

Reaching for the Cloud from Devices

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www.ibm.com/smartcloud
www.ibm.com/mobilefirst

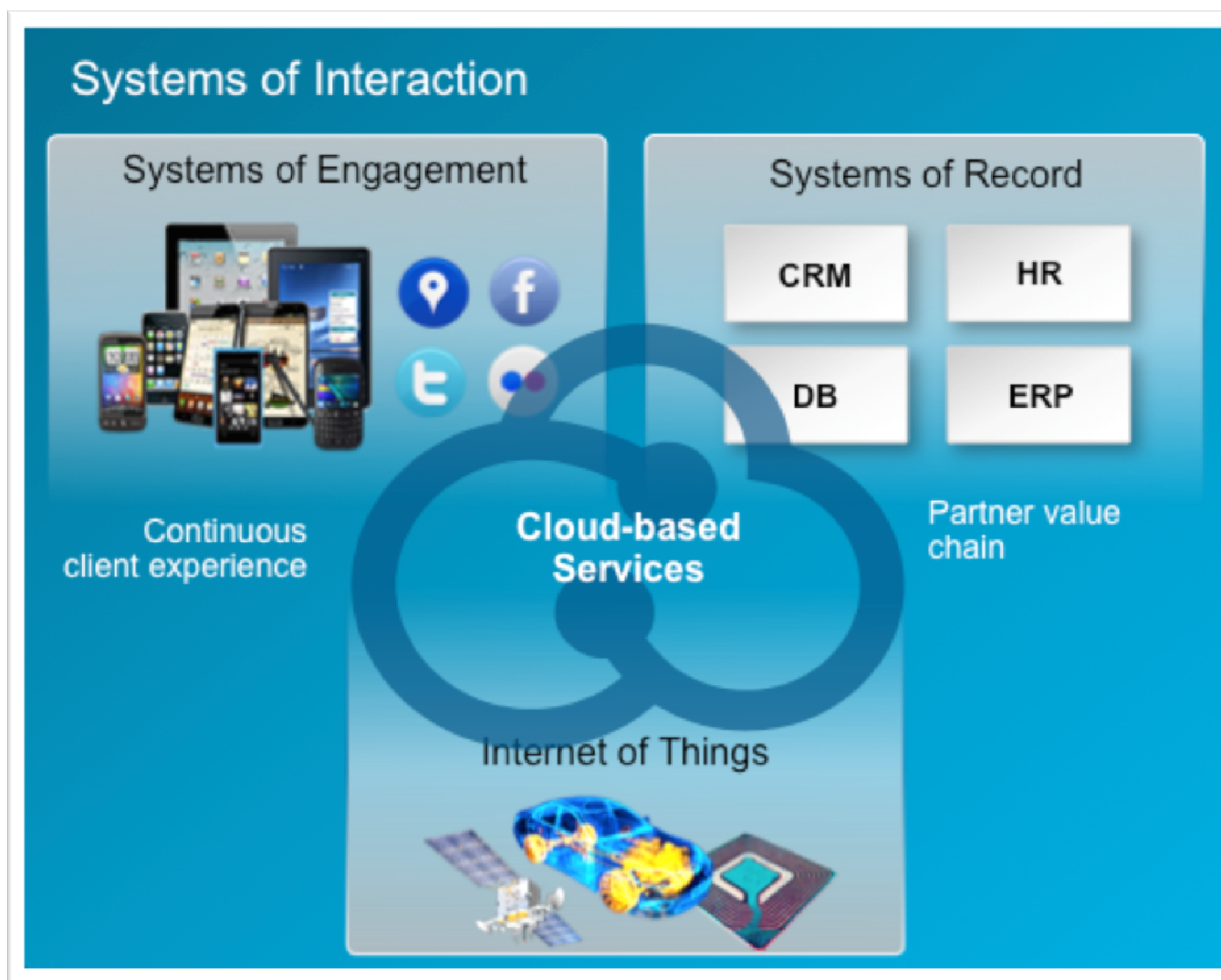


www.html5report.com/conference/newyork/

Topics

- **A Sea Change: Systems of Interaction**
- **Use Cases**
- **Mobile / Device Platforms (Engagement)**
- **Cloud Platforms (Records & Engagement)**
- **The Other 50 Billion Devices**
- **Reference Architecture & Patterns (evolving thoughts, including an appeal)**

Systems of Interaction integrate existing operational systems with rapid delivery of new client-facing apps



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In the new computing era, we have moved from ...

Single transactions to  personalized **engagement**

Millions of PCs to  **billions** of mobile devices

Structured data to  massive amounts of **unstructured** data

Static applications to  **dynamic** services

Rigid infrastructure to  an **elastic** cloud infrastructure

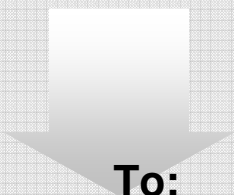
Reactive security  Intelligent, **proactive** protection

Forward thinking customers are realizing the benefits of becoming a mobile enterprise

Healthcare

From:

Traditional health institution



To:

Seamless interactions among physicians and providers improving quality of care patient safety and efficiency improving patient experience



Construction

From:

Construction general contractor with remote employees



To:

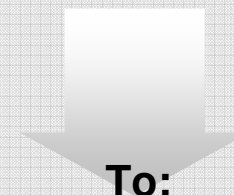
Optimize their delivery schedules via mobile and electronically track waiting times and confirm deliveries



Government

From:

Sitting in traffic jams



To:

Real-time re-direction to optimal routes using mobile info





Transform the Value Chain

CEMEX, UK-based manufacturer enables drivers to make 68% more shipments per day



I want **a provider**

That prioritizes **my convenience**

Versus **their processes**

Which **streamlines our engagement**

In ways that **build loyalty**



Deliver Contextually Relevant Experience

Large retailer delivers personalized and contextually relevant real-time shopping experiences based on known shopping patterns



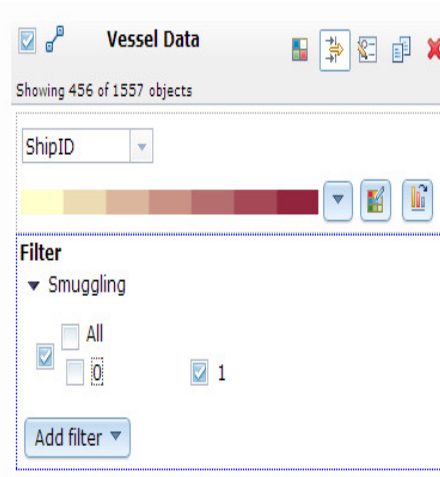
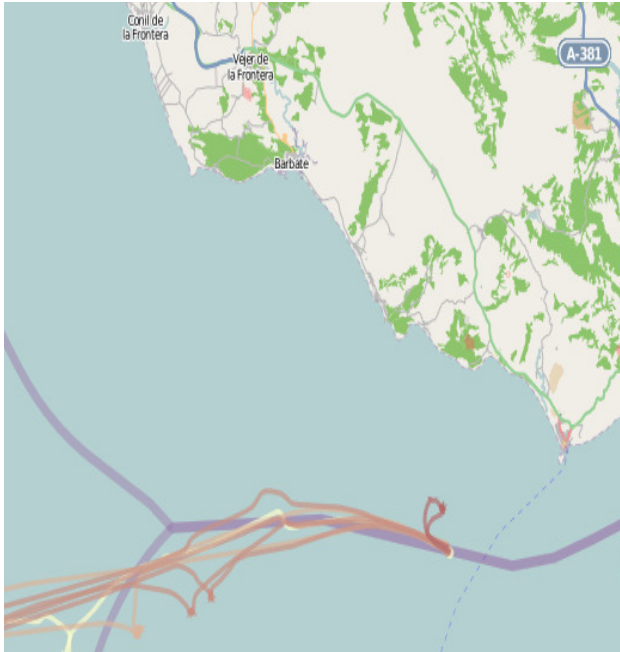
I want **a retailer**

That helps me **find what I want**

And gives me **customized offers**

Before, not after, **I need them**

In order to maximize **my shopping experience**



Deliver Contextually Relevant Experience

IBM research lab uses location services to drive interactions using push notification and decision management features while prioritizing security with geo-fencing rules



I want **a business**

That helps **analyze information in real-time**

To **optimize decisions**

Based on **where I am**

While **protecting my security**



Drive Revenue & Productivity

Smartphone access saves nearly 400 employee-hours per month, contributing to over 40% YoY increase in new business



I want **an employer**

That allows me to **work when I can**

Wherever **I am, with my own device**

In ways that **maximize my productivity**

In order to **help their bottom line**



Drive Revenue & Productivity



Government agency collaborates and provides access to 3rd party developers to create secure quality apps leveraging analytics and distributes in its enterprise app store

I want **an employer**

That allows me to **work with the tools I want**

And allows me to **improve those tools**

With the **common knowledge of our workforce**

In order for us to **optimize productivity**



Deepen Engagement

Grand Slam events improves user experience and increases productivity by 10 percent by providing a consistent multi-channel experience



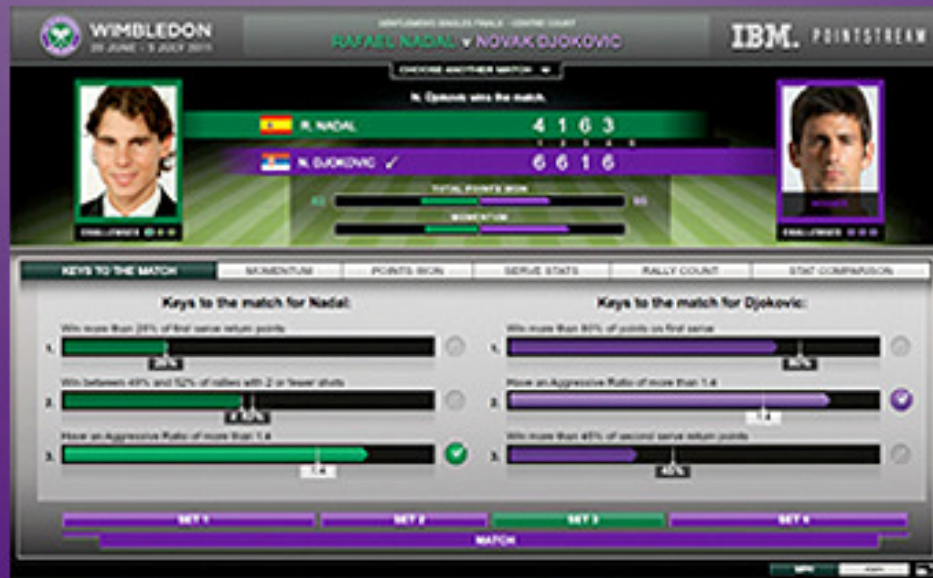
I want **a relationship**

That enables me to **take action**

At the **right time**

In a **meaningful context**

In ways that **build trust**





Leverage Industry Transformations

Region of Eindhoven captures data from cars and road sensors to notify commuters via smart phone app



I want to tag things through auto ID technologies like RFID

Sense things through sensors and actuators

Shrink things through developments in miniaturization and nanotechnology

Create Thinking Things by imbedding processing power

and **Power things** through advances in energy efficiency, storage and generation



Leverage Industry Transformations

Healthcare provider setting time and location based services to have secure access to sensitive medical information

I want to protect privacy for our patients through secure context-based access to medical data

while **delivering the rapid access** needed by our healthcare professionals to deal with emergency situations

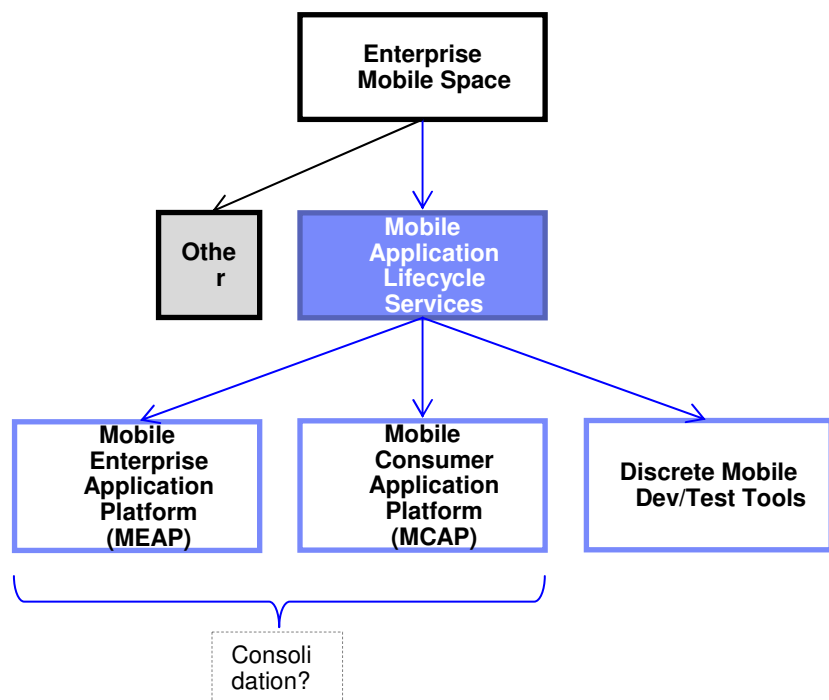
And **ensuring compliance with regulatory requirements** in a productive and cost-effective manner

Topics

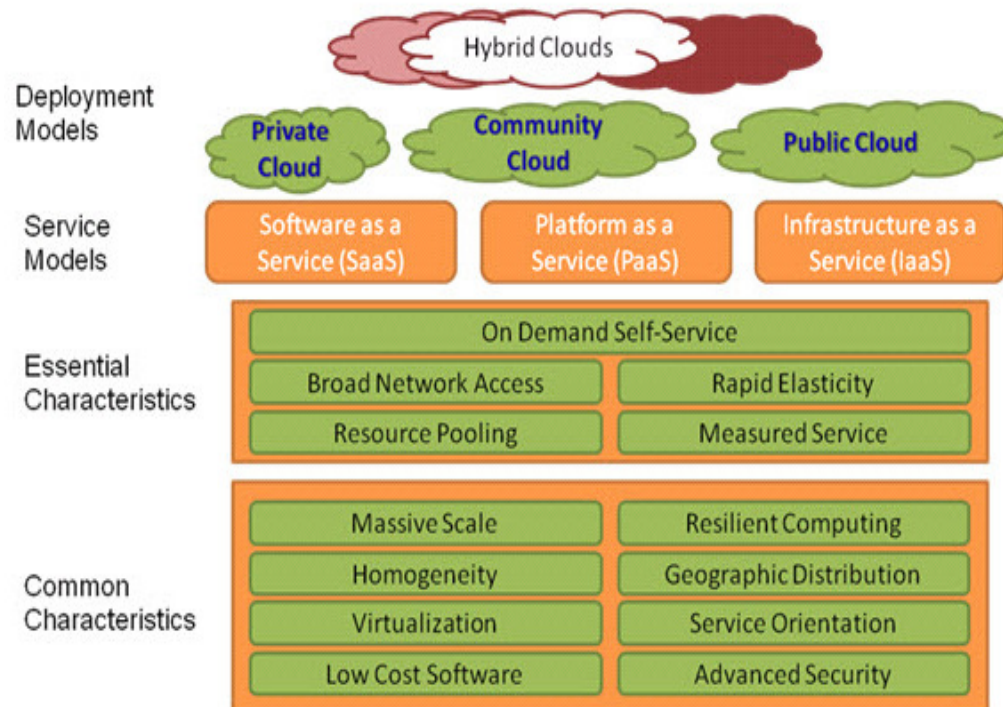
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Though mobile and cloud platforms ...plus various levels in each of them.... may be fragmented, the chief priority for business and developers alike is application integration and managing the application life cycle

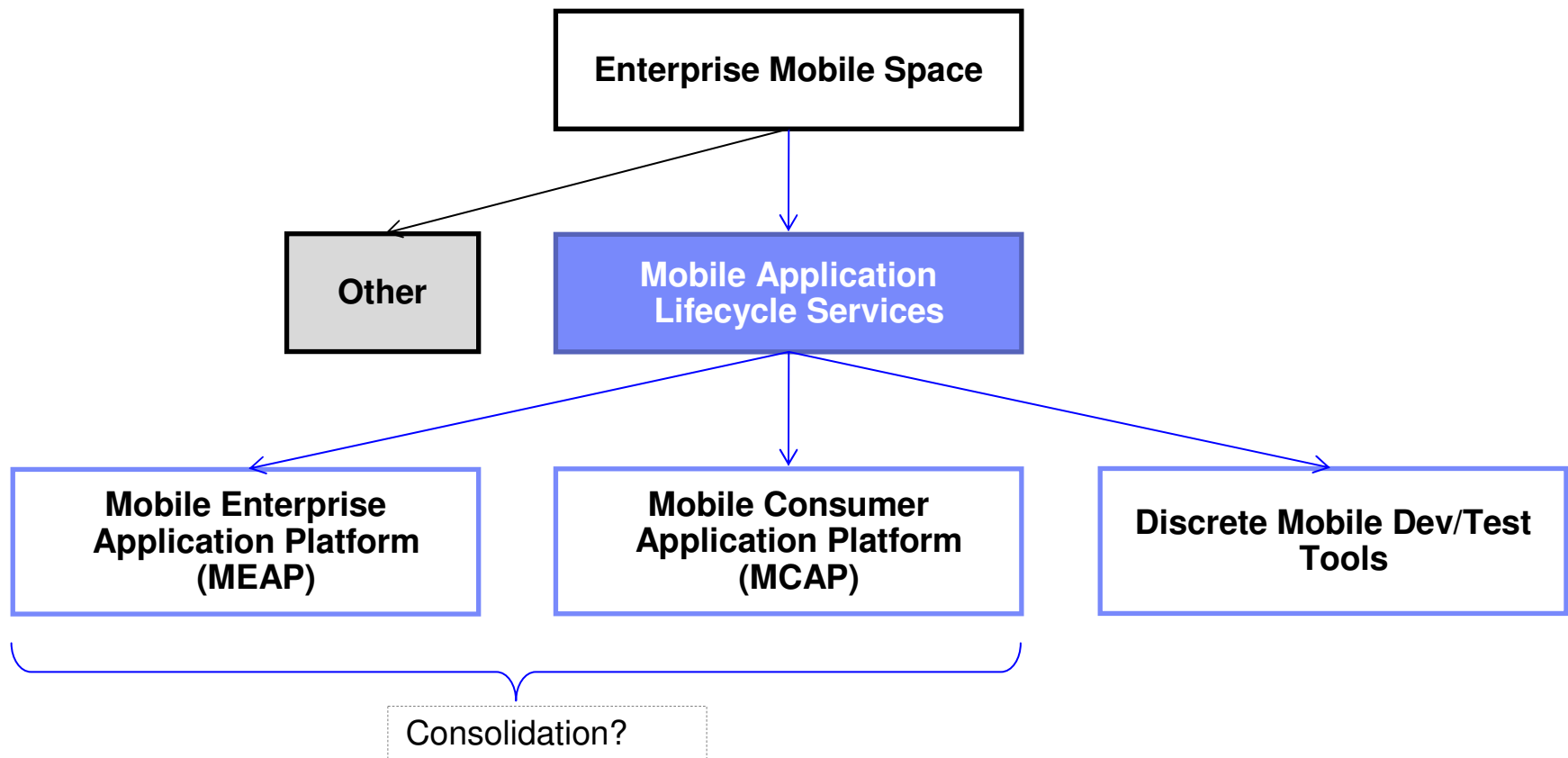
Mobile Space



Cloud Space



Though mobile and cloud platforms ...plus various levels in each of them.... may be fragmented, the chief priority for business and developers alike is application integration and managing the application life cycle



The Mobile Innovation Portal enables sales teams to place their mobile application work orders online using a simple wizard-based form

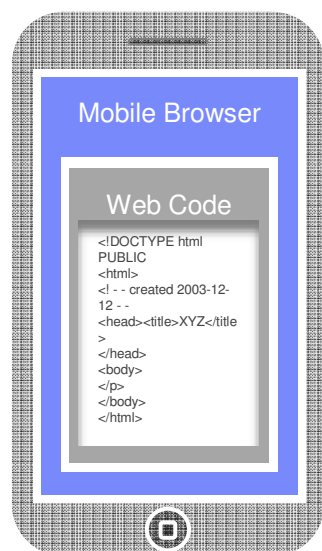


A [Mobile Innovation Worksheet](#) is also available for capturing Client requirements

Worklight Application Types

Browser Access

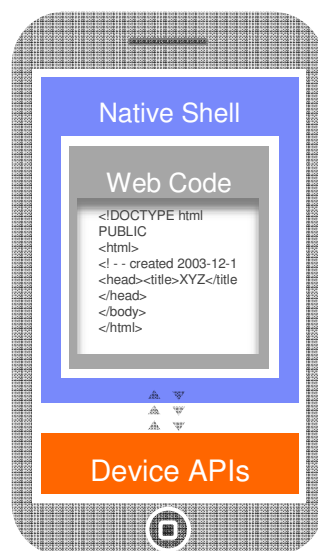
Written in HTML5 JavaScript and CSS3. Quick and cheap to develop, but less powerful than native.



Browser Access

Hybrid Apps - Web

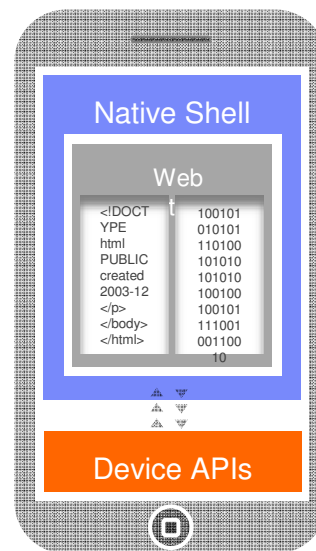
HTML5 code and Worklight runtime libraries packaged within the app and executed in a native shell.



Downloadable

Hybrid Apps - Mixed

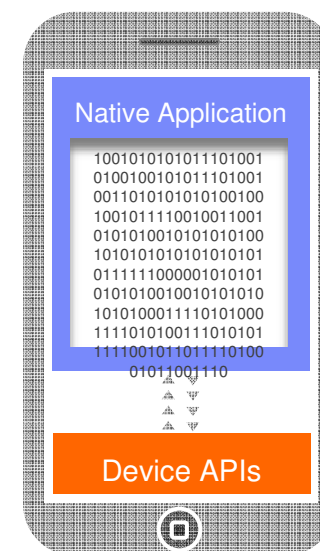
User augments web code with native language for unique needs and maximized user experience.



Downloadable

Native Apps

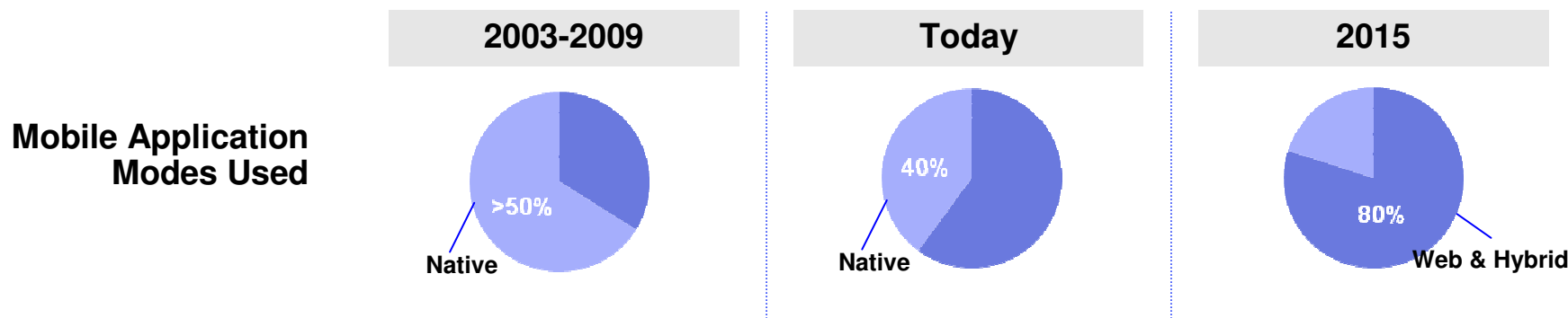
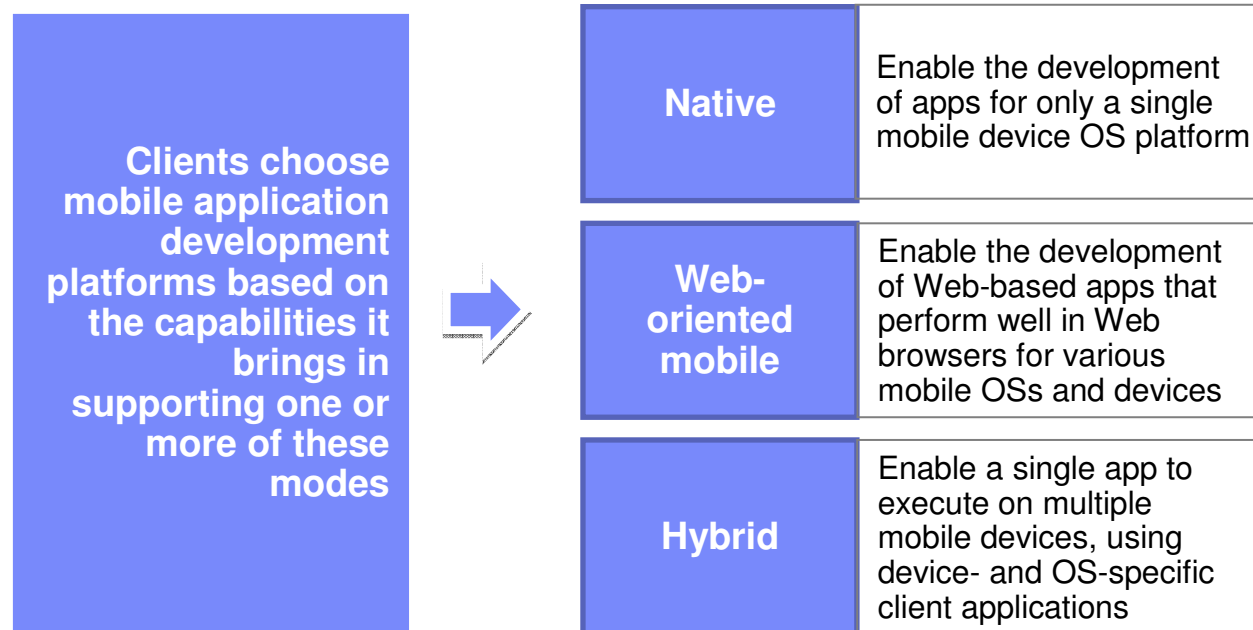
Platform-specific. Requires unique expertise, pricy and long to develop. Can deliver higher user experience.



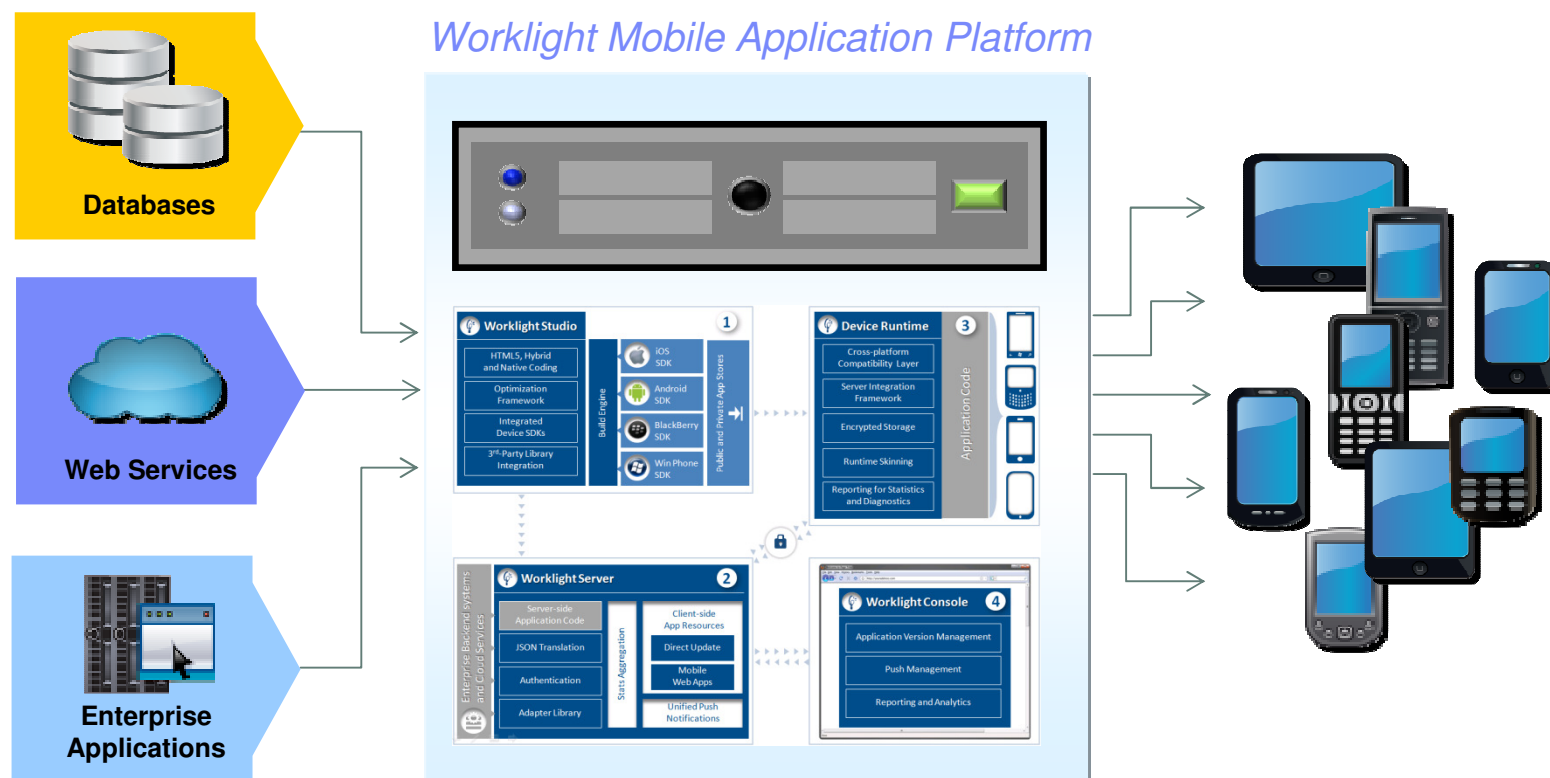
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Users have to decide between three application architectures; while native has 40% of market, hybrid and mobile are expected to be 80% by 2015

3 Mobile Application Modes



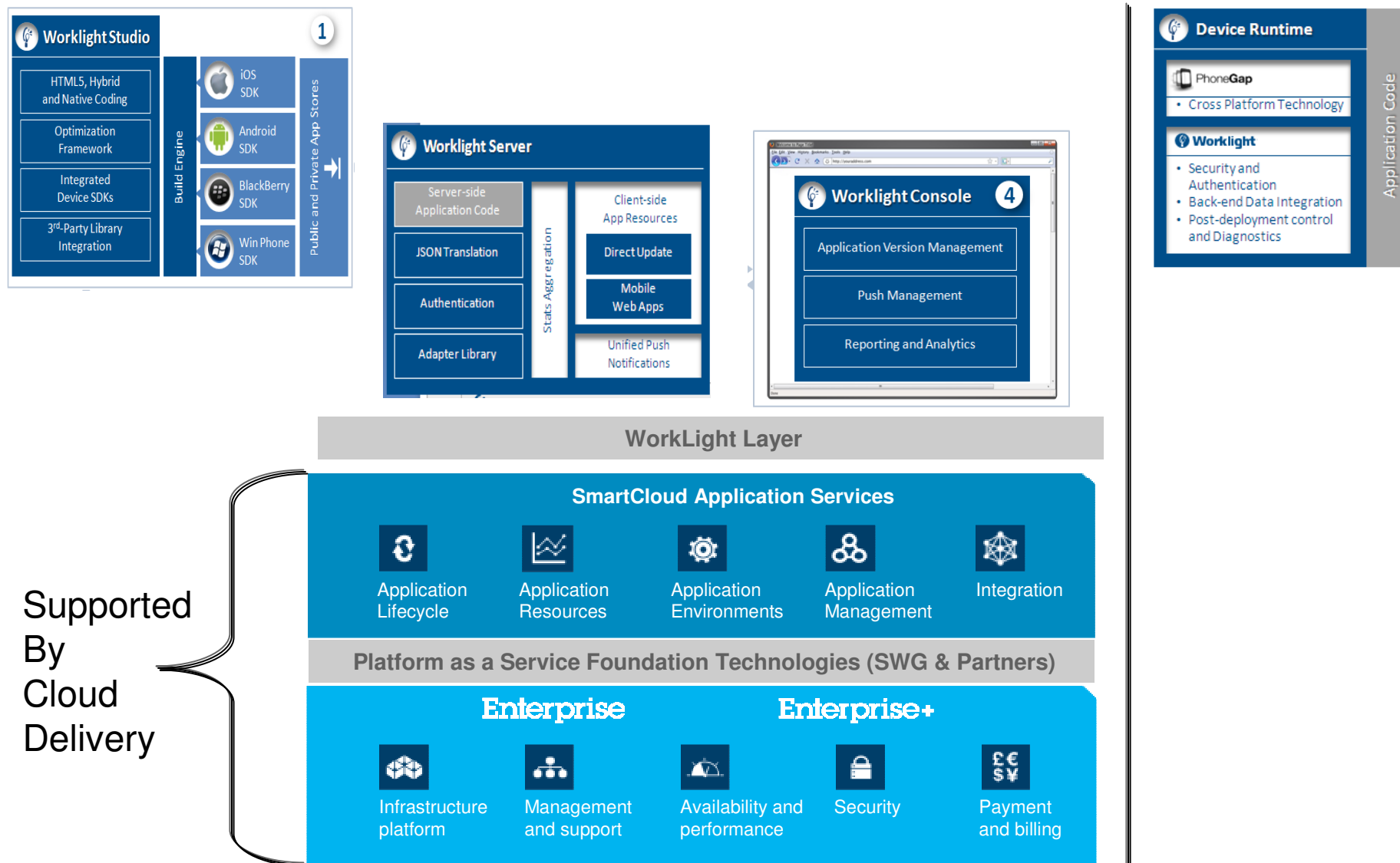
Mobile Application Platforms help build, manage and integrate more easily - to maximize the opportunity value of enterprise applications



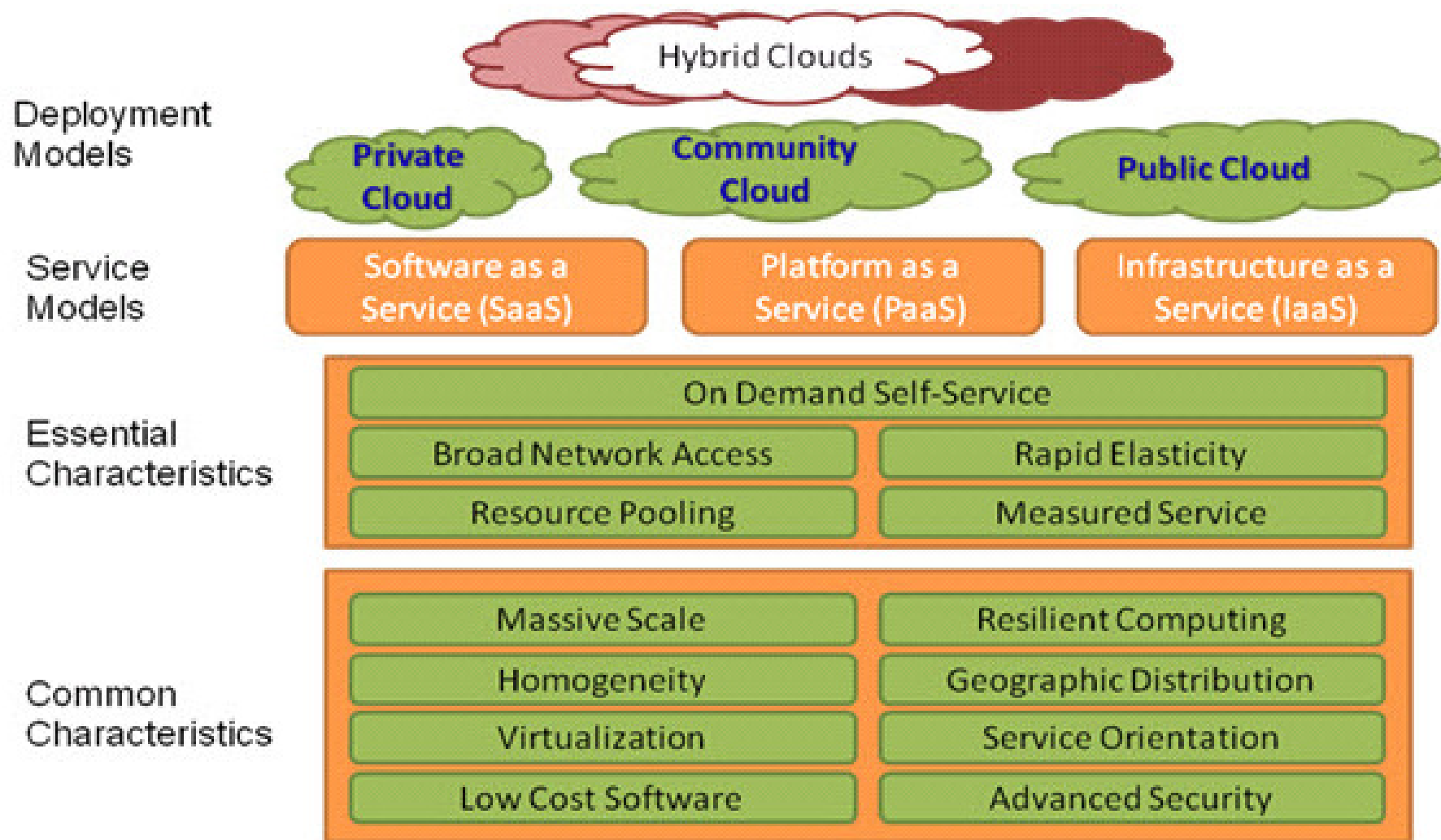
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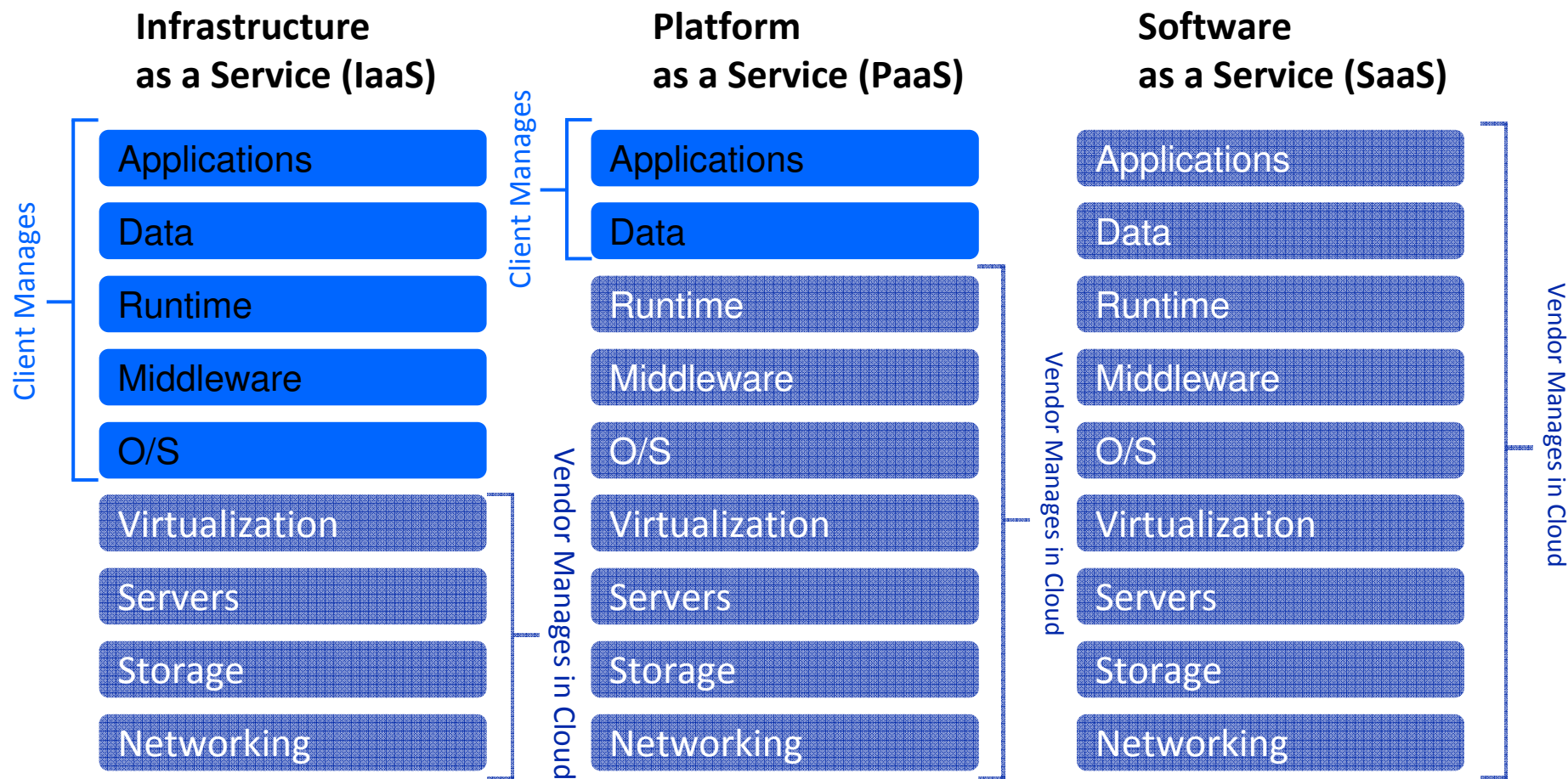
Mobile Platform and Cloud



Though mobile and cloud platforms ...plus various levels in each of them.... may be fragmented, the chief priority for business and developers alike is application integration and managing the application life cycle



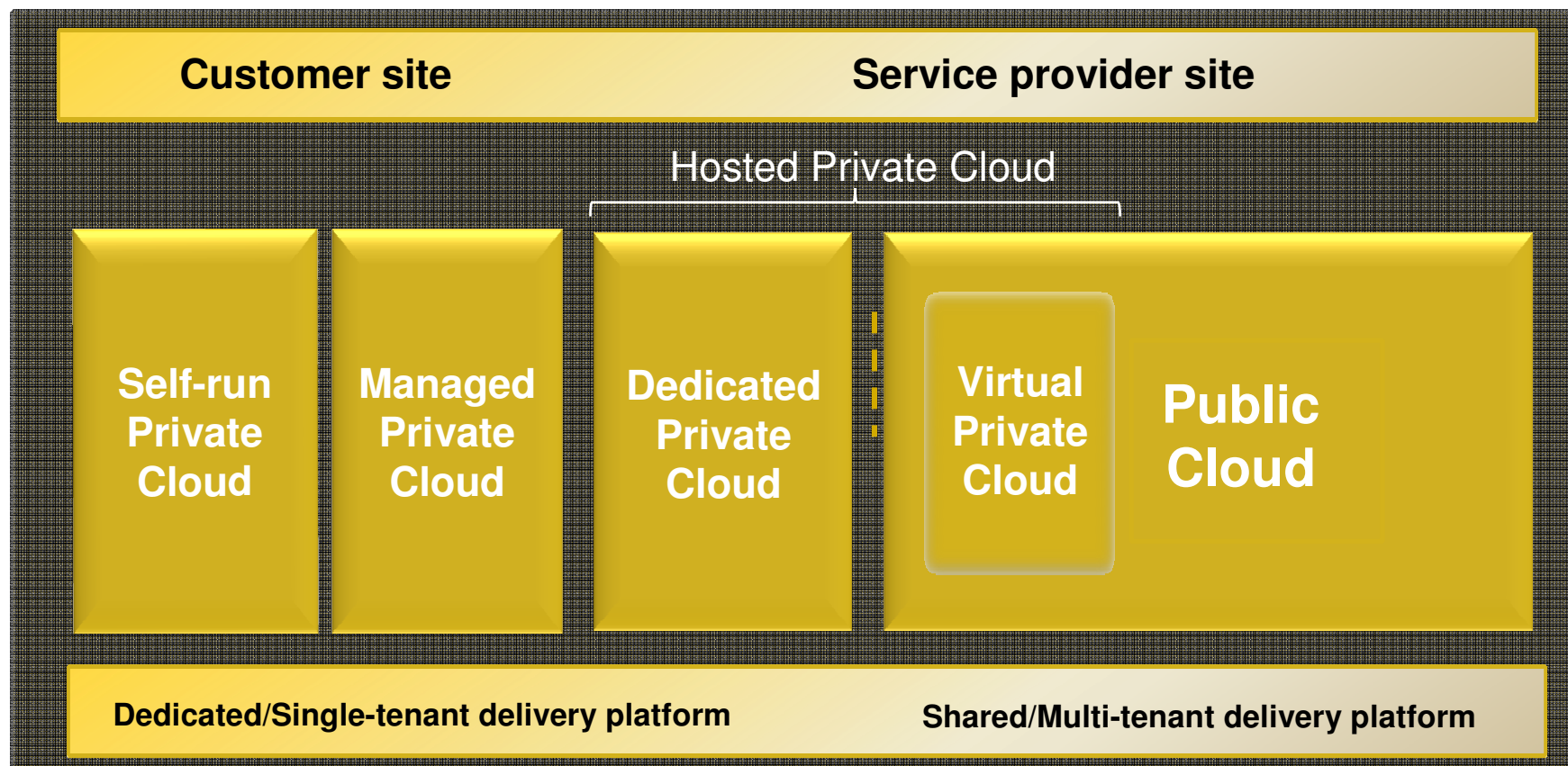
Cloud Service / Delivery Models



Customization; higher costs; slower time to value

Standardization; lower costs; faster time to value

Cloud Deployment Models (Conceptual View, IDC)



Source: IDC

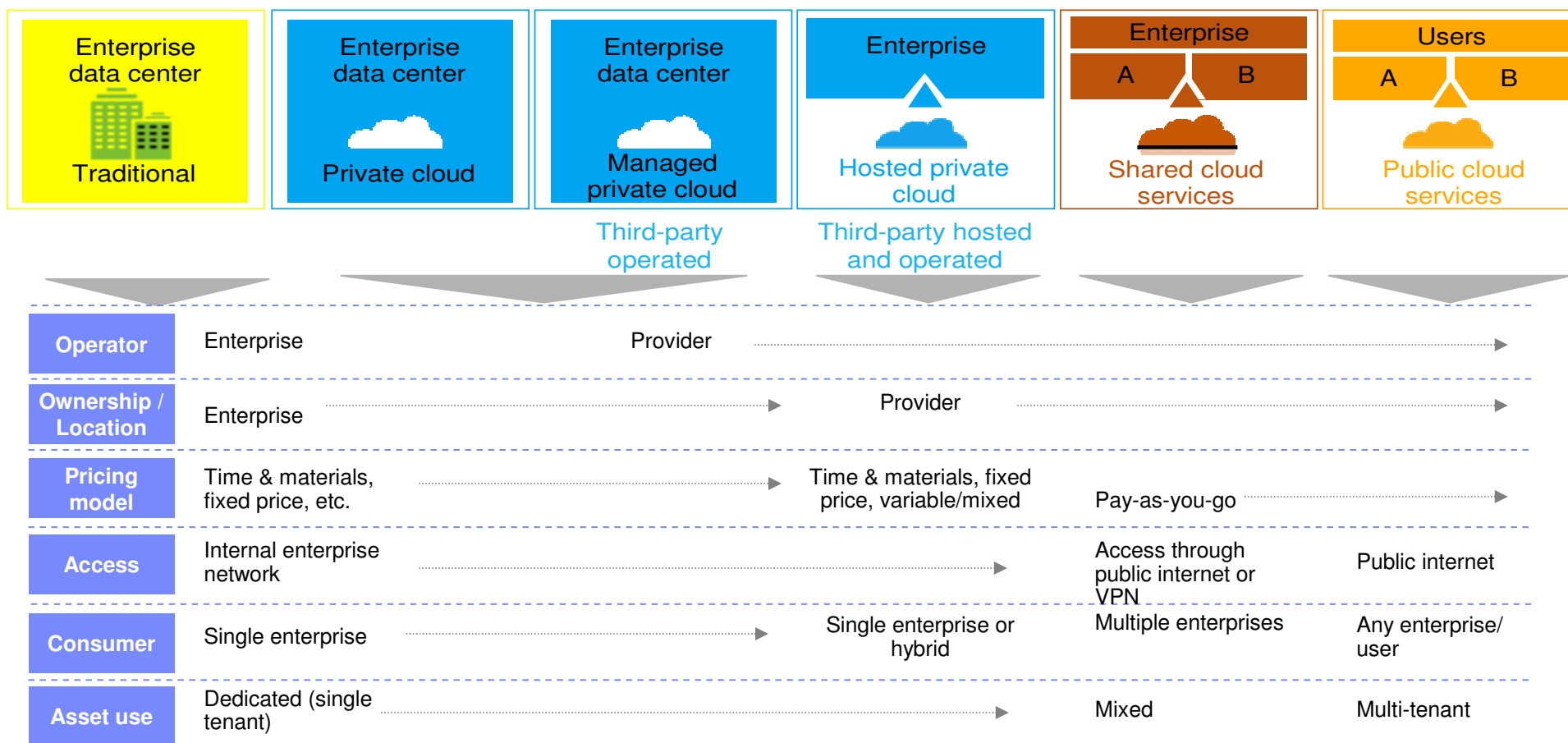
Various trade-offs from the cloud deployment models (IBM slide, vendor neutral)

Private

IT capabilities are provided “as a service,” over an intranet, within the enterprise, and behind the firewall

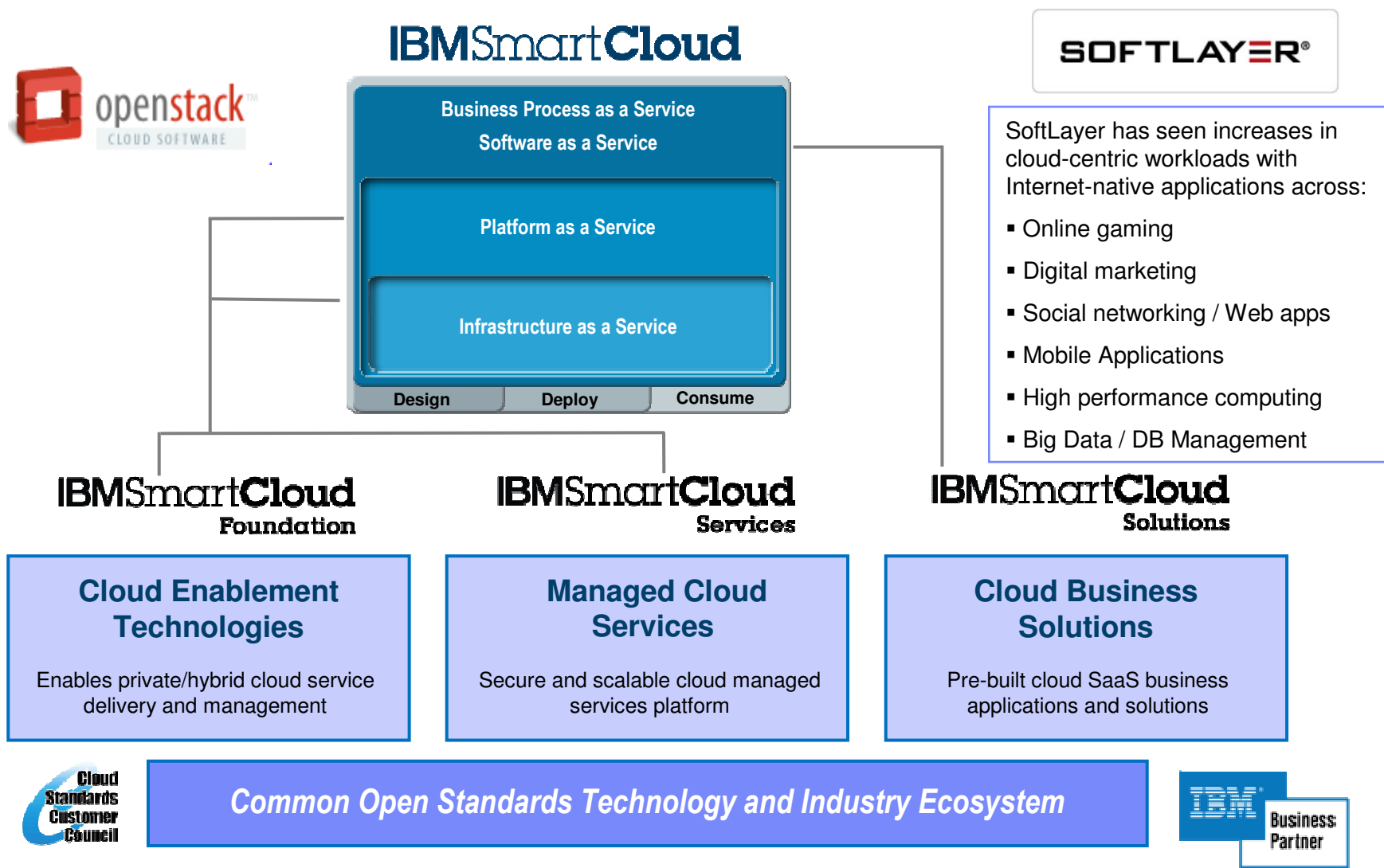
Public

IT activities / functions are provided “as a service,” over the Internet

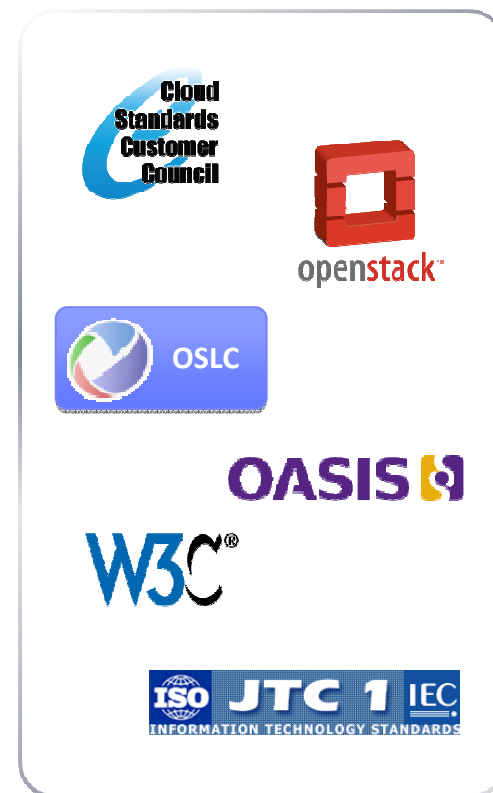
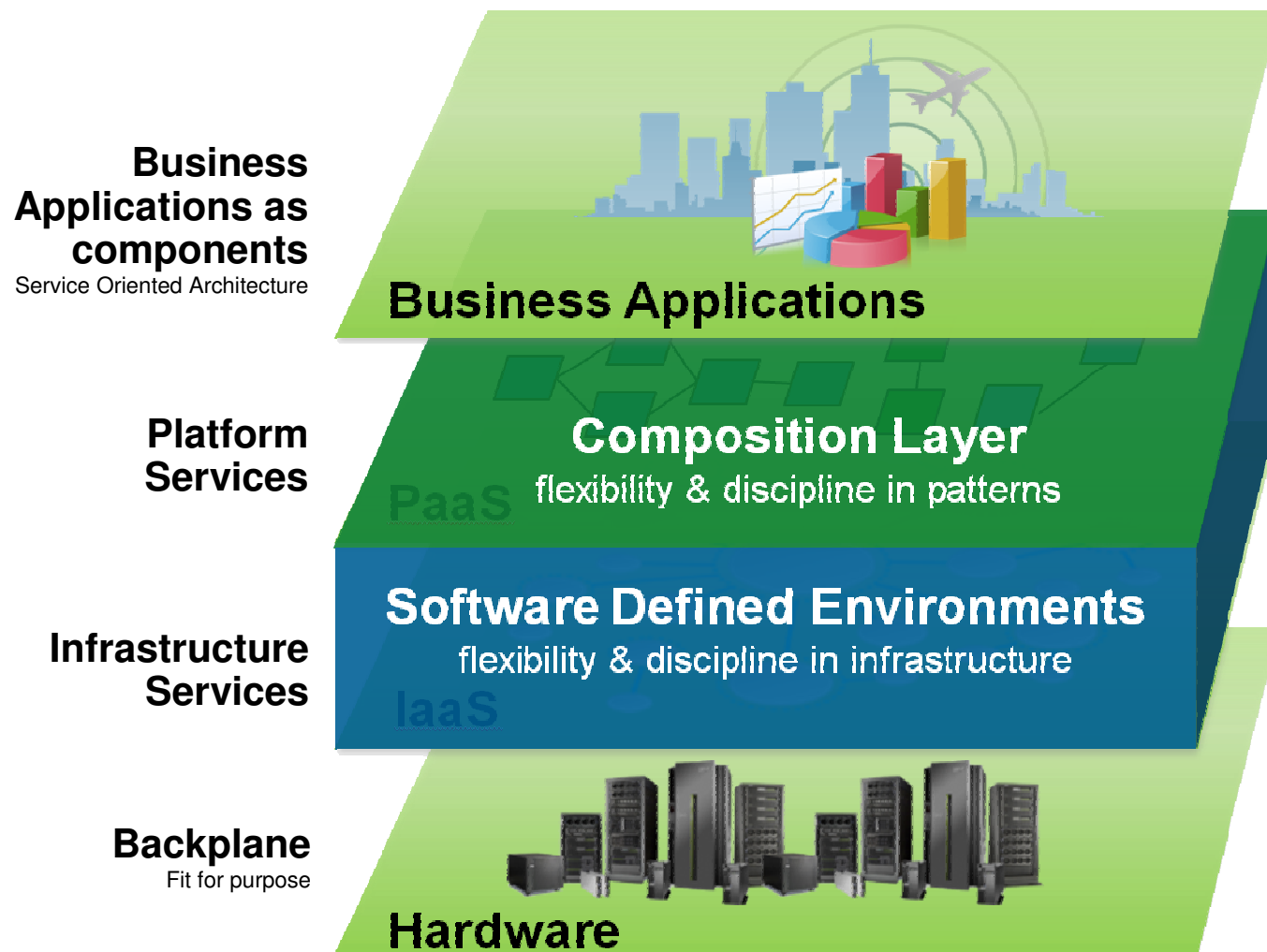


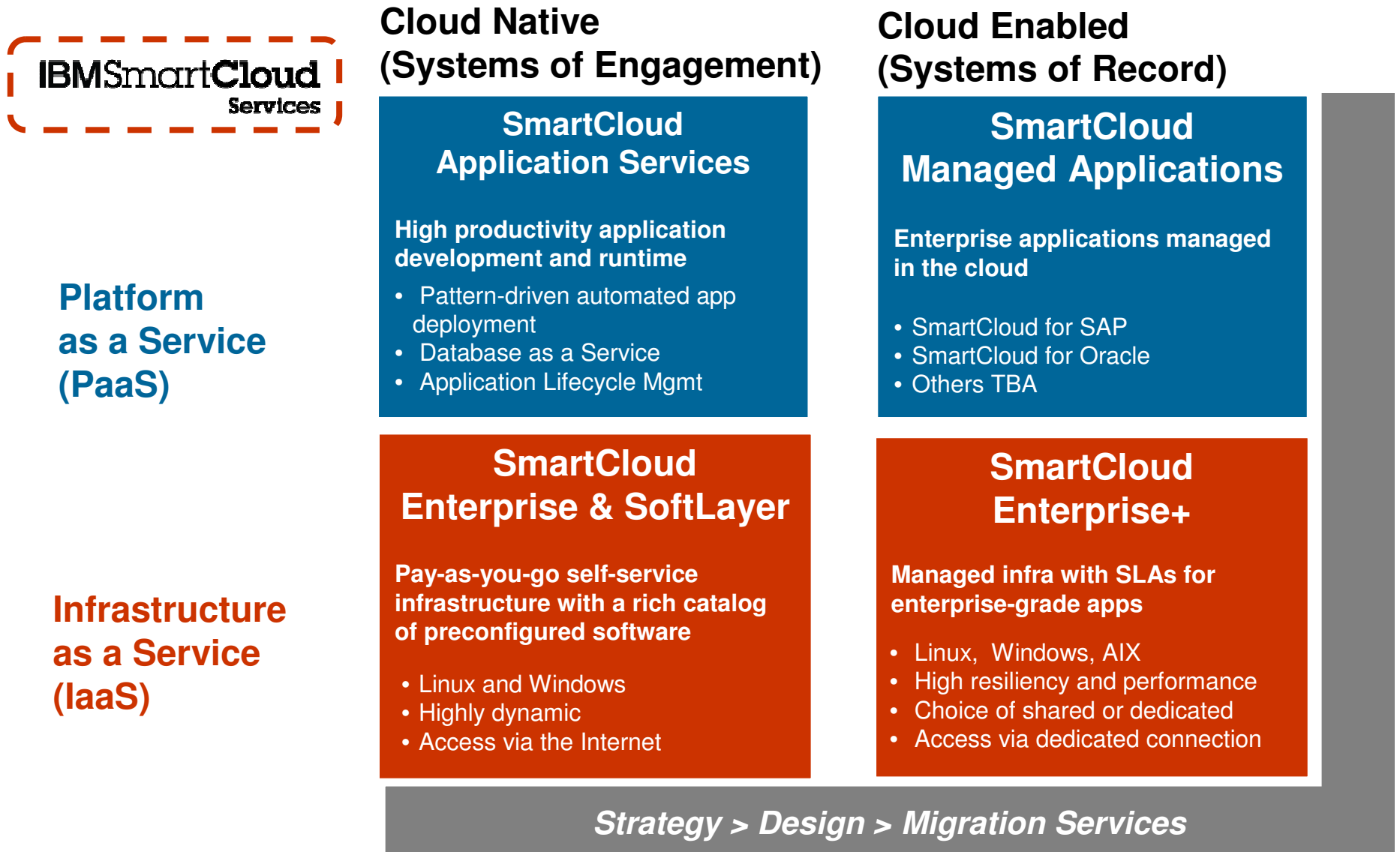
Source: IBM

The open standards based IBM SmartCloud Portfolio

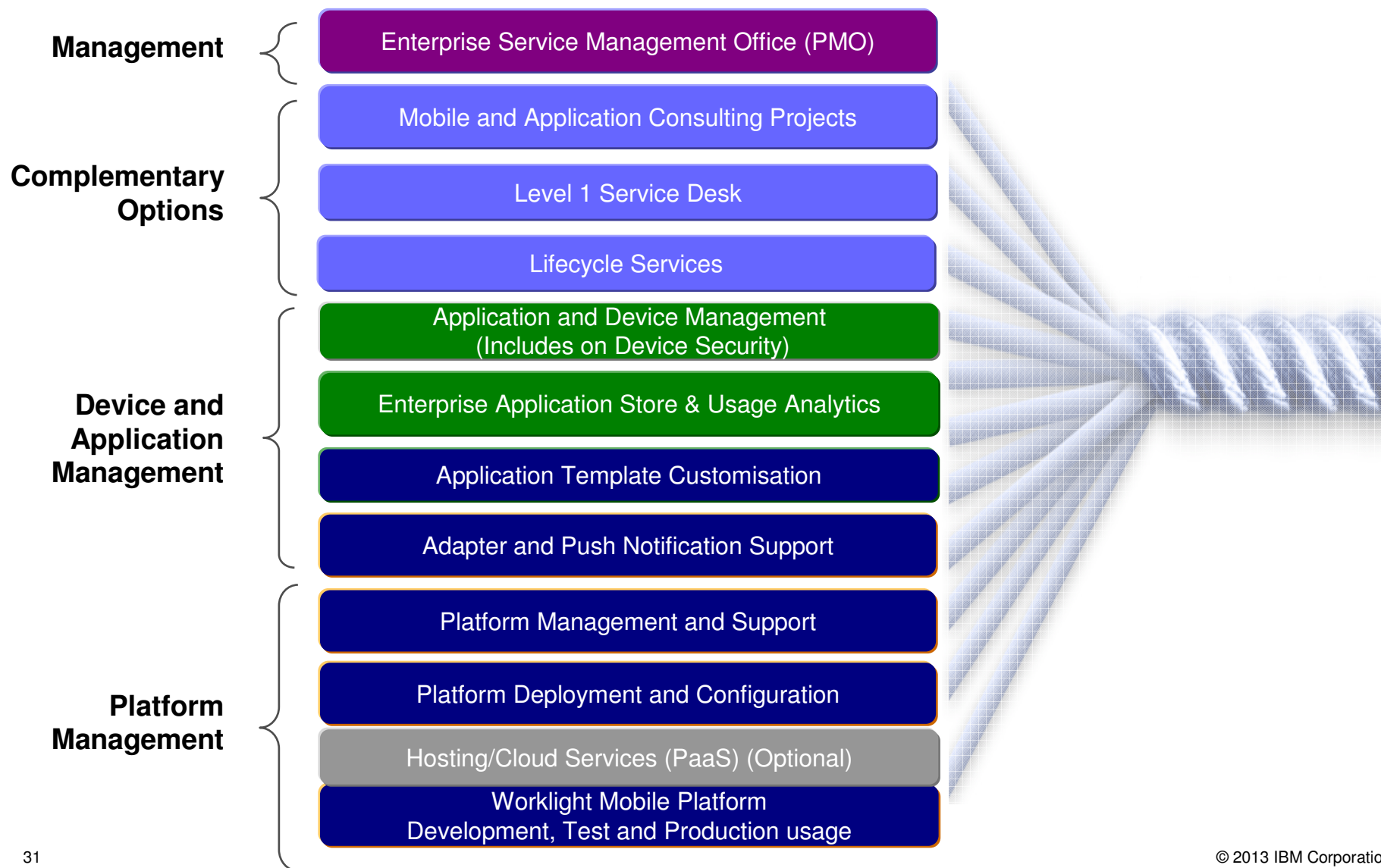


A layered and open cloud architecture is emerging





(Mobile) Application Platform Management Solution to provide a comprehensive mobile and cloud application suite of capability



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A taxonomy of devices

Intelligent Device Hierarchy

Mobile Phones,
Smart Phones,
Notebooks
Mobile Terminals
Tablets,
Media Players

Desktop PCs
Servers/Storage
Routers/Switches/Gateways
Printers/Imaging
Game/Media Equipment & Players

Consumer/Commercial Vehicles
Off-Highway Vehicles
Air/Rail/Transit/Marine
Navigation Systems
Mobile Healthcare Devices

Building Equipment
Retail/Vending/POS/ATMs
Industrial Machinery
Healthcare Equipment
Power Distribution Equip
Infrastructure Equipment

Controllers
Sensors,
Instruments
Meters
Microprocessors
Microcontrollers

**Mobile
Info
Devices**

**Static Info
Appliances**

Mobile Devices

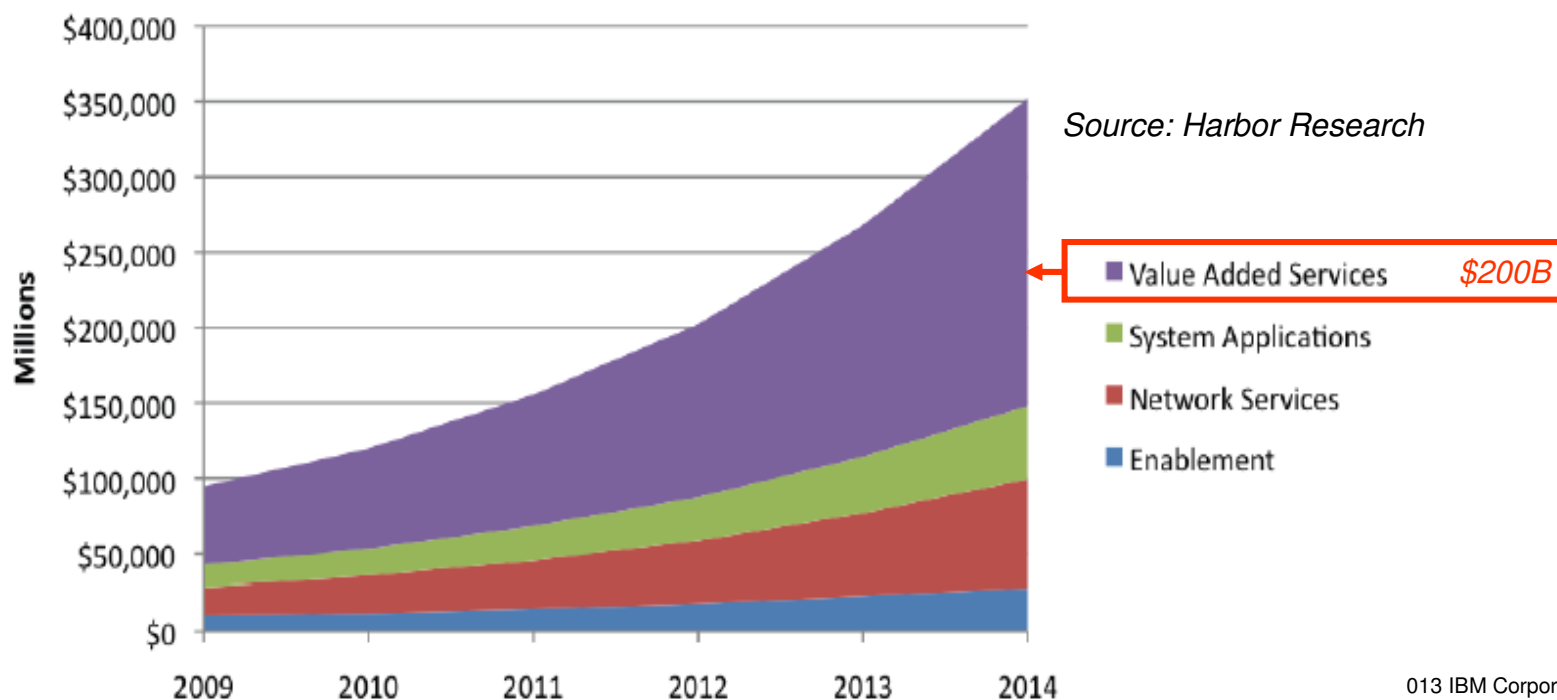
Static Devices

Embedded Devices

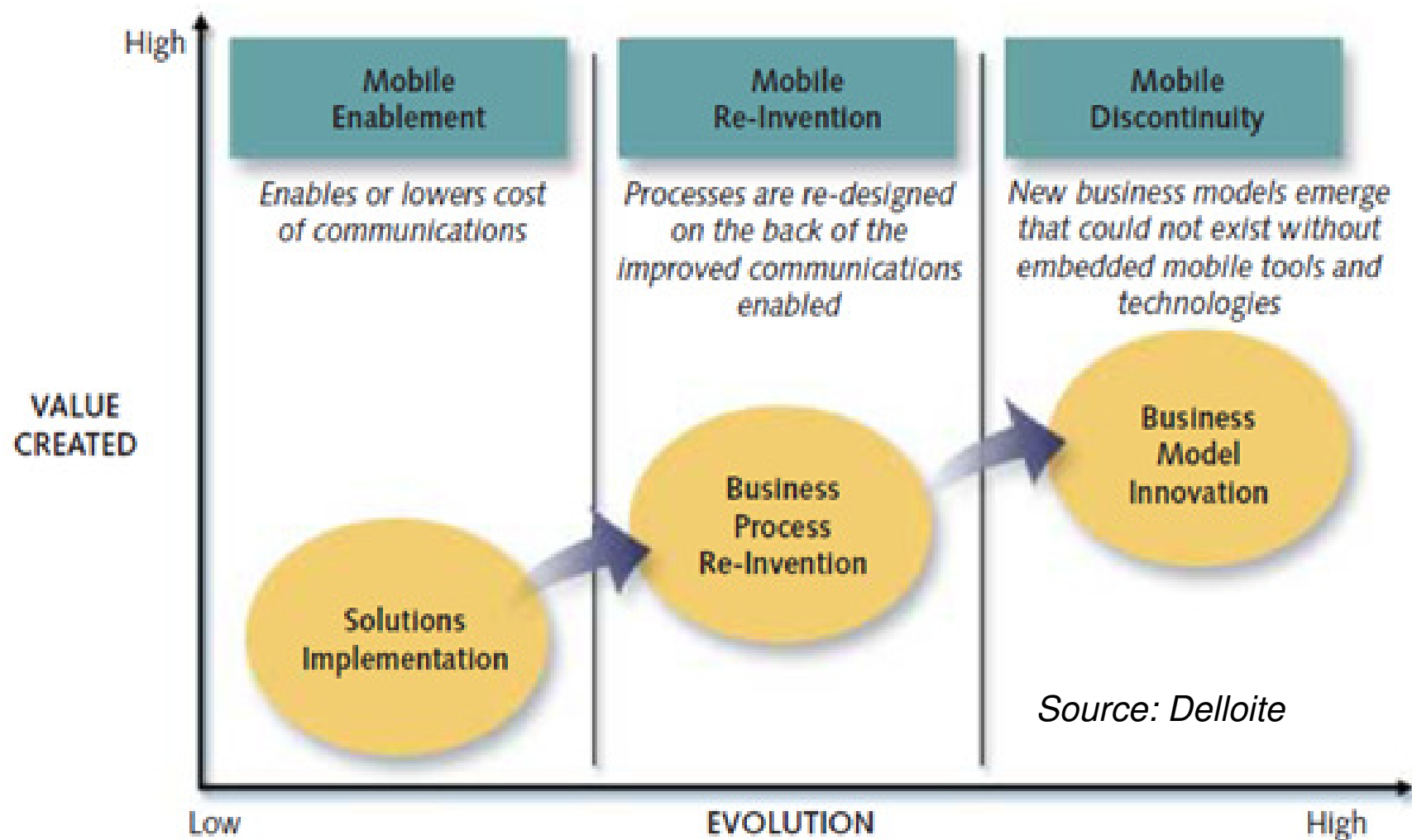
Source: Harbor Research

Real Value > Sum of the Parts

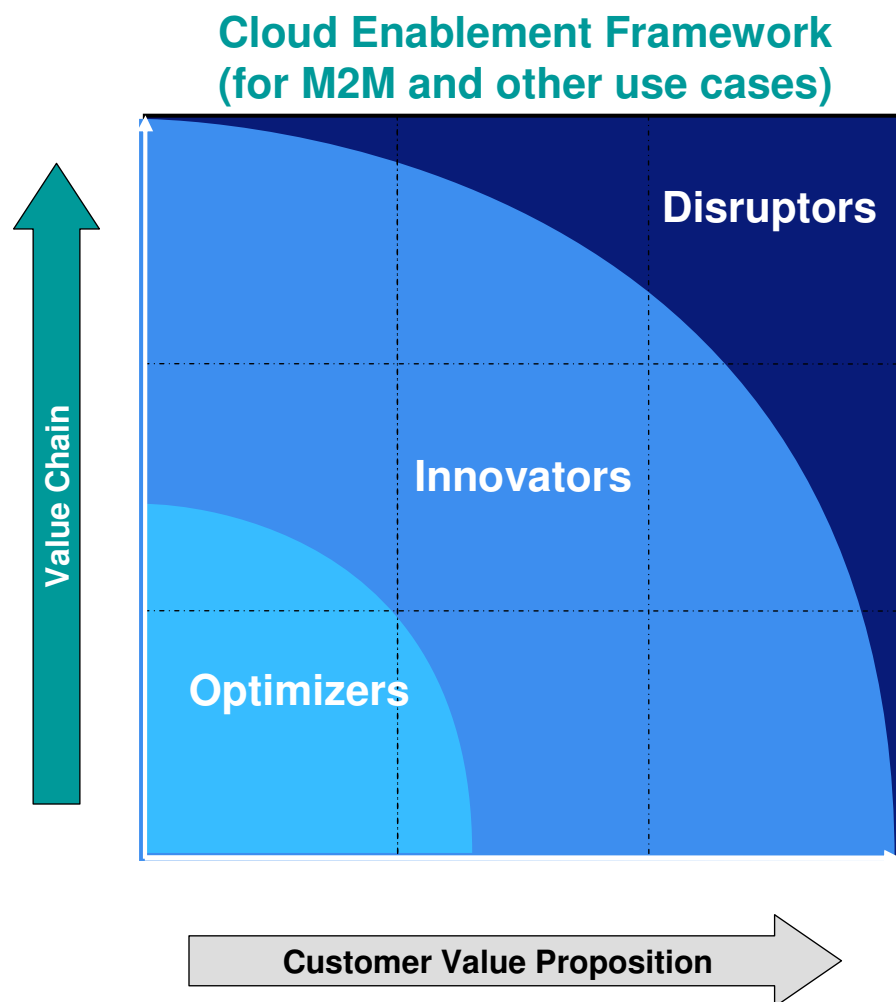
- Huge surge to deliver value at the edges of computing and value at the core of computing – individually in those realms
- The whole is great than the sum of the parts
 - Mobile/Smart Phones (edges) + Cloud (core)
 - M2M (edges) + Cloud (core)
- What are the patterns, models of this the M2M+Cloud “whole” is addressed in this discussion



There are different levels of value to tap from the progression



Optimize vs. Innovate vs. Disrupt



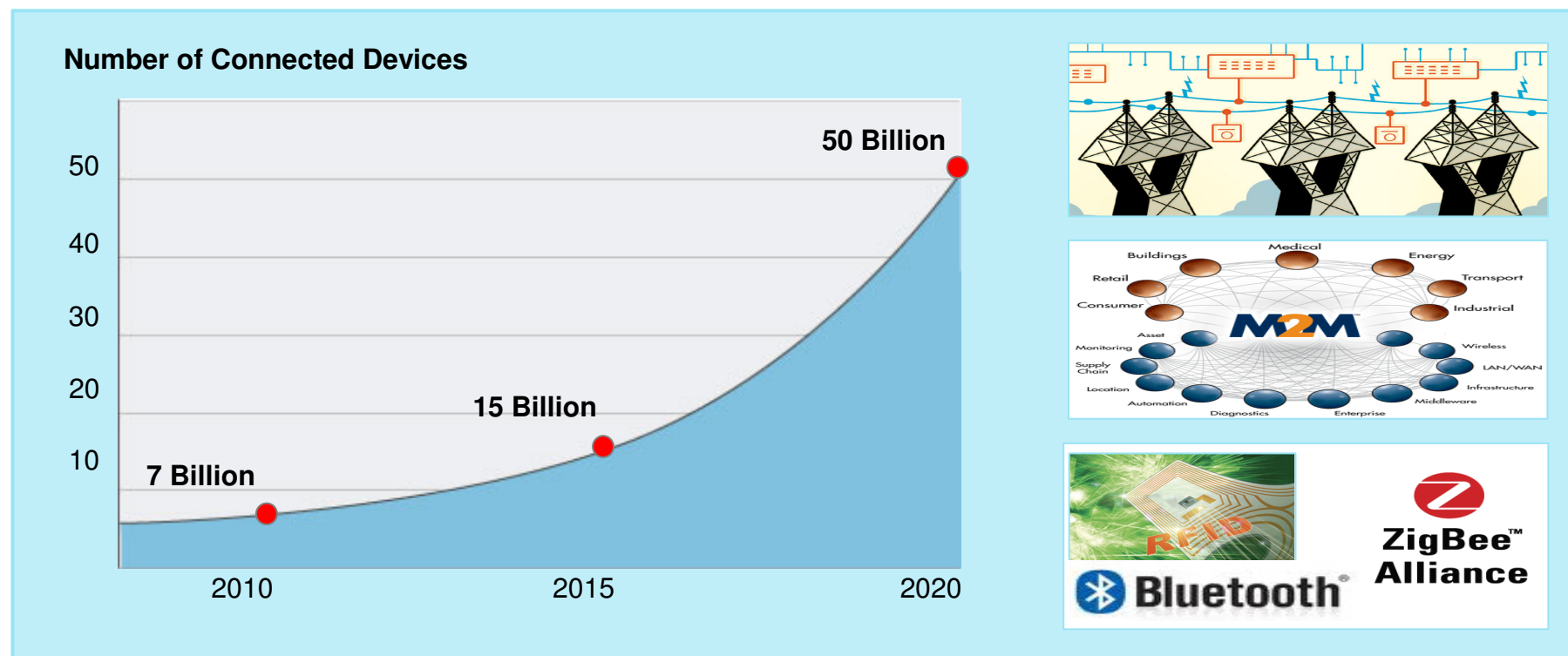
Disruptors create radically different value propositions, generate new customer needs and segments. They disintermediate existing industries or even create new ecosystems

Innovators significantly extend customer value propositions resulting in new revenue streams and transform their role within their industry or enter a different industry ecosystem

Optimizers use the cloud to incrementally enhance their customer value propositions while improving their organization's efficiency

Source: IBM's Institute of Business Value

What patterns and infrastructure is needed for such value realization and massive scale
– *at viable economics, and less headache*



Multiple Sources: Intel, Ericsson, Gartner, etc.

M2M / Device Scenarios Show a Pattern of Pain Points

- Lack of capability to design, implement, deploy, operate, manage complex M2M systems
- Lack of situation awareness leading to unacceptable responsiveness and resilience
- Requirement of end-to-end security

Water Management



Grid



Food Safety



Logistics



Home Healthcare



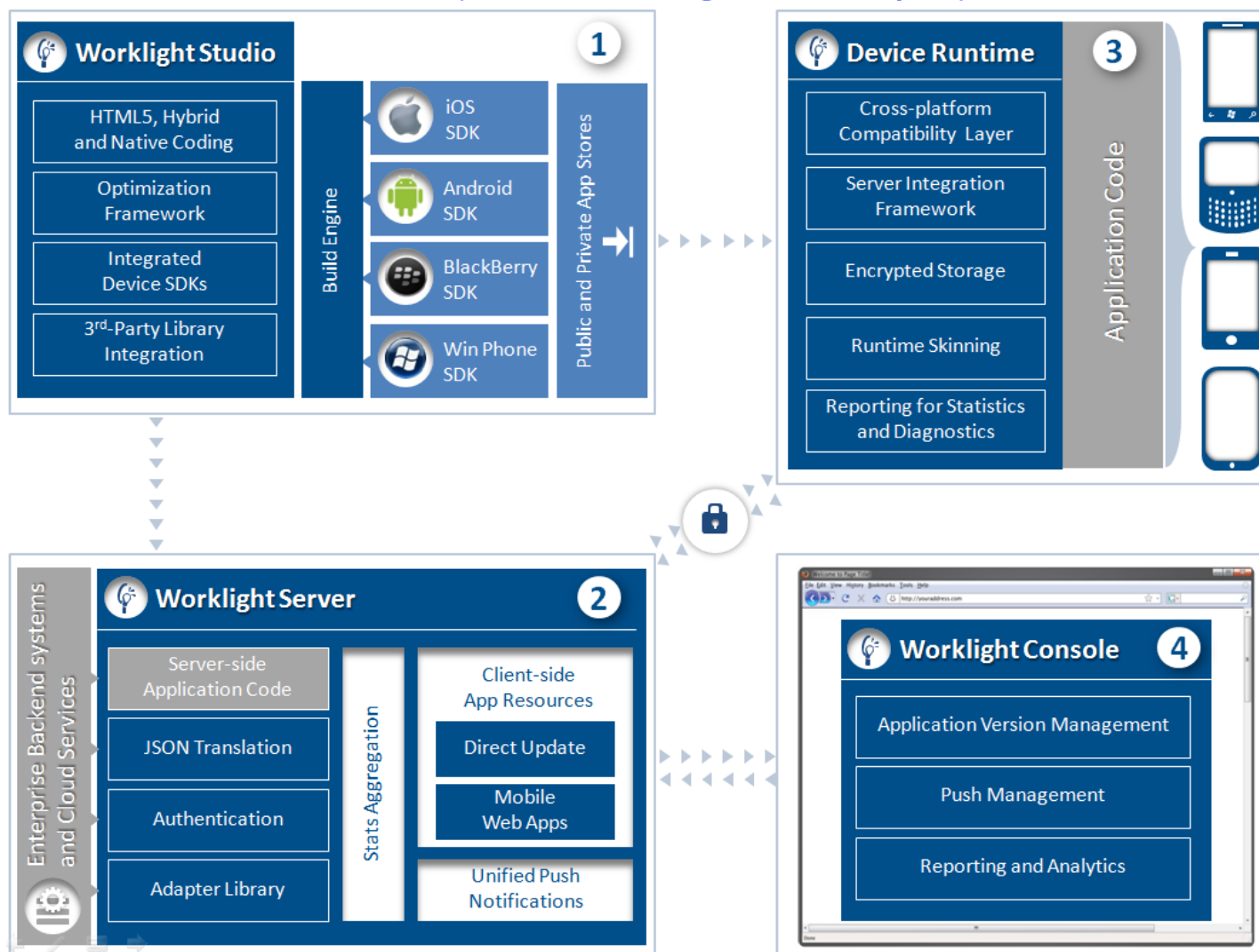
Transportation



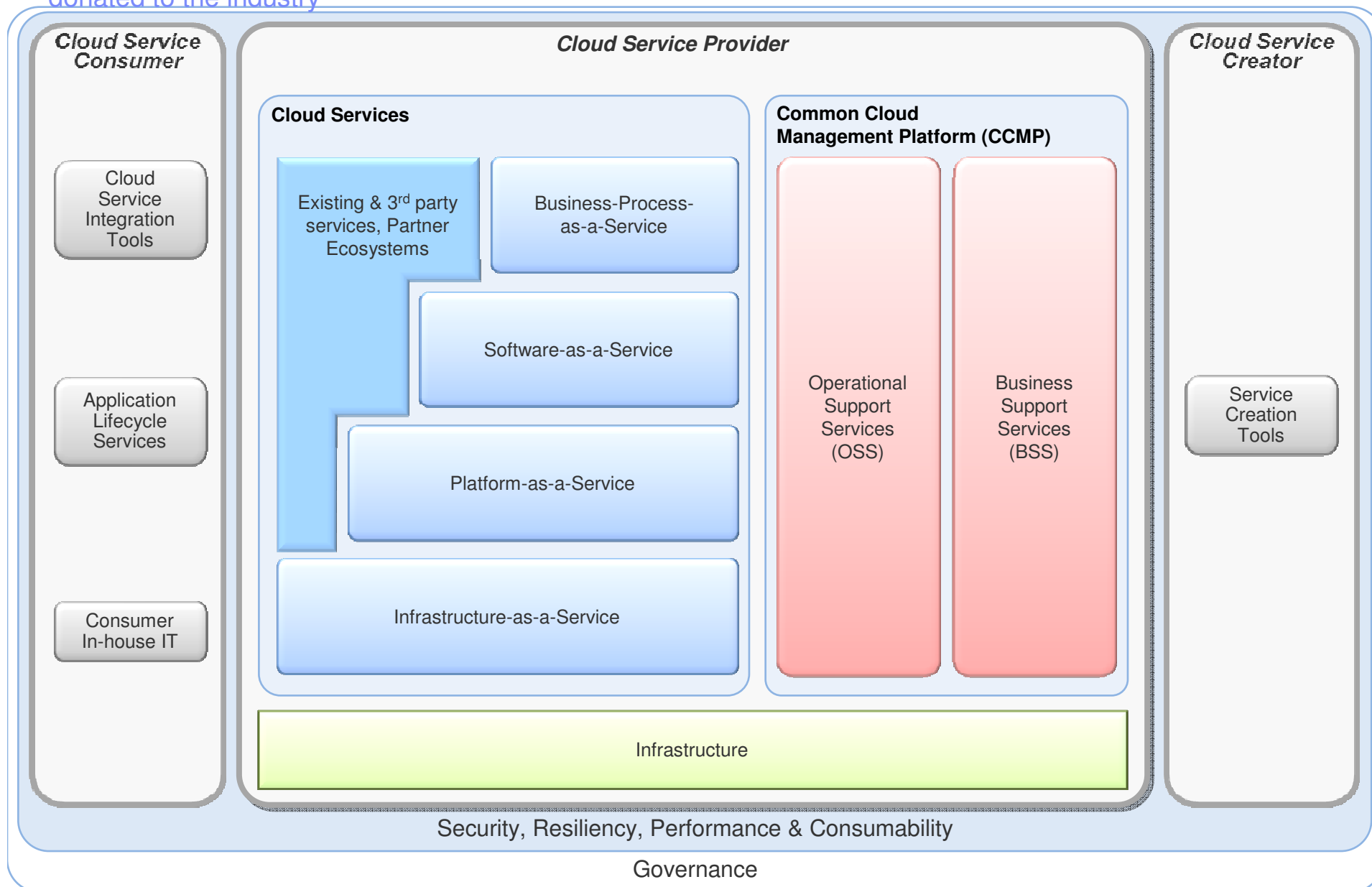
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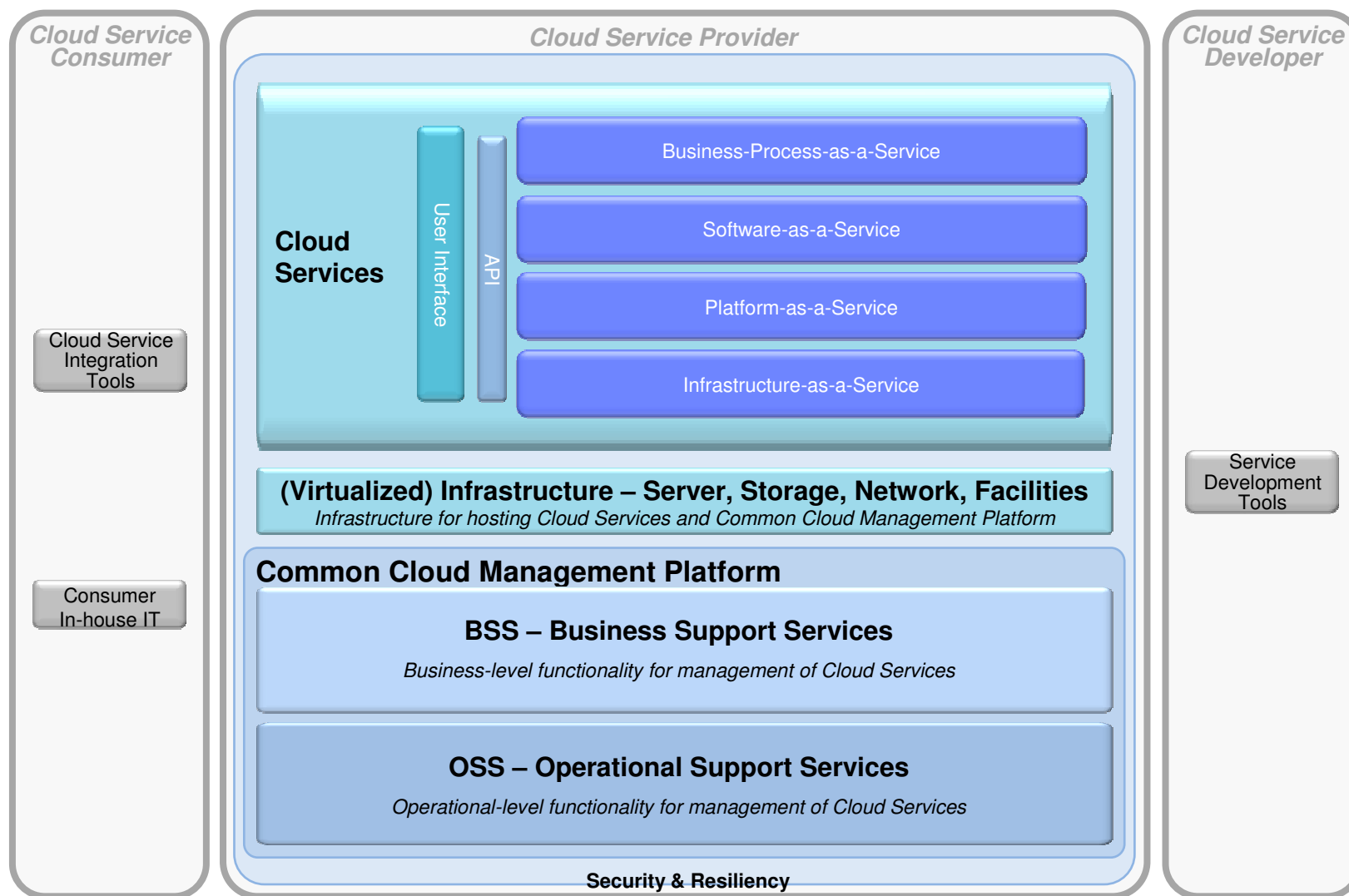
Mobile Platform Architecture (IBM Worklight Example)



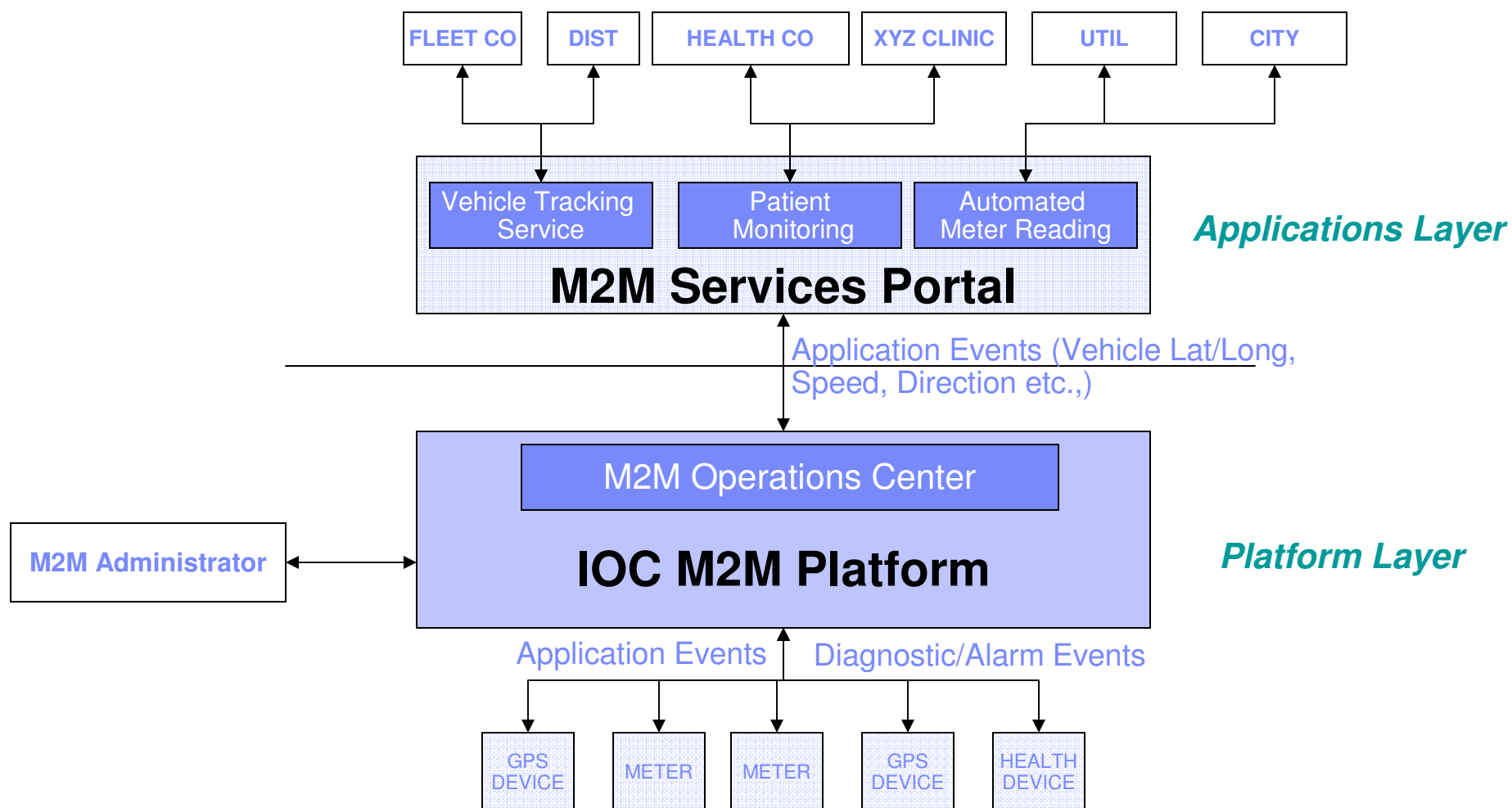
Cloud Computing Reference Architecture (CCRA) – Created by IBM – vendor agnostic, interoperable, donated to the industry



Cloud Computing Reference Architecture



M2M/Device Reference Architecture



Resources

Further Resources

- Cloud (Overall)
 - www.ibm.com/smartcloud
 - www.softlayer.com (Softlayer)
- IBM & Pivotal Announcement this week (Cloud Foundry, PaaS)
 - <http://www-03.ibm.com/press/us/en/pressrelease/41569.wss>
 - Developer works: https://www.ibm.com/developerworks/community/blogs/32f9d388-7f35-4598-a08a-7cd6c0bd3841/entry/ibm_and_pivotal_to_accelerate_open_cloud_innovation_with_cloud_foundry?lang=zh
- Mobile:
 - www.ibm.com/mobilefirst
- SmarterPlanet (including overall Devices)
 - www.ibm.com/smarterplanet