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## **Fiord Company has adopted standard ISaGRAF 5.1 Runtime Target for using C++ and ACE libraries.**

Fiord Company has developed a new ISaGRAF 5.1 Runtime Target, based on original version target source code, using C++ and ACE (Adaptive Communication Environment) libraries. The new target supports all original target functionality and has several additional features:

- IODEVKit gives developers an opportunity to use C++ and ACE libraries to develop efficient device drivers and embedded functions.
- All system-dependant functions in the new target are replaced by ACE library function calls. For this reason the new target source code is the same for various OS. At the moment the new target has been ported and tested on Linux, QNX4, QNX6, Windows XP, WinCE, FreeBSD, OpenSolaris. The ACE library supports many platforms and evolves with the changing requirements.
- Platform independency - all ISaGRAF targets have equal features and the same PLC description in the Workbench environment, allowing the transfer of projects from one ISaGRAF target to another (configuration) without requiring recompilation.
- Increased stability (determinacy) of cycle with preset execution time.
- High execution speed of real-time cycle in the mode of operation without preset cycle time (from 5 microseconds).
- Porting drivers that use standard communication devices (RS232, Ethernet, USB) from one platform to another does not require source code modification. Recompilation is sufficient.
- ACE library availability during development of embedded ISaGRAF target functions, which are available in Workbench during application development. ACE contains various useful classes and functions (C++ containers for data manipulation, class String, etc). The following embedded functions are currently being developed:
  - High-resolution (1 microsecond) time measurement functions
  - Functions for fast access to ISaGRAF-arrays (fast\_array\_) for vector creation, copy, addition and multiplication
  - Functions for fast access to matrices based on ISaGRAF-array (fast\_matrix\_) for matrix creation, copy, addition, multiplication and linear equation set solution
  - built-in signal processing functions (FFT, digital filters, etc) based on fast\_array
  - built-in C++ container functions (vector, list, hash, bitset)

These functions are executed on the target with machine code speed and therefore allow implementation in ISaGRAF applications high-performance data array processing algorithms suitable for processing audio/video streams, and impulse forms registered by an ADC.



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- Support of FDA (Fast Data Access) - fast data exchange with remote clients (FDA is an UDP based protocol). FDA client program sample and FDA-OPC server (as a stand-alone product) are available. High speed of data exchange in FDA protocol is attained by sending all changed values in a single packet to client on its request. Remote variable tracking speed may be increased up to 10 or even 100 times relatively the use of other protocols. Tests show the delivery speed to a client of 100'000 changed values per second and more (up to 500'000). Available functions allow developers to select application variables for data exchange. For integer and real variables, it is possible to set dead bands. When exceeding these dead bands, variable values are sent to the client.
- Support of local data archives (FIFO), accumulated in target data, are sent to the client on demand. Only new variable values with time stamp data are registered in the archives. Tests show the archiving speed with data delivery to a client of 100'000 archive values per second.

The new target, therefore, provides a full, complex solution for high-speed processing, control and delivery of information for high-level Automatic Control Systems.