

(Why) We Live in The World of Java

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HUJAK

Hrvatska udruga Java korisnika
Croatian Java User Association

www.hujak.hr

JavaCro^{TE}



Occasional Java Meme

BRACE YOURSELVES

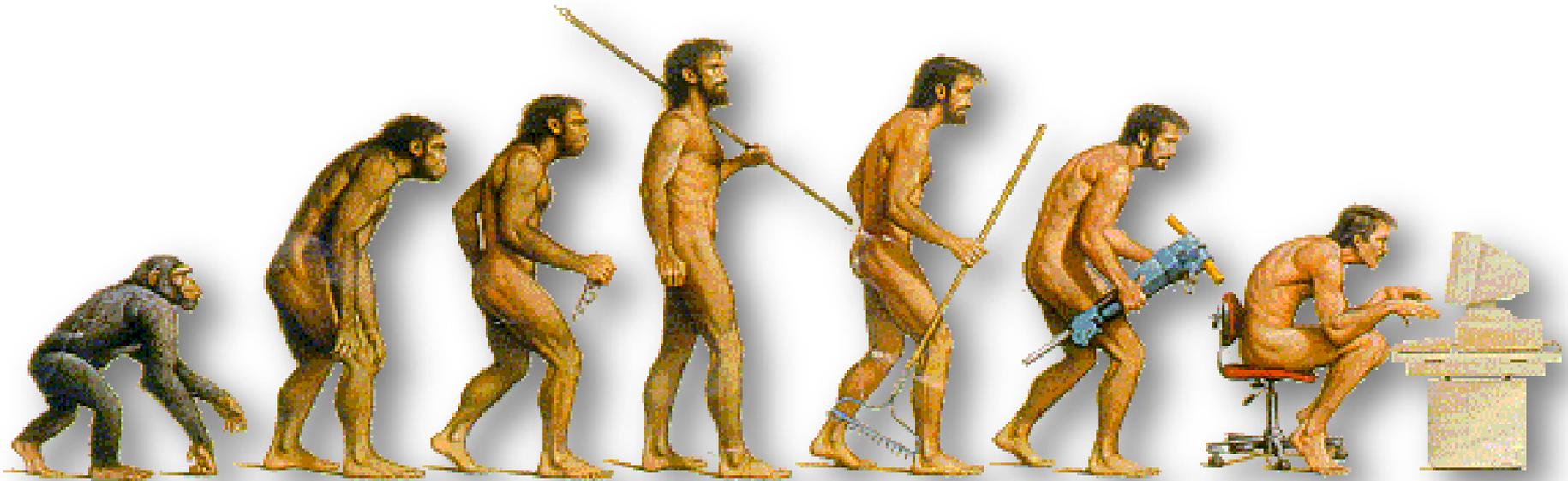
**THE JAVA MEMES ARE
COMING**





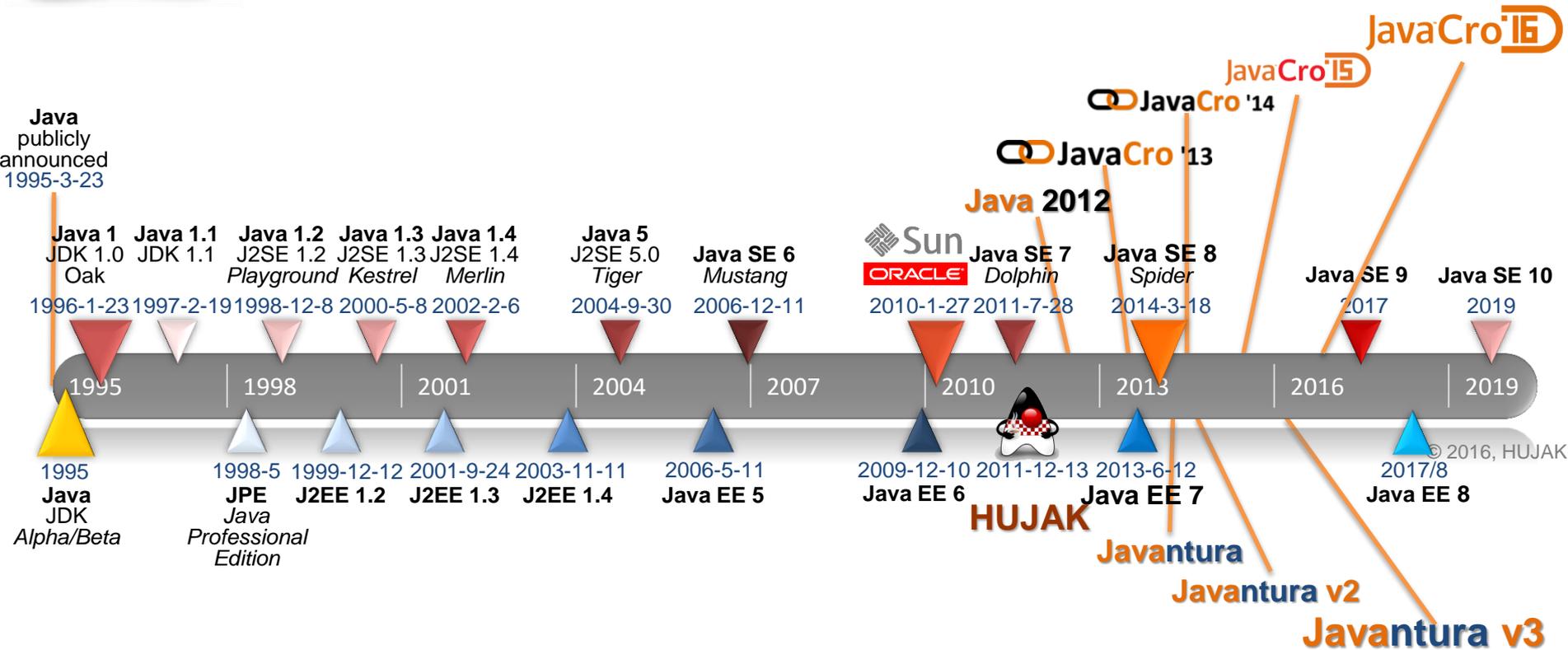
Evolution of (Java) Man

- How did we come here **today**?
- Well ... once upon a time ...





Java Timeline (by HUJAK)





Back on track – **why** Java?

- From **enterprise** applications to **small smart** devices
 - IoT, sensorics, wearable, pervasive, ubiquitous ...
- **Enormous ecosystem** of **code**, **libraries** and **tools**
- **Portable** and **open source**
- **Corporate** and **vendor backing**
- **Android!** 😊

Java is not a language, Java is a **platform!**

Most people talk about Java the Language, and this may sound odd coming from me, but I could hardly care less.

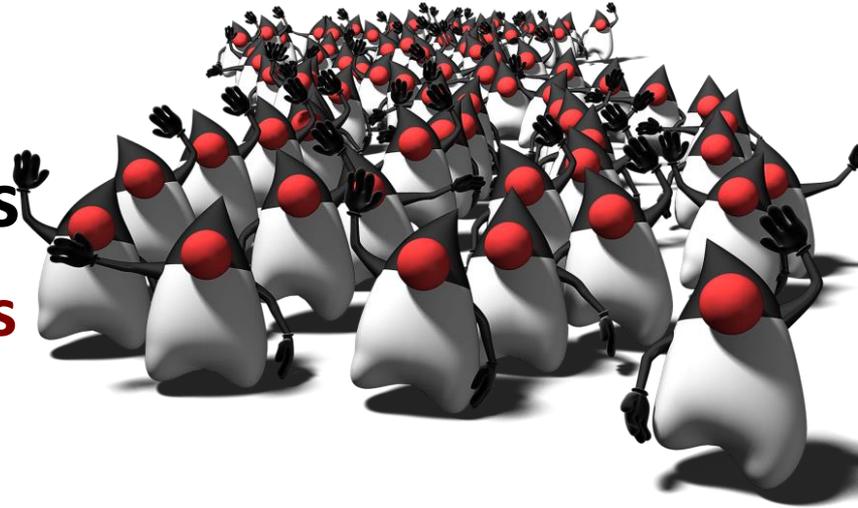
*At the core of Java ecosystem is the **JVM**. James Gosling*

- **30+ JVM languages** (Clojure, Groovy, Scala, JRuby, Jython ...)
- The **most popular language** (still 😊)?



Is Java really that **good**?

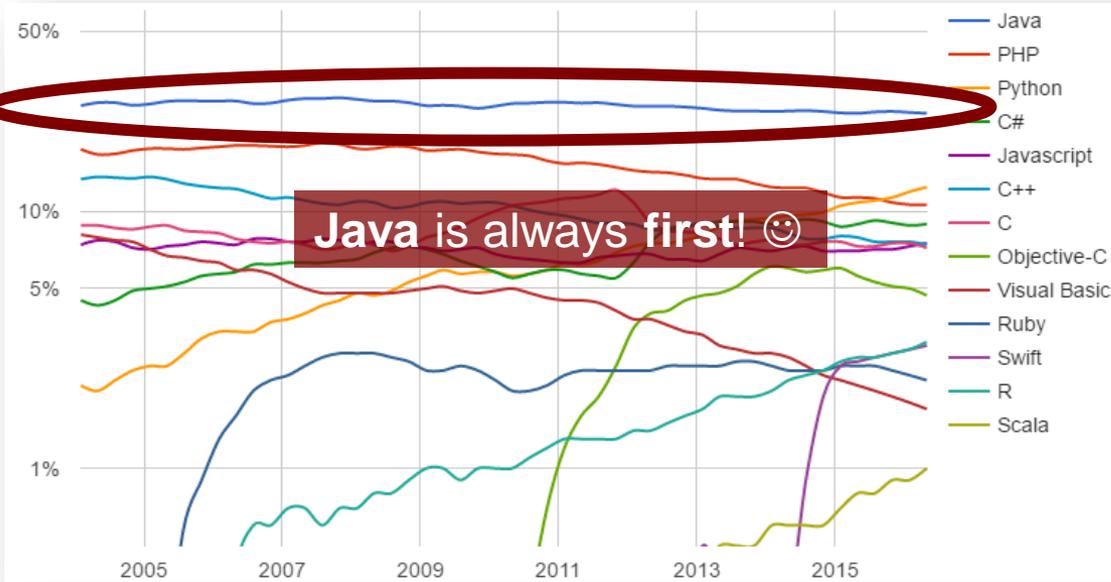
- Continued **growth of Java** for **20+** years
- **#1** Development Platform
 - Also in the **Cloud**
- **10** Million Java Developers
 - **800.000+** Java **Certifications**
- **13** Billion Devices run Java
 - **200** Million Medical Devices
 - **1** Billion Automotive Devices
 - **97%** of Enterprise Desktops





Popularity of Java Language

- **PYPL index** (Popularity of Programming Language)
 - May 2016

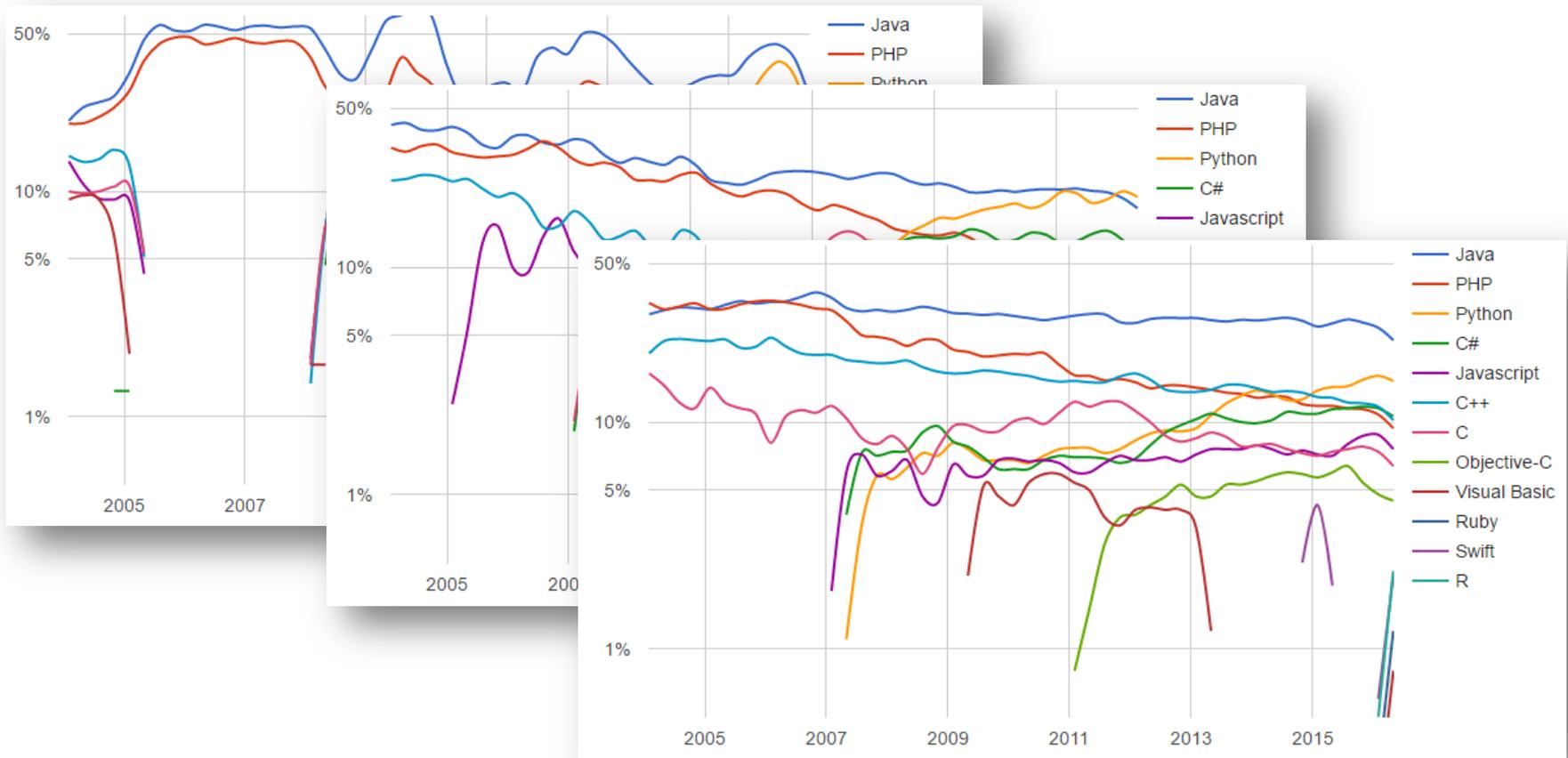


Rank	Language	Share	Feb 2015
1	Java	24.0 %	-0.2 %
2	Python	12.4 %	+1.8 %
3	PHP	10.6 %	-0.8 %
4	C#	8.9 %	-0.4 %
5	JavaScript	7.5 %	+0.5 %
6	C++	7.4 %	-0.3 %
7	C	7.2 %	+0.1 %
8	Objective-C	4.7 %	-0.7 %
9	R	3.1 %	+0.5 %
10	Swift	3.0 %	+0.4 %



Java Popularity in Europe

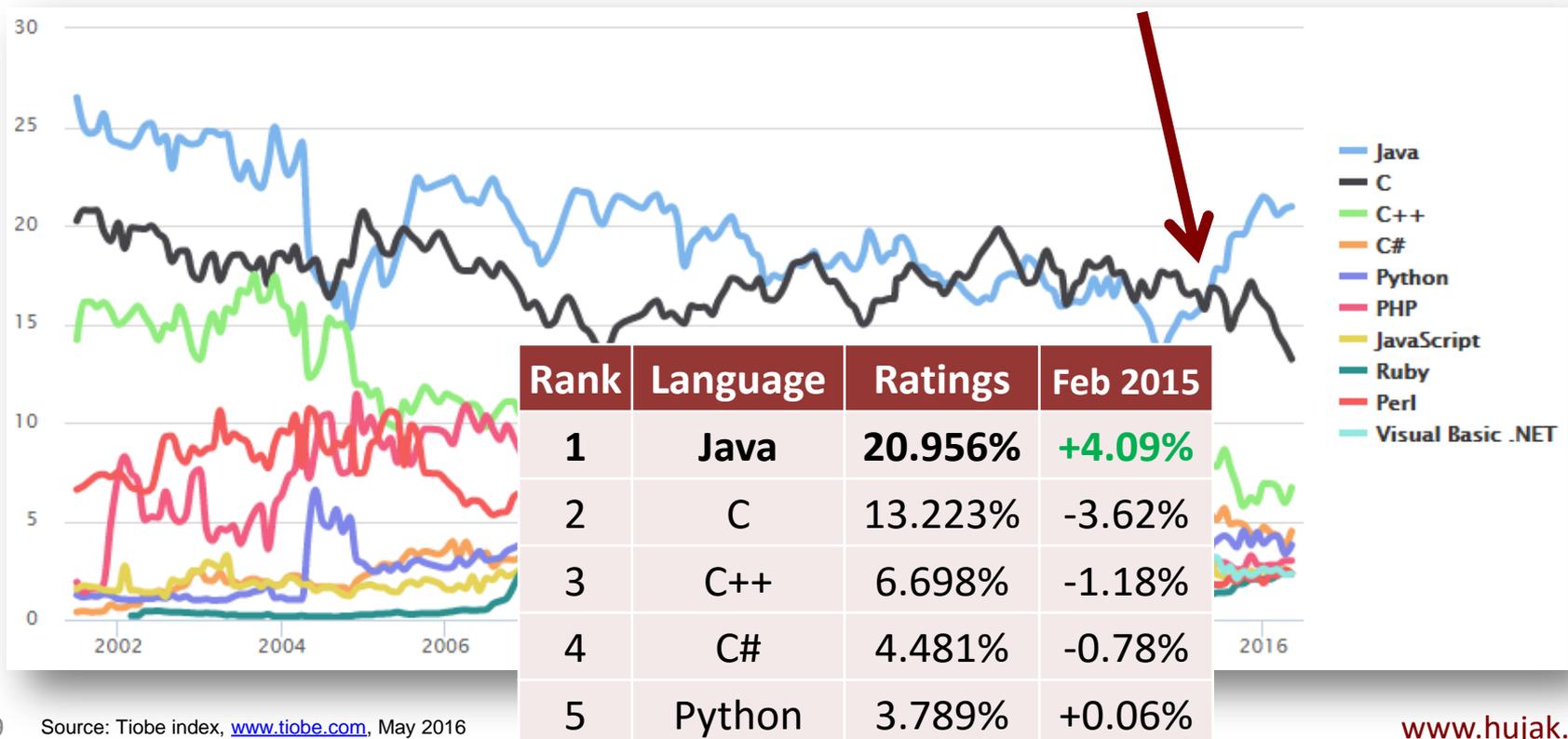
- PYPL for **France, UK** and **Germany**, May 2016





Popularity of Java language #2

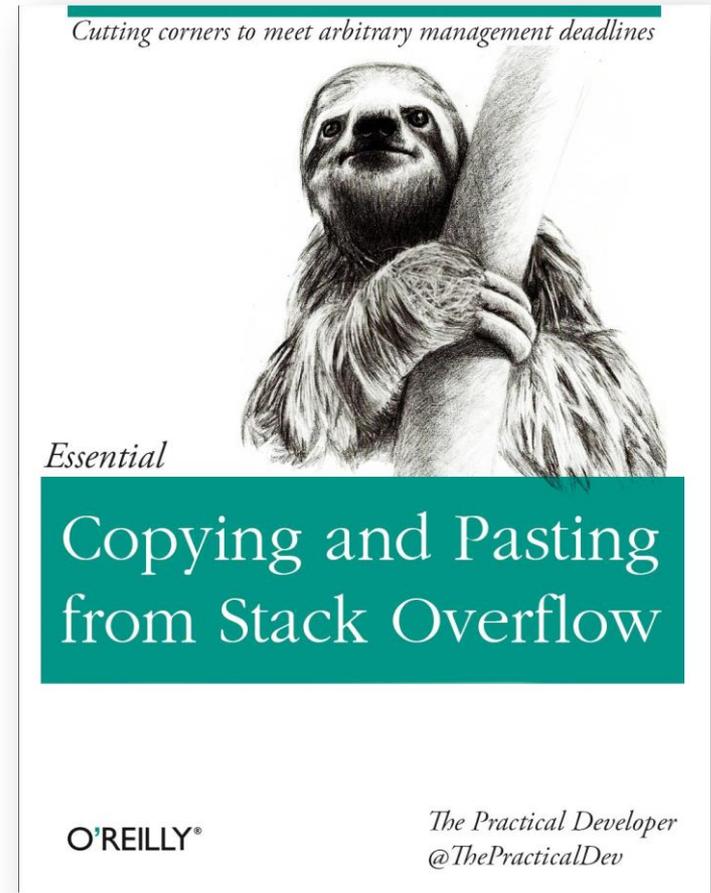
- **TIOBE index** (still controversial?!) May 2016
- April 2015 Headline: **Java back at the top!**





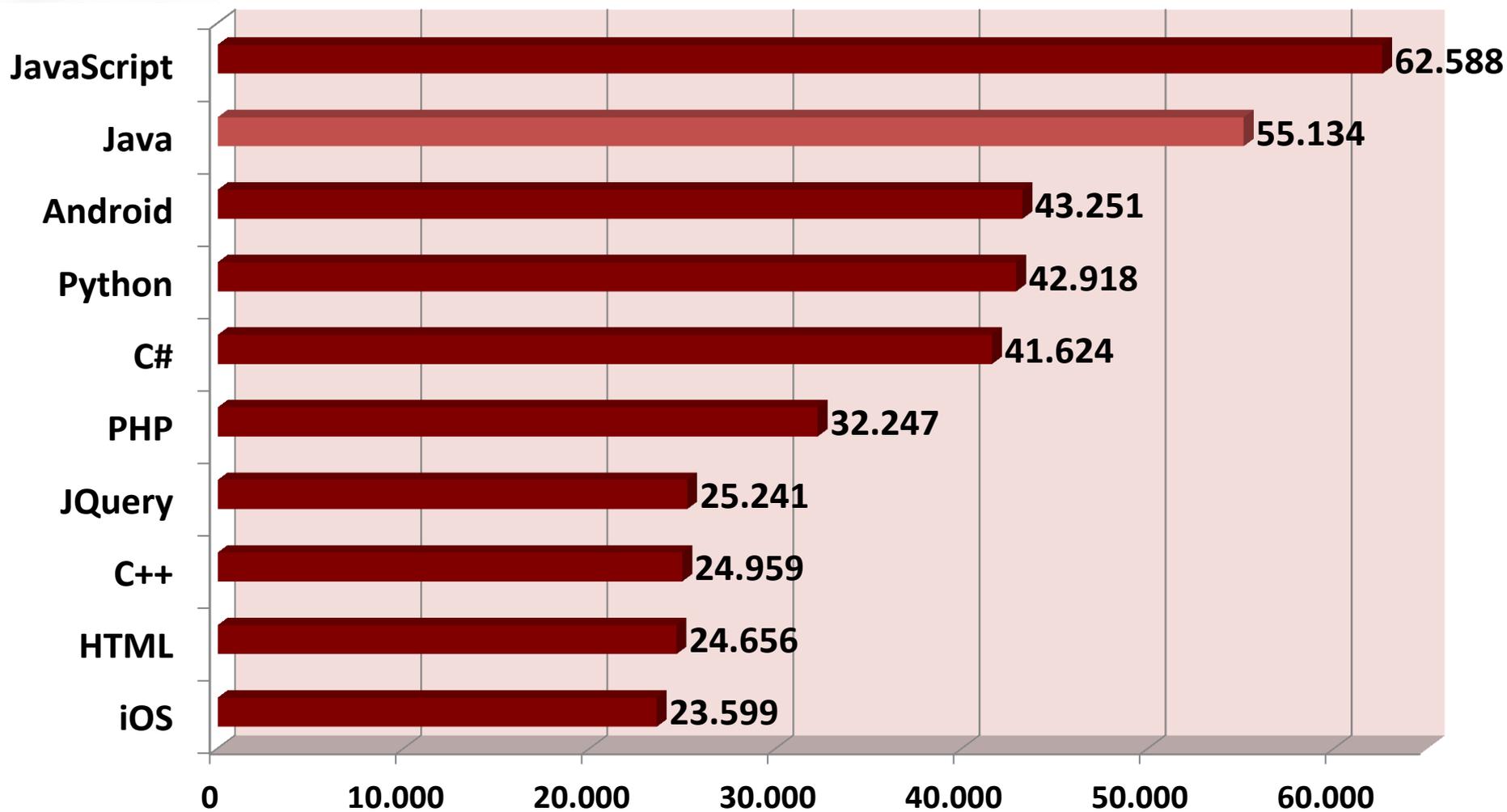
One source we trust

- **Stack Overflow** 😊
- Since 2009 – **12.3 million questions** asked and **18.4 million answers** submitted
 - In 2015 only – **2.7 million questions** and **3.2 million answers**
- **Developer Survey Results 2016**
 - **56,033** survey respondents from **173** countries





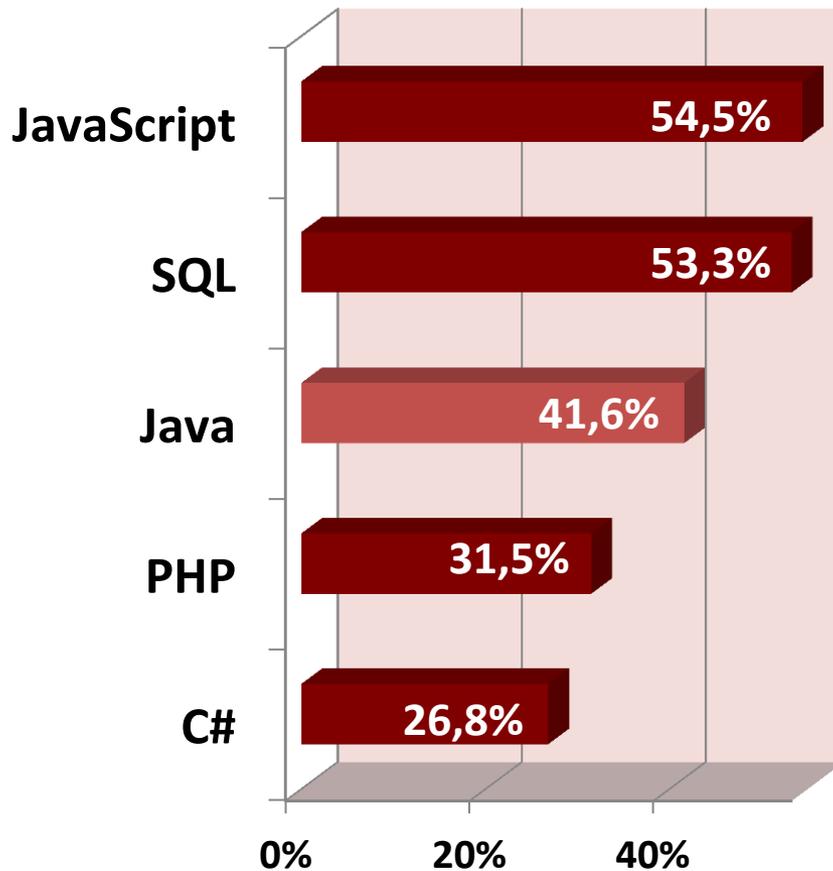
Top Tech on Stack Overflow



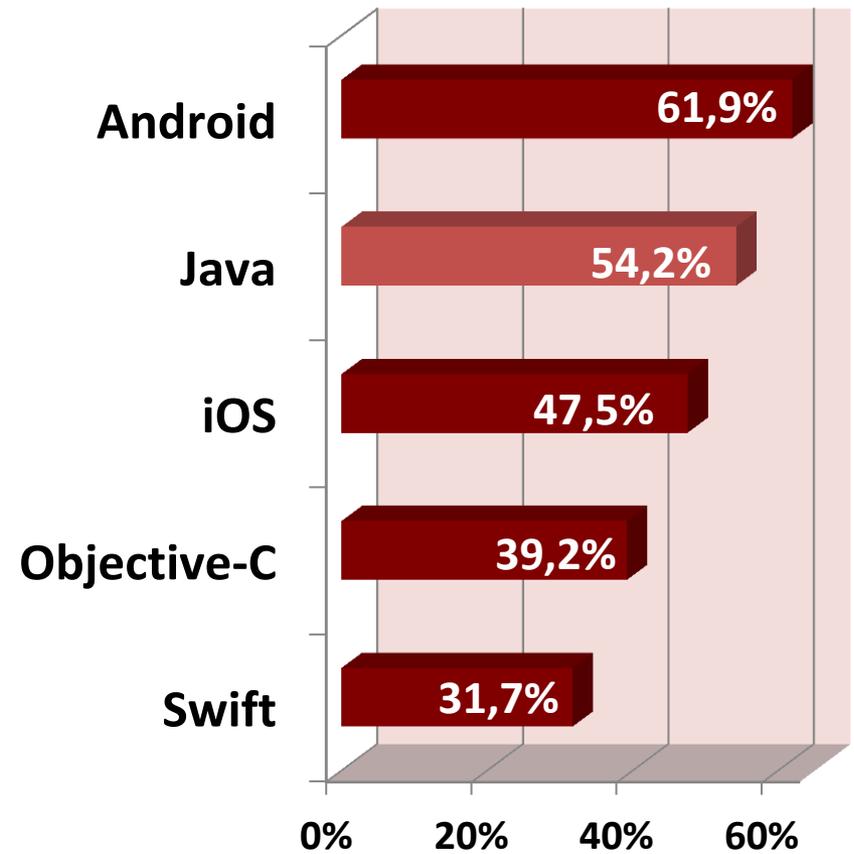


Most popular technologies

- **Back-End Developers**



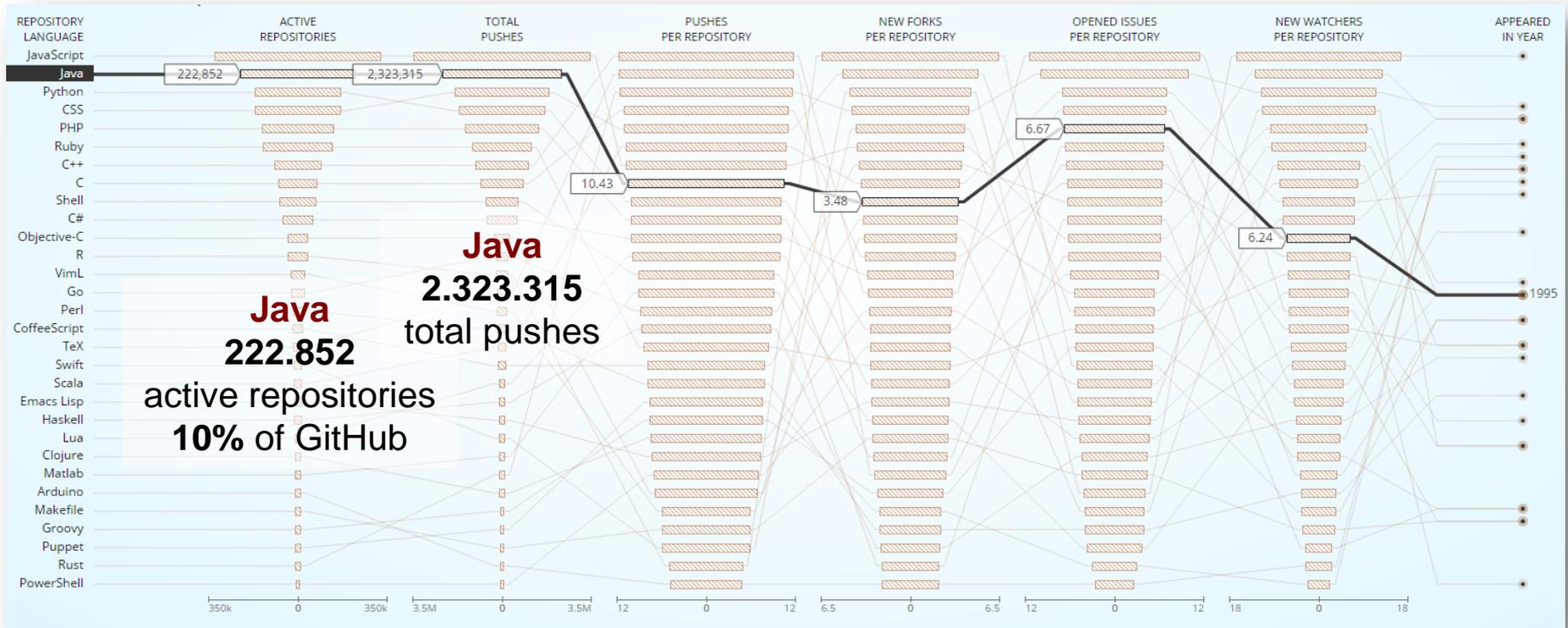
- **Mobile Developers**





Java at GitHub

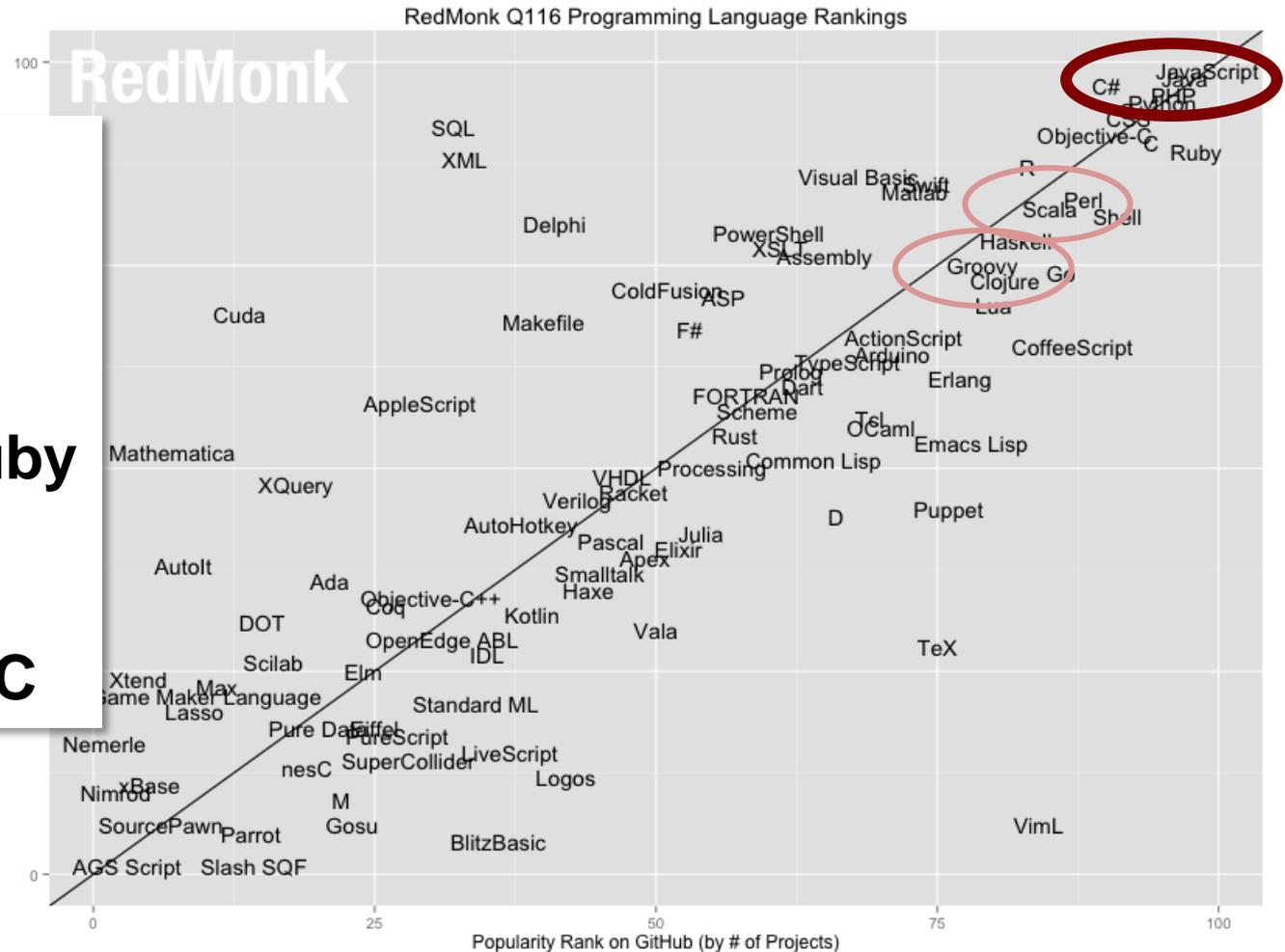
- **GitHut** – discovery of active languages in GitHut
 - Java is **2nd** out of **2.2M** active repositories





Java at GitHub/Stack Overflow

1. JavaScript
2. Java
3. PHP
4. Python
5. C#, C++, Ruby
8. CSS
9. C
10. Objective-C





Occasional Java Meme





Java SE news

- Java 7 **Auto Update** to Java 8 since 2015
 - End of public updates for JDK 7 April 2015
- Java SE **8u91/92** released April 2016
 - Next critical update July 2016
- **Early Access Release JDK 9 build 118**
 - Eclipse Java 9 Support (beta)
 - www.java9countdown.xyz

Countdown to Java 9 Release Date
Update: Jigsaw Delays Push Java 9 Launch Date to 2017 - Read more

3 0 7

Days until Java 9 is officially released



Java last month news

- **Oracle vs Google \$9 billion fight**

- Since 2010, Google and Oracle locked in a legal battle
- Oracle seeking \$9 billion in damages in a second trial



- **JavaPoly.js** www.javapoly.com

- Polyfills native JVM support in the browser
- Import existing Java code and invoke it directly from JavaScript
- Applets bye-bye?



Java SE 9 delayed

Proposed schedule change for JDK 9

mark.reinhold at oracle.com [mark.reinhold at oracle.com](mailto:mark.reinhold@oracle.com) Tue Dec 1 17:08:06 UTC 2015

The key feature of Java 9 is **Project Jigsaw** [1], which will introduce a standard module system and use that system to modularize both the Java SE Platform and the JDK. This large project consists of a JSR for the module system plus five JEPs, for the implementation of the module system and for other changes specific to the JDK. We've made good progress on Jigsaw over the last eighteen months: We reorganized the source code into modules in August 2014 (JEP 201 [2]), restructured run-time images to support modules in December 2014 (JEP 220 [3]), began discussions in the JSR 376 EG last February [4], and published a design overview, draft specification, and EA builds in September [5]. More recently we presented an integrated series of talks on Jigsaw at JavaOne 2015 and Devoxx BE 2015 [6] which were very well-attended and motivated many developers to download the EA builds, try them out, and send feedback and suggestions.

In the current JDK 9 schedule [7] the Feature Complete milestone is set for 10 December, less than two weeks from today, **but Jigsaw needs more time**. The JSR 376 EG has not yet published an Early Draft Review specification, the volume of interest and the high quality of the feedback received over the last two months suggests that there will be much more to come, and we want to ensure that the maintainers of the essential build tools and IDEs have adequate time to design and implement good support for modular development.

For these reasons I hereby propose a **six-month extension** of the JDK 9 schedule, moving the Feature Complete (FC) milestone to 25 May 2016, the General Availability (GA) milestone to **23 March 2017**, and adjusting the interim milestones accordingly. As with previous schedule changes, the intent here is not to open the gates to a flood of new features unrelated to Jigsaw, nor to permit the scope of existing features to grow without bound. It would be best to use the additional time to stabilize, polish, and fine-tune the features that we already have rather than add a bunch of new ones. The later FC milestone does apply to all features, however, so reasonable proposals to target additional JEPs to JDK 9 will be considered so long as they do not add undue risk to the overall release.

Comments on this proposal from JDK 9 Committers are welcome, as are reasoned objections. If no such objections are raised by 18:00 UTC next Tuesday, 8 December, or if they're raised and satisfactorily answered, then per the JEP 2.0 process proposal [8] this will be adopted as the new schedule for JDK 9.

- Mark



Java SE 9 Schedule

- **Proposed schedule for JDK 9**

2016-05-26	Feature Complete	(was 2015-12-10)
2016-08-11	All Tests Run	(was 2016-02-04)
2016-09-01	Rampdown Start	(was 2016-02-25)
2016-10-20	Zero Bug Bounce	(was 2016-04-21)
2016-12-01	Rampdown Phase 2	(was 2016-06-16)
2017-01-26	Final Release Candidate	(was 2016-07-21)
2017-03-23	General Availability	(was 2016-09-22)



Java 9 and Beyond

- **Modularity**
 - **Performance** – ahead of time compilation (startup speed), fast class lookup, linker with optimization ...
 - **Security** – internal APIs (sun.*, *.internal.*), class dependency analyzer ...
- Project **Jigsaw** – Java Module System
 - JEP 200: **The Modular JDK** – "umbrella"
 - JEP 201: **Modular Source Code**
 - JEP 220: **Modular Run-Time Images**
 - JSR 376: Java Platform **Module System**
- Project **Valhalla**
 - Value Types, Specialized Generics, Var Handles ...
- Project **Panama**
 - Foreign Function Interface, Data Layout Control, Arrays 2.0 ...





JDK 9 – what's in it?

- 102: Process API Updates
- 110: HTTP 2 Client
- 143: Improve Contended Locking
- 158: Unified JVM Logging
- 165: Compiler Control
- 197: Segmented Code Cache
- 199: Smart Java Compilation, Phase Two
- 201: Modular Source Code
- 211: Elide Deprecation Warnings on Import Statements
- 212: Resolve Lint and Doclint Warnings
- 213: Milling Project Coin
- 214: Remove GC Combinations Deprecated
- 215: Tiered Attribution for javac
- 216: Process Import Statements Correctly
- 217: Annotations Pipeline 2.0
- 219: Datagram Transport Layer Security (DTLS)
- 220: Modular Run-Time Images
- 221: Simplified Doclet API
- 223: New Version-String Scheme
- 224: HTML5 Javadoc
- 226: UTF-8 Property Files
- 227: Unicode 7.0
- 228: Add More Diagnostic Commands
- 229: Create PKCS12 Keystores by Default
- 230: Microbenchmark Suite
- 231: Remove Launch-Time JRE Version Selection
- 232: Improve Secure Application Performance
- 235: Test Class-File Attributes Generated by javac
- 236: Parser API for Nashorn
- 237: Linux/AArch64 Port
- 240: Remove the JVM TI hprof Agent
- 241: Remove the jhat Tool
- 243: Java-Level JVM Compiler Interface
- 245: Validate JVM Command-Line Flag Arguments
- 246: Leverage CPU Instructions for GHASH and RSA
- 247: Compile for Older Platform Versions
- 248: Make G1 the Default Garbage Collector
- 249: OCSP Stapling for TLS
- 250: Store Interned Strings in CDS Archives
- 251: Multi-Resolution Images



JDK 9 – what's in it? (cont'd)

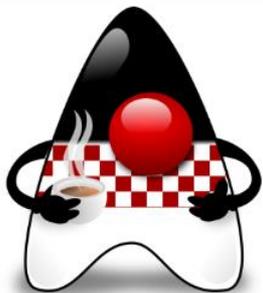
- 252: Use CLDR Locale Data by Default
- 253: Prepare JavaFX UI Controls & CSS APIs for Modularization
- 254: Compact Strings
- 255: Merge Selected Xerces 2.11.0 Updates into JAXP
- 256: BeanInfo Annotations
- 257: Update JavaFX/Media to Newer Version of GStreamer
- 258: HarfBuzz Font-Layout Engine
- 259: Stack-Walking API
- 260: Encapsulate Most Internal APIs
- 261: Module System
- 262: TIFF Image I/O
- 263: HiDPI Graphics on Windows and Linux
- 264: Platform Logging API and Service
- 265: Marlin Graphics Renderer
- 266: More Concurrency Updates
- 267: Unicode 8.0
- 268: XML Catalogs
- 269: Convenience Factory Methods for Collections
- 270: Reserved Stack Areas for Critical Sections
- 271: Unified GC Logging
- 272: Platform-Specific Desktop Features
- 273: DRBG-Based SecureRandom Implementations
- 274: Enhanced Method Handles
- 275: Modular Java Application Packaging
- 276: Dynamic Linking of Language-Defined Object Models
- 277: Enhanced Deprecation
- 278: Additional Tests for Humongous Objects in G1
- 279: Improve Test-Failure Troubleshooting
- 280: Indify String Concatenation
- 281: HotSpot C++ Unit-Test Framework
- 282: jlink: The Java Linker
- 283: Enable GTK 3 on Linux
- 284: New HotSpot Build System
- 285: Spin-Wait Hints
- 287: SHA-3 Hash Algorithms
- 289: Deprecate the Applet API

82+ JEPs!



Java in the **Cloud**?





What about Java EE?

- **Java EE 7 ecosystem**



- **And where is currently Java EE?**

Java EE 7

- HTML 5: WebSockets, JSON Processing, REST, Servlet NIO
- Productivity: More annotated POJOs, less boilerplate code, cohesive platform
- Meet Enterprise Demands: Batch, Concurrency

Java EE 8 JSR 366 Begins

- Approved unanimously
 - HTML5 and web enhancements
 - Ease of development and CDI alignment
 - Modernized infrastructure cloud/on-premise
- GlassFish**
- GlassFish 4.1, Java EE 7 SDK, update 1

Java EE 8 GA

- Servlet 4.0, JAX-RS 2.1
- Model-View-Controller 1.0, JSF 2.3
- JSON Binding, JSON-P 1.1
- CDI 2.0, JMS 2.1
- Java EE Security 1.0, Java EE Management 2.0





Occasional Java **Meme**



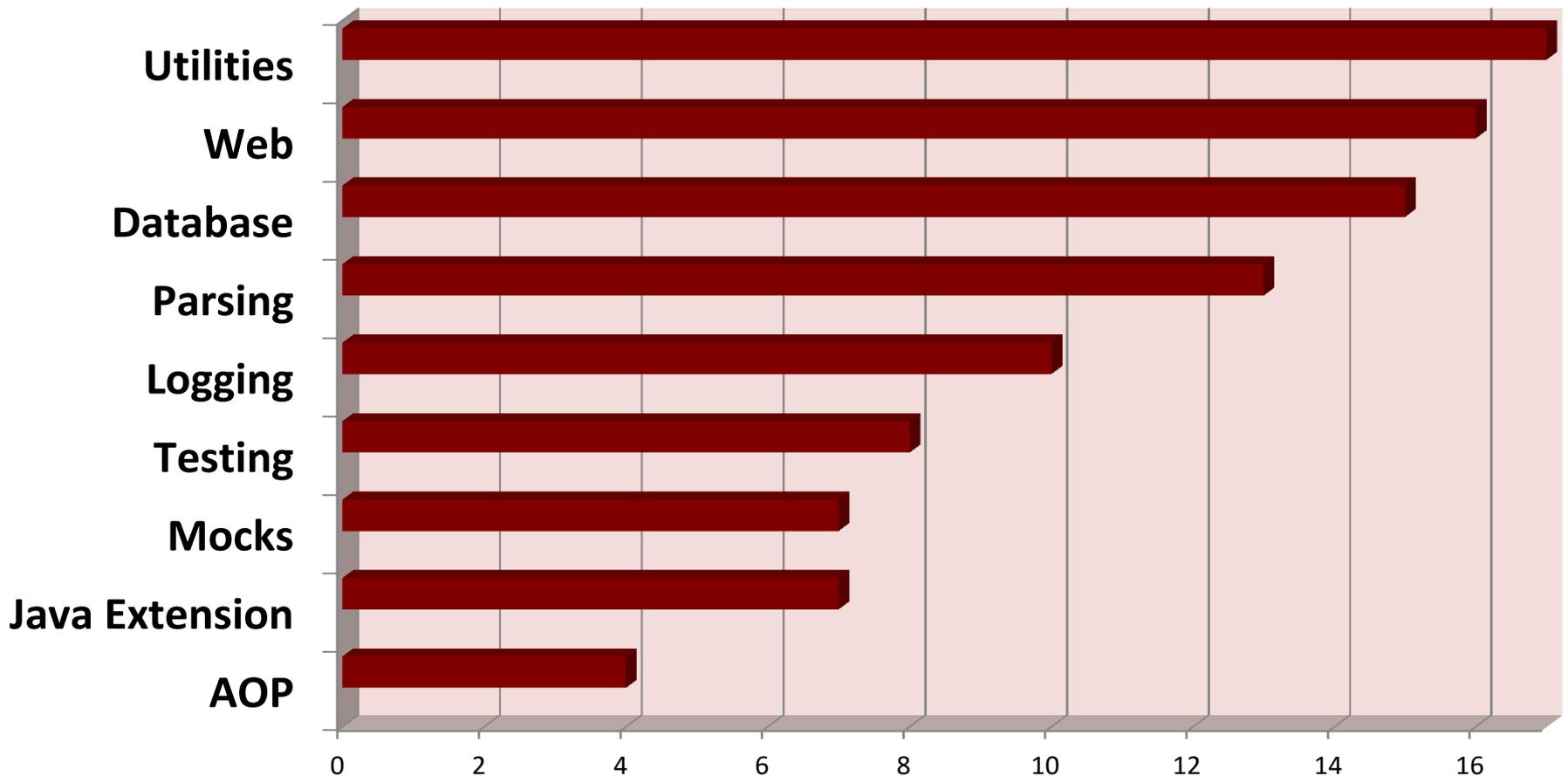
OK, but what is **really popular?**





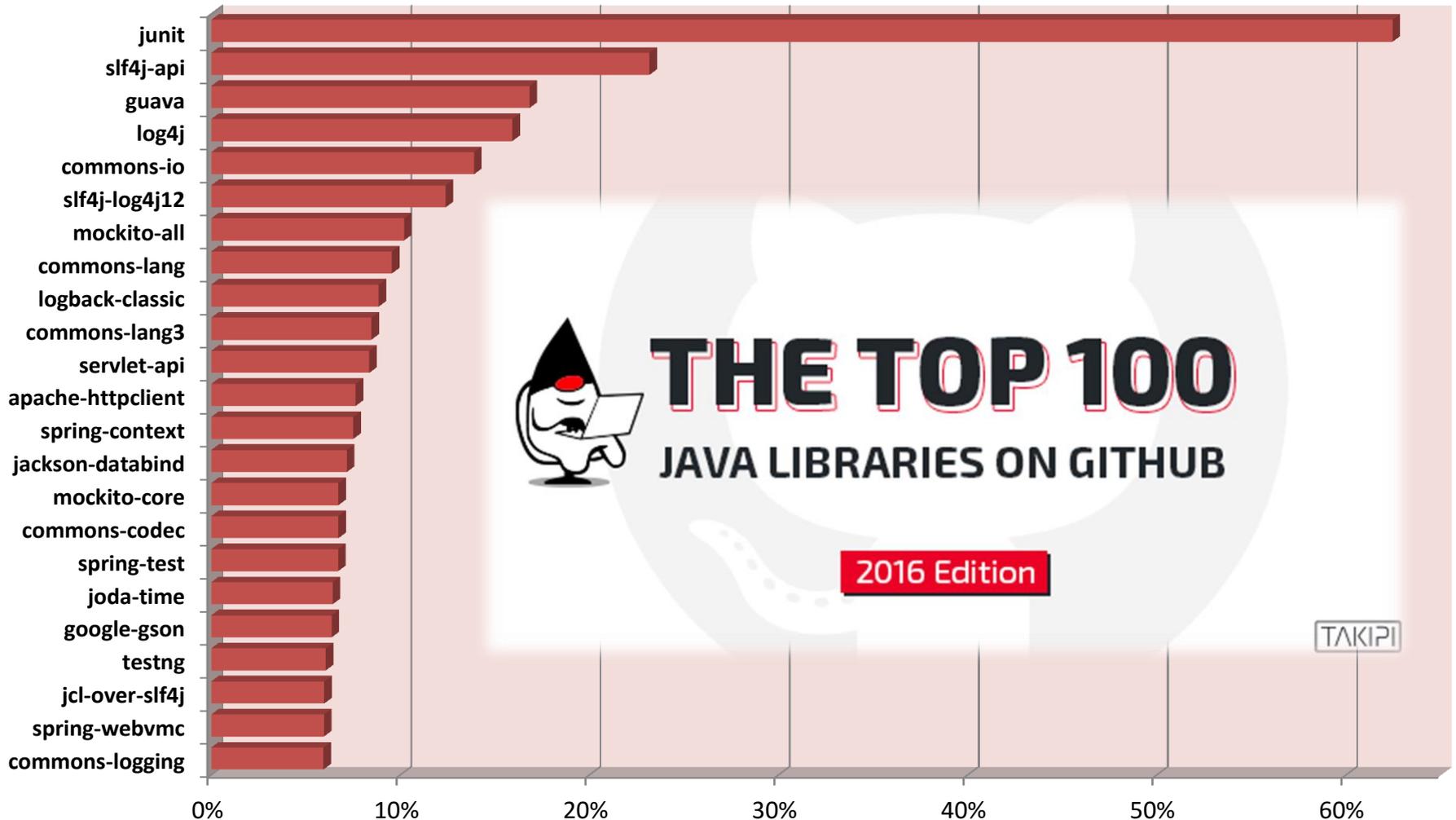
Top Java libs on Github

- **Types of Java libraries in Top 100 list on Github**





Top Java libs on Github





Top Java libs on Github

- **Testing** libraries – undisputed king #1 is **JUnit**, **spring-test** at #17 and **testng** at #20
- **Logging** libraries – **SLF4J** at #2, **log4j** at #4 and **logback-classic** at #9
 - **slf4j-log4j12** at #6 and **jcl-over-slf4j** at #22
- Google **Guava** at #3
- **Spring** libraries – **44** out of **top 100**
 - **Spring Boot** rises
- **Apache-commons** – **commons-io** at #5, **commons-lang** at #8, **commons-lang3** at #10, **commons-codec** at #15
- **Mockito-all** at #7
- **JSON** libraries – **jackson-databind** at #14, **gson** at #19

JUnit



 guava-libraries

 spring



Trending at GitHub

- **Top 10 trending** at **GitHub** this month (May 2016):
 1. google/**agera** – Reactive Programming for Android – 4795*
 2. google/**flexbox-layout** – Flexbox for Android – 3760*
 3. facebook/**react-native** – framework for building native apps with React – 1769*
 4. twitter/**distributedlog** – high performance replicated log service – 1446*
 5. weibocom/**motan** – RPC framework for high performance distributed services – 1219*
 6. ReactiveX/**RxJava** – Reactive Extensions for the JVM – 880*
 7. medyo/**android-about-page** – About Page for your Android App – 936*
 8. square/**retrofit** – Type-safe HTTP client for Android and Java – 818*
 9. square/**okhttp** – HTTP+HTTP/2 client for Android and Java – 780*
 10. google/**guava** – Google Core Libraries for Java 6+ - 757*



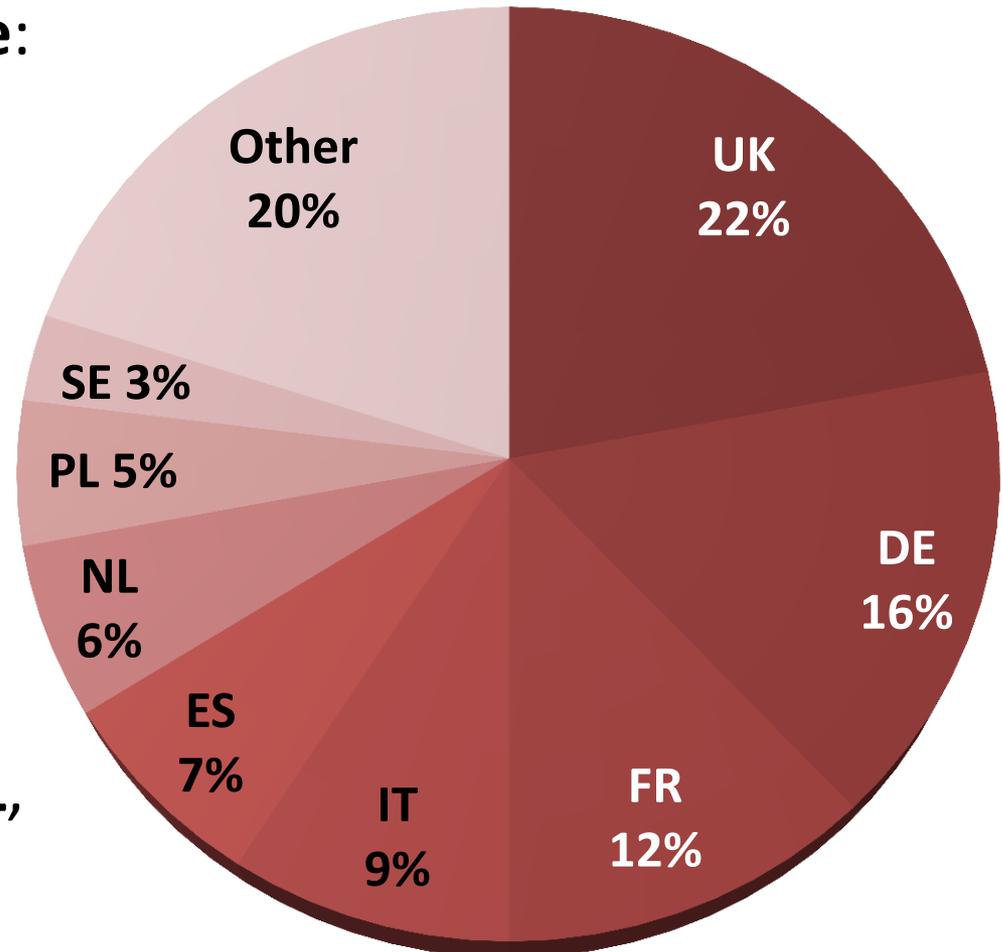
Occasional Java Meme





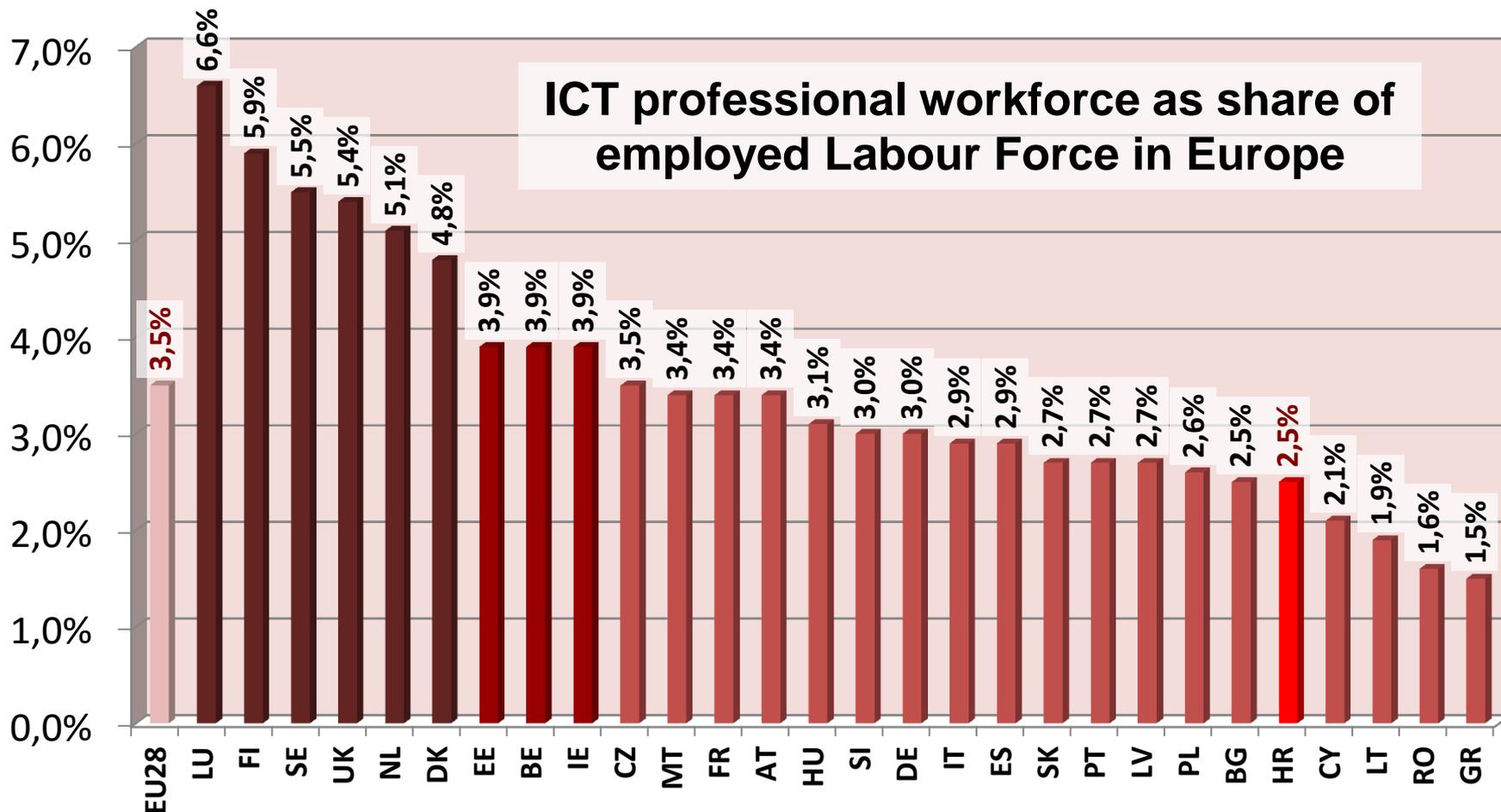
ICT workforce in EU countries

- **ICT Workforce** in Europe:
7.535.000
practitioners
- **>50%** in only 3 EU countries:
UK, DE, & FR
- **>80%** in only 8 EU countries:
UK, DE, FR, IT, ES, NL, PL, & SE





ICT workforce in EU and HR





ICT workforce in Croatia

- Hard to tell ...?
- Approx. **32.000** ICT Professionals
 - Data by Eurostat and
 - According to Croatian Bureau of Statistics (DZS)
 - **NKD 2007** (*National classification of activities*)
category J "*Information and communications*"
subcat. 62 "*Computer programming, consulting and related jobs*"
- Unemployed (?) approx. **5.000**
 - Outdated profession, low education, deprecated technologies
- Educated guess by HUIJAK:
 - Approx. **20.000** Software Developers
 - Approx. **5.000** Java Developers

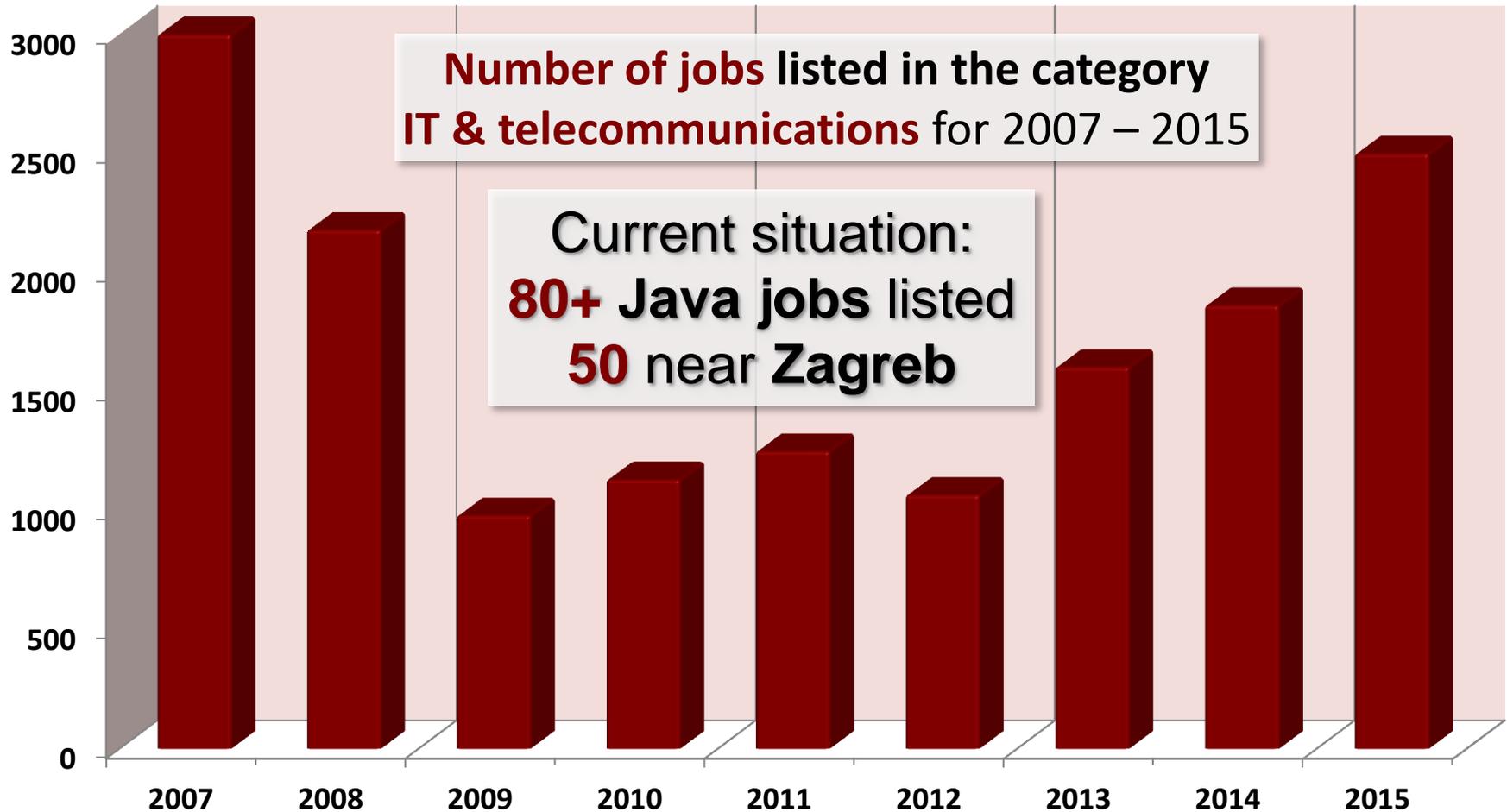


Job offers for ICT in Croatia

- Statistics from one **job portal** in **Croatia**
- **Job offers** - category **IT and Telecommunications**
 - **11%** of all job offers listed
 - **4th place category**
 - after Sales/Trading, Tourism and Hospitality, and Production and Craft services
 - **300+ jobs** offered **daily**
 - The most wanted: **Programmer**, “**Informatičar**”, and **System Administrator**
 - The most wanted **Programmers**: **Java**, **.NET**, and **PHP**



Job offers for ICT in Croatia





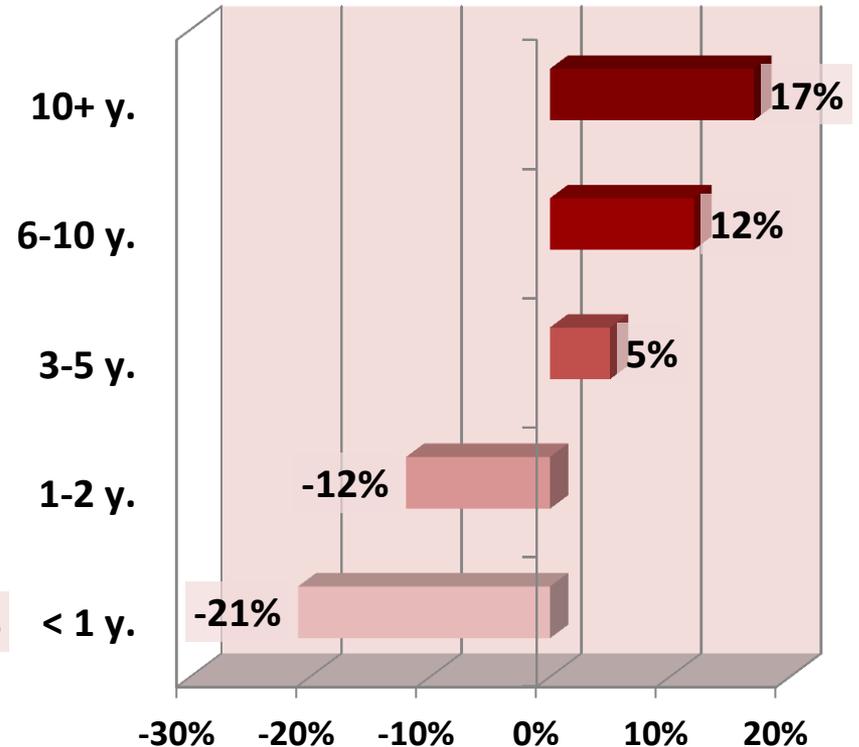
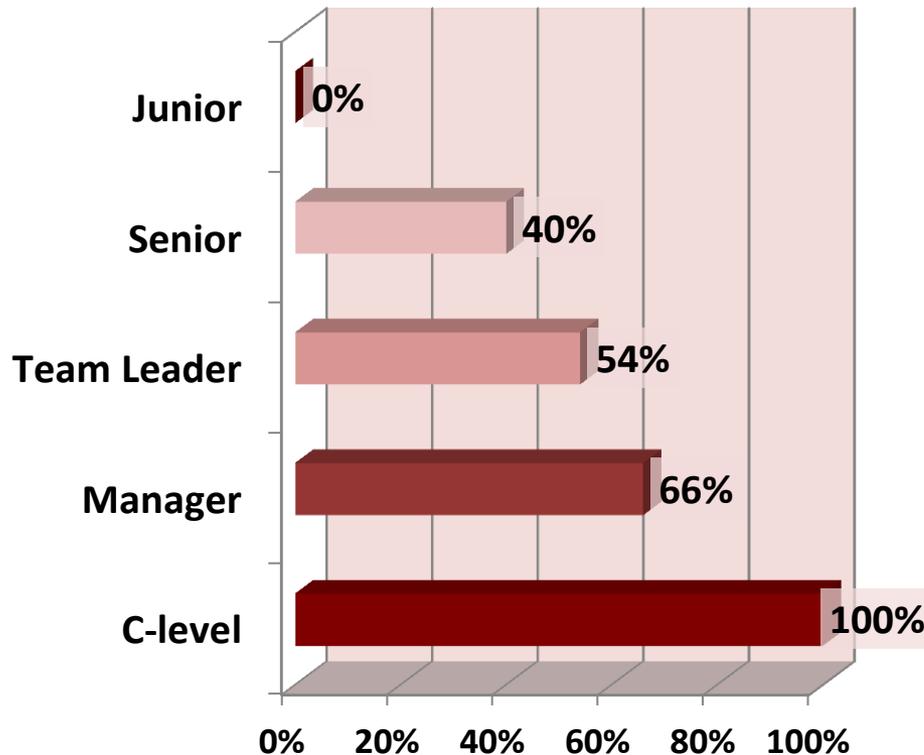
Employers perspective

- Statistics from one **job portal in Croatia** (cont'd)
- What do **employers** seek from **ICT experts**?
 - **52%** want employees with **prior experience**
 - Average prior experience **2y7m**
 - **85%** offer **contract** for an **indefinite period**
 - **62%** still want **VSS (MSc)**
- According to that job portal **Java programmer** in Croatia **average salary** – **7461 kn**
 - **“Generic” Programmer** – **6822 kn**



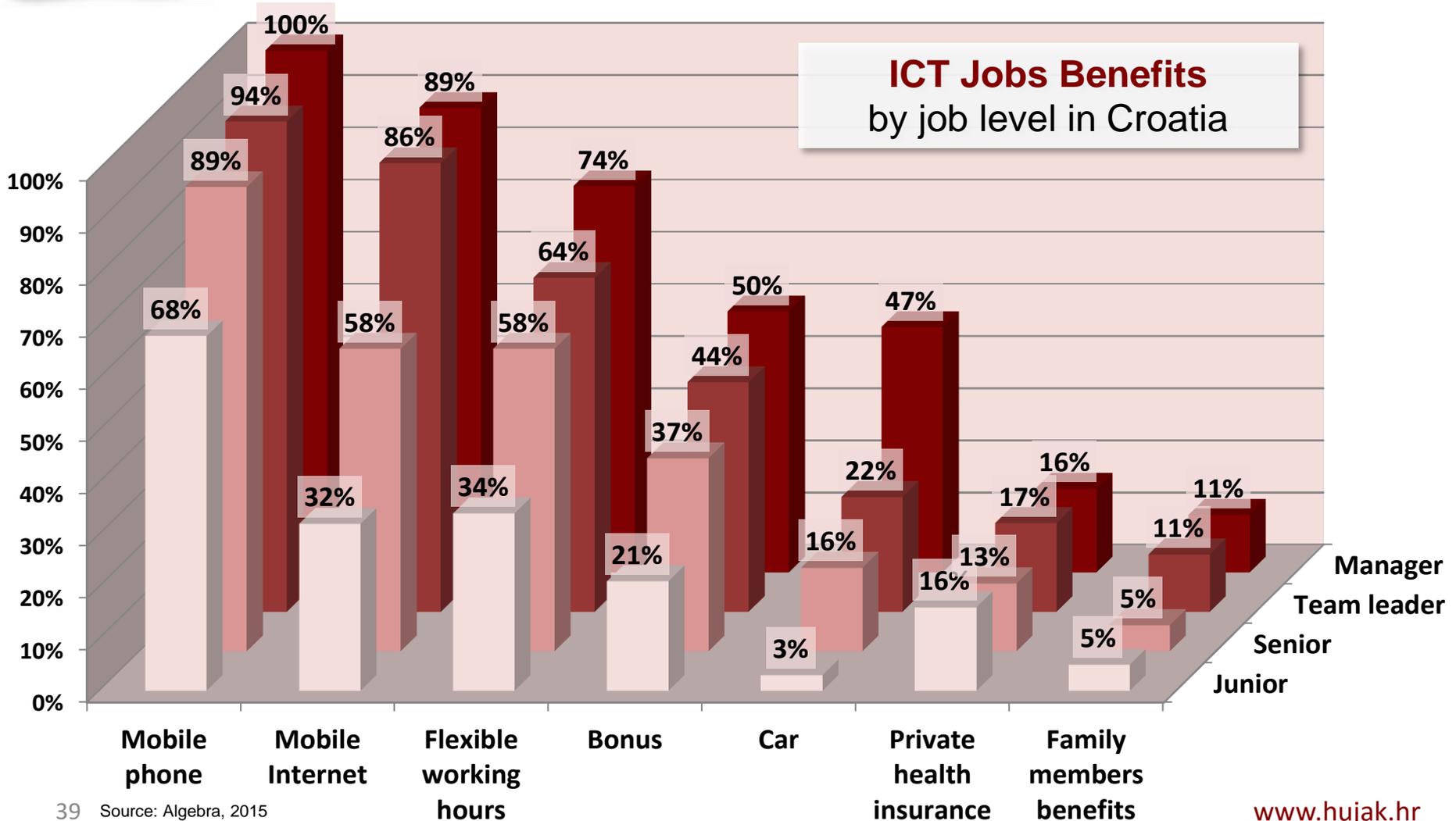
More/less than Average

- **Relative salary** compared to Junior ICT salary
- **Years of experience** compared with average



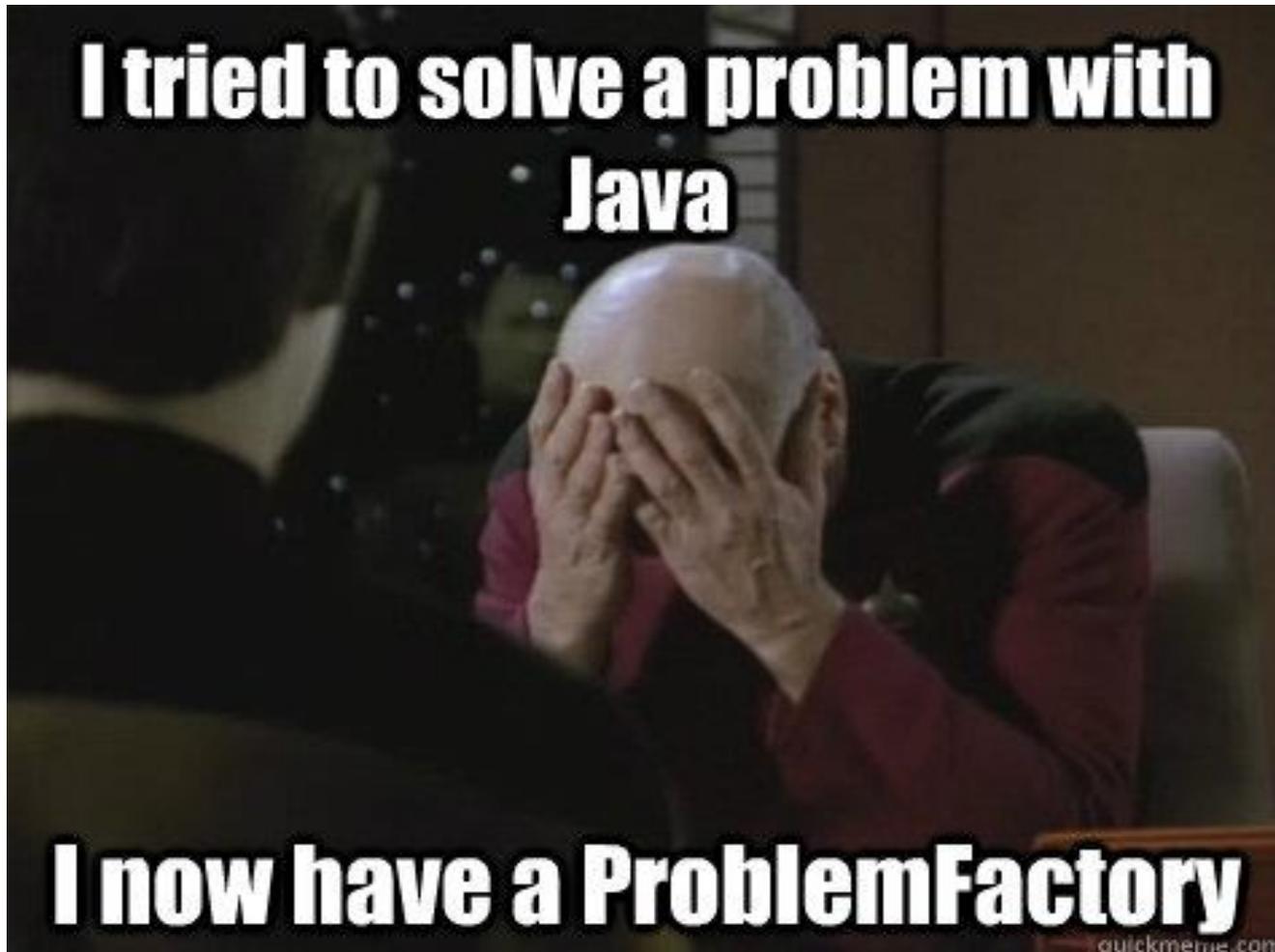


ICT Jobs Benefits in Croatia



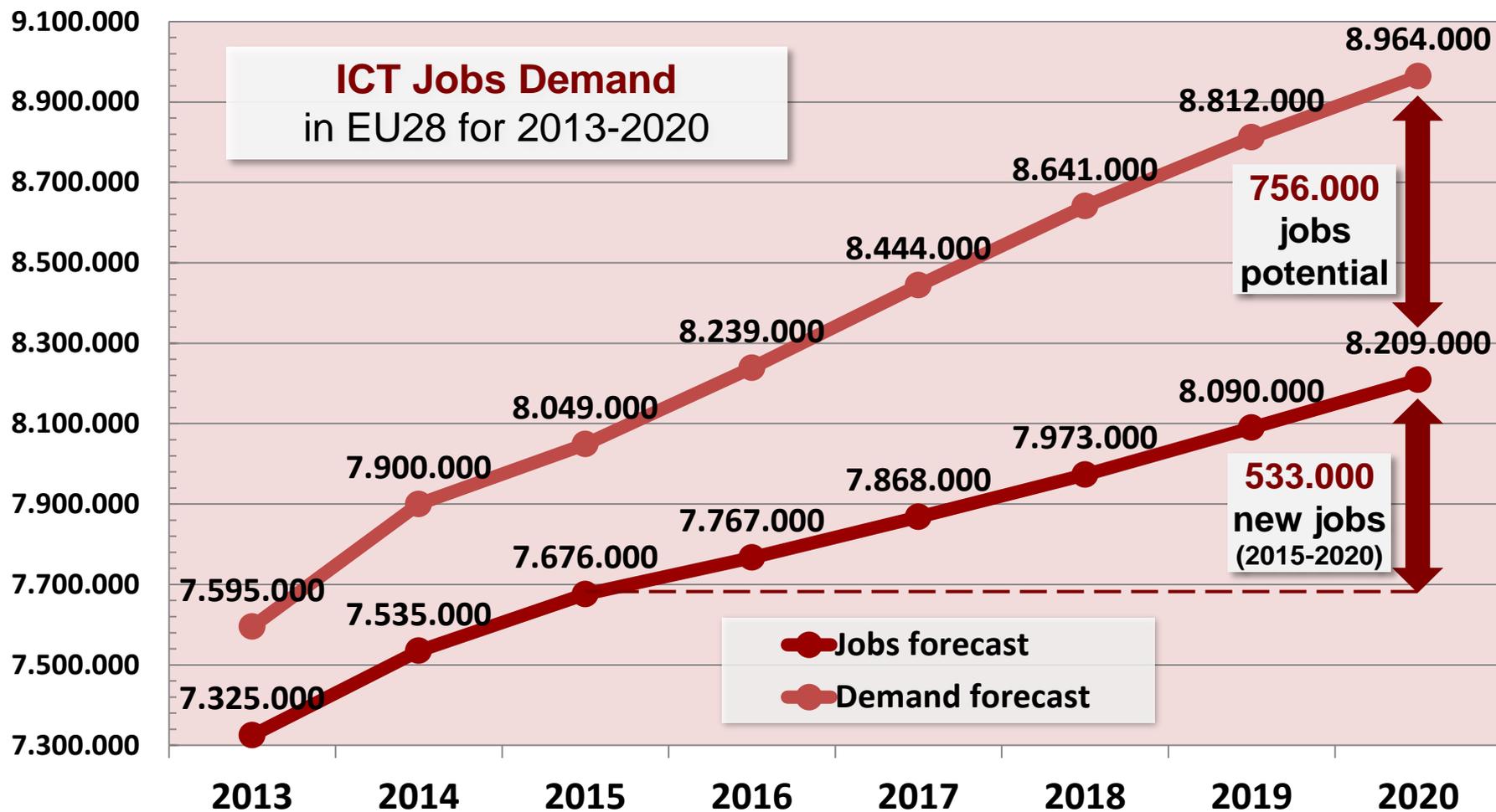


Occasional Java Meme



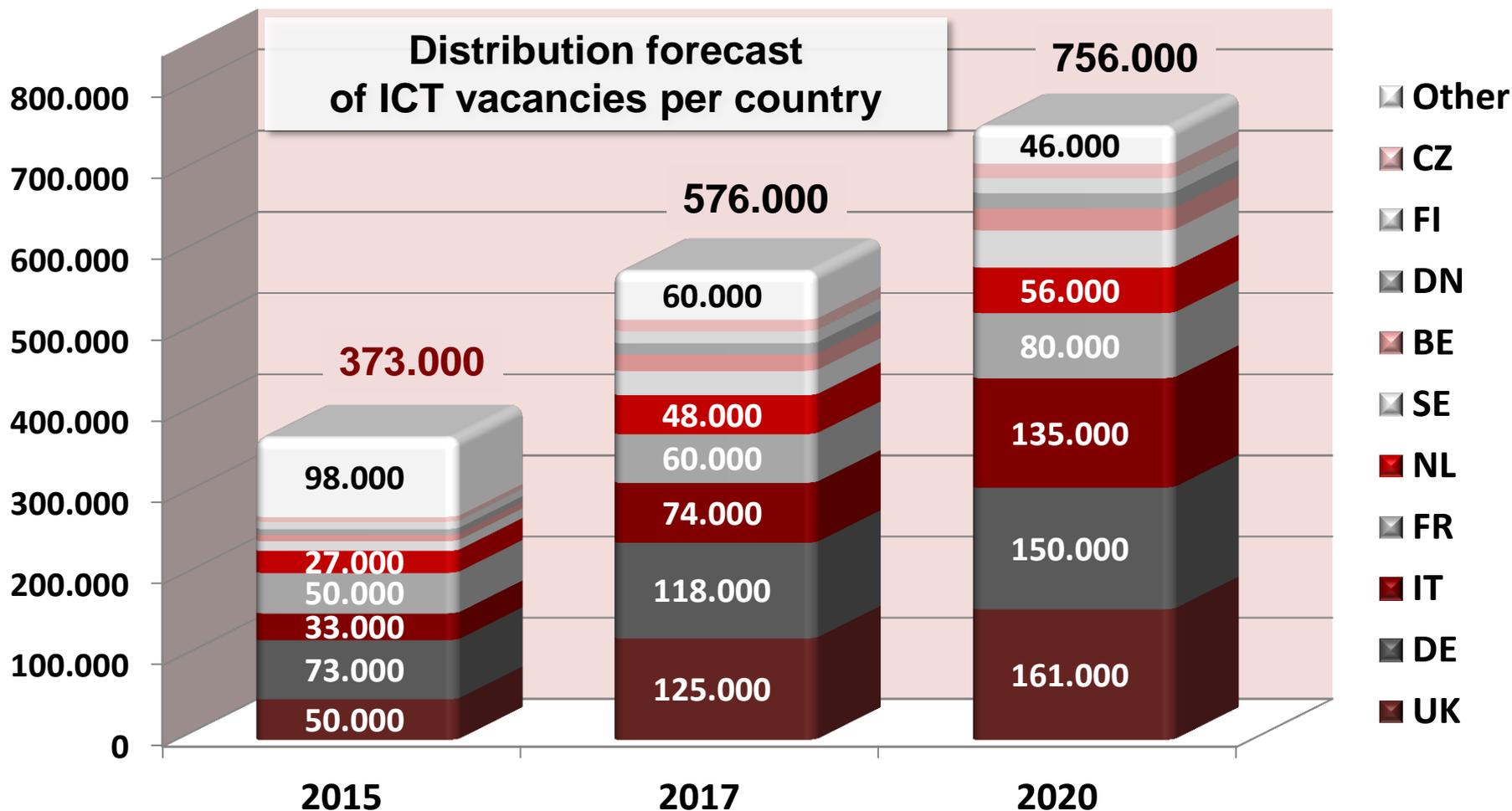


ICT in EU – Jobs and Demand





ICT Vacancies per Country





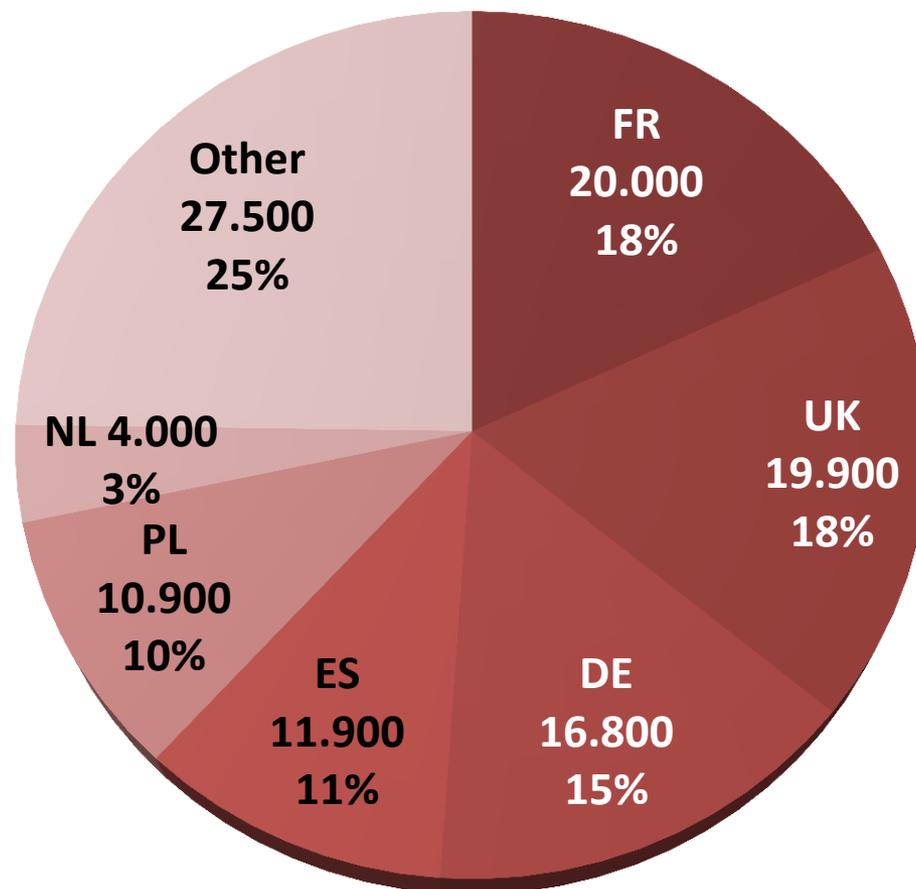
ICT education in Croatia

- At first sight – **ICT/IT/CS/SE** is interesting study 😊
- **42%** ICT students never finished 1st year of study
- **1500+ new ICT graduates** each year
- **850+ new ICT professionals** on the market
 - 44% of them continue education (mostly MSc)
- **Approx. 500+ new Software Developers** each year
- **Approx. 125+ new Java Developers** each year



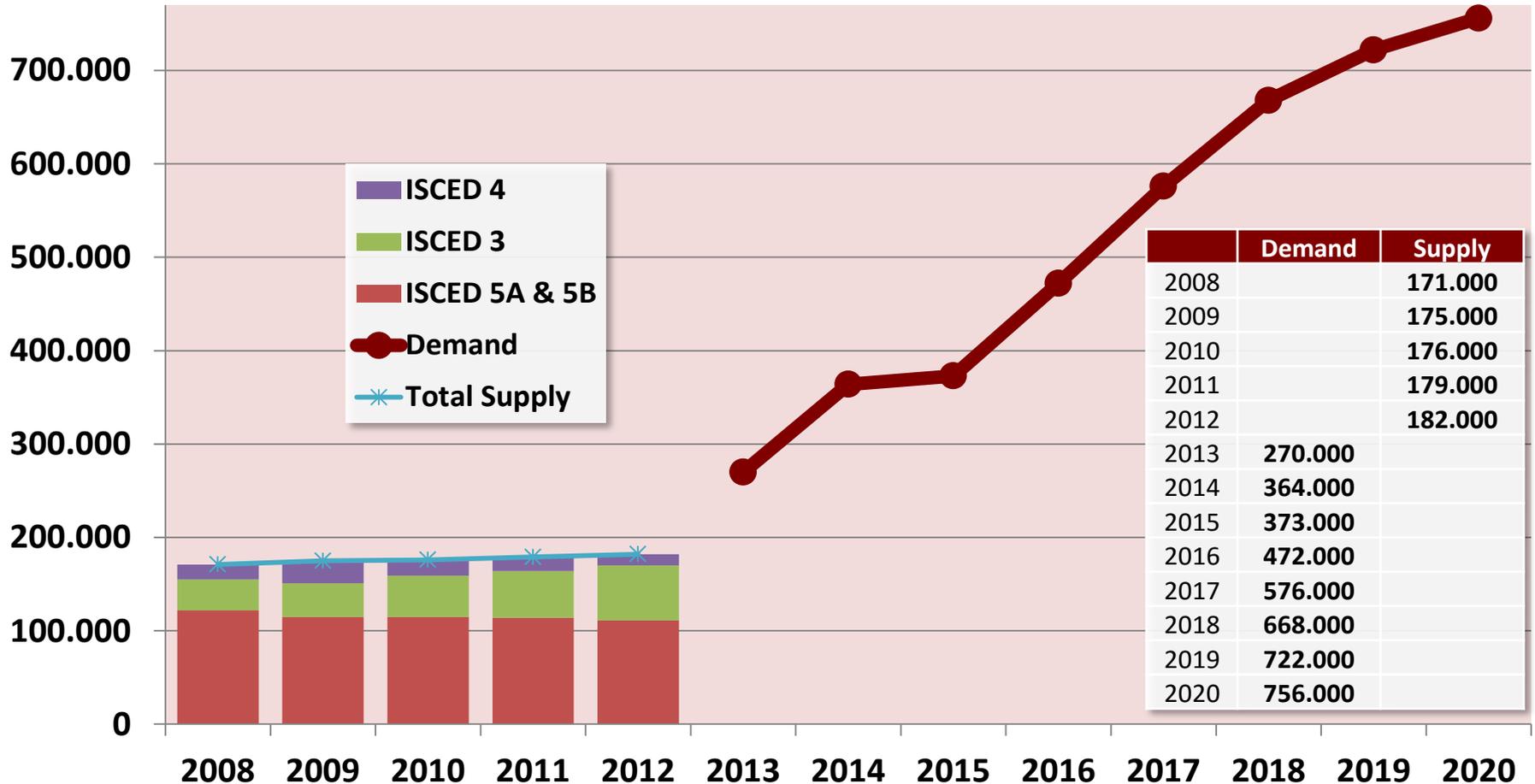
ICT graduates in EU

- **ICT graduates in Europe per country**
 - **Tertiary level ICT graduates (ISCED 5A and 5B)**
 - Data Eurostat for EU28
- **>80000** from only 6 EU countries: **FR, UK, DE, ES, PL & NL**
- **Croatia approx. 1500**





ICT in EU – Supply vs Demand





Positive Examples in Croatia

- **Croatian Makers League**
 - One great example 😊
- **Curricular reform**
 - A lot of people involved
- **Initiatives: CISEx, Mreža, eSkills for Jobs ...**
 - CISEx Friday on STEM education
 - Mreža Smart Day – Jobs 2020
 - eSkills ambassadors
 - Oracle Academy
 - ...
- **New hackathons, challenges, competitions**
 - HUJAK members included 😊





Croatian Makers League

- **Primary** school **STEM** education
 - Private funding and **Donations** (!)
- **Goal** for 2016: **1200** robots in **220+** schools
- **mBot** – Scratch, Arduino, LEGO compatible





Oracle Academy

- Present in **100+** countries with **2.5M** students
 - **100** institutions in **Croatia**
- **Community**
- **Training (free! 😊)**
 - **Java Fundamentals** (90h), **Java Programming** (90h), Alice, Greenfoot, DB & SQL
- **Certification** help and discounts
- Learning **resources**
- **Technology**

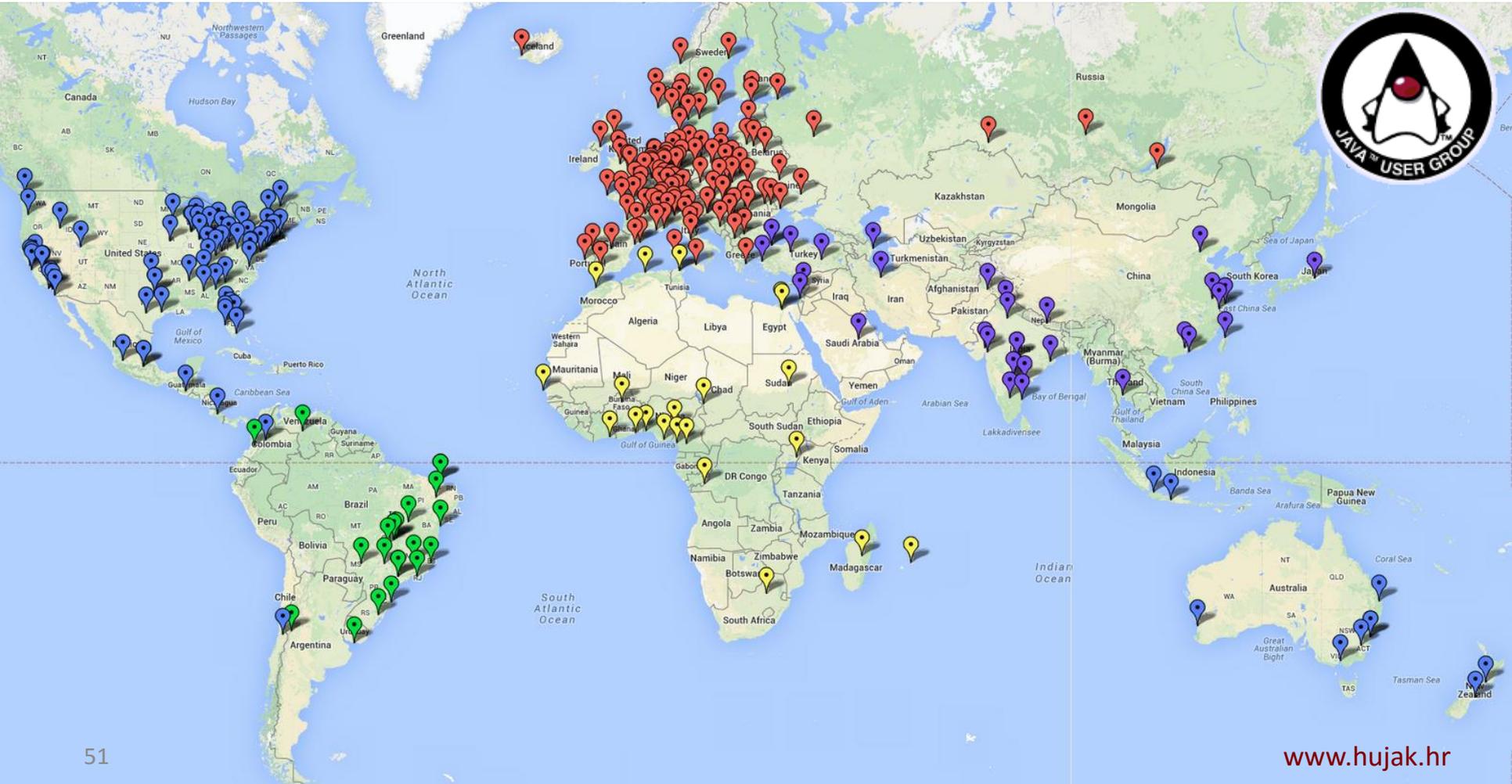


Occasional Java Meme





350+ JUGs worldwide





New Java Map

- **New Java map** at mapme.com/java-use-groups

typo ☺

- by Stephan Janssen
- **Java User Groups**
- **Java Champions**
- **Java Events**
- **Java for Kids**
 - Devoxx4Kids





100+ JUGs in Europe only

Hrvatska udruga Java korisnika – **HUJAK**



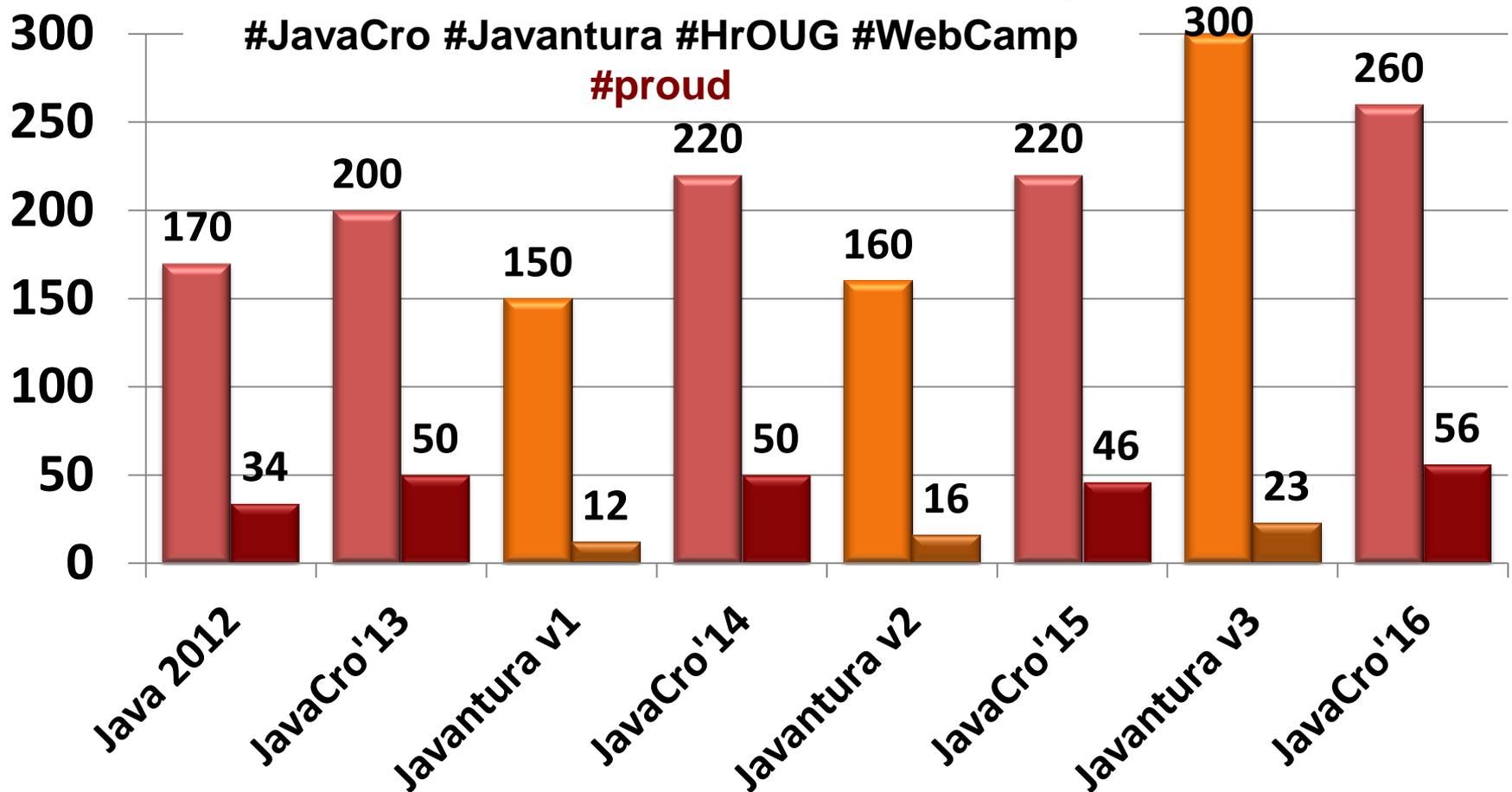
*Croatian Java User Association is an **non-profit association** of citizens, private persons as well as representatives of legal entities, who are in their professional, scientific or professional work **involved** in the **development** or **use** of **technologies** related to the **Java language and platform**.*





And we are growing 😊

This is our **13th conference !!!** 😊





Conferences HUIJAK supports

- **droidcon** conference, April, Zagreb
- **DORS/CLUC** conference, May, Zagreb
- **CROZ QED** conference, May, Zadar
- **Infobip Dev Days**, May, Tuhelj
- **Shift** conference, June, Split
- **HrOUG** conference, October, HERE 😊

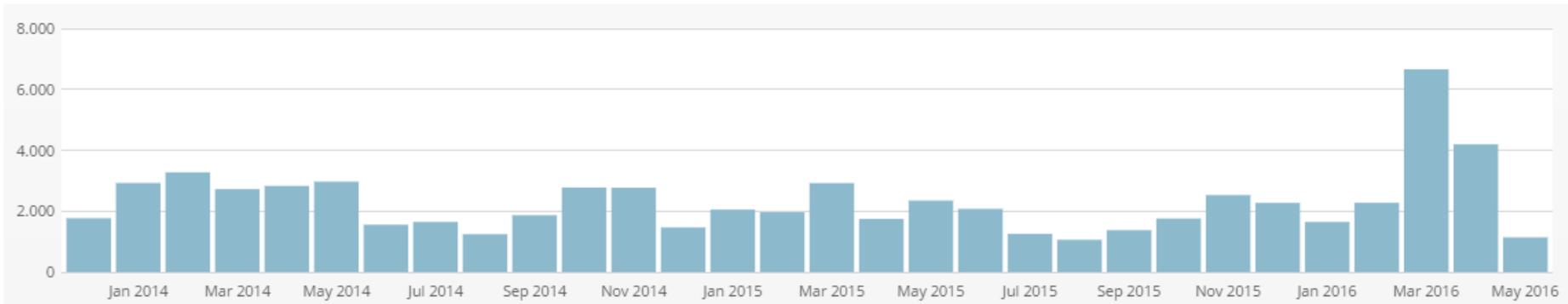


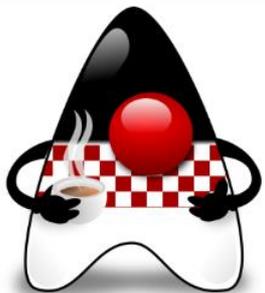
DEVELOPER CONFERENCE
www.hujak.hr



Popularity – hujak.hr

- Posts: **698** + Pages: **55**
- Total view: **110.000+**
 - **16.000+** in 2012, **25.000+** in 2013, **28.000+** in 2014, **24.000+** in 2015, **16.000+** in 2016 until now
- Monthly max: **6.663** (Mar 2016)
- Daily max: **1664** (March 30, 2016)





Partners & friends



hrvatska udruga oracle korisnika



CARNET

HRVATSKA AKADEMSKA I ISTRAŽIVAČKA MREŽA



HULK Agile Croatia

hrvatska udruga linux korisnika



Škola otvorenog računarstva



NetAkademija
ICT PROFESSIONALS.



kompetencijski centar
za programsko inženjerstvo
u otvorenim sustavima
Competence center for software engineering in open systems

R·I·T
Croatia

webcamp
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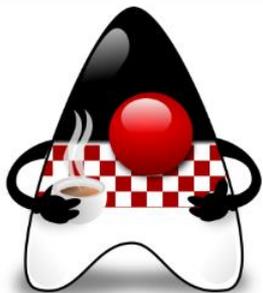


FrontmanHR

IXDA
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časopis za IT profesionalce
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45+ company members

AD AMPHINICY TECHNOLOGIES Nothing is Impossible.[®] NPIS IT ASRECO SOUTH EASTERN EUROPE calyx CROZ

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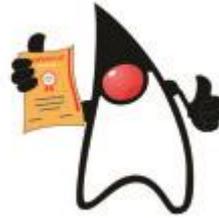
PERSOLVO identalia realnetworks Sedam IT Primjena informatičkih tehnologija SERENGETI CUSTOM SOFTWARE SOLUTIONS FIVE MINUTES

SV GROUP ERICSSON Ericsson Nikola Tesla d.d. Steatoda TRILIX TVZ TEHNIČKO VELEUČILIŠTE U ZAGREBU POLYTEHNIČKOM ZAGREBENSKE

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X;O ALTIMA BUSINESS INTEGRATOR Imtech MENTAT LABS instantor

CROATIAN JAVA USER ASSOCIATION MEMBER



Java Certification

- **Help** with Java Certification

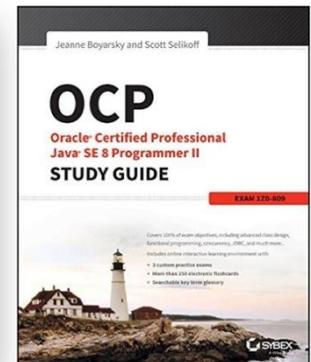
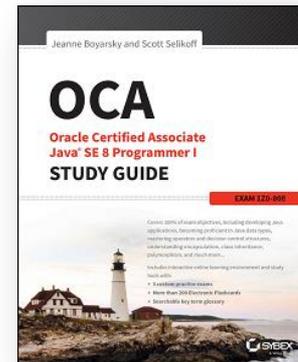
- Java SE – OCA, OCP, OCM
- Java EE – OCE, OCM

- **Section** about certification at HUIJAK site

- hujak.hr/certifikacija
- Study groups (Java 8 related)

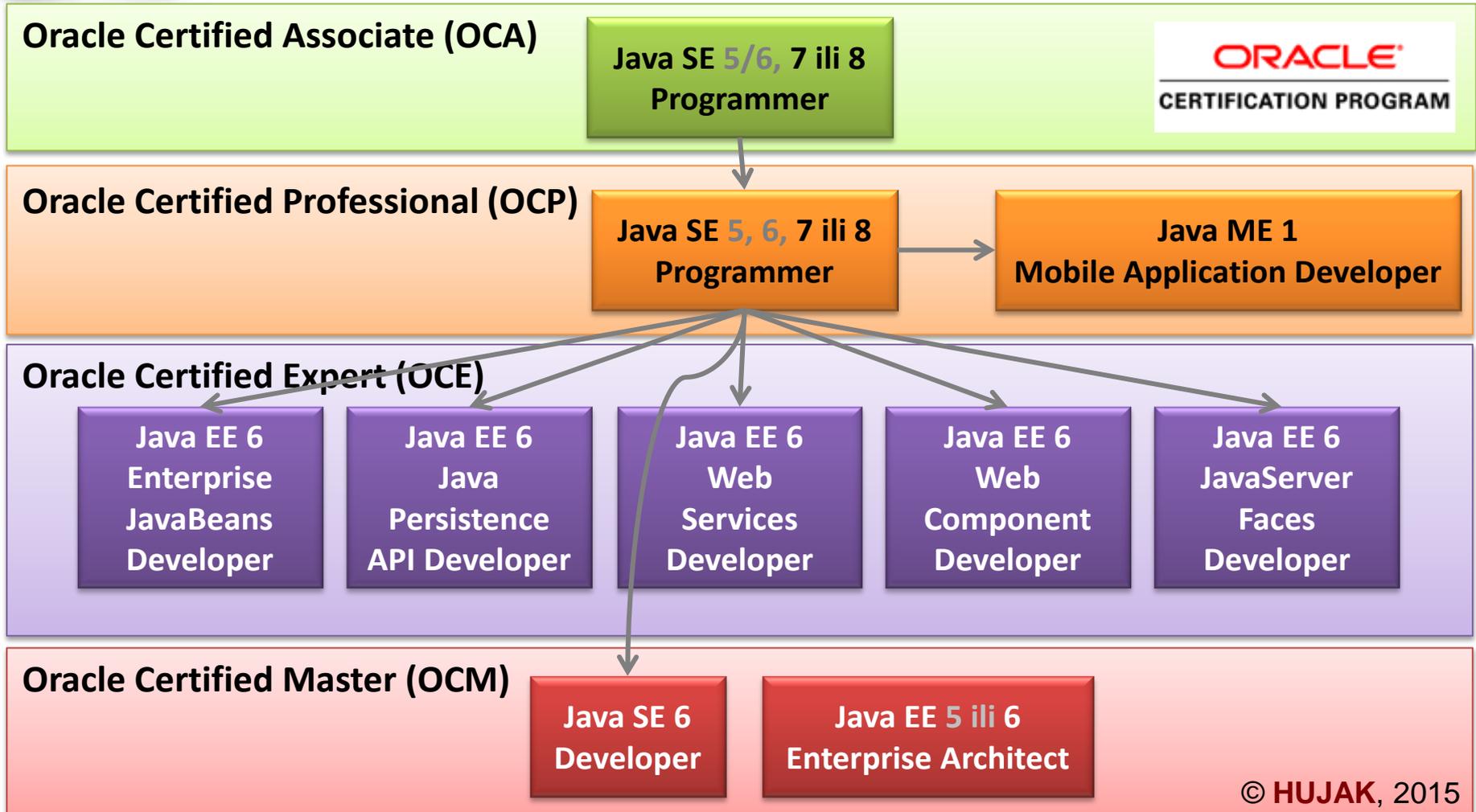
- Big thanks 😊

- Aleksander Radovan, Tihomir Smuđ, Jurica Križanić, Lucija Zadrija, Lovro Pandžić, Milan Draganić, Hrvoje Đurđević ...





Java Certification Levels





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it's time to **Get Shi* Done**



Occasional Java Meme





Instead of **conclusion**

Call for **participation!**

- **HUJAK needs your help** in:
 - Everyday **life** of our JUG
 - Organizing **meetups** and **workshops**
 - Organizing **conferences**
 - **Education** and **certification**
 - **Employment**-related activities

HUJAK is YOU!



Thank you & greetings from HUIAK!

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- www.hujak.hr

- LinkedIn group **HUIAK**

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