The Java Revolution: From Enterprise to Gaming

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Sun Microsystems, Inc.

ICEIS Conference
May 26th, 2005

Sun microsystems

Who is a Technology Evangelist?

- Developer by heart
- “preach” and “teach”
  - I speak and publish extensively. I also teach.
- Strive for credibility:
  - In the developer and OS community
- Aptitude to simplify complexity and seperate the wheat from the chaff
- My Evangelical Mission:
  - It's better to have an unanswered question than a unquestioned answer

Speaker's Qualifications

- Raghavan "Rags" N. Srinivas is a Technology Evangelist at Sun Microsystems
- Rags writes frequently for JavaWorld™ and other online publications
- Rags is an adjunct faculty at Brandeis University

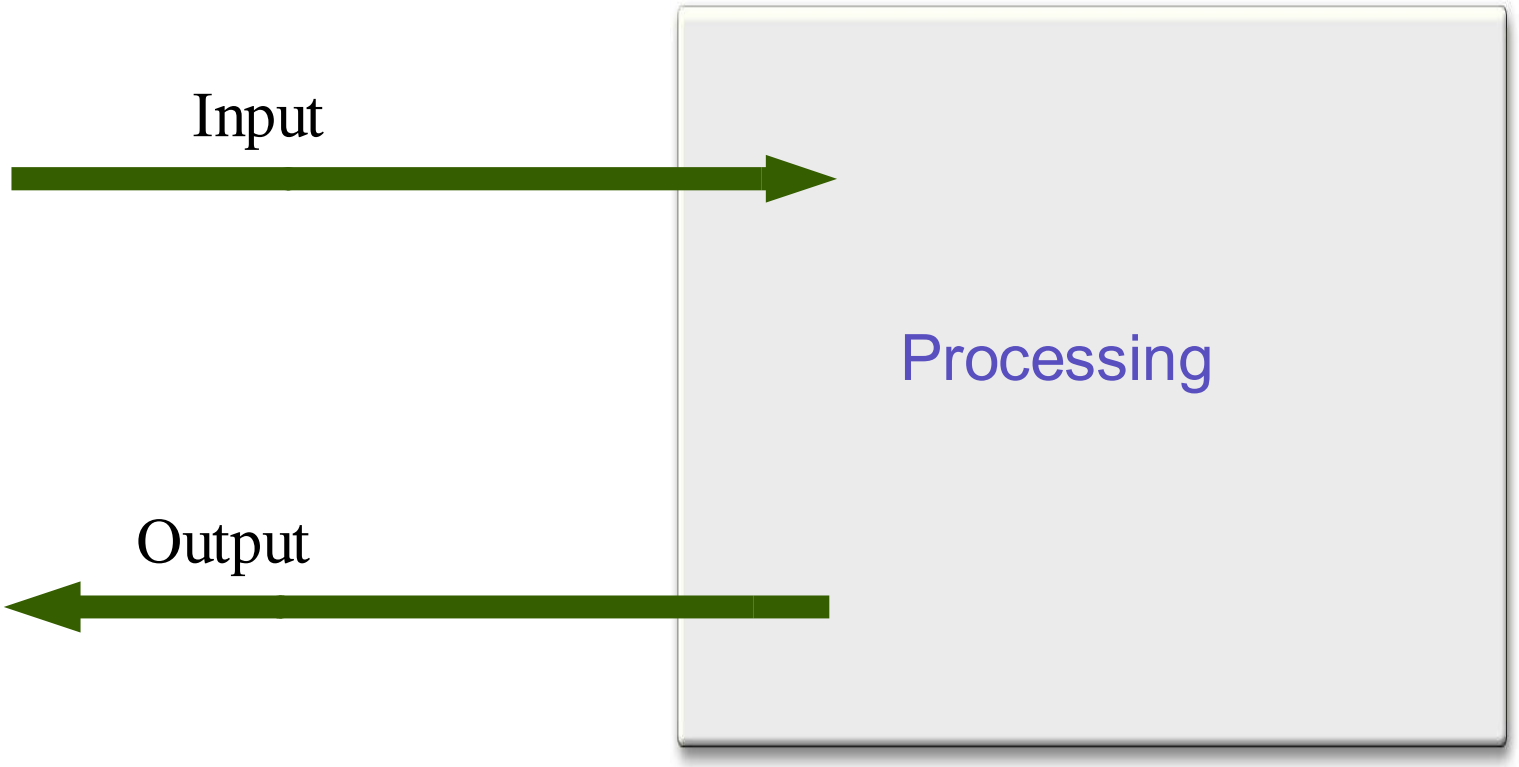
Agenda

- History: Open * computing and Java
- Present: java and java.net
- Many, many examples
- Future: Demos (when possible and relevant)
- Resources and Summary

Open * Computing and Java

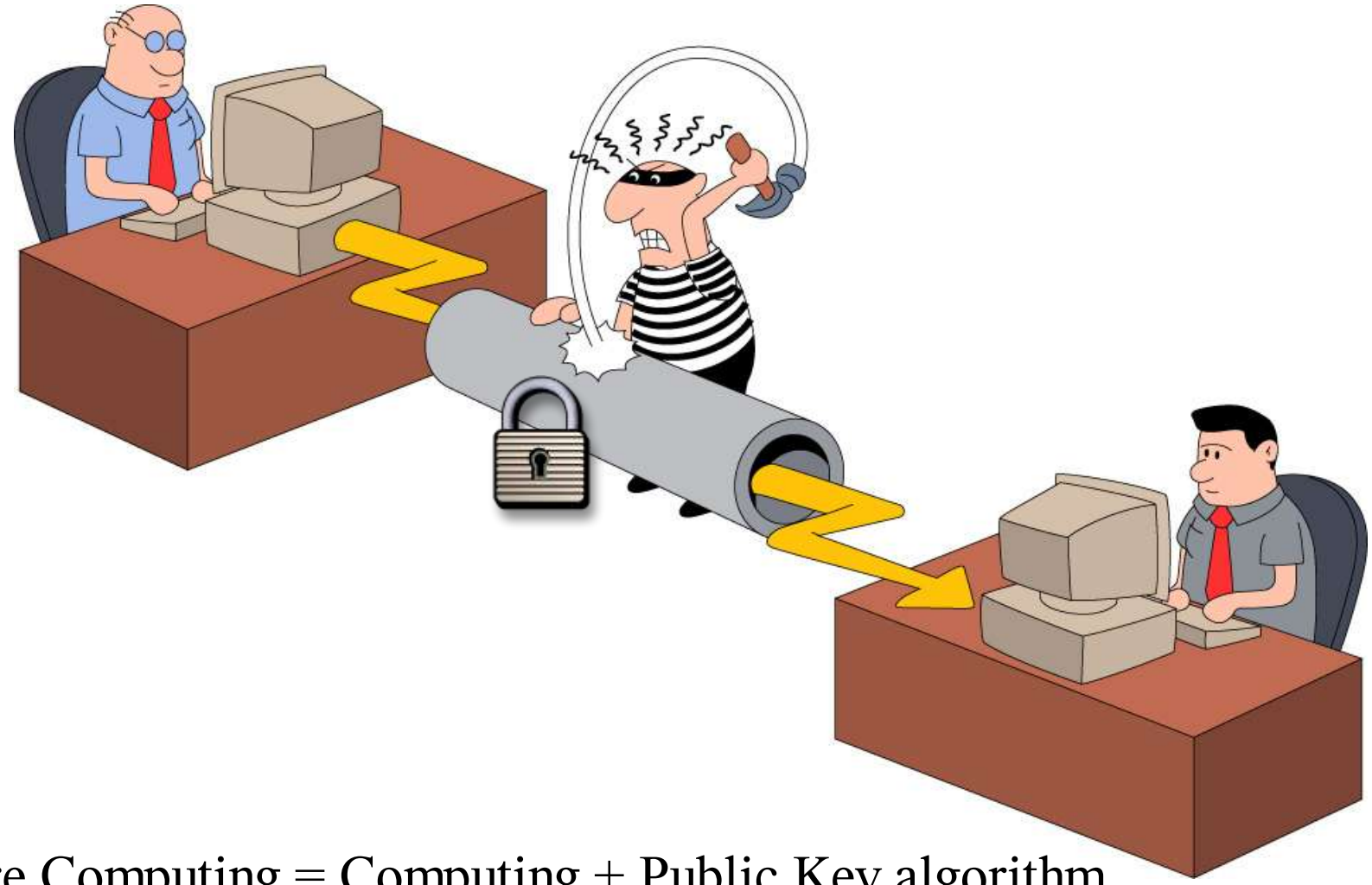
March, 2005

Computing (simplified)



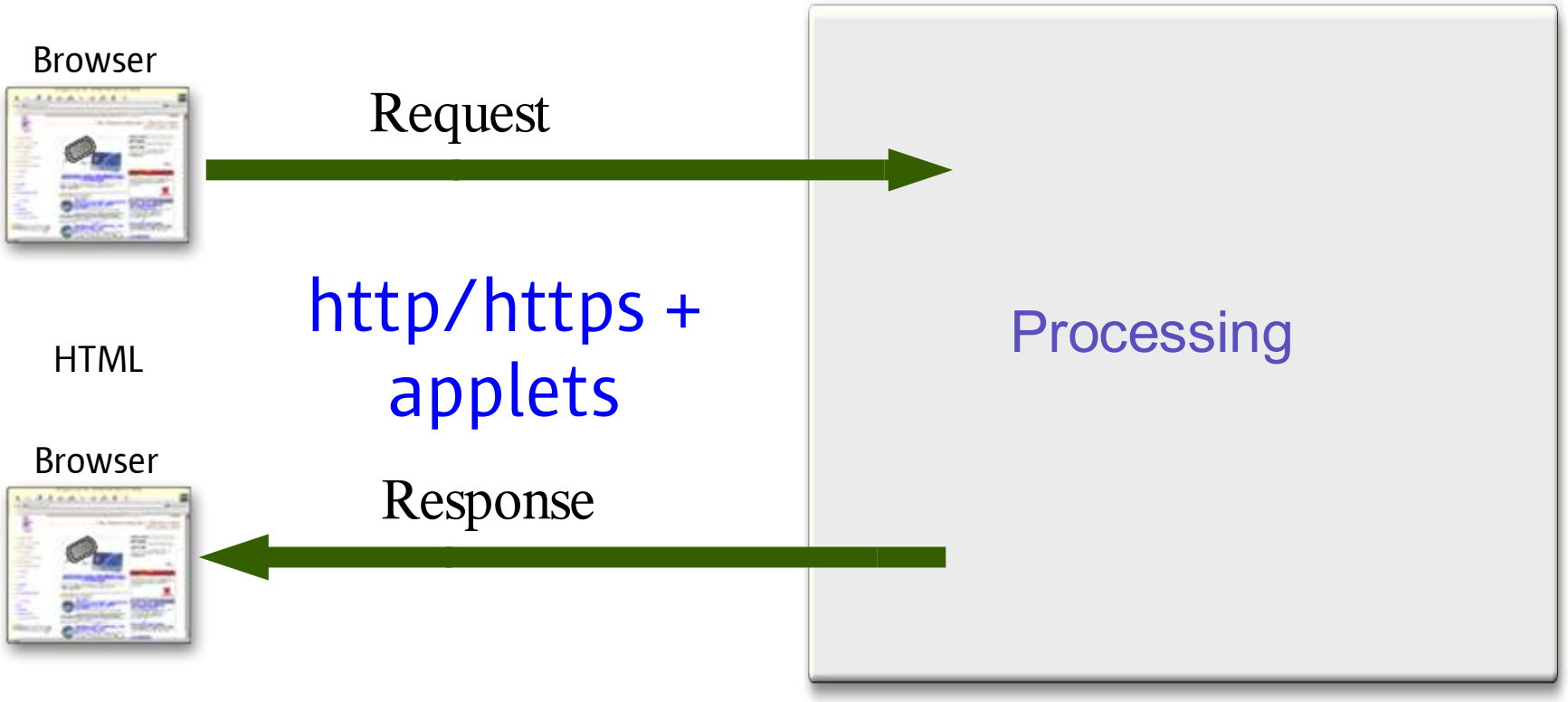
Computing = Input + Processing + Output

Secure Computing



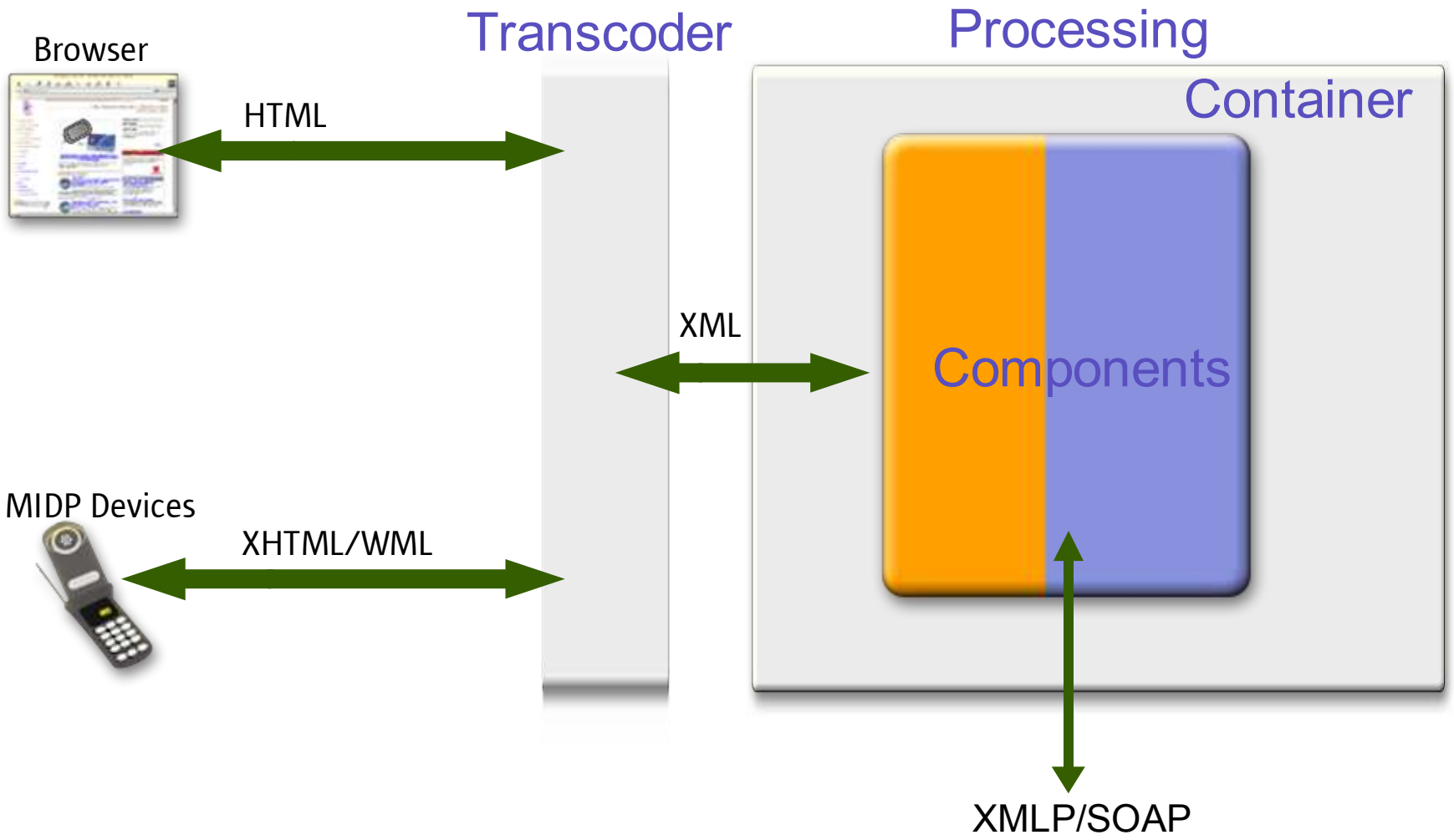
Secure Computing = Computing + Public Key algorithm

Ubiquitous Computing



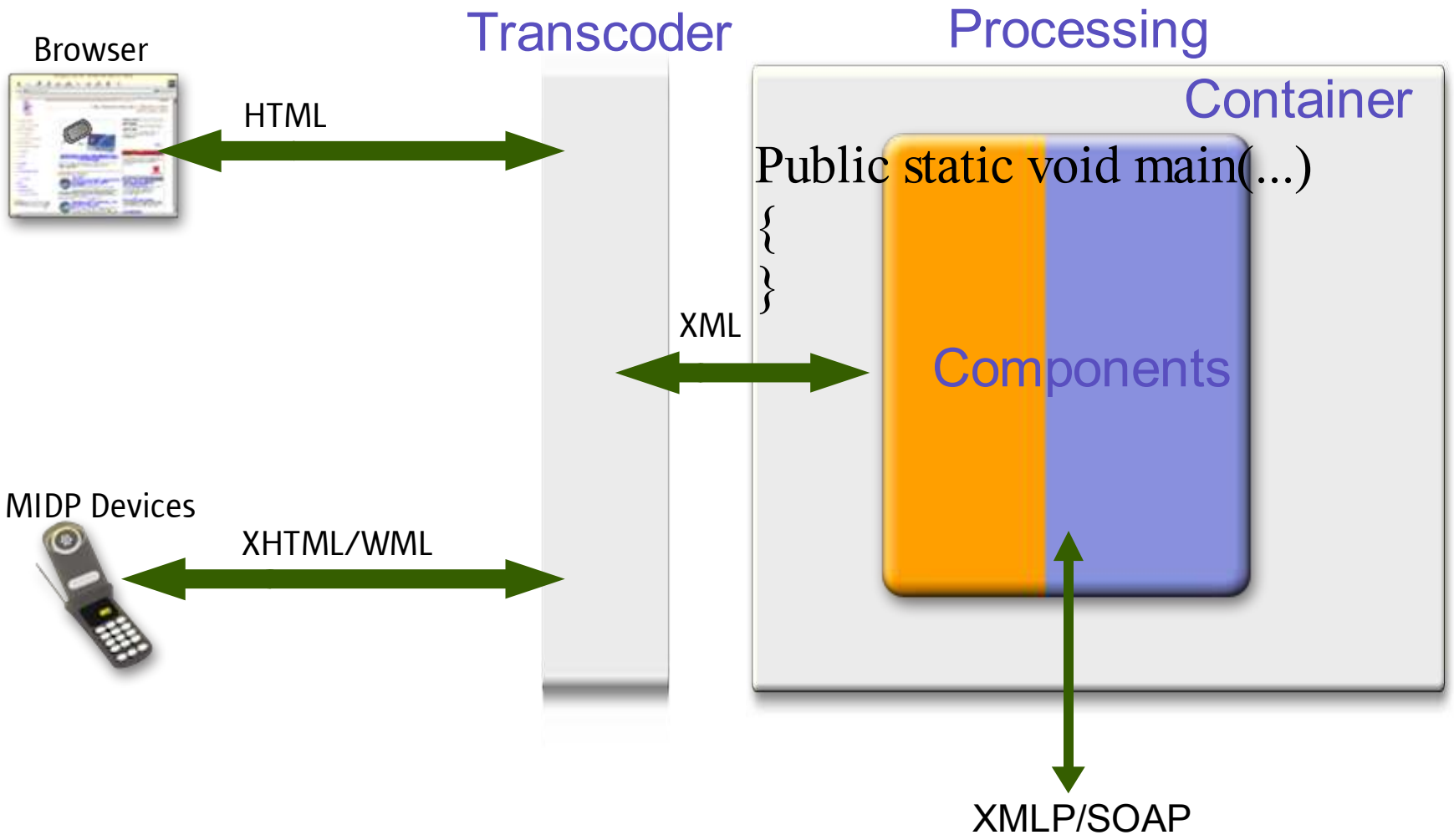
Ubiquitous Computing = Computing + Public Key algorithm + Public Standards + Public Protocols

Portable Computing



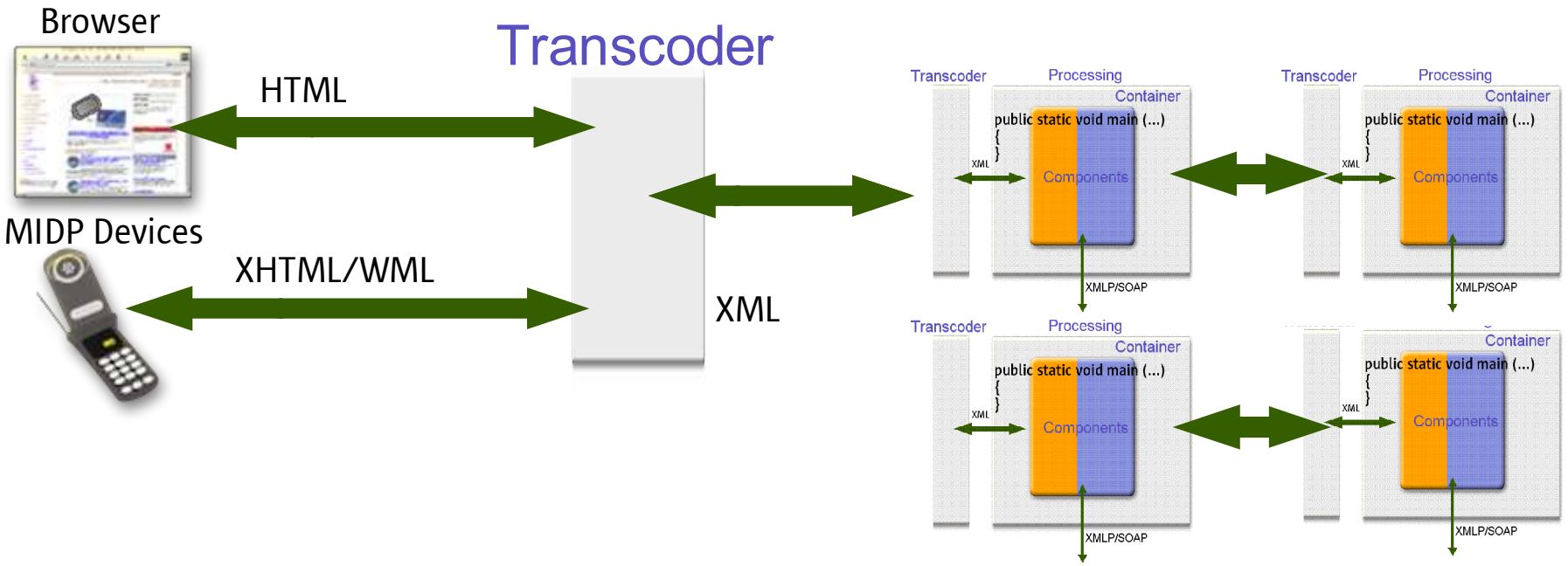
Portable Computing = Ubiquitous Computing + "trans"latable output

Open * Computing

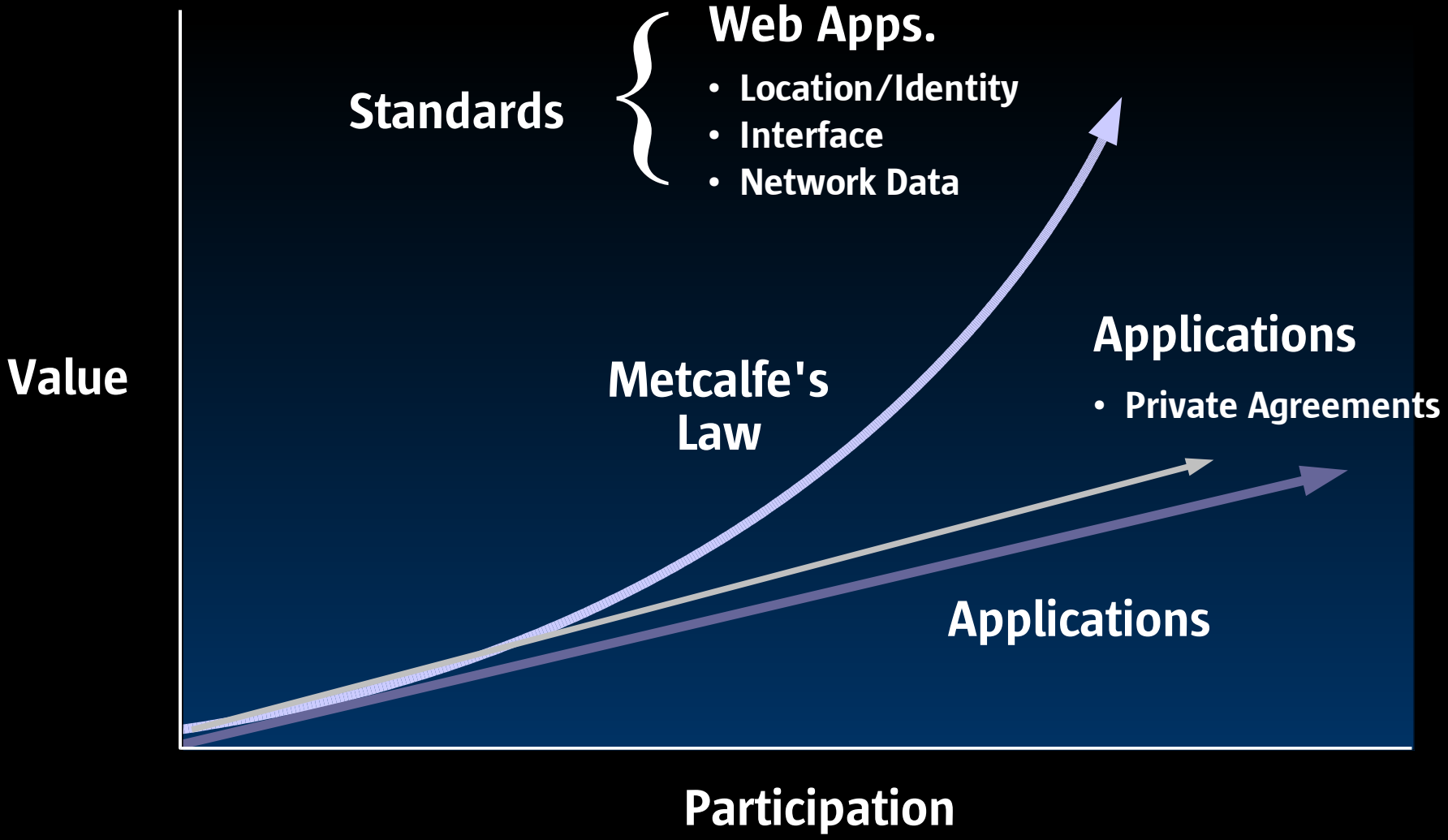


Open * computing = Portable Computing + Open Source
+ Open Processes

Network of Open * Computing



Applications vs. The Swarm.



Open * computing – Notable Milestones

Year	What?	Who?
1975	Public Key Infrastructure	Diffie and Hellman
1979	Berkeley Software Distribution	Bill Joy
1983	Free Software Foundation	Richard Stallman
1991	Linux	Linux Torvalds
1993	http and web	Tim Berners Lee
1994	Apache Software Foundation	Brian Behlendorf
1995	Java	James Gosling
1998	J2EE	Java Community
1998	mozilla	Mozilla Foundation
1999	XML	W3C
2000	?	?

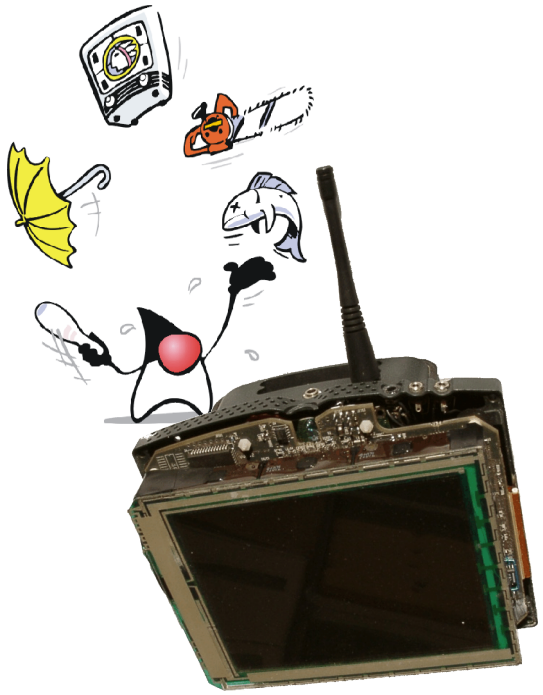
1991 –
Duke gets on the stage with Oak on *7 from Project Green

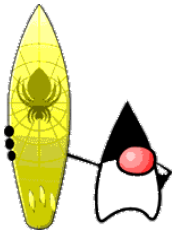
1995 –
The world gets to know about Java in the form of HotJava

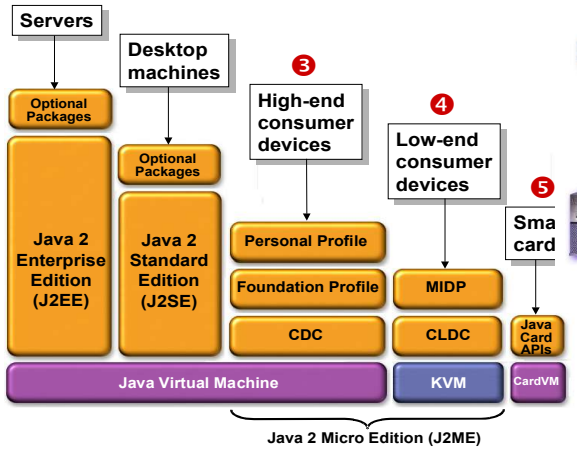
1996 –
JavaOne

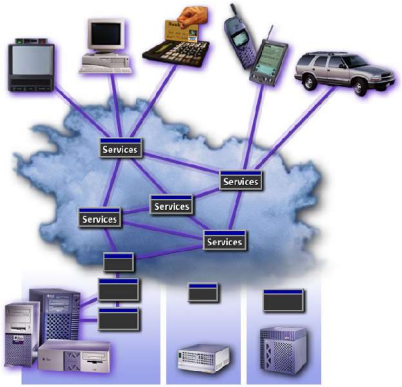
1999 –
J2 enters with the “Family”

2003 –
J2ME, J2SE J2EE leads the adoption of WS and Mobility

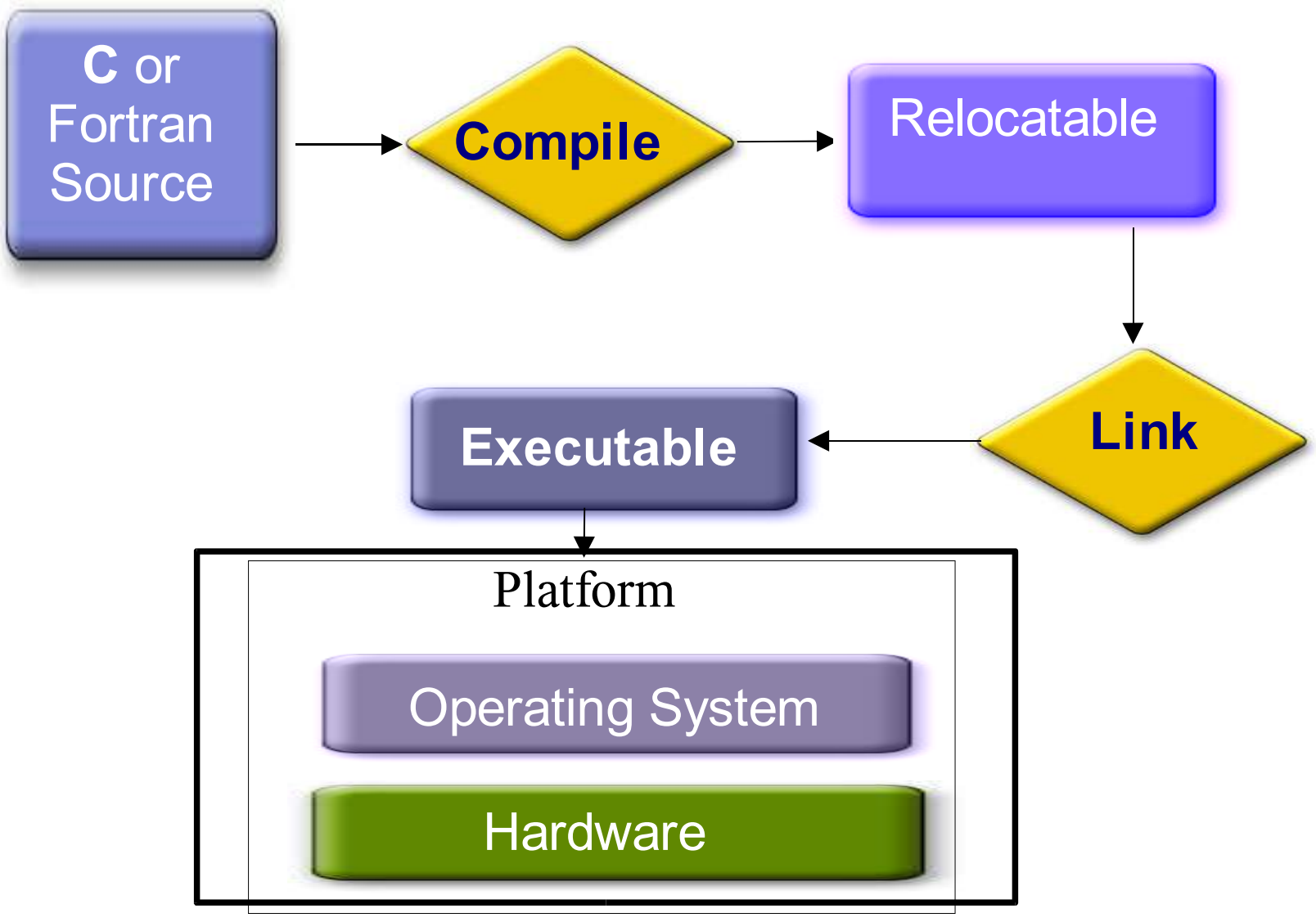




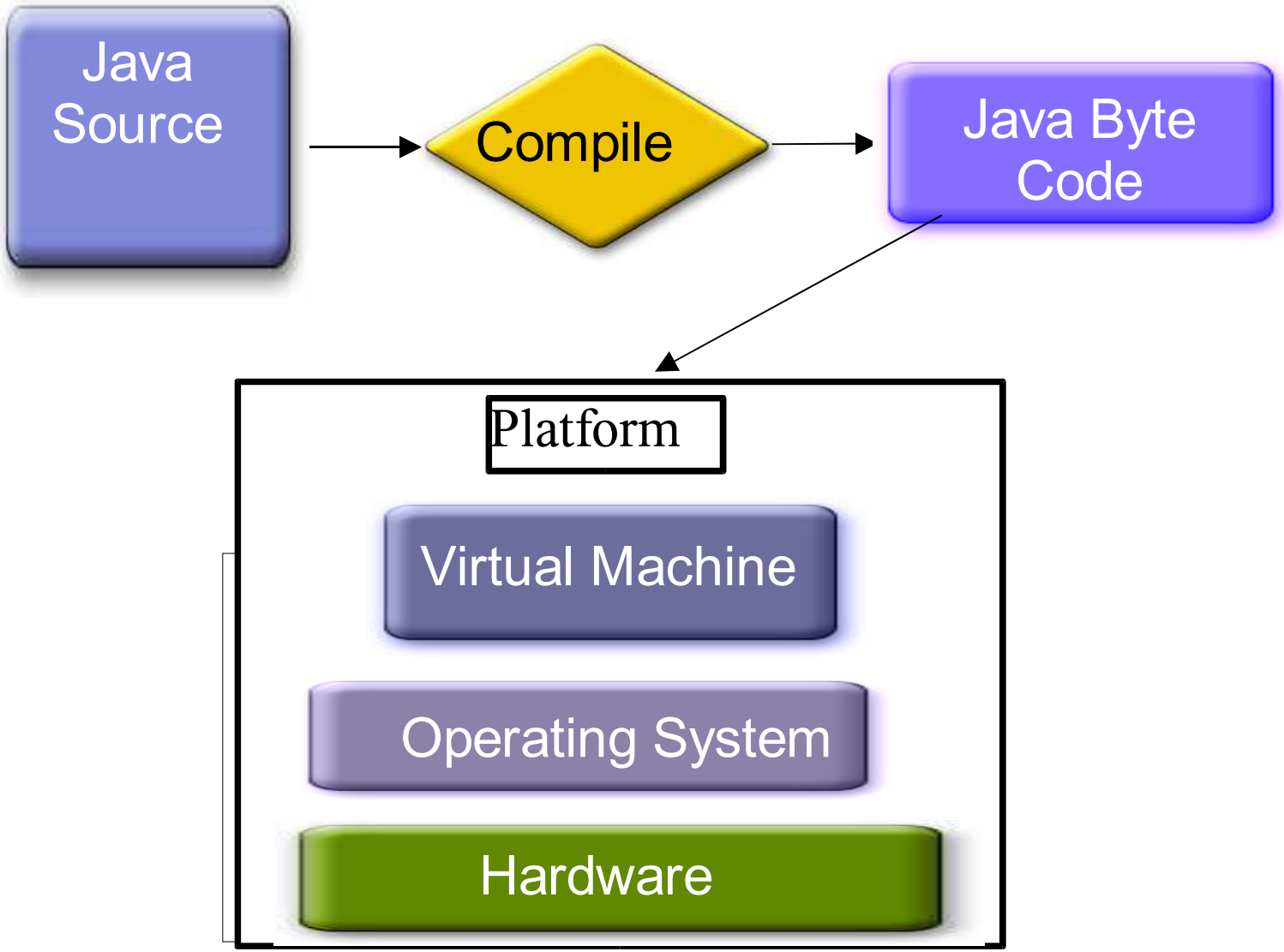




Computing before Java



Java – Portable Code : WORA Write Once Run Anywhere



Java: It's a Language

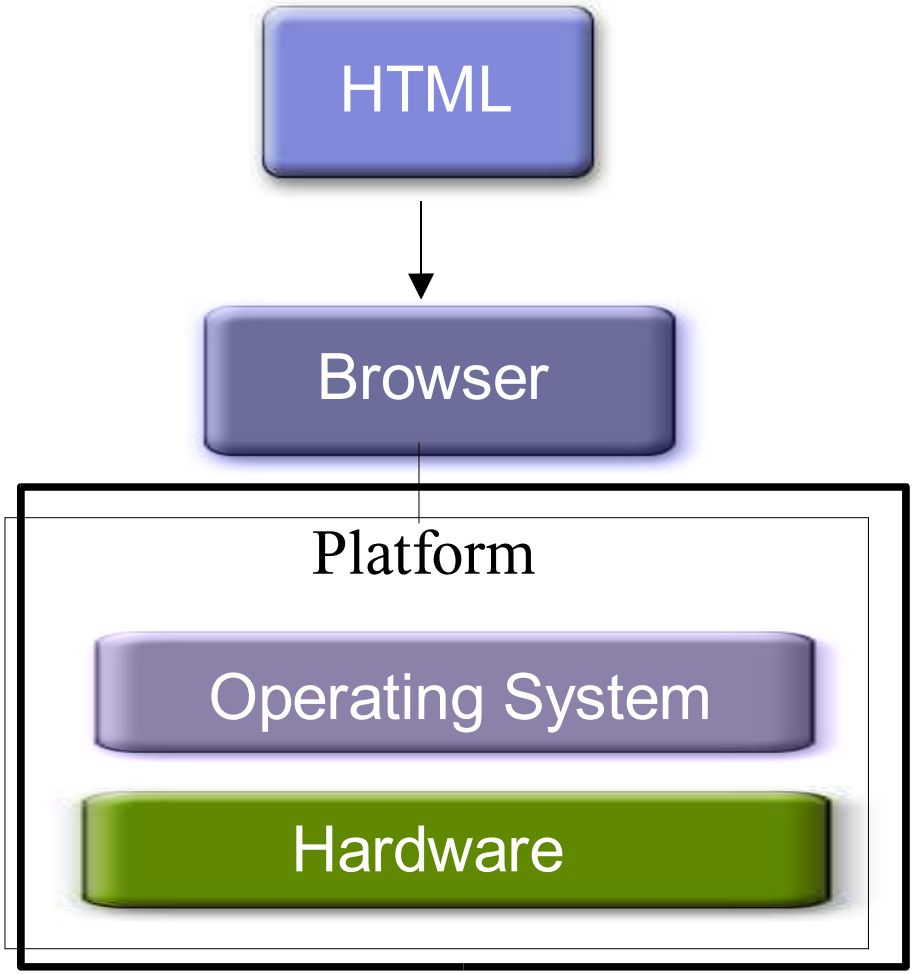
- Language Requirements
  - Secure
  - Powerful
  - Robust
  - Network Ready

=> Language for Distributed Applications

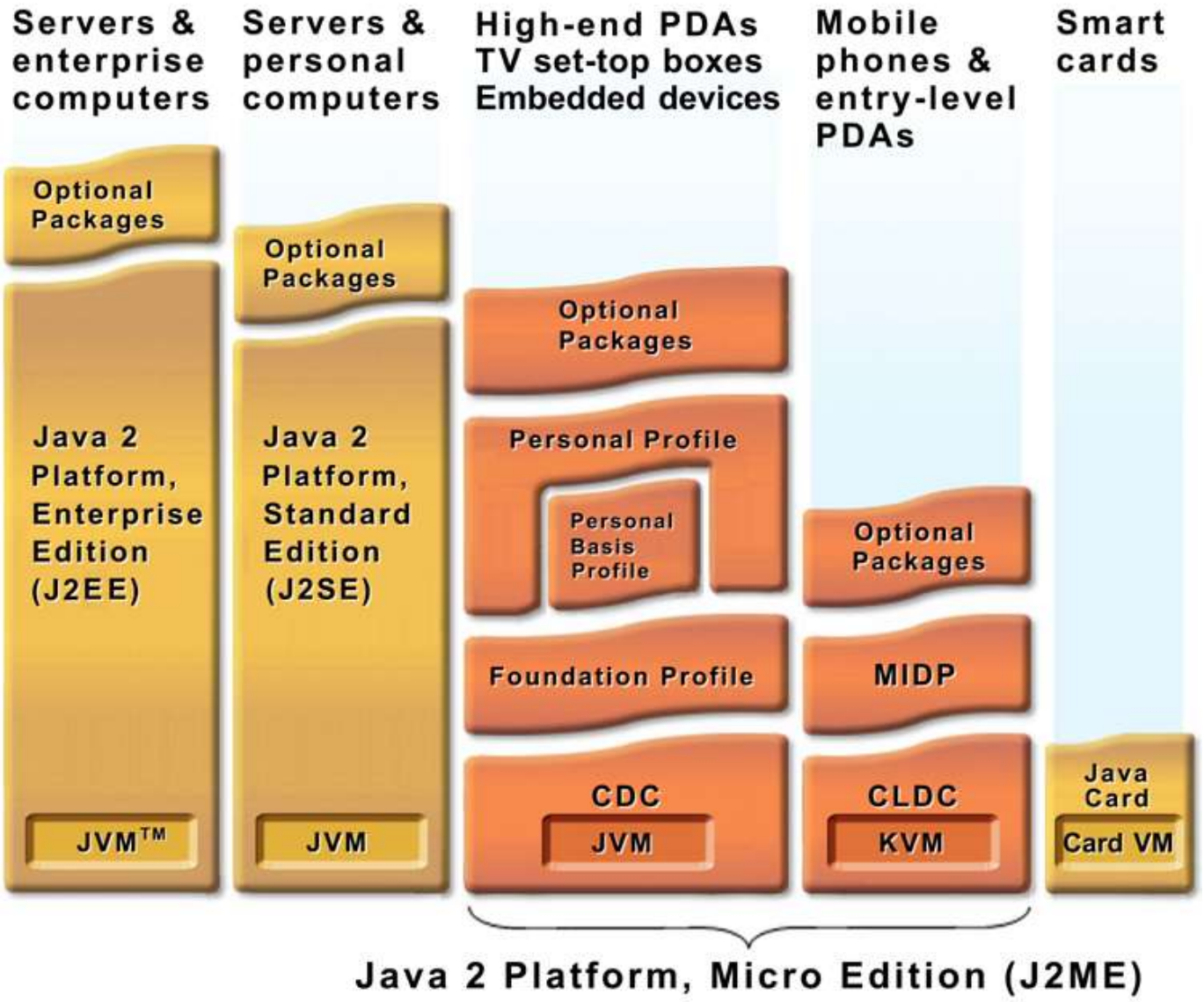
Why did Java become Popular

- Simple & Familiar – like C, C++
- Object-Oriented language
- Portable -
  - executes anywhere Java Virtual Machine exists
- Robust, Secure
- Garbage Collection – No memory leaks
- Distributed
  - Network Ready

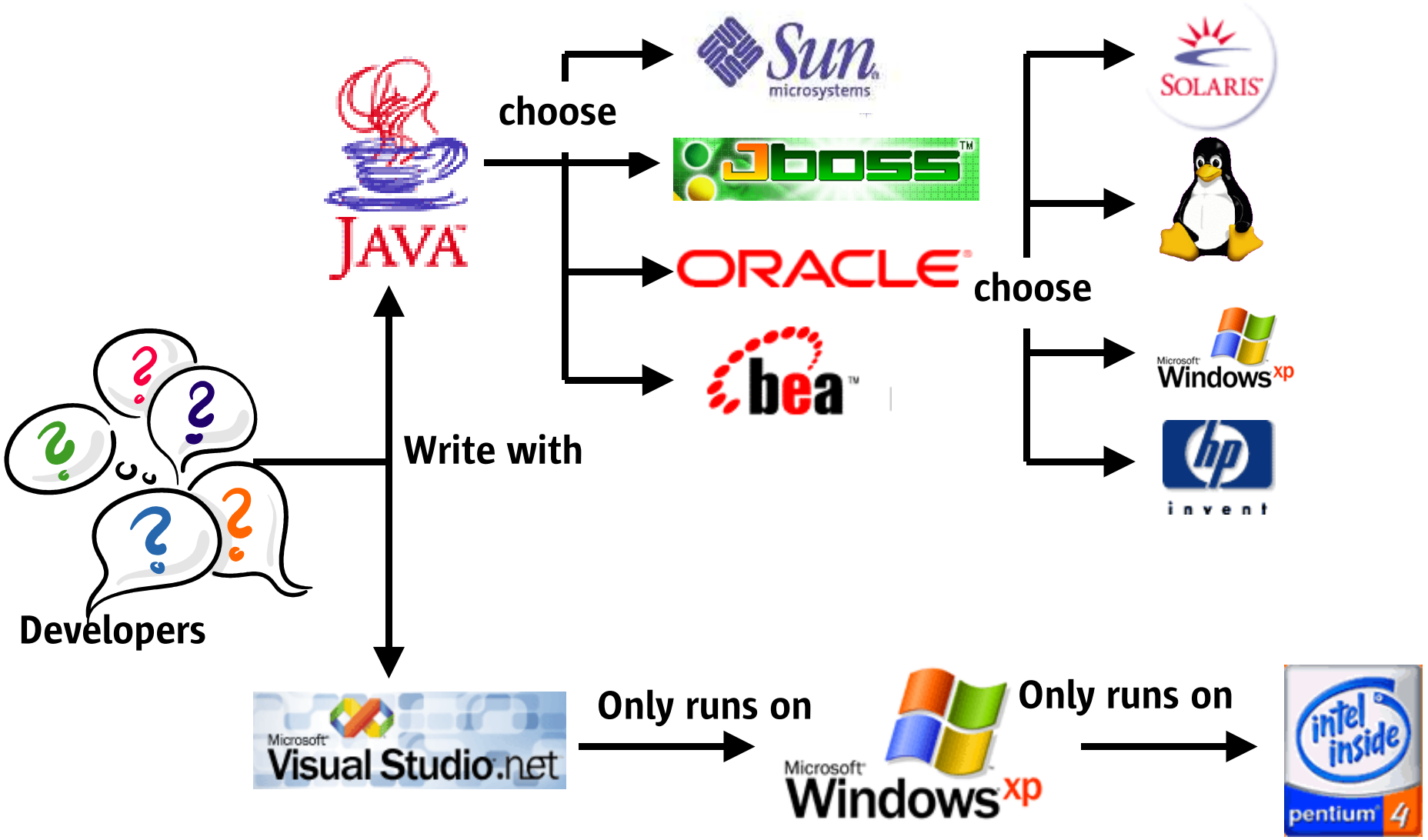
HTML Portable Content for Browsers



Java Platform



The Java "Glue"



J2ME Devices

1970
PDP-8/I
1/4 Mhz
8K of RAM

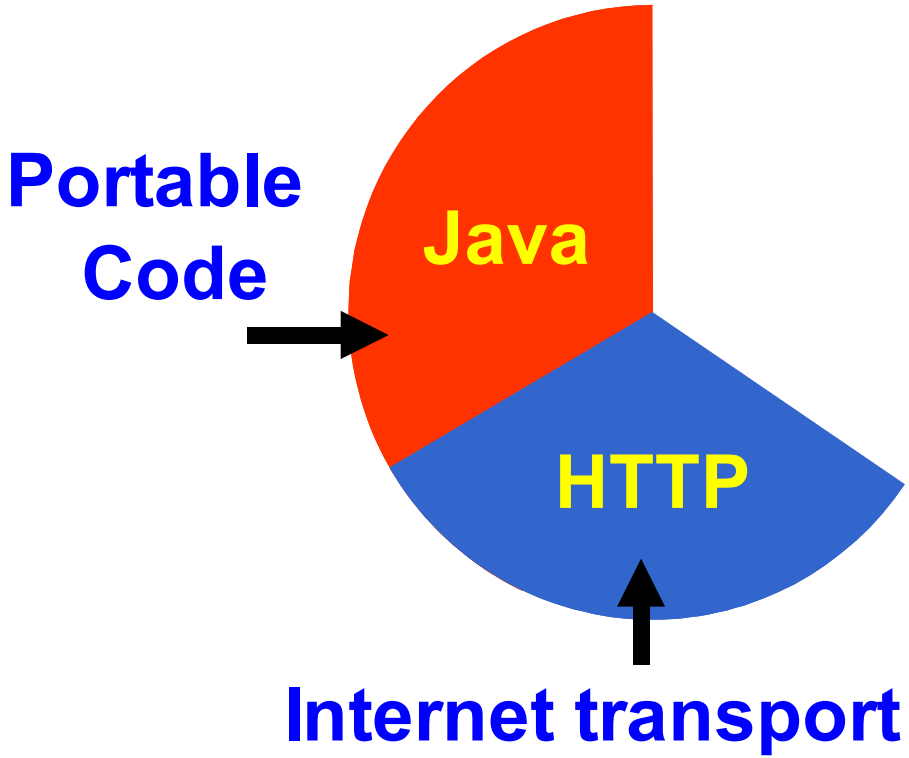
Less horsepower
than Java Card

5 Mhz
2 KB of RAM

Java Card examples

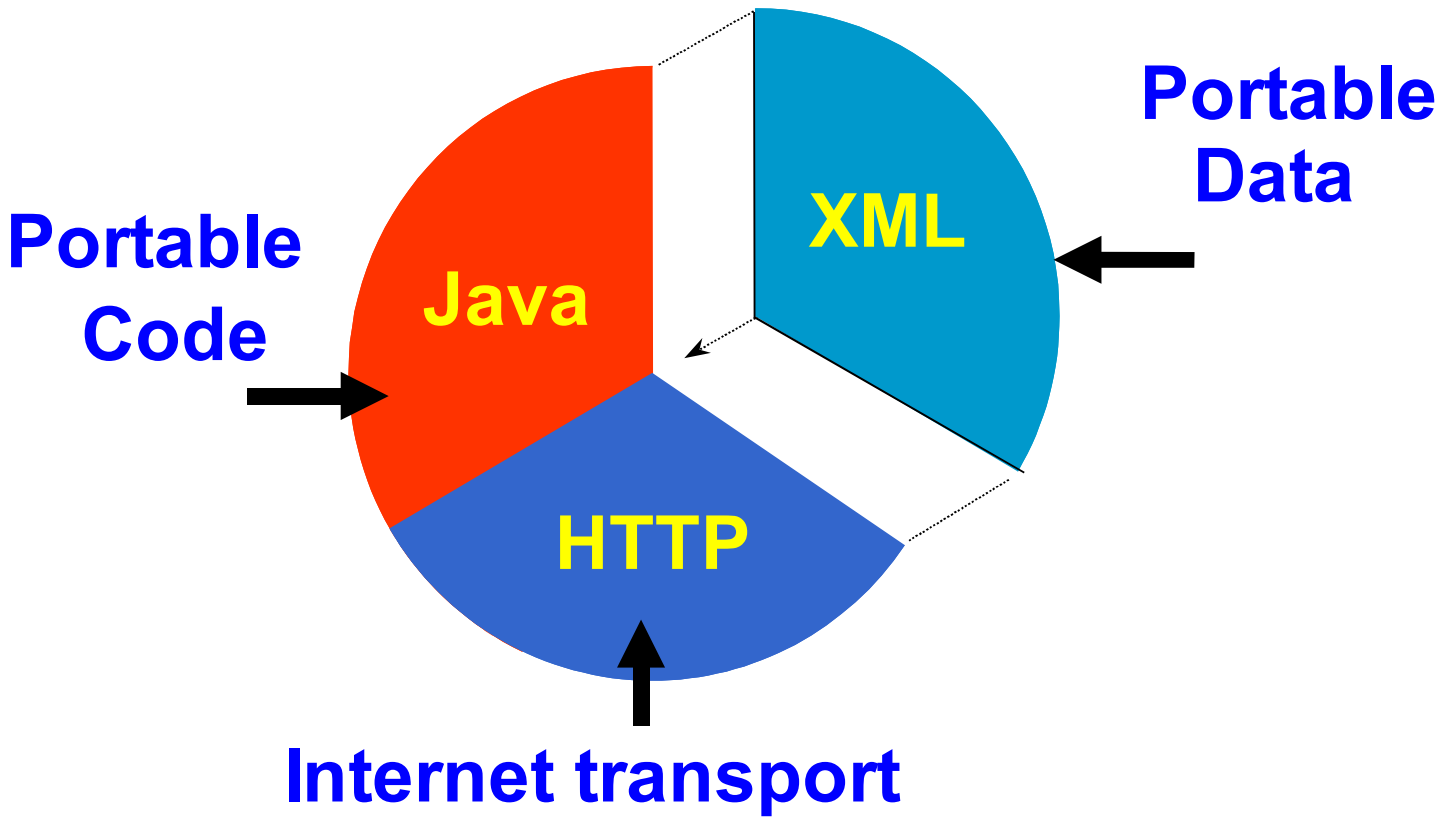
- Belgium, Malaysia,Thailand: Electronic National Identity card
- Switzerland: SWISSCOM GSM operator 500,000 JavaCards
- Taiwan Health care Id
- Singapore's Road Toll
- U.S. Department of Defense
- American Express, Visa

Java + HTTP



- Portable, Networked Systems
  code + transport
  functions + communication

Java + XML + Internet

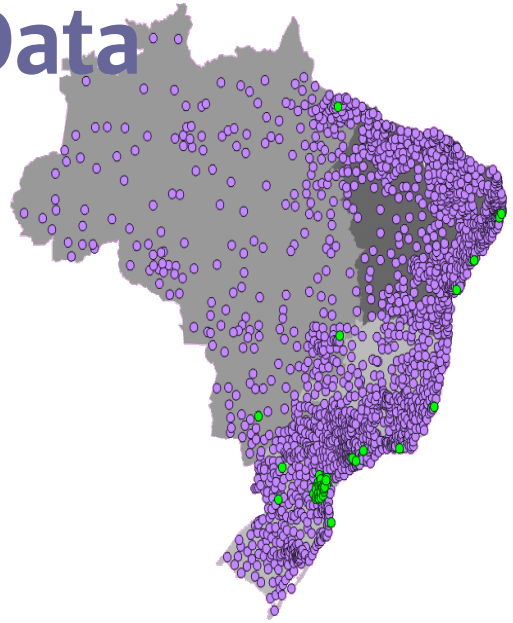


- Portable, Networked Systems
  code + data + transport
  Verbs + nouns + communication

Mars Rovers Mission
Collaborative Information Portal

- Provide a central place to access mission information
- Provide a Mars time clock
- Navigate, search, and view mission data, plans, reports and schedules from various perspectives
- Provide notification of updates of various mission data

Brazilian National Health Project Data and Information Captured

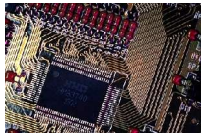


Identification and treatment data

- Patients ID

- Professional ID

- Provider Info



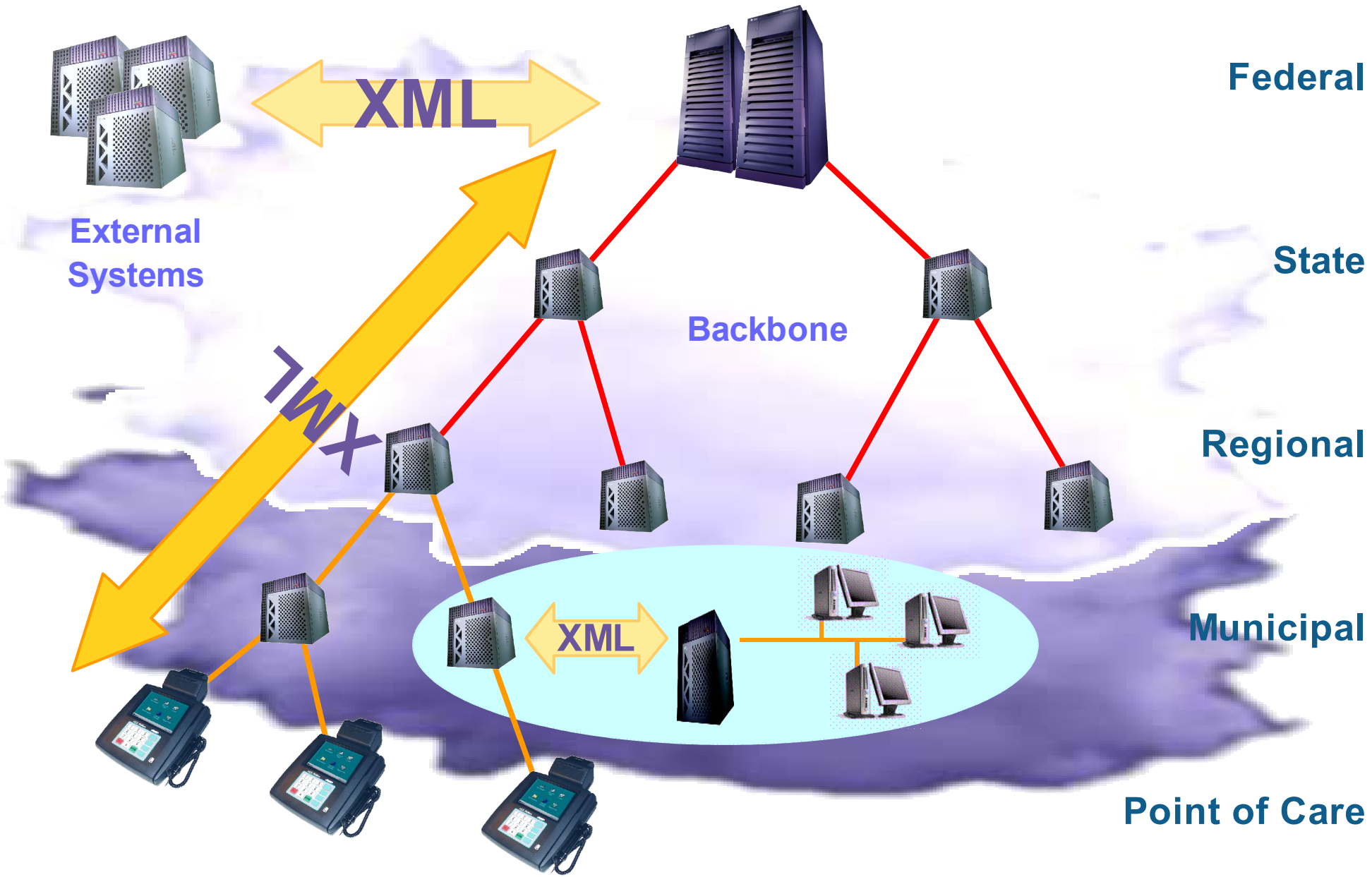
- Encounter Information

Point-of-Care Device

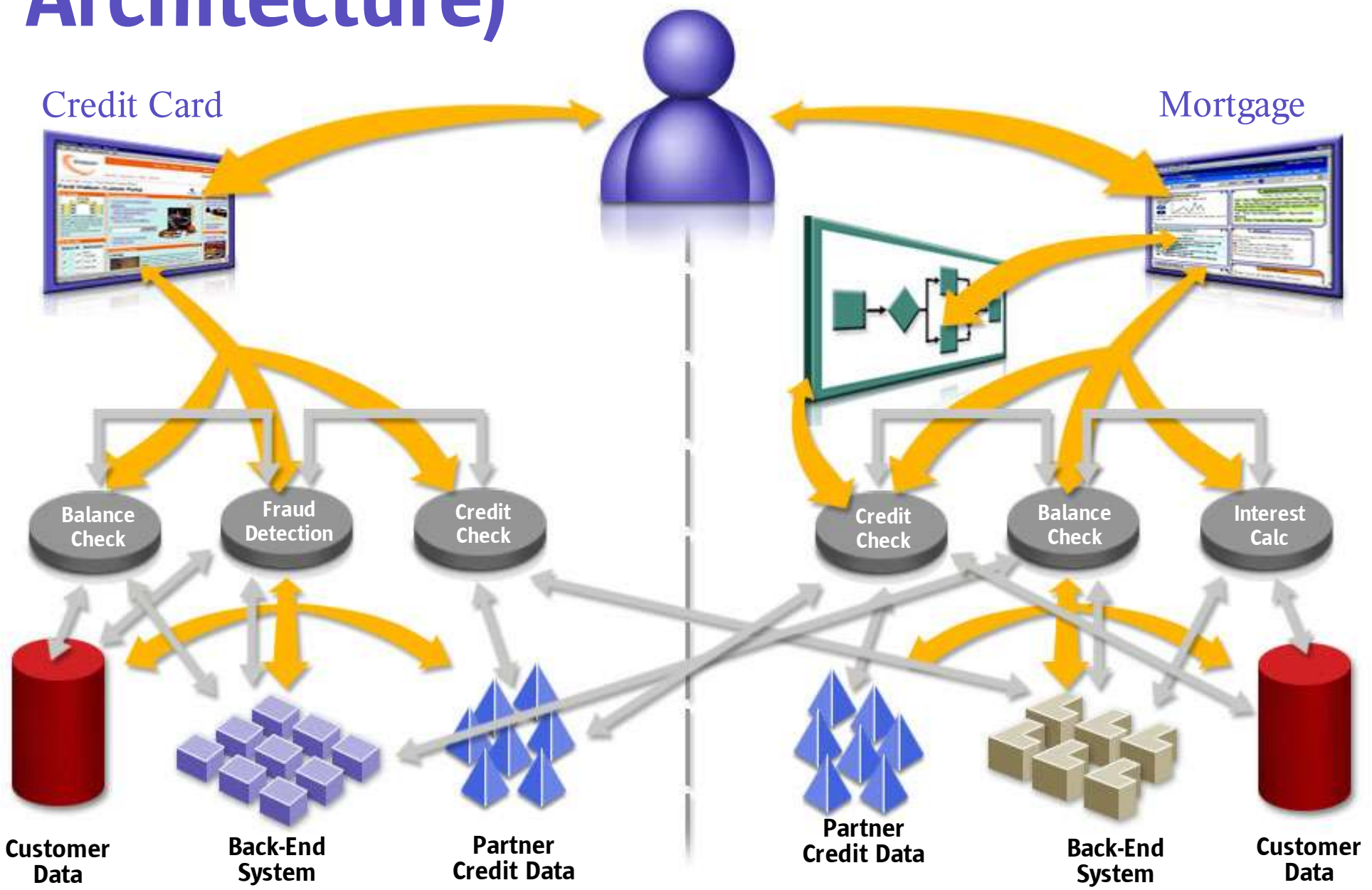
Servers

- 130M inhabitants

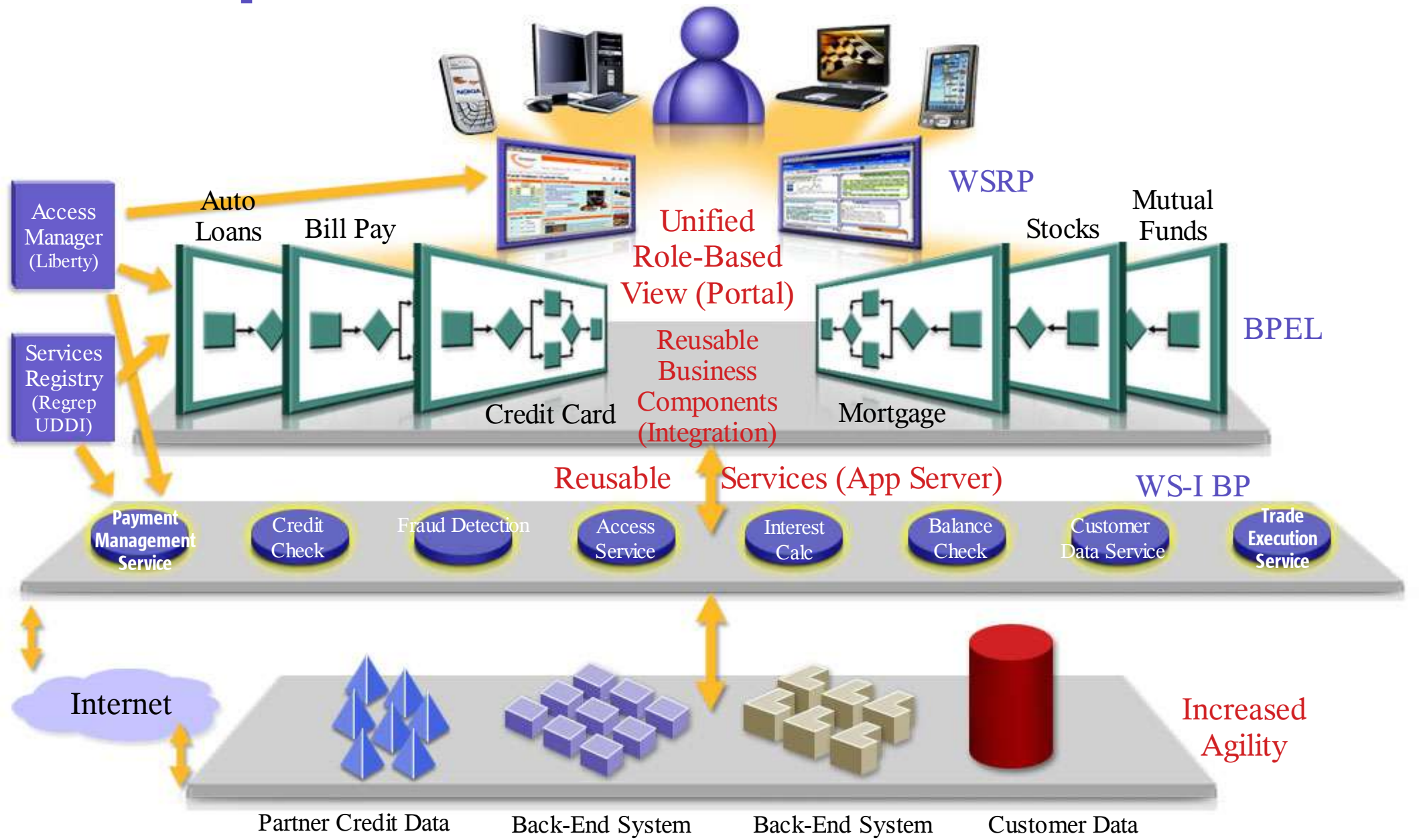
Brazilian National Health Project



Customer Pre-SOA (Service Oriented Architecture)



Enterprise Post-SOA



Present: java and java.net – java getting more open

March, 2005

A Licensing Primer

SOFTWARE	Free?	Redistribute?	Unlimited Usage	Source Available?	Source Modifiable?	Public Check-ins	Derivatives Free?	Example
Commercial								
Shareware	Almost!							
Royalty Free Binaries	Y	Y	Y					
Royalty Free Libraries	Y	Y	Y	Y				
Open Source	Y	Y	Y	Y	Y			BSD
Open Source (Apache)	Y	Y	Y	Y	Y	Y		Apache
Open Source (GNU, Linux)	Y	Y	Y	Y	Y	Y	Y	GNU, Linux

Characteristics of Open * computing

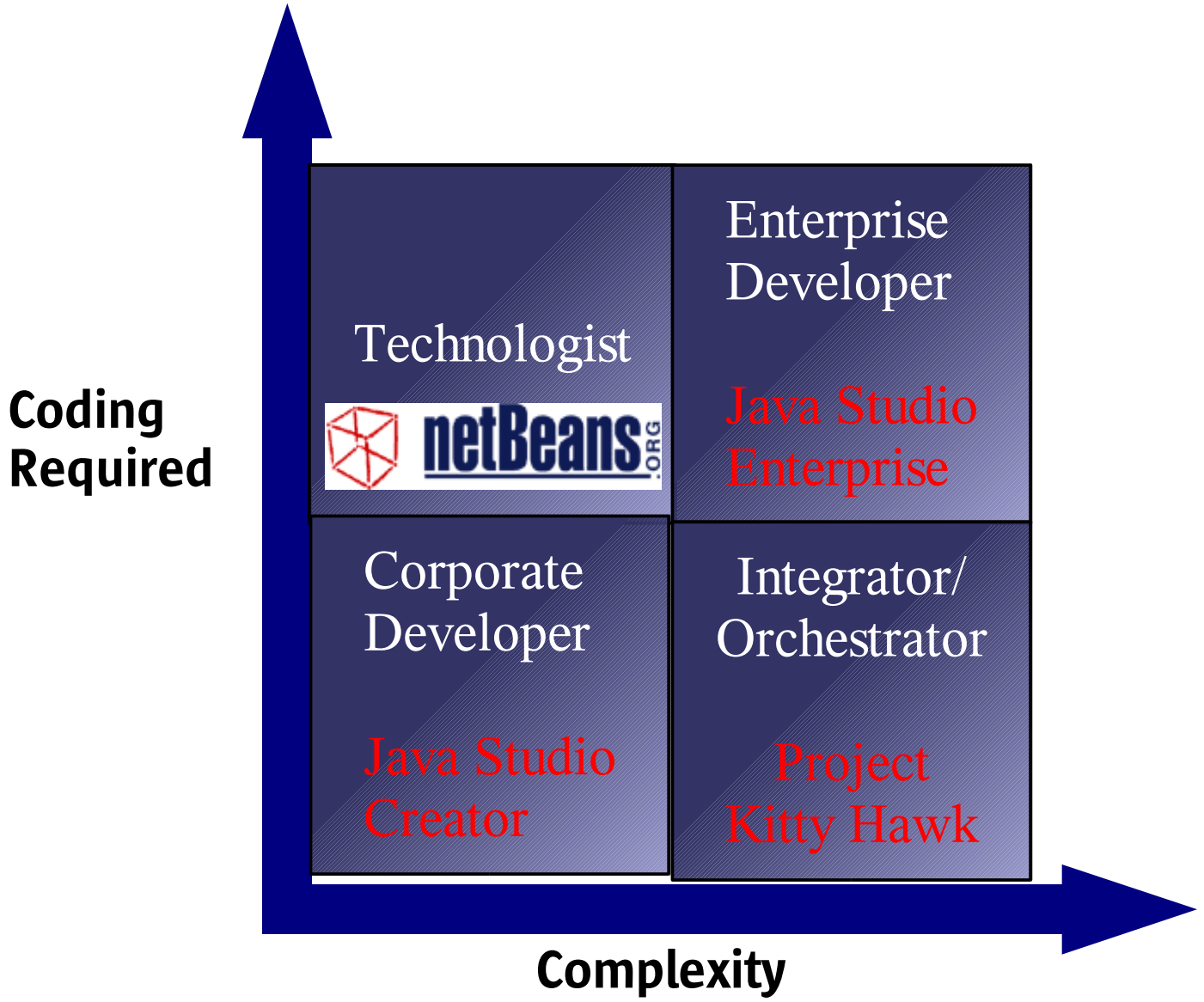
Pros

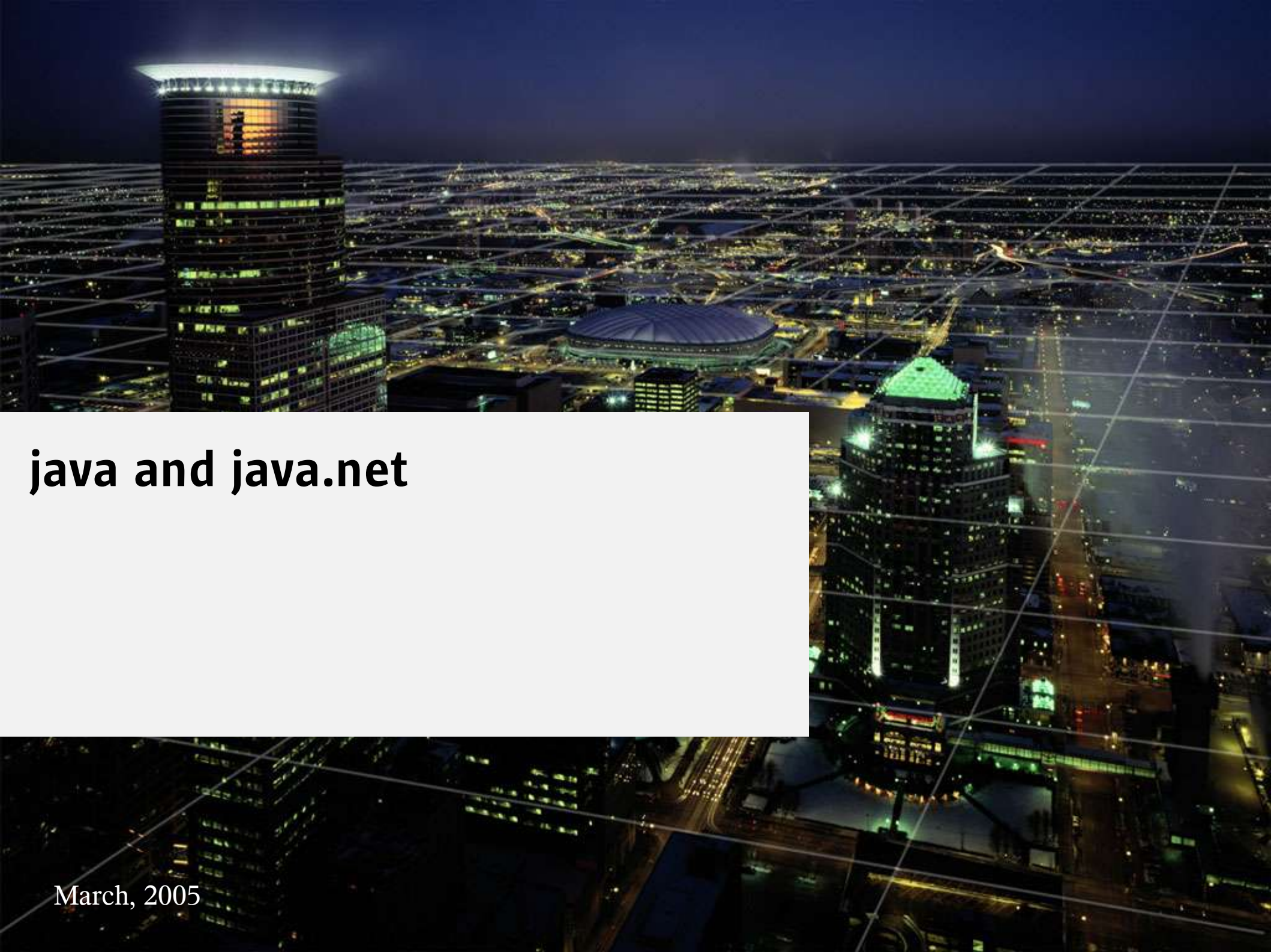
- Choice
- Code
- Community

Cons

- Chaos
- Code-centric
- Coterie

Open Source makes Money





java and java.net

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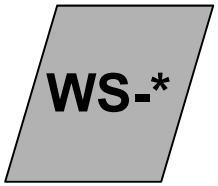
Proliferation of Standards



LIBERTY ALLIANCE PROJECT

JAVA COMMUNITY PROCESS

UN/CEFACT

WS-I WEB SERVICES INTEROPERABILITY ORGANIZATION

OASIS

ebXML

ITU

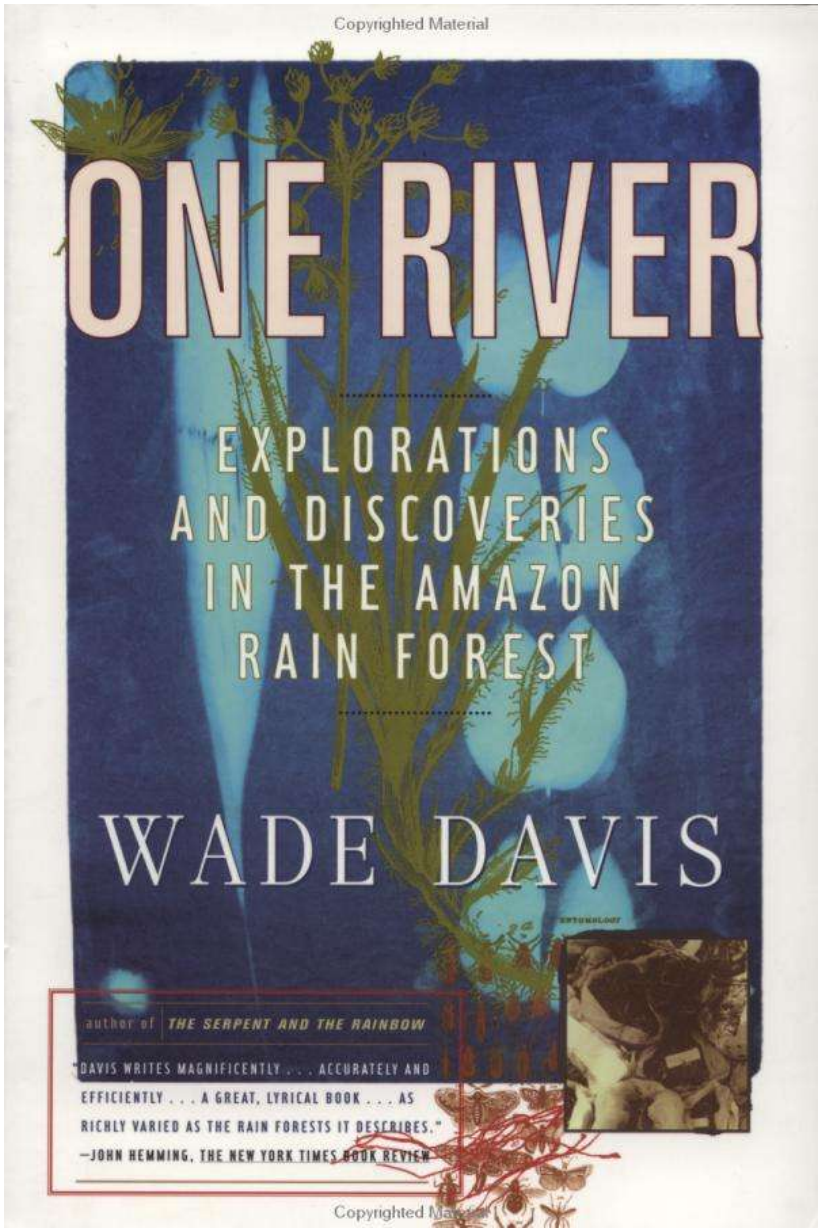
W3C

IETF

Java Community Process

- Java:
  - Compatibility. No tolerance to forks
- Open Source:
  - Forks are OK
- Project Geronimo:
  - Open Source implementation of J2EE 1.4 application server with branding via the Technology Compatibility Kit (TCK)

One River?



- Rhetorically, the Amazon is one river.

… or many?

- Practically, it is many.

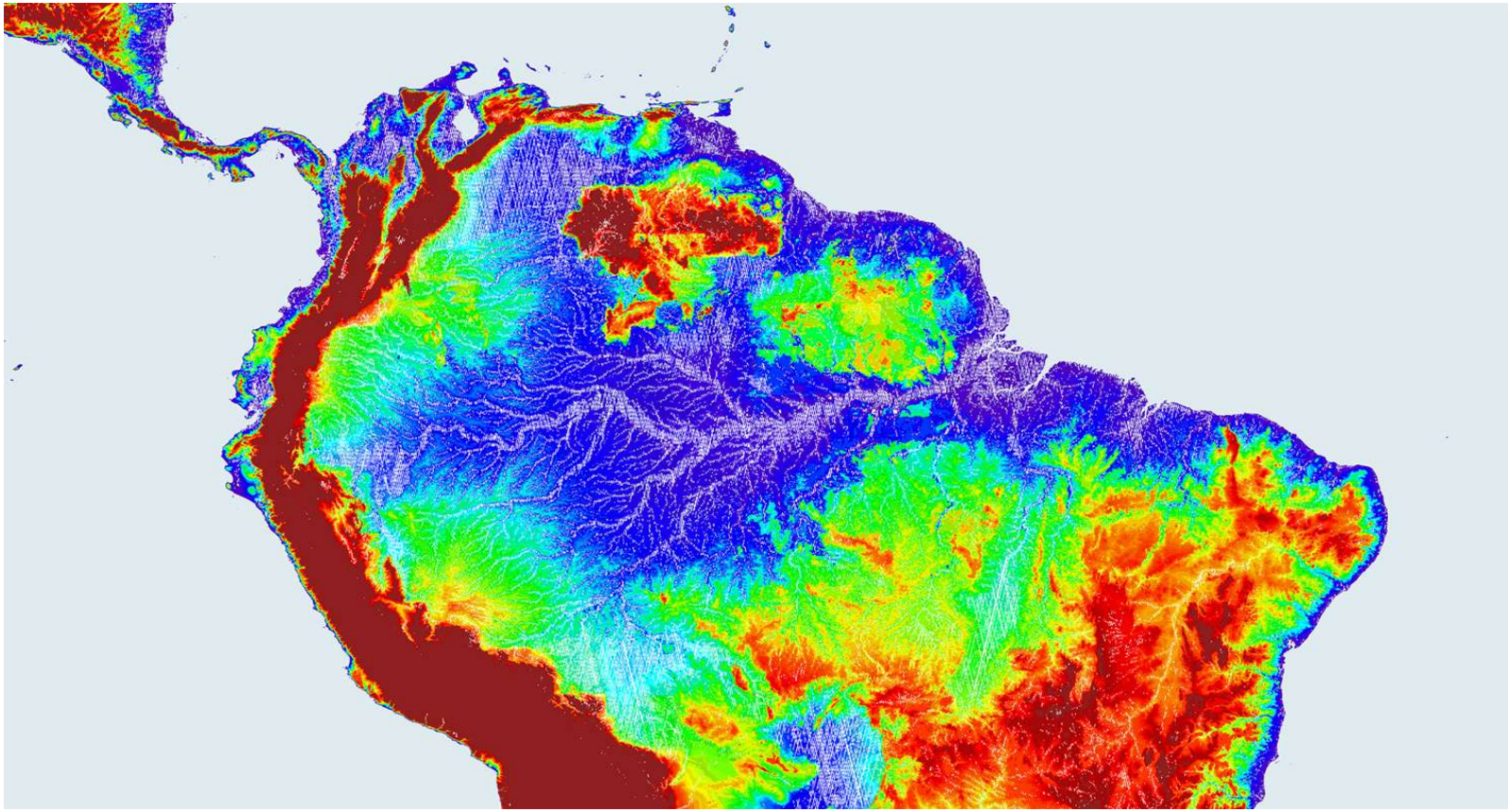
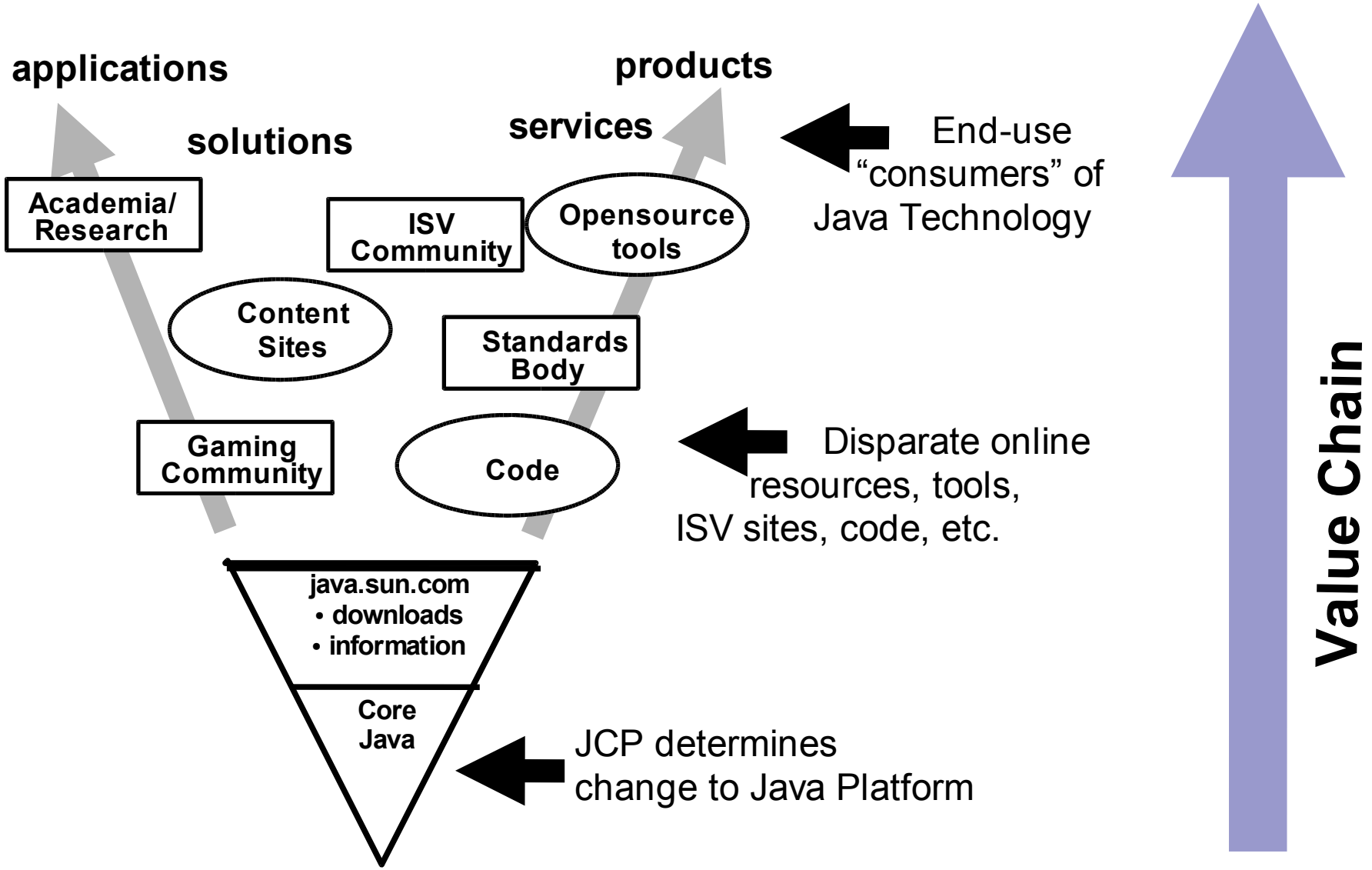


Photo credit: European Space Agency,
http://esamultimedia.esa.int/images/EarthObservation/amazon_river.jpg

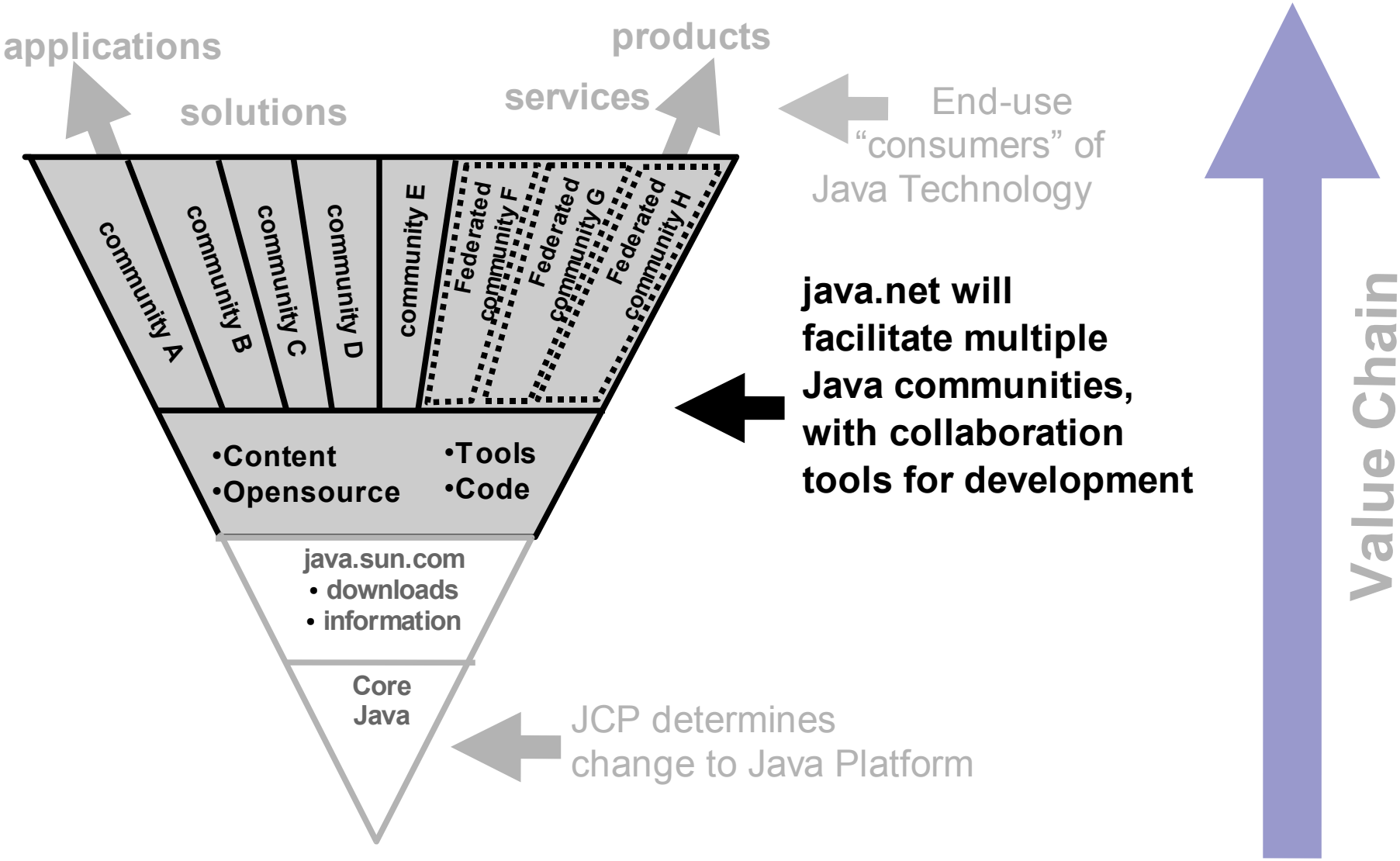
Freedom In Common

- Objective of OSI (open standards initiative)
  - Freedom through standards
- Objective of FSF
  - Freedom through source access
- Objective of Java & JCP
  - Freedom through compatibility
- Objective of OSI (open source initiative)
  - Freedom through licensing
- Each solving a different part of the same problem; freedom is the goal

Java Community (diverse and rich)



java.net (collaboration is key)



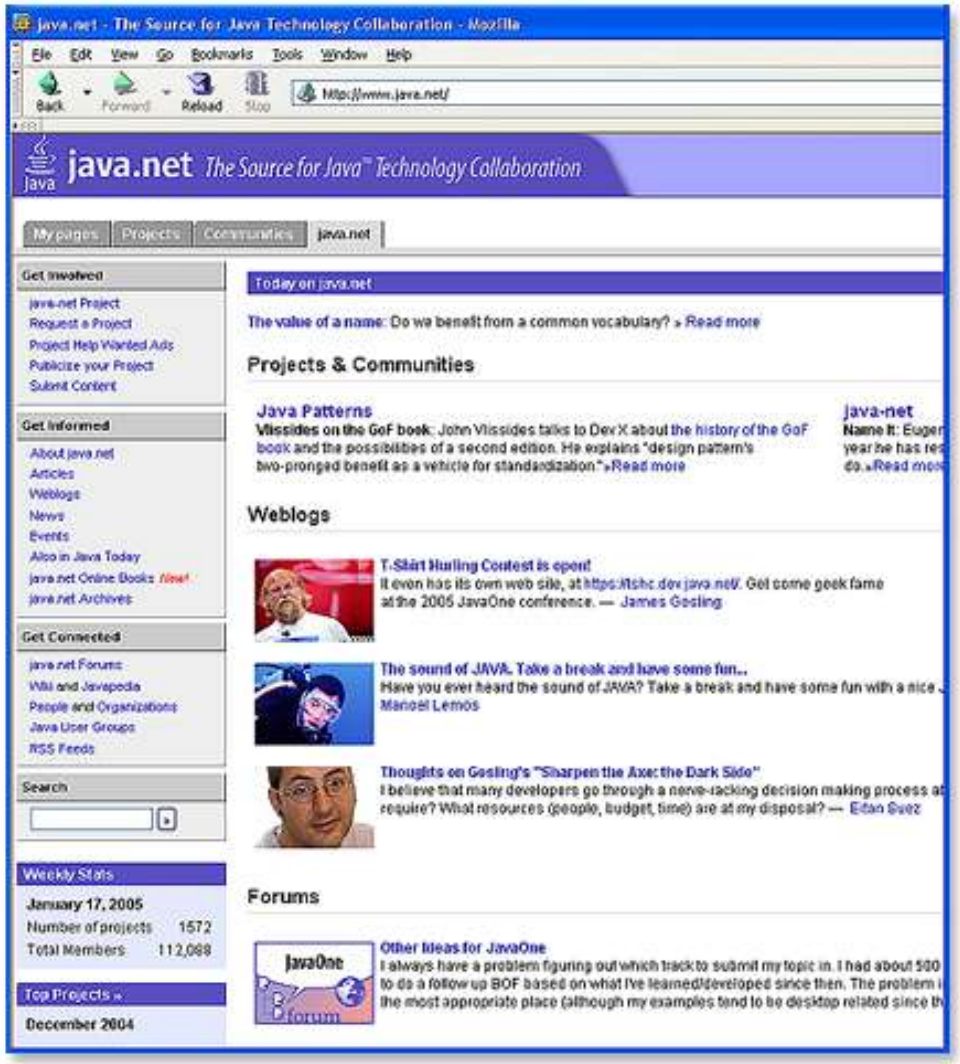
java.net — Building the community

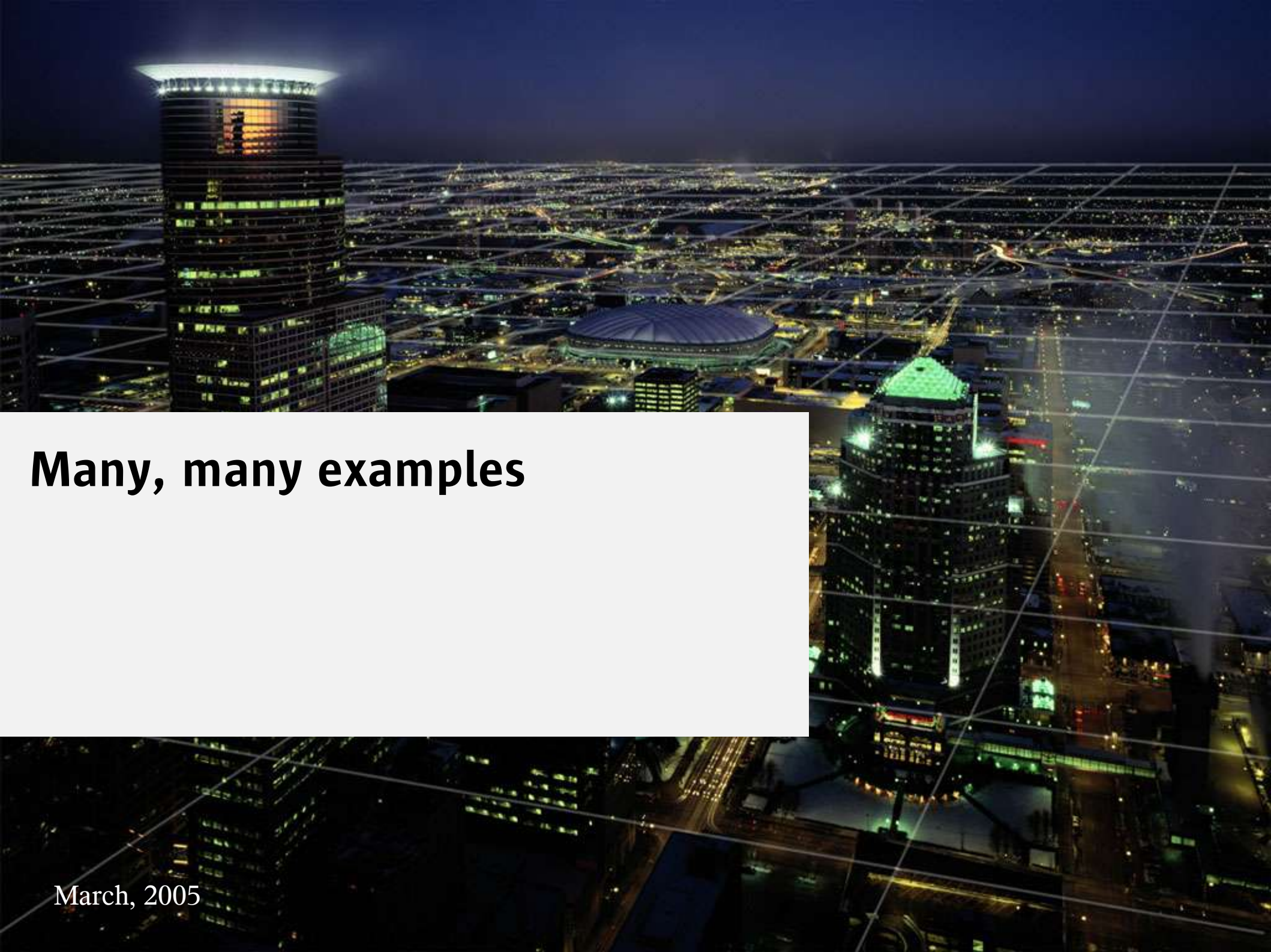
Community "Home" for Java

- The "playground" for Java open source and open development projects

Status:

- 130,000+ members
- ~1,800 projects, 110 JUGs
- 18 active communities
- Blogs, Wikis, RSS, lots of dialogs!
- Interesting projects
  (Visible development of Mustang)
- James Gosling and other key Java technology leaders participate





Many, many examples

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NetBeans.org

- Center for Innovation, News and Support
- 3.5 Million Downloads of NetBeans tool
- 100 add-ons and extensions
- Visitors from 160 countries
- Active Community supporting developers in English, French, Russian, Japanese, and simplified Chinese

NetBeans: Core IDE Features

- State-of-the-art Editor
- Ant-based project system
- Versioning: CVS, PVCS, VSS, and more
- Debugging: Multi-session, multi-threaded
- Testing: JUnit
- Refactoring and JavaDoc generation
- JDK version management
- Highly configurable
- Extensive templates

OpenOffice.org

- **60 million downloads** and growing
- **100,000 community members**
- Over **40 community localisations**
- **15 local-language mail lists** for self-help
- Community **ports to virtually every known platform**
- **Archival document formats**!
- **Conversion** to and from Microsoft Office formats
- **No virus problems**
- **Open APIs**
- **StarOffice has enterprise-level support & warranty**

Java: The Future

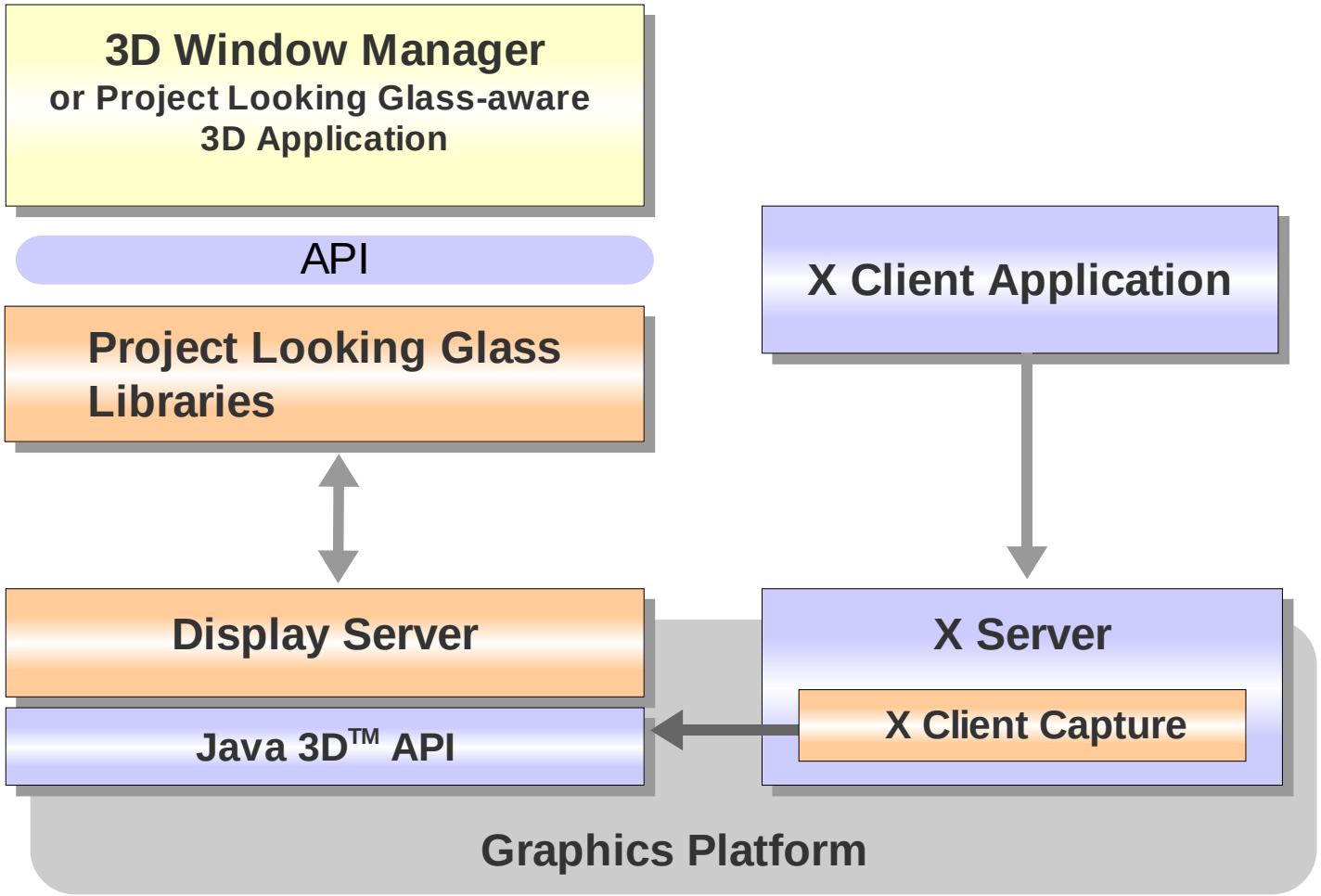
March, 2005

Project Looking Glass

Existing 2D Applications

New 3D Applications

Looking Glass High-level Architecture Overview



J2SE 6.0 “Mustang” Themes

- Compatibility, Stability, Quality!
- Diagnosability, Monitoring & Management
- Ease of Development
- Corporate / Enterprise Desktop
- XML & Web Services

- Transparency

“Mustang” Component JSRs

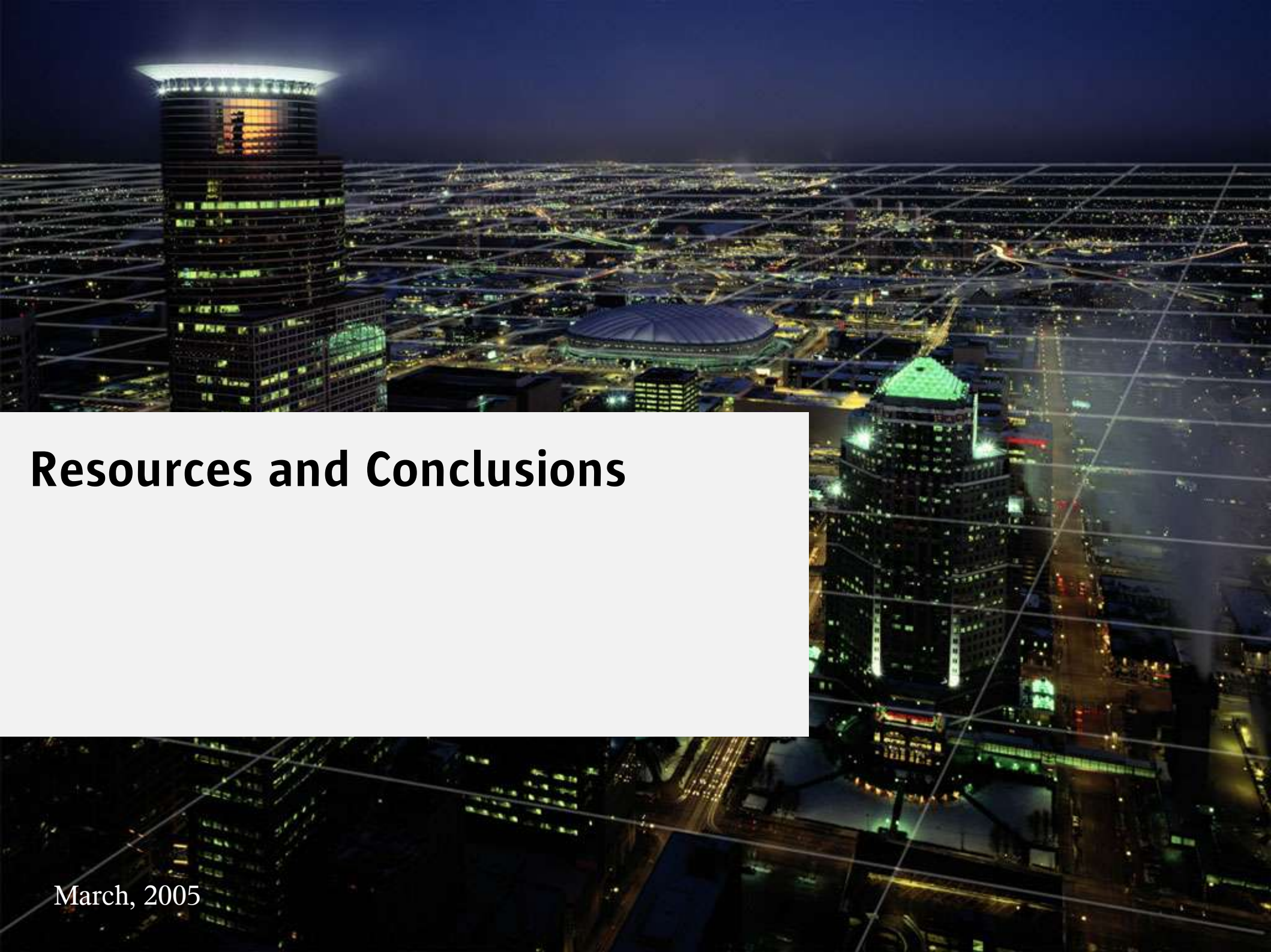
- JSR 105: XML Digital Signature
- JSR 199: Java Compiler API
- JSR 202: Java Class File Specification Update
- JSR 221: JDBC 4.0
- JSR 222: JAXB 2.0
- JSR 223: Scripting for the Java Platform
- JSR 224: JAX-RPC 2.0
- JSR 260: Javadoc Tag Update
- JSR 268: Java Smart Card I/O API
- JSR 269: Pluggable Annotation Processing API
- JSR TBD: JAXP.next

Please note:
JSRs may be added or removed.

Open development w/Java

- "Visible Development" Project: J2SE initiative for open development
  - Improve collaboration with developer community
    - Publish weekly Mustang build sources and binaries
    - Encourage contribution of bug fixes & enhancements
    - Simplify build process so anyone can participate
  - Provide visibility into Sun engineering processes
- Encourage R&D using Java source code

https://jdk.dev.java.net



Resources and Conclusions

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Java.net topical poll

java.net The Source for Java™ Technology Collaboration

User: Password: Login

Register | Login help

My pages | Projects | Communities | java.net

Get Involved

- java-net Project
- Request a Project
- Project Help Wanted Ads
- Publicize your Project
- Submit Content

Get Informed

- About java.net
- Articles
- Weblogs
- News

POLL RESULTS

Do you use Open Source software at work?

Yes	93.5% (533 Votes)
No, not allowed	1.5% (9 Votes)
No, don't want to	1.9% (11 Votes)
Yes, but not allowed	2.9% (17 Votes)

Resources

- Netbeans
  - http://www.netbeans.org
- java.net
  - http://java.net
  - http://j2se.dev.java.net
  - http://lg3d-core.dev.java.net
- Open Solaris
  - http://opensolaris.org
- Open Office
  - http://openoffice.org

Call for Action!

- Develop on Java and Open * computing
- Use a platform that is robust and evolving
- Participate in java.net and open source

java.net
http://java.net

rags@sun.com

Sun microsystems

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