

Technology and Management Directions for Smartphones and Tablets

Ken Dulaney

Key Issues

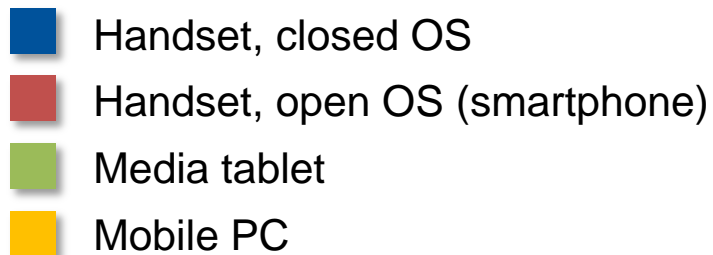
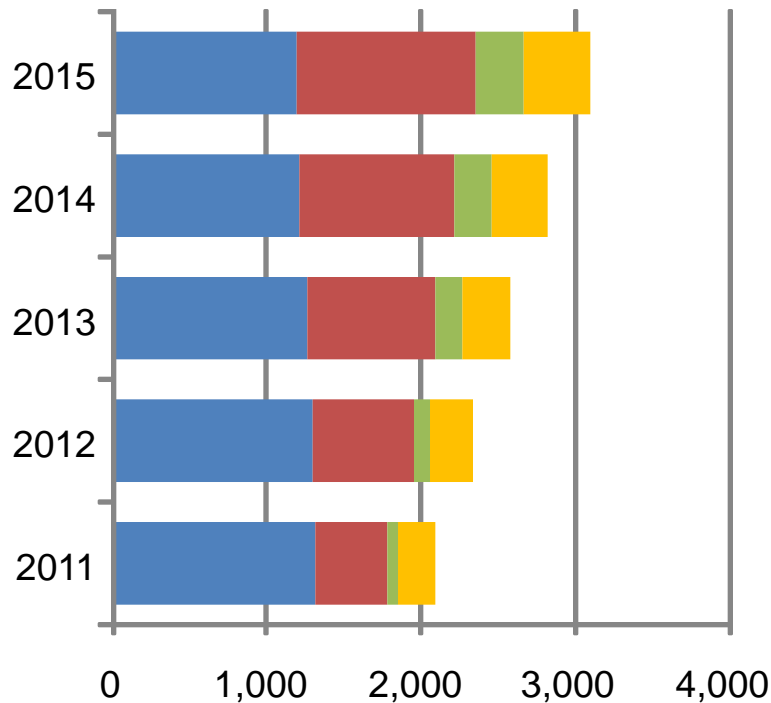
- How will the technology of handheld devices evolve and mature during the next five years?
- How will consumer – enterprise device security and management evolve over the next five years?

Key Issues

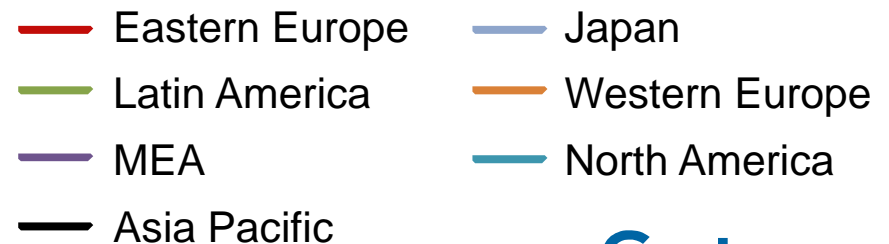
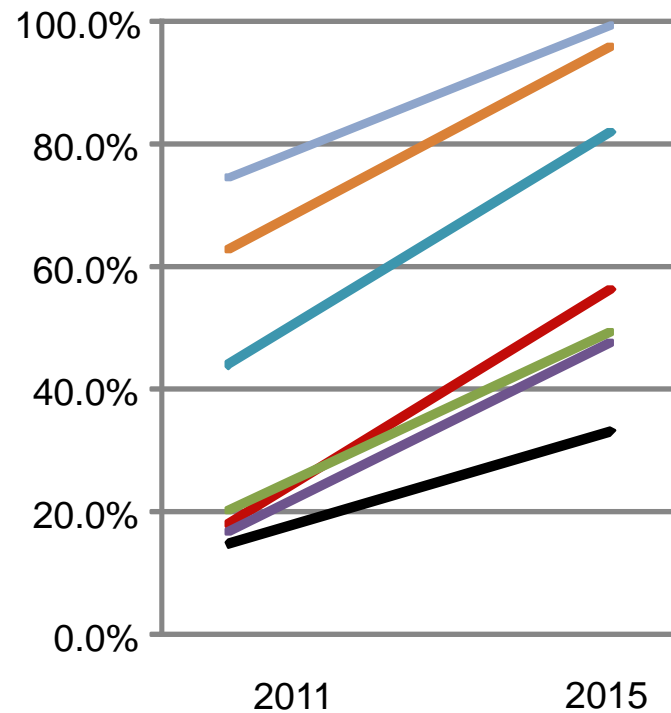
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Mobile Devices

Predicted Mobile Device Shipments



Smartphones as a %age of Handset Shipments



Device Trends

↑
Tablets
↓



- Tablet prices fall, under \$300 for entry level 10" by 2013
- iOS domination will shift to joint iOS/Android domination — comprising 80% tablets shipped in 2015
- 10" remains the dominant tablet size in mature markets
- Windows 8 could unify tablet and PC platforms by 2013
- High-density HD screens become mainstream
- Android remains fragmented

↑
Smartphones
↓



- Handset and tablet high-end features continue to improve: more sensors, multicore processors, better cameras, high-resolution screens, NFC, new interface experiences...



- Low-end handset prices continue to fall, approx. \$50 wholesale for "white box" Android devices by 2012

Mobile Computer Segmentation Matrix

Closed Face

Clamshells

Convertibles



Open Face

Slates

- Full touch
- Half touch

Sliders

- Landscape (horizontal)
- Portrait (vertical)



Hybrids

Wearables



Small

(2"-5")

Medium

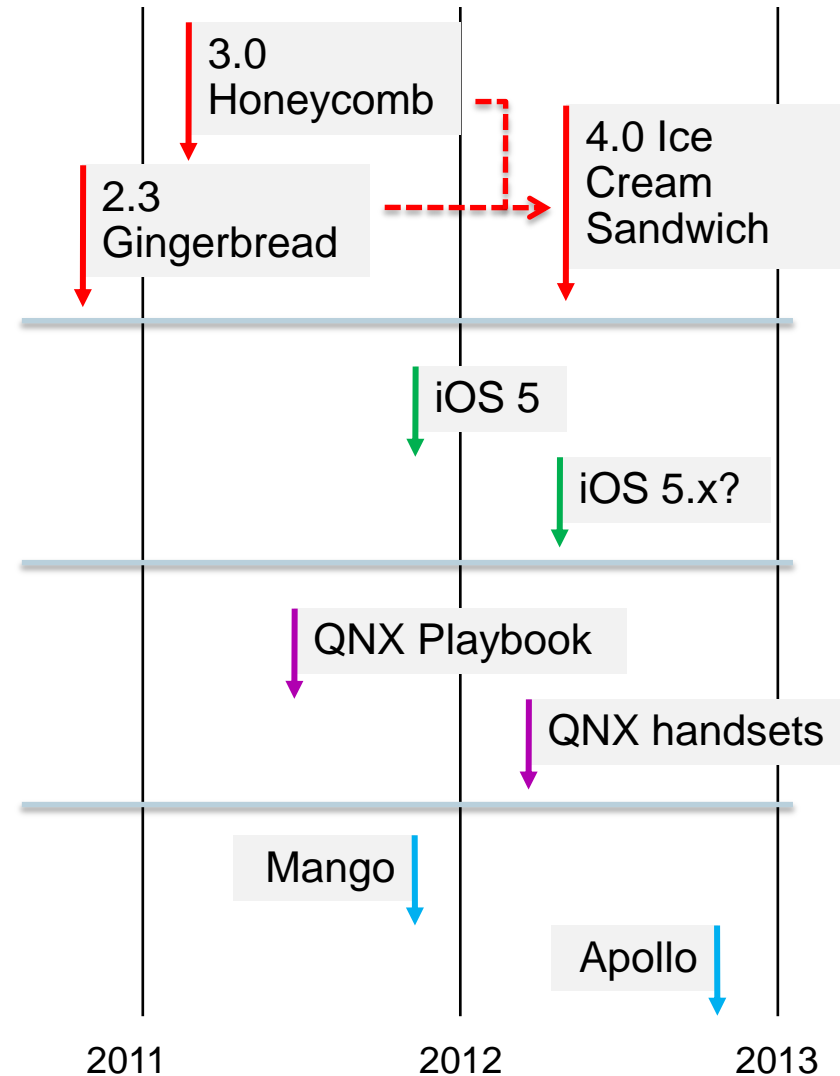
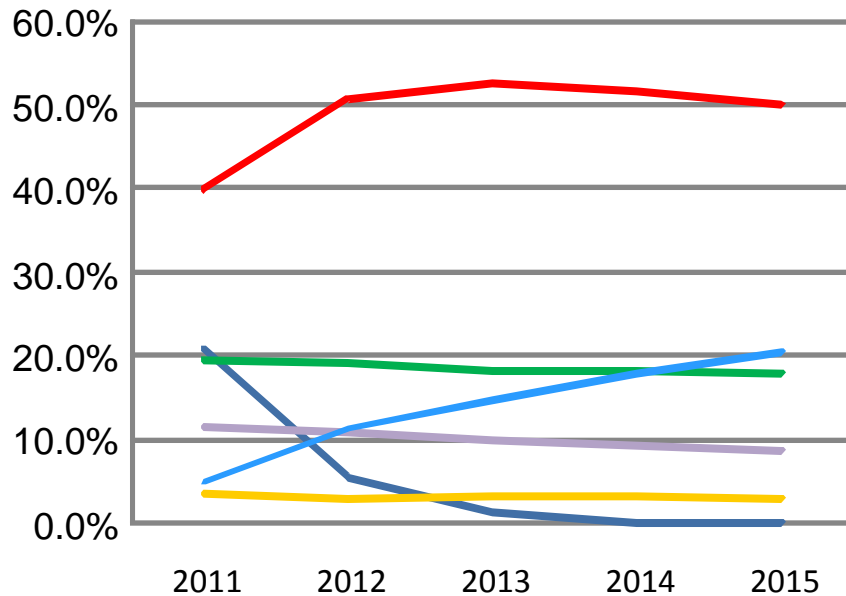
(5"-12")

Large

(12"+)

Smartphone Platform Trends

Predicted Smartphone Platform Market Share 2011 to 2015



User Interface Comparisons



Android 3.1
Honeycomb



webOS
3.0



Nokia MeeGo
(no home
screen)

Windows
Phone 7
Mango
(single home
screen)

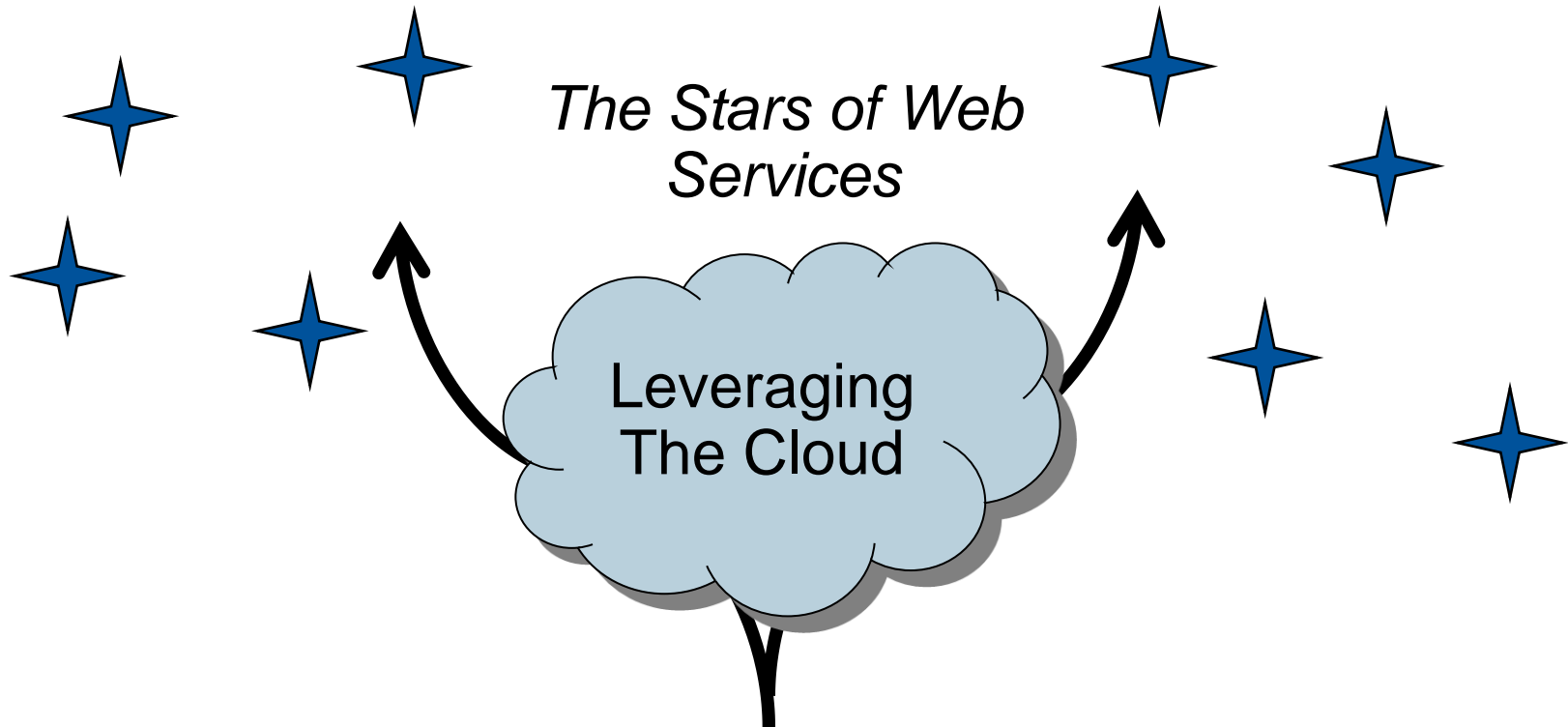


iOS 4



QNX
(no home
screen)

Innovation in Software and Web Services



Mobile Collaboration Client — Integrating Multiple Communications Styles



Communications Applications:

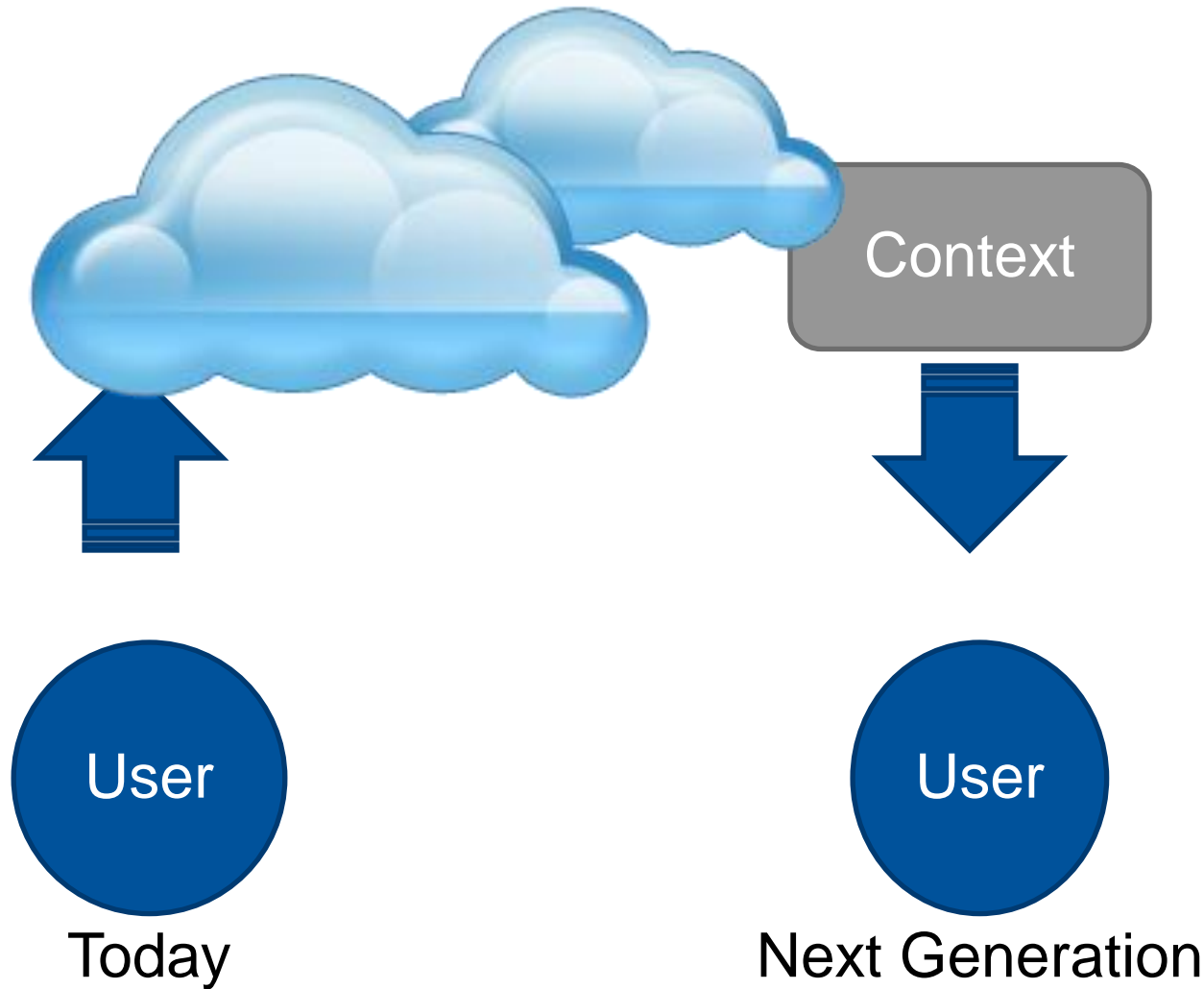
- Short Message Service (SMS), e-mail
- Calendar, contacts and address book
- Instant messaging (IM), presence
- Social networking
- Telephony

A single client integrating:

- Multiple capabilities — e.g., IM, presence, social networking
- Multiple data sources — e.g., e-mail accounts, calendars, blogs
- Single view, multiple layers
- Real-time updates from servers or cloud services
- Plugs in to e-mail client (e.g., Xobni, Outlook Social Connector)

➔ **The Mobile Office Goes Social**

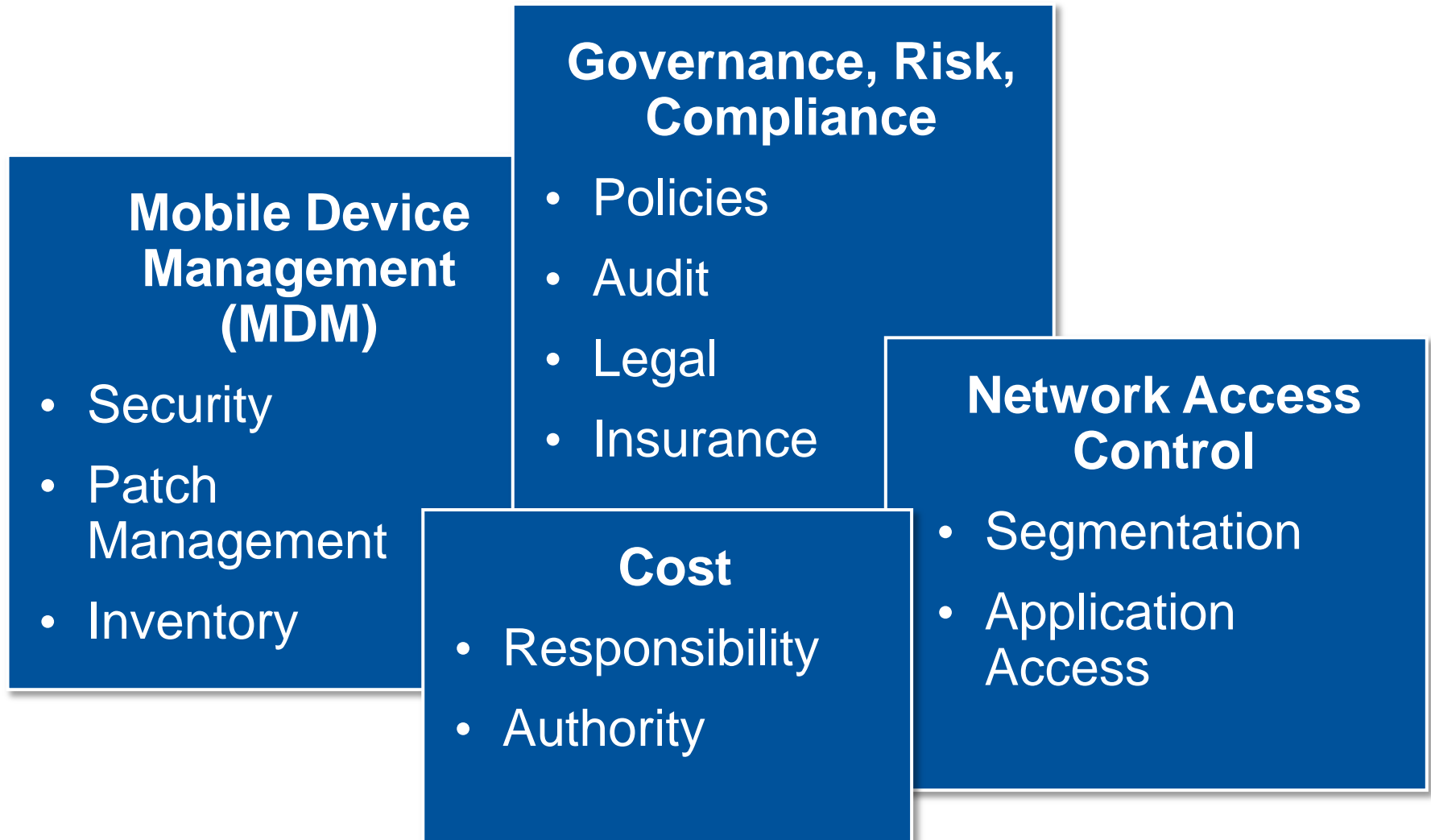
Context Reverses The Flow of the Internet



Key Issues

- How will the technology of handheld devices evolve and mature during the next five years?
- **How will consumer – enterprise device security and management evolve over the next five years?**

Cornerstones of Mobile Management



Managed Diversity — A Mobile Best Practice

Service Levels

Platform: IT fully responsible

Hardware/OS standards
Full life cycle management
Support for offline applications
Enterprise liable only

Appliance: Shared IT/end-user responsibility
Concierge: End user fully responsible

Email, PIM, browser and telephony only
Increased hardware and OS choices
Enterprise or individually liable

Anything goes
High cost

User Categories (defined by attributes below)

Mobility

Global traveler
Day extender
Remote worker

Cost

C-level employee
Client facing
Task worker

Security

High exposure
Regulatory issues
Controlled applications

Managed Diversity Matrix

Key Goals

Cost control

Auditable security

Defined responsibilities

Managed Diversity — A Mobile Best Practice

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Managed
Diversity
Matrix

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Full life cycle management
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Increased IT and OS complexity
Enterprise liability individually

User Categories (defined by mobility and cost)

Mobility

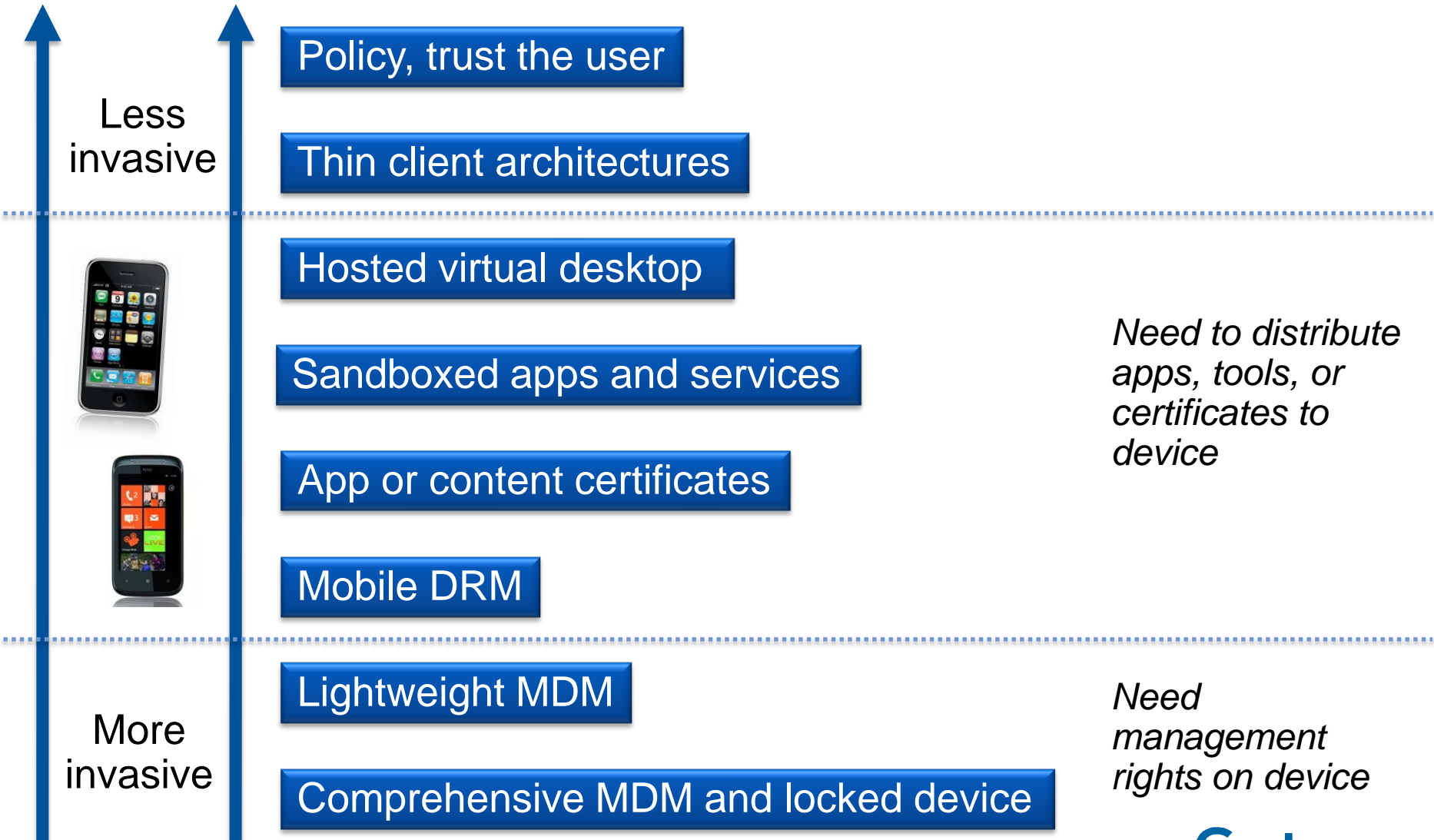
Cost

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C-level executive
Client-facing
Task worker

Key Goals
Cost control
Auditable security
Defined responsibilities

Securing and Managing Smartphones and Tablets



Policy Managers Versus Containers

Policy Managers

(Living With What's
There)



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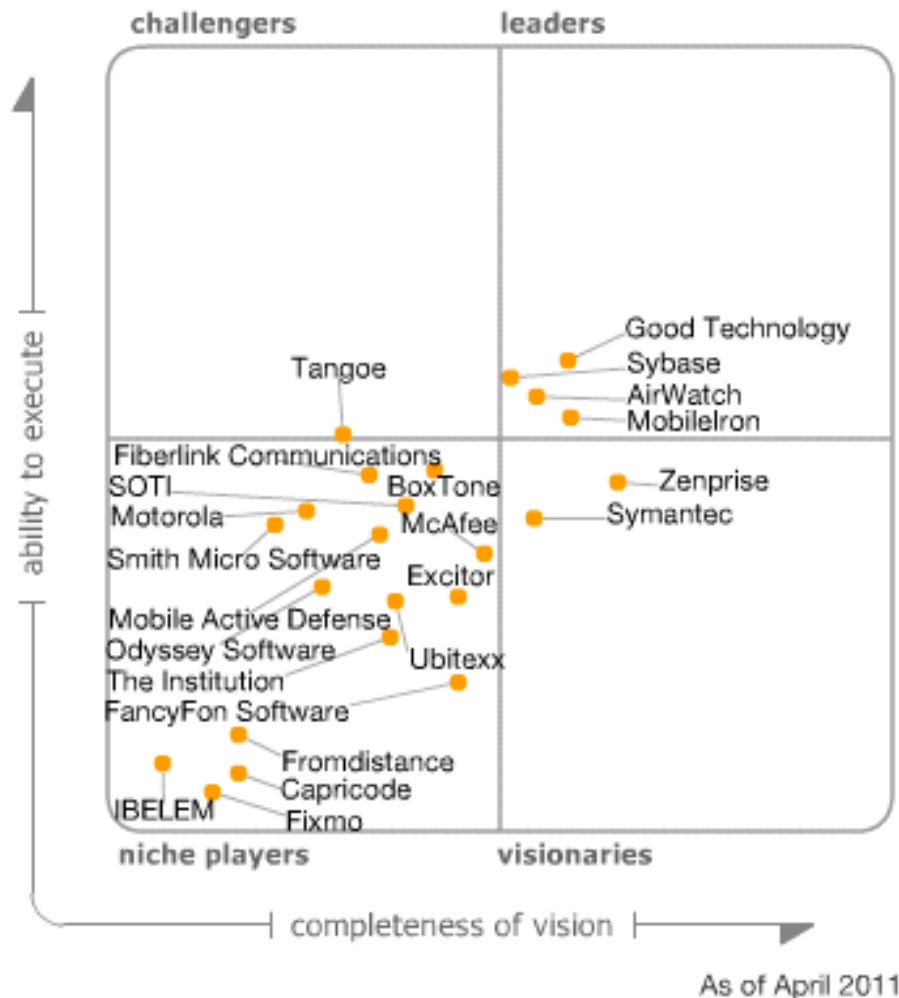
Containers

(An Environment
Within an
Environment)



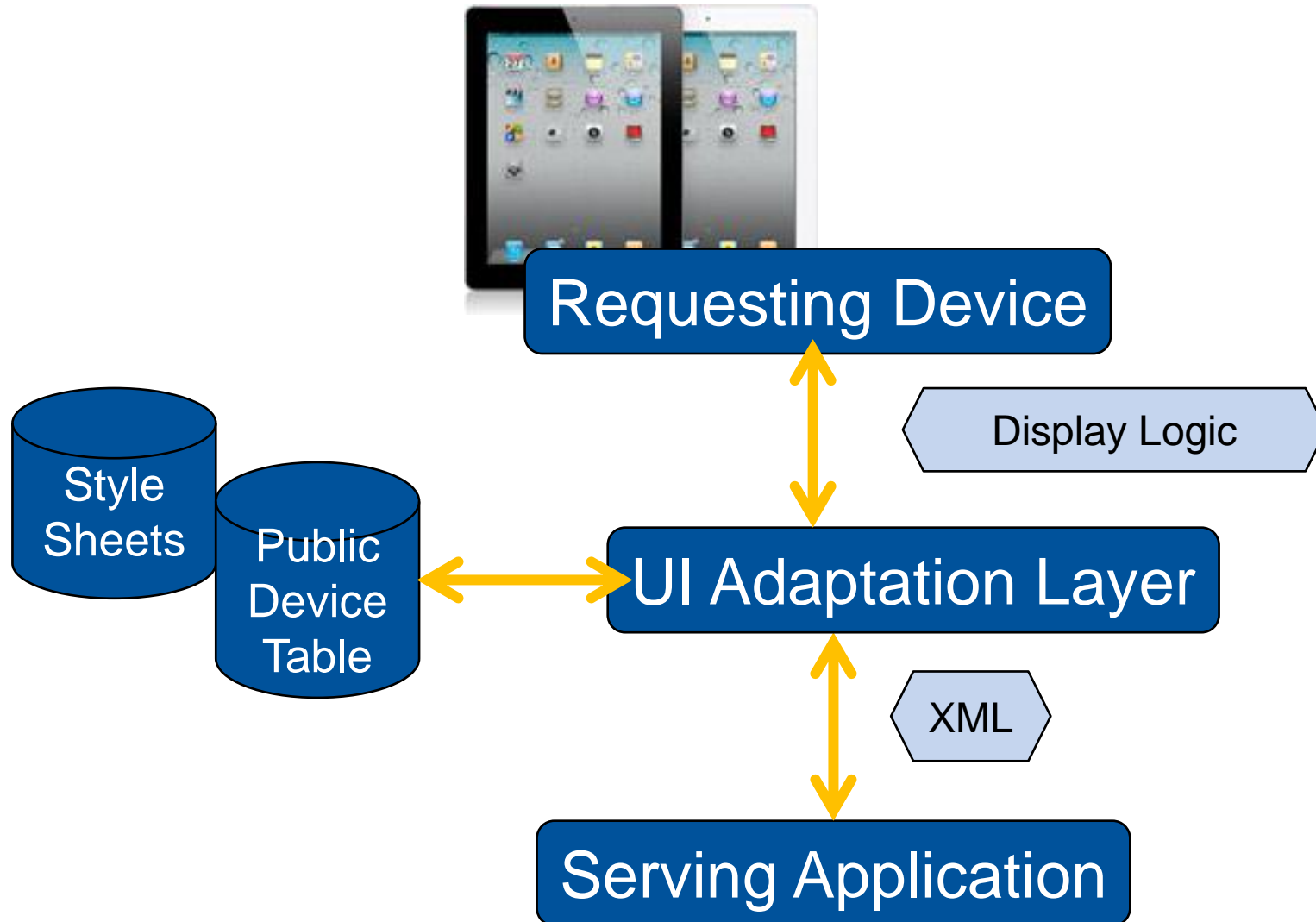
Enterpripod
VMWare

Mobile Device Management Tools



- Market evolving quickly:
 - Over 60 vendors in market
 - 23 vendors in Magic Quadrant
- Devices limit manageability:
 - Inherent in device design
- Android support immature:
 - Better support in 2012
- BlackBerry support still important:
 - Not all vendors support BES
- Don't underestimate reporting:
 - Reporting tools are immature

The Impact on Application Architectures

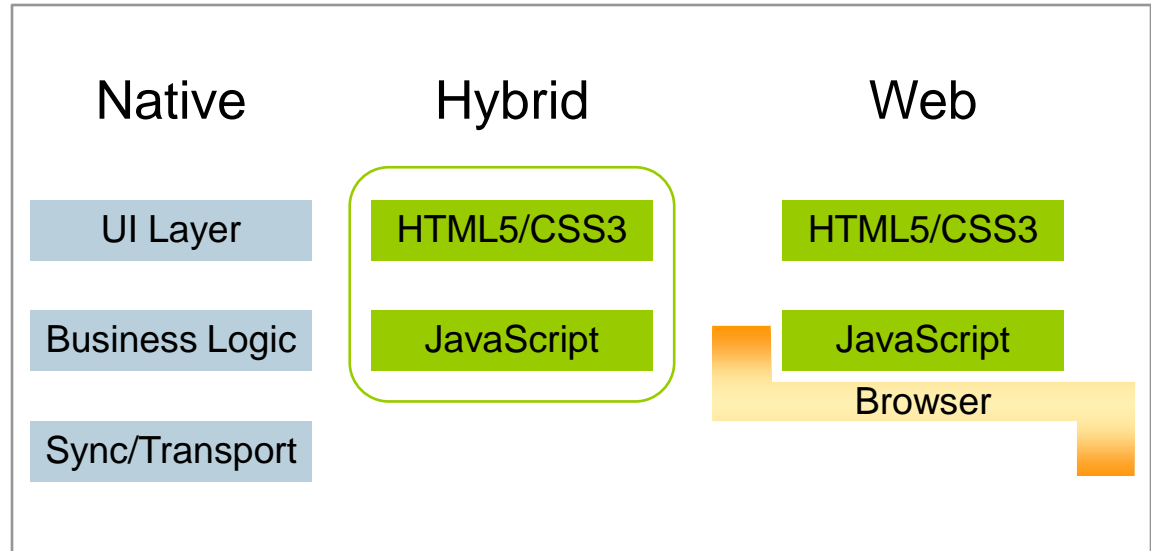


The Future Web Leans Heavily on HTML5

Vendor Support



Range of Client-Side Architecture*



Mobile
Ascends



"Heavy
RIA" in
Danger?



- Rich Media
- Local Storage
- Geolocation
- Threading (Workers)
- Networking (Sockets)
- New Markup Options



Will HTML Overtake Native Apps?

By 2015, mobile Web technologies will have advanced sufficiently such that half of the applications that in 2011 would be written as native apps will be, instead, delivered as Web apps

Supporting the SPA:

- HTML5 will be mature and widely available on mobile devices.
- HTML5 will slowly gain access to more native platform services either from new standards or vendor-specific extensions.
- Increasing numbers of mobile development tools will offer HTML5 generation as an output option.
- The quality, usability, and performance of mobile device browsers will grow.

Alternate position to the SPA:

- Native platforms and APIs will advance so fast that HTML won't be able to create competitive applications.
- Network performance and latency will be poor and unpredictable.
- Users will demand the features of native applications.
- Platform owners will try to discourage Web applications as being "inferior" so as to lock users into specific platforms.
- HTML5 will fragment.

Emergence of Enterprise App Stores

Cisco AppHQ



Others coming!

Key Requirements

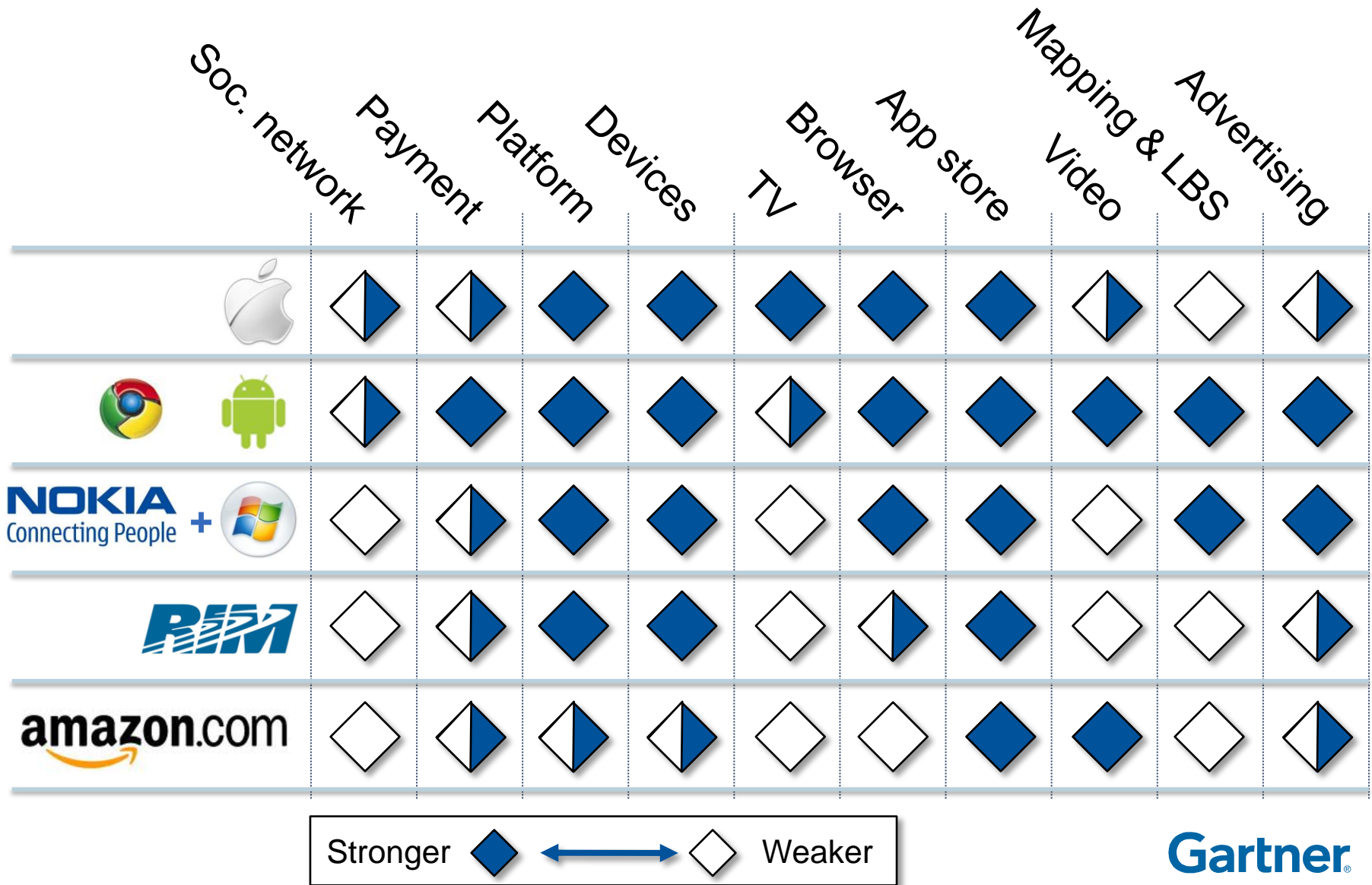
- License Management and Distribution
- Verification Testing
- Publish and Approve
- OTA Install/Uninstall
- App Discovery and Trials
- Ratings and Reporting

Related Gartner Research

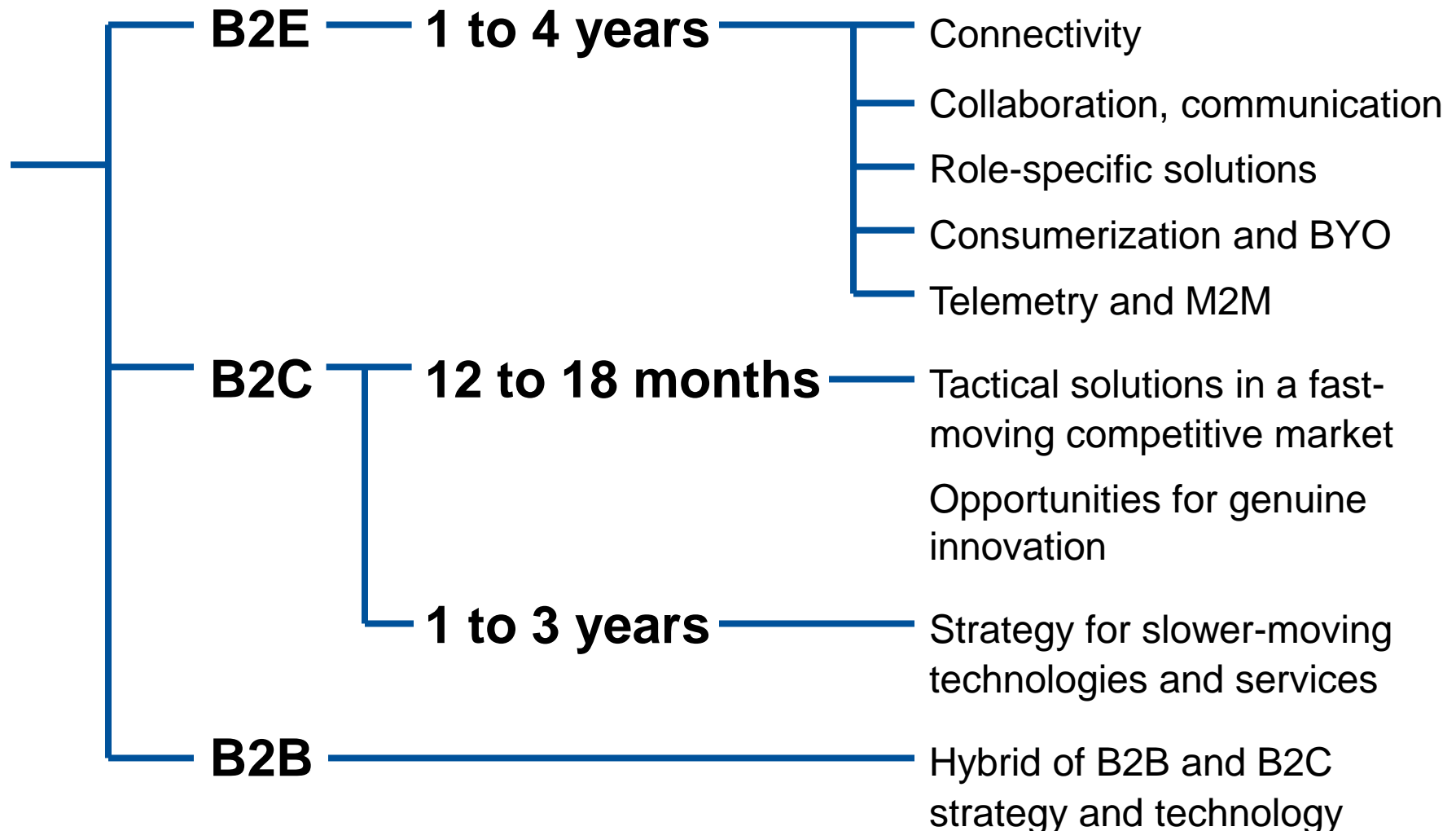
- ➔ **Hype Cycle for Mobile Device Technologies, 2011**
Tuong Huy Nguyen (G00214663)
- ➔ **CIO Attitudes Toward Consumerization of Mobile Devices and Applications**
Nick Jones (G00212597)
- ➔ **Magic Quadrant for Mobile Consumer Application Platforms**
William Clark, Michael J. King (G00213327)
- ➔ **Magic Quadrant for Mobile Enterprise Application Platforms**
Michael J. King, William Clark (G00211688)
- ➔ **Hype Cycle for Wireless Networking Infrastructure, 2011**
Sylvain Fabre (G00214543)

Thank You!

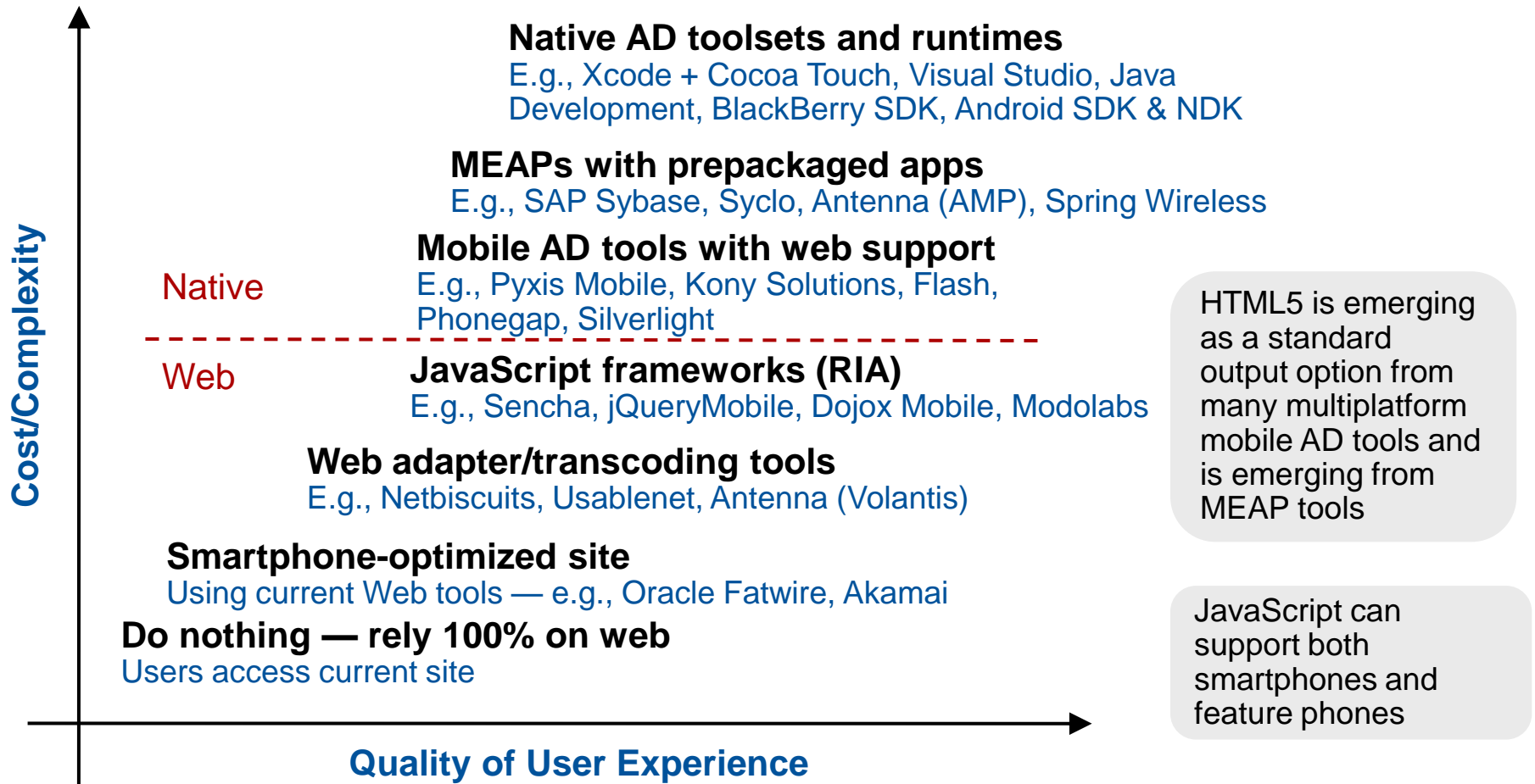
... Ecosystems



How Many Mobile Strategies and Architectures Do You Need?



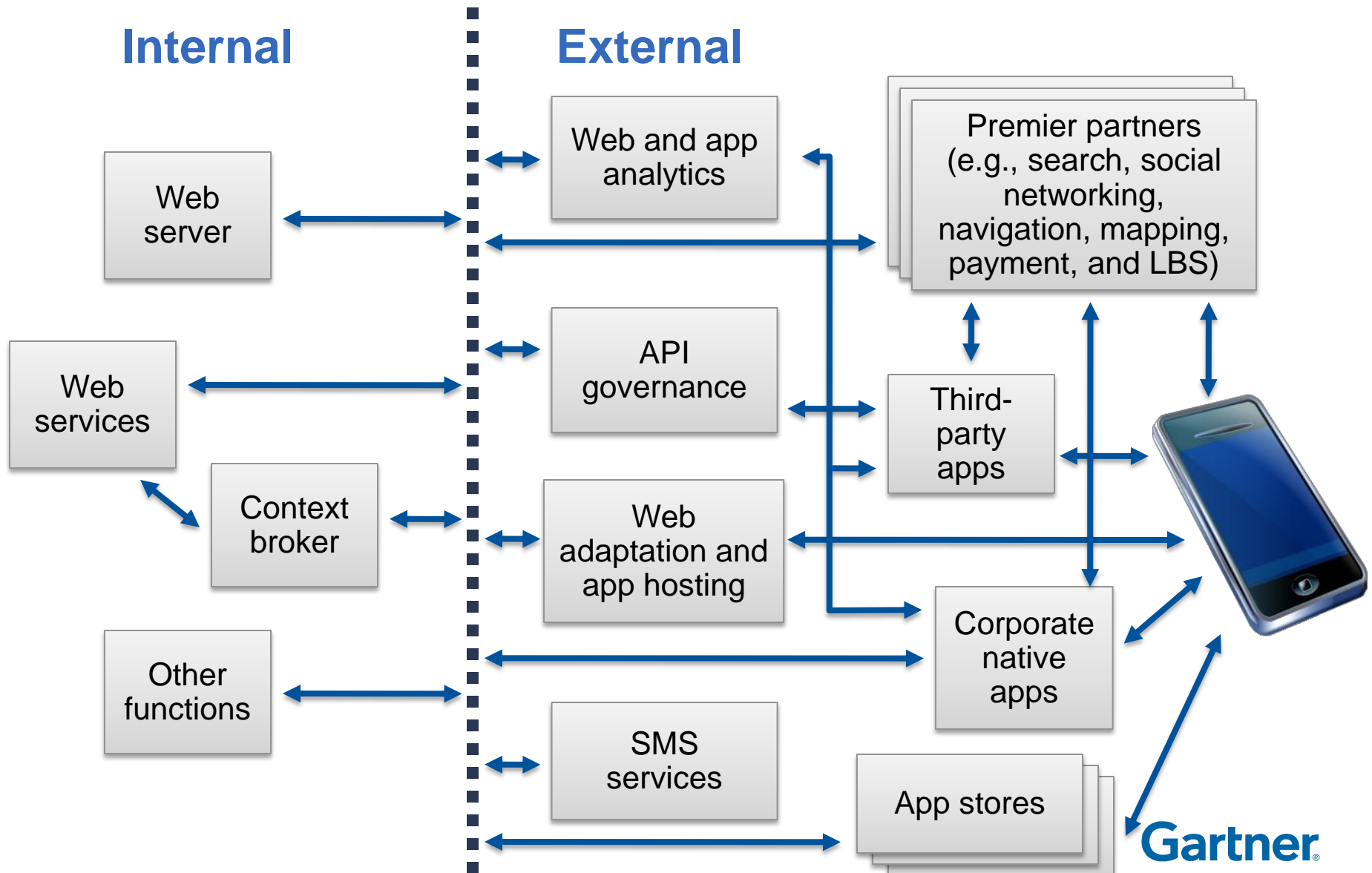
Approaches to Creating Mobile Apps



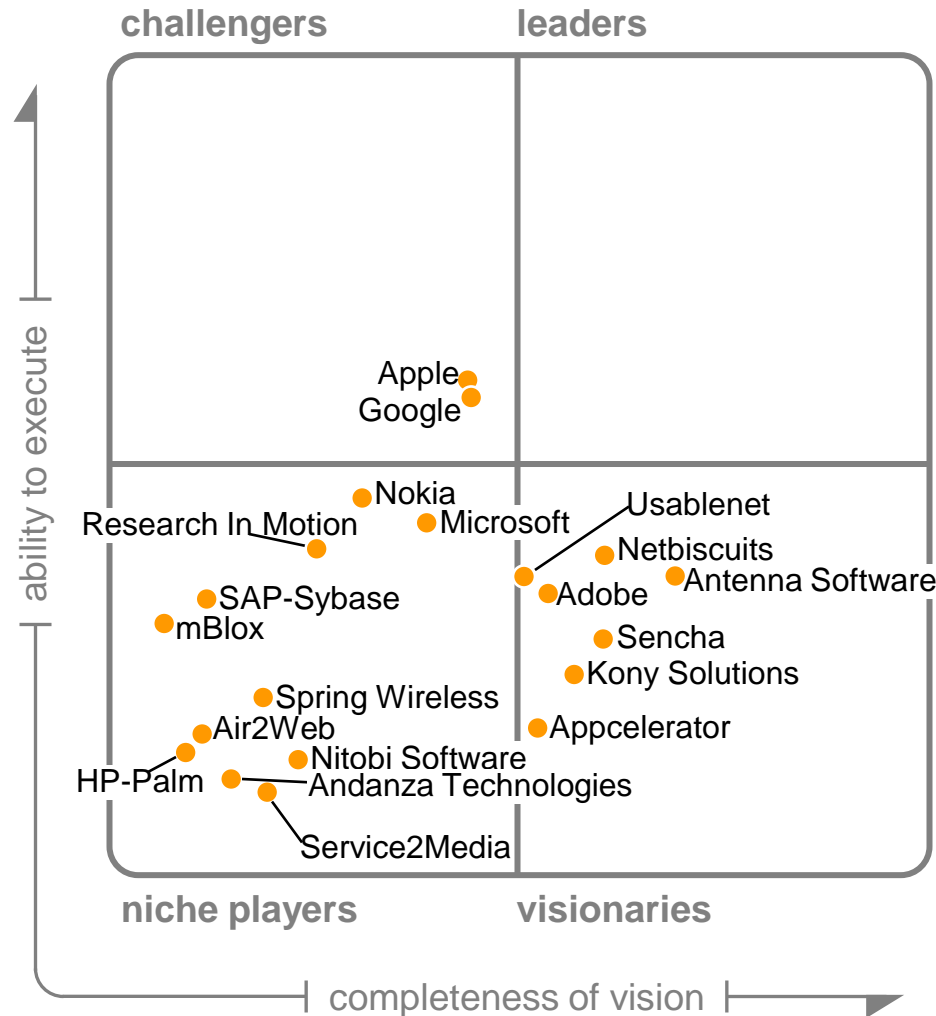
Important Mobile B2C Design Principles

- Project owner must have clear metrics
- Applications must be time critical, uncomplicated
- Mobility must be advertised
- Multi-channel revenue recognition
- Navigation controlled by
 - 2 levels or less (Openwave study)
 - New application designs
- Expose web services to spread the wealth
- Outbound and inbound

Key B2C Infrastructure Components



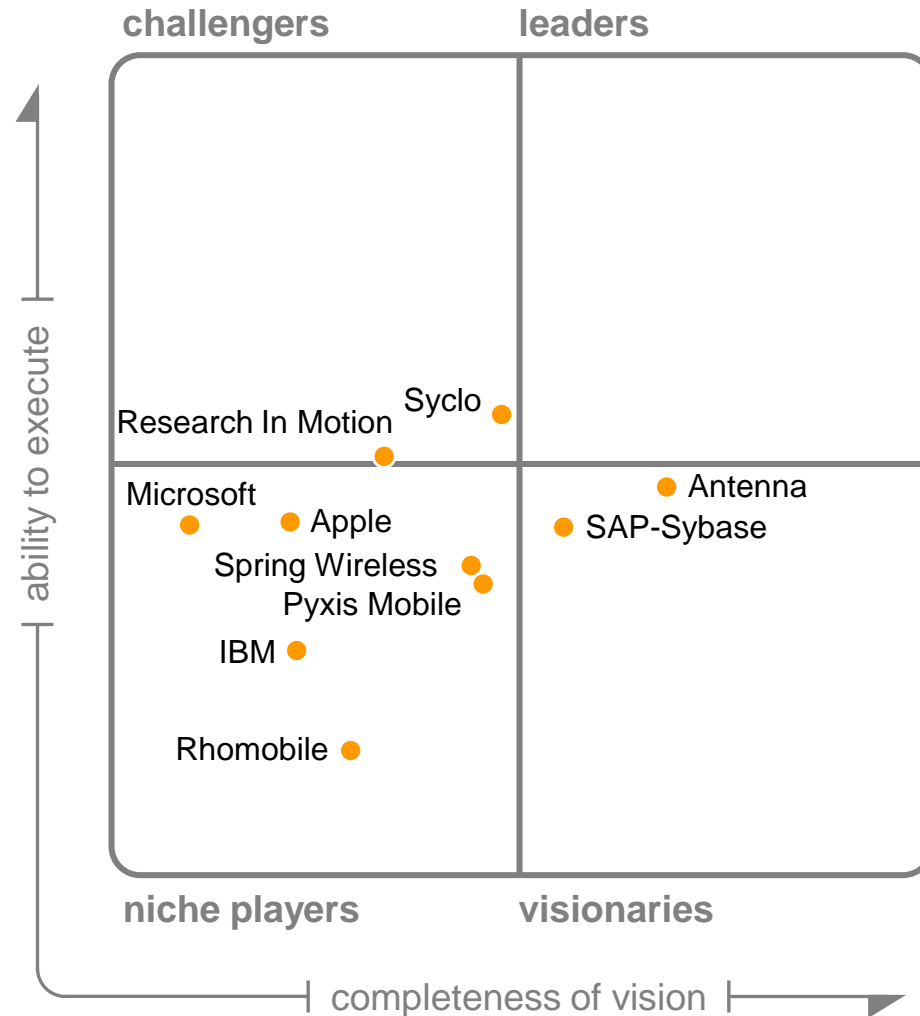
Magic Quadrant for Mobile Consumer Application Platforms, 2011



As of June 2011

(From: "Magic Quadrant for Mobile Consumer Application Platforms,"
22 June 2011, G00213327)

Magic Quadrant for Mobile Enterprise Application Platforms, 2011



As of April 2011

(From: "Magic Quadrant for Mobile Enterprise Application Platforms," 20 April 2011, G00211688)

Examples of Mobile AD Tools and Implementations



Flash and Air slowly moving onto a wider range of devices



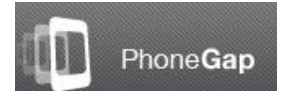
Hybrid Application Framework



iPad-based B2B catalog application



Blurring the boundaries between Web and native development



JavaScript-oriented tool, but able to call native APIs



Dynamic adaptation of Web content for a wide device range



Multichannel B2C, iOS, Android support from internal-developed cross-platform tool



Open-source JavaScript frameworks that augment HTML5



Recommendations and Action Plan for Everyone

Monday Morning

- *Identify* how you're going to deal with the "new normal" by finding new ways to provide, manage, and secure mobile devices and apps.
- *Run* brainstorming sessions and workshops to look for innovative ways to gain advantage from mobility.
- *Define* a comprehensive set of mobile strategies covering B2C, B2B, and B2E domains and refresh them regularly.

Next 90 Days

- *Select* a small but sufficient portfolio of mobile development tools to address current platform and application needs.
- *Look* for opportunities where a tablet can deliver provable ROI (e.g., by replacing a PC).

Next 12 Months

- *Look* for opportunities to exploit context.

Key Topics (2 of 2)

- Developing For the Mobile World
 - Accessing services through mobile apps
 - Understanding how to leverage Web 2.0 to deliver constituent services
 - Accessing services through portals
 - Issues involved with adopting and maintaining new operating systems
- Mobile Technology Requirements
 - Infrastructure support requirements
- Defining Great Mobile Projects
 - Examples of applicable solutions that California can duplicate

Key Topics

- **Managing Mobile Technology**
 - **Supporting mobile devices (smart phones & tablets) including: selection, integration, and maintenance**
 - **Needed policy changes to adapt to mobile information devices and access**
 - **Security in a mobile environment**