



Java Embedded Update

JCP EC Meeting Sept 2019
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Why Java on Embedded?

- That is where it started!
- Hardware abstraction
- Good responsibility isolation
- Better development model for things
 - OOM
 - Security aspects
 - Better defense against common C programming errors
- 12 M developers!



Why NOT Java on Embedded?

- Licensing costs (C is “free”)
- “Huge” hardware impact on RAM/Flash
- Much of what makes Java Java is not really necessary
 - Reflection
 - Dynamic Classloading
 - JIT Compiling
- Performance issues - hard real time?



What is Java (tm) ?

- JVM
- Java Language
- Java Ecosystem

- Do we need all that for embedded?!



Java ME effort

- Didn't work as expected...
- No community/vendor support/interest
- The last vendor standing (Gemalto) left the JCP EC. That sends a message...



Java on Gateways (Cortex-A5+)

- Running Java on “powerful” processors is easy, specially because they already support Linux
- Java SE + Frameworks (such as Eclipse Kura)
- Java can also be used with specific use cases such as AI devices for image processing
- V2COM is using Oracle Java SE Embedded 7 in legacy devices, Azul Java SE Embedded 8 for newer devices
 - We’re waiting for Java 11 ports to ARM architectures



Java on Smaller devices (Cortex-M)

- This kind of devices don't have much hardware and are cost sensitive - every dollar must be saved...
 - Example use case: street lighting controller
- Do we need Java?
 - Yes, please!
- Previous effort of Java ME 8 with Cortex M4 was almost successful
- The case of MicroEJ
- The case of Javaino



Quarkus and “native Java”

- Taking away what makes Java Java?
- Can this next evolution of Java help embedded Java?
- What is missing?
 - Licensing model
 - Porting efforts
 - Ecosystem / use cases?



Why / Should the JCP (EC) care?

- How can we help?
 - More specifically, is there anything to be helped?
- Keep a healthy ecosystem
- New connectivity options will “explode” the number of connectable devices, so even more platforms to enable



What do you think?!

(Please be gentle 😊)



Thanks!

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