

Command and Control Toolkit™

Real-time Command and Control Middleware

2.3

Advanced command and control framework for creating custom mission-critical control systems.

Features:

- Multi-stream, multi-format I/O
- Stand-alone or multi-user operation
- Commanding
- Real-time graphical visualization
- Integrated simulation environment
- Archival, retrieval, and playback
- XML configuration database
- System customization tools
- Modular data processing
- Network/Internet data distribution
- Built-in graphical tools: Quick-Look, Data Analysis, & Event Messaging

Typical Applications:

- Control center situation awareness
- Remote/Mobile control & monitor
- Mobile command & control
- Telemetry & tracking
- Launch & fire control
- Automated test
- Process control
- Training simulation
- Surveillance & Targeting
- Communications gateway

Configuration Options:

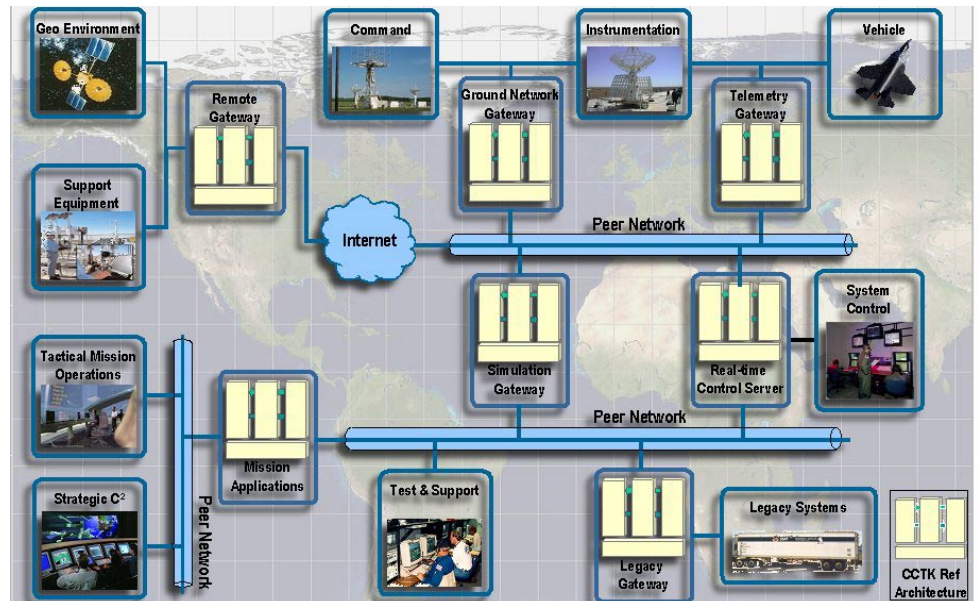
- Linux | UNIX | RTOS (call)
- PCI | VME
- Client/Server
- Graphic Workstation
- Rugged Portable
- Embedded
- Custom Packaging (call)

Product Options:

- Developer's Environment
- GIS Display Environment
- Web Server
- RangeNet™
- T-Zero™ Sequencer

External Interfaces:

- PCM telemetry, simulator and uplink
- IRIG UTC (GPS opt), NTP Server
- SCADA: OPC/Fieldbus/Interbus,
- RS-232/RS-422
- Peer – Peer Networks
- RADAR
- (Contact CCT for more interface options)



The CCTK™ software is an off-the-shelf software framework designed to integrate your distributed operations for real-time shared situation awareness and reliable operational control. The scalable software architecture is suitable for embedded, headless client/server, or network distributed operation capable of handling millions of data, command, event, and message transactions.

Built with highly modular services that can be arranged much like Lego™ building blocks, CCTK dramatically reduces the effort required to build mission critical command and control systems. Using technology developed for space mission control, CCTK converts large volumes of data from a variety of sources in to usable decision-support information that can be acted on by autonomous applications or human operators. With this solution, you can manage your most complex operations more reliably with fewer operators and less technology.

Extensibility. Even though CCTK is ready to use right out of the box, it comes with powerful customization tools for user-created graphical visualization, data processing modules, a variety of external communication interfaces, a unique virtual channel technology for tailoring real-time communications bandwidth, scripting shell, and an optional API for linking application software to CCTK. This combination allows you to configure CCTK to your operation specific data, automation approaches, and decision aids.

Diverse I/O support. Multiple concurrent input/output channels are supported. Any simultaneous combination of telemetry, analog, digital, serial, SCADA, Time, and network channels are supported. Non-standard interfaces are supported with interface templates, tools for creating protocol adapters, and generic packet decom modules.

Modular Data Processing Chains. CCTK provides standard yet flexible processing algorithms for performing data conversion, filtering, and evaluating data for state conditions (conversion, linearization, compression, data health, & events). Provisions are also made for adding custom algorithms. Processing modules can be chained together in a near infinite number of combinations. Processing modules are allocated to data using the configuration database.

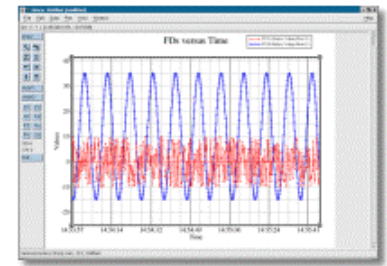
Real-time Visualization. CCTK provides customizable graphical visualization capability for user interaction and end-item control and monitoring. The integrated [Glg Toolkit](#) provides an interactive environment for creating dynamic 2D and 3D graphics in a point-and-click editor. Dynamic widgets such as graphs, dials, gauges, and valves are animated by real-time data. Graphical displays can be optionally deployed in native C/C++ (for optimum performance) or as Java Applets, which can be accessed locally, or remotely across the Internet in a web browser.



Flexible Configuration & Setup. External interface protocols, data and command definitions, processing algorithms, filters, simulations, and mission specific algorithms are all managed in the configuration database that allows operators to maintain configuration control of mission products. Built on XML technology, the configuration database supports exchange of configuration information, and flexible extension of CCTK to a wide variety of operational scenarios. Organizations with multi-mission operations concepts can reconfigure from one mission to the next in a matter of seconds simply by choosing from a library of stored and validated configuration options.

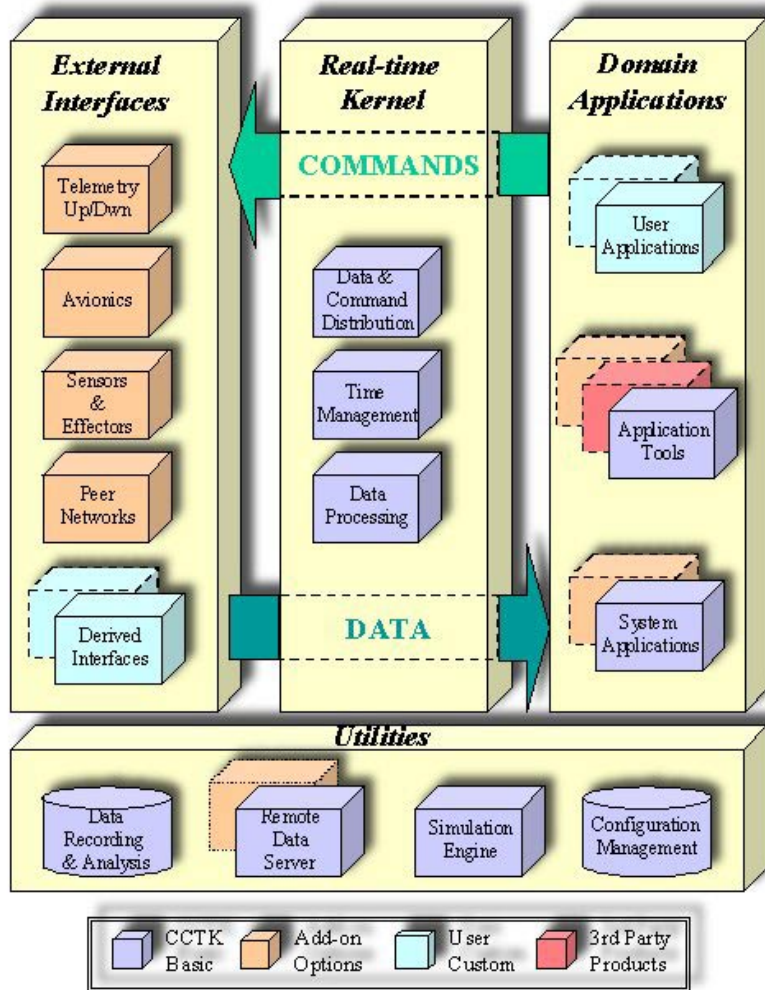
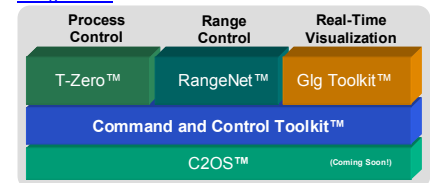
Network Enabled Operation. The CCTK enhances systems interoperability with network based communications gateway services for broadcast, point-to-point, peer-to-peer, HTTP, as well as semantic exchange between CCTK nodes or between CCTK nodes and other legacy systems.

Health Management. Health monitoring is hierarchically managed, allowing lower level status to be fused to an abstract global system health indicator, convenient for user defined recovery automation. All resources are continuously monitored by executive health management services. Data and data communication is continuously evaluated for health and validity, resulting in status propagating with data so operators viewing data are always aware of its integrity. Verbose diagnostic messaging and error logging is integrated throughout the architecture. All health and status data is recorded and accessible for analysis in the event of a system anomaly.



Recording and Analysis. Data and events are digitally recorded and indexed to optimize throughput and near-real-time access. Remote users can logon and access mission data for immediate analysis or export to other tools for data reduction, even during real-time operations. Mission data can also be played back or integrated with simulations for further analysis and operator training.

Simulation Tools. The operability of CCTK is fully realized via a completely integrated simulation environment that supports modeling the continuous or discrete time behavior of any device, target, or system. Using the simulation graphical user interface, or scripting environment, simulations can be quickly and easily composed in to mission scenarios for: verification of other systems, mission/operation dress rehearsals, operator training and qualification, and validation of processing algorithms. CCT also offers plug-in modules for the specialized operations called [T-Zero™](#) and [RangeNet™](#).



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