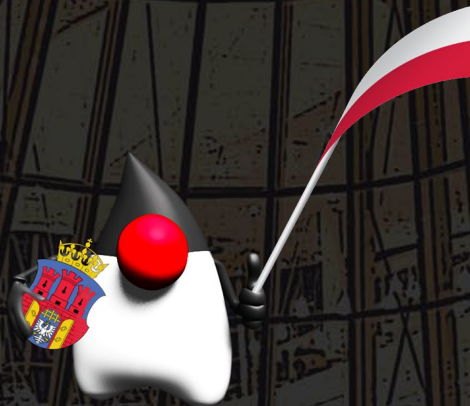


The Future of Cloud Native Java is Native Java

Burr Sutter, Director of Developer Experience



RED HAT
DEVELOPER

CENTRUM KONGRESOWE ICE KRAJOW

Dzień dobry!



CHOPIN (B. 1810)
Żelazowa Wola, Poland



COPERNICUS (B. 1473)
Torun, Poland



CURIE (B. 1867)
Warsaw, Poland







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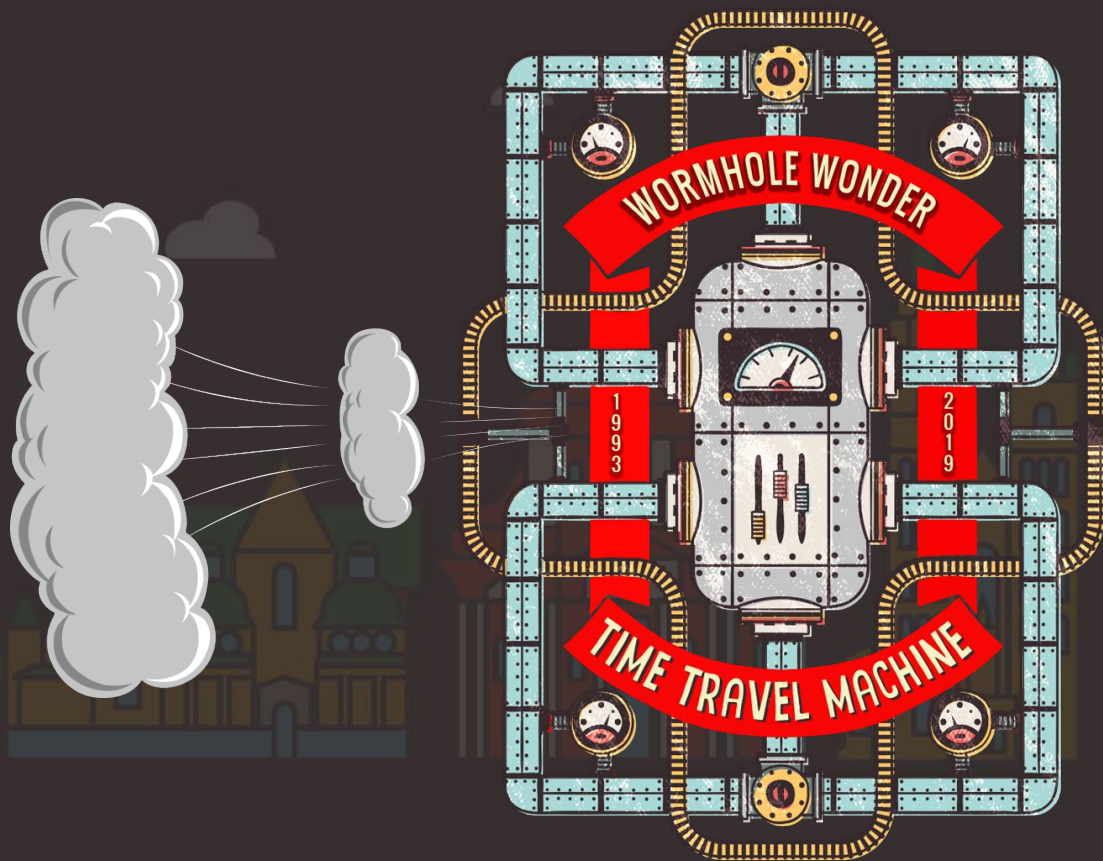


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Only 11% of organizations across industries indicated their existing in-house talent has the competitive skills necessary for success in the digital economy.

MIT Sloan Management Review



1993





=

Linux

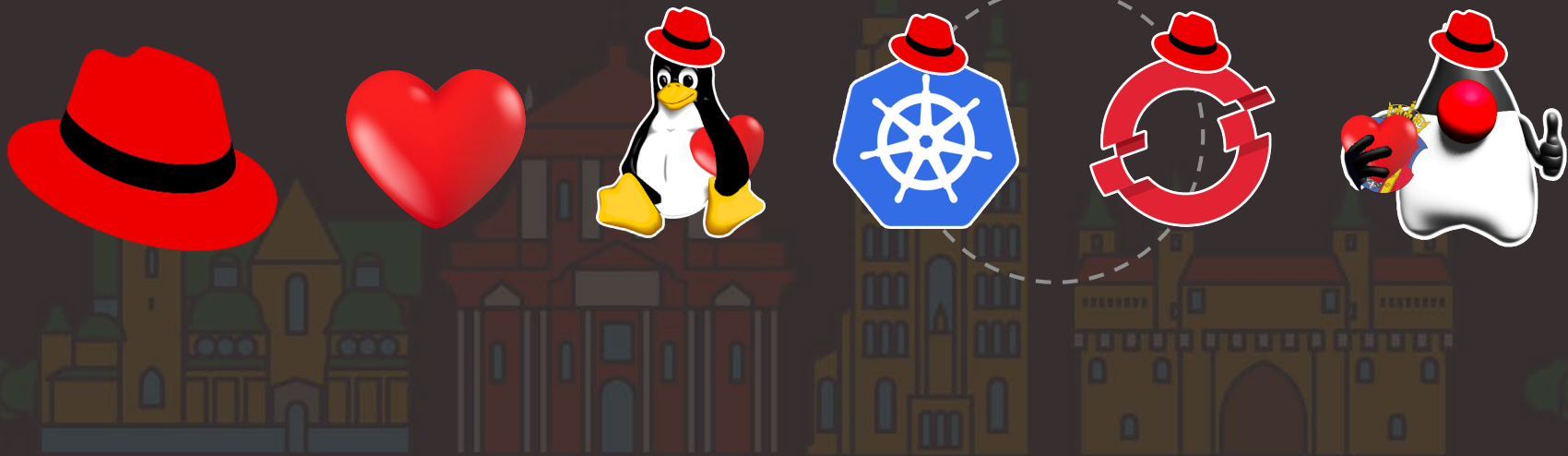


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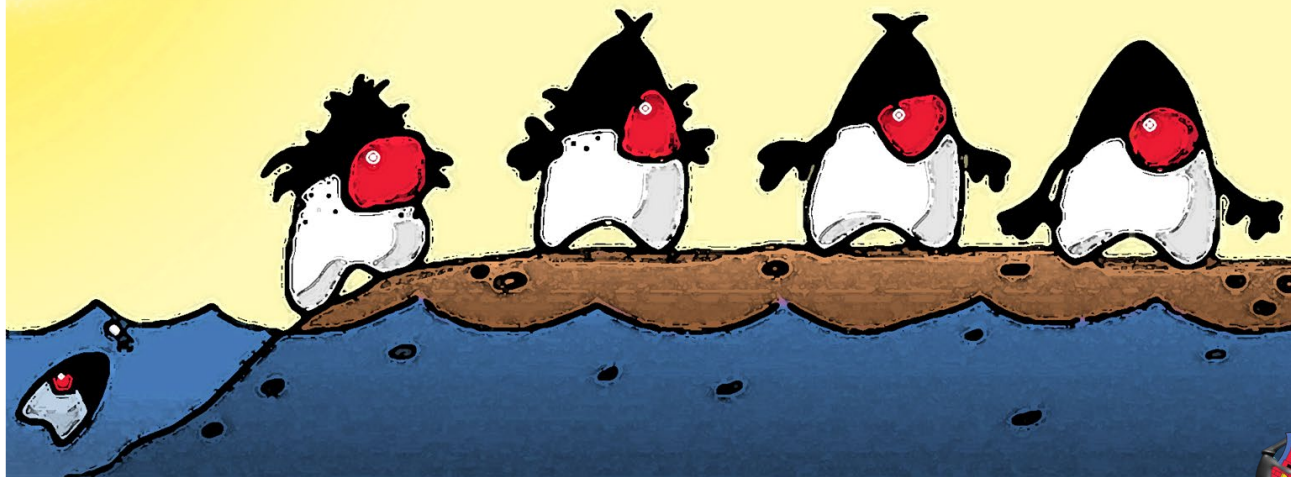
Linux

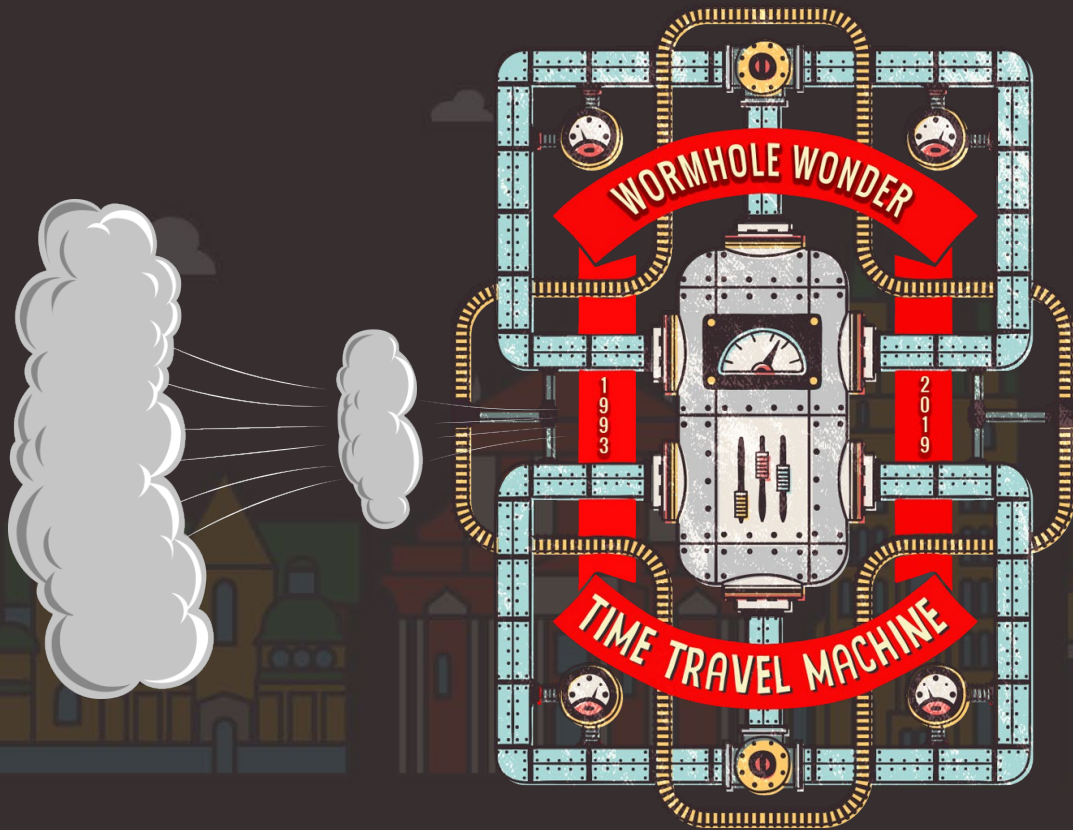


Linux



YOU SAY YOU WANT AN EVOLUTION





1999



https://en.wikipedia.org/wiki/1999_in_film





"Angel of Mine" (Monica)



"Heartbreak Hotel" (Whitney Houston)



"Baby One More Time" (Britney Spears)

https://en.wikipedia.org/wiki/Billboard_Year-End_Hot_100_singles_of_1999



United States Wins FIFA World Cup

FIFA







1999

Cost of a Java-based Web App

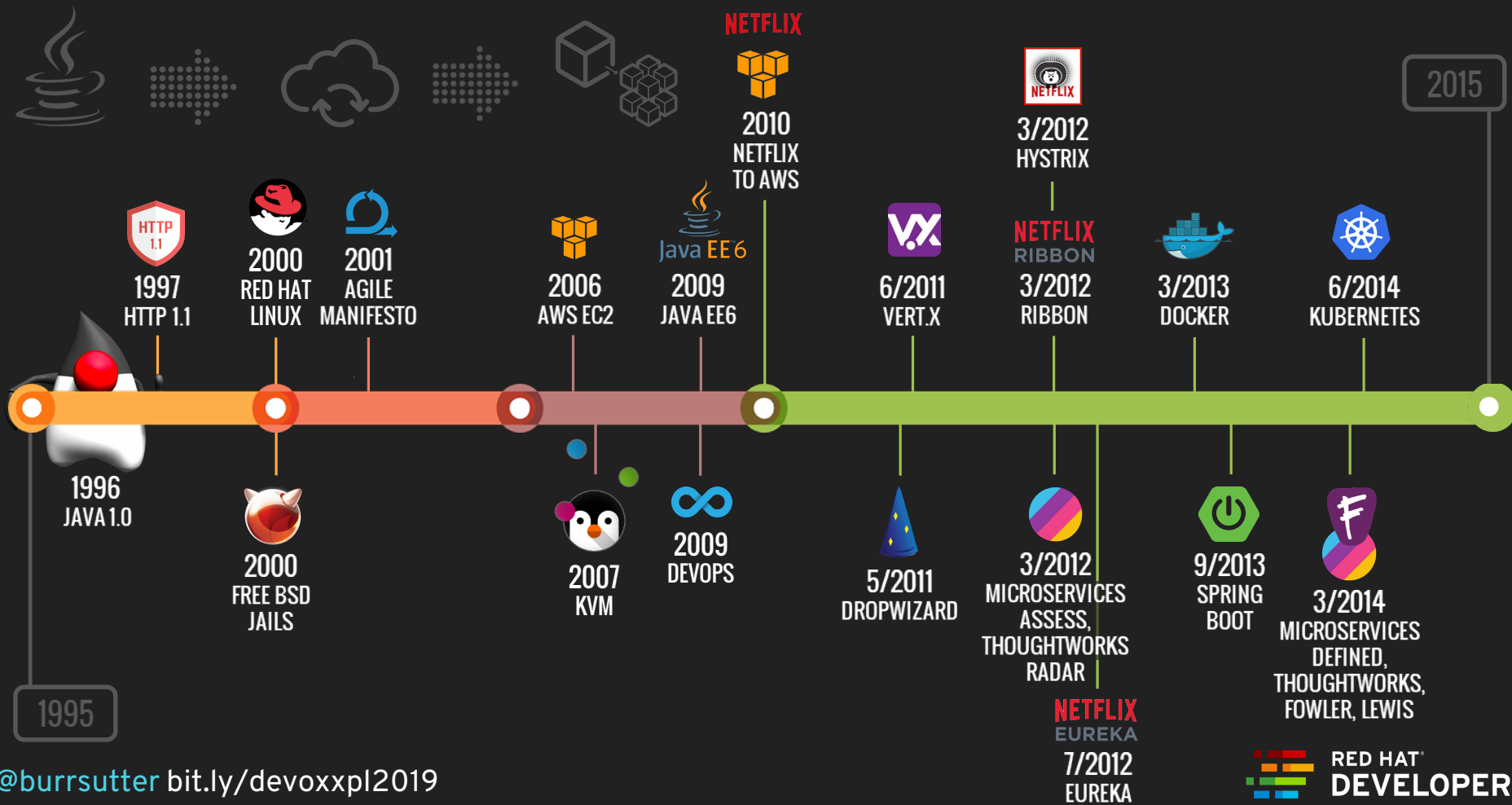
	\$18,000	Sun Sparc App Server Box (4 CPUs, 2GB of RAM)
+	\$60,000	BEA Weblogic
+	\$92,000	Sun Spark DB Server Box (8 CPUs)
+	\$243,000	Oracle RDBMS
+	\$50,000	Symantec Visual Café for 10 developers
	\$463,000	(capex) + ~\$80,000 annual maint (opex)



MEMORY	VCPUS	SSD DISK	TRA	
1 GB	1 vCPU	25 GB	1 TB	\$5/mo \$0.007/hr
2 GB	1 vCPU	50 GB	2 TB	\$10/mo \$0.015/hr
3 GB	1 vCPU	60 GB	3 TB	\$15/mo \$0.022/hr
2 GB	2 vCPUs	60 GB	3 TB	\$15/mo \$0.022/hr
1 GB	3 vCPUs	60 GB	3 TB	\$15/mo \$0.022/hr
4 GB	2 vCPUs	80 GB	4 TB	\$20/mo \$0.030/hr
8 GB	4 vCPUs	160 GB	5 TB	\$40/mo \$0.060/hr
16 GB	6 vCPUs	320 GB	6 TB	\$80/mo \$0.119/hr

m5ad.4xlarge	16	N/A	64 GiB	2 x 300 NVMe SSD	\$0.824 per Hour
m5ad.12xlarge	48	N/A	192 GiB	2 x 900 NVMe SSD	\$2.472 per Hour
m5ad.24xlarge	96	N/A	384 GiB	4 x 900 NVMe SSD	\$4.944 per Hour
m5d.large	2	8	8 GiB	1 x 75 NVMe SSD	\$0.113 per Hour
m5d.xlarge	4	16	16 GiB	1 x 150 NVMe SSD	\$0.226 per Hour
m5d.2xlarge	8	31	32 GiB	1 x 300 NVMe SSD	\$0.452 per Hour

INSTANCE	VCPU	RAM	TEMPORARY STORAGE	PAY AS YOU GO
D2 v3	2	8 GiB	50 GiB	\$0.096/hour
D4 v3	4	16 GiB	100 GiB	\$0.192/hour
D8 v3	8	32 GiB	200 GiB	\$0.384/hour





1000+ Containers
Launched

Audience Members
Claim Containers



<https://www.youtube.com/watch?v=GCtpncAOEa0&feature=youtu.be&t=1031>

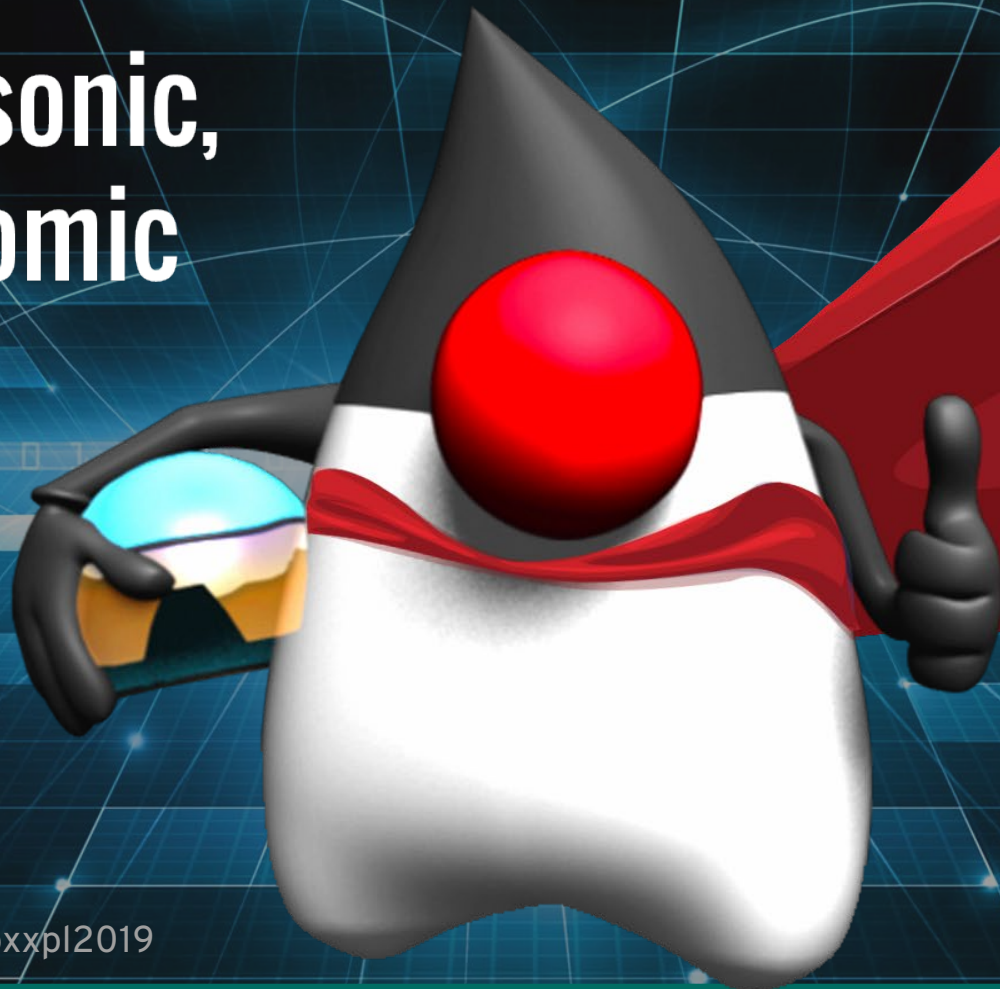
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Supersonic, Subatomic Java

QUARKUS.IO

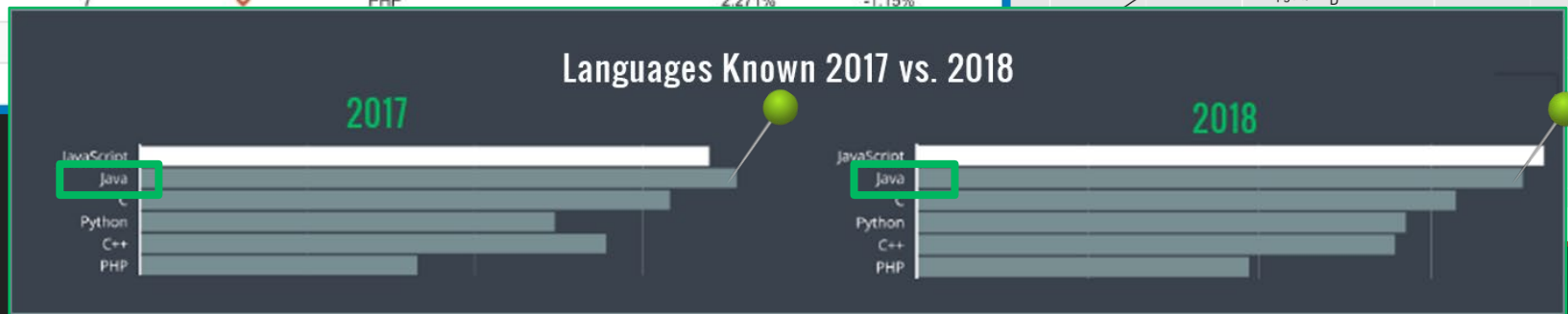
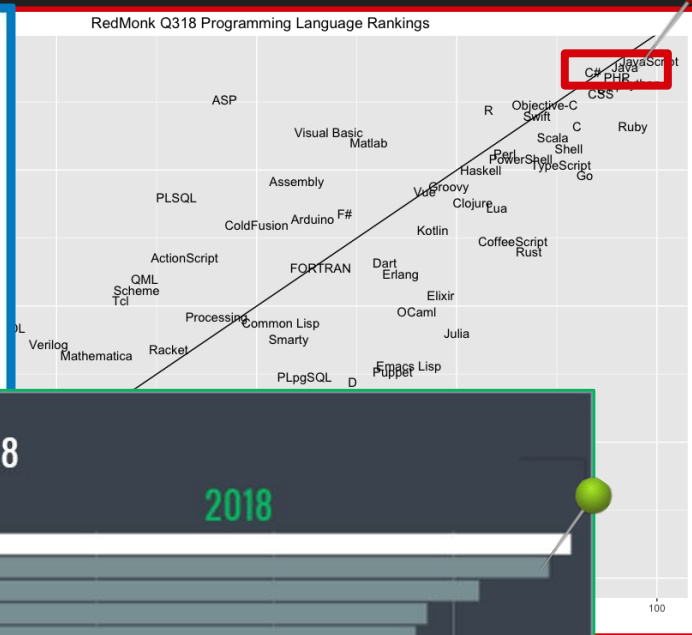


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**“The reports of my
death are greatly
exaggerated.”**



Feb 2019	Feb 2018	Change	Programming Language	Ratings	Change
1	1		Java	15.876%	+0.89%
2	2		C	12.424%	+0.57%
3	4	▲	Python	7.574%	+2.41%
4	3	▼	C++	7.444%	+1.72%
5	6	▲	Visual Basic .NET	7.095%	+3.02%
6	8	▲	JavaScript	2.848%	-0.32%
7	5	▼	C#	2.346%	-1.61%
8	7	▼	PHP	2.271%	-1.15%
9					
10					





Still, so much goodness ...





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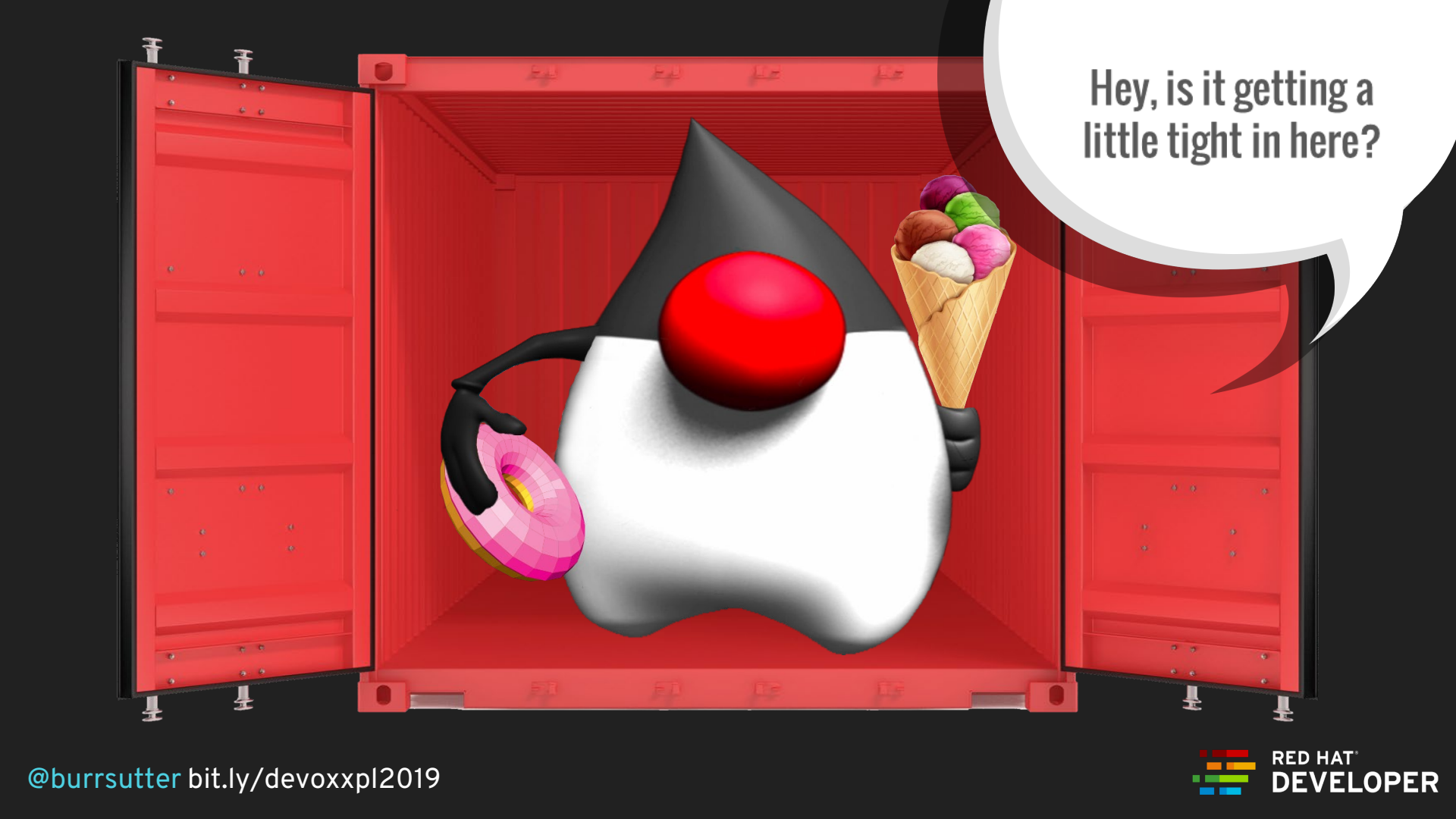
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In so many flavors ...



So so many flavors ...



Hey, is it getting a
little tight in here?





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So who is this Quarkus— and what's all the fuss?



Up to 10x smaller, 100x faster.
Seriously.



Live reload



Imperative and
reactive



Serverless



Microservices



Fat jars
and native
executables



Optimized for
JAX-RS & JPA
(Hibernate) ...



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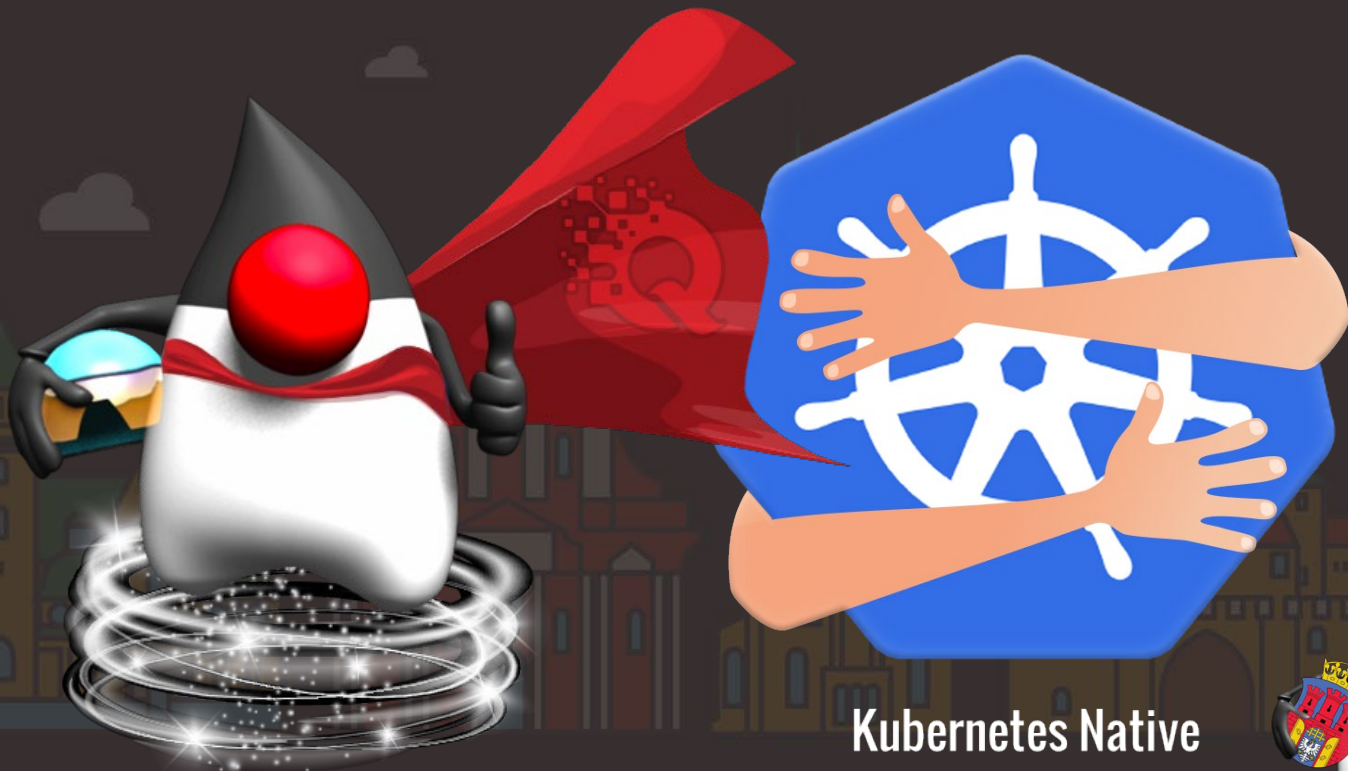
10x smaller.

Up to 100x faster.



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 **RED HAT
DEVELOPER**



Kubernetes Native

The logo for Eclipse Vert.x, featuring the text "VERT.x" in a white, sans-serif font, with the ".x" in a purple color.

ECLIPSE VERT.X



HIBERNATE



RESTEASY



APACHE CAMEL



ECLIPSE
MICROPROFILE



NETTY



KUBERNETES



OPENSIFT

OPENSIFT



JAEGER



PROMETHEUS



APACHE KAFKA



INFIN



Kogito



Data Sources

Event-based
Microservices

Business
Monitoring

SMALLRYE

Analytics &
Machine Learning

Alerting,
Back loop

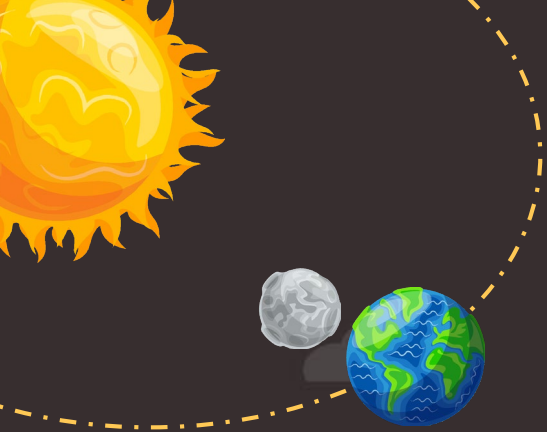
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COPERNICUS (B. 1473)
Torun, Poland

**“To know that we know what we know—
and that we do not know what we do not know—
that is true knowledge.”**

CHOPIN (B. 1810)
Żelazowa Wola, Poland



“After one has played a vast
quantity of notes and more notes,
it is simplicity that emerges as
the crowning reward of art ...

Simplicity is the final achievement.”

“One never notices what has
been done; **one can only see
what remains to be done.**”



CURIE (B. 1867)
Warsaw, Poland

“Nothing in life is to be feared,
it is only to be understood.

Now is the time to understand more,
so that we can fear less.”



CURIE (B. 1867)
Warsaw, Poland



The Future of Cloud Native Java Is Native Java

monday @ 9am

Burr Sutter



Real-World HTTP Performance Benchmarking: Lessons Learned

tuesday @ 9am

Julien Viet



Particle Accelerators and Java with Quarkus

monday @ 3:50pm

Burr Sutter



Let's Develop on Prod! Wait! What?!

wednesday @ 3:50pm

Bartosz Majsak



Quarkus: A Next- Generation Java Runtime

tuesday @ 9am

Michał Szykiewicz & Martin Kouba



Java, Turbocharged

monday @ 11:40am

Marcus Biel



How & Why We Turned Old Java Projects into First-Class Serverless Components

monday @ 1:30pm

Mario Fusco & Maciej Swiderski



12 Ways of the Cloud Native Warrior

tuesday @ 3:40pm

Burr Sutter



Cloud Native Development with Eclipse Microprofile & Quarkus on Kubernetes

tuesday @ 2:30pm

M. Szykiewicz, M. Kouba, M. Swiderski

It's just the
beginning ...



~~The End~~