

9. SERVICES, APPS AND THE API POWERED WEB

Based on slides of Steven Willmott (3scale networks)



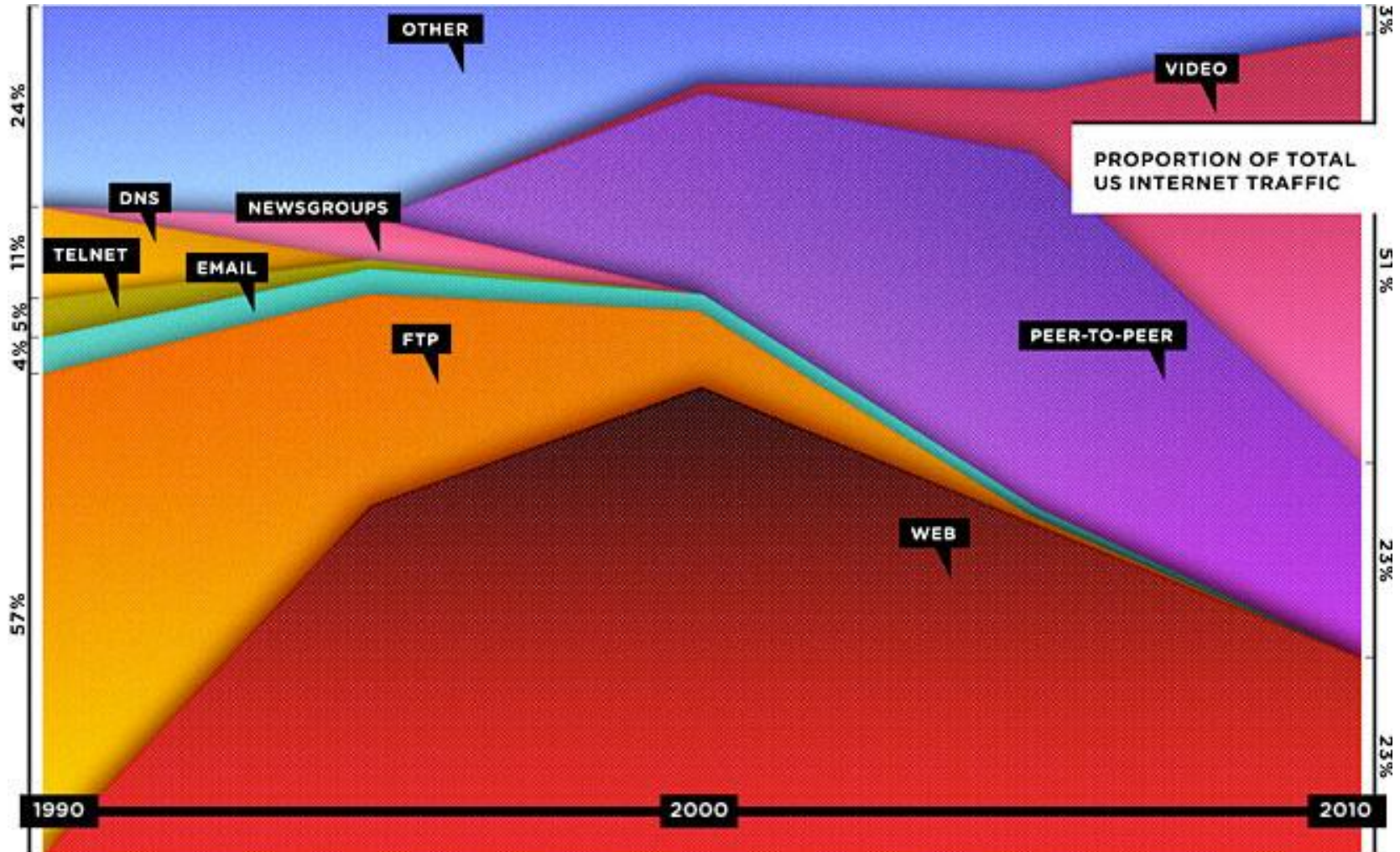
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The Web is Dead, Long Live the Internet

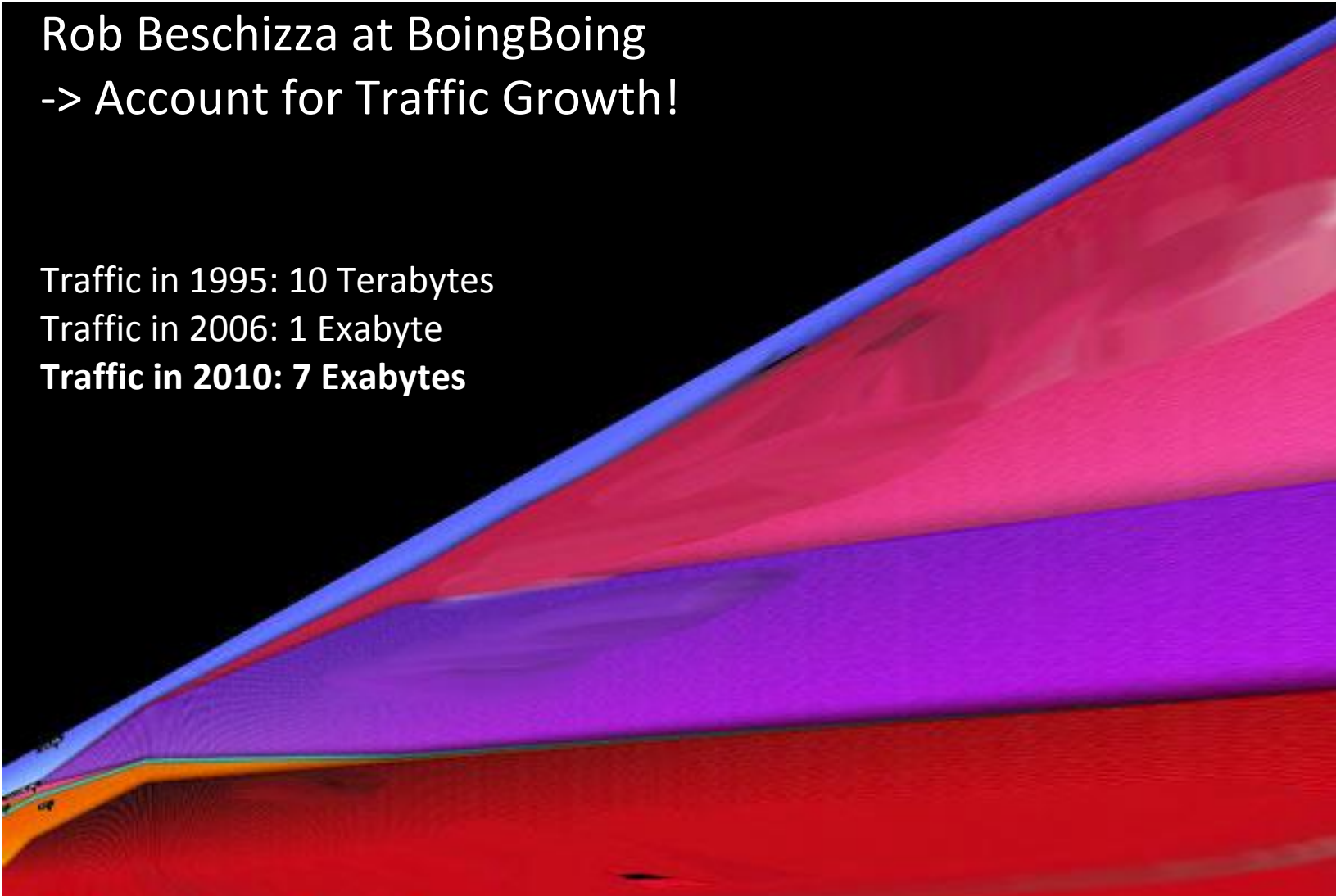


Wired Magazine / Aug / 2010

The Web is Dead, Long Live the Internet

Rob Beschizza at BoingBoing
-> Account for Traffic Growth!

Traffic in 1995: 10 Terabytes
Traffic in 2006: 1 Exabyte
Traffic in 2010: 7 Exabytes



The Web is Dead, Long Live the Internet

● But right or wrong:

- The shift really about traffic or Megabytes

● It's structural:

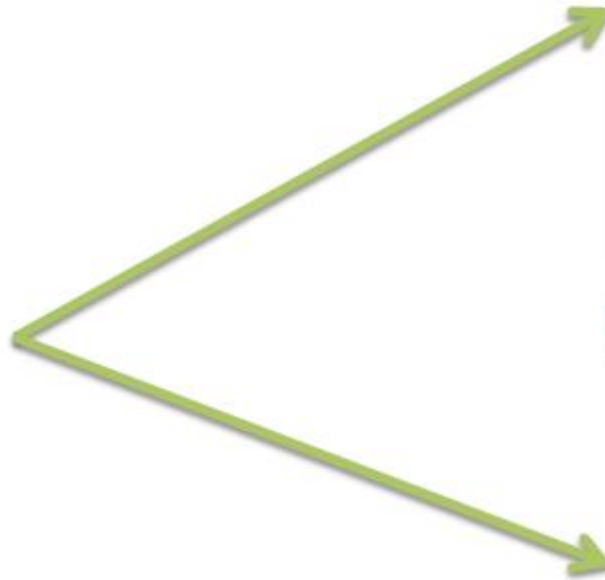
- Where is the data?
- How does it get to people?
- How do people experience it?

● This applies to e-Commerce as well as Content

Web Page -> App+API

The Web

Web Servers



Servers host and deliver content / services to browsers to view / manipulate

Web Page -> App+API

● Apps

Web Servers



iPhones



iPads



Android Devices



Desktop Widgets

Servers host and deliver content / services to many platforms



Tv's, Fridges, Microwaves...

Internet in 2015 (estimated in 2010)

World
Population **7.3B**

3B

Internet
Population

23%

Computer Sales (USA) are
Tablets

Internet
Connected
Devices

15B

800M

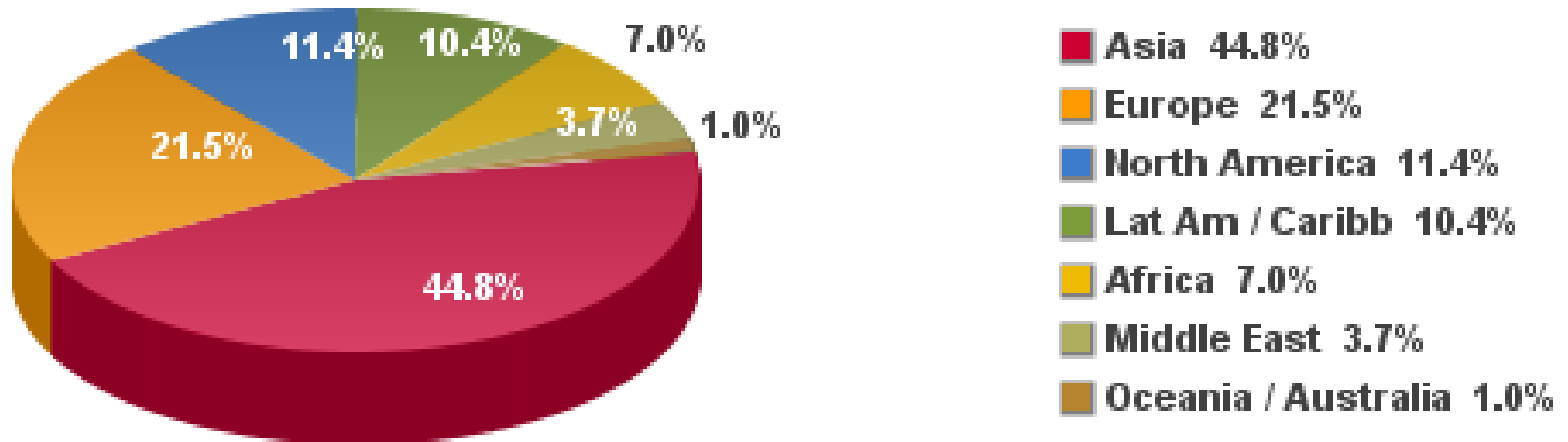
Smartphones

facebook

2 Billion
Users?

Internet in 2015 (estimated in 2010)

Internet Users in the World Distribution by World Regions - 2012 Q2

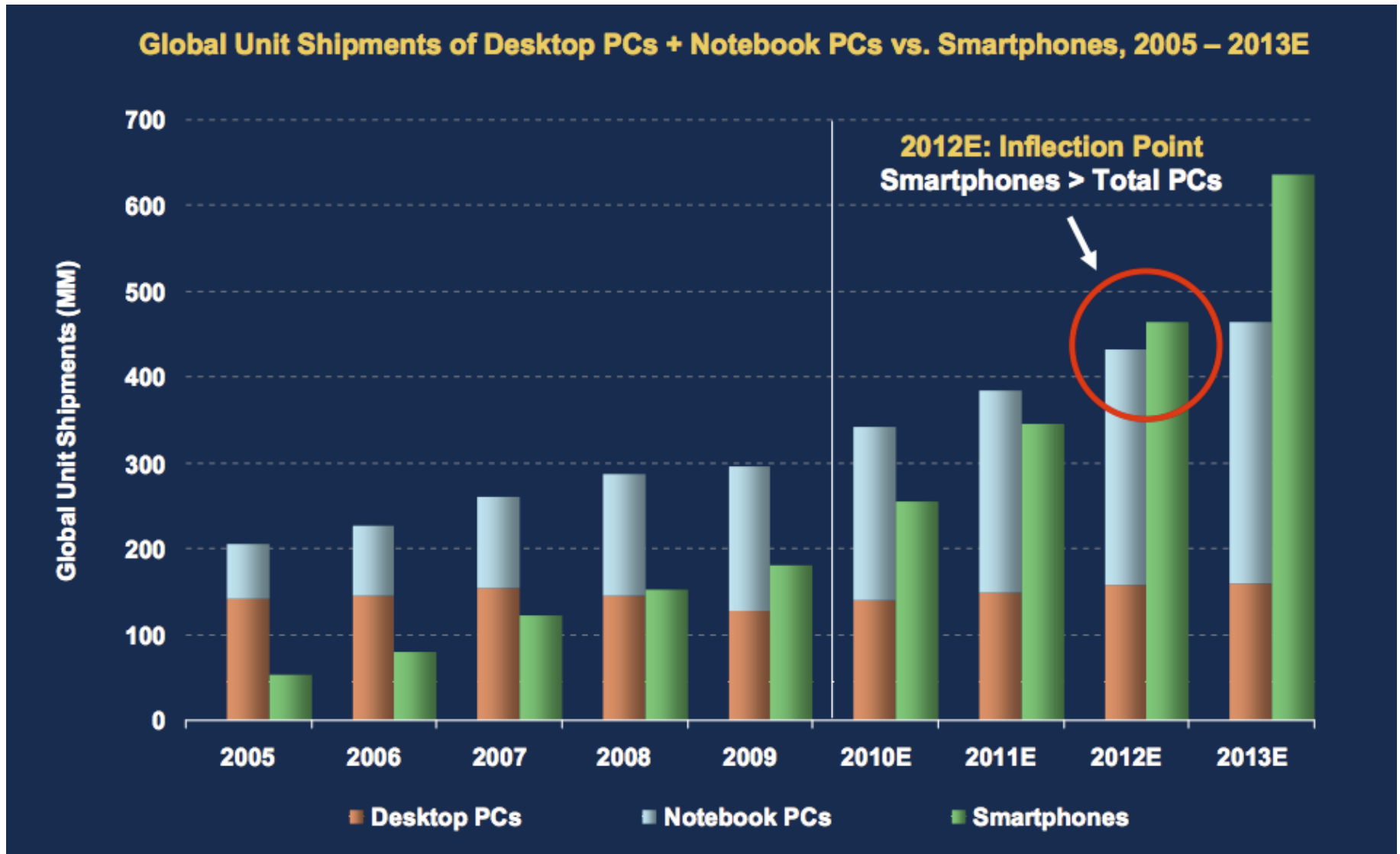


Source: Internet World Stats - www.internetworldstats.com/stats.htm

Basis: 2,405,518,376 Internet users on June 30, 2012

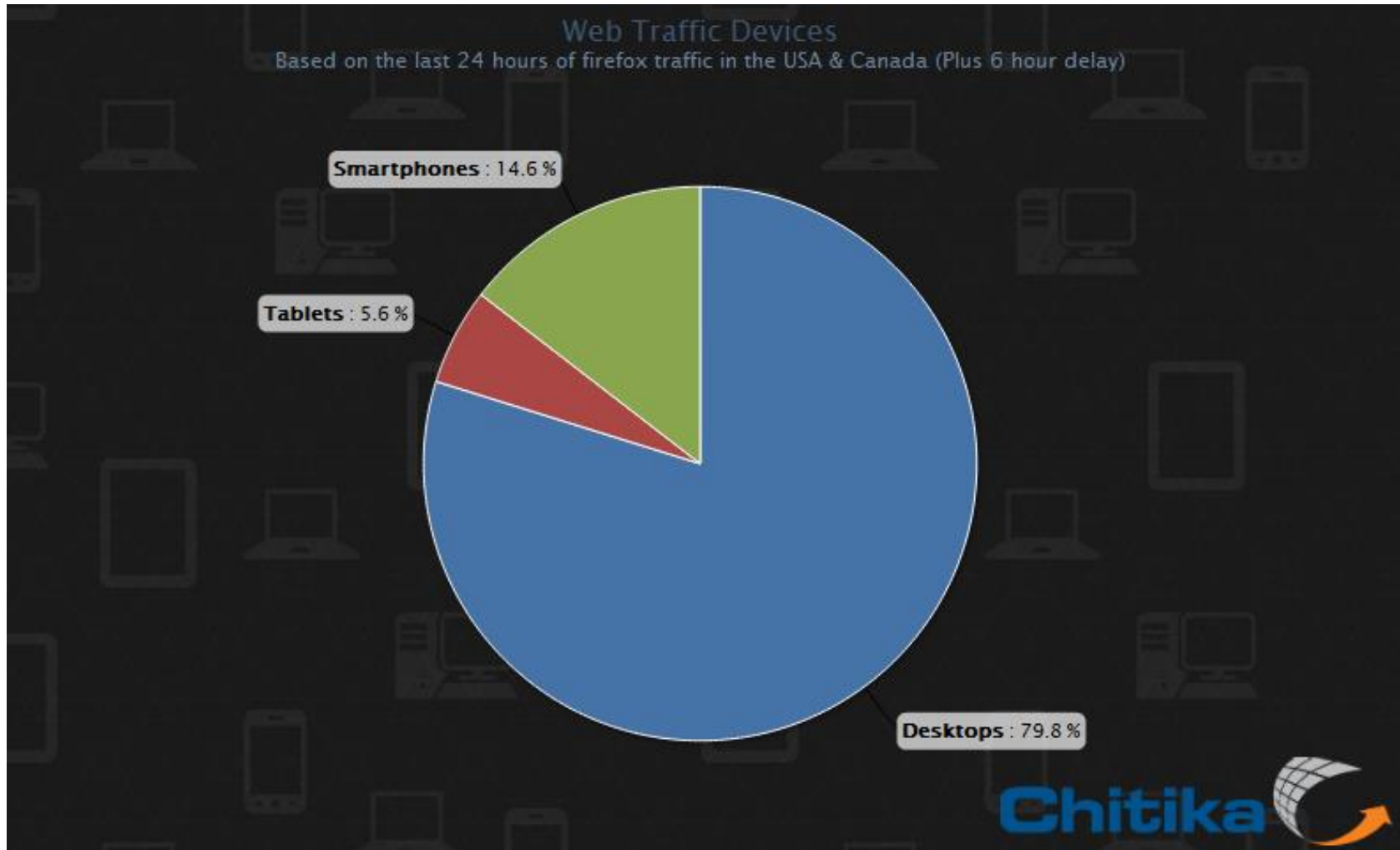
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Internet in 2015 (estimated in 2010)



Mary Meeker / Web 2.0 Summit / Nov 2010 / San Francisco

Internet in 2015 (estimated in 2010)



All Things D / May / 2012

Implications

Full Page Web Browsing



App Specific Interfaces



Business Model Change



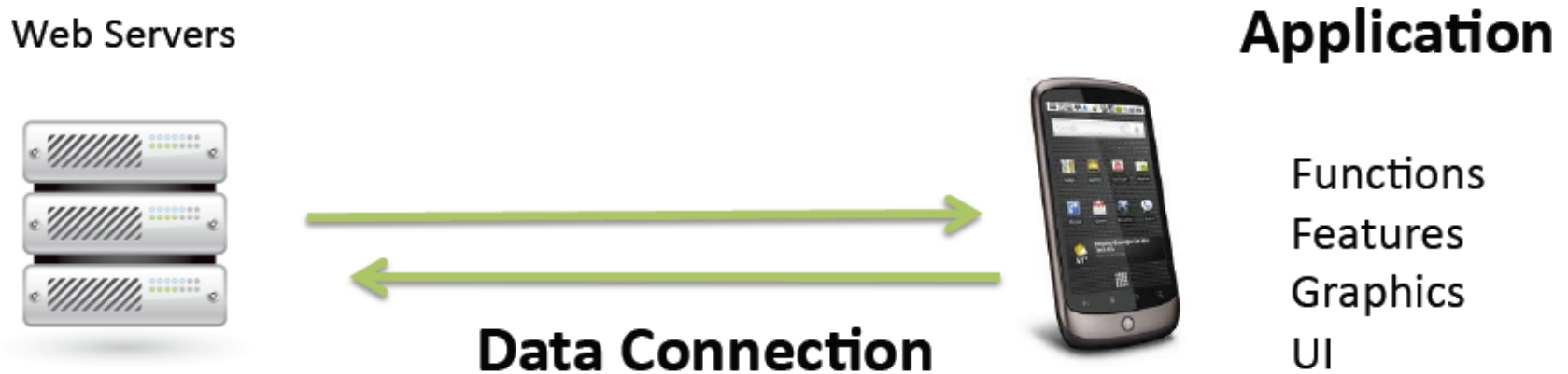
Questions

- What is eBay?
- What is Amazon?

A: They're not "Web sites" or "Web Portals" – eBay is an auction engine, Amazon is a commerce platform.

APPS & APIS

- What's really going on with Mobile Applications?



- Application often calls "some backend somewhere"
- -> Calling an API !

APPS & APIS

● Which means ...

Web Servers



Data Connection



Raw Data / Service for your Application



Can be used by
Many different
Applications

APPS & APIS

● RESTfull Web Services

- Resources
- Resources Identifiers (URIs)
- Representations
- Operators
- Response Codes

70-80% of
Web APIs
Are simple
REST-like

APPS & APIS

● Evolution of Web Technology

1. Server sends Data, Structure & Styling to the Browser

e.g. `<i>Heading 1</i></h>`

2. Server sends Data, Structure (HTML) +Styling (CSS) to the Browser

HTML: `<h1>Heading 1</h1>` CSS: `h1 { }`

APPS & APIS

● Evolution of Web Technology

1. Server separates Data and structure on the server before sending in big chunks

XSLT Transformation for device specific Content

2. Start sending small chunks (AJAX)

e.g. Gmail fetches email in the background –
no full page refresh

APPS & APIS

- Evolution of Web Technology
- The Web is becoming Programmable
- Anybody can open up their data / service for reuse
- Apps Everywhere!



API Economy

● The “Dark Traffic” of the Web



5 Billion API Calls / Day (April 2010)



5 Billion API Calls / Day (October 2009)



3 Billion API Calls / Day, 75% of all traffic (April 2010)



8 Billion API Calls / Month (Q3 2009)



3 Billion API Calls / Month (March 2009)

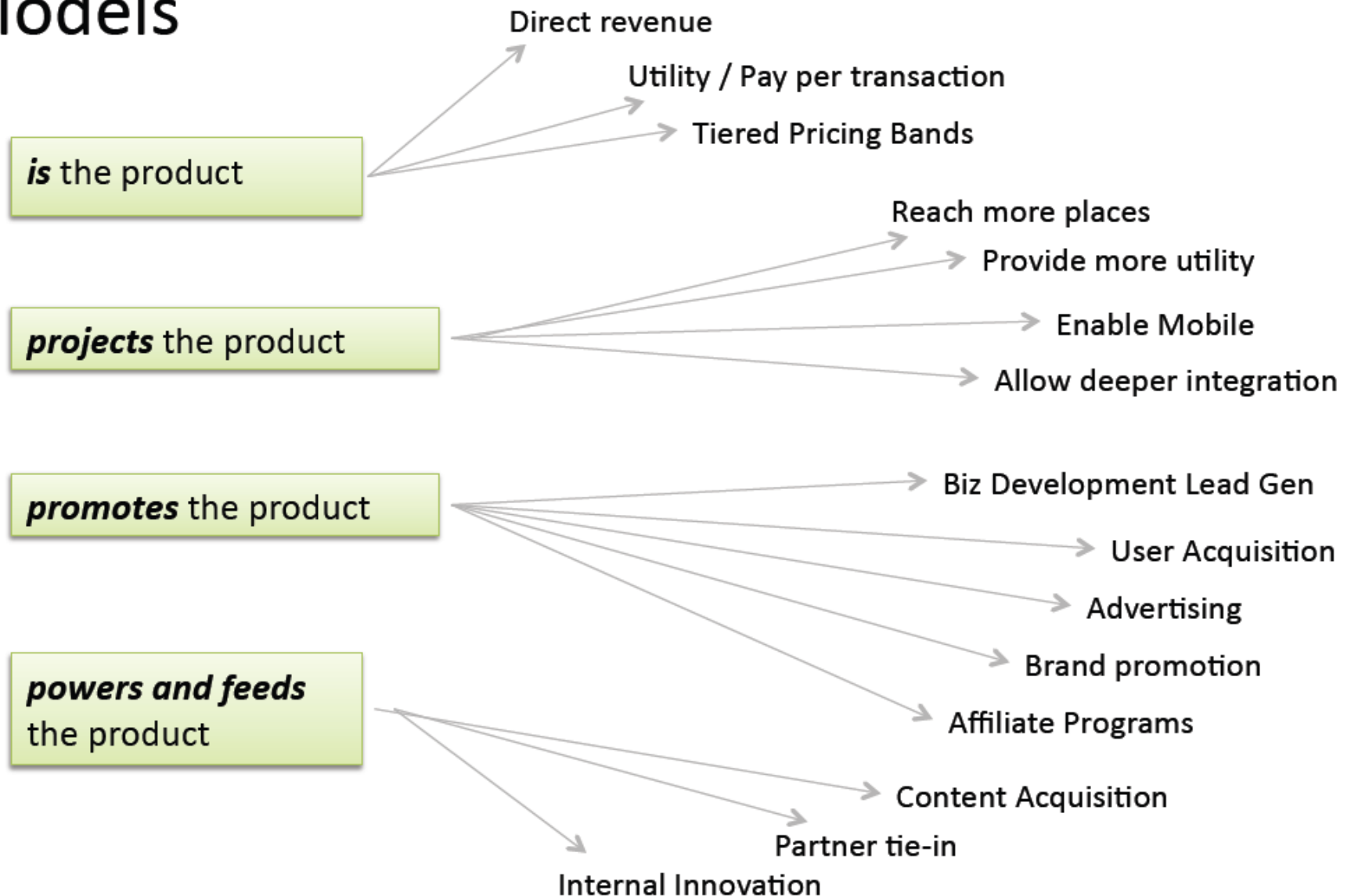


Over 50% of all traffic via API (March 2008)



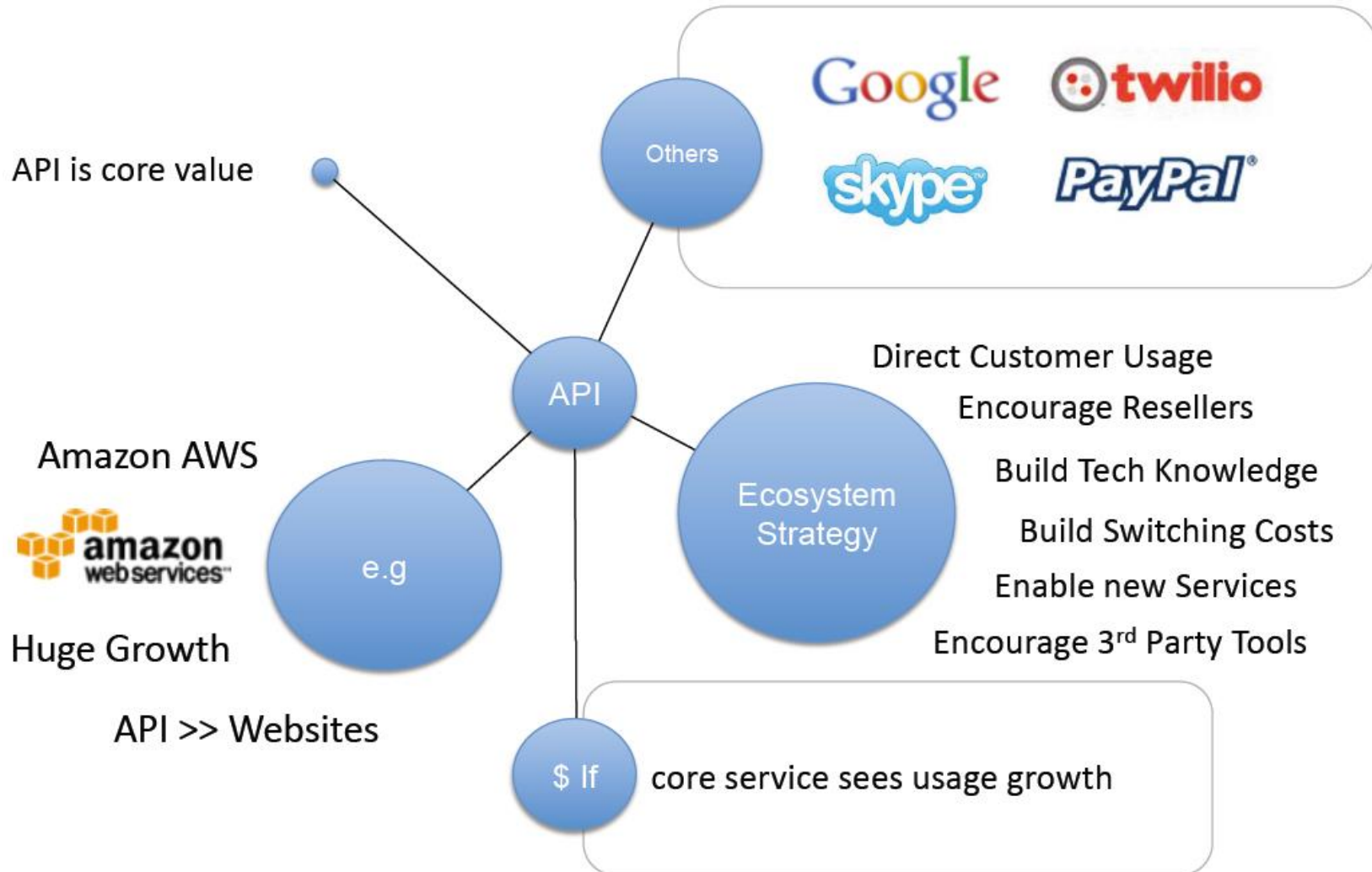
Over 100 Billion objects stored in S3 (March 2010)

API Business Models



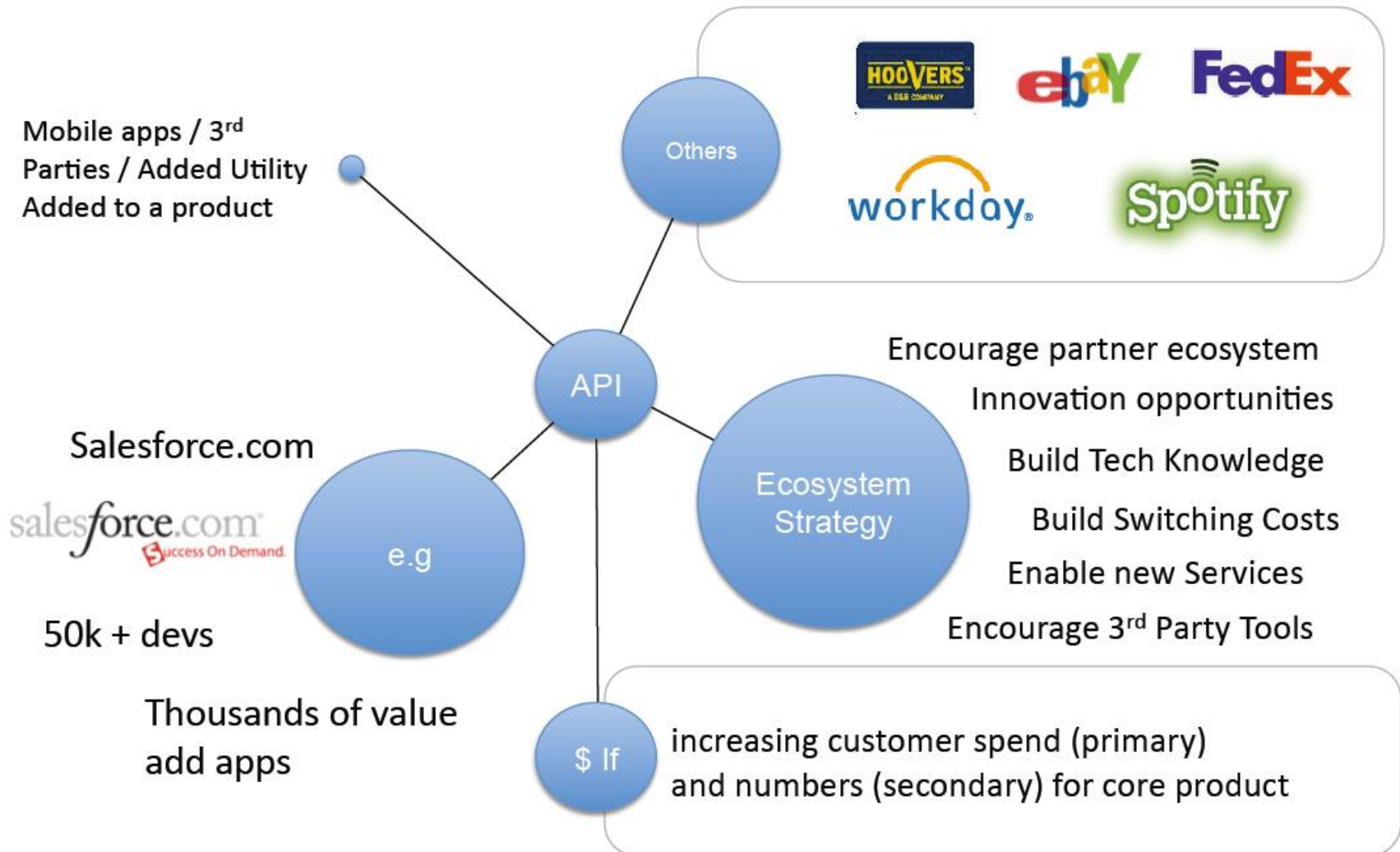
API Economy

● The API **IS** the product



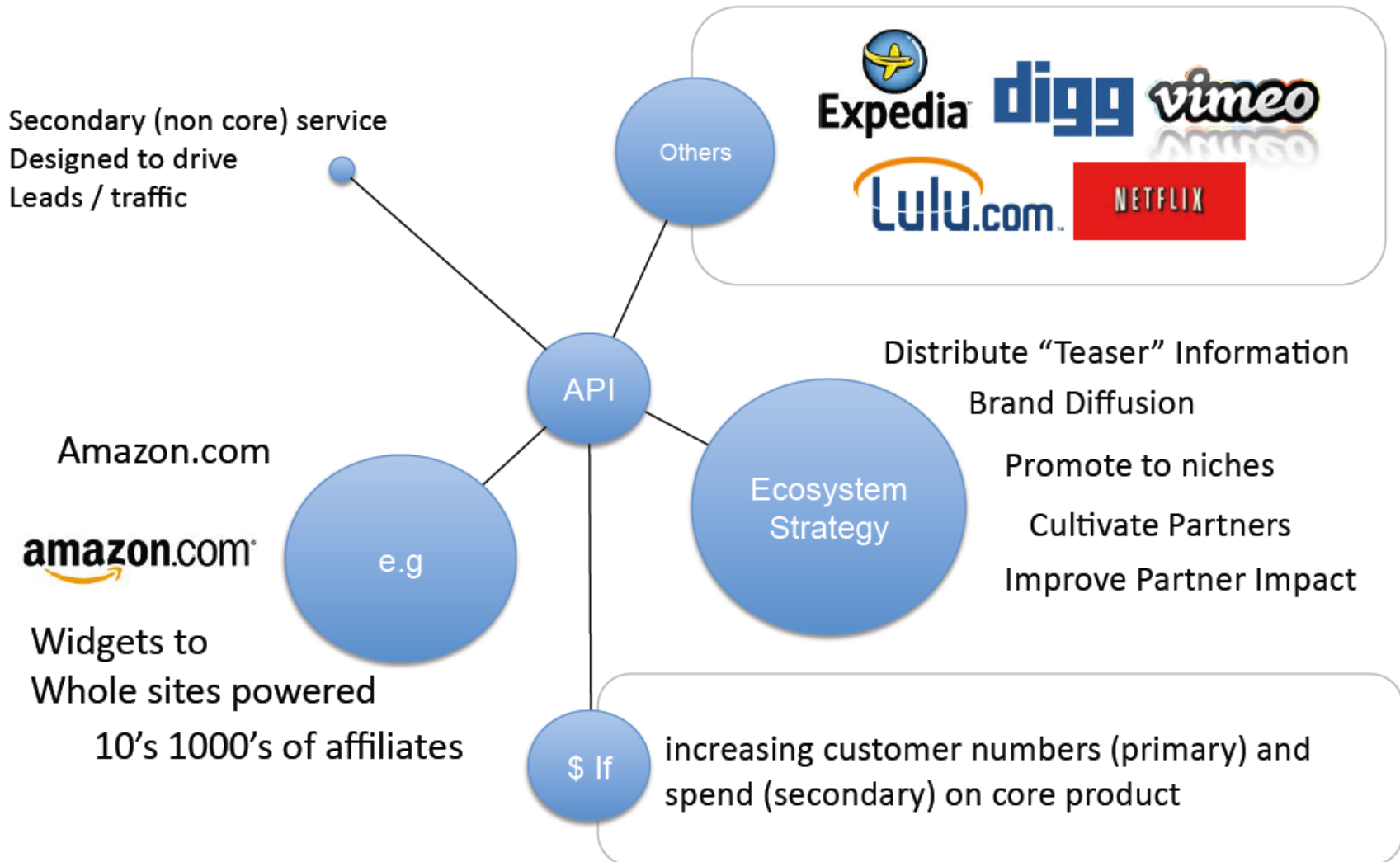
API Economy

● The API *Projects* the product



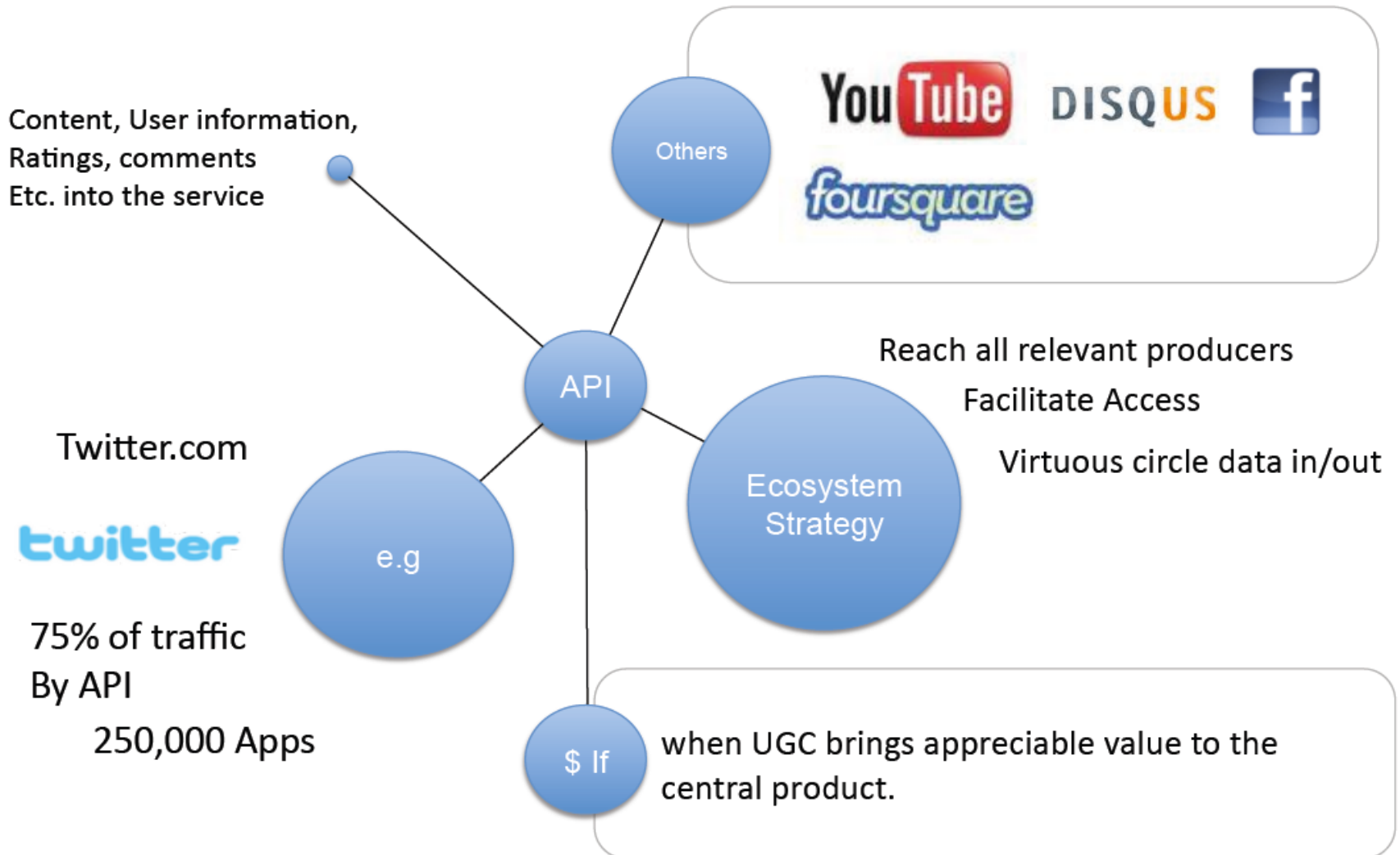
API Economy

● The API **Promotes** the product



API Economy

● The API ***Powers and Feeds*** the product



Programmable Web Stats

- <http://www.programmableweb.com/>

- May 2010

 - 2000+ APIs

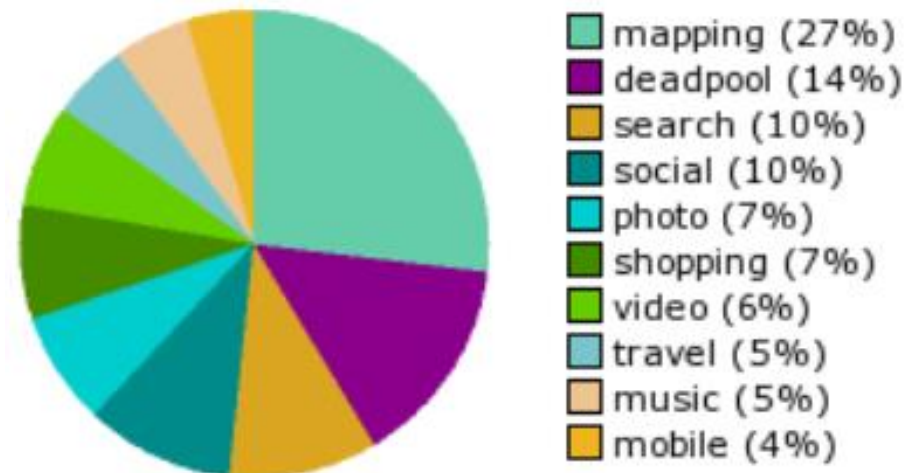
 - 4800 Mashups

- Nov 2012

 - 7900 APIs

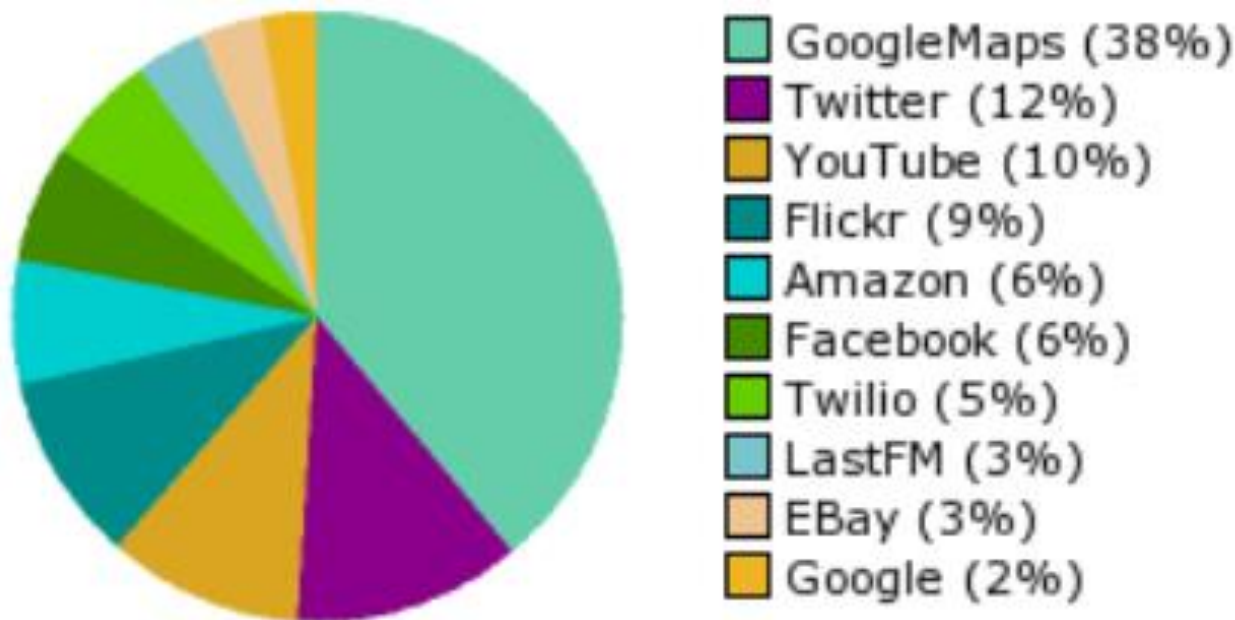
 - 6832 Mashups

Top Mashup Tags (all time)



Programmable Web Stats

- APIs usage by protocol: REST (69%), SOAP (22%), JavaScript (5%), XML-RPC (2%)
- 2418 of 6832 Mashups use GoogleMaps API

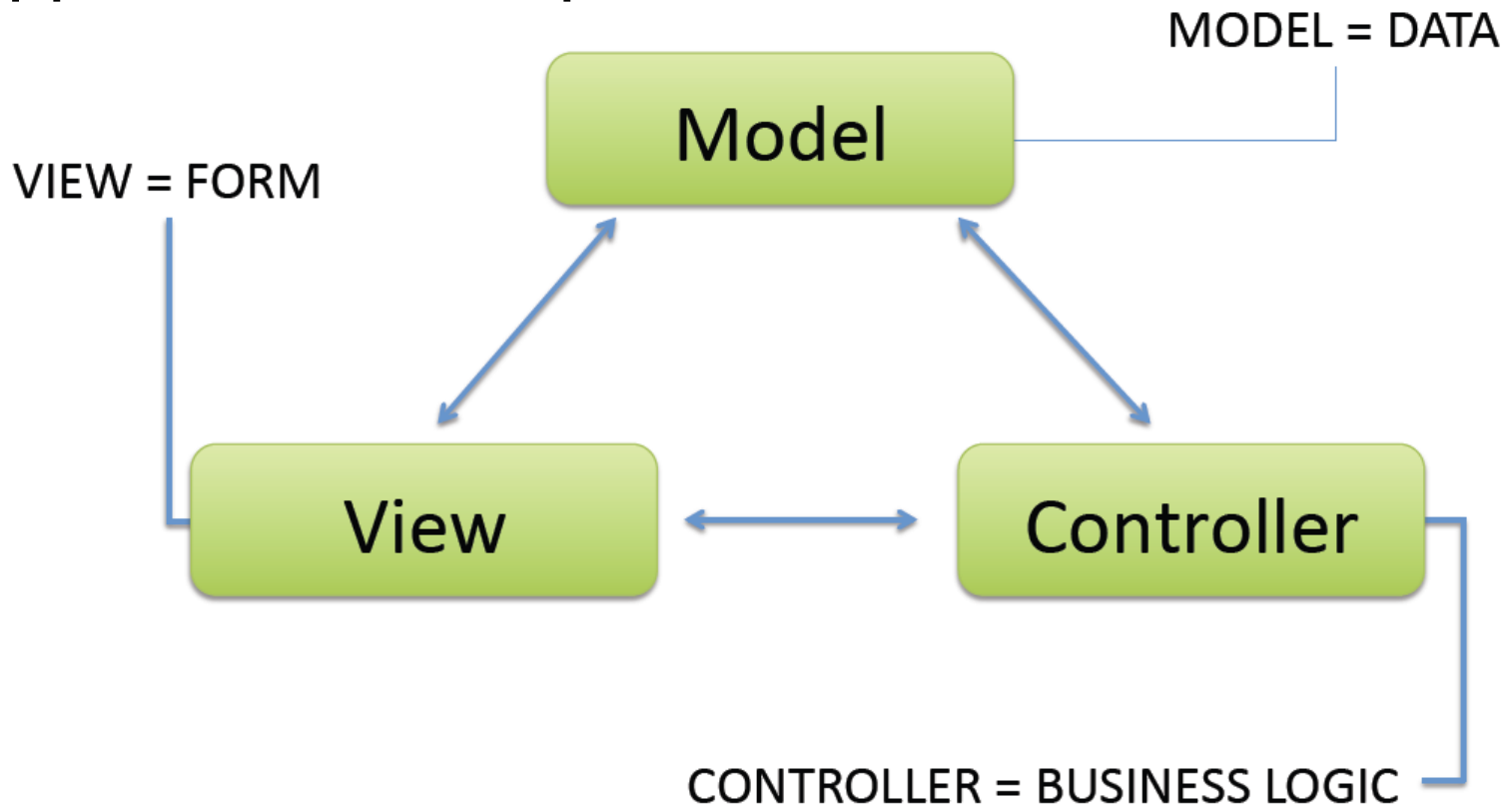


APIs by Layer



Model / View / Controller

- An architectural metaphor to help understand this evolution
- Highly successful architectural pattern for application development



Model / View / Controller

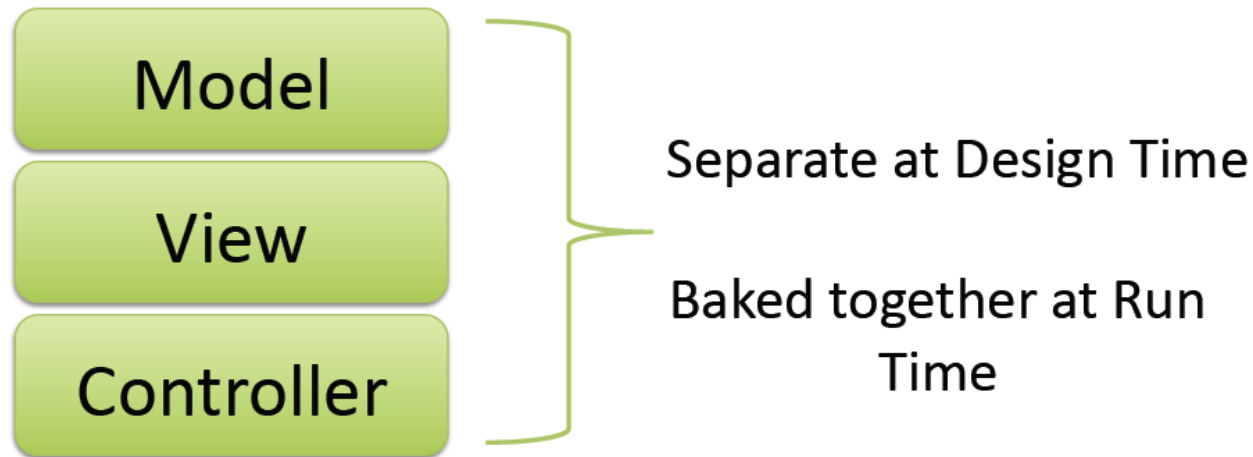
- Originally described for Smalltalk at Xerox Park



- MVC has Revolutionized Software Web App Development

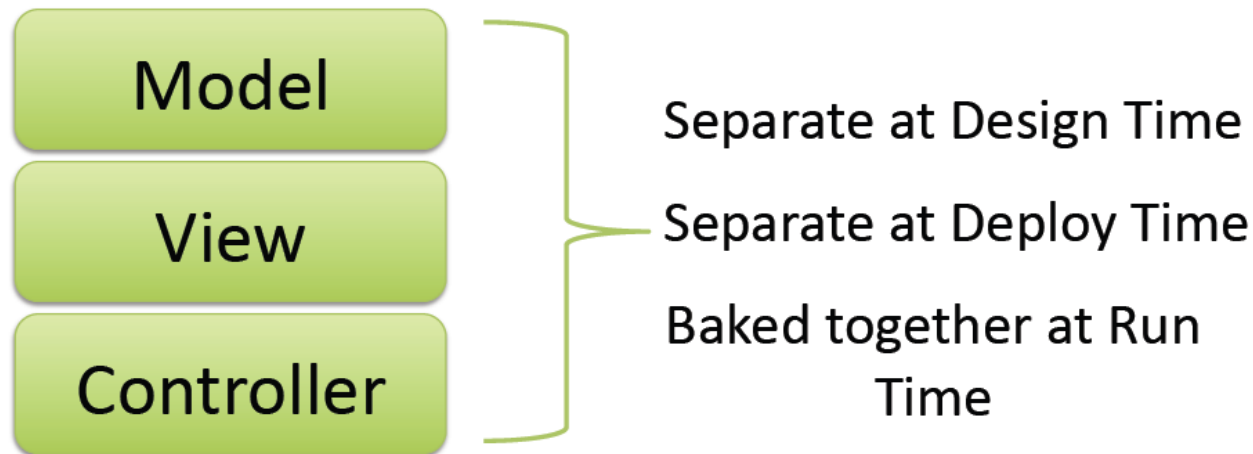
Model / View / Controller

- Clear separation between Data, Presentation & Business Logic
- First – MVC Applications:



Model / View / Controller

- Clear separation between Data, Presentation & Business Logic
- First – MVC Application
- Then – MVC SAAS (software as a service):



Model = Data

- Often most critical asset:

- Wealth of data which has value
- Real time / Reference data
- Sometimes unique / sometimes not

- Often:

- has great value beyond the company that owns it
- AND value beyond the ways the company can effectively deliver it

View = Form

- This used to be the “company web site”
- Now it could be your SAAS application interface
- Increasingly on Android, iPhone, Symbian, ...



Controller = Business Logic

● Also known as the “smart stuff”

- Application logic
- Algorithms
- Secret sauce
- Housekeeping like user management / authentication / billing

● Increasingly:

- Some companies allow others to apply smart stuff to their data
- Some companies apply their smart stuff to the data of others

APIs enable Cloud Scale MVC

Model

View

Controller

Data Anywhere in
any form

Many Delivery
Channels

Third parties
operating on data

The New York Times
Expect the World[®]

Bloomberg

WeatherBug

Y!
YAHOO!



ANIMOTO

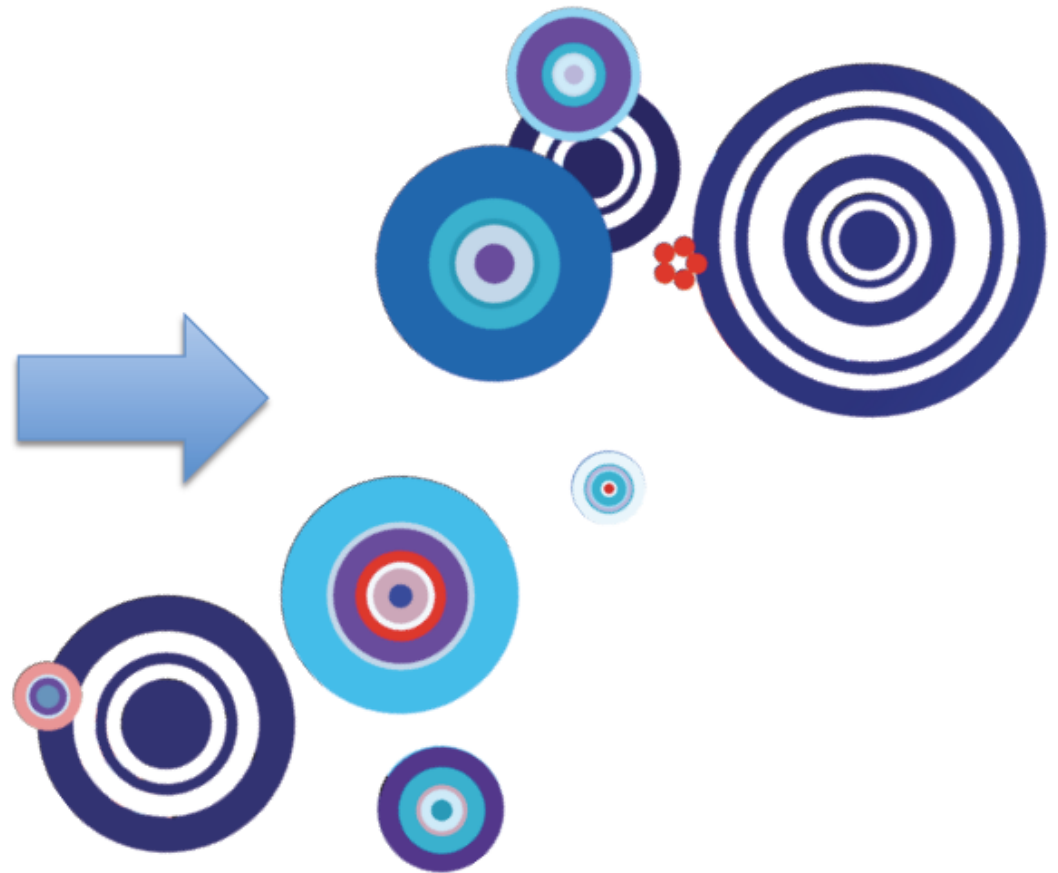
twitter

Impact on Their Business

- Companies focus on core competence
- • Leverage their Ecosystem
- • Companies are successful when they:
 - Define a clear center of gravity
 - Proactively manage the interfaces with other parts of the value chain Originally

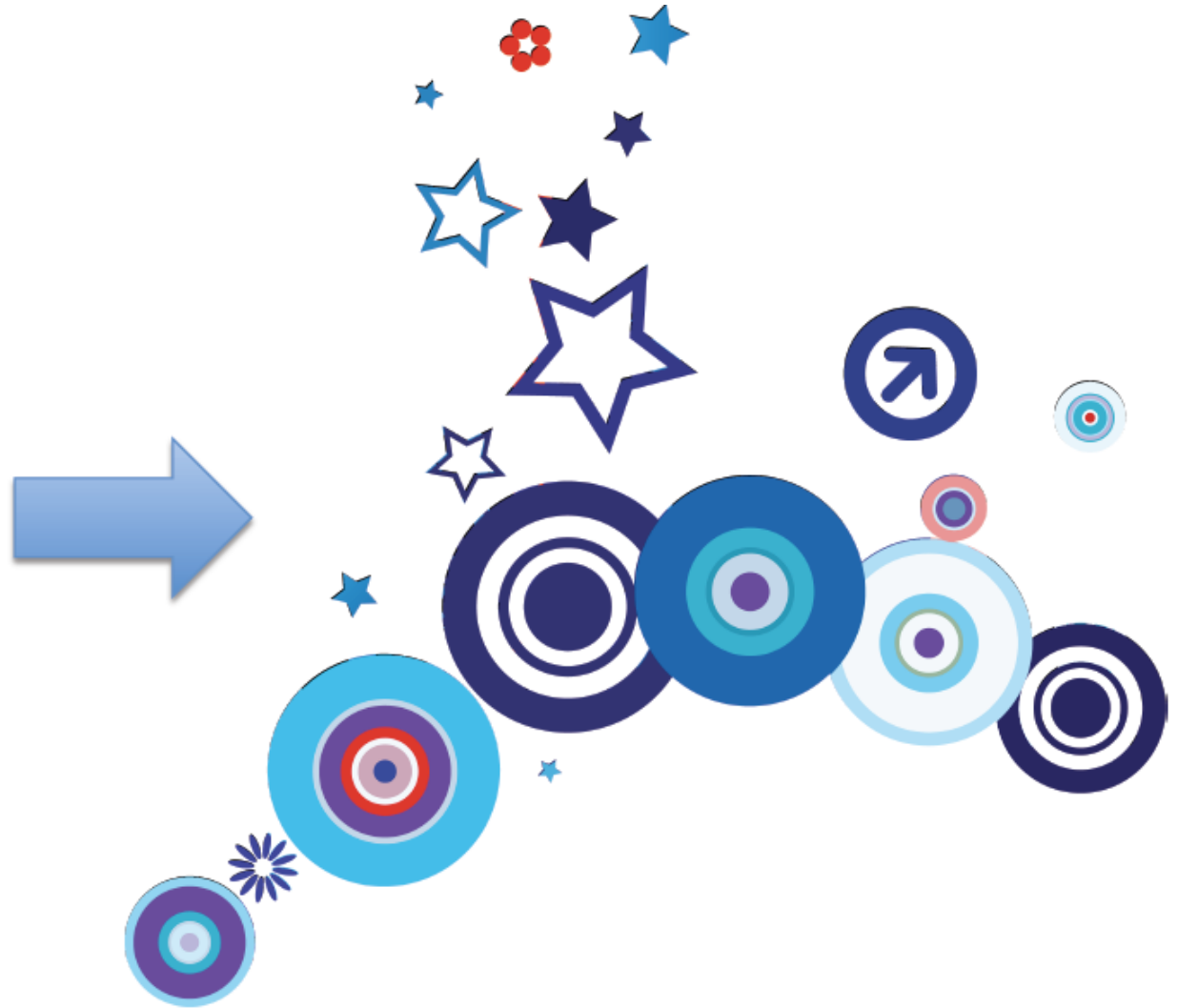
APIs Make This Work: Models

An API delivers
you Data in Raw
Form



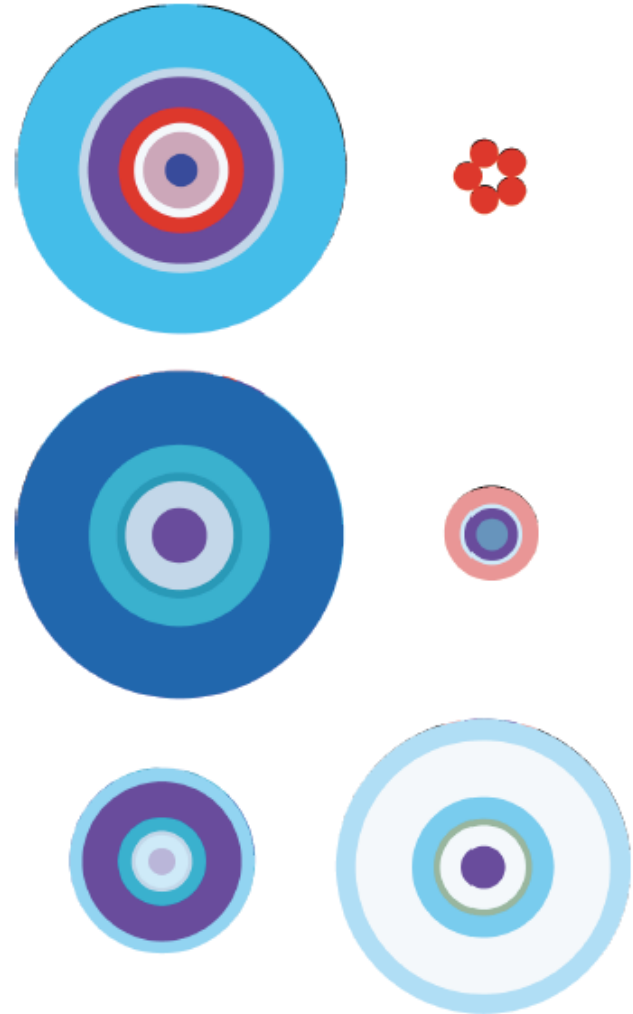
APIs Make This Work: Controllers

APIs Provide
Access to
Smart
Processing



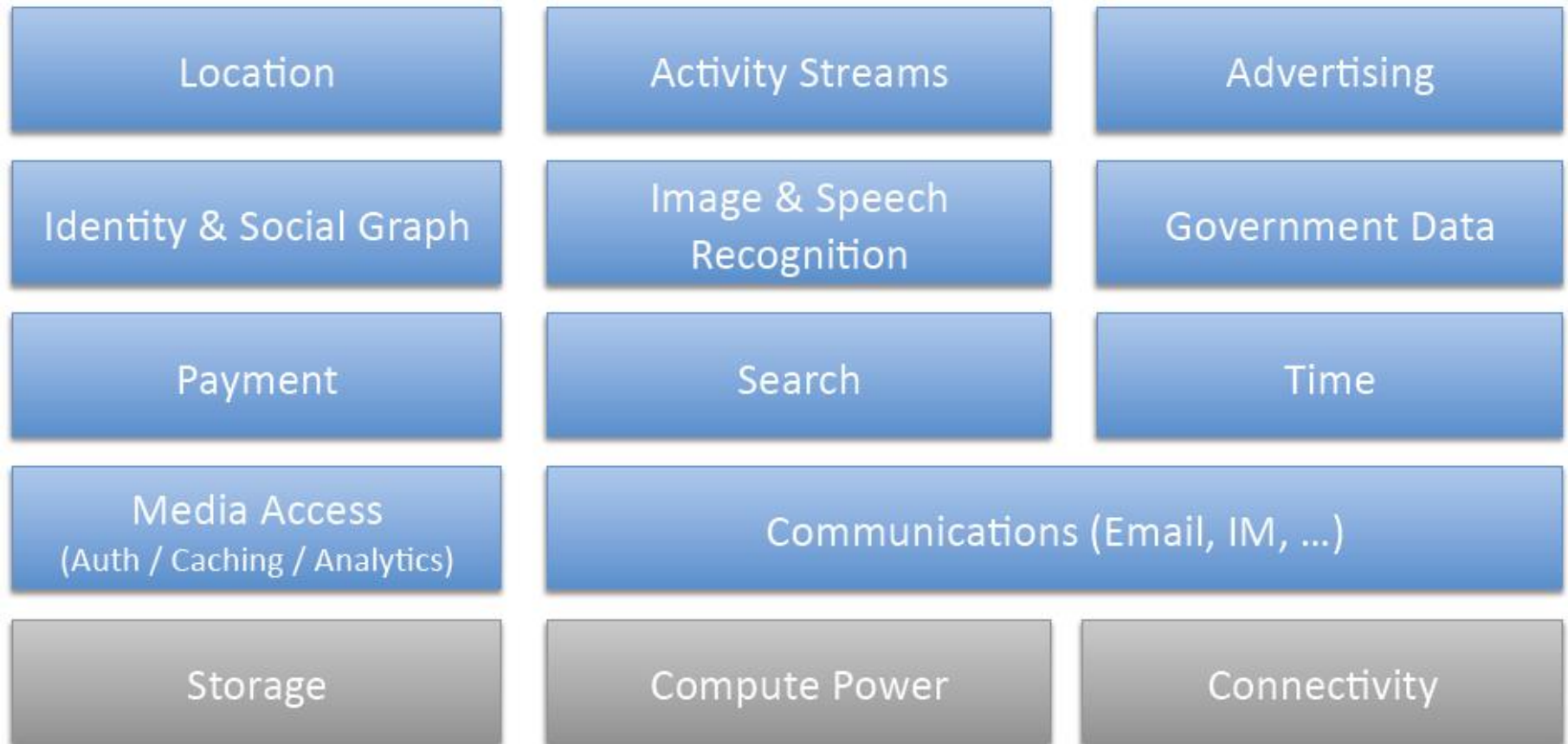
APIs Make This Work: Views

APIs feed many possible ways to consume Data & Services



A Fourth Element

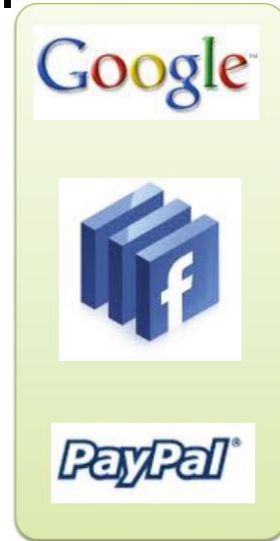
● The Framework – The Internet Operating System



A Fourth Element

- Elements of the “Internet Operating System” already API Driven

Search
Advertising
Location
Time
Media Access
Identify & Social Graph
Communications



C.f. Tim O'Reill

- The Internet Operating System Emerging



To Help Keep the Web Moving Forward

Standardisation will have a huge impact

HTML5 and APIS / APPs need to blend well overtime

Keeping APIs Easy to Use & Apps easy to build across platforms will be a key challenge

Conclusion

- The Web / Internet is rapidly becoming an open programmable computing system
- Web Page Browsing will decline & Apps / APIs become the norm
- In the near future will see dramatic changes in the structure of the Web & Internet
- The shift from Web Pages to Apps + APIs is at the core of this change