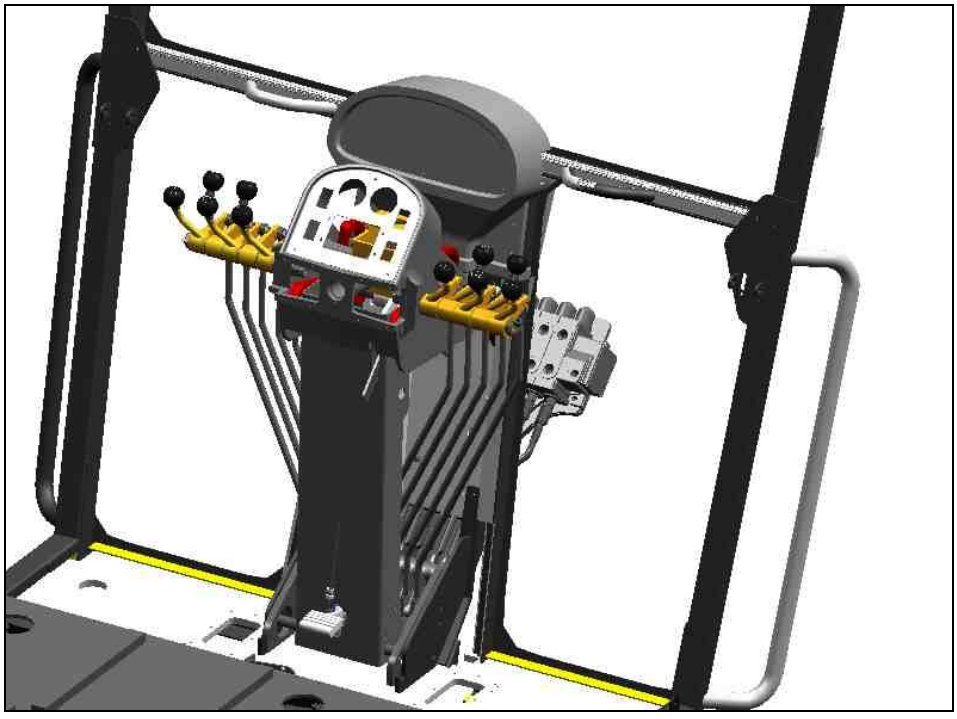
VOLVO

Volvo Construction Equipment

White Book

Grader Embedded Software (ESW) Project



Grader ESW Team
July 2002

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0. Summary

Project Objectives

- Objectives included: the creation of processes required to support the implementation of Volvo CE Embedded Software in the G700B Grader and to merge these into the ongoing duties of personnel in each functional area (Vehicle Electronics, PROSIT, Central Systems, VCADSPro). These were essentially completed, subject to the open issues identified in Section 7 (primarily documentation).
- The objectives in the original Scope included coordination of the introduction of Motor grader Specific ESW processes into Brazil manufacturing. This has not been completed as it has been decided not to implement the G700B in Brazil until at least 2004.

0.2 Performance versus Schedule

- The project was to be complete by December 2001 per original plan. Delay in the G700B project (e.g. pilots slipped to Q1/02) delayed the finalization of the ESW portion of the project. The Team was however able to support pilots and the staged launch of the G700B (initial ships to EU) with no delays caused due to ESW tasks not performed.
- Any tasks still outstanding from the original plan, or identified since, have been carried forward to the local Grader ESW Council to monitor and complete.

0.3 Project Cost

- Spending versus Plan - k CDN :

Planned Total Expenditures per Scope:	$ 455.0
Actual Total Expenditures	$ 357.8
Variance – Favourable	$ 97.2

- Variance Breakdown Fav (Unf)

Consulting 6 Add'l weeks req'd	(36.5)
ESW Support/Software	31.0
VCADSPro Consulting not required	10.0
VCADSPro Training provided free	49.0
PROSIT Hardware requirements	35.4
Other	8.3
Total Variance	$ 97.2

- Hours expended to execute the ESW plan: 4,200
  (Includes 900 hrs consultant, does not include Vehicle Electronics Engineering)

0.4 Lessons Learned

Things that went well:

- Strong people with appropriate skills assigned to the project, few changes in resources assigned to project, excellent cooperation and initiative.
- Adding Eirik Isene to the Grader project team was important for us to complete the project in the time we had available as this accelerated the completion of activities by utilizing his experience and contacts.
- Training completed in appropriate timeframe.
- Contacts with counterparts in Sweden by visits both ways important to clarify issues and establish relationships early in project.
- Chose a relatively low-risk path (display-only system) to start with ESW.

Things that could have been better:

- A better understanding of the Central Systems and SAP may have helped to avoid some of the misunderstandings and problems with transfer of MESA Structure tables from SAP and the need for our unique approach. This process could have been planned in conjunction with Volvo CE earlier in the project to improve everyone's understanding and cooperation. Core Group still not comfortable with unique Grader process and feel it required more support from them to implement than it should have.
- Concern from most areas about the time gaps in support available from the Central Systems group in Sweden, and also the quality of support in off-hours.
- Too many launches of other product lines caused a lack of resources in Sweden to provide adequate services at certain points in the project – reflected in issues with meeting schedules, testing adequacy.
- Very few people appear to understand the total ESW system, which spans many departments – made it very difficult to get clear answers in which one could be confident.
- Grader Prototypes and Pilots not available to extent required to complete testing – amount of time required to complete testing underestimated.
- Access to project documents (using Lotus Notes) not gained until late in the project – need to have for all Volvo projects at start.

0.5 Open Issues / Risks:

- Single source suppliers (employees) – we need to quickly expand knowledge of the ESW process in Graders and ensure back-up is available to support the line for all shifts.
- We need to ensure all process documentation is complete within GRD and also in Central ESW for processes common to Volvo CE to mitigate above risks.
- More detailed manuals are required from VolvoCE and Volvo, specific to Volvo CE software operation.
- Overall great deal of concern about the apparent fragility of the Volvo CE ESW systems as evidenced by ongoing problems.

0.6. Project Closure:

- The Grader Software Council has now taken full operational responsibility for ESW in Motor Graders. Cindy Matikainen, as chair, will ensure that all items identified for follow-up or action in this document are carried forward as open action items in the Grader Council minutes.
- This White Book will be distributed as follows:
  - Motor Graders ESW Council
  - Motor Grader Product Strategy Committee
  - Eirik Isene, Consultant, Motor Grader Team
  - Volvo CE ESW Core Group.
  - Patrik Lindblom, TUE
  - Lennart Johansson, TUM
  - A700 Project Team

- The White Book will be available for Goderich personnel involved in Product Development under: **drive "I" → Eng → Projects → P6600 A700 → ESW General.**

- All other project documents are stored in the various folders of the P6600 A700 project (e.g. Cost, Schedule) or in the appropriate departmental network location for specific applications.

- Acknowledgments: My thanks to Eirik Isene for the major portion of work on this document, and to the rest of the team for their honest contributions.

1. *Project Background / Objectives:*

The Grader ESW Project was started as a consequence of the decision to start using Volvo Engines in Volvo Motor Graders.

A Volvo CE ESW Project had been finished just months before. The results of this project were presented to Volvo Motor Graders in December 1999.

The start-up of the Project happened during December 1999 and January 2000. The project was approved by the Executive Committee February 1, 2001:

- Project Scope – including Objectives, budget, plan, gates, organization
- Objectives included: the creation of processes required to support the implementation of Volvo CE Embedded Software in the A700 Grader and to merge these into the ongoing duties of personnel in each functional area (Vehicle Electronics, PROSIT, Central Systems, VCADSPro). These were essentially completed, subject to the open issues identified in Section 7.
- The objectives in the original Scope included coordination of the introduction of Motor grader Specific ESW processes into Brazil manufacturing. This has *not* been completed as it has been decided not to implement the G700B in Brazil until at least 2004.

2. *Project Organization:*

The following people were given tasks and responsibilities in the Project:

- **Gerry Bender** was appointed **Project Manager. Pat MacFarland** replaced him as such in December 2001 when it was decided to merge this project with the A700 Project 6600.
- **Eirik Isene** was hired as **Project Coordinator**.
- **Clair Hodges** was given the responsibility for the **Central Systems** and infrastructure**. John Lee and Mike Mason** assisted him. He also got some help from his Group: **Wayne Pritchard** and **Pete Wise**.
- **Wally Preston** got the responsibility for the **PROSIT** Tool and the installations in the workshop. He was assigned the help of **Cindy Matikainen** for development of **VISP tests**. Cindy soon replaced Wally when Wally resigned from Volvo Motor Graders.
- **Ove Christensen** was responsible for the **VCADSPro Tool** with assistance of **Bryan Brezynskie.** Bryan replaced Ove when Ove was given other responsibilities in early 2002.
- **Olli Matikainen** has been responsible for **Vehicle Electronics** from the start. **Matthew Lawrence** has been assisting with cable harnesses and schematics.
- **Glenda Becker** has been assisting with her knowledge about **ECN** and their Effectivity.

The Project has also been assisted by other organizations within Volvo CE:

- The departments **TUE** and **TUM** has developed the Vehicle Electronics based on Volvo Motor Graders Requirements Specifications.
- **Dept 8650** (Volvo IT) has adapted the Volvo CE applications to meet Volvo Motor Graders requirements: Karl-Erik Manfred and Bengt Andersson.
- **CST** in Eskilstuna has helped develop and manufacture one **Test Simulator**.
- **Volvo Parts** has developed VCADSPro to meet the Volvo Motor Graders requirements.
- Volvo Motor Graders have been assisted by the **ESW Core Group** in **Eskilstuna** and **Växjö**: Karen Nichols-Rexwall, Helge Anderhav, Marie Karlsson, Alberto Palomeque, Roger Nilsson, Joakim Dahlen, Pearu Kiiver and others – responsible for implementation of any programming requirements for all aspects and support.

3. Project Milestones:

4 different Gates were defined. These should be passed before the Grader ESW Project could be declared as finished:

- **Gate #1**: Formal decision to implement ESW at Volvo Motor Graders was passed February 1-2001 when the Steering Committee took the formal decision to run and fund the Project.
- **Gate #2**: This Gate was passed as planned on April 20.
- **Gate #3**: This Gate was considerably delayed due to the inability to produce files according to Requirements Specs. and hence, verify the complete cycle of events and application updates. A principal solution was found in the end of September but was not accepted by the ESW Core Group until December 2001.
- **Gate #4**: This Gate was passed April 25, 2002 but was originally planned to done November 9, 2001. Very low production of “ESW-graders” and various decisions related to the G700 Project have had some influence on the delay.

4. Project success and failure story:

We will not describe in detail what we have done, merely how we believe we have succeeded. The people responsible per sub-project have given their subjective views on how the project was run:

- What was good in this project?
- What could have been better in the project?
- Was it worth it? or What came out of it?

4.1 Central Systems and Infrastructure (Clair Hodges)

Good Stuff:

- Communication Protocol FTP, allowed Graders to establish connections faster and more reliable than VCOM.
- We could use our own Hardware for the PROSIT server.
- Eirik Isene was a good choice for a project consultant, because of his previous experience with ESW.
- Initial training for 2 people (Wally & Cindy) was a good approach, the project was not set back when Wally left the company.
- Good teamwork at Graders, the project did not stall, even though there was a lot of other activities around the new grader configuration.

Needs Improving:

- Improved Testing Facilities, while testing the communications link, the MESA production server (Sweden) crashed because the order file was empty. A test server would have avoided the problem.
- Need to use an Implementation Team concept. As the project progresses through different phases of testing and implementation, the players “Who to Contact” changes. To know whom to contact at the various stages of implementation is important information, in keeping the project on track. E.g. who is the Swedish contact for the GRD programmer working on files to be transferred to MESA.
- Need improved System Documentation, the concepts of ESW are fairly well documented with good presentations, but the implementation details need to be improved (ESW Core Group).
- The application needs to be more self-supporting, and should not rely on other legacy applications for support. New Volvo acquisitions, will inevitably run into the same problems of not using PROST for their PDM system.

4.2 PROSIT and VCOM (Cindy Matikainen)

Good Things:

- Throughout the project, cooperation between departments at Volvo Motor Graders (Manufacturing, Engineering, IT, Purchasing, etc.) was excellent.
- The training courses given in Sweden were a very good introduction to the ESW system and sending at least two people from the Manufacturing department was a good decision.
- The consultant hired (Eirik Isene), has assisted a great deal with the planning and organizing of this project. He has also been able to contact the correct people and open communication channels that would have been difficult for us to establish on our own.
- Work on this project was done promptly to ensure schedules were met. Equipment purchased is high quality and was available when it was needed.
- Assistance was available from Volvo CE and experienced personnel in other product companies.

Things to Improve Upon:

- More local resources (ME) are required to ensure support for the production line.
- Because the grader has a more complex electrical and electronics system, the personnel assembling and trouble-shooting the system require more knowledge in these areas.
- Detailed manuals are required from Volvo Truck for software operation (PROSIT and VISP) and they should be specific to Volvo CE.
- A gap in PROSIT help-line support in Sweden exists for a large portion of our production time due to time differences. The off-hours support that is provided typically does not have the expertise to solve a problem.
- A better understanding of the Central Systems and SAP may have helped to avoid some of the misunderstandings and problems with transfer of MESA Structure tables from SAP and the need for our unique approach. This process could have been planned in conjunction with Volvo CE earlier in the project to improve everyone's understanding and cooperation.

Achievements and Benefits:

- Volvo Motor Graders has become known to Volvo CE personnel. Volvo Motor Graders has become linked to Volvo CE and integrated through the Central Systems in a new way, we feel more a part of Volvo.
- Stage 1 of implementation of the ESW system into graders is complete. We are able to order, program and check software in graders as they are built. Volvo Motor Graders can now produce graders with engines performing to tier 2 standards.
- Volvo Motor Graders personnel have gained an understanding of the Volvo CE Central systems and how the product companies are integrated into these processes.
- Volvo Motor Graders personnel have developed a better cooperative working environment between departments through the implementation of the ESW system.
- Volvo Motor Graders was able to integrate with Central Systems by utilizing SAP in its current form without major modifications.

4.3 VCADSPro and Simulators (Bryan Brezynskie)

What went right:

- Project team was set up and the project content and milestones were identified
- Visits to and from Volvo Sweden contacts helped to clarify issues.
- Training was delivered at an appropriate time.
- Schedule was developed and updated.
- WSW Council and Grader SW Council teams were assembled.

What went wrong:

- No specific graders were available for testing and verification.
- Many error messages caused verification difficulties.
- Tests received from Sweden seemed to lack basic test verification before they were sent to us.
- Too many launches of other product lines caused a lack of resources to provide adequate service.
- Problems with Central Systems caused programming problems.

What came out of the project:

- Now have a better understanding of the complete system
- Now have good contacts for problem resolution.
- Graders will now be compatible with other Volvo products for testing and diagnostics.
- Will have a simulator for training purposes.
- We now have internal support for all ESW functions.

4.4 Vehicle Electronics (Olli Matikainen & Patrick Lindblom)

Olli Matikainen:

Good Points:

- We started with “display only” system (essentially no control outputs), hence associated risk was low.
- Project has provided opportunity to meet people elsewhere in Volvo CE and suppliers outside of VMG
- Project provided opportunity to gain familiarity with grader electrical system. Eventually led to my promotion as Engineering Electrical Team Leader.
- Project provided opportunity to learn about electronics and communication systems.
- Gained better understanding of grader build process and material planning, e.g. ECN scheduling.

Not so good:

- ESW system is more complex (hence more $) than was required for grader size business (1000 graders/yr.).
- Engineering was first group to get acquainted with entire "ESW" system, hence we were the first group to appreciate the scope of the system and the impact on the rest of the company. It was very difficult to get the rest of the groups to appreciate that a lot of work was required in their areas – this was not an "engineering project" only. Fortunately for the other groups, the G700B launch has been delayed.
- Long lead time to make software changes, even if the change is a "small" one. Finding information from other Volvo CE groups (e.g. WLO & ART) was difficult because:
  - we did not know where to find information;
  - written information was often not in English;
  - we lacked access to the documents (e.g. Lotus Notes used by TUE & TUM, for which we gained access toward the end of the project).
- ESW System appears to be too much a "manual system" – seems as though a lot of manual work must be done to release software. Data entry is often duplicated, hence, more chance of mistakes. ESW system spans many different departments across Volvo, but seems as though very few people understand the whole system (even in a general sense). This meant that often it was necessary to talk to many people to get an understanding of how it would impact VMG systems and processes (and even still you were left wondering if the original question was answered).
- Software testing was difficult because of resources. A full test requires about 3 weeks, and with all the other activity surrounding G700B project, it was difficult to get test engineers and uninterrupted access to graders to use for testing.
- Project was progressing well when I worked on it "full time". Since taking responsibility for Electrical and Cab Team, I feel that the project has suffered due to demands on my time in other areas. Unfortunately there was no one else available to take over the details of the project. The project still is not finished (mainly documentation which is not complete) – leaving the documentation unfinished happens too often in our department!

Patrik Lindblom (from Final report P9502)

Good Points:

- Product delivered as required
- Completed within budget
- Project Team functioned well including collaboration and communication
- Well organized from GRD side, high quality specs and on time.

Noted for Improvement:

- Use error reports and change requests more to track properly (being done now)
- Use examination more i.e. review of specifications between customer (e.g. GRD) and supplier (e.g. TUE) either by phone or face-to-face depending on situation to ensure understood and agreed.
- No tool for VCADS verification locally by TUE.
- Test routines for MATRIS missing (TUE to address)

4.5 Processes and Guide Lines (Eirik Isene)

- It is generally very hard to get people to take any interest in Process Descriptions: these are only interesting when the informal routines do not work or a conflict occurs.
- Necessary processes have been described and this has resulted in changes to some guidelines and 6 new guidelines with the process descriptions as appendices.
- The guidelines have been filed in the appropriate public folder (“Everyone”).

4.6 Project Management (Pat MacFarland, Gerry Bender & Eirik Isene)

Eirik Isene:

- Positive and active engagement from the top executives
- Professional attitude/focus to the project as such and the job to be done.
- Very nice and knowledgeable people to work with.
- Largely we have been able to stick to plans with one exception: Central Systems.
- A very nice challenge for me personally and I believe that I have been of good use in the project.
- Disappointing that we could not manage to deliver information to MESA that was acceptable to the support-people in Eskilstuna. Future problems may occur.
- A little disappointed that the introduction of ESW in the machines was delayed due to general collapse of the world economy and other factors outside our control.
- I believe that Volvo Motor Graders has got an ESW solution on a competitive level that they would never have been able to get on their own (without Volvo and the TEA).

Gerry Bender:

Best:

- Having the local expertise in a main role right from the beginning, so the routines could be established and developed based on real experiences.
- It was essential to our success in having the benefit of Eirik’s experience on the systems and as an on-site support person in Sweden to open doors and intervene on our behalf.
- Initiative of the team members to secure completion in their areas.

Worst:

- Overcoming our lack of experience in this level of electronics
- Differences in work routines and system structures between Motor Graders and the Volvo CE systems
- Occasional brick walls or lack of response from Volvo CE
- Incomplete documentation or unfinished routines at Volvo CE

Worth it?:

- Definitely, even though we didn't have a choice.

Pat MacFarland:

Good Stuff:

- Very impressed by the way the members of the grader ESW Team took responsibility for their areas and responded to the challenge in front of them. As a result, this has been a relatively trouble-free portion of the G700B project, in spite of the complexity and attendant risk.
- Eirik Isene's addition to the project early on has been critical to our success. His Volvo CE and IT background, not to mention language skills, contacts and location, clearly helped facilitate our entry into the Volvo CE ESW world.
- Under budget – only part of G700B that is!
- All of above meant it required very little of my time and mostly I tried to stay out of the way.

Could have been better:

- Could have done a more consistent job at schedule / activity tracking, including planning requirements for testing. Also we should consider allocation of machine or machines to ESW for testing.
- Must have been some communication issues that resulted in a minor blow-up late 2001 @ ESW Core Group relative to Grader Processes. This probably could have been avoided with more consistent project manager involvement from GRD.
- Disappointed in late execution on test simulators and infrequent usage of.
- Concern still exists going forward re: fragility of Volvo CE / Volvo ESW process / Structure and possible impacts – as evidenced by recent problems with Central Systems losing test files, D7 ECU parameter file overwrites, etc. Not unique to Graders.

Achievements / Benefits:

- Confident that Graders ESW Team can support process in future, subject to capacity / time constraints.
- Sets up graders for the next generation.
- Relationships developed and Volvoization of grader extremely valuable.

4.7 ESW Core Group - Sweden (Helge Anderhav, Marie Karlsson, Pearu Kiiver, Karen Nichols, Roger Nilsson, Alberto Palomeque)

Positive Points

- PROSIT installation roll-out went very well without any hitches.
- PROSIT and Process Control area with good level of understanding and good networking.
- SW Development area with good level of understanding and easy cooperation.

Areas for improvement

- Overall: Difficulties in finding a viable working solution outside of the normal ESW routines. Previous ESW introductions in other locations were more easily able to implement already established routines and specifications, i.e.
- Normal lead-times insufficient to cover extensive additional investigations into the proposed unknown and untested solutions
- Poor attendance level during initial training (General Overview, July 2001)
- Expanded support needed from Gothenburg and Eskilstuna personnel GRD than was needed for other companies due to above difficulties in finding a viable working solution outside of normal ESW routines.
- Initial VCOM routing through Belgium instead of Gothenburg (lack of official support)
- Great difficulties to obtain machines for VCADS Pro testing and verification
- Reaction times at GRD longer than Core Group expectations (based on average for other companies) primarily for during the VCADS Pro verifications. This problem has been addressed and is now hopefully solved.
- Core Group missed a greater participation of the GRD Project Leader throughout the planning and implementation phases.
- Manual ECN handling does not secure acceptable level of quality assurance. GRD ECNs are sent to Sweden as attachment to a mail, and sometimes arrive late, or the list is incomplete (missing some ECNs). Marie Karlsson must then request again. There was talk some time ago of GRD organizing a database for the ECNs. This would be very good since the access can be electronic and there would be no need to send/mail them any longer.

5. Project budget and results:

Project Budget $CAD	**Plan 2001 & 2002**			**Result 2001 & 2002**				
	Own hours	**Exp.**	**Capital**	**Exp.**		**Capital**	**Own-hours**	**Notes**
Project Management								
Consulting		66000		102500			900	1)
Travel		25000		30700				
VCADSPro							1400	Estim.
Consulting	Own	10000		0	0			
Hardware			35000			35000		3)
Support & Software (25%)		72000						6)
Training		49000		0	0			5)
Travel		35000		34000				
PROSIT							1500	Estim.
Consulting								
Hardware			95000			59600		4)
Support & Software (15%)		39000				?		6)
Training		0						
Travel		19000		6000				
Central Systems							448	Estim.
Consulting		--						
Hardware		--	0					
Support & Software		10000		0	0			2)
Training		--						
Travel		--						
ESW Central Support charged to Eng.				90000				6)
Sub-Total		**325000**	**130000**	**263200**		**94600**	**4248**	
TOTAL		**455000**		**357800**				

1) Approx. 6 more weeks work required than anticipated; related to differences In GRD operating processes and delays in project and integration test.
2) Services from Dept 8650, PDM Team
3) 26.000 to date, 1 more PC to come.
4) IT/IS investment
5) Nothing charged to date.
6) Volvo CE charged to Engineering for ESW
7) Included in A700 budget (Engineering)

6. Hand-over to the Operations Organization:

This has been done successfully since mid-2001. The roles and responsibilities have been described in a number of documents. The contents of these documents are reflected in the guidelines. The relation between Volvo Motor Graders as a Volvo CE company and the ESW support organization in Sweden is described in the ESW Home Page: http://violin.vce.volvo.se/esw/

All personnel at Volvo Motor Graders working with ESW operationally, are well aware of their roles and responsibilities.

7. Open Issues / Risks:

The following situations should either

- be handled as soon as possible or
- be kept in mind and watched out for

in order to avoid serious problems in the future.

7.1 Central Systems:

There is a high probability that Volvo (Dept. 27246 and Dept 9650) will develop MESA and TruckSpec further to a Common Volvo application. When this happens, Volvo Motor Graders may have to reconsider their current solution where

- the information is not ECN related and
- Function Groups are not actually used within SAP and Volvo Motor Graders. However, Function Groups are used within GCST, but not within Manufacturing and Engineering.
- Etc.

Further development of the electronics in the Volvo Motor Graders machines should be formalized: formal Requirements Specifications with follow-up.

Cindy and Clair will take necessary actions and keep a close watch.

7.2 Test Simulators:

There is today only one simulator built, placed at Volvo Parts (Dept 31400 and Dept 9224) and used to verify development of VCADSPro functions. We have not decided on any method for how to follow up this simulator to keep it in line with the development of ESW software. It is not even properly documented as it is.

Simulators have to be treated as "regular machines" in a sense: they have to be entered and maintained in VDA as part of their documentation.

We need to build more simulators for education of mechanics at Goderich and in Eskilstuna. They may also need a simulator for the development of PROSIT and CVSP at Dept. 27246 and Dept 9650. We will consider the need for ‘basic’ simulators for VCADS and/or PROSIT and use the current full machine simulator for training purposes.

We need to find a way to document the simulators and keep track of "versions" as these are followed up towards the Road Map. The alternative is chaos.

Bryan will approach Roger Nilsson to issue necessary guidelines. See also point 8 References.

7.3 PROSIT and VCADSPro:

It is necessary to keep the relations to Alberto and Roger in the ESW Core Group very formal with written Requirements Specifications. These should be co-developed to a level where we can have an acceptance by the Volvo CE people responsible for pushing the matter at Volvo level towards a required solution. The results should be verified on Volvo CE and Volvo Motor Graders levels.

On short term it seems like there is still a lot to learn about VCADSPro. It seems like people are still unaware of some of the functions existing in VCADSPro. It is valuable to learn about these on Grader level even if they will not be used on Graders. It is necessary to be able to give support even when the improbable happens (Murphy's law).

Gerry and Bryan will approach Roger Nilsson about guidelines and additional education.

7.4 Parts:

The routines (applications) for pricing and delivering ESW Parts in Volvo Darts System are still not working for Volvo CE. That means we cannot invoice ESW Parts (excluding ECU) and Options/Kits (Parameters).
Volvo Motor Graders should push this matter with Customer Support (Parts) at Volvo CE and Volvo IT. Volvo has a solution for Trucks and Buses etc.

Routines for pricing and invoicing and delivery of Options/Kits should be developed at Volvo Motor Graders and Volvo CE. This will probably be discussed with Peter Ahlberg when he is here Week 218 (Gerry Bender and Jason Klassen).

7.5 Central Support:

- Support from the Central ESW Group (including the groups that provide support to our contacts such as the Technical Support Centre (TSC) in Sweden) is required 24 hours/day, 7 days/week. TSC currently not available 24x7.
- All future manuals, specs, programs for testing etc. need to be available in English.

8. References:

Documentation of processes and people etc within ESW but apart from the Volvo Motor Graders guidelines, see: **http:/violin.vce.volvo.se/esw/**

The following items are still missing but should either be found on the **Volvo CE ESW Site** or should be found via a **direct link** (in English) from this site. People from Volvo Motor Graders have approached people in Eskilstuna about this. Cindy Matikainen will pursue progress.

- Generic Process Description of how the **Development of VCADSPro** shall be done (Roger Nilsson).
- Instruction for how to present and update a **Road Map** (Marie Karlsson)
- Generic description of requirements regarding **How Engines shall be ordered** from Skövde (Spec-Week, data required, addresses of order etc.) (Marie Karlsson or TUM?)
- Generic description of **Responsibilities of TUE** versus GRD, WLO, ART and other Volvo CE Product Companies. (Toni Hagelberg, TUE)
- Generic description of **Responsibilities of TUM** versus GRD, WLO, ART and other Volvo CE Product Companies regarding ESW. (Lennart Johansson, TUM)
- Description of **Service Level** (response time and time to solution) to be expected by a Volvo CE Product Company or Plant from the various Volvo CE ESW Team members for different types of problems which they may have. (Volvo CE ESW Core Group)