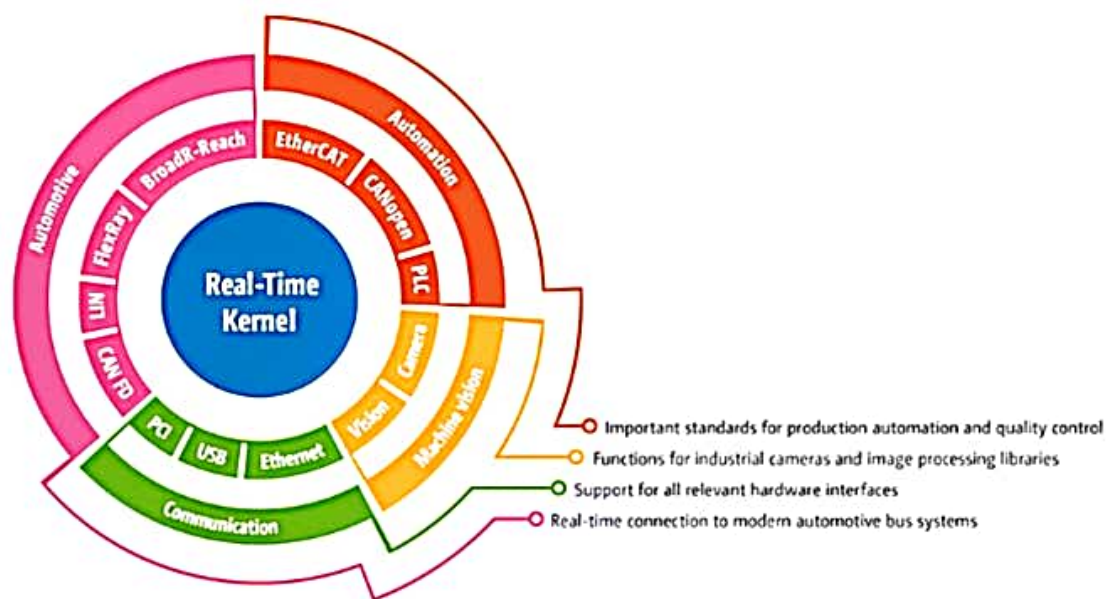# Basic Functions

Kithara RealTime Suite is a real-time extension for Windows. As a function library, it covers a wide range of different areas that are required for PC-based automation:

- Real-time multitasking system
- Hardware-dependent programming
- Real-time communication
- Automation and fieldbus protocols
- Real-time machine vision
- Automotive protocols

- Important standards for production automation and quality control
- Functions for industrial cameras and image processing libraries
- Support for all relevant hardware interfaces
- Real-time connection to modern automotive bus systems

Modules

The basic functions of the modular system of Kithara RealTime Suite consist of the following components:

Modules

The basic functions of the modular system of Kithara RealTime Suite consist of the following components:

- General management, execution of real-time code at kernel level, real-time memory management, debugging support, system information › Base/Kernel Module
- Interception of system events, fail-safe handler › System Module
- Mathematical/trigonometrical and string/memory functions in real time › Runtime Library

The Base/Kernel Module is generally the basis for every real-time system of Kithara RealTime Suite. It provides functions for opening the real-time driver from the Windows application as well as for the execution of real-time code at kernel level in order to reach the real-time context. It enables functions for general management tasks, version information and helper functions for debugging and for determining system information. It also contains mechanisms for fundamental resources such as application threads, events, callbacks, shared memory, data and message pipes and fast mutex objects. Additonally, it provides functions for real-time memory management, memory copyas well as generic WDM drivers for plug-and-play installation. The integrated KiK64 allows for 32-bit code to run on 64-bit systems (only with the 64-bit version of Kithara RealTime Suite)

Common Features

The System Module provides the interception of system events, e. g. protection faults and system crashes at the kernel level. For that purpose pre-registered handler (Callback functions or real-time tasks) can be started. Thus, FailSafe handler ("BlueScreen handler") can be implemented and in case of an error a predefined reaction can be executed.

Runtime Library

Mathematical/trigonometric and string/memory functions in real-time

Common Features

For the execution of application codes in a real-time context, functions of the common runtime library are often required. However, they are possibly not qualified for real-time execution. Therefore, the Runtime Library provides real-time modified functions of the C-

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