The RDBASE project

I

**OBJECTIVES >
STANDARD PRACTICE**

IDENTIFY

**STATE of
EXISTING KNOWLEDGE**

**BENCHMARKING
SOURCES**

OBJECTIVES

**BENCHMARKS VS.
OBJECTIVES**

II
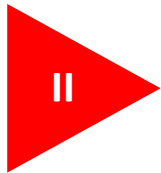
**UNCERTAINTIES &
HYPOTHESES**

**VARIABLES for
EXPERIMENTATION**

III

EXPERIMENTS

CORRELATE

RESULTS

OBJECTIVES

CONCLUSIONS

VARIABLES

RDBASE Project Template for claiming
Research Grants & Tax Credits

I ◆ **PROJECT OBJECTIVE BEYOND STANDARD PRACTICE:** *Illustrate to Government (Patents, CRA, IRS, etc.) :*

i) **State of Existing technology: Benchmarking methods & sources**

Technology limits of "readily available" information to someone "skilled in the art."

	Number (#) of	
i	Internet / Google Searches	internet sites
ii	Articles	articles
iii	Patent searches	patents
iv	Competitive methods	products / processes
v	In-house technologies	products / processes
vi	Potential components	products
vii	Queries to experts	responses
viii	Other	

RDBASE PAST links to patents

Hyperlink or upload

ii) **Objective(s)**

	Performance benchmarks (top 5)*	
	Benchmark 1	**Benchmark 2**
i	Existing benchmark	
ii	Units of measure	
iii	Performance objective	
iv	*Result (III below)**	

Quantifiable Objectives beyond known limits

Overview of how objectives exceed existing methods

II ▶ **TECHNOLOGICAL UNCERTAINTIES** *Using "science" to formulate hypotheses & experiments*

	Variables for experimentation (top 5)**	
	Variable 1	**Variable 2**
Name of variable		

Identify & rank top 5

Overview of how we hypothesized these variables as most

III ● **EXPERIMENTAL ACTIVITY** *Defined by tax year**

i) **Experimentation method**   **Number of**   *Justify sample sizes via "variables"*

i	Analysis / simulation	alternatives	*Quickest*
ii	Process trials	runs / samples	*Longer*
iii	Prototypes	samples	*Longest*
iv	Software	lines of code	
v	Other methods	revisions	

Briefly describe experimentation performed during the year

ii) **Analysis**

i	Results	* vs. Objectives I	*Identify the unexpected*
ii	Conclusions	** on Variables II	*Attempt understand "why?"*
iii	Documentation	Experiments/Analysis	*Proof experiments & costs*

Briefly describe results & related conclusions (i.e. what we learned about inter-relation of stated variables)

iii) **Direct Costs**

i	Wages	Hours / Employee	** PROJECTS span multiple years but*
ii	Contractors	Labour $ / Contractor	*ACTIVITIES match tax years.*
iii	Materials	Consumed/transformed	

RDBASE - Project Example - Key Criteria Summary

1401 - Miniature Printer - TAX CASE (6379249 Canada Inc.)				
BENCHMARKS	**ACTIVITIES BY YEAR**			
	2014		**2015**	
Internet searches: 100 Articles	'1-1	'1-2	'1-3	'1-4
Patent searches: 14 patents	Felt: Static vs. Dynamic Friction	Redesign of the slip clutch	New print driver	Moisture analysis
Potential components: 7 products				
Competitive products or processes: 5 products				
Similar prior in-house technologies: 54 processes				
OBJECTIVES: GOALS	**RESULTS**			
Battery life: 20 pages	8	12	22	
Jam rate: 1 jams/1,000 sheets	140	95	27	
Ambient humidity limit: 95 %	87	92		92
Media thickness upper: 0.1 mm		0.11	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	14.5	17	18.5	
Overall reject rate: 0.1 %	17	11	4	
Cost : 80 $			83	
UNCERTAINTIES & KEY VARIABLES	**CONCLUSIONS**			
Clutch Plate (surface area & use of ridges)	Y	Y		
Felt (friction, compression & degradation)	Y			
Moisture vs Anti Curl Mechanism				Y
Static vs Dynamic Load	Y		Y	
EXPERIMENT & TEST	**METHODS**			
Analysis		77	400	
Trials	2300		70	1200
Prototypes	7			
Lines of code	4300			
	COSTS			
Hours	200	750	1100	300
Materials $		7500	14000	
Subcontractor $			15000	8000