A new regulatory framework for the digital ecosystem

Executive summary and overview

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 250 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai and the Mobile 360 Series conferences.

For more information, please visit the GSMA corporate website at www.gsma.com

Follow the GSMA on Twitter: @GSMA

NERA
ECONOMIC CONSULTING

NERA Economic Consulting (www.nera.com) is a global firm of experts dedicated to applying economic, finance, and quantitative principles to complex business and legal challenges. For over half a century, NERA's economists have been creating strategies, studies, reports, expert testimony, and policy recommendations for government authorities and the world's leading law firms and corporations. We bring academic rigor, objectivity, and real world industry experience to bear on issues arising from competition, regulation, public policy, strategy, finance, and litigation.

NERA's clients value our ability to apply and communicate state-of-the-art approaches clearly and convincingly, our commitment to deliver unbiased findings, and our reputation for quality and independence. Our clients rely on the integrity and skills of our unparalleled team of economists and other experts backed by the resources and reliability of one of the world's largest economic consultancies. With its main office in New York City, NERA serves clients from more than 25 offices across North America, Europe, and Asia Pacific.

About the Authors

Dr. Jeffrey Eisenach is a Senior Vice President and Co-Chair of NERA's Communications, Media, and Internet Practice. He is also an Adjunct Professor at George Mason University Law School, where he teaches Regulated Industries, and a Visiting Scholar at the American Enterprise Institute, where he focuses on policies affecting the information technology sector, innovation, and entrepreneurship. Previously, Dr. Eisenach served in senior policy positions at the U.S. Federal Trade Commission and the White House Office of Management and Budget, and on the faculties of Harvard University's Kennedy School of Government and Virginia Polytechnic Institute and State University.

Dr. Bruno Soria is an Associate Director and Head of NERA's Communications, Media, and Internet Practice in Europe. He is also Guest Professor at the University of Barcelona, where he lectures on Telecommunications Economics. Previously, Dr. Soria served in a number of senior positions in telecommunications economics, regulation and strategy, including at Telefónica, MCI WorldCom and The Boston Consulting Group.

CONTENTS

Foreword

The ingenuity shown by the digital ecosystem in responding to consumer demand, often in unpredictable ways, never ceases to amaze. New services, applications and technologies are stimulating markets, empowering small businesses and challenging the status quo.

The mobile industry contributes over $3 trillion to the global economy annually, supporting 25 million jobs and enabling growth across all sectors of the economy. With 3.8 billion mobile users worldwide today – and 700 million more expected to connect by 2020 – one of our industry's biggest challenges is fostering the investment needed to deliver high quality connections the world over.

This new report by NERA Economic Consulting makes clear that telecoms regulations drafted for a by-gone era have no place in today's dynamic and converged digital ecosystem where consumers face an expanded array of competitive choice. Without reform, markets will become further distorted and investment will be put at risk.

The telecoms regulations in place today are largely the same as those used to regulate 20th Century technologies and markets. Our digital economy deserves better. Not only do legacy regulations impose costs on consumers and businesses, they often frustrate the very public interest goals they purport to address.

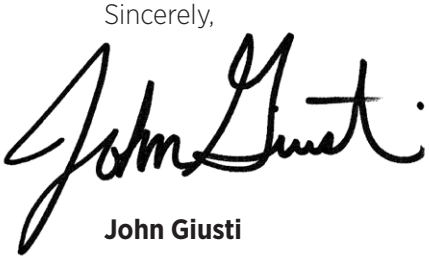
Now is the time for a regulatory reset. With 4G deployments expanding and 5G technology under development, governments and industry are already considering the shape of Smart Cities and the network-enabled Internet of Things. These new technologies will bring about vast complex networks, new service providers and innovative business models.

We cannot allow tomorrow's technologies to be stifled by yesterday's regulations. Policymakers need to take a fresh look at their regulatory approach to reflect changes in technologies and markets. The future will require a more technology-agnostic and flexible approach, where unnecessary legacy regulations are discarded and where everyone can compete on a level playing field.

Governments and the mobile industry have a shared interest in connecting everyone and everything to a better future. This will require continued investment and innovation from the private sector. This will also require a fundamentally new approach to regulation of the digital ecosystem by policymakers.

We hope the ideas in this report contribute to a constructive debate and serve as a call to action. We have little doubt that countries that choose to modernise regulations to reflect market and technology realities will reap real benefits in terms of increases in infrastructure investment, consumer choice and economic growth.

Sincerely,



John Giusti

Chief Regulatory Officer, GSMA

Executive summary

The GSMA commissioned this study to contribute to the current debate about the implications of technological and economic convergence for regulation of the digital ecosystem. It has three primary objectives: first, to describe the competitive dynamics of the modern digital ecosystem as they relate to public policy in general and government regulation in particular; second, to describe why these changes challenge existing regulatory frameworks and require significant reforms; third, to lay out a set of principles to guide policymakers and regulators as they adapt regulation to sweeping changes in the digital economy.

Digitisation has created rapid technological progress and growth, which has generated tremendous benefits for consumers. Prices for digital services are falling rapidly, more than three billion people are now connected to the internet, and the mobile revolution is rapidly bringing connectivity to even the remotest areas. Three key characteristics of the digital ecosystem are responsible for this progress: modularity, economies of scale and scope, and dynamism.

- Modularity means that digital products and services are made up of complementary inputs (applications, communications, content and devices) that work together in many different combinations to produce value and give consumers an unprecedented array of choices.
- Economies of scale and scope (including network effects) allow new and improved products and services to be made available to consumers at constantly falling prices (or even for free).

  Technological advances can also make their way into the marketplace extremely quickly, which constantly advances the pace of innovation.
- Digital markets are dynamic, which means that both new and existing companies have powerful incentives to invest and innovate, and therefore compete to create new products, enter new markets and apply new technologies to make existing services cheaper and better.

While digital convergence has benefited consumers, it also creates regulatory challenges. For example, the complexity of digital ecosystem markets increases regulatory uncertainty, and the rapid pace of change makes regulation become quickly obsolete. Growing innovation and rapid entry by new competitors in digital ecosystem markets increase the costs and likelihood of regulatory distortions by, for example, deterring entry or skewing the path of technological progress.

If regulatory policies and institutions fail to adapt, markets can become distorted in ways that harm competition, slow innovation, and ultimately deprive consumers of the benefits of technological progress.

Today, outdated regulatory policies are creating harm in at least two specific ways:

- Discriminatory regulation. As technological and market convergence has accelerated in pace, broadened in scope and deepened in impact, market distortion is also increasing because of disparities in the way different sectors are regulated. In particular, legacy regulation of communications services and service providers is far more intrusive and prescriptive than regulation of other elements of the digital ecosystem. Regulatory discrimination takes two main forms, substantive and procedural. Both forms can harm competition and reduce consumer welfare.
- Static regulation of dynamic markets. In general, prescriptive, ex ante regulatory regimes —like those traditionally governing communications markets—are no longer effective in the face of rapid innovation. In many cases, as competition increases, the need for such regulation has disappeared altogether. The persistence of such outdated rules not only harms competition and slows innovation, but also fails to achieve regulatory objectives.

Policymakers all over the world are now recognising these challenges and working to implement reforms that will protect competition and consumers without impeding social and economic progress.

In doing so, policymakers should apply three specific principles:

- First, regulation should be functionality-based rather than based on structure or technology. That is, regulation should be designed to achieve its objective in the most efficient way (i.e., to be 'cost effective'), without regard to technologies, industry structures, or legacy regulatory regimes. Regulatory policies and institutions designed around obsolete definitions of products and markets need to be replaced with more holistic approaches and should be implemented by institutions with both the jurisdiction and expertise to consider all the alternatives.
- Second, because digital ecosystem markets are dynamic and complex, regulation also needs to be flexible. It needs to accommodate rapidly changing markets and technologies and create enough regulatory confidence for companies to take risks. In general, performance-based approaches are superior to prescriptive, ex ante rules. Simply put, static regulation needs to be replaced by dynamic regulation.
- Third, the profound and sweeping changes in the digital ecosystem imply that regulatory polices need to be rethought from the ground up. In many cases, intense competition in the digital ecosystem means that regulation is no longer needed, or can be significantly scaled back. In other areas, such as privacy and cyber security, new regulatory challenges are emerging. Regulatory reform discussions should follow a bottom-up approach that takes entirely new approaches into consideration - and is willing, where appropriate, to jettison old ones.

A new regulatory framework based on these principles will be inherently market- and technology-neutral, because it will apply to all elements of the digital ecosystem. It will also be cost-effective, because it will achieve regulatory goals and objectives at the lowest possible cost. Finally, it will be flexible because it will allow markets and technologies to evolve while preserving and enhancing regulators' ability to achieve their functional objectives. Most importantly, the new regulatory framework proposed here is designed to ensure that consumers can continue to enjoy the benefits of technological progress and be protected by well-designed regulation.

The study concludes by applying the above principles to six areas of regulation and regulatory policy that are actively being considered around the world: access regulation, removal of barriers to entry and exit, privacy and data protection, merger review, spectrum policy, and universal availability and affordability. The resulting recommendations, while necessarily general in nature, show that the challenges being faced by policymakers can be solved by developing pragmatic solutions based on the analytical framework and policy principles in this study.

1 Introduction

In the past 30 years, the explosion of information and communication technologies, driven by digitisation and technological convergence, has created rapid technological progress and growth, producing tremendous benefits for consumers. Prices for digital services are falling rapidly, more than three billion people are now connected to the internet, and the mobile revolution is bringing connectivity to hundreds of millions of people in even the most remote areas.

Economies have also benefited, especially developing ones. Widespread connectivity and digital services have prompted improvements in productivity and economic output. Easy access to customers and business partners worldwide has allowed companies in small and developing countries to compete in the world economy, extending the benefits of globalisation to citizens and businesses in emerging countries. Falling communications costs and the rapid pace of innovation have also allowed innovative start-ups and entrepreneurs to successfully challenge established incumbents.

It has long been accepted that digital convergence necessitates regulatory reform. As the European Commission said in a 1999 Green Paper:

> The convergence of the telecommunications, broadcasting and IT sectors is reshaping the communications market; in particular the convergence of fixed, mobile, terrestrial and satellite communications, and communication and positioning/location systems. From the point of view of communications infrastructure and related services, convergence makes the traditional separation of regulatory functions between these sectors increasingly inappropriate and calls for a coherent regulatory regime.[1]

Despite best efforts, it is clear that the pace of technological and market change has outpaced the pace of reform. In recent years, the spread of high-capacity fixed and mobile broadband networks has spawned a new phase of convergence by enabling the emergence and explosive growth of over-the-top (OTT) services that fundamentally challenge existing business models. As a result, regulators around the world are confronting the urgent need to accelerate the pace of reform and to redesign institutions in virtually every area of internet and communications regulation, including consumer protection, competition, privacy and data protection, network security, taxation, and universal service and accessibility.

1. European Commission, 1999, A New Framework for Electronic Communications Services COM, 539 final, 10.11.1999, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l24216.

The same questions arise in each case:

Should regulators try to achieve a level playing field by applying the same rules to entrants that were traditionally only applied to incumbents? Or should neutrality be achieved by reducing regulation on incumbents? Or something in between? Given the realities of the new market, how can regulatory goals and objectives best be achieved? How can policies and institutions be future-proofed so that they are flexible enough to accommodate continuing change? And to what extent has dynamic competition in the digital ecosystem reduced the need for regulation in the first place?

This paper puts forward a set of principles and ideas designed to address these questions and guide efforts at regulatory reform. The first section briefly describes the unique characteristics of digital ecosystem markets and their implications for regulatory reform. The second section explains how traditional regulatory approaches distort markets and prevent the digital ecosystem from fully achieving its potential to create prosperity and empower citizens.

The third section puts forward three key principles for improving regulation, arguing that:

(a) regulations should be redesigned around a functionality-based approach;

(b) regulation should be reduced or eliminated when justified by market changes, and for areas where regulation is still needed, static, prescriptive regimes should be replaced with dynamic regulation; and

(c) regulators should take a bottom-up approach that includes re-examining all aspects of legacy policies.

A new regulatory framework based on these principles will be inherently market- and technology neutral, because it will apply to all elements of the digital ecosystem. It will be cost-effective, because it will achieve regulatory goals and objectives at the lowest possible cost. It will also be flexible, because it will allow markets and technologies to evolve while preserving and enhancing regulators' ability to achieve the functional objectives of regulation.

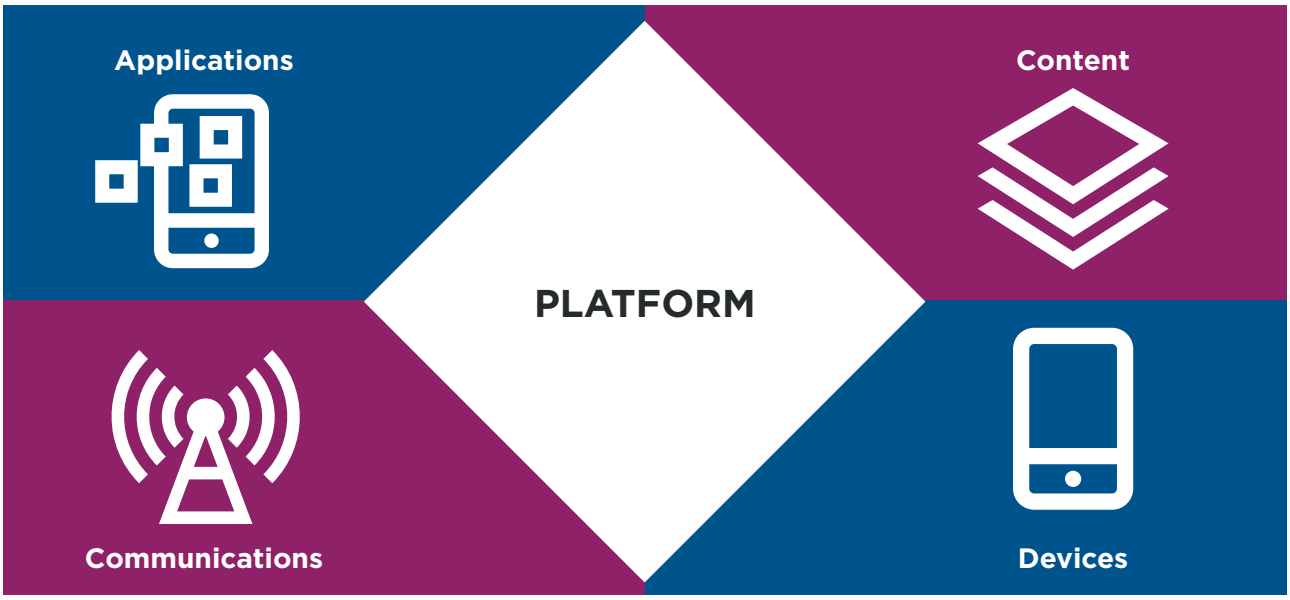
2 Competitive dynamics of the digital ecosystem

Three primary characteristics distinguish information technology markets—including markets for communications services—from the commoditised, traditional markets featured in elementary economics textbooks: modularity, economies of scale and scope, and dynamism. These characteristics have important implications for regulatory policy. [2]

Modularity means that complementary inputs combine to make digital technologies work and create value for consumers. Examples include cloud services that make electronic commerce and financial services possible, Internet of Things applications that facilitate systems control and logistics, video game platforms that allow people to play in real time, and wireless and wireline communications platforms (including one-way and two-way voice, video and data applications). All of these platforms have one characteristic in common: modularity. They all rely on some combination of hardware, applications, content and communications technologies in order to function. (See Figure 1.)

Figure 1

MODULES IN AN INTERNET ECOSYSTEM PLATFORM



2. For a recent discussion of some of these principles, see Nicolai Van Gorp and Olga Batura, July 2015, Challenge for Competition Policy in a Digitalised Economy, European Parliament, Directorate General for Internal Policies. See also Jeffrey A. Eisenach and Ilene Knable Gotts, "In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector," in Fabrizio Cugia di Sant'Orsola, 2014, et al, eds, Competition and Communications Law: Key Issues in the Telecoms, Media and Technology Sectors, Kluwer Law International, 69-90.

Modularity translates into diversity and choice, giving consumers an almost limitless ability to customise combinations of products from a multitude of suppliers to meet their particular needs. On the supply side, modularity implies that companies usually thought of as occupying different sectors (thus, not in the same market) are, in fact, offering products that satisfy the same or similar consumer needs.

> As a result of modularity, effective regulation requires a holistic approach that addresses the diversity of all the relevant platforms.

In the digital ecosystem, positive economies of scale and scope, which drive benefits for consumers, operate for both suppliers of services and for consumers. For suppliers, it means that the expansion of firms and markets leads to lower average costs;[3] for consumers, it implies that the value of digital products and services to consumers increases as the number and diversity of consumers increases.

Two consequences of economies of scale and scope for regulatory policy are especially important:

First, economies of scale and scope result in lower costs and increased value to consumers. Therefore, regulatory impediments that limit the scope of the market (either horizontally or vertically) and prevent economies of scale and scope will result in higher costs and less valuable products.

Second, market-driven efforts to capture economies of scale and scope often lead to diverse, complex, and constantly changing business arrangements. For example, companies have come up with creative ways to expand the size of the market, such as zero rating, which is designed to attract new users to various internet applications to increase the value of these applications for consumers and advertisers. Regulatory interventions that frustrate such efforts ultimately result in higher costs and reduced value for consumers.

> Regulation should enable, not discourage, the realization of economies of scale and scope that represent real savings for consumers.

Dynamic competition in digital ecosystem markets means that companies compete on the basis of their ability to create new products, enter new markets, and apply new technologies to provide existing services at much lower cost. As a result, innovation rates throughout the digital ecosystem are extremely high, and disruptive innovations (i.e., innovations which fundamentally change the competitive landscape, for example by creating an entirely new market, or an entirely new way of producing a good or service) usually occur every two or three years.

Dynamism has profound implications for regulation. First and foremost, dynamic markets generate benefits by creating new and better products or services that displace inferior ones and challenge the dominance of incumbent suppliers. Conventional competition analysis concludes that a company that has a sizable cost advantage over its competitors because of economies of scale must have sustainable market power because other players are unable to produce at a comparable cost. In dynamic markets, however, competitors can and do successfully compete with dominant companies by introducing new technologies or business models that offset, or even eliminate, the competitive advantages enjoyed by the statically-dominant incumbent. Thus, even the most “entrenched” incumbent must constantly fear a competitive challenge.

In market after market, new products and services have displaced supposedly dominant incumbents.

3. Supply-side economies refer to the fact that the cost of making a product goes down as output increases.

Table 1

EXAMPLES OF DISRUPTIVE DYNAMIC COMPETITION

	Incumbent(s)	Entrant(s)
MOBILE PHONES	Blackberry, Nokia, Motorola	Apple, Samsung
INTERNET BROWSERS	Microsoft	Chrome
MOBILE MESSAGING	Wireless Companies	Skype, WhatsApp
ONLINE MUSIC	Apple	Pandora, Spotify
LONG DISTANCE CALLS	Wireline telco incumbents	Mobile carriers, Skype

It is important to remember that in each case, incumbents were displaced by challengers because the challengers offered products and services that consumers liked better than what they had before. Thus, dynamic competition not only forces firms to compete vigorously, but directly benefits consumers by generating new and better products—in economic terms, by increasing consumer surplus.[4]

Dynamic competition implies that regulation should avoid creating artificial barriers to entry or raising the costs of innovation; and, it should recognise that firms with high market shares in the past are not likely to maintain their "dominance" in the future.

4. "Consumer surplus" is the benefit consumers receive from a product or service in excess of the purchase price.

3 Designing a new regulatory framework

The changes described in the preceding sections create serious challenges for existing regulatory frameworks. First, the emergence of OTT services in competition with traditional communications and content services has led to discriminatory regulation of similar services and competing companies. Second, the legacy regulatory regimes traditionally governing communications markets are no longer effective in the face of rapid innovation—and in many cases, are no longer necessary, given the emergence of dynamic competition.

In general, regulation is intended to address market imperfections, including inefficiencies associated with monopoly power, externalities and public goods, and information asymmetries. The existence of a market imperfection is not by itself a justification for government intervention: for regulation to improve welfare, intervention must create benefits greater than the costs.

Just as there is no such thing as a perfect market, there is no such thing as perfect regulation. Even in the best of circumstances, regulators face significant challenges, including:

- Imperfect information about the nature of the markets that regulation seeks to improve and the consequences of potential actions. As a result, regulation is subject to both Type I and Type II errors, as well as to the law of unintended consequences, leading to the misallocation of economic resources and harming consumers.
- Market conditions and technologies are constantly changing in ways that are difficult or impossible to predict, meaning that regulations imposed today may no longer be appropriate tomorrow, or next year. Thus, even when regulators can accurately diagnose a market failure and identify a welfare-enhancing intervention, the resulting rules may soon be obsolete.
- Third, because markets are complex and rules must be written while anticipating alternative future outcomes, regulations are often complex and ambiguous. This means they can impose substantial compliance burdens on regulated industries—and even heavier burdens on startups and new entrants.
- Finally, private actors have strong incentives to engage in rent seeking—that is, to attempt to influence regulatory outcomes to impose costs on competitors and achieve advantages for themselves. Furthermore, regulatory institutions have interests of their own, including preserving and expanding their reach and authority.

The characteristics of the converged digital ecosystem exacerbate each of these problems:

- Digital ecosystem markets are complex, increasing regulatory uncertainty and making it more difficult for regulators to assess market performance and come up with solutions.
- The rapid pace of market change makes regulations obsolete faster, resulting in regulatory structures and policies that are mismatched to market realities.
- The distortions caused by fixed compliance costs and regulatory delay are magnified in digital markets because they harm new entrants and hamper the ability to innovate and introduce new products.
- The enhanced potential for regulations to distort markets (e.g., by deterring entry or skewing the path of technological progress) increase the likelihood that special interests will seek to influence the regulatory process to their own particular benefit.

These generic challenges to effective regulation have manifested themselves in two concrete and increasingly harmful ways:

First, regulators have not moved quickly enough to adopt a dynamic ex post approach in place of prescriptive, ex ante rules, which are often too complex, inflexible and static to be effective in fast-evolving digital ecosystems.

Second, convergence has led to discriminatory regulation because similar services are subject to different regulatory regimes based on the type of firm offering the product or the type of technology used, and because companies regulated by different regimes have entered each other's markets. That is, regulation is 'structure-based,' in the sense that it is designed around legacy market structures which are dissolving.

Discriminatory regulation is the unintended consequence of regulation failing to adapt to the entry of 'edge' providers (suppliers of applications, content and devices) into markets previously served by vertically integrated infrastructure-based communications providers. Today, services provided by companies like Amazon, Facebook, Google, Microsoft, and Netflix are directly competing successfully with services provided by companies like AT&T, Comcast, Bharti Airtel, CBS, Fox, NTT, Sky, Telstra, and Vodafone. The first group of companies and the services they provide typically are regulated only under general antitrust and consumer protection regimes, while the second group of companies and their offerings are generally also subject to industry-specific rules and institutions. Thus, telecommunications carriers (but not other voice and data communications providers) are still subject to rules designed for telephone companies. Traditional audio and video distributors (but not OTT providers) are still subject to rules designed for 'broadcasters'. Mobile carriers and their services face many of the same rules as wireline telephone companies (and often even more that come attached to their spectrum licences), while other wireless ecosystem participants face much lower burdens.

Table 2

EXAMPLES OF DISCRIMINATORY REGULATION

Issue	Applications	Communications	Content	Devices
Consumer Protection	General CP law.	Specific regulation: portability, opt-in services, specific consumer protection offices	Age-related, violence, sex; otherwise general CP law	General CP law
Competition Enforcement and Economic Regulation	General competition law	Industry specific obligations and regulatory institutions Asymmetric access regulation to SMP operators Retail price regulation and tariffing	Compulsory licensing for some content; otherwise general competition law Restrictions on advertising time Restrictions on foreign ownership	General competition law
Intellectual Property	General IP/ competition law	General IP law	Mandated licensing of some content Specific regulation of IP rights management	General IP law Mandated licensing for IP included in some standards Compulsory levies to content rights owners
Privacy and Data Protection	General privacy regulation	Industry specific regulation (e.g., "CPNI"); license conditions	Specific regulation (e.g. images of minors; "right to be forgotten")	General privacy regulation
Resource Management	None	Regulated allocation of spectrum, numbering and access to property (rights of way), regulation of technology transitions	Regulated allocation of spectrum for broadcasters	None
Security	Data requests by authorities	Legal interception of communications Retention of call data records Interoperability with military networks	State secrets regulation	Little or no regulation Current battle over encryption
Taxes	Sales tax with potential for jurisdiction shopping	Sales tax Spectrum charges Sector specific taxes Luxury taxes	Sales tax Levies to fund local production and public television	Sales tax Import duties
Universal Access/ Universal Service	No regulation. No obligations to contribute to funds	Obligation to provide basic set of services at affordable prices and wide coverage ("carrier of last resort") Contribution by telcos to universal service fund. Included as license obligation for mobile operators	Included as license obligation for broadcasters. No obligations for others	No regulation

Source: NERA Economic Consulting

As shown in Table 1, sector-specific regulation of communications providers—and the resulting disparity in treatment—extends across the entire scope of regulatory issues, including consumer protection, competition regulation, privacy and data protection, security and law enforcement, and even taxation.

Importantly, structure-based regulation not only imposes costs on consumers and the economy—it frustrates public interest objectives by creating a bias in favour of interventions against certain types of companies and services over others. While it is understandable that regulators tend to look first at markets they are familiar with (and where regulatory institutions are already in place) during the decision-making process, this approach can artificially limit regulatory options in ways that increase the costs of achieving regulatory goals or even prevent them from being achieved altogether. [5]

The second primary challenge facing regulation of the digital ecosystem is the inability of prescriptive, ex ante regulatory regimes to keep pace with the dynamism of digital products and markets, leading to regulation that is both excessive and inefficient.

Traditional ex ante regulatory approaches typically seek to specify not just the objectives being sought, but the means by which they are to be achieved. For example, environmental regulations may specify the particular technology used to reduce emissions, workplace safety regulations may impose detailed engineering specifications, or consumer protection rules may specify the use of a specific type of safety device. In the telecommunications arena, regulations often specify the technology that must be used for particular wireless services, describe in detail how infrastructure providers satisfy 'open access' requirements to make their systems available to competitors, or identify categories of business conduct that may be considered discriminatory in advance.

The downsides of such prescriptive approaches are well documented, including regulatory complexity, inflexibility in the face of diverse circumstances (i.e., forcing a 'one-size-fits-all' solution) and lack of adaptability over time.[6] As noted above, all of these factors are exacerbated in digital ecosystem markets.

The principles of the new regulatory framework put forward here respond directly to the challenges just described.

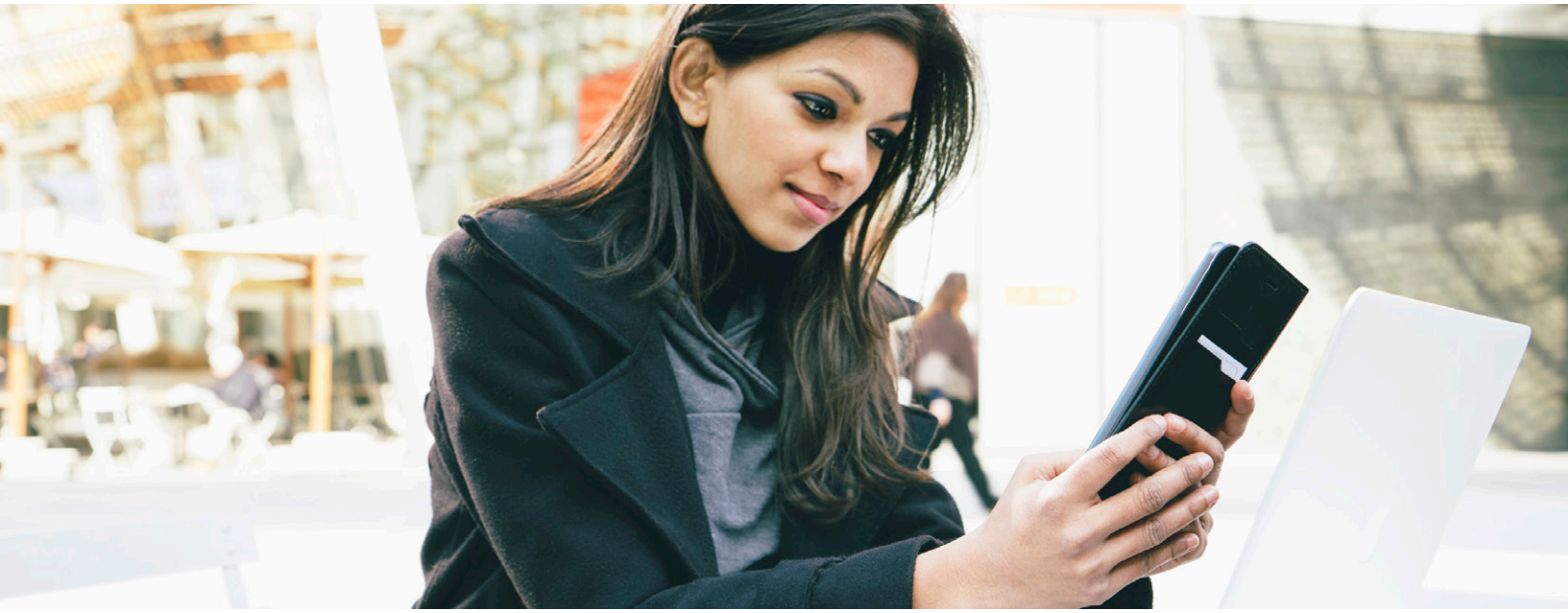
A new regulatory framework for the digital ecosystem should incorporate three main principles.

- First, it should be functionality-based, rather than structure-based.
- Second, it should recognise that the dynamism of the digital ecosystem demands that regulation also be dynamic and flexible.
- Third, it should recognise that many of today's legacy regulatory structures are outdated, and take a bottom-up or 'clean-slate' approach by assessing both current and potential new regulations, and regulating only when it can be demonstrated that the benefits will exceed the costs.

A functionality-based approach begins by assessing the regulatory objectives being pursued and examines how those objectives can best be achieved, regardless of technology or legacy market structures. To be clear, a functionality-based approach does not preclude sector- or technology-specific regulation, but instead provides an analytical framework to determine when regulation is appropriate by considering all of the available regulatory options, rather than being constrained by existing paradigms.

Functionality-based regulation is related to policy criteria like technological neutrality or 'same services, same rules', but goes beyond them. First, it is technology-agnostic rather than technology-neutral, since it calls for all technological means for achieving the desired objective to be examined, but does not demand that each technology be regulated identically. Indeed, a functionality-based approach

5. The ability to regulate effectively is also affected by underlying statutes and—because the digital ecosystem operates on a global scale—by international law. For example, Microsoft is currently in litigation with the U.S. government over the government's ability to subpoena information stored in Microsoft servers located outside the U.S. See See Donald G. Shelkey and Christopher C. Archer, National Law Review, 11 June 2015, "Microsoft Ireland Case—Status and What's to Come", http://www.natlawreview.com/article/microsoft-ireland-case-status-and-what-s-to-come. Unlike Google and Microsoft, communications carriers have substantial tangible assets in the jurisdictions where they operate.
6. See e.g. U.S. Office of Management and Budget, Circular A-4, 2003, Regulatory Analysis, https://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf ("Performance standards ... are generally superior to engineering or design standards because performance standards give the regulated parties the flexibility to achieve regulatory objectives in the most cost-effective way.")



recognises that differences in technology may require different regulatory treatment to achieve a common objective. A functionality-based approach is also consistent with the 'same services, same rules' in the sense that the purpose or 'function' of regulations is to protect consumers from potential harms associated with a particular service regardless of the type of firm or technology used to provide it.

The second principle of the new regulatory framework is the need to promote dynamism and innovation by favouring flexible, performance-based approaches over command-and-control prescriptive standards.

A competitive market is, of course, the most dynamic governor of marketplace conduct, and there is a broad consensus that the competitiveness, dynamism and complexity of the digital ecosystem increasingly requires that decision-making be shifted from regulatory agencies to the marketplace wherever possible. When intervention is required, however, regulators should seek to embody regulatory objectives in performance standards that can be enforced after the fact rather than through engineering specifications or prescriptive rules specifying particular conduct or procedures.[7] The central argument in favor of the ex post approach is flexibility. [8]

A dynamic model focusing on predictable ex post enforcement of clearly defined performance standards (rather than ex ante prescriptive regulations) can recognise and embrace the pace of technological and market innovation. This allows the approach taken to achieve regulatory objectives to evolve over time, even when the objectives remain mostly stable.[9]

Lastly, taking a bottom-up approach means identifying the best way of achieving regulatory objectives regardless of legacy regulatory regimes and approaches, and recognising that changes in technologies and markets have likely altered the need for regulation as well as its optimal form and focus. A bottom-up approach does not imply that policymakers should ignore existing rules and institutions and 'start over' from scratch. It simply means that current regulatory regimes should be taken into account in the implementation phase of policy making, rather than in the design stage.

A new regulatory framework based on these principles will be: inherently market and technology neutral, in that it will apply to all elements of the internet ecosystem; cost-effective, in that it will achieve regulatory goals and objectives at the lowest possible cost; and flexible, in that it will allow markets and technologies to evolve while preserving and enhancing regulators' ability to achieve their functional regulatory objectives.

7. See OMB Circular A-4 at 8 ("Market-oriented approaches that use economic incentives should be explored. These alternatives include fees, penalties, subsidies, marketable permits or offsets, changes in liability or property rights (including policies that alter the incentives of insurers and insured parties), and required bonds, insurance or warranties.").
8. Jonathan Sallet, November 2011, The Internet Ecosystem and Legal Regimes: Economic Regulation Supporting Innovation Dynamism, 3, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1957715 ("Because rulemaking is necessarily based on a current state of understanding about the market, it is ill-equipped to deal flexibly with the rapidly changing and ever-evolving nature of competition in the Internet marketplace.")
9. It is sometimes offered that an ex post approach is "too slow" to correct harmful conduct when compared to ex ante rules that prohibit such conduct outright. The main problem with this argument in the rapidly changing digital ecosystem is that it ignores the time it takes to put in place ex ante rules in the first place. Further, having ex ante rules does not eliminate the need for – and delays associated with – adjudication of alleged violations.

4 Applications

Adoption of a new regulatory framework based on these principles would have broad and profound implications for regulation of the digital ecosystem. We explore some of them in the following examples, with special attention to the implications for mobile operators.

Table 3

IMPACT OF NEW FRAMEWORK PRINCIPLES ON MOBILE WIRELESS REGULATION

Type of Regulation	Legacy Status Quo	New Framework
Access Regulation	Regulated access to termination and roaming; mandated resale of voice and wireless under telecom specific standards	Access regulation reassessed under generic standards applicable to all digital ecosystem players
Barriers to Entry and Exit	Limits on entry and exit; approval required before new technologies or business models can be deployed	"Permissionless innovation;" subject to general consumer protection and antitrust regulation
Privacy and Data Protection	Industry-specific restrictions; regulatory uncertainty on application to digital services	Symmetric regulation focused on preventing consumer harm
Merger Review	Static analysis and stricter standards for telecom operators than for other ecosystem firms; industry-specific procedures	Dynamic analysis with same criteria and procedures across the digital ecosystem
Spectrum Management	Technology-specific licenses; variety of regulatory obligations embedded in spectrum licenses	Flexible spectrum rights; symmetric regulatory obligations through general regulation
Universal Availability and Affordability	Financial, price and coverage obligations only on network operators	Holistic policy that enhances availability and affordability across the whole ecosystem

Access Regulation

Mandated access regulation exists in one form or another throughout the digital ecosystem, but the broadest and most extensive requirements apply to communications carriers, which are required to interconnect with other carriers in most countries.

Adopting a new regulatory framework would mean taking a fresh look at the economic and institutional conditions under which access mandates improve or harm economic welfare. By applying a consistent standard across the entire ecosystem, the same criteria could be applied when evaluating the benefits and costs of open access mandates, regardless of sector or technology.

Barriers to entry and exit

Much of the success of the digital economy is credited to the concept of 'permissionless innovation'—the ability of internet companies to create new products and abandon old ones, without being required to seek permission from regulators. For the most part, communications carriers are not beneficiaries of permissionless innovation, but instead are bound by legacy regulations that force them to seek approval before introducing new products or (to an even greater extent) retiring old ones.

Adopting a new regulatory framework would imply a comprehensive re-examination of barriers to entry and exit that exist in legacy regulation of communications carriers, with a focus on enhancing consumer welfare and encouraging value-creating innovation.

Privacy and data protection

The ability to store, transmit, and use information is ultimately the source of the economic and social value created by the digital ecosystem. At the same time, concerned consumers want to be sure that their information is protected and that it is not used inappropriately. In many countries, these concerns have led regulators to put various privacy and data protection rules into place, and communications providers are often subject to sector-specific rules.

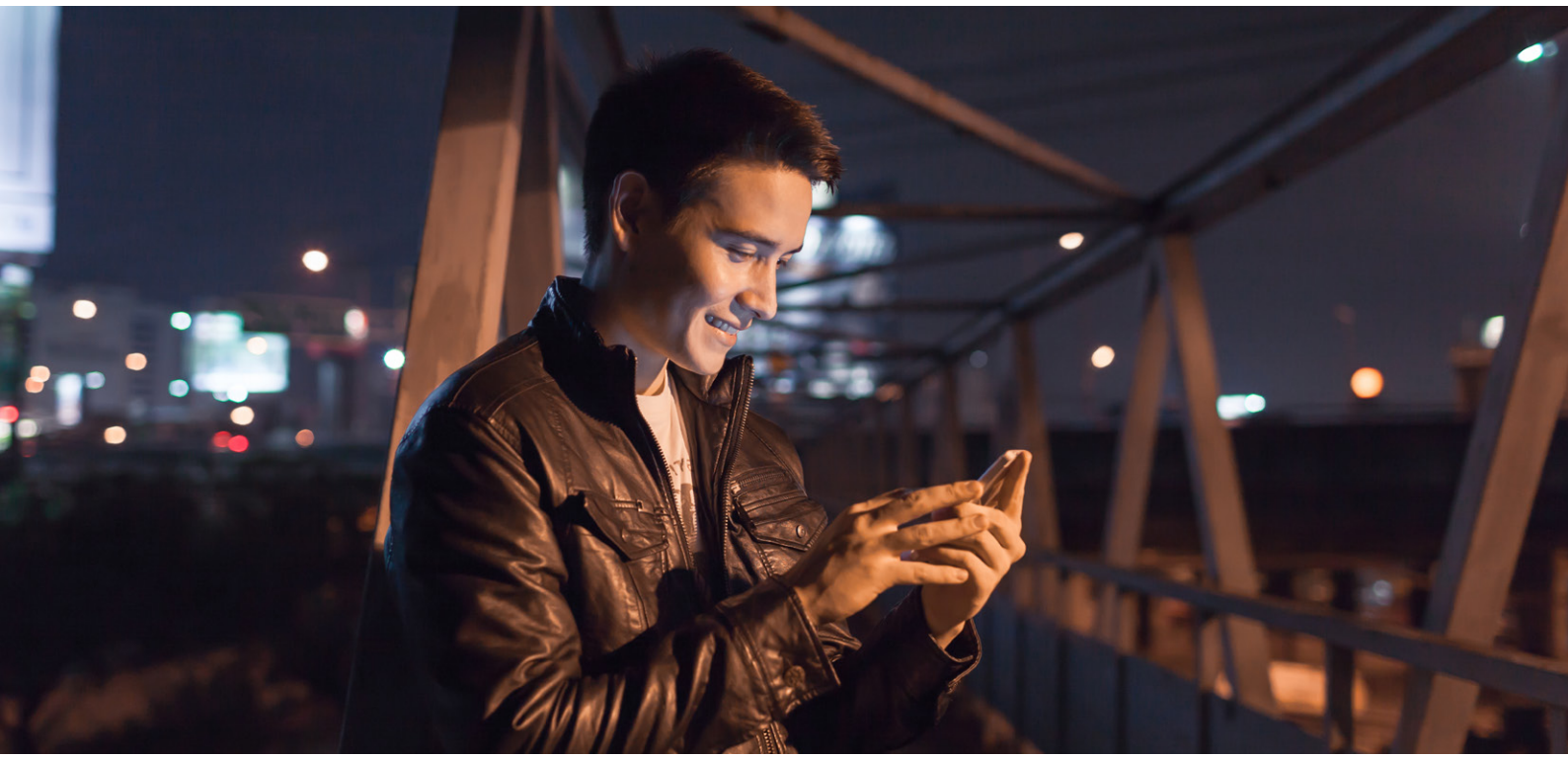
Such industry-specific rules can cause both horizontal and vertical distortions, preventing ISPs from entering data-dependent markets such as cloud services (thus protecting incumbents), and potentially stopping other companies from becoming involved in platform markets where ISPs operate. The new regulatory framework principles argue in favor of a technology- and business model-agnostic approach to privacy regulation, which focuses on the ways in which data is collected and used.

Merger review

Mergers and acquisitions are an essential way for digital ecosystem providers to adapt to constant, dynamic change. They allow companies to combine complementary technologies, capture economies of scale and scope, and bring together intellectual and other resources needed to speed innovation. While mergers in the digital ecosystem are capable of creating anticompetitive effects, just as in other industries, companies' ability to acquire sustainable market power is limited by the dynamism of the digital ecosystem.

While circumstances vary significantly by geography, communications carriers are generally subject to more extensive and burdensome merger review procedures than other digital ecosystem companies. In the U.S., for example, mergers between communications carriers are reviewed by both the FCC and the Department of Justice (DOJ), while other digital ecosystem mergers are reviewed by only a single agency. Even in the European Union, where large and cross-border merger reviews for all industries are performed by the European Commission's DG Competition, telecommunications mergers experience longer review periods than mergers in other digital sectors: up to a third longer on average, and more than twice as long for the longest ones.

The new regulatory framework approach emphasizes the need to devise more sophisticated analytical tools for assessing competition in dynamic markets and valuing the efficiencies generated by mergers in markets with strong economies of scale and scope; and, to embody these new tools in non-discriminatory standards and processes, so that communications market transactions are reviewed on the same terms as other transactions in the digital ecosystem.



Spectrum management

Spectrum is obviously an essential input into the provision of mobile broadband services. While there is significant variation in national spectrum policies, nearly all countries use their control over spectrum licences and spectrum licence conditions to assert regulatory control over mobile broadband providers and broadcasters.[10] Such policies discriminate against communications providers relative to other participants in the digital ecosystem.

A new regulatory framework would recognise the need to reduce spectrum scarcity and enhance flexibility, allowing market mechanisms to allocate spectrum rights to their highest valued use, and ending the practice of regulating mobile wireless carriers by placing conditions on their use of the spectrum.[11]

Universal availability and affordability

Virtually every nation promotes the widespread availability of affordable, relevant digital services—and, ultimately, internet adoption—as a major policy objective, especially in the developing world, where a large percentage of the population is not yet online. Traditionally, public policy has focused mainly on communications and content, for example by subsidising (or mandating) expansion of network availability, or promoting the creation of locally produced content.

A new regulatory framework approach would embrace the modular nature of the digital ecosystem by adopting a balanced, holistic approach that improves the availability and affordability of all elements of the digital ecosystem platform.

10. For a discussion of EU policies, see e.g., Bohlin et al at 47-49. For a discussion of U.S. policy, see Jeffrey A. Eisenach, 2011, "Spectrum Allocation and the National Broadband Plan," Federal Communications Law Journal 64;1, 87–135, http://www.fclj.org/wp-content/uploads/2013/01/Vol.64-1_2011-Dec._Art.-03_Eisenach.pdf. The costs of ineffective spectrum policies are currently very visible in India, where the government's failure to make adequate spectrum and other licensing policies available have helped cause severe congestion on the country's mobile wireless networks. See M.G. Arun and Shweta Punj, Speak Uneasy, 16 July 2015, India Today,http://indiatoday.intoday.in/story/call-drops-airtel-vodafone-idea-trai/1/451901.html; see also International Telecommunications Union, Trends in Telecommunications Reform 2015 at 71 (hereafter Trends in Telecommunications Reform 2015).
11. See Trends in Telecommunications Reform 2015, 65. "[M]any licensing regimes now have more flexibility, because they provide for technology neutrality, service neutrality and unified licensing. Earlier, command-and-control licences prescribed exactly what service could be offered, using exactly which technology. As part of 'lighter touch' regulatory reforms, however, regulators now often refrain from such prescriptions. They may even issue licences that allow recipients an open-ended choice to provide service using a combination of wireless and wireline technologies (i.e., unified licensing). These innovations enhance the general pragmatism of many updated spectrum management and licensing regimes."

5 Conclusion

This study assesses in broad terms how changes occurring in the digital ecosystem relate to public policy in general and regulation in particular. The changes underway are both sweeping and profound, and regulatory policy has failed to keep pace. The ultimate goal of government intervention in the economy is to identify and remediate, when possible, shortcomings in market outcomes, and thereby enhance social and economic welfare. Regulatory policies and institutions designed for a by-gone era—when competition was less intense and markets were not so dynamic and interrelated—cannot achieve those objectives. To the contrary, today's regulatory policies are, in many cases, having the opposite of their intended effects by distorting markets and inhibiting competition and innovation. In this context, policymakers' efforts to understand and adapt to the new realities deserve encouragement and support.

To download the full report, please visit the GSMA website at www.gsma.com/new-regulatory-framework

GSMA HEAD OFFICE
Floor 2
The Walbrook Building
25 Walbrook
London EC4N 8AF
United Kingdom
Tel: +44 (0)20 7356 0600
Fax: +44 (0)20 7356 0601