

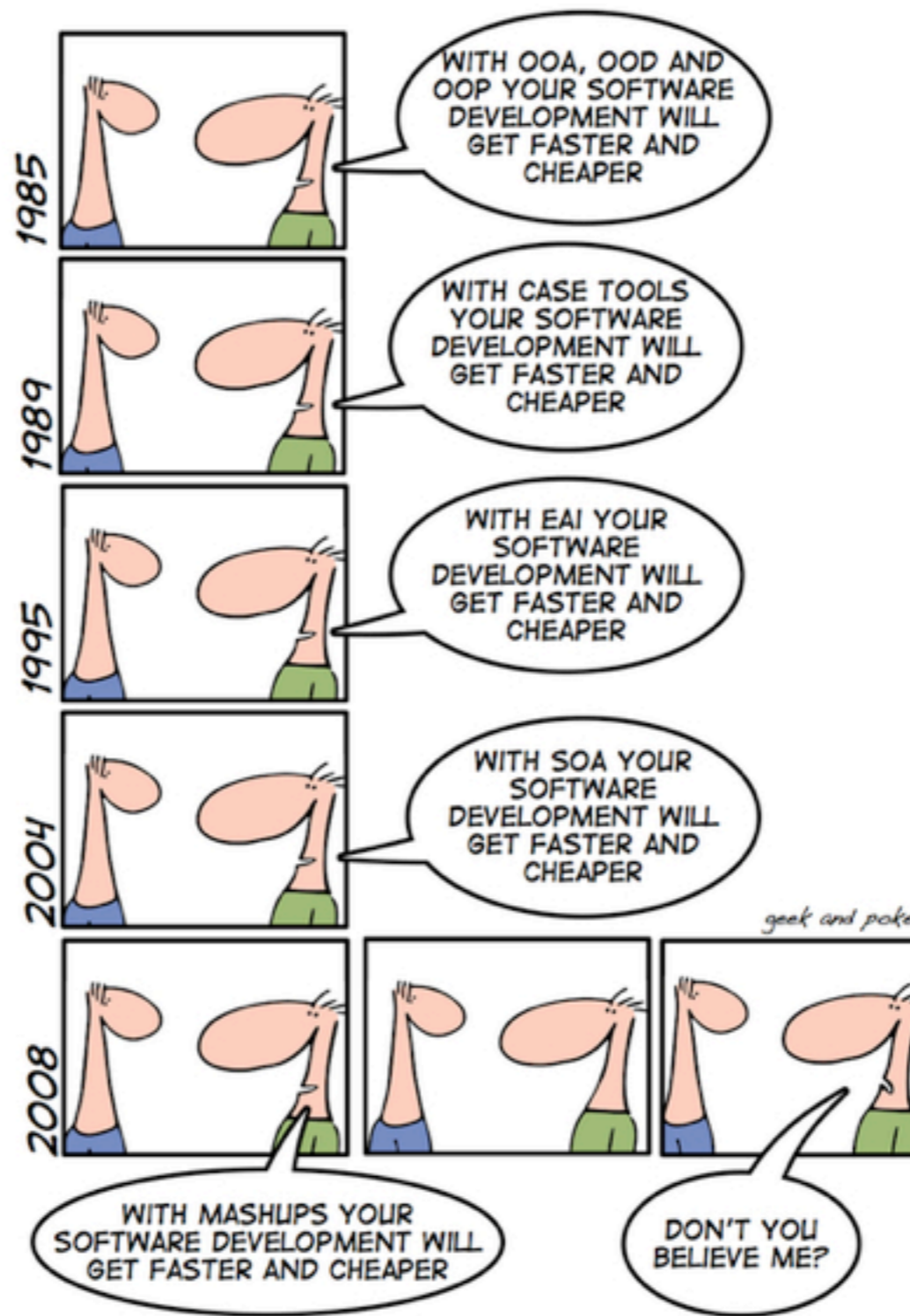
Web Technology Trends

Prodosh Banerjee, Managing Partner, Anolim

<http://anolim.com>

web applications, services & solutions for:
collaboration, marketing / communications,
social media, knowledge sharing, e-commerce





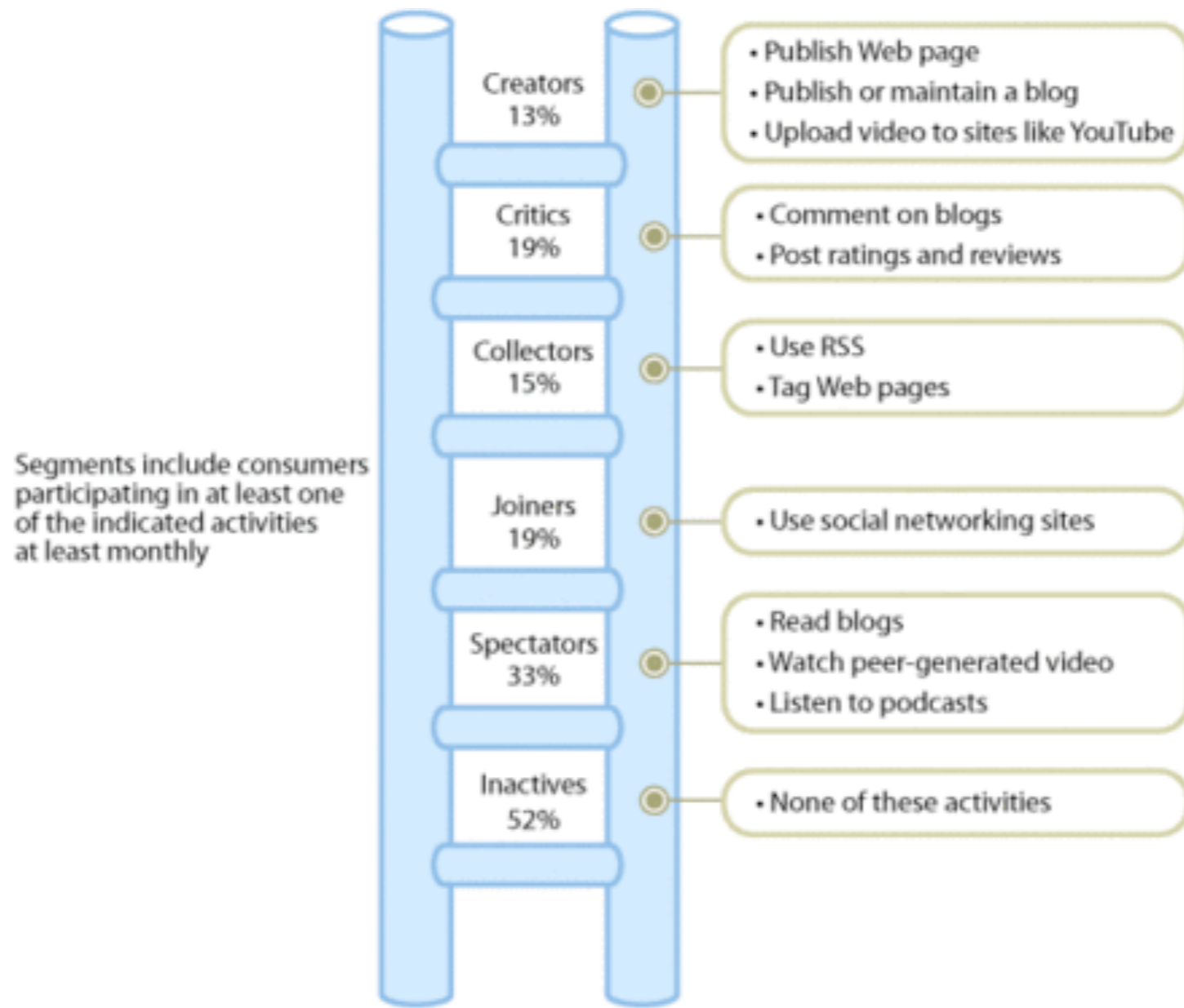
What Trend?

Technology Map Internet of Services



(c) 2008 Lars Kirchoff

Context



Base: US adult online consumers

Source: Forrester's NACTAS Q4 2006 Devices & Access Online Survey

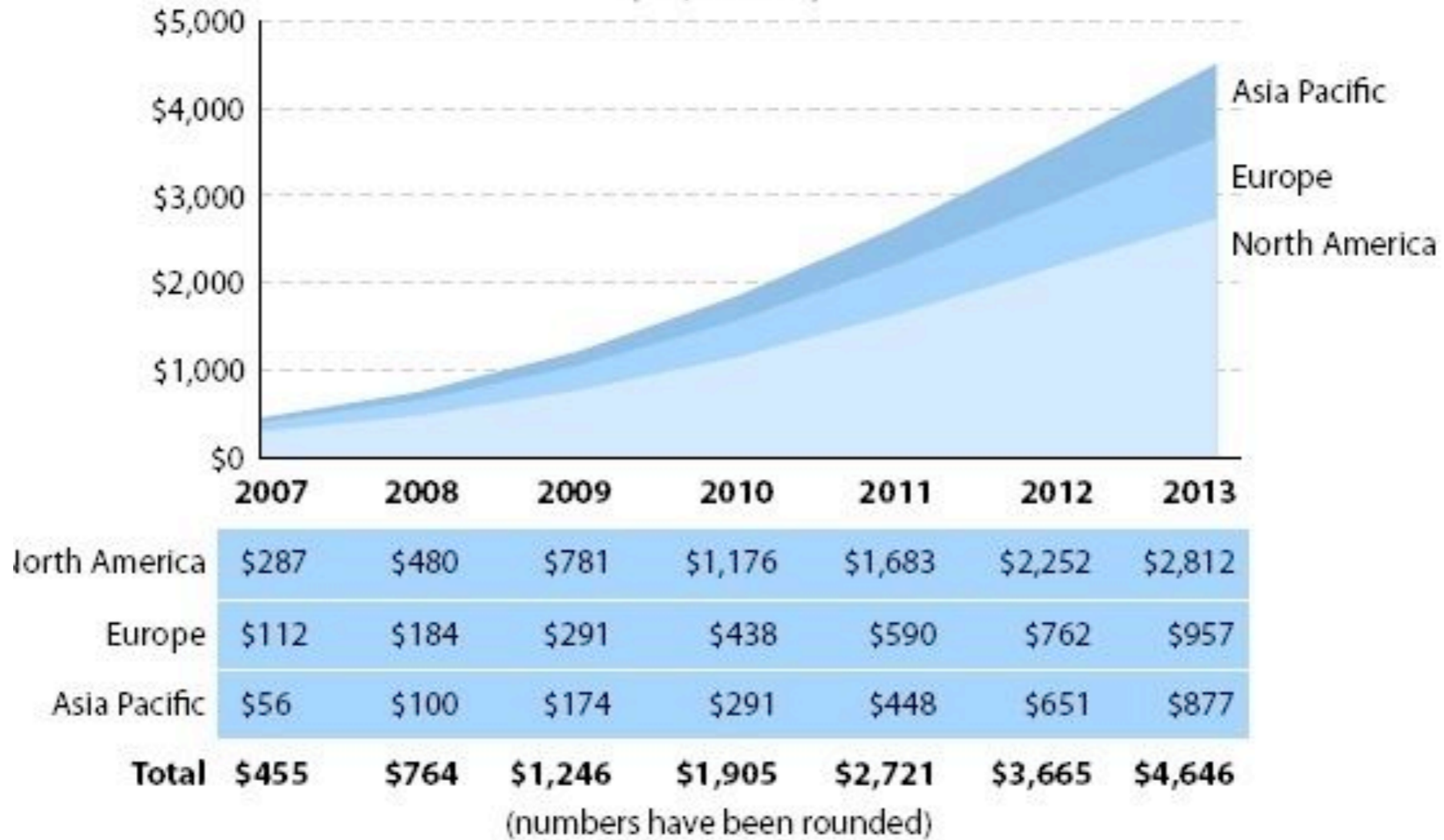
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Source: Forrester Research, Inc.

Context

Global enterprise Web 2.0 spend by geography, 2007 to 2013

Total annual sales
(US\$ millions)



Source: Forrester Research, Inc.

Why Trends?

- ❑ Semantic Web (Web 3.0)
- ❑ Web Application Development
- ❑ Web / Cloud Platforms

Web Technology Trends

Find inter related data more easily

Online analysis

More automation:
allow the computers to do more

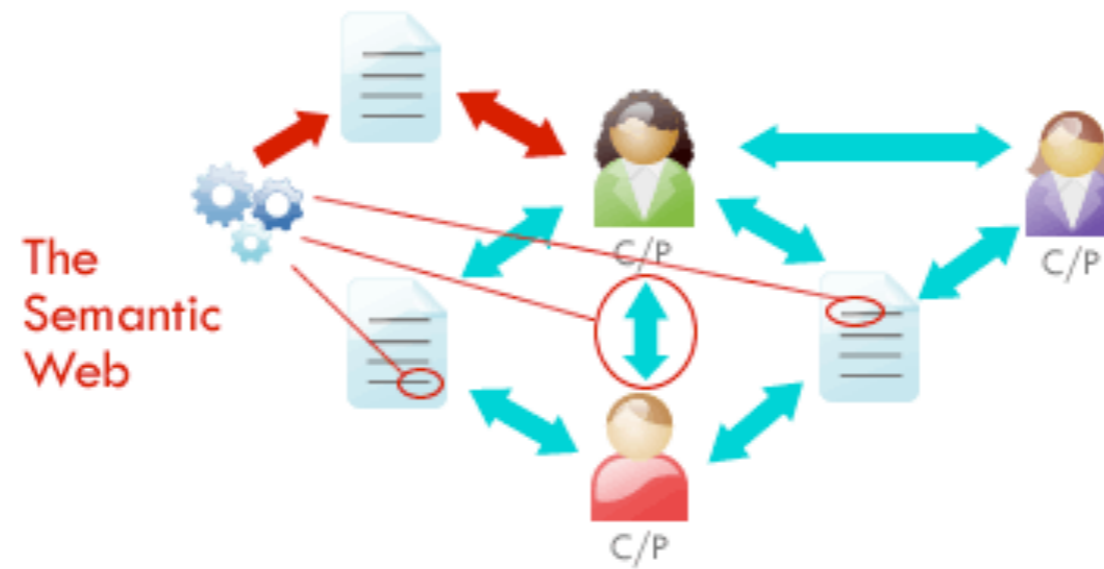
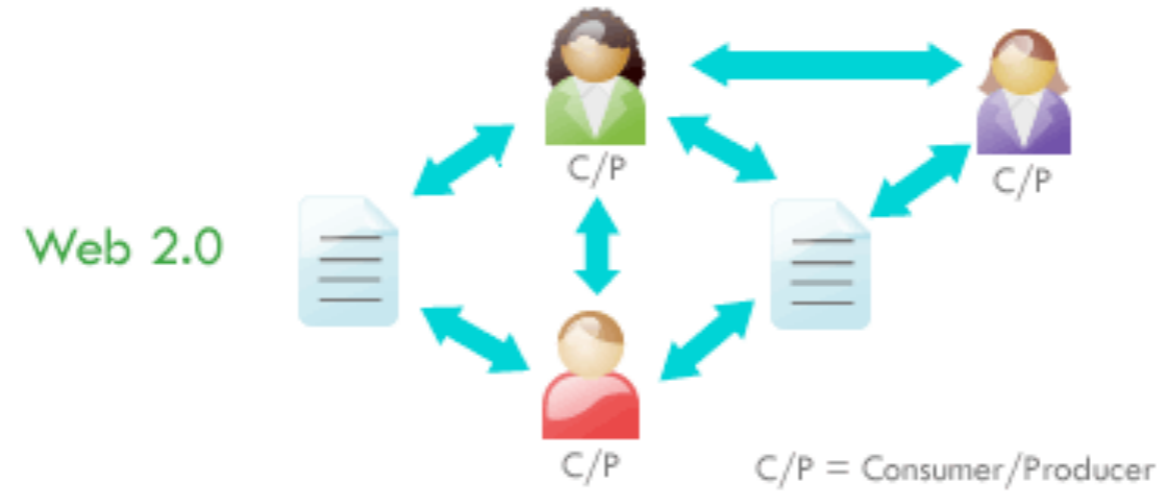
Semantic Web: Why?

Question related to Alzheimers:
What proteins are involved in signal transduction
and are related to pyramidal neurons

Search Engine: 223'000 hits, 0 results

Linked healthcare data: 32 hits, 32 results

Why Semantic Web: Example



Semantic Web

From a web of documents ... to a web of things

“Things” can be: people, places, videos, events ...

RDFa: meta data markup for linking “things”
uses attributes from XHTML's meta and link
elements

Representation:

Triple: Subject, Predicate, Object

Semantic Web - what it is: markup

```

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN"
  "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:dc="http://purl.org/dc/elements/1.1/" xml:lang="en">
<head>
  <title>John's Home Page</title>
  <base href="http://example.org/john-d/" />
  <meta property="dc:creator" content="Jonathan Doe" />
</head>
<body>
  <h1>John's Home Page</h1>
  <p>My name is <span property="foaf:nick">John D</span> and I like
    <a href="http://www.neubauten.org/" rel="foaf:interest"
      xml:lang="de">Einstürzende Neubauten</a>.
  </p>
  <p>
    My <span rel="foaf:interest" resource="urn:ISBN:0752820907">favorite
    book</span> is the inspiring <span about="urn:ISBN:0752820907"><cite
    property="dc:title">Weaving the Web</cite> by
    <span property="dc:creator">Tim Berners-Lee</span></span>
  </p>

```

XHTML and RDFa Example

Source: http://en.wikipedia.org/wiki/RDFa#XHTML.2BRDFa_1.0_example

11



Query the web of related things
like a database with:

SPARQL:

The query language of the semantic Web

Semantic Web - what it is: query language

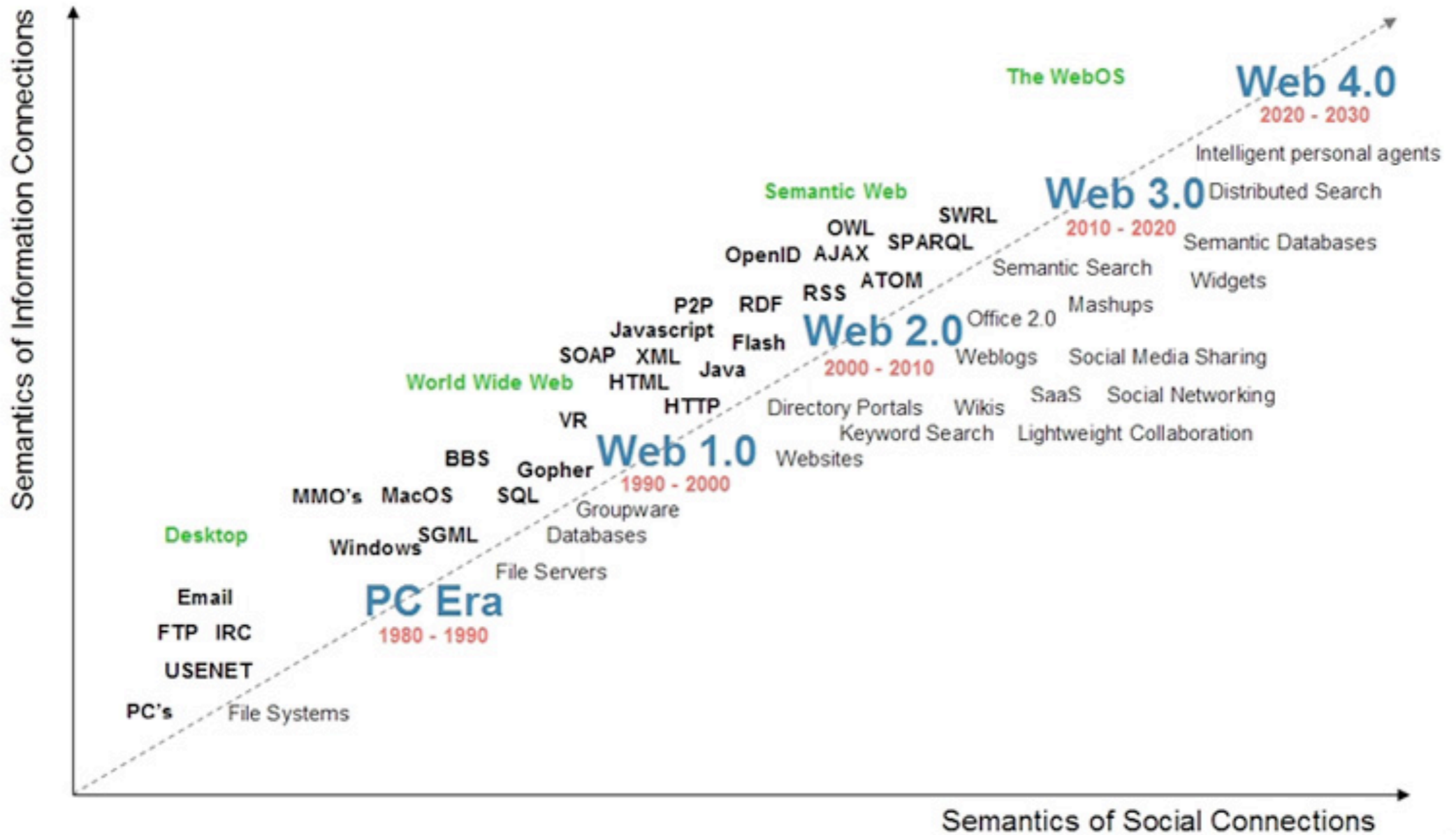
The following simple SPARQL query returns all country capitals in Africa:

```
PREFIX abc: <http://example.com/exampleOntology#>
SELECT ?capital ?country
WHERE {
  ?x abc:cityname ?capital ;
    abc:isCapitalOf ?y .
  ?y abc:countryname ?country ;
    abc:isInContinent abc:Africa .
}
```

Variables are indicated by a "?" or "\$" prefix. Bindings for ?capital and the ?country will be returned. The SPARQL query processor will search for sets of triples that match these four triple patterns, binding the variables in the query to the corresponding parts of each triple.

In this query, the prefix "abc" stands for "<http://example.com/exampleOntology#>".

SPARQL Example



Web Technology Trends



Semantic Web (Web 3.0)



Web Application Development



Web / Cloud Platforms

Web Technology Trends

Web Content Frameworks

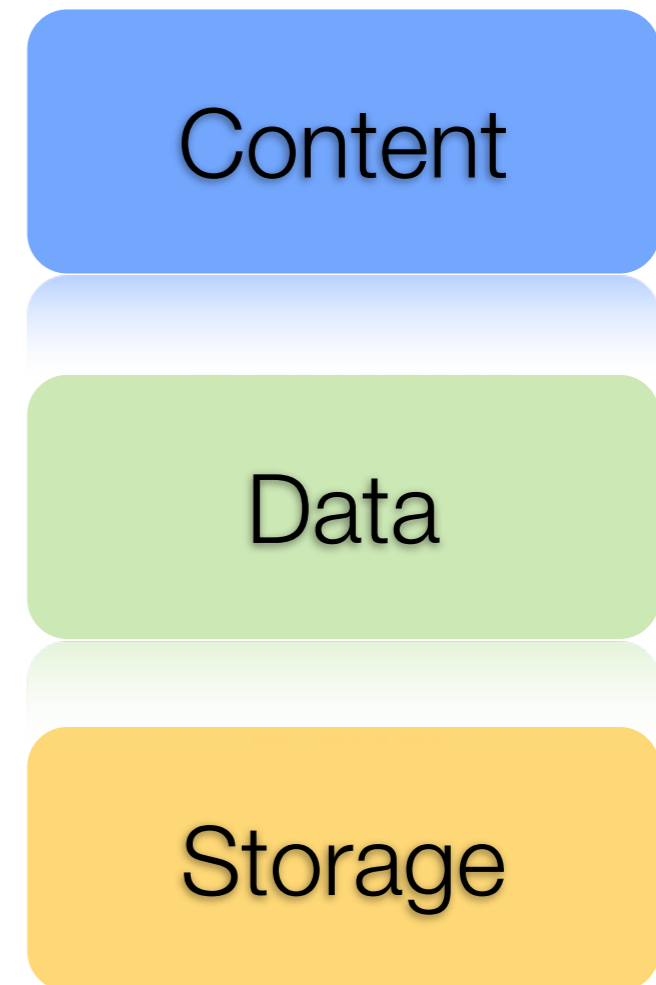
Web Programming Language

Web Application Development

(Semantic) web of linked
content

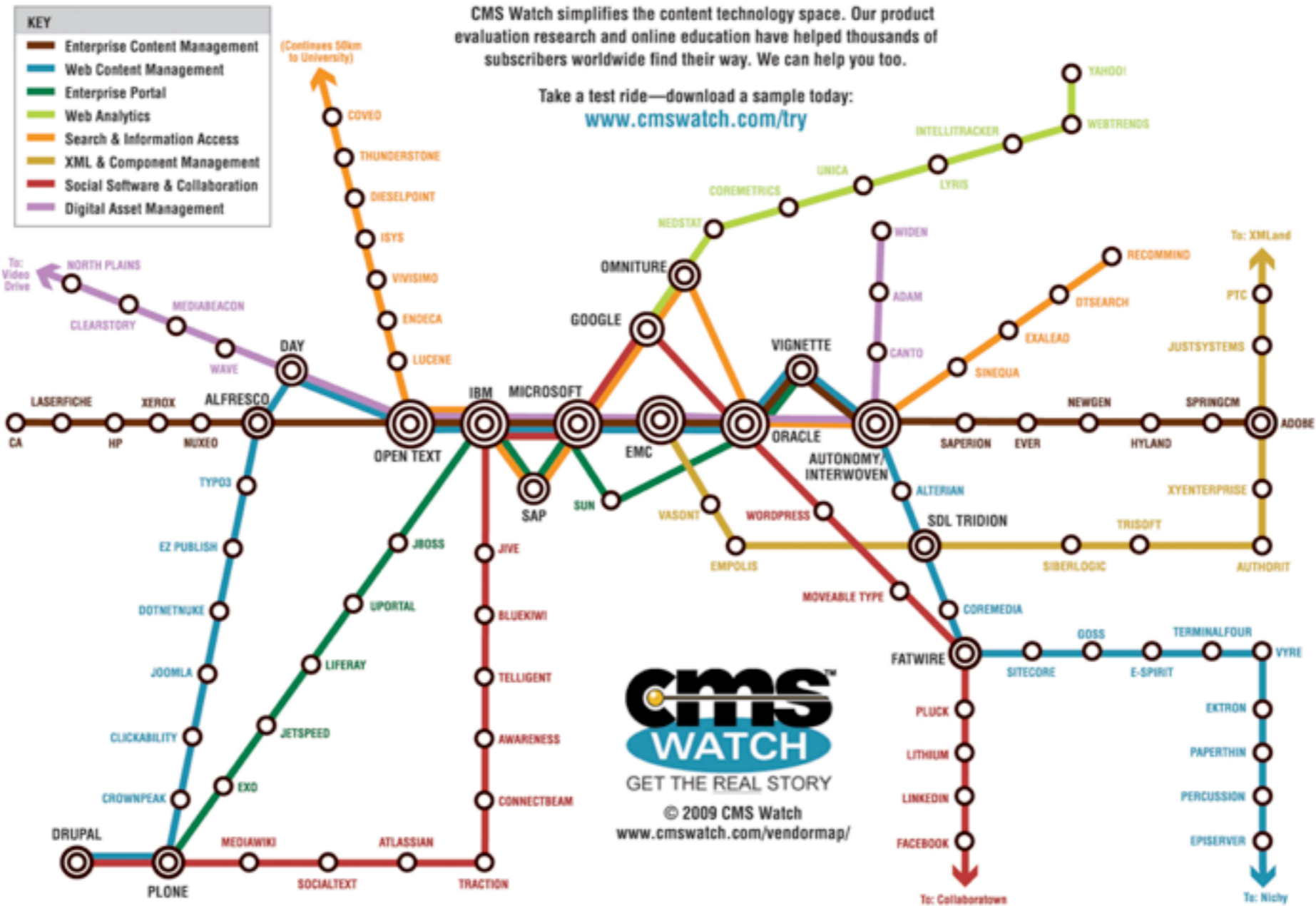
Web Content Frameworks

Why reinvent the wheel?
Use content technology



Web Content Frameworks

2009 Content Technology Vendor Map



Web Content Frameworks

Drupal: Modular, open source, > 2000 plug-in modules, standards compliant, interfaces to many web services

Dynamic Content Types and Queries, Taxonomies, Tagging, Collaboration, Communities, Photo, Video, Music, Web Interfaces, Blogs, Forums, Programmable Layouts

Very large, active community

Users: MTV, Sony-BMG, US Govt, NY Observer, Amazeer, Edipresse, DRS, Now Public, Team Sugar, Harvard, Popular Science, NASA

Web Content Frameworks: Drupal

Alfresco: Enterprise Content Management, Open Source

Document and Content Management, Workflows,
Collaboration, Interoperability Services, Records
Management, Image Management

Strong backers: SAP Ventures & other Investors

Users: CH Bundesgericht, Kt. Waadt, American Stock
Exchange, Harvard, McGraw Hill, Swisscom Mobile
Labs, Electronic Arts, Shimano, Lausanne City

Enterprise Content Management: Alfresco

Easy to manipulate web interfaces

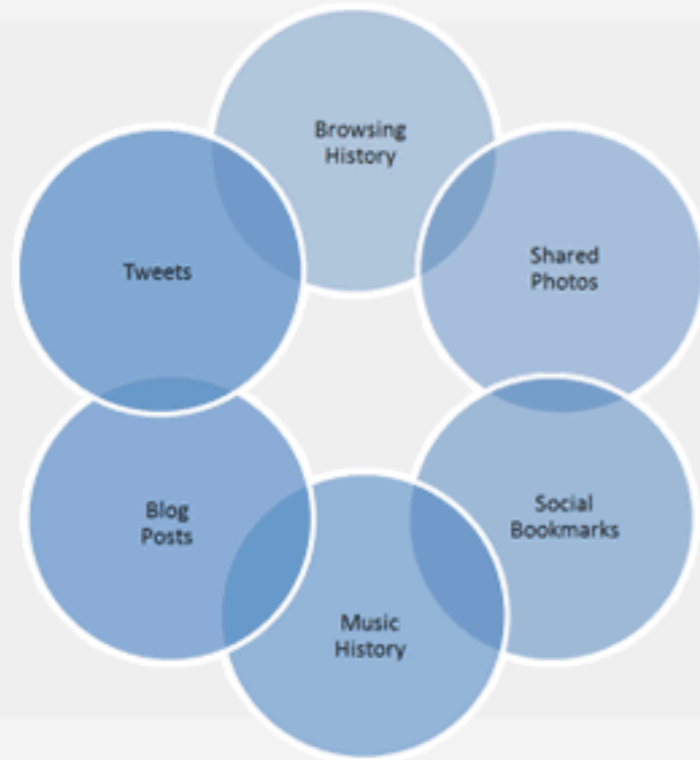
Easy to do Web GUIs

Parallel processing:
Functional Programming
Map - Reduce algorithm

Web Programming Languages: Requirements

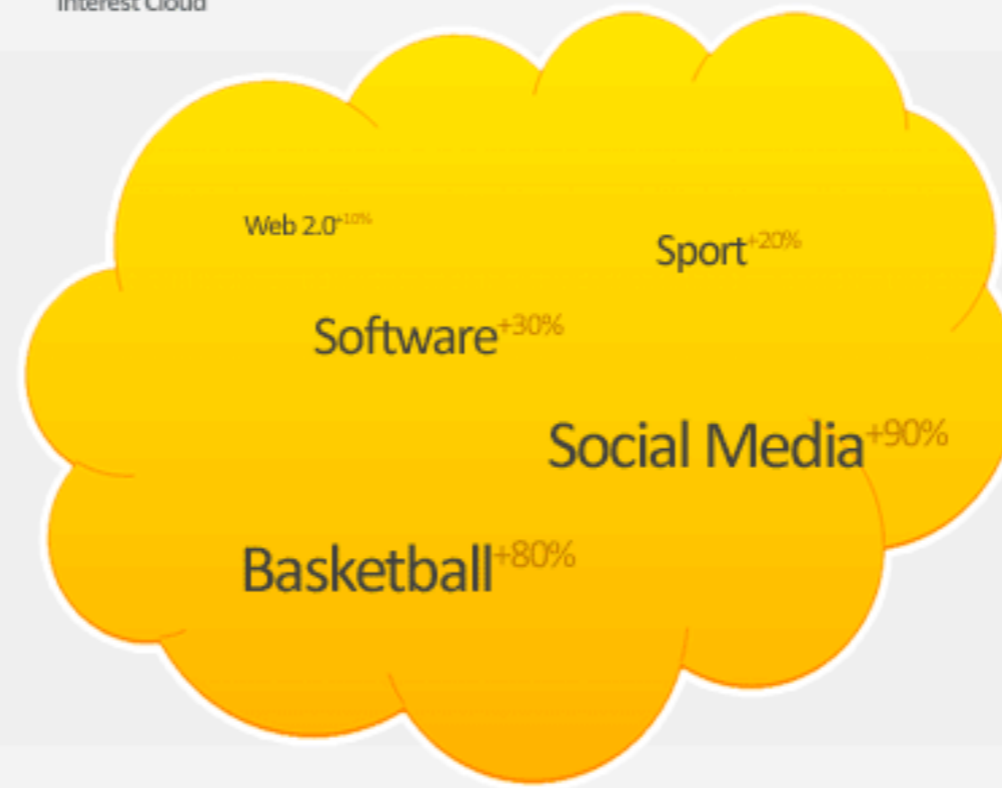
Turn This

Attention Data



Into This

Interest Cloud



Then This

XML Attention Profile - APM



```
<APM xmlns="http://www.apml.org/apml-1.0"
  version="1.0" >
  <read>
    <title>Example APM file for apml.org</title>
    <Generator>Written by nando</Generator>
    <creatormailto:example@apml.org</creatormailto>
    <dateCreated>2007-03-11T11:55:00</dateCreated>
  </read>
  <body defaultProfile="next">
```

Web Programming Language: Use Case

Trendy:

Ruby on Rails: DRY, CoC, OO, FP

Python: OO, FP, reflective, clear syntax

Established:

Java, PHP (\geq v5): OO, reflective

C++, Eiffel: OO

Trendy Web Programming Languages

Python: Google, YouTube, NASA, New York
Stock Exchange

Ruby on Rails: Hulu, Twitter, Basecamp

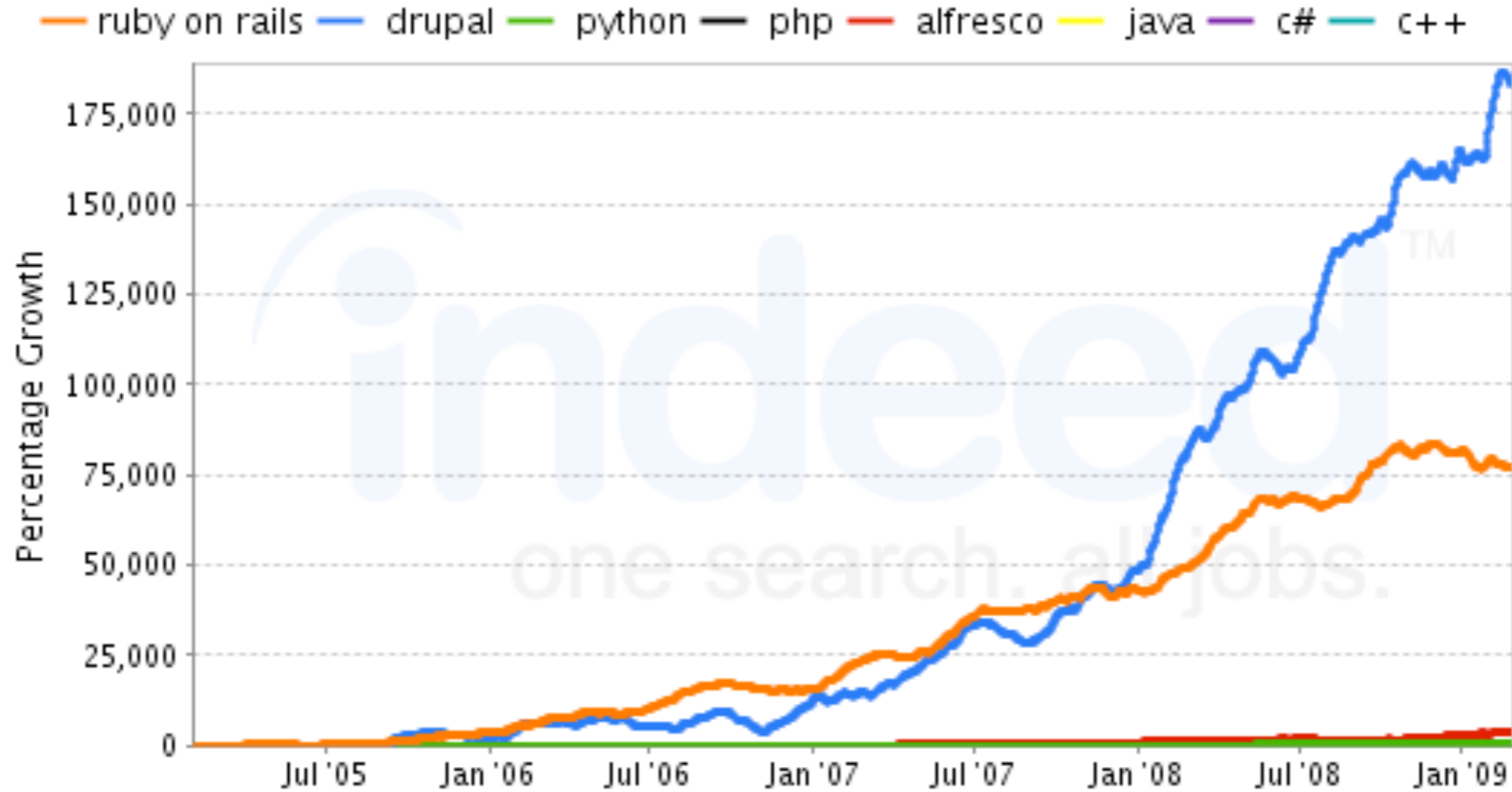
PHP (LAMP): Yahoo, Facebook, Wikipedia,
Lufthansa (GUI), used by 35% of web sites

Java: Amazon, Ebay, Gmail

C++: Google / .Net: MySpace

Web Programming Languages

Job Trends from Indeed.com



Web Programming Language Trends

- Semantic Web (Web 3.0)
- Web Application Development
- Web Content Frameworks
- Web Programming Languages
- Web / Cloud Platforms

Web Technology Trends

Platform as a service:

You can run your Windows/.Net or LAMP (Linux, Apache, MySQL, PHP), Ruby, Python or other stack on the computing resources provided as a service

Amazon AWS: EC2, EBS, S3

Web / Cloud Platforms

	Linux	Windows	Apache	IIS	Lighttpd	PHP	ASP.NET	Perl	Python	Java	MySQL	SQL Server	Memcached
Flickr	x		x			x		x		x	x		x
YouTube	x		x		x				x		x		
PlentyOfFish		x		x			x					?	
Digg	x		x			x					x		x
TypePad	x		x					x			x		x
LiveJournal	x		x					x			x		x
Friendster	x		x			x		x			x		
MySpace		x		x			x					x	
Wikipedia	x		x		x	x					x		x

OS: Linux 7, Windows 2

Web server: Apache 7, IIS 2, Lighttpd 2

Scripting: PHP 4, Perl 4, ASP.NET 2, Python 1, Java 1

Database: MySQL 7, SQL Server 1 (possibly 2)

Source: Pingdom: (<http://royal.pingdom.com/2007/08/22/what-nine-of-the-world%E2%80%99s-largest-websites-are-running-on/>)

Large Web Sites: Platform Trends

Linux, Apache, MySQL, Programming Language

Large PHP, Python Sites: Yahoo, Google

Ruby: Hulu, Twitter, Basecamp, Scribd

Large .Net Sites: Myspace.com, Live.com

Large Java Sites: eBay, Amazon, Gmail

Large Web Sites: Platform Trends



Service as a platform:

Google App Engine: Python only

Microsoft Azure (end-2009): Windows, .NET, Live Mesh, MSSQL, Sharepoint, PHP

Amazon Elastic MapReduce (Hadoop)

Web / Cloud Platforms

-  Semantic Web (Web 3.0)
-  Web Application Development
-  Web / Cloud Platforms

Presentation online URL: <http://anolim.com/blog/web-technology-trends>

Web Technology Trends

Why are so many big web sites running LAMP,
Python, Ruby on Rails and not Java?

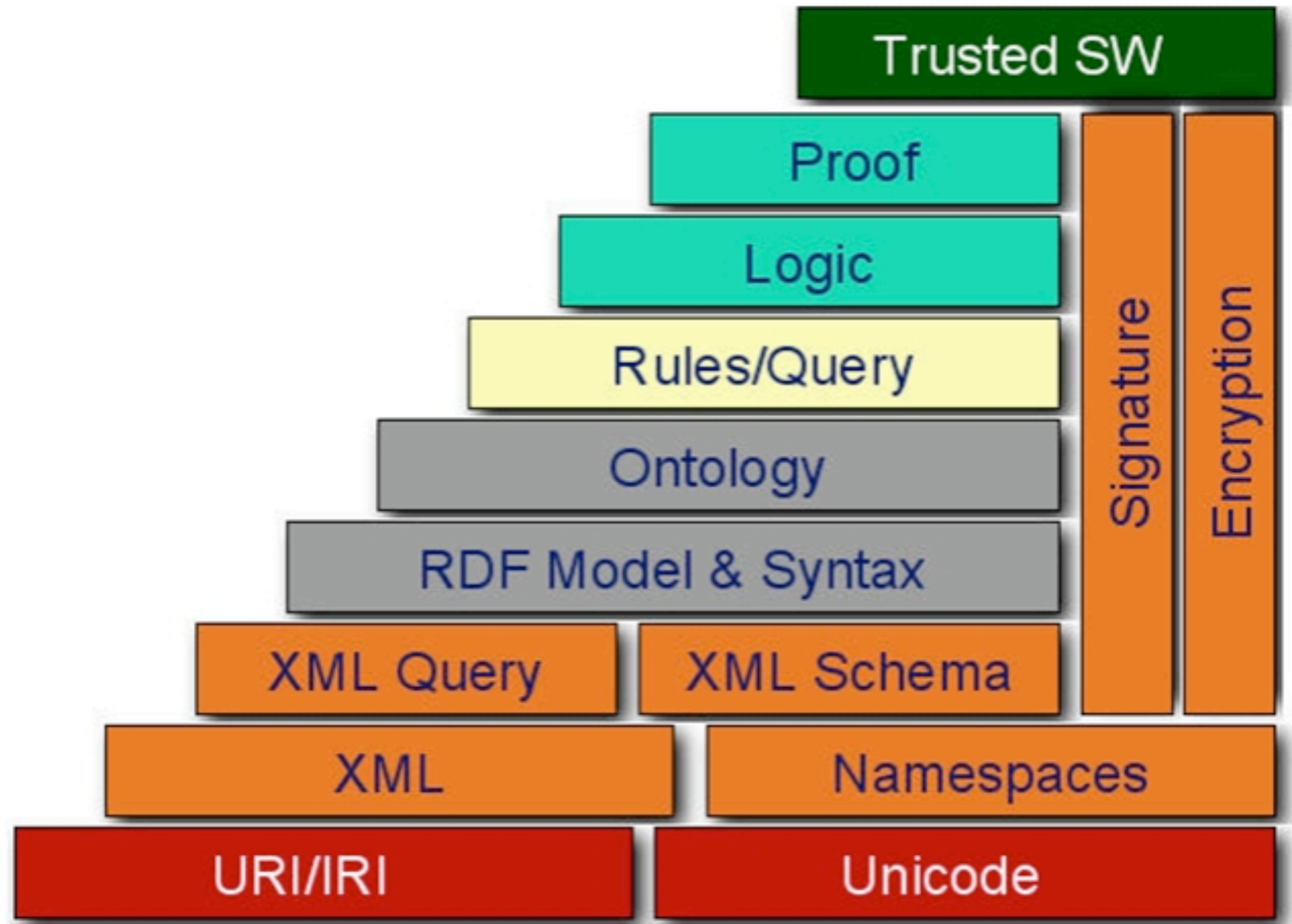
Why is Java preferred in the Enterprise?

Public Web vs. Enterprise differences

Why is the semantic web important?

What are your thoughts?

Q&A, Discussion



Semantic Web Stack