

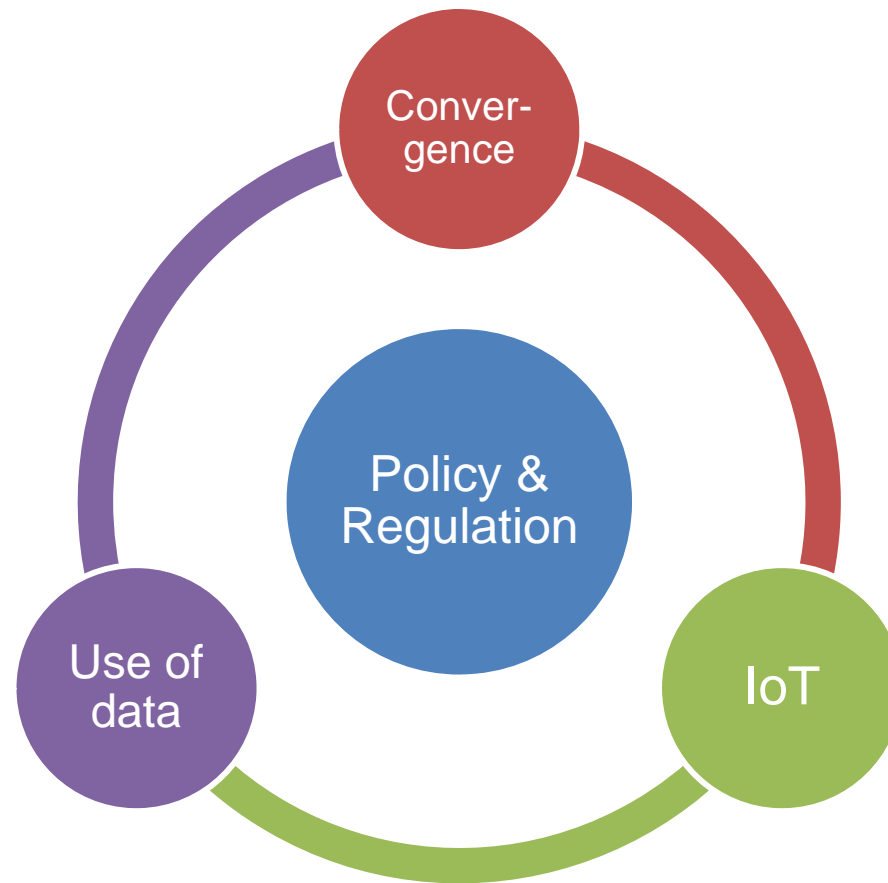


Telecommunications infrastructure: traditional and emerging challenges

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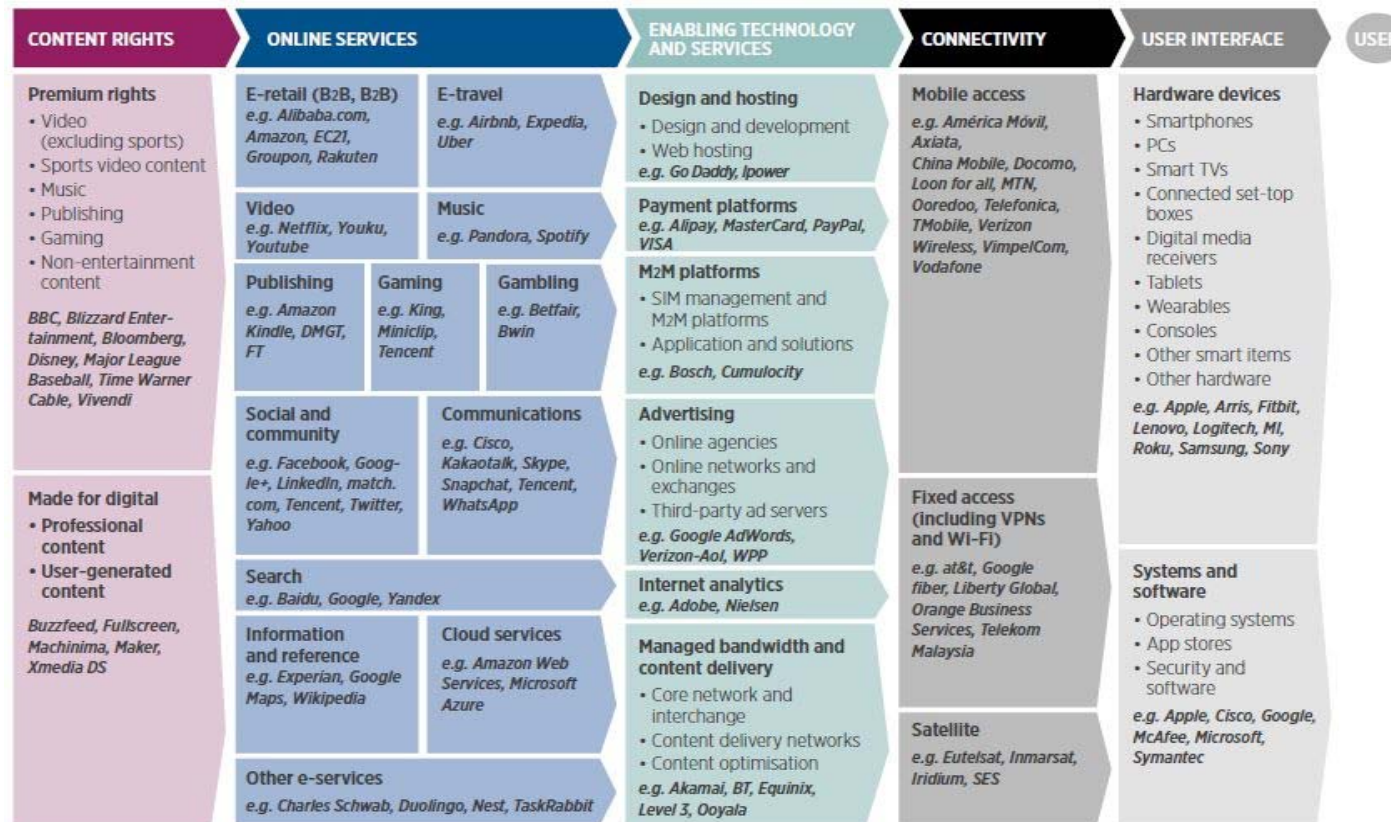
What are the emerging issues?



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



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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



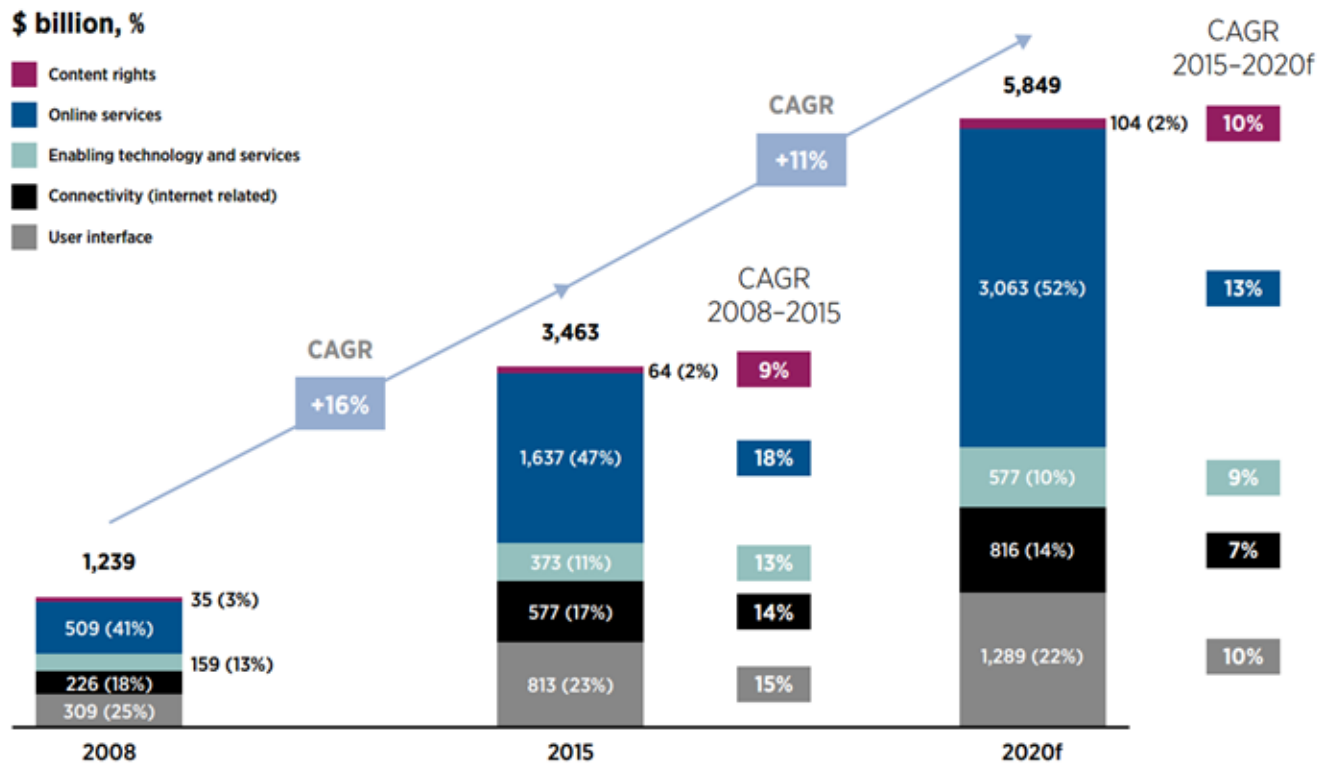
Strong complementarities
between infrastructure
and services



Individual contributions to social
welfare difficult to disentangle

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

Internet value chain size and growth by segment



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

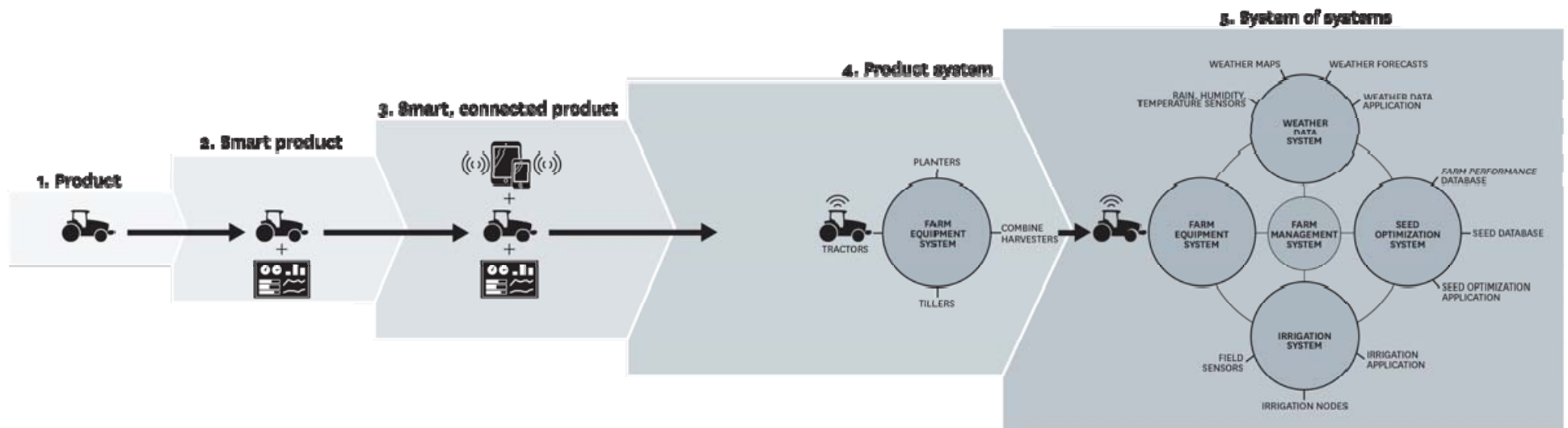
- Competition “for” the market, not “in” the market
- Consumers benefit from size and scope; regulation should not impose barriers to their realization

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





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



Enterprise



Individual

Telecom & Technology firms

AT&T
Alphabet
Amazon
Microsoft
Cisco
Verizon
Vodafone

Machinery and car manufacturers

Audi
GE
Bosch
John Deere
PTC
Tesla

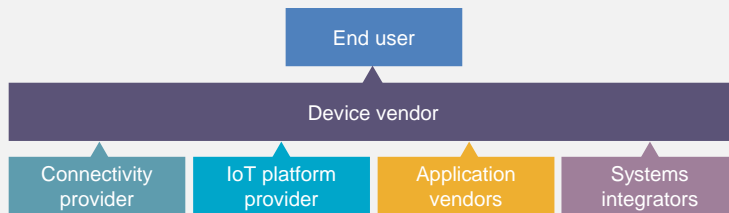
Non-traditional entrants

Xaomi
Fitbit
Jawbone
SIGFOX
Alarm.com

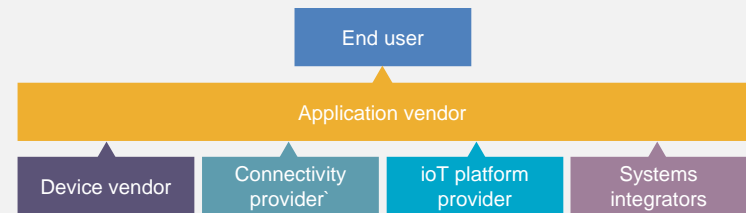
Many players compete to own the end user relationship



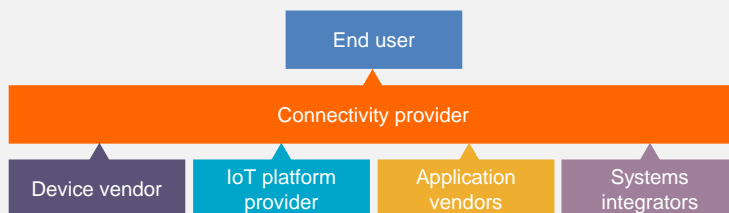
IoT solutions led by device vendors (e.g. wearables)



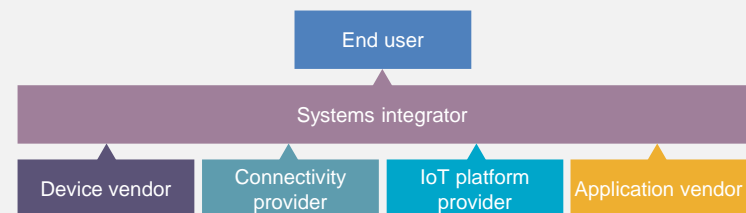
IoT solutions led by application vendors (e.g. health)



IoT solutions led by connectivity providers (e.g. smart home, fleet management)



IoT solutions led by systems integrators (e.g. industrial IoT, smart cities)



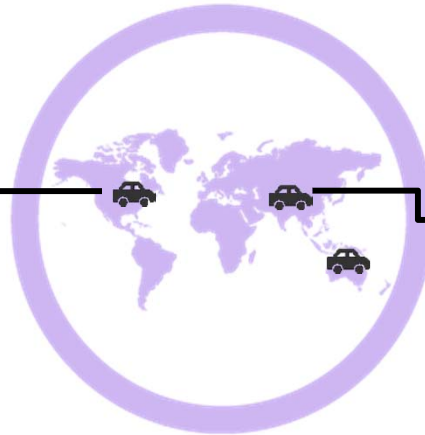


IoT has a “glocal” dimension – global production and local connectivity models



**Distinct elements of the value chain
will be performed in different
geographies**

Connected cars
manufactured in
one location



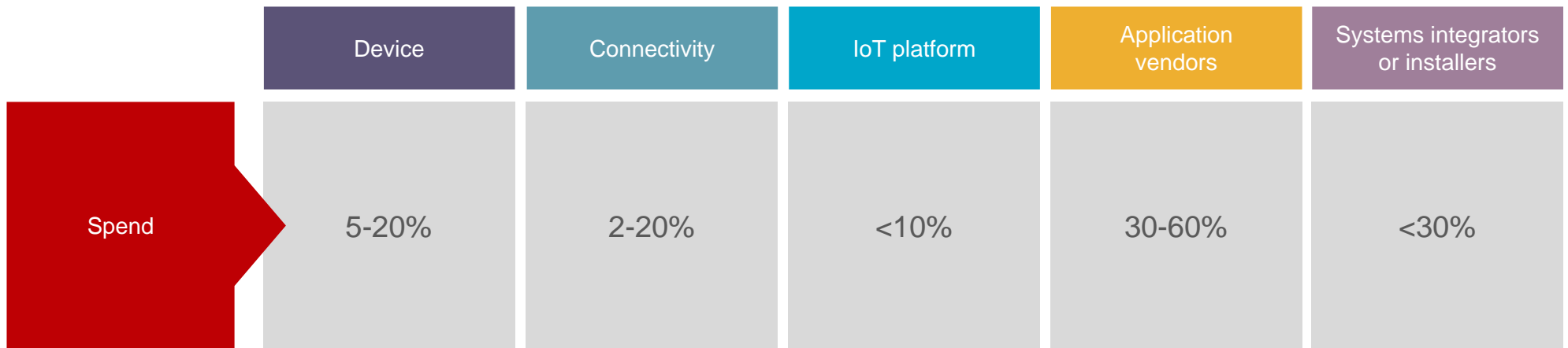
Distributed globally with
installed sensors,
seamless connectivity,
data and analytics



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

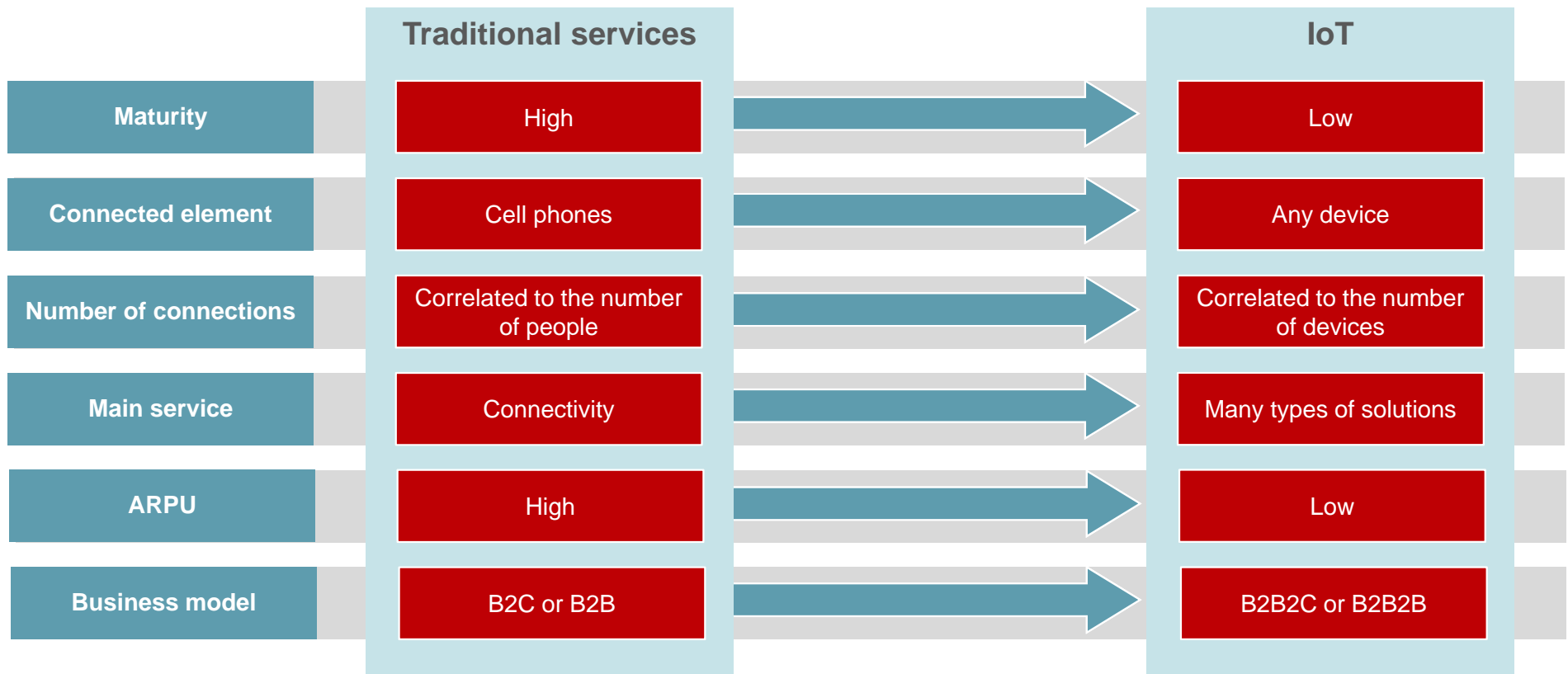


Spend on value chain elements for typical IoT solutions* [Source: Analysys Mason]



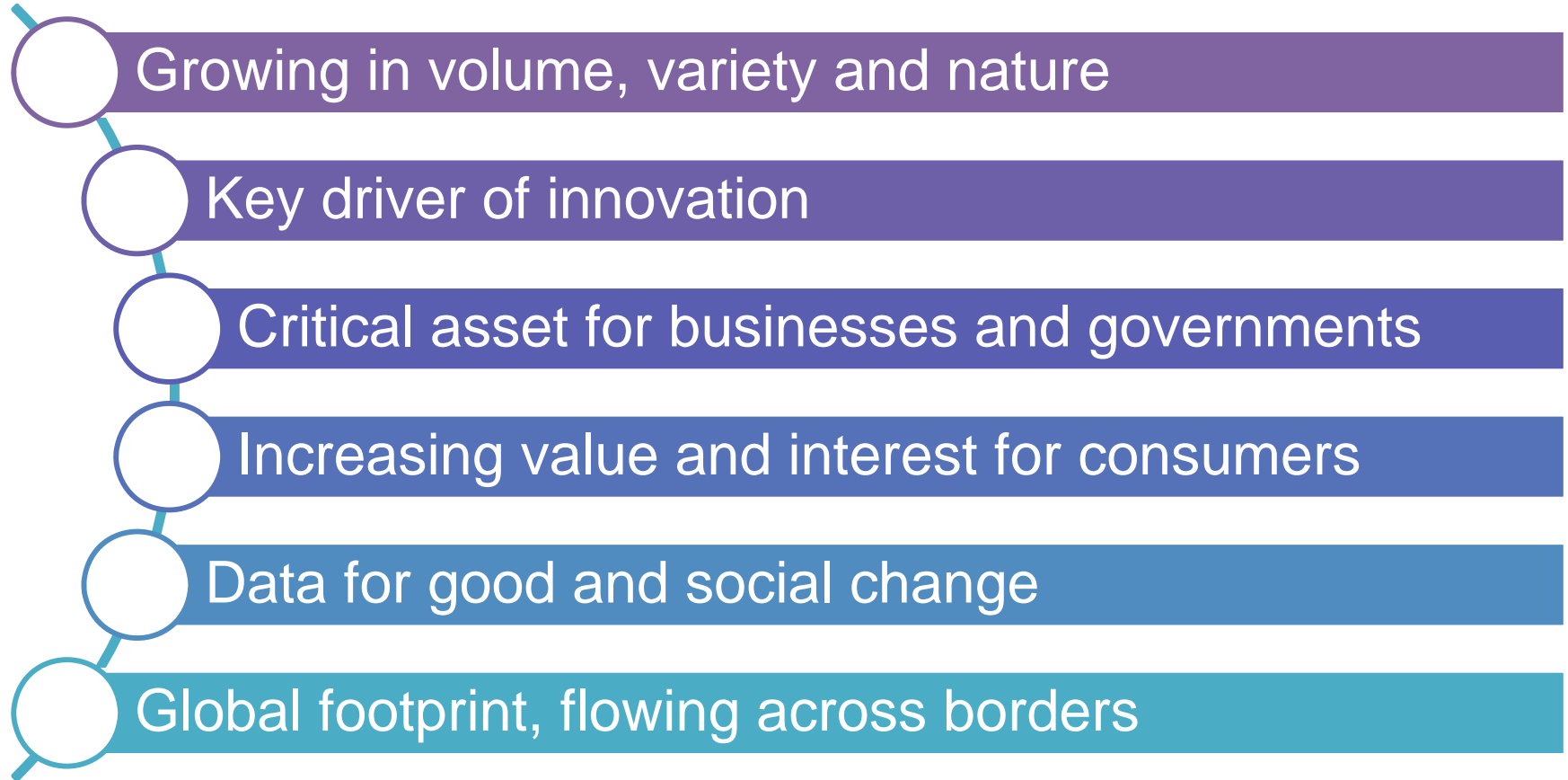
** Indicative figures only. The exact spend will vary by solution and vertical market*

Thus, the IoT is still fundamentally different from traditional services



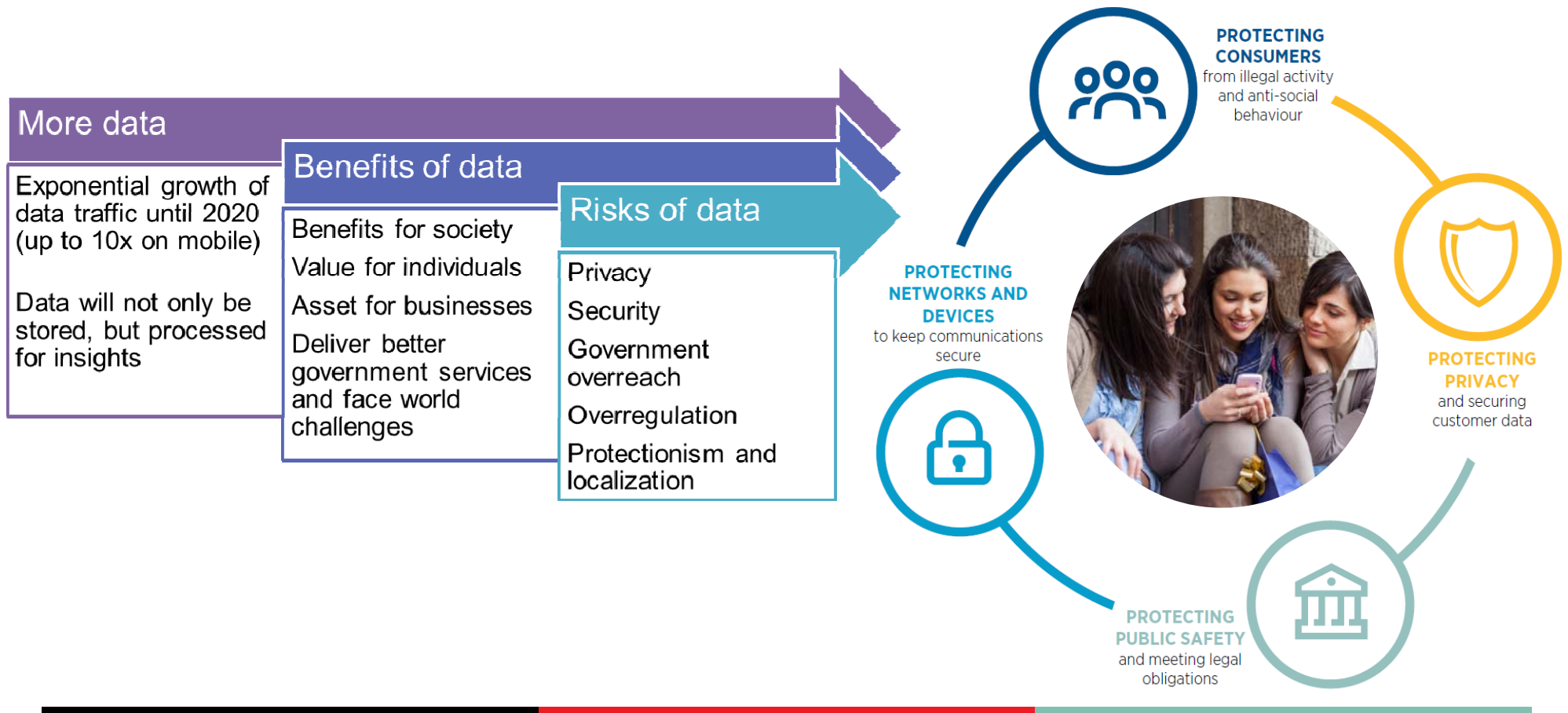
Data is not the new oil – it is much more than that

D



Source: CIPL

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



How do we move forward while creating the right environment?

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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 IoT 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?

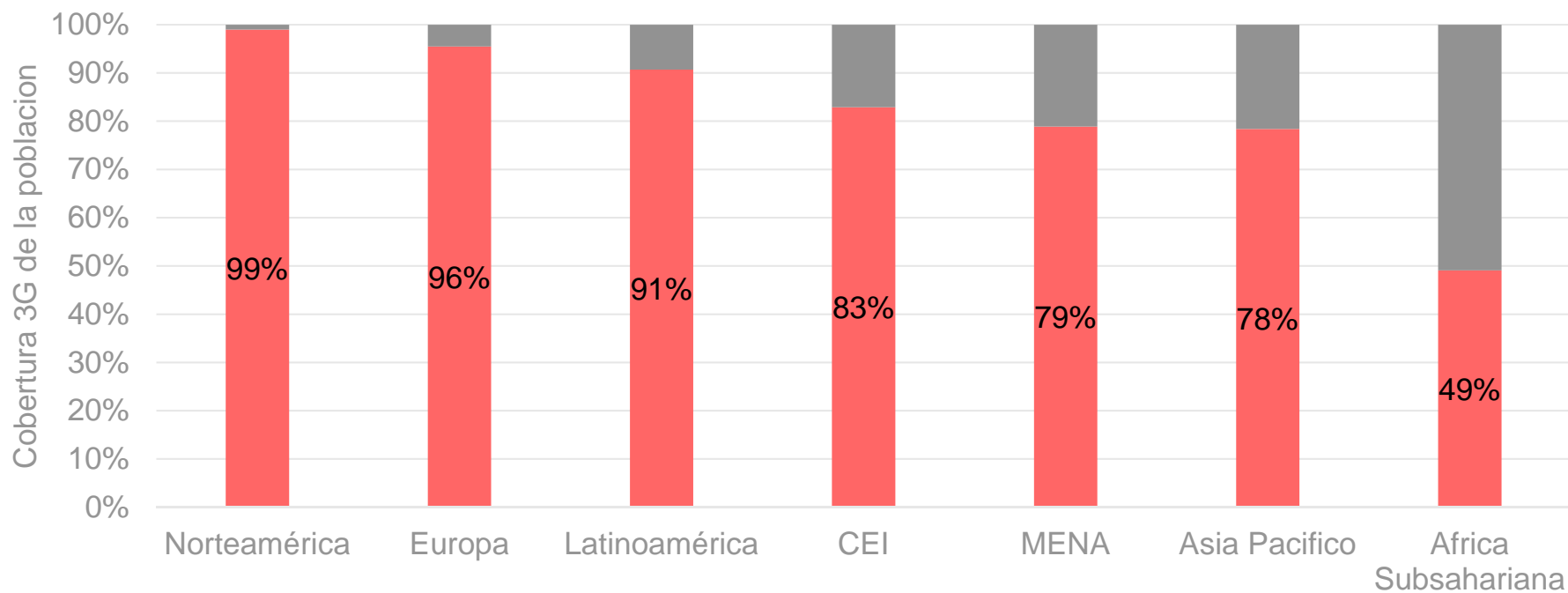
What can be done to improve it?

How do existing challenges relate to emerging opportunities?





3G in Latin America covers more than 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



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



Obrigado!

Philippe Moura
Regulatory Manager