

2014

Simple Function Point Functional Size Measurement Method

Measurement Examples

SiFP-01.00-EX-EN-01.01

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Versions

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EXAMPLE 1

Diving School: Development Project

EXAMPLE 1

Diving School: Development Project



Description

A diving school requires a system for managing their information: contractors, facilities, working shifts to effectively manage the coverage of shifts by the instructors that are available at the diving facilities and aboard several boats for touristic dives and diving courses.

Functional requirements

RF01

To handle the documentation for the insurance policies of the instructors and to be in compliance with the current legislation, the school needs to store the following information for each Contractor:

- unique serial number
- first name and last name,
- address of residence,
- town of residence,
- postal code of residence,
- telephone number,
- whether in possession or not of nautical licence.

In order to keep track of the 'career' of each Contractor, the school decided to associate with them a category, which can take the following values:

1. "Dive-master",
2. "Assistant Instructor",
3. "Instructor".

These values are fixed and are not expected to change over time; they can be assigned to each Contractor sequentially and represent the progress of 'careers' within the school (e.g. a new employee starts as "Dive-master" and advances over time to become "Instructor").

Forms must be created for entry, display, editing and deletion of Contractor's data.

In order to select the occurrence of data to edit, delete or view in detail, there will be an independent list box of items without accessory details: Serial number, Name and Surname.

A function key will activate all the functions, and eventually generate an error/outcome message.

The deletion of a Contractor is only a logical one: no data will be physically deleted, but will be labeled as obsolete. A Contractor cannot be deleted as long as there are working shifts associated with it.

RF02

The school also needs to manage the Facilities ("diving", "boat" or "rubber dinghy - RD"), to each of which a unique friendly name is associated (for example: "diving_moneglia", "diving_palau", "blue-arrow-boat", "goletta-boat", "Genova_RD" and so on).

For each type of facility, the following information must be stored:

- unique identifier of the Facility
- description
- type
- number of people it can host
- number of available cylinders
- presence or absence of portable toilet
- presence or absence of drinking water reserve.

Forms must be created for entry, display, editing and deletion of Facility data; a Facility cannot be deleted if there are active shifts.

In order to select the occurrence of data to edit, delete or view in detail, there will be an independent display of the list of items without accessory details: Identifier, Description, Type.

A function key will activate all the functions, and eventually generate an error/outcome message.

RF03

Lastly, in order to effectively manage shifts coverage, the school needs to handle the following shift availability information of Contractors:

- unique identifier of the working shift,
- serial number of the Contractor who is available (using a combo-box),
- date on which availability was provided,
- start date of the availability period,
- end date of the availability period,
- preferred facility (using a combo-box)
- status (initially set to "tentative shift").

Forms must be created for entry, display, editing and deletion of Shift availability data.

In order to select the occurrence of data to edit, delete or view in detail, there will be an independent display of the list of items without accessory details: Availability identifier, Contractor serial number.

A function key will activate all the functions, and eventually generate an error/outcome message.

RF04

Each Contractor can provide more than one availability, each one initially in "tentative shift" status.

When consolidating an availability within a "shift", the Secretariat select the desired availability and transform it using specific command in a "assigned shift"; he/she can change the start and end dates of the dive period, and can assign the status of "operating shift" to the availability. To delete an operating shift after consolidation, the same function to delete a tentative shift can be used.

RF05

The following queries are defined and required to:

1. Find out who, among the Contractors, already has a license and is therefore able to handle excursions at sea as "boatman" – attributes displayed: serial number, first name and last name, total.
2. Select all availabilities of Contractors received for any month of the current year (or other month and year) – attributes displayed: serial number, first name and last name, category, start date and end date of the availability period, and facility preference.
3. Calculate which is the maximum number of people managed by the school (considering both the dives and the boats), depending on the number and type of facilities in the archive.
4. Calculate the number of employees in each category (Dive-master; Assistant-instructor; Instructor) present in the archive – total and subtotal by category.
5. Select, by displaying first name and surname, the most "loyal" employees, i.e. the first three that have provided more availability since the beginning of the current year.
6. An enhanced version of query 4 (above), parametric by category – in other words the capability of selecting a single category to display the list of Contractors (First name and last name) in addition to their total.

The functional size solution of this development project is detailed below, using the attached "Solution Page".

EXAMPLE 1

Scuola SUB - Progetto di Sviluppo

Soluzione

Measurement Details

Application:		Diving School				
Project:		Development				
Measurement method:		Simple FP				
Function	Function Type	Description	SiFP	Mult.	Operation Type	SiFP tot
Data type functions						
Contractor	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Frame	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Shifts	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Transactional functions						
Contractor Management						
Enter Contractor	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Edit Contractor	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Contractor	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Delete Contractor	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Contractor choice list	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Facility Management						
Add Facility	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Edit Facility	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Facility	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Delete Facility	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
List for choice of Facility	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6

Shift Management						
Enter Shifts	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Edit Shifts	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Shifts	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Delete Shifts	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Favorite Facility Combo-box	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Choice of available Contractor number Combo-box	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Assign Shifts						
Shift selection list	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Assign shift	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Queries						
List of Contractors with nautical licence	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
List of availability of contractors by period	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Calculation of maximum number of people manageable by the school	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Statistics of Contractors present in archive by category	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Statistics of most habitual Contractors	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Statistics of Contractors present in archive with choice of category	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Total				27		131.4

Summary of Measurement

	SiFP
ADD	131.4
AUX	0
Total	131.4

DEVELOPMENT MEASURE

$$\text{DEV SiFP} = \text{ADD} + \text{AUX} = (131.4 + 0) = 131.4 \text{ SiFP}$$

APPLICATION MEASUREMENT AFTER DEVELOPMENT

$$\text{MSA SiFP} = \text{ADD} = 131.4 \text{ SiFP}$$

EXAMPLE 2

Diving School: FEM Project

EXAMPLE 2

Diving School: FEM Project

Description

With reference to the previously measured Diving School system, a Functional Enhancement Maintenance Project (FEM) for the Software is proposed.

Functional requirements

RF01

The user wants to eliminate the Contractor delete function.

RF02

The presence/absence of a ship doctor during excursions must be managed in the file DIVING FACILITIES.

RF03

For tax and safety reasons the function to delete availability shifts will no longer be required.

RF04

The user also needs to manage the information of course Participants and their enrollment in the excursion. The information managed will be

for Participants: Participant ID, LastName, FirstName, Date of Birth, diving license, license date.

To enroll in the excursion shift: Participant ID, Shift ID, excursion date, duration, final examination passed (YES/NO).

Selection of the participants in an excursion shift will be obtained by List Box on the Participant file, containing Participant ID, FirstName, LastName.

For Shift selection the List box already available in the basic application will be used.

A function key will activate the function, and eventually generate an error/outcome message.

RF05

The user also needs to be able to issue at the end of the course a certificate of attendance to all participants enrolled in an excursion.

The information to manage, in addition to the participant master data, are: the excursion shift the participant is enrolled in, the date of the excursion, the duration, the name of the instructor and of the doctor if present.

For Shift selection the List box already available in the basic application will be used.

A function key will activate the functions, and eventually generate an error/outcome message.

RF06

The user also needs to be able to issue a **Certificate of participation as instructor** to Contractors, in which the information will be, in addition to master data: Shift ID, Instructor ID, excursion date, ship doctor if present.

For Shift selection the List box already available in the application will be used.

A function key will activate the functions, and eventually generate an error/outcome message.

The proposed solution follows, including:

1. The functional size of the project Functional Enhancement Maintenance of the Software (FEM)
2. The new functional size of the system after the maintenance

EXAMPLE 2

Diving School- FEM Project

Solution

Measurement Details

Application:		Diving School			
Project:		Functional Enhancement Maintenance			
Measurement method:		Simple FP			
Function	Function Type	Description	SiFP	Operation Type	SiFP tot
Data type functions					
Contractor	UGDG	Unspecified Generic Data Group	7		
Frame	UGDG	Unspecified Generic Data Group	7	CHG	7.0
Shifts	UGDG	Unspecified Generic Data Group	7		
Participants	UGDG	Unspecified Generic Data Group	7	ADD	7.0
Enrollment in shift	UGDG	Unspecified Generic Data Group	7	ADD	7.0
Transactional functions					
Contractor Management					
Enter Contractor	UGEP	Unspecified Generic Elementary Process	4.6		
Edit Contractor	UGEP	Unspecified Generic Elementary Process	4.6		
Display Contractor	UGEP	Unspecified Generic Elementary Process	4.6		
Delete Contractor	UGEP	Unspecified Generic Elementary Process	4.6	DEL	4.6
Contractor choice list	UGEP	Unspecified Generic Elementary Process	4.6		
Facility Management					
Add Facility	UGEP	Unspecified Generic Elementary Process	4.6	CHG	4.6
Edit Facility	UGEP	Unspecified Generic Elementary Process	4.6	CHG	4.6
Display Facility	UGEP	Unspecified Generic Elementary Process	4.6	CHG	4.6
Delete Facility	UGEP	Unspecified Generic Elementary Process	4.6		
List for choice of Facility	UGEP	Unspecified Generic Elementary Process	4.6		
Shift Management					
Enter Shifts	UGEP	Unspecified Generic Elementary Process	4.6		
Edit Shifts	UGEP	Unspecified Generic Elementary Process	4.6		
Display Shifts	UGEP	Unspecified Generic Elementary Process	4.6		

Delete Shifts	UGEP	Unspecified Generic Elementary Process	4.6	DEL	4.6
Favorite Facility Combo-box	UGEP	Unspecified Generic Elementary Process	4.6		
Choice of available Contractor number Combo-box	UGEP	Unspecified Generic Elementary Process	4.6		
Assign Shifts					
Shift selection list	UGEP	Unspecified Generic Elementary Process	4.6		
Assign shift	UGEP	Unspecified Generic Elementary Process	4.6		
Enrollment Management					
Enter Enrollment	UGEP	Unspecified Generic Elementary Process	4.6	ADD	4.6
Edit Enrollments	UGEP	Unspecified Generic Elementary Process	4.6	ADD	4.6
Display Enrollments	UGEP	Unspecified Generic Elementary Process	4.6	ADD	4.6
Delete Enrollments	UGEP	Unspecified Generic Elementary Process	4.6	ADD	4.6
Queries and prints					
List of Contractors with nautical licence	UGEP	Unspecified Generic Elementary Process	4.6		
List of availability of contractors by period	UGEP	Unspecified Generic Elementary Process	4.6		
Calculation of maximum number of people manageable by the school	UGEP	Unspecified Generic Elementary Process	4.6		
Statistics of Contractors present in archive by category	UGEP	Unspecified Generic Elementary Process	4.6		
Statistics of most habitual Contractors	UGEP		4.6		
Statistics of Contractors present in archive with choice of category	UGEP		4.6		
Print Certificate of attendance	UGEP		4.6	ADD	4.6
Print contractor participation	UGEP		4.6	ADD	4.6
Participant Management					
Add Participant	UGEP		4.6	ADD	4.6
Edit Participant	UGEP		4.6	ADD	4.6
Display Participant	UGEP		4.6	ADD	4.6
Delete Participant	UGEP		4.6	ADD	4.6
Participant Combo-box	UGEP		4.6	ADD	4.6
					94.6

Summary of Measurement

	SiFP
ADD	64.6
CHG	20.8
DEL	9.2
AUX	0.0
Total	94.6

FUNCTIONAL ENHANCEMENT MAINTENANCE MEASUREMENT

$$\text{FEM SiFP} = \text{ADD} + \text{CHG} + \text{DEL} + \text{AUX} = (64.6 + 20.8 + 9.2 + 0) = 94.6 \text{ SiFP}$$

MEASUREMENT OF APPLICATION AFTER FUNCTIONAL ENHANCEMENT MAINTENANCE

$$\text{MSA SiFP after} = \text{MSA SiFP before} + \text{ADD} - \text{DEL} = (131.4 + 64.6 - 9.2) = 186.8 \text{ SiFP}$$

EXAMPLE 3

Tourist Services - Development Project

EXAMPLE 3

Tourist Services - Development Project



Description

The WonderTravel company plans to automate its travel package (Trips) management system, which will interface the travel Booking systems and the Trip Routes (PV).

Functional requirements

The system will consist of an online component based on a menu interface and a batch component that will run periodically.

ON-LINE

RF01

The travel package data will be stored in a **Trips** file using the Trip code as the primary key

The Trips will be entered using the following fields:

- Trip code (ID)
- Trip Route code (PV)
- names of tour guides qualified for the trip
- trip type (by car, bus, train, airplane, cruise ship, mixed)
- number of planned editions
- frequency of editions (monthly, quarterly, etc.)

The Trip code will be set automatically while the PV code will be selected from a drop-down list derived from the **Trip Routes** (PV) file that contains the planned tourist areas (e.g.: Northern Europe, North Pole, Tunisia, Turkey, Greece, United States, Cuba and the Caribbean, Japan, China, Egypt, etc), managed externally.

The names of the Tour Guides qualified to make that kind of trip will be set using a selection from a drop-down list obtained from the Guides Register file.

The Edition status field will automatically be set to the value "planned".

The trip type will be set using a selection from a drop-down list showing some valid values such as "cultural" or "pleasure", or "religious".

A function key will allow validation, congruence check (editing) and writing the entered data. Error messages are generated if required.

RF02

The Trips will be displayed with the same data contained in the previous paragraph and also with the data extracted from the PV file and the detail data of the Guide extracted from the Guides Register file mentioned in paragraph RF07. The selection will be based on the Trip code and a function key.

A Trips drop-down list identical to that of the previous section will be available to assist the user's selection.

The system will generate an error message if the trip code does not exist in the Trips file.

RF03

All fields contained in paragraph RF01 can be modified except the Trip code (since it is the key of the Trips file).

The edition status field can only be changed by making a selection from a programmed drop-down list containing the values "provided" and "deleted".

In any case, changing the Edition status field will be automatically update the field:

- number of editions to provide

subtracting the number of editions provided and/or deleted from the number of editions planned.

The same drop-down list of the Guides mentioned in paragraph RF01 will be available.

A function key will validate and write the data. Error messages are generated if required.

RF04

A Trip can be cancelled by selecting the Trip code and pressing a function key.

The same drop-down list of Trips referred to in paragraph RF01 will be available to select a trip to be deleted. If the Trip code does not exist in the Trips file, the system will generate an error message, and a cancellation confirmation message.

RF05

The user will be able to view information about Trip editions that belong to a certain Trip Route (PV). The user will have to enter the Trip code and press a function key. The Trip editions selected will be displayed with the following data:

- Trip code
- Trip description
- PV code
- PV description
- Guide name (all guides qualified for this trip)
- Guide qualification (all guides qualified for this trip)

- number of editions planned
- frequency of editions
- number of editions to provide
- for each edition
 - edition ID
 - edition date
 - edition status (planned/provided/deleted)
 - selected guide

The Trip description and PV description data is extracted from the PV file. The user can also request printing the displayed data.

RF06

Due to the seasonality of the trips offered by WonderTravel, the **editions of a Trip** are generated by selecting the Trip code (that must be present in the Trips file) and entering the date of the edition (must be a date greater than the edition date entered the first time). The system will automatically generate a unique edition code. The dates of the editions take into account seasonality related choices.

The edition status field will automatically be set to the value "planned". A function key will activate the writing of the data. Error messages are generated if required.

RF07

Information about Tour Guides will be kept in a **Guides Register** using the Guide's name as the primary key.

RF08

The data of the Guide can be displayed. The selection will take place using the name of the Guide and a function key. The system will generate a message if the Guide does not exist in the Guides Register. The same drop-down list of Guides as in paragraph RF01 will be available.

RF09

Guide data can be changed, except for the name of the Guide (since it is the key of the Guides Register file).

The same drop-down list of Guides as in paragraph RF01 will be available to select the Guide to change.

A function key will allow editing and saving the data. Error messages are generated if required.

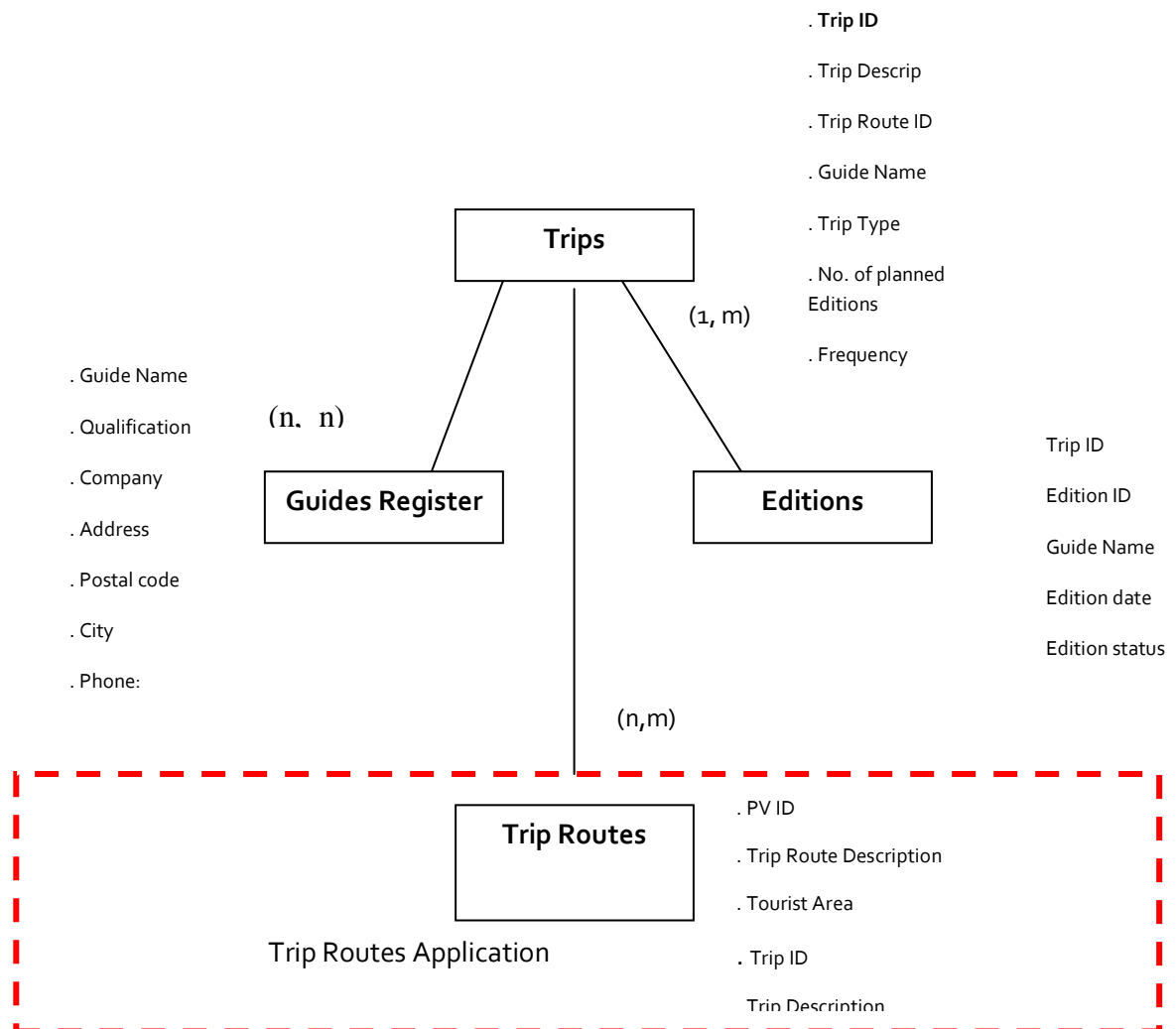
BATCH

RF010

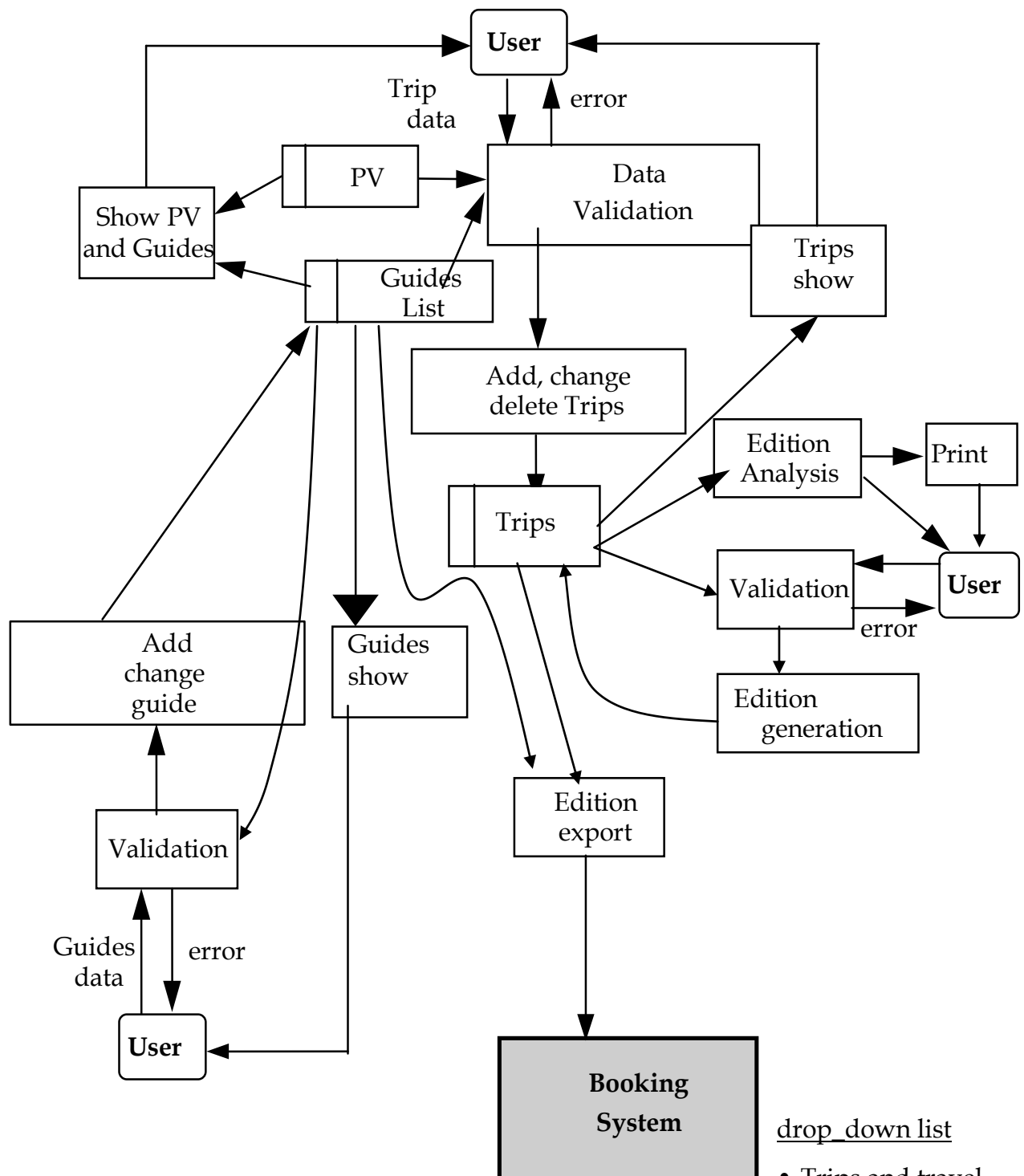
The data entered in the Trips file will be sent via a file to the **Booking System** to the Trip periodically. The information will be obtained from the Trips file and from the Guides Register.

ER Diagram

Travel Package Management Application



DATA FLOW DIAGRAM



drop_down list

- Trips and travel
- Guide

The functional size solution of this development project is detailed below, using the attached "Solution Page".

EXAMPLE 3

Tourist Services - Development Project

Solution

Measurement Details

Application:		Tourist Services				
Project:		Development				
Measurement method:		Simple FP				
Function	Function Type	Description	SiFP	Mult.	Operation Type	SiFP tot
Data type functions						
Trips	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Guides Register	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Trip Routes (PV)	UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Editions (included in Trips)						
Transactional functions						
Trip Management						
Add Trip	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Trip	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Edit Trip	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Delete Trip	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Show List Guides Register	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Show List Trip Routes	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Analyze Editions (Display/Print)	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Generate and Save Trip Editions	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Tour Guide Management						

Add Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Change Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Output flow for Booking System	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Total				15		76.2

Summary of Measurement

	SiFP
ADD	76.2
AUX	0.0
Total	76.2

DEVELOPMENT MEASURE

$$\text{DEV SiFP} = \text{ADD} + \text{AUX} = (76.2 + 0) = 76.2 \text{ SiFP}$$

APPLICATION MEASUREMENT AFTER DEVELOPMENT

$$\text{MSA SiFP} = \text{ADD} = 76.2 \text{ SiFP}$$

EXAMPLE 4

Tourist Services: FEM Project

EXAMPLE 4

Tourist Services: FEM Project



Description

With reference to the previously measured Tourist Services system, a Functional Enhancement Maintenance (FEM) Project for the Software is proposed.

Functional requirements

RF01

Information about the current political situation of the countries included in the trip in the PV file must be displayed, following functional enhancement maintenance of the Trip Routes system

RF02

Information about the experience of the tour guide must be handled in the tourism field in the Guides Register file.

RF03

Statistics about the travel packages most chosen by users must be provided.

RF04

Travel packages must be sent to the Ministry of Foreign Affairs.

The proposed solution follows, including:

1. The functional size of the Functional Enhancement Maintenance (FEM) project for the Software
2. The new functional size of the system after the maintenance

EXAMPLE 4

Tourist Services – FEM Project

Solution

Measurement details

Application:		Tourist Services				
Project:		Functional Enhancement Maintenance				
Measurement method:		Simple FP				
Function	Function Type	Description	SiFP	Mult.	Operation Type	SiFP tot
Data type functions						
Trips	UGDG	Unspecified Generic Data Group	7			
Guides Register	UGDG	Unspecified Generic Data Group	7	1	CHG	7.0
Trip Routes (PV)	UGDG	Unspecified Generic Data Group	7	1	CHG	7.0
Transactional functions						
Trip Management						
Add Trip	UGEP	Unspecified Generic Elementary Process	4.6			
Display Trip	UGEP	Unspecified Generic Elementary Process	4.6			
Edit Trip	UGEP	Unspecified Generic Elementary Process	4.6			
Delete Trip	UGEP	Unspecified Generic Elementary Process	4.6			
Show List Guides Register	UGEP	Unspecified Generic Elementary Process	4.6			
Show List Trip Routes	UGEP	Unspecified Generic Elementary Process	4.6	1	CHG	4.6
Analyze Editions (Display/Print)	UGEP	Unspecified Generic Elementary Process	4.6			
Generate and Save Trip Editions	UGEP	Unspecified Generic Elementary Process	4.6			
Tour Guide Management						

Add Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	CHG	4.6
Display Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	CHG	4.6
Change Guide	UGEP	Unspecified Generic Elementary Process	4.6	1	CHG	4.6
Output flow for Booking System	UGEP	Unspecified Generic Elementary Process	4.6			
Statistics of travel packages most chosen by users	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Sending travel packages to the Ministry of Foreign Affairs	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Total				8		41.6

Summary of Measurement

	SiFP
ADD	9.2
CHG	32.4
DEL	0
AUX	0
Total	41.6

FUNCTIONAL ENHANCEMENT MAINTENANCE MEASUREMENT

$$\text{FEM SiFP} = \text{ADD} + \text{CHG} + \text{DEL} + \text{AUX} = (9.2 + 32.4 + 0 + 0) = 41.6 \text{ SiFP}$$

MEASUREMENT OF APPLICATION AFTER FUNCTIONAL ENHANCEMENT MAINTENANCE

$$\text{MSA SiFP after} = \text{MSA SiFP before} + \text{ADD} - \text{DEL} = (76.2 + 9.2 - 0) = 85.4 \text{ SiFP}$$

EXAMPLE 5

Tickets Sale - Development Project

EXAMPLE 5

Tickets Sale - Development Project



Description

The "Ticket Sales (TS)" application handles on-line tickets sales for entertainment events.

It has a final user interface and a different interface for travel agency operators throughout the country.

All administrative and accounting tasks are handled by a separate "Back Office (BO)" application. The two systems interact by exchanging appropriate messages. For example the BO issues notifications concerning updating of the show calendar file and receives lists of tickets sold and to ship (see next section RF03).

Functional requirements

RF01

After selecting an event the user purchases a ticket and confirms it after entered the payment.

RF02

Payment through the travel agency operator can be made in cash or by credit card (in the latter case user authentication is required; if not registered, the user can register and manage its profile)

RF03

After payment, the ticket can be printed. The printed ticket includes the event name, name and surname of the purchaser, price, seats, and the code of the travel agency issuing the ticket.

When using the system from home or from a kiosk, the customer can enter the address of the place where they prefer the ticket to be sent.

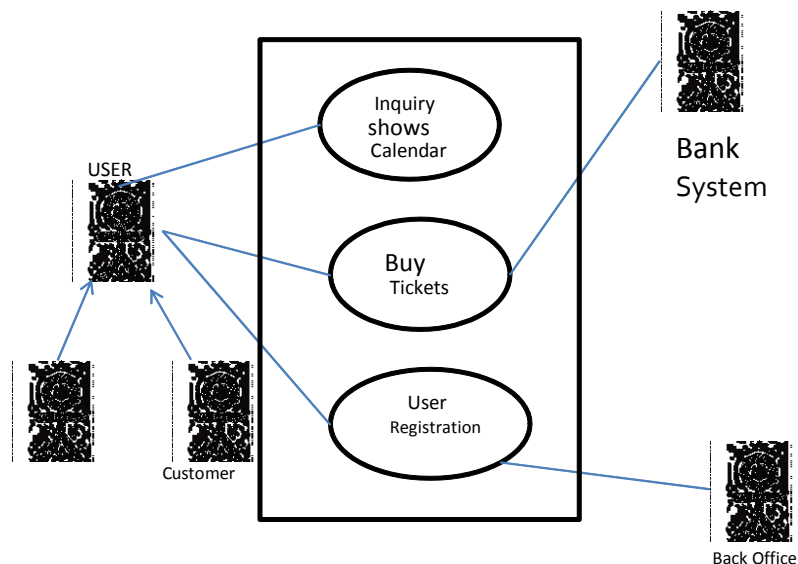
The supporting documentation is as follows:

- a) the list of the application data
- b) a use case diagram of the system
- c) a use case diagram of ticket purchase

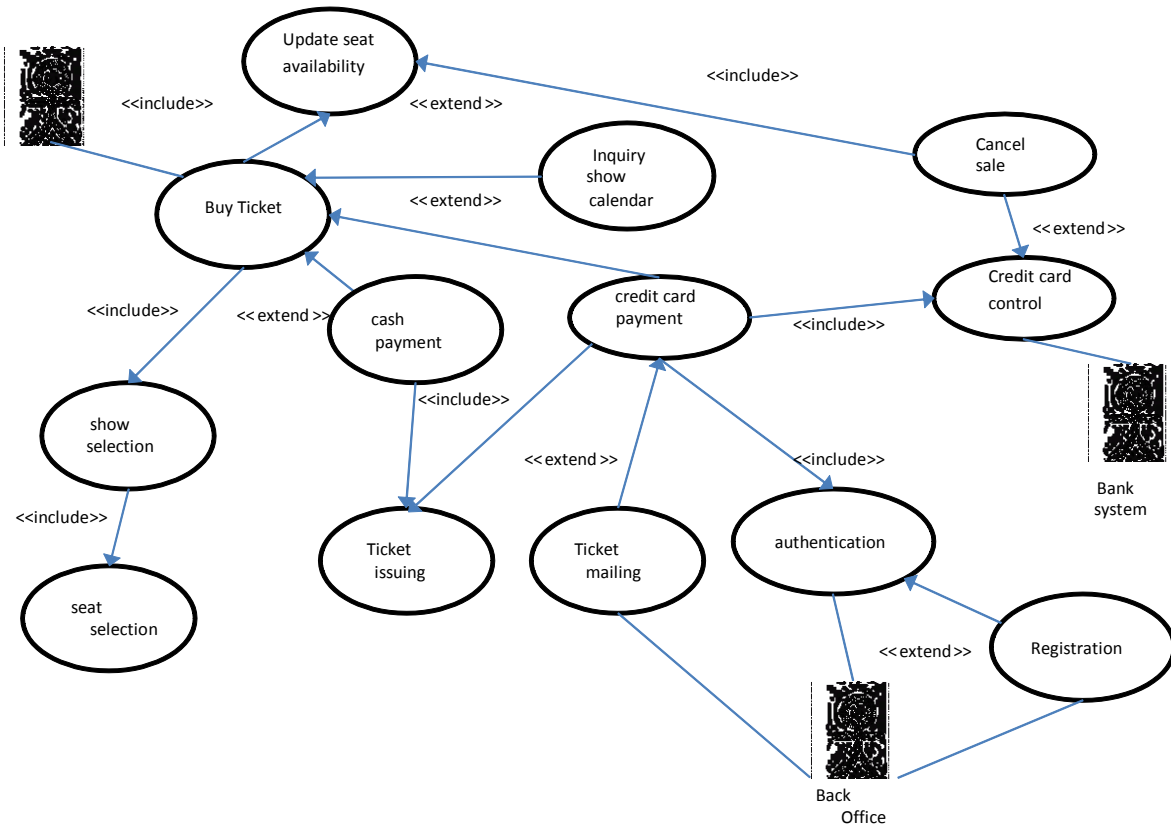
a)List of application data:

1. Calendar (EventID, Show Type, Title, Description, Ticket Price, location, Start date)
2. Tickets (EventID, FirstName, LastName, TaxID, Seats, Purchase Date, Payment Type, Total Payment, CardNumber (if Payment Type = credit card), Security Code (if Payment Type = credit card), Delivery, Shipping Address - Street, City, Province, Region - (if Delivery = shipment)
3. Seats available (EventID, Capacity, Seats available)
4. Registered users master data (10 attributes)
5. Credit cards (FirstName, LastName, TaxID, CardNumber, Type, ExpirationDate, Status (active/blocked))
6. Agencies (5 attributes)

b)System Use Case



c) Ticket Purchase Use Cases



* * * * *

The functional size solution of this development project is detailed below, using the attached "Solution Page".

EXAMPLE 5

Tickets Sale - Development Project

Solution

Measurement Details

Application:			Ticket Sales				
Project:			Development				
Measurement method:			Simple FP				
Function	Requirement	Function Type	Description	SiFP	Mult.	Operation Type	SiFP tot
Data type functions							
Registered users master data		UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Calendar (includes av. seats)		UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Tickets		UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Credit cards		UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Agencies		UGDG	Unspecified Generic Data Group	7	1	ADD	7.0
Transactional functions							
User Profile							
User enrollment	RF02	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Edit User	RF02	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Delete User	RF02	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display User	RF02	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Display Calendar	RF01	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Purchase Ticket	RF01	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Ticket issue	RF03	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Tickets sold sent to BO		UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Tickets to be shipped sent to BO		UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Total					14		76.4

Summary of Measurement

	SiFP
ADD	76.4
AUX	0.0
Total	76.4

DEVELOPMENT MEASURE

$$\text{DEV SiFP} = \text{ADD} + \text{AUX} = (76.4 + 0) = 76.4 \text{ SiFP}$$

APPLICATION MEASUREMENT AFTER DEVELOPMENT

$$\text{MSA SiFP} = \text{ADD} = 76.4 \text{ SiFP}$$

EXAMPLE 6

Tickets Sale - FEM Project

EXAMPLE 6

Tickets Sale - FEM Project



Description

With reference to the previously measured Ticket Sale system, a Functional Enhancement Maintenance (FEM) Project for the Software is proposed.

Functional requirements

RF01

Statistics about the most sold tickets by Show type must be provided.

RF02

Every week all ticket purchases must be sent to the accounting system.

RF03

A new function to cancel all tickets expired at a certain date must be provided.

RF04

A function to delete all registered users by selecting the last ticket purchase date must be provided.

RF05

There is also the requirement to add the logo of the event in the ticket printing.

The proposed solution follows, including:

1. The functional size of the Functional Enhancement Maintenance (FEM) project for the Software
2. The new functional size of the system after the maintenance

EXAMPLE 6

Tickets Sale - FEM Project

Solution

Measurement details

Application:			Ticket Sales				
Project:			Functional Enhancement				
Measurement method:			Maintenance				
			Simple FP				
Function	Requirement	Function Type	Description	SiFP	Mult.	Operation Type	SiFP tot
Data type functions							
Registered users master data	RF04	UGDG	Unspecified Generic Data Group	7	1	CHG	7.0
Tickets	RF03	UGDG	Unspecified Generic Data Group	7	1	CHG	7.0
Transactional functions							
Statistics of the most sold tickets by Show type	RF01	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
All tickets purchased in the period sent to accounting system	RF02	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Tickets expired at a certain date deleted	RF03	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Registered users by ticket purchase date deleted	RF04	UGEP	Unspecified Generic Elementary Process	4.6	1	ADD	4.6
Total					6		32.4

Summary of Measurement

	SiFP
ADD	18.4
CHG	14.0
DEL	0
AUX	0
Total	32.4

FUNCTIONAL ENHANCEMENT MAINTENANCE MEASUREMENT

$$\text{FEM SiFP} = \text{ADD} + \text{CHG} + \text{DEL} + \text{AUX} = (18.4 + 14.0 + 0 + 0) = 32.4 \text{ SiFP}$$

MEASUREMENT OF APPLICATION AFTER FUNCTIONAL ENHANCEMENT MAINTENANCE

$$\text{MSA SiFP after} = \text{MSA SiFP before} + \text{ADD} - \text{DEL} = (76.4 + 18.4 - 0) = 94.8 \text{ SiFP}$$

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