

# BUILDING SMART SOCIETIES - A BLUEPRINT FOR ACTION

How the World's Most Digitally Advanced  
Governments Offer a Strategic Choice Framework  
on Technology for Policymakers

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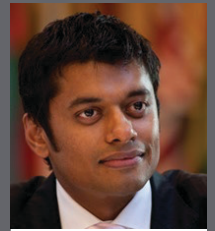
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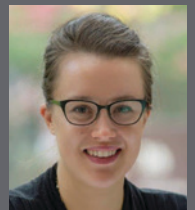
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# ABOUT

## DIGITAL PLANET

Digital Planet is an interdisciplinary research initiative of The Fletcher School's Institute for Business in the Global Context. Dedicated to understanding the impact of digital innovation on the world, Digital Planet provides actionable insights for policymakers, businesses, investors, and innovators.

## INSTITUTE FOR BUSINESS IN THE GLOBAL CONTEXT

The Institute for Business in the Global Context (IBGC) connects the world of business to the world. It is the hub for international business at The Fletcher School, the oldest graduate school of international affairs in the United States. The Institute takes an interdisciplinary approach, preparing global leaders who can cross borders of many kinds and integrate business skills with an understanding of the geopolitical, legal, financial, security, macroeconomic, humanitarian, and environmental impacts on business. The Institute is organized around four core activity areas: education, research, dialogue and a lab. The Master of International Business degree and leadership development programs are at the heart of the education mission. These offerings, coupled with original research in multiple areas — inclusive growth, digitalization, innovation and economic development at scale, sovereign wealth and global capital flows, among others — facilitate a vibrant dialogue on contemporary global issues through conferences, symposia and speaker events. The lab creates opportunities for student teams to take knowledge into the “field” to effect change through entrepreneurial startups and consulting projects. The Institute also houses the Council on Emerging Market Enterprises, a think tank comprising distinguished practitioner-scholar experts, who collaborate with the Institute and The Fletcher School on a variety of initiatives, such as research programs, symposia, and conferences.

## THE FLETCHER SCHOOL AT TUFTS UNIVERSITY

The Fletcher School of Law and Diplomacy at Tufts University is the oldest exclusively graduate school of international affairs in the US, working to solve the world's most pressing problems through a collaborative, cross-disciplinary approach to research and education. Since 1933, The Fletcher School has prepared the world's leaders to become innovative problem-solvers in government, business, and non-governmental organizations with strategic cross-sector networks. Through our ongoing commitment and rigorous approach to advancing world knowledge through research and scholarship, The Fletcher School continues to inform and build bridges to meaningful global solutions.

# ACKNOWLEDGMENTS

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We are extremely grateful to the members of our Smart Societies research team: James Bolitho, Jessica Sashihara, and Bradley Waddell for their contributions to this study. A special thanks to Christina Filipovic and Cassandra Pagan for their advice and support, and to Carolyn Gideon, our faculty advisor, for her guidance.

This report on building smart societies is an outcome of a collaboration between an international network of digital governments, a technology firm, and a research university; we gained tremendously from the perspectives of these policymakers and technologists, and this study is the richer for it.

Our grateful thanks to the Chair of the Digital 5 (D5) network, Colin MacDonald, Government Chief Digital Officer of New Zealand, for the sage counsel and to his team -- Sonitha Aniruth, Gordana Brkljaca, Kim Connolly-Stone, Emma MacDonald, Karl McDiarmid, Tim Occleshaw, Graeme Osborne, and Clare Toufexis for all the insights and unconditional support. We are also thankful to the members of the D5 steering group -- Hyeyoung Kim, Jesse Rosenblit, Seong Ju Park, Louise Sheridan, Siim Sikkut, and Shai-lee Spigelman -- for their insights and feedback.

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# FOREWORD

## COLIN MACDONALD

I welcome this insightful report written by the Fletcher School at Tufts University, in conjunction with Microsoft Digital, and I am pleased that we could contribute New Zealand's experience. Working together, we have created something that I hope challenges and inspires all nations on their digital journey.

This report reinforces that so much more than technology is required for a truly digital nation. As we head towards a digital future, we must consider the role of government in ensuring we have an inclusive and equitable society and whether the old models are still fit for purpose in a rapidly changing world.

Improving service delivery and adjusting policy isn't enough. Government needs to help communities adjust to the coming changes and to support everybody to adapt to the new world, ensuring that citizens benefit, rather than get left behind. In addition to making our own cultural shift, government has a role to play in helping our citizens understand the changes.

How citizens, the economy, and the government interact together makes each country unique, with its own strengths and its own challenges. The Fletcher School Smart Society benchmark helps us identify our strengths and our distinctive challenges, and it helps us plan and target our response to achieve positive outcomes for our own citizens.

The Fletcher School has chosen to use the Digital 5 (D5) nations, a collection of countries with digitally advanced governments with a commitment to open and inclusive Government, to define a global benchmark for a smart society. Not one of us has reached our ambitious goal yet, but by working together, learning, and supporting one another, we can all achieve more.

I welcome the aspirational nature of the benchmark, and I will continue to work for New Zealand to push at the outer edges and create a digital society that helps all of our people live full and satisfying lives.



**Colin MacDonald**

Government Chief Digital Officer of New Zealand  
Chair of the D5

### ANAND ESWARAN

As an avid student of archaeology, I at times wonder how the world would be today had some civilizations pursued a different course of action. Would the Incan Empire—by some accounts one of the largest empires of the early 16th century—have survived and thrived had their leaders possessed better access to information and access to better information? Would they have made a different set of choices? How might their better-informed decisions have changed the course of history?

Today's societies are more connected than ever by information and data flows. In this fast-paced digital world, leaders and policymakers, unlike those of civilizations past, face tough real-time decisions, often with long-term consequences, such as how to allocate scarce resources, or where and in what kind of public services to invest. What would happen when Estonia, a country of 1.3 million citizens, attracts 13 million e-Residents? What does e-Estonia need to do to prepare for it? How can data-driven insights, drawn using sophisticated Artificial Intelligence (AI) and Machine Learning technologies, help policy makers and technologists in Israel make better informed investment decisions to improve the quality-of-life outcomes of its citizens?

Countries, corporations, and communities around the world are entering an unprecedented era of change. Over the course of the coming decades, the decisions and investments governments make will have significant near-term and long-term ramifications on the economic competitiveness and well-being of societies.

Understanding the emerging opportunities and challenges of this era requires interdisciplinary and multilateral approaches. Microsoft Digital is delighted to collaborate with The Fletcher School at Tufts University and the Chair of the Digital 5 network, Colin MacDonald, Government Chief Digital Officer of New Zealand, and his team to help shed light on an all-too-important question: How can technology help achieve better societal outcomes? This smart societies benchmarking exercise is a snapshot of the societal outcomes of the most digitally advanced nations, intended as a yardstick for other countries to measure themselves against the best and as a tool for policymakers to identify gaps and priority areas and create a plan of action to close the gaps and unlock public value.

This piece of rigorous academic craftsmanship uses the tools of our modern age to help leaders understand how to navigate the unknowns of tomorrow. It ties together 242 indicators drawn from over 40 sources. It is the beginning of our ongoing collaborative journey with The Fletcher School that will help nations around the world prepare themselves for the opportunities and the challenges that lie ahead.

At Microsoft, our mission is to empower every person and every organization on the planet to achieve their fullest potential. This work is a great example of that mission—and we are very pleased to do our part in it.



**Anand Eswaran**

Corporate Vice President  
Microsoft Digital, Services, and Success

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# EXECUTIVE SUMMARY

The twin forces of globalization and digitalization have been the cause for much anticipation and anxiety lately; they have been the source of electoral outcomes, policy debates, and news headlines. On the one hand, emergent technologies bring with them the promise of greater productivity, efficiency, prosperity, and well-being—case in point: the market for smart technologies is predicted to be worth up to \$1.6 trillion by 2020, and \$3.5 trillion by 2026.<sup>1</sup> On the other hand, as countries, corporations, and communities are realizing that traditional sources of advantage can be upended, the need to adapt to and seek new sources of advantage in the global digital economy have become paramount.

Governments, in addition to being responsible for securing national competitive advantage, have much to gain from embracing digitalization. Digital technologies can deliver services and benefits at scale and, therefore, when combined with other policy levers, have the potential to improve broad societal outcomes, such as the well-being of people, robustness of the economy, and effectiveness of institutions. In parallel, some of the most dynamic digital societies have governments playing a key role. As our ongoing Digital Planet research indicates, some of the most digitally advanced countries are also ones where the governments play an essential role in promoting the use of technology widely across society.<sup>2</sup>

Policymakers keen on fostering digitally advanced and competitive societies would, therefore, do well to go beyond reactive approaches—of adapting themselves and their societies to technological changes—to a proactive stance of envisioning the desired societal outcomes and investing in appropriate digital technologies to realize said outcomes. Achieving such outcomes, through proactive policymaking, with technology as one of the essential policy levers, is what makes a society “smart.”

We offer this as a working definition for a smart society:

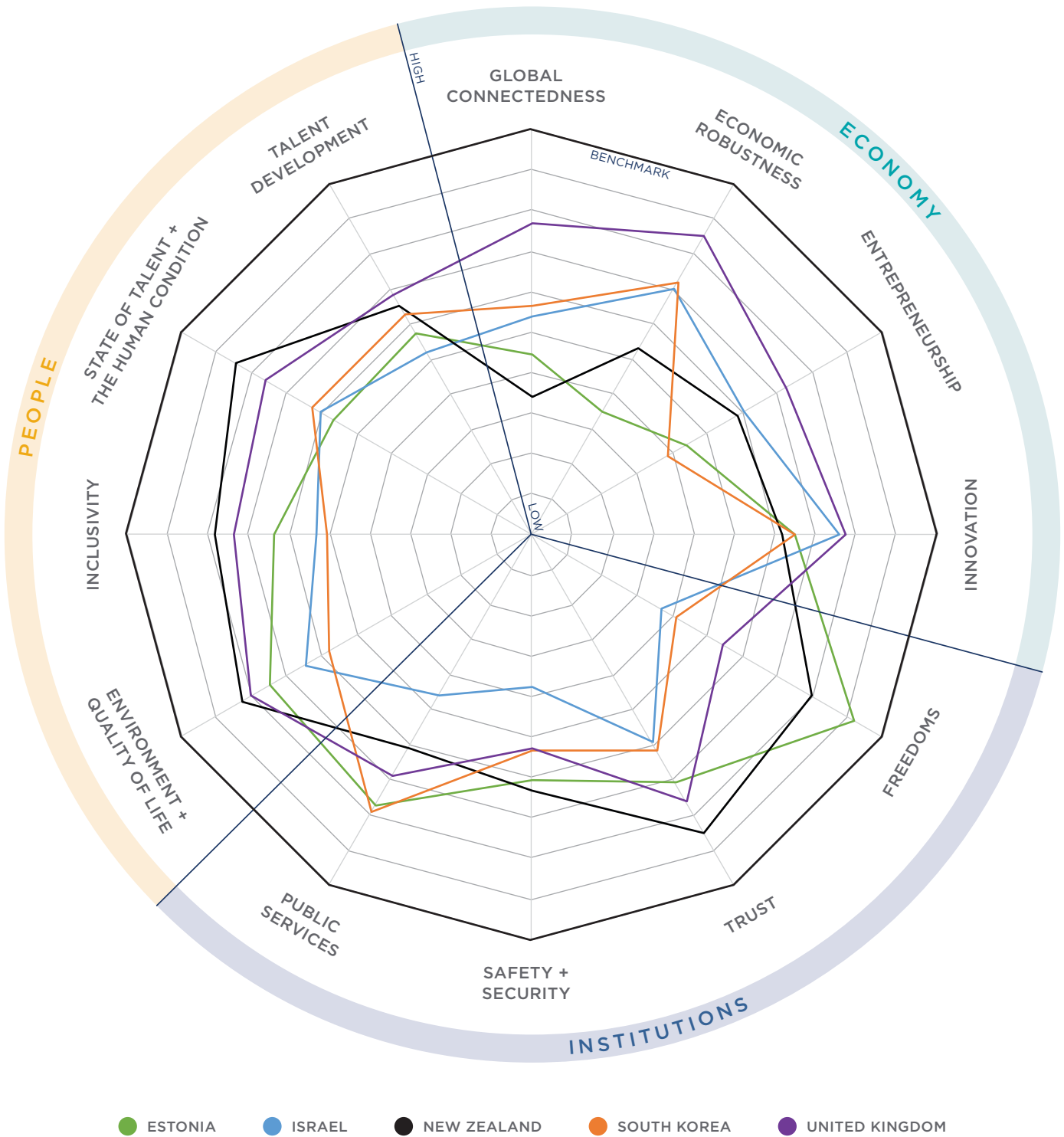
*A smart society is one in which digital technology, thoughtfully deployed by governments, can improve on three broad outcomes: the well-being of people, the strength of the economy, and the effectiveness of institutions.*

In this report, we offer a comprehensive framework that covers the essential societal outcomes and a set of benchmarks to measure the progress of any country on the journey towards a “smart society.” For countries aspiring to accelerate that journey, this report offers a dashboard that helps a country’s policymakers locate where the country currently is relative to the benchmarks and what its areas of strength and advantage are. Additionally the dashboard identifies the gaps to be closed, thereby facilitating policy priorities and an action plan.

With an aim to create such a benchmark and put some leading countries to the test, we at The Fletcher School at Tufts University, in partnership with Microsoft Digital, turned to the Digital 5 (D5), a network of nations—comprising Estonia, Israel, New Zealand, South Korea, and the UK—committed to co-creating the “best digital government activity in the world.”<sup>3</sup>

We combined the best outcome attributes of the D5 to create a handy global proxy—a benchmark—for smart societies. Next, we compared each of these countries against this composite benchmark to decipher patterns and essential differences.

**FIGURE 1: HOW FIVE COUNTRIES RANK AGAINST SMART SOCIETY BENCHMARKS**



Our hope is that this analysis serves several purposes:

- First, it sets a standard for policymakers based on specific outcome measures that are demonstrated to be feasible by at least one of the D5 nations.
- Second, with the benchmark designed as a composite of the best outcome attributes, no single nation achieves it and yet each of the five countries' progress toward the ideal can be assessed in terms of performance against the benchmark. If any country intends to close a certain gap, it can turn to the others to learn about best practices and import knowledge that could help it get to the benchmark.
- Third, the resulting framework and benchmarking process provides a dashboard for other countries to measure themselves against a composite of the most digitally advanced nations in the world, identify where digital technology can play a role in closing high-priority gaps, and develop a plan for action.

The outcomes of this exercise are shown in the exhibit below and in the rest of the report. Higher scores along each of the 12 components are represented by the distance from the center. The line connecting each country's component scores across all 12 components is its "Smart Society Footprint."

## KEY TAKEAWAYS

- How "smart" a society is should be measured in terms of the outcomes that policymakers and other key decision-makers are aiming for, the progress they have made, and the gaps they need to close; technology is simply a means to those ends.
- There are multiple archetypal journeys towards "smartness." Each country's chosen archetype reflects a combination of the country's context and priorities. In a world with limited resources, the ability to prioritize and identify areas of focus and particular forms of "smartness" that fit with each country's circumstances can prove to be essential.
- As the footprints of the world's most digitally advanced governments indicate, even the best positioned nations have gaps to close. The gaps, and the technologies to close them, vary. The individual footprints of the D5 countries also offer models for other countries' policymakers to consider for their own purposes and priorities. This process also sets the basis for identifying the role of technology in closing the prioritized development gaps and enabling progress towards a smart society.
- A dashboard can be created for any country in the world, identifying its progress relative to the benchmark offered by the composite of the D5, the areas of greatest strength and the areas of greatest need for development.
- While the analysis for this particular study is at a country level, our evaluation framework of "smart outcomes" is versatile and applicable for decision-makers in a variety of societal contexts and administrative units—supranational, national, subnational, states, counties, cities, etc.

# CONTEXT

In our *Digital Planet 2017* report, entitled “How Competitiveness and Trust in Digital Economies Vary Across the World,” we noted the rising impact of digitalization on the global economy and how cross-border flows of data, technology, and ideas today account for an increasing share of global growth. As countries and corporations discover that their traditional sources of advantage can be upended because of a combination of new technologies, innovation, and globalization, the notion of “digital competitiveness,” the need to adapt, and the search for new sources of competitive advantage have become imperatives.

For countries, the benefits of digitalization go well beyond accruing economic and competitive advantages: digitalization creates opportunities for governments to deliver superior services and meet a wide range of policy objectives as they relate to the well-being of people, ensuring robustness of the economy and effectiveness of institutions. Digital technologies, in combination with other policy levers, have the potential to unlock significant public value. Policymakers keen on fostering digitally enabled and advanced societies would do well to go beyond reactive approaches—of adapting to technological changes and adopting digitalization—to a proactive stance of embracing and investing in digital technologies to achieve desired societal outcomes.

In order to develop a systematic plan for outlining the broad set of policy objectives, setting priorities, and identifying the role that digital technologies might play in getting to the objectives, it is essential to have a comprehensive framework as well as a system with which to set benchmarks so that decision-makers can identify the key gaps to be closed. As our *Digital Planet 2017* report indicates, some of the most competitive countries in terms of the evolution and momentum of their digital economies are also countries in which the governments play an essential role in promoting the use of the technology. In this report, we pick up on this observation and turn to the Digital 5 nations—Estonia, Israel, New Zealand, South Korea, and the UK—representing five of the most digitally advanced governments in the world, to set the benchmarks. These are governments that are establishing the necessary environments that leverage digital technologies in combination with other levers to foster advanced societies and unlock public value.

In light of these observations, The Fletcher School created a “smart societies” framework that involves a measurement of the societal outcomes, as observed in their people’s well-being, the effectiveness of institutions, and the robustness of the economy. The framework serves multiple purposes as a diagnostic for the D5 and other countries in their journey to getting “smarter,” that is, using digital technologies in order to achieve their policy goals, set priorities, and identify where such technologies provide the appropriate leverage.

While our unit of analysis for this particular study is at a country level, we have designed a measurement framework of “smart outcomes” that is versatile and applicable to a variety of societal contexts and administrative units—supranational, national, subnational, states, counties, cities, and so on.

**Digitalization:** A process where everyday human interactions and transactions—with the government, businesses, and fellow humans—and consumption of goods, services, information, and ideas are primarily conducted through the use of the internet and internet-based technologies and services, as defined in *Digital Planet 2017*, [https://sites.tufts.edu/digitalplanet/files/2017/05/Digital\\_Planet\\_2017\\_FINAL.pdf](https://sites.tufts.edu/digitalplanet/files/2017/05/Digital_Planet_2017_FINAL.pdf).

# WHAT IS A “SMART SOCIETY”?

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# WHAT IS A “SMART SOCIETY?”

The answer depends on whom you ask.

Flights of imagination from science fiction writers, filmmakers, and techno-futurists involve flying cars,<sup>4</sup> teleportation, and the like. Clear-eyed innovators and technologists offer a more plausible vision of a society where “contextually aware machines and technologies capable of making decisions without human intervention”<sup>5</sup> work to boost human productivity, efficiency, prosperity, pleasure, and well-being. Interpretations abound; in common parlance though, the words “smart” and “technology” are joined at the hip.

In practice, however, smart technologies are making inroads in a piecemeal fashion, often in rather banal circumstances. In Chicago,<sup>6</sup> for example, predictive analytics is improving health inspections schedules in restaurants, while in Boston<sup>7</sup> city officials are collaborating with Waze, the traffic navigation app company, combining its data with inputs from street cameras and sensors to improve road conditions across the city. A city-state such as Singapore<sup>8</sup> has a more holistic idea of a “smart nation,” whereby the vision includes initiatives from<sup>9</sup> self-driving vehicles to cashless and contactless payments, robotics and assistive technologies, data-empowered urban environments, and technology-enabled homes.

The promise of and potential for technologies to make societies—be they cities, states, or countries—smart is on the rise. For example, internet-of-things sensor applications are envisioned to deliver a wide range of services,<sup>10</sup> from smart water to industrial controls to e-health. The market for smart technologies is predicted to be worth up to \$1.6 trillion by 2020, and \$3.5 trillion by 2026.<sup>11</sup> The sheer size of the opportunity, increasing interest among governments and policy makers, and the explosion of myriad technologies make it imperative that we understand what smart societies are and what they ought to be and that we establish standards and ideals to aim for.

To explore this issue, we at The Fletcher School at Tufts University, in collaboration with Microsoft Digital, launched an initiative with the following questions as the guiding framework:

1. What are smart societies, and what are their core components?
2. Are there countries that might offer realistic models for such societies?
3. Are there patterns of different approaches to smartness reflecting different contexts, histories, and societal priorities?
4. What are the implications for policy makers, technologists, and bureaucrats, particularly as they consider digital technology—whose applications are growing at an accelerated pace—as a lever for getting to “smartness”?

To answer these questions, we began with a simple premise: Neither “smartness” nor the “technology” to be deployed is the end goal. A “smart society” ought to be defined by a framework that is based on outcomes. Its building blocks are what governments and policy makers aim to provide for their people. The technology is just a way to get there.

In keeping with this premise, we offer this working definition: *a smart society is one in which digital technology, thoughtfully deployed by governments, can improve on three broad outcomes: the well-being of people, the strength of the economy, and the effectiveness of institutions.*

## TOWARDS AN OUTCOMES-BASED APPROACH TO MEASURING SMART SOCIETIES

### Identifying Potential Models

To validate our premise and gain a better understanding of how governments of the most digitally advanced countries are optimizing the use of digital technologies to improve societal outcomes, we turned to the collaborative networking and expertise sharing activity taking place through a dedicated forum, the Digital 5 (D5): an international network of the digital governments of Estonia, Israel, New Zealand, South Korea, and the UK,<sup>12</sup> whose objective, as set out by the D5 charter<sup>13</sup> (See Appendix), is to improve their digital public services and to share best practices and expertise.

The D5 group’s charter and stated intent, is to admit into the network more countries whose governments share the D5’s commitment to digital advancement, transparency, open government,<sup>14</sup> open markets, and open standards in order to collaborate and co-create the “best digital government activity in the world.”<sup>15</sup> The observed societal outcomes of the members of this group of digitally advanced countries are a useful starting point to understanding the underpinnings of smart societies writ large and could potentially offer an insight into the building blocks of and distinct approaches to smartness.

### Devising a Plausible Global Benchmark of Outcomes

Combining the best outcome attributes of the D5, with all their digital similarities and considerable diversity in economic strengths, factor conditions, and institutional and societal aspects, make for a handy global proxy—a benchmark—for smart societies.

Such a benchmark would be both aspirational and, at the same time, realistic. Our hope is that it serves several purposes:

- First, it sets a standard for policymakers based on specific outcome measures that are demonstrated to be feasible by at least one of the D5 nations.
- Second, with the benchmark being designed as a composite of the best outcome attributes, no single nation achieves it and yet each of the five countries’ progress toward the ideal can be assessed in terms of performance against the benchmark. If any country intends to close a certain gap, it can turn to the others to learn about best practices and import knowledge that could help it get to the benchmark.

## WHAT IS A “SMART SOCIETY”?

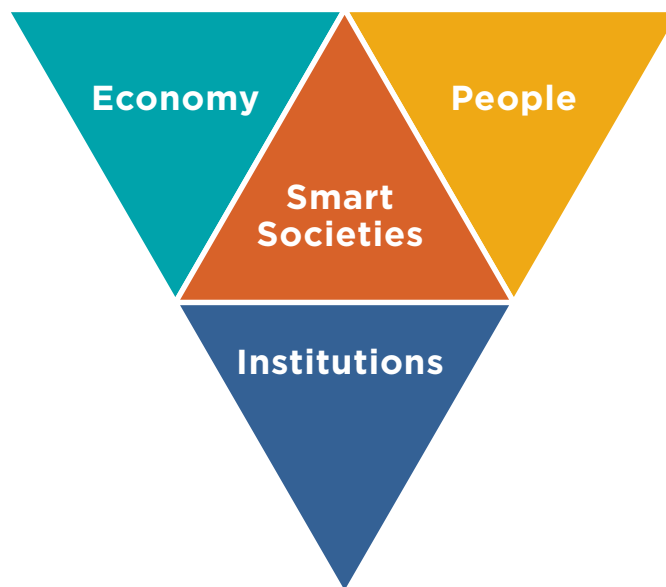
- Third, the benchmark would provide a yardstick for countries worldwide to measure themselves against a composite of the most digitally advanced nations in the world.

The benchmark, therefore, is a tool for policy makers, technologists, bureaucrats, and other decision-makers to evaluate progress and prioritize the gaps. It would thus enable a dialogue among the key actors and create a plan of action to study the potential for digital technologies to close the gaps, unlock public value, and achieve desired societal outcomes.

To demonstrate the practical utility of such a benchmark, we conducted a set of diagnostics on each of the D5 member countries to determine where they stand vis-à-vis the benchmark. The results are documented in the subsequent sections.

## BUILDING THE BENCHMARK

**FIGURE 2: MODEL BUILDING BLOCKS OVERVIEW**



To find relevant, quantifiable measures for the three outcomes, we further classified them into broad components, four for each outcome measure, for a total of 12 components that are interconnected, mutually reinforcing, and of equal importance:

**People and Their Well-Being (“People”):** the four components of this outcome are (see Figure 3 below for a detailed illustration):

- inclusivity
- environment and quality of life
- state of talent and the human condition
- talent development



## WHAT IS A “SMART SOCIETY”?

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**The Robustness of the Economy (“Economy”):** the four components of this outcome are (see Figure 4 below for a detailed illustration):

- global connectedness
- economic robustness
- entrepreneurship
- innovation capacity

**The Effectiveness of Institutions (“Institutions”):** the four components for this outcome are (see Figure 5 below for a detailed illustration):

- freedoms (offline and online)
- trust
- safety and security
- public services

We collected a total of 242 germane data points on the D5 countries, drawn from over 40 sources, including public and proprietary databases (for a complete list, please see “Data Sources”), that speak to the 12 underlying components of the three outcome measures. Please see the methodology section of this report on page 39 for a detailed discussion of the model structure, data selection, weightings, computation, and benchmark construction.

In keeping with our stated approach to designing an aspirational yet realistic target, we created the benchmark by combining the best attributes—that is, the maximum scores achieved by any one of the D5 nations across the 242 indicators—into weighted sub-clusters, clusters, and components as detailed in the methodology section of this report, as if the benchmark were another country. That these are actual scores demonstrated to be feasible by at least one of the D5 nations makes them realistic; our methodology of combining these best attributes to create the composite makes the benchmark aspirational, since no single nation achieves said composite scores, thereby allowing us to assess individual country performance against the benchmark.

Finally, we scored each of the D5 countries along the twelve components and compared the resulting country scores for each component with that of the benchmark to evaluate each country’s progress on said parameter and to derive patterns and differences in priorities.

Collectively, the D5 nations serve two important purposes for our project: they are the proxy for our global benchmark construct that can be used to assess the outcomes of D5 nations and other countries, and they each offer a case study and model for what “smart” can look like.

The outcomes of this exercise are shown in the exhibits below. Higher scores along each of the 12 components are represented by the distance from the center. The line connecting each country’s component scores across all 12 components is its “Smart Society Footprint.”

**FIGURE 3: THE WELL-BEING OF PEOPLE**

Outcome Measure	PEOPLE			
Component	Environment and Quality of Life	Inclusivity	State of Talent and the Human Condition	Talent Development
Cluster	Air, Water, and Sanitation Quality	Labor Market Inclusion	Current Vitals of Society	Training and Education
	Health	Economic Mobility	Retaining Talent	Attracting Talent
	Work Life Balance	Diversity and Acceptance		
	Transportation	Inclusive Policies		

**FIGURE 4: THE ROBUSTNESS OF THE ECONOMY**

Outcome Measure	ECONOMY			
Component	Global Connectedness	Economic Robustness	Entrepreneurship	Innovation
Cluster	Mobility of Data	Economic Productivity	Funding for New Businesses	Innovation Readiness
	Mobility of Goods and Services	Economic Diversification	Ease of Starting New Ventures	Investment in Innovation
	Mobility of Financial Flows	Economic Stability	Vibrancy of Start Up Environment	Innovation Collaboration
				Uptake of New Technology

**FIGURE 5: THE EFFECTIVENESS OF INSTITUTIONS**

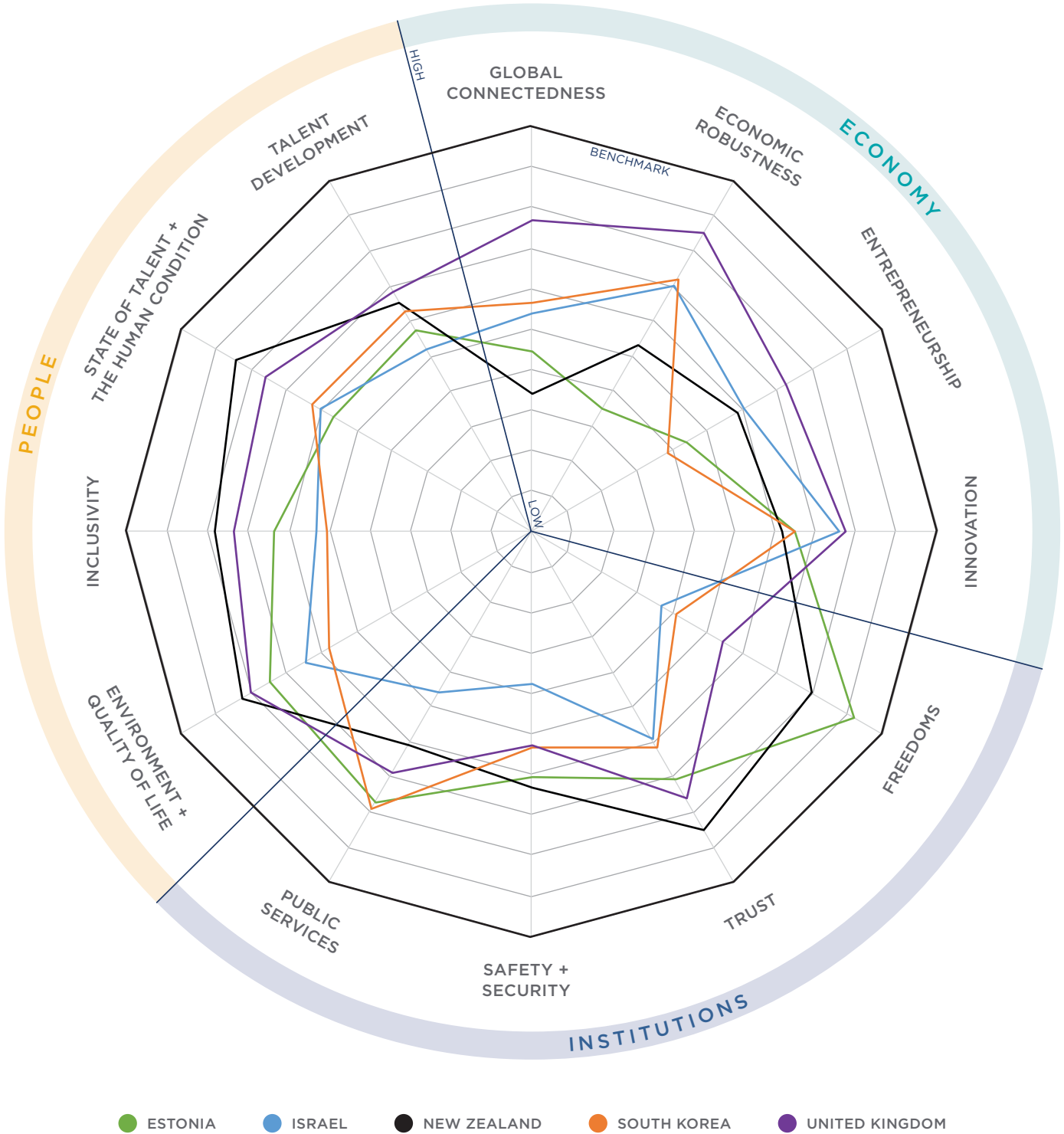
Outcome Measure	INSTITUTIONS			
Component	Freedoms	Trust	Safety and Security	Public Services
Cluster	General Freedoms	Trust in Technology	Physical Safety	Regulatory Regime
	Online Freedoms	Government Accountability	Cyber Security	Government Use of Technology
				e-ID in Public Services

# DIGITAL 5 COUNTRY DASHBOARDS

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An Outside-In Assessment of the  
Smart Society Footprints of the Digital 5

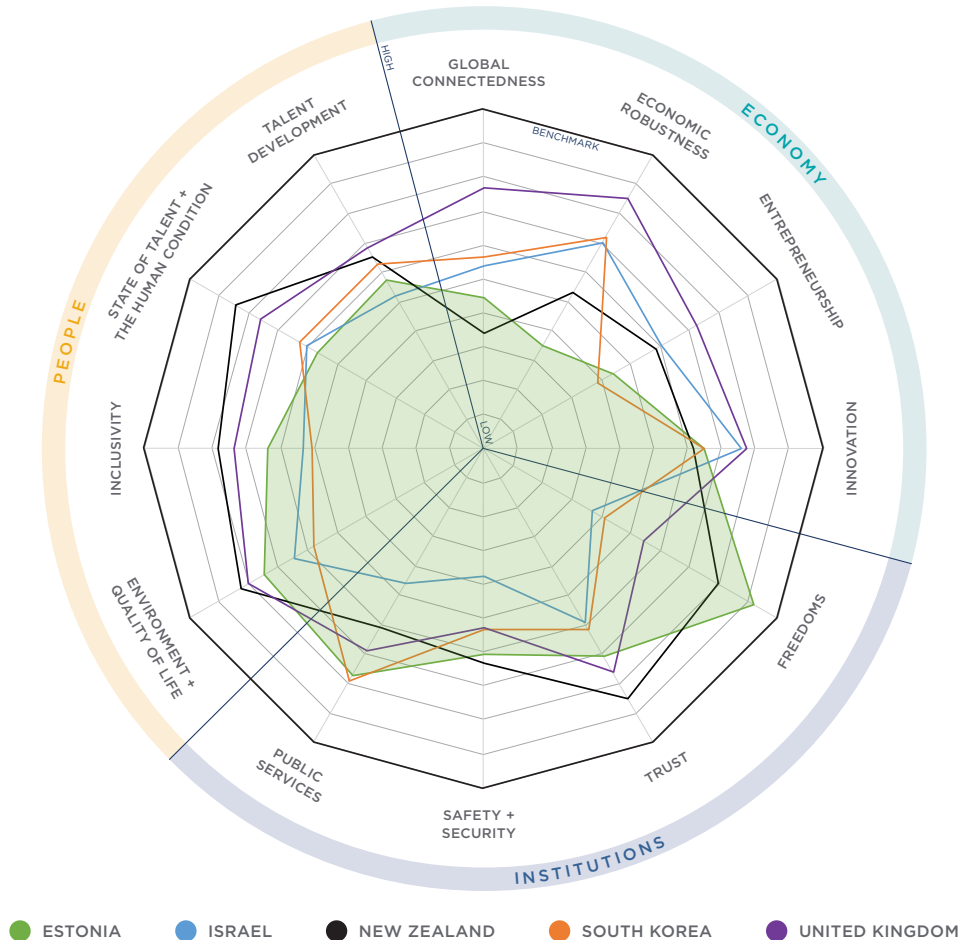
**FIGURE 6: BENCHMARKING SMART SOCIETIES**



# ESTONIA

## SMART SOCIETY FOOTPRINT ANALYSIS

Estonia's Smart Society Footprint vs. The Global Benchmark



## EMBRACING A “DIGITAL FIRST” APPROACH TO LEGISLATION, LIFE, AND CONTINUITY

Estonia has set a gold standard—as two of the authors of this report (Chakravorti and Chaturvedi) observed in a 2015 Foreign Affairs article, “The Way to Estonia”<sup>16</sup>—in making government and democracy run efficiently. From experimenting with and establishing a paperless “e-cabinet” system for lawmakers in 1999<sup>17</sup>—which led to a decision-making process 10 times more efficient than before—to becoming the first country in the world, in 2005,<sup>18</sup> to offer internet voting nationally, leading to every third vote being cast online<sup>19</sup> today, this tiny Baltic nation’s digital first approach has created many firsts.

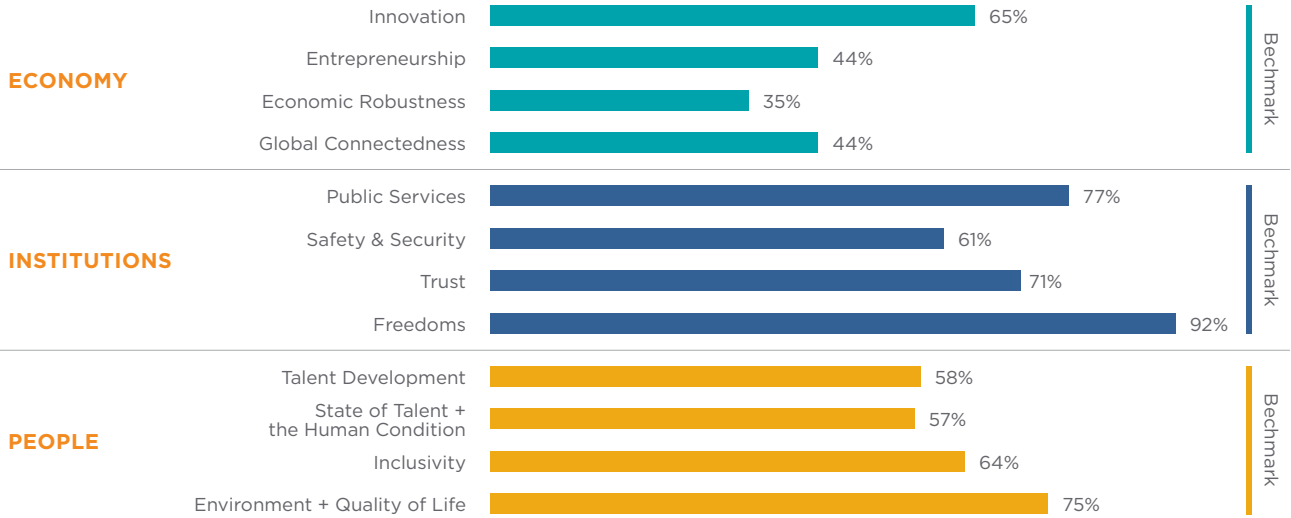
This embrace of digitalization has permeated into every aspect of life in Estonia: into education—the country is among the first to introduce coding into the curriculum for first-graders<sup>20</sup>—and public services. Fully 99% of all of public services—barring marriages, divorces, and real estate transactions, for which

Estonian citizens are expected to show up in person<sup>21</sup>—are available online 24/7, and 95% of all Estonians file taxes online, a process that takes no more than 3 minutes.<sup>22</sup>

For a country where digital technologies are an article of faith,<sup>23</sup> it is little wonder that its lawmakers are a step ahead of the rest of world in thinking about and acting on concerns of digital continuity. Legislators in Estonia paved the way for the world’s first “data embassy,” allowing the country to “reboot” itself from Luxembourg,<sup>24</sup> if needed. Having taken care of continuity, Estonian lawmakers have now turned their attention to dilemmas such as the status of a robot as a legal person and of artificial intelligence in legal disputes.<sup>25</sup>

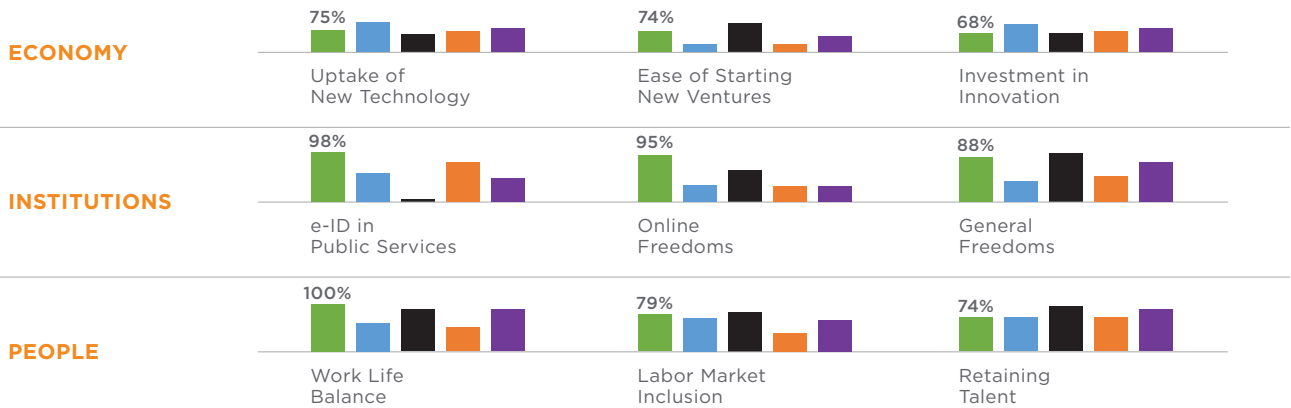
Estonia’s greatest competitive advantage—the country’s “digital first” approach to legislation—is perhaps the hardest to replicate.

## SMART SOCIETY OUTCOMES TRACKER



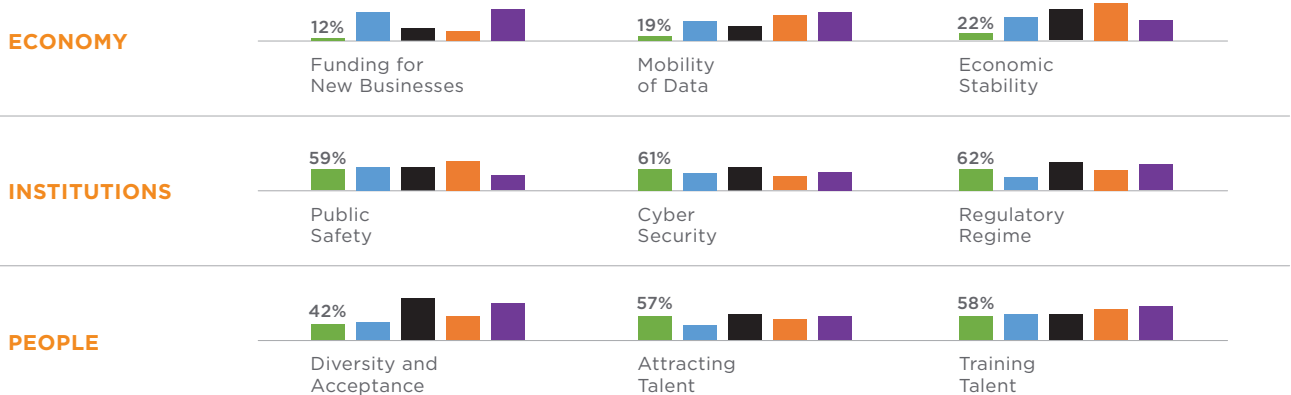
## AREAS OF STRENGTH

Where Estonia's Cluster Scores are Closest to the Benchmark



## AREAS FOR IMPROVEMENT

Where Estonia's Cluster Scores are Furthest from the Benchmark

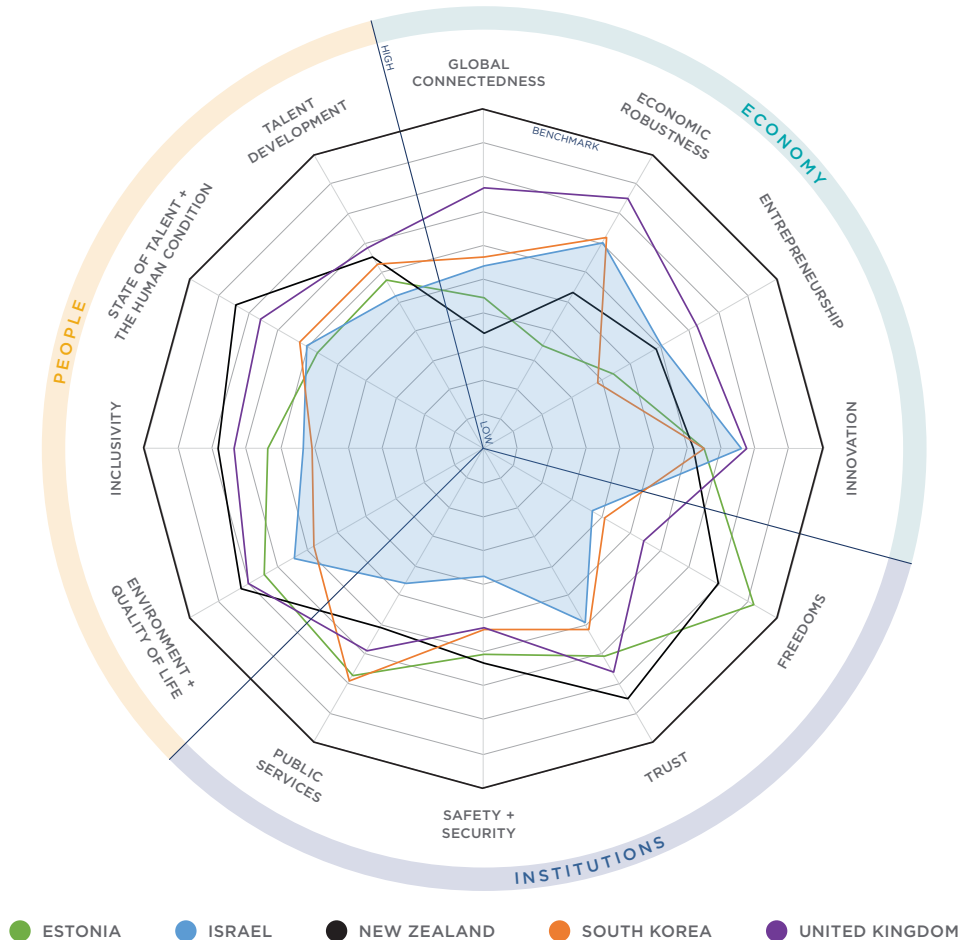


● ESTONIA ● ISRAEL ● NEW ZEALAND ● SOUTH KOREA ● UNITED KINGDOM

# ISRAEL

## SMART SOCIETY FOOTPRINT ANALYSIS

Israel's Smart Society Footprint vs. The Global Benchmark



## CLOSING THE INCLUSION GAP TO PRESERVE THE INNOVATION ADVANTAGE

Israel has a formidable innovation advantage. A country of 8.7 million,<sup>26</sup> it routinely leads global rankings in the number of R&D personnel per capita<sup>27</sup> and the concentration of high-tech start-ups per head.<sup>28</sup> In 2015, high-tech exports as a percentage of total exports stood at over 50%;<sup>29</sup> for a sector that contributes over 9% of GDP, it employs only 12% of the salaried workforce.<sup>30</sup> The industry today faces headwinds owing to a shortage of human capital,<sup>31</sup> which could blunt Israel's edge.

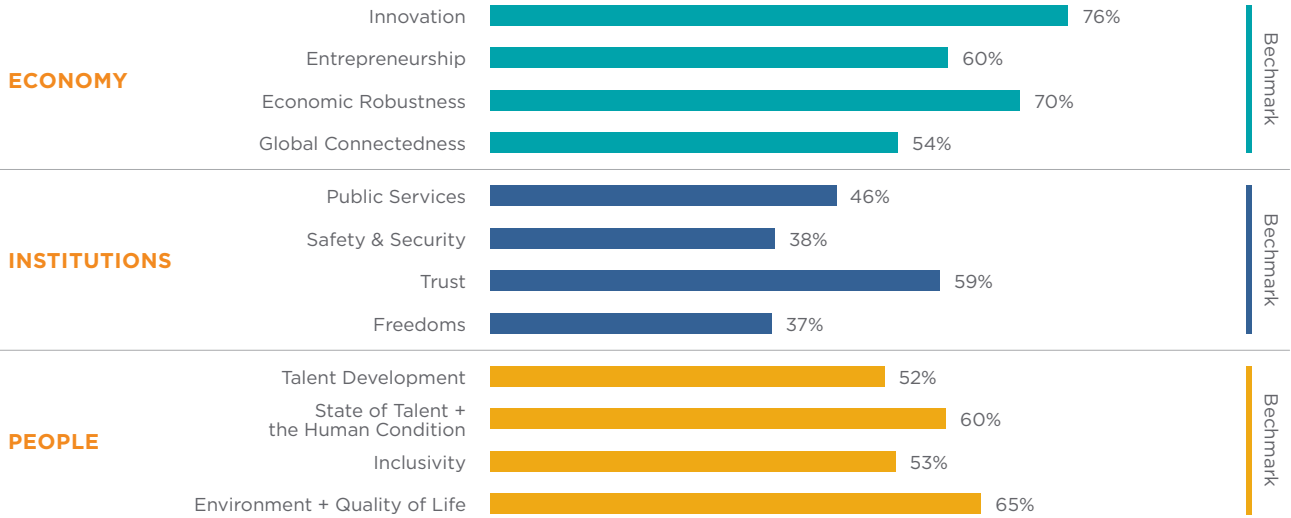
Part of the problem is in the closed nature of the innovation ecosystem<sup>32</sup> which, in the words of Professor Eugene Kande, the former Chairman of the Israeli National Economic Council, is like a "zeppelin floating above the rest of the economy," out of reach of everyday Israelis. A large part of the problem is the low labor force participation, primarily among religious minorities and women.<sup>33</sup>

Recognizing the risk to its competitiveness, the Israeli Ministry of Economy and Industry initiated a set of steps<sup>34</sup>—such as identifying and eliminating barriers to participation<sup>35</sup> and creating accelerators and incubators tailored to attract the underrepresented<sup>36</sup>—to bridge the human capital challenge in the high-tech sector and close the inclusion gap. The Ministry for Social Equality allocated a budget of US\$ 400 million in 2017 for Digital Israel to promote economic inclusion of minorities and women.<sup>37</sup>

A mix of public and private sector initiatives on the ground are showing encouraging early results. There is a surge in female entrepreneurship in Tel Aviv.<sup>38</sup> In Nazareth, there is a steady increase of minorities working in high-tech jobs.<sup>39</sup>

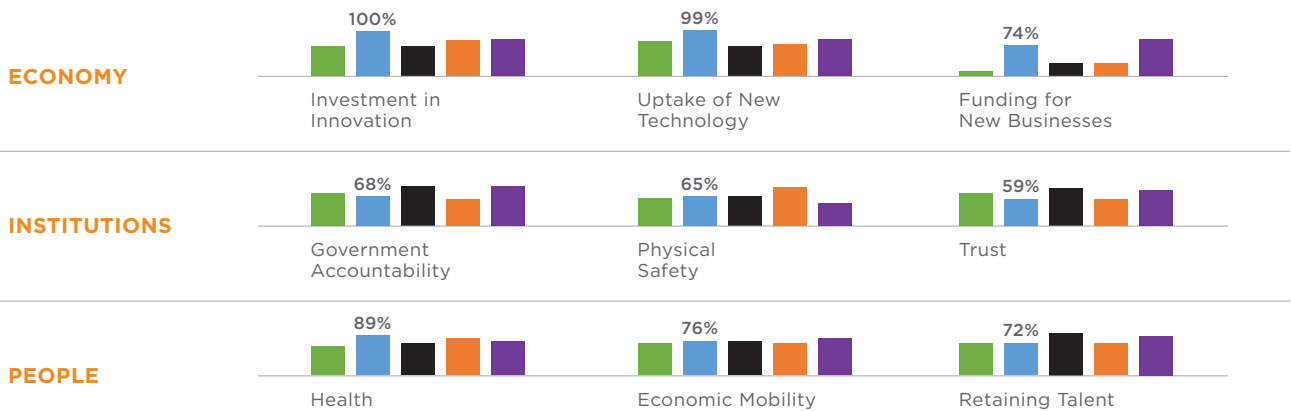


## SMART SOCIETY OUTCOMES TRACKER



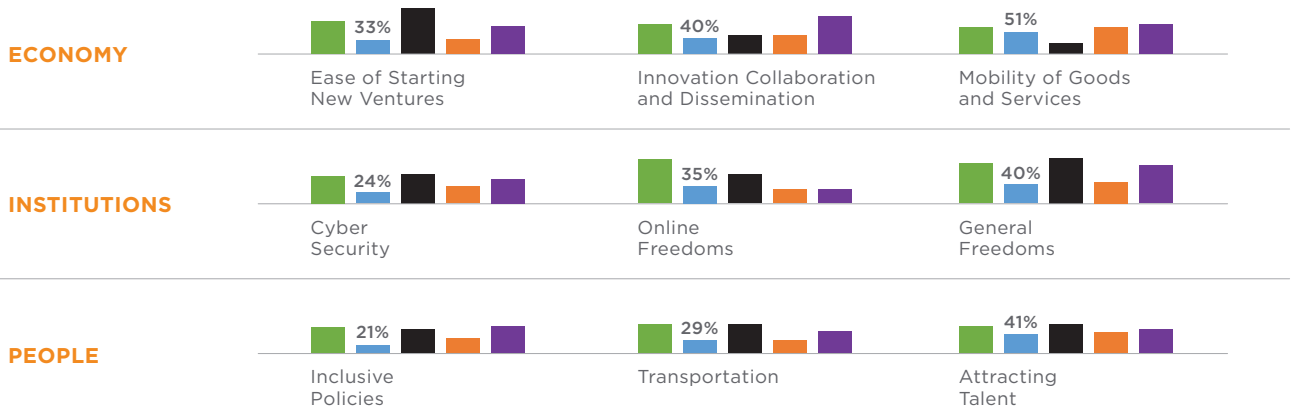
## AREAS OF STRENGTH

Where Israel's Cluster Scores are Closest to the Benchmark



## AREAS FOR IMPROVEMENT

Where Israel's Cluster Scores are Furthest from the Benchmark

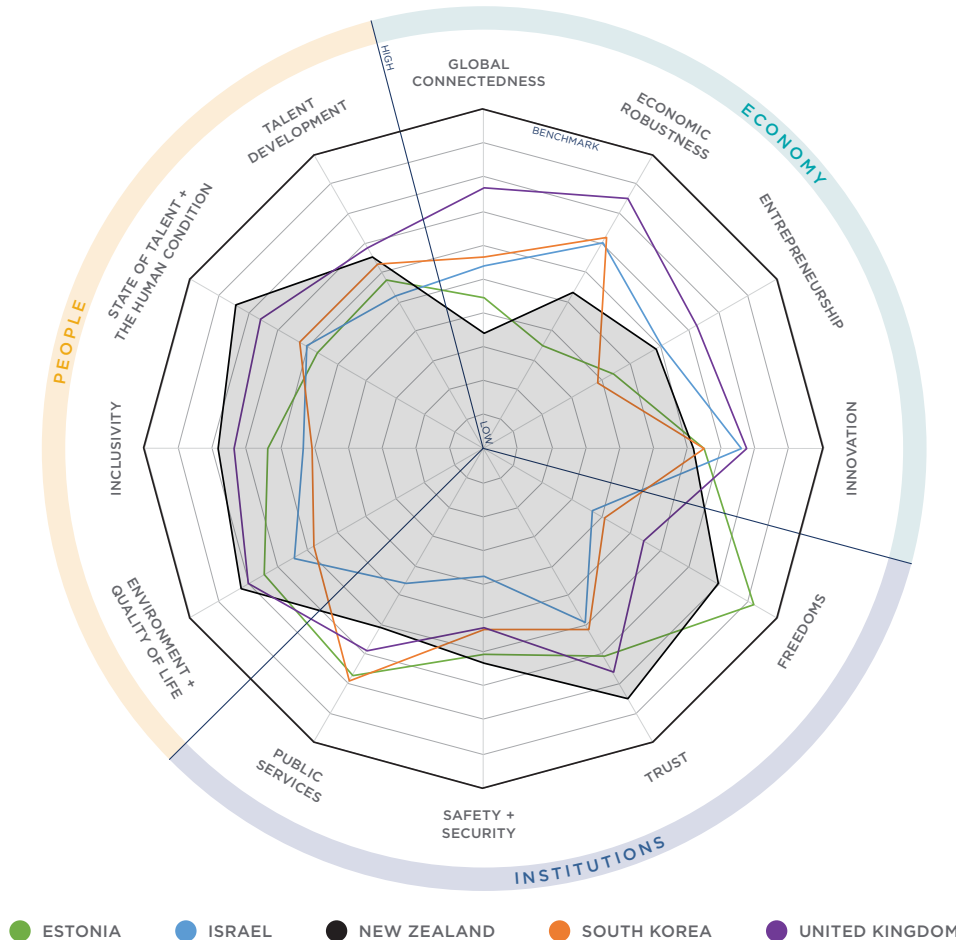


● ESTONIA ● ISRAEL ● NEW ZEALAND ● SOUTH KOREA ● UNITED KINGDOM

# NEW ZEALAND

## SMART SOCIETY FOOTPRINT ANALYSIS

New Zealand's Smart Society Footprint vs. The Global Benchmark



## REIMAGINING PUBLIC SERVICES—CENTRALLY LED, COLLABORATIVELY DELIVERED

What would need to be true to get all agencies from across government to radically reimagine the delivery of public services? From New Zealand's experience, it took three things: a) being a "stand out" digital nation;<sup>40</sup> b) having a population that is generally trusting of their government and digital technologies;<sup>41</sup> and, most important, c) a collaborative ethic among the many arms of government.

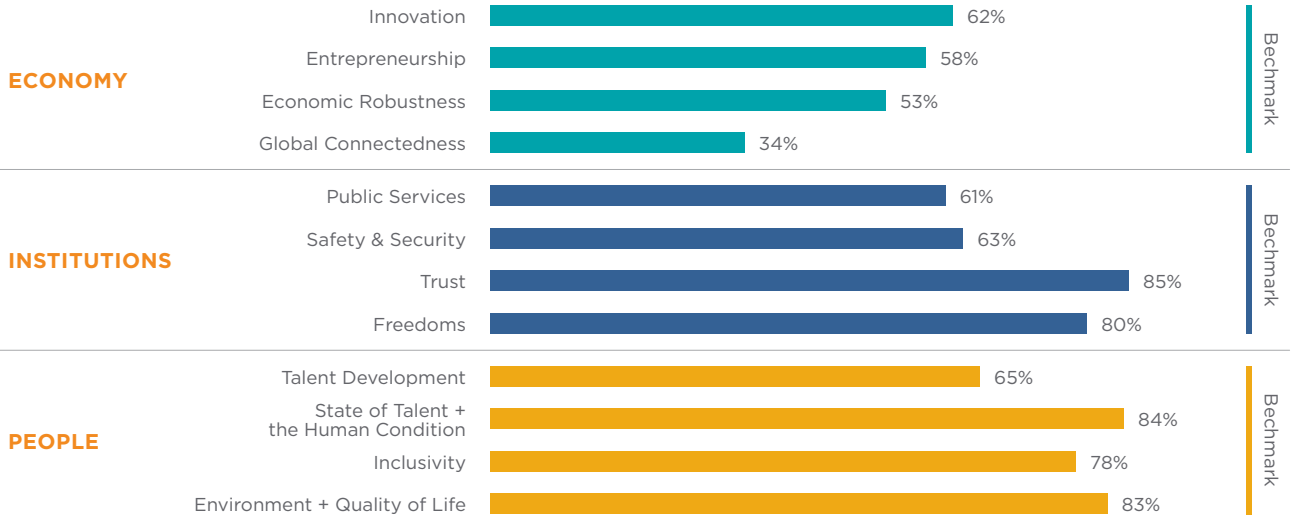
Through a partnership framework<sup>42</sup> based on the core mantra of "centrally led, collaboratively delivered,"<sup>43</sup> the Government Chief Digital Officer (GCDO) and team supported an interagency collaboration involving 21 agencies from across government to lead change in digital services, technology, information, and investment.<sup>44</sup>

Collaborative delivery in action: Based on research driven insights that people prefer public services to be based around their lives and life events (for example, having a baby, getting a job, buying a house, or bereavements)<sup>45</sup> and experience more pain points when dealing

with multiple agencies,<sup>46</sup> and that people find it frustrating to navigate a myriad of agency silos and provide the same information over and over, four major government agencies worked collaboratively to create one of the first integrated services, SmartStart. A global first of its kind, launched in December 2016, SmartStart is a predictive service for new and expectant parents<sup>47</sup> that provides support and information in one place, obviating the need to visit multiple agencies. Despite its early days, the immediate impact has been in savings in time and paperwork for families and the government.

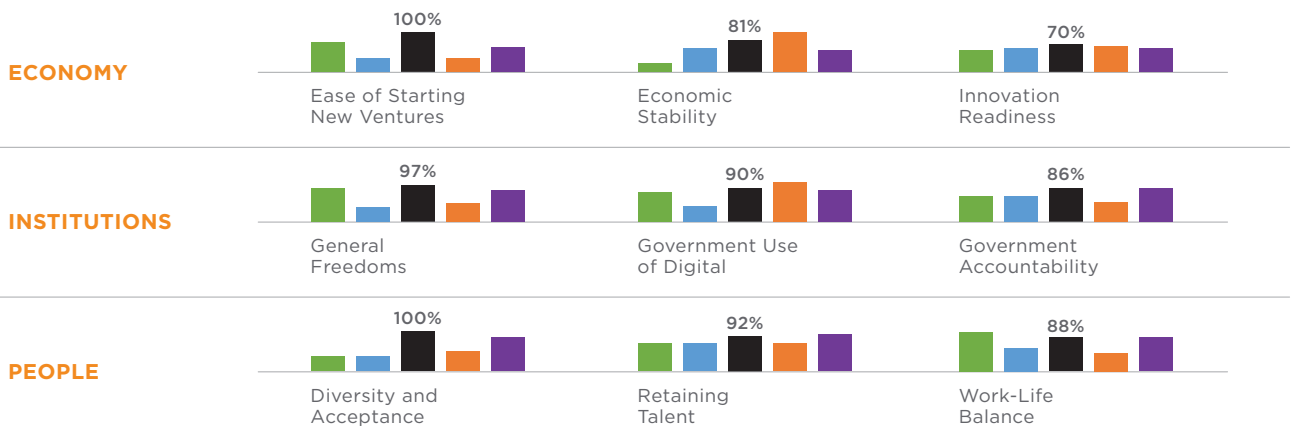
SmartStart, according to government data as of the publication of this report,<sup>48</sup> has attracted more than 150,000 unique visitors to the site in the first year of its operation; at least 56,000 births are expected to be registered over the coming year through SmartStart (93% of all expected births in 2018). As a next step, New Zealand plans to integrate AI into SmartStart for greater personalization of services.<sup>49</sup>

## SMART SOCIETY OUTCOMES TRACKER



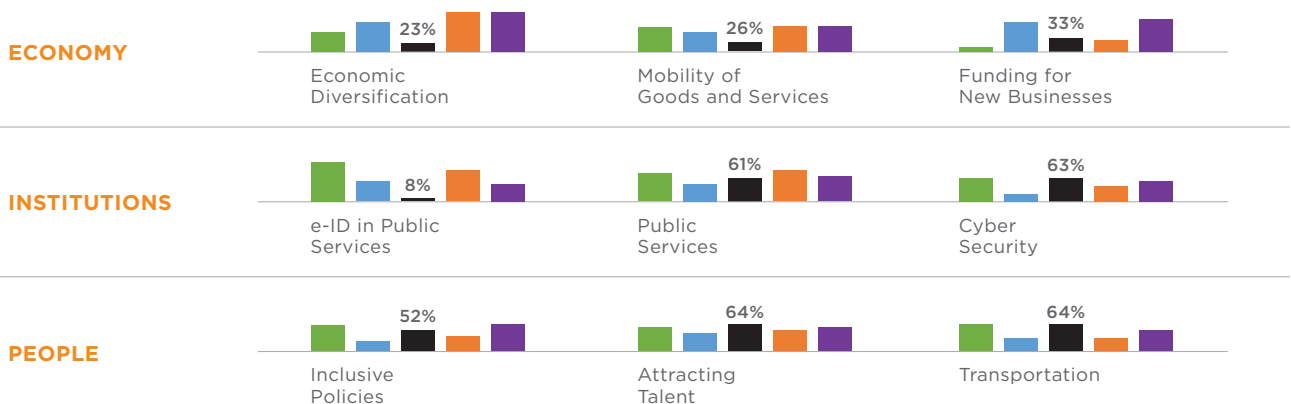
## AREAS OF STRENGTH

Where New Zealand's Cluster Scores are Closest to the Benchmark



## AREAS FOR IMPROVEMENT

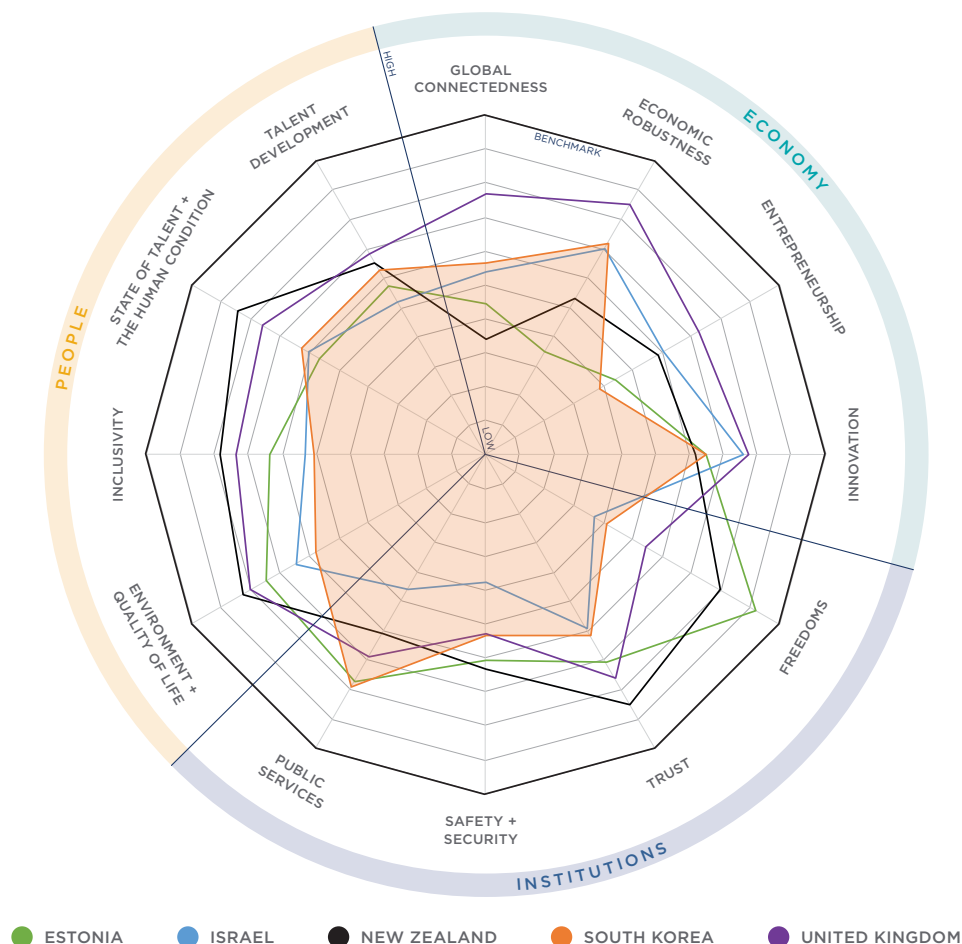
Where New Zealand's Cluster Scores are Furthest from the Benchmark



# SOUTH KOREA

## SMART SOCIETY FOOTPRINT ANALYSIS

South Korea's Smart Society Footprint vs. The Global Benchmark



## BRIDGING TRUST DEFICIT AND NUDGING ENTREPRENEURSHIP

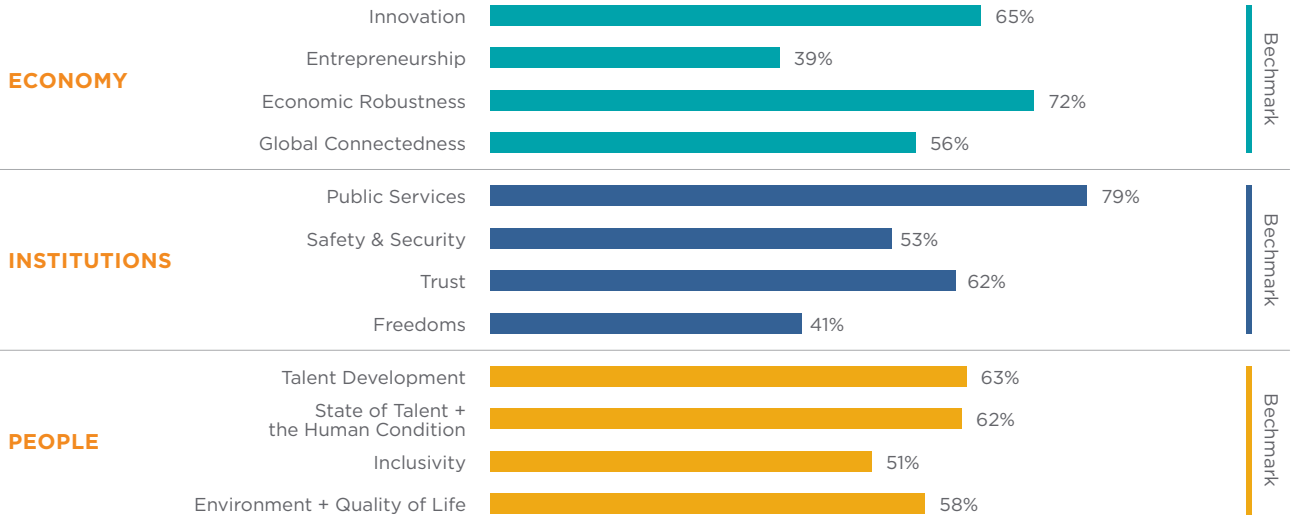
Korea, in our research on the state of digital trust around the world,<sup>50</sup> falls in the “trust deficit” zone—that is, despite the country’s highly evolved and world-leading digital environment and experience, its citizenry, sophisticated in matters of technology, display a high sensitivity and a low degree of tolerance to friction in their everyday digital experiences. Koreans’ trust in institutions, particularly businesses, media, and the government,<sup>51</sup> according to other independent research, has been on a declining trend<sup>52</sup> as well.

In such a context, making the government open and accountable through greater transparency, data disclosure and the use of new technologies to strengthen governance<sup>53</sup> can act as a trust-building measure and engender greater civic engagement; opening government data can also potentially

unlock new sources of economic value for entrepreneurs and innovators. The enactment of Open Data Law in 2013 under the auspices of Government 3.0—an ambitious program to bolster “openness, sharing, communication, and collaboration”<sup>54</sup>—resulted in a massive increase in the number of datasets opened up by government and the public sector.<sup>55</sup>

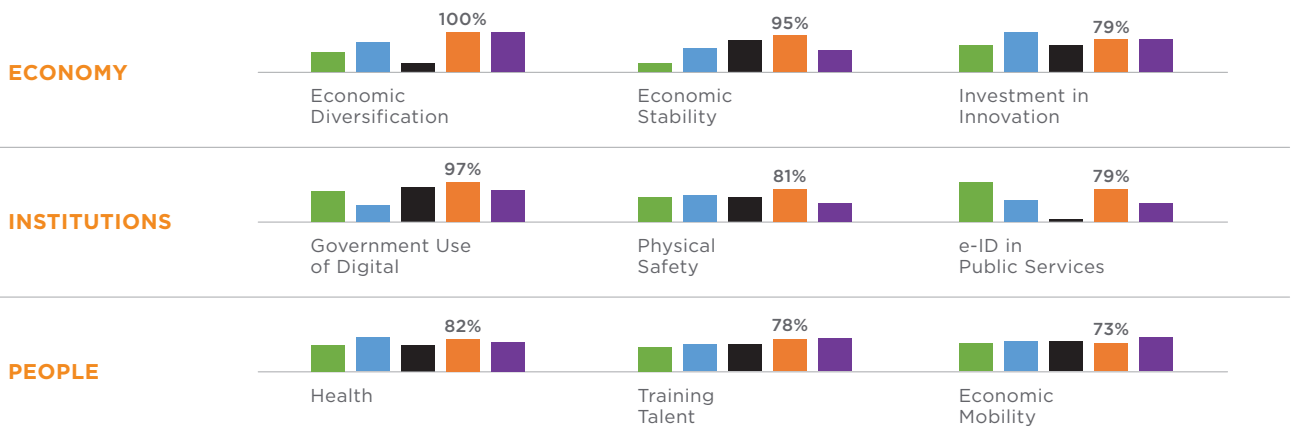
The emergent open data ecosystem has helped spawn over 300 start-ups such as MediLatte, an application for customized hospital information whose open data sources are the national health insurance service and local governments.<sup>56</sup> In 2016, the government facilitated the creation of Open Square D, a hub to incubate start-ups using OGD and collaborate with universities to design courses around using OGD.<sup>57</sup>

## SMART SOCIETY OUTCOMES TRACKER



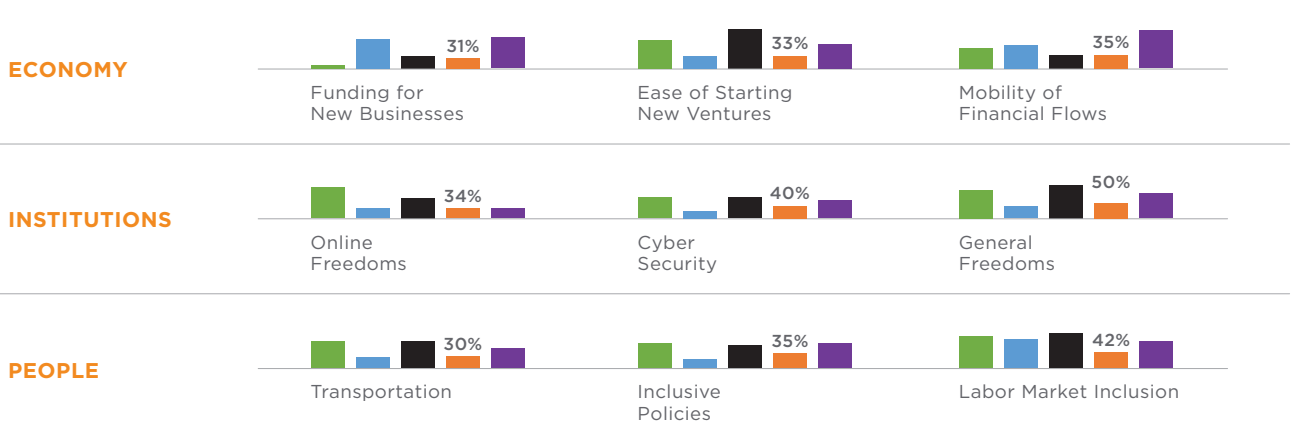
## AREAS OF STRENGTH

Where South Korea's Cluster Scores are Closest to the Benchmark



## AREAS FOR IMPROVEMENT

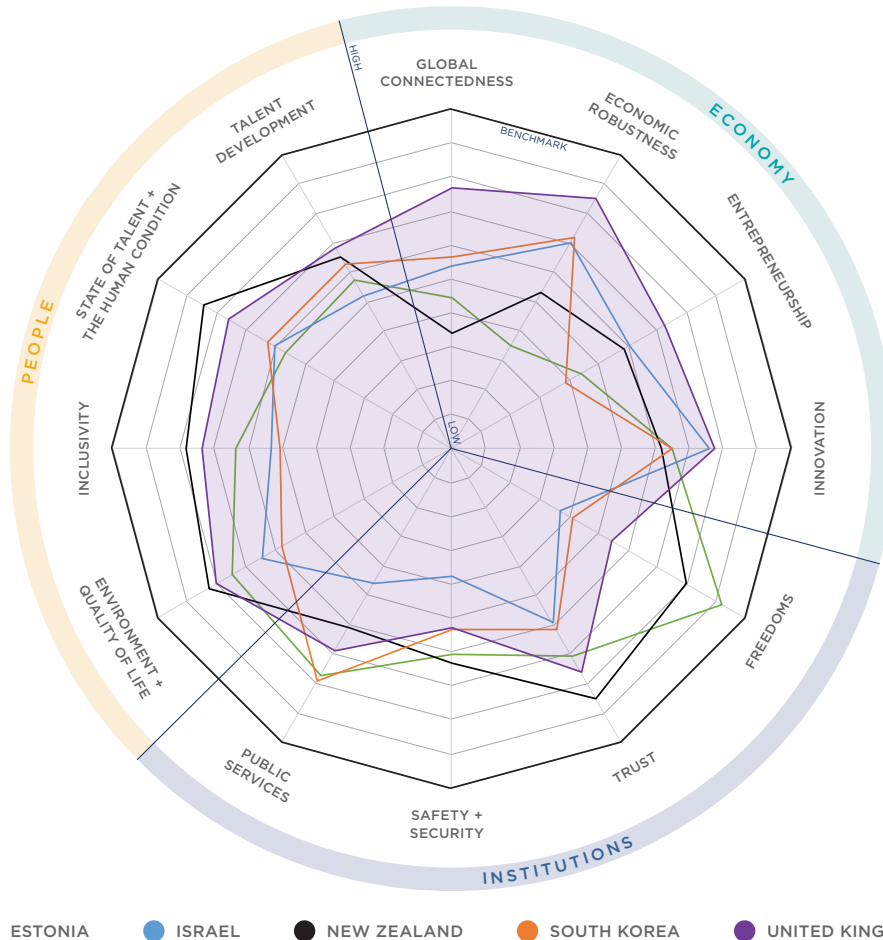
Where South Korea's Cluster Scores are Furthest from the Benchmark



# UNITED KINGDOM

## SMART SOCIETY FOOTPRINT ANALYSIS

United Kingdom's Smart Society Footprint vs. The Global Benchmark



## CATAPULTING RESEARCH AND TECHNOLOGY THROUGH COLLABORATION

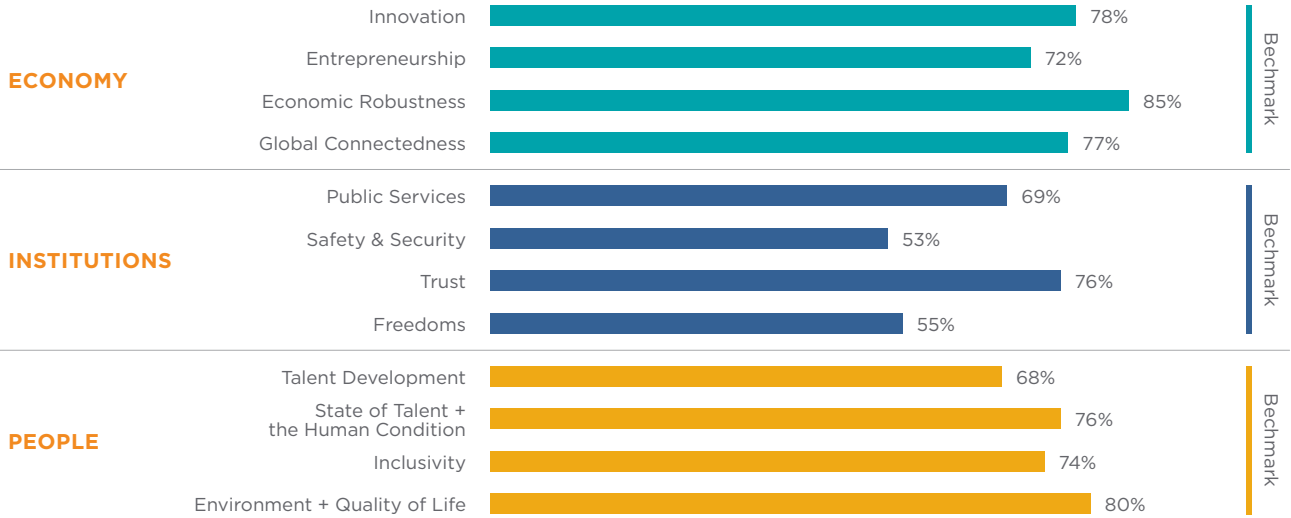
The UK is home to some of the world's top universities<sup>58</sup> specializing in basic research; it is also a global leader in a variety of high-value industry and service sectors. Influential reports in 2010 by leading technologists Hermann Hauser<sup>59</sup> and James Dyson<sup>60</sup> observed that while the country excels in early-stage publicly funded academic research and in late-stage privately funded research by industry that finds its way into the market, the lack of a bridge between the two is hurting the country's innovation and technological readiness, and concluded that this gap between basic research at universities and their subsequent development into commercially viable propositions is a threat to the UK's economic competitiveness.

Following their recommendations to establish "translational infrastructure"<sup>61</sup> in the form of a nationwide network of technology and innovation centres, modeled after Germany's Fraunhofer Institutes,<sup>62</sup> to foster collaboration and deepen

relationships between the UK's research and academic communities, businesses, and entrepreneurs, and deliver a step change in the UK's ability to commercialize its basic research,<sup>63</sup> the government created the Catapult initiative.<sup>64</sup> The Catapult initiative is funded in equal part by state, industry, and contractual work,<sup>65</sup> with the first catapult focused on high-value manufacturing (HVM) in 2011, and 10 more since then spanning areas such as cell and gene therapy, satellite applications, future cities, transport systems, digital, and more.<sup>66</sup> The stated aim is to get to 20 centres by 2020.<sup>67</sup>

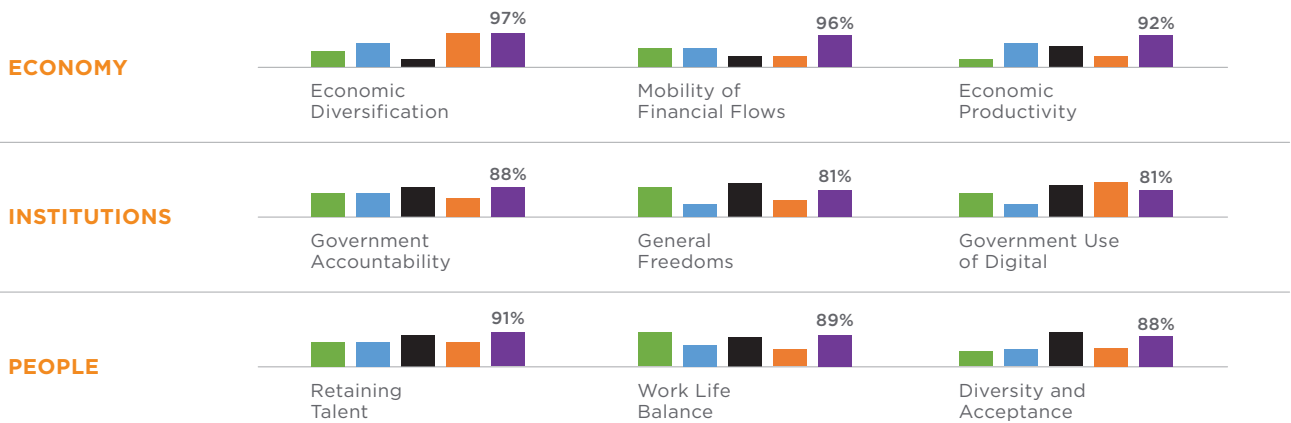
Early results are encouraging. An independent impact evaluation study notes that the HVM Catapult has generated net benefits worth GBP 15 for every GBP 1 of core public funding.<sup>68</sup> To date, Catapult initiatives have delivered 2,473 industry collaborations and 636 academic collaborations and have supported 2,851 SMEs and counting.

## SMART SOCIETY OUTCOMES TRACKER



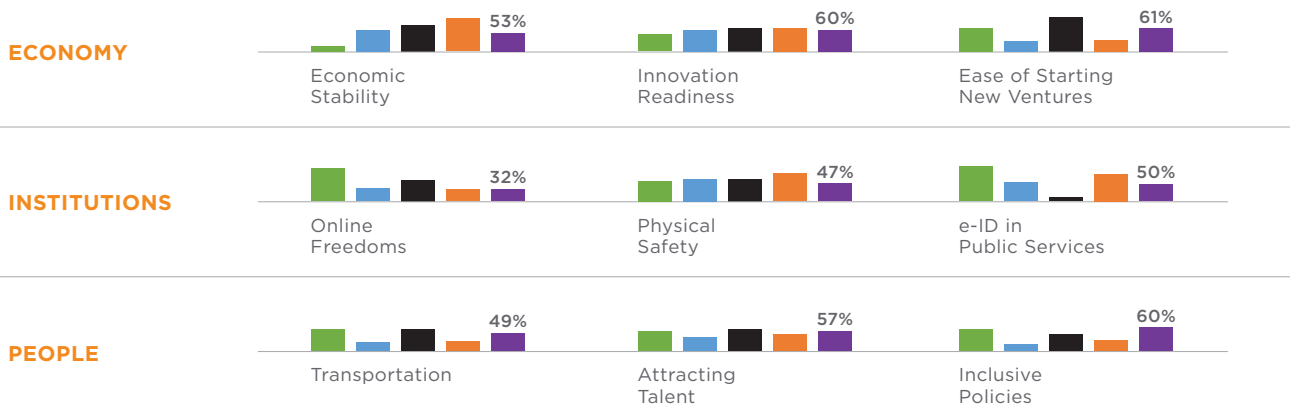
## AREAS OF STRENGTH

Where the United Kingdom's Cluster Scores are Closest to the Benchmark



## AREAS FOR IMPROVEMENT

Where the United Kingdom's Cluster Scores are Furthest from the Benchmark



# EMERGING IMPLICATIONS AND RECOMMENDATIONS

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### EMERGING IMPLICATIONS

There are several implications that flow from this analysis:

- The D5 nations constitute an extraordinary group, with the world's most digitally advanced governments, and collectively help us define a global benchmark for a smart society. The benchmark is aspirational yet feasible.
- The D5 nations share several characteristics, even as they offer role models for different archetypes of smart societies. Each has a democratically elected government that plays an active role in offering services to its people. Each is a highly evolved digital player as detailed in our *Digital Planet 2017* report<sup>69</sup> and yet each also has a unique context.

Consider some of the key differences:

- Estonia is an outlier. It is a small country, formed out of the breakup of the Soviet Union. It used technology to build out its government services and embrace a market economy.
- Despite their historical associations, the UK and New Zealand are at extreme ends of connectivity spectrum. While the UK is often identified as a global hub (a position that is going to be tested during the Brexit process), with strong global economic and political connections, New Zealand is geographically distant from much of the economic and political centers of the world and is used to operating at the periphery of the global economy.
- Both Israel and South Korea escaped the “middle income trap”<sup>70</sup> and transitioned successfully from middle income to high income status—a relatively rare feat. They both are key players in the global economy today, have great geopolitical significance, and are strong US allies. Israel is mostly surrounded by hostile neighbors in a politically tense Middle East. South Korea resides in a different politically tense region, in North Asia, with an active threat of conflict with its nuclear-armed neighbor, North Korea, and the added tensions created by China's growing dominance.<sup>71</sup>

We asked Colin MacDonald, Chair of the D5 and the New Zealand's Government Chief Digital Officer, about the differences between the D5 countries. He said: “Although we all bring a diverse range of perspectives, the D5 allows us to leverage the knowledge and experience of our smartest people, creating faster and more efficient digital governments for our citizens. We do this through collaboration and sharing. We all learn from one another and adopt the solutions that will work in our own countries. Ultimately, this makes us all stronger as digital nations.”

The Smart Societies Footprint analysis reveals that each D5 nation is an archetype of a distinct model of “smartness,” which reflects a combination of the country's context and priorities. In a world with limited resources, the ability to prioritize and identify areas of focus and particular forms of “smartness” that fit with each country's circumstances can prove to be essential. Here are some of the distinct patterns, which offer models for other countries to use.

**Strong Institutions Footprint:** Estonia's footprint reveals its initial priorities on establishing strong institutions, particularly in its commitment to assuring post-Soviet-era freedoms to its people. Its e-solutions have resulted in high levels of government transparency, easy access to data, and

public services.<sup>72</sup> Its priorities on creating an open and decentralized system that links multiple digital applications and services are core to how it accomplished these outcomes. Its key gap areas as revealed by its distance from the benchmark are in establishing greater connectedness and robustness of its economy. Given its heavy investment in a digital infrastructure, the government can leverage this foundation to narrow the gaps.

**Strong Innovation Footprint:** Israel demonstrates strength in innovation, while its greatest opportunities for closing gaps are in the area of strengthening institutions. In addition to the technology-related innovations that are a product of Israel's investment in its national security infrastructure, a major government plan, the Digital Israel initiative, with its emphasis on high-speed internet connectivity, has been a boon for businesses looking to go online.<sup>73</sup> The country can utilize the same technological platforms for improving public services and improving the state of interaction between the government and its people, which our analysis has identified as being among the gaps that need to be narrowed.

**Strong Well-Being Footprint:** New Zealand offers a case study in strengths in the components that ensure well-being of a country's people, including the environment and quality of life, inclusivity, and the state of its talent base. Here, policymakers view digital government as one in which digital technology is a tool for governments to interact with its "customers"—people and businesses—so that they can experience public services in a seamless, integrated, and trusted manner. Given its physical distance from much of the world, New Zealand has some inherent challenges in narrowing the gap in its global connectedness. Its investment in a seamless digital ecosystem to enhance the well-being of its people and the quality of its institutions indicates a focus on areas where it can compensate for its physical distance and attract and retain talent to narrow the gaps in the areas of innovation and entrepreneurship.<sup>74</sup>

**Strong Public Services Footprint:** South Korea has utilized a digital initiative, Government 3.0, to provide personalized public services.<sup>75</sup> One of the key areas where the government needs to narrow the gap is in the robustness of the economy and the quality of its institutions. The Government 3.0 initiative is potentially a powerful lever in advancing such an objective through several means: ensuring greater transparency and providing more data on the workings of public agencies, encouraging more cross-agency collaborations, and helping people find jobs and economic opportunities more readily.

**Strong Economy Footprint:** Historically, the UK has been one of the world's most significant economies. It is the fifth largest in terms of GDP<sup>76</sup> and is one of the most globally connected of all major economies. It has historically been the preeminent hub for global finance because of a combination of history, geography, and strengths in digital technologies. As one of the authors of this report (Chakravorti) has observed earlier in a *Harvard Business Review* article, "Would a Hard Brexit Cripple the EU's Digital Economy?"<sup>77</sup> the UK is a star performer among EU digital economies. These strengths show in the benchmarking analyses above. The conundrum for the UK is that, with Brexit, it runs the risk of diminishing its economic strengths. Already, since the referendum in June 2016, it has been the worst-performing advanced economy in terms of growth; its currency has lost more than 13% of its value<sup>78</sup> against the dollar in the 14 months following the vote because of the uncertainties caused by Brexit. In order to compensate for the turbulence ahead for the economy,

it is essential for the government to use tools at its disposal to shore up other aspects of society. Here the UK's Government Transformation Strategy 2017-2020<sup>79</sup> and "Government as a Platform" approaches help provide first-rate digital services to grow talent, improve workplace conditions, and help transformations through shared platforms and data.

These case studies suggest that before governments can take advantage of the ways in which smart technology can strengthen their economies, make their institutions more effective, and improve people's well-being, we need to bring the idea of a "smart society" down to earth and define it in ways that are practical, actionable, and focused on outcomes. Benchmarking can also help governments better understand their current capabilities.

Of course, it's quite possible that one day all smart societies will be traversed by flying cars and lit by streetlights that communicate with each other and with the flying cars. In the meantime, we can get societies to be a whole lot smarter by making better use of the technology we have at hand. As the footprints of the world's most digitally advanced governments indicate, even the best positioned nations have some gaps to close. And those gaps, and the technologies to close them, vary according to every country's unique context and priorities.

## RECOMMENDATIONS FOR FUTURE DIRECTIONS

**Use the D5 as a Baseline:** The analysis covered in this report is meant to set a foundation for all countries in the world to build upon. In addition to serving as a vivid illustration of what any country's policymakers can expect from the analysis, the D5 nations serve an important purpose: they provide a baseline for any country around the world that has an aspiration for a smart society. The D5 help create a benchmark that all countries can compare themselves against. They also constitute a peer group whose members have several commonalities across their respective objectives; yet each country provides a different archetypal path of progress towards the benchmark. The D5 countries can be meaningfully compared with other members of the network to yield insights into their respective areas of strength and areas for improvement.

**Create a Policy Dashboard and Establish Your Smart Society Footprint:** Even before developing plans for a smart society, a country's policymakers would find it useful to have its own dashboard to facilitate an evidence-based comparison against international benchmarks and peer groups. In combination, such an exercise can help identify the gaps to be closed and the successes to be celebrated. The selection of the peer group should follow a few simple criteria: the group should have some shared aspirations; it should comprise of members that are sufficiently different from each other; it should give each member a chance to observe the experience of others in the group and develop some ideas to apply in their own environments.

Across the world, there are natural peer groups, based on geographic alliances or socio-political affiliations or economic interests, to use for the analysis. For example, an ASEAN country can use other ASEAN countries as its peer group. The EU countries might do the same within the EU. The G7 or the G20 separately would constitute different sets of comparisons as would the BRICs countries. In Sub-Saharan Africa, the various Regional Economic Communities of the African Union could help provide the peer groupings.

**Focus on Tracking Outcomes, Not on Technology Alone:** We close with an essential recommendation. In establishing a process for integrating digital and other technologies into the policy arsenal, it is essential to have an evaluation framework that is focused on outcomes rather than on the deployment of technology or other policy changes. The latter are the means to a set of ends that the government is hoping to accomplish. Far too often, governments publish data on the state of telecommunications, Internet access, digital payments, or financial inclusion in their countries. While it is important to track progress on these fronts, it is even more important to keep score in terms of the outcomes that they have helped accomplish. The smart societies framework and accompanying dashboards for the D5 countries provide a clear illustration of how every government in the world can put in place its own outcome-focused measure of its goals, calibrate progress towards the goals, establish relevant comparison points to set priorities and identify how technology can help the country get to the goals. We hope that this analysis helps us get smarter about smart societies and serves as a step towards an improvement of the human condition anywhere on the planet.

# METHODOLOGY

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## **MODEL STRUCTURE**

We define a smart society as “one where digital technology, thoughtfully deployed by governments, can improve on three broad outcomes: the well-being of people, the strength of the economy, and the effectiveness of institutions.” Our premise is that these outcomes and their underlying components are interconnected, mutually reinforcing, and of equal importance. Our model, therefore, accords equal weights to the three outcomes and the twelve components that shape these societal outcomes.

The Smart Societies benchmark model is comprised of a total of 242 indicators that measure specific aspects of the three above-mentioned outcomes of the Digital 5 nations, drawn from over 40 sources (for a complete list, please see “Data Sources”). It is structured at five levels: indicators, sub-clusters, clusters, components, and outcome measures. Indicators are data points that answer a specific question. Sub-clusters are a statistical grouping of indicators that are normalized, scaled, and weighted to create standardized values for the purposes of analysis and comparison; they combine and capture information from several indicators to illuminate a particular aspect. Combinations of sub-clusters roll up to form clusters that address a specific issue area (Example: the sub-clusters, “policies supporting working families” and “policies supporting integration of marginalized groups” together form the cluster “Inclusive Policies”). These clusters roll up into components—the twelve facets, four for each outcome measure, all weighted equally—which are the building blocks that shape the benchmark.

## **DATA SELECTION, WEIGHTINGS, AND COMPUTATION**

To build this model, we relied entirely on secondary data. Most of the data are drawn from quantitative data sets. Where quantitative data were spotty, we deployed an approach of finding intelligent proxies and deriving intelligence from proxies. Where no data were available, we relied on qualitative data which we coded manually to make them combinable and compatible with other data sets. All data were normalized to enable comparability across countries prior to being statistically treated.

In selecting quantitative data, we chose the most up-to-date and best available data of countries in question. Combining and comparing of indicators drawn, in some instances, from different years may have introduced some bias; however, our use of the most recent year data is the closest representation of current or recent conditions across countries in our study. Further, allowing for minor differences in vintage enabled us to increase the breadth of indicators we could draw from. For data that were volatile across individual years, we calculated and used averages over three-year periods instead.

To translate the qualitative data into numeric scores, we arranged the data into a logical sequence and assigned values. For instance, data ranging from “never” to “sometimes” and “always” were assigned values of 0, 1, and 2, respectively.

### WEIGHTINGS

Indicators are given weights depending on the following factors:

**Data quality:** Indicators that required more estimations, owing to patchy coverage across countries or years or both, were weighted lower than those with fewer estimations.

**The strength of the data collection methods:** Since we use secondary data, we evaluated the data-gathering processes deployed by the sources of said data. We assigned greater weights to indicators that had robust processes of data collection. In the same vein, we assigned greater weights to observational data over survey data.

**Centrality:** The importance of the indicator within its component/cluster/sub-cluster. Foundational measures, on which many other measures are dependent, were given greater weights than those that had fewer multiplicative effects.

In our model, the indicators are weighted first using a robust process to minimize correlations and covariance within sub-clusters, clusters, and components. After making considerations for these effects, the weightings are then determined based on rigorous social science reasoning. Where possible, we tested for interaction effects to ensure that we are capturing the correct measures and in the right ratios. We also subjected our weighting approach to a range of stress tests to minimize conceptual biases.

### COMPUTATION OF SCALED DATA SCORES

Indicators drawn from a variety of sources are transformed to a five-point scale for comparability.

Data scaling is executed by multiplying the data point of a given country by a scale factor. The scale factor is calculated by finding the ratio of the difference between the data point and the minimum value data point in the set and the difference between the maximum and minimum values in said data set. This ratio is then multiplied by a factor of 5. In this way, the maximum determined data point in a set will have an index value of 5, while the minimum value in the data set will have an index value of 0.

The scaling formula we deployed:

$$\text{Scaled Value} = 5 \times \frac{(\text{data minimum value})}{(\text{maximum-minimum})}$$

## CONSTRUCTING THE BENCHMARK

In keeping with our approach to design an aspirational yet realistic target, we created the benchmark by combining the best attributes—that is, the maximum scores achieved by any one of the D5 nations across the 242 indicators—into weighted sub-clusters, clusters, and components as detailed above, as if the benchmark were another country. That these are actual scores demonstrated to be feasible by at least one of the D5 nations makes them realistic; our methodology of combining these best attributes to create the composite makes the benchmark aspirational, since no single nation achieves said composite scores, thereby allowing us to assess individual country performance against the benchmark.

For a given indicator  $i$ , the benchmark's score was:

$$\text{Benchmark}_i = \text{Max}\{\text{EST}_i, \text{GBR}_i, \text{ISR}_i, \text{KOR}_i, \text{NZL}_i\}$$

## LIMITATIONS AND FUTURE ENDEAVORS

This benchmarking model is designed to serve as a diagnostic to highlight areas of strength and weakness and to motivate a conversation with policymakers on prioritizing the gaps that need to be closed in the journey toward smart societies.

While we made every effort to gather the most recent and best available data across the many parameters to measure the current state of the D5 countries, the data and the model are neither indicative of past trajectory nor of future direction. Further, given our reliance entirely on secondary data sources which are, for the most part, lag indicators, there may be shortcomings in our assessment of the current states of the countries analyzed. Built as an outside-in assessment, the model is oblivious to any initiatives and efforts that are currently underway in these countries.

We recognize in all humility that there are many facets to and outcomes of smart societies writ large that we haven't recorded and many more that the world is yet to discover. We invite you to let us know what other aspects we ought to measure and consider as we build on this work.



# APPENDIX

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# D5 CHARTER

1. The Ministry of Government Administration and Home Affairs (MOGAHA) of the Government of the Republic of Korea, the Cabinet Office of Her Majesty's Government, the Ministry of Economic Affairs and Communications of the Republic of Estonia, the Department of Internal Affairs of the Government of New Zealand and The Prime Ministers' Office of the Government of Israel, hereinafter individually referred to as "the Participant" and collectively as "the Participants" have reached the following understanding:
2. The Participants have mutually agreed to found the D5, a group of the most digitally advanced governments in the world. The D5 will provide a focused forum to share best practice, identify how to improve the Participants' digital services, collaborate on common projects and to support and champion our growing digital economies.
3. The Participants have decided to commit to working towards the following principles of digital development, acknowledging that they will not be able to meet all of the criteria on joining:
  - 3.1 **User needs:** the design of public services for the citizen
  - 3.2 **Open standards:** technology requires interoperability and so a clear commitment to a credible royalty free open standards policy is needed
  - 3.3 **Open source:** future Government systems, tradecraft, manuals and standards are created as open source and are shareable between members
  - 3.4 **Open markets:** in government procurement create true competition for companies regardless of size. Encourage and support a start-up culture and promote economic growth through open markets
  - 3.5 **Open government (transparency):** be a member of the Open Government Partnership and use open licences to produce and consume open data
  - 3.6 **Connectivity:** enable an online population through comprehensive and high quality digital infrastructure
  - 3.7 **Teach children to code:** commitment to offer children the opportunity to learn to code and build the next generation of skills
  - 3.8 **Assisted digital:** a commitment to support all its citizens to access digital services
  - 3.9 **Commitment to share and learn:** all members commit to work together to help solve each other's issues wherever they can
4. The Participants acknowledge that Digital Government is evolving, and will update these principles as work together refines them, and in the light of new challenges and opportunities.

5. Each Participant agrees to lead by example and contribute to advancing digital government in other D5 countries by sharing best practices and expertise, on a non-binding, voluntary basis.
6. The Participants' collective goal is to harness the potential global power of digital technology and help each Participant to become an even better digital government faster and more efficiently through sharing and learning from each other.
7. D5 will meet once a year with a rolling host nation who will chair the meeting. All Participants shall be invited to each Conference.
8. Following the establishment of the D5 it has been mutually determined that a joint working group will establish:
  - 8.1 future chair / host nations, and themes for future conferences
  - 8.2 principles and arrangements for expanding the circle of countries involved. The group will be open to include upon consensus of all Participants additional countries that meet the principles as stated above.
  - 8.3 The principles may iterate and evolve as part of this work
9. The Participants will decide on a case by case basis how any joint initiatives will be funded and resourced.
10. Any differences arising from the interpretation or implementation of this Charter will be settled amicably through consultations and negotiations between the Participants without reference to any third party or international tribunal.
11. Each Participant may, as appropriate, designate another institution(s) or institutions to lead and(or) participate in the initiatives.
12. This Charter is not legally binding. It will come into effect on the date of the signature of all Participants and will continue to have effect for a period of five (5) years unless terminated by a Participant giving three (3) months written notice to current Chair.
13. Signed digitally in London, United Kingdom on the 9 December 2014 in English Language

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