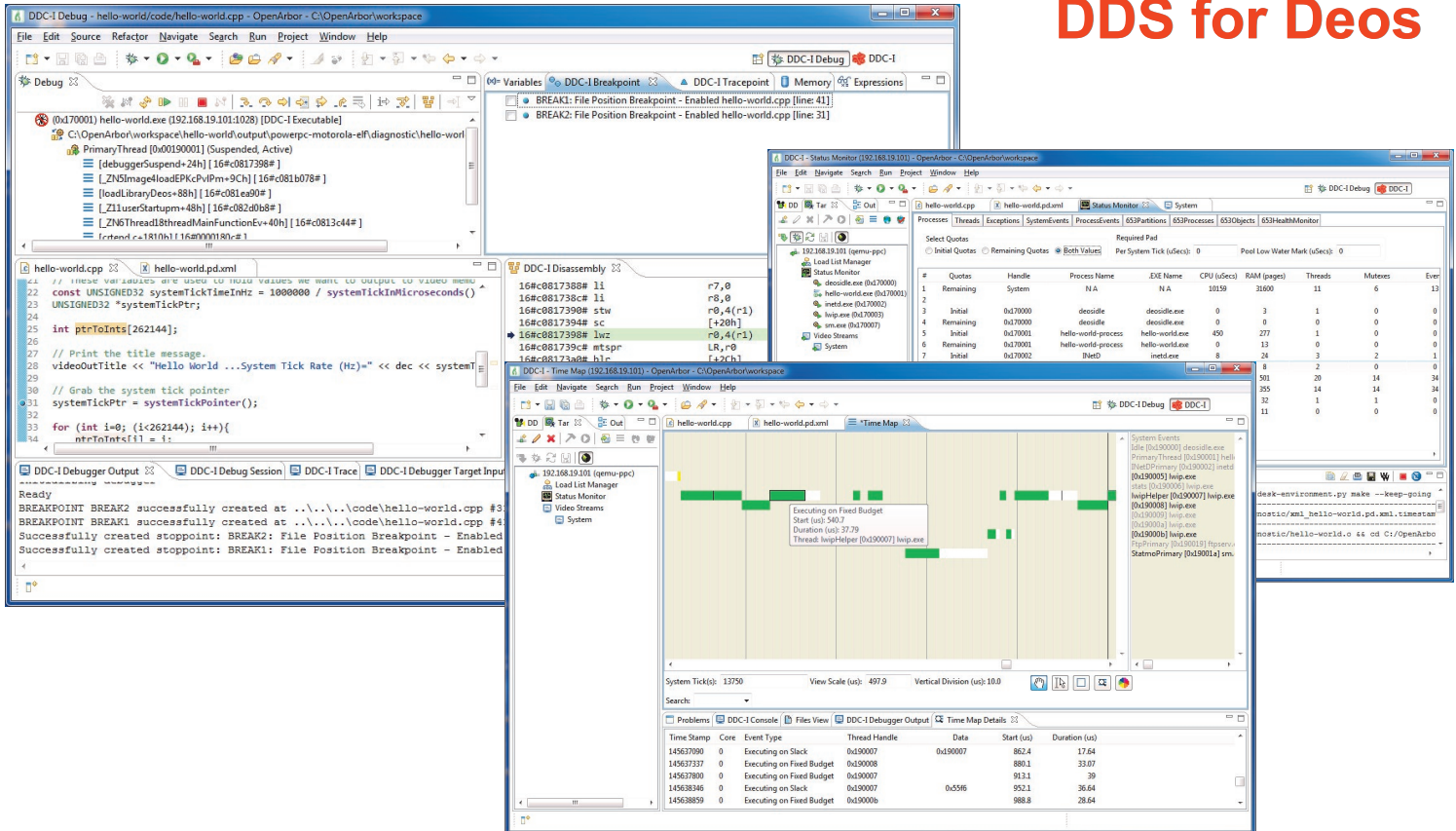


# DDC-I Developer Suite

## DDS for Deos



## Complete Developer Tool Suite Fully Integrated with Deos, DO-178 Certifiable RTOS

Tools for All Phases of Product Development

- Development
  - Integrated Development Environment
  - Compiling & Debugging
  - QEMU Hardware Virtualization
  - IOI, Testing & Simulation
- Configuration
  - Integration Tool
- Verification
  - Qualifiable Configuration & Verification Tools
  - Timing Analysis
  - Application Profiling
- Execution Visualization
  - StatusMonitor
  - TimeMap

**DDC-I Developer Suite (DDS) for Deos** is a complete Integrated Development Environment (IDE) and tool suite, targeted at developing applications on Deos™, DDC-I's DO-178 Certifiable DAL A time and space partitioned Real-Time Operating System (RTOS). DDS for Deos offers avionics software developers an efficient, feature rich, IDE & development tools that are ideally suited for safety critical real-time embedded applications. The DDS toolsuite connects to the Deos target via Ethernet, or via an optional serial connection, and utilizes Deos' patented slack scheduling technology to allow non-invasive communication & monitoring with the development target. For customers purchasing the certification package for Deos, DDS also offers a set of qualifiable verification tools that conform to the guidance of DO-330/ED-215 for the DO-178 development process. DDS uses FLEXIm licensing.

# DDS for Deos



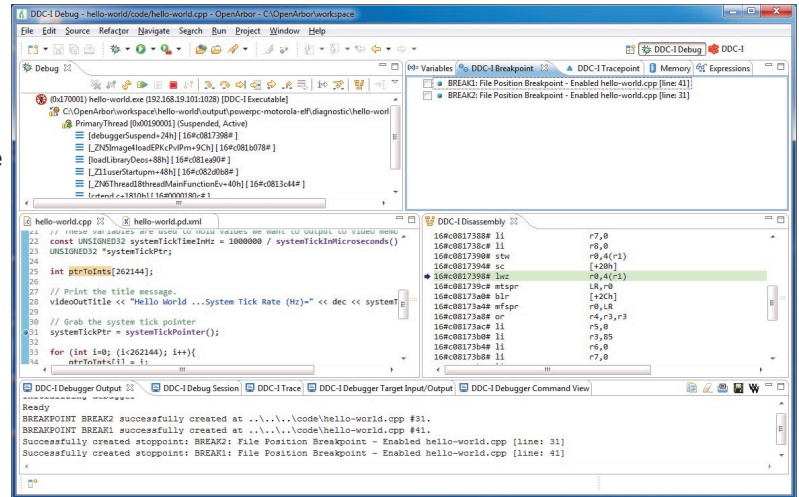
Safety Critical Software Solutions  
for Mission Critical Systems

Ideally suited for safety critical real-time embedded applications

## Development & Debugging

### Integrated Development Environment

OpenArbor™ is an Eclipse-based integrated development environment, which utilizes the open Eclipse framework to provide mixed language support for real-time embedded applications. All Eclipse functions are also available from the command line which allows developers to do scripting etc. OpenArbor is fully integrated with DDC-I's Deos, a time & space partitioned DO-178 Level A certifiable real-time operating system. Additionally, the industry standard Eclipse framework offers access to third party tools, which provides the user valuable flexibility to integrate other tools to meet their needs.



### Compilers

- GCC C/C++
- Optional DDC-I's SCORE® Ada 95

Current versions of these compilers are provided. Both of these compilers are supported by the qualified Assembly Branch Coverage (ABC) structural coverage analysis tool (listed under verification), which then permits a high degree of optimization levels.

### Debugger

Full-featured debugging is supported via Ethernet or optionally a serial connection to the development target running a GDB server. Additionally integration to the Lauterback Trace32 toolset is available.

### QEMU

QEMU is a free and open-source emulator that performs hardware virtualization. This allows you to run Deos for any supported target architecture, on your host development system.

### IOI, Testing & Simulation

IOI, a modular data distribution service (IO data transport layer) used for inter-partition data communication for use in service. It can also be utilized as an input simulator and output monitor during development, debug & verification testing.

## Configuration

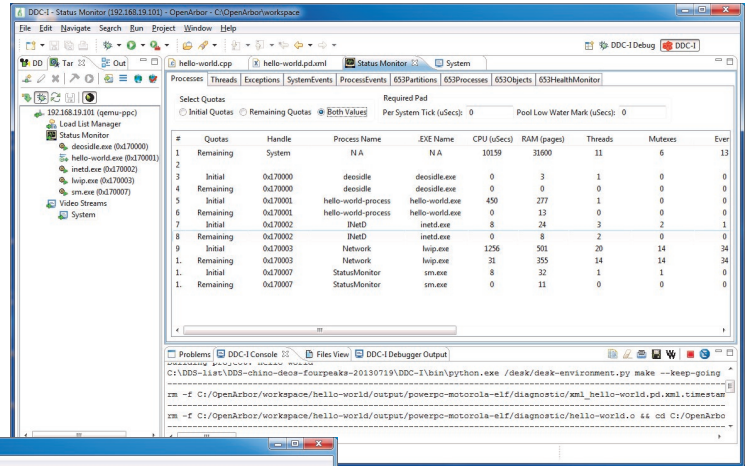
### Integration Tool

The XML-based integration tool allows developers to specify processes, threads, platform/hardware resources, resource ownership/utilization, etc, including execution rates and time budgets, RAM/FLASH allocations, etc. These defined specifications are used to "configure" Deos on a given platform.

## Execution Visualization

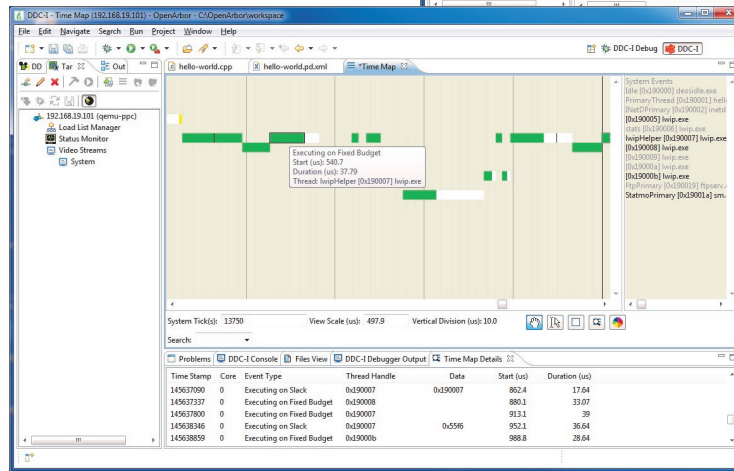
### Status Monitor

Status Monitor allows developers to observe budgeted vs. actual usage resource utilization, including time budgets, RAM/FLASH allocations. It also logs events and exceptions. No application instrumentation is required, and target side communications are scheduled via slack scheduling to not affect the timing of tasks running on the development target.



### Time Map

Time Map allows developers to observe real-time execution behavior, including application execution times, interrupts, events & exceptions, via a graphical time-line. No application instrumentation is required.



## Verification

### Configuration & Verification Tools

DDS supplies 4 configuration verification tools and associated documentation which provide the guidance and data required to get through the qualification process. These tools conform to the guidance of DO-330/ED-215. Tools include ABC Tool Qualification, Deos 653 Configuration Verification Tool, IOI Configuration Verification Tool and a Registry Configuration Verification Tool.

### Timing Analysis

The DDS includes a unique Deos Critical Time Kernel which is an instrumented version of Deos that measures worst-case, target-specific kernel timing (e.g., context switch times, etc). This tool then frees Deos developers from creating their own tests to capture this critical timing information, that's unique to their target design.

### Application Profiling

Profiling is also available during the verification phase because these tools run on Deos slack time & therefore do not impact critical execution timing.

### Structural Coverage Analysis via ABC

Structural Coverage Analysis (SCA) is supported at the object-code level. No source-object trace-ability is required for DAL A when using ABC and no compiler qualification is required, which allows DDS to stay current with the latest GCC releases & processor support. ABC is a qualified verification tool and is specified as a valid means of coverage by the DO-178C standard.

## Third Party Tools

DDC-I also supports the integration of many popular third party tools with Deos.



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### The DDC-I Advantage

With over 30 years of experience supplying complex COTS and custom embedded solutions, DDC-I provides long-term, strategic advantages to an ever changing safety critical industry. Boasting founding and committed management, our staff offers a level of experience and service that is unmatched in the industry. Our customers have direct access to DDC-I's highly experienced engineers, which ensures the success of our customer's development efforts.

For additional information about DDC-I's experienced, industry leading, safety critical development systems and solutions please contact:

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