

Mobility

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Safe Harbor Statement

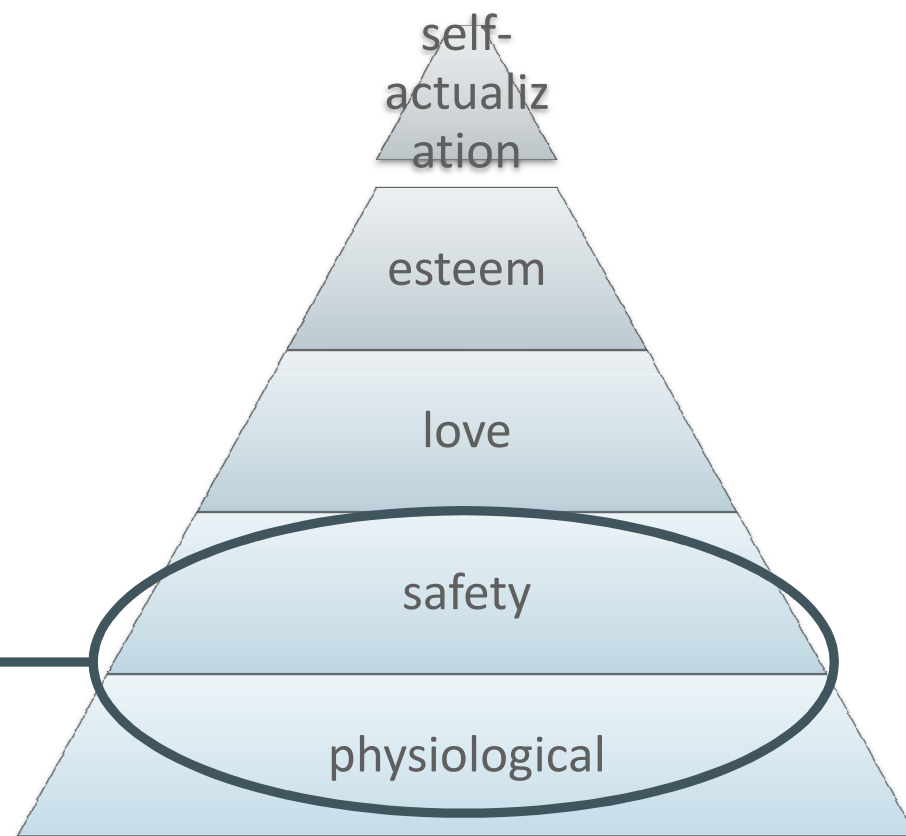
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What Do People Carry?

Keys

Money

Mobile phone



Maslow's Hierarchy of Needs

Mobile Life, Daily Life

1990s



2010s

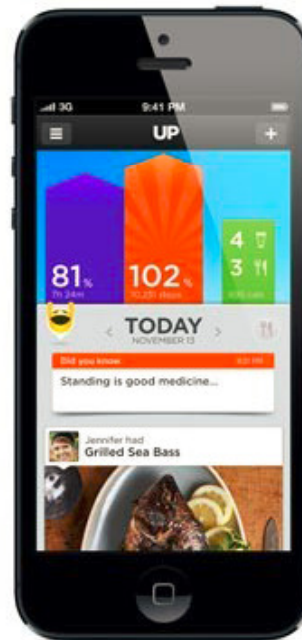


Mobile Life, Daily Life

THEN...



NOW...



Ubiquitous, mobile, and pervasive computing are converging

Due to the on-going incorporation of concepts from all three areas into mobile devices and mobile information systems enabled by technological advances and standardization efforts.

Ubiquitous computing – an environment where computers are “embedded in the everyday world” – both in a physical and social sense

Mobile computing – Mobile computing primarily refers to the “portability of computing”, namely the process of computing services becoming mobile

Pervasive computing – refers to the “broadly accessible and increasingly-seamless embedding of computing into the environment”

What Is Mobile Computing?

Mobile computing is human–computer interaction by which a computer is expected to be transported during normal usage. Mobile computing involves mobile communication, mobile hardware, and mobile software.

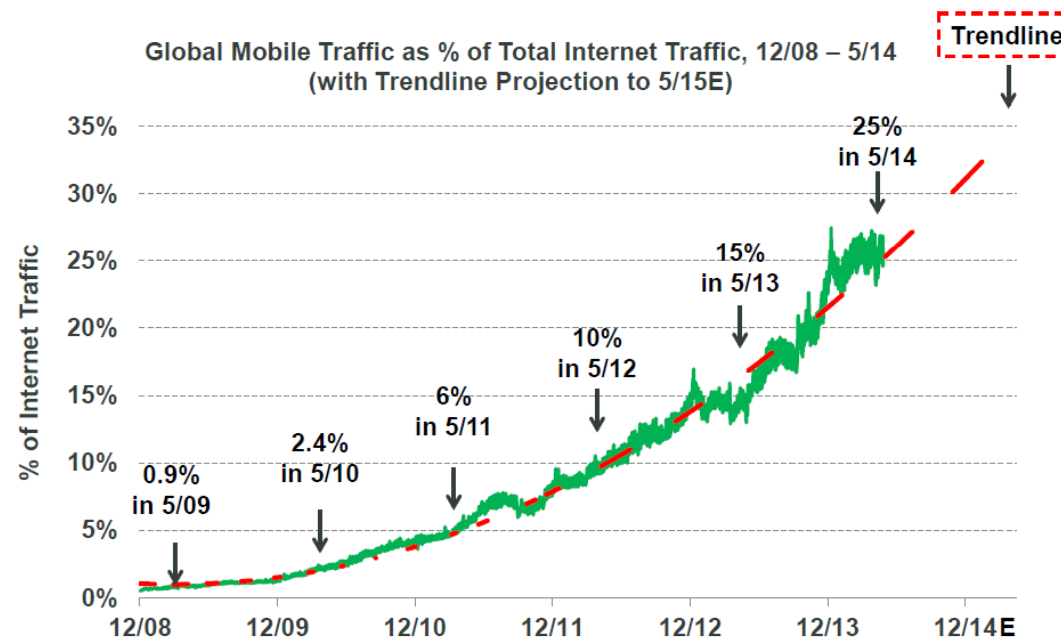


Mobile Computing Is Just Getting Started

Facebook – In January 2013 for the first time that more audience was coming from mobile devices than from PCs.

Search—Google’s great cash cow—is declining in the United States as people use their phones to search for restaurants, bus times, and weather reports.

Mobile Traffic as % of Global Internet Traffic = Growing >1.5x per Year & Likely to Maintain Trajectory or Accelerate



@KPCB

Source: StatCounter Global Stats, 5/14. Note that PC-based Internet data bolstered by streaming.

What Comprises Mobile Computing?

BYOD/COPE – Employee Privacy, Appropriate Device Usage

Authentication – Trust Boundary

App Stores – Distribution Channel (Google Play, Apple Store, Microsoft Windows Phone Store, Amazon Appstore for Android)

Device Management – Enterprise Mobility Management (EMM) consist of MDM (Mobile Device Mgmt.), MAM (Mobile App Mgmt.) and MCM (Mobile Content Mgmt.)

Security



Enterprise Mobility Management

Term	Description
Mobile Device Management (MDM)	Focuses on the device level including the management and security of certificates, Wi-Fi settings, E-Mail settings, VPN settings, and hardware and software inventory aspects, and is typically responsible for deploying applications. Typically used on corporate liable or corporate managed BYOD devices. Companies providing MDM include Mobile Iron, AirWatch (VMWare), Zenprise (Citrix), SOTI, Fiberlink (IBM), Good Technologies etc.
Mobile Application Management (MAM)	MAM focuses on providing higher level of control over mobile application. MAM describes software and services responsible for provisioning and controlling access to internally developed and commercially available mobile apps used in business settings on both company-provided and "bring your own" smartphones and tablet computers. Containerization, Virtualization, integrated SDKs etc are different ways of MAM. Most of the MDM vendors are adding MAM functionality to their portfolio. Pure play MAM vendors include OpenPeak, Mocana, Bitzer, Appcentral (Good). AirWatch, MobileIron and IBM have added MAM capabilities to their MDM.
Mobile Content Management (MCM)	Mobile Content Management system enables services for storing and delivering content and services to mobile devices. Enables users to access business critical information anytime, anywhere. Provides IT users with the security and controls required to distribute sensitive content with customers and partners without resorting to storing information in open cloud services such as Dropbox. Oracle's WebCenter Content management is MCM.

Mobile App Becomes the Fundamental Value Delivery Vehicle

Mobile operations – improve workflow and operations



Mobile collaboration – information management and social collaboration



- Mobile commerce – efficient transaction and commerce



- Mobile marketing – effective marketing and campaigns



Native Or Hybrid - It's How You Spin The Answer

"Native is the answer"

These all look "native" to consumers (via app store)

"HTML5 is the answer"

These all are developed using Web technologies

	Native	Hybrid	Web
Consumer	40	40	20
Enterprise	10	60	30

Consumer/Enterprise split in 2015



Gartner.

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Mobile Application Development Challenges

Developing for Multiple Mobile Platforms

Delivering High-Quality Apps That Securely Engage Users and Meet Business Objectives

Connectivity to Back-End Systems and Data

Meeting Accelerated Time-to-Market Requirements

Integration with Existing Development Processes

Mobile Cloud Computing

We define mobile cloud computing as an **integration of cloud computing technology with mobile devices** to make the mobile devices **resource-full** in terms of computational power, memory, storage, energy, and context awareness.

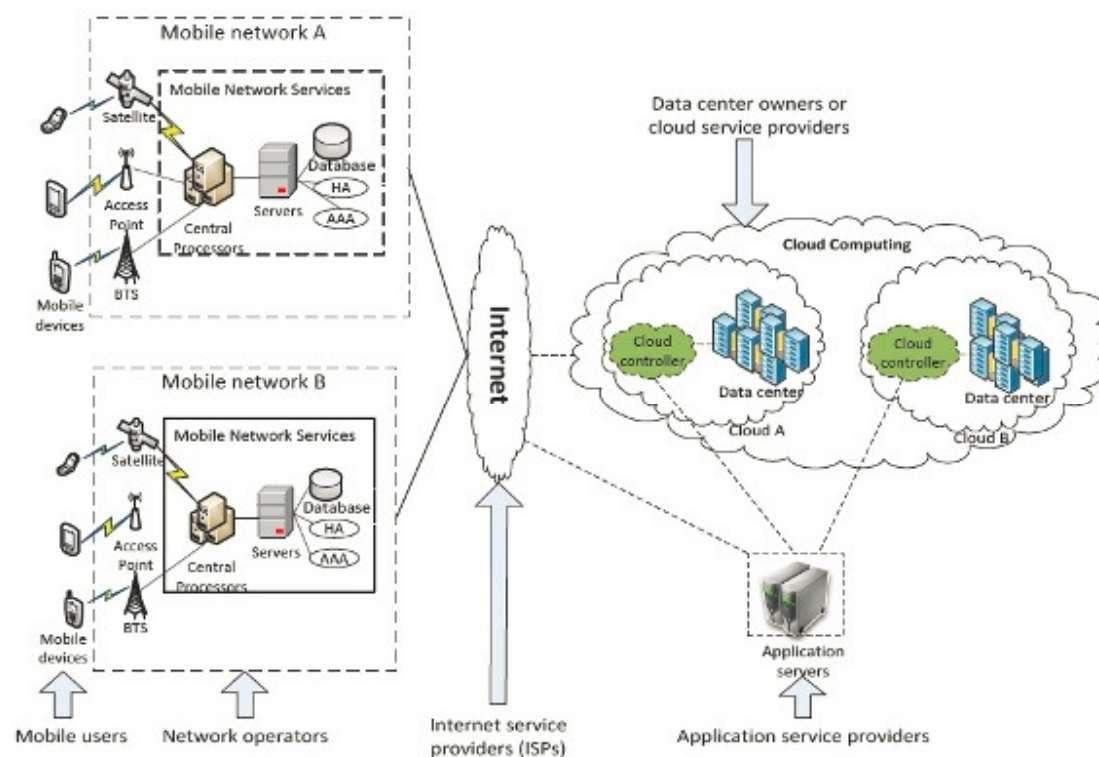


Fig. 1. Mobile cloud architecture

MCC Challenges

Limitations of mobile devices – size of screen, energy resource

Seamless Connectivity – less-reliable transmission grounds

Long WAN Latency – utilizing WLAN instead of HSDPA(High Speed Download Packet Access) to process heavy functionalities in "cloudlet"

Cloud's trustworthiness – channel of Internet

MCC Billing – Mobile Network Operators as a bridge between cloud-mobile and cloud providers

Heterogeneity in MCC – Interoperability between fragmented systems

Division of application services – core computing task is processed by cloud

Role of Middleware in MCC

Loss of connection

- Client and middleware caching
- Middleware push

Limited resource

- Cloud Computing
- Personal Mashup Platform

• Bandwidth/Latency

- Protocol transformation
- Result optimization

• Connect to the backend

- API/Services
- DB Synchronization
- Transaction Replay

Mobile use Cloud deployed Services

Protocols:

- RESTful Services
- SOAP-based Services

Upon authorizing access to service resources, the main limitation of consuming RESTful or SOAP-based services in mobile devices is due to the XML processing. However, due to the lightweight design and asynchronous request/response approach of RESTful services, the data exchanged is small in contrast to the heavyweight SOA-based services.

Mobile Security

Mobile security vs. conventional

mobility

strong personalization

strong connectivity

technology convergence

reduced capabilities

Threats

- physical
- mobile network connectivity
- malware

Mobile Cloud Security

Challenges

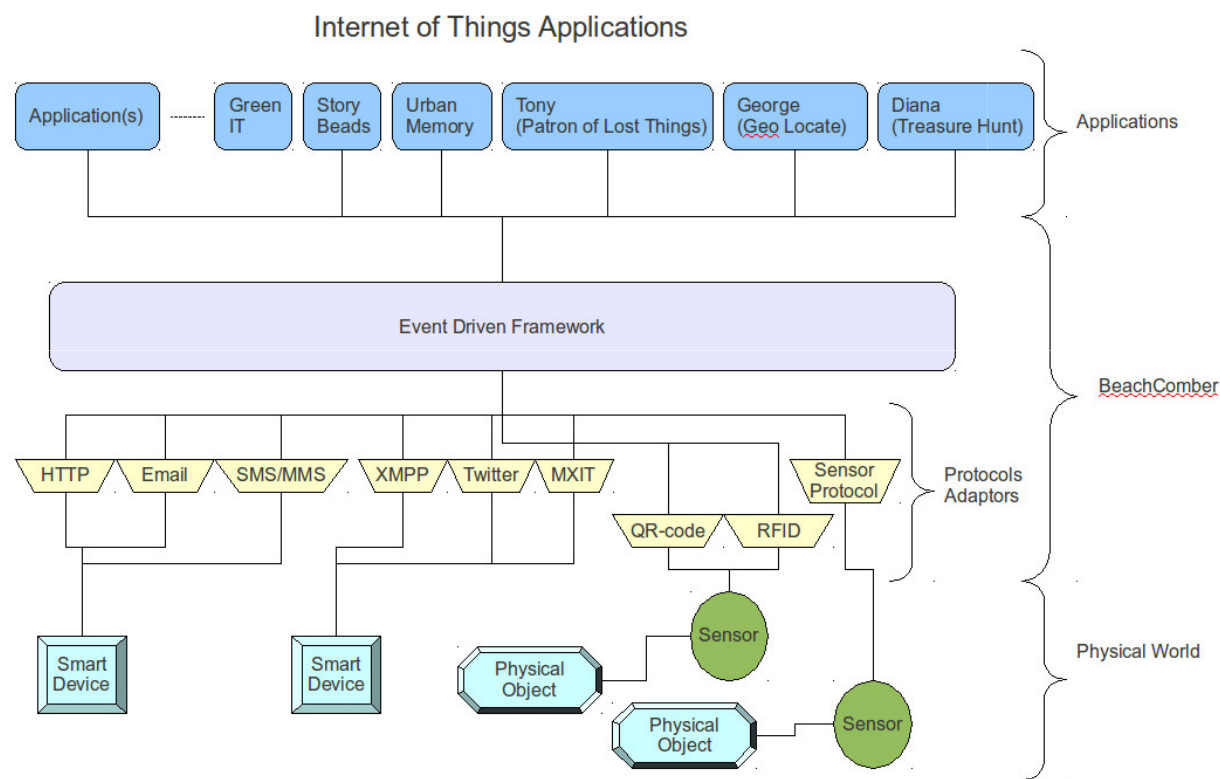
Platform Reliability

Data and Privacy Protection

Approaches

- Protection to Platform Reliability – Integrating the current security technologies
- Data Encryption and Key Management
- Authentication and Access Control
- Privacy Protection

Mobile + The Internet of Things → Fast Data



Combination that links the physical world to cyberspace through the smart device

An enormous number of devices and things will be connected to the Internet, each providing data and information and some, even services

These include personal objects we carry around such as smart phones, tablets and digital camera

merging trend – MBaaS

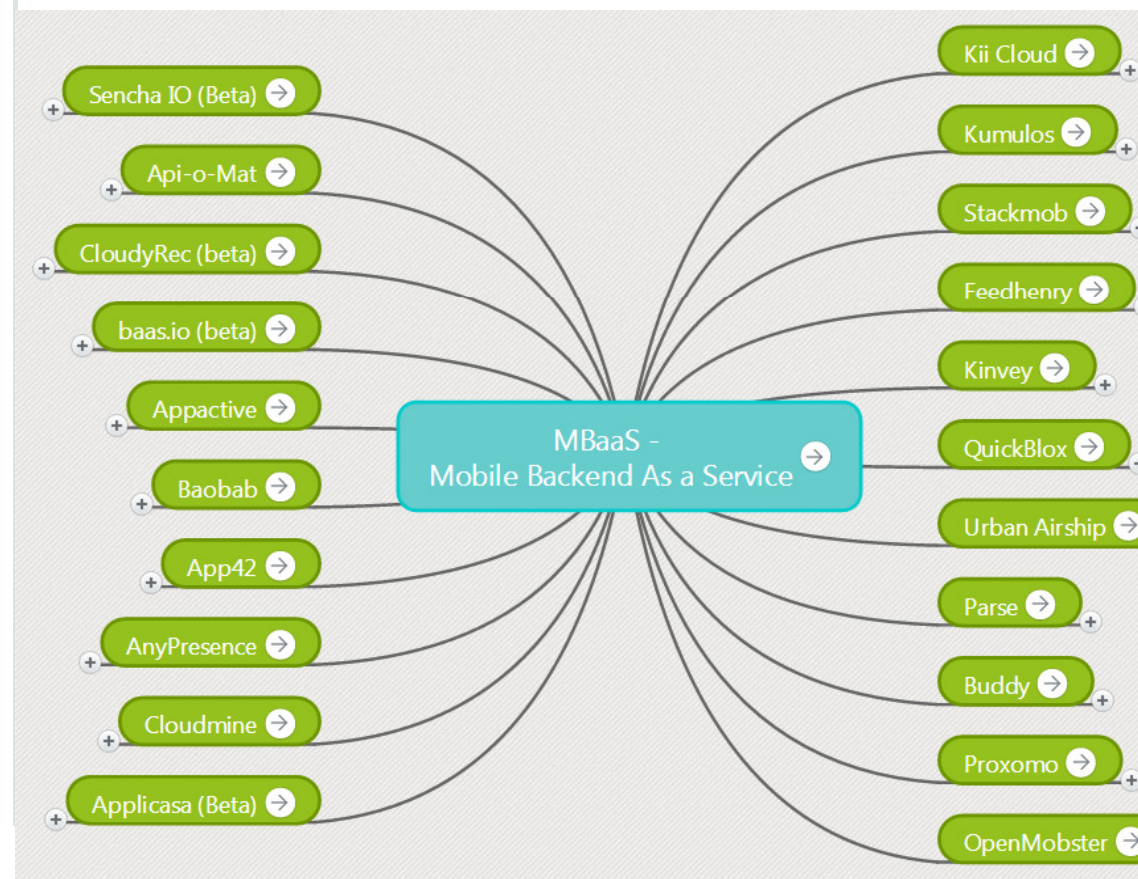
“Turn-on infrastructure” for mobile applications.

Solutions that provide pre-built, cloud hosted components for developing mobile application backends.

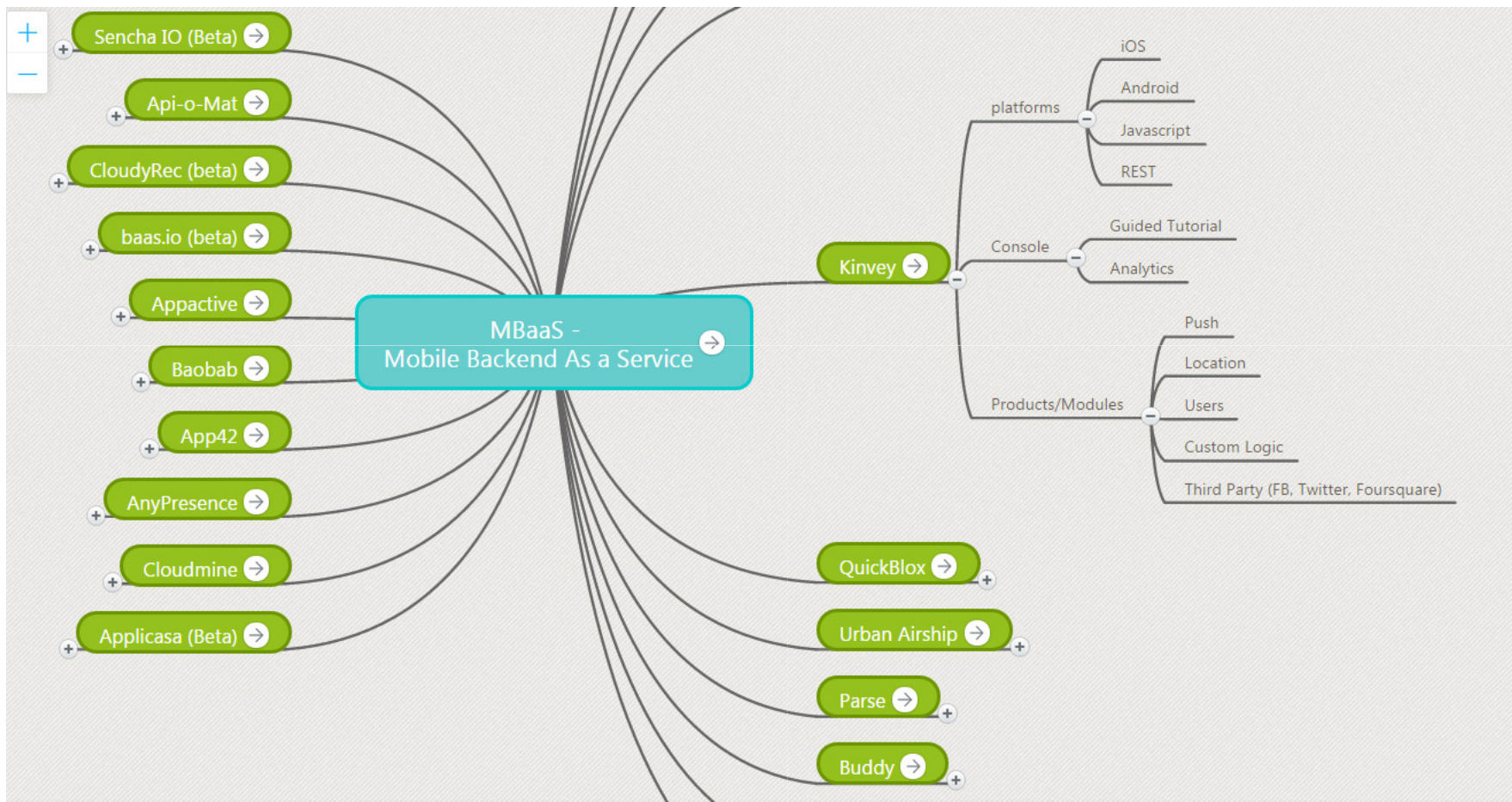
reduce the time and complexity required to build mobile applications.

allow developers to focus on core features instead of low-level tasks.

• MBaaS Providers



kinvey MBaaS



The Open Group Open Platform 3.0™

The convergence of technologies such as mobility, social networks and social enterprise, big data analytics, cloud computing and The Internet of Things – Gartner identified this as a ‘Nexus of Forces’, while IDC is calling it the 3rd Platform. The Open Group are referring to the convergence as Open Platform 3.0.

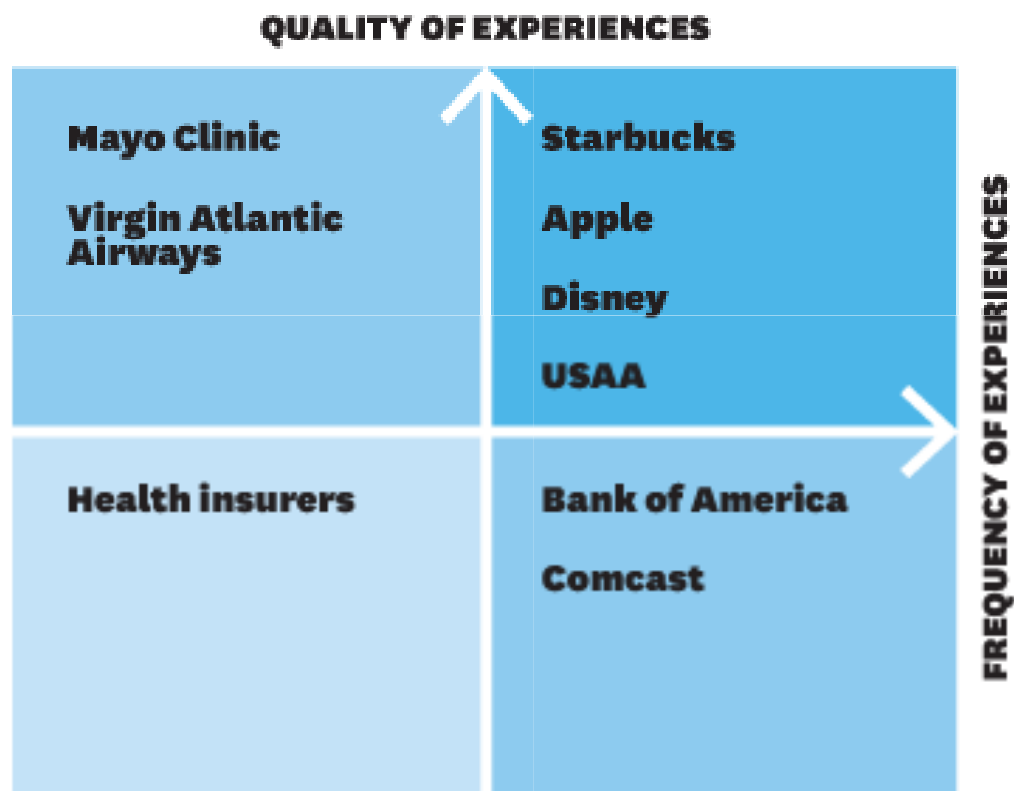
The Open Group established the Open Platform 3.0™ Forum to look at how these technologies can be used effectively and reliably both in combination (as a platform) and individually.

22 Open Platform 3.0 business use-cases



What's Your Mobile Strategy?

How You'll handle mobile mind shift?



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tesco's Home Plus: Reducing Steps in Daily Tasks



Nike+ FuelBand: Enhancing Value by Extending with APIs



Fuelband that monitors active lifestyle of 10+ million users on a daily basis

Current data grid volume is approximately 150,000 request per minute with about 40 million objects at any given time on the grid

Oracle Coherence & Oracle Exadata for new digital sports platform

Fitness Monitoring



F Park

The global first implementation of a city wide “smart” parking management system

Ability to remotely 27,000 metered parking spaces and gather information from 14 garages having about 13,000 spaces”

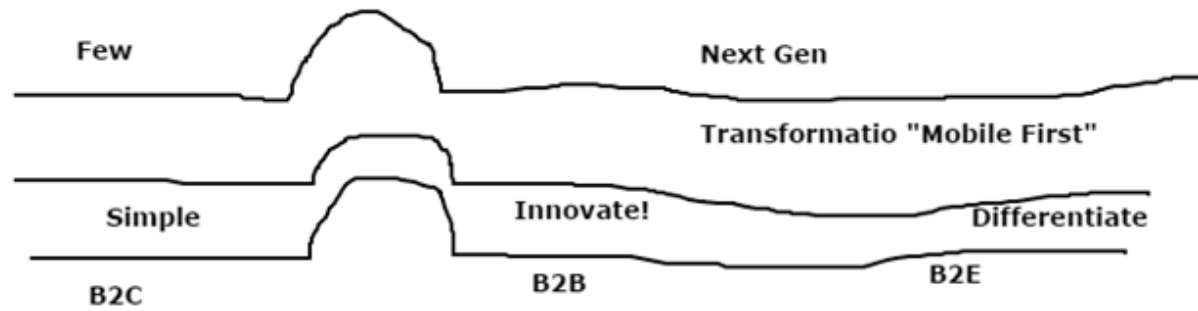
Customers can look for vacancy and pay for parking by phone

Smart Parking Management

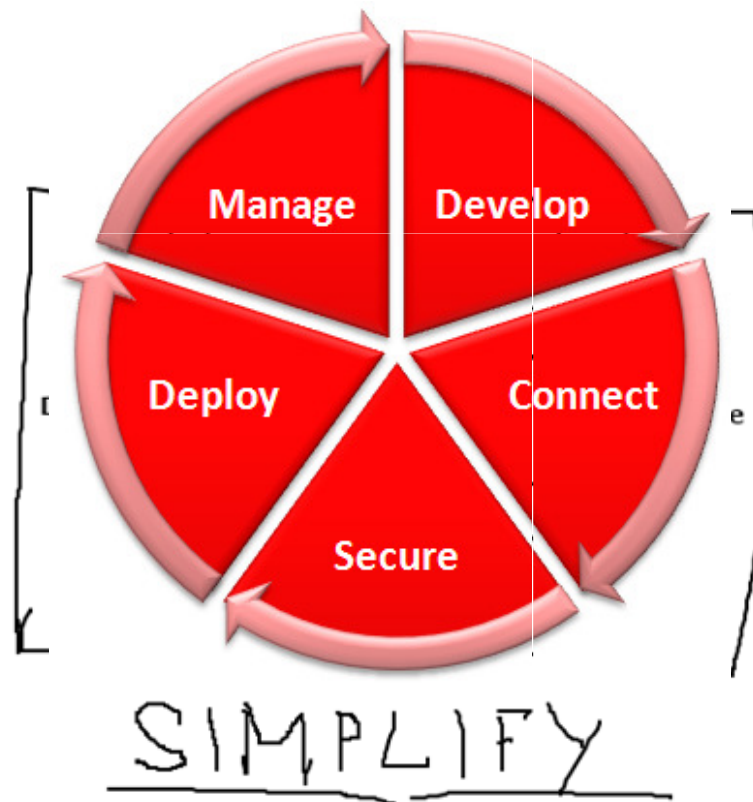
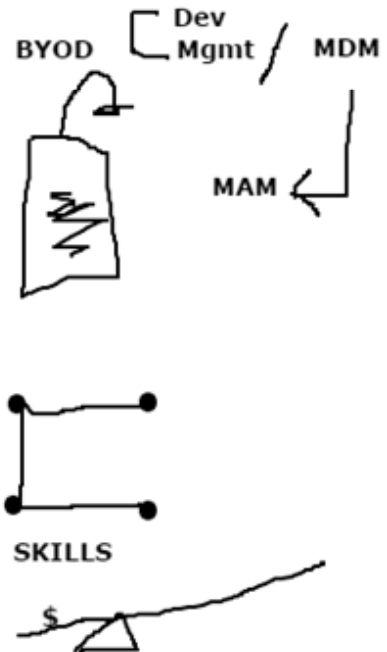


SF Park Pursues Comprehensive Parking Approach at Over 20,000 Metered Spaces and Parking Garages

Roadmap to Enterprise Mobility



Challenges



Value



