3.5 *Evaluate the candidates*

This section describes how to judge found possible solutions.

It is based on all specified absolute demands a product must satisfy to become a true candidate, and the list of all desired functions or capabilities on which an evaluation and thus a comparison of the products is based.

A suitable tool for this evaluation is a so called Comparison Grid, as an extension of the requirement list **table** with all possible solutions (products) in a **matrix**. One Evaluation worksheet per solution can also be chosen.

This evaluation might be done at two different levels of ambition, corresponding to the Pre-study and the Analyse and Design phase respectively, described in the Model chapter. The **rough** evaluation corresponds to "Analyse and Design Possible Solutions" on page 8, and the **detailed** evaluation to "Analyse and Design the Solution" on page 11.

3.5.1 Evaluation phases

3.5.1.1 Rough evaluation

This section is to be used only briefly within the first phase, the pre study, of a PP evaluation. For example, not all parties mentioned below must participate in the rough evaluation of each possible candidate.

The major question to answer here is:
What solutions are of interest for the detailed evaluation to be done in the design phase ?

Here products and own solutions are eliminated if they:

- are not realistic
- do not satisfy **all** absolute demands
- have other obvious major shortcomings

The work can be done in various levels of detail:

- Documentation study
  Use announcements, magazine articles, presentaion material, brochures and product manuals

- Questions and answers from vendor
  Make sure that all demands are clearly satisfied

- Information from reference installations
  In addition to those given by vendor, own contacts at other installations are preferable.

- Reports from evaluations done
  Watch reliability!

3.5.1.2 *Detailed evaluations*

In a later phase, the detailed product comparison rules in this section shall be used in detail, to verify to what degree remaining candidates really meet all requirements.

That can be done by a deeper study of the same kind as described above.

It may also be complemented with vendor presentations, or even education, in order to determine how the product works and to be able to do appropriate testing.

Because, a product installation at VD must always be done to **test** these candidates. This test must be very well planned, as it might involve several persons during a limited test period time.

As a complement to these tests, a product presentation can be done by the project group, where product experiences and test results are presented to people not having the opportunity for detailed testing.

Such a presentation should be followed up by a questionnaire in which the opinions of the participators are noted.

3.5.2 Parties involved

In the detailed product comparison, all parties pointed out in the evaluation preparation, as described in appendix A, section 'Personnel involved', Reference and Test/evaluation groups, shall be involved.

This includes the same various personnel categories as in the creation of the requirement list, see section above.

Thus, in a memo or other questionnaire form, after all studies, tests and presentations have been done, ask for their opinions concerning absolute demands and requirements according to the rules within this section.

3.5.3 Test planning

In order to effectually use a limited test period, this must be carefully planned:

1. order product for test
2. plan for installation when product delivery can be expected (include possible delay!).
3. describe how test is to be done, include and plan for any vendor education or presentations
4. plan for different levels of testing
    - base test after installation (verify runability)
    - base test after customization needed

(verify specific VD options)

- central functionality test
  (learn how product works)
- central operational test
  (learn how product is operated)
- central performance test
  (measure resource consumption etc)
- decentralized functionality tests
  (application and operation oriented)

5 inform all test personnel involved WHEN and HOW the test is going to take place. Include how test results are to be reported.

6 install and verify product

7 perform planned tests

8 gather and summarize all test results
(by means of the Evaluation worksheet)

As an addition to product tests, you can also:

- plan and invite participants to any evaluation presentation
- perform these presentations
- ask for opinions
- gather and summarize all opinions received
  (means completing the Evaluation worksheet)

3.5.4 Evaluation worksheet

From the TABLE in the Requirement list create a MATRIX with one column for each candidate to be evaluated.

Instead of such a matrix one separate list per product can be chosen, where the original requirement list is complemented with estimate values and considerations. A comparison matrix then can be created only on a summary level.

All specifications in the requirement list should be included in an evaluation worksheet.

3.5.5 Estimating candidates

All instances involved then shall judge each candidate to estimate

1 if each absolute demand specified really is satisfied

2 an average RATING of the products within each area

Also to be included is a brief description, with comments, within each area, of the opinions received.

3.5.6 Rating of candidates

Estimate within each area how well a candidate meets the specified requirements.

First decide whether the product satisfies each absolute demand. Answer YES or NO and add appropriate comments.

Then consider the product rating for each requirement:

Very well covered by product	RATE=5
Good	RATE=4
Satisfactory	RATE=3
Doubtful	RATE=2
Not very well	RATE=1
Not at all	RATE=0

3.5.7 Average rating

Estimate, in a fair way, an average rating for each product within each area. This could be done by calculating the averages, or by discussion within the project group, carefully considering all opinions received from the reference group involved.

These opinions shall also be briefly described and added as an extension to the Evaluation worksheet in the final evaluation report.

3.5.8 Total points

Multiply average RATING with area WEIGHT to calculate the total POINTs for each candidate.

This is best done in a 'Final area summary' table, as shown in Appendix D.

This completes the Evaluation worksheet. From this the best candidate can hopefully be chosen.

3.5.9 Work checklist

The working order in this task may be:

1 Estimate how the solutions/products satisfy the requirements (YES/NO, RATING and comments for absolute demands, RATING from 0-5 for desired capabilities)

2 Calculate POINT for each requirement by multiplying WEIGHT (999 counted as 30) by RATING.

3 Calculate total rating for each area by dividing the sum of points received by maximum number of points, multiplied by 5. This gives SUMMARY RATING of product within an area.

4 Calculate total POINTS for each area in table Final area summary, by multiplying total WEIGHT by this SUMMARY RATING.

3.5.10 Work skeleton

Area/group title:		WEIGHT	RATING	POINT
a.	Absolute demand	999	Y 4	120
	Comment:			
	This is ...			
b.	Strongly desired capability	25	5	125
c.	Less important desired capability			
	(explanation, if needed)	5	1	5
	Summary:	300	4.2	250

General comments about the area estimate should follow here

3.5.11 Examples

An example of an Evaluation worksheet, based on a Requirement list, is to be found in Appendix C.

In Appendix D a Final area summary table for one product is shown.

3.6 *Evaluating effects*

This section describes the procedure of determining how a chosen software product will affect the business.

This work corresponds to "Evaluate effects" on page 9 and "Evaluate solution" on page 12 in the Model chapter.

3.6.1 Organization and staff impact

Define all changes within Volvo Data and the customer companies concerning personell usage. First of all this means the amount of man-time needed, or saved, in various functions, to handle the new solution, compared to the old one.

It also mean that e.g. an appropriate product responsible person shall be chosen. To be prepared to act when an investment decision will be made, for a proper handling of the product concerning purchase routines and product calculations etc.

3.6.2 Price list impact

Define how the investment will affect the product-oriented cost that are reflected in Volvo Data price list. This will indicate the impact on customer costs with new prices next year.

3.6.3 Miscellaneous cost considerations

Consider all of the computers even outside Volvo Data. Contact the purchase department for advice. In this regard, matters such as license disposition affect the vendors price, which later can influence your cost estimate.

Also evaluate routines which affect the cost estimate, for both mantime and machine costs, e.g. maintenance, supervision, release of diskspace etc.

3.6.4 Miscellaneous savings considerations

What affects the computer capacity? Can we delay the computer upgrade ? How can we affect the storing-capacity ? Is there money to save by delaying or not making the investment?

Of course saved man time, within all affected functions at VD as well as at the customer companies, shall be included.

Also always include man time etc saved at other GGG sites, as described in "GGG importance" on page 3.

3.6.5 Total costs and savings

Calculate the cost of obtaining the software. In this regard consider the internal depreciation by 41%/year of the agreed price which initially burdens the product with less cost. Other costs as described in earlier sections are then to be calculated.

There could also be other costs to be included. Think twice!

Example of COSTS:

```
THE COST OF OBTAINING  for X computers                         90.000

INITIAL COSTS:
   Extallation of current SW       3 md=  3 x 8 x 425   = 10.200
   Installation/Customization      3 md=  3 x 8 x 425   = 10.200
   Basic education                14 md= 14 x 8 x 425   = 47.600
   Operation introduction
   Customer introduction
   Operation costs
                                                          -------
                                                          68.000 SEK

TOTAL  COST:                                             158.000 SEK
```

The above list is an example of NET-investment which later on is used in the calculation below.

Example of SAVINGS:

```
Current maintenance time             Mhour x month   =  370' kronor
Maintenance time with new SW         Mhour x month   =- 250' kronor

Other effects like release of disk space etc included here.


Total yearly savings in mantime                      =  300 timmar
Total yearly savings in kronor                       =  120' kronor
```

The above list is an example of OPERATION COSTS SAVINGS as to be used in the calculation below.

3.6.6 Calculation

3.6.6.1 Pay-back method

The technique of Profitability-calculation by Pay-Back-method is to be done as follows.The calculation method consists of an estimate of the difference between continuing with an old existing product or with a new purchased software.The formula below provides you with the investment pay-off time, in years.

```
            net investment
Formula:    -----------------         =   Pay-off-time
            operation cost savings


                                            old        new
                                          ------     ------
Example:    operation cost               370.000    250.000
            operation cost savings                  120.000
            cost of obtaining                       158.000

                                    158.000
Net investment:   pay-off-time    = ------ = 1.3 year
                                    120.000
```

3.6.6.2 *Other method*

When you are calculating over a long period you can use the model below to see the cost effect over a long cycle.

	year 1	year 2	year 3	year 4
Cost SW (800'*0.41)	328'	328'	328'	-
Maintenance	-	160'	160'	160'
Initial cost	109			
SUM cost	437'	488'	488'	160'
Yearly savings	387'	774'	774'	774'
Profit	-50	+286	+286	+614

For larger investments there is another method called the over-yield method. This method is used for investments of more than 0,5 million SEK and you can ask the economy department how to handle the method.

3.6.6.3 *EXAMPLES*

An example of a program product investment request including a cost-benefit justification will be found in Appendix E.

3.7 Pre-Study report

The summary and recommendation section in this report should be the basis for the decision about further detailed evaluation to be done. The main task here is to point out remaining 'true' candidates to be involved herein.

Use the layout and headlines described in the Model chapter. A GML-marked skeleton for this is in member REPORT1 in dataset F1PUVT.PPEVAL.TEXT.

3.8 Evaluation report

The summary and recommendation section in this report should be the basis for a purchase or manufacturing decision.

The main task here is to determine which solution to choose, including a clear and credible cost-benefit justification.

A detailed implementation plan is also always to be included.

Use the layout and headlines described in the Model chapter. A GML-marked skeleton for this is in member REPORT2 in dataset F1PUVT.PPEVAL.TEXT.

In case of a recommendation to buy a product, this report is to be distributed and handled as described in appendix A, "Information" on page 32.

Appendix A. Evaluation preparations

This appendix describes in more detail some important areas that must be considered, and defined, early within a PP evaluation process. These areas should be previously described in the research directives done as a preparation in the Pre-study phase of such an evaluation.

A.1 Personnel involved

Compile a list of functions/personnel that might be affected by a change to this product.

From this list it should be possible to identify all people involved in the project functions, divided into different ***groups***:

- Project group (manager)
  All persons suggested as members within a PP evaluation.
- Steering group
- Reference group
  All instances to ask for an opinion within a PP evaluation.
- Test/evaluation group
  All parties to participate in testing and reviewing products within the evaluation.
- Information group
  All parties to merely inform about an evaluation in progress.

These functions include different personnel ***categories*** such as:

- installation and technical responsible persons
- operating staff
- method responsible persons
- application representatives
  (one or many 'customers' may be involved)
- product responsible persons

Also consider the following reference list to choose appropriate Volvo Data and customer ***functions*** with an interest in any product evaluations, to be at least informed:

- GGG Product Board (refer to "GGG importance" on page 3)
- Product Development Council (PU-rådet)
- System Development Council (SU-rådet)

- Technical Advisory function (teknik-rådet)
- Functional responsible persons
- Unit managers
- Customer EDP managers etc
- all departments probably to be involved when appropriate product change occurs

A.2 Information

This section describes the different kinds of information that a PP evaluation project shall distribute outside the project group, in addition of course to the information exchanged when evaluating the products.

A.2.1 Early evaluation information

Distribute information regarding the proposed change in this product area.

This information should, in addition to objectives, contain the following information:

- A list of persons involved, and what functions they will have in this project.
- The plan for this project.
- For major projects it is recommended that the information activities are included in the plan for the project.

The information should be sent out well ahead of the project start to all persons within any group defined above.

A.2.2 Pre-study report

Consists of parts as specified in the Model chapter, "Compile the pre-study report" on page 10. This report shall be distributed to the steering group. However, observe that this report might be considered as confidential.

A.2.3 Final evaluation report

This is named 'Analysis and design report' in the Model chapter. Same aspects as above for Pre-study report. This report usually always is considered as **confidential** and must thus be carefully handled, and distributed only after admission from the principle.

Moreover, this report shall also be regarded as a final investment request, to buy or rent, or manufacture, a chosen product/solution. Thus this report shall be the base for such a decision, usually to be made by the appropriate **unit manager**.

Upon request the report might need to be summarized down to a convenient format, for a Volvo Data board of directors decision.

A.3 Decision points

- project directives settled and approved by steering group
- decision made by steering group about project continuation into an Analysis and Design, based on the Pre-study report
- decision made by steering group about approved project end, based on the final Evaluation report
- decision about investment to be done, to be made by the unit manager or by the VD board of directors, based on the final Evaluation report or corresponding summarized presentation.

A.4 Review points

Special points of review shall always be considered within a program product evaluation. As a useful review group the GGG product board can be used, if no such group is defined in the directives. Note that noone participating in the real evaluation can be used as review group member.

These are possible review points:

- project directives before settled and approved by steering group
- project objectives before specified in detail within the pre-study
- pre-study results before presentated in the Pre-study report
- evaluation results before presentated in the final Evaluation report

Appendix B. Areas to consider in a PP evaluation

In this appendix we try to point out important aspects within the different areas, which are to be carefully considered when creating the requirement list within a program product evaluation.

B.1 Strategy

Global aspects of how a product should fit into a Volvo Data computing environment, as described in the chapter Strategies. That also means architectural point-of-views, e.g. what degree of impact on the operational environment that can be accepted. In this area we also handle the very important 'GGG value' also described in this chapter.

This area should be divided into more subareas than an overall strategic view and the GGG importance. Moreover, these aspects must be rated very highly, preferably specified as absolute demands, in the requirement list.

Also refer to a Volvo Data Strategy document, to be produced by the Operation and Technical support division in early 1993.

B.2 Functionality

A clear description of all required and desired functions we ask for. These of course differ a lot from case to case, and so it's difficult to describe general suggestions. Functions not wanted, especially those which use of can have dangerous impact, must also be pointed out. These however may not be discovered until later when evaluating the products and must then be added there.

B.3 Output and Reporting

Described in addition to other functions, so as not to be forgotten. Includes all kinds of output to be produced by a product, and could be divided into subareas like

- main reports needed
- contents and appearence
- ease of generation
- online storage
- printing facilities

B.4 Security

- backup routines
- recovery routines
- ACF2 co-existance
- setting security rules
- authorization facilities needed

B.5 User friendliness

- ease of use (overall)
- user interface
- guidelines
- online help texts
- error messages
- manuals

B.6 Installation and maintenance

- ease of installation/maintenance (overall)
- installation method (SMP etc)
- guidelines
- install error handling
- need for vendor support
- maintenance performance

B.7 Operation

- ease of operation (overall)
- guidelines
- error messages
- operating facilities/method
- operation routines
- co-existanse with other software
- automation possibilities

B.8 Support

- technical staff
- local staff (city, country)
- in-house support capability
- problem handling
- education support

B.9 Vendor reliability

- market point-of-views
- VD experiences (other products, 8010)
- IBM alliance/business partner
- survival probability

B.10 Resource utilization

- CPU consumption
- I/O consumption
- memory consumption
- storage (DASD, tape)
- STC or INIT occupation
- response times (commands etc)

B.11 Costs

- license fees (purchase, maintenance)
- agreement conditions
- resource consumption (CPU etc)
- manuals
- education
- support
- implementation work time
- usage work time

B.12 Savings

- replaced product costs
  (same aspects as above)
- eliminated work time
- quality improvements

Appendix C. Example of Requirement list and Evaluation worksheet

This requirement list was originally made quite without any known XXXXXXXX capabilities in mind. Only capabilities in current xxxxxxx tools, and things we clearly wanted in addition to these, was considered. Thus that list can be used when evaluating ANY xxxxxxx tools.

The list has then been complemented with vendor and product estimates.

The requirement list is divided into some 10 areas, each describing the **absolute demands** and **desired capabilbities** we have on these xxxxxxx tools.

Area 2, Functionality, also is divided into sections per main product, CICS, DB2 and IMS.

Note: Below, in this example, only 2 (of some 30) subareas are shown:

Resource measuring	WEIGHT	RATING	POINT
a. Resource Collection	999	Y 3	90
Summarization	25	1	25
History Log	25	4	100
Online Display	25	3	75
History Reports	25	2	50
Selection	25	3	75
b. Resource Utilization Summary	999	Y 3	90
Targets	25	5	125
Utilization Level	25	1	25
Pct of Thresholds	20	1	20
Graphics	20	3	60
Resource Id	15	3	45
Sorting Capability	15	0	0
Summary: (780/1525)*5	1525	2.6	780

General comments: The main drawbacks are lack of summarization for log records and limiting batch reports. But if we are going to use XXXX together with XXX programs those drawbacks would not cause any serious problems.

Other capabilities		WEIGHT	RATING	POINT
a.	Task termination	999	Y 3	90
b.	Cursor Selection	999	Y 4	120
c.	4GL Language Support Supply Program Name File I/O Statistics	999	Y 5	150
d.	MICS Support	25	2	50
e.	Memory Scan/Display/Alter	25	2	50
f.	Search Criteria (Job Name, Date/Time, Id's, Thresholds, Exeptions, Indicators, Down Time)	25	2	50
g.	Target Definition / Selection	25	0	0
h.	User Commands	20	0	0
i.	Cycle	20	0	0
j.	Interval Display	15	0	0
k.	SAA Validation	10	0	0
	Summary: (510/1275)*5	1275	2.0	510

General comments: Task termination (item a)) works the same in XXXXXXXX and XXXX (it might be a little bit softer for XXXX). The use of cursor selection we think is more sofisticated in XXXXXXXX. The navigation is more efficient and straigtforward. The 4GL support must be tested thoroughly. According to the vendor, full support including program name fetching exist. Due to the critical value of this function a full scale test must be conducted.

Summary rating

Total functionality		WEIGHT	RATING	POINT
a.	Overall Summary:		2.35	

Conclusion XXXXXXXX seems to be a xxxxxxx well worth further investigation. Although severe limitation in some areas, the comprehensiv and easy to use functions makes XXXXXXXX a powerfull tool for xxxxxxxxxx purposes. The lack of xxxxxxx facilities however is bad.

Appendix D. Example of a Final area summary table

This table includes the final area estimates done in this evaluation.

Area	WEIGHT	RATING	POINT
1. Strategy	15	4.6	69
2. Functionality CICS=2.35, DB2=3.4, IMS=2.8	25	2.9	72
3. Output and Reporting	1	n.n	nn
4. Security	5	2	10
5. User friendliness	8	4	32
6. Installation and maintenance	3	4?	12
7. Operation	10	2.5	25
8. Support	3	4?	12
9. Vendor reliability	10	3.9	39
10. Resource utilization	5	n.n	nn
11. Economic aspects (Costs & Savings)	15	n.n	nn
Summary:	395	3.4	271

General comments: The result from this rough and simplified calculation certainly is to be regarded just as an indication of how well the products seem to meet our criterias. It should not be used as a definite 'quality mark' of the products.

Conclusion The result is summarized in section Summary and recommendation in the pre-study respectively the Analyse and Design reports.

Appendix E. Example of Cost-benefit justification

E.1 *Investment request of software to analyze DB2 tables*

E.1.1 Product description

The type of tool here dealt with is for automatic, regular analysis of DB2 tables. Such a product shall also be able to initiate actions when threshold values have been reached, and send messages to the responible persons about this.

A fairly deep evaluation of such tools has been accomplished during 1991 by Volvo Data together with the customer companies.

E.1.2 Need of product

The use of this type of tool gives a considerable advantage as noted in the complete evaluation report and cost-benefit justification below. The most important advantages can be summarized as:

- savings in man-time, by follow up/monitoring of DB2-tables,which frees valueable special competence for other purpose

- lower execution and storage costs, which reduces the need of investment in extended capacity in our computers.

- improved quality for databases,which gives fewer faults,less computer resource consumption, which gives faster response times

It can also be pointed out that Gartner Group has declared that this type of tool, which primarily saves valuable man-time are the most cost-effective ,with normal pay-off time of 6-12 months by the investment of 100'-200' USD at larger computer centers like Volvo Data.

It is remarkable that Volvo, where there is a large number of users of DB2, still does not, in 1991, have this kind of tool.

E.1.3 Choice of product

Department 2540 recommends the purchase of Platinum Database Analyzer (PDA).

PDA has in the evaluation been judged a better alternative than its primary competitor, BMC Softwares DASD Manager. Also, the latter is more expensive (to purchase, however there are also other conditions to consider).

E.1.4 Costs and price impact

The calculated purchase cost for 3 computers is about 800.000 SEK.

This affects the self-cost-price of the DB2-product(SSK),which is based on the combine-price(KNC), for 1992 as below:

Product:	DB2/VICS	DB2/IMS	DB2/batch
yearly-cost/PDA	110'	110'	110'
yearly-cost total	2730'	2930'	2545'
%-share	4.2	3.9	4.5
SSK (kr/PU)	0.57	0.145	1.70
contribution/PDA	0.024	0.005	0.08
KNC	0.80	0.26	1.50

OBSERVE that this extra cost is in the budget for 1992 and shall also be seen as a contribution to the 1992 price list.

Attention should be taken about the KNC above, as beeing an ADDITION to a lot larger basic cost, and the declared impact, by the customers point of view, must be observed in that matter.

E.1.5 Customer acceptance

All participating customer companies are aware that this tool will create savings and improve application quality.

Some hesitation of purchasing the product has been stated by some of our customer representatives (at PV and Penta). They point out the uncertainty about the profitability.

The remaining companies and Volvo Data have no doubts regarding profitability.

E.1.6 Time schedule

The purchase according to my opinion should be done this year. A fast decision prior to the negotiation must thus be made !

Volvo Data is, together with our customer companies, prepared to aim for a gradual introduction of the product during 1992.

Detailed questions about the product will be answered by Håkan Enarsson/2540.

E.1.7 Cost-benefit justification for PDA (Platinum Database Analyzer)

E.1.7.1 Quantified savings.

- The DB2-systems at Volvo Data have a total of 233 DB2-production databases (June 1991) Since some of these are small,inactive or private, the calculation is based on 200 databases.

  The maintenance/monitoring of these databases varies considerably, but an approximate value is 1 hour/month

  Result : 1 * 12 * 200 = 2400 hours/year.

  With PDA this time has been estimated to be halved. The yearly savings will then be 1200 hours.

- Additional estimate of new databases/year is 30. With PDA the work with preparation and maintenance routines will be reduced.

  Estimated time/ database without PDA: 24 hrs
  with PDA: 8 hrs,

  which gives a saving of 16 * 30 = 480 hrs.

  Total yearly saving in mantime: 1200 + 480 = 1680 hrs
  " " " " kronor : 1680 * 425 = 714′ SEK

- By letting PDA monitor the allocations of the tables you can keep these at a considerably lower level than today.In two of the computers,when 25% of growthspace is discounted, more than 1000 MB are allocated but not used.

  Immediate saving by release of disk space/year is estimated at:

  1500 Mb x 365 x 0.11 SEK = 60′ SEK

  This estimate does not include savings for future tables.(These tables should be seen as contribution by delaying the purchase).

- Based on a gradual introduction of the product for our companies′ DB2-tables we only estimate 50% of these calculated savings in 1992.

E.1.7.2 Non-quantified savings

- Better status of the databases.
  Gives faster reponse times and lower CPU consumption.
  This can contribute to a delayed upgrade of computer capacity.

- Less volumes of storing.
  To let the database space increase when needed, and also reduce the need when it is not wanted, can help obtaining new disc to be delayed.

- Automatically overwiev and measuring will give fewer fault situations and less man-time for solving problems. It can also prevent serious unavailability.

- Created objects are not forgotten, but are included automatically in the maintenance routines.

- Statistic history will make follow-up and tuning easier.

E.1.7.3 Costs

- The cost of obtaining PDA for 3 computers (2 grp E + 1 grp D) is 136.869 USD:

```
136.869 * 5,85 = 800.684 SEK
```

This cost will be deducted with 41% per year for 3 years.
Maintenance cost from year 2 is about 160.000 SEK per year.

- Introduction costs can be split up into

```
Installation:       3 md =  3 x 8 x 425 = 10.200
Basic education:   14 md = 14 x 8 x 425 = 47.600
Central adaption    5 md =  5 x 8 x 425 = 17.000
Customerintro    1x10 md = 10 x 8 x 425 = 34.000
                 ----- =                  ------
                   32 md                 108.800
```

Introduction costs is included in the cost-benefit justification only for 1992.

E.1.7.4 Calculation

	year 1	year 2	year 3	year 4
Software cost (800'*0.41)	328'	328'	328'	-
Maintenance	-	160'	160'	160'
Initiate cost	109'			
SUM cost	437'	488'	488'	160'
Yearly savings	387'	774'	774'	774'
Profit	-50'	+286'	+286'	+614'

Appendix F. Purchase routine

Commission work for a decided product is done by a request. You find the request in the "MEMO"-system under mail-box PURCHASE.

F.1 How to fill in the purchase request

Since the request requires information regarding product affiliation, product responsibility, logical and physical computer environments etc, there is a limit of the number of software products that can be ordered on one request. Requiring all this information may seem to be unneces- sarily bureaucratic procedure, but someone must take responsibility for the software at implementation time, and it's just as well to have everything worked out from the beginning.It is, in fact, easier to install a product than it is to scrap one that's already in production.

VENDOR:
Name and address of the company supplying the software

GOODSRECEIVER:
Name of the person who will receive the installation material. At Volvo Data it is usually the person placing the order.

DEPT:
The cost-responsible department.

NAME/PART NO:
Only IBM software has a part no, which is to be specified. The product name is required for software from vendors other than IBM.

QUANTITY:
Usually a software product applies to a specific computer. Most often the second license is cheaper. Specify quantity. If ordering a BASIC license and one or more DSLO licenses (secondary license), you must write them on two lines because the price is different for BASIC and DSLO (IBM).

MONTHLY CHARGE/:
Basically,there are two ways of paying for a software product.

LICENSE/MAINTENANCE:
- Leasing on a monthly, yearly or multi-year basis.
- License (one time charge) and yearly maintenance.

Older IBM-softwares sometimes has an 'Initial Charge', which should be specified as a license cost. To complicate matters, some software prices depend on computer size. Please indicate the price group.A list of computers and price goups will be found below.

OPTIONAL TEXT
Specify if the product does not conform to standards, e.g. applies to all computers or to an specific computer. Multi-year lease or maintenance paid for more than the first year etc.

CURRENCY:
Swedish crowns (SEK)is standard.Specify other currencies using the proper abbreviation.

SEND REQUEST TO:
Always Purchase department 8020.

SEND COPY TO:
Indicate manager of the responsible cost-dept.

ORDER NO:
Will be filled in by department 8020

ORDERED BY:
Name and phone no. of person placing the order

INVOICE ADDRESS:
The invoice will normally be sent to the Accounting department at Volvo Data.To be specified if other address than above-

PRODUCT AFFILIATION:
Software is normally included in a product, e.g. BATCH, TOB, VICSBAS, VM, CAD/CAM.

ACCOUNT CODE:
The account code to which the software cost will be charged. Required info.

PRODUCT RESP:
Each product has a person responsible for it. This person has an administrative responsibility for the quality and further development of the product. Memo ID is required info.Will recieve an order copy.

INSTALLATION RESP:
Has a responsibility for the technical installation and maintenance of the product. Memo ID is required information. Will receive an order copy.

TECHNICAL RESP:
The person reponsible for the technical customization of the software. Required info.

METHOD RESP:
Investigates and develops methods for using the software product. Required info.

TECHNICAL OPERATIONS RESP:
Responsible for product availability and performance according to SLA. Required info.

TECHNICAL SUPPORT:
Has detailed knowledge about the software and the customer, works togehter with the customer.

THE SOFTWARE WILL RUN IN THESE ENVIRONMENTS:
Specify the physical computer and logical partitions in which the software will be used. Since a logical partition can be moved between computers, it is important to be aware of the consequences of a move from a software point of view,where both man-time and cost aspects are to be considered.

BY ORDER OF:
The name of the person initiating the request. This is automatically filled in.

Any quetions can be directed to department 8020.

F.2 Procurement negotiation

The offers will be processed and examined together with the person responsible for the product. The vendors are then invited to participate in the negotiations, during which we attempt to obtain the best possible price and quality. This includes the price on which maintenance costs are to be based, the cost of running on several computers,and computer size. Other factors are the effects of upgrades and computer replacements. Price effects as a result of long term agreements are also studied. A termination period of time is agreed upon, and a negotiation for an extension of the agreement is set.In IBM's case, we have a test period of 60 days without charge, other vendors generally offer a test period of 30 days.

After negotiations are concluded, the material will be presented to the person responsible for the product, the order placed, and the transaction is thus completed. After reaching an agreement, it is important to follow up contract dates etc, so that oppor- tunities for re-negotiations, termination notices and extensions will not be missed.

Appendix G. Checklist

This checklist is intended to be used when evaluating program products. All activities must be based upon the MODEL and the METHOD chapters in the main document. References to corresponding sections in these chapters are given (within parenthesis).

1 Produce the Project Directive (2.1.2.1 + Appendix A)

- a use member REPORT0 as a skeleton
- b decide level of evaluation, separate Pre-study or combined with Analysis and Design
- c get acceptance from suggested project participators
- d roughly define project activities
- e suggest project staff (participators)
- f get acceptance from suggested project participators
- g get complete Project Directive approved by the principle

2 Inform about evaluation (2.1.2.2)

- a call for start-up project meeting
- b define/get accepted all project activities
- c inform other parties affected/interested in the evaluation

3 Describe the present situation (3.1)

- a Task
- b Organization
- c Man
- d Technology

4 Analyse the problems (3.2)

- a Quality
- b Delivery
- c Costs

d Staff

e Information

5 Specify Requirement list (3.3 + Appendix B)

a define areas of concern

b define detailed requirements (subareas)

c point out Absolute demands

d weight Desired capabilities

6 Provide a Product inventory list (3.4)

7 Evaluate the candidates (3.5)

a plan for
rough evaluation = theoretical studies (3.5.1.1)
OR
detailed evaluation = in-house testing (3.5.1.2)

b plan for product installation and tests (3.5.3)

c define a Comparison Grid (3.5.4)

d test and rate the candidates (3.5.5,6)

e summarize test results (3.5.7,8)

8 Evaluate effects (3.6)

a describe changes in organization and staff

b describe cost considerations

c describe saving considerations

d specify total costs and savings

e summarize in a cost-benefit justification

9 Compile project report

a use skeleton in member REPORT1 for Pre-Study report (2.1.4.2)

b use skeleton in member REPORT2 for Evaluation report (2.2.4.2)