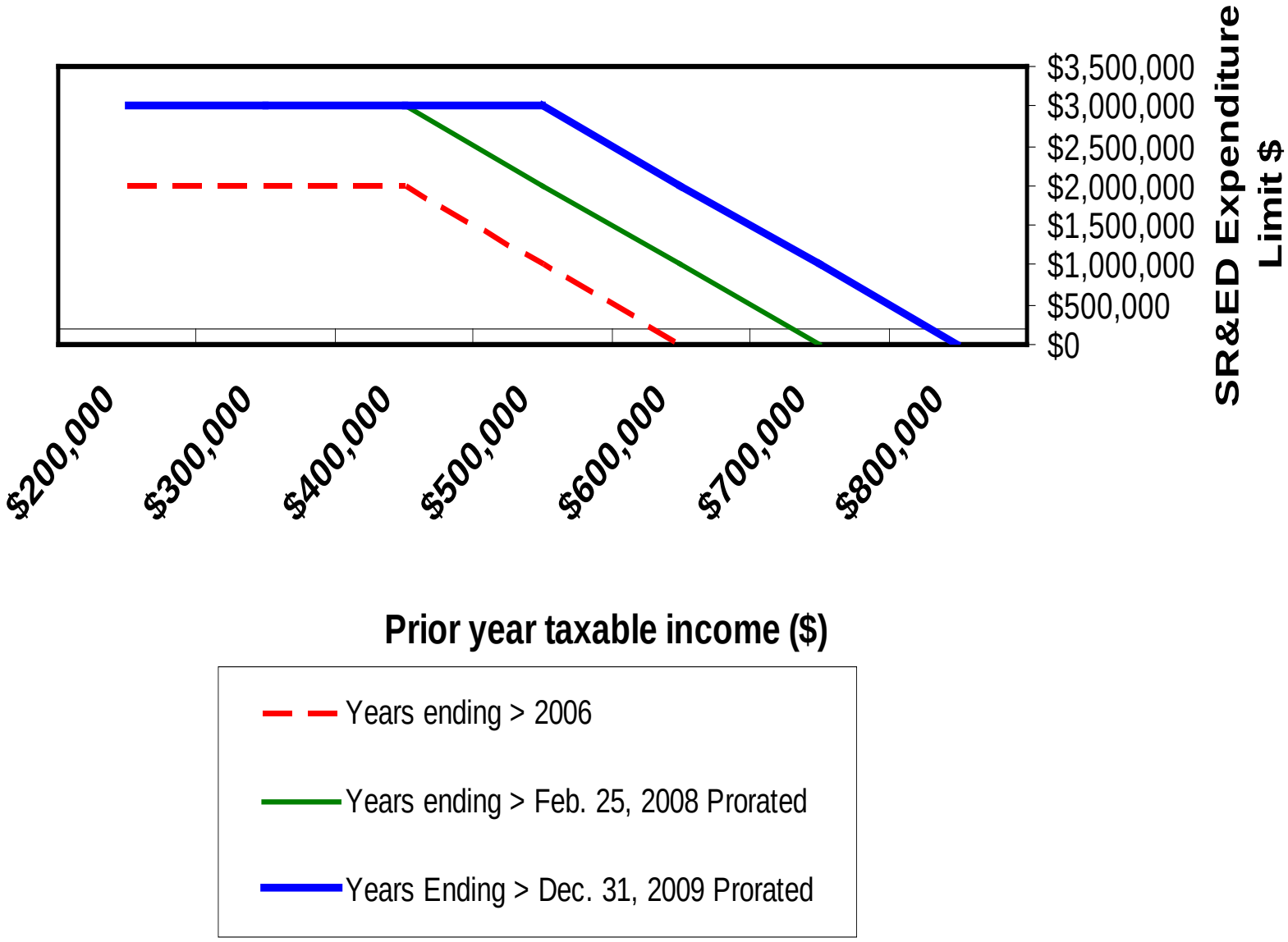
For tax years starting > Feb 25, 2008

- ($8 million - 10A) × ($40 million - B)/$40 million

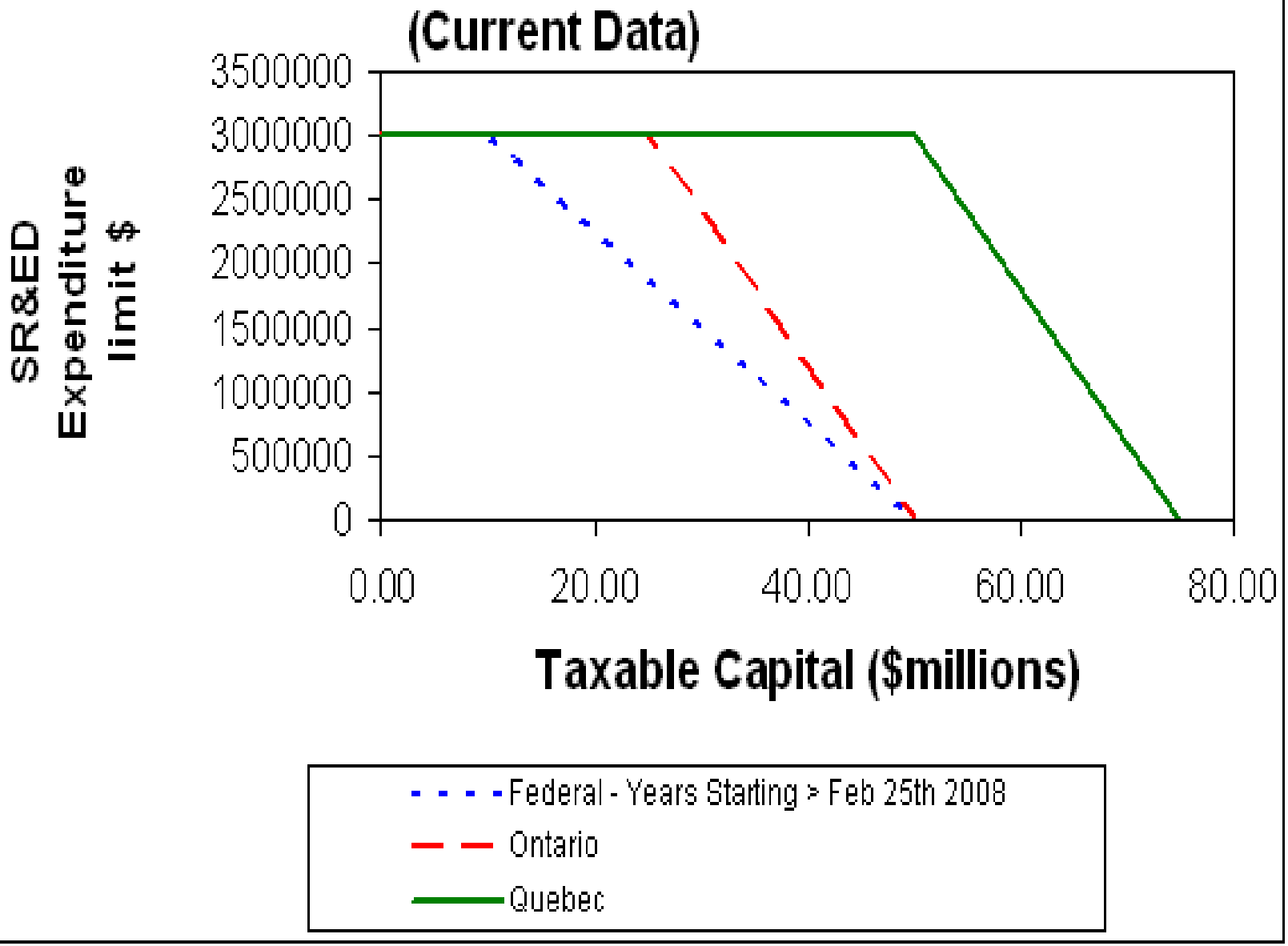
- **A** **represents the greater of $500,000 and the** previous **year's** **taxable income**

- **B** **is the total of the business limits as determined under subsection 125 for the** current **year**

SR&ED Income Phase out



SR&ED Capital Phase Out



Qualified CCPC*				
Provinces & Territories	Prov./Terr. Credit	Prov./Terr. Refundable? *(Federal is refundable)*	Federal Credit Refundable (reduced by Prov./Terr. credit)	Combined
AB	10%	Yes	31.50%	41.50%
BC	10%	Yes	31.50%	41.50%
MB	20%	No	28.00%	48.00%
NB	15%	Yes	29.75%	44.75%
NL	15%	Yes	29.75%	44.75%
NS	15%	Yes	29.75%	44.75%
ON	**10%**	**Yes**		
ON	**4.5%**	**No**	**29.93%**	**44.43%**
PEI	0%	N/A	35.00%	35.00%
QC	20%	Yes	28.00%	48.00%
SK	15%	No	29.75%	44.75%
YK	15%	Yes	29.75%	44.75%
NWT	0%	N/A	35.00%	35.00%
NV	0%	N/A	35.00%	35.00%

Other companies (non Qualified CCPC)				
Provinces & Territories	Prov./Terr. Credit	Prov./Terr. Refundable? *(Federal is non-refundable)*	Federal Credit Non-refundable (reduced by Prov./Terr. credit)	Combined
AB	10%	Yes	13.50%	23.50%
BC	10%	No	13.50%	23.50%
MB	20%	No	12.00%	32.00%
NB	15%	Yes	12.75%	27.75%
NL	15%	Yes	12.75%	27.75%
NS	15%	Yes	12.75%	27.75%
ON	**10%***	**Yes**		
ON	**4.5% ****	**No**	**12.83%**	**27.33%**
PEI	0%	N/A	15.00%	15.00%
QC	10%	Yes	13.50%	23.50%
SK	15%	No	12.75%	27.75%
YK	15%	Yes	12.75%	27.75%
NWT	0%	N/A	15.00%	15.00%
NV	0%	N/A	15.00%	15.00%

E - Claiming Investment Tax Credits

Annual Investment Tax Credit Limit

- Individuals
  - 100% of Federal tax
- Corporations
  - 100% of Federal tax

Carry back excess 3 years, and forward:

- **10 years** for ITCs earned **up to the end of 2005**
- **20 years** for ITCs earned **after 2005**

E - Qualified Expenditures (for ITC)

Includes:

- amounts re: shared use equipment;
- SR&ED expenditures under s.37(1)(a) – current;
- SR&ED expenditures under s.37(1)(b)(i) – capital;

  and
- prescribed proxy amount.

E - Qualified Expenditures

Do not include:

- prescribed expenditures Reg. 2902 (see N's)
- payments to **non-arm's-length person** for SR&ED performed on behalf of the taxpayer
- payments to **non-taxable suppliers** (other than for SR&ED payments for expenditures such as material, capital assets)
- qualified expenditures that have been **paid for by government or non-government assistance** or compensated by contract payment

SR&ED changes in March 29, 2012 Federal budget

	Year change proposed to start (prorate)	2012 current	2013	2014 full effect
1)	Federal ITC rate (non-CCPC)	20	20	15
2)	Subcontractor costs (% eligible)	100	80	80
3)	Rate to calculate proxy (overhead)	65	60	55
4)	Capital equipment (% eligible)	100	100	0

Notable quote:

"I've missed more than 9,000 shots in my career.
I've lost almost 300 games. 26 times I've been trusted to take the game winning shot & missed.
I've failed over & over & over again
in my life & that is why I succeed.""

- Michael Jordan

Quebec changes 2014

Report: Update on Québec's economic and financial situation Fall 2014 – section D

- Effective for fiscal years beginning after Dec. 2, 2014, Quebec is imposing minimum expenditure thresholds in order to be eligible for the R & D tax credit.
- Threshold depends on corporation assets.
- Rate varies from 14% to 30% for CCPCs for the first $3 million in qualified expenditures
- After $3 million 14% rate applies.

Quebec changes 2014

- **Minimum expenditure thresholds** for R&D tax credits :
- — **$50 000 for corporations with assets of less than or equal to $50 million**;
- — $225 000 for corporations with assets of $75 million or more;
- — an amount that increases linearly between $50 000 and $225 000 for corporations with assets between $50 million and $75 million.

CHART D.5

Minimum eligible expenditure thresholds for R&D tax credits
(dollars, unless otherwise indicated)

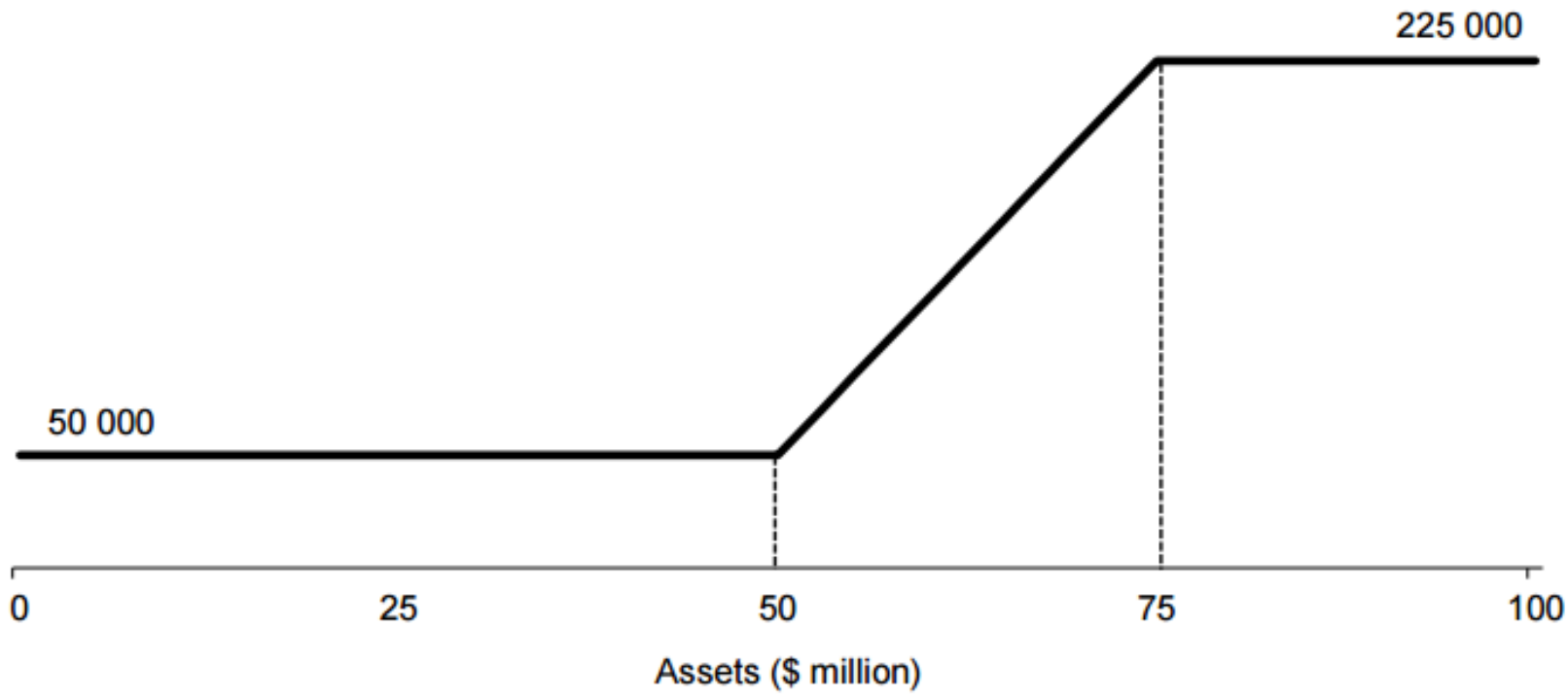


TABLE D.23

Summary of the changes to R&D tax credits

Tax credits	Size	Rate		Tax base
		Before update	After[(1)] update	
Researchers' salaries	SME	30%	30%	Salary or 50% of the amount of the subcontract entered into with a third party at arm's length
	Large business	14%	14%	
University research contracts	SME	28%	30%	80% of the amount of the subcontract entered into with a university, a public research centre or a research consortium
	Large business	28%	14%	
Private partnership	SME	28%	30%	100% of current expenditures related to R&D work in partnership or 80% of the amount of the subcontract
	Large business	28%	14%	
Funding of research consortiums	SME	28%	30%	100% of the amount of eligible fees and dues
	Large business	28%	14%	

(1) Each of the R&D tax credits has an increased rate of 30% applicable to the first $3 million of annual eligible expenditures in the case of Canadian-controlled corporations with assets of $50 million or less. A linear reduction in the rate of the tax credit from 30% to 14% applies in the case of Canadian-controlled corporations with assets between $50 million and $75 million. The rate is 14% when assets are $75 million or more.

Economic Rationale

- The budget claims for 2011:
- 40% of businesses that claimed R&D tax credits had eligible expenditures of less than $50 000, for an average expenditure of about $25 000 per business;
- The tax credit does not seem to be an essential deciding factor for carrying out the activities or investments concerned.
- Moreover, the administration of all of these claims entails considerable administrative costs for the government and businesses. In some cases, the administrative costs related to claiming the tax credit can be higher than the tax assistance granted.

Implications?

F – SR&ED wages

- T-4 slip?
- Allocation to SR&ED activities (F-3 to 6)?
- Vacation & holiday pay (F-0)?
- >=10% a class of stock (F-7)?
- Technical backgrounds (F-2)?

Employee List

R&D Base demo

Employee Name	Designations	T661 Class*	Employment Period		Practicing Since	Discipline
ADMINISTRATOR, RDBASE		C	2012-09-01	2015-09-02		
Einstein, Al	PhD.	A			1938	Physics
Frail, Debbie		A	2013-10-01			
Kilburn, Colin	BSc.	A			1995	
Newton, Isaac	MASc.	A			1974	Mechanical engineering
Nobel, Al	P.Eng.	A			1989	Chemical Engineering
Pasteur, Lou	BSc.	A			1996	Chemistry
Prototype line 1, Heating elements	PHD	D	2000-12-14		1985	Information Technology
Prototype Line 2, Motors	n/a	D				n/a
Rutter, John Nicholas	Master of Mathematics	A			2000	Computer science
Tesla, Nick	CET	B			2002	Electrical technology
Tuli, Raja	BASc.	A	2013-12-01		1988	Computer Engineering, 100+ patents held
Wierzbica CRA RTA, Ted	PhD	A	2013-11-01		1980	Metrology

* Definitions of T-661 employee classifications:

Class A	Scientists and engineers (B.Sc. Or equivalent)
Class B	Technologists and technicians (CET, etc.)
Class C	Non technical, administrative staff (CGA, etc.)
Class D	Other (e.g. prototype labor)

Duty	Direct SR&ED	Eligible Overhead expenditures	Non-SR&ED expenditures
Experimentation and analysis	x		
Technical-support work (under paragraph 248(1)(d) of the definition of SR&ED	x		
Non-specialized employees: ■ operating a machine for the purposes of an experiment that requires the use of this machine ■ feeding raw materials into a machine To be eligible, the non-specialized employee's work must be supervised by staff with scientific or technological qualifications.	x		
Direct supervision of employees performing experimentation and analysis (directing the ongoing SR&ED work)	x		
Technological planning for ongoing SR&ED projects you claimed in the year, such as planning for: ■ assignment of technological personnel ■ job priorities ■ development of technological strategies ■ quality of material used	x		
Long-term planning for future SR&ED projects, for example: ■ planning for prototype vs. commercial scale ■ project selection		x	
Human-resource activities such as technological staffing		x	
SR&ED contract administration (technical input only)		x	
Technological training for ongoing SR&ED projects you claimed in the year		x	
Administrative training			x
Technological documentation for internal use	x		
Preparation of user manuals			x
Clerical and other administrative support (e.g., in personnel, accounting, maintenance, and purchasing) if the functions performed are non-technological and aid the ongoing SR&ED you claimed in the year, and if the salaries and wages of the employees providing the support are: ■ directly related and incremental to the prosecution of SR&ED ■ not directly related and not incremental to the prosecution of SR&ED		x	x
Other support (e.g., equipment maintenance or repairs) if the functions performed are non-technological and aid the ongoing SR&ED work you claimed in the year, and the salaries and wages of the employees providing the support are directly related and incremental to the prosecution of SR&ED		x	
Preparation of Form for SR&ED projects carried out in the current year		x	
Sales and marketing activities			x

Source: Canada Revenue Agency form T4088(E) Rev. 04 - Claiming Scientific Research and Experimental Development Guide to Form T661.

D Process

SR&ED Salary & Wage inclusions

		Specified employees*	Non-specified employee	ITA section
1	**R&D labour for the:**			
	a) **R&D expenditure pool (for deduction), &**			37(1)
	b) **Qualified expenses (for ITC calculation)**			127(9)
	Type of expense:			
	· salary & wages	**In**	**In**	(5-8)
	· bonuses or profit based $	**Out**	**In**	37(9) & 5(1)
	· Expenses paid > 180 days	**Out**	**Out**	78(4)
	Maximum	**5 x [YMPE]**	**N/A**	37(9.1)
2	**Salary base for proxy amount (for ITC calculation)**			
	Type of expense:			
	· Income from employment	**In**	**In**	5 to 7
	· bonuses/profit based $	**Out**	**Out**	5(1) & 37(9)
	· Expenses paid > 180 days	**Out**	**Out**	78(4)
	Maximum	**2.5x [YMPE]**	**N/A**	Reg. 2900(7)

F - Example Of Labour Cost Calculation

Hourly rate = (A+B+C)/D

A = annual base salary including statutory holidays & vacation pay

B = bonus (unless specified employee)

C = eligible taxable benefits incurred by employer

D = hours available to work

Standard Available Hours Calculation		**	
Work day	Hours / Day	8	
Workdays / week	Work Days / Week	5	
	Total Hours per week		40
	Weeks/year less;	52	
	Stat Holidays	2	
	Vacation	3	
Work weeks / year			47
Available hours / standard work year			**1,880**

F - SR&ED Wages for Specific Employees

- Limited to 5 times YMPE (5 x $ 53,600 = 268,000) for 2015
- Example - owner manager working 80% on eligible projects
  - Annual Salary (includes taxable benefits) of $400,000 limited to SR&ED wages $ 268,000 in 2015.
- SR&ED wages before the limit = 80% x $400,000 = $320,000
- The maximum amount of eligible wages for this specified employee is $268,000.

SR&ED wages - annual limits			Specified employees	
SR&ED labour:	**YMPE**		**Wages**	**Proxy Base**
2014	$ 52,500	$	262,500	131,250
2015	$ 53,600	$	268,000	134,000
2016	$ 54,900	$	274,500	137,250

Recommended timesheet details to address RFI procedures

Recommended Employee time detail for SR&ED *(record for each project/each year)*

Employee details			Linking work to SR&ED				SR&ED wages	
First Name	Last Name	Hours Worked	Type of work	Variables researched	Comments	Location	*hourly $ rate*	*SR&ED $*
			1) Design 2) Testing 3) Programming 4) Supervision	*OPTIONAL - Link to the variables in the project*	*OPTIONAL - should be completed by the more senior people if possible.*	*Country + Province or State*		
ALREADY EXISTS *most systems*			This information is MISSING *in most time reporting systems*				Complete @ y/e	
NEED TOTALS BY STATE/PROVINCE								$_____ -

Recommendations

- Ultimately each employee should be able to identify how his or her

- - “design or testing” work was
- - “necessary to resolve”
- - one or more of the stated “uncertainties.”

Recommend details for SR&ED timesheet templates

Project details	
#	Name

FISCAL YEAR ENDED:	

Employee Man-Hours & Cost Summary

Employee details			Linking work to SR&ED				SR&ED wages	
First Name	Last Name	Hours Worked	Type of work Drop down	Variables of research (If possible link work to "Variables" of uncertainty)	Comments	*location of work*	*hourly $ rate*	*SR&ED $*
			1) Design 2) Testing 3) Programming 4) Supervision	*OPTIONAL - Link to the variables in the project*	*OPTIONAL - should be completed by the more senior people if possible.*			
NEED TOTALS BY STATE / PROVINCE								$ -

SR&ED Wages by Person

R&D Base demo

Thursday, Dec 31, 2015

Province -- Specified Employee Employee Name	T661 Class	Wages T4 Box 14	Bonuses T4 Box 40	Hourly Rate (Wages)	Standard Available Hours	Direct SR&ED Hours	% Time SR&ED	Direct SR&ED Wages
Fiscal Year2015								
Specified Employees -- Ontario								
Rutter, John Nicholas	A	$100,000.00	$0.00	$52.97	1888.00	1,200.00	63.56	$63,559.32
Tuli, Raja	A	$360,000.00	$0.00	$190.68	1888.00	1,400.00	74.15	$266,949.15
		$460,000.00	$0.00			2,600.00		$330,508.47
Other Employees -- Ontario								
Newton, Isaac	A	$100,000.00	$0.00	$52.97	1888.00	450.00	23.84	$23,834.75
Nobel, Al	A	$88,000.00	$7,500.00	$46.61	1888.00	700.00	37.08	$32,627.12
Pasteur, Lou	A	$114,000.00	$11,500.00	$60.38	1888.00	570.00	30.19	$34,417.37
		$302,000.00	$19,000.00			1,720.00		$90,879.24
		$762,000.00	$19,000.00			4,320.00		$421,387.71

F – Reducing taxable income to $500K

- Consider use of
  - Reasonable bonuses &/or
  - Wages
- Need to get onside each taxation year
- Can’t correct once off side
  - Specified future tax consequences
- Ensure with-holdings paid by 7th month after year end

G – SR&ED Materials

- Were materials consumed during experimentation?
- Materials transformed – if uncertain of use at year-end?
- Repayment on disposition

Material Costs - by Project

Thursday, Dec 31, 2015

1401 Miniature Printer - TAX CASE (6379249 Canada Inc.)

Supplier / Materials	Use	Timeline		Log	Description	Adjustment	Amount
1-3 Variables cited in tax case / New print driver							
Unknown (ON): Unknown	Trans.	2015-01-01	2015-09-30	1	-prototype components		14,000.00
						Total:	**14,000.00**

1500 Engineering - Tax Case (Northwest Hydraulics)

Supplier / Materials	Use	Timeline		Log	Description	Adjustment	Amount
1-2 Geometry to address sediment & water levels / Upstream training works							
Unknown (ON): Unknown	Cons.	2015-01-01	2015-12-31	1	-prototype structures / no scrap value		22,000.00
						Total:	**22,000.00**

G - ITC Recapture - subsequent sale

Situation

- Property was acquired in the year, or any of the previous
  - **10 taxation years that ended before 2006, or**
  - **20 taxation years that ended after 2005,**

  and claimed as Qualified Expenditure.
- After February 23, 1998, that property or property that includes that property is
  - **Disposed of, or**
  - **Converted to commercial use**.

Result

- Recapture of investment tax credit on property acquired - Increase Part I tax
- Reverse the deduction of ITC from SR&ED expenditure pool - Increase eligible expenditures

G - ITC Recapture

- Qualified Expenditure for recapture is the **lesser of**:
  - cost of property
  - proceeds of disposition of property
  - 25% - 50% of first & second term shared-use equipment respectively

- **ITC rate applied to recapture is the <u>original ITC rate</u> that applied when Qualified Expenditure was claimed**

- **Deemed proceeds = FMV of property at the time of a disposition to a non-arm's-length party or a conversion of the property to commercial use**

H – Third party payment”

- Payments to Universities?
- Entitled to exploit?
- Control of the work?
- Was there a contract?
- T661, Schedule A?
- Ontario/Quebec university credits?

H - Third Party Payments

(i.1) Third Party Payment to **a corporation resident in Canada**

- For SR&ED carried on in Canada
- Related to the business of the taxpayer
- Only where **taxpayer is entitled to exploit results** of SR&ED

(ii) Third Party Payment to:

(A) approved associations

(B) approved university, college, research institute or other similar institution

(C) non-profit SR&ED corporations

(D) reclassified as (i.1) above

(E) approved association making payments to (A), (B) or (C)

- SR&ED carried on in Canada
- Related to the business of the taxpayer
- Only where taxpayer is entitled to exploit results of SR&ED

(iii) Third Party Payment to non-profit SR&ED corporations for basic or applied research

Canada Customs and Revenue Agency | Agence des douanes et du revenu du Canada

NO.: **IT-151R5** DATE: October 17, 2000

SUBJECT: INCOME TAX ACT
Scientific Research and Experimental Development Expenditures

Entitlement to Exploit the Results

¶ 37. The determination of whether a taxpayer is "entitled to exploit the results" of SR&ED is a question of fact that can only be determined on a case-by-case basis. For example, this requirement is **considered to be met in cases where the taxpayer has the right to use a patent that results from the SR&ED project even if the taxpayer is charged a royalty or similar fee** for the use of the patent. **This requirement is also considered to be met in cases where the taxpayer is entitled to distribute and market any product that results from the SR&ED project.**

In addition, when a taxpayer makes a payment for SR&ED to a corporation described in subparagraph 37(1)(*a*)(i.1) or to an approved university or other entity described in subparagraph 37(1)(*a*)(ii) and it is likely that the SR&ED project will not result in a product or patent, the taxpayer will be considered to have **met this requirement if** it can be established that the taxpayer has, as a consequence of the payment, been granted a **preferential right to use the results** of the SR&ED in its business.

I – SR&ED Subcontractors

- Payment to subcontractors for SR&ED activities?
- Work performed in Canada?
- Subcontractor at arm's-length?
- Files a Canadian tax return (HST#)?
- Subcontractor NOT claiming?
- 20% reduction after 2012

Subcontractor Costs - by Project

R&D Base demo

Thursday, Dec 31, 2015

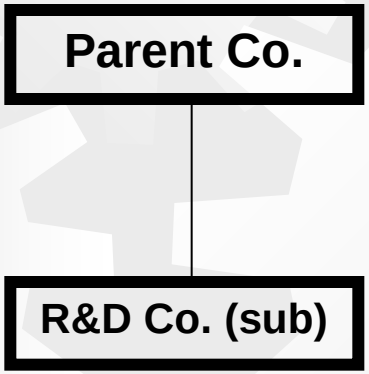
1500 - Engineering - Tax Case (Northwest Hydraulics)

Subcontractor	Timeline		Log	Description	Adjustment($	Amount
1 - Geometry to address sediment & water levels / 1 - Geometry to address sediment & water levels						
123 consultants (ON): -base measurements	2015-01-01	2015-12-31	1	-base measurements		50,000.00
					Total:	**50,000.00**

I - Rules for Arm's-Length Contracting

- Payer incurs SR&ED expenditures
- Payee (performer) receives SR&ED contract payment
- Payer claims qualified expenditure for payment made to SR&ED performed on its behalf
- Performer claims qualified expenditure minus contract payment received

I - Non-Arm's-Length Contracting



R&D payment $200 to R&D Co.

Arm's length R&D costs $150

Contract Payment	**- Parent Co.**	**$nil**
	- R&D Co.	**$nil**
Qualified Expenditure	**- Parent Co.**	**$nil**
	- R&D Co.	**$150**

I - Transfer of Qualified Expenditures

Limited to least of three amounts:

- The amount specified in the election
- The transferor's SR&ED qualified expenditure pool at the end of year
- The notional contract payment amount

The SR&ED qualified expenditure pool at the end of the year equals:

- Qualified Expenditures incurred in the year, plus amounts transferred to the taxpayer in the year, less amounts transferred by the taxpayer in the year

I - Purchasing Goods or Services from Non-Arm's Length Parties

Goods – capital cost is lesser of:

- Actual expenditure incurred and
- Adjusted selling cost to supplier

Services – expenditure is lesser of:

- Actual expenditure incurred and
- Adjusted service cost to supplier

J – SR&ED Capital

- Depreciable property?
- Building, leasehold interest in building, or intangible right?
- Intended use > 50 % SR&ED?
- Intended use > 90 % SR&ED?
- Available for use at year-end?
- Is the property new?
- **Is the property purchased before Dec 31, 2014?**

K – SR&ED Assistance

- Assistance “receivable”
- All levels of government
- Contract payments received
- No double dip

K - Expenditure Pool Adjusted for Assistance

- Deductible SR&ED Expenditures reduced by
  - Government assistance
  - Non-government assistance
- Contract payments DO NOT reduce the expenditure pool – just qualified expenditures (for ITC)

K – Effects on ITC's

Qualified Expenditures reduced by:

- Government Assistance
- Non-Government Assistance
- Canadian sourced payments for SR&ED performed on behalf of a customer (Contract Payments)

Qualified Expenditures not reduced by:

- Foreign sourced payments for SR&ED performed on behalf of a customer

Ensuring ability to claim contractor costs (no double dips)

To ensure that your company maintains its right to claim credits and work performed, we recommend the following wording be added to the contracts:

- a) you have performed on your behalf &/or
- b) which you perform for others:

“In the event of any of the development activities performed are eligible for Canadian SR&ED tax credits, X Co. reserves the right to claim these credits.”

L – Unpaid amounts

- 180 day rule
- Strategies:
  - Unpaid salary & wages (R-1)

L - Unpaid And Prepaid Expenditures

Unpaid amounts = expenditures incurred in a year that have **not been paid 180 days after year-end**

For the purposes of calculating SR&ED Expenditures:

- Unpaid salaries, wages and other remuneration
  - must be **reported in year incurred &**
  - are **deductible & creditable in the year paid.**

- Prepaid amounts considered **incurred in the year if to**
  - **Third Party Payments**

- Prepaid amounts **not** considered **incurred in the year if**
  - **In-house expenditures and contract SR&ED payments**
  - **Subcontractor to be resident in Canada 37(1)(i.1)**

M – Foreign expenses

- In Canada – physically
  - Exemption for up to 10% of SR&ED wages
- Taxable supplier
  - Permanent establishment

M - Foreign Expenditures

- Not added to the SR&ED pool
- Deductible under 37(2) in the year for current SR&ED expenditures only
- No ITC

N – Overheads & prescribed expenses

- Traditional overhead
  - Use reasonable allocation (N-1)
  - Affects eligibility of wages includes some administration & support work (F-5/6)
- Proxy election
  - 55- 65% of SR&ED wages

N - Eligible SR&ED Current Expenditures

Under The Traditional Method

- **Salaries and wages** of employees who directly undertake, supervise or support SR&ED
- **Materials** consumed or transformed in the prosecution of SR&ED
- **Payments to contractors** for SR&ED performed on behalf of the taxpayer
- Cost of leasing/renting SR&ED equipment used ASA for SR&ED (up to 2014)
- Overheads (directly related and incremental)

N - Eligible Current SR&ED Expenditures

Under The Proxy Method

- **Salaries and wages of employees** directly engaged in SR&ED
- **Materials consumed or transformed in the prosecution of SR&ED**
- **Payments to contractors for SR&ED performed on behalf of the taxpayer**
- **Cost of leasing SR&ED equipment (not general purpose office equipment and furniture GPOEF) used all or substantially all (at least 90%) for SR&ED**
- **50% of cost of leasing equipment (not GPOEF) used at least 50% for SR&ED**

N - Prescribed Proxy Amount (PPA)

- Proxy election is **optional & annual**

- Subsection 37(10)
  - election must be filed with first filing of the T661,
  - before deadline
  - cannot amend later

- Notional amount for overheads
  - For calculation of ITC only
  - Not treated as a SR&ED expenditure
  - Actual overheads deducted as business expense

N - Prescribed Proxy Amount

- 65% of salary base: salaries and wages of employees directly engaged in SR&ED

Reduced to

- 60% for 2014 &
- 55% for 2014+

Salary base:

- excludes taxable benefits under s.6 or s.7
- excludes bonuses or remuneration based on profits
- excludes deemed payments under s.78(4)

N - Specified Employee

- In calculating the proxy amount, the salary of a Specified Employee is limited to the least of:
  - SR&ED portion of salary & wages
  - 2.5 times yearly maximum pensionable earnings &
  - 75% of total salary and wages
- Cap applies to the sum of salaries and wages received from an associated group of companies

Expenditure	Traditional method	Proxy method
Direct SR&ED salaries or wages	▪ eligible for ITC ▪ deductible 37(1)(*a*) (see line 300)	▪ eligible for ITC and base for proxy amount (see line 502) ▪ deductible 37(1)(*a*) (see line 300)
▪ Overhead expenditures directly related to SR&ED	▪ eligible for ITC ▪ deductible 37(1)(*a*)	▪ not specifically identified ▪ covered in prescribed proxy amount (see examples below)—PPA is eligible for ITC. ▪ deductible as regular business expenses only—not deductible under 37(1)(*a*)
Other expenditures claimed separately: ▪ materials consumed or transformed in performing SR&ED ▪ lease costs of SR&ED equipment ▪ expenditures for SR&ED directly undertaken on your behalf ▪ third-party payments	▪ eligible for ITC ▪ deductible 37(1)(*a*)	▪ eligible for ITC ▪ deductible 37(1)(*a*)

The **proxy amount covers** overhead expenditures such as:

- office supplies
- general purpose office equipment
- heat, water, electricity, and telephones
- support staff salaries or wages
- travel and training
- property taxes
- maintenance and upkeep of SR&ED premises, facilities or equipment
- any other eligible expenditures directly related to the prosecution of SR&ED that you would not have incurred if the SR&ED had not occurred

N - CAP on Prescribed Proxy Amount

Regulation 2900(6) limits PPA to

- Amount of total business expenses
- Less specified adjustments

Deferred tax on proxy portion of ITC

Amount taxable under 37(1)(d) as a reduction to expenditures reported

- "… at the taxpayer's filing-due date for the year, the taxpayer has received, is entitled to receive, or can reasonably be expected to receive,"

Deferred tax on ITC proxy portion

ITA 12(1)(x) states

- "… any particular amount received by the taxpayer in the year, in the course of earning income from a business or property, …"
- The net result being that government assistance on the PPA is only taxable when actually received.

O – CRA review timing

- CRA services:
  - First time claimant
  - PCPR & Account Executive
- Assessment times
  - Refundable & filed wT2 – 120 days
  - Refundable TPR – 240 days
  - Non-refundable – 365 days

P – Pitfalls

- Partnerships (P-1)
  - No enhanced ITCs
  - No carryforward of pool
  - No allocation to limited partners

Q – Associated Corporations

- Share expenditure limits
  - Aggregate incomes
  - Phase outs (E-2)
- Defacto control
  - Documentation critical (Q-1)
  - Mimetex – case example

Q -Tax effects of Corporate Structure

Corporate status:	1) Associated	2) Related	3) Connected
Criteria	Under "common control"	Controlled by related person(s) [RP's]	>10% of FMV of issued & voting shares
ITA references	*256(1)*	*251(2)*	*186(4)*
General tax implications	Share business limits for income & capital tax + Interco. rent = active income	Disclose RP transactions & use "fair market value"	Tax free intercompany dividends
ITA references	*125(3-5) & 129(6)*	*69(1)*	*186(1)*
SR&ED implications	Share expenditure limits for enhanced credits		Employees controlling >= 10% are "specified employees"
	Election to claim or transfer eligible costs - no mark-ups		
ITA references	*127(10.2-4)*	*127(9) & (13-22)*	*248(1)*

R – Advanced planning

- Accrue reasonable wages
  - With-holding taxes only payable when amounts actually paid

R- Unpaid Amounts

- Subsection 127(26)
- Amounts unpaid 180 days after year-end
- Expenditure deemed not to have been incurred in the year
  - Expenditure is deemed to be incurred when paid
- Investment tax credit earned when expenditure deemed incurred

ADDITION TO EMPLOYMENT AGREEMENT [draft – for discussion purposes only]

- **Rate of remuneration:** Subject to statutory deductions, upon submission of weekly timesheets, the Employer shall pay the Employee a gross cash salary, inclusive of any statutory vacation pay to which the Employee may be entitled, equivalent to $ 240,000 per year ($20,000 per month).

- **Timing of payment:** The Employer shall pay minimum balances of $10,000 (gross before deductions) per month but may reserve payment of amounts in excess of this balance in the event that these funds are required for working capital. The maximum deferral of any such payment will be 180 days of the corporation's year end.

S – Financial statements

- Adjusting JE's (S-2)
  - Note disclosure of ITCs & expenses
- Research vs. Development expenses

R&D Base demo
General Ledger Adjusting Journal Entries
December 31,2015

AJE #	WP Ref.					
1	**T-0**	DR	Investment Tax Credit recoverable	Current Ontario	73,248	
		DR	Investment Tax Credit recoverable	Non current CRA	-	
		DR	Investment Tax Credit recoverable	non-current Ontario	18,924	
		DR	Investment Tax Credit recoverable	Current CRA	197,350	
		CR	Capital assets			-
		CR	Tax Provision			289,522
			To recognize research and development related ITC's			
2	**T-0**	DR	Professional fees (SR&ED consultant)	current	10,000	
		DR	Professional fees (CPA)	current	5,000	
		CR	Accounts payable	current		10,000
		CR	Accounts payable	current		5,000
			Total SR&ED fees:			15,000
			To recognize fees for SR&ED tax credit support services			

CICA Handbook section 3450 recommends that a note to the financial statements indicate the amount recognized for SR&ED investment tax credits in the current year and reduce the related research (current) or development (capital) expenses.

Potential note disclosure: Note X – Research & Development

Research and development costs incurred during the year and charged to expense amounted to $ 547,344 (prior year $XXX,XXX) and have been reduced by related investment tax credits of $ 0 (prior year $ XXX,XXX). The cost accumulations follow the definition of scientific research and experimental development as provided in the Income Tax Act. No development costs were deferred in the current year.

T - Tax summary & forms

- Federal schedules:
  - T661/Sch 32 – expenses
  - Sch 31 & 49 – Expenditure limits & ITCs
  - Sch 1 – taxable income
  - T1146 & 1174 – NAL expenses
- Ontario schedules
  - Sch 566 (OITC)
  - Sch 508 (ORDTC)

Tax Credit Overview

			Expense type			
I	**Eligible Expenses: for deduction**		**Current**	**Capital**	**Total**	**Notes**
						T-0.1
	Labour		400,000			
	Materials	***D-0***	25,000			
	Subcontractors - Arm's length		35,000		only 80% eligible to claim	
	- Non-arm's length		10,000			
	Traditional Overhead		-			
	Third-party Payments		50,000			
			520,000	***T-3***		I-A
	ASA R&D Capital	***D-0***		15,000		I-B
	Eligible (deductible) R&D Expenses				535,000	
II	**Qualified Expenses: for calcuation of ITC's**					
	Add					
	Proxy (overhead allocation) if elected	***T-1.8***	240,001	-	calculated at 60% for 2013	
	Qualified expenditures transferred (T1146)	***T-4.1***	10,000			
	Shared Use Equipment Allocation (SUE)		-	-		
	Less					
	non-arms letnth contracts		(10,000)			
	Subcontractor expenditures Cap		(7,000)	20% of arms length contractor		
	Third party payments expenditures Cap		(10,000)	20% of third party payments		
	Used equipment & other prescribed expenses		-	-		
	Qualified Expenditures for SR&ED ITC		743,001	15,000	758,001	II-A

	Credits:			Current	Capital	Total	% refundable	
III	Ontario Innovation Tax Credit (OITC)							
	Current Expenditures (10%)			74,300	-		100%	III-A
	Capital expenses - ASA SR&ED (4%)			-	600		100%	III-A
	Total Ontario Innovation Tax Credit (OITC)					74,900		
	Ontario R&D Tax Credit (ORDTC) (4.5%)			30,740		30,740	0%	
	Ontario Business Research Institute Credit (OBRI)						→	***to T-1.3***
	Ontario University Payments (20%)	***T-7***		10,000	-	10,000	100%	
	Qualified Expenditures for Federal SR&ED ITC			627,962	14,400	642,362		III-A
IV	Federal Investment Tax Credit Earned (35%)							
	Current Expenditures (35%)	***T-2.2***		219,787	-		100%	III-B
	Capital expenses - ASA SR&ED (35%)			-	5,040		40%	III-B
	Total Federal Investment Tax Credit			219,787	5,040	224,827 *		
	Expected Investment Tax Credit refunds		CRA	219,787	2,016	221,803		
			Ont.	84,300	600	84,900		
	Investment Tax Credit carryforward		CRA		3,024	3,024		
		T-2.2	Ont.	30,740		30,740		
	Total Investment Tax Credits earned			334,826	5,640	340,466		
				↘ ***S-1***		↘ ***J-0 / S-1***		

V **After tax cost of I.T.C**

ITC's earned = eventual taxable income	340,466
Tax Effect - Federal taxes @ 13.1%	(44,601)
Provincial taxes @ 5.5%	(18,726)
Net Taxes Saved	277,139

T - Form T661 - Prescribed Form for SR&ED Expenditures

- Part 1: General Information
  - includes choice of proxy or traditional method
- Part 2 - Scientific or Technological Project Information
  - Step 1: Detailed Project Description
  - Step 2: Project Summary Information
- Part 3: Summary of SR&ED Expenditures
  - Step 1: Allowable SR&ED expenditures for SR&ED carried out in Canada
  - Step 2: Pool of deductible SR&ED expenditures
  - Step 3: Qualified SR&ED expenditures for ITC purposes
- Part 4: Background information (includes statistical information)

U – Filing procedures

- E-file or
- Mail (RSI codes) to Tax Centre (U-1)
  - Projects to CRA only
  - **Now: all information (including project descriptions) within “prescribed form”**

U - CRA SR&ED Review

- Technical Review
  - desk review
  - may be followed by field visit
- Financial Review
  - most refundable claims
  - other claims at random

U - CRA Procedures for Processing SR&ED Claims

- Taxation Centre - first check of return for T661
  - acknowledgement letter sent to taxpayer
  - completeness check by local taxation centre and preliminary assessment of claim
  - Decision to accept claim as filed or forward to CTSO for further assessment
- District Office or Regional Science Office
  - decision to screen (for audit) or downscreen (assess without audit) by Financial Reviewer and/or Research and Technology Advisor (RTA)
- Downscreened returns
  - general technical science check by Financial Reviewer and/or a RTA
  - assessment issued without audit
  - only applies to current claims (not multiple years) filed before the due date of the tax return
  - only applies to filers already in the system and approved

U - CRA Procedures for Processing SR&ED Claims

- Screened returns
  - technical review by RTA or technical consultant
  - desk review and possible site visit
  - request for clarification or request for additional information
  - technical report
  - financial review - on site
- Assessment
  - issue proposal letter
  - issue assessment and initiate request for refund
  - should be 120 days from complete claim date to assessment

Sample CRA "Request For Information" (RFI) template (2 pages)

Canada Revenue Agency | Agence du revenu du Canada

[redacted]

[redacted]

Re: Scientific Research and Experimental Development (SR & ED) Claim

[redacted]

Request for Information (RFI)

Thank you for submitting your claim for the above fiscal period. We have examined the information you submitted and found that the work you described does not appear to meet the definition of SR&ED in section 248(1) of the Income Tax Act. Consequently, as part of the administration of the Scientific Research and Experimental Development (SR&ED) Program by the Canada Revenue Agency (CRA), we require the following technical and financial information in order to determine whether your SR&ED claim requires a detailed review:

Technical Information:

1) People and contractors who did the work
   - A list of all people and contractors claimed with, for each, their
     - job title,
     - duties,
     - expertise/credentials, and
     - activities in the claimed project(s).
   - An organization chart for the people claimed.
2) Activities claimed
   - Details of activities for each SR&ED project claimed, including number of hours claimed for each individual person or contractor per activity, per month.
3) On Form T661 *Scientific Research and Experimental Development (SR&ED) Expenditures Claim*, you indicated that the evidence is available to support your claim(s). Please send us for each claimed project:
   - a sample of your contemporaneous evidence that you feel best demonstrates that the work meets the definition of SR&ED in Subsection 248(1) of the Income Tax Act up to a maximum of five (5) letter-sized (8.5" x 11") pages for each project claimed.

In addition, if not included in the above sample, please send us copies of the contemporaneous evidence that:

- recorded your initial due diligence activities and that shows that available technology could not overcome the technological problem or obstacle that you faced;
- recorded the plan you subsequently devised to overcome the technological problem or obstacle;

Canada

- preserved the new technological knowledge gained by the company that was generated or created during the systematic search or investigation to create technological advancement.

Do not send original documents, bulk printouts of time records or source code, optical media or other mass storage devices (CDs, DVDs, flash memory) or physical samples, as we are unable to store these items. At CRA's option, these items may be returned to you without review of their contents. Send copies of documents and keep all originals handy in the event your SR&ED claim is subsequently selected for a detailed review.

Financial Information:

4) Form T661 and allowable SR&ED expenditures
   - Reconciliation of expenditures claimed on Form T661 to the adjustment made on line 118 of Schedule T2SCH1: *Net Income (Loss) for Income Tax Purposes* and the financial statements.

5) Revenues
   - Details regarding the source of your revenue(s), including sales invoices and contracts

6) Salary or wages directly engaged in SR&ED
   - Working paper(s) showing salaries claimed for each SR&ED project reconciled to the amount claimed on FormT661. Identify any bonuses, taxable benefits, severance payments or related benefits such as the employer's share of Canada Pension Plan, Employment Insurance, and Worker's Compensation Board payments that were included
   - Time records in support of the time spent by the employee in SR&ED and non-SR&ED activities. Time records may include employee time sheets, workbooks, diaries, meeting notes, etc. In the absence of time records, please explain the methodology used for the allocation of SR&ED and non-SR&ED activities
   - Payroll records to support employee wages expensed in the year including T4 information slips.
   - Details of wages payable and proof of payment for any portion of the claimed wages paid within 180 days after the fiscal year end.

7) Cost of materials consumed and/or transformed in performing SR&ED.

   - Itemized list with associated costs of the specific material items consumed and/or transformed for each SR&ED project that reconciles to the Form T661 amount claimed. Identify any payables at year-end.
   - Receipts supporting the claimed materials; and
   - Cancelled cheques supporting payment of the claimed materials.

You may send the information in paper-copy format by mail/courier to [redacted] in an envelope marked 'Private and Confidential'. Please note that CRA does not consider fax or email to be secure forms of electronic transmission.

Please provide the requested information on or before [redacted] If you do not submit the requested information by this date, CRA will process your claim on the basis of information on hand; this may result in disallowance of your SR&ED claim.

Please note, only a sample of information is currently being requested. If your claim is subsequently selected for a Detailed Technical and/or Financial Review, the CRA may contact you again to request more information and/or to set a time and place for a meeting to discuss your claim and review your contemporaneous information.

U - Services to Taxpayers

- Pre-Claim Project Review
- Account Executive Service
- National Industry Sector Specialists - RTA for each industry
- SR&ED protocol & manuals
- First-time SR&ED claimant service
- Public information and industry specific seminars

U.10 Budget 2014 – reporting on SR&ED preparer fees

According to the Department of Finance,

- "Budget 2014 introduces measures to provide the Canada Revenue Agency with new resources and administrative tools to better respond to the **minority of SR&ED** program **tax preparers** and SR&ED performers who participate in claims where the risk of non-compliance is perceived to be high and eligibility for the SR&ED program unlikely."

New reporting on SR&ED preparer fees – started Jan 1, 2014

In particular, in instances where one or more third parties have assisted with the preparation of a claim,

- the Business Number of each third party
- details about the billing arrangements including
- whether contingency fees were used &
- the amount of the fees payable.

In instances where no third party was involved, the claimant will be required to certify that no third party assisted in any aspect of the preparation of the SR&ED program claim.

SR&ED – dispute resolution

- The normal “negotiation process” could include:

Typical dispute resolution steps & timelines

	Step	Party(ies)	Expected timeframe
1	Negotiate with CRA reviewer	CRA & client	30 days
2	2nd administrative review	CRA & client	180 days
3	Objection	CRA & client	365 days
4	Appeal (TCC)	CRA, Dept. of Justice & client	2-3 years

Legal Timeframes for tax appeals

Legal Timeframes of Tax Appeal Process:

Step:	Time limits on the: Taxpayer	Minister	Notes:
Receive notice of assessment	-	-	
File notice of objection	90 days	-	
Receive notice of reassessment	-	-	1
File notice of Appeal with TCC	-	-	2
File Reply to NofA w TCC	-	60 days	3
Send Reply to NofA to Taxpayer	-	65 days	3*
Taxpayer can Answer the Reply	30 days	-	4
Exchange - list of documents	30 days	30 days	5
Discovery	-	-	6
Hearing before the Court	-	-	7
Trial & findings	-	-	8
Appeal to Federal Court of Appeal	-	-	9

Notes to tax appeal process timelines:

1) taxpayer can appeal directly to Tax Court of Canada (TCC) if issue not addressed by CRA within 90 days of filing its Notice of Objection.

2) NofA served to TCC which in turn serves it to: Revenue Canada & Dept. of Justice via a Deputy Attorney.

3) If Minister does not file reply the taxpayer can file for default judgement.

4) This is optional for the taxpayer however, beyond this point the taxpayer can not submit any further documents without the Minister's consent.

5) Both parties have to list the evidence they intend to rely upon & disclose this to each other.

6) The discovery process has no set time limit & can drag on for years.

7) An application for hearing must be filed including the pleadings and admissions of fact. The courts may request a pre-hearing conference.

8) Costs are then allocated to respective parties at the discretion of the courts.

9) Appeals must be filed within 30 days of the day of judgement from the TCC.

Typical dispute resolution steps & timelines			
Step		**Parties**	**Expected timeframe**
1	Negotiate with CRA reviewer	CRA & client	30 days
2	2nd admin. review	CRA & client	180 days
3	Objection	CRA & client	365 days
4	Tax Court of Canada		
	a) Appeal - Informal	CRA, Dept. of Justice client	6-9 months
	b) Appeal - General	CRA, Dept. of Justice client	2-3 years

Notable quote

"The best way to predict the future is to invent it."

- Alan Kay

X – SR&ED Tax Court Cases

SR&ED cases regarding "technological eligibility"

		TOPICAL AREA	APPELLANT	PRIMARY ISSUE	WIN - LOSE - DRAW?	RULING & RATIONALE	IMPLICATIONS: UNRESOLVED ISSUES AND OPPORTUNITIES	LONG-TERM SIGNIFICANCE
1)	a)	TECHNOLOGICAL ADVANCEMENT	Northwest Hydraulic	"system uncertainties" basis for	Win	4 of 5 projects eligible due to "system	Landmark case on technological eligibility	High
	b)		Rainbow Pipeline	definition of "technological	Win	rejection of an hypothesis is an advance	Significant precedent definition of "TA"	High
2)	a)	BUSINESS VS. TECHNOLOGY TECHNOLOGY	CW Agencies	software development - business vs. technology?	Lose	3 strikes: no hypotheses, lack of records, 3rd party defense	Need to focus on technology	Moderate
	b)		Nashen	software development - business vs. technology?	Draw	2 of 4 projects eligible - technology vs. business	bus. vs. tech. software - eg. Patents U.S. vs. Japan & Europe	Moderate
	c)		Zeuter	Is transcribing "info" eligible SR&ED?	Lose	As per NW Hydraulics ruling	Need to verify "data collection" is "commensurate"	Moderate
3)	a)	SYSTEMATIC INVESTIGATION(SI)	Hun-Medipharma	eligibility of analysis without	Win	SR&ED work can be "experimentation	"SI" envisions contemplation of	Moderate
	b)	TECHNICAL RECORDS	RIS Christie	"lack of documentation"	Lose - round 1	ineligible - lack of any experimentation or analysis	Successful result &/or patent NOT proof of experimentation	Moderate
					Win - round 2 appeal (FCA)	engineer died prior to trial - court sympathetic	courts may be sympathetic for CCPC's in extreme circumstances	Moderate
	c)		R.J. Miller	lack of technical documentation	Lose	claimant must provide evidence	need evidence of experimentation	Low
	d)		Blue wave Seafoods	challenging science officer's analysis	Lose	insufficient evidence to refute CRA recommendations	challenge auditor qualifications before opinion rendered	Moderate
	e)		Maritime-Ontario Freight Lines	hardware & software adequacy of documentation	Lose	must illustrate methods utilized & results	need evidence of experimentation	Low

SR&ED cases regarding Financial issues

TOPICAL AREA			APPELLANT	PRIMARY ISSUE	WIN, LOSE, DRAW?	RULING & RATIONALE	IMPLICATIONS: UNRESOLVED ISSUES AND OPPORTUNITIES	LONG-TERM SIGNIFICANCE
1)	a)	WAGES	Alcatel	stock options - whether SR&ED "cost" incurred	Win - round 1	SR&ED "cost" is dilution of shareholder interest	Courts contemplate "costs" not in taxable income	High
					Draw - round 2	legislation to disallow > Nov. 14, 2006	2 year window to amend 2004 - 2006 taxation years	High
	b)		CDD-REM	payments to "specified employees"	Win - round 1	eligible based on "evidence"	courts allow reasonable estimate of costs incurred	Low
					Draw - round 2	Subsequent events: "non-arm's length"	post 1996 - only "salary & wages" allowed "NAL"	
	c)		Synchrosat	allocating salary to only SR&ED activities	Lose	only SR&ED percentage claimable	need system to document employee experimentation time	Low
	d)		Ergorecherche	time allocation - SR&ED vs. non-SR&ED projects	Lose	"reasonable" basis for allocation required	could structure "non-SR&ED" done during unpaid time	Moderate
2)		MATERIALS	Consoltex	materials used in SR&ED then sold	Win - round 1	eligible if required for SR&ED	short-lived precedent to include "commercial materials"	Low
					Draw - round 2	Subsequent legislation repayment of ITC's on sale	Clarification: labour eligible - materials "sold" excluded	High
3)	a)	CAPITAL	Dew Engineering	building vs. "other structure"	Win	temporary lab not a "building" - no fixed foundation	courts take literal interpretation of "building"	Moderate
	b)		Aurora Marine	eligibility of Yacht expenses for SR&ED	Win	SR&ED eligible even if not otherwise tax deductible	courts took liberal interpretation of "SR&ED costs incurred"	Low
	c)		Waxman	whether cattle eligible SR&ED	Win	eligible if ASA (>90%) SR&ED intent	short-lived precedent to include "commercial materials"	Low
					Draw - round 2	Subsequent events: repayment of ITC's on sale	eligible if SR&ED intent - repayment if sold	High
4)	a)	ASSISTANCE GRANTS	Com Dev Ltd.	government fees - "assistance" or	Win	fixed price contract not purchase of SR&ED	Structure SR&ED contracts - "taxpayer" to bear "risks"	High
	b)	SALE OF PRODUCT	Les Cultures	sale of experimental production	Win	subsequent sale irrelevant if SR&ED	clarifies SR&ED labour eligible despite subsequent sale	High
5)		UNPAID AMOUNTS	Chartwell	eligibility of unpaid amounts / bad	Win / lose	need to claim costs during the year incurred	opportunity to claim unpaid wages ("unless forgiven)	High
6)	a)	FOREIGN EXPENSES	Data Kinetics Ltd.	foreign "mainframe" costs Canadian SR&ED?	Win	attributable to SR&ED if researcher "in Canada"	definition of "in Canada" issue of contention.	Moderate
					Draw - round 2	Subsequent events: only payments to "taxable suppliers"	subcontractor BN# now required to claim payment	High
	b)		LGL	data collection outside Canada SR&ED?	Lose	ineligible if physically outside Canada	courts took literal interpretation of "in Canada"	Moderate
					Draw - round 2	Subsequent events: eligible if within "EEZ"	marine work eligible to 200 nauts - still "unclear" travel abroad if >10%	Low
7)		"ASA"	Quantech	"costs" or "revenues" basis for	Lose	SR&ED costs basis for eligibility	Preferential ITC's "sole purpose performer" gone 1992	Moderate
8)	a)	FILING EXTENSIONS	Datacalc	extension of 18 month filing	Lose	qualified expenditures - identified by filing	object under proper sections of ITA - see Alex Parallel	Low
	b)		Alex Parallel Computers	basis for extension of filing deadline	Win	CRA cannot restrict Minister's power to extend deadlines	extension for reasons other than CRA IC (illness disasters)	High
					Draw - round 2	Legislation - Nov. 17, 2006 restriction of	must file within 18 months of year-end - preferably 15	High
9)	a)	QUALIFIED CCPC STATUS	Mimetex	if US director with 50% of shares	Lose	actions of US director w/o consent of	consent from 1 of 2 Canadian directors solves problem	High
	b)		HSC Research	Factors in evaluating de facto	Win	separate directors - no control evidenced	Landmark case on definition of "de facto control"	High
	c)		Terra Remote	Is shareholder with < 50% ownership arm's length?	Win	Analysis of ITA 256 (control) & 251 (related persons)	Confusing "specified employee" (>10%) with "arm's length"	High
	d)		All Colour Chemicals	Can CCPC partners claim 35% refundable ITC's	Lose	ITA 127(3) for partnership "over-rides" 127(10.1) refunds	Qualified CCPC's should avoid using SR&ED partnerships	High
10)		ITC USE	Ainsworth Lumber	ordering of ITC use - refundable vs. non-refundable	Win	Act clarifies that taxpayer "may" deduct [credits] indicates that taxpayer elects order of refundable vs. non-refundable credits	right to order affairs to minimize taxes	Moderate

HOW RDBASE CAN HELP

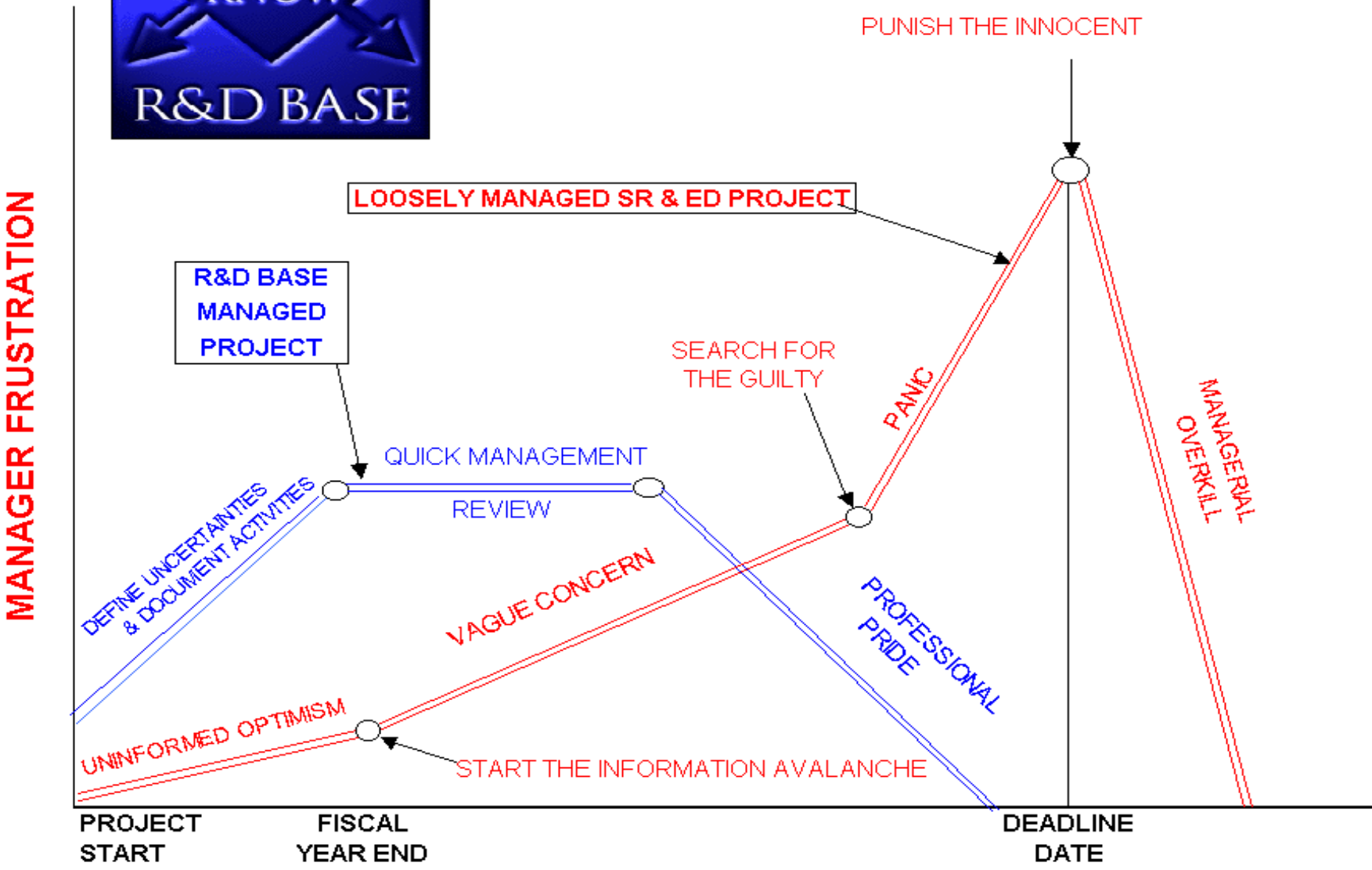
R&D Base.net - $ 0 / year / user 2017

- Technical documentation support
- Financial / tax filing support

OUR PARTNERS

- Full claim preparation – using your existing accountants
- typical fee 20% of ITC recovery

SR & ED PROJECT MANAGEMENT



Notable quote

“Leaders don't create followers, they create more leaders.”

- Tom Peters