

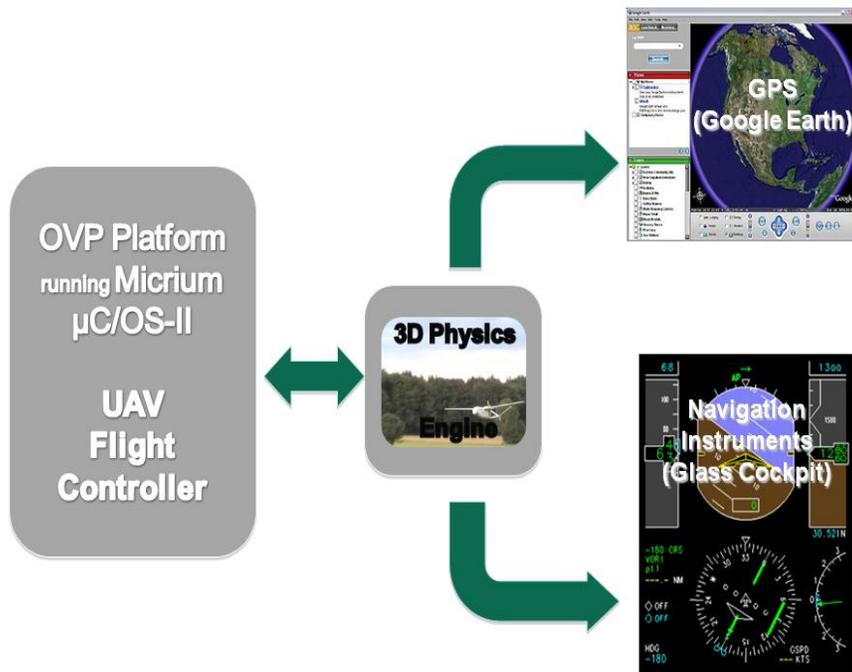
# Nuum Design's UAV (Unmanned Aerial Vehicle) OVP Case Study

**Nuum Design** is proud to present a case study that illustrates the use of Micrium and OVP technologies combined together, in an effort to demonstrate the great benefits of using virtual prototyping technologies to develop embedded software systems.

With firmware and application software development drawing on the majority of the resources for developing embedded systems, creating new flows for embedded software development is becoming increasingly important. The Imperas flow with Micrium's  $\mu\text{C}/\text{OS-II}$  makes it easier to use the Open Virtual Platforms (OVP) open source models for the development of embedded systems.

**Nuum Design** developed a virtual prototype case study that addresses the avionics field by showing a UAV flight management system (FMS). This FMS consists in several real-time tasks running on a port of the  $\mu\text{C}/\text{OS-II}$  RTOS on an OVP platform. This demo application was built on a virtual prototype consisting of an ARM7 processor core, UART, timer, interrupt controller, and a math co-processor implementing the CORDIC (Coordinate Rotation Digital Computer) algorithm commonly used in navigation systems. Nuum Design ported the  $\mu\text{C}/\text{OS-II}$  RTOS on the virtual platform and met the application requirements to support avionic-certified RTOS. A navigation screen is part of the demo application, displaying the UAV flight parameters, and traces GPS coordinates onto Google Earth in real-time.

*"Thanks to OVP, we were able to prove that the use of virtual platform technologies to design embedded systems is also productive in avionics. As a result, Nuum sees OVP as an asset in promoting Nuum's mission to help companies adopt ESL technologies,"* said Maxime de Nanclas, CEO of Nuum Design.



**Num Design** has created a development environment based on OVP, called Num Virtual Frameworks (NVF), to support different engineering fields, such as Avionics and Aerospace. Please contact us for more detailed information.

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## NEWS RELEASE

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### Imperas and Micrium Ease Embedded Software Development For Systems Using $\mu$ C/OS-II RTOS

*Micrium  $\mu$ C/OS-II RTOS Running on ARM-Based Free Reference Platforms Available Through Open Virtual Platforms™ (OVP™)*

**THAME, United Kingdom, November 8, 2010** – Imperas today announced a flow with Micrium, Inc. focused on enabling more productive and higher quality embedded software development with the Micrium  $\mu$ C/OS-II Real-Time Operating System (RTOS). With firmware and application software development taking the majority of the resources for developing embedded systems, creating new flows for embedded software development is increasingly important. The Imperas flow with Micrium's  $\mu$ C/OS-II makes it easier to use the Open Virtual Platforms (OVP) open source models for the development of embedded systems.

Num Design developed a demonstration of the OVP-  $\mu$ C/OS-II flow with an avionic application, available through the Num page on the OVP website, consisting of a flight management system for an Unmanned Aerial Vehicle (UAV). This demo system was built on a virtual prototype consisting of an ARM7 processor core, UART, timer and a math co-processor implementing the CORDIC (COordinate Rotation Digital Computer) algorithm commonly used in navigation systems. Num Design, who is also expert with Micrium products, ported the  $\mu$ C/OS-II RTOS on the virtual platform and met the application requirements to support avionic-certified RTOS. A navigation screen is part of the demo applications, displaying the UAV flight parameters, and traces GPS coordinates onto Google Earth in real-time. “Thanks to OVP, we were able to prove that using virtual platform technologies to design embedded systems is productive in avionics systems. As a result, Num sees OVP as an asset that promotes Num’s mission to help companies adopt ESL technologies,” said Maxime de Nanclas, CEO of Num Design. This virtual platform can be requested from Num Design. Developers interested in the  $\mu$ C/OS-II RTOS can get that from the Micrium website.

“Software is the key differentiator for today’s embedded systems, and we need to make it easier to develop embedded systems,” said Jean Labrosse, president of Micrium. “Virtual platforms are fast becoming accepted by mainstream developers as an excellent way to accelerate software development, and we are excited that Imperas and Num Design have provided a flow that enables users to run our  $\mu$ C/OS-II RTOS on OVP virtual platforms.”

A virtual platform is a set of models and a simulation engine that enables the same software binaries that would run on the hardware to be executed on a software, or virtual, platform. Because instruction-accurate models do not require the full implementation details of the hardware, they can be more easily and quickly developed, enabling software development to start months before any hardware is available. In addition, software development on virtual platforms offers the benefit of simulation of any system: full visibility and controllability, unlike the limited access that hardware provides as a software development environment. Further benefits of virtual

platforms include real-time simulation speed of hundreds of millions of instructions per second, and deterministic behavior, enabling simulation runs to be repeated.

“We use the  $\mu$ C/OS-II RTOS on Open Virtual Platforms virtual platforms with ARM 7 and ARM 9 processor core models,” said Andreas Gerstlauer, assistant professor of Electrical and Computer Engineering at the University of Texas at Austin. “We’ve found OVP virtual platforms to be fast and easy to use, and a great tool for embedded systems research. That the models are open source is an added benefit.”

“Software simulation, or virtual platforms, are becoming a commonly used tool for embedded software development,” said Simon Davidmann, president and CEO, Imperas and founding director of the OVP initiative. “Making it easier to get started with virtual platforms by providing support for the most popular operating systems such as  $\mu$ C/OS-II provides great value to the OVP and embedded systems communities.”

The Nuum Design demo of the  $\mu$ C/OS-II RTOS running on a OVP virtual platform can be viewed at the Micrium booth number 517 at the [ARM TechCon conference](#) November 9-11 at the Santa Clara Convention Center. Please contact Imperas at [info@imperas.com](mailto:info@imperas.com) to set up an appointment.

**About Imperas ([www.Imperas.com](http://www.Imperas.com))**

For more information about Imperas, please go to the Imperas [website](#).

**About the Open Virtual Platforms Initiative ([www.OVPworld.org](http://www.OVPworld.org))**

For more information about OVP, please go to the About OVP page on the OVP [website](#).

Detailed quotations regarding OVP are available from

<http://www.ovpworld.org/newsblog/?p=42>.

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