APIS CARM-Server

Summary

- **The *APIS CARM-Server* is a supplement to the APIS IQ-Software.**
- **Project data are still stored in FME files (object databases).**
- **Users of the IQ-Software keep their power of decision on their FME files. They decide which data are transferred from the central knowledge database (CARM-Server) into the FME files and the update time of these data.**

- **The contents of the *APIS CARM-Server* are protected against unauthorized access by means of certificates.**
- **The *APIS CARM-Server* can be upgraded with service (CSS) and agent (CSA) modules.**
- **Usually, no additional hardware is needed.**

APIS IQ-Software

Users of the APIS IQ-Software (APIS IQ-FMEA, APIS IQ-RM, etc.) can store data in FME files (object databases). The convenient and intuitive user interface enables the development of even complex interrelations between knowledge.

Almost any requirements concerning the reuse of knowledge, centralized controlling, etc. can be realized with the IQ-Software alone. The CARM-Server supplements the IQ-Software.

APIS CARM-Server

The APIS CARM-Server covers the following functions:

1. Administration of modules, catalogs, and actions
2. Web interface to view modules and edit actions
3. Automatic processing of tasks, time- or event-triggered (agents)
4. Interfaces to external systems

Windows Service

The APIS CARM-Server is started as a Windows Service on a server computer. The server is stopped for maintenance purposes only.

Communication

The APIS IQ-Software sends requests to the CARM-Server at times defined by the user. If these are not answered promptly, a corresponding return notification is sent. The IQ-Software can be used independently of the CARM-Server.

Each configuration level of the APIS IQ-Software can obtain information from the CARM-Server and include it in FME files (object databases).

For the IQ-Software to be able to contact the Server, the server's IP address must be recorded in the workstation settings. A check for a valid certificate is additionally executed upon each request.

Administration of rights

Several certificates can be created and specifications of access rights to library categories for each certificate defined. The user then sees the content of a category only, if the certificate used has at least "read" access to the category.

CARM-NG-Server

Some functions are represented via the CARM NG Server (Next Generation). After the respective data were entered in the workstation settings of the IQ-Software, the requests are automatically sent to the next competent server; of which the user does not notice anything.

Function 1: Administration

With the library functionality, information to be stored centrally is administered for decentralize use:

a) (Knowledge) modules
b) Actions with responsibilities and deadlines
c) Catalog-based objects (functions, failures, preventive and detection actions, etc.)

Function 2: Web-Interface

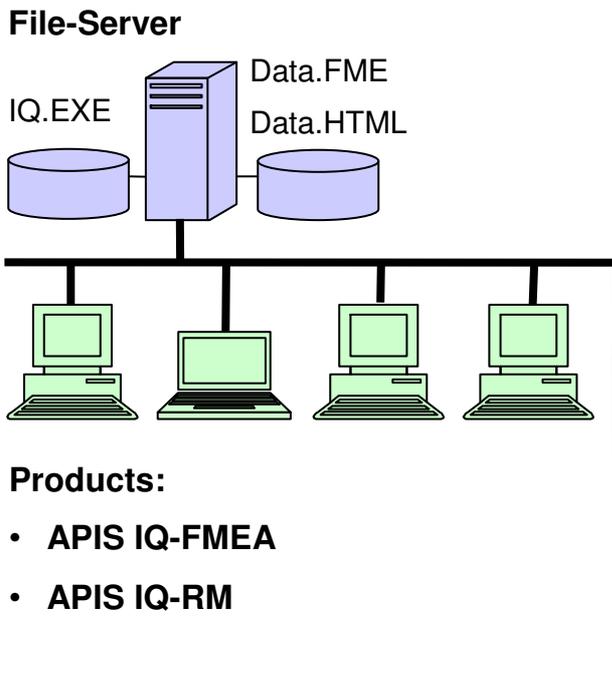The Web-Interface shows the information stored on the CARM-(NG)-Server in an internet browser.

File-Server

IQ.EXE   Data.FME
         Data.HTML

Products:
- **APIS IQ-FMEA**
- **APIS IQ-RM**

Fig. 1: The APIS-IQ-Software

Function 3: Agents

Recurring tasks can be automated by agents. This is particularly important, if a person-independent, reliable, error-free and close-to-the-moment processing of certain tasks is to be ensured.

Function 4: Interfaces

In general, data can be exchanged with other applications via neutral data formats. The IQ-Software supports standardized interfaces, e.g. the XML-based XDI interface (eXternal Data Integration).

It is alternatively possible to use the CARM-Server to exchange data. The user of the IQ-Software will not notice anything or very little of the technical process. The advantage of that is that there is only one central place where one has to deal with the specification, commissioning, and maintenance of the interface.

Knowledge management

The document-centered approach of the APIS-IQ-Software is tried and tested and provides many benefits for practical work. The APIS IQ-Software has been supplemented by another concept with the APIS CARM-Server, which supports knowledge management in an equally optimal manner without relinquishing the benefits of document-centered working.

Services (CSS) / Agents (CSA)

CARM-Server Services (CSS) are server services waiting to be addressed by the IQ-Software. A CSS

Advantages:
- **Methodology according to AIAG and VDA**
- **Integrated approach** without redundancy
- **Integration Features**
  - Workflow
  - Document Management
  - OS Storage, Backup, …
- **High performance Windows Application**
- **Robust, safe data handling**
  - OS based storage concept
- Reusable knowledge module under user control

installed on the CARM-Server will promptly process the task and e.g. answer the question, whether a module is available for a certain item code and submit it to the IQ-Software where applicable.

CARM-Server Agents (CSA) are server services which are assigned with tasks by an administrator and then work in the background. An agent can e.g. monitor a database and inform the responsible person, if a deadline is exceeded.

Information Push / Pull

The APIS IQ-Software supports project-oriented working so that a piece of information is always under the control of the person respectively in charge of the project. If a new piece of information is to become a standard within the corporation, then either the person who compiled the information may transfer it to the server, or a central function (which may also be an automatically working agent) transfers the information to the server. This, however, is only possible if the access restrictions of the operating system permit it.

If the piece of information is actively transferred to the server, this is called an information push; if the piece of information is analyzed, filtered from the amount of stored information, e.g. FMEA, and then stored on the server by the server, this is called an information pull. The important thing is that the original piece of information never disappears or is amended, if this is not required.

Knowledge-Server

Addresses,
Module library, …

APIS CARM-Server

Fig. 2: The APIS CARM-Server

If there are several users of a centrally administrated piece of information, it is required in case of amendments to:
- Inform users/requestors,
- Check project statuses for their topicality, and
- Include current information in projects.

This work can be done either according to the push or the pull principle. If something new is available, the information may be distributed (push principle) or collected (pull principle).

Modularity

As not every user needs the same functions, the CARM-Server is structured in modules. Many different CSS and CSA (CSS = CARM-Server Service, CSA = CARM-Server Agent) are available:
- CSS Administration, Remote Configuration
- CSS Catalogs
- CSA Notification
- CSS Module / CSA Module
- CSS Module Access Rights
- CSS Action Tracking
- CSA Web Publisher
- CSA PDF-Publisher / CSA CT PDF-Reporting

CSS Administration /
CSS Remote Configuration

After the CARM-Server was installed, you can and you have to adjust certain basic settings on the server. Among other things, password protection can be set. Other tasks in connection with the administration are:
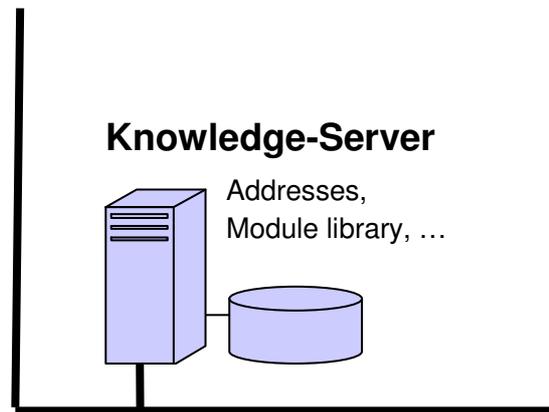
More advantages:

- Controlled, central stored and **managed knowledge modules**
- **Web-Interface**
- **Interface** to external systems
- **agents**

- Certification of computer upon initial access
- Definition of a password for access via the web interface
- Basic settings of the module library (approval, blocking and deletion)
- Basic settings of CSA Notification
- Basic settings of CSA Web-Publisher
- Basic settings of CSA PDF-Publisher / CSA PDF-Reporting

CSS Catalogs

Access to catalogs is supported by the CSS Catalogs. It contains approved collections of e.g. failure causes with preventive and detection actions, etc.

In the IQ-Software, the centrally stored standard catalogs can be accessed via the input collector.

CSA Notification

The notification agent ensures that the information push works. For example, the employees in charge can be automatically asked by e-mail to send a feedback on a pending action before a deadline is exceeded.

CSS & CSA Module

The APIS CARM-Server Service Module (CSS Module) is a service to administrate knowledge modules, which are then used in projects, i.e. they are copied into the FME file.

The module library can contain several generations of a module, of which usually only one generation is approved for being applied in new projects.

It is also possible to update already used modules, if more recent modules are available in the library. Module comparison shows the available changes in modules.

The configuration of the web interface defines, which information from the "module library" is available to be viewed and in which form.

CSS Module Access Rights

The current version of the CARM-Servers permits to replace the previous standard certificate with several certificates. You can define the specific authorization levels of specific certificates for each library category.

Certificates can be assigned with a password and a date of expiry.

CSS Action Tracking

CSS Action Tracking is a service to centrally administrate action deadlines.

It is thus also possible to edit actions via a web interface.

CSA Web-Publisher

If a defined set of web sites is to be placed on an Intranet server already in existence in the company, the analysis of the documents in question can be automated, as can the transfer to the Intranet.

A Web Publisher batch specifies which information is extracted from FME files and how it is published.

CSA PDF-Publisher

The CSA PDF Publisher sends data to a printer (here: PDF printer), as defined in the PDF Publishing batch. This automatically generates PDF files.

CSA CT PDF-Reporting

The CSA CT PDF-Reporting sends data to a printer (here: PDF printer), as defined in the PDF-Reporting batch. This automatically generates PDF files.

This function is part of the Customized Tools (CT), which are realized in customer projects according to specifications.

CSS Functional Safety

Special calculation standards can be created and/or reference standards, e.g. SN29500, are used to determine the failure rates of components.

The CSS Functional Safety allows for the assignment of FIT values to the relevant system elements.

System requirements

The Administrators Guide includes a description of the system requirements. The document is available for download as PDF file on http://www.apis.de in the section Downloads – Documents.