



Focused on Safety Critical

Fast Facts...

- **Serving the Safety Critical Industry for 40 Years**
- **DDC-I's Deos with its SafeMC Technology is the Preeminent Multi-core RTOS for Mission and Safety Critical Solutions**
- **Does Supports Industry Standard Application Programming Interfaces for Maximum Software Portability**
- **25 Year DO-178 Certification History with Millions of Flight Hours of Use in Certified Applications**
- **Deos is the Only Certifiable COTS RTOS Created using DO-178 Level A Plans and Procedures From the Very First Day of its Development**
- **Integrated Safety Critical Software Solutions Including Real-time Operating Systems, Software Development Tools and Services**

DDC-I Corporate Capabilities Brochure

DDC-I offers complete solutions for embedded software developers, including field proven safety critical real-time operating systems, multi-language compilers, integrated development environments and run-time systems.

Primary Market: Certifiable Avionics Software Worldwide

Core Competencies:

- **Certifiable, Safety Critical RTOS Products**
 - Deos (optional ARINC 653 & POSIX Interfaces)
 - HeartOS
- **Integrated Development Environment (IDE)**
 - Development, Testing & Analysis Tools
- **DO-178/ED-12 Certification Expertise**
 - We Perform our Own Certification Work
 - We Defend our Certification Artifacts During all Audits
 - We do not Reverse Engineer Certification Artifacts



**Safety Critical Software Solutions
for Mission Critical Systems**

DDC-I Products

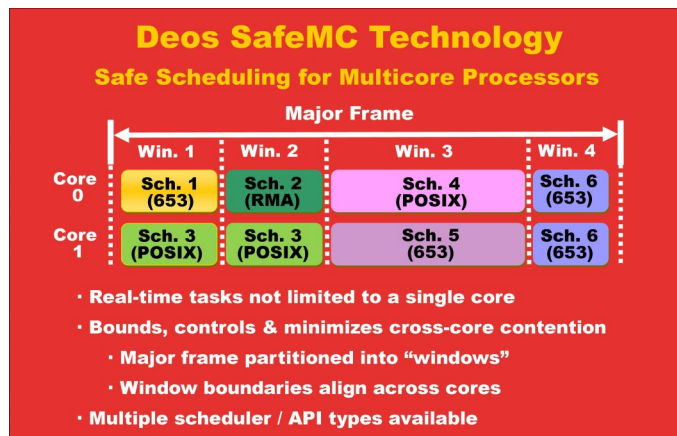
Embedded Real-Time Operating Systems



Deos™ is a time & space partitioned RTOS, which has been certified to DO-178 Level A since 1998. Built from day one using Level A certification processes, Deos features hard real-time response and employs “slack scheduling” to deliver higher CPU utilization than any other certifiable safety-critical COTS RTOS.

Key Advantages of Deos

- Preeminent Multi-core RTOS Support for Safety Critical Operation on All the Leading Microprocessor Architectures
- DO-178 Certification Artifact Reuse (*Leveraging Certification Credit from prior Certifications*)
- Time & Space Partitioning (*Allows Mixed Levels of Criticality Running on the Same Device*)
- Optional ARINC 653 & POSIX Support (*Delivers the Standard Interfaces for Enhanced Portability, and Allows Designers to Continue to Take Advantage of the Advanced Features of Deos*)
- Extensive Certification Pedigree (*Certified to DO-178 DAL A since 1998*)
- Scalable (*from Simple LRUs to Complex IMA Systems*)



SafeMC Technology from DDC-I enables developers of safety-critical systems utilizing multi-core processors to achieve best in class multi-processor performance without compromising safety-critical task response and guaranteed execution times.

The Deos Hybrid Architecture allows the best of both worlds with the portability of the popular avionics ARINC 653 and FACE standards, and the value added features of Deos, such as slack scheduling, it’s modular architecture, application space device drivers and more.

Support for FACE Safety Extended & Safety Base Profiles- The integration of DDC-I’s Deos Hybrid Architecture with ARINC 653 APplication EXecutive (APEX) interfaces plus RTEMS for POSIX APIs with a Deos time & space partition, produces an operating system that has been certified to conform to applicable requirements defined in the FACE Technical Standard.

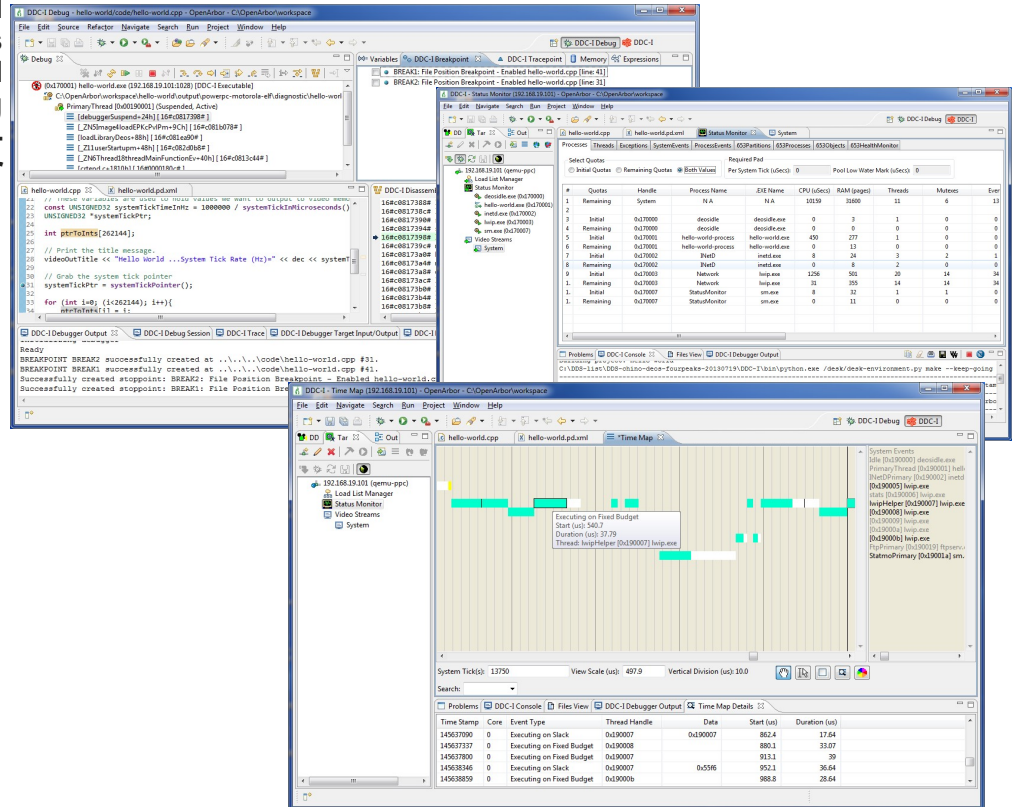


HeartOS™ is a DO-178 certifiable POSIX-based hard real-time operating system that is fast, light and well featured for most small to medium embedded applications, including safety-critical applications.

DDC-I Services

DDC-I Developer Suite

DDC-I Developer Suite (DDS) targeting DDC-I's RTOSs and run-time systems, is a complete Integrated Development Environment and tool suite which offers full lifecycle support. Ideally suited for safety critical real-time embedded applications, DDS includes development, verification and configuration tools providing an efficient, feature rich development environment for avionics software developers.



Legacy Development Systems

DDC-I is dedicated to long life programs that require long-term flexible support & maintenance options and migration upgrade solutions designed to save our customers time and money.

Ada 83/Ada 95

Mature development systems, field proven on hundreds of applications. Available as a native or cross, supporting Intel 80x86, Intel i960, Mips, Motorola 68xxx or MIL-STD-1750A processors.

Product Customization

Our product customization services are based on a wealth of safety critical experience. We offer services that allow our customers a low risk solution for hardware and operating system support. We will port our RTOS to customer specific hardware platforms with full certification artifacts, as well as full defense of those artifacts with certification authorities. This allows our customers to focus on their application, not the hardware it's running on.

As a trusted embedded software provider for 40 years, DDC-I has provided software development tools, real time operating systems and software services for many successful safety-critical programs. Deos, DDC-I's time and space partitioned real-time operating system is field proven on hundreds of aircraft types, in a multitude of avionics functions.

Aircraft

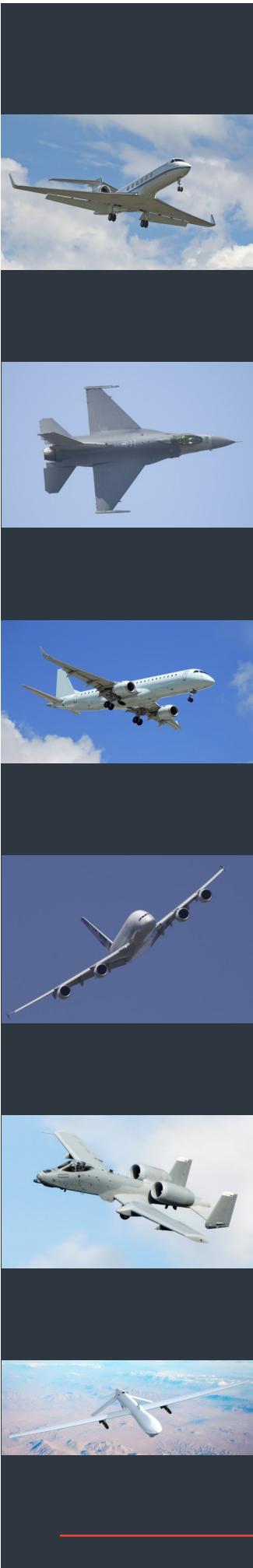
- A-10 Thunderbolt
- Agusta AB-139
- Airbus A320, A330, A340, A350 XWB, A380, A400M
- Apache Helicopter
- B-1B Lancer, B-2 Spirit, B-52 Stratofortress
- Bell-Boeing V-22
- Boeing 757, 777, 787, F-18
- Bombardier C Series, Global Express
- Cessna Citation V, Sovereign
- Chinook CH-47 Helicopter
- Comac ARJ21, C919
- Comanche Helicopter
- CV-22 Osprey
- Dassault F7X, F900, F2000
- Embraer ERJ-170, ERJ-175, ERJ-190, ERJ-195
- F-14 Tomcat, F-15 Eagle, F-16 Fighting Falcon F-22 Raptor, F/A-18 Hornet
- Gulfstream GIV-X, GV, G150, G200, G350, G500, G550, G650
- Hafei Y-12
- Hawker Horizon, 450
- Joint Strike Fighter
- Kiowa Warrior Helicopter
- Lockheed C-5, C-130J, C-141
- Pilatus PC-12NG
- Spectrum S-40
- Viking Twin Otter
- ... other



Avionics Functions

Other

- Air Data Computer
 - Air Data Inertial Reference Unit
 - Cockpit Video
 - Communications & Radios
 - Data Recorders
 - De-Icing
 - Displays
 - Electronic Flight Bag
 - Engine Controls
 - Enhanced Ground Proximity Warning
 - Flight Controls
 - Flight Instrumentation
 - Flight Management
 - Health Management
 - Maintenance
 - Power Distribution
 - Traffic Collision Avoidance System
 - Weather Radar
 - ... other
- A2100 Satellite
 - Atlas V
 - Bradley Tank
 - Breecher Tank
 - Cassini Cosmic Dust Analyzer
 - CouldSat Satellite
 - Global Positioning System
 - Javelin Weapon System
 - Joint Standoff Weapon
 - Ørsted Micro Satellite
 - Unmanned Aerial Vehicle
 - Vertical Launch System
 - ... other

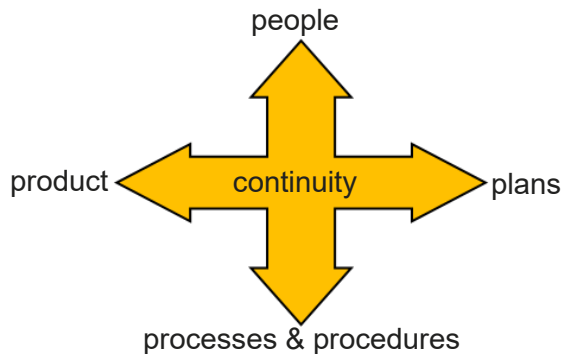


Deos Supports the Leading Microprocessor Architectures with Unmatched Multi-core Technology for Safety Critical Applications

RTOS Pedigree

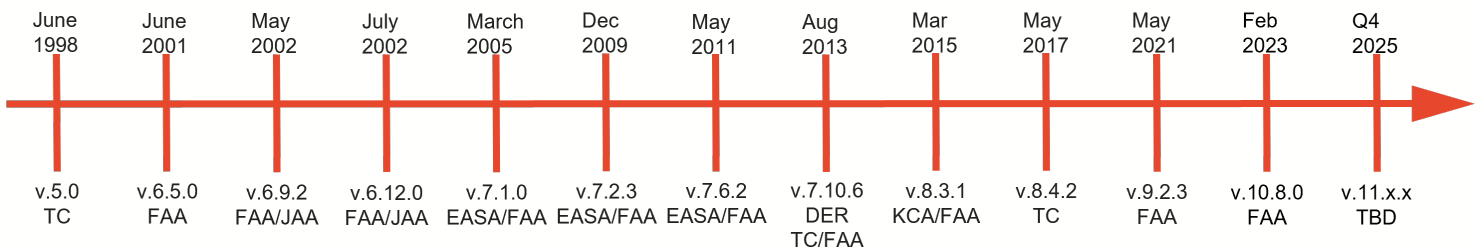
Deos from DDC-I is a DO-178 Level A certifiable embedded RTOS that has been used in hundreds of safety critical avionics applications on commercial and military aircraft, with continuity of people, product, plans, processes & procedures since its inception.

- ✓ 25+ Year Certification History with Millions of Flight Hours of Use in Certified Applications
- ✓ The Only Certifiable COTS RTOS Created Using DO-178 Level A Plans and Procedures from the Very First Day of its Development
- ✓ Field Proven on Hundreds of Aircraft, in a Multitude of Avionics Functions
- ✓ Well Known in the Avionics Certification Community
- ✓ Certified as FACE™ Conformant



Deos Certification Baselines (DAL A)

A Single Line of On-Going Development!



Core Advantages

- ✓ Completely focused on the safety critical industry for over 35 years, DDC-I's customer base in an impressive "who's who" in the defense, space and commercial avionics industries.
- ✓ Experts in all phases of safety critical systems development and verification to high design assurance levels, our highly experienced engineering staff assists customers in developing certifiable software platforms and providing products support for the life of the program.
- ✓ SafeMC technology from DDC-I delivers maximum safety critical performance across multiple cores.
- ✓ Industry leading customer service is provided through direct interaction with our team of certification experienced engineers for all product support questions.
- ✓ Many legacy software systems are experiencing extended lifetime requirements. Unlike many of our competitors, DDC-I is committed to our customers and provides extended support for our legacy products for the long term.

Patented Technology

Cache Partitioning Technology provides an effective means of bounding and controlling interference patterns in shared cache. Managing contention for shared resources (such as cache) poses a significant challenge to developers of safety-critical software applications. Benchmarks demonstrate that cache contention can increase worst-case execution times (WCETs) from 100% to 1000% over average-case execution times (ACETs). Unless developers can bound and control these WCETs, software execution times will vary wildly, processor utilization will be seriously diminished, and analysis of inter-application interference patterns will greatly complicate safety certification. DDC-I's Deos RTOS gives developers the ability to effectively manage this contention via its patented cache partitioning technology.

Slack Scheduling Technology gives developers the ability to greatly increase processor utilization and enhance software performance. Safety-critical software requires time budgets to be set for WCET behavior. However, WCET behavior rarely occurs. DDC-I's Deos RTOS gives developers the ability to recover budgeted but unused time, and then reallocate it to other functions in real-time. Uses of slack time include increasing quality of service while still meeting safety-related performance requirements, and the removal of non-critical functions from the safety-critical, fixed budget timeline. Software designers can now leverage all the power of today's modern processors, without sacrificing the safety of space & time partitioning.

The DDC-I Advantage

With 40 years of experience supplying complex COTS and custom embedded solutions, DDC-I provides long-term, strategic advantages to an ever changing safety critical industry. Our staff offers a level of experience and service that is unmatched in the industry. Our customers have direct access to DDC-I's skilled engineers who are highly experienced in advanced software certification, which ensures the success of our customer's development efforts.

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



Safety Critical Software Solutions
for Mission Critical Systems