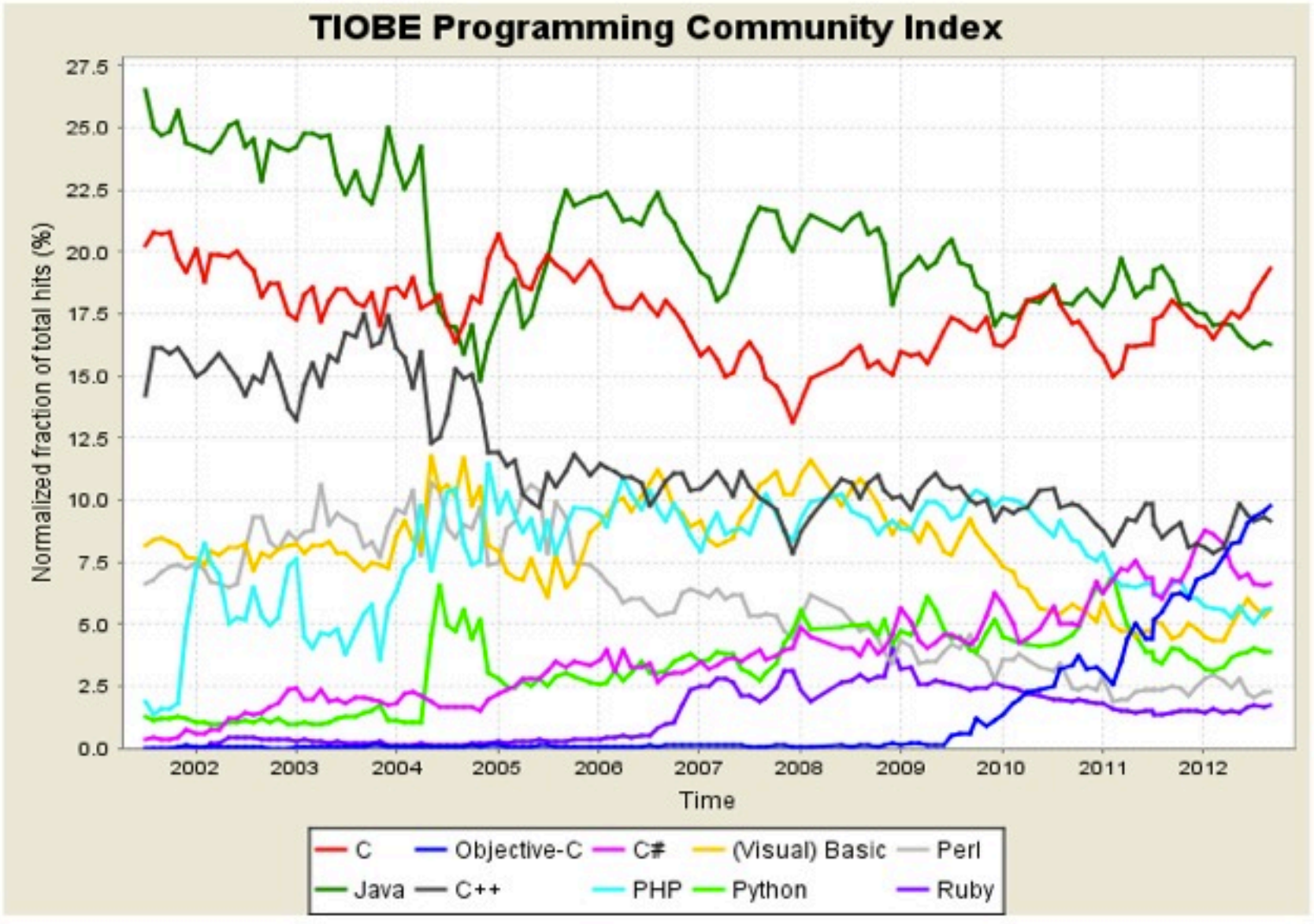
Java. Cloud. Leadership.

JBoss Polyglot: Java & Beyond

Dr Mark Little,
Red Hat,
November 7th 2012.

Introduction

- Why are multiple languages interesting to JBoss?
- What does it mean to be involved with these languages?
  - What are we trying to accomplish with the communities?
  - What are we trying to accomplish with our implementations?
- Illustrate with some projects
- How you can get involved
    - User
    - Contributor



Source : www.tiobe.com, Sept 2012

redhat. JBoss by Red Hat

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Developer explosion

Build

Devices / Clients

Integration

Data
Process
Messages
Applications

Databases

Web Services

Data Center

Enterprise Applications

Management/Provisioning

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The JVM...

The best VM for $LANGUAGE

Polyglot

Before 2010
1 JVM, 1 Language

JVM

Today
1 JVM, Over 20 Languages

JVM

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New language requirements

- Customers and community wants:
  - Interoperability
  - Guaranteed message delivery
    - Even in the presence of failures
  - Transactions
    - Though not necessarily ACID
  - Audit trails and bullet-proof security
  - Machine-readable SLAs
- N-tier approach with different languages

Enterprise capabilities

- Java in 1996 did not possess enterprise features
  - J2EE took several years to evolve
    - Some implementations layered on existing services
- Popular JVM languages experiencing similar problem
  - Lack of enterprise capabilities
- Two ways to resolve
  - Build from scratch in language
  - Leverage existing implementations in other languages

JBoss AS...

The best app-server for **$LANGUAGE**

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“Java EE is too bloated”

- Differentiate between the standard and implementation
  - Bloatware should be a thing of the past
- It is possible to be lightweight and enterprise ready

The Open Source Java application server *reignited*

Designed for flexibility.
Amped with electrifying speed.
Launch your Java EE applications in a flash!

Lightning Fast... *start-up / deployment / configuration*

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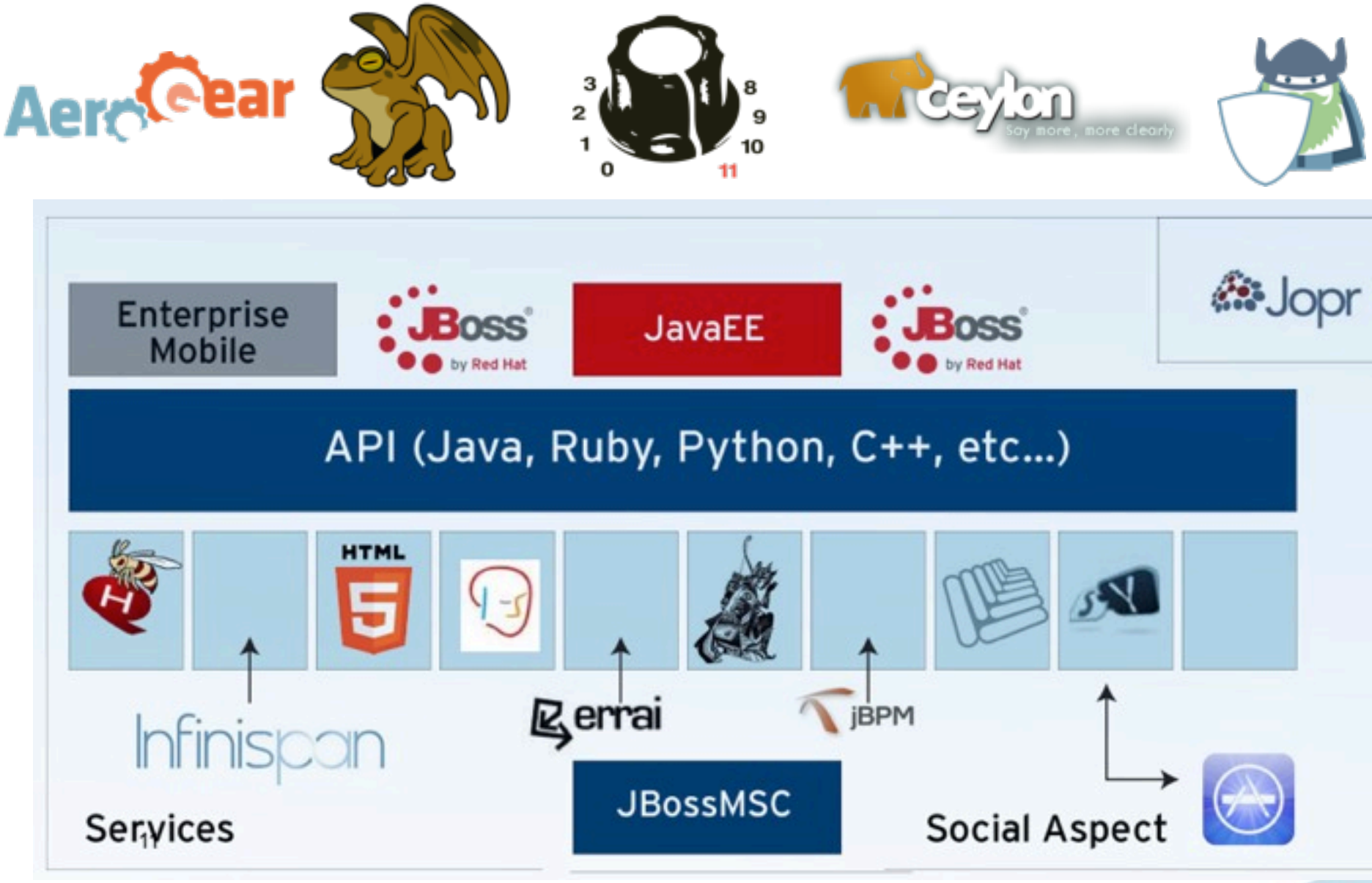

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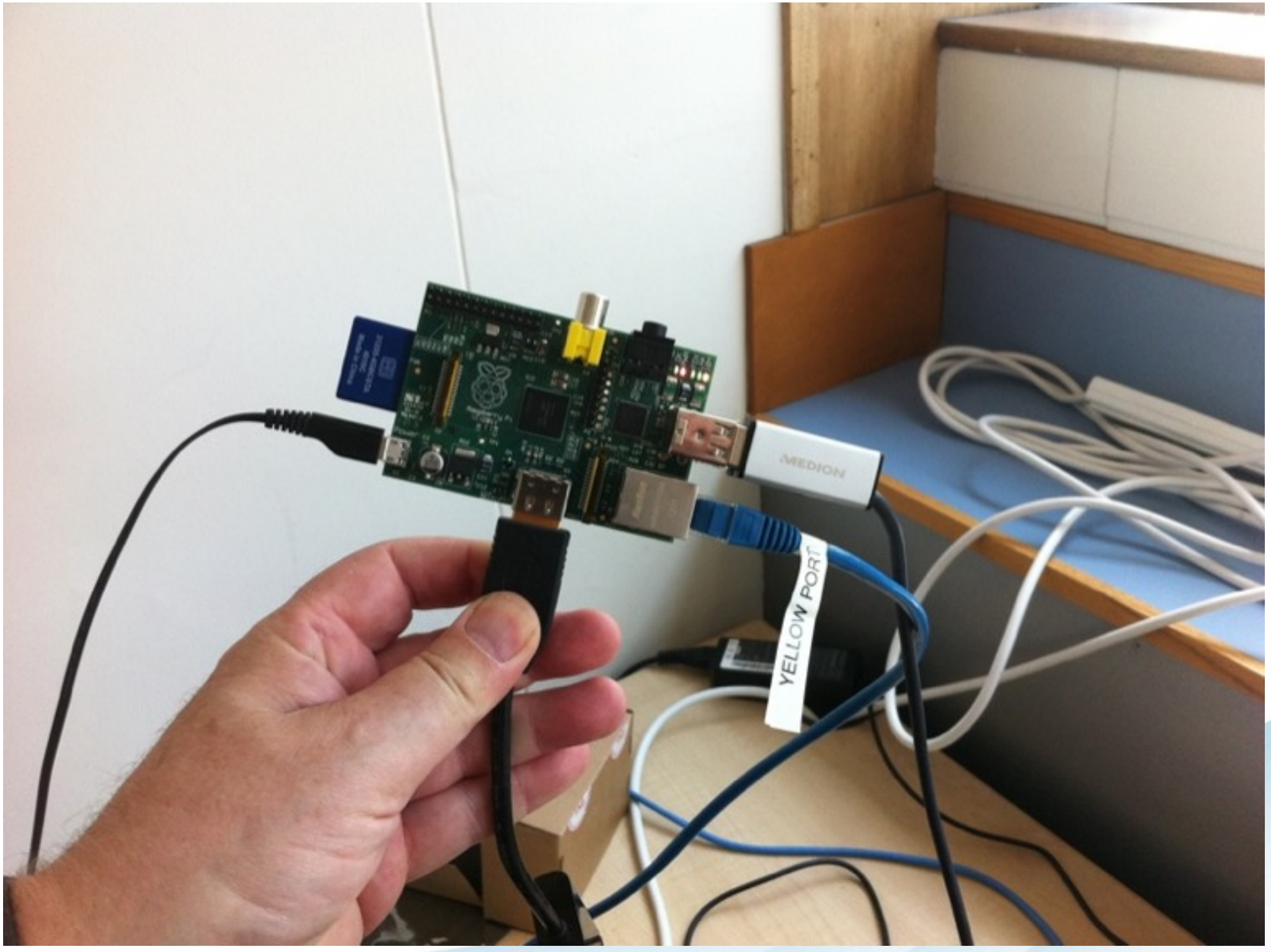
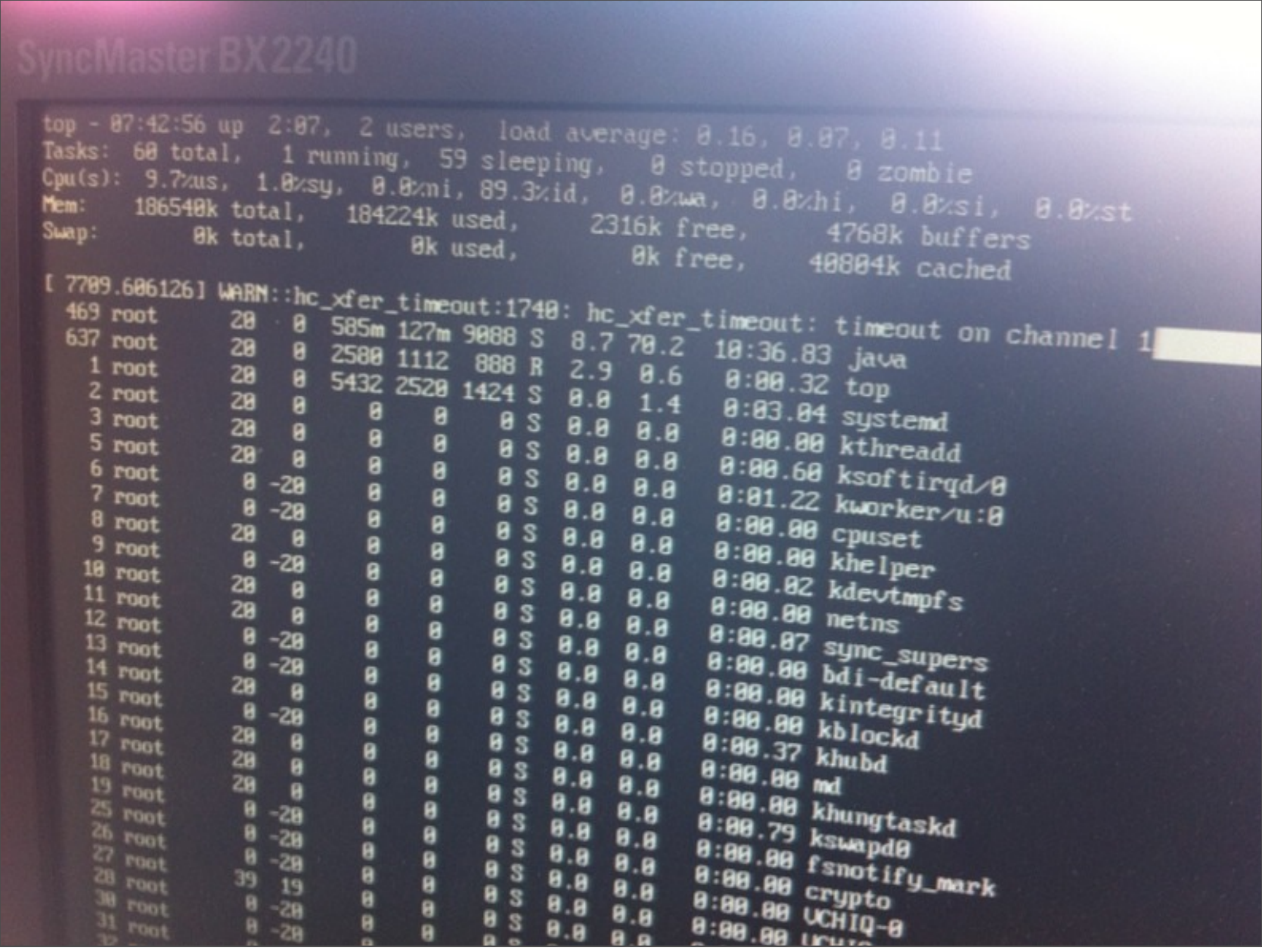

MEDION
YELLOW PORT


SyncMaster BX2240
top - 07:42:56 up 2:07, 2 users, load average: 0.16, 0.07, 0.11
Tasks: 60 total, 1 running, 59 sleeping, 0 stopped, 0 zombie
Cpu(s): 9.7%us, 1.0%sy, 0.0%ni, 89.3%id, 0.0%wa, 0.0%hi, 0.0%si, 0.0%st
Mem: 186540k total, 184224k used, 2316k free, 4768k buffers
Swap: 0k total, 0k used, 0k free, 40804k cached
[7709.606126] WARN::hc_xfer_timeout:1740: hc_xfer_timeout: timeout on channel 1
469 root 20 0 585m 127m 9088 S 8.7 70.2 10:36.83 java
637 root 20 0 2580 1112 888 R 2.9 0.6 0:00.32 top
1 root 20 0 5432 2520 1424 S 0.0 1.4 0:03.04 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd
3 root 20 0 0 0 0 S 0.0 0.0 0:00.60 ksoftirqd/0
5 root 0 -20 0 0 0 S 0.0 0.0 0:01.22 kworker/u:0
6 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 cpuset
7 root 20 0 0 0 0 S 0.0 0.0 0:00.00 khelper
8 root 0 -20 0 0 0 S 0.0 0.0 0:00.02 kdevtmpfs
9 root 20 0 0 0 0 S 0.0 0.0 0:00.00 netns
10 root 20 0 0 0 0 S 0.0 0.0 0:00.07 sync_supers
11 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bdi-default
12 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 kintegrityd
13 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kblockd
14 root 0 -20 0 0 0 S 0.0 0.0 0:00.37 khubd
15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 md
16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 khungtaskd
17 root 20 0 0 0 0 S 0.0 0.0 0:00.79 kswapd0
18 root 20 0 0 0 0 S 0.0 0.0 0:00.00 fsnotify_mark
19 root 20 0 0 0 0 S 0.0 0.0 0:00.00 crypto
25 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 VCHIQ-0
26 root 0 -20 0 0 0 S 0.0 0.0
27 root 0 -20 0 0 0 S 0.0 0.0
28 root 39 19 0 0 0 S 0.0 0.0
30 root 0 -20 0 0 0 S 0.0 0.0
31 root 0 -20 0 0 0 S 0.0 0.0

Getting involved with communities

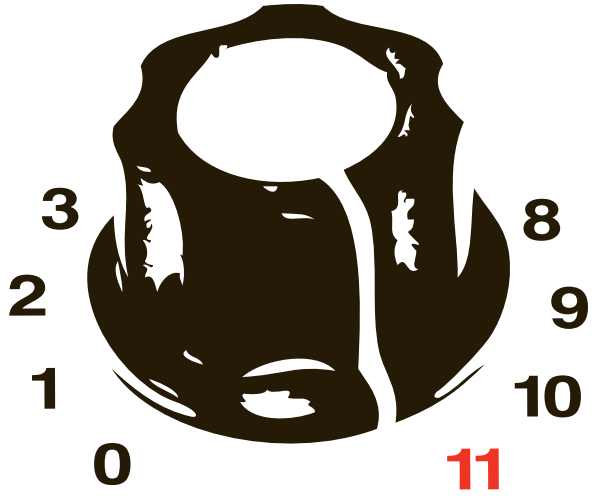
Parallel communities

- The language community
- The implementation community
- Work to ensure the JVM implementation of a language is a first-class citizen

Charlie Nutter, Thomas Enebo

Douglas Campos, Bruno Oliveira

TorqueBox



- **Ruby** on EAP 6

Bob McWhirter, Jim Crossley, Ben Browning, Toby Crawley, Lance Ball

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Beyond the basics

- Message-driven Ruby objects
- Scheduled Jobs
- Services/Daemons
- Infinispan caching
- HA/Failover

Further beyond

- Asynchronous programming model based on messaging

```
class MyClass
  include Backgroundable
  always_background :slow

  def slow()
    sleep 60
  end
end
```

Immutant

- **Clojure** on EAP6

Jim Crossley, Toby Crawley

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What you get ...

- HornetQ
- Infinispan
- Quartz
- XA
- Clustering

Dynamic deployment

- Service binding via code:

```
(require '[immutant.web :as web])

(defn my-handler [request]
  {:status 200
   :headers {"Content-type" "text/html"}
   :body "Hello world!"})

(web/start "/hi" my-handler)
```

Escalante

- **Scala** on EAP 6

Galder Zamarreño

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Basics

- Multiple Lift apps on JBoss
- Multiple versions of Scala
- Multiple versions of Lift
- Living happily together

YellowBeard (aka AS.py)

- **Python** on JBoss AS 7

Toby Crawley

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Some issues ...

- Jython not quite first-class
- Some Python frameworks/apps assume C-based Python implemention
- The occasional bug

AS.js

- **JavaScript** on EAP 6

Lance Ball, Bob McWhirter, Douglas Campos

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Goals

- Support Node.js applications
- Using DynJS Java7 InvokeDynamic for fast execution
- And all that other middleware stuff

https://ceylon-lang.org/

- A new language for the JVM

Gavin King, Emmanuel Bernard, Max Andersen, countless others

Goals

- Union and Intersection Types
- Type inference/Strongly-typed
- Mixins
- Higher-order functions
- Operation Overloading

JBoss

The J stands for

JVM

not just Java

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Wayfinding

- http://torquebox.org/
- http://immutant.org/
- http://escalante.io/
- http://jruby.org/
- http://dynjs.org/
- http://ceylon-lang.org/

Richard Hamming, 1968 Turing speech

- Whereas Newton could say, "If I have seen a little farther than others, it is because I have stood on the shoulders of giants," I am forced to say, "Today we stand on each other's feet." Perhaps the central problem we face in all of computer science is how we are to get to the situation where we build on top of the work of others rather than redoing so much of it in a trivially different way.