

10. SERVICES, APPS AND THE API POWERED WEB

Based on slides of Steven Willmott (3scale networks)



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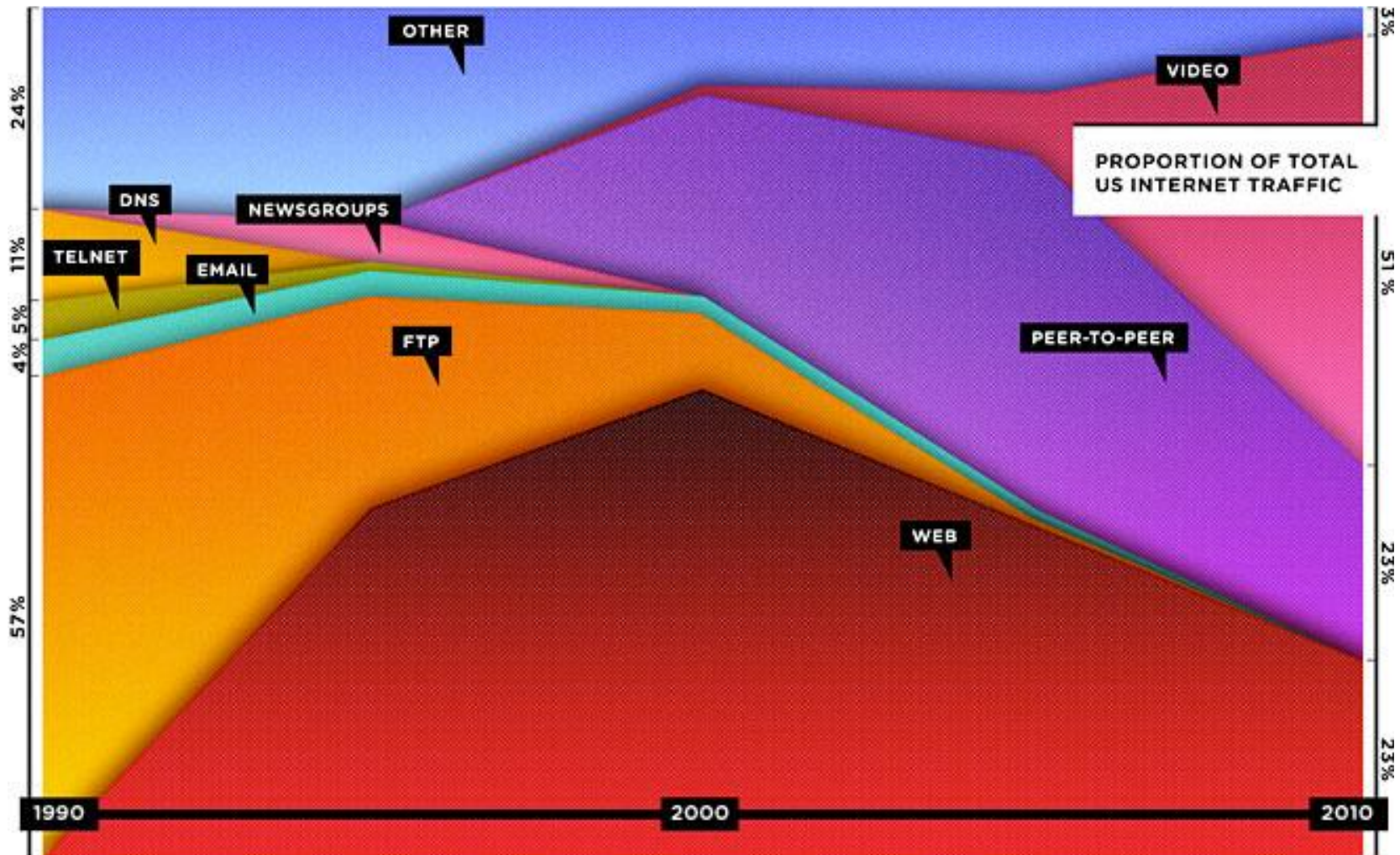
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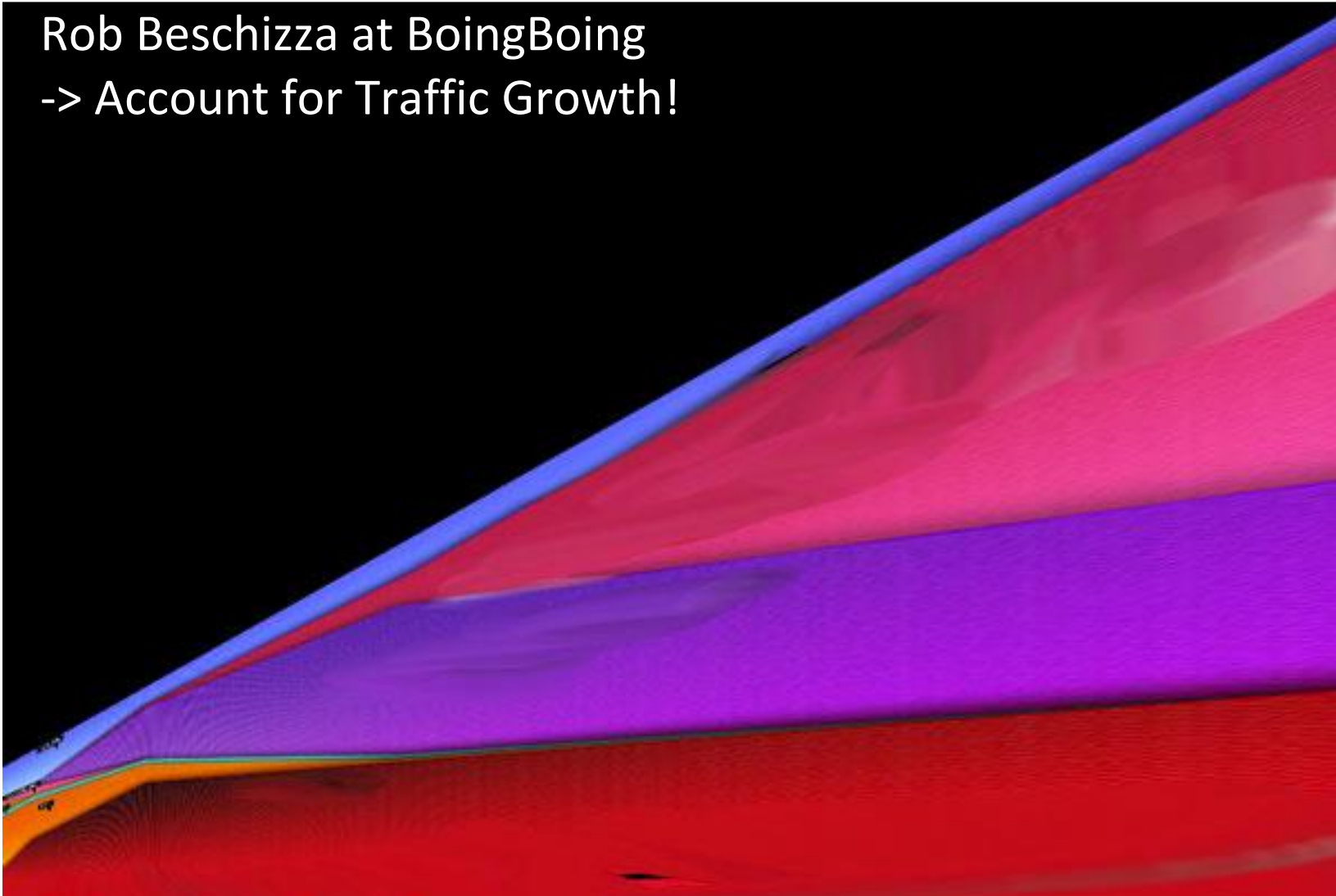
The Web is Dead, Long Live the Internet



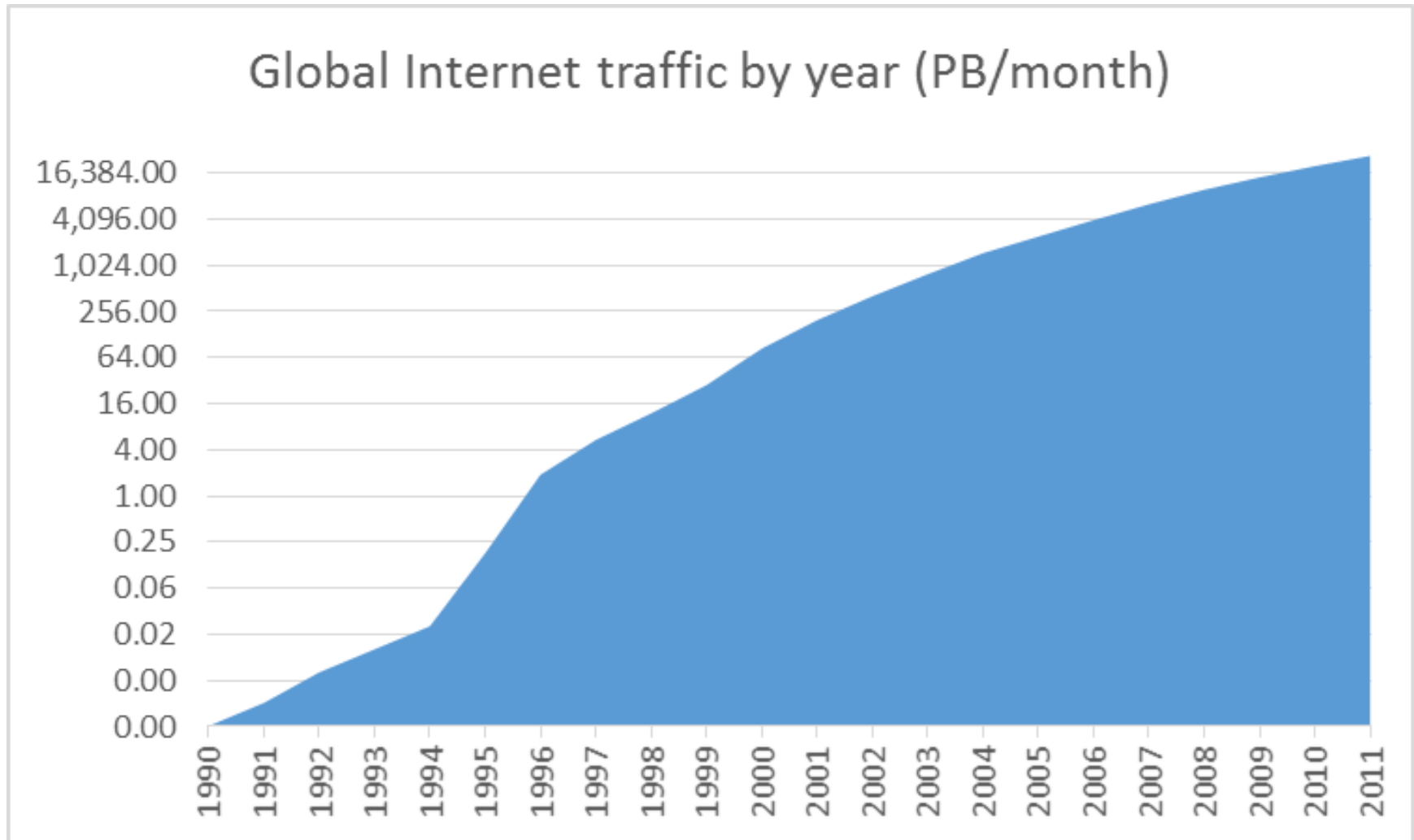
Wired Magazine / Aug / 2010 (source: Cisco estimates based on CAIDA publications, Andrew Odlyzko)

The Web is Dead, Long Live the Internet

Rob Beschizza at BoingBoing
-> Account for Traffic Growth!



The Web is Dead, Long Live the Internet



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?

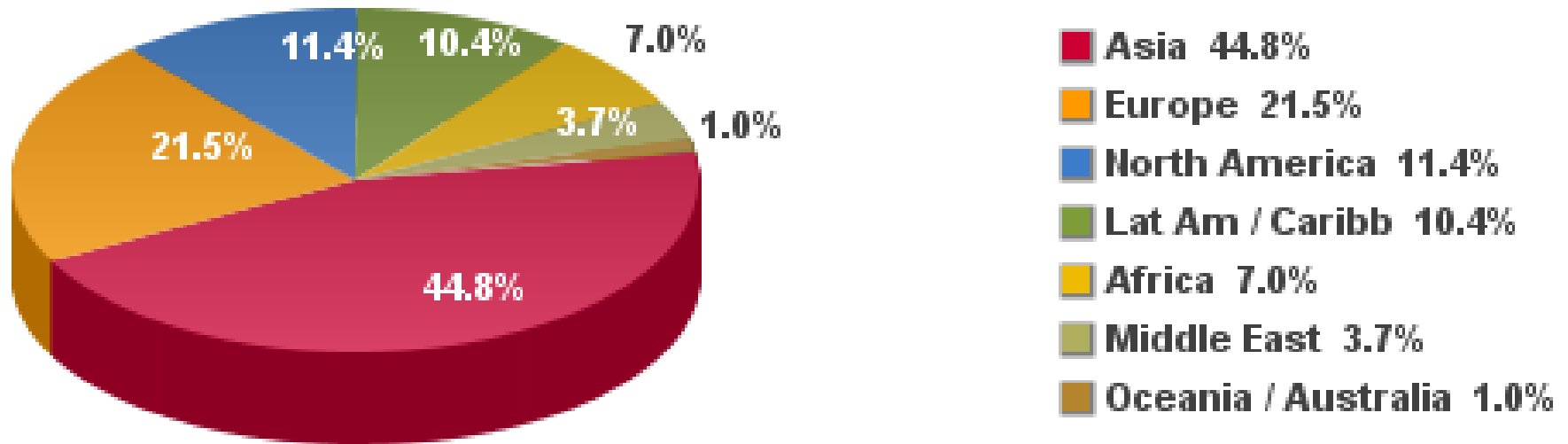
- How does it get to people?

- How do people experience it?

- This applies to e-Commerce as well as Content

Internet in 2012

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

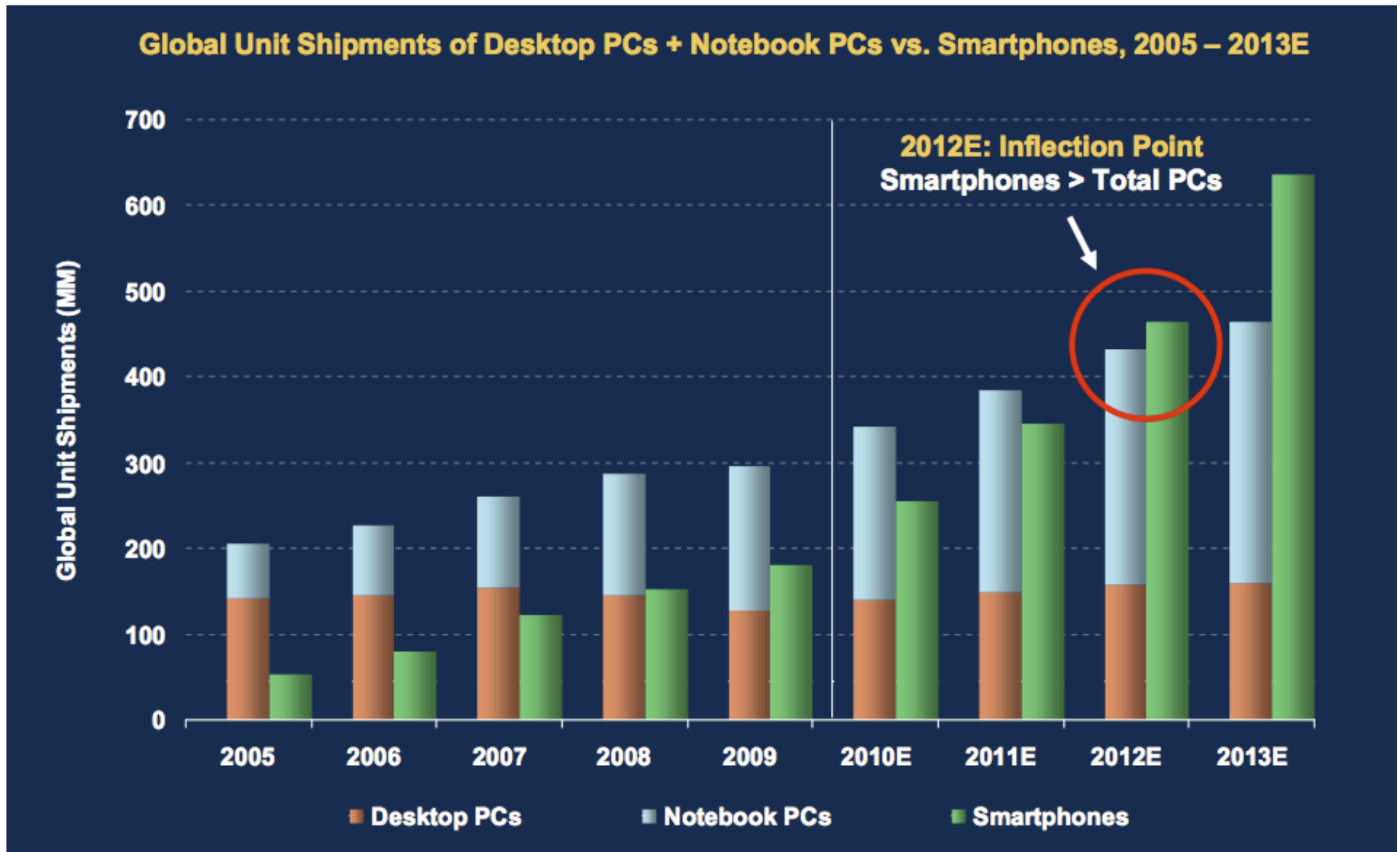
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Internet in 2012

WORLD INTERNET USAGE AND POPULATION STATISTICS June 30, 2012

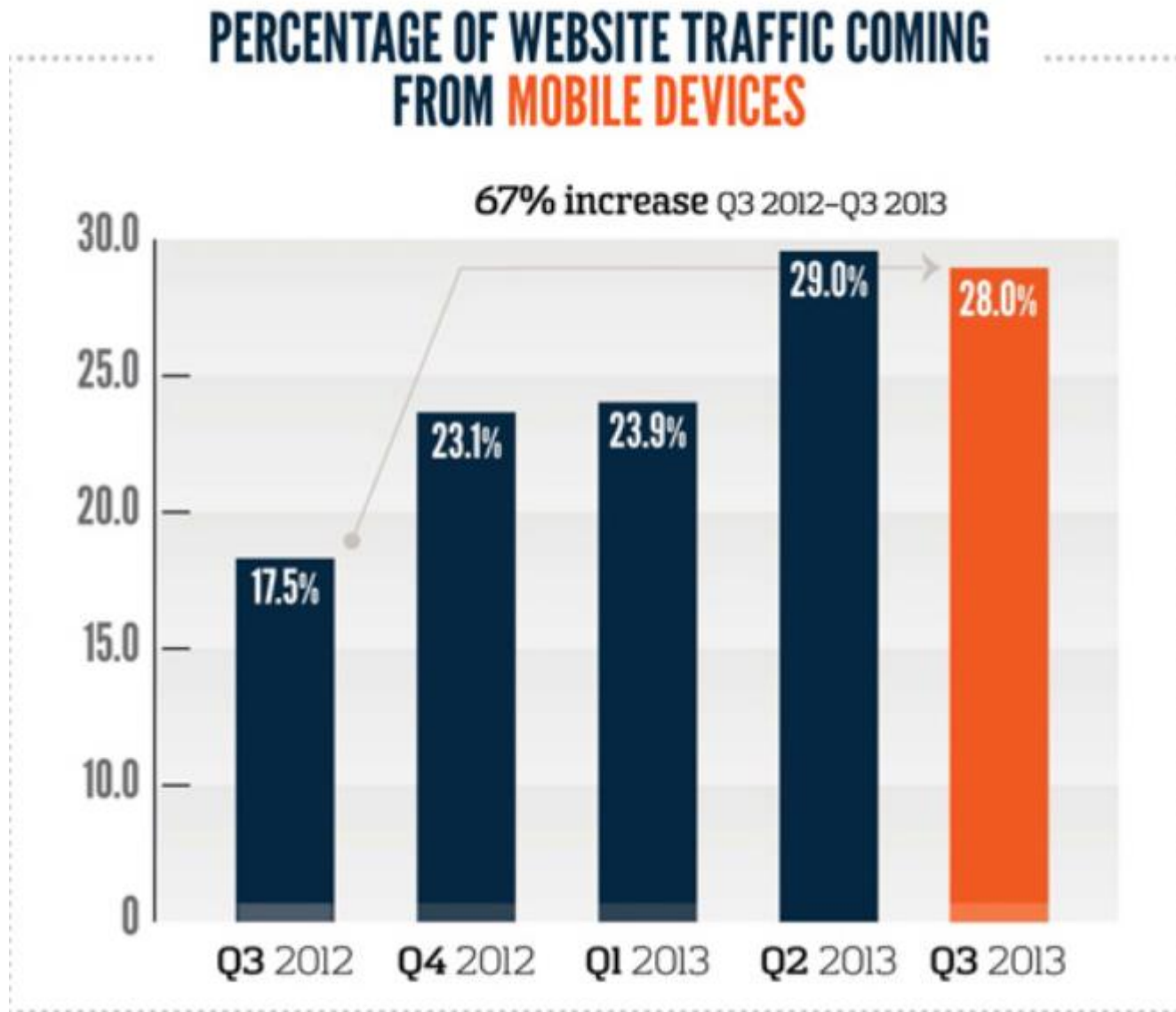
World Regions	Population (2012 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2012
Africa	1,073,380,925	4,514,400	167,335,676	15.6 %	3,606.7 %
Asia	3,922,066,987	114,304,000	1,076,681,059	27.5 %	841.9 %
Europe	820,918,446	105,096,093	518,512,109	63.2 %	393.4 %
Middle East	223,608,203	3,284,800	90,000,455	40.2 %	2,639.9 %
North America	348,280,154	108,096,800	273,785,413	78.6 %	153.3 %
Latin America / Caribbean	593,688,638	18,068,919	254,915,745	42.9 %	1,310.8 %
Oceania / Australia	35,903,569	7,620,480	24,287,919	67.6 %	218.7 %
WORLD TOTAL	7,017,846,922	360,985,492	2,405,518,376	34.3 %	566.4 %

Internet in 2012 (estimated)



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

Internet in 2013



Source: <http://www.walkersandsdigital.com/Walker-Sands-Mobile-Traffic-Report-Q3-2013>

Internet in 2013

Mobile Phones Account for 17% of Global Web Usage

Percentage of page views coming from mobile devices*



* StatCounter defines mobile as a pocket-sized computing device, excluding tablets

Internet in 2013

Top Tablet Operating Systems, Shipments, and Market Share, Second Quarter 2013 (Shipments in Millions)

Vendor	2Q13 Unit Shipments	2Q13 Market Share	2Q12 Unit Shipments	2Q12 Market Share	Year-over-Year Growth
1. Android	28.2	62.6%	10.7	38.0%	162.9%
2. iOS	14.6	32.5%	17.0	60.3%	-14.1%
3. Windows	1.8	4.0%	0.3	1.0%	527.0%
4. Windows RT	0.2	0.5%	N/A	N/A	N/A
5. BlackBerry OS	0.1	0.3%	0.2	0.7%	-32.8%
Others	0.1	0.2%	N/A	N/A	N/A
Total	45.1	100.0%	28.3	100.0%	59.6%

Source: IDC Worldwide Tablet Tracker, August 5, 2013

Internet in 2013

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Internet in 2013



Apple iOS (61)

Operační systém použitý v telefonech iPhone a tabletech iPad.



Google Android (373)

Populární mobilní operační systém s velkou podporou výrobců tabletů i doplňkových programů.



Microsoft Windows (57)

Klasický systém ze stolních počítačů upravený pro ovládání dotykem.



Internet in 2013

Nokia 770 Internet Tablet



2005

Asus Eee PC



2007

iPad



2010

Surface RT



2012

Internet in 2015 (estimated in 2012)

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 2013)

World
Population **7.3B**

3B Internet
Population

50% in 2014

Internet
Connected
Devices **15B**

2B

Smartphones

facebook

2 Billion
Users?

Implications

Full Page Web Browsing



App Specific Interfaces



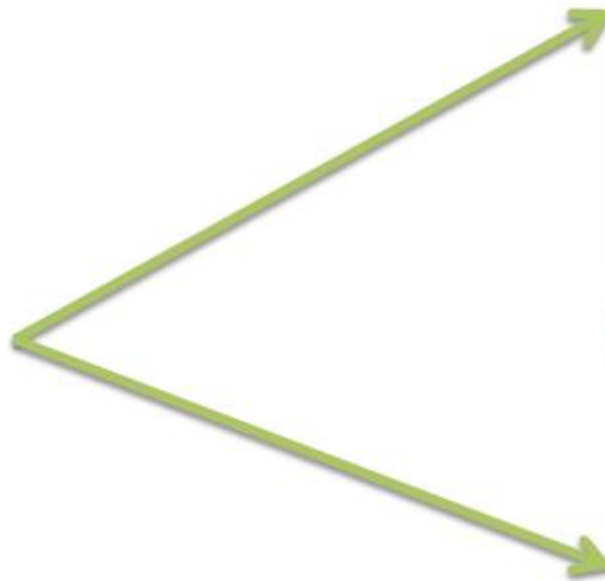
Business Model Change



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...

APPS & APIS

- What's really going on with Mobile Applications?

Web Servers



Application



Functions
Features
Graphics
UI

- 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)

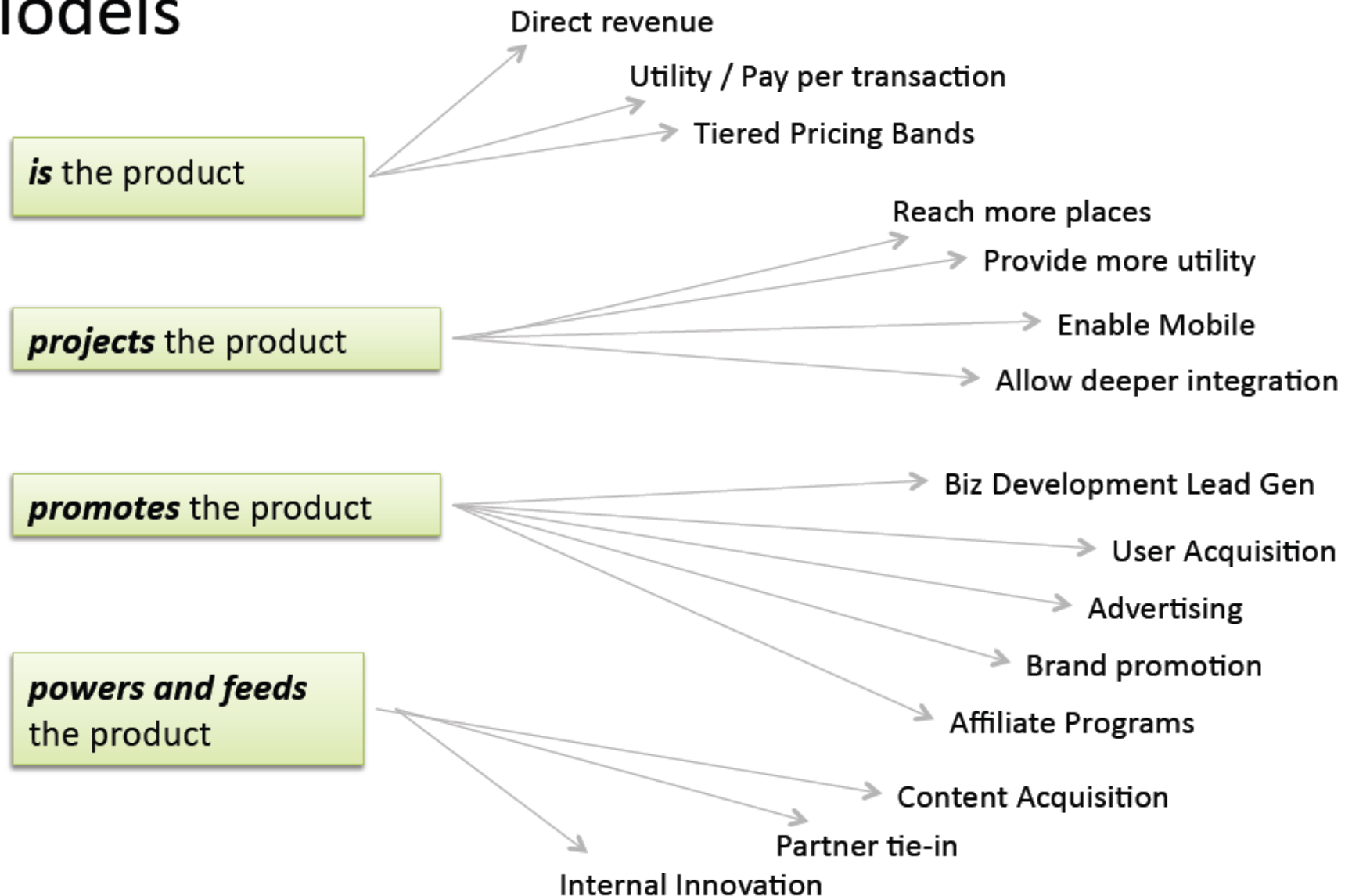


Over 50% of all traffic via API (March 2008)



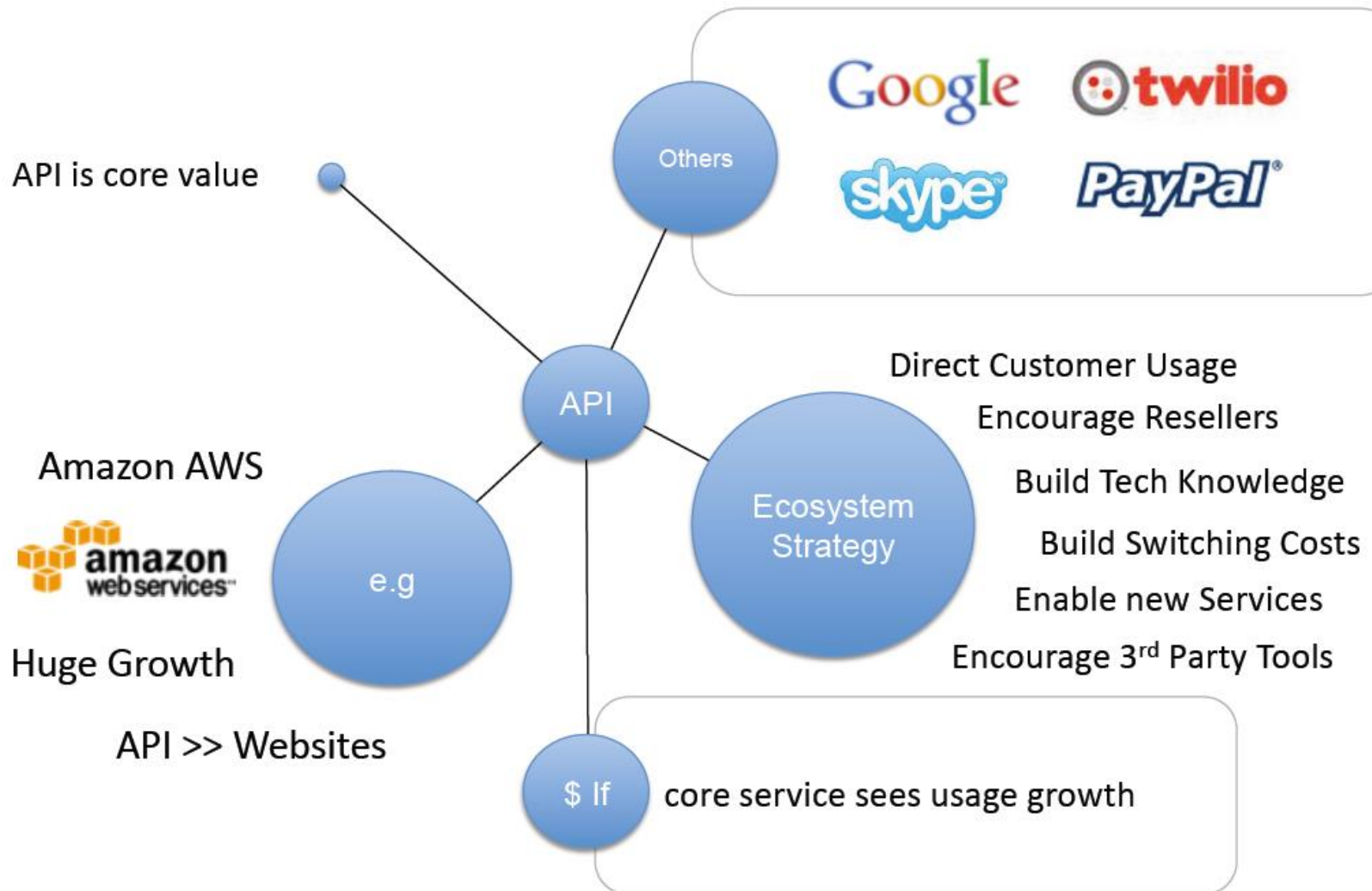
Over 100 Billion objects stored in S3 (March 2010)

API Business Models



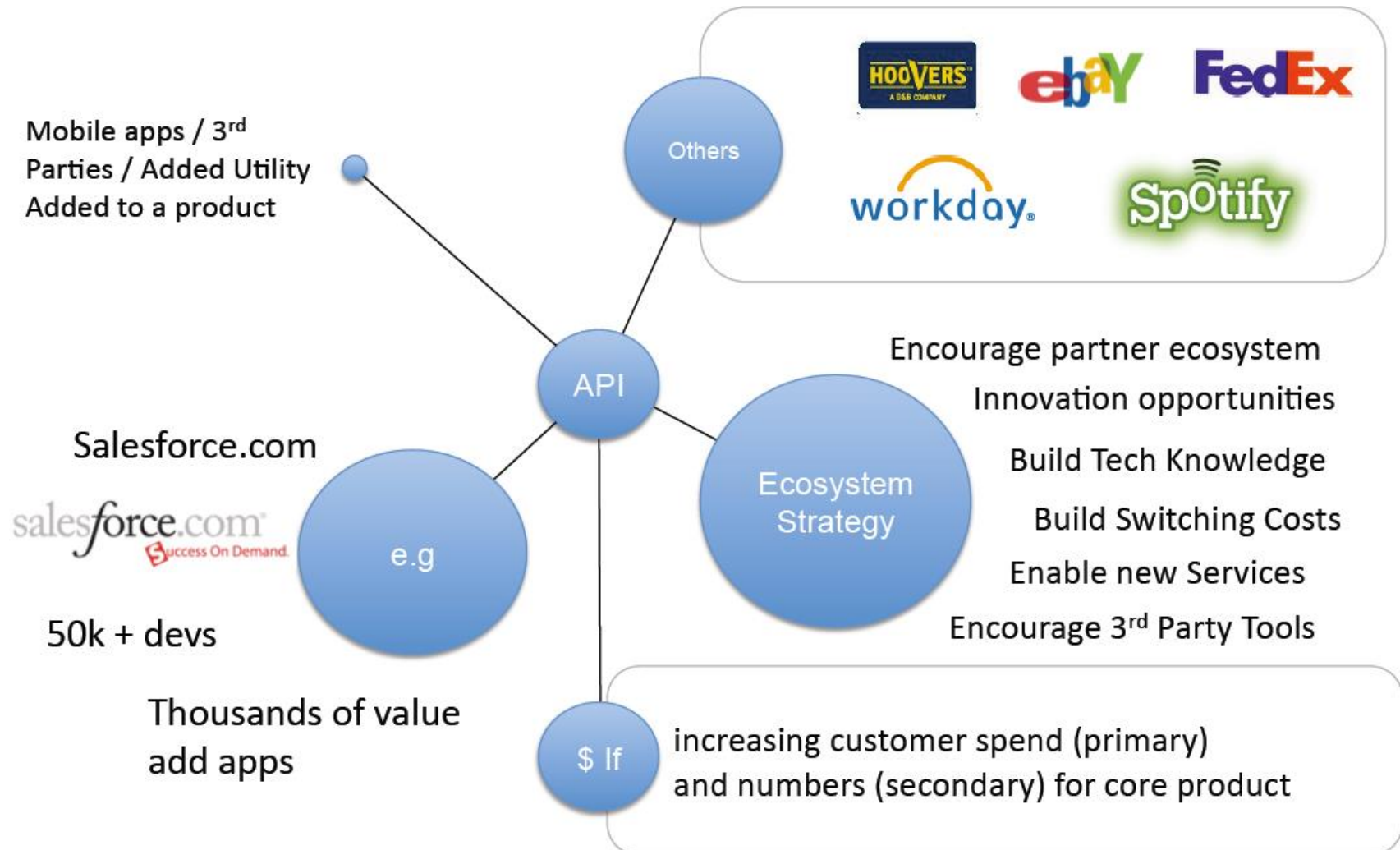
API Economy

● The API ***IS*** the product



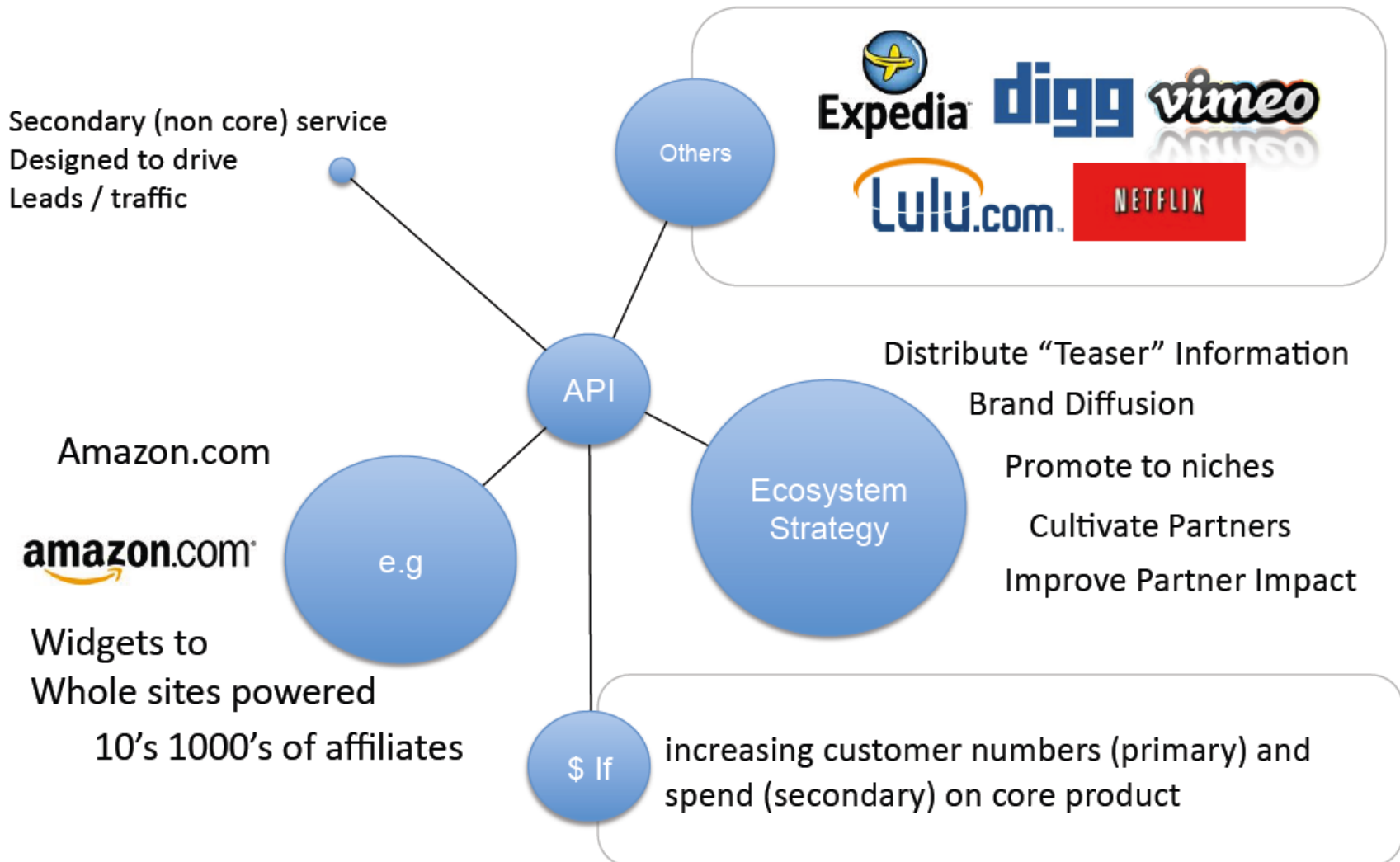
API Economy

● The API ***Projects*** the product



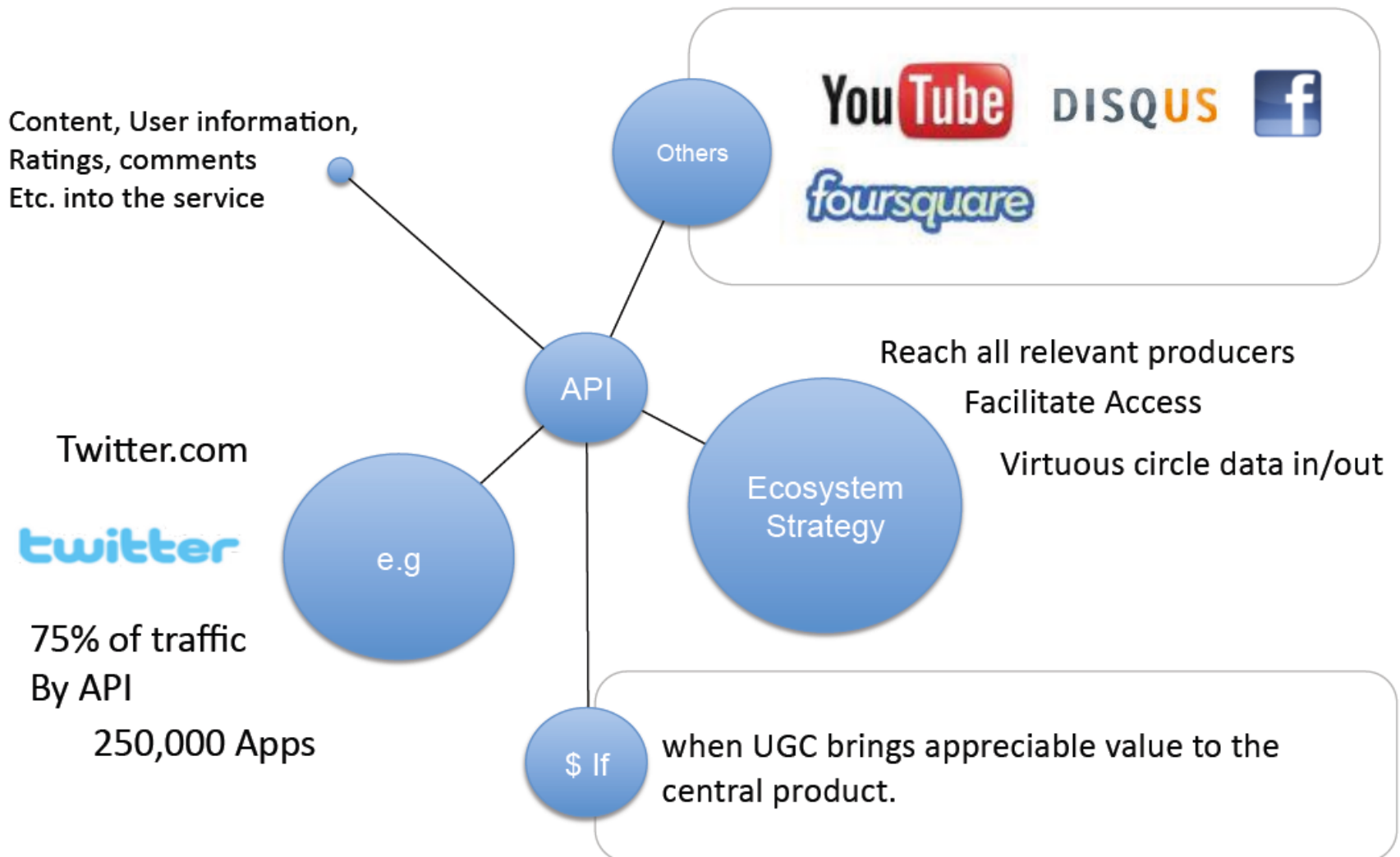
API Economy

● 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

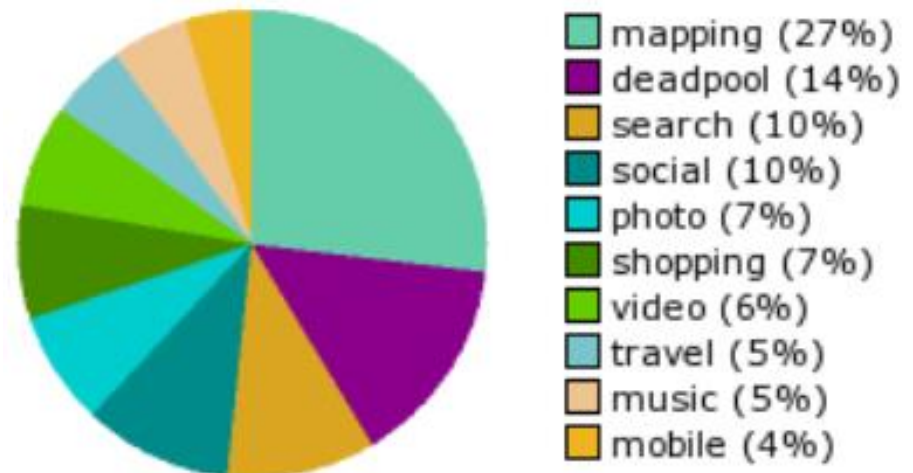
- 4800 Mashups

- Nov 2012

- 7900 APIs

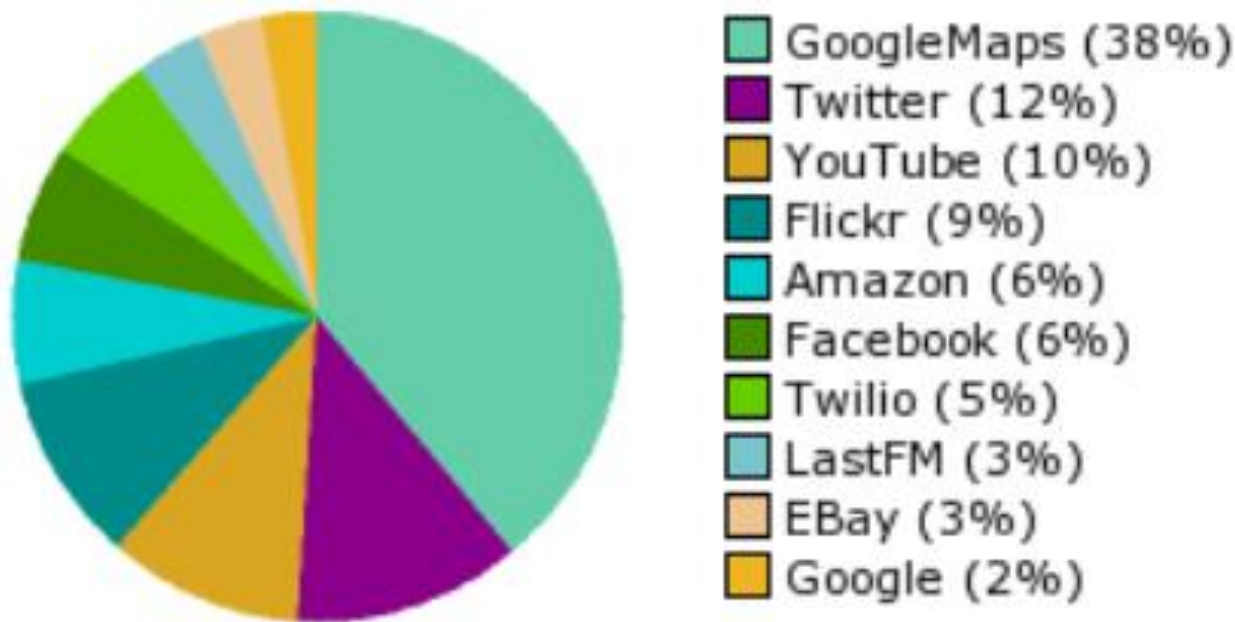
- 6832 Mashups

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

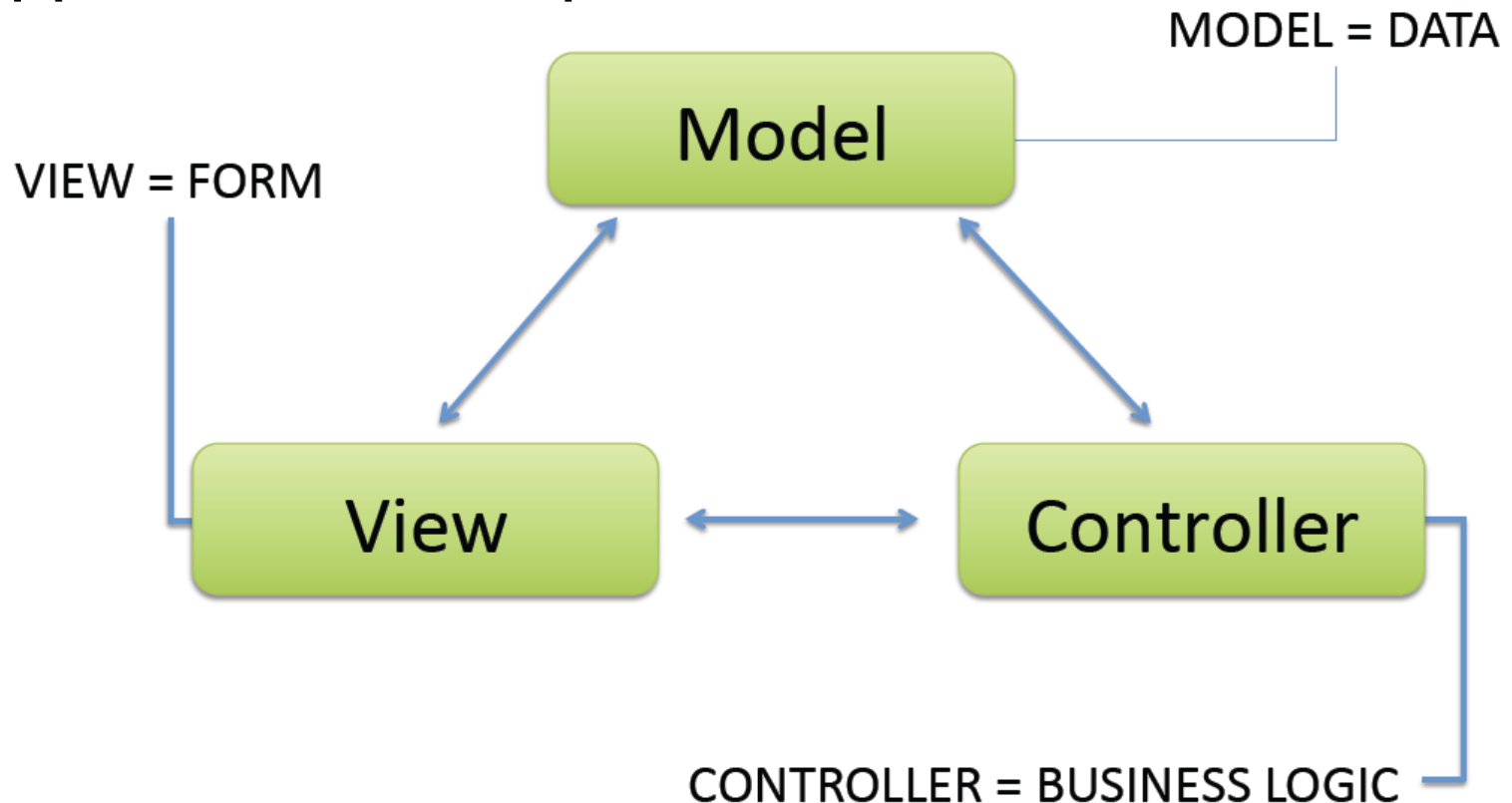


APIs by Layer



Model / View / Controller

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



Model / View / Controller

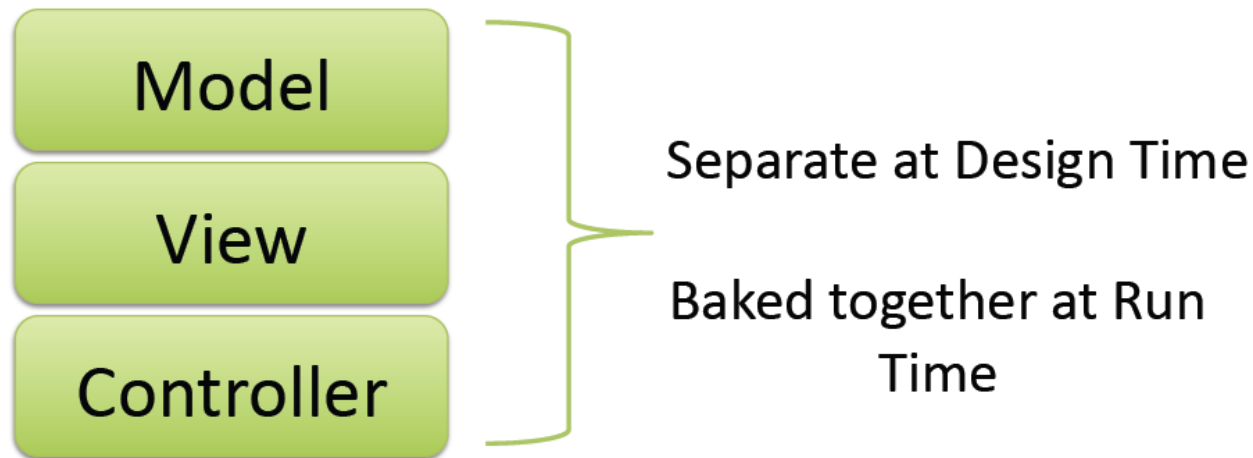
- Originally described for Smalltalk at Xerox Park



- MVC has Revolutionized Software Web App Development

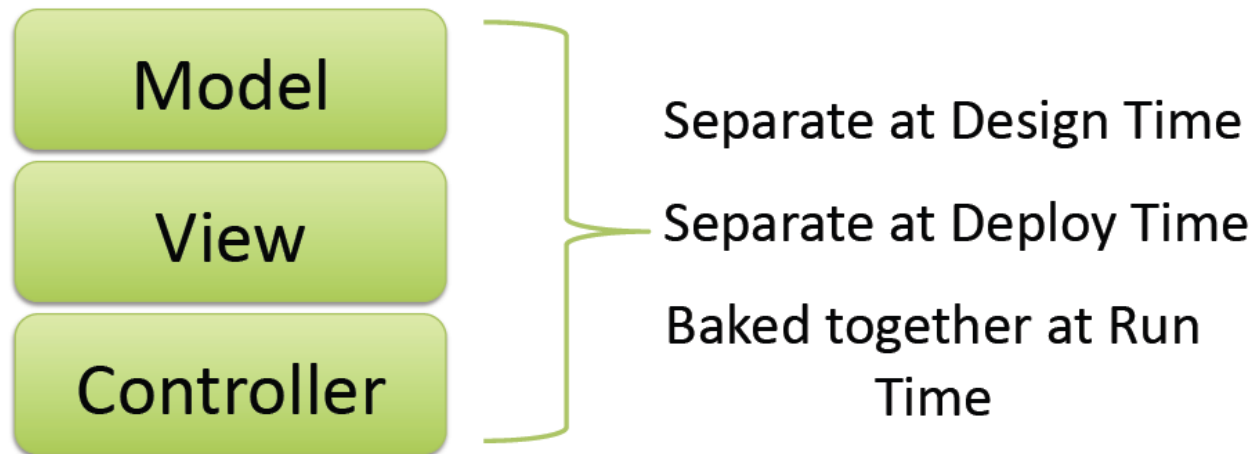
Model / View / Controller

- 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

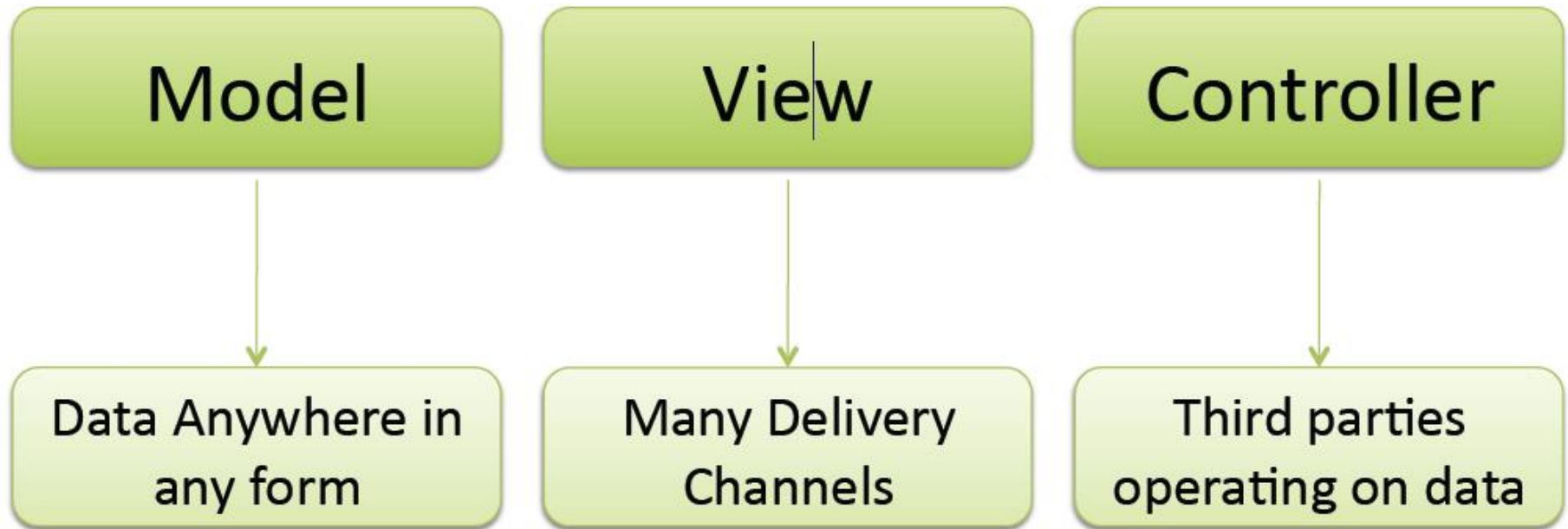
● Also known as the “smart stuff”

- 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



The New York Times
Expect the World®

Bloomberg

WeatherBug

Y!
YAHOO!



ANIMOTO

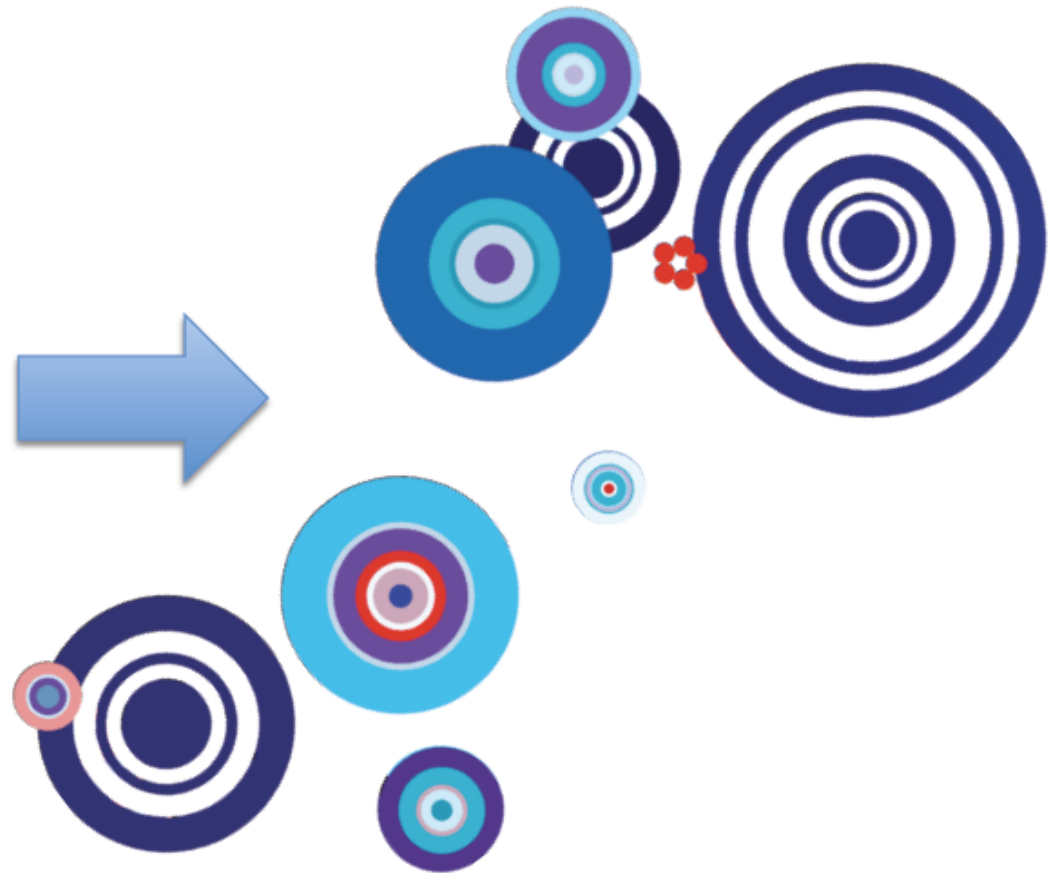
twitter

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

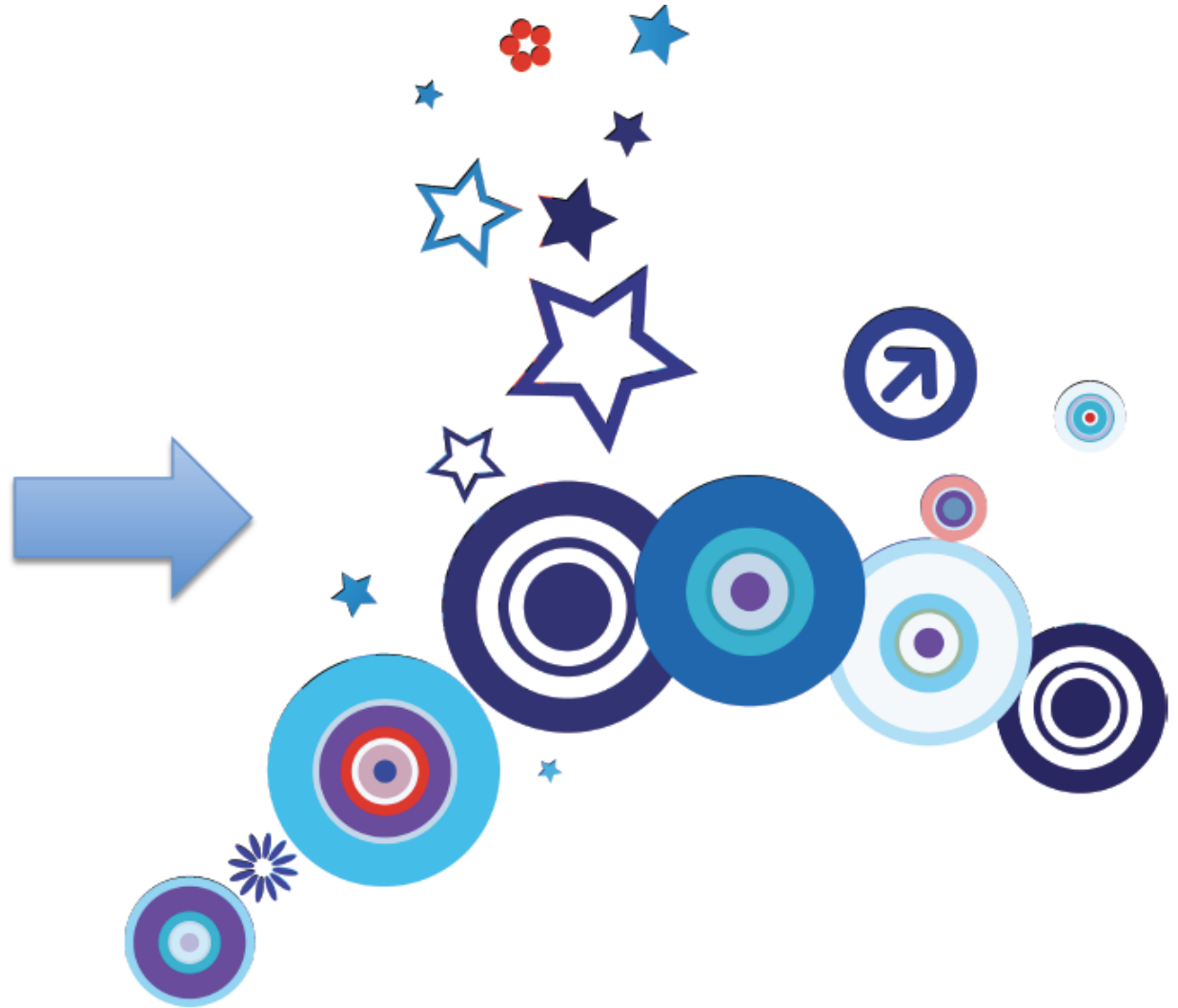
APIs Make This Work: Models

An API delivers
you Data in Raw
Form



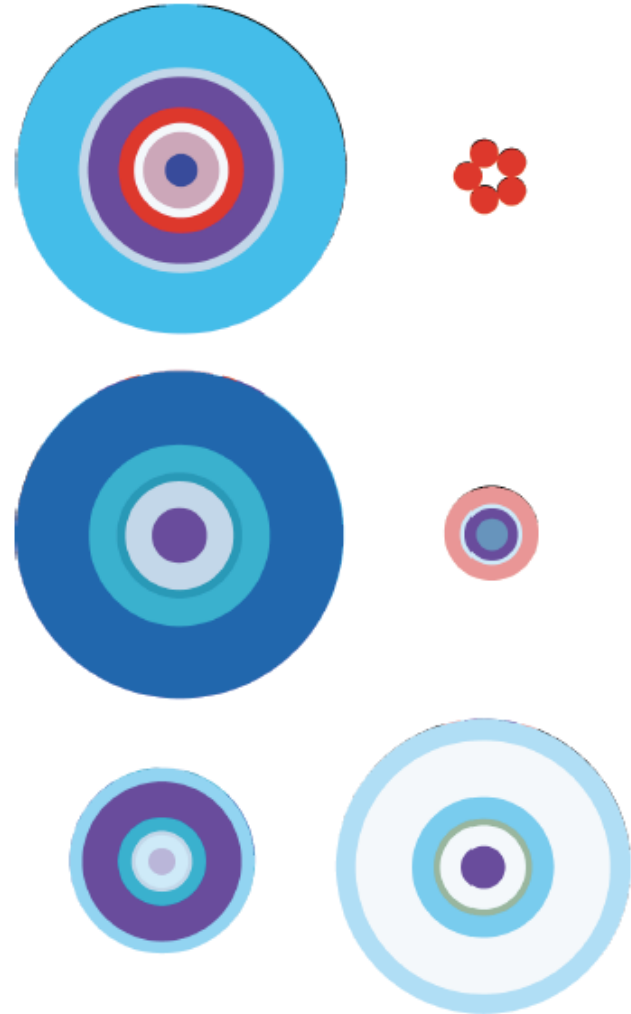
APIs Make This Work: Controllers

APIs Provide
Access to
Smart
Processing



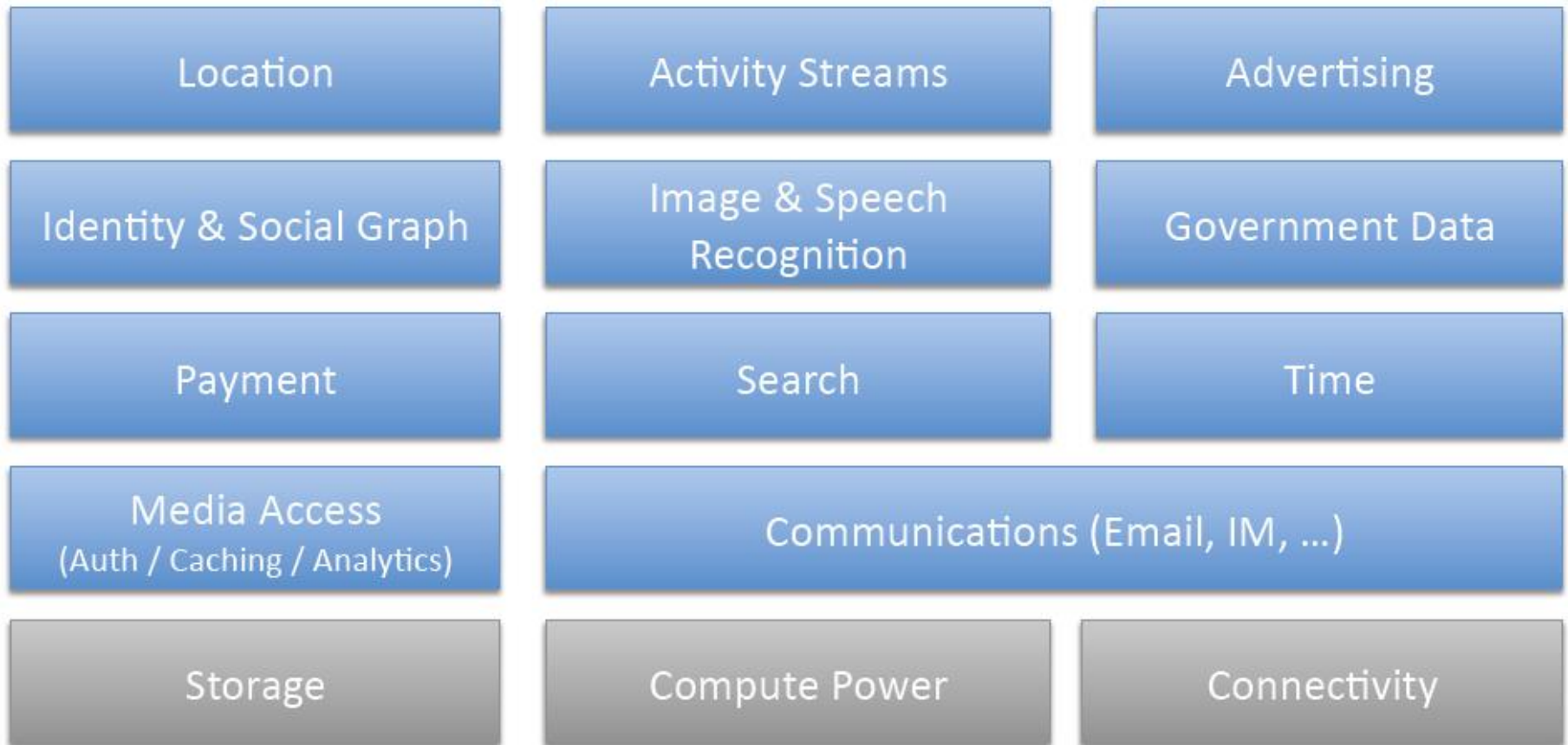
APIs Make This Work: Views

APIs feed many
possible ways to
consume Data &
Services



A Fourth Element

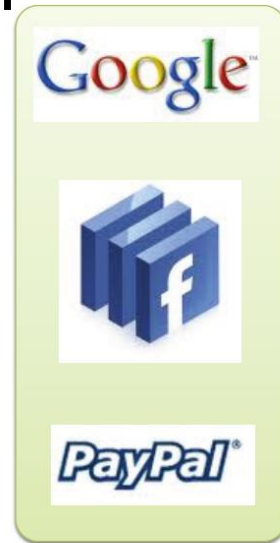
● The Framework – The Internet Operating System



A Fourth Element

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

Search
Location Advertising
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