Program Product Evaluation

93-09-09

Project PPEVAL

Volvo Data AB

Preface

This document describes a general way of working when changing the product offering.

The document consists of four main parts:

1 Strategy - Overall RULES to follow
2 Model - WHAT is to be done
3 Method - HOW to perform the tasks
4 Appendix - EXAMPLES of results etc

The aim of the document is to cover changes of all sizes, from replacing the operating system to acquiring a new PC program product for calculation.

Due to this generality it is necessary to adjust the working procedure to the project in question. Therefore consider the document as a **check list** or a **bank of knowledge** from which suitable parts can be chosen.

The document has been developed within a project called PPEVAL during late 1992, by following participants:

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The purpose then was to create a 'starter set' of the document, later to be complemented with experiences of product evaluations made. Thus some parts, e.g. appendices, might be missing from the beginning.

In september-93 the first version has been adjusted and complemented with experiences made in a pre-study of one product evaluation. The document will later be more improved from other evaluations.

Contents

1.0 Strategies

1.1 Introduction

Due to size and continously increasing complexity, there is a need to simplify and streamline different areas to get the best possible efficiency, i.e. within the systems management area, to be able to meet growth and new technologies.

In every program product evaluation, the responsible individuals should consider and pay attention to areas such as:

- **Volvo Data's strategies.** Program products that are selected for an evaluation must follow the strategies in one particular area as well as a whole.
- **Degree of standardization.** Can user code be eliminated or minimized?
- **Overlapping functions.** To buy program products that contain already existing functionality might be expensive and should be avoided.
- **Who are affected**? Which data centers, departments, or functions are affected, or have interests, in a new program product? Even if the scope of the evaluation is very limited others might be affected and must be involved before a final decision is made on which program products should be selected for test.
- **Investment protection.** The entire cost to introduce a new program product and implement it in production is high: Fees (one time charge or monthly charges and service costs), aquire and maintain skills, education and documentation, customization etc.. It is of utmost importance that program products, selected for purchase, have a long life time and are strategic also from the vendors point of view.

1.2 Related products

When evaluating new program products it is important to investigate existing, or maybe possible products and their future evolution in comparison with new program products regarding:

- Vendors
- New functionality
- Investment protection (knowledge/skill, documentation, customized procedures)
- Execution costs
- Added values

Requirement: Before switching from one program product to another, the current vendor should have the opportunity to inform about their planned enhancements and general availability for new releases.

1.3 Strategic concerns

The software market is changing continuously over time and more and more rapidly: Small software vendors merge with larger vendors, other vendors have difficulty surviving, more and more program products tie together into frameworks or concepts which sometimes are stretched over multiple areas and hardware platforms. Regardless of these trends there is an obvious trend that the software market has in common: Continuously increasing costs.

To achieve sound investments and reduced costs it is essiential to invest in long term solutions from solid software vendors and to look for added values but avoid overlapping functions.

According to Volvo Data's strategies, or policies, regarding enterprise-wide concepts or architectures, i.e.:

- SystemView from IBM
- Polycenter from Digital Eqc.
- DCE/DME from Open Software Foundation (OSF)

Evaluations of new, or new releases of, program products shall be examined from a wide perspective by the appropriate advisory functions within Volvo Data.

The purpose is to get the most appropriate and best solution in each evaluation for all areas, functions, or organisations. Special care shall be taken as to how program products follow strategies, possible added values, and investment protection.

Requirement: The function responsible for the strategies and for the specific area **Should always** be involved or contacted.

In lack of function responsibles, see above, The GGG Product Board, see next section, should be contacted.

1.4 GGG importance

Since 1991, Volvo Data consists of 3 datacenters with mainframe computing. These datacenters are located in **G**othenburg/Sweden, **G**hent/Belgium, and **G**reensboro/USA. To standardize these datacenters wherever it is applicable in terms of services, program products, operation management and other areas, a project was started 1991: The GGG project.

To be able to provide similar services to Volvo Data's customers and to be able to manage and operate systems in an efficient way, the 3 data centers should use the same program products wherever it is suitable or possible. Care should also be taken regarding the different needs that can exist between the data centers; one solution may be preferred by one data center but does not fit another. This is especially important for products classified as mandatory.

Each GGG data center must always justify its investments. However, a 'GGG value' in economic terms should always be included in cost-benefit calculations. The rule for estimating this value is to include 'any savings at any of the other data centers' in the total calculated savings. I.e., any manpower and other resources saved at VDG if VDNA and/or VEDA install a products used at VDG etc.

Requirement: For all program product evaluations that affect the GGG standardization work, the selected program products shall be examined by the GGG product board.

Until this function is established, the normal GGG project organization should be used. The persons to currently coordinate this between the GGG sites are Kjell Rask, Cliff Thompson and Hubert Francet. If they can not decide, the case will be brought up to the next GGG steering meeting.

If you are unsure or doubtful, always contact the GGG product board.

1.5 Purchase considerations

1.5.1 Selection of products

Select at least two products (solutions) from different vendors to remain in a final choice situation. This will create opportunities during negotiation proceedings.

Of course you must also carefully consider all other strategic values in this chapter. Then you must look at all functions and form an opinion if all functions are to be used. By comparing two products you probably see that one of them includes all functions and the other one perhaps 75% of the functions. Then you have to decide if you really need all functions as seen in a long perspective.

1.5.2 Choice of vendor

According to what's been said earlier in this chapter solid and well-known vendors that VD has good experience with are to be strongly preferred.

Requirement: The purchase department, 8020, provides a list of such vendors, upon request.

2.0 Model

The model is based on the "AD model" which is to be used for all administrative systems development at Volvo Data AB.
The general AD model has been adjusted to a "Model for change of product offering" described in this chapter.
The model, especially the activity descriptions, has been modified to suit tasks of product evaluation.

The model is divided into two phases, **Pre-study** and **Analysis and Design**. (Realization and Maintenance have been omitted.)
When dealing with large projects it is suitable to indeed have two separate phases with a clear decision point in between, while you can combine both phases in smaller projects.

The most important purpose of the model is to prevent the unintentional omission of some activity.

2.1 *Pre-study*

2.1.1 Purpose

- To investigate what possibilities are available and what problems can be solved by changing the current product offering.
- To gain enough information to make it possible to decide whether or not a more detailed analysis should be performed.
- To recommend what alternative solutions a more detailed analysis should concentrate on.

The pre-study should be carried out during a short period of time and should not be costly. This normally implies that no product installations are done during the pre-study.

Some of the most common pitfalls when performing a pre-study are:

- Being too detailed
- Going straight for a solution instead of identifying the real problems and their causes.
- Only taking "technology" and "task" into consideration and forgetting "organization" and "man".

2.1.2 Preparation

During the preparations of the pre-study the principal and the study leader have to agree on the scope of the analysis, its purpose etc, and create the directive document as described below. See appendix A for more details in some of these preparation activities.

2.1.2.1 Directive

The directive should contain the following parts:

- Conditions and background

  Reasons for the pre-study i.e. why to make the change.

- Objectives

  The aim of the change, resources available, completion date and quality objectives.

  It is recommended that the quality objectives for new products are grouped into the following areas:

  - Agreement with strategy and overall architecture
  - Functionality
  - Security
  - User friendliness
  - Installation and maintenance
  - Support
  - Vendor reliability
  - Resource utilization

- Scope and limitations

Which parts of the business (product offering) are included, which interest groups will be taken into account as well as which computer environments or operating systems should be considered, which vendors are to be considered etc.

- Expected result

  What is the pre-study supposed to achieve, in what way should the results be presented etc.

- Profitability

  Rough estimate of the possible cost-benefit and where appropriate a lower limit of the profit. Note that the estimate should be for the whole project, not just the pre-study. The estimate does not have to be expressed in economic terms, even though this is desirable.

- General plans

  Rough schedule and resource plan. In case of dependencies to other projects these should be described.

- Organization, responsibilities and staffing.

  Staffing of the project and the role for each person. It should be stipulated who is supposed to make what decisions, who is supposed to be informed about what etc.

- Risk and vulnerability

  Any factors that might jeopardize the project or the change.

The directive should be reviewed by a review-group.

A GML-marked skeleton for a project directive specification is in member REPORT0 in dataset F1PUVT.PPEVAL.TEXT.

2.1.2.2 *Information*

Submit information about the initiation of the pre-study to all people concerned. See appendix A, section Information.

2.1.3 Execution

2.1.3.1 *Describe the Present Situation*

How does it work today?

The purpose of this activity is to explain the area in question. The description should be divided into the following parts:

- Task
  - What tasks are done/can be done with the present components?
  - What tasks have to be done in order to make the components work in a satisfactory way?

- Organization
  - Who are the concerned partners?

- What responsibilities and what authorities does each partner have?

- Man
  - What persons/categories are concerned?
  - What opinions and what requirements do we have?
  - What competence do we have?

- Technology
  - What technology is used today?
  - Are there any dependencies (e.g. between products)?
  - What technology is available on the market?

2.1.3.2 Analyse the Problems and Possibilities

What is or is not working well? What can be improved?

This is the point to determine what the real problems are. Beware of looking only at technical aspects. The result is a list of well defined, accepted and prioritized problems grouped together with their causes and effects.

The problems are to be examined within the following areas:

- Quality problems
- Delivery problems
- Problems with costs
- Problems with staff
- Information problems

2.1.3.3 Set Change Objectives

What requirements and what requests do we have?

In this activity we establish the level of ambition for the change, that is establish the changing objectives, requirements and requests.
The objectives should be related to the problems that were described in the previous activity. For every objective specify how to verify it has been met (by the final solution).
The list of objectives must be accepted by the concerned parties and approved by the principal.

2.1.3.4 Generate Ideas for Change

How can we solve the problems?

This activity is creative and its aim is to collect as many ideas as possible that could solve any of the problems listed. Then the ideas should be evaluated and checked against the objectives and the problems.

2.1.3.5 Analyse and Design Possible Solutions

What solution(s) seems realistic?

We now put the ideas from the previous activity together so that they form one or preferably many complete solutions.

The solutions should be described in such detail that it is possible to make a decision whether or not each solution is acceptable. It should however not be a complete analysis and design.

Questions that should be answered for each possible solution are:

- What is included in the solution?
- Will the solution cause organizational or responsibility changes?
- What do the working procedures look like?
- What are the resource (man, machine etc) requirements?
- What are the resource (man, machine etc) costs?
- Will other technical areas (e.g. products) be affected?
- Are there any critical success factors?
- Is there acceptance or rejection at the other GGG data centers?

2.1.3.6 *Evaluate effects*

Is it profitable?

The proposed solutions must be evaluated in economic terms (Cost-Benefit estimate). In this stage it will of course be rather rough. Although the estimate is done in strict economic terms the non-quantitative effects should also be described.

2.1.3.7 *Risk Analysis*

Are there any risks involved?

For each solution the risk factors specified in the directive should be examined and new risk factors should be documented.

2.1.4 Termination

2.1.4.1 *Plan the project*

A project plan is an important document to those who are to decide on whether or not to start a project to analyse, design, construct and implement the solution(s).

The plan should contain:

- Activities

  What has to be done and when?

- Milestones

  What are the important events (e.g. decisions)?

- Needs per activity

  What resources are needed?

- Alternate routes

  What to do if ...?

2.1.4.2 *Compile the pre-study report*

The pre-study report is the basic documentation for making decisions about "Analysis and Design" and "Realization". It should be reviewed by a review-group and contain the following parts:

- Conditions and background

  This section is taken from the pre-study directions and complemented with results from the pre-study.

- Summary and recommendation

  This should be a brief summary (maximum 3 pages) including all discussed suggestions and ONE recommended alternative. (Note that this, for instance, does not mean that a specific product has to be chosen. The suggestion may well be to evaluate a number of products during Analysis and Design.)

- Results achieved

  What is achieved in the pre-study compared to the expectations in the pre-study directions.

- Checking against objectives

  Do our proposals agree with the objectives in the directive.

- Experiences

  Describe experiences (positive or negative) from the project that are of common interest to other projects.

- Suggested continuation

  This section contains the plan that was created in the previous activity complemented with:

  - Project organization, responsibilities/roles and staffing
  - Cost-Benefit estimate
  - Special risk factors

- Appendix

  The appendix should contain the detailed results from the pre-study activities:

  - Description of the current situation
  - Problems and possibilites
  - Change objectives
  - Solutions
  - Effects

  Beside this, the pre-study directions should be included as an appendix.

2.2 Analysis and Design

2.2.1 Purpose

- Based on the recommendations from the pre-study, in detail analyse and design a comprehensive solution.
- Plan for Realization
- Describe the solution to all interested parties so that they are aware of the effects.

2.2.2 Preparation

During the preparation of the Analysis and Design we have to create conditions for a successful execution. The work is to be carried out by the project management.
In the same way as in the preparation for the pre-study we have to agree upon a "Directive for Analysis and Design".
The "Directive for Analysis and Design" is similar to the "Directive for Pre-study", although more precise since we now know what is to be achieved.

2.2.2.1 Plan the activities

The Directive contains a rough plan including organization, responsibilities and staffing. This plan must be refined into a detailed and accepted project plan.

When products are to be evaluated during Analysis and Design, do not forget to negotiate about test licenses. Contact the procurement department.

2.2.3 Execution

2.2.3.1 Perform Detailed Analysis

Which tasks will be performed in the future?

During this activity we create a detailed specification of all tasks and procedures that will be carried out when the new proposed solution is implemented.
All tasks and procedures that involve new products have to be refined to such a degree that we can list precise product requirements and demands.

2.2.3.2 Analyse and Design the Solution

How will it be done?

Now we have to choose one detailed solution and describe exactly how different tasks and procedures will be carried out.
In order to do this we must decide upon which product(s) to select.
Thus the remaining products must be deeply analysed.

2.2.3.3 Design the Organization

Responsibility and authority?

The aim of this activity is to clarify:

- Who will be the owners of the new procedures and products?
- Which organizational unit has what responsibility and what authority?
- What are the resource requirements?

2.2.3.4 Design the Work Situation

Who does what?

From the result of the previous activity we now decide who (which person/which group of persons) will perform the different tasks. Sometimes new competence and/or more/fewer persons will be needed. We have to plan for this and inform all affected persons so that they are aware of the new tasks and the procedures.

2.2.3.5 Dimension Technique

Is the technical capacity there?

This activity consists of three parts:

1. Calculate required capacity

   Based on volumes, transaction rates etc the amount of technical capacity (such as disk-space, CPU-usage etc) has to be calculated.

2. Determine the current restrictions

   We have to clarify if anything might affect our time schedule. E.g. upgrading of CPU-capacity might have been postponed, a related program product might have been rejected etc.

3. Make preliminary agreement with suppliers

   Together with those who supply the required technical capacity we now make a preliminary decision when and how installation should be performed.

2.2.3.6 Evaluate solution

Is it possible and profitable?

As at the end of the pre-study we now have to make a cost-benefit estimate, however, this time we have to be more precise.

For an example see the cost-benefit calculation in appendix E.

We have now gained enough information to make a final check of whether it is possible and profitable to implement the solution or not. We also have the ability to judge if all objectives will be met.

2.2.4 Termination

The termination work is performed by the project management.

2.2.4.1 Plan for Realization

At the end of the Pre-study we planned for ″Analysis and Design″. For the same reasons and in the same way we now have to plan for Realization (see "Plan the project" on page 9).

2.2.4.2 Compile Analysis and Design report

The ″Analysis and Design″ activities have given us a detailed understanding of the problem area. Therefore the ″Analysis and Design report″ is much more precise and broad than the ″Pre-study report″.

Since the Realization phase normally is far more expensive than the Pre-study and ″Analysis and Design″ taken together we have to be very clear on our recommendation and we also have to put a lot of efforts into the cost-benefit estimate.

Normally, an acceptance of the ″Analysis and Design″-report is the point of no return. This is to be regarded as a final investment request, in order to buy or rent, or manufacture, a recommended product/solution.

The structure (sections, headings etc) of the ″Analysis and Design″-report is however the same as the one of the ″Pre-study report″. See "Compile the pre-study report" on page 10. The ″Analysis and Design″-report should, like the ″Pre-Study″-report, be reviewed, see section ′Review points′ in appendix A.

3.0 Method

This chapter describes the METHOD to be used at product evaluations, i.e. HOW such an evaluation should be done. The method is based upon the MODEL described in the previous chapter, which describes WHAT is to be observed and involved in such an evaluation.

The method chapter is not divided into the two major parts of the model, i.e the Pre-study and the Analysis and design phases. Instead common points of view are described in a logical order for both phases, including comments about main differences between these, when appropriate.

Some sections from the complete model are here just briefly commented, when a reference to the model has been considered to be enough, and no special way to perform or document the task can be recommended. Other parts with special handling needed for PP evaluations have been concentrated upon.

3.1 Describing the present situation

Describe the situation of today, and how the functions are handled, with or without any old program product.

Regard areas pointed out in the Model chapter.

3.2 Analysing the problems

Describe current problems. Answer questions like:
What does not work well ?
What are the weak points ?
Why ?
How should it work ?
What can be done better ?

Observe areas pointed out in the Model chapter.

3.3 Requirement list

This section describes how a requirement list is to be produced. It consists of all absolute demands a product must satisfy to become a true candidate, and a list of all desired functions or capabilities on which an estimate and thus a comparison of the products is based.

This work corresponds to "Set Change Objectives" on page 8 and "Perform Detailed Analysis" on page 11 in the Model chapter.

3.3.1 Evaluation phases

This section is to be satisfied to a high degree within the first phase, the Pre-study, of a PP evaluation. The main reason for this is to avoid analysed products affecting the requirements, which is quite the opposite of what we want.

In the later Analysis and Design phase, it shall only be complemented with additional details, if found in the deeper requirement analysis, or 'detected' in the detailed study of products (true candidates).

3.3.2 Parties involved

In the creation of the requirement list, as well as the detailed product evaluation, parties pointed out in the evaluation preparation, as described in appendix A, section Personnel involved, Reference and Test/evaluation groups, shall participate.

Thus, in a memo or other questionnaire form, ask for their opinions concerning absolute demands and requirements according to rules within this section.

3.3.3 Requirement specification

Create a table in which you can specify required capabilities within different areas.

3.3.3.1 Areas

First consider the following main areas:

1. strategy
2. functionality
3. output and reporting
4. security
5. user friendliness
6. installation and maintenance
7. operation

8 support

9 vendor reliability

10 resource utilization

11 costs

12 savings

Further explanations, comments and details concerning these areas, are given in appendix B of this document.

3.3.3.2 Subareas

Major main areas, like Functionality, can be divided into smaller 'subareas', covering a group of functions within a certain sphere of interest.

3.3.3.3 Requirements

Then specify detailed requirements (functions, capabilities) within each area or subarea, upon which a judgement is to be made.

These can be divided into **absolute demands** and **desired capabilities**.

3.3.4 Absolute demands

Clearly specify all demands which the solution (product) absolutely must satisfy.

Include major functionality and capability needed.

Also consider things like computing environment and other strategic concerns of vital importance. Review rules and recommendations in the Strategies chapter.

These demands can be included in the created table, under the corresponding area, marked as **mandatory**. They certainly are the first things to consider in the later comparison of product solutions (i. e. rough estimate).

After the rough estimate of all products in the Pre-study, only those satisfying all these demands should remain as 'true' candidates in the further deeper comparison.

3.3.5 Desired capabilities

Estimate within each area a 'weight' of importance, from 0 to 25 (from not needed to very important)

These weights can also be 'spread out' to desired capabilities within an area, to pay certain attention to.

Consider for each area capabilities that are:

mandatory	WEIGHT=999
desired	WEIGHT=5-25
good to have but ...	WEIGHT=0-10
not interesting	WEIGHT=0
not wanted	WEIGHT=-nn (warning)
to be excluded	WEIGHT=-999 (dangerous!)

Regardless of the contents within an area, each such area shall be 'summarized' into a total weight factor 0-25, of course excluding the '999' specifications to be answered YES or NO.

3.3.6 Usage rules

Describe rules for how to use the requirement list in the following product evaluation phases (Pre-study and Analysis and design).

This must be well understood by all persons involved in the remaining evaluation work.

3.3.7 Work checklist

A working order in this task may be:

1. Create a table called Final area summary, (as shown in appendix D), including all main areas
2. Create a requirement list prototype, see next section, divided into each specified area (or subarea)
3. Specify all ABSOLUT DEMANDS within each area (WEIGHT=999)
4. Specify all DESIRED CAPABILITIES within each area
5. Weight all main areas 0-25 (Sum of weights = 100) (use table Final area summary).
6. Weight all DESIRED CAPABILITIES within each area (they all will contribute to main area estimate)
7. Calculate maximum possible points per area/subarea (summary of all weights, 999 counted as 30, multiplied by 5, which is maximum RATING)

3.3.8 Work skeleton

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

General comments:

3.3.9 Example

An example of a PP evaluation requirement list is to be found in Appendix C. However, note that this list includes estimated values for one product, thus composing a completed evaluation worksheet, based on the requirement list, for that product.

3.4 Product inventory

This work corresponds to "Generate Ideas for Change" on page 8 in the Model chapter. Thus this inventory is to be completely performed within the Pre-study of a PP evaluation.

The task here is to answer two main questions:
What products exist ?
Can we build our own solution, if so are there alternate ways ?

3.4.1 Preparations

Create a list of **possible** products, with name, vendor, price and short comment. More detailed information about each product is best presented separately, together with the subsequent rough estimate.

3.4.2 Realization

Different possibilities to be used for this inventory are:

1 literature research

2 software registers
- SW database available (refer to VD.2502BD)
- catalogues like 'DATA SOURCE' (refer to VD.2540PL)

3 "brainstorming" in project group or other constellation

4 interview experienced Volvo Data staff

5 make inquiries to vendors

6 inquiries to other computer centers

7 study visits

Don't forget the alternatives to produce your 'own' product, if such a solution can be considered at all.