

COSITU

Software for the Calculation of Costs, Tariffs
and Rates for Telephone Services

Telecommunication Development Bureau

(Edition 2002)

VERSION 1.0



International Telecommunication Union

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TABLE OF CONTENTS

	Page
1 Installing COSITU.....	1
1.1 Introduction.....	1
1.2 Installation Process	1
1.3 Starting COSITU	3
2 Using COSITU.....	4
2.1 Introduction.....	4
2.2 Session Menu	5
2.2.1 Introduction.....	5
2.2.2 New.....	5
2.2.3 Open Session.....	7
2.2.4 Save as Session	8
2.2.5 Delete	8
2.2.6 Settings	9
2.2.7 Export-Import.....	9
2.2.8 Exit	10
2.3 Settings Menu.....	11
2.3.1 Cost Distribution Matrix.....	11
2.3.2 Change Language	11
2.3.3 Translation	12
2.4 Reports Menu.....	13
2.4.1 Results of the Traffic Estimation	13
2.4.2 List of Tickets	14
2.4.3 Traffic Measures in Erlangs	15
2.4.4 Cost Distribution Matrix.....	16
2.4.5 Cost Evaluation Data	17
2.4.6 Unit Costs	18
2.4.7 Tariffs.....	19
2.5 Administration Menu.....	20
2.5.1 Create Login.....	20
2.5.2 Manage Login.....	21
2.6 Help Menu	22
2.6.1 COSITU Help	22
2.6.2 About COSITU	22

	Page
3 Traffic Estimation	23
3.1 Ticket Analysis	24
3.1.1 File Format	24
3.1.2 File Import.....	25
3.1.3 Missing Data	25
3.1.4 Dataset Suppression	25
3.1.5 Ticket Interpretation	25
3.1.6 Normalization.....	26
3.1.7 Generate Report	26
3.2 Affinity Matrix.....	26
3.3 Revenues	28
3.4 Validation	29
4 Cost Evaluation.....	30
4.1 Analytical Accounting	31
4.2 General Accounting	33
4.3 Other Costs.....	35
4.3.1 Direct and Indirect Costs	36
4.3.2 Common and Special Costs	36
4.3.3 Adjusted Average Interest Rate and Return on Capital	38
4.3.4 Cost of Capital	38
4.3.5 Allocation of Common and Special Costs	39
4.3.6 Required Amortization Period vs Actual Amortization Period.....	39
4.3.7 Inefficiency Costs	40
5 Cost of Services – Unit Costs	41
5.1 Cost of Services.....	41
5.2 Unit Costs	42
6 Current Prices.....	44
7 Tariffs and Simulation	45

1 Installing COSITU

1.1 Introduction

The COSITU program can be installed on any computer running one of the following operating systems:

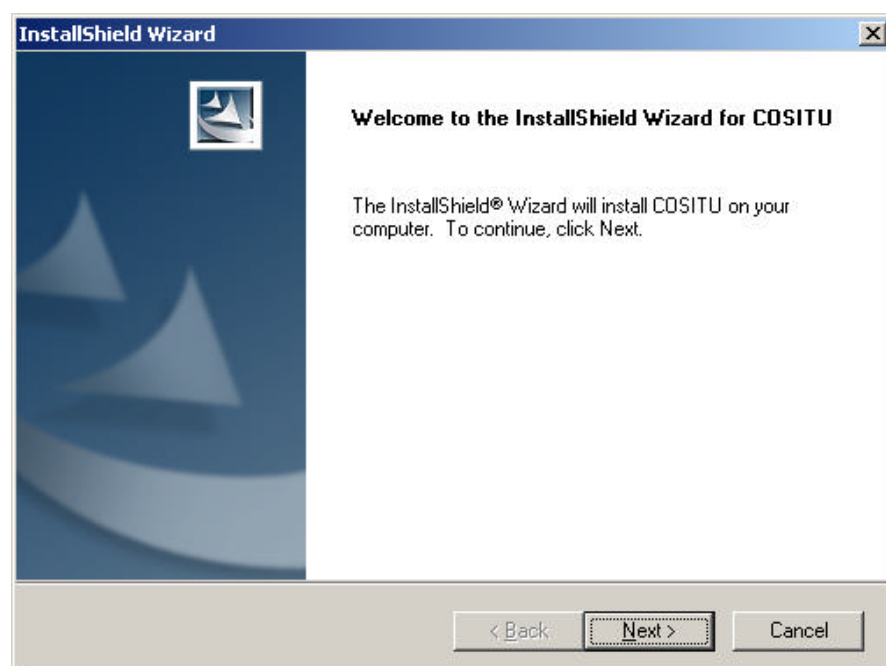
- a) Windows 98
- b) Windows 98 SE
- c) Windows ME
- d) Windows NT
- e) Windows 2000
- f) Windows XP or any later version

Important Note – If you are running Windows 98 first edition, you should have Internet Explorer 5.0 or a later version installed to be able to install COSITU.

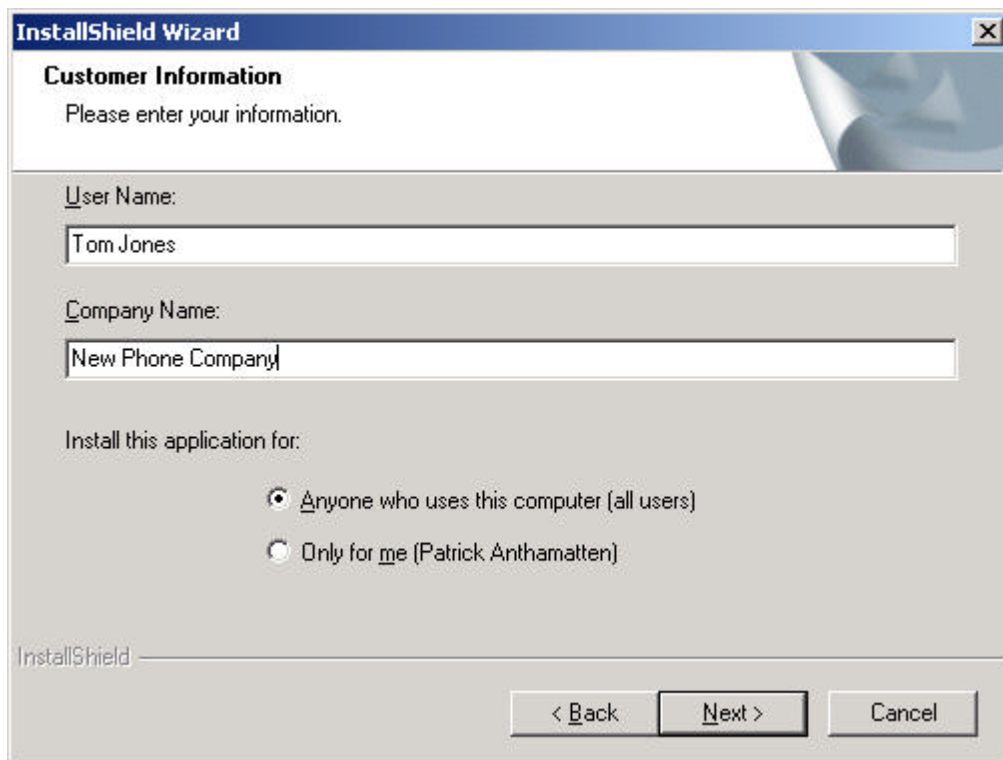
1.2 Installation Process

To install COSITU, proceed as follows:

- 1 Insert the COSITU CD into the CD drive of your computer
- 2 Open the COSITU *Install* directory
- 3 Doubleclick on the *Setup* icon
- 4 The Installation program runs and pauses at the following screen



- 5 Specify your Name and Company in the following window



The screenshot shows the 'InstallShield Wizard' window with the 'Customer Information' tab selected. The window has a blue title bar with the text 'InstallShield Wizard' and a close button. Below the title bar, the text 'Customer Information' is displayed, followed by 'Please enter your information.' There are two text input fields: 'User Name:' with the text 'Tom Jones' and 'Company Name:' with the text 'New Phone Company'. Below these fields, the text 'Install this application for:' is followed by two radio button options: 'Anyone who uses this computer (all users)' (selected) and 'Only for me (Patrick Anthamatten)'. At the bottom of the window, there is a status bar with the text 'InstallShield' and three buttons: '< Back', 'Next >', and 'Cancel'.

InstallShield Wizard

Customer Information
Please enter your information.

User Name:
Tom Jones

Company Name:
New Phone Company

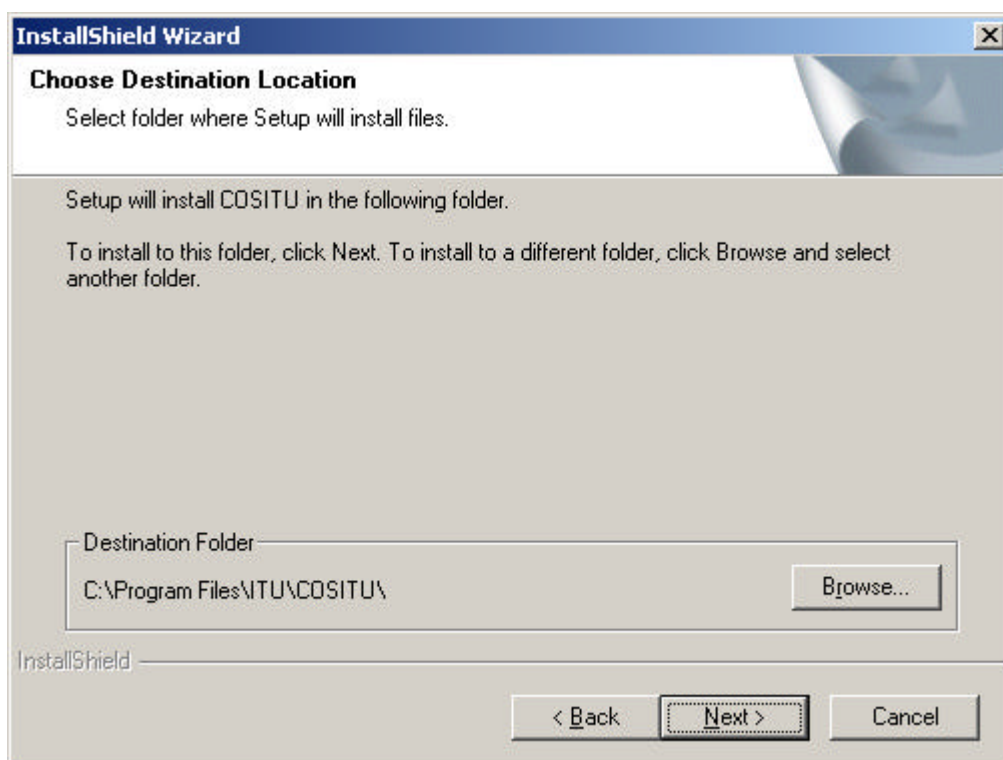
Install this application for:

☒ Anyone who uses this computer (all users)
☐ Only for me (Patrick Anthamatten)

InstallShield

< Back Next > Cancel

- 6 Choose the destination folder for the COSITU program



The screenshot shows the 'InstallShield Wizard' window with the 'Choose Destination Location' tab selected. The window has a blue title bar with the text 'InstallShield Wizard' and a close button. Below the title bar, the text 'Choose Destination Location' is displayed, followed by 'Select folder where Setup will install files.' There is a text area with the text 'Setup will install COSITU in the following folder.' and a paragraph of instructions: 'To install to this folder, click Next. To install to a different folder, click Browse and select another folder.' Below this, there is a text input field for 'Destination Folder' with the text 'C:\Program Files\ITU\COSITU\'. To the right of this field is a 'Browse...' button. At the bottom of the window, there is a status bar with the text 'InstallShield' and three buttons: '< Back', 'Next >', and 'Cancel'.

InstallShield Wizard

Choose Destination Location
Select folder where Setup will install files.

Setup will install COSITU in the following folder.

To install to this folder, click Next. To install to a different folder, click Browse and select another folder.

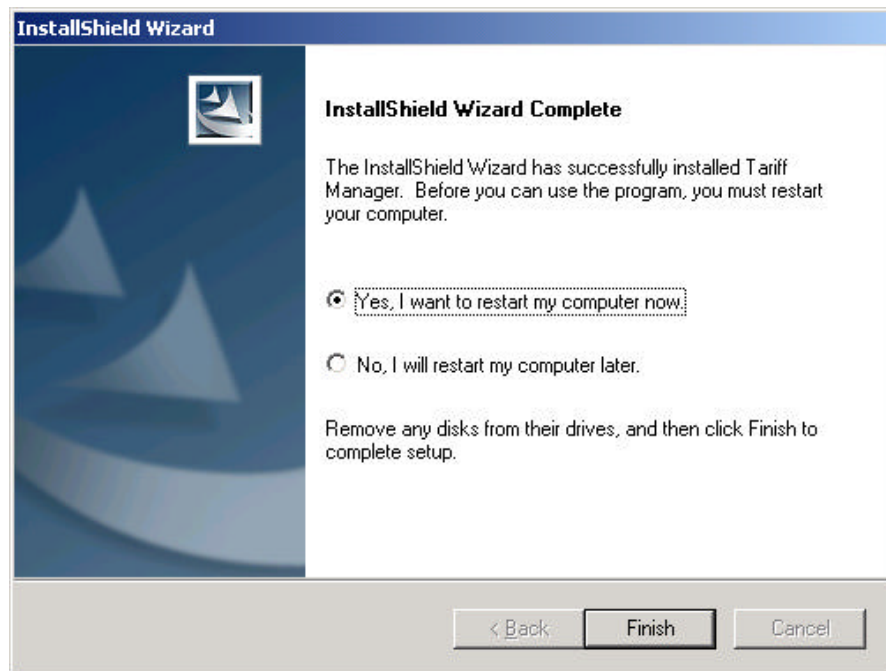
Destination Folder
C:\Program Files\ITU\COSITU\

Browse...

InstallShield

< Back Next > Cancel

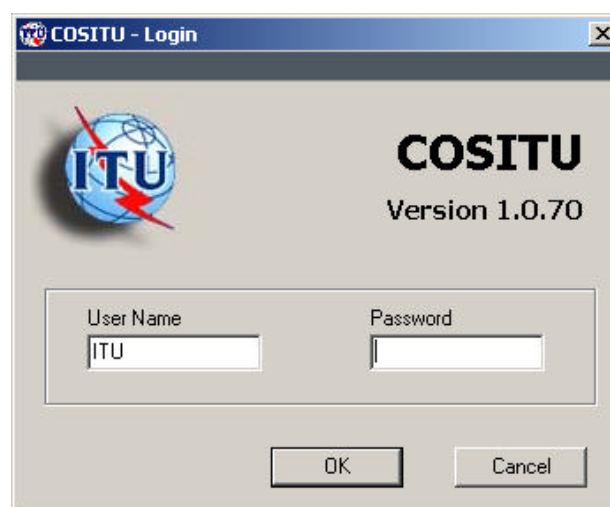
- 7 Proceed with installation by clicking the *Next* button
- 8 To complete installation, restart your computer



- 9 After you have restarted your computer, COSITU will be available among the other programs under the *Start* button.

1.3 Starting COSITU

When starting COSITU, the following Login screen appears:



Enter the user name *ITU* and password *itu* the first time you log in.

This user name has Administrator rights and allows you to define other COSITU users.

2 Using COSITU

2.1 Introduction

COSITU is a stand-alone¹ application using the Windows Graphical User Interface. Its goal is to compute cost-oriented tariffs for urban, interurban, international, subregional and interconnection communications at a country level, for a given year and a given operator.

All costs are expressed in local currency, but the exchange rate with the Special Drawing Right (SDR) must be known in order to be able to benchmark the computed data with other operators in other countries.

Traffic Estimation

This first window allows for evaluation of traffic, based on four different methods: Manual Entry, Ticket Analysis, Affinity Matrix or Revenues. The goal at this level is to evaluate the traffic for the following services:

- Urban;
- Interurban;
- Subregional outgoing;
- Subregional incoming;
- International outgoing;
- International incoming;
- Transit from international to subregion;
- Transit from international to international;

Urban	Interurban	Subreg Out	Subreg In
7 360 002	376 923	1 203 077	943 077
International Out	International In	Transit Int'l/Subreg	Transit Int'l/Int'l
300 000	490 769	18 462	243 077
Transit Subreg/Int'l	Trans Subreg/Subreg	Nat In Single	Nat In Double
601 539	130 769	270 769	489 231
Nat to Int'l	National Out	Int'l to Nat	Nat to Nat
416 923	376 923	130 769	196 923

ITU - Champéry 10:07

COSITU – Main window

The lower part of the window contains some general information such as:

- Current session name (see chapter 2.2)
- Current date and time

¹ It is a stand-alone application in the sense that it is able to run independently. However, a connection to the central server is provided in order to benchmark the data.

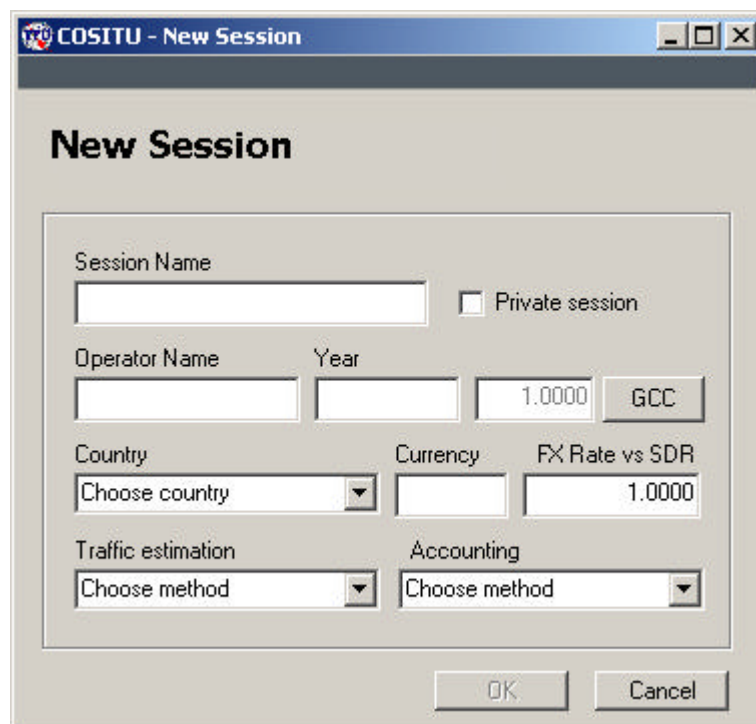
2.2 Session Menu

2.2.1 Introduction

This application is session-based. This means that when the application is started, it automatically opens the last session opened by the logged-in user.

2.2.2 New

This option allows the creation of a new session. When a new session is created, the following information must be entered:



The screenshot shows a Windows-style dialog box titled "COSITU - New Session". The dialog has a title bar with standard minimize, maximize, and close buttons. The main content area is titled "New Session" and contains several input fields and controls:

- Session Name:** A text input field.
- Private session:** A checkbox.
- Operator Name:** A text input field.
- Year:** A text input field.
- Currency:** A text input field with the value "1.0000".
- Country:** A dropdown menu with the text "Choose country".
- FX Rate vs SDR:** A text input field with the value "1.0000".
- Traffic estimation:** A dropdown menu with the text "Choose method".
- Accounting:** A dropdown menu with the text "Choose method".

At the bottom of the dialog are two buttons: "OK" and "Cancel".

Session Name:

This is the name by which this session will be referenced.

Private Session Indicator:

This indicator allows the user to specify whether the session can be managed by all system users (box unchecked) or only by its creator (box checked).

Operator Name:

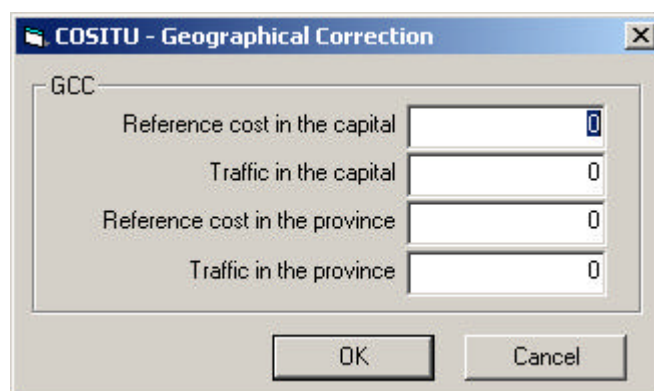
This is the name of the operator using COSITU.

Year:

This is the year for which cost-oriented tariffs will be calculated.

Geographical Correction Coefficient (GCC):

The GCC can be calculated with the following tool:

**GCC is calculated as:**

$T_c \cdot C_p / T_p \cdot C_c$ where

T_c : Traffic in the capital

T_p : Traffic in the province

C_c : Reference cost in the capital

C_p : Reference cost in the province

If the GCC is smaller than 1, the system automatically rounds it up to 1. If it is greater than 3, the system informs the user that the value is not likely to be correct. However, the user can keep the calculated value if he/she considers it to be correct.

Country:

This is the country where the operator is active and for which tariffs are calculated in this session.

Currency:

Local currency of the country. All amounts are entered in local currency except settlement rates relative to international traffic.

FX Rate vs SDR:

Exchange rate of the local currency against the SDR. This rate is used when data are being exchanged with the ITU server as well as for the calculation of weighted average tariffs for international services.

Traffic Estimation Method:

The user can choose between four different methods to determine traffic data:

- Manual entry (these values do not necessarily come from an estimation method)
- Ticket analysis
- Affinity matrix
- Revenues

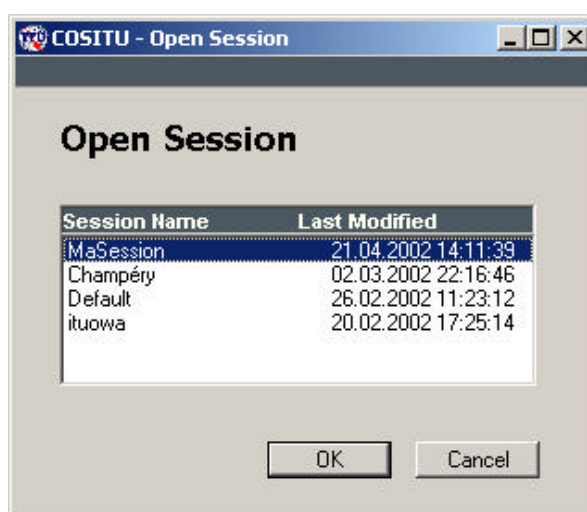
If the manual entry method is selected, the user must enter the traffic data manually. The three other methods allow specific traffic information to be deduced from other information known by the operator. The estimation logic of these three methods is detailed in chapter 3.

Accounting:

The user specifies, here, whether the cost data are coming from his/her General or Analytical Accounting. Choosing one source or the other will guide the user through different steps requiring the entry of specific data.

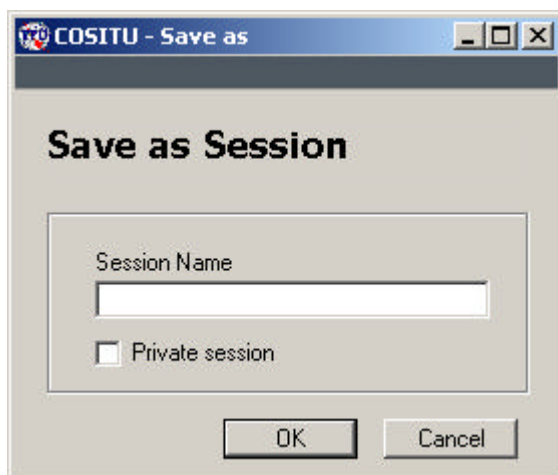
2.2.3 Open Session

This option allows a user to select a session to be opened from the list of sessions that are available.



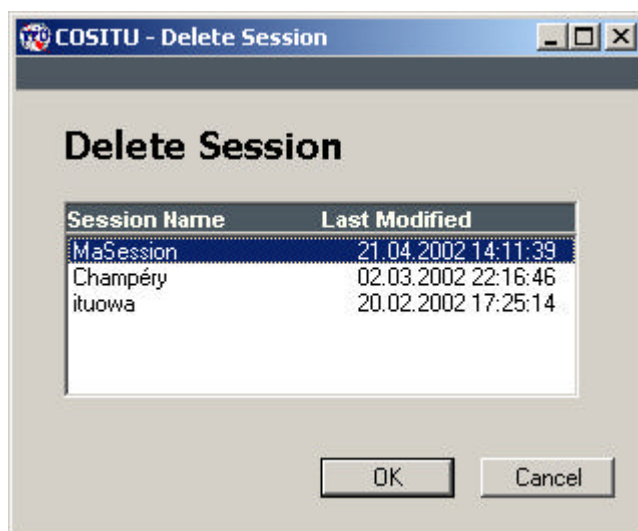
2.2.4 Save as Session

This option allows all the data of the current session to be saved as a new session. The system will ask for the new session name and the user can then specify whether the new session is private (checked box) or public (unchecked box). Private sessions can only be viewed or managed by their creator. Other sessions can be viewed and managed by all users of the system.



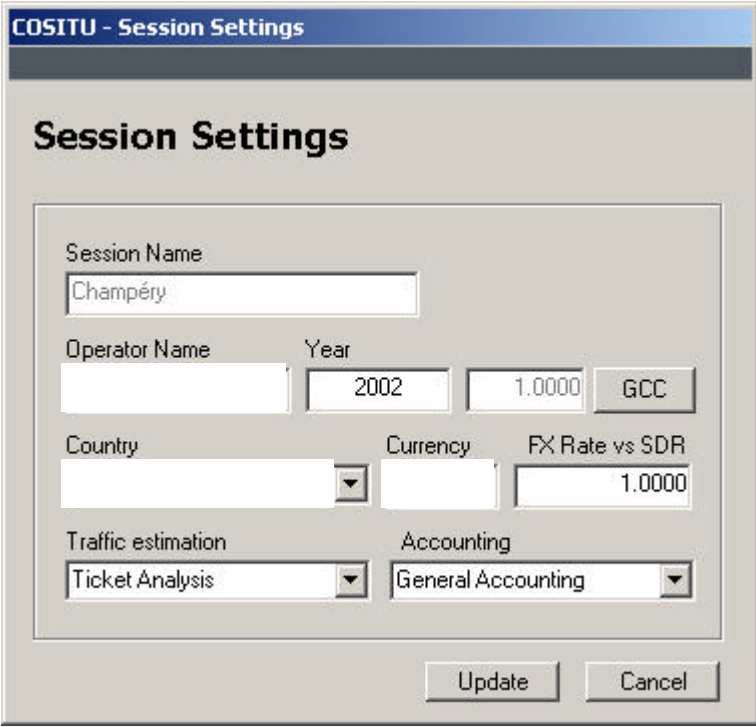
2.2.5 Delete

This option allows a session to be deleted from the list of sessions that are available to the user. The *Default* session cannot be deleted.



2.2.6 Settings

This option allows a user to modify the information related to a session. This information is the same as that required when creating a new session. All fields can be modified except the name of the session.



The screenshot shows a dialog box titled "COSITU - Session Settings". Inside, the title "Session Settings" is displayed. The form contains several input fields and dropdown menus:

- Session Name:** A text box containing "Champéry".
- Operator Name:** A text box.
- Year:** A text box containing "2002".
- Currency:** A text box containing "1.0000".
- FX Rate vs SDR:** A text box containing "1.0000".
- Country:** A dropdown menu.
- Traffic estimation:** A dropdown menu containing "Ticket Analysis".
- Accounting:** A dropdown menu containing "General Accounting".

At the bottom right, there are two buttons: "Update" and "Cancel".

2.2.7 Export-Import

This option allows exporting and importing sessions.

To export a session, the user must choose the session and after pressing the *Export* button, specify the name of the file to which it should be stored.

To import a session, the user has to specify the file by pressing the *Choose file* button. If the name of the session from file already exists in the database, the user must set a different name for the imported session.

If the FX Rate in the database is different than the FX Rate of the imported file, the button *Change* is enabled and it is allowed to import the value from the file to the database.

COSITU - Export Import Sessions

Export Session

Session Name	Last Modified
MaSession	2002-04-21 14:11:39
Champéry	2002-03-02 22:16:46
ituowa	2002-02-20 17:25:14

Export

Import Session

File
C:_workdir\ITU\Source\ii.itu Choose file

Session Name
MaSession Import

Country

Operator
NoAdmin

Year
2002

FX Rate in file
1,36677200

FX Rate in database
1.36677200 Change

OK

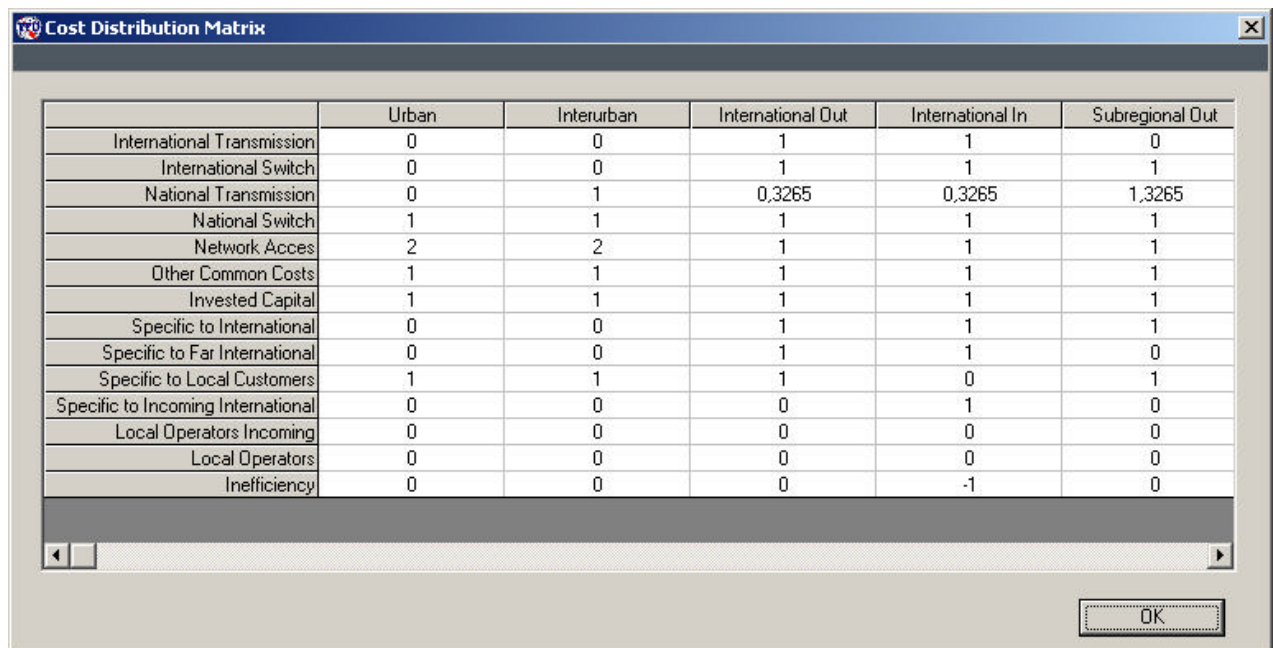
2.2.8 Exit

This option allows the user to quit the application.

2.3 Settings Menu

2.3.1 Cost Distribution Matrix

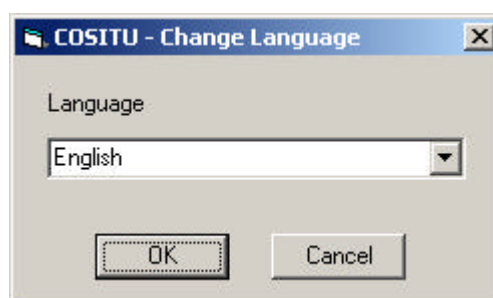
The Cost Distribution Matrix specifies the rules for allocating costs among the different services. This option displays the contents of the Cost Distribution Matrix.



	Urban	Interurban	International Out	International In	Subregional Out
International Transmission	0	0	1	1	0
International Switch	0	0	1	1	1
National Transmission	0	1	0,3265	0,3265	1,3265
National Switch	1	1	1	1	1
Network Acces	2	2	1	1	1
Other Common Costs	1	1	1	1	1
Invested Capital	1	1	1	1	1
Specific to International	0	0	1	1	1
Specific to Far International	0	0	1	1	0
Specific to Local Customers	1	1	1	0	1
Specific to Incoming International	0	0	0	1	0
Local Operators Incoming	0	0	0	0	0
Local Operators	0	0	0	0	0
Inefficiency	0	0	0	-1	0

2.3.2 Change Language

This option allows users to change the language of the application. The user can choose from the languages available in the list. Once the language has been selected, the application is automatically translated.



2.3.3 Translation

The Translation option allows the management of translations for the application.

The screenshot shows the 'Translation' window. On the left is a list of application components: cboCLLang, cboMCountry, cboNIFrom, cboNITo, cboNIType, cboNSAccountancy, cboNSCountry, cboNSTraffic, cboTAFrom, cboTRLang, cdmDefNoServ, celCapCost, cellnefCost, and celOthComCosts. To the right of this list is a dropdown menu currently set to 'English'. Below the dropdown are three buttons: 'Add language', 'Delete language', and 'Translate application'. Below these buttons is a table with two columns: 'Choose language' and 'English'. The 'Choose language' column contains the text 'Sélectionner la langue'. The 'English' column contains 'Français'. At the bottom of the window are four buttons: 'Test item', 'Previous values', 'Save changes', and 'Exit'.

Add Language

The Add Language option allows users to add a new language in which the application can be translated. Translations can then be added to the application by the user.

Delete Language

The Delete Language option deletes the language itself and all its corresponding translations.

Translate Application

This option allows translation of the application to the language specified in the field at the top of the window; the read-only field indicates the current language.

Test Item

This option allows translations which have been entered to be tested before being saved. To use this option, select the translated item to be tested and activate the application in the area in which the item is used.

Previous Values

This option allows translation values entered to be replaced by stored values.

Save Changes

This option allows the newly entered translations to be stored in the database.

2.4 Reports Menu

The Reports Menu includes a set of reports that can be executed from the data stored in the database.

2.4.1 Results of the Traffic Estimation

This report shows the traffic data that have been estimated using one of the estimation methods.

Session Name	Method Name	Service Name	Traffic Volume
Champéry	Ticket Analysis	Urban	7 360 002
Champéry	Ticket Analysis	Interurban	376 923
Champéry	Ticket Analysis	International Outgoing	300 000
Champéry	Ticket Analysis	International Incoming	490 769
Champéry	Ticket Analysis	Subregional Outgoing	1 203 077
Champéry	Ticket Analysis	Subregional Incoming	943 077
Champéry	Ticket Analysis	International to International	243 077
Champéry	Ticket Analysis	International to Subregional	18 462
Champéry	Ticket Analysis	Subregional to International	601 539
Champéry	Ticket Analysis	Subregional to Subregional	130 769
Champéry	Ticket Analysis	National Incoming Single	270 769
Champéry	Ticket Analysis	National Incoming Double	489 231
Champéry	Ticket Analysis	National Outgoing	376 923
Champéry	Ticket Analysis	National to National	196 923
Champéry	Ticket Analysis	International to National	130 769
Champéry	Ticket Analysis	National to International	416 923

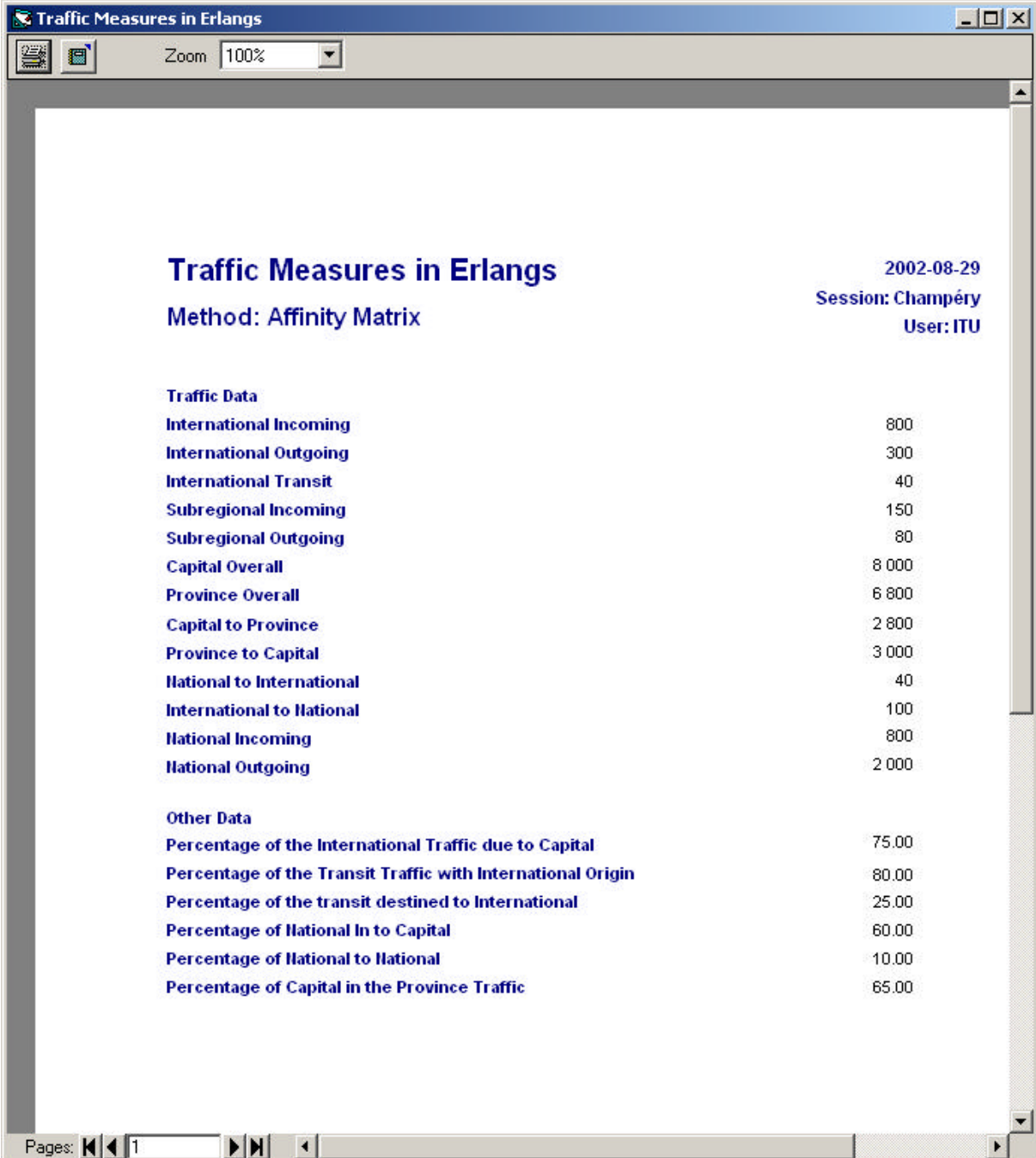
2.4.2 List of Tickets

This report gives details on tickets imported from normalized files.

List of Tickets					
Method: Ticket analysis					
2002-08-29					
Session: Champéry					
User: ITU					
Dataset Number - Name	Collection Time	Origin	Destination	Time	Type of communication
24 - Geneva	5	France	Geneva	00:04:22	International Incoming
24 - Geneva	5	France	USA	00:02:10	International to International
24 - Geneva	5	France-Reg	Geneva	00:08:24	Subregional Incoming
24 - Geneva	5	France-Reg	Germany-Reg	00:01:10	Subregional to Subregional
24 - Geneva	5	France-Reg	USA	00:05:21	Subregional to International
24 - Geneva	5	Geneva	France	00:02:40	International Outgoing
24 - Geneva	5	Geneva	France-Reg	00:10:43	Subregional Outgoing
24 - Geneva	5	Geneva	Fribourg	00:03:21	Interurban
24 - Geneva	5	Geneva	Geneva	01:05:32	Urban
24 - Geneva	5	Geneva	Sunrise	00:03:21	National Outgoing
24 - Geneva	5	Sunrise	Geneva	00:02:25	National Incoming Single
24 - Geneva	5	Sunrise	Germany	00:03:43	National to International
24 - Geneva	5	Sunrise	Globale-One	00:01:45	National to National

2.4.3 Traffic Measures in Erlangs

This report displays the data entered in Erlangs as well as the percentages used for the estimation of the traffic volume.



Traffic Measures in Erlangs	
Method: Affinity Matrix	
2002-08-29	
Session: Champéry	
User: ITU	
Traffic Data	
International Incoming	800
International Outgoing	300
International Transit	40
Subregional Incoming	150
Subregional Outgoing	80
Capital Overall	8 000
Province Overall	6 800
Capital to Province	2 800
Province to Capital	3 000
National to International	40
International to National	100
National Incoming	800
National Outgoing	2 000
Other Data	
Percentage of the International Traffic due to Capital	75.00
Percentage of the Transit Traffic with International Origin	80.00
Percentage of the transit destined to International	25.00
Percentage of National In to Capital	60.00
Percentage of National to National	10.00
Percentage of Capital in the Province Traffic	65.00

2.4.5 Cost Evaluation Data

This report shows the detailed result of the network costs calculation.

Cost Evaluation Data							
2002-08-29							
Session: Champéry							
User: ITU							
Method: General Accounting							
Other Amortization: 0							
Net Fixed Assets: 1 600 000							
	Amortization Period						
	Amortization	Adjustment for Asset Reevaluation	Maintenance and Running Costs	Total	CAGR	Actual	Required
International Transmission	291 149	518 762	1 739 293	2 549 204	1.12	10.00	10.00
International Switch	291 148	474 853	1 043 575	1 809 576	0.00	10.00	10.00
National Transmission	291 148	474 853	1 739 290	2 505 291	0.00	10.00	10.00
National Switch	0	0	0	0	0.00	10.00	10.00
Network Access	0	0	0	0	0.00	10.00	10.00
Total	873 445	1 468 468	4 522 158	6 864 071			

2.4.6 Unit Costs

This reports displays the Unit Costs data as displayed under the *Unit Costs* tab.

Unit Costs					
2002-08-29					
Session: Champéry					
User: ITU					
Service	Current Country	Average Group	10 Best Group	Min 10 Best Group	Max 10 Best Group
Urban	0.1073	0.0000	0.0000	0.0000	0.0000
Interurban	0.6154	0.0000	0.0000	0.0000	0.0000
International Outgoing	1.8793	0.0000	0.0000	0.0000	0.0000
International Incoming	1.8691	0.0000	0.0000	0.0000	0.0000
Subregional Outgoing	1.3421	0.0000	0.0000	0.0000	0.0000
Subregional Incoming	1.3318	0.0000	0.0000	0.0000	0.0000
International to International	2.7477	0.0000	0.0000	0.0000	0.0000
International to Subregional	2.2113	0.0000	0.0000	0.0000	0.0000
Subregional to International	2.2112	0.0000	0.0000	0.0000	0.0000
Subregional to Subregional	1.6739	0.0000	0.0000	0.0000	0.0000
National Incoming Single	0.0978	0.0000	0.0000	0.0000	0.0000
National Incoming Double	0.6058	0.0000	0.0000	0.0000	0.0000
National Outgoing	0.2246	0.0000	0.0000	0.0000	0.0000
National to National	0.0978	0.0000	0.0000	0.0000	0.0000
International to National	1.7036	0.0000	0.0000	0.0000	0.0000
National to International	1.7039	0.0000	0.0000	0.0000	0.0000

2.4.7 Tariffs

This report displays computed tariffs, profit and loss and computation parameters.

Cost-oriented tariffs			2002-08-29
			Session: Champéry
			User: ITU
Simulation parameters			
Connection Tax		0.00	
Monthly Rental Fee		0.00	
Contribution for Universal Service		0.00	
Received for Universal Service		0.00	
Price for 1 min. Urban		0.0050	
Price for 1 min. Interurban		0.0100	
Service Name	Tariff	Profit & Loss	
Urban	0.0050	0.0000	
Interurban	0.0100	0.0000	
International Outgoing	2.0921	0.0685	
International Incoming	2.0807	0.3178	
Subregional Outgoing	1.4940	2.5060	
Subregional Incoming	1.4826	8.5174	
International to International	3.0588	-3.0588	
International to Subregional	2.4617	-2.4617	
Subregional to International	2.4616	-2.4616	
Subregional to Subregional	1.8635	-1.8635	
National Incoming Single	0.1088	0.8912	
National Incoming Double	0.6744	0.3256	
National Outgoing	0.2500	0.7500	
National to National	0.1088	0.8912	
International to National	1.8965	-0.8965	
National to International	1.8969	-0.8969	

2.5 Administration Menu

2.5.1 Create Login

The *Create Login* option allows new users to be added to the COSITU application.



The screenshot shows a Windows-style dialog box titled "COSITU - Create Login". The main area of the dialog has a light gray background with the text "COSITU" in large bold letters and "Version 1.0.70" below it. There are four input fields arranged in two columns. The left column has a "New Login" field and two checkboxes below it labeled "Administrator" and "Responsible". The right column has a "Password" field and a "Retype Password" field below it. At the bottom of the dialog are two buttons: "OK" and "Cancel".

When defining a new *User Login*, the following information must be entered:

Login:

This option specifies the *Login* to be used by the new user.

Password:

This option specifies the *Password* to be used by the new user. The password must be entered twice in order to be validated.

Administrator:

The *Administrator* option specifies whether the new user will be allowed to access the Administrative Tasks of the application. These Administrative Tasks are:

- 1 The Translation option in the Settings Menu
- 2 The Administration Menu

Responsible:

The *Responsible* option defines whether the specific user can create *Private* sessions. Private sessions are sessions that can only be managed and viewed by their creator.

2.5.2 Manage Login

The *Manage Login* option allows the management of User Logins.

The screenshot shows a Windows-style dialog box titled "COSITU - Manage Login". Inside the dialog, the text "COSITU" is prominently displayed in a large, bold font, with "Version 1.0.70" underneath it. Below this, there is a section with a dropdown menu currently showing "Marc". To the right of the dropdown is a button labeled "Delete Login". Below the dropdown are two checkboxes, both of which are checked: "Administrator" and "Responsible". To the right of these checkboxes is a button labeled "Update Status". Below the checkboxes are two text input fields; the first is labeled "Password" and the second is labeled "Retype Password". To the right of the "Retype Password" field is a button labeled "Update Password". At the bottom right of the dialog is a standard "OK" button.

Delete Login:

This option allows a User Login to be deleted.

Update Status:

This option allows the Administrator and Responsible status of a User Login to be modified (see 2.5.1 Create Login).

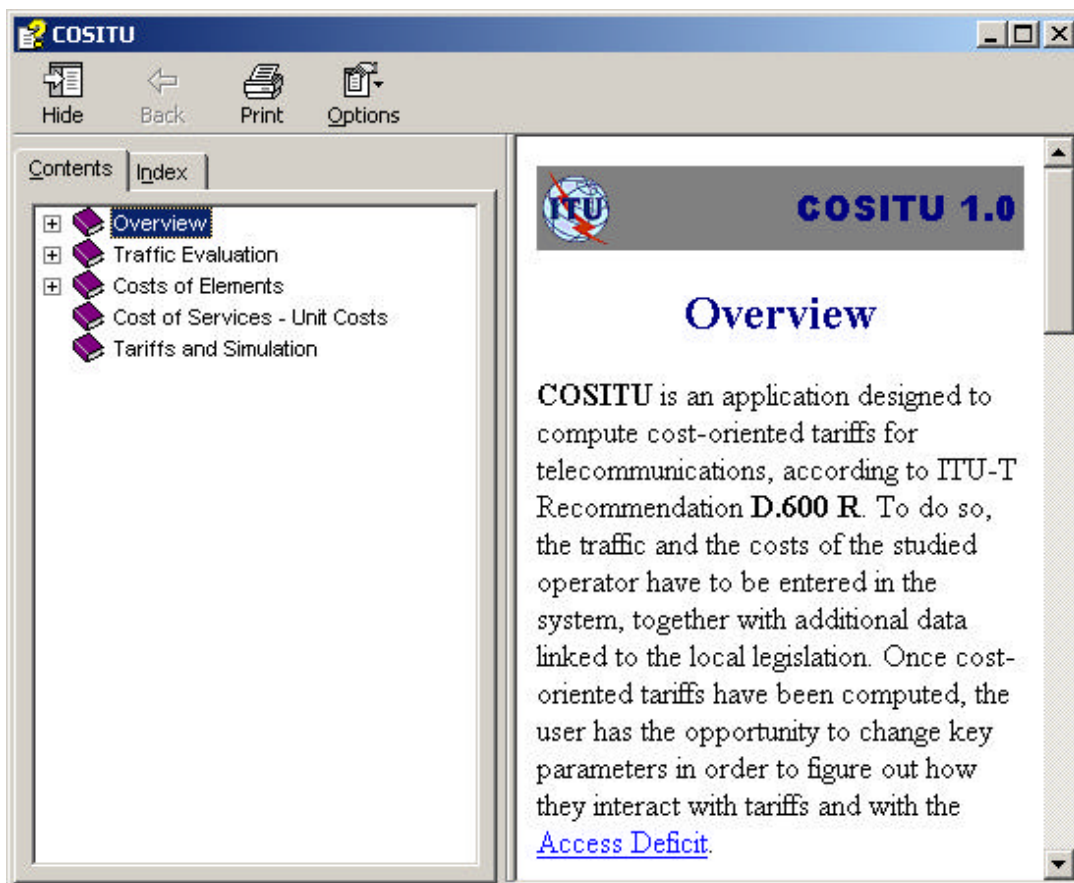
Update Password:

This option allows the modification of the User Login Password. The Password must be entered twice correctly to be accepted.

2.6 Help Menu

2.6.1 COSITU Help

This Menu option calls up the Help window. This window can also be called up by pressing F1 in any location of the application. Selecting this option from the Menu will open the standard Help window on its Overview page.



From this page it is possible to use Help in the following ways:

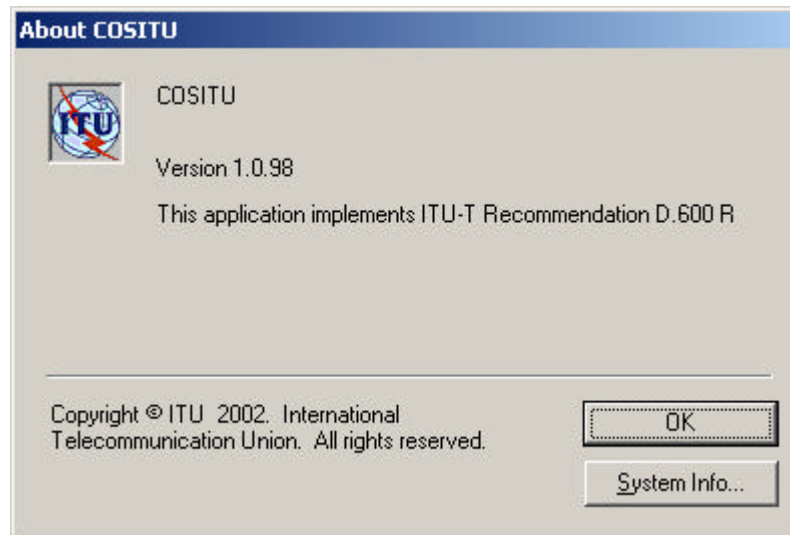
- 1 Select a page from the Contents window
- 2 Select a keyword from the Index or search for a keyword in the Index
- 3 Navigate within the Help by using the hyperlinks

2.6.2 About COSITU

This window gives general information about the COSITU application such as:

- version number,
- description.

It is also possible to access System Information from this window by clicking System Info...



3 Traffic Estimation

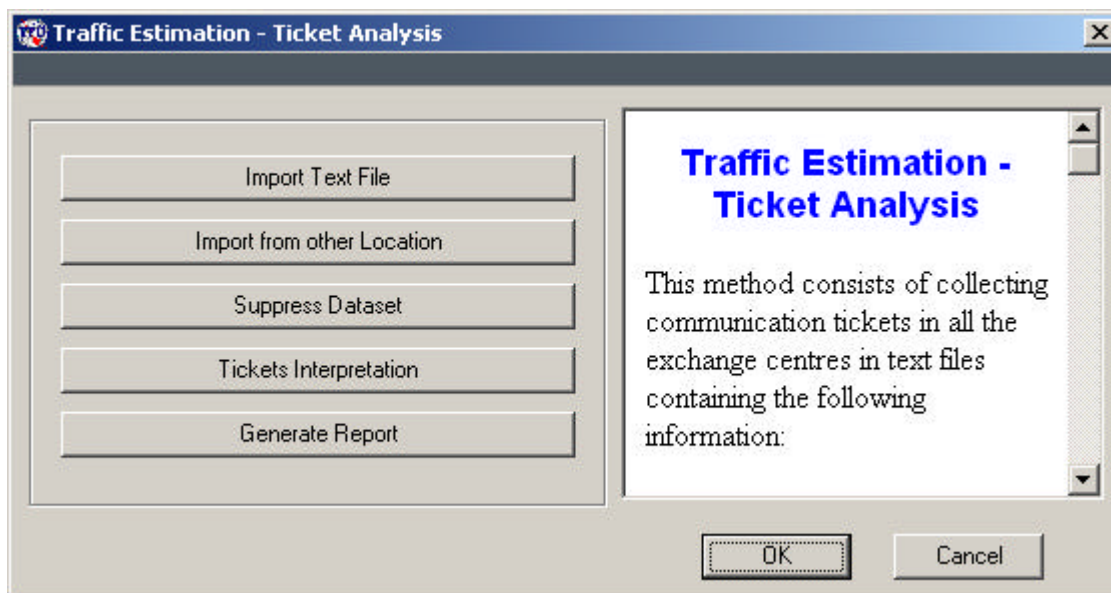
The *Traffic Estimation* is the very first step in the determination of the Cost-Oriented Tariffs². The goal here is to obtain as accurate an estimation as possible of the traffic data for all services.

If these traffic data are known, they can be entered directly into the system. However, knowing that very often this data is not entirely available, three methods for the estimation of the traffic data are proposed:

- *Ticket Analysis*: this method consists of collecting call tickets in the Telephone Exchanges during a specific period of time. Based on this data, the annual traffic in minutes for each service can be derived.
- *Affinity Matrix*: a traffic matrix in busy-hour Erlangs may be used to determine coefficients of affinity which are then considered in relation to outgoing national traffic or outgoing international traffic.
- *Revenues*: based on the international outgoing traffic and the national outgoing traffic which are usually known, and on the turnover for billed traffic, the turnover for domestic traffic can be determined, allowing the deduction of the urban and interurban traffic.

² The principles used are taken from ITU-T Recommendation D.600 R. The procedure is based on the Enhanced Fully Distributed Costing (EFDC) method. Taking as a basis the principles of activity-based costing, the procedure is applied in such a way that all the costs incurred for each service offered, and only those costs, are attributed to the service in question. The unit cost of the service is the total cost divided by the volume.

3.1 Ticket Analysis



Traffic observation can be performed by recording call tickets over a specific period of time (usually a week). The call tickets must show the location of the calling party, the location of the called party and the duration of the call. The point-to-point matrix determined from these data is used as the basis for extrapolation.

3.1.1 File Format

The call tickets are stored in text files having the following format:

```
Localisation,duration (in days)
Origin_1,Destination_1,minutes:seconds
Origin_2,Destination_2,minutes:seconds
....
Origin_n,Destination_n,minutes:seconds
```

It is the responsibility of the user to provide files having the required format. This format must be passed to the technical teams that will be in charge of extracting the data in the Telephone Exchanges. This kind of file can easily be generated from a database or from a spreadsheet.

3.1.2 File Import

The ticket files are **imported** into the system using the *Import Text File* button. If the file cannot be imported due to a format error, an error message appears telling the user where the mistake is and asking him/her to correct it manually. Before importing the file, the user is required to assign a name to this dataset. A number is automatically assigned to the dataset by the system.

3.1.3 Missing Data

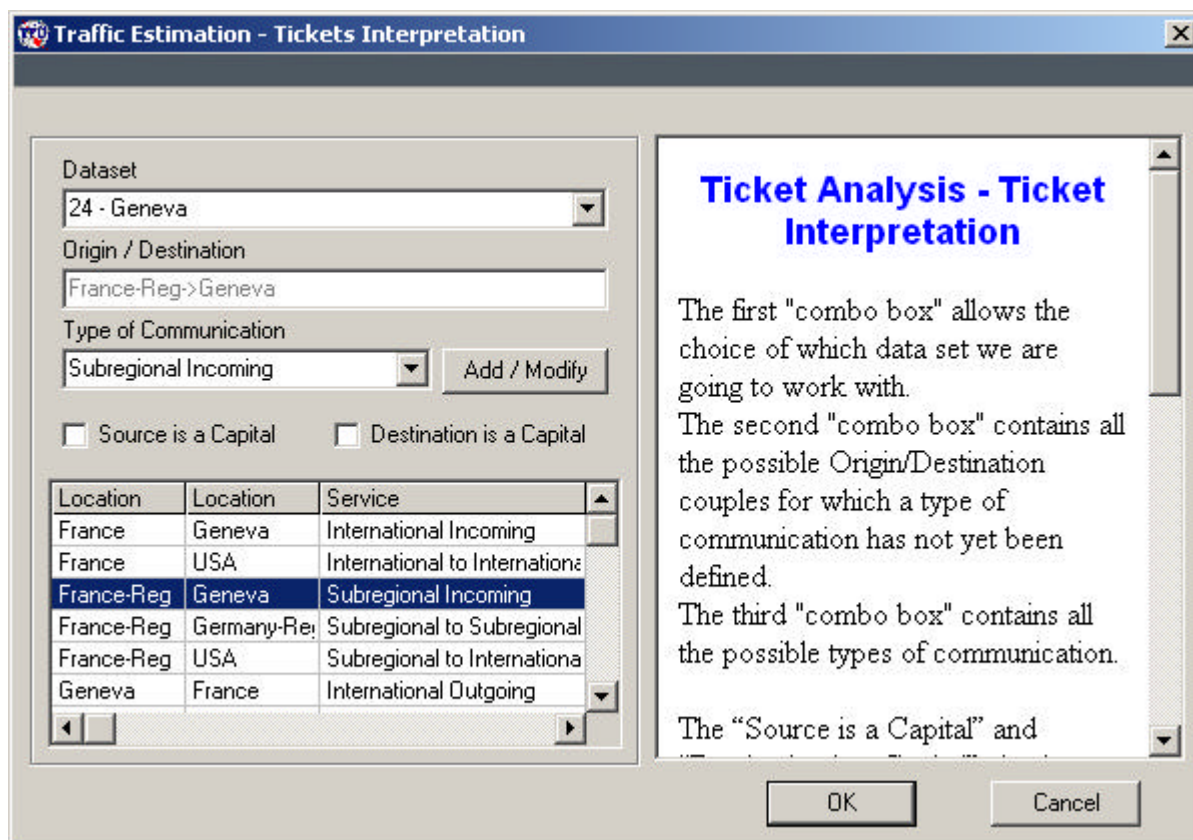
If, for any reason, data is missing for a given location, the user has the opportunity to copy data from another location that **he/she** considers similar. This operation can be performed with the button *Import from other Location*.

3.1.4 Dataset Suppression

With the button *Suppress Dataset*, the user has the possibility of deleting a previously entered dataset. It will not be taken into account in the traffic estimation. **A suppressed dataset cannot be recovered** (unless the corresponding text file is imported again).

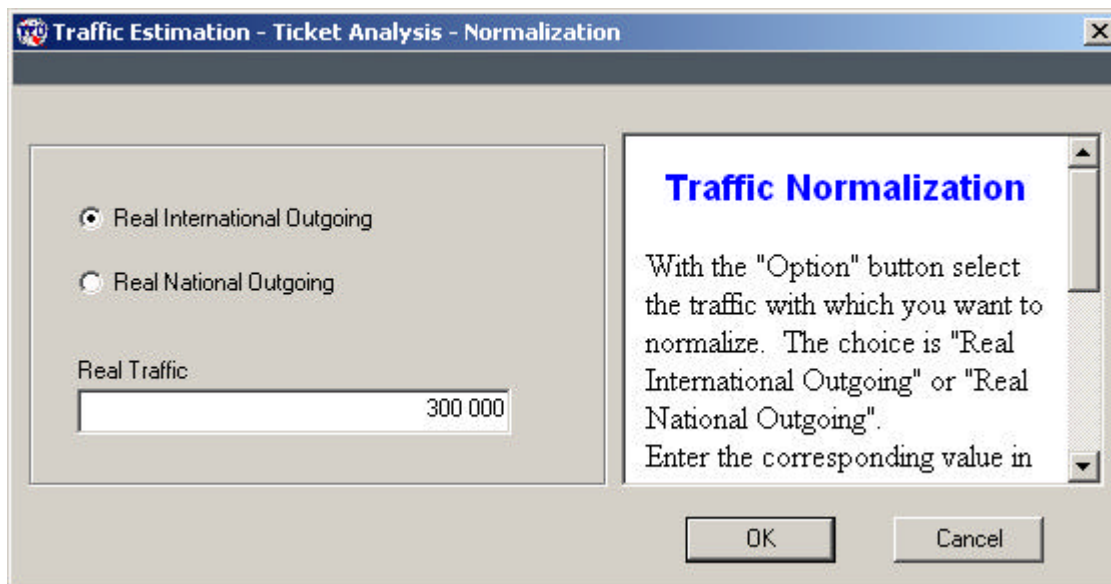
3.1.5 Ticket Interpretation

This button starts a sub-window allowing the assignation of a type of communication to all the occurrences of an Origin/Destination couple. This task has to be performed for each and every dataset. This sub-window is automatically started when a dataset has been imported.



3.1.6 Normalization

Once the data has been entered, and all the possible Origin/Destination couples have been identified, the traffic must be normalized, based on a known outgoing traffic volume in minutes such as the International Outgoing Traffic or the National Outgoing Traffic (recommended):



Traffic Estimation - Ticket Analysis - Normalization

☒ Real International Outgoing
☐ Real National Outgoing

Real Traffic: 300 000

Traffic Normalization

With the "Option" button select the traffic with which you want to normalize. The choice is "Real International Outgoing" or "Real National Outgoing". Enter the corresponding value in

OK Cancel

Based on the number entered, all traffic will be computed, assuming there is proportionality between the numbers estimated by the method and the real traffic volume entered.

3.1.7 Generate Report

The system allows the creation of a report containing all the call tickets entered for the current session, arranged by dataset.

3.2 Affinity Matrix

If it is not possible to observe the traffic by means of call tickets, a traffic matrix in busy-hour Erlangs may be used to determine coefficients of affinity which are then considered in relation to outgoing national traffic or outgoing international traffic.

The following data, coming from the busy-hour Erlangs measured in the Telephone Exchanges, must be entered:

Measured in the International Transit Centre:

- International Incoming
- International Outgoing
- International Transit
- Subregional Incoming

- Subregional Outgoing
- National to International
- International to National

Measured in the Capital exchanges:

- Capital Overall (total traffic of customers from the capital: Number of lines used x average traffic per line)
- Capital to Province (traffic between the capital and the Province switches)
- Province to Capital
- National to Capital (interconnection traffic between the capital switches and other local operators' networks)
- Capital to National

Measured in the Province exchanges:

- Province Overall (total traffic of customers from the province: Number of lines used x average traffic per line)

Traffic Estimation - Traffic Matrix in Erlangs

Measures in Erlangs

International In	International Out	Internat. Transit
800	300	40
Subreg In	Subreg Out	Capital Overall
150	80	8 000
Nat -> Int'l	Int'l -> Nat	Cap -> Prov
40	100	2 800
Prov -> Cap	Nat -> Cap	Cap -> Nat
3 000	800	2 000
	Province Overall	
	6 800	

Other Data

Transit Trf of Int'l orig	Transit dest to Int'l	Cap in Int'l Trf
80.00 %	25.00 %	75.00 %
National In to Capital	National to National	Trf Prov -> Capital
60.00 %	10.00 %	65.00 %

Traffic Estimation - Affinity Matrix

Here traffic estimation is based on the traffic matrix in Erlangs (peak hour traffic) in order to define affinity coefficients that will be normalized with national outgoing traffic or international outgoing traffic.

The following amounts in Erlangs that can be measured in the exchange centres have to be entered:

- International incoming (international transit)

OK Cancel

The additional percentages (in the second half of the window) and the volume of International Outgoing Traffic or National Outgoing Traffic in minutes, combined with the entered data will allow computing of the required traffic data.

3.3 Revenues

If the international traffic and the interconnection traffic are known in minutes, it is also possible to take advantage of the fact that the turnover for billed traffic includes revenue from the following sources: domestic traffic, outgoing international traffic (including subregional outgoing traffic) and outgoing national traffic.

If the average price per minute and the volume of outgoing traffic are known, the turnover for domestic traffic can be determined.

The analysis of the matrix of national traffic and internal telephone exchange traffic allows the distribution of domestic traffic between local (urban) traffic and trunk (interurban) traffic, to be determined.

All the data are entered in the following window:

Traffic Estimation - Commercial Data

Technical Data

International Out	2 500 000	National Out	500 000
Urban in domestic traffic	67.00 %	Int'l traffic at normal price	25.00 %
		Domestic traffic at normal price	75.00 %

Commercial Data

Turnover billed to local customers: 20 000 000 000

Average Int'l Prices

	Normal	Reduced
Average price for 1 min of International communication	5.3737	3.7778
Average price for 1 min of Urban communication	25.0000	10.0000
Average price for 1 min of Interurban communication	85.0000	50.0000
Average price for 1 min of communication with other local operators	100.0000	50.0000

Traffic Estimation - Revenues

This method allows for estimation of domestic traffic (urban and interurban) based on revenue data that should be extracted from the accounting.

The following technical data must be entered:

- Annual international outgoing traffic in minutes;
- Annual national outgoing traffic in minutes;
- Percentage of urban traffic

OK Cancel

The average prices (normal and reduced tariffs) must be known for the international (including the subregional), the urban, the interurban and the interconnection traffic. The urban and interurban tariffs are usually known.

The expression of the urban tariff per minute in local currency may, however, require some intervention at the telephone exchange level with a view to determining, for a data observation period, the total amount and the duration of the corresponding urban communications.

The international average prices may be a bit more difficult to determine, which is why a dedicated tool, activated by the *Average Int Prices* button, is available in the system. It requires, for each international and subregional relation, the entering of the annual traffic (incoming and outgoing), the settlement rate (incoming and outgoing) in SDR as well as the current normal and reduced prices in local currency for the outgoing traffic.

3.4 Validation

Once the traffic has been partially or fully estimated through one of the three methods mentioned above, the *Validate* button automatically sets the application to the *Manual Entry* mode. At this moment the results obtained from the estimation method are automatically copied. The user then has the possibility of manually entering missing data or modifying the existing data.

Additional data must now be entered. These will be used at a later stage by other processes:

- Percentage of the Capital in the Urban traffic;
- Percentage of the Province in the International traffic;
- Percentage of the Province in the National Outgoing traffic.

Traffic Estimation				Cost Elements	Unit Costs	Tariffs / Simulation
Method		<input type="text" value="Revenues"/> <input type="button" value="Capture"/>				
		<input type="button" value="Validate"/>				
		<input type="button" value="Generate Report"/>				
				% of the Capital traffic in urban traffic	<input type="text" value="12.35"/>	%
				% of Province in the international traffic	<input type="text" value="32.65"/>	%
				% of Province in the national out	<input type="text" value="23.00"/>	%
Traffic Estimation						
Urban	Interurban	Subreg Out	Subreg In			
<input type="text" value="339 179 985"/>	<input type="text" value="167 058 799"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
International Out	International In	Transit Int'l/Subreg	Transit Int'l/Int'l			
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
Transit Subreg/Int'l	Trans Subreg/Subreg	Nat In Single	Nat In Double			
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
Nat to Int'l	National Out	Int'l to Nat	Nat to Nat			
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			

A report containing all the traffic data can be generated. It can be seen on-screen, printed or exported to a text file:

Traffic Estimation

06.09.2002
Session: Champéry
User: ITU

Session Name	Method Name	Service Name	Traffic Volume
Champéry	Ticket Analysis	Urban	4'784
Champéry	Ticket Analysis	Interurban	245
Champéry	Ticket Analysis	International Outgoing	195
Champéry	Ticket Analysis	International Incoming	319
Champéry	Ticket Analysis	Subregional Outgoing	782
Champéry	Ticket Analysis	Subregional Incoming	613
Champéry	Ticket Analysis	International to International	158
Champéry	Ticket Analysis	International to Subregional	12
Champéry	Ticket Analysis	Subregional to International	391
Champéry	Ticket Analysis	Subregional to Subregional	85
Champéry	Ticket Analysis	National Incoming Single	176
Champéry	Ticket Analysis	National Incoming Double	318
Champéry	Ticket Analysis	National Outgoing	245
Champéry	Ticket Analysis	National to National	128
Champéry	Ticket Analysis	International to National	85

Pages: 1

4 Cost Evaluation

The second step of the application consists of evaluating all the costs related to the telephone services.

Depending on the accounting data available, two possible methods may be chosen: a cost evaluation based on analytical accounting or a cost evaluation based on general accounting. This choice has to be made when a session is created, but can be changed using the *Settings* tool in the *Session* menu.

COSITU
Session Settings Reporting Administration Help

Operator Name Country Year Currency FX Rate vs SDR
2002 EUR 2.7000

Traffic Estimation **Cost Elements** Unit Costs Tariffs / Simulation

Net Costs

Int'l Transmission	Nat Transmission
2'553'572	2'509'658
Int'l switch	Nat switch
1'812'196	0
Access Network	Invested Capital
0	1'445'453
Other common	Inefficiency
699'462	137'699

☒ General Accounting Compute
☐ Analytical Accounting Report
 Routing Table Costs Distribution

Cost specific to

International In Trf	873
International Trf	1'834
Far International Trf	1'747
Local Clients Trf	4'367
Local Operators Trf	873
Local Operators In	873

Cost Elements

This screen is the second step in the tool, to compute the cost-oriented tariffs. The amounts displayed here are the result of one of the two computation methods, based on **General** or **Analytical Accounting** respectively. They cannot be changed manually and they reflect the **Net Costs** and **Specific Costs** that will have to be dispatched among all the services and network segments. All of them are expressed in the local currency of the country.

The net costs are linked to the infrastructure of the company.

ITU - Champéry 16:59

4.1 Analytical Accounting

When analytical accounting is available, it should be possible to obtain detailed information regarding amortizations, operating costs and maintenance.

The following data should be provided: Annual amortization of equipment (telecommunications and energy), buildings and miscellaneous investments in the areas of switching (national and international), transmission (national and international), the access network and investments in structures.

The amortization period calculated for each network segment will be a weighted average of the amortization periods of the elements from which it is composed.

The data to be entered are the following:

- Amortization amounts for all segments

Double clicking on any field will activate a detail sub-window that allows the amount to be entered (Amortization, Compound Annual Growth Rate (CAGR) and Amortization Period) for each category defined in the analytical accounting.

The screenshot shows a dialog box titled "COSITU - Analytical Accountancy Tool". Inside, there is a section titled "Amortization - International Transmission". This section contains a table with four rows of asset categories and three columns for input: a value, CAGR, and Amortization period. The values are all set to 0. At the bottom of the dialog are "OK" and "Cancel" buttons.

		CAGR	Amortization period
Telecommunication Equipment	0	0.00 %	0
Energy Equipment	0	0.00 %	0
Buildings	0	0.00 %	0
Other Investments	0	0.00 %	0

- Running and maintenance costs for each segment

The screenshot shows a dialog box titled "COSITU - Analytical Accountancy Tool". Inside, there is a section titled "Maintenance - International Transmission". This section contains a table with four rows of asset categories and one column for input: a value. The values are all set to 0. At the bottom of the dialog are "OK" and "Cancel" buttons.

Telecommunication Equipment	0
Energy Equipment	0
Buildings	0
Other Investments	0

- Compound Annual Growth Rate of the prices (CAGR) for each segment
- Amortization duration for each segment
- Total of net fixed assets

4.2 General Accounting

If cost information is available only from general accounting data, a good knowledge of the network's cost structure may allow the carrying out of an initial allocation of overall amortization and operating charges to the network's various segments.

The cost structure can be calculated on the basis of the net fixed assets of the various network segments. The segments considered are international transmission, international switching, national transmission, national switching and the access network. Other investments that cannot be classified in one of these segments are added.

It frequently happens that this information cannot be drawn directly from the subaccounts in the general accounting data. In this case, a more detailed analysis may be necessary (often requiring inspection in the field): for example, the separation of fixed assets for international and national switching, the allocation of fixed assets in technical buildings to the various segments, the allocation of fixed assets in electrical power equipment to the various segments, etc.

The cost structure is indicated by the relative value of net fixed assets for each segment of the network, in proportion to the total net fixed assets.

The general accounting data provide subaccounts of charges. The following subaccounts must be identified:

- *Purchases and variations in stock:* Purchases of material; purchases of raw materials and associated supplies; purchases of stocks of raw materials and associated supplies; purchases of packaging; other purchases; variations in stocks of material; variations in stocks of raw materials and associated supplies; variations in stocks of other supplies.
- *Transport:* Transport for purchases of non-fixed assets; transport for sales; transport for third parties; transport of staff; mail and other transport charges.
- *External services:* Subcontracting; rental, leasing and associated charges; payments on leases and similar agreements; maintenance, upkeep and repair; insurance premiums; studies; research and documentation; advertising; publications; public relations; telecommunication charges; bank charges; intermediaries' and consultants' honoraria; staff training charges; royalties in respect of patents, licences and computer software, and similar charges; sundry subscriptions and financial assistance; payments to outside personnel; other outside charges.
- *Expenses for terminal traffic:* Payments made to other operators (national or international) for settlement charges, excluding transit charges.
- *Taxes (other than income taxes):* Direct taxes; indirect taxes; registration fees; tax penalties and fines; other taxes and levies.

- *Other charges:* Losses on accounts receivable from customers and other debtors; share of earnings on joint ventures; cancelled share of earnings in respect of partial execution of agreements covering several fiscal years; accounting values of current transfers of fixed investments; sundry charges.
- *Personnel charges:* Direct remuneration paid to personnel; lump-sum indemnities paid to personnel; social charges; remuneration and social charges of individual operators; remuneration transferred to outside personnel; other social charges.
- *Financial and similar charges:* Interest paid on loans; interest on leases and similar agreements; discounts granted; other interest (advances received and creditor deposits, blocked current accounts, interest on commercial and sundry debts); discounted commercial paper; exchange losses; losses on transfers of securities; losses on financial risks; financial provisioning charges. (Given that financial charges are a component of the cost of capital, they must be clearly identified so as to prevent any double counting.)
- *Amortization:* Operating amortization; financial amortization (e.g. premium on redemption of securities).
- *Provisions:* Operating provisions, financial provisions.

Cost Elements - General Accounting

Net Fixed Assets		Costs		Amortization	
<input checked="" type="checkbox"/> Repartition Known				<input checked="" type="checkbox"/> Repartition Known	
International Transmission	Distribution	Purchases and variations in stock	Transport	International Transmission	Amortization Period
533'334	33.33 %	1'000'000	1'000'000	291'149	10
International Switch		External Services	Costs for terminal traffic	International Switch	
320'000	20.00 %	2'000'000	1'000'000	291'148	10
National Transmission		Corporation tax	Personnel Charges	National Transmission	
533'333	33.33 %	1'000'000	1'000'000	291'148	10
National Switch		Other Charges	Financial Charges	National Switch	
0	0.00 %	1'000'000	4'624'454	0	10
Network Access		Amortizations	Provisions	Network Access	
0	0.00 %	1'000'000	58'665'365	0	10
Other		Total amount of costs		Other	
213'333	13.33 %	71'289'819		0	
Dispatch		Percentage of the cost for services other than telephone	12.66 %		
	0 %				

Cost Elements - General Accounting

The cost estimation using general accounting data is performed in two main steps:

- Computation of net costs;
- Computation of direct, indirect, common and special costs (common to general and

OK Cancel

The charges described above may not be generated solely by the telephone service. In this case, non-telephone charges must be individually identified and deducted. This is generally a straightforward procedure in low teledensity networks. However, if difficulties should arise in this regard, a cost deduction factor can be reckoned on the basis of the proportion of non-telephone revenues (this approximation assumes that prices are cost-oriented).

4.3 Other Costs

Once the direct costs have been estimated through the analytical or general accounting, the costs mentioned in the window below must be integrated in the model. These are the direct, indirect, common and special costs.

Cost Evaluation - Direct, Indirect, Common and Special Costs

Direct/Indirect Costs Net Financial Debt: 1 000 000 Long and Mid term Debts: 1 000 000 Equity: 3 000 000 Corporation Tax Rate: 0.00 %		Amort. period (required) International Transmission: 10 International Switch: 10 National Transmission: 10 National Switch: 10 Network Access: 10	Common & Special Costs Provisions for clients debts: 1 000 Provisions for local operators debts: 1 000 Provisions for Int'l operators debts: 1 000 Local operators relations: 1 000 International operators relations: 1 000 International Services Received: 1 000 International Transit Fees: 1 000 International Accounting Costs: 1 100 Product Design Costs: 1 000 Commercial Shops: 1 000 Advertising Costs: 0 Billing Costs: 1 000 Commercial Information System Costs: 1 000 Research & Development Costs: 15 000 Other Support Costs: 2 000
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Impact of monetary erosion on capital return and interest rates

Average Erosion Rate: 17.59 % Return on Equity: 36.383821 %

Expected Return with taxes: ☐

Average Loans Time: 10 Average Interest Rate: 35.39 %

Cost Elements
Direct, Indirect, Common and Special Costs

Four data sets have to be entered in order to compute these costs and finalize the Cost of Elements

4.3.1 Direct and Indirect Costs

Net Financial Debt

Long-term bank and financial debts plus short-term funds (discount, ...) minus financial investments minus available assets (cash, bank)

Long- and mid-term Debts

Long- and mid-term debts registered in the company's accounts.

Equity

Equity registered in the company's accounts.

Income Taxes

According to fiscal law, the State claims a part of the income as taxes. This value should only be entered if the user has specified that the cost of invested capital is taken after taxes.

4.3.2 Common and Special Costs

Provisions for National and International Debts

Amounts of provisions for uncertain National debts specific only to communications of local origin and amounts for provisions for uncertain International debts specific only to incoming communications of external origin.

Local Operator Relations

Costs of activities exclusively linked to the collection of accounts balance from other local operators. These are supported by the National Traffic.

International Operators Relations

Costs of activities exclusively linked to the promotion of the International traffic, the collection of accounts balance from international operators, etc. These are supported by the International Traffic.

International Services Received

Costs linked to services received from international third parties such as Intelsat, Rascom, International transit service providers, the maintenance of submarine cabling, etc.

International Transit Fees

Costs linked to international services received from international suppliers of transit services.

International Accounting Costs

Amount of costs linked to international accounting. These are separated in order to be able to allocate them to international communications only.

Product Design Costs

Costs generated by commercial studies of products that the operator offers or will offer to its customers. These costs are exclusively supported by the national customers.

Commercial Shops

Amount of costs linked to commercial agencies.

Advertising Costs

Amount of costs linked to advertising as far as these are accounted for in the category *Other Common Costs*.

Billing Costs

Amount of billing costs and customer relation costs specific only to communications of local origin.

Commercial Information System Costs

Amortization and operation costs linked to the commercial information system. These are exclusively supported by national customers.

Research and Development Costs

These functional support costs should be allocated to the infrastructure of the technical network. They are therefore distributed among all services that use the network. The distribution to the network segments is made according to their cost structure, unless a more precise allocation method is possible.

Other Support Costs

General support costs identified among common costs. These are allocated to all services according to the actual traffic in minutes, unless another, more precise allocation method, is available.

4.3.3 Adjusted Average Interest Rate and Return on Capital

Average Interest Rate

The average rate of interest can be determined by calculating the weighted average value on borrowings during the previous five years. For tariff purposes, it is preferable to use the evolution of the money rate on the international market in the telecommunication sector, and to take into account the risk factor for the given country.

Return on Capital

The after-tax return on capital can be calculated on the basis of net earnings, using the following relationship:

$$S = \frac{B}{E}$$

Where B is the net profit and E is the equity.

For tariff purposes, it is preferable to use the evolution of the rate of return on capital on the international market in the telecommunication sector, and to take into account the risk factor for the given country.

If, for any reason, the expected return includes the taxes, the check box *Expected Return with Taxes* must be checked, in order not to take taxes into account a second time in further computations.

Impact of Monetary Erosion

Entering the amount of monetary erosion and the average duration of the loans will allow the impact on the return on capital and the average interest rate to be computed (click the *Adjust* button).

These adjusted values will be used normally automatically in the rest of the computations.

4.3.4 Cost of Capital

The Net Financial Debt, the Equity, the Tax Rate and the Expected Return on Capital will be used for the computation of the Capital Cost. When the Expected Return on Capital has been adjusted (see chapter 4.3.3), this new value is automatically taken into account.

Important Note – The Long- and Mid-term Debt must always be entered in constant currency for the calculation of the Net Financial Debt. Otherwise the correction due to the monetary erosion would be applied twice.

4.3.5 Allocation of Common and Special Costs

All the costs specified in the *Common and Special Costs* part can be allocated very precisely to one or several services:

- The provision for client debts is specific to Telephone Services billed to Local Customers
- The provision for local operators debts are specific to the National Incoming Traffic
- The provision for international operators debts are specific to the International Incoming Traffic
- The management costs for local operator relations are specific to the National Traffic (Incoming, Outgoing, National to International and International to National)
- The management costs for international operator relations are specific to the International Traffic (Incoming, Outgoing, National to International and International to National)
- The costs for International Services received are specific to the Far International
- The fees paid for International Transit are specific to the Far International
- The International Accounting Costs are specific to the International Traffic (Incoming, Outgoing, National to International and International to National)
- The Product Design costs are specific to the Local Customers
- The Commercial Shops costs are specific to the Local Customers
- The Advertising costs are added to the Other Common Costs
- The Billing costs are specific to the Local Customers
- The Commercial Information System costs are specific to the Local Customers
- The Research and Development costs are allocated over all the services
- The Other Support Costs are added to the Common costs

4.3.6 Required Amortization Period vs Actual Amortization Period

The amortization period in accounts is governed by a policy that is rigorously monitored by government authorities. However, when the cost of services is being determined, the actual amortization period may need to be adjusted vis-à-vis the amortization period for accounting purposes. The effect of such an adjustment is twofold:

- The annual provision for amortization will have to be adjusted accordingly; and
- The figures for net fixed assets will also have to be corrected.

The result of such adjustment can be seen in the Cost Results window (Adjustment to current costs and net fixed assets):

Cost Results							
	Amortization	Current Cost Adjustment	Maintenance and Running Costs	Total	CAGR	Amortization Period	
						Actual	Required
International Transmission	291'149	518'762	1'739'293	2'549'204	1.121 %	10	10
International Switch	291'148	474'853	1'043'575	1'809'576	0.00 %	10	10
National Transmission	291'148	474'853	1'739'290	2'505'291	0.00 %	10	10
National Switch	0	0	0	0	0.00 %	10	10
Network Access	0	0	0	0	0.00 %	10	10
Total	873'445	1'468'468	4'522'158	6'864'071			
	Other Amortization	Net Fixed Asset					
	0	1'600'000					
OK							

This window is automatically displayed when all the cost data have been entered and the *Direct, Indirect, Common and Special Costs* window has been validated.

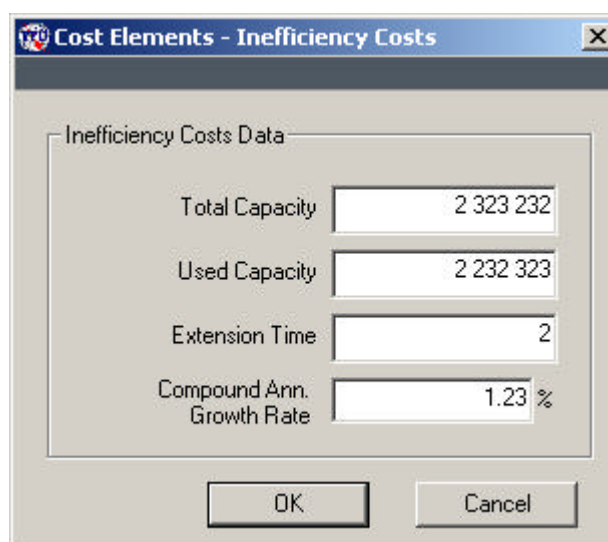
The Compound Annual Growth Rate (CAGR) that represents the growth (positive or negative) of prices for the equipment of the service concerned must be entered here. It will have a direct impact on the Adjustment to Current Costs.

4.3.7 Inefficiency Costs

The very last window allows the user to enter the data that is used to compute the inefficiency cost. It uses the Total and Used Capacity of the network, the Extension Time and the Compound Annual Growth Rate.

As regards mobile GSM networks, efficiency determination can be made in the same way by evaluating, at the level of base station controller (BSC), the potential traffic that results from the allocation of frequency channels of base stations compared with the flow of real traffic via the BSCs.

The Total Capacity is computed as the division of the potential traffic by the average traffic by user. The Used Capacity is computed as the actual traffic divided by the average traffic by user.



Inefficiency Costs Data	
Total Capacity	2 323 232
Used Capacity	2 232 323
Extension Time	2
Compound Ann. Growth Rate	1.23 %

5 Cost of Services – Unit Costs

5.1 Cost of Services

The costs calculated at this stage differ from tariffs as they do not include any components specific to tax policy or to State policies with respect to universal service obligations. They cannot be directly compared to actual tariffs.

Nevertheless, these costs are the basis for all further calculations that will eventually lead to the determination of tariffs that are cost-oriented and tariffs that are cost-based. They are computed by the distribution of the costs computed in the *Cost of Elements* step over all the services. This distribution is based on a matrix that allows the right cost to be allocated to the right service, and is weighted by the traffic (equivalent traffic for the lines 1, 2, 3, 4, 5 and 7 in the matrix displayed below, and real traffic for all the other segments).

Cost Distribution Matrix					
	Urban	Interurban	International Out	International In	Subregional Out
International Transmission	0.00	0.00	0.00	0.00	0.0
International Switch	0.00	0.00	0.00	0.00	0.0
National Transmission	0.00	2 509 658.00	0.00	0.00	0.0
National Switch	0.00	0.00	0.00	0.00	0.0
Network Access	0.00	0.00	0.00	0.00	0.0
Other Common Costs	468 639.54	230 822.46	0.00	0.00	0.0
Invested Capital	968 453.51	476 999.49	0.00	0.00	0.0
Specific to International	0.00	0.00	0.00	0.00	0.0
Specific to Far International	0.00	0.00	0.00	0.00	0.0
Specific to Local Customers	2 925.89	1 441.11	0.00	0.00	0.0
Specific to Incoming International	0.00	0.00	0.00	0.00	0.0
Local Operators Incoming	0.00	0.00	0.00	0.00	0.0
Local Operators	0.00	0.00	0.00	0.00	0.0
Inefficiency	0.00	0.00	0.00	0.00	0.0
Computed Inefficiency	92 258.33	45 440.67	0.00	0.00	0.0


5.2 Unit Costs

Telephone Service Costs: With costs being allocated to services as indicated above, the unit cost for each service is defined as being equal to the total cost of the service divided by its actual traffic.

Interconnection Service Costs: With costs being allocated to services as indicated above, the unit cost for each service is defined as being equal to the total cost of the service divided by its actual traffic.

Network Component Costs: The unit cost of each network segment is determined by dividing the consolidated value for the segment by the traffic.

COSITU
Session Settings Reporting Administration Help

 Operator Name Country Year Currency FX Rate vs SDR
Nmae [] 2002 [] 1.0000

Traffic Estimation Cost Elements **Unit Costs** Tariffs / Simulation

	Current Country	Average Group	10 Best Group	Min 10 Best Group	Max 10 Best Grc
Urban	0.0042	0.0000	0.0000	0.0000	0.0000
Interurban	0.0193	0.0000	0.0000	0.0000	0.0000
International In	0.0000	0.0000	0.0000	0.0000	0.0000
International Out	0.0000	0.0000	0.0000	0.0000	0.0000
Subregional In	0.0000	0.0000	0.0000	0.0000	0.0000
Subregional Out	0.0000	0.0000	0.0000	0.0000	0.0000
Transit					
International to International	0.0000	0.0000	0.0000	0.0000	0.0000
International to Subregional	0.0000	0.0000	0.0000	0.0000	0.0000
Subregional to International	0.0000	0.0000	0.0000	0.0000	0.0000
Subregional to Subregional	0.0000	0.0000	0.0000	0.0000	0.0000
Interconnection					
National Incoming Single	0.0000	0.0000	0.0000	0.0000	0.0000
National Incoming Double	0.0000	0.0000	0.0000	0.0000	0.0000
National Outgoing	0.0000	0.0000	0.0000	0.0000	0.0000
National to National	0.0000	0.0000	0.0000	0.0000	0.0000
International to National	0.0000	0.0000	0.0000	0.0000	0.0000
National to International	0.0000	0.0000	0.0000	0.0000	0.0000

Benchmarking Print Report

ITU - Champéry 10:19

When computed, the data can be benchmarked with comparable data obtained in other countries. These countries must belong to the same group as the present country in terms of Teledensity, Region or Development level. To obtain these data, a connection with a server must be established, and a login and a password obtained.

COSITU - Communication

Choose category

☒ Teledensity
☐ Region
☐ Development

User Dolores

Password []

Connect Close

For the selected group, the benchmark data will be the average unit cost per service, the average unit cost per service for the 10 best of the group, the minimum unit cost per service for the 10 best of the group and the maximum unit cost per service for the 10 best of the group.

6 Current Prices

In order to compare the cost-oriented tariffs with reality, and to compute the access deficit and profit or loss for each service, the current prices for all traffic must be entered.

Terminal Traffic		Interconnection	
Price for 1 minute of communication		Price for 1 minute of communication	
Urban	25	National In Single	50.0000
Interurban	82.0000	National In Double	55.0000
International In	513.8972	National Out	100.0000
International Out	210.4038	National to National	25.0000
Subregional In	194.2000	Int to Nat	400.0000
Subregional Out	168.3000	National to International	350.0000

USD parameters			
Contribution for Universal Service	Received for Universal Service	Connection Tax	Monthly rental fee
0.00	0.00	22'500.00	2'500.00

Average Int Prices OK Cancel

Average prices for the International Incoming, the International Outgoing, the Subregional Incoming and the Subregional Outgoing must be computed. A dedicated tool launched by the button labelled *Average Int Prices* allows this to be performed very easily.

Note – Settlement rates are expressed in SDR and not in local currency in this tool.

Traffic Estimation - International Prices Evaluation

Operator: ☒ International ☐ Subregional % of Int'l traffic at normal price: %

Normal Price: Settl. Rate Out (SDR): Settl. Rate In (SDR): Clear

Reduced Price: Traffic Out: Traffic In: Add / Modify Delete

Operator	NP	RP	Traffic In	Traffic Out	Settl. In	Settl. Out	Service
kuku	12.00	8.00	500 000	1 000 000	10.00	5.00	Subreg
tpsa	10.00	7.00	5 100 000	5 100 000	5.00	4.00	Int'l
swisscom	2.20	1.60	8 000 000	10 000 000	0.74	0.40	Int'l

International Tariff Estimation

This window allows the computation of the mean international and subregional prices. Here is the description of the data to be entered:

- **Operator name:** name of the international operator used.
- **International /**

OK Cancel

7 Tariffs and Simulation

The **cost-oriented tariffs** are computed here. The simulation function will allow the modification of some key parameters linked to political choices for universal service in order to figure out how they interact with the tariffs; the re-balancing tool will allow the modification of the domestic tariffs in order to make the access deficit null, thus obtaining **cost-based tariffs**.

COSITU

Session Settings Reporting Administration Help

Operator Name: Country: Year: Currency: FX Rate vs SDR:

Traffic Estimation Cost Elements Unit Costs **Tariffs / Simulation**

Tariff for 1 Minute

	Tariff	P&L
Urban	0.0050	0.0000
Interurban	0.0100	0.0000
International In	2.0807	0.3178
International Out	2.0921	0.0685
Subregional In	1.4826	8.5174
Subregional Out	1.4940	2.5060

Tariff for Interconnection

	Tariff	P&L
Nat In Single	0.1088	0.8912
Nat In Double	0.6744	0.3256
Nat to Int'l	1.8969	-0.8969
National Out	0.2500	0.7500
Int'l to Nat	1.8965	-0.8965
Nat to Nat	0.1088	0.8912

Transit Tariff

Int'l <-> Int'l: Int'l <-> Sreg: Sreg <-> Sreg: Access Deficit:

Parameters

Contribution for Universal Service: <input type="text" value="0.00"/> %	Received for Universal Service: <input type="text" value="0.00"/>
Connection Tax: <input type="text" value="0.00"/>	Monthly rental fee: <input type="text" value="0.00"/>

Price for 1 min: Urban: Interurban:

Current Prices: Compute tariffs Simulation Rebalance Report

Tariffs and Simulation

The very last step allows for computation of tariffs based on the effective costs and on the traffic. The main window displays these tariffs for the terminal, the interconnection and the transit traffic. Additionally, the access deficit is computed. The profit and loss are also displayed for the terminal and interconnection traffic, based on the difference between the computed tariff and the actual current tariff.

To get there, some additional data has to be entered:

The current prices (button "Current

ITU - Champéry 10:19

Based on the Unit Costs, the tariffs are computed taking into account the Universal Services Obligations, the profit tax, the payment received (connection tax and monthly fees) and the access deficit.

Compute Tariffs

This button allows the calculation of the cost-oriented tariffs based on the data entered or computed:

- Unit Costs
- Taxes
- Payments (connection tax and monthly rental fee)
- Contribution to Universal Service
- Amount received to compensate the Universal Service obligation

Once the tariffs have been computed, the access deficit is deduced; it is allocated across other services if positive.

Simulation

This function helps the user to figure out how a change in the domestic tariffs (and other parameters) would impact on the other tariffs and the access deficit. It does the same kind of computation as the one performed by the *Compute Tariffs* function but forces the domestic prices (urban and interurban) to the values provided by the user in the *Parameters* area.

Rebalance

This last function modifies the prices of urban and interurban traffic until the access deficit is exactly zero.

Report

This option runs the Tariff report. If access deficit is equal to 0, the report's name is *Cost-based tariffs*. Otherwise it is *Cost-oriented tariffs*.

Cost based tariffs			2002-08-29
			Session: Champéry
			User: ITU
Simulation parameters			
Connection Tax		0.00	
Monthly Rental Fee		0.00	
Contribution for Universal Service		0.00	
Received for Universal Service		0.00	
Service Name	Tariff	Profit & Loss	
Urban	0.1500	-0.1450	
Interurban	0.6299	-0.6199	
International Outgoing	1.7751	0.3855	
International Incoming	1.7648	0.6337	
Subregional Outgoing	1.2378	2.7622	
Subregional Incoming	1.2275	8.7725	
International to International	2.6435	-2.6435	
International to Subregional	2.1070	-2.1070	
Subregional to International	2.1070	-2.1070	
Subregional to Subregional	1.5697	-1.5697	
National Incoming Single	0.1492	0.8508	
National Incoming Double	0.6573	0.3427	
National Outgoing	0.2764	0.7236	

