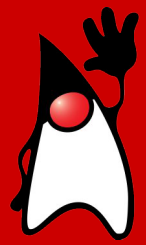
Java



Kaunas JUG

History & Trends

Dainius Mežanskas · kaunas.jug@gmail.com · http://plus.google.com/+KaunasJUG

Dainius Mežanskas

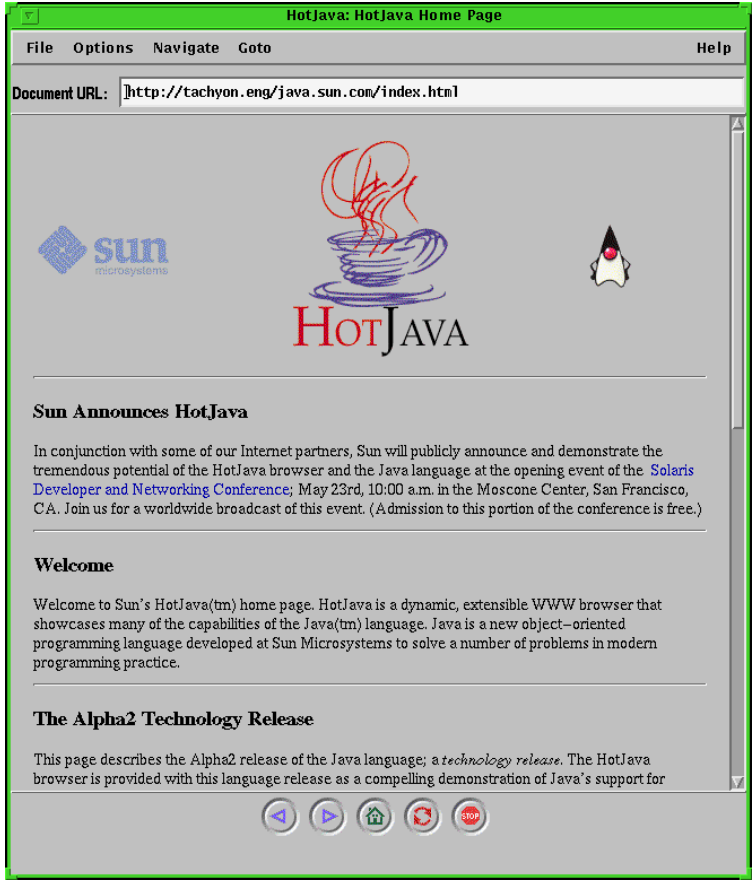
- 16 years of Java
- Java SE/EE
- e-Learning · Insurance · Telecommunications · e-Commerce
- KTU DMC · Exigen Group · NoMagic Europe · Modnique Baltic

Java Birth

- 1991 – “Green Project”; “Duke”
- *7
- Applet
- 1993 – Mosaic
- 1994 – HotJava ™ (WebRunner)

Java father
James Arthur Gosling

*7 Device · HotJava™



Press Announcement, 1995

San Jose Mercury News

PENINSULA MORNING EDITION
35 CENTS

Serving Northern California Since 1851

THURSDAY
.... MARCH 23, 1995

Why Sun thinks Hot Java will give you a lift

New software designed to make World Wide Web's 'home pages' more useful — and spur computer sales

BY DAVID BANK
Mercury News Staff Writer

A few months ago, establishing a "home page" — or site — on the Internet's World Wide Web was enough to win a company or individual a place among the information cognoscenti.

Now, many of multimedia's hippest designers deride today's Web pages as static, boring and dumb.

A home page is a computer file with text, photos or graphics that can be viewed via the World Wide Web and can contain links to other files.

Many leading-edge designers today are buzzing about Sun Microsystems Inc.'s new software that the Mountain View-based company hopes will turn the Web into a rocking new medium. The software enables producers to make the Web as lively as a CD-ROM, but with the added advantages of continuous updates and real-time interaction between people.

"Rather than just having a CD-ROM that gets pressed once and is immediately out of date, you can interact with people on the Net," said Karl Jacob, the chief technologist at Dimension X Inc., a San Francisco game producer that is using the software to construct "environments" for multiple computer users to visit, such as virtual saloons, dance halls and poetry-reading salons.

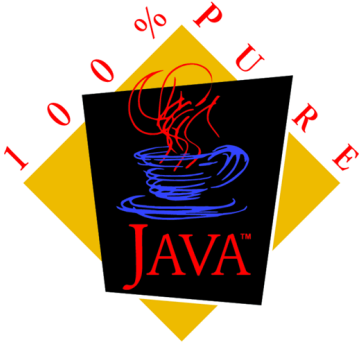
"What we're trying to do with this is build a community around the site," Ja-

See ***SOFTWARE****, Back Page*

‘ What these guys are doing is undeniably, absolutely new. It's great stuff. . . . These guys are really pushing the envelope. ’

JDK 1.0

- 1994 – “Invented” (Oak)
- 1995 – JDK Alpha and Beta
- 1996, Jan 23 – JDK 1.0 (1.0.2)
- 1 year · 38 licensees, 6,000 devs at JavaOne
- 2 year · 100 licensees, 10,000 devs at JavaOne



Language Goals & Objectives

- Garbage collection
- Run on wide range of devices
- Security Model
- Networking · Run Remote Code
- Threading
- Object Oriented

What was so Exciting...

- JVM · Byte Code · WORA
- Simpler syntax (than C++)
- Implicit Pointers to Objects
- Auto memory allocation (GC)
- Threads · Exceptions

… and what wasn’t!

- Interpreted Language
- Not Efficient Memory Model

  (Double-Checked Locking is Broken)
- Slow Startup and Execution

Criticism

- Stat. /dynamic. scoped functions
- Inlined functions
- Pointers to functions
- Long-living closures
- Preprocessing
- Macros system
- Multiple inheritance
- Operator override
- printf()
- unsigned primitives
- Unicode Strings

Java Processor (Chip)

- picoJava
- Dozen of other implementations

JDK 1.1 · (Feb 19, 1997)

- JavaBeans
- Improved AWT
- JDBC, RMI, Reflection
- Inner classes
- JIT, for Windows only (by Symantec)

J2SE 1.2 · Playground · (Dec 8, 1998)

- J2SE, J2EE, J2ME
- 3x · 1520 classes in 59 packages
- Sun's JIT compiler
- Collections framework
- Integrated Swing API
- `strictfp` keyword
- Java plug-in
- Java IDL/for CORBA

Java EE

- 1999 · J2EE 1.2
- 2001 · J2EE 1.3
- 2003 · J2EE 1.4
- 2006 · Java EE 5
- 2009 · Java EE 6
- 2013 · Java EE 7

Java ME

- CLDC 1.0, 1.1
- MIDP 1.0, 2.0, 3.0
- IMP 1.0, 2.0

J2SE 1.3 · Kestrel · (May 8, 2000)

- HotSpot JVM
- Synthetic (Dynamic) proxy classes
- JNDI included
- Debugger Architecture (JPDA)
- RMI + CORBA
- JavaSound

J2SE 1.4 · Merlin · (Feb 6, 2002)

- JCP · JSR 59
- `assert` keyword
- Exception Chaining
- RegEx
- NIO · IPv6 · Logging
- Image API
- JAXP
- JCE · JSSE · JAAS
- Java Web Start
- Preferences API

J2SE 5.0 · Tiger · (Sep 30, 2004)

- Generics
- @Annotations
- Autoboxing
- `enum` keyword
- Varargs
- `for each` loop
- Static imports
- Mem Model Fix
- RMI auto stubs
- java.util.concurrent

OpenJDK · (Nov 13, 2006)

- Sun Microsystems made the bulk of its implementation of Java available under the GNU General Public License (GPL)

Java SE 6 · Mustang · (Dec 11, 2006)

- Performance impr.
- JVM/GC impr.
- Scripting Language Support
- Java Compiler API
- JAX-WS
- JDBC 4.0
- JAXB 2.0 · StAX
- Pluggable annotations

(http://projectlombok.org/)

R.I.P Sun (Jan 27, 2010)

Java SE 7 · Dolphin · (Jul 28, 2011)

- `invokedynamic`
- switch
- autocloseable
- <>
- 0b10_01
- catch()

- Concurrency · File I/O · Timsort · New File I/O · Crypto · 2D · Protocols SCTP SDP · etc.

Java SE 8 · (Expected Mar 18, 2014)

- Lambda (closures)
- Bulk Data Operations for Collections
- Nashorn (JS engine)
- Unsigned Int/Long
- Date & Time API
- Repeating Annotations
- Remove PerGen
- Base64 · HashMap · JDBC 4.2 · Crypto · etc.

Java SE 9 · (2016 ?)

- Better support for multi-gigabyte heaps
- Self-tuning JVM
- Money and Currency API
- Modularization of the JDK (Jigsaw)

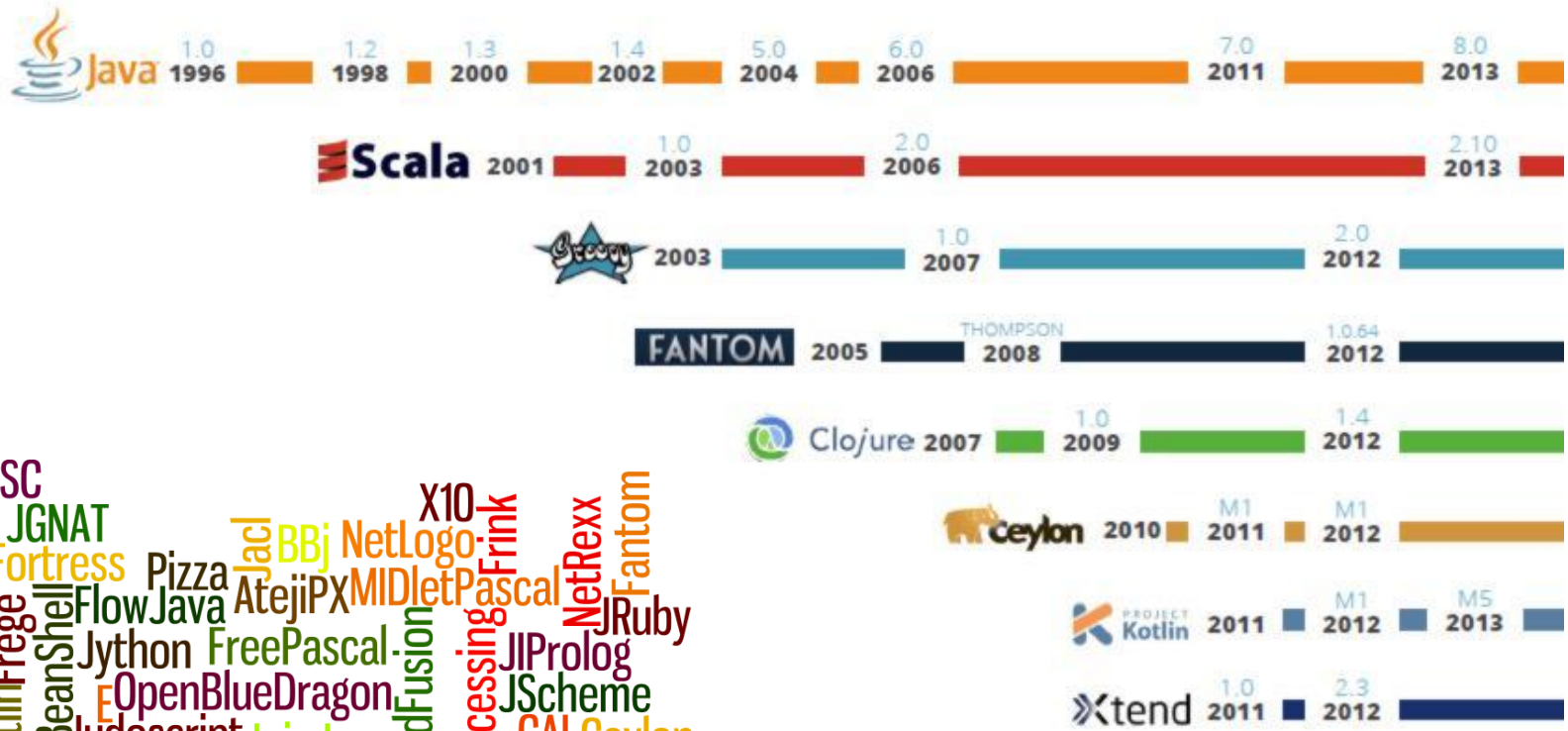
Java SE 10 · Speculation · (2018 ??)

- Removing primitive data types.
- 64-bit addressable arrays to support large data sets.

JVMs

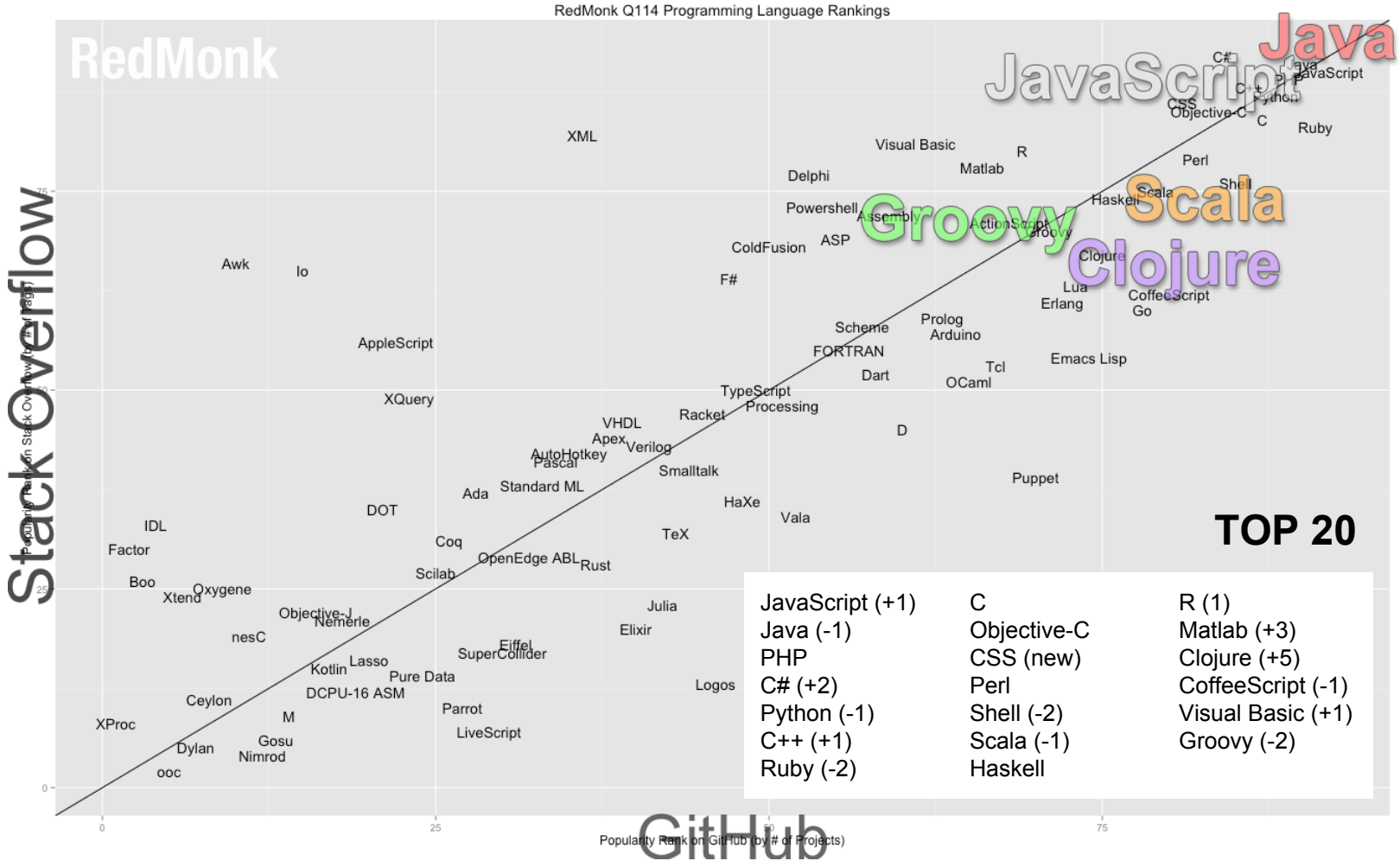
- HotSpot
- JRocket
- IBM J9 JVM

JVM Languages

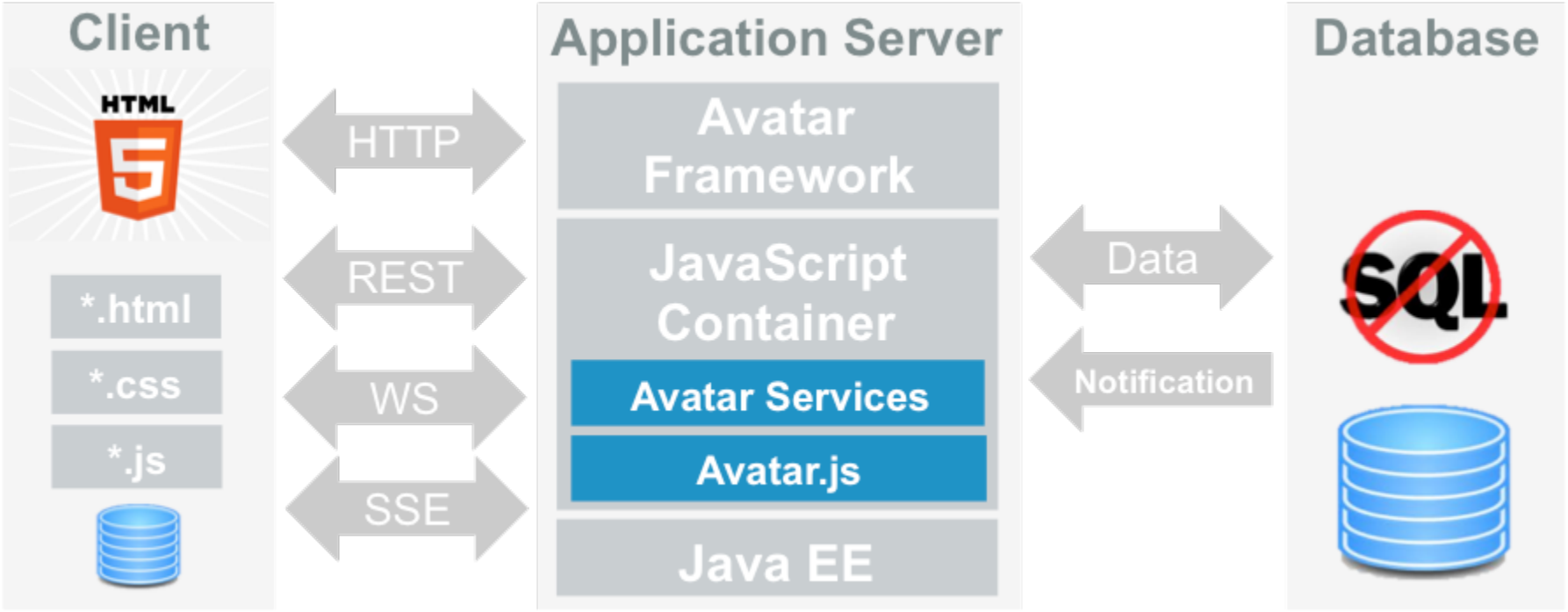


JVM Popularity

http://redmonk.com/sogrady/2014/01/22/language-rankings-1-14/



Avatar · (avatar.java.net)



Java · Source Code Example

```
public class CalculateCircleAreaExample {
    public static void main(String[] args) {
        int radius = 0;
        System.out.println("Please enter radius of a circle");
        try {
            BufferedReader br = new BufferedReader(
                                        new InputStreamReader(System.in));
            radius = Integer.parseInt(br.readLine());
        } catch (Exception e) {
            System.out.println("Error :" + e);
            System.exit(0);
        }
        double area = Math.PI * radius * radius;
        System.out.println("Area of a circle is " + area);
    }
}
```

Scala · Source Code Example

```
object reduceList {
  val nums = List(2, -4, 5, 7)
  def sum1(xs: List[Int]) = (0 :: xs) reduceLeft ((x, y) => x + y)

  sum1(nums)
  def sum(xs: List[Int]) = (0 :: xs) reduceLeft (_ + _)

  sum(nums)
  def product(xs: List[Int]) = (1 :: xs) reduceLeft (_ * _)

  product(nums)

  def concat[T](xs: List[T], ys: List[T]): List[T] = (xs foldRight ys)(_ ::
_)
}
```

Groovy · Source Code Example

```
def sudoku(values) {
    def i = values.indexOf(48);
    if (i < 0)
        print values
    else
        (('1'..'9') - (0..80).collect { j ->
            g = { (int) it(i) == (int) it(j) };
            g { it / 9 } | g { it % 9 } | g { it / 27 } &
                    g { it % 9 / 3 } ? values[j] : '0'
        }).each {
            sudoku(values[0..<i] + it + values[i + 1..-1])
        }
}
```

Java Forever

Thank You!