



An ESG Group Company

# Integrated systems Services and solutions for optimising after-sales processes





# Motivation and benefits

**Commercial vehicle manufacturers (on-road, off-road) are experiencing ever increasing product complexity and customer-driven diversity of variants.**

## Challenges

- Increasing amount of electronics
- Complex software in the products
- Diversity of variants and versions
- Rising warranty costs
- Growing number of lease and full-service contracts
- Calculable TCO
- High availability
- Optimising production costs for after-sales systems
- Interfaces to ERP systems

Total lifecycle	Phase 1	Phase 2	Phase 3
	lease (3 years)	Purchase with r & M contracts (3 Jahre)	Purchase
System ↑ INTERACTION ↓ Use	Diagnostics, parts, service, fleet management, r & M contracts	Diagnostics, parts, service, fleet management, r & M contracts	Diagnostics, parts, service
	Fleet management, r & M contracts	Fleet management, r & M contracts	Diagnostics, parts, service

The other side of the coin is the requirement of designing the processes in the services area as efficiently as possible and with the highest quality, in order to guarantee permanent customer loyalty.

The aim is to support the customer optimally by offering the best possible service and to guarantee high vehicle availability by reducing repair and service times.

However, this can only be guaranteed by efficient processes and systems that create and provide exactly the vehicle-specific information required for each product, such as working methods, labour times, diagnostics information, circuit diagrams, spare parts and SW versions comprehensively and in detail in the languages required and make them available worldwide on the same day.

Technicians spend a significant amount of their working time researching information in different systems which are characterised by different organisation systems and search paths.

Integrated information authoring and retrieval systems are based on identical systems and standard file structures. A standard workflow is developed on the basis of a common business process.

The information is edited, modularised and made available to the user for the respective vehicle-specific purpose (service literature, labour times, etc.).

The use of integrated systems extends over the entire lifecycle of the product.

# Modular integrated systems



**Modular integrated systems for after-sales service combine various function modules in a standard operational concept. The authoring system is used for information filling, while the retrieval system is used during operation.**

Authoring systems serve to edit and update the information. Retrieval systems are used for researching information and supporting the service processes. Depending on the respective specific customer requirements, integrated systems can include the part determination and documentation, service and customer literature and labour times and diagnostics modules. Thus, interfaces to upstream IT systems (ERP, engineering) and to multimedia data sources, terminology databases and translation are required on the authoring site; on the retrieval site, interfaces to central ordering and enterprise resource planning systems, dealer management- and workshop-disposition-systems and also vehicle diagnostics are available.

## **Integrated authoring system (back office)**

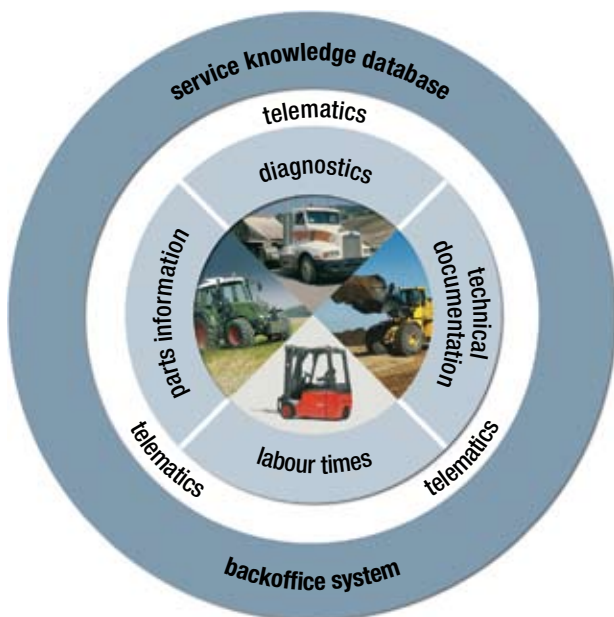
An integrated authoring system guarantees a coordinated, continuous authoring process, from editing through to publication. The information is created once by the editors in the form of reusable information modules, which are provided with validities, are independent of layout and can be used for all publication media (single-source, multiple-publishing).

## **Integrated retrieval system (front office)**

An integrated retrieval system supports the technicians in all his individual work steps and guarantees a continuous process based on a single information system.

## **Services for integrated systems**

- **Technology, process and system consulting**
- **Project planning and implementation (concept, specification, prototype)**
- **Realisation using solution modules**
- **(COTS products, SXP frameworks)**
- **Integration & test rollout & life-cycle support**



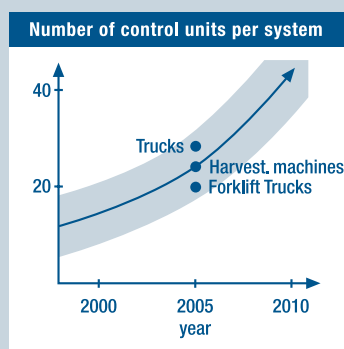


# Diagnostics & technical documentation

**The diagnostics system supports the technician during troubleshooting and repair. The technical documentation provides him with repair and maintenance instructions.**

## Diagnostics

- Troubleshooting and repair
- Coding control units
- Startup and testing
- Programming (flashing)



## Technical documentation

- Workflow-controlled authoring process
- Editing with standard XML editors
- Information management with CMS
- Configurable publication

## Module: Diagnostics

### Motivation

As in the automotive sector, the number of electronic and electric components is also increasing disproportionately in the commercial vehicle sector. The quantity and distribution of functions combined with the networking of control units are also making troubleshooting more complicated. Thus, to enable the technician to perform the repair correctly, information about symptom and fault relationships as well as the appropriate repair measures to be taken must be provided.

### Solution

A software-supported diagnostics and test system supports the technician while he is establishing the operational capability and availability of vehicles and systems. The tasks cover troubleshooting, repair, coding, startup, testing and programming.

### Components

In the form of the DiaMon diagnostics system, ServiceXpert provides a flexible and proven system for the diagnostics lifecycle of commercial vehicles and mechatronic systems.

## Module: Technical documentation

### Motivation

The creation of technical documentation and the translation process are also subject to permanent cost pressure in the commercial vehicle sector. Furthermore, there is increasingly also a demand for daily updating. Suitable solution approaches are characterised by modularisation and increasing the reuse proportion.

### Solution

In contrast to the solutions currently used, the information is no longer created in book form (PDF format), but rather as information units which are independent of layout (XML format). Information created once can thus be published via several media (paper, CD-ROM, Internet, ...) (single-source, multiple-publishing).

### Components

The information is created with established XML editors (e.g. EPIC; XMETAL). Our own development, SXP.NET, is used for the retrieval components.

# Labour times & parts information



**Labour times are the key information for integrated systems in service. R&M jobs and parts lists control the workshop process.**

## Module: Labour times / R&M jobs

### Motivation

Against the background of continually increasing vehicle complexity, the requirement for detailed and up-to-date information relating to the maintenance and repair of vehicles is increasing in the area of overall customer service organisation. This information allows the manufacturer to take a clear position in cases of warranty and service repair contracts. Dealers and workshops are able to create detailed workshop plans (e.g. qualifications required of technicians, procedure, special tools, technical data, time targets) and cost calculations. The workshop's services and price calculations are rendered transparent and comprehensible for the end customer as a result of this information.

### Solution

Comprehensive R&M master job structures, provided with validities, are created for the individual product ranges. From these, the respective specific work steps required can be selected using the vehicle constructions described by the parts lists and are displayed in the retrieval system.

### Components

The information is created using standard XML editors. Our own development, SXP.NET, is used for the retrieval components. An established content management system is used for management.

## Module: Parts information

### Motivation

To minimise the number of incorrect orders during repairs, the technician must be able to research the required spare part quickly and accurately. To do this, he requires information about the specific vehicle construction. For control units, information about the vehicle-specific software version and the parameter set must also be available.

### Solution

The required information is provided to the workshops in a vehicle-specific catalogue, which is updated daily. SXP also commands the expertise to integrate interfaces to the ordering system and enterprise resource planning system, as well as to the ERP system from the creation page.

### Components

Use of standard browsers to display the information.

Use of our own development, SXP.NET, for the retrieval components.

Use of generic interface modules as an ERP interface.

### Labour times

- Setting up R&M master job structures
- Managing validities
- Use of labour times macros
- Generating labour times lists (bill of labour)

### Parts information

- Vehicle-specific generation
- Effective search and selection mechanisms
- Managing validities
- Generating order lists (bill of material)



# R & M contracts & fleet management

**Equipment and deployment-specific calculation models are the basis of cost-efficient fleet deployment. For these, R&M contract and fleet management systems are used.**

## R&M contract management

- Contract configurator with standard components
- Interface to operation data acquisition
- Target/actual comparison of R&M costs
- Module for customer-specific analyses

## Fleet management

- Master data management with interfaces to the ERP system
- Production data acquisition/analysis
- Configurable prediction module
- Vehicle-specific cost calculation module

## Module: R&M contract management

### Motivation

As well as manufacturing costs, warranty and goodwill payments also have a considerable influence on the OEM's financial statement. Validated projections are required both for estimating the costs required within the scope of new developments and also for structuring and standardising the costs calculation of the field organisations and/or as the calculation basis for full-service contracts.

### Solution

By introducing R&M contract management, equipment and deployment-specific calculation models for vehicle use can be employed. The system creates, processes and manages service contracts, as well providing ongoing support for the target/actual comparison of R&M contracts.

### Components

The information is created using standard XML editors. Our own development, SXP.NET, is used for the retrieval components. An established content management system is used for management.

## Module: Fleet management

### Motivation

Mobile investment goods used in logistics (such as lorries and fork-lifts) have to be both durable and dependable. Information about the performance of the commercial vehicle over the whole of its lifecycle is just as important to the customer as to the manufacturer: the customer needs this information for operational planning and optimisation, whereas the manufacturer (OEM, original equipment manufacturer) uses this information as a basis for product modifications and process optimisation.

### Solution

Introducing a professional management system supports the direction, management and analysis of fleets. The fleet management system takes on the tasks of master data management, maintenance planning and production data acquisition and analysis, as well as access control.

### Components

Use of standard databases (Oracle, DB2). Use of web-capable report generators and our own development, SXP.NET, for the web frontend.

# Services for integrated systems

The conception and realisation of integrated systems takes place within the scope of a structured development process, based on the V-Model XT (eXtreme Tailoring).

## Structured procedure in the development process

### Objectives

- Minimising project risks
- Improving and guaranteeing quality
- Containing total costs over the entire project and system lifecycle
- Improving communication between everyone involved

### Procedure components

#### Compulsory

- Project management
- Quality assurance
- Configuration management
- Problem and modification management

#### Optional

- Commercial project management
- Measurement and analysis

### Tasks for each procedure component

- Project-specific tailoring
- Determining roles
- Defining products
- Defining activities

### Requirement specification

- Compiling system requirements
- Defining specifications for the project handbook

### Requirements analysis/specifications

- Surveying, documenting and managing requirements
- System, process and data modelling

### System development/ implementation

- Specification and design
- Realisation, testing & integration
- Verification and validation

### Acceptance and rollout

- Legacy data/ legacy system migration
- Lifecycle optimising



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### Selected references:

#### Integrated systems

- ServiceRapido - DAF Trucks

#### diagnostics

- Pathfinder - KION Group

#### service documentation

- SETIX - KION Group

#### labour times

- ServiceRapido - DAF Trucks

#### spare parts

- EPOS - Schmitz-Cargobull

#### R&M contracts

- Pro Service - DAF Trucks

#### fleet management

- Fleetmanager - STILL GmbH



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ServiceXpert GmbH is a subsidiary of the major system and software house, ESG Elektroniksystem- und Logistik-GmbH. ServiceXpert is headquartered in Hamburg, Germany, and has a branch office in Munich. We provide solutions for technical information systems for the agricultural technology, commercial vehicle, fork-lift trucks and construction machines market segments in Germany and Europe.

As a specialist for complex processes, we support you in planning, implementing and operating information management systems throughout the product lifecycle. We concentrate our systems and services on the areas of marketing/sales, development and after-sales service. Our solutions are based on the concept of integrated data management for technical product information.

Integrated systems map the information flows of integrated processes. Unlike the product development process (PDP), for which information must be available at defined points in time, the focus of integrated after-sales information systems is on providing product-related, up-to-date information at defined points during the lifecycle. ServiceXpert's solutions are designed to meet this challenge.

