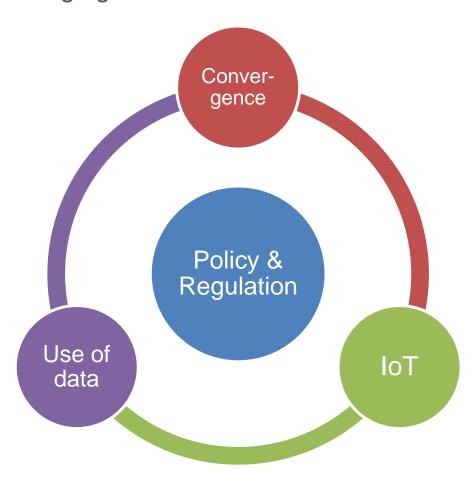


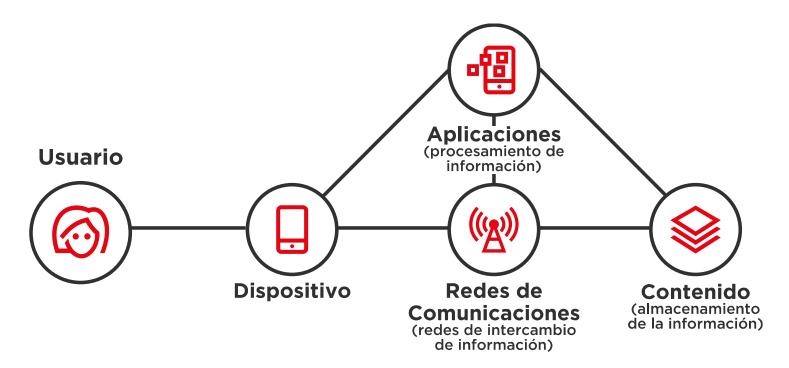


What are the emerging issues?





The internet value chain emcompasses a complex fabric of players that interact to create the end user experience





The internet value chain encompasses a complex fabric of players that interact to create the end user experience



CONTENT RIGHTS	ONLINE SERVICES			ENABLING TECHNOLOGY AND SERVICES	CONNECTIVITY	USER INTERFACE
Premium rights Video (excluding sports) Sports video content Music Publishing Gaming Non-entertainment content BBC, Blizzard Entertainment, Bloomberg, Disney, Major League Baseball, Time Warner Cable, Vivendi Made for digital Professional content User-generated content Buzzfeed, Fullscreen, Machinima, Maker, Xmedia DS	e.g. Alibaba.com,		E-travel e.g. Airbnb, Expedia, Uber	Design and hosting Design and development Web hosting e.g. Go Daddy, Ipower	Mobile access e.g. América Móvil, Axiata, China Mobile, Docomo, Loon for all, MTN.	Hardware devices • Smartphones • PCs • Smart TVs • Connected set-top boxes • Digital media
	a a Mattlin Vandon		Music e.g. Pandora, Spotify	Payment platforms e.g. Alipay, MasterCard, PayPal, VISA	Ooredoo, Telefonica, TMobile, Verizon Wireless, VimpelCom,	
	Publishing e.g. Amazon Kindle, DMGT, FT	Gaming e.g. King Miniclip, Tencent	g, e.g. Betfair, Bwin	M2M platforms SIM management and M2M platforms Application and solutions e.g. Bosch, Cumulocity	Vodafone	receivers Tablets Wearables Consoles Other smart items Other hardware
	e.g. Facebook, Goog- le+, LinkedIn, match. Sn		Communications e.g. Cisco, Kakaotalk, Skype, Snapchat, Tencent, WhatsApp	Advertising Online agencies Online networks and exchanges Third-party ad servers e.g. Google AdWords, Verizon-Aol, WPP	Fixed access (Including VPNs and WI-FI)	e.g. Apple, Arris, Fitbit, Lenovo, Logitech, MI, Roku, Samsung, Sony
	Search e.g. Baidu, Google, Yandex			Internet analytics e.g. Adobe, Nielsen	e.g. at&t, Google fiber, Liberty Global, Orange Business	Systems and software
	and reference e.g. Experian, Google Service		Cloud services e.g. Amazon Web Services, Microsoft Azure	Managed bandwidth and content delivery Core network and	Services, Telekom Malaysia	Operating systems App stores Security and software
	Other e-services e.g. Charles Schwab, Duolingo, Nest, TaskRabbit			interchange Content delivery networks Content optimisation e.g. Akamai, BT, Equinix, Level 3, Ooyala	Satellite e.g. Eutelsat, Inmarsat, Iridium, SES	e.g. Apple, Cisco, Google McAfee, Microsoft, Symantec

Note: M2M is machine to machine, and VPN is virtual private network Source: A.T. Kearney analysis



The whole ecosystem is driven towards continuous expansion



Strong complementarities between infrastructure and services



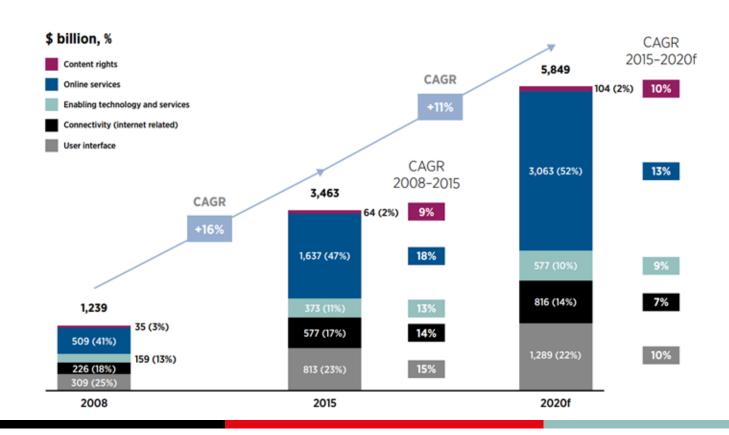
Individual contributions to social welfare difficult to disentangle



... And yet, the internet value chain is dynamic



Internet value chain size and growth by segment





Competitive Dynamics of the Digital Ecosystem



Modularity

- All digital players engage each other across the value chain in a variety of roles
- Digital sector is not a collection of related but separate markets but rather a single, integrated ecosystem

Economies of Scale and Scope/Network Effects

- Competition "for" the market, not "in" the market
- Consumers benefit from size and scope; regulation should not impose barriers to their realization

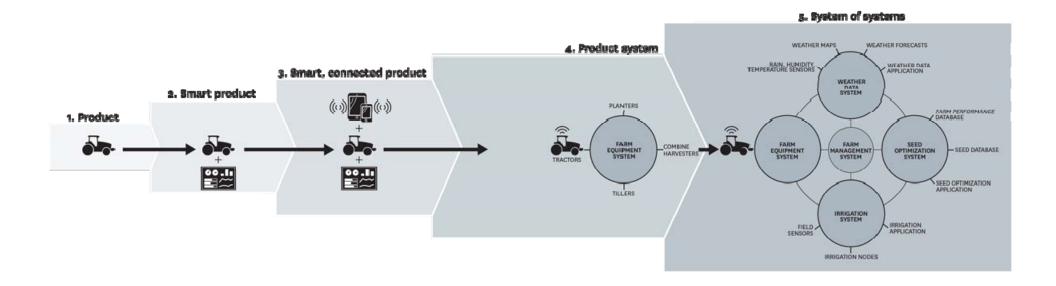
Dynamic Competition

- Transformative innovation generates choice and value for consumers
- Static "dominant" positions are dynamically contestable
- Regulation should not inhibit innovation and investment



The IoT is transformative





Source: HBR 8



The IoT value chain is complex and involves many players



Companies will build cross-industry alliances and partnerships, increasing the intensity of competition

Smart modules

Smart objects

Operator networks

Integrate systems

Provide Service



Government

Telecom & Technology firms

AT&T
Alphabet
Amazon
Microsoft
Cisco
Verizon
Vodafone

Machinery and car manufacturers

Audi GE Bosch John Deere PTC Tesla

Non-traditional entrants

Xaomi Fitbit Jawbone SIGFOX Alarm.com



Enterprise

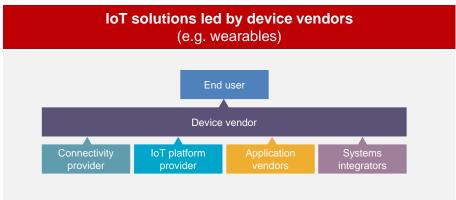


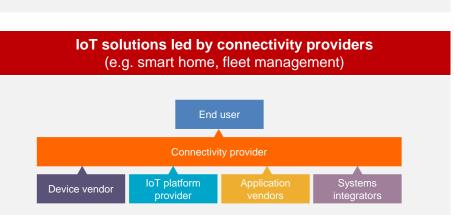
Source: PwC analysis, ADL

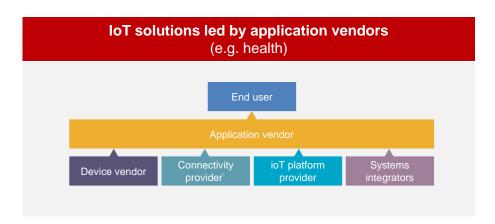


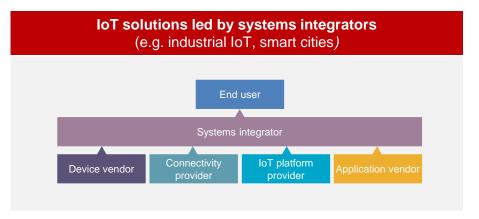
Many players compete to own the end user relationship







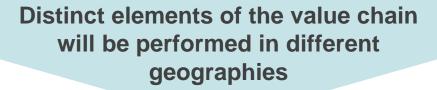


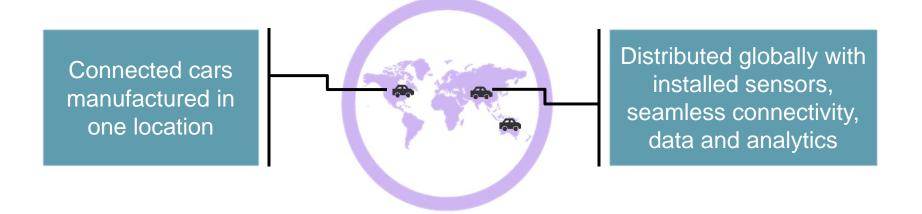




IoT has a "glocal" dimension – global production and local connectivity models









Connectivity spend is typically only a small fraction of overall project cost



Spend on value chain elements for typical IoT solutions* [Source: Analysys Mason]

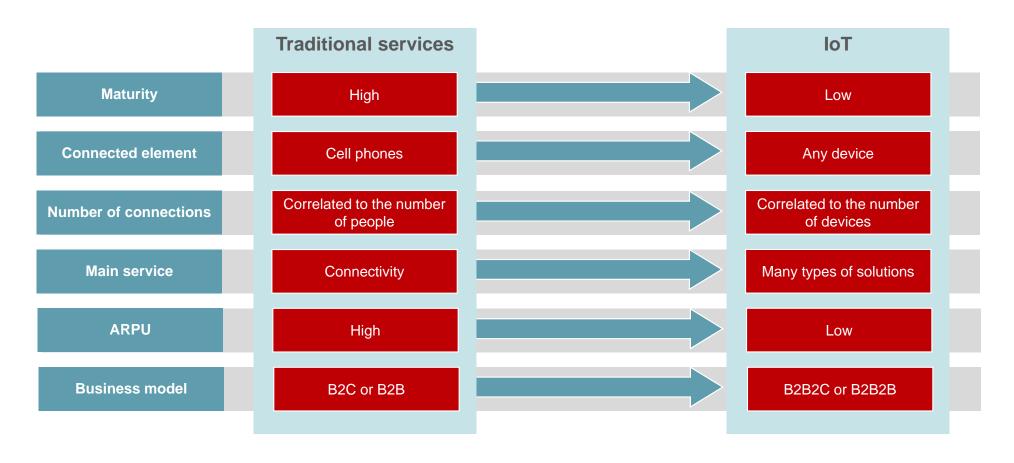
	Device	Connectivity	IoT platform	Application vendors	Systems integrators or installers
Spend	5-20%	2-20%	<10%	30-60%	<30%

^{*} Indicative figures only. The exact spend will vary by solution and vertical market



Thus, the IoT is still fundamentally different from traditional services







Data is not the new oil – it is much more than that



Growing in volume, variety and nature

Key driver of innovation

Critical asset for businesses and governments

Increasing value and interest for consumers

Data for good and social change

Global footprint, flowing across borders

Source: CIPL



Users and "things" are becoming more connected, everywhere, generating data at all times



More data

Exponential growth of data traffic until 2020 (up to 10x on mobile)

Data will not only be stored, but processed for insights

Benefits of data

Benefits for society
Value for individuals
Asset for businesses
Deliver better
government services
and face world

challenges

Risks of data

Privacy
Security
Government
overreach
Overregulation
Protectionism and

localization

PROTECTING NETWORKS AND DEVICES to keep communications secure



000

PROTECTING

PRIVACY and securing customer data

PROTECTING
PUBLIC SAFETY
and meeting legal
obligations

PROTECTING CONSUMERS

from illegal activity and anti-social

behaviour



How do we move forward while creating the right environment?



Principles-based regulation of privacy

- Based on risk for consumers
- Technology and industry neutral
- Favorable to investment and innovation

Trust and accountability on big data

- Big data analytics and loT depend on the availability of data and on consumer trust
- Privacy by design
- Adoption of internationally recognized privacy principles, such as transparency, control, purpose and accountability

Free flow of data across borders

- Recognition of corporate binding rules (corporate digital responsibility) and of codes of conduct
- Restrictions and conditions on international data flows should be kept to a minimum and applied in exceptional circumstances only



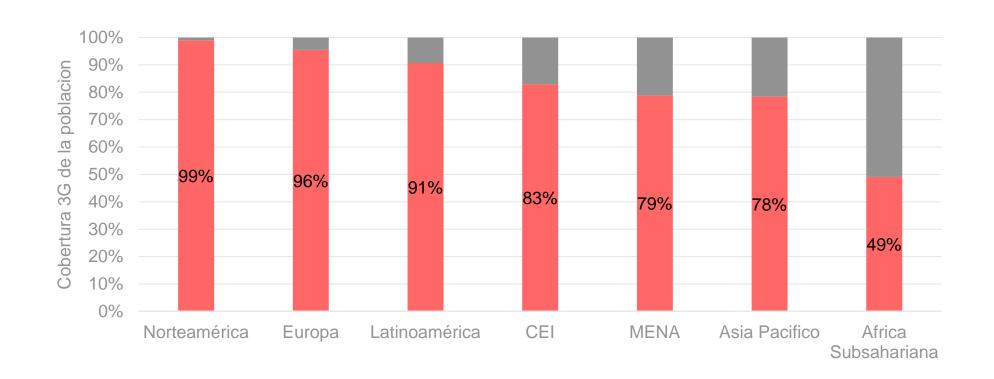
How is infrastructure in Latin America today?

What can be done to improve it?

How do existing challenges relate to emerging opportunities?



3G in Latin America covers more tan 90% of the population, more than any other developing region





Taking this 3G to the remaining 10% demands significant investments, and there are no commercial incentives to do so

Fact #1

~2x of total investment today

How much is needed to take 3G to 99% of the population

Fact #2

10x less

Revenue generated Rural vs. Urban sites

19 Fuente: GSMA 2017



Regulatory frameworks in Latin America are not always aligned with the goals of the digital agenda

- Taxation policies that overburden and distort the telecoms market
- Regulatory asymmetry between operators and other ecosystem players
- Regulatory frameworks that disincentivize investments in infrastructure



Considerations for policy & regulation

Regulating well is always difficult...

- Market conditions and technologies change in unpredictable ways
- Regulations often impose substantial compliance burdens
- Regulation inevitably benefits some interests over others (every policy is necessarily a redistribution of something)

...and more so in the digital ecosystem

- Complexity of digital markets increases tendency of error
- Rapid change accelerates regulatory obsolescence
- Many issues require participation and input from multiple players
- Innovation and entry are distorted by regulatory burdens and risks

To address existing and future challenges regarding the digital ecosystem, regulation should be functionality-based, dynamic and constantly re-evaluate itself to ensure it is supporting the policy goals behind it

