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PTC Developer Tools Sales Representative
(Europe, UK and RoW)

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Principal Software Development Engineer
PTC Developer Tools

Ada Europe 2019 – Warsaw Poland – June 2019
ABOUT PTC

• Global Software Company, $1B+ Revenue, Headquarters: Boston MA USA

• CAD / IoT / AR products which Design, Manufacture, Operate, and Service “Things”

• Leading Platform and Solutions Enable Industrial Innovation

• Global Network
  - 550,000 Developers
  - 6,500 employees
  - 1,150 Partners,
  - 1,050 Services Professionals
Transforms how companies create, manufacture and service things, and enables an ecosystem to develop the applications and experiences for those things.
PHYSICAL DIGITAL CONVERGENCE SHAPED OUR STRATEGY

- vuforia™
- kepware®
- creo®
- thingworx®
- windchill®

PHYSICAL WORLD

DIGITAL WORLD

PHYSICAL THINGS

DIGITAL TWIN

IOT

CAD/PLM

AR

LM

thingworx® analytics

vuforia™ studio
“P” represents physical things in the IoT, and the data they generate.

Our logo embodies our deep conviction in the physical and digital convergence, and the incredible value unlocked when they come together.

Grey the color of stability

Yin-Yang symbolizes balance between complementary forces, like physical and digital.

Hexagon a shape of connection, balance, and integration.

“D” represents digital information that define the things in the IoT.

Green the color of growth
The leader in unleashing industrial innovation that occurs at the convergence of the physical, digital, and human worlds.
THE WORLD’S MOST RESPECTED DIGITAL TRANSFORMATION CONFERENCE

June 10 – 13, 2019 | Boston, MA

6500+ Technologists
100 Product Demos
240 Breakout Sessions
300+ Industry Experts

Register to view LiveWorx LIVE broadcast (and recordings) at LIVEWORX.COM/LIVE
PTC FOCUSED SOLUTIONS GROUP

- Internal group of independent Business Units within the larger PTC
- Provide focused attention to established product lines and associated customer base
- Dedicated development, sales, and support resources
- Ongoing commitment to important long-term customers
PTC DEVELOPER TOOLS BUSINESS UNIT

PTC Developer Tools
A Comprehensive Suite of Developer Tools for the Serious Engineer

ptc® apexada
Family of Ada compilers, runtime environments, and test tools

ptc® objectada
Family of real-time virtual machine and compilation technologies for Java

ptc perc®
Packet of latest Product Release Announcements and Datasheets located in Conference Attendee Bag / Kit
PTC EXHIBIT – ADA EUROPE 2019

Visit our exhibit to learn more!

Register & take survey to be entered into drawing for an Amazon.com Gift Card!

Winner announced at end of conference!
PTC APEXADA OVERVIEW

• Ada 95 & Ada 2005 language support

• ApexAda Developer (native compilers):
  – Solaris SPARC
  – Solaris Intel
  – Linux Intel

• ApexAda Embedded Developer (embedded / cross compilers):
  – VxWorks (Intel, PowerPC targets)
  – LynxOS (Intel, PowerPC targets)
  – ApexAda Exec (Intel, PowerPC, MIPS bare-board targets)

• Summit CM & TestMate test tools
PTC APEXADA PRODUCT STATUS UPDATE

**pte® apexada™**  Native & Embedded v4.x / v5.x

- Updates for new OS versions (Solaris 11.4, SuSE 12 SP3)
  - RHEL/CenOS 8 & SuSE 15 planned/in-progress

**pte® apexada™**  Embedded v5.2 for 64-bit Targets

- Includes 64-bit Linux native compiler
- Available Embedded cross compilers:
  - Wind River VxWorks V7/Intel 64 cross compiler
  - ApexAda Exec/ Intel 64 bare-board cross compiler
- In Development: Linux ARM/aarch64
PTC OBJECTADA PRODUCTS

ptc® objectada® / ptc® objectada® 64 for Windows
• Native compiler for Windows
• Ada 95, Ada 2005, Ada 2012 (subset) language support

ptc® objectada® for Unix / Linux
• Native compilers (Solaris SPARC, Solaris Intel, AIX, HP-UX, Linux Intel)
• Ada 95 language support

ptc® objectada® Real-Time™
• Cross development products - Real-time full Ada 95 runtime products
• VxWorks (Windows host; Intel, PowerPC targets)
• LynxOS (Solaris, AIX, Linux host; PowerPC targets)

ptc® objectada® Raven™
• Cross development products – safety-critical Ravenscar profile – restricted Ada 95 runtime
• Bare target (Windows, Solaris host; PowerPC, Intel, ERC32 targets)
• VxWorks 653 (Windows host; PowerPC target)
PTC OBJECTADA 10.1 RELEASE

ptc® objectada® for Windows V10.1

ptc® objectada® 64 for Windows V10.1

➢ 32-bit / 64-bit application development & execution
➢ Expanded Ada 2012 language feature support
  ➢ Runtime assertion checks for conditions on class-wide types
  ➢ Full support for container packages and required features
➢ Windows 10 compatibility – also works with Windows 7 or later
➢ Based on Visual C++ 2017 tools and Windows 10 SDK libraries
  ➢ Also works with Visual Studio / C++ 2019
➢ ADT Eclipse interface works with latest (32-bit) Eclipse versions

Released May 2019
• Aspect specifications
• Dynamic contracts
  – Preconditions and Postconditions for subprograms
  – Assertions for types that are checked dynamically
• New flexible forms of expressions
  – If expressions
  – Case expressions
  – Quantified expressions
  – Expression functions
  – Generalized forms for membership tests
• Loops and quantified expressions using the iteration specification form
• Functions with out and in out parameters

• Predefined program library extensions
  – Ada.Strings extensions / new child packages
  – Ada.Wide_Characters.Handling
  – Ada.Wide_Wide_Characters_handling
  – Ada.Directories extensions
  – New container packages
THE REAL-TIME SOLUTION FOR JAVA APPLICATIONS

PTC Perc - The Embedded/Real-Time, Deterministic Virtual Machine

- Deterministic Garbage Collection Technology
- Java Standard Edition Compatible
- Symmetrical Multi-Processor Support
- Ahead-Of-Time (AOT), Just-In-Time (JIT), and Interpreted Compilation
- Eclipse-based Tool Chain
- Reduces Time and Cost of Development
- Guarantees System Availability
PTC PERC VERSUS JAVA STANDARD EDITION

ptc perc® - the obvious choice

✓ For IoT Gateways
✓ For Edge Devices
✓ When application code security is important
✓ When long-lived, trusted execution is required
✓ When real-time, deterministic behavior is critical to application success

<table>
<thead>
<tr>
<th>Feature</th>
<th>Java SE</th>
<th>PTC Perc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Just-in-Time (JIT) Compiler</td>
<td>✓ Yes</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Ahead-of-Time (AOT) Compiler</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Real-Time Garbage Collector</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Priority Inheritance Protocol</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Precise Timing APIs</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>GC monitor and control APIs</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Real-Time Scheduling</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Page Locking</td>
<td>✗ No</td>
<td>✓ Yes</td>
</tr>
</tbody>
</table>
ptc perc® ultra smp

ptc perc® 64  Version 8.2

• 32-bit & 64-bit Linux/Intel and Linux/ARM support

• Key Features / Highlights
  – Updated OpenJDK Library (Java 8 Update 162)
  – Faster real-time Garbage Collector
  – OpenJFX graphics supports Java 8 UI applications
  – AOT/JIT Compiled Lambda expressions for faster execution

• New Linux/ARM64 support for Raspberry Pi 3, IoT gateways

CURRENT PERC PRODUCT RELEASE
CONCLUSION / Q & A

Ada Europe 2019

• Have Questions?
• Need more information?
• Stop by the PTC exhibit for additional information on these PTC Developer Tools products!