Putting the Digital into Towns: How Ready are Rural Towns for Digital Transformation? An Analysis of Five Irish Rural Towns

Theo Lynn

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Presenter Bio

Professor Theo Lynn

Full Professor of Digital Business

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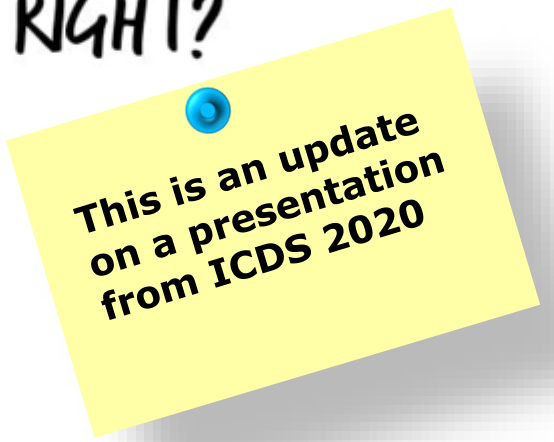
About Theo Lynn

Professor Theo Lynn is (Full) Professor of Digital Business at DCU Business School and is Associate Dean (Strategic Projects) at DCU Business School. Professor Lynn specializes in the role of digital technologies in transforming business processes. His main teaching areas are strategy and digital marketing.

Prof. Lynn was Centre Director at the Irish Institute of Digital Business (2018-2019), Principal Investigator of the Irish Centre for Cloud Computing and Commerce, an EI/IDA funded Cloud Computing Technology Centre (2011-2018), Associate Dean (Industry Engagement and Innovation) at DCU Business School (2015-2017), Business Innovation Platform Director for DCU (2015-2016) and Director of the Leadership, Innovation and Knowledge Research Centre at DCU (2009-2011). He has won over 200 grants representing over €20m in total project funding. He was a PI on the Horizon 2020 CloudLightning Project (2015-2017) and Horizon 2020 RECAP Project (2017-2019); he is currently a PI on the Horizon 2020 RINNO project (2020-2023).

SOUNDS FAMILIAR, RIGHT?



The Digital Town Project includes faculty from a range of business disciplines.

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Dr. Grace Fox
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Prof Edel Conway
Full Professor in HRM and Organisational Psychology
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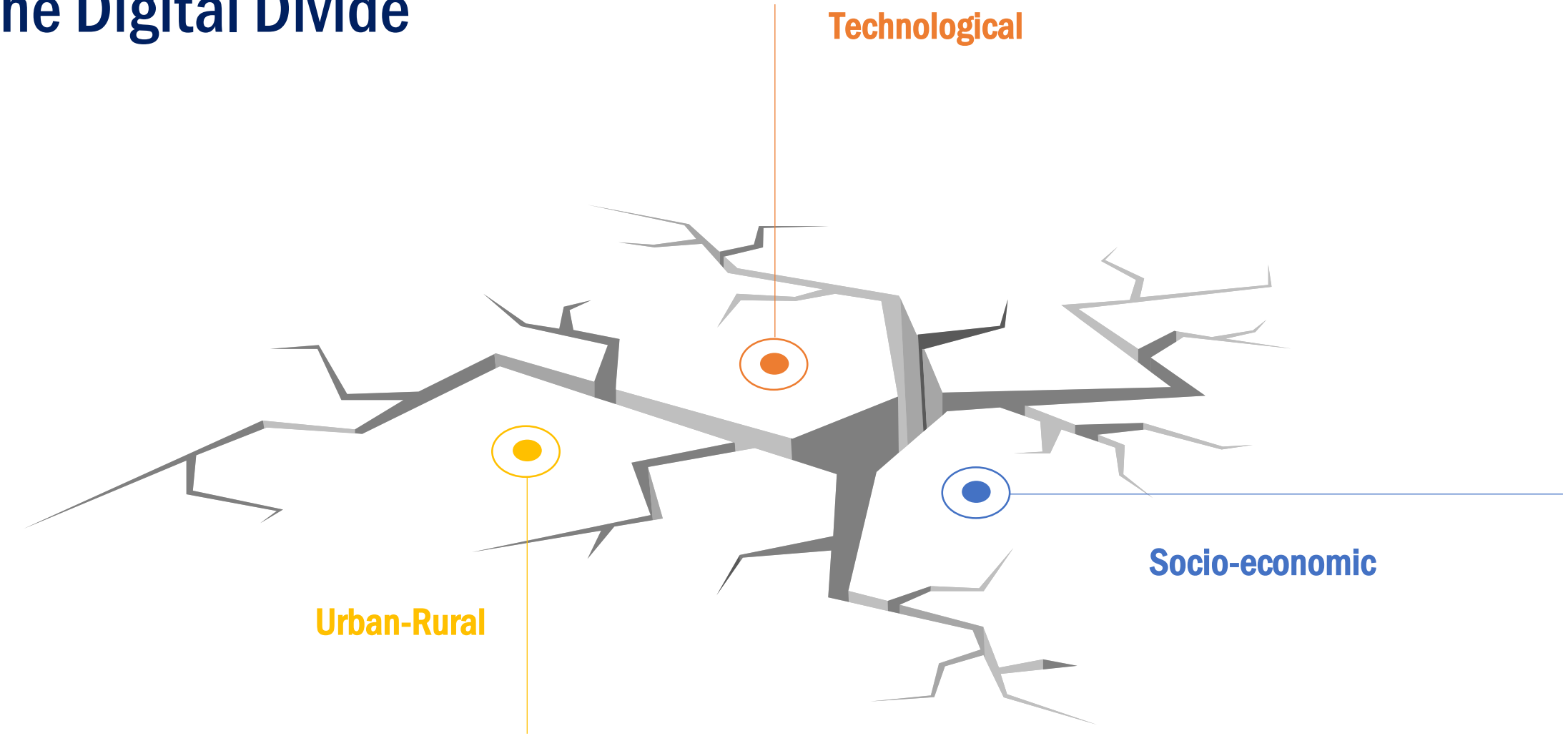
RECAP

The Digital Society is one whose social structures and activities are organised around digital information networks that connect people, processes, things, data and networks (Lynn et al, 2018).

The Digital Divide



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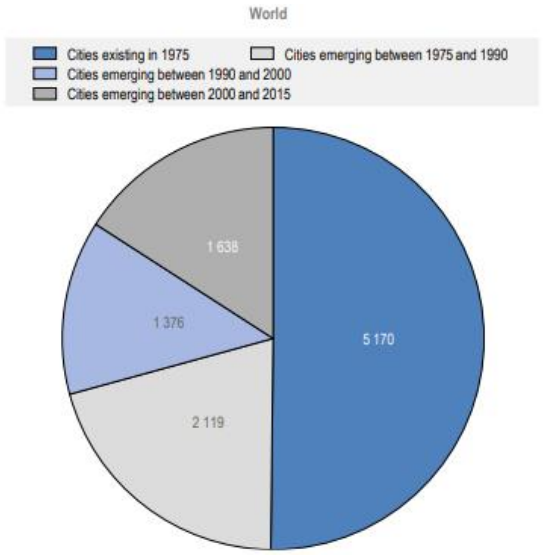
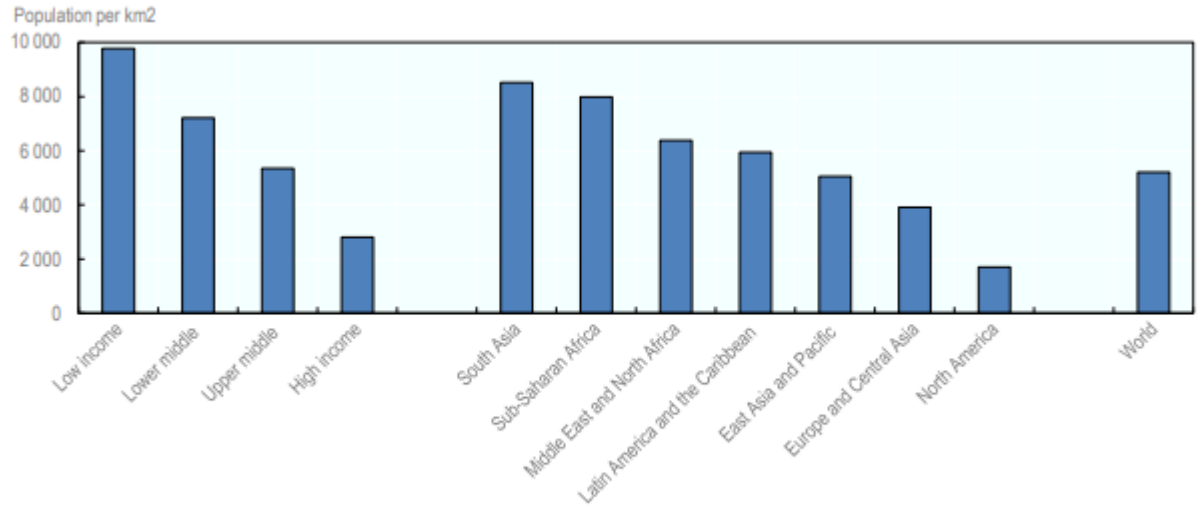
There are more cities and more people living in cities than ever before. By 2050, over 55% of the population worldwide will live in urban areas.



Source: Calculated by EC, based on the Urban Centre Database GHS-UCDB R2019A, Florczyk, A. et al. (2019[11]), *GHSL Data Package 2019 (database)*, http://dx.doi.org/10.2760/06297.



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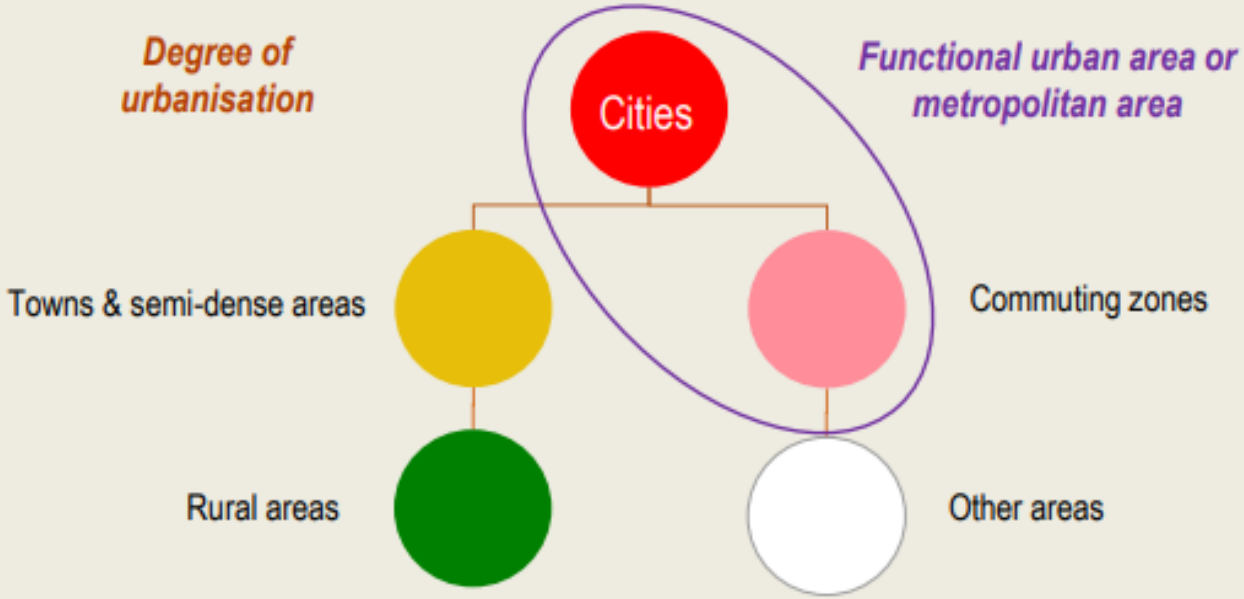
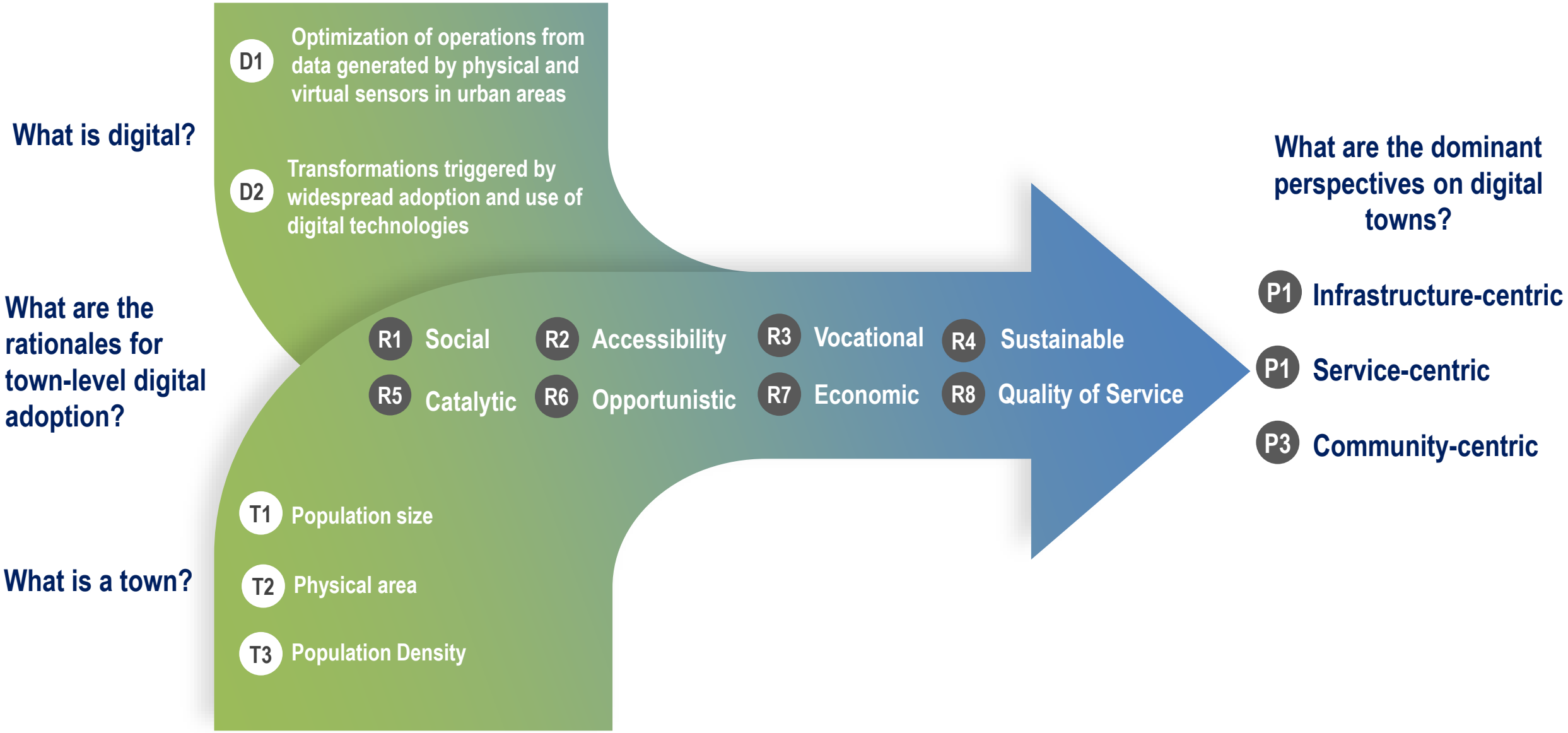
Our definitions and understanding of “urban” and “rural” are changing. This requires a re-examination of digital society policy, strategies, and how we measure progress.



Dijkstra, L., H. Poelman and P. Veneri (2019)

WHAT IS A DIGITAL TOWN?

A review of academic and grey literature, and digital town projects, highlighted a lack of consistent definitions and perspectives



A DIGITAL TOWN IS:

- A GEOGRAPHIC AND INFORMATION SPACE
- THAT ADOPTS AND INTEGRATES INFORMATION & COMMUNICATION TECHNOLOGIES
- IN ALL ASPECTS OF TOWN LIFE

(Hervé-Van Driessche, 2001)

WHERE A TOWN IS DEFINED AS:

- CONTIGUOUS GRID CELLS WITH A DENSITY OF AT LEAST 300 INHABITANTS PER KM^2
- IS AT LEAST 3% BUILT UP, AND
- HAS A TOTAL POPULATION OF AT LEAST 5,000.

(OECD, 2020)

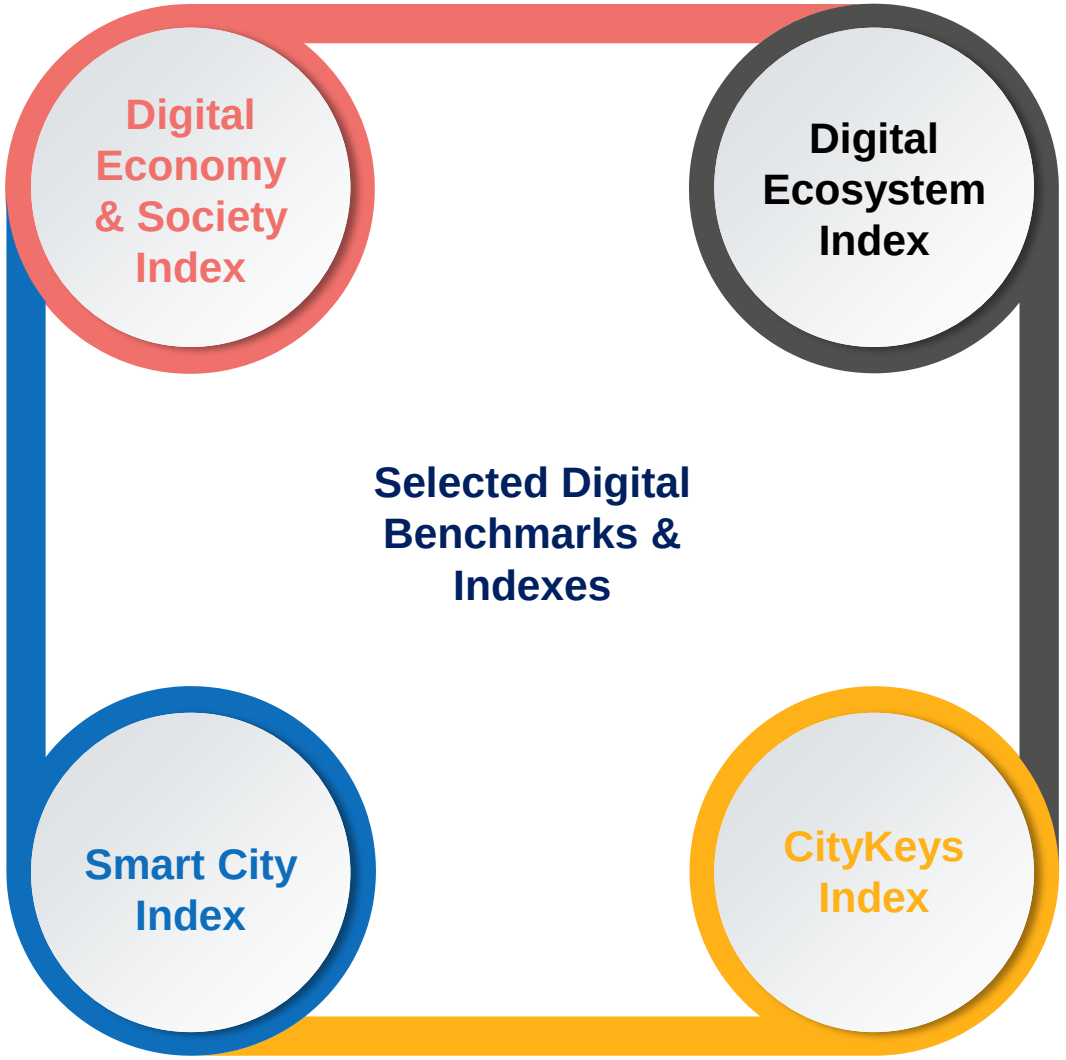
The emergence of frameworks for assessing digital adoption and use emerged in the mid-nineties and tend to focus on countries and cities.

Digital Economy & Society Index (EU, 2019-2020)

Country-level index with 5 dimensions – Connectivity, Human Capital, Citizen Use of Internet and Online Transactions, Business Digitisation and E-commerce, Digital Public Service

Smart City Index (IMD, 2019)

City-level index with two pillars, Structures and Technology. Each pillar is evaluated from 5 perspectives - Health & Safety, Mobility, Activities, Opportunities, and Governance.



Digital Ecosystem Index (Katz & Callorda, 2018)

Country-level index with 64 indicators organised in to eight pillars – Institutional & Regulatory, Connectivity, Infrastructure, Factors of Production, Household Digitization, Competition, Digitization of Production, and Digital Industries.

CityKeys Index (Bosch et al. 2017)

City-level index organized around 5 themes – People, Planet, Prosperity, Governance, and Propagation.

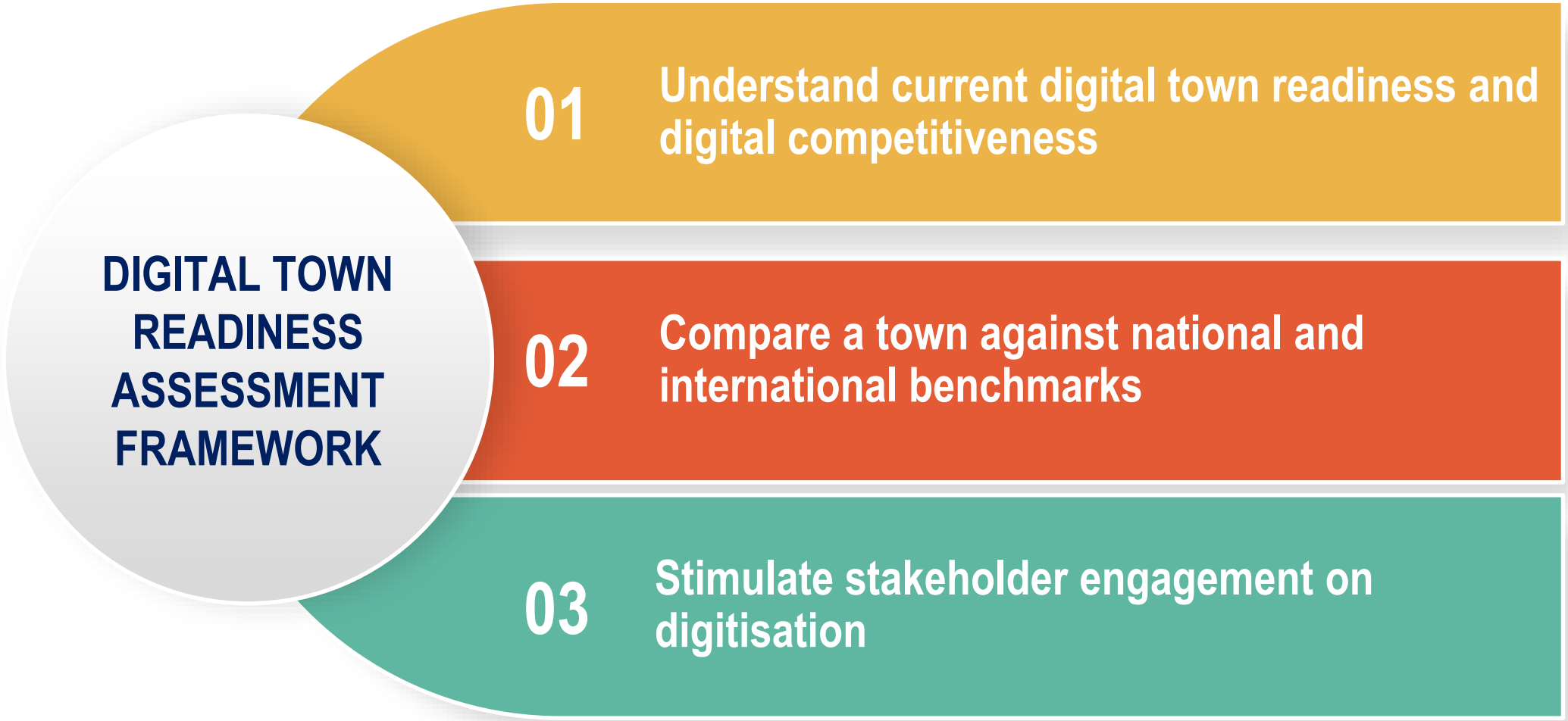
These benchmarks and indexes are not appropriate for towns for at least three reasons:

1. Many of the indicators are not within the control of local communities or municipal authorities at a town-level.

2. The discussion of smart cities and related technologies, including the limited smart town literature, is often conflated or combined with environmental sustainability and associated outcomes.

3. Data may not easily be available or required at regional or national levels and therefore are not collected or easily accessible for town stakeholders.

A framework to support stakeholders in towns outside of functional urban areas



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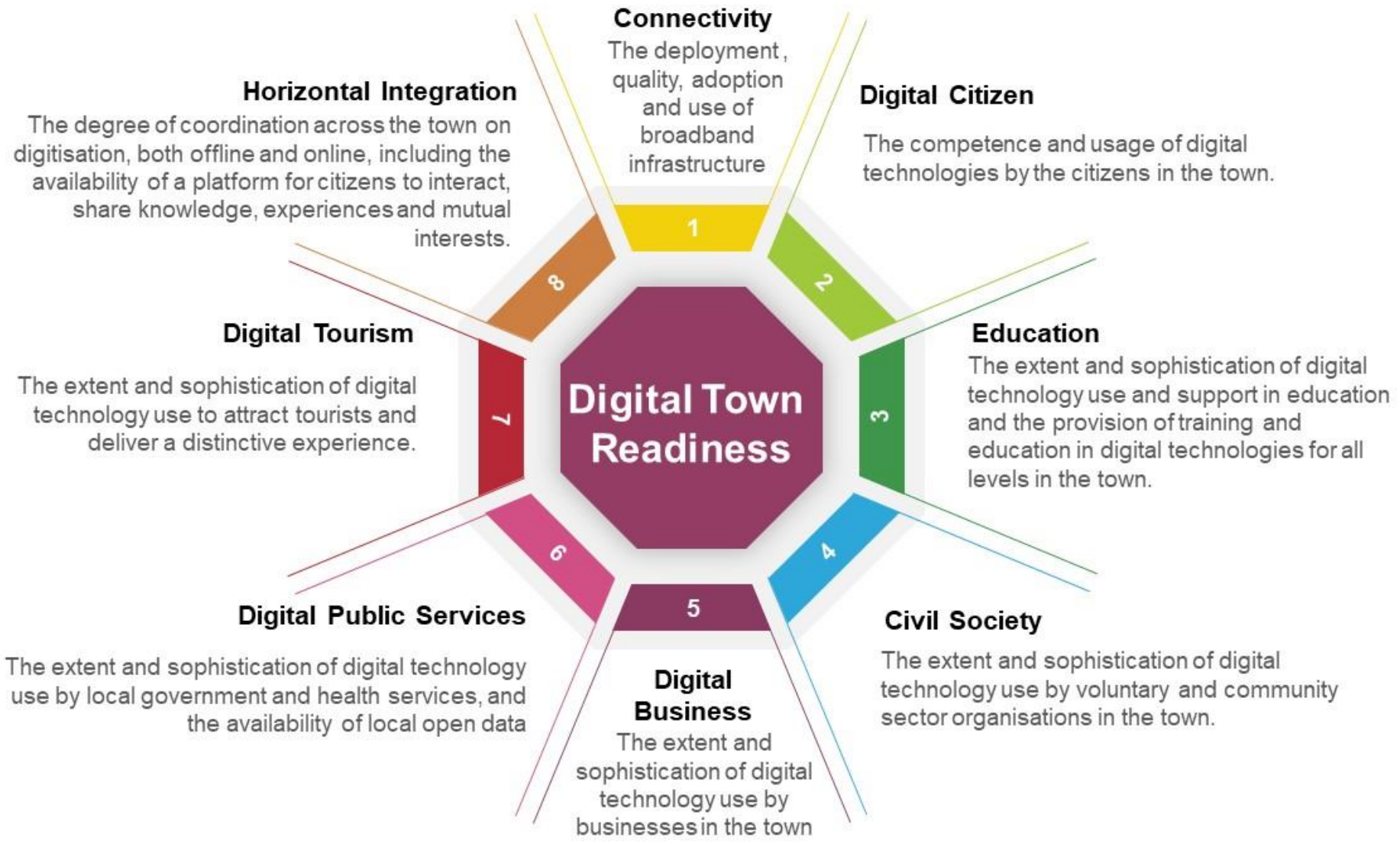
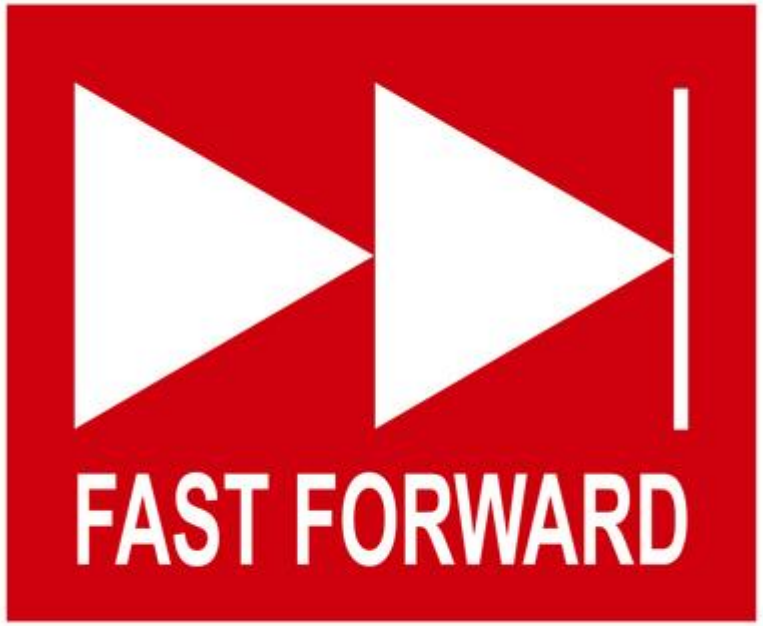
The DTMF comprises eight dimensions and is designed to be implemented by local stakeholders





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Digital Town Rapid Assessment includes all dimensions except digital citizenship (see Appendix 1 for sample indicators)

Dimension Score	Readiness	Explanation
1	Non-Existent	**Digital Readiness is non-existent or at a very low level.** The use and sophistication of digital technologies and capabilities likely do not exist. If they do exist, they are at very low levels of use and sophistication, largely informal and not documented, managed or measured at a town level. KPIs are significantly below regional, national or EU averages.
2	Ad Hoc	**Digital Readiness is ad hoc and mostly not documented.** Some evidence of digital readiness in the use and sophistication of digital technologies and capabilities. Most are not documented and not managed. Performance may be measured and reviewed periodically but mostly informally. KPIs are below regional, national or EU averages.
3	Defined Competitive	**Digital Readiness is clearly defined and documented** There is clear evidence of digital readiness. Use and sophistication of digital technologies and capabilities are documented and planned. KPIs are competitive relative to peer towns and regional, national and EU averages.
4	Significant Differentiating	**Digital Readiness is clearly differentiating and significant** The use and sophistication of digital technologies and capabilities and levels of digitalisation are significant and clearly differentiating compared to peers. KPIs are higher relative to peer towns and regional, national and EU averages.
5	Leading	**Digital Readiness is leading** The use and sophistication of digital technologies and sophistication and levels of digitalisation are best-in-class and approaching optimum states/full digitalisation with clear plans for further optimisation. KPIs are at the highest levels when compared to peers and regional, national and EU averages.

This table illustrates how **sub-dimensions** are first weighted.

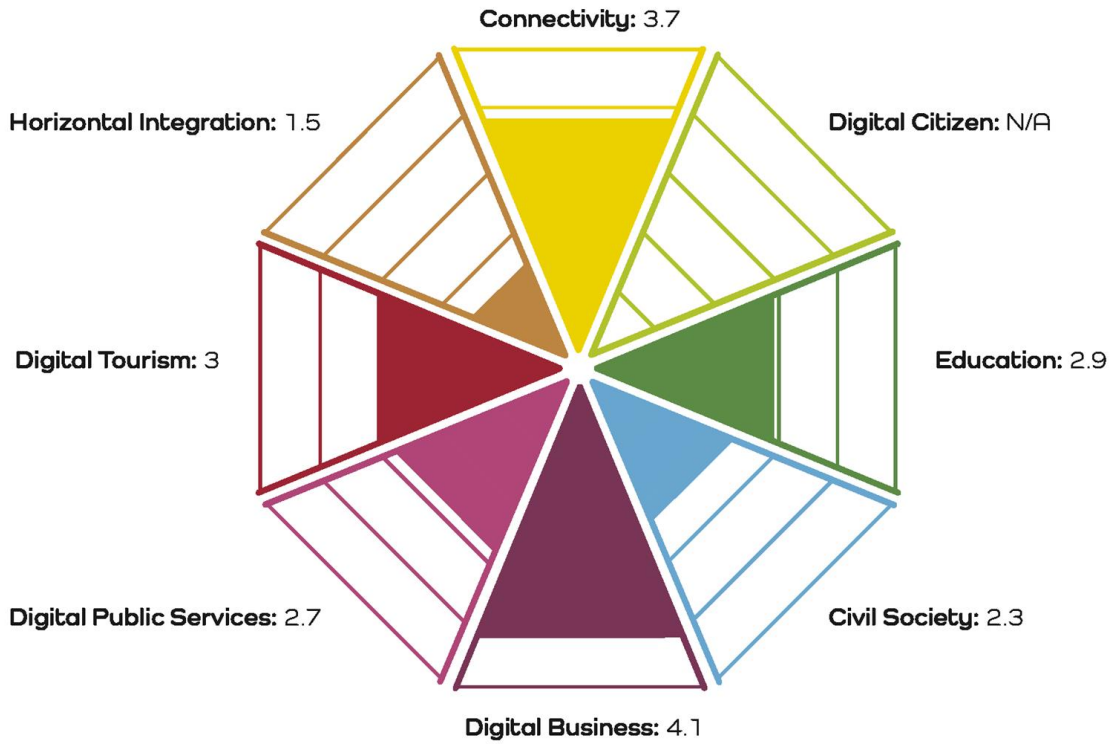
Then the dimension is also weighted...

Application of dimension weightings to Gorey, Co. Wexford.

Digital Town Dimension	Sub-dimension Score	Sub-dimension Weighting	Sub-dimension Weighted Score	Dimension Score	Readiness Score: Dimension Weighting*	Readiness Score: Weighted Score	Readiness Score: Out Of
Connectivity							
Fixed broadband coverage	4	40%	1.6				
Mobile broadband coverage	4	20%	0.8				
Mobile broadband quality	3.5	20%	0.7	3.7	20%	0.7	1.0
Competition	4	10%	0.4				
Public WiFi	2	10%	0.2				
Education							
Pre-school	1.5	25%	0.375				
Primary	2.5	25%	0.625	2.9	15%	0.4	0.75
Post-primary	4	25%	1				
Digital skills education availability	3.5	25%	0.875				
Civic Society							
Web intensity	2.5	40%	1				
Digital technology penetration	2.5	40%	1	2.3	10%	0.2	0.5
e-commerce penetration	1.5	20%	0.3				
Digital Business							
Web intensity	4.5	30%	1.35				
Digital technology penetration	4.5	30%	1.35	4.1	20%	0.8	1.0
e-commerce penetration	3.5	40%	1.4				
Digital Public Services							
e-government	3.5	64%	2.24				
e-health	1.5	20%	0.3	2.7	15%	0.4	0.75
Open data	1	16%	0.16				
Digital Tourism							
Tourism business web intensity	4	20%	0.8				
Digital technology penetration	4	20%	0.8				
e-commerce penetration	4	20%	0.8	3.0	10%	0.3	0.5
Tourism digital infrastructure	1	10%	0.1				
Digital access	1	10%	0.1				
Platform availability and maturity	2	20%	0.4				
Horizontal Integration							
Coordination of digitalisation	1.5	75%	1.125	1.5	10%	0.2	0.5
Platform availability and maturity	1.5	25%	0.375				
					100%	3.1	5.0
					Readiness Score 61.5		

***Note:** Users may set the weighting for each dimension based on perceived relevancy.

For policymakers and local stakeholders, this is visualised in a cobweb diagram for sense-making



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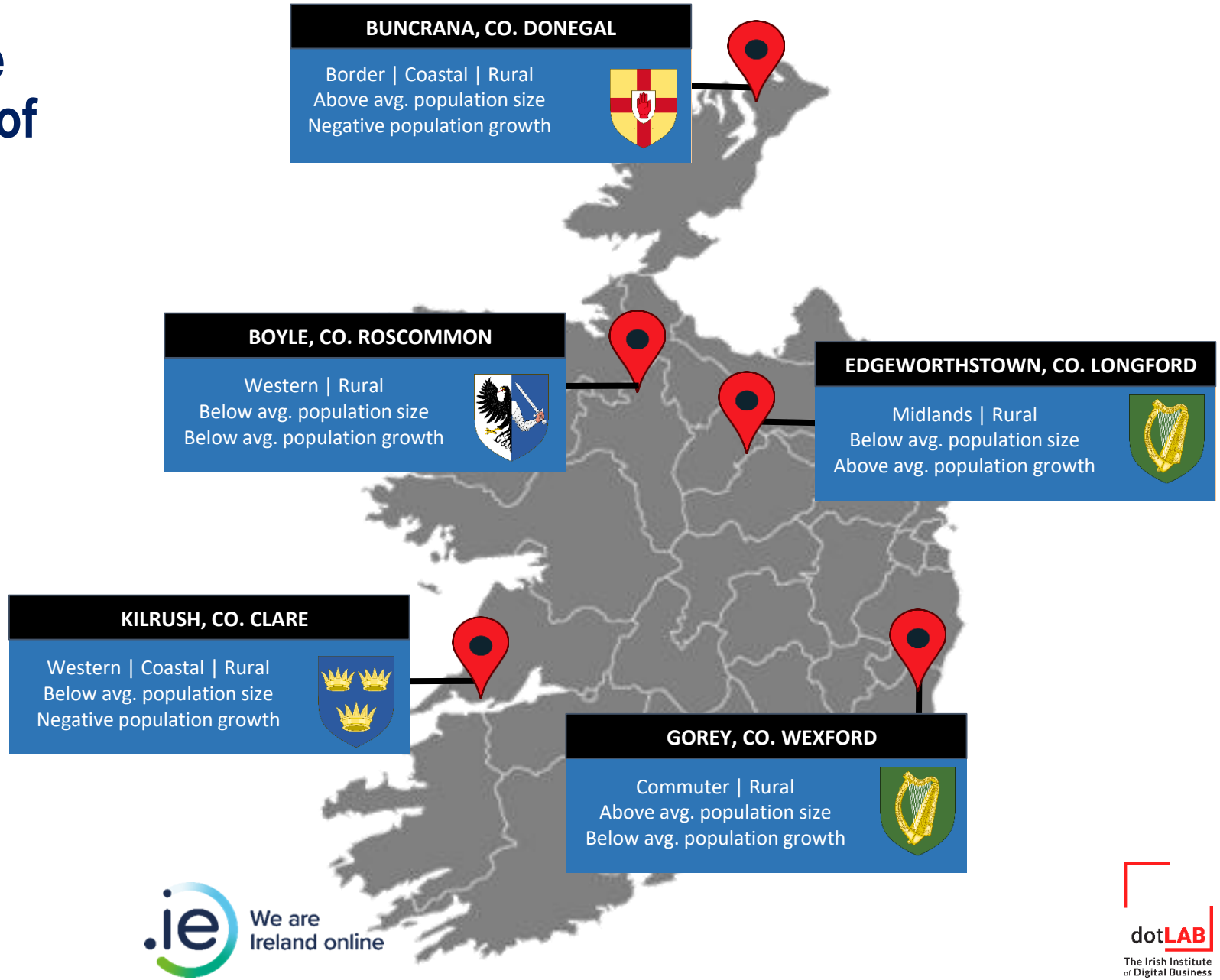
Five Pre-COVID (September 2019) rapid assessments were completed representing each of the four Irish provinces and different contexts



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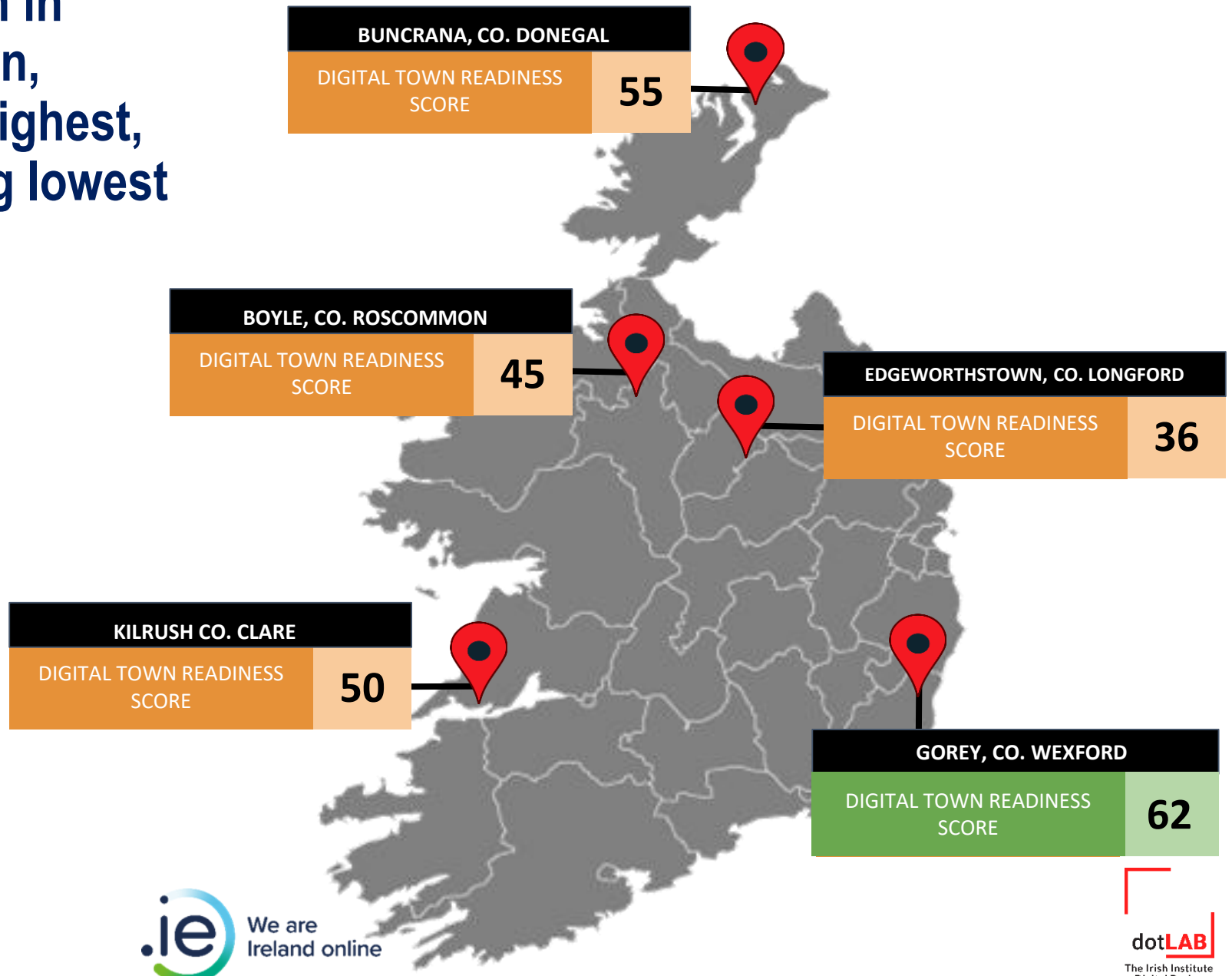
There was significant variation in scores with the commuter town, located near Dublin, scoring highest, and the midlands town scoring lowest



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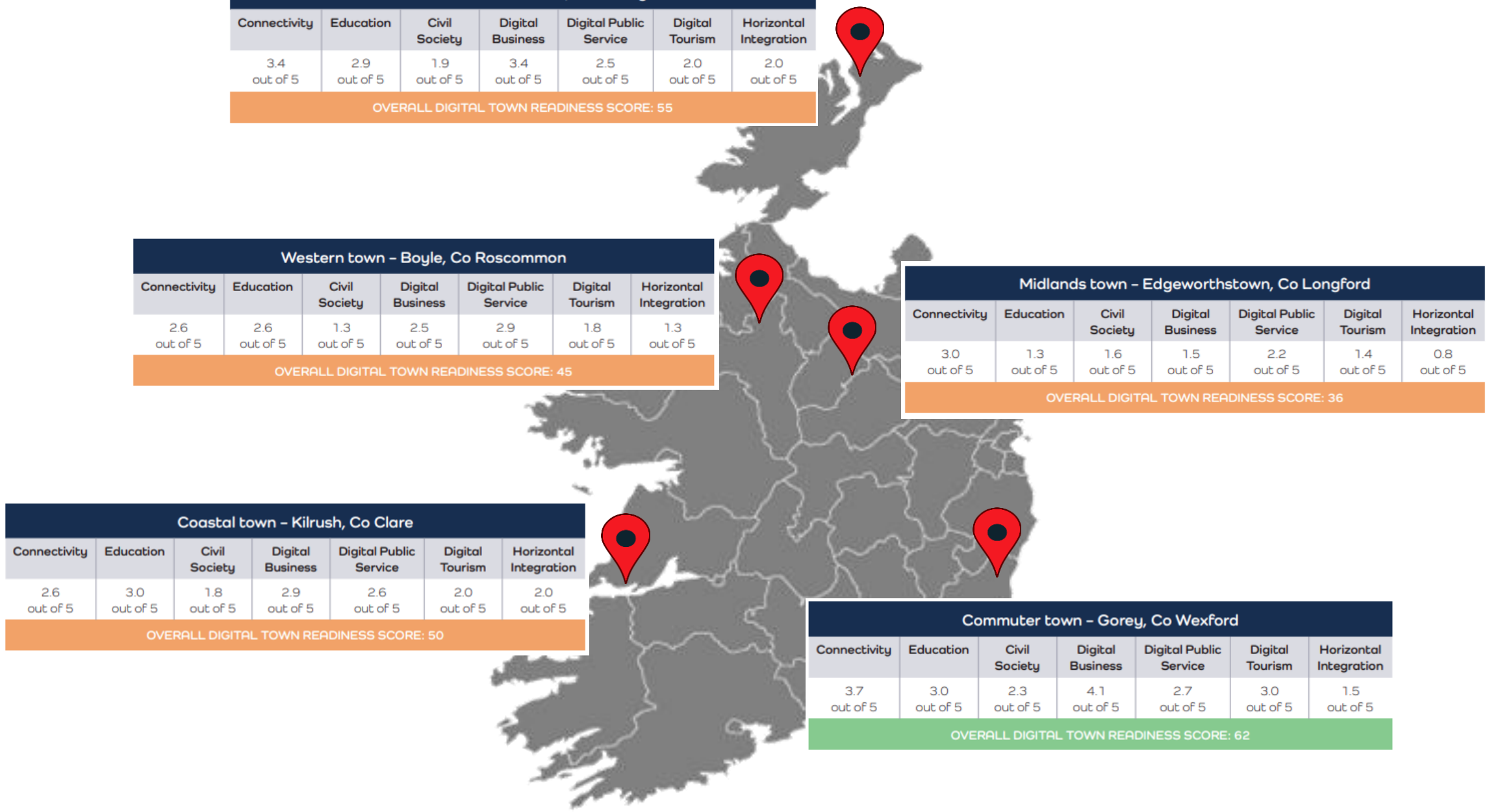


Border town – Buncrana, Co Donegal						
Connectivity	Education	Civil Society	Digital Business	Digital Public Service	Digital Tourism	Horizontal Integration
3.4 out of 5	2.9 out of 5	1.9 out of 5	3.4 out of 5	2.5 out of 5	2.0 out of 5	2.0 out of 5
OVERALL DIGITAL TOWN READINESS SCORE: 55						

Western town – Boyle, Co Roscommon						
Connectivity	Education	Civil Society	Digital Business	Digital Public Service	Digital Tourism	Horizontal Integration
2.6 out of 5	2.6 out of 5	1.3 out of 5	2.5 out of 5	2.9 out of 5	1.8 out of 5	1.3 out of 5
OVERALL DIGITAL TOWN READINESS SCORE: 45						

Midlands town – Edgeworthstown, Co Longford						
Connectivity	Education	Civil Society	Digital Business	Digital Public Service	Digital Tourism	Horizontal Integration
3.0 out of 5	1.3 out of 5	1.6 out of 5	1.5 out of 5	2.2 out of 5	1.4 out of 5	0.8 out of 5
OVERALL DIGITAL TOWN READINESS SCORE: 36						

Coastal town – Kilrush, Co Clare						
Connectivity	Education	Civil Society	Digital Business	Digital Public Service	Digital Tourism	Horizontal Integration
2.6 out of 5	3.0 out of 5	1.8 out of 5	2.9 out of 5	2.6 out of 5	2.0 out of 5	2.0 out of 5
OVERALL DIGITAL TOWN READINESS SCORE: 50						

Commuter town – Gorey, Co Wexford						
Connectivity	Education	Civil Society	Digital Business	Digital Public Service	Digital Tourism	Horizontal Integration
3.7 out of 5	3.0 out of 5	2.3 out of 5	4.1 out of 5	2.7 out of 5	3.0 out of 5	1.5 out of 5
OVERALL DIGITAL TOWN READINESS SCORE: 62						

Visualising the dimensions show clear dimensional differences and areas for improvement

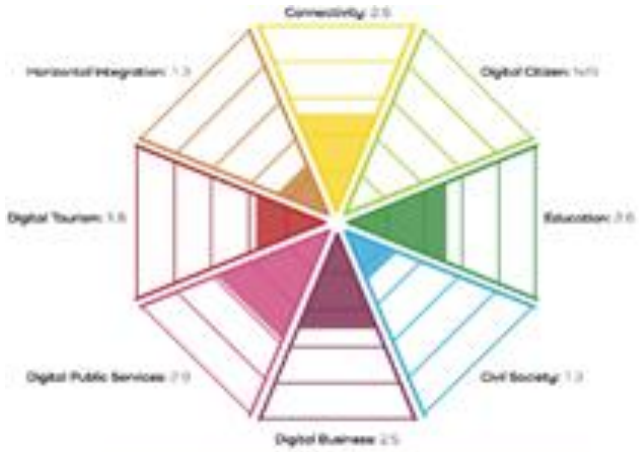


Figure 6: Boyle Digital Town Readiness Dimension Score

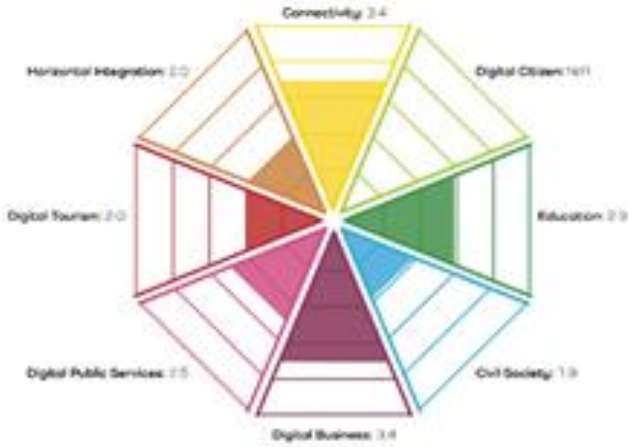


Figure 6: Buncrana Digital Town Readiness Dimension Score

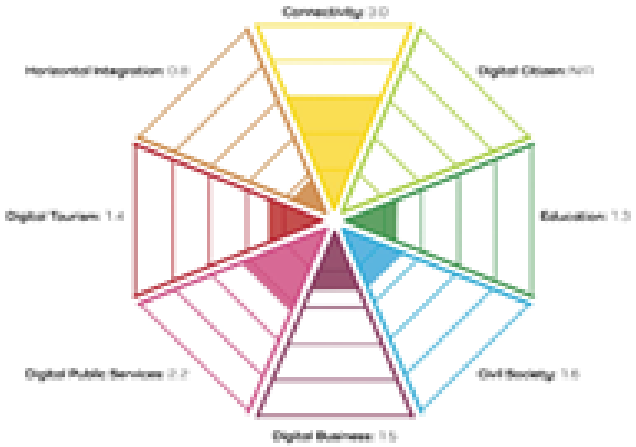


Figure 6: Edgeworthstown Digital Town Readiness Dimension Score

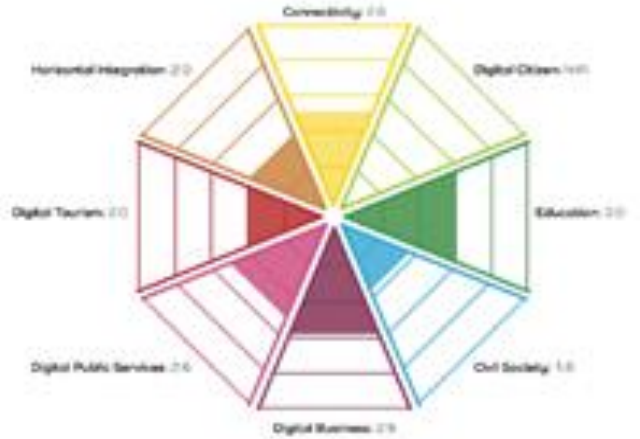


Figure 6: Kilrush Digital Town Readiness Dimension Score

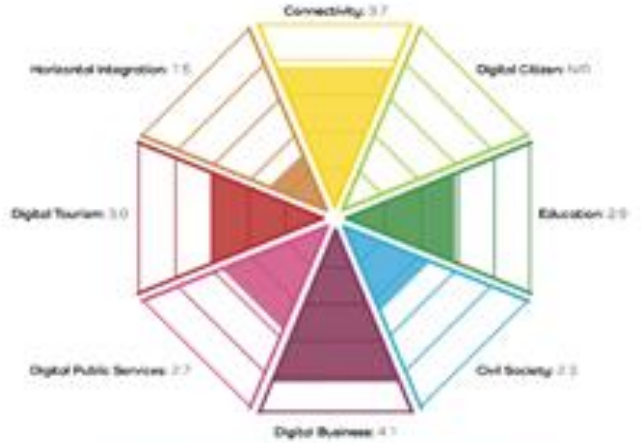


Figure 7: Gorey Digital Town Readiness Dimension score

SOME HIGH LEVEL TAKEAWAYS

Connectivity is largely following the Irish national broadband plan. Those towns scoring higher typically have free Wi-Fi in the towns and greater access to Wi-Fi and the Internet for the public.

Horizontal integration was the lowest scoring dimension. While there are county-level initiatives, few town-level systematic initiatives were identified

Digital Citizenship is not included in the rapid assessment due to the high cost of data collection particularly for populations with low technology penetration.

Digital tourism in rural towns is at largely at a low level of conceptualisation and limited to firm-level websites and town websites of varying quality without e-commerce transaction capabilities.

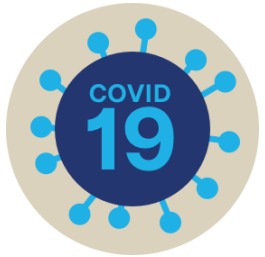
Digital education provision varies and is typically strongest in secondary schools. Digital skills development for younger and older citizens requires focussed effort and investment.

Digital public services in rural towns is typically good however e-health provision is poor. This is consistent with DESI which finds Ireland scoring in the lower quartile. While Open Data initiatives are available in these towns, they are limited in scope and utility.

Civil society organisations is an area that requires greater focus and investment particularly given the role such organisations play in rural society. They lag business organisation in terms of web technology intensity and sophistication.

Digital business adoption varies. While many businesses have an internet presence, this is often limited to social media. Towns nearer urban centres had higher digital business penetration and sophistication. Technology intensity and sophistication reflected sectoral differences e.g. construction, transport, and storage businesses had low technology intensity scores while ICT, financial services and media businesses had higher ones.

What's next?



COVID-19	BASELINE	DIGITAL SKILLS	LIGHTHOUSE	INTERNATIONAL
Longitudinal study of the five towns across three periods: T1 – Sept.2019 T2 – June 2020 T3 – June 2021	Expand the baseline comparison to 35 rural towns with populations between 5,000 and 10,000 people	Complete comprehensive survey of digital competences for 35 rural towns.	Catalog digital town materials, projects initiatives and collaborate on lighthouse projects.	Collaborate on international projects to compare rural towns and support knowledge transfer.

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Want more information - https://www.weare.ie/ie-digital-town-blueprint/

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Appendix 1 – Sample Indicators

	Dimension	Items
Connectivity	Connectivity	Number of premises covered by commercial broadband or designated as forming part of the intervention area
	Connectivity	% households with fixed broadband coverage
	Connectivity	% households with 4G Coverage
	Connectivity	% households covered by VDSL, FTTP or Docsis 3.0
	Connectivity	% households covered by FTTP or Docsis 3.0
	Connectivity	4G Coverage Quality
	Connectivity	3G Coverage Quality
	Connectivity	2G Coverage Quality
	Connectivity	Number of mobile service providers
	Connectivity	Number of broadband providers
	Connectivity	Plan/initiatives for 5G Coverage
	Connectivity	% of retail outlets offering public wi-fi
	Connectivity	% of hotels offering public wi-fi
	Connectivity	Public wi-fi availability in municipal locations
Digital Business	Digital Business	% of businesses with a website or homepage
	Digital Business	% of businesses with a website with sophisticated functions
	Digital Business	% of businesses with a mobile responsive website or mobile app
	Digital Business	% of businesses paying to advertise on Internet
	Digital Business	% of businesses making sophisticated use of online advertising
	Digital Business	% of businesses using cloud computing services
	Digital Business	% of businesses selling on the Internet from their website
	Digital Business	% of businesses with social media presence
Digital Public Services	E-government maturity	Information availability
	E-government maturity	Downloadable forms availability
	E-government maturity	Online form submission availability
	E-government maturity	Two-way communication channels
	E-government maturity	Online payments availability
	E-government maturity	Mobile readiness of local authority's website
	E-government maturity	Information integration
	e-Health	% of healthcare providers with a website or homepage
	e-Health	% of healthcare providers with a website with sophisticated functions
	e-Health	% of healthcare providers with a mobile responsive website or mobile app
	e-Health	% of healthcare providers paying to advertise on Internet
	e-Health	% of healthcare providers making sophisticated use of online advertising
	e-Health	% of healthcare providers using cloud computing services
	e-Health	% of healthcare providers selling on the Internet from their website
	e-Health	% of healthcare providers with social media presence
	e-Health	% of healthcare providers who provide e-prescriptions
	e-Health	% of healthcare providers who accept e-prescriptions
	e-Health	% of healthcare providers providing online consultations
	e-Health	% of healthcare providers using an electronic network to exchange medical data with other healthcare providers
	Open data	Sophistication of open data plan
	Open data	Number of open datasets available
	Open data	Variety of open datasets available

	Dimension	Items
Education	Education	% of pre-school childcare businesses with a website or homepage
	Education	% of pre-school childcare businesses with a website with sophisticated functions
	Education	% of pre-school childcare businesses with a mobile responsive website or mobile app
	Education	% of pre-school childcare businesses paying to advertise on Internet
	Education	% of pre-school childcare businesses making sophisticated use of online advertising
	Education	% of pre-school childcare businesses using cloud computing services
	Education	% of pre-school childcare businesses selling on the Internet from their website
	Education	% of pre-school childcare businesses with social media presence
	Education	% of primary and post-primary schools with a website or homepage
	Education	% of primary and post-primary schools with a website with sophisticated functions
	Education	% of primary and post-primary schools with social media presence
	Education	% of primary and post-primary schools with a Virtual Learning Environment (VLE)
	Education	% of primary and post-primary schools with broadband
	Education	% of primary and post-primary schools using interactive whiteboards
	Education	% of primary and post-primary schools using laptops or tablets
	Education	Student to computer ratio
	Education	% of primary and post-primary schools with an ICT plan in place
	Education	% of primary and post-primary schools with an ICT coordinator
	Education	% of primary and post-primary schools with a professional development plan for teachers
	Education	% of primary and post-primary schools offering incentives to encourage participation in training
	Education	Frequency of teachers' use of ICT in the classroom
	Education	Digital skills education availability
Civil Society	Civil Society	% of voluntary and social groups with a website or homepage
	Civil Society	% of voluntary and social groups with a website with sophisticated functions
	Civil Society	% of voluntary and social groups with a mobile responsive website or mobile app
	Civil Society	% of voluntary and social groups paying to advertise on Internet
	Civil Society	% of voluntary and social groups making sophisticated use of online advertising
	Civil Society	% of voluntary and social groups using cloud computing services
	Civil Society	% of voluntary and social groups selling on the Internet from their website
	Civil Society	% of voluntary and social groups with social media presence
Digital Tourism	Digital Tourism	% of tourism businesses with a website or homepage
	Digital Tourism	% of tourism businesses with a website with sophisticated functions
	Digital Tourism	% of tourism businesses with a mobile responsive website or mobile app
	Digital Tourism	% of tourism businesses paying to advertise on Internet
	Digital Tourism	% of tourism businesses making sophisticated use of online advertising
	Digital Tourism	% of tourism businesses using cloud computing services
	Digital Tourism	% of tourism businesses selling on the Internet from their website
	Digital Tourism	% of tourism businesses with social media presence
	Digital Tourism	% of tourism destinations with a website or homepage
	Digital Tourism	% of tourism destinations with a website with sophisticated functions
	Digital Tourism	% of tourism destinations with a mobile responsive website or mobile app
	Digital Tourism	% of tourism destinations paying to advertise on Internet
	Digital Tourism	% of tourism destinations making sophisticated use of online advertising
	Digital Tourism	% of tourism destinations using cloud computing services
	Digital Tourism	% of tourism destinations selling on the Internet from their website
	Digital Tourism	% of tourism destinations with social media presence
	Digital Tourism	% of tourism destinations offering free public wi-fi
	Digital Tourism	% of tourism destinations using smart kiosks
	Digital Tourism	% of tourism destinations using digital signage
	Digital Tourism	% of tourism destinations using augmented reality (AR) or virtual reality (VR)
	Digital Tourism	% of tourism destinations using QR codes
	Digital Tourism	Presence of dedicated mobile apps
Horizontal Integration	Horizontal Integration	Coordination of digitalisation
	Horizontal Integration	Platform availability
	Horizontal Integration	Platform maturity