

Digging for the New Mobile Gold

The Next Generation of Mobile Monetization

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May 2014

It's almost impossible to remember a world before mobile devices. Over 85 percent of the world's population enjoys access to a mobile phone. In 105 countries around the world, there are now more mobile devices than people.¹ The International Telecommunication Union (ITU) estimates that there will be close to 7.3 billion mobile subscribers in the world this year - or more mobile devices than people on the planet.² Cisco's recent mobile consumer research reveals that Americans already own an average of three mobile devices each, up from 2.6 devices just over a year ago.³

The mobile market continues to evolve at a blindingly fast pace. It seems as though new faster, sleeker, and more powerful mobile devices are launched every day. And new categories of mobile devices are created almost overnight. The number of applications available to run on these revolutionary new mobile devices is staggering, numbering in the millions. Now you can do everything from managing your bank account to controlling your home thermostat to shopping and boarding a plane - all from the palm of your hand. On top of this, we now have faster ways to connect these devices to the Internet through 4G/LTE or Wi-Fi.

The insatiable demand for mobile devices and new bandwidth-hungry applications is generating enormous amounts of mobile data. The Cisco Visual Networking Index™ (Cisco VNI™) predicts that these trends will cause global mobile data traffic to increase 11-fold from 2013 to 2018, surpassing 15 exabytes per month by 2018.⁴ All of this growth has been great news for mobile network operators (MNOs), as total global mobile data revenue reached \$350 billion in 2012 - more than the combined revenues of the music industry, movies, ISP services, and cable TV.⁵

Meet the Mobile Paradox

In spite of this phenomenal growth and insatiable consumer demand, many MNOs are struggling to profit from this mobile gold rush. Mobile operators are watching as their average revenue per customer (ARPU) flattens or declines. Despite increasing customer appetite for mobile data, minutes of use in their cash-cow voice business are falling off sharply, and usage of text messaging is peaking. In fact, Ovum predicts that 2018 will mark the first year of revenue contraction in the history of the global mobile market.⁶ Following four years of less than 1 percent growth between 2012 and 2017, revenues will decline by 1 percent in 2018, ending the year \$7.8 billion lower than in 2017.

This mobile paradox - huge growth and customer demand, yet significant business and market challenges - seems to be unique to the mobile industry. When other industries, such as the automotive industry, face healthy customer demand, they build out more capacity, sell more cars, and reap greater profits. Mobile operators need to build out more network capacity to keep up with the voracious customer demand, but they are struggling to convert these investments into higher revenues and profitability. Much of this business is being lost to substitute over-the-top (OTT) services and to major shifts in usage behaviors. Chetan Sharma Consulting estimates that OTT services currently account for 10 percent of total mobile industry revenues and will rise to one-third of the total industry value by the end of the decade.⁷ Mobile consumers would rather pay for these OTT services or be subjected to advertising from the likes of Google, Facebook, YouTube, and the App Store, than pay more to mobile operators.

¹ International Telecommunication Union, Key Statistical Highlights. ICT Indicators Database. June 2012.

² Ibid.

³ Understanding the Changing Mobile User: Gain Insights from Cisco's Mobile Research. 2013.

⁴ Cisco Visual Networking Index (Cisco VNI) Mobile. February 2014.

⁵ "State of the Global Mobile Market Industry: Annual Assessment 2012" Chetan Sharma Consulting. 2012.

⁶ Global Mobile Market Outlook: 2013-18. Ovum. September 2013.

⁷ "State of the Global Mobile Market Industry: Annual Assessment 2012" Chetan Sharma Consulting. 2012.

Facing a New Mobile World

Not only is it a challenging world for mobile operators to be doing business in, but a number of major disruptors are radically altering the entire mobile ecosystem. The rise of software platforms (from “walled gardens” to “walled ecosystems”), the availability of new fast mobile networks, and the Internet of Everything (growth of network-connected devices) are causing significant disruption and uncertainty across the industry. Equally, the move to cloud delivery models (“everything as a service”), the changing industry structure, and the role of regulators are fundamentally changing the mobile ecosystem.

A new mobile world is emerging. Aside from large pipes to big-screen TVs and other fixed devices, everything in this new mobile world is connected over a wireless network. Access type won't matter - end users will be completely unaware as to which of the multiple interrelated licensed and unlicensed networks they're using to connect their devices to the Internet. Although two or three large platform ecosystems will likely dominate, there will be good interoperability between devices, networks, and applications or services. Much of this interoperability will be driven by the mobile cloud, delivering the most compelling mobile services - finally achieving the long-awaited promise of services delivered anywhere, anytime, on any device.

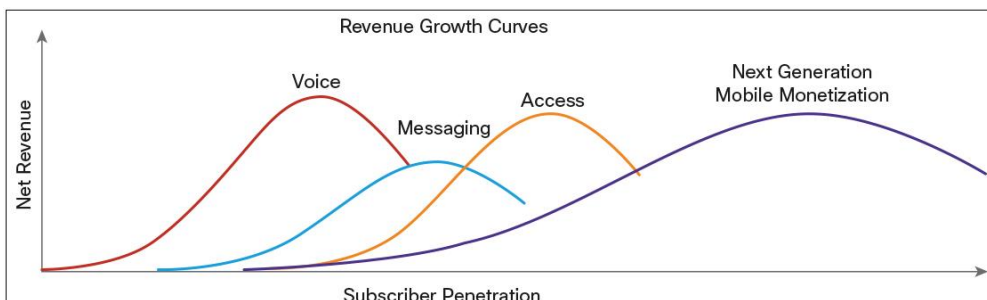
Competition in the new mobile world increases within and across parts of the mobile value chain as the number of networks increases, platforms and devices become interoperable, and services are easily delivered at scale through the mobile cloud. The lines between the segments in the value chain begin to blur as each of the players both competes and seeks ways to partner or collaborate with others to enhance and differentiate its offering. Once archrivals, mobile operators and OTT services now seek collaborative opportunities to use their core capabilities to create new value for themselves.

A mobile-centric world is definitely in the sweet spot of the mobile operators. However, how can they continue to make money and seek new sources of value in a world that is very different from what they know today?

Seeking the Next Wave

The history of the mobile industry has involved huge and successful waves of revenue growth (Figure 1). For a long time the mobile industry made huge sums of money from the mobile killer app - voice. However, high or unlimited minute plans and changing usage have meant the end of that growth wave. Messaging provided operators with perhaps one of the highest-margin and highest-growth products of all time, from any industry. OTT applications such as WhatsApp, Snapchat, and social media saw that revenue wave crest. Lately, MNOs are watching mobile data access rise to well over one-half of their total revenue, fueled by the insatiable consumer need to connect their mobile devices and applications. However, the crest of this third growth wave is visible on the horizon as the industry disruptors begin to shape a new mobile world.

Figure 1. Mobile Revenue Growth Curves



Source: Adapted from Chetan Sharma Consulting. Mobile Fourth Wave. 2013.

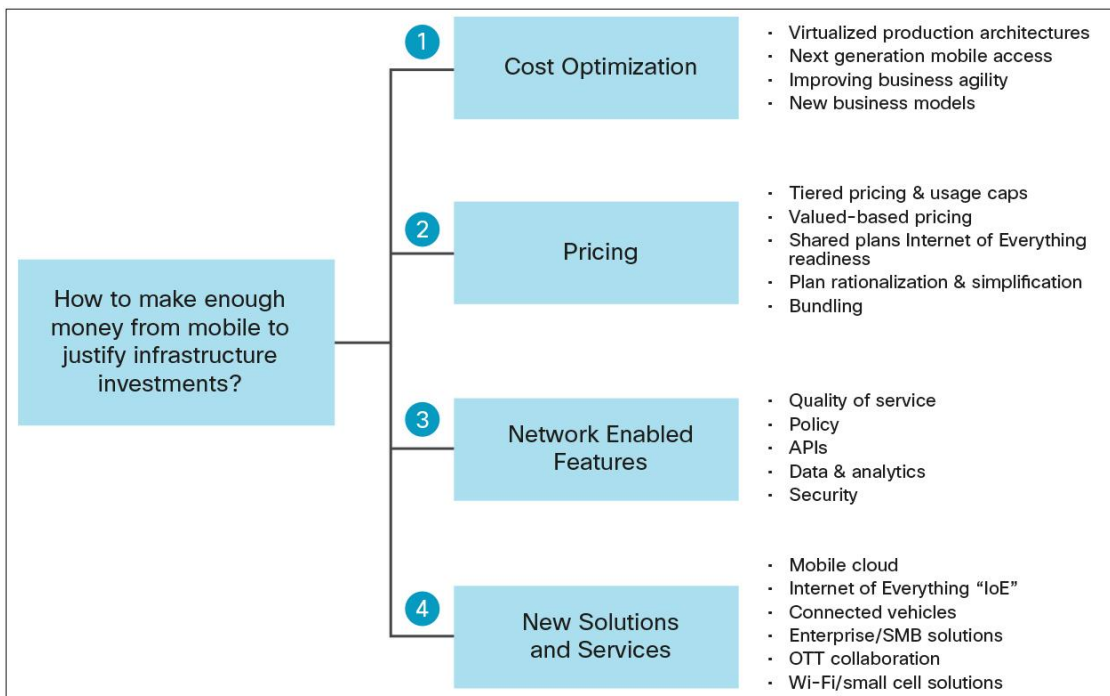
The question for mobile operators everywhere is, what is this fourth, or next, wave of mobile growth? What are the new opportunities for them to monetize their assets and extensive investments in their mobile networks? How can MNOs continue to enjoy the success and profitability in this new mobile world that they have had in the past?

The New Mobile Gold

Unfortunately there is no obvious tsunami-size fourth monetization wave cresting on the horizon for mobile operators. Unlike the preceding three waves, there will be no gold rush created by a single killer app, such as voice, messaging, or data. A lot of gold still remains in the mobile business, but it is going to come from multiple sources and require some sophisticated mining techniques.

Cisco believes that there are four key strategic thrusts, or monetization areas, for operators to create new value from their mobile business (Figure 2).

Figure 2. Mobile Monetization Strategic Thrusts



1. Cost Optimization

While not a revenue-generating opportunity in itself, cost leadership will be a critical component in creating value for service providers. Production costs, embedded in the IT and network architectures typically make up one-third of an operator's typical operating expenses (OpEx).⁸ In Cisco's experience, working with our major service provider customers, we have been able to improve overall service provider OpEx efficiency by at least 10 percent. Key activities to deliver these improvements include:

- **Virtualized production architectures:** The move to software-defined networking (SDN) will not only decrease network costs but also greatly improve technological and business flexibility. Additional cost-reduction strategies based on new technologies include consolidating and virtualizing data centers, consolidating and standardizing IT platforms, and moving key applications and IT workloads to the cloud.
- **Next-generation mobile access:** New technologies such as cloud RAN, Wi-Fi, and small cells can be cost-effective substitutes and complements to traditional macro cell networks. Simplifying, consolidating, and retiring existing mobile networks and embracing a heterogeneous network (HetNet) of multiple licensed and unlicensed access technologies will significantly reduce OpEx as well as capital expenditures (CapEx). Self-organizing network (SON) technologies permit the optimization of the blend of various RAN technologies. Integrated Wi-Fi-small cell devices, platforms, and installations can significantly reduce access point installation and operating costs.
- **Improved business agility:** To realize the OpEx reduction potential of new technology architectures, it is critical to also adapt the underlying business architectures. Using a modular Agile Business Architecture approach⁹ to reengineer and realign processes and organizations will greatly improve overall business efficiency and effectiveness and allow operators to act more nimbly in the marketplace. Typically, improving business agility is combined with a consolidation of legacy operating support and business support systems (OSS and BSS).
- **New business and operating models:** Smart providers are carefully assessing where they can lower costs by outsourcing the operations, the maintenance, and often the initial building of nonstrategic assets to vendors and other third parties. They are recognizing that they don't need to do everything in this new world, and that by redefining their business and operating costs, they can not only substantially reduce their costs but also increase their business flexibility.

⁸ CSP Opex Segment Analysis Highlights, Ovum 2014.

⁹ The Agile Service Provider: How Executives Can Break the Barriers to Offering New Services & Technologies.

2. Pricing

Pricing has always been an important tool for mobile operators. While pricing is, in fact, the most powerful of a firm's profit levers, it is often overlooked by managers.¹⁰ Key considerations in enhancing profitability through pricing include:

- **Tiered pricing and usage caps:** While flat rate, "all-you-can-eat" plans have been successful in boosting mass market penetration, these plans are less appropriate for deriving value from mobile data, as they bear very little relation to the underlying network economics. As mobile markets mature, a shift away from flat rate pricing is now required.¹¹ The Cisco VNI finds that the top 1 percent of all mobile users account for roughly 15 percent of all data traffic.¹² And the top 10 percent of users consume approximately one-half of all of the mobile bandwidth. Yet pricing plans typically treat all mobile users as equal. Plans that tier pricing to data usage more fairly, and more profitably, charge users based on their need and willingness to pay. In addition, operators are applying usage caps for high-volume users to indicate that mobile data is not free and to monetize bandwidth hogs.
- **Value-based pricing:** Many operators are still focused on pricing for access. New pricing mechanisms are designed to capture the additional value of services delivered by mobile operators or their OTT partners. Such mechanisms include embedded connectivity and quota-free access to services, as well as network-enabled features such as reduced latency, policy control, and turbo buttons (see the next section, "Network-Enabled Features").
- **Shared plans for Internet of Everything (IoE) readiness:** Several carriers, especially in the United States, have successfully expanded their pricing plans to include additional devices and to expand the user base to family members or employees. Not only does this provide additional profitable revenue, and help to lock in customers, but it readies operators for the IoE world by expanding the market to traditionally nonmobile connected devices.
- **Plan rationalization and simplification:** Most mobile operators still have a plethora of pricing plans. Rationalization of plans reduces the overall cost of offering service and decreases customer confusion. Recently, T-Mobile US has been very effective at disrupting the market, and attracting many new subscribers, with its simple and easy-to-understand pricing plans.
- **Bundling:** Offering triple or quad plays (landline, mobile, broadband, and TV) of communication services has been an effective means for service providers to significantly raise customer lifetime value (CLV). Not only does it help to attract new subscribers and increase customer spending, but bundling is clearly connected to retaining customers - one of the most important levers in CLV. Increasingly, integrated operators are adding access to an extensive public Wi-Fi into the bundle to sweeten the retention pot even further.

¹⁰ Smart Pricing: How Google, Priceline, and Leading Businesses Use Pricing Innovation for Profitability. Jagmohan Raju and Z. John Zhang. Pearson Prentice Hall. 2010.

¹¹ Rethinking Flat Rate Pricing for Broadband Services: How Service Providers Can Monetize Internet Traffic Growth via Value-Based Pricing. Cisco, 2012.

¹² Cisco VNI Mobile. February 2014.

3. Network-Enabled Features

Mobile operators realize that many of the assets and capabilities in their network and operations allow them not only to improve the quality of the user experience but also to sell relevant information and services to other interested parties. For example, McKinsey estimates that service providers have a one-of-a-kind moment to employ big data and advanced analytics in order to capitalize on a global opportunity potentially worth \$300 billion.¹³ Given the importance of mobile in people's lives, and the rapid migration of traditional PC-based and new applications to mobile, there is a significant opportunity for operators to monetize their unique network-enabled features. Operators such as Verizon, SK Telecom, and Telefonica have established business units to extract, package, and sell the valuable big data that is resident in their networks and operations. The GSM Association has established its OneAPI Exchange initiative to provide a platform for the collection, sharing, and monetization of APIs among mobile operators and application developers. Key opportunities to monetize network-enabled features include:

- **Quality of service (QoS):** Cisco® mobile user research¹⁴ demonstrates that subscribers are willing to pay for faster download speeds and an overall better quality of service or, more appropriately, quality of experience. Service providers are beginning to offer additional paid services that guarantee levels of service tied to specific applications, or power boosters that provide extra data speed when needed, as additional paid services.
- **Policy:** The first generation of policy features was primarily about cost control. However, Policy 2.0 provides many more opportunities to monetize data and the policy features in the network. User self-care features, for example, can improve the overall subscriber experience. Loss prevention features provide a valuable service to mobile users, whereas policy capabilities such as campaign tools, authentication, and subscriber data management offer desirable capabilities to third parties.
- **APIs:** Through API platforms mobile operators can make network features such as messaging, authentication, payments, presence, and location finding available to application developers in order to enhance the experience of their users and differentiate their applications.
- **Data and analytics:** Mobile operators collect a vast amount of valuable data on their subscribers and the use of their mobile devices from their networks and operations. Everything from device type to location, presence, and usage behavior can feed the big data machine to provide invaluable insights that can be used to improve operations or enhance the user experience, or be sold to third parties who can use it for advertising, planning, or powering new services.
- **Security:** Given our growing reliance on the Internet, mobile devices, and applications for managing our lives, as well as recent high-profile events, it is no wonder that security is a critical concern to most mobile users. Not only did respondents to the Cisco mobile user survey tell us that they were concerned about mobile security, almost one-half of users indicated that they would be willing to pay for a premium service that guaranteed mobile security.¹⁵

¹³ Big Data in Telecoms: How to Capture Value from Customer Information. McKinsey & Company, Media & High Tech Extranet. March 19, 2014.

¹⁴ Understanding the Changing Mobile User: Gain Insights from Cisco's Mobile Research. Cisco, 2013.

¹⁵ Understanding the Changing Mobile User: Gain Insights from Cisco's Mobile Research. Cisco, 2013.

4. New Solutions and Services

While the changing mobile world creates many new issues and challenges for mobile operators, it also opens up numerous new monetization opportunities for operators. As the world becomes truly mobile, service providers have a unique opportunity to use their core technology and business assets to create new solutions and services to enhance their users' experience and utility, reshape businesses and business models, and create new sources of value beyond their core access business. Potential new solutions and services that mobile operators could successfully deliver include:

- **Mobile cloud:** The delivery of services or applications from a centralized data center is fast becoming *the* means of obtaining new and valuable functionality on mobile devices. Cisco research reveals that not only do consumers want the more traditional cloud services (such as storage, email, and applications) delivered to their mobile devices, but they are also very interested in new unique mobile cloud services that exploit the capabilities of the device and the functionality of mobility (for example, real-time translation, augmented reality, and dual personas).¹⁶ With their carrier-grade networks, IT infrastructure, and strong customer franchise, operators are in a great position to be the leading providers of the new mobile cloud services. In fact, the same Cisco research found that for close to 50 percent of mobile users, service providers were their preferred channel, dwarfing the less than 20 percent who preferred web companies.
- **Internet of Everything and machine-to-machine (M2M):** Cisco predicts that there will be 25 billion devices connected to the Internet by 2015 and 50 billion by 2020.¹⁷ The IoE creates an unprecedented opportunity to connect not just devices (things) but people, data, and processes as well - making networked connections more relevant and valuable. Service providers, with their ubiquitous mobile networks, are already at the center of the IoE. But there are significant opportunities for operators to move beyond the access layer to deliver unique solutions and to build and manage the platform for a hyper-connected world. Already, we are starting to see service providers play a leadership role in creating unique industry-focused M2M solutions and new smart cities.¹⁸
- **Connected vehicles:** AT&T Mobility's president recently opined that "The car is becoming a smartphone on wheels." The race is on to embed SIM cards and Wi-Fi in cars to connect them to the outside world. While many of the high-profile use cases revolve around entertainment, perhaps the more valuable and profitable opportunities include safety, car operation and maintenance, and the creation of unique services such as linking your personal profile and driving preferences to your car through your smartphone. Mobile operators realize that this is a huge opportunity for them, and they are individually lining up deals with auto manufacturers (for example, China Unicom and BMW, GM and AT&T, Tesla and Telefonica) or through the GSM Association's Connected Car Forum.
- **Enterprise and small and midsize business (SMB) solutions:** Business users have always been the bread and butter of the mobile industry. However, we are still primarily rooted in "Enterprise Mobility 1.0" - extending a small range of business capabilities to mobile devices, such as email and limited access to corporate websites and applications. Exciting opportunities exist to create the next generation of the mobile business experience, with solutions such as virtual desktop integration, dual personas, integrated Wi-Fi-cellular voice, and close integration of corporate IT cloud initiatives with the mobile cloud. In addition, operators are uniquely positioned to use mobility to help reinvent the way business is actually done by developing new, mobile-centric industry solutions.

¹⁶ The Mobile Cloud. When Two Explosive Markets Collide. Cisco. 2011.

¹⁷ The Internet of Things: How the Next Evolution of the Internet Is Changing Everything. Cisco. 2011.

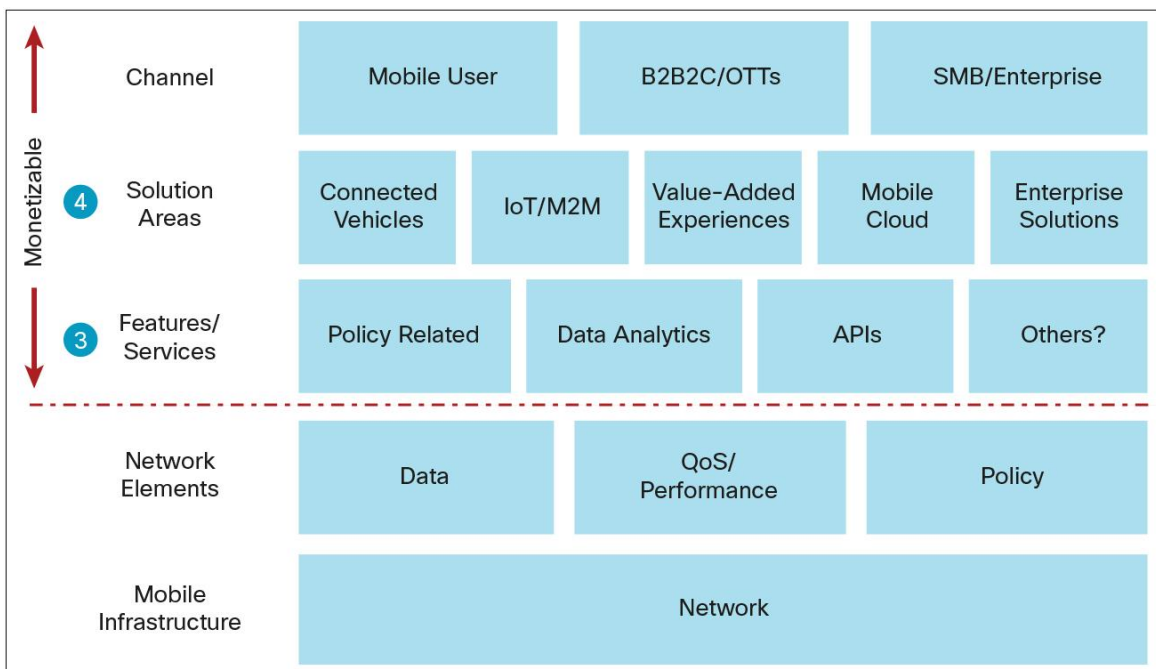
¹⁸ Smart Mobile Cities: Opportunities for Mobile Operators to Deliver Intelligent Cities. Accenture, Cisco, and GSMA. 2011.

- **OTT collaboration:** As the new mobile world emerges, mobile operators and OTT services are beginning to seek collaborative opportunities to use their core capabilities to create new collective value. Collaboration can involve everything from pursuing new sales and marketing opportunities to preloading and integrating applications into the device and mobile platform to using the MNO's customer data and network capabilities such as presence, location and connection experience, and history to enhance the OTT service.
- **Location and data analytic solutions:** Hypersensitive location information, device details, identification of returning customers, and sophisticated path analysis are just some of the valuable customer data inherent in the Wi-Fi and small cell networks that service providers are actively deploying. These can be complemented by other technologies (such as GPS, or beaconing) for superior indoor and outdoor location information, and by additional, rich customer and network data. Monetization opportunities exist to unlock these hidden business values to create a suite of value-added solutions that service providers can offer as managed services to different industries on top of the Wi-Fi, small cell, and other mobile networks to create new end-user experiences and sources of value for their customers and business.

Mining the Gold in the Mobile Network

While mobile operators can derive new and incremental business value by focusing on all four strategic monetization opportunities described in the previous section, Cisco believes that the truly untapped gold lies at the heart of the mobile operators - their network. This new gold exists in the information and capabilities deep in the core network elements and infrastructure (Figure 3). The key to mining this new gold and creating new and lasting business value involves building, and successfully delivering, the monetization layers that lie above the network. The features/services and solution layers extract the inherent technical value from mobile networks and translate these into market-ready products and services that can be sold through different channels to the ultimate end user.

Figure 3. Monetizing the Mobile Network



Charting the Path to New Mobile Riches

The new mobile world will be very different from the world that most operators have known since the industry's origins. New ecosystem platforms, OTT services, new competition and alternatives, and fundamental shifts in consumer behavior are fundamentally disrupting the industry and the operators' hegemony. We are currently witnessing the cresting and crashing of the industry's phenomenally successful three revenue waves. However, the new mobile world offers new sources of revenue and profitability for service providers to pursue across four key monetization categories. Mobile operators are well positioned to profit from these new opportunities. Mobility is the future, and they have strong customer franchises and brands. The biggest point of differentiation and source of new monetization lies in the valuable features and capabilities embedded in their unique core asset - the mobile network.

The next wave of mobile monetization is just emerging, and the path to this new source of mobile gold is still unclear. However, the new sources of monetization can be divined by considering a three-phased approach:

1. **Business assessment and strategy development:** Define and size the potential market, undertake competitive analysis, identify customer needs and develop service definitions, create a robust economic model, and identify key technical and business ecosystem components and initial architectures.
2. **Offer development and planning:** Identify key business and technical requirements, build and integrate the solution, develop a detailed marketing and business plan, and define the business and operating models.
3. **Pilot testing and commercial development:** Create pilots with early adopter or lighthouse customers and use feedback to modify solutions accordingly; and implement, market, and operate the service commercially.

By carefully understanding the market, taking advantage of their core assets, and collaborating with ecosystem partners, mobile operators will be able to successfully ride the next monetization wave to new sources of mobile gold.

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