

**EP-29512**



## **METHOD ADOPTION REPORT**

***DELIVERABLE D2.2.1***

<b>Issuing Partner:</b>	Engineering SpA
<b>Contributing Partners:</b>	Siceas Service Srl
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## 1. Introduction

The present report accounts for the work done to evaluate the EMERGENCY method appointed along with the project to systematically estimate costs of EURO projects.

The work has been accomplished by the collaboration between Siceas Services that has acted as user and Engineering that has acted as provider and has also actively participated to the implementation of the method. This approach has enabled to considerably shorten the knowledge transfer work that, in particular, has been performed following the “training on the job” model. Although potentially subject to criticisms, the selected approach was in fact the only possible one given the time scale and the resources within which the whole project has been accomplished.

The work, in particular, has been structured in two main phases. During the first phase the main focus has been on the selection of the sample application to be used for the evaluation and on a preliminary “theoretical” evaluation of the method in order to provide early feedback to the development.

In particular, the selection of the application has been particularly accurate in order to assure the validity of the experiment either in qualitative and quantitative terms.

After this initial stage, following the method forms, the different information have been collected and used to produce the related estimate.

After this two operational stages, to make the related evaluation conclusions more generally valuable, the quantitative results (estimate) obtained have been compared with the results produced following the indications given by Gartner Group and by ABI (Italian Banking Association).

To report the work done, the document is structured in the following main sections:

***Application selection:*** briefly illustrating rationale and characteristics of the selected sample application,

***Euro Estimate:*** using specifically appointed forms, this section shows how the required information have been collected and elaborated to produce the estimate.

***Conclusion:*** this section provides some overall conclusions concerning both qualitative and quantitative value of the method. In particular, while qualitative considerations are necessarily based on personal considerations expressed by the evaluation team, we have tried to express quantitative consideration in more objective terms. To do this we have estimated the cost of the same Euro project using other approaches published by the two above mentioned primary organisations.

## 2. APPLICATION SELECTION

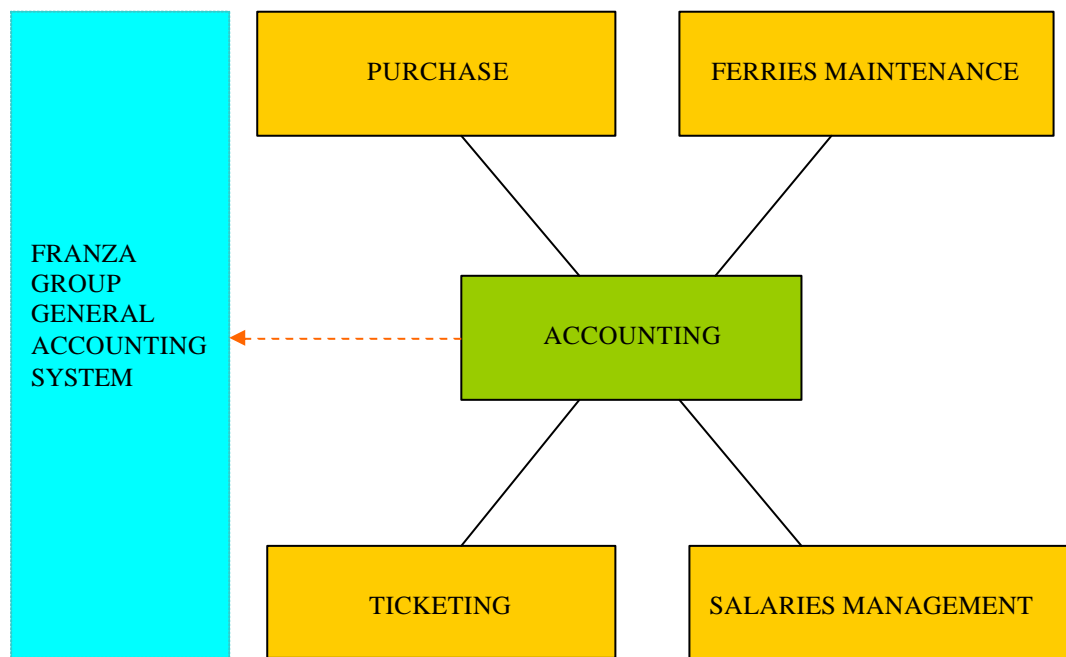
The selection of the application has been driven by two major factors. The first one is related with the need to assure its overall adequacy to represent a wide family of applications for which Euro conversion will be typically applied. With this respect, the selection has been driven towards a classical legacy monolithic application making intensive usage of financial operation.

The second is related with the business priorities of the Franza Group. In particular, although the whole IS will need to be adapted in the next year and half, based on more marketing reasons, Siceas people had already stated the need to set priorities for those applications involving external customers.

After an accurate investigation of the possible alternatives, the selected application has been the one managing the accounting of the ferry company of the group. This is formed by the following main software modules:

- ◆ Ticketing
- ◆ Purchase
- ◆ Salaries management
- ◆ Maintenance
- ◆ Accounting

From the logical point of view this application is structured as following:

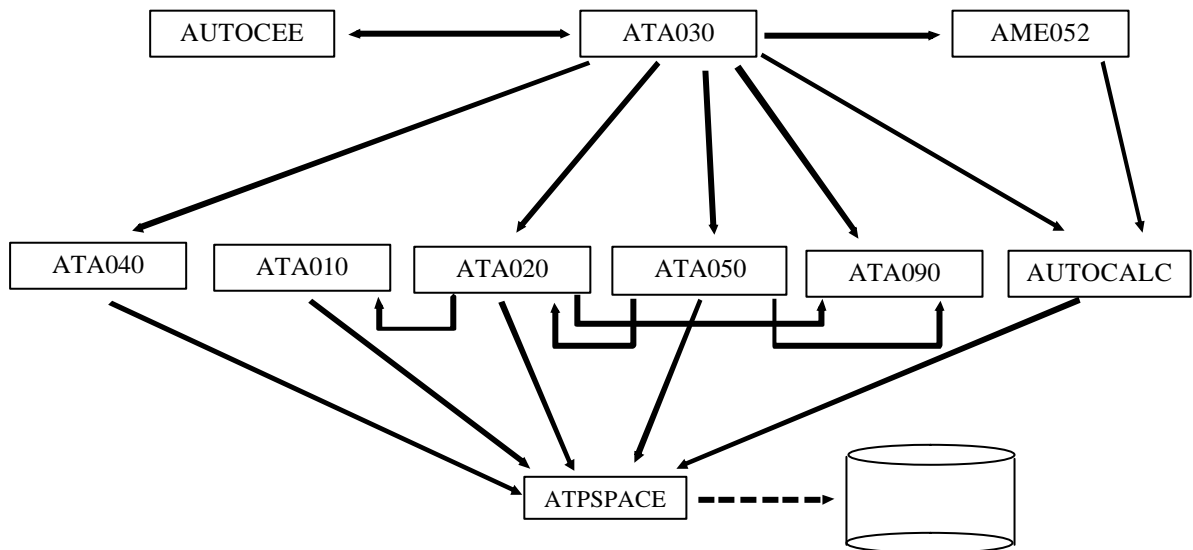


The first four components produce financial data that are elaborated by the accounting application and passed to the external system in charge for the general accounting of the Group. The dashed arrow identifies the exchange with the external applications.

From the technical point of view the application is a classical medium size Cobol based software and clearly make intensive usage of financial data. The related modules, in particular, are poorly documented although quite well-known due to the recent investigation made to make them Y2K compliant. Moreover and mainly with respect to the ticketing application, the system responded to the general priority (requirements) criteria set out by the user in that in charge for the computation and the issuing of the tickets for the ferries.

In particular, in fact, the ticketing module is in charge for passengers' booking and ticketing for all the ferries and routes. The application, that is owned by the naval goods and persons transport company of the Franza Group, is a small, but typical, poorly documented Cobol monolithic system based on a networked DB. The main documentation source are the source code and the user manual normally adopted by the company employees to issue tickets and to book accommodations on ferries in accordance with prizes stated by catalogues. Consequently, the work was totally based on any other information but the source and therefore, we have only been capable to report about the few structural information that we have extracted from the source and that were required to approach the problem.

From the source analysis we have extracted the following structural information (block diagram):



The rectangle in the picture represents programs while the arrows are the program-to-program call but the dashed one representing BD access.

### **3. EURO ESTIMATE**

The Euro estimate work has accomplished following the Emergency Method. In particular, following the sequence of documents provided as templates to elaborate the estimate. For simplicity reason, hereafter, we only report an aggregate view of the documents produced for each of the five listed modules. The global view provides the estimate for the whole accounting system described. With this respect, it is worth mentioned that this approach is applicable given the overall technical similarities of individual modules.

Finally, as general premise, it must be reported that, to make the collection and the elaboration of the information more easy to work out, we have preliminary appointed a set of related Excel sheets mapping those provided by the method but extensively automating the computation part.

The following sub-sections, as stated, report specific information as requested by related forms. In particular, anyway, the analysis has not considered the Application Catalogue (Doc0) being this document finalised to provide an overall inventory of the Information System.

#### **3.1 THE ESTIMATE**

As already anticipated, the production of the estimate has been completed strictly following the form sequence supporting the method steps. In particular, from the collection of overall information concerning the application to be adapted, it has been possible to elaborate the follow up information and to draw the final estimate.





<p>1.7. Is the application under <b>revision</b>?</p> <p>IF YES,</p> <ul style="list-style-type: none"> <li>• When?</li> <li>• For which reason?</li> </ul>	<p>1. <input checked="" type="checkbox"/> Yes      2. <input type="checkbox"/> No</p> <p>_____ Jan. 1999 _____</p> <p>1. <input type="checkbox"/> Technical reasons      2. <input type="checkbox"/> Functional reasons</p> <p>3. <input checked="" type="checkbox"/> Others ____ Year 2000 _____</p>
<p>1.8. Is <b>documentation</b> available?</p>	<p>1. <input checked="" type="checkbox"/> Yes      2. <input type="checkbox"/> No</p> <p style="text-align: center;">If Yes, which?      Is it up to date?</p> <p>1. <input type="checkbox"/> Functional Analysis      1. <input type="checkbox"/> Y 2. <input type="checkbox"/> N</p> <p>2. <input type="checkbox"/> Technical Analysis      1. <input type="checkbox"/> Y 2. <input type="checkbox"/> N</p> <p>3. <input type="checkbox"/> Data Dictionary      1. <input type="checkbox"/> Y 2. <input type="checkbox"/> N</p> <p>4. <input checked="" type="checkbox"/> User Manual      1. <input type="checkbox"/> Y 2. <input checked="" type="checkbox"/> N</p> <p>5. <input type="checkbox"/> Administration Manual      1. <input type="checkbox"/> Y 2. <input type="checkbox"/> N</p> <p>6. <input type="checkbox"/> Other: _____      1. <input type="checkbox"/> Y 2. <input type="checkbox"/> N</p>
<p>1.9. <b>EURO</b> compliancy assessment:</p> <ul style="list-style-type: none"> <li>◆ is a currency code included in archives?</li> <li>◆ Do monetary amounts in archives contain decimal digits?</li> <li>◆ Is the application multi-currency?</li> <li>◆ In your opinion, is the application EURO compliant already?</li> </ul> <p>IF NO, how broad do you consider the impact due to the EURO adaptation?</p>	<p>1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No</p> <p>1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No</p> <p>1. <input type="checkbox"/> Yes 2. <input checked="" type="checkbox"/> No</p> <p>1. <input type="checkbox"/> Yes 2. <input checked="" type="checkbox"/> No</p> <p>1. <input checked="" type="checkbox"/> High 2. <input type="checkbox"/> Medium 3. <input type="checkbox"/> Low</p> <p>WHY? ____ amount in ITL _____</p>
<p>1.10. <b>Functional Coverage:</b> number of enterprise business processes supported by the application</p>	<p>1. <input checked="" type="checkbox"/> High      2. <input type="checkbox"/> Medium      3. <input type="checkbox"/> Low</p>
<p>1.11. <b>Functional Quality:</b> application quality as perceived by the end user of specific enterprise functions</p>	<p>1. <input type="checkbox"/> High      2. <input checked="" type="checkbox"/> Medium      3. <input type="checkbox"/> Low</p>
<p>1.12. <b>Technical Quality:</b> adequacy of the adopted technology and compliance level with respect to company standards</p>	<p>1. <input type="checkbox"/> High      2. <input checked="" type="checkbox"/> Medium      3. <input type="checkbox"/> Low</p>



SEC. 3. TECHNICAL ASPECTS

<p>3.1 Is the application <b>Client/Server</b>?</p>	<p>1. <input type="checkbox"/> Yes                      2. <input checked="" type="checkbox"/> No</p> <p>If Yes, with how many levels? _____</p>
<p>3.2 Which is the running <b>environment</b>?</p>	<p><b>HOST</b> _____</p> <p>HW _____ IBM _____</p> <p>S.O _____ VSE _____</p> <p>TP Monitor _____ CICS _____</p> <p>DBMS _____ VSAM _____</p> <p>Prog. Lang.1 _____ COBOL _____ 100 _____ %</p> <p>Prog. Lang.2 _____ %</p> <p>Tools _____</p> <p><b>DEPARTMENTAL</b> _____</p> <p>HW _____</p> <p>S.O _____</p> <p>TP Monitor _____</p> <p>DBMS _____</p> <p>Prog. Lang.1 _____ %</p> <p>Prog. Lang.2 _____ %</p> <p>Tools _____</p> <p><b>PC</b> _____</p> <p>HW _____</p> <p>S.O _____</p> <p>TP Monitor _____</p> <p>DBMS _____</p> <p>Prog. Lang.1 _____ %</p> <p>Prog. Lang.2 _____ %</p> <p>Tools _____</p>

<p>3.3. Does usage of the application involve other <b>equipment</b> (HW) affected by the currency change? (ATM, POS, cash-counter, .....)</p>	<p>1. <input type="checkbox"/> Yes                      2. <input checked="" type="checkbox"/> No                  Number                      Type                  _____</p>
<p>3.4. <b>Number</b> (or estimate) of source <b>programs</b></p>	<p>TP Pgms                      Maps                  __115__                      __78__                      __5__                      _____                  1. <input checked="" type="checkbox"/> estimate                      2. <input type="checkbox"/> exact</p>
<p>3.5. <b>Number</b> (or estimate) of <b>statements</b></p>	<p>TP                  _240000_____                      _____                      __10000_____                  1. <input checked="" type="checkbox"/> estimate                      2. <input type="checkbox"/> exact</p>
<p>3.6. <b>dead-code</b> information:</p> <ul style="list-style-type: none"> <li>• % of unused <b>statements</b></li> <li>• % of unused <b>programs</b></li> </ul>	<p>_____%                  _____%</p>
<p>3.7. <b>Number</b> (or estimate) of <b>archives</b>.</p>	<p>Traditional Archives    __8_____</p> <p>DB2 Tables                      _____</p> <p>DL/I Segments                      _____</p> <p>Other DBMS                      _____</p> <p>1. <input type="checkbox"/> estimate    2. <input checked="" type="checkbox"/> exact</p>
<p>3.8. <b>person/months</b> effort last year for <b>maintenance</b> of the application</p> <p>3.9. <b>person/months</b> effort forecast for current year <b>maintenance</b></p> <p>For Packages fully maintained by the provider set the maintenance effort to ZERO</p>	<p>_0,5_____</p> <p>__0,5_____</p>

SEC. 4. FUNCTIONAL ASPECTS

<p>4.1. How many <b>Departments</b> use the application?</p>	<p>___1___</p>								
<p>4.2. How many end <b>users</b> of the application are there?</p>	<p>___75___</p>								
<p>4.3. How is the application used?</p>	<p>1. <input checked="" type="checkbox"/> by internal staff for internal purposes                  2. <input checked="" type="checkbox"/> by internal staff to support the provision of services to clients                  3. <input type="checkbox"/> by clients directly</p>								
<p>4.4. What <b>time-window</b> is used by the application?</p>	<p>1. <input type="checkbox"/> less than one month                  2. <input type="checkbox"/> between one month and one year                  3. <input type="checkbox"/> between one and three years                  4. <input type="checkbox"/> more than three years</p>								
<p>4.5. What time -window is relevant to the application for <b>archiving and management of historical data</b>?</p>	<p>1. <input type="checkbox"/> less than one year                  2. <input type="checkbox"/> between one and five years                  3. <input checked="" type="checkbox"/> more than five years</p>								
<p>4.6. What deployment <b>method</b> was used for the application?</p>	<p>1. <input checked="" type="checkbox"/> deployment for all users at the same time                  2. <input type="checkbox"/> deployment to groups of users                    number of months for the deployment due to the second scenario _____</p>								
<p>4.7. Nr. <b>Prospects/Modules/Prints</b></p> <ul style="list-style-type: none"> <li>• internal users</li> <li>• external users (eg. clients)</li> </ul>	<p>Blank paper / flash Forms</p> <p>___20___ _____</p> <p>_____ _____</p>								
<p>4.8. Number of <b>I/O FLOWS</b> to other applications imposed by the company:</p> <ul style="list-style-type: none"> <li>• from/to internal applications</li> <li>• from/to applications of companies in the same Group</li> <li>• from/to external applications</li> </ul>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">INPUT</th> <th style="width: 50%; text-align: center;">OUTPUT</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">___4___</td> <td style="text-align: center;">___2___</td> </tr> <tr> <td style="text-align: center;">___1___</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	INPUT	OUTPUT	___4___	___2___	___1___	_____	_____	_____
INPUT	OUTPUT								
___4___	___2___								
___1___	_____								
_____	_____								

<p>4.9. Number of <b>I/O FLOWS</b> to other applications imposed by other organisations (eg BACS):</p> <ul style="list-style-type: none"> <li>• from/to applications of other companies in the Group</li>   <li>• from/to external applications</li> </ul>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">INPUT</th> <th style="width: 50%; text-align: center;">OUTPUT</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	INPUT	OUTPUT	_____	_____	_____	_____			
INPUT	OUTPUT									
_____	_____									
_____	_____									
<p>4.10. How many other <b>applications</b> may be <b>impacted</b> by modifications to the one under consideration?</p>	<p>Owned by the Company</p> <p>___ general accounting_____</p> <p>Owned by other Company in the Group</p> <p>_____</p> <p>_____</p> <p>_____</p>									
<p>4.11. Do you know any application, developed internally, that may be impacted by modifications to the one under consideration?</p> <p>If Yes,</p> <ul style="list-style-type: none"> <li>• managed internally?</li>   <li>• managed by other companies of the Group?</li> </ul>	<p>1. <input type="checkbox"/> Yes                      2. <input checked="" type="checkbox"/> No</p> <p>1. <input type="checkbox"/> Yes                      2. <input type="checkbox"/> No</p> <p>1. <input type="checkbox"/> Yes                      2. <input type="checkbox"/> No</p> <p>If possible, list them:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%; text-align: center;">Office</th> <th style="width: 33%; text-align: center;">Application</th> <th style="width: 33%; text-align: center;">Environment</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	Office	Application	Environment	_____	_____	_____	_____	_____	_____
Office	Application	Environment								
_____	_____	_____								
_____	_____	_____								

### 3.1.2 DOC2 – Assessor Questionnaire

USER RELIABILITY: To be filled in by the assessor and used to adjust weights

Level of responsibility on the application		selected	
direct	0	0	
supervision	7		
none	14		
Technical competence			
high	0	0	
medium	12		
low	24		
seniority in the role			
more than 5 years	0	0	
between 2 and 5 years	12		
less than 2 years	24		
availability of the user			
complete	0		
medium	7	7	
scarce	14		
personal impression by the interviewer			
positive	0	0	
sufficient	12		
negative	24		
	<b>USER RELIABILITY is 7</b>	<b>adjustment factor for weights</b>	<b>0</b>
	<b>LOW (L) between 0 and 33</b>	0	
	<b>MEDIUM (M) between 34 and 66</b>	15	
	<b>HIGH (H) more than 66</b>	30	

### 3.1.3 DOC3 – Direct Effort Weights

<i>Parameter Description</i>	<i>WEIGHT</i>
<b>Documentation Availability (question 1.8)</b>	
<i>Functional Analysis</i>	
<b>Not available</b>	<b>0</b>
Not updated	7
Updated	15
<i>Technical Analysis</i>	
<b>Not available</b>	<b>0</b>
Not updated	12
Updated	25
<i>Data Dictionary</i>	
<b>Not available</b>	<b>0</b>
Not updated	7
Updated	15
<i>User Manuals</i>	
Not available	0
<b>Not updated</b>	<b>7</b>
Updated	15
<i>Administration Manuals</i>	
<b>Not available</b>	<b>0</b>
Not updated	10
Updated	20
<i>Other Manuals</i>	
<b>Not available</b>	<b>0</b>
Not updated	5
Updated	10
<b>Total Percentage</b>	
<b>LOW (L)</b>	<b>&gt;zero&lt;=</b>
MEDIUM (M)	<b>&gt;L, &lt;=</b>
HIGH (H)	<b>&gt;M, &lt;=</b>
<b>Percentage</b>	<b>33 plus (result "USER RELIABILITY")</b>
<b>7</b>	<b>66 plus (result "USER RELIABILITY")</b>
<b>LOW</b>	<b>100</b>
<b>Technical/Functional Adequacy</b>	
<i>Application Revision (question 1.7)</i>	
foreseen for technical reasons	5
foreseen for functional reasons	5
<b>foreseen for other reasons</b>	<b>15</b>
not foreseen	20
<i>Functional Coverage (question 1.10)</i>	
<b>high</b>	<b>20</b>
medium	12
low	0
<i>Functional Quality (question 1.11)</i>	
high	20
<b>medium</b>	<b>12</b>
low	0
<i>Technical Quality (question 1.12)</i>	
high	20
<b>medium</b>	<b>12</b>
low	0

<b>Total Percentage</b>	LOW (L)	>zero<=	33 plus (result "USER RELIABILITY")
	MEDIUM (M)	>L, <=	66 plus (result "USER RELIABILITY")
	HIGH (H)	>M, <=	100
<b>Percentage</b>	<b>59</b>	<b>MEDIUM</b>	

**Organisational Impact**

*Units using the application (question 4.1)*

<b>from 1 to 10</b>	<b>10</b>
from 11 to 30	30
more than 30	40

*Users using the application (question (4.2))*

from 1 to 20	10
from 21 to 60	30
<b>more than 60</b>	<b>40</b>

*Deployment Policy (question 4.6)*

<b>in one shot to all groups and users</b>	<b>0</b>
for groups of users in less than 3 months	10
for groups of users in more than 3 months	20

<b>Total Percentage</b>	LOW (L)	>zero<=	33 minus (result "USER RELIABILITY")/3
	MEDIUM (M)	>L, <=	66 minus (result "USER RELIABILITY")/3
	HIGH (H)	>M, <=	100
<b>Percentage</b>	<b>50</b>	<b>MEDIUM</b>	

**Maintenance Complexity**

*Initial Deployment date (question 1.4)*

<b>more than 5 years</b>	<b>15</b>
between 1 and 5 years	6
less than 1 year	0

*Application Replacement Shortly (question 1.6)*

foreseen for technical reasons	10
foreseen for functional reasons	10
foreseen for other reasons	20
<b>not foreseen</b>	<b>0</b>

*Operational Environment (question 3.1; 3.2)*

<b>host application</b>	<b>10</b>
C/S application	5
PC application	3

*maintenance effort in the last year (question 3.8)*

more than 5 months	35
between 3 and 5 months	20
between 1 and 3 months	10
<b>less than 1 month</b>	<b>0</b>

*maintenance effort foreseen this year (question 3.9)*

more than 5 months	20
between 3 and 5 months	10
between 1 and 3 months	5
<b>less than 1 month</b>	<b>0</b>

<b>Total Percentage</b>	LOW (L)	>zero<=	33 minus (result "USER RELIABILITY")/3
	MEDIUM (M)	>L, <=	66 minus (result "USER RELIABILITY")/3
	HIGH (H)	>M, <=	100
<b>Percentage</b>	<b>35</b>	<b>MEDIUM</b>	

**Structural Criticity**

<i>Number of Programs (question 3.4)</i>			
	less than 50		5
	<b>from 50 to 99</b>		<b>10</b>
	more than 99		20
<i>Number of Maps (question 3.4)</i>			
	less than 10		1
	from 20 to 50		5
	<b>more than 50</b>		<b>10</b>
<i>Number of Archives (question 3.7)</i>			
	<b>less than 10</b>		<b>3</b>
	from 20 to 50		8
	more than 50		15
<i>Number of Prints (question 4.7)</i>			
	less than 10		1
	<b>from 20 to 50</b>		<b>3</b>
	more than 50		5
<i>Number of I/O FLOWS (questions 4.8; 4.9)</i>			
	<b>less than 10</b>		<b>3</b>
	from 20 to 50		8
	more than 50		15
<b>Total Percentage</b>	LOW (L)	>0, <=	33 minus (result "USER RELIABILITY")/3
	MEDIUM (M)	>L, <=	66 minus (result "USER RELIABILITY")/3
	HIGH (H)	>M, <=	100
<b>Percentage</b>	<b>29</b>	<b>LOW</b>	

3.1.4 DOC4 - IT Characteristics

A	B	C	D	H	I	J	K	M	N	O	P
Company	Area	Sub-system	Application Acr.	Devel.Policy 1=internal 2=Package 3=ThirdParty 4=Outsourcing	App.Type 1=C/S, 2=Host, 3=PC	replacement before Euro advent. (" " = no)	Pgm TP	Pgm batch	Total pgm	Maps	jcl
SICEAS	ACCOUNT		FERR-ACC	1	2		115	5	120	78	
			Totals								

Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Vsam	DB2	DL1	Other	Tot. arc.	Num. prosp./ mod/ print	Tech/ funct. Adeq.	Organ. Impact	Structural criticality	Mainten. Complexity	Document. Level	Nr. of Interf. Flows
				8	20	Medium	Medium	Low	Medium	Low	7

### 3.1.5 DOC5 – Modification / Solution Table

Modification	Solution	Multiple currency	Duplicate application	Dual currency	Dual amounts	Mask Nat. Currency	Mask EURO	Single curr. EURO
	<i>decimalization</i>	yes	yes	yes	yes	no	yes	yes
	<i>dual-currency management</i>	no	no	no	yes	no	no	no
	<i>currency code management</i>	yes	no	yes	no	no	no	no
	<i>change of comput. algorithms</i>	yes	yes	yes	yes	no	yes	yes
	<i>modification of constants</i>	yes	yes	yes	yes	no	yes	yes
	<i>new functions</i>	yes	opt	yes	yes	no	no	no
	<i>output in dual-amount</i>	opt	opt	opt	yes	opt	opt	opt
	<i>converter to interface other applications</i>	opt	opt	opt	yes	opt	opt	opt
	<i>converter to interface archives</i>	yes	no	yes	no	no	opt	opt
	<i>conterter for TP inputs</i>	no	no	no	yes	yes	yes	no
	<i>converter for prints</i>	opt	opt	opt	opt	opt	opt	opt

#### Legend

**yes:** modification required

**no:** modification not required

**opt:** the modification is optional.

Its execution depends on the specific application, on the normative constraints and/or on strategic needs of the company

3.1.6 DOC6 - Euro Solution Characteristics

A	B	C	D	E	F	I	J	K	L	M	N	O	P
Appl. Acron.	Description	Curr. Code	Decimals	Multi-curr.	Appl Euro Compl	Limit deployment date	Solution type	Impact	Notes	Decimaliz 0=no 1=y (no ark) 2=y ark	Dual amount 0=no 1=y	Curr. Code 0=no 1=y	Algorit 0=no 1=simple 2=comp
FERR-ACC	accounting	yes	yes	yes	no			high		2	1	0	2

Q	R	S	T	U	V	W	X	Y	Z	AA
Costants & represent. 0=no 1=y	New funct. 0=no n=n^funct.	Dual amount output 0=no 1=y	Interface Converter 0=no 1=simple 2=complex	Arch. Convert 0=no 1=simple 2=complex	TP input Convert 0=no 1=simple 2=complex	Prints Convert 0=no n=n^fun	Other modifications 0=no n=n^fun	Cost for package or service (annual fee)	Annual fee for package	Cost for Euro adaptation by the provider
1	0	126	6	1	0	0	0			

**3.1.7 DOC7 – Cost Item / Modification Parameters**

<b>TYPE OF MODIFICATION REQUIRED</b>											
<i>decimaliz'n</i> 0=no 1=y (no archive) 2=y (with arch.)	<i>dual currency.</i> 0=no 1=y	<i>currency code</i> 0=no 1=y	<i>algorithms</i> 0=no 1=simple 2=complex	<i>constants &amp; representations</i> 0=no 1=y	<i>New functions</i> 0=no n=nr.functs	<i>dual currency output</i> 0=no n=nr. functs	<i>Interface Converters</i> 0=no 1=simple 2=complex	<i>Archive Converters</i> 0=no 1=simple 2=complex	<i>Input Converters</i> 0=no 1=simple 2=complex	<i>Print Converters</i> 0=no n=nr.functs	<i>Other changes</i> 0=no n=nr.functs
70%	70%	70%	30%	50%	10%	10%	10%		20%		10%
70%	70%	70%	50%	30%	10%	10%	10%				10%
70%	70%	70%		75%	10%	10%			20%		10%
								70%			
							100%				

**3.1.8 DOC8 – Effort Parameters**

	<i>Parameter</i>	<i>p/d</i>	<i>Notes</i>
	<b>Person/day cost</b>		<b>market cost (average)</b>
<b>1</b>	<b>effort required for the adjustment for each prog. and map</b>		To be applied for decimalisation, dual-currency, Currency, Code, Algorithms and Constants
	p/d to modify a map on host	0.3	
	p/d to modify a C/S map	0.2	
	p/d to modify map on PC	0.1	
	p/d to modify a program on host	1.8	
	p/d to modify a C/S program	1.3	
	p/d to modify a PC program	1	
<b>2</b>	<b>adjustments due to special kind of modifications</b>		
	simple archives (Type 1)	0	
	complex archives -VSAM- (Type 2)	5	add 5 p/d for the adaption of each archives
	simple algorithms (Type 1)	0	
	complex algorithms (Type 2)	p/d * 20%	add 20% to the total estimated p/d (Parameter 1)
<b>3</b>	<b>Additional effort for CONVERTERS</b>		To be applied to Interfaces, Archives, Prog_TP Prints
	Simple Converters (Type 1)	2	
	Complex Comterters (Type 2)	10	
<b>4</b>	<b>Standard values for new developments</b>		To be applied as for new functions
	new function on Host	7	
	new function on C/S	4	
	new function on PC	2	

3.1.9 DOC9 – Other Costs

			%	%	%	TOTAL
	Parameter	Value	Cost Increase for implementation	Other Costs for EDP personnel	Functional Analysis Costs	Other Costs Increase %
		High	7		7	14
	structural criticality	Medium	3		3	6
		Low	0		0	0
		High	10			10
	maint. complex.	Medium	5			5
		Low	0			0
		High		10		10
	organiz. impact	Medium		5		5
		Low		0		0
		High	0		0	0
	docum. availability	Medium	3		3	6
		Low	7		7	14
		High	0		0	0
	tech/func. adequacy	Medium	3		3	6
		Low	7		7	14
		Min. Value				5%
	TOTALS		15	5	10	30%
		Max. Value				40%

**3.1.10 DOC10 – Estimate**

Differently from the other documents, the Estimate one has been filled in reporting both the aggregate value and the one for individual applications. This enable to appreciate how the costs are shared among the different applications considered.

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>J</b>	
<i>Area</i>	<i>Application</i>	<i>Acronym</i>	<i>Platform</i>	<i>Implement Effort (p/d)</i>	<i>Other effort (p/d)</i>	<i>Total Effort (p/d)</i>	<i>Estimate ITL*1000</i>	<i>Notes</i>
salaries	Ferr-Acc	sal	host	308	56	364	246.400	
purchase	Ferr-Acc	pur	host	37	7	44	29.600	
ticketing	Ferr-Acc	tick	host	48	9	57	38.400	
ferr.maint	Ferr-Acc	maint	host	11	2	13	8.800	
account	Ferr-Acc	acc.	host	34	6	40	27.200	
<b>TOTAL</b>		<b>ferr-acc</b>	<b>host</b>	<b>437</b>	<b>80</b>	<b>517</b>	<b>350.400</b>	

## 4. CONCLUSION

The evaluation of the Emergency method, as well as the construction of the method itself, has been largely driven by the need to address concrete and practical needs. In particular, the method seems to properly and realistically address the different issues to be considered when facing an estimating work for Euro adaptation projects.

This statement well summarises the positive conclusion of the evaluation work and more extensively reported in the following questionnaire jointly filled in by the evaluation team members.

### 4.1 EVALUATION QUESTIONNAIRE

**Learning complexity.** Can the method be learned easily by consultants who are giving advice to customers on converting their systems for EMU? Is the method documentation appropriate and easy to use?

*The method is well documented easy to learn. Moreover, it offer a wide investigation of the different problems to be considered when planning an Euro conversion project and, with this respect, the Emergency results are clearly a good instrument for consultancy services.*

**Usability.** Can the method be applied in practice without extensive overhead and documentation? Can the method return useful results with relatively little effort and does additional effort improve the value of the results?

*The method has been initially designed and worked out to be usable and to respond to concrete needs. Moreover the provision of well defined forms that guide the adopter step by step hardly reduce the need for intensive preliminary training. With this respect, it must be said that the provision of the Excel sheets automatically elaborating information to produce the estimate further facilitate the work in that enabling to do not care at all about any computation issue.*

**Scope and applicability.** To what classes of system can the method be applied? Are there classes of system where the method is clearly inapplicable?

*Realistically speaking, the undertaken evaluation does not have the breath to state if the method is best suited for specific topology of application only. On the other hand, as general consideration, we can say that the approach suggested seems to consider all the typologies of applications and, moreover, that the possibility to weigh parameters helps, in case of need, to further tune the computation to take into account specific situations.*

**Strengths and weaknesses.** What are the strong points and the weak points of the method? How can the weak points be addressed? What is missing from the method?

*The major strength of the method is clearly the problem oriented approach used at design time and makes it fully usable without major preliminary training. The major weakness is probably the computational complexity to get the estimate from the*

information. This aspect, anyway, is hardly mitigated by the possibility to implement the formulas (as done for the experiment) using an Excel sheet that allow to apply them automatically.

**Compatibility.** Is the method compatible with other approaches and tools that are used in the EMU conversion. If not, what are the incompatibilities?

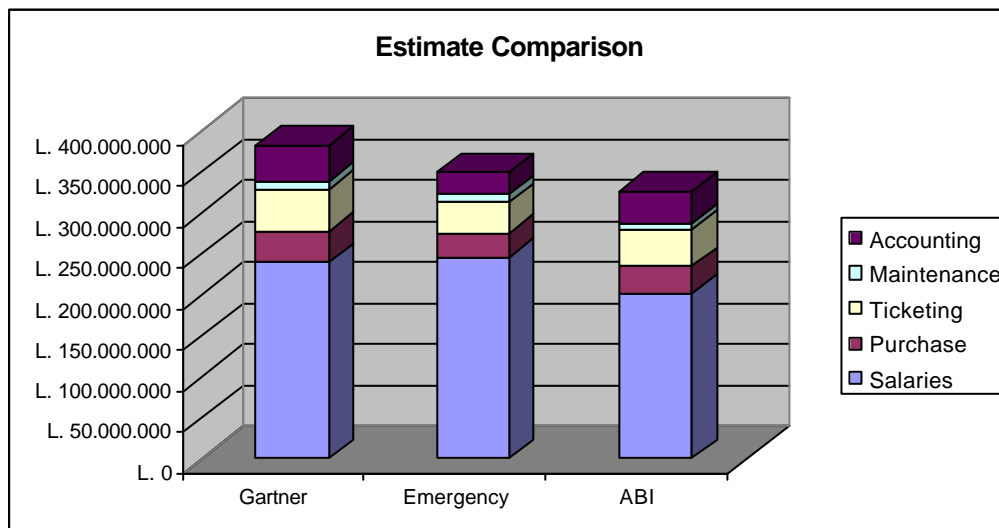
*Proposed approaches to estimate Euro projects are proposed by all major players in the software market as well as by associations. At the best of our knowledge, the related approaches are generally fully compatible with the one proposed by Emergency in that based on the number of source code.*

**Helpfulness.** In what ways was the method helpful in tackling the problem of Euro conversion?

*The method helps to plan and estimate project and enables to preliminary quantify the resources that will be necessary to accomplish the project.*

**Alternatives.** Are there any alternative approaches? How does the method compare to these alternatives?

*As stated all the main players propose their own approach to estimate Euro project. To say which is the best and what are the differences is quite difficult provided that the overall philosophy is generally similar. On the other hand, also to prove the validity of the results obtained with Emergency, we have applied the approaches proposed by Gartner Group and by ABI (Italian Banking Association) to the sample application. The hereafter reported diagram show the results of the comparison and, in some way, enables to appreciate how the results obtained by the Emergency experience are also valuable from the quantitative point of view.*



*For Gartner, the Estimate is computed considering 1 USD per statement (it must be noted that this rate has been published almost 2 years ago when the UDS was much weaker than today). The Estimate from ABI is based on the assumption that the time to modify a program is 3-4 person days. For our comparison we have used 3,5 days for one program at a cost of 800.000 ITL per day.*