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Economic Commission for Europe

Inland Transport Committee

**Working Party on Customs Questions affecting
Transport**

**Informal Ad hoc Expert Group on Conceptual and
Technical Aspects of Computerization of the TIR Procedure**

Twentieth session

Prague, 19-20 April 2012

Item 5 of the provisional agenda

Financial implications of the introduction of the eTIR international system

Draft cost-benefit analysis (part 3)

Note by the secretariat

I. Background

1. At its forty-eighth session, further to requests from the Inland Transport Committee (ITC), WP.30 and Informal Ad hoc Expert Group on Conceptual and Technical aspects of Computerization of the TIR Procedure (GE.1), the TIR Executive Board mandated the secretariat to conduct a cost-benefit analysis of the eTIR Project (TIRExB/REP/2011/48final para. 10). Consequently, taking into account the funds available in the TIRExB consultancy budget line and the task to be undertaken, the TIR secretariat requested the relevant services in the United Nations Office at Geneva (UNOG) to issue a tender. In line with the applicable United Nations procurement principles, rules and procedures, UNOG sent out a request for quotes to five companies. Two companies submitted a bid, which were evaluated. Subsequently, the contract was awarded to the qualified bidder whose bid substantially conformed to the requirements set forth in the solicitation documents and who had been evaluated as being most cost-efficient for the United Nations.

2. Considering that the cost-benefit analysis has not yet been finalised and consolidated into a single document, the various chapters are presented independently. The draft cost-benefit analysis is reproduced in the annexes of the following informal documents:

Informal document GE.1 No.6a (2012)	System Architecture alternatives
Informal document GE.1 No.6b (2012)	Costs Analysis
Informal document GE.1 No.6c (2012)	Benefits Analysis and Cost-Benefit Analysis
Informal document GE.1 No.6d (2012)	Executive summary and recommendations
Informal document GE.1 No.6e (2012)	Annex : References and applicable documents

II. Disclaimer

3. All parts of the cost-benefit analysis, including but not limited to the various assumptions on which they are based, are the sole responsibility of the authors and do not necessarily reflect the views of the UNECE secretariat. As yet, the UNECE secretariat's contribution to the analysis has been limited to ensuring that the methodologies required for a successful cost-benefit analysis have been properly applied. Considering that the cost-benefit analysis is still under review and may, possibly, be subject to further amendments, the results presented in the annex should be considered as provisional and as merely intended to brief GE.1 on the current state of play with regard to the issue at stake.

III. Further considerations

4. The GE.1 may wish to consider the part of the cost-benefit analysis as contained in the annex, provide comments or suggestions for its improvement as well as, possibly, formulate first and preliminary recommendations with regard to the most appropriate – or most realistic – option to be pursued.

Annex Benefits Analysis and Cost-Benefit Analysis

United Nations

Economic Commission for Europe

Inland Transport Committee

Project:

Cost Benefit analysis of eTIR system

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Benefits Analysis

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Benefits Analysis*

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0. DOCUMENT CONTROL

0.1. ISSUE CONTROL

This document has been issued by:

- SIVECO Romania SA.

We will refer to SIVECO Romania SA in the present document as **SIVECO**.

The current project: the Cost Benefit Analysis of eTIR will be referred to as **eTIR-CBA**

This document will be reviewed by UNECE and accepted.

0.2. DISTRIBUTION CONTROL

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1. INTRODUCTION

1.1. PROJECT OVERALL OBJECTIVE

The overall objective of the eTIR-CBA project is to analyze, from a technical and financial perspective, the technical options for the implementation of the eTIR international system.

The first step in accomplishing this objective is defining the architectural alternatives, which is the subject of document UNECE-eTIR_CBA-ARCH-v02-41

The second step is an estimation of the software development costs for the eTIR international system. This is the subject of the document UNECE-eTIR_CBA-EST-v09-51.docx.

The next steps are dedicated to the benefits analysis, Return On Investment (ROI) and Cash Flow and are the subject of the present document.

1.2. SUMMARY OF ESTIMATIONS

The purpose of the Benefit Estimation document is to present the benefits of the eTIR international system for:

- national Customs administrations;
- TIR Carnet holders;
- Guarantee chain.

At this stage, only direct benefits are presented.

The indirect benefits, coming from the facilitation of legal and the reduction of illegal trade do not constitute a subject of this analysis.

1.2.1. Assumptions regarding the quantity and type of data to be processed

The assumptions are based on document **ECE/TRANS/WP.30/GE.1/2011/5 [R5]** and are reproduced below:

On the basis of the functional requirements laid down in Chapter 2 and 3 of the eTIR Reference model and the available statistics on the distribution of TIR Carnets, a set of preliminary assumptions with regard to the possible technical specifications of the future eTIR international system has been formulated, as follows:

- The eTIR international system should be able to manage approximately 3 million TIR transports per year;
- Each TIR transport consists, on average, of 3 TIR operations;
- 1% of guarantees, issued by the guarantee chain, is cancelled each year;
- 50% of all TIR transports give rise to direct queries of the eTIR international system, from both Customs and the guarantee chain;
- 10% of all initially lodged Customs declarations are later amended.

When computing the benefits, the following costs of using paper TIR Carnets are taken into account, as summarized below:

<i>Estimated costs per TIR Carnet (USD)</i>	<i>Min</i>	<i>Max</i>
Guarantee chain		
Printing of TIR Carnets	1	2
Distribution and issuance	1	2
Archiving costs (TIR Carnets to be stored for 5 years)	1	1
Holder		
Obtaining and filling in the TIR Carnet	1	3
Total	4	8
Estimated handling costs of a TIR Carnet per TIR operation (UDS)		
Filling in and stamping:	1	2
Typing of data in national system	3	5
Total	4	7

Table 1. Estimated costs per paper TIR Carnet

1.2.2. Assumptions on average time taken to complete a customer request

First, the holder has to get a TIR Carnet from his issuing association. TIR Carnets are printed and distributed by an authorized international organization (at present, the International Road Transport Union (IRU)). The time required to obtain a TIR Carnet varies greatly from country to country. The holder fills-in the TIR Carnet, which takes from 15-20 minutes. The TIR Carnet is then presented to Customs administrations of departure or entry, where, in most cases, Customs officers will fill-in the paper TIR Carnet and key in the data in the national system: this can take up to 10- 15 minutes per operation. At Customs offices of exit and destination, the TIR Carnet will also be presented and filled-in. Possibly, Customs will also enter additional information in their national system. This will take from 5 to 10 minutes. At the end of the transport, the TIR Carnet is returned to the guarantee chain. The guarantee chain archives all TIR Carnets.

1.2.3. Assumptions on the average time to fill in an eTIR Carnet

The assumption is based on the time required by Customs officers to fill in a NCTS TIR form, after training in the NCTS-TIR system.

The time was collected from a test done among 240 Customs officers, immediately after their training sessions.

The time spent is presented in the table below:

Time spent	Number of users	%
15-20	7	2.92%
10-15	15	6.25%
7-10	35	14.58%
5-7	60	25.00%

4-5	86	35.83%
3-4	30	12.50%
2-3	5	2.08%
1-2	2	0.83%
Total	240	100%

Table 2. Time spent to fill in an eTIR Carnet

It is assumed that TIR Carnet holders will require the same amount of time to fill in the electronic information currently contained in the paper TIR Carnet.

Considering that Customs officers receive the data filled in by the holder and will only be required to input minimal information (seals, control results, ..), the assumption is that 30% of processing time will be saved during Customs clearance.

2. ESTIMATION OF BENEFITS FOR 10 YEARS

2.1. SUMMARY OF DIRECT BENEFITS PER YEAR OF FULL USAGE

After identifying the possible benefits and considering that all TIR Carnets are electronically processed, the direct benefits can be summarized as follows:

Type	Normal	Risk ratio (0.8)
Customs (benefits from the reduction of processing time for each TIR operation)	\$6,859,090.91	\$5,487,273
Guarantee chain (benefits from using paperless environment)	\$6,000,000.00	\$4,800,000
Traders (Benefit from the reduction of time to fill in documents)	\$8,977,272.73	\$7,181,818
Traders (benefit from the reduction of time of document processing by Customs)	\$30,180,000.00	\$24,144,000
Total	\$52,016,363.64	\$41,613,091

Table 3. Direct benefits of eTIR

A detailed explanation of each category of benefits is presented in the next chapters.

The benefits per TIR Carnet are: USD **17.34 (global benefit) or USD 13.87, after application of risk ratio.**

2.2. BENEFITS FOR NATIONAL CUSTOMS

ADMINISTRATIONS PER YEAR OF FULL USAGE

2.2.1. Benefits from reducing the processing time

First, the costs of using paper TIR Carnets versus eTIR are compared.

For a paper TIR Carnet, the keying in of data takes between 10 and 15 minutes. Therefore, on the basis of 9,000,000 operations per year, Customs officers spend a minimum of **90 000 000** minutes on keying in data.

Considering the statistics of the time required to fill in TIR data electronically as presented in Chapter 1.2.3, the total time required for 9,000,000 eTIR operations is calculated below:

Time (Minutes)	% of users	Total minutes (9,000,000 TIR operations)
15-20	2.92%	3,675,000
10-15	6.25%	5,906,250
7-10	14.58%	9,187,500
5-7	25.00%	11,025,000
4-5	35.83%	11,287,500
3-4	12.50%	3,150,000
2-3	2.08%	393,750
1-2	0.83%	105,000
Total	100.00%	44,730,000

Table 4. Total time required to fill in eTIR Carnets

Compared to the paper TIR Carnet, the results show that the time spent for filling in data electronically is half the time required for filling in the paper TIR Carnet (45,270,000 minutes less).

Considering a medium salary of \$4000 per month, benefits can be estimated at **\$17,147,727.27** per year.

It should further be considered that a shorter time required for processing a document does not necessarily lead to a benefit. For example: if at a specific Customs office there are only two TIR operations processed per day, it is not important if the time spent is reduced from 10 to 5 minutes.

Considering that only 60% of such time savings will ultimately lead to actual cost savings for government budgets, an annual benefit of **\$6,859,090.91 can still be calculated.**

This is regarded as the direct benefit for Customs administrations, coming from *the reduction of staff costs to process TIR operations in electronic form rather than processing paper TIR Carnets*. In addition, it should be highlighted that there are also various indirect benefits of obtaining electronic information in advance, e.g. through improved use of equipment, control lanes, infrastructure, etc.

2.3. BENEFITS FOR THE GUARANTEE CHAIN

2.3.1. Benefits from a paperless environment

Considering that the printing of TIR Carnets is no longer needed and that 3 000 000 TIR Carnets are used each year, benefits of **\$3 000 000** per year (\$1 printing cost per TIR Carnet) can easily be realized.

2.3.2. Benefits from reducing the processing time

Considering also that the distribution and archiving is automatically done through the eTIR international system, benefits of **\$3 000 000** per year can be realized.

2.4. BENEFITS FOR THE TRADER COMMUNITY

2.4.1. Benefits from reducing the filling in time

Considering that each year, TIR Carnet holders fill in 3 000 000 TIR Carnets and that the average time required per TIR Carnet is 15 minutes, TIR Carnet holders spend a total of 45 000 000 minutes per year on filling in paper TIR Carnets.

Taking into account the statistics in Chapter 1.2.3., the total time required to provide the information electronically is calculated as follows:

Time Interval	Percent Users	Time for 3 000 000 TIR Carnets
15-20	2.04%	1750000
10-15	4.38%	2812500
7-10	10.21%	4375000
5-7	17.50%	5250000
4-5	25.08%	5375000
3-4	8.75%	1500000
2-3	1.46%	187500
1-2	0.58%	50000
Total		21,300,000

Table 5. Total time to fill in eTIR Carnets

This represents a reduction of 23,700,000 minutes, without even taking into account the fact that, in particular, large companies might adapt their IT systems to

automatically process data, received from their clients, in order to generate the required messages.

Taking an average of \$4000 per month, the benefits obtained by reducing the processing time are calculated at \$8,977,272.73 per year.

2.4.2. Benefits from reducing time spent at Customs.

As presented in Chapter 2.1.1, the time required to process a TIR operation by Customs decreases by 45,270,000 minutes.

Again, considering that in only 80% of the situations this reduction affects traffic, the total is calculated at 452,700 hours. (in 20% of the situations, the waiting time is used by traders for other necessary operations).

Considering a cost of \$50 per hour (personnel and means of transport costs), this gives a figure of **\$30,180,000** per year (under the assumption that all TIR Carnets are registered electronically).

2.5. BENEFITS WHEN ETIR IS GRADUALLY IMPLEMENTED

Considering the benefits calculated for each paper TIR Carnet replaced by an eTIR Carnet, we can estimate the yearly benefits when the eTIR system is implemented gradually.

We present the benefits for a period of 12 years. The first two years are dedication to constructing the system and no TIR Carnets are registered in the system during that period.

For the next 10 years, we assume that the number of registered TIR Carnets will be, in thousands:

100, 700, 800, 1200, 1300, 2000, 2500, 2600, 2800, 3000

Benefits in this case will be:

2.5.1. Benefits (no risk ratio applied)

Year	eTIR (thousands)	Total Benefits	Benefits for Customs
1	0	0	\$0.00
2	0	0	\$0.00
3	100	\$1,734,000.00	\$229,000.00
4	700	\$12,138,000.00	\$1,603,000.00
5	800	\$13,872,000.00	\$1,832,000.00
6	1200	\$20,808,000.00	\$2,748,000.00
7	1300	\$22,542,000.00	\$2,977,000.00
8	2000	\$34,680,000.00	\$4,580,000.00
9	2500	\$43,350,000.00	\$5,725,000.00
10	2600	\$45,084,000.00	\$5,954,000.00
11	2800	\$48,552,000.00	\$6,412,000.00
12	3000	\$52,020,000.00	\$6,870,000.00

Table 6. Benefits, eTIR gradually implemented, no risk ratio

By applying a risk ratio of 80%, we obtain the following benefits per year:

Year	eTIR (thousands)	Total Benefits	Benefits for Customs
1	0	0	\$0.00
2	0	0	\$0.00
3	100	\$1,387,103.03	\$182,909.09
4	700	\$9,709,721.21	\$1,280,363.64
5	800	\$11,096,824.24	\$1,463,272.73
6	1200	\$16,645,236.36	\$2,194,909.09
7	1300	\$18,032,339.40	\$2,377,818.18
8	2000	\$27,742,060.61	\$3,658,181.82
9	2500	\$34,677,575.76	\$4,572,727.27
10	2600	\$36,064,678.79	\$4,755,636.36
11	2800	\$38,838,884.85	\$5,121,454.55
12	3000	\$41,613,090.91	\$5,487,272.73

Table 7. Benefits, eTIR gradually implemented, risk ratio

2.6. ROI AND CASH FLOW FOR CUSTOMS, eTIR LAUNCHED FOR ALL TIR CARNETS

In the situation where the eTIR international system is used for all TIR transports from the beginning (“Big Bang launch”), the benefits **for Customs are computed at \$10,287,273 per year and the overall benefits at 41,613,091 per year**. The costs as presented in detail in UNECE-eTIR_CBA-EST-v09-51. In the tables hereafter the ROI and Cash flows are calculated as follows:

Cash Flow = Discounted risk adjusted benefits – discounted risk adjusted costs ;

ROI=(discounted risk adjusted benefits-discounted risk adjusted costs)/ discounted risk adjusted costs*100;

Discount rate = 5%

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2.6.1. At premises implementation, all eTIR Carnets from the beginning

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total	
Costs	Total Dev, Operations;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$627,500	\$627,500										\$1,255,000
	Operational			\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$3,404,190
	Total Dev, Operations;	\$462,400	\$1,089,900	\$967,919	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$340,419	\$5,583,990
Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300	
National App	\$3,503,103	\$3,503,103											\$7,006,205	
Total Costs	\$3,965,503	\$4,593,003	\$1,096,549	\$469,049	\$469,049	\$469,049	\$469,049	\$469,049	\$469,049	\$469,049	\$469,049	\$469,049	\$13,876,495	
Total Costs (including 20% risk factor)	\$4,758,603	\$5,511,603	\$1,315,859	\$562,859	\$562,859	\$562,859	\$562,859	\$562,859	\$562,859	\$562,859	\$562,859	\$562,859	\$16,651,794	
Discounted Costs	\$4,758,603	\$5,249,146	\$1,193,523	\$486,219	\$463,065	\$441,015	\$420,014	\$400,013	\$380,965	\$362,824	\$345,546	\$329,092	\$14,830,024	
Benefits for Customs (including 20% risk factor)			\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730	
Total Benefits (including 20% risk factor)			41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910	
Discounted Customs Benefits			\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948	
Discounted Overall Benefits			\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056	
ROI for Customs													410%	
Overall ROI													1964%	
Cash Flow for customs	-\$4,758,603	-\$5,249,146	\$8,137,337	\$8,400,315	\$8,000,300	\$7,619,333	\$7,256,508	\$6,910,960	\$6,581,866	\$6,268,444	\$5,969,947	\$5,685,664	\$60,822,924	
Overall Cash Flow	-\$4,758,603	-\$5,511,603	\$36,428,441	\$35,384,094	\$33,672,334	\$32,042,087	\$30,489,470	\$29,010,788	\$27,602,519	\$26,261,311	\$24,983,969	\$23,767,454	\$289,372,262	
Discounted CF	-\$4,758,603	-\$5,249,146	\$33,041,670	\$30,566,111	\$27,702,313	\$25,105,813	\$22,751,712	\$20,617,425	\$18,682,471	\$16,928,275	\$15,337,990	\$13,896,338	\$214,622,370	
Net present value													\$214,622,370	

Table 8. Cost, benefit, all eTIR Carnets registered from the beginning, at Premises implementation

2.6.2. UNOG implementation, all eTIR Carnets from the beginning

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total	
Costs	Total Dev, Operationa;														
	Development	\$462,400	\$462,400											\$924,800	
	Initial		\$340,750	\$340,750										\$681,500	
	Operational			\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$1,947,390	
	Total Dev, Operationa;	\$462,400	\$803,150	\$535,489	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$194,739	\$3,553,690
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App	\$3,503,103	\$3,503,103												\$7,006,205	
Total Costs		\$3,965,503	\$4,306,253	\$664,119	\$323,369	\$323,369	\$323,369	\$323,369	\$323,369	\$323,369	\$323,369	\$323,369	\$323,369	\$11,846,195	
Total Costs (including 20% risk factor)		\$4,758,603	\$5,167,503	\$796,943	\$388,043	\$388,043	\$388,043	\$388,043	\$388,043	\$388,043	\$388,043	\$388,043	\$388,043	\$14,215,434	
Discounted Costs		\$4,758,603	\$4,921,431	\$722,851	\$335,206	\$319,244	\$304,042	\$289,564	\$275,775	\$262,643	\$250,136	\$238,225	\$226,881	\$12,904,598	
Benefits for Customs (including 20% risk factor)				\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730	
Total Benefits (including 20% risk factor)				41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910	
Discounted Customs Benefits				\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948	
Discounted Overall Benefits				\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056	
ROI for Customs														486%	
Overall ROI														2271%	
Cash Flow for customs		-\$4,758,603	-\$4,921,431	\$8,608,009	\$8,551,327	\$8,144,121	\$7,756,306	\$7,386,958	\$7,035,198	\$6,700,189	\$6,381,132	\$6,077,269	\$5,787,875	\$62,748,349	
Overall Cash Flow		-\$4,758,603	-\$5,167,503	\$36,947,357	\$35,558,910	\$33,847,150	\$32,216,903	\$30,664,286	\$29,185,604	\$27,777,335	\$26,436,127	\$25,158,785	\$23,942,270	\$291,808,622	
Discounted CF		-\$4,758,603	-\$4,921,431	\$33,512,342	\$30,717,123	\$27,846,134	\$25,242,786	\$22,882,163	\$20,741,664	\$18,800,794	\$17,040,963	\$15,445,312	\$13,998,549	\$216,547,796	
Net present value														\$216,547,796	

Table 9. Cost, benefit, all eTIR Carnets registered from the beginning, UNOG implementation

2.6.3. UNICC implementation, all eTIR Carnets from the beginning

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operationa;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$316,000	\$316,000										\$632,000
	Operational			\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$1,677,190
	Total Dev, Operationa;	\$462,400	\$778,400	\$483,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719	\$167,719
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
	National App	\$3,503,103	\$3,503,103											\$7,006,205
Total Costs		\$3,965,503	\$4,281,503	\$612,349	\$296,349	\$296,349	\$296,349	\$296,349	\$296,349	\$296,349	\$296,349	\$296,349	\$296,349	\$11,526,495
Total Costs (including 20% risk factor)		\$4,758,603	\$5,137,803	\$734,819	\$355,619	\$355,619	\$355,619	\$355,619	\$355,619	\$355,619	\$355,619	\$355,619	\$355,619	\$13,831,794
Discounted Costs		\$4,758,603	\$4,893,146	\$666,502	\$307,197	\$292,568	\$278,637	\$265,368	\$252,732	\$240,697	\$229,235	\$218,319	\$207,923	\$12,610,927
Benefits for Customs (including 20% risk factor)				\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730
Total Benefits (including 20% risk factor)				41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910
Discounted Customs Benefits				\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948
Discounted Overall Benefits				\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056
ROI for Customs														500%
Overall ROI														2327%
Cash Flow for customs		-\$4,758,603	-\$4,893,146	\$8,664,358	\$8,579,336	\$8,170,796	\$7,781,711	\$7,411,153	\$7,058,241	\$6,722,134	\$6,402,033	\$6,097,174	\$5,806,833	\$63,042,021
Overall Cash Flow		-\$4,758,603	-\$5,137,803	\$37,009,481	\$35,591,334	\$33,879,574	\$32,249,327	\$30,696,710	\$29,218,028	\$27,809,759	\$26,468,551	\$25,191,209	\$23,974,694	\$292,192,262
Discounted CF		-\$4,758,603	-\$4,893,146	\$33,568,691	\$30,745,132	\$27,872,809	\$25,268,191	\$22,906,358	\$20,764,707	\$18,822,740	\$17,061,864	\$15,465,217	\$14,017,507	\$216,841,468
Net present value														\$216,841,468

Table 10. Cost, benefit, all eTIR Carnets registered from the beginning, UNICC implementation

2.6.4. PaaS implementation, all eTIR Carnets from the beginning

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total	
Costs	Total Dev, Operationa;														
	Development	462,400	462,400												
	Initial		96,000	96,000											
	Operational			159,116	159,116	159,116	159,116	159,116	159,116	159,116	159,116	159,116	159,116		
	Total Dev, Operationa;	\$462,400	\$558,400	\$255,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$159,116	\$2,707,960
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App	\$3,503,103	\$3,503,103												\$7,006,205	
Total Costs		\$3,965,503	\$4,061,503	\$383,746	\$287,746	\$287,746	\$287,746	\$287,746	\$287,746	\$287,746	\$287,746	\$287,746	\$287,746	\$11,000,465	
Total Costs (including 20% risk factor)		\$4,758,603	\$4,873,803	\$460,495	\$345,295	\$345,295	\$345,295	\$345,295	\$345,295	\$345,295	\$345,295	\$345,295	\$345,295	\$13,200,558	
Discounted Costs		\$4,758,603	\$4,641,717	\$417,683	\$298,279	\$284,075	\$270,548	\$257,665	\$245,395	\$233,709	\$222,580	\$211,981	\$201,887	\$12,044,122	
Benefits for Customs (including 20% risk factor)				\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730	
Total Benefits (including 20% risk factor)				41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910	
Discounted Customs Benefits				\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948	
Discounted Overall Benefits				\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056	
ROI for Customs														528%	
Overall ROI														2441%	
Cash Flow for customs		-\$4,758,603	-\$4,641,717	\$8,913,177	\$8,588,254	\$8,179,290	\$7,789,800	\$7,418,857	\$7,065,578	\$6,729,122	\$6,408,688	\$6,103,512	\$5,812,869	\$63,608,826	
Overall Cash Flow		-\$4,758,603	-\$4,873,803	\$37,283,805	\$35,601,657	\$33,889,898	\$32,259,650	\$30,707,034	\$29,228,352	\$27,820,083	\$26,478,874	\$25,201,533	\$23,985,017	\$292,823,498	
Discounted CF		-\$4,758,603	-\$4,641,717	\$33,817,510	\$30,754,050	\$27,881,303	\$25,276,280	\$22,914,062	\$20,772,044	\$18,829,727	\$17,068,518	\$15,471,555	\$14,023,543	\$217,408,272	
Net present value														\$217,408,272	

Table 11. Cost, benefit, all eTIR Carnets registered from the beginning, PaaS implementation

2.6.5. IaaS implementation, all eTIR Carnets from the beginning

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operationa;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$316,000	\$316,000										\$632,000
	Operational			\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$1,134,020
	Total Dev, Operationa;	\$462,400	\$778,400	\$429,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402	\$113,402
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
	National App	\$3,503,103	\$3,503,103											\$7,006,205
Total Costs		\$3,965,503	\$4,281,503	\$558,032	\$242,032	\$242,032	\$242,032	\$242,032	\$242,032	\$242,032	\$242,032	\$242,032	\$242,032	\$10,983,325
Total Costs (including 20% risk factor)		\$4,758,603	\$5,137,803	\$669,638	\$290,438	\$290,438	\$290,438	\$290,438	\$290,438	\$290,438	\$290,438	\$290,438	\$290,438	\$13,179,990
Discounted Costs		\$4,758,603	\$4,893,146	\$607,382	\$250,892	\$238,944	\$227,566	\$216,730	\$206,409	\$196,580	\$187,219	\$178,304	\$169,813	\$12,131,588
Benefits for Customs (including 20% risk factor)				\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730
Total Benefits (including 20% risk factor)				41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910
Discounted Customs Benefits				\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948
Discounted Overall Benefits				\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056
ROI for Customs														524%
Overall ROI														2423%
Cash Flow for customs		-\$4,758,603	-\$4,893,146	\$8,723,478	\$8,635,642	\$8,224,421	\$7,832,781	\$7,459,792	\$7,104,564	\$6,766,251	\$6,444,049	\$6,137,189	\$5,844,942	\$63,521,360
Overall Cash Flow		-\$4,758,603	-\$5,137,803	\$37,074,662	\$35,656,514	\$33,944,755	\$32,314,507	\$30,761,891	\$29,283,208	\$27,874,940	\$26,533,731	\$25,256,390	\$24,039,874	\$292,844,066
Discounted CF		-\$4,758,603	-\$4,893,146	\$33,627,811	\$30,801,438	\$27,926,434	\$25,319,262	\$22,954,997	\$20,811,030	\$18,866,856	\$17,103,880	\$15,505,232	\$14,055,616	\$217,320,807
Net present value														\$217,320,807

Table 12. Cost, benefit, all eTIR Carnets registered from the beginning, IaaS implementation

2.6.6. SaaS implementation, all eTIR Carnets from the beginning

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total	
Costs	Total Dev, Operation;														
	Development													\$0	
	Initial		30,000	30,000										\$60,000	
	Operational			1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	\$15,000,000	
	Total Dev, Operation;	\$0	\$30,000	\$1,530,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$15,060,000
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App		\$3,503,103	\$3,503,103											\$7,006,205	
Total Costs		\$3,503,103	\$3,533,103	\$1,658,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$1,628,630	\$23,352,505	
Total Costs (including 20% risk factor)		\$4,203,723	\$4,239,723	\$1,990,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$1,954,356	\$28,023,006	
Discounted Costs		\$4,203,723	\$4,037,831	\$1,805,312	\$1,688,246	\$1,607,854	\$1,531,289	\$1,458,371	\$1,388,924	\$1,322,785	\$1,259,795	\$1,199,805	\$1,142,671	\$22,646,607	
Benefits for Customs (including 20% risk factor)				\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$10,287,273	\$102,872,730	
Total Benefits (including 20% risk factor)				41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	41,613,091	\$416,130,910	
Discounted Customs Benefits				\$9,330,860	\$8,886,533	\$8,463,365	\$8,060,348	\$7,676,522	\$7,310,973	\$6,962,831	\$6,631,268	\$6,315,493	\$6,014,755	\$75,652,948	
Discounted Overall Benefits				\$37,744,300	\$35,946,953	\$34,235,193	\$32,604,946	\$31,052,329	\$29,573,647	\$28,165,378	\$26,824,169	\$25,546,828	\$24,330,312	\$306,024,056	
ROI for Customs														234%	
Overall ROI														1251%	
Cash Flow for customs		-\$4,203,723	-\$4,037,831	\$7,525,548	\$7,198,287	\$6,855,511	\$6,529,059	\$6,218,151	\$5,922,049	\$5,640,046	\$5,371,473	\$5,115,688	\$4,872,084	\$53,006,341	
Overall Cash Flow		-\$4,203,723	-\$4,239,723	\$35,753,944	\$33,992,597	\$32,280,837	\$30,650,590	\$29,097,973	\$27,619,291	\$26,211,022	\$24,869,813	\$23,592,472	\$22,375,956	\$278,001,050	
Discounted CF		-\$4,203,723	-\$4,037,831	\$32,429,881	\$29,364,083	\$26,557,524	\$24,015,539	\$21,713,356	\$19,628,514	\$17,740,651	\$16,031,304	\$14,483,731	\$13,082,758	\$206,805,788	
Net present value														\$206,805,788	

Table 13. Cost, benefit, all eTIR Carnets registered from the beginning, SaaS implementation

2.7. ROI AND CASH FLOW FOR CUSTOMS, eTIR LAUNCHED GRADUALLY

Considering the benefits from Table 7 Chapter 2.5.1. and the costs for eTIR costs presented in detail in UNECE-eTIR_CBA-EST-v09-51, when distributed gradually, the following tables indicates the ROI and Cash Flow.

2.7.1. On Premises implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operation;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$627,500	\$627,500										\$1,255,000
	Operational			\$13,000	\$91,000	\$104,000	\$156,000	\$169,000	\$260,000	\$325,000	\$338,000	\$364,000	\$390,000	\$2,210,000
	Total Dev, Operation;	\$462,400	\$1,089,900	\$640,500	\$91,000	\$104,000	\$156,000	\$169,000	\$260,000	\$325,000	\$338,000	\$364,000	\$390,000	\$4,389,800
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630
National App		\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,462,400	\$2,089,900	\$1,269,130	\$719,630	\$732,630	\$784,630	\$797,630	\$888,630	\$953,630	\$966,630	\$992,630	\$1,024,655	\$12,682,125
Total Costs (including 20% risk factor)		\$1,754,880	\$2,507,880	\$1,522,956	\$863,556	\$879,156	\$941,556	\$957,156	\$1,066,356	\$1,144,356	\$1,159,956	\$1,191,156	\$1,229,586	\$15,218,550
Discounted Costs		\$1,754,880	\$2,388,457	\$1,381,366	\$745,972	\$723,284	\$737,734	\$714,245	\$757,839	\$774,545	\$747,718	\$731,266	\$718,913	\$12,176,220
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														73%
Overall ROI														1213%
Cash Flow for customs		-\$1,754,880	-\$2,388,457	-\$1,215,462	\$360,054	\$480,554	\$982,035	\$1,060,120	\$1,841,962	\$2,320,457	\$2,317,808	\$2,412,862	\$2,489,381	\$8,906,434
Overall Cash Flow		-\$1,754,880	-\$2,507,880	-\$264,813	\$7,524,066	\$8,250,229	\$12,100,422	\$12,498,853	\$18,649,409	\$22,326,792	\$22,087,658	\$22,652,550	\$23,100,726	\$144,663,133
Discounted CF		-\$1,754,880	-\$2,388,457	-\$240,193	\$6,499,571	\$6,787,484	\$9,480,997	\$9,326,837	\$13,253,786	\$15,111,652	\$14,237,901	\$13,906,701	\$13,506,516	\$97,727,915
Net present value														\$97,727,915

Table 14. Cost, benefit, all eTIR Carnets registered gradually, at Premises implementation

2.7.2. UNOG implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operationa;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$340,750	\$340,750										\$681,500
	Operational			\$7,000	\$49,000	\$56,000	\$84,000	\$91,000	\$140,000	\$175,000	\$182,000	\$196,000	\$210,000	\$1,190,000
	Total Dev, Operationa;	\$462,400	\$803,150	\$347,750	\$49,000	\$56,000	\$84,000	\$91,000	\$140,000	\$175,000	\$182,000	\$196,000	\$210,000	\$2,796,300
Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App	\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,462,400	\$1,803,150	\$976,380	\$677,630	\$684,630	\$712,630	\$719,630	\$768,630	\$803,630	\$810,630	\$824,630	\$844,655	\$11,088,625
Total Costs (including 20% risk factor)		\$1,754,880	\$2,163,780	\$1,171,656	\$813,156	\$821,556	\$855,156	\$863,556	\$922,356	\$964,356	\$972,756	\$989,556	\$1,013,586	\$13,306,350
Discounted Costs		\$1,754,880	\$2,060,743	\$1,062,727	\$702,435	\$675,896	\$670,037	\$644,399	\$655,501	\$652,714	\$627,047	\$607,502	\$592,623	\$10,706,503
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														97%
Overall ROI														1393%
Cash Flow for customs		-\$1,754,880	-\$2,060,743	-\$896,823	\$403,592	\$527,942	\$1,049,732	\$1,129,966	\$1,944,300	\$2,442,288	\$2,438,478	\$2,536,627	\$2,615,672	\$10,376,151
Overall Cash Flow		-\$1,754,880	-\$2,163,780	\$86,487	\$7,574,466	\$8,307,829	\$12,186,822	\$12,592,453	\$18,793,409	\$22,506,792	\$22,274,858	\$22,854,150	\$23,316,726	\$146,575,333
Discounted CF		-\$1,754,880	-\$2,060,743	\$78,447	\$6,543,109	\$6,834,871	\$9,548,694	\$9,396,683	\$13,356,125	\$15,233,483	\$14,358,572	\$14,030,466	\$13,632,807	\$99,197,632
Net present value														\$99,197,632

Table 15. Cost, benefit, all eTIR Carnets registered gradually, UNOG implementation

2.7.3. UNICC implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operationa;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$316,000	\$316,000										\$632,000
	Operational			\$5,000	\$35,000	\$40,000	\$60,000	\$65,000	\$100,000	\$125,000	\$130,000	\$140,000	\$150,000	\$850,000
	Total Dev, Operationa;	\$462,400	\$778,400	\$321,000	\$35,000	\$40,000	\$60,000	\$65,000	\$100,000	\$125,000	\$130,000	\$140,000	\$150,000	\$2,406,800
Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App	\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,462,400	\$1,778,400	\$949,630	\$663,630	\$668,630	\$688,630	\$693,630	\$728,630	\$753,630	\$758,630	\$768,630	\$784,655	\$10,699,125
Total Costs (including 20% risk factor)		\$1,754,880	\$2,134,080	\$1,139,556	\$796,356	\$802,356	\$826,356	\$832,356	\$874,356	\$904,356	\$910,356	\$922,356	\$941,586	\$12,838,950
Discounted Costs		\$1,754,880	\$2,032,457	\$1,033,611	\$687,922	\$660,100	\$647,472	\$621,117	\$621,388	\$612,104	\$586,824	\$566,247	\$550,526	\$10,374,647
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														103%
Overall ROI														1441%
Cash Flow for customs		-\$1,754,880	-\$2,032,457	-\$867,707	\$418,104	\$543,738	\$1,072,297	\$1,153,248	\$1,978,413	\$2,482,898	\$2,478,702	\$2,577,882	\$2,657,769	\$10,708,007
Overall Cash Flow		-\$1,754,880	-\$2,134,080	\$118,587	\$7,591,266	\$8,327,029	\$12,215,622	\$12,623,653	\$18,841,409	\$22,566,792	\$22,337,258	\$22,921,350	\$23,388,726	\$147,042,733
Discounted CF		-\$1,754,880	-\$2,032,457	\$107,562	\$6,557,621	\$6,850,667	\$9,571,260	\$9,419,964	\$13,390,237	\$15,274,093	\$14,398,795	\$14,071,721	\$13,674,904	\$99,529,488
Net present value														\$99,529,488

Table 16. Cost, benefit, all eTIR Carnets registered gradually, UNICC implementation

2.7.4. PaaS implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operations;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$96,000											\$192,000
	Operational			\$6,000	\$42,000	\$48,000	\$72,000	\$78,000	\$120,000	\$150,000	\$156,000	\$168,000	\$180,000	\$1,020,000
	Total Dev, Operations;	\$462,400	\$558,400	\$102,000	\$42,000	\$48,000	\$72,000	\$78,000	\$120,000	\$150,000	\$156,000	\$168,000	\$180,000	\$2,136,800
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
	National App	\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,462,400	\$1,558,400	\$730,630	\$670,630	\$676,630	\$700,630	\$706,630	\$748,630	\$778,630	\$784,630	\$796,630	\$814,655	\$10,429,125
Total Costs (including 20% risk factor)		\$1,754,880	\$1,870,080	\$876,756	\$804,756	\$811,956	\$840,756	\$847,956	\$898,356	\$934,356	\$941,556	\$955,956	\$977,586	\$12,514,950
Discounted Costs		\$1,754,880	\$1,781,029	\$795,244	\$695,178	\$667,998	\$658,754	\$632,758	\$638,445	\$632,409	\$606,935	\$586,874	\$571,574	\$10,022,078
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														110%
Overall ROI														1495%
Cash Flow for customs		-\$1,754,880	-\$1,781,029	-\$629,340	\$410,848	\$535,840	\$1,061,014	\$1,141,607	\$1,961,357	\$2,462,593	\$2,458,590	\$2,557,255	\$2,636,720	\$11,060,576
Overall Cash Flow		-\$1,754,880	-\$1,870,080	\$381,387	\$7,582,866	\$8,317,429	\$12,201,222	\$12,608,053	\$18,817,409	\$22,536,792	\$22,306,058	\$22,887,750	\$23,352,726	\$147,366,733
Discounted CF		-\$1,754,880	-\$1,781,029	\$345,930	\$6,550,365	\$6,842,769	\$9,559,977	\$9,408,323	\$13,373,181	\$15,253,788	\$14,378,684	\$14,051,093	\$13,653,855	\$99,882,057
Net present value														\$99,882,057

Table 17. Cost, benefit, all eTIR Carnets registered gradually, PaaS implementation

2.7.5. IaaS implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operations;													
	Development	\$462,400	\$462,400											\$924,800
	Initial		\$316,000											\$632,000
	Operational			\$4,000	\$28,000	\$32,000	\$48,000	\$52,000	\$80,000	\$100,000	\$104,000	\$112,000	\$120,000	\$680,000
	Total Dev, Operations;	\$462,400	\$778,400	\$320,000	\$28,000	\$32,000	\$48,000	\$52,000	\$80,000	\$100,000	\$104,000	\$112,000	\$120,000	\$2,236,800
	Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630
National App	\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,462,400	\$1,778,400	\$948,630	\$656,630	\$660,630	\$676,630	\$680,630	\$708,630	\$728,630	\$732,630	\$740,630	\$754,655	\$10,529,125
Total Costs (including 20% risk factor)		\$1,754,880	\$2,134,080	\$1,138,356	\$787,956	\$792,756	\$811,956	\$816,756	\$850,356	\$874,356	\$879,156	\$888,756	\$905,586	\$12,634,950
Discounted Costs		\$1,754,880	\$2,032,457	\$1,032,522	\$680,666	\$652,202	\$636,189	\$609,476	\$604,332	\$591,799	\$566,712	\$545,619	\$529,477	\$10,236,332
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														106%
Overall ROI														1462%
Cash Flow for customs		-\$1,754,880	-\$2,032,457	-\$866,619	\$425,360	\$551,636	\$1,083,580	\$1,164,889	\$1,995,469	\$2,503,203	\$2,498,814	\$2,598,510	\$2,678,817	\$10,846,322
Overall Cash Flow		-\$1,754,880	-\$2,134,080	\$119,787	\$7,599,666	\$8,336,629	\$12,230,022	\$12,639,253	\$18,865,409	\$22,596,792	\$22,368,458	\$22,954,950	\$23,424,726	\$147,246,733
Discounted CF		-\$1,754,880	-\$2,032,457	\$108,651	\$6,564,877	\$6,858,565	\$9,582,542	\$9,431,605	\$13,407,294	\$15,294,398	\$14,418,907	\$14,092,348	\$13,695,952	\$99,667,804
Net present value														\$99,667,804

Table 18. Cost, benefit, all eTIR Carnets registered gradually, IaaS implementation

2.7.6. SaaS implementation, eTIR Carnets distributed gradually

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Costs	Total Dev, Operationa;													
	Development													\$0
	Initial		30,000	30,000										\$60,000
	Operational			50,000	350,000	400,000	600,000	650,000	1,000,000	1,250,000	1,300,000	1,400,000	1,500,000	\$8,500,000
	Total Dev, Operationa;	\$0	\$30,000	\$80,000	\$350,000	\$400,000	\$600,000	\$650,000	\$1,000,000	\$1,250,000	\$1,300,000	\$1,400,000	\$1,500,000	\$8,560,000
Help Desk			\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$128,630	\$1,286,300
National App		\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$506,025	\$7,006,025
Total Costs		\$1,000,000	\$1,030,000	\$708,630	\$978,630	\$1,028,630	\$1,228,630	\$1,278,630	\$1,628,630	\$1,878,630	\$1,928,630	\$2,028,630	\$2,134,655	\$16,852,325
Total Costs (including 20% risk factor)		\$1,200,000	\$1,236,000	\$850,356	\$1,174,356	\$1,234,356	\$1,474,356	\$1,534,356	\$1,954,356	\$2,254,356	\$2,314,356	\$2,434,356	\$2,561,586	\$20,222,790
Discounted Costs		\$1,200,000	\$1,177,143	\$771,298	\$1,014,453	\$1,015,508	\$1,155,197	\$1,144,960	\$1,388,924	\$1,525,837	\$1,491,855	\$1,494,483	\$1,497,706	\$14,877,363
Benefits for Customs (including 20% risk factor)				\$182,909	\$1,280,364	\$1,463,273	\$2,194,909	\$2,377,818	\$3,658,182	\$4,572,727	\$4,755,636	\$5,121,455	\$5,487,273	\$31,094,545
Total Benefits (including 20% risk factor)				\$1,387,103.03	\$9,709,721.21	\$11,096,824.24	\$16,645,236.36	\$18,032,339.40	\$27,742,060.61	\$34,677,575.76	\$36,064,678.79	\$38,838,884.85	\$41,613,090.91	\$235,807,515
Discounted Customs Benefits				\$165,904	\$1,106,026	\$1,203,838	\$1,719,769	\$1,774,365	\$2,599,802	\$3,095,002	\$3,065,526	\$3,144,129	\$3,208,295	\$21,082,654
Discounted Overall Benefits				\$1,258,143	\$8,387,622	\$9,129,385	\$13,041,978	\$13,456,009	\$19,715,765	\$23,471,148	\$23,247,614	\$23,843,706	\$24,330,312	\$159,881,683
ROI for Customs														42%
Overall ROI														975%
Cash Flow for customs		-\$1,200,000	-\$1,177,143	-\$605,394	\$91,573	\$188,330	\$564,572	\$629,404	\$1,210,877	\$1,569,165	\$1,573,671	\$1,649,645	\$1,710,588	\$6,205,291
Overall Cash Flow		-\$1,200,000	-\$1,236,000	\$407,787	\$7,213,266	\$7,895,029	\$11,567,622	\$11,921,653	\$17,761,409	\$21,216,792	\$20,933,258	\$21,409,350	\$21,768,726	\$139,658,893
Discounted CF		-\$1,200,000	-\$1,177,143	\$369,875	\$6,231,091	\$6,495,260	\$9,063,535	\$8,896,121	\$12,622,701	\$14,360,360	\$13,493,764	\$13,143,484	\$12,727,723	\$95,026,772
Net present value														\$95,026,772

Table 19. Cost, benefit, all eTIR Carnets registered gradually, SaaS implementation

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