A new cloud Infrastructure powering the next-generation mobile experiences
新型云架构提升下一代移动用户体验

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10.17.2014

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Yahoo today

#1 GLOBALLY

>800M
MAU
活跃用户

Y! NEWS

>200M
MAU
活跃用户

Y! SPORTS

105M
MAU
活跃用户

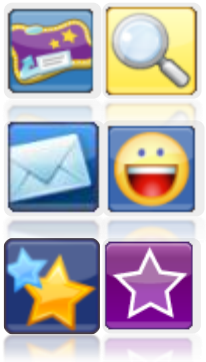
Y! FINANCE

76M
MAU
活跃用户

MOBILE

430M
MAU
活跃用户

Others…



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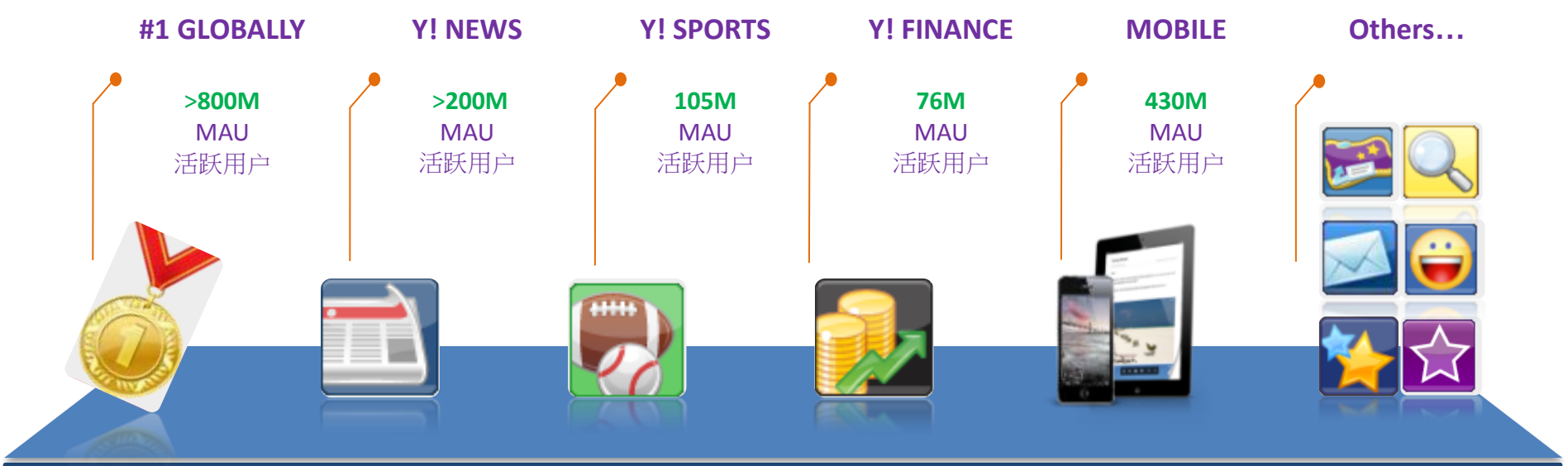
Yahoo today – Powered by Yahoo Beijing



Science-Driven Engineering 科学驱动的工程开发

Yahoo Beijing Global R&D Center
雅虎北京全球研发中心

Advertising 广告

Personalization 个性化

Mobile Platform 移动平台

Cloud Computing 云计算

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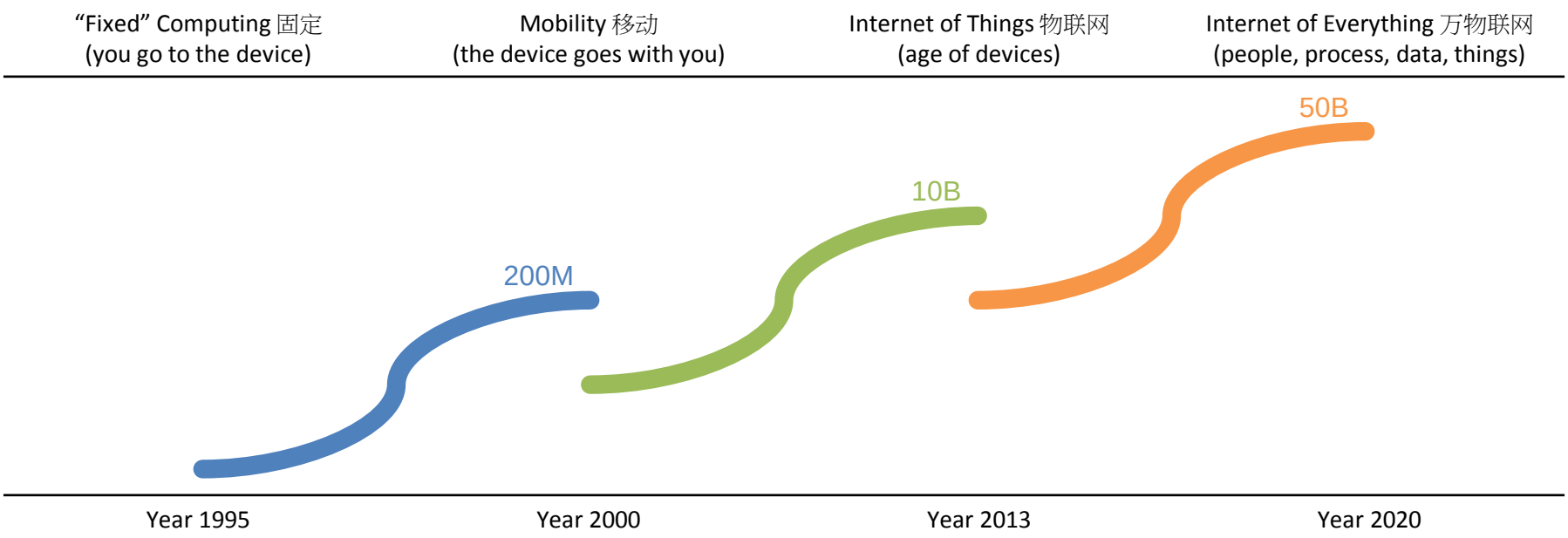
Internet of Things & Everything (万)物联网



Source: Cisco – Growth of the number of things connected to the internet.

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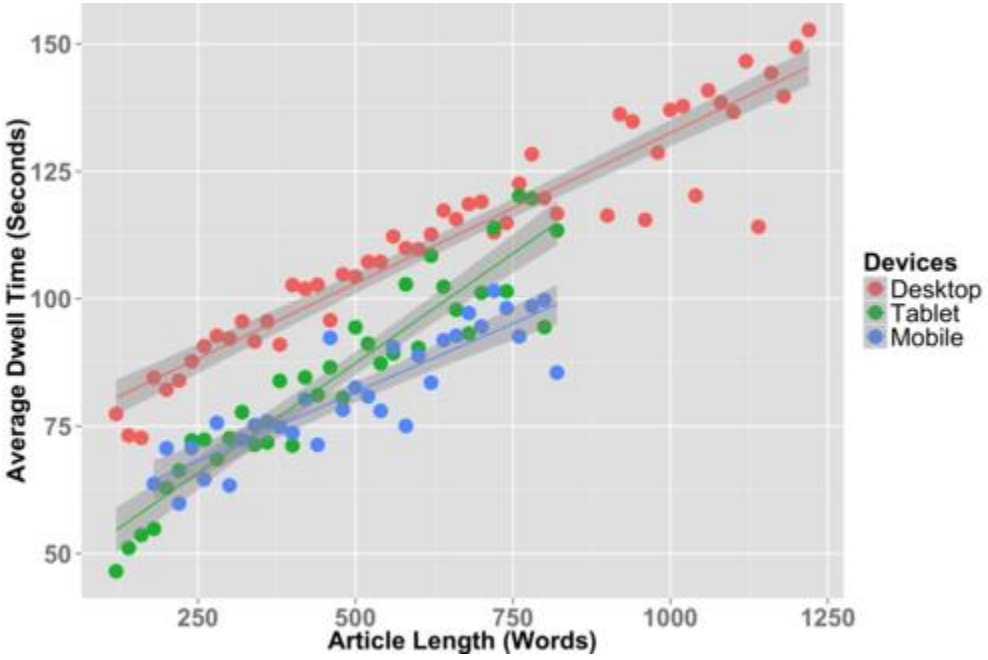
Challenges ahead 未来的挑战

- From web to mobile 从传统互联网到移动应用
- Dwell time per article less on mobile than web 移动用户的驻留时间在每篇文章上有着明显的减少
- Notifications to re-engage users 重新参与用户的消息推送
- Interactions between multiple devices 多设备间的交互
- Wearables collecting data more personal and in bigger volume 来自于可穿戴设备的大数据
- Security, privacy and trustworthiness more important than ever 安全，隐私，诚信将变得更加重要



Source: Yahoo Lab – Relationship between binned average dwell time and article length (per device type).

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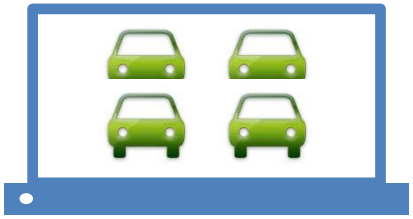
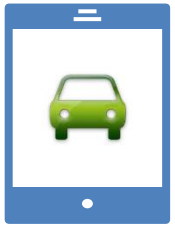
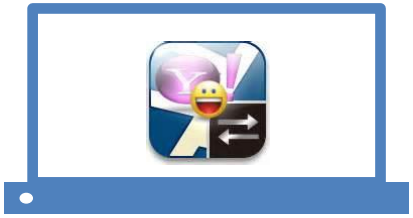
Opportunities abound 机会也很多

An ecosystem of connected devices whose seamless experience requires a design approach based on Consistency, Continuity and Collaboration principles. 一个生态系统的连接设备，其无缝的体验需要基于一致性、连续性和合作原则的设计方法。

	Web	Tablet	Phone
Consistency			
Continuity			
Collaboration			

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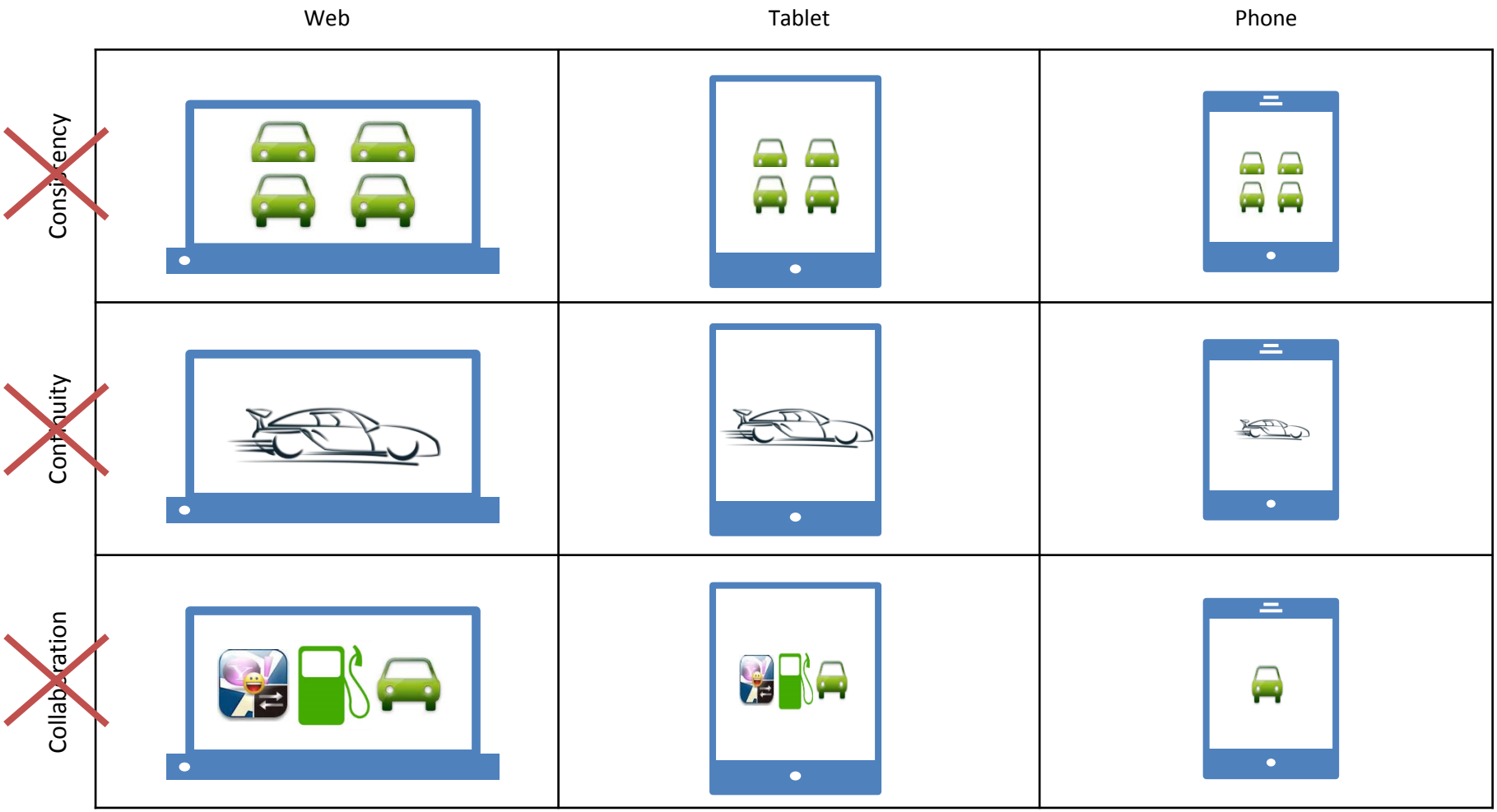

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New cloud 新云端

A new cloud infrastructure that supports **Internet of Things** and that realizes **Consistent**, **Continuous** and **Collaborative** (3C) user experiences.
一个崭新的云基础设施来支持**物联网**和实现有**一致性**、**连续性**、**有合作性**的用户体验。

Challenge	Requirement	Architectural Vision
From web to mobile 从传统互联网到移动应用	**A sustainable business model** 一个可持续的商业模式	**Accommodate O2O, B2C, B2B2C models** 适应O2O、B2C、B2B2C模式
Dwell time less on mobile 移动用户的驻留时间明显的减少	**Personalize everything** 完全个性化	**One unified data pipeline processing** 统一管道的数据处理
Notifications to re-engage users 重新参与用户的消息推送	**24/7 reliable services, anywhere** 提供7*24无间断的服务	**Effective pull, stream & push** 有效的拉、流、推送
Interactions between multiple devices 多设备间的交互	**3C-integrated experiences across devices** 有一致性、连续性、合作性的跨设备用户体验	**Single version of truth on data & analytics** 真实版本的数据和分析
Wearables collecting more data 来自于可穿戴设备的大数据	**Connect people, process, data & devices** 连接人、流程、数据和设备	**Support new signal types** 支持新的信号类型
Security, privacy, trustworthiness problems 安全，隐私，诚信问题	**Security, privacy & trustworthiness are number one design goal** 安全、隐私、诚信为首要设计目标	**Confidently and timely exchange & share data across devices** 自信并及时交换和共享数据

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引入雅虎现有的移动和云资产

INTRODUCING YAHOO'S EXISTING MOBILE & CLOUD ASSETS

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Hadoop – Incredible scale at Yahoo

Hadoop集群提升全球的用户体验

460
Products
产品

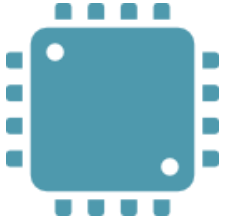
800
Developers
开发人员

17.2M
Jobs/Month
作业/月

世界上最大的Hadoop集群

35,000[1]
Servers
服务器

440 Petabytes
Storage
存储空间



10M Compute
Hours/Day
计算小时/天

[1] *Across Hadoop, HBase, Storm, Data Loading, and Dev Clusters.*

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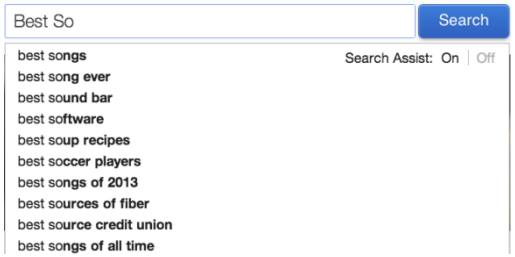
Hadoop – Behind every click at Yahoo

CONTENT PERSONALIZATION 内容个性化

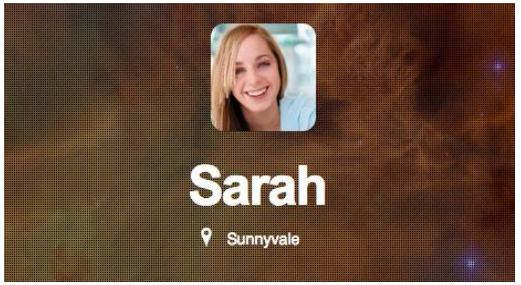
更相关的内容意味着更好的广告效果

AD TARGETING 用户定标



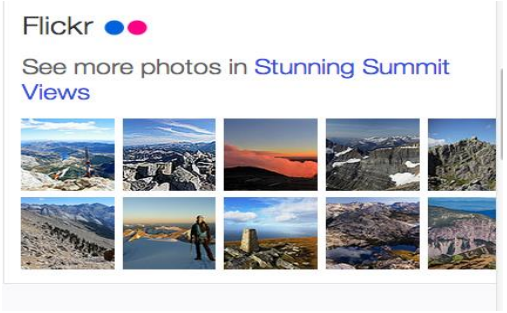
处理超过10亿的网页来提升搜索体验

ANTI-SPAM & ANTI-ABUSE 反垃圾/作弊



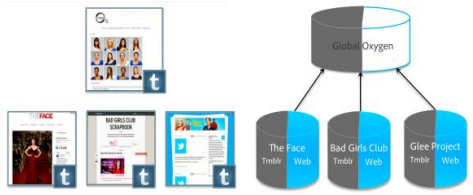
每天以大于95%的置信度从200万注册信息中过滤掉25%的虚假注册

CONTENT AGILITY 内容机动存取



单独基于集群的方案让发布新站点的时间从几个季度缩短到几个星期

DATA PIPELINES 数据流水线



每天预处理1千亿事件(35TB)的用户活动记录以供下游应用分析

AD OPTIMIZATION 广告优化

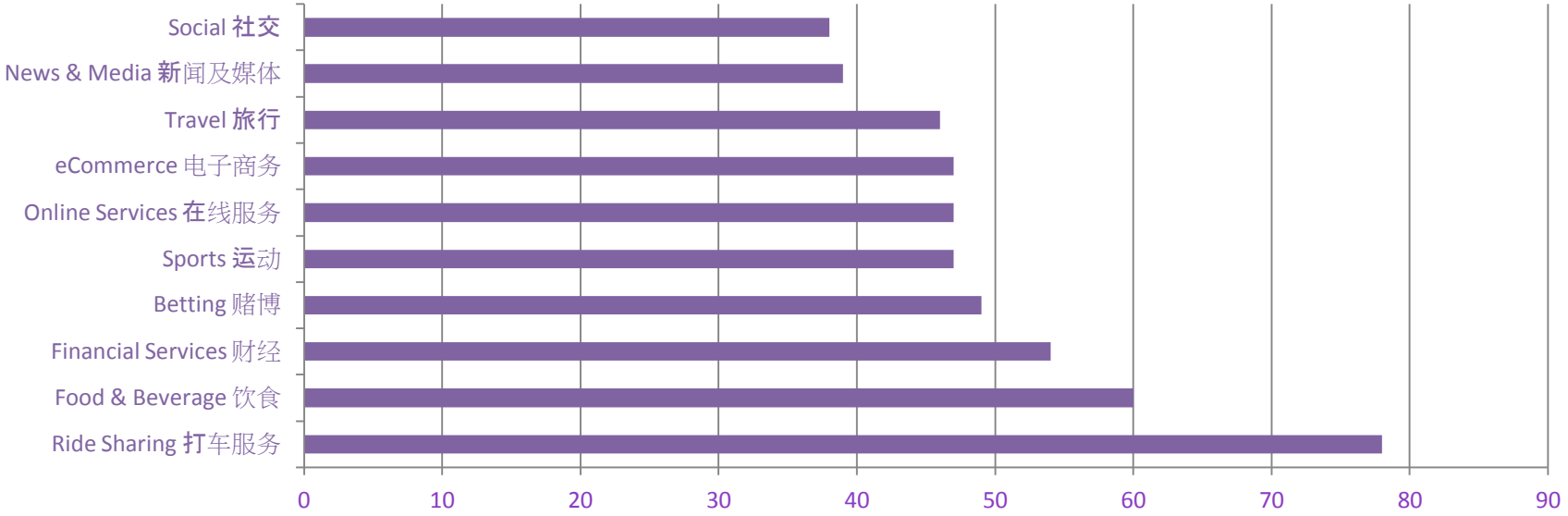
同时为100万个以上的合约提供广告投放预测和决策

Notification – Industry-wide problems

END-USER PAIN POINTS

- Dropped messages 没有成功推送的消息
- Duplicated messages (i.e. on one device) 推送重复的消息
- Spamming messages 垃圾消息推送
- Untimely-sent messages 不及时或不适宜时间的消息推送
- Replicated messages (i.e. on multiple devices) 在不同设备上推送重复的消息
- Non-engaging messages 用户参与度不高的消息推送

NOTIFICATION ENABLE RATES PER APP CATEGORY ON iOS PLATFORM[1]



[1] *Source: Kuhuna Mobile Analytics.*

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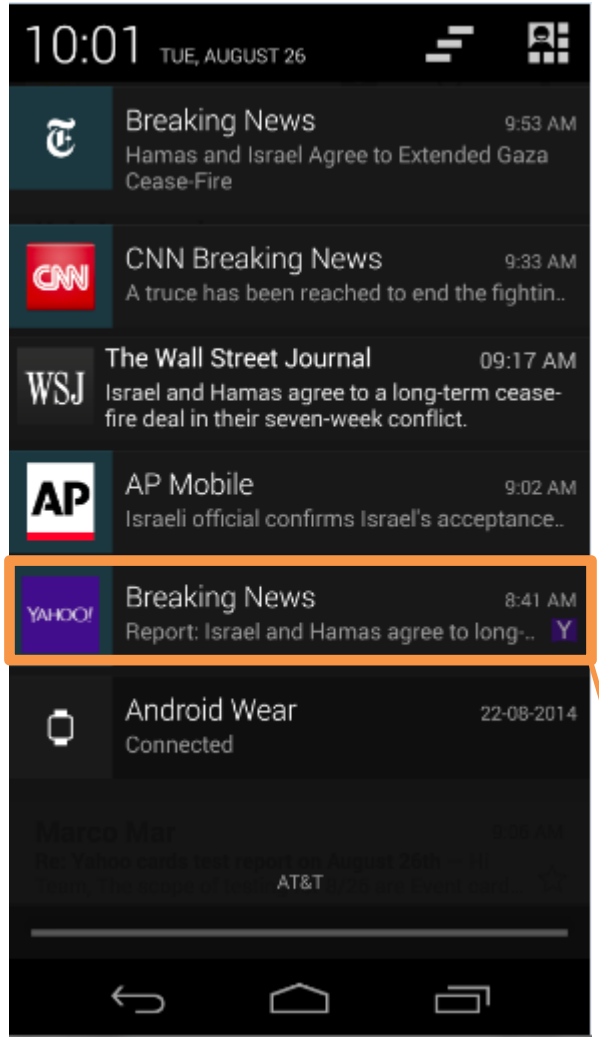
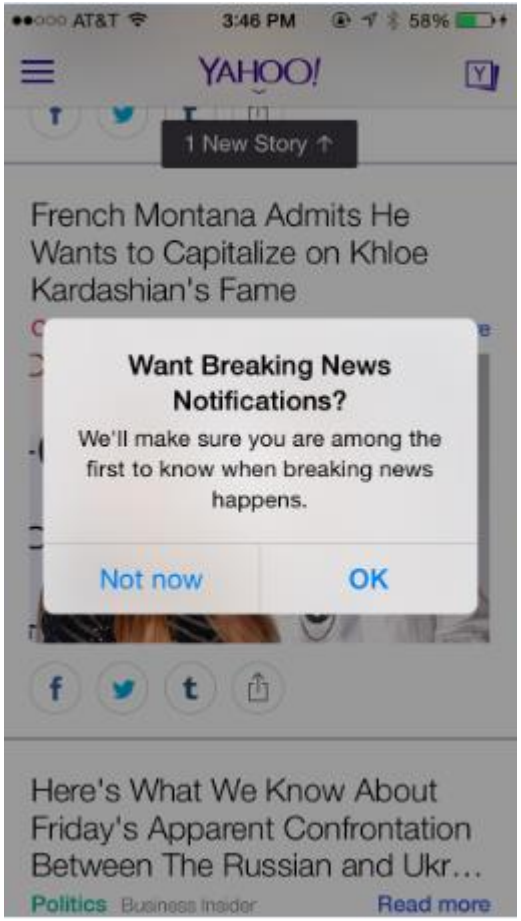
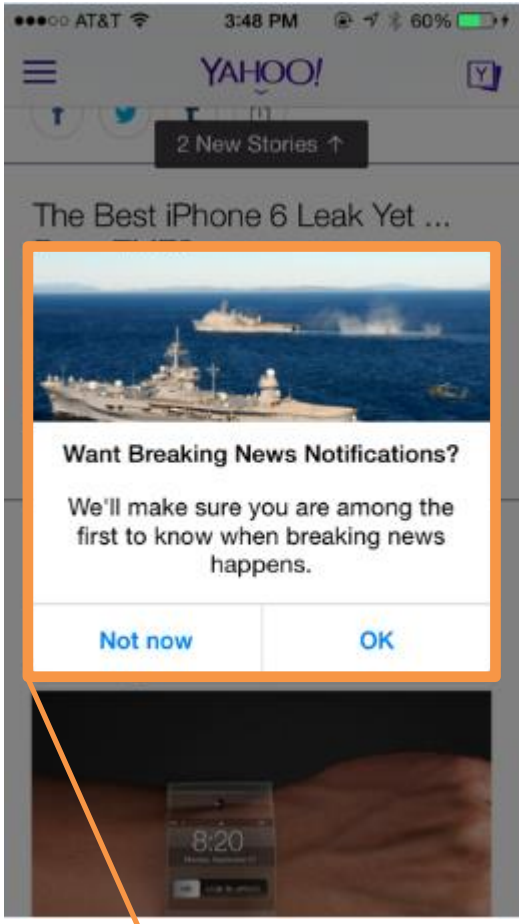
OnePush – Yahoo's notification standard







First to engage
抢先与用户进行参与

Higher notification opt-ins
提高用户接收推送率

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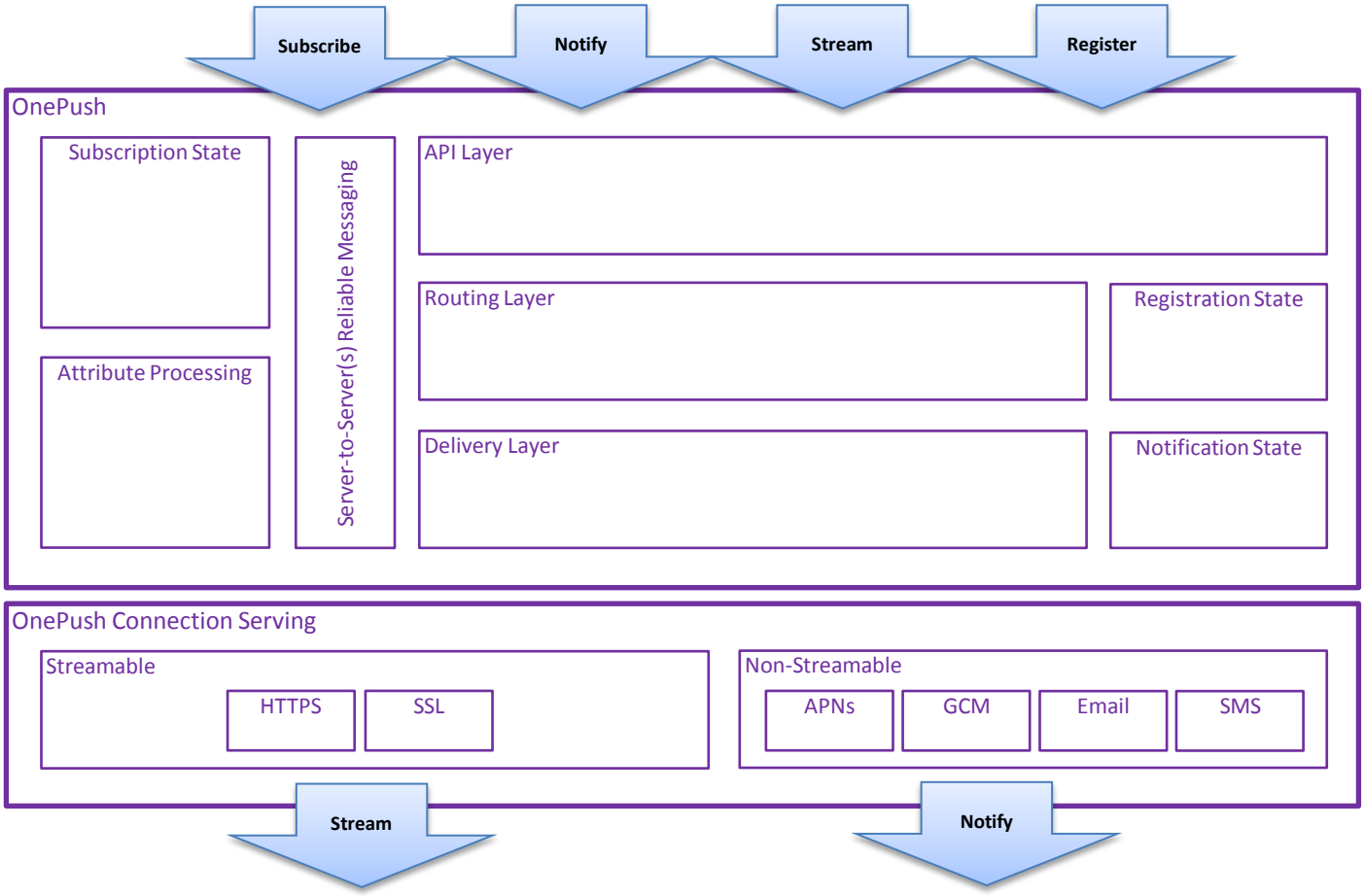
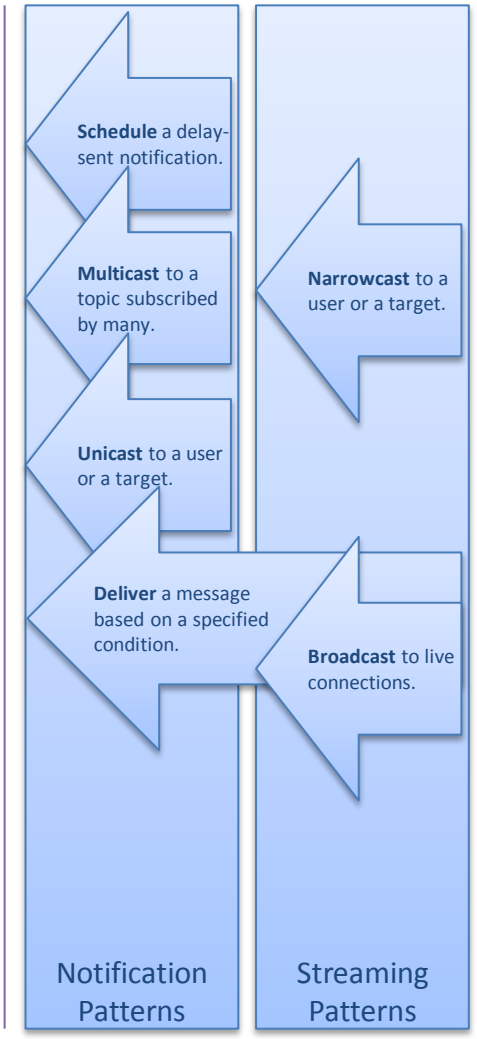
OnePush – Logical architecture

OnePush is a cloud service providing intelligent, personalized and cost-effective 1:1 and 1:Many (in Millions) messaging that span multiple channels and scale to hundreds-of-millions of devices on mobile and web.





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Flurry – Personalizing the mobile experience

Flurry's mission is to optimize the mobile experience through better apps and more personal ads.

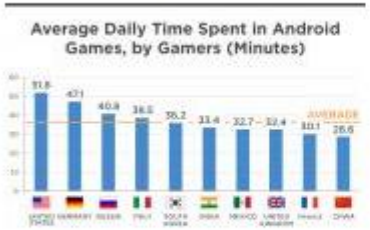
FROM WEB TO MOBILE

- New Behavior 新用户行为 – from Content Consumption, to Content Sharing, and now to Interactivity, Productivity and Personal Health & Fitness
- New Persona 新人物角色 – App Developers (in addition to Users, Advertisers, Publishers and Partners)
- Push Model 推送模型 – New user engagement (in addition to Pull and Stream models)
- O2O (Online to Offline) 线上到线下商业模式 – New enabled business model (in addition to B2C, B2B2C, etc.)

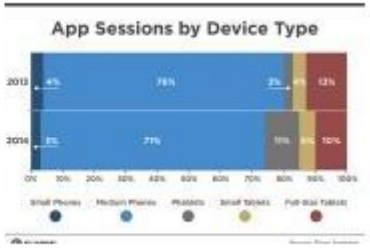
BETTER APPS THROUGH MOBILE ANALYTICS

FLURRY from YAHOO!

FLURRY INSIGHTS



Gaming: The Lingua Franca of Mobile



The Tides Turn for the Phablet's Popularity

Number of apps Flurry sees 看到应用的数量 – **540,000**
Number of app sessions per day 每日应用段量 – **5.5 Billions**

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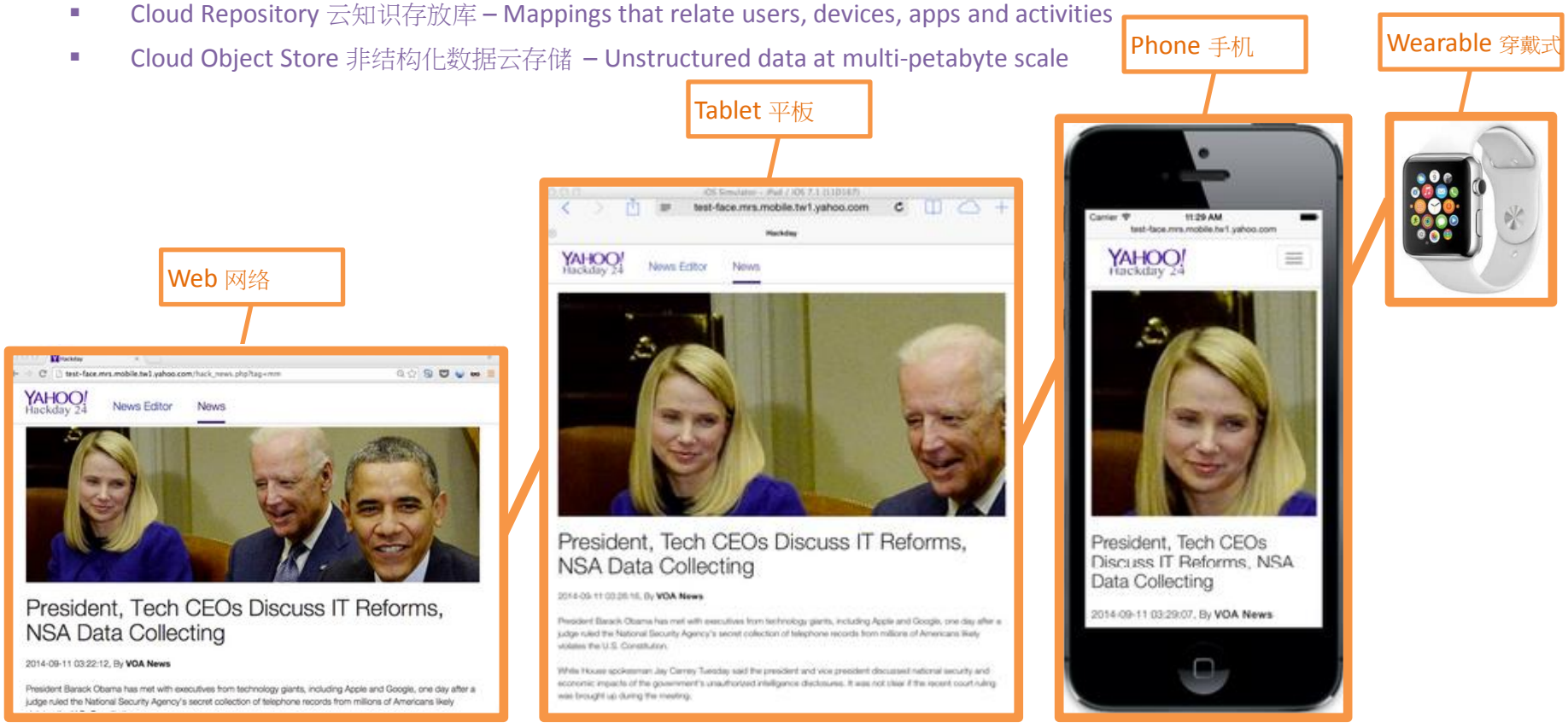
Mobile Services – Cloud for mobile

A set of cloud services collectively optimize for cross-app, multi-devices user experiences.

- Device Catalog 设备检测 – Currently up to 99.7% detection coverage for device, browser, app and network types
- Smart Photo Rescaling 智能图像缩放 – Bandwidth-sensitive, form factor appropriate, content-relevant, and GPGPU-powered
- Cloud KV Key-Value云存储 – Multi-device app cookie store
- Cloud Repository 云知识存放库 – Mappings that relate users, devices, apps and activities
- Cloud Object Store 非结构化数据云存储 – Unstructured data at multi-petabyte scale



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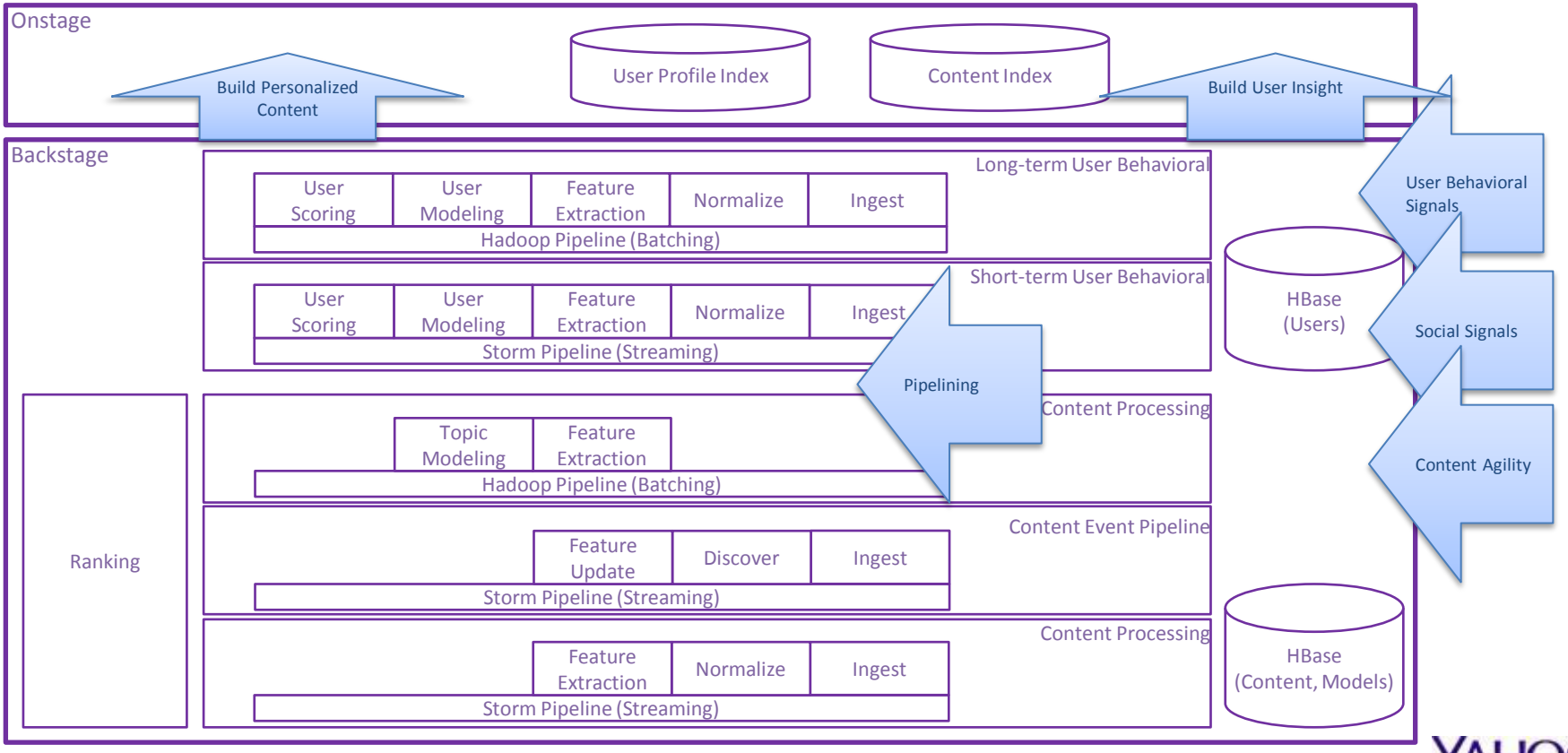
Personalization – Know what users want

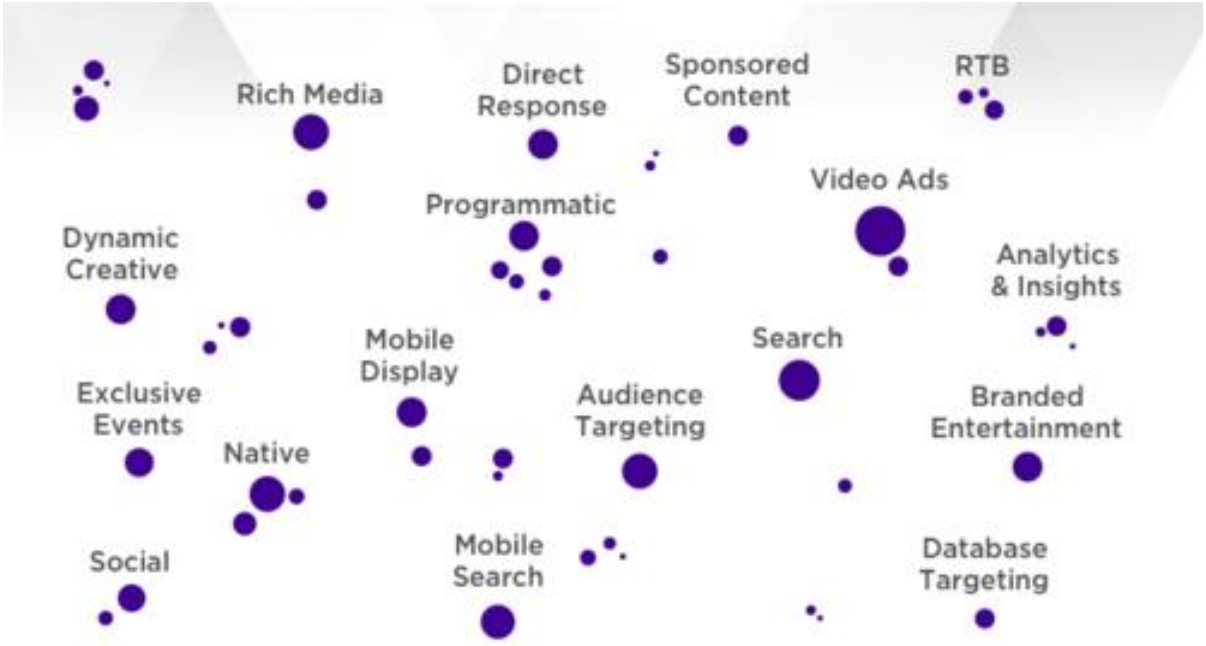
Personalized content recommendation for Yahoo's Home Page on both web and mobile.

- Content Pipelining 内容处理 – Support streaming & batching from ingesting [content & signals], to content reprocessing [CAP], to topic modeling, to semantic analysis, and to feature extraction
- User Profiling 用户建模 – Long-term (batching) and short-term (streaming) user behavioral profiling
- Ranking & Serving 内容排序 – Personalized content based on user profiling



Gemini – 移动搜索和原生广告放在一起的服务

The first unified ad marketplace for mobile search and native advertising.



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新统一云端愿景

NEW UNIFIED CLOUD VISION

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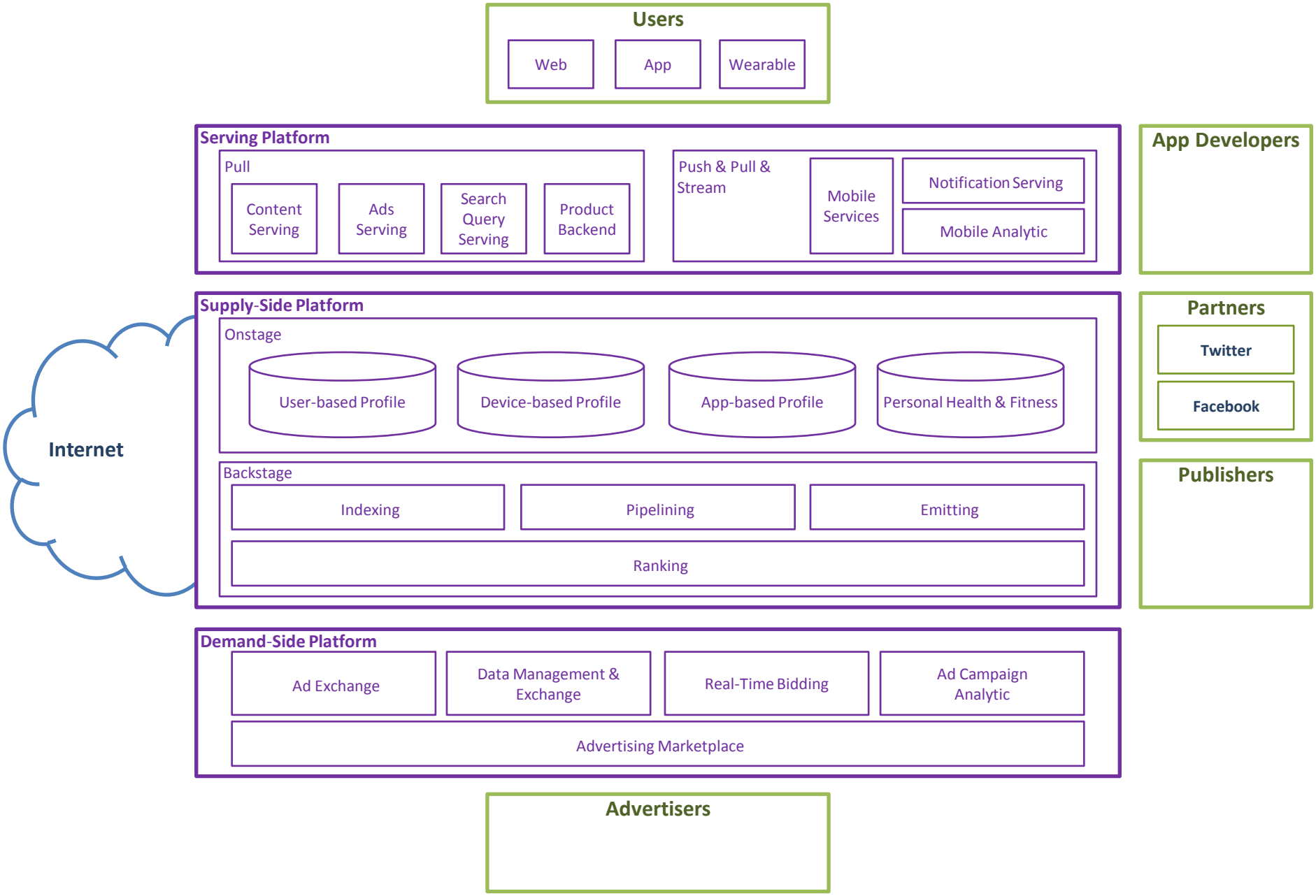

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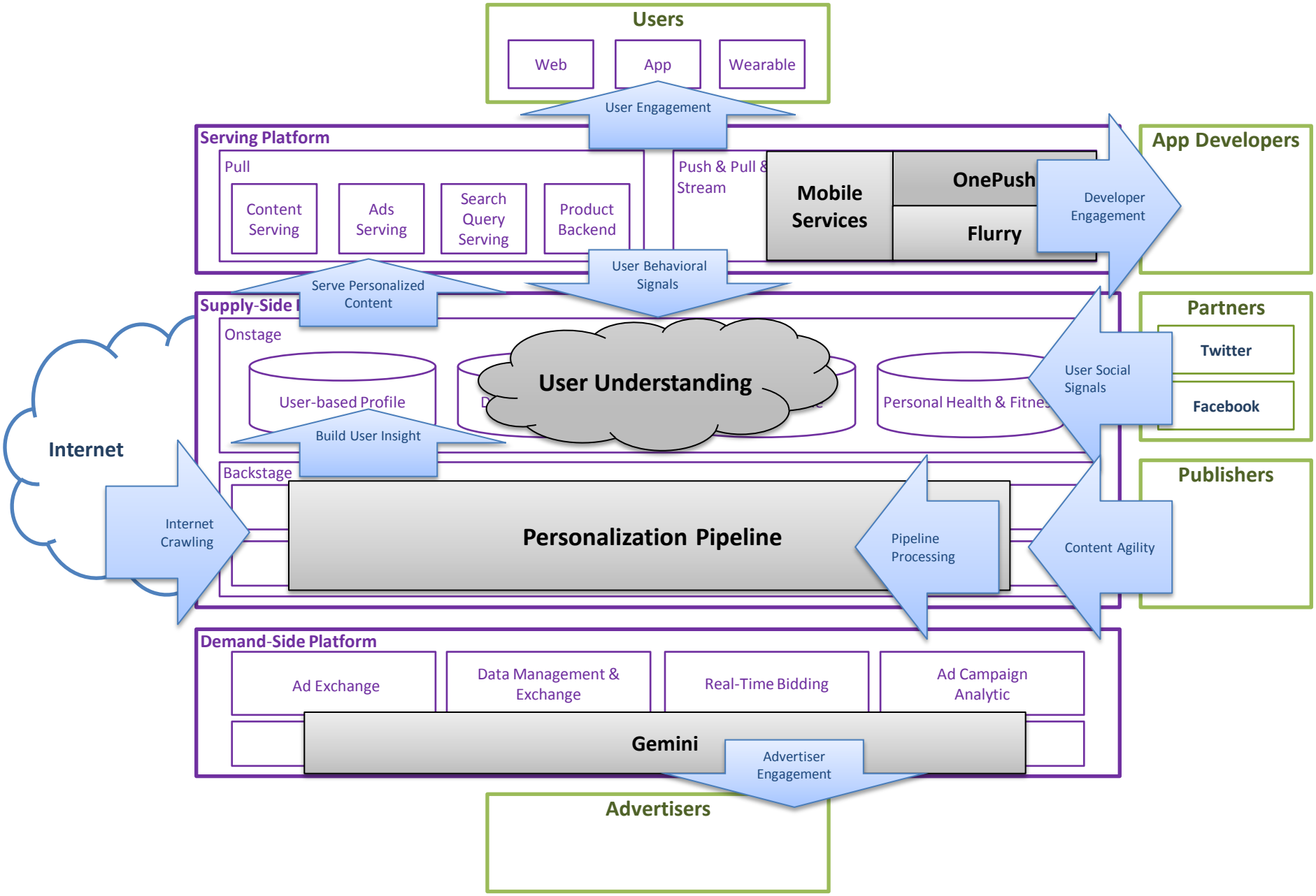

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谢谢大家

THANK YOU

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Notes & Acknowledgments

1. **Internet of Things** – Wikipedia, http://en.wikipedia.org/wiki/Internet_of_Things.
2. Liangjie Hong & Suju Rajan, "**Science Powering Product and Personalization: Going Beyond Clicks**", Yahoo Lab, October 2014, http://yahoolabs.tumblr.com/post/99405569711/science-powering-product-and-personalization-going.
3. Michal Levin, "**Designing Multi-Device Experiences – An Ecosystem Approach to User Experiences across Devices**," 2014, O'Reilly

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