

# Java SE Update

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# Moving Java Forward, Faster

## Goals and motivation

- Around Java 9, started to reevaluate how Java is delivered
  - Feature-boxed release model was slow, unpredictable
    - Perception of slow progress, even when rate of innovation is high
    - Increasingly out of line with how other platforms do things
  - High release management overhead
    - Significant pressure to backport many bugfixes
  - Significant distortions at the boundaries
  - Hard to spread out disruptive changes
- Six months seemed the right balance
  - Any longer, and the distortions would come back
  - Many (including the EC!) were skeptical...

# Moving Java Forward, Faster

## Laying the groundwork

- Jigsaw module system was a key technical enabler
  - Encapsulate internals, divide codebase into modules
- Processes were not ready to support a rapid, agile cadence
  - Oracle-internal, OpenJDK, JCP processes all had timescale assumptions
  - Many hidden waterfall assumptions
- Took significant groundwork to make this possible
  - Oct 2017 – maintenance review of JCP 2.10 (JSR 364)
    - Minimal changes to fit a release, end-to-end, in 6 months
  - Dec 2018 – JCP 2.11 (JSR 387)
    - More significant rationalization of process overhead to new cadence
    - Replace discrete steps with continuous, coalesce end-game milestones

# Moving Java Forward, Faster

## Separation of concerns

- Overlapping governance models are a recipe for conflict
- New model has more clear division of responsibilities
  - OpenJDK “JDK” Project – Looking to the future
    - Technical direction, development
  - JCP – Safeguarding the present
    - Integrity, completeness, and accuracy of specification, TCK
    - Independent implementability
  - Commercial support entities – Preserving the past
    - Support lifetimes and policies, update trains, backports, etc

# Moving Java Forward, Faster

## Results so far

- Java 9 – Sept 2017
  - 3 ½ years in the making
  - Over 90 JEPs
- Java 10 – March 2018
  - 12 JEPs
- Java 11 – Sept 2018
  - 17 JEPs
- Java 12 – March 2019
  - 8 JEPs
- Kept to the schedule, no surprises or disruptions
  - ... with *vastly* reduced release-management overhead

# For the Committed

- JVM Language Summit
  - Annual event, for last 10 years
  - In-depth discussions on interaction of JVM architecture and language implementations on the JVM
  - Presentations streamed on YouTube
- OpenJDK Committers Workshop
  - August 2018 (Santa Clara), Jan 2019 (Brussels)
    - Likely continuing on that cadence
  - Open to all OpenJDK committers
  - Discussions of technical directions, processes, policies for OpenJDK

# Looking ahead

- Our feature pipeline is better than it has ever been
  - Better mix of smaller and larger features
  - Ability to break bigger features into smaller ones
- Long-term projects bearing fruit
  - Amber – right-sizing language ceremony
  - Panama – native code and data interop
  - Loom – fibers and continuations
  - Valhalla – value types and specialized generics
- This is a very exciting time for Java!