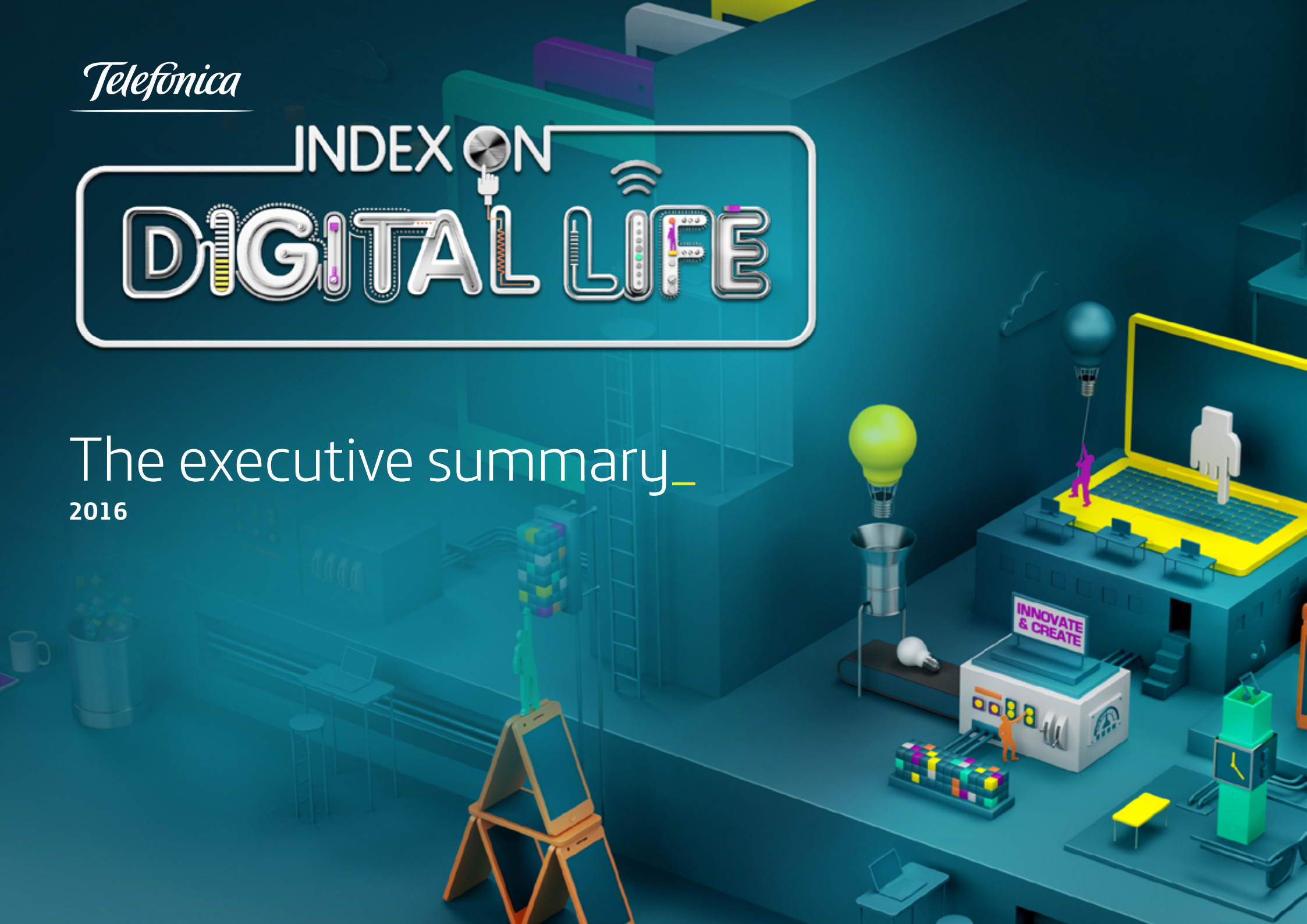


*Telefonica*

# INDEX ON DIGITAL LIFE

The executive summary\_

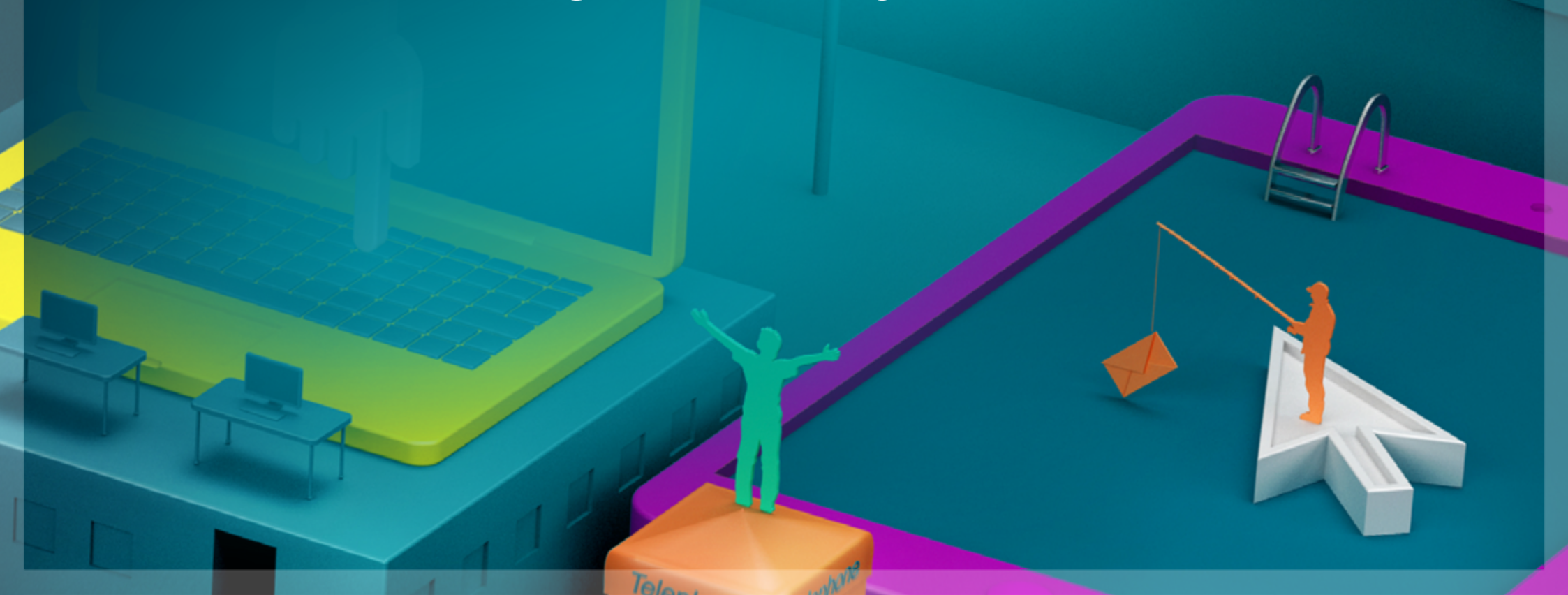
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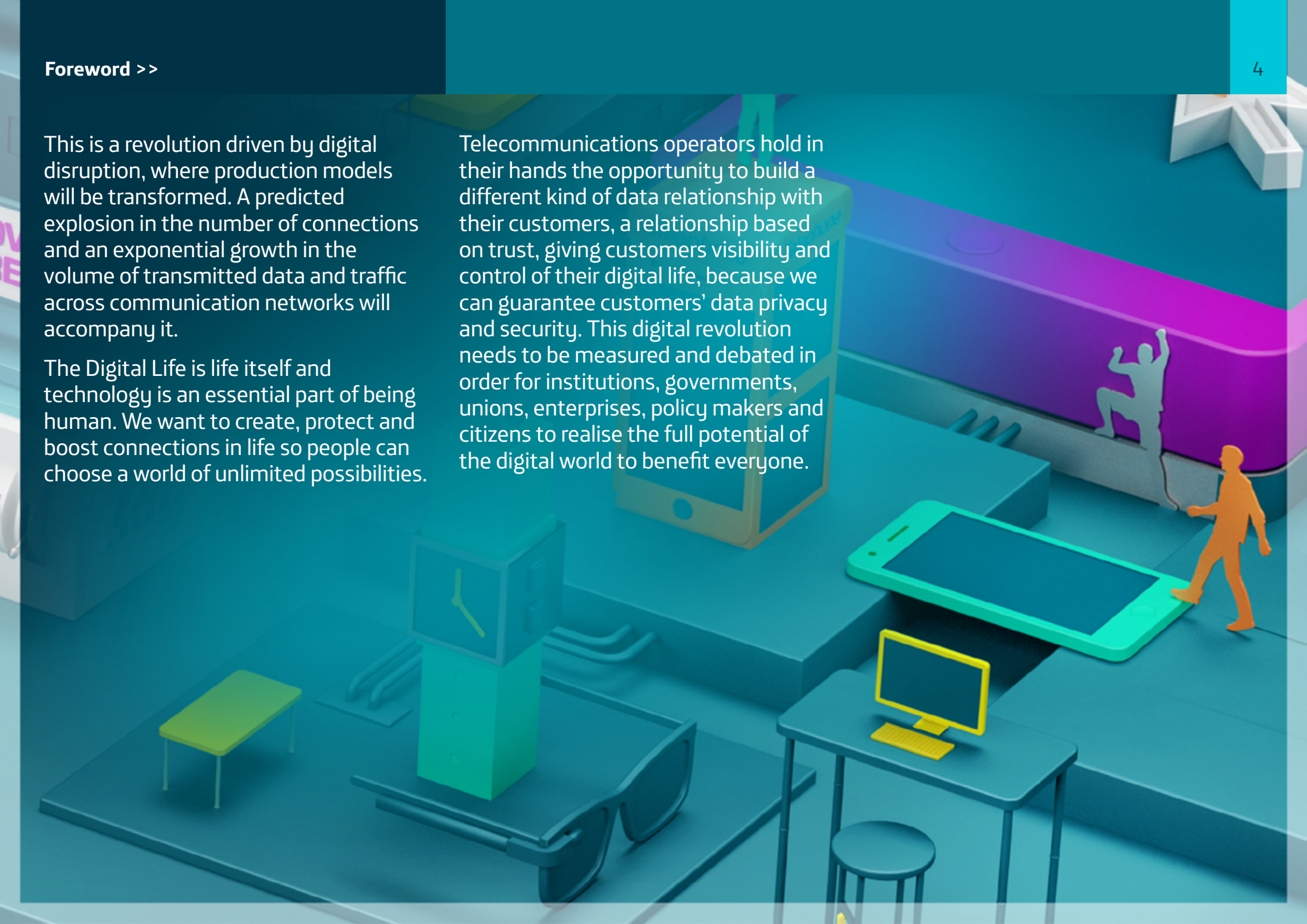
We are experiencing a revolution that will change everything. Digitalisation will enable unparalleled social progress with even greater wealth creation. The digital industry has accounted for nearly one fifth of global growth in the past two decades, and recent reports estimate that a 10% increase in digitalisation of the economy could increase GDP per capita growth rates by up to 40%.



This is a revolution driven by digital disruption, where production models will be transformed. A predicted explosion in the number of connections and an exponential growth in the volume of transmitted data and traffic across communication networks will accompany it.

The Digital Life is life itself and technology is an essential part of being human. We want to create, protect and boost connections in life so people can choose a world of unlimited possibilities.

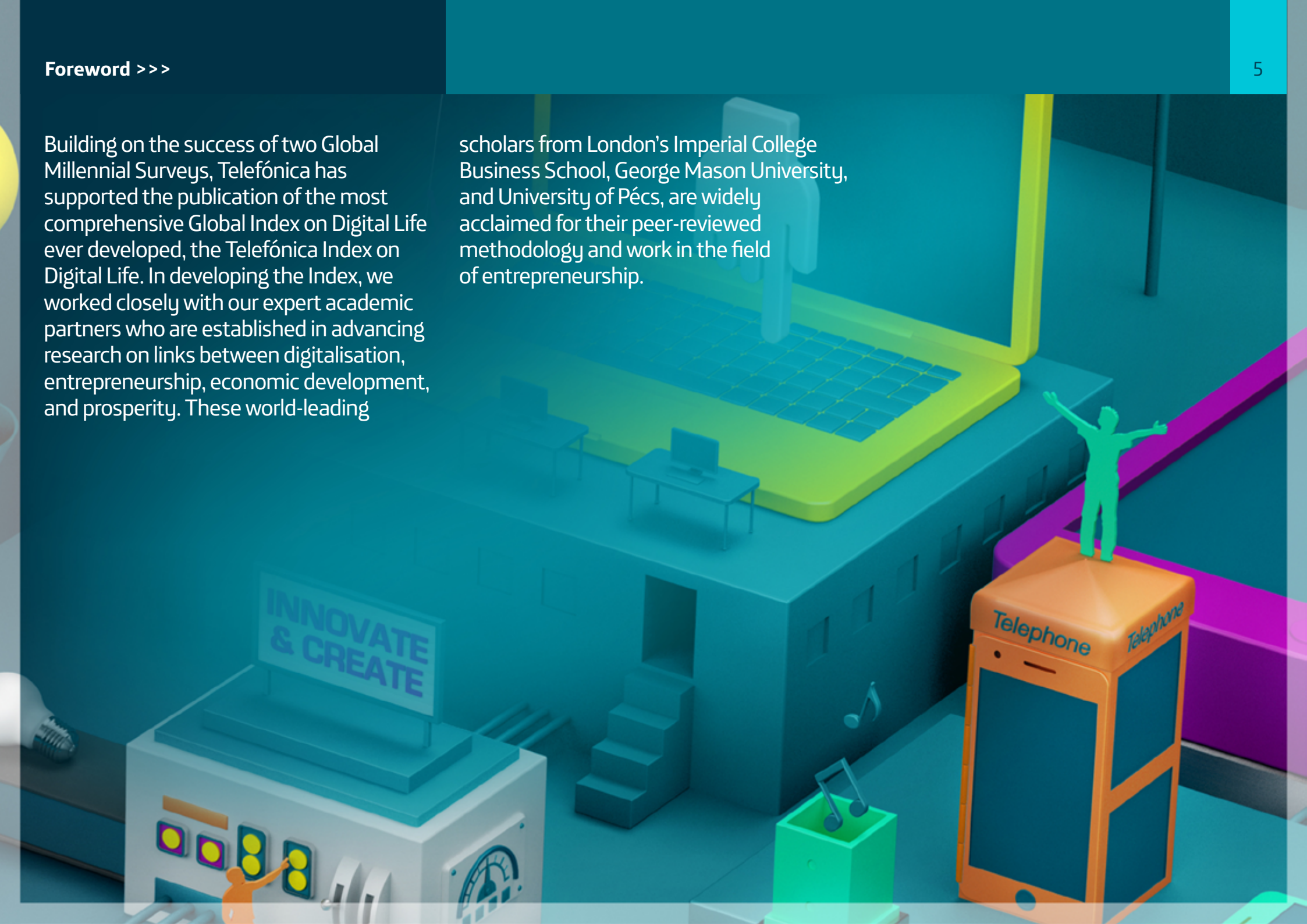
Telecommunications operators hold in their hands the opportunity to build a different kind of data relationship with their customers, a relationship based on trust, giving customers visibility and control of their digital life, because we can guarantee customers' data privacy and security. This digital revolution needs to be measured and debated in order for institutions, governments, unions, enterprises, policy makers and citizens to realise the full potential of the digital world to benefit everyone.





Building on the success of two Global Millennial Surveys, Telefónica has supported the publication of the most comprehensive Global Index on Digital Life ever developed, the Telefónica Index on Digital Life. In developing the Index, we worked closely with our expert academic partners who are established in advancing research on links between digitalisation, entrepreneurship, economic development, and prosperity. These world-leading

scholars from London's Imperial College Business School, George Mason University, and University of Pécs, are widely acclaimed for their peer-reviewed methodology and work in the field of entrepreneurship.



The Index on Digital Life reflects Telefónica's core belief that technology should be open to everyone and was motivated by the need to have a more holistic and global way to measure Digital Life within the digital economy. Moving away from measurement based simply on the level of access, the Index takes into account the harmonisation of socio-economic factors that drive the digital economy.

To unleash the full potential of the digital economy, we need forward-looking, fairer public policies and a better cooperation between all stakeholders, public and private. Telefónica's Index on Digital Life uniquely provides the critical insight required to help global economies truly capitalise on the possibilities offered by digital technology and we are excited to present it for the benefit of global policy makers and the digital communications industry.

We look forward to an on-going conversation on how to improve Digital Life.

**José María Álvarez-Pallete López,**  
Executive Chairman, Telefónica S.A







# Executive summary

The Telefónica Index on Digital Life (TIDL) measures the ability of different countries to progress their Digital Economies and Digital Societies<sup>1</sup>. Combined, we call this broad and multifaceted phenomenon Digital Life.

Digitalisation – i.e. the socioeconomic process of harnessing digital technologies in all domains of social and economic life – affects virtually all aspects of economies and societies, from the way individuals and organisations interact; how they communicate; how they learn; how they work; how they conduct business; how they spend their leisure time. Digitalisation affects business, healthcare, education, culture, government, social care, transportation and the way individuals conduct their lives regardless of where they live. Understanding how countries perform in different domains of Digital Life is therefore timely and important.

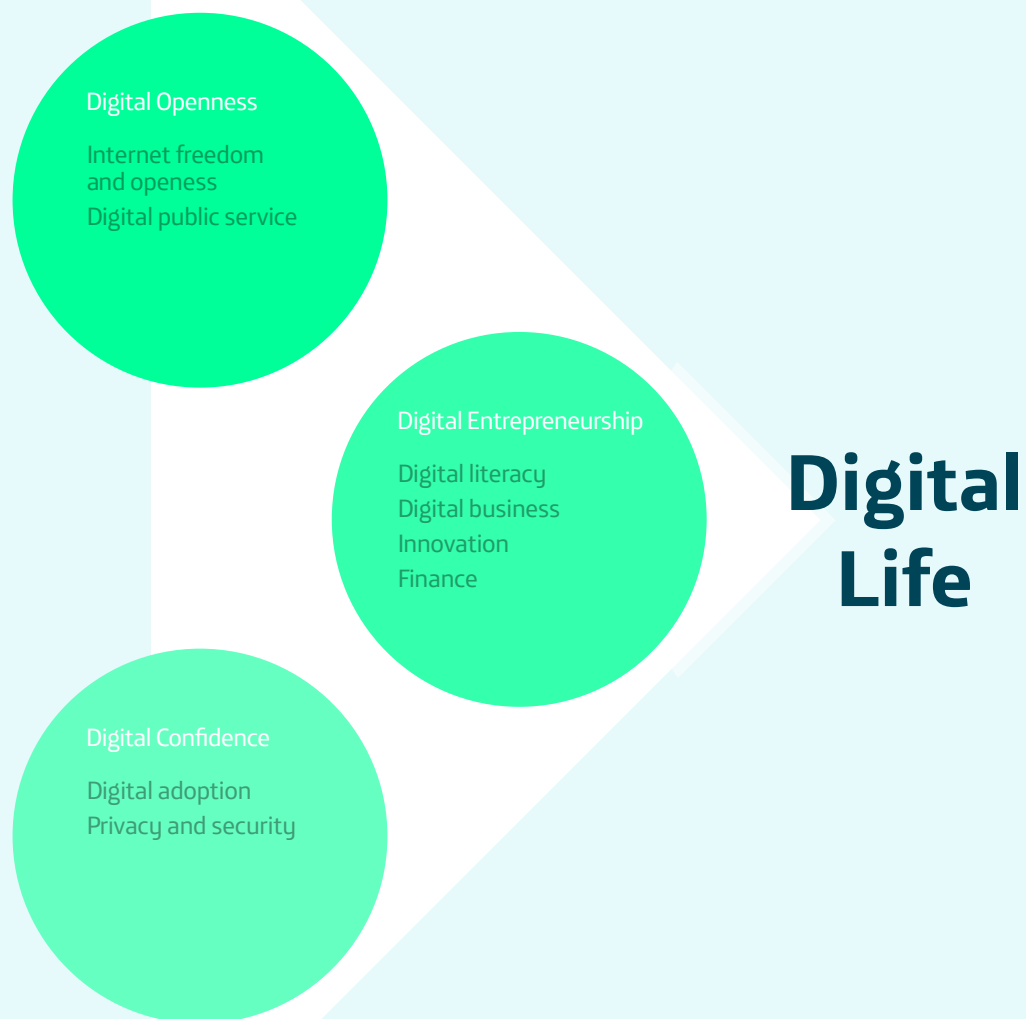
The Telefónica Index on Digital Life captures the systemic capacity of countries to embrace Digital Life: (1) Digital Openness: how well a country's digital infrastructure facilitates open access to information; (2) Digital Confidence: how readily and confidently individuals and organisations engage with the country's digital infrastructure; and (3) Digital Entrepreneurship: how readily citizens and organisations leverage the digital infrastructure for entrepreneurship and innovation. Consistent with this, the Index tracks three systemic capacities in 34 countries: Digital Openness (Internet freedom and openness, digital public services), Digital Confidence (digital adoption, privacy and security), and Digital Entrepreneurship (digital literacy, digital business, innovation, and finance).

The Telefónica Index on Digital Life does not measure the country's digital infrastructure because there are already many indices that measure investment in this area. Infrastructure alone, however, will be static and sterile if the country lacks the capacity to leverage it for economic and societal development. As such, TIDL is unique in opening up this dynamic 'black box' of Digital Life.

<sup>1</sup>The terms: 'Digital Economy' and 'Digital Society' describe economies and societies affected by digitalisation. The term: 'Digital Life' captures both processes.

### Structure of Telefónica Index on Digital Life

TIDL is composed of 3 sub-indices, 8 pillars, and 37 variables from 53 key performance indicators. Statistically comprehensive and globally harmonised data was gathered from 17 different sources, including ITU, World Bank, World Economic Forum, UN and WIPO, among others. Table 1 shows the TIDL scores for the 34 countries on a scale from 0 (low) to 100 (high). Figure 2 plots the TIDL scores (vertical axis) against the countries' GDP (PPP) per capita (2014, in US dollars).





**TIDL: Ranking of Performance Relative to GDP per capita 2014 (PPP, current USD)**

Score	Country	TIDL-Score	GDP per capita (PPP) 2014, USD
1	United States	96.3	54,629
2	Canada	92.4	44,057
3	Australia	90.1	43,930
4	United Kingdom	88.7	39,762
5	Germany	81.0	45,802
6	Israel	78.5	33,230
7	France	78.3	38,847
8	Japan	77.3	36,426
9	Czech Republic	71.1	30,407
10	South Korea	70.8	34,356
11	Chile	70.4	22,346
12	Spain	70.1	33,211
13	Saudi Arabia	69.4	51,924
14	Columbia	67.4	13,357
15	Russia	66.9	19,401
16	Mexico	65.3	17,108
17	Italy	64.8	34,706
18	Argentina	62.3	17,554
19	South Africa	62.1	13,046
20	Uruguay	62.0	20,884
21	Brasil	62.0	15,838

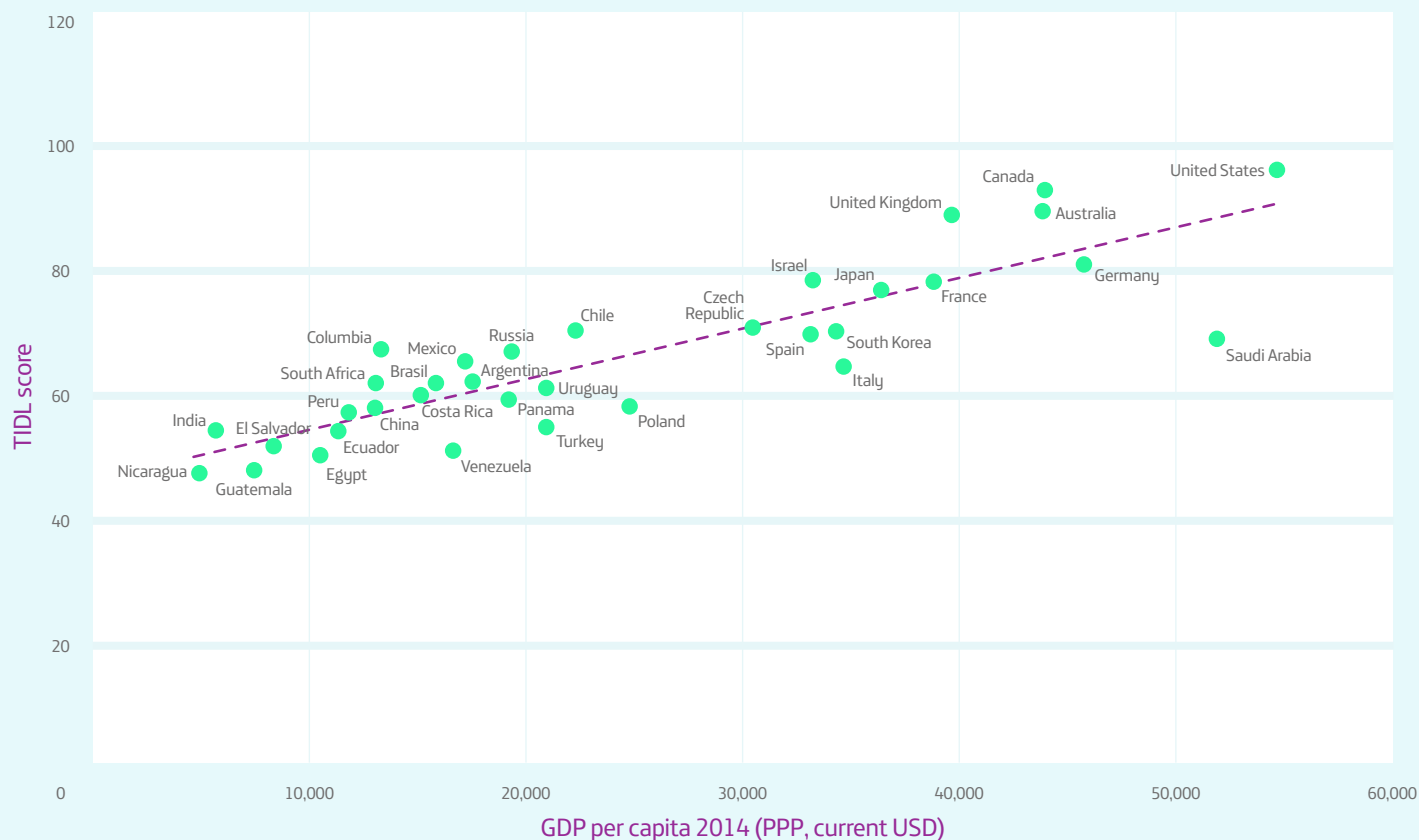
**TIDL: Ranking of Performance Relative to  
GDP per capita 2014 (PPP, current USD)**

Score	Country	TIDL-Score	GDP per capita (PPP) 2014, USD
22	Costa Rica	60.2	14,918
23	Turkey	59.5	19,199
24	China	58.3	24,744
25	Poland	58.3	13,206
26	Peru	57.3	11,989
27	Panama	56.0	20,895
28	India	54.4	5,701
29	Ecuador	54.3	11,372
30	El Salvador	52.0	8,351
31	Venezuela	51.3	16,666
32	Egypt	50.5	10,530
33	Guatemala	48.0	7,454
34	Nicaragua	47.6	4,918



### Scores Plotted Against GDP per capita

TIDL scores correlate strongly with the country's wealth, reflecting the greater resources richer countries can bring to bear to advance Digital Life. However, this correlation is not automatic. As Figure 2 shows, some countries reside above the GDP per capita trend line, and some reside below it. Countries residing above the trend line (e.g. Colombia, Chile, UK) can be said to 'over-perform' in Digital Life relative to their wealth. On the other hand, countries residing below the trend line (e.g. Saudi Arabia, Italy) may not be harnessing their resources as efficiently as they probably could and should to embrace Digital Life. The policy challenges implied by TIDL differ according to the overall score, the country's level of economic development and its position relative to the GDP-predicted performance trend line.



## Global Highlights

The capacity of countries to embrace Digital Life varies considerably across the world. The TIDL score of the best performing countries (USA, Canada, Australia, and the UK) is twice that of the lowest performer. This suggests considerable differences in countries' abilities to reap the benefits of the global digital economy.

Behind the top four countries there is a group of another four countries: Germany, Israel, France, and Japan. The Czech Republic and South Korea make up the top 10 countries in this year's edition of TIDL.

Chile is the highest-scoring South American country, just ahead of Spain. The second-richest country in this year's ranking, Saudi Arabia, ranks just ahead of Colombia in spite of having almost three times higher GDP per capita. Russia ranks ahead of Italy (17th), which is the lowest-ranking G7 country. Argentina, South Africa, Uruguay, and Brazil are ranked close to one another. China ranks 24th, just ahead of Poland and only four index points ahead of India.



Figure 3

### Performance Relative to GDP per capita

The performance of the countries relative to their wealth is shown in Figure 3. Figure 3 shows first the TIDL score and its sub-index scores (left columns) and the performance of each country relative to its 'expected' score (right columns). The right columns indicate the difference between the country's actual score and its GDP-predicted score. Green colours indicate over-performance relative to GDP and red colours indicate under-performance. Black colour indicates that the country is performing broadly at level with its GDP-predicted score.

Country	GDP per capita (PPP) 2014, USD	TIDL Index 2016		Digital Openness Sub-Index		Digital Confidence Sub-Index		Digital Entrepreneurship Sub-Index	
		Index Score	Relative to GDP*	Index Score	Relative to GDP*	Index Score	Relative to GDP*	Index Score	Relative to GDP*
Argentina	17,554	62.3 ▲	2.4 ▲	65.9 ▲	4.3 ▲	66.9 ▲	5.8 ▲	54.4 ▼	-7.2 ▼
Australia	43,930	90.1 ▲	9.1 ▲	89.9 ▲	7.2 ▲	95.9 ▲	11.1 ▲	84.4	2.0
Brazil	15,838	62.0 ▲	3.4 ▲	69.0 ▲	8.8 ▲	61.5	2.0	55.4 ▼	-4.5 ▼
Canada	44,057	92.4 ▲	11.3 ▲	100.0 ▲	17.2 ▲	88.6 ▲	3.7 ▲	88.7 ▲	6.2 ▲
Chile	22,346	70.4 ▲	6.7 ▲	65.3	-0.1	67.8 ▲	2.4 ▲	78.2 ▲	13.1 ▲
China	13,206	58.3	1.8	54.7 ▼	-3.4 ▼	58.3	1.1	61.8 ▲	4.0 ▲
Colombia	13,357	67.4 ▲	10.9 ▲	71.1 ▲	12.9 ▲	65.1 ▲	7.8 ▲	66.1 ▲	8.2 ▲
Costa Rica	14,918	60.2 ▲	2.4 ▲	56.3 ▼	-3.2 ▼	62.4 ▲	3.7 ▲	61.8 ▲	2.6 ▲
Czech Republic	30,407	71.1	0.9	71.1	-0.8	77.5 ▲	4.9 ▲	64.6 ▼	-7.0 ▼
Ecuador	11,372	54.3	-0.7	58.3	1.7	52.3 ▼	-3.2 ▼	52.3 ▼	-4.1 ▼
Egypt	10,530	50.5 ▼	-3.8 ▼	54.1	-1.9	50.9 ▼	-3.8 ▼	46.6 ▼	-9.1 ▼
El Salvador	8,351	52.0	-0.5	51.7 ▼	-2.5 ▼	50.6 ▼	-2.2 ▼	53.8	-0.1
France	38,847	78.3	1.4	80.0	1.4	73.1 ▼	-7.1 ▼	81.9 ▲	3.5 ▲
Germany	45,802	81.0	-1.5	75.3 ▼	-8.9 ▼	84.4 ▼	-2.1 ▼	83.2	-0.7
Guatemala	7,454	48.0 ▼	-3.8 ▼	42.5 ▼	-11.0 ▼	46.1 ▼	-5.9 ▼	55.5 ▲	2.3 ▲
India	5,701	54.4 ▲	4.0 ▲	59.3 ▲	7.2 ▲	44.9 ▼	-5.5 ▼	59.1 ▲	7.3 ▲

\* Column indicates the difference between actual score and GDP-predicted score. Positive values indicate over-performance, and negative values indicate under-performance relative to GDP-predicted score. Colour codes indicate the extent of over or under-performance.

Country	GDP per capita (PPP) 2014, USD	TIDL Index 2016		Digital Openness Sub-Index		Digital Confidence Sub-Index		Digital Entrepreneurship Sub-Index	
		Index Score	Relative to GDP*	Index Score	Relative to GDP*	Index Score	Relative to GDP*	Index Score	Relative to GDP*
Israel	33,230	78.5 ▲	6.0 ▲	74.4	0.3	78.7 ▲	3.5 ▲	82.4 ▲	8.6 ▲
Italy	34,706	64.8 ▼	-8.9 ▼	65.4 ▼	-9.9 ▼	64.8 ▼	-11.7 ▼	64.1 ▼	-10.9 ▼
Japan	36,426	77.3 ▲	2.3 ▲	85.0 ▲	8.3 ▲	79.0	0.9	67.8 ▼	-8.6 ▼
Mexico	17,108	65.3 ▲	5.8 ▲	68.4 ▲	7.2 ▲	64.2 ▲	3.5 ▲	63.4 ▲	2.5 ▲
Nicaragua	4,918	47.6 ▼	-2.2 ▼	51.4	-0.1	43.3 ▼	-6.4 ▼	48.2 ▼	-3.0 ▼
Panama	20,895	56.0 ▼	-6.6 ▼	47.2 ▼	-17.0 ▼	52.2 ▼	-11.9 ▼	68.7 ▲	4.7 ▲
Peru	11,989	57.3	1.9	45.5 ▼	-11.6 ▼	63.8 ▲	7.7 ▲	62.7 ▲	5.9 ▲
Poland	24,744	58.3 ▼	-7.4 ▼	55.5 ▼	-11.8 ▼	61.1	-6.4	58.3 ▼	-8.7 ▼
Russia	19,401	66.9 ▲	5.5 ▲	74.5 ▲	11.4 ▲	69.6 ▲	6.9 ▲	56.7 ▼	-6.1 ▼
Saudi Arabia	51,924	69.4 ▼	-18.0 ▼	60.3 ▼	-28.8 ▼	63.5 ▼	-28.5 ▼	84.3 ▼	-4.5 ▼
South Africa	13,046	62.1 ▲	5.8 ▲	71.2 ▲	13.2 ▲	57.6	0.6	57.4	-0.3
South Korea	34,356	70.8 ▼	-2.6 ▼	70.9 ▼	-4.1 ▼	75.2	-1.0	66.3 ▼	-8.4 ▼
Spain	33,211	70.1 ▼	-2.3 ▼	66.4 ▼	-7.7 ▼	72.8 ▼	-2.4 ▼	71.1 ▼	-2.7 ▼
Turkey	19,199	59.5	-1.8	55.4 ▼	-7.5 ▼	56.8 ▼	-5.7 ▼	66.2 ▲	3.6 ▲
United Kingdom	39,762	88.7 ▲	11.1 ▲	93.1 ▲	13.8 ▲	90.5 ▲	9.4 ▲	82.6 ▲	3.6 ▲
United States	54,629	96.3 ▲	6.8 ▲	97.3 ▲	6.1 ▲	97.7 ▲	3.3 ▲	94.0 ▲	3.0 ▲
Uruguay	20,884	62.0	-0.6	58.1 ▼	-6.1 ▼	67.3 ▲	3.2 ▲	60.6 ▼	-3.4 ▼
Venezuela	16,666	51.3 ▼	-7.9 ▼	50.5	-10.4	50.6 ▼	-9.7 ▼	52.7 ▼	-7.9 ▼

\* Column indicates the difference between actual score and GDP-predicted score. Positive values indicate over-performance, and negative values indicate under-performance relative to GDP-predicted score. Colour codes indicate the extent of over or under-performance.



We see several countries either beat their GDP-predicted score or perform at the expected level. These countries are: United Kingdom, Colombia, Canada, United States, Mexico, Chile, Australia and South Africa. In the overall index, Canada is the strongest over-performer, followed by the United Kingdom, Colombia, Australia, United States and Chile. For these countries, the challenge is to keep building on their strengths and ensuring that investments in digital infrastructure seamlessly support individual and corporate initiatives in Digital Life.

Some countries over-perform in some areas while under-performing in others. For example, Argentina, Brazil, the Czech Republic, and Russia over-perform in Digital Openness and Digital Confidence but show relative weakness in Digital Entrepreneurship, a key component in realising the economic potential of digitalisation. Other countries including Turkey, Panama and Guatemala, exhibit an opposite profile, with over-performance in Digital Entrepreneurship and under-

performance in Digital Openness and Digital Confidence. In these countries, the challenge may be to reinforce government, political institutions, and citizens' digital skills.

If a country under-performs in more than one sub-index, this may signal that the country needs a broad-based policy approach to strengthen its capacities to advance digitalisation. Otherwise the country may not be fully able to realise the potential opened by its investment in digital infrastructure.

## Policy implications

TIDL highlights different policy issues in different countries. Eight countries over-performed or matched their GDP predicted performance for all sub-indices: United Kingdom, Colombia, Canada, United States, Mexico, Chile, Australia and South Africa. For the remaining countries, the TIDL analysis suggests strengths and challenges in varying degrees.

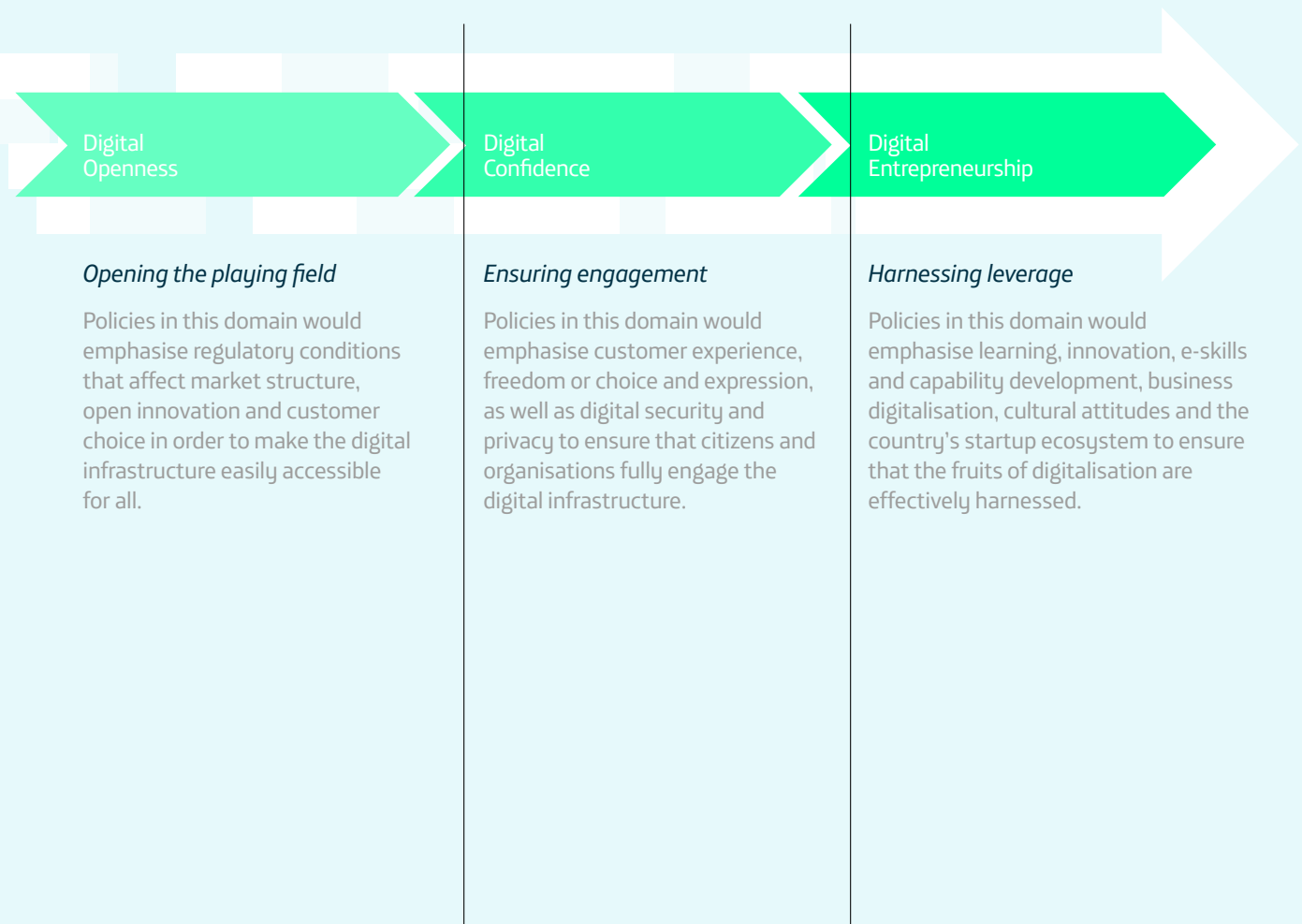
What, then, are these challenges? TIDL is based on the idea that a country's Digital Life is actually an ecosystem that comprises many elements. These elements work together to create an 'ecosystem service' – i.e. its Digital Life. A country's Digital Life ecosystem may therefore exhibit bottlenecks – relatively weakly performing elements – that may hold back its overall performance. Where this is the case, a country might benefit from prioritising its efforts in relation to the bottleneck elements, while also ensuring that its strengths continue to be fully leveraged.

The required policy response will depend on the nature of the bottleneck element: is it related primarily to Digital Openness, Digital Confidence, Digital Entrepreneurship, or any combination of them? As shown in Figure 4,

the three elements of Digital Life call for different policy considerations. Policies to enhance Digital Openness are primarily concerned with ensuring an open level-playing field that is not monopolised by any single organisation or technology platform. Open access to the digital infrastructure and different technology platforms, low switching costs and ease of migration all ensure that the country's Digital Life ecosystem does not become the fiefdom of a single technology platform, monopoly, or group.

Policies to enhance Digital Confidence are primarily concerned with ensuring that citizens and organisations in the country have the skills and confidence to fully engage the country's digital infrastructure. Policies to enhance Digital Entrepreneurship are primarily concerned with ensuring that citizens and organisations in the country have the skills and resources to efficiently pursue opportunities opened by advances in digitalisation, such that the potential opened up by digitalisation is fully leveraged. It is important to recognise that these challenges transcend traditional policy 'silos' and cannot be sub-ordinated to any individual government agency. Effective policies to advance Digital Life are likely to require concerted action across multiple policy domains and agencies and involve stakeholders from many different parts of the society.

# Arrow of Digital Life



### Policy framework

*United Kingdom, Colombia, Canada, United States, Mexico, Chile, Australia and South Africa* are strong across-the-board performers who perform at the expected level or above in all areas of Digital Life relative to their wealth. These countries should therefore pursue balanced policies, with attention paid to balanced development of all three drivers of Digital Life. The nuances of these policies will differ according to each country's level of development and how well their strengths are balanced. For example, United Kingdom should invest slightly more effort in Digital Entrepreneurship and Digital Confidence, whilst Chile should focus more on Digital Openness. Overall, however, the profiles of these countries make them well equipped to harness digitalisation for further economic development.

Some countries are relatively strong in Digital Openness and Digital Confidence but show relative weakness in Digital Entrepreneurship. *Argentina, Brazil, Russia*, and, to some degree, the *Czech Republic* and *Japan* share this profile. It is likely that in these countries, advances in digitalisation are seen but not necessarily effectively transformed into new economic activity. Both *Argentina* and *Brazil* are countries where important strides towards a stronger Digital Life could be achieved by entrepreneurs creating localised digital services and content and introducing new, more effective

business models. *Russia* faces an urgent need to diversify its industrial base and relative weakness in Digital Entrepreneurship is one of the factors hampering this objective.

In some countries, conditions for Digital Entrepreneurship are strong relative to GDP per capita but relative weaknesses in Digital Openness and/or Digital Confidence may mean that entrepreneurs in these countries may not be able to fully leverage advances in digitalisation. *Turkey, Panama*, and *Guatemala* share this profile. These countries need to ensure that their digital infrastructures are sufficiently open and secure to facilitate broad engagement with the digital infrastructure. Also *France's* profile is somewhat similar, but there the challenges are more narrowly confined to Digital Confidence, where the country's Digital Life ecosystem does not seem to perform quite at the high level one would expect given its wealth.

*Costa Rica* and *China* both share a relative weakness in Digital Openness, suggesting that both countries should do more to advance Internet freedom and openness and do more to embrace and adopt digital public services. Both countries also share a relative strength in Digital Entrepreneurship, with Costa Rica additionally exhibiting relative strength in Digital Confidence.



*India* stands out with its profile that exhibits relative strength in Digital Openness and Digital Entrepreneurship but a relative weakness in Digital Confidence. Confidence-boosting policies that facilitate digital adoption and privacy and security might therefore prove efficient in advancing Digital Life in India.

*Uruguay* and *Peru* exhibit somewhat similar profiles in that both share a relative weakness in Digital Openness but a relative strength in Digital Confidence. Though both countries perform to their expected levels overall. However, there is an important difference in that whereas Digital Entrepreneurship appears to be a relative strength in Peru, it is signalled as a relative weakness in Uruguay. Thus, the two countries need to balance their Digital Life policies slightly differently in order to move into the category of overall TIDL over-performers.

The remaining countries do not exhibit strengths in any area relative to their GDP per capita. Instead, all remaining countries exhibit weaknesses in at least one domain of Digital Life, with the result that the countries under-perform relative to their GDP per capita in terms of TIDL overall score. Of the 34 countries, *Saudi Arabia* stands out as the most dramatic under-performer, with GDP-predicted score 18

index points higher than its actual TIDL index score. Saudi Arabia's under-performance seems alarming particularly in Digital Openness and Digital Confidence. Other stand-out under-performers within this group are *Venezuela* and *Italy*. In these three countries, broad-based government action is likely required to ensure that the countries will be able to effectively harness digitalisation for further economic development. In *Spain* and in *Germany*, relative weaknesses in more than one domain of Digital Life raise concerns that the high-quality digital infrastructure that exists in both countries may not get sufficiently harnessed for needed advances in digitalisation.

This review suggests that countries may experience strengths and bottlenecks in Digital Life regardless of their performance in absolute terms. For example, even though *Germany* and *Spain* are shown to experience weaknesses in relative terms, their absolute TIDL scores are very respectable in all sub-indices. This highlights a very important feature of Digital Life ecosystems: in order for countries to nurture efficient Digital Life ecosystems, the different elements of it need to be in balance, relatively speaking. For any given country, it is not so much the absolute performance but rather, the balance across different domains of its Digital Life ecosystem that is important for ensuring the best outcome for that country.

## Towards a Digital Life: conclusion

**This first edition of the Telefónica Index on Digital Life has revealed important differences in progress towards a better Digital Life across the 34 countries covered. The Index suggests different policy emphases for different countries, based on their current level of economic development and the balance across different elements of their Digital Life ecosystems.**

We hope that TIDL will initiate and inform a lively debate on Digital Life among the different stakeholders of this phenomenon: consumers, public policy-makers, business, media, and governments and help stimulate the policy initiatives that are necessary to create a better Digital Life for all.



For more information and to join the conversation  
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Email us [digitallife@telefonica.com](mailto:digitallife@telefonica.com)

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