EtherCAT is a high-performance, industrial Ethernet fieldbus system. It features high data transfer rates, short data processing times, and high synchronicity with low jitter. EtherCAT is ideally suited for machine control applications such as machine, plant or building automation, I/O, drives, sensors, and measurement tools.

**Data “Processing On The Fly” With EtherCAT**

EtherCAT delivers 100Mb frame processing. EtherCAT Slaves read data addressed to them specifically, and insert input data while the telegram passes through the device. This “processing on the fly” allows the entire network to be addressed in just one frame.

**The Most Flexible Network Topology**

EtherCAT provides the most flexible network topology. It supports line, tree, ring, and star topologies with up to 65,000 nodes per segment.

**The Most Cost-Effective & Safe Solution**

EtherCAT is a low-cost networking solution. Since no active infrastructure components, such as hubs or switches, are necessary Masters are implemented in software, or on any standard Ethernet MAC. Slave devices benefit from low-cost FPGA implementations. Safe data communication, in compliance with IEC 61508 (SIL3), can be implemented utilizing the Safety over EtherCAT protocol.
Implementing SoC with the Xilinx FPGA Platform

Xilinx FPGAs offer the most cost-effective platforms for implementing full SoC with EtherCAT. Xilinx FPGAs allow designers to integrate processors and discrete devices, while improving system timing and reliability. Xilinx FPGAs inherently provide stability and scalability to your EtherCAT implementations.

Greater Performance and Easier Implementation

An on-board, customizable MicroBlaze® 32-bit soft processor allows implementation of process control and Real-Time Ethernet as a SoC. Xilinx EtherCAT Master and Slave controllers insure the best use of Spartan-3 Generation FPGA resources. IP is readily available through Beckhoff Automation, the company that invented EtherCAT.

Security and Power Management

Spartan-3 generation FPGAs utilize unique Device DNA serial numbers to prevent design cloning, unauthorized overbuilding, and reverse engineering. The Spartan-3 generation FPGAs also offer the industry’s first flexible power management modes for lower power consumption.

Take The Next Step

EtherCAT Resources
EtherCAT Technology Group: http://www.ethercat.org
Xilinx Resources: http://www.xilinx.com