Embedded Services

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1 Product Services by Vector

For over 30 years, Vector has been creating software components as well as professional tools, and has been successfully supporting customers worldwide in developing ECU software, ECU hardware and complete networking ECUs. Our experts bring success to your project with individually tailored product services.

![Diagram showing product services at Vector]

**Figure 1:** Product services at Vector

With our product services, we support you in every phase of your ECU development. Starting after delivery of your Vector software with **Integration Services** like GettingStarted or Extended Integration Packages (EIP) or with **Assistance and Knowhow** by support, coaching and technical consulting.

**Your advantages:**

- **Competence** - Benefit from our solid background of many years of professional experience
- **Precision** - Our engineers understand your project and focus on your individual challenges
- **Tempo** - Professional assistance without a long customer learning period
- **Knowledge transfer** - Sustained build-up of know-how for your employees

2 Delivery

Vector will deliver a "ready to use" software product and offers additional services to help customers speeding up setup and initial configuration as well

2.1 Installation and Support with the MICROSAR "Getting Started Package"

As part of the package, we work together with you to start up the MICROSAR basic software (BSW) and the RTE on your ECU hardware using the related configuration tools and a sample application. This enables a quickly runnable system, letting you afterwards focus on your application. This support is typically performed at your business site and is done at a fixed price. The main targets of this package are:

- Communication basically works on all busses
- Diagnostics responds on a basic service request
- Non-volatile memory is accessible
Afterwards, our helpdesk teams are available to assist you in case of questions about how to use the MICROSAR solution.

2.2 Installation and Support with the MICROSAR "V2G Getting Started Package"

Within the scope of this fix price service package, we will take the MICROSAR.V2G software into operation on your ECU hardware using the related configuration tools and a sample application. This quickly gives you a runnable system, letting you afterwards focus on your application. The project setup is completely performed at Vector site, while the handover workshop can either take place at your business site, at Vector site or by Webex.

The main targets of this package are:

- The PHY chip is able to download firmware from host controller
- A link can be established after SLAC has completed
- V2G communication completes a full session

A detailed offer attachment will describe the prerequisites that have to be fulfilled prior to the start of this service package, in order to ensure successful completion in time.

Afterwards, our helpdesk teams are available to assist you in case of questions about how to use the MICROSAR V2G.

2.1 Installation and Support with the CANbedded "Getting Started Package"

Here, we work together with you to start up the CANbedded basic software on your ECU hardware based on your valid input data, using the related configuration tools. This quickly gives you a runnable system, letting you afterwards focus on your application. This service is typically performed in a remote session but can also be done at your business site at a fixed price.

The main targets of this package are:

- Communication work basically on the channels described in your dbc-file
- Diagnostics will respond on a basic service request like a TesterPresent or a change to extended session

Afterwards, our helpdesk teams are available to assist you in case of questions about how to use the CANbedded solution.

2.2 Installation and Support with the Flash Bootloader "Getting Started Package"

As part of the package, we work together with you to start up the Flash Bootloader (FBL) on your ECU hardware using the related configuration tools and a sample application to ensure that you will quickly get a reprogrammable system. This service is typically performed in a remote session but can also be done at your business site at a fixed price.

The main targets of this package are:

- Download of example application (DemoAppl or StartApplication, included in the FBL delivery) will be possible via the defined bus system.
- Return from download with positive response from application software

Afterwards, our helpdesk teams are available to assist you in case of questions about how to use the Vector Flash Bootloader.

3 Support

The product support, regardless whether it is self-service or helpdesk support, is included into the SIP Maintenance, the prototype package and the evaluation package.

The Vector embedded product support consist of two parts:

3.1 Self-Service Support

The self-service support is the easiest and fastest support we provide. You will get access to our Vector portal and you will find steadily growing information in our knowledge database, containing engineering videos, descriptions and frequently asked questions (FAQ). Here you get questions answered like:

- How do I create a support request package?
› How do I integrate End-To-End Protection in MICROSAR
› How do I install and update a Vector basic software package?
› How do I copy configuration data from one DaVinci project to another

3.2 Helpdesk Support

The helpdesk support bases on our ticket system. You can ask your questions via the Vector portal or e-mail. Your request will be checked by a support dispatcher and assigned to an appropriate support engineer. This support engineer is mainly located at your local Vector subsidiary. Due to the worldwide availability of Vector subsidiaries we can also handle tickets in other subsidiaries and by that we reach a very high availability.

To ensure a fast reaction time for you in helpdesk we hand over requests that require longer lasting assistance to coaching.

4 Coaching

In coaching, we accompany your ECU development as long as you wish from first Vector software delivery to SOP. In coaching we’ll focus on handling typical situations that might happen in ECU development and handle them together with you and your team. Examples for common coaching activities are:

› Setting up your Vector software package on your hardware based on your requirement
› Integration and configuration of OEM-specific software components
› Individual configuration of the operating system or other basic software clusters
› ECU and mode management in power up and shut down
› Optimization of RAM, ROM consumption and runtime of your basic software system
› Integration of diagnostics, error memory and memory management in your ECU software
› Linking of the applications to watchdog management
› Integration of further standard software from the OEM

If you ordered coaching you will request a service via our helpdesk system, a coach will contact you afterwards to plan the realization.

4.1 Coaching Packages

All coaching actions we offer as coaching packages. You can trigger them by a request to our helpdesk support team or your Vector contact. The following packages are offered and the content will be adjusted to your specific needs:

› Setup Package
  A package, including all tasks to make the Vector basic software basically running on your system.
› Update Package
  A package to support you especially in updating the input data like ECU-extracts, diagnostic descriptions, etc.
› Configuration Package
  Configuration of specific clusters like communication, memory, diagnostics, watchdog, XCP, etc.
› Optimization Package
  Analyzing your configuration to improve the memory consumption and/or the runtime behaviour
› Troubleshooting Package
  In case of serious troubles with Vector’s basic software our experts will assist you in debugging to find a solution.
› Walkthrough Package
  Checking your specific configuration of the Vector basic software and give you feedback. The walkthrough is an informal configuration check that cannot replace an official review demanded by an OEM.

In addition to the telephone and e-mail hotline, our coaching also offers you on-site support by arrangement. Based on the agreed specific objectives, we ensure individual support of your project.
In order to optimally synchronize our supplies and services with your ECU development, we also offer you a customized project management within the scope of coaching. The scope can range from selective coordination to regular management meetings to support in appointments with the respective vehicle.

4.2 Project Management

A project manager at vector can be considered as your single point of contact in all technical and management concerns during your project development cycle. The main activity of the project manager is to “supervise and control” the project in sense of identifying and preventing impediments that may slow down the development process and delay your releases. The project manager represents your escalation path and can support you to (re)act in order to keep the project on track. The supervision and control activities are part of your SIP and will not be charged extra. Following activities are categorizing the tasks performed:

Planning of project activities
- Creating a schedule at the beginning of the project according to the ordered software products

Control of project activities
- Handling change requests (delivery change request, change requests which may affect the ECU project e.g. change of derivative, platform, compiler etc.)
- Handling of service and sales requests (coaching budget, feature requests, trainings, workshops, etc.)
- Managing tasks and activities in a so called open item list (OIL); actions in such an OIL may also be performed by customer (providing questionnaires, µC data sheets, wiring schematics, etc.)
- Adapting project plan according to the needs during the development process and in case new activities relate to the project are added or submitted
- Handling escalation requests

Monitoring of project activities
- Monitoring the status of the tasks and activities managed in the OIL (HW/SW change requests, feature requests, quickfix/warranty deliveries, etc.).
- Monitoring the project related technical support requests in our support helpdesk to detect impediments to the project

Project management activities are usually performed in the background on Vector side and are communicated to the customer. In order to synchronize even closer with the project manager at Vector you can optionally request a “regular meeting” and/or a “regular project status report”. Both instruments can be ordered as additional services and will be charged to the coaching budget accordingly.

Regular meetings
- Establishing a regular meeting in order to discuss open questions in detail and derive new project activities; the frequency is depending on the project requirements and can be defined during the kick-off meeting

Project status reports
- Providing project status reports including management relevant information (OIL status, quickfix/warranty delivery status, service tickets, etc.); the frequency is agreed during the kick-off meeting
## 5 Support & Coaching - The Differences at a Glance

The table below gives an overview of the differences between support and coaching.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Support (Self-Service + Helpdesk)</th>
<th>Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail Support</td>
<td>Yes, unknown contact person (Support Engineer)</td>
<td>Yes, dedicated contact person (a Coach)</td>
</tr>
<tr>
<td></td>
<td>support@&lt;ccTLD&gt;.vector.com</td>
<td><a href="mailto:Firstname.lastname@vector.com">Firstname.lastname@vector.com</a></td>
</tr>
<tr>
<td>Main focus</td>
<td>Standard Q+A (+ incident management)</td>
<td>Performing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-defined work packages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setup Package</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Update Package</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Configuration Package</td>
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<td></td>
<td></td>
<td>Optimization Package</td>
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<td></td>
<td></td>
<td>Troubleshooting Package</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walkthrough Package</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customized work packages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Workshops</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... to address complicated and complex (long running) topics together with you, know-how transfer, consulting.</td>
</tr>
<tr>
<td>Request type</td>
<td>event-driven request, to address simple (quick to solve) topics</td>
<td>must be planned, mid-term resp. long term activities (e.g. work packages)</td>
</tr>
<tr>
<td>Project details</td>
<td>out of scope, shall be independent of other tickets</td>
<td>known</td>
</tr>
<tr>
<td>Contact</td>
<td>Impersonal via Helpdesk-System i.e. by E-Mail or Vector portal</td>
<td>Personal via phone or E-Mail</td>
</tr>
<tr>
<td>On-Site support</td>
<td>No</td>
<td>Included if necessary</td>
</tr>
<tr>
<td>Self service</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Knowledge database, engineering videos, FAQs</td>
<td>Coaching is an optional support extension</td>
</tr>
<tr>
<td>Limit</td>
<td>Certain limit per ticket (e.g. few hours only)</td>
<td>Limited to the pre-defined Coaching package based on existing budget</td>
</tr>
<tr>
<td>Criteria</td>
<td>Project details: out of scope Shall be independent of other tickets</td>
<td>Project details: known Project Manager and/or Coach are familiar with project context</td>
</tr>
<tr>
<td>Examples</td>
<td>Installation support Configuration support</td>
<td>Setting up the system i.e. bring the Vector software to your system Updating the Vector software or the ECU-Extract Optimization of RAM, ROM, Runtime</td>
</tr>
<tr>
<td>Effort Reporting</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Business Model</td>
<td>Covered by the product maintenance or by an explicit support package</td>
<td>Available as additional service (as hourly based budget)</td>
</tr>
</tbody>
</table>
6  Trainings

Vector offers different types of training:

> E-Learning
   The E-Learning training is an online training, which can optionally accompanied by interaction with a trainer via one - or multiple face-to-face or remote sessions. Depending on the type of training the content is provided as a mixture between videos and interactive contents or as videos only. Students learn on their own pace – depending on their personal schedule – using the Vector E-Learning Platform, which provides all learning contents.

> Remote Training – Content of Classroom Training in remote sessions
   All contents of the classroom trainings are made available as remote training. Trainer and participants meet in a web conference and will perform the training in a "virtual classroom". Exercises will be performed on our virtual training environment and supported directly on site by the trainer. This form of training is available for all offered Vector embedded training courses.

> Classroom Training – Presence Training
   The classroom training is a presence training. The theoretical and practical parts are accompanied and supported directly on site by the trainer. This form of training is available for all offered Vector embedded training courses.

6.1  AUTOSAR Training for the Classic/Adaptive Platform

Vector AUTOSAR training courses provide you with an ideal entry into ECU development with AUTOSAR. Intensive exercises ensure its relevance to practice.

> For more information about the AUTOSAR Classic Platform refer to https://vector.com/vi_class_autosar_overview_en.html. There you can find our trainings for AUTOSAR basics, usage of AUTOSAR 4 in practice, OEM related trainings and special topics such as Safety, NV memory and Multi-core.

> For more information about the AUTOSAR Adaptive Platform refer to https://vector.com/vi_class_autosar_adaptive_en.html. There you can find our trainings for AUTOSAR Adaptive Platform basics as well as the usage of AUTOSAR Adaptive in practice.

6.2  CANbedded Training

In the Vector CANbedded training you will get an introduction to the characteristics and interaction of the CANbedded software components. The training also includes the specific peculiarities for the different OEMs.

For the list of available Vector in-house training courses on the Internet, please visit our website http://vector.com/vi_class_canbedded_en.html.

6.3  Flash Bootloader Training

The Vector flash bootloader training concerns the important aspects of flash programming in the vehicle. Based on selected examples you learn the basics and functionalities of the flash bootloader. You get to know how to integrate the bootloader into an existing application in practice.

For details on the training schedule, please visit our website http://vector.com/vi_class_flash_bootloader_en.html.

6.4  Vector Certified Partner Program (CSP-E)

With the Vector Certified Partner for Embedded (CSP-E) program, you can be trained as an expert in Vector basic software and thus maintain close contact with our development and product management departments.

Your advantages as a Vector Certified Partner are:

> Combining the domain-specific know-how of your employees with the expertise for Vector MICROSAR software

> Availability of Vector special know-how at your location

> Continuous expansion of your knowledge regarding the latest topics through special workshops for certified partners.
6.4.1 Prerequisite

The prerequisite for the Vector Certified Partner for Embedded program is a solid AUTOSAR basic knowledge. You can build this knowledge by participating the Vector MICROsAR Basic Training. Of course, your experience, which you have already gained with AUTOSAR projects, also matters.

6.4.2 Phases of the Vector Certified Partner Program

The Vector Certified Partner program distinguishes between an education- and membership phase.

<table>
<thead>
<tr>
<th>Education Phase</th>
<th>Membership Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome webinar</td>
<td>Exclusive Partner Workshop</td>
</tr>
<tr>
<td>Module 1</td>
<td>“Ask the Expert” Session</td>
</tr>
<tr>
<td>Module 2</td>
<td>Exclusive Partner Workshop</td>
</tr>
<tr>
<td>Module 3-8</td>
<td></td>
</tr>
<tr>
<td>Module 9-10</td>
<td></td>
</tr>
<tr>
<td>Exam Preparation</td>
<td></td>
</tr>
<tr>
<td>Exam</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Phases of the Vector Certified Partner program

6.4.2.1 Education Phase

The education phase will start after a welcome webinar that provides you with the necessary information about the eLearning platform and the modalities.

During the training phase you will go through a special program of online learning modules and attendance phases, which will end in exam preparation and certification. The training phase lasts about 10 weeks.

The modules give you access to our modern eLearning platform, which enables the transfer of knowledge through various videos, explanations and helpful animations. Complete your knowledge build-up with expert tips and best practice sequences and check your learning status at any time with numerous self-check questions. In addition to the eLearning platform, the Vector Certified Expert Program offers a real working environment. Practical applications can be simulated directly in a virtual environment via included SIP and Vector DaVinci toolsuite.

This exam preparation phase takes place in a classroom event at Vector with further expert topics, a summary and a further “Ask the Expert” session. The certificate examination then takes place. After successful completion of this examination, you have qualified as Certified Partner for Embedded and enter directly into the membership phase.

6.4.2.2 Membership Phase

As a certified partner, you have further advantages and access to the membership phase:

- 2 times a year exclusive partner workshops at Vector
  The topics of the partner workshops are selected by Vector and the certified partners. The duration of the workshops varies, depending on the topic, between 1 and 3 days. As workshop participants, you will work with your own evaluation bundle and can optionally bring in your own target hardware. The agenda includes a theoretical part, a practical trainer session, as well as a practical work of the participants on their own system and on their own use cases with the support of the trainer.

- Regularly, web-based “Ask the Expert” sessions with Vector experts on current topics and issues
  The topics of the “Ask the Expert” session are proposed by Vector but can also be worked out together with the service partners. Typical contents are an open round of questions in which you can ask your own questions. The same applies to an exchange round in which you can exchange your own experiences with other participants and the Vector experts. Of course, there are also tips and tricks from the Vector experts, news about embedded products, schedules and releases as well as information about similar topics and Vector solutions.

- Networking with other Vector Certified Partners for Embedded
- Access to online training and workshop materials
- Access to Community Events

The membership phase has a duration of 12 months and can be renewed annually.
6.4.3 Business Model

The business model consists of an initial package and an annual update. Both licenses are personal and cannot be shared with others.

> Initial Package (Education Phase)
   The initial package includes access to the embedded online training and participation of the exam, which is valid for three years after successful completion. In these three years, you have the rights to the evaluation package and receive an annual update.

> Annual Update Package (Membership Phase)
   With the annual update package, you receive the rights to participate in the expert sessions. In addition, during this time they have access to the current online trainings as well as the possibility to participate in two partner workshops at Vector.

7 Technical Consulting

Within the scope of technical consulting, we can work out together individual, technical solutions to various questions related to AUTOSAR:

> Definition of an AUTOSAR-compliant software architecture
> Optimal use of the AUTOSAR tool chain: DaVinci Developer, Configurator Pro and GENy
> Migration of existing software to the AUTOSAR architecture
> Conceptualization of gateway functions
> Structuring of MATLAB/Simulink models to be linked as software components via the RTE
> Interfacing external peripheral components
> Hardware-dependent sleep and wakeup concepts under consideration of individual quiescent current requirements
> Consideration of aspects related to Functional Safety according to ISO 26262

We are performing these consulting activities as customized workshops. This ensures that the worked-out solutions optimally fit into your ECU project.

8 Extended Integration Package (EIP)

The Extended Integration Package is a pre-defined (standardized) project work for the integration of the OEM-specific standard software on your ECU. It offers an efficient start for your project and allows an early and successful execution of bench tests with the OEM. For details on the content of this service package, please refer to the separate Product Information MICROSAR at www.vector.com/pi_microsar_en.

9 Review of your Configuration

You have been using our AUTOSAR embedded software for a longer period of time, and you are approaching an important project milestone. Based on prepared checklists, we conduct an integration and configuration review related to the concrete usage of the MICROSAR stack. In this process, we evaluate the completeness, correctness and consistency of the selected settings and the required integration code. In particular, specific aspects of the OEM are considered, such as parameters, configuration settings, as well as provided software components.

Reviews will always be done in close cooperation with the car manufacturer. We’ll offer reviews for the following OEM:

> Porsche
> Audi
> Ford
> Mazda