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DESI / I-DESI

Digital Economy and Society Index

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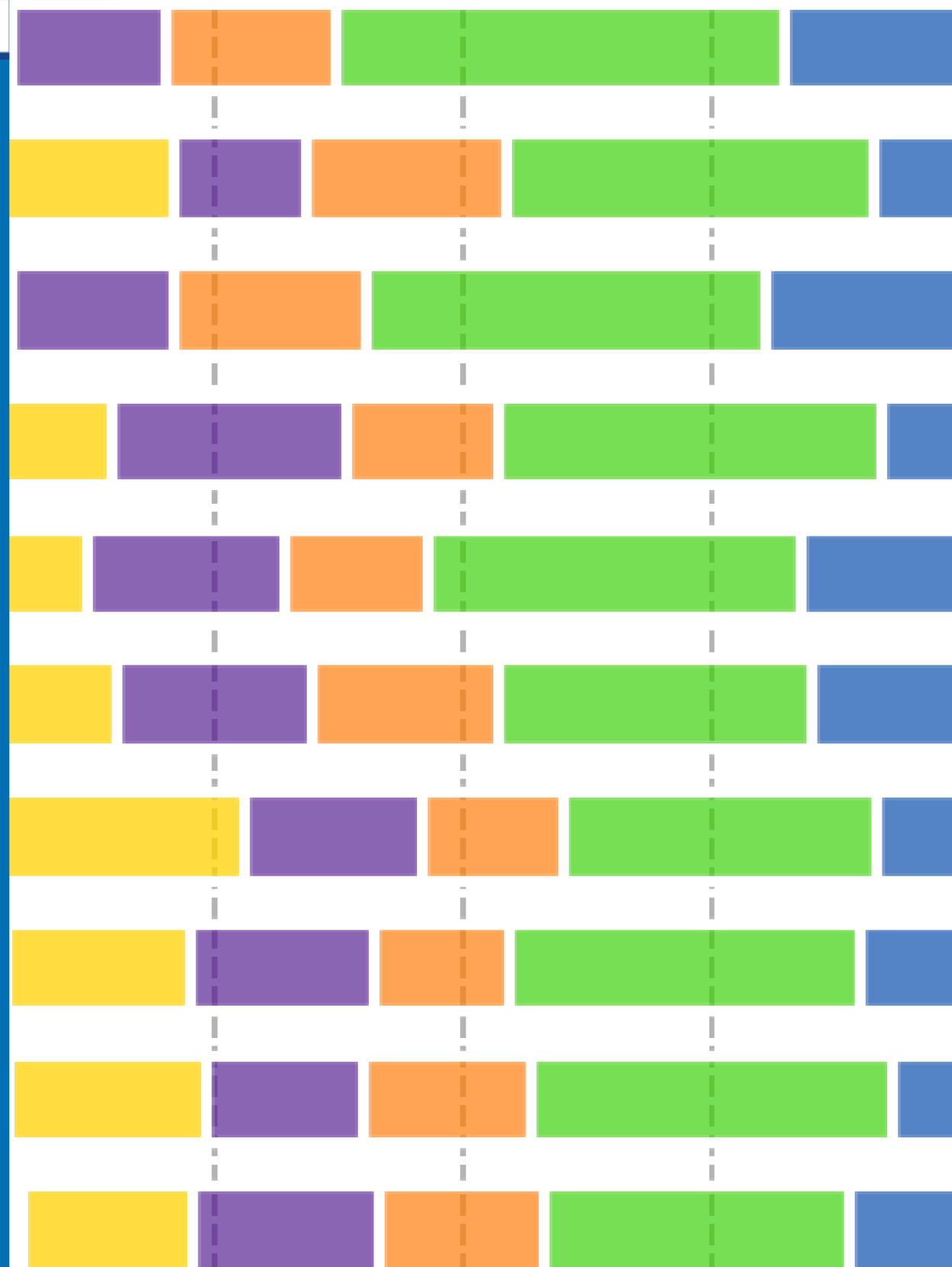
DG Connect



Introduction

- The **Digital Economy and Society Index** (**DESI**) measures progress of EU countries towards a digital economy and society.
- It brings together a set of relevant indicators on Europe's current digital policy mix.

- **Objectives**
  - As a part of Europe's Digital Scoreboard, it assesses the relative performance of Member States and their readiness to embrace digital.
  - It is the main analytical tool for monitoring Member States' progress in the scope of the European Semester and Europe's Digital Progress Report.
  - It provides analytical support for the rollout of the Digital Single Market.
  - It supports communication activities and Going Local.

- The **DESI** has been **calculated for 2014, 2015 and 2016**

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Types of Analyses

- **General performance assessment**
  - Characterisation of the performance of individual Member States by observing their overall index score and the scores of the main index dimensions.
- **Zooming-in**
  - Pinpoint the areas where Member State performance could be improved by analysing the scores of the index's sub-dimensions and individual indicators.
- **Follow-up**
  - Assess progress over time in aggregate dimensions and individual indicators.
- **Comparative analysis**
  - Cluster Member States according to their index scores and growth from the previous year
    - Comparisons between Member States in similar stages of digital development to flag the need for improvement in relevant policy areas.

Structure

- The DESI comprises **5 dimensions** representing main policy areas
    1. Connectivity
    2. Human Capital
    3. Use of Internet
    4. Integration of Digital Technology
    5. Digital Public Services

- Relevant sub-dimensions under each dimension
- Overall gathering 30 indicators

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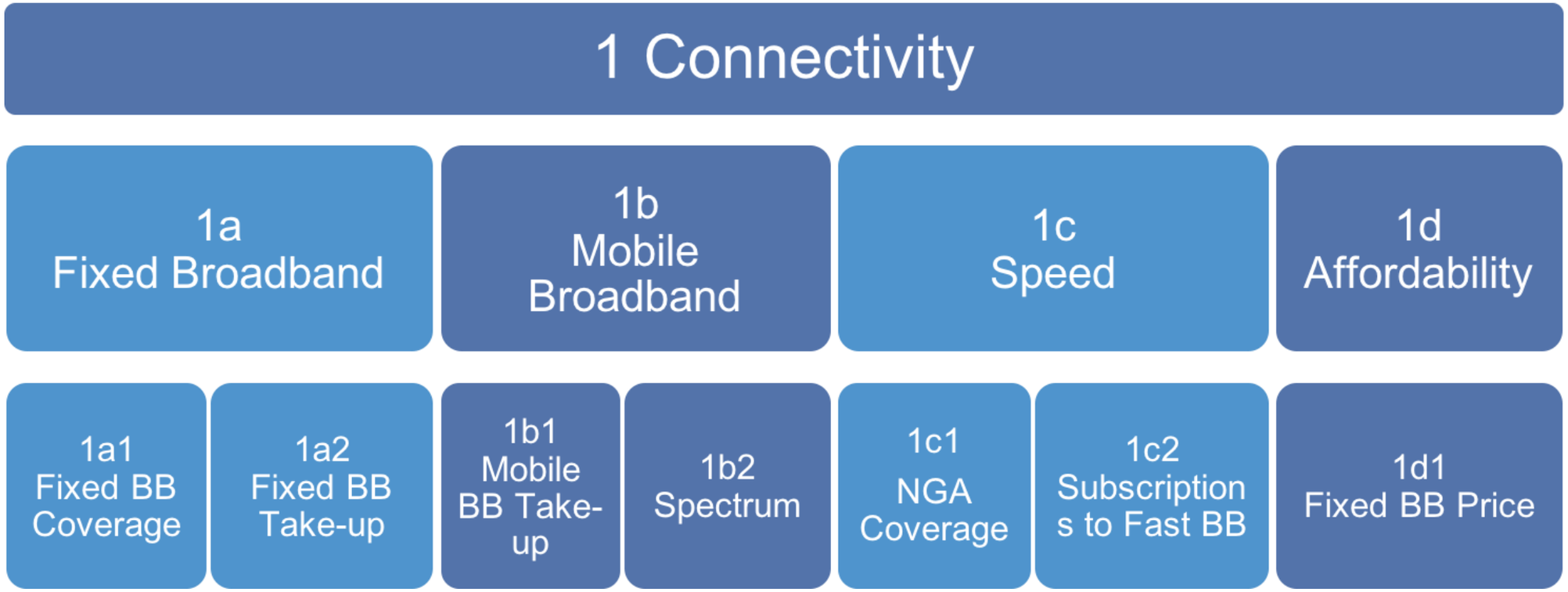
1. Connectivity

- Connectivity is a necessary infrastructure for a digital economy and society.
- A digital society can only develop if its members are connected to the Internet.
- A high-speed Internet connection is essential to fully benefit from the developments of today's digital world.



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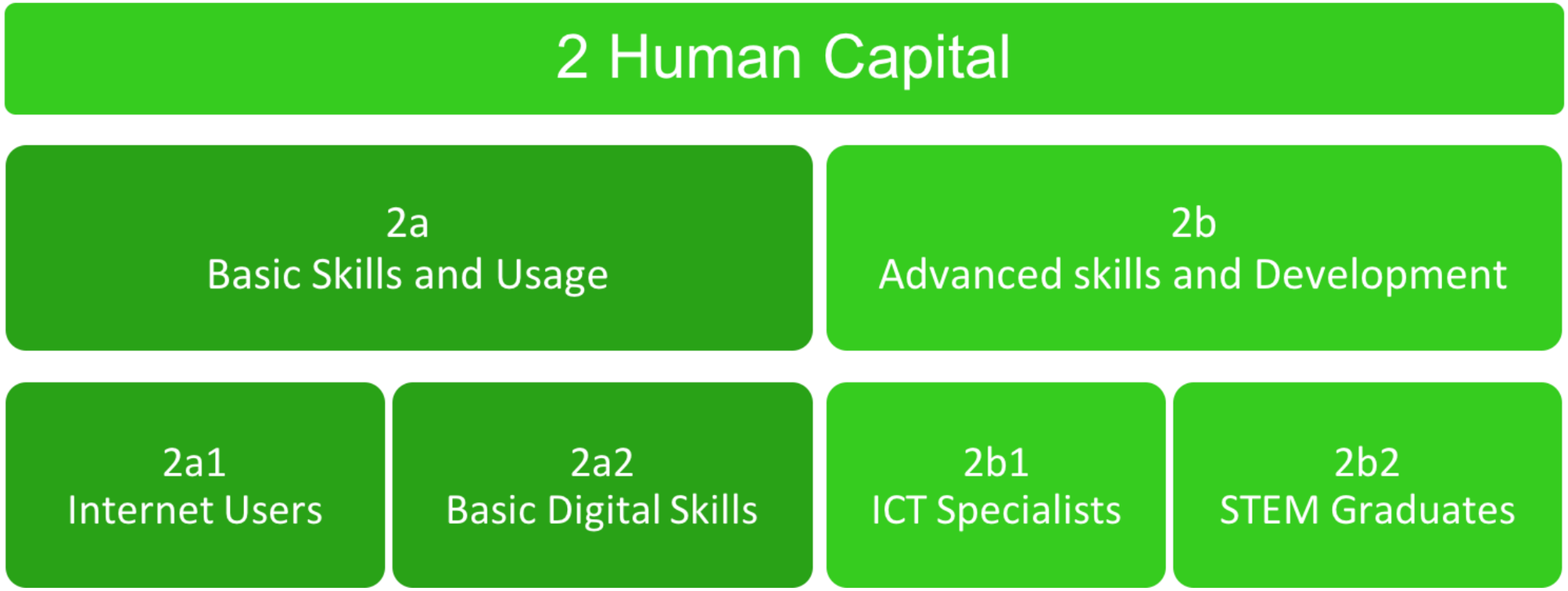
2. Human Capital

- Digital skills are a necessary infrastructure for a digital economy and society.
- Citizens must have the appropriate skills to take advantage of the Internet its possibilities.
- Basic usage skills enable individuals to take part in the digital society and consume digital goods and services.
- Advanced skills empower the workforce to develop digital goods and services for enhanced productivity and economic growth.



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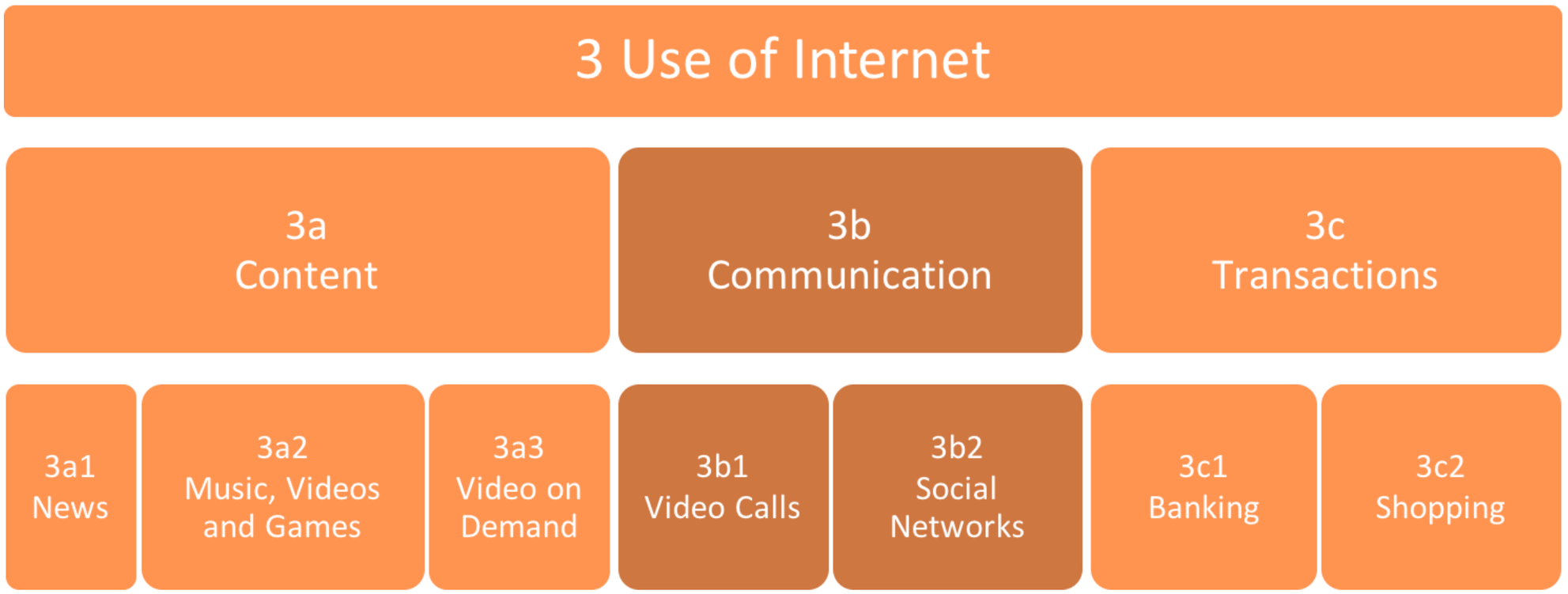
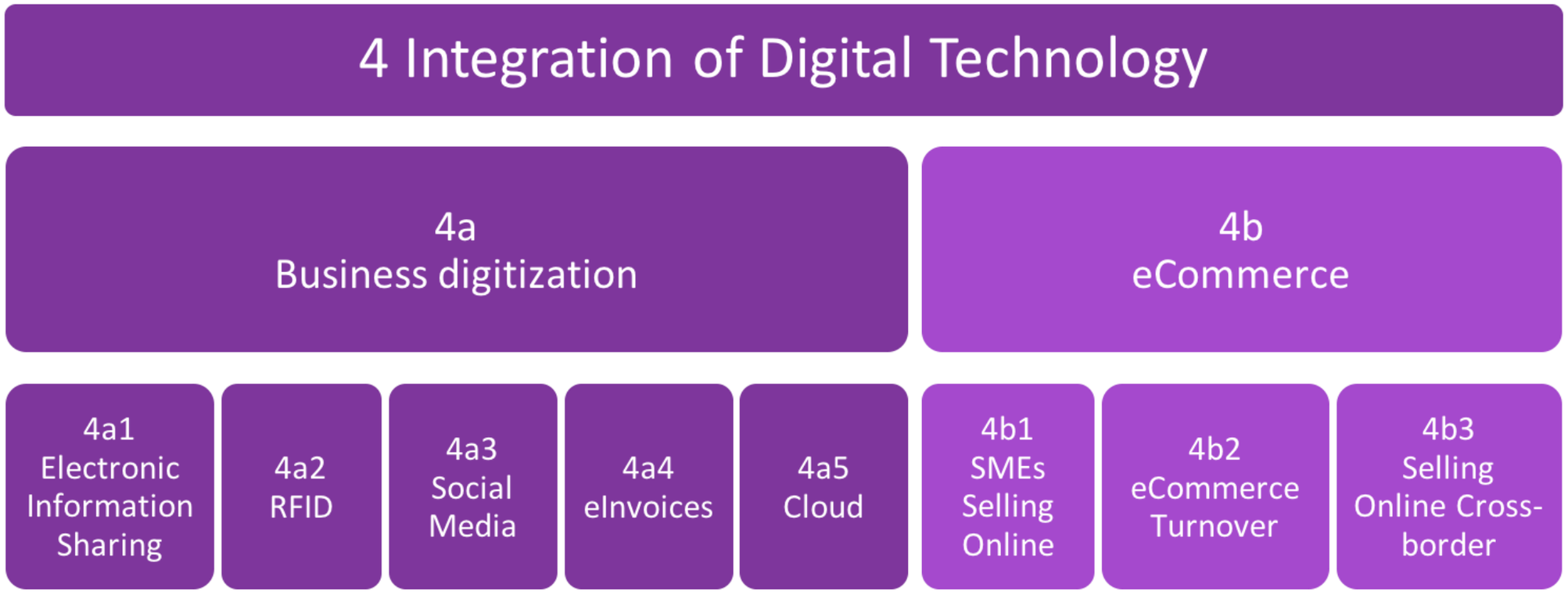
3. Use of Internet

- Citizens engage in a wide range of content-rich activities online:
  - They consume content, such as news, music, movies, TV or games.
  - They communicate in different ways (e.g., via online video-calls, or social networks),
  - They engage in transactions, such as banking or shopping online.
- Such activities are drivers for the development of broadband networks. They drive users to subscribe to broadband connections as well as operators to deploy faster networks and better content delivery facilities.



4. Integration of Digital Technology

- Business digitisation is one of the main contributors to enhanced economic growth.
- Adoption of digital technology (such as Cloud, Big Data, or the Internet of Things) enhances efficiency, reduces costs and allows for closer engagement with customers, collaborators or business partners.
- The ability to use the Internet as a sales outlet pushes businesses to modernise and allows them to exploit new sources of revenue.



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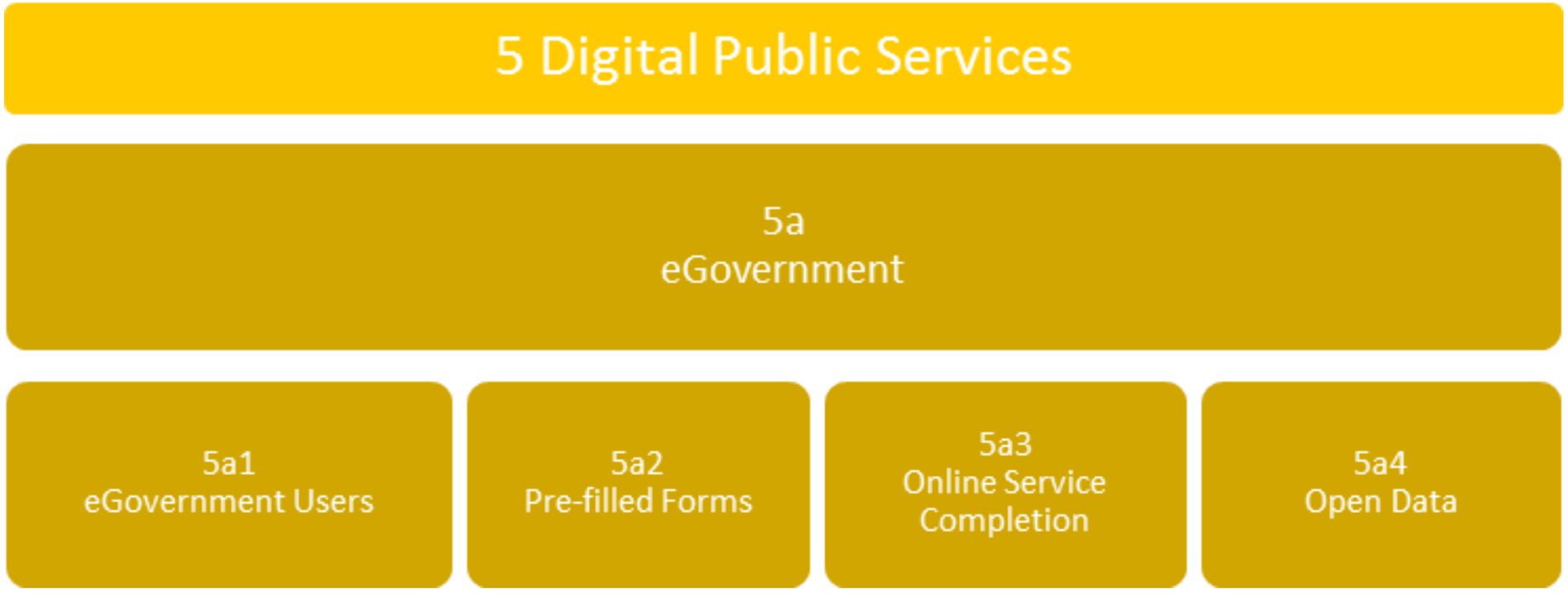
5 Digital Public Services

- Digital technologies can improve business and citizen interaction with the Public Sector.
  - Public Administrations can better address business and citizen needs, while reducing costs.
  - Better and more streamlined Public Services make citizens and businesses gain efficiency, both due to better functionality as well as to reductions in time spent.



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Methodological notes

- Indicators collected on an **yearly basis** for follow-up purposes
  - Few exceptions for biennial indicators

- Normalisation of indicator scores performed using **bounds that are fixed** over time
  - Allow **comparability** of scores between years to track progress

- **Weighing** of indicators and dimensions
  - Pre-defined weights for top dimensions
  - Interactive tool lets users set their own weights

Dimension	Weight
1 Connectivity	25%
2 Human Capital	25%
3 Use of Internet	15%
4 Integration of Digital Technology	20%
5 Digital Public Services	15%

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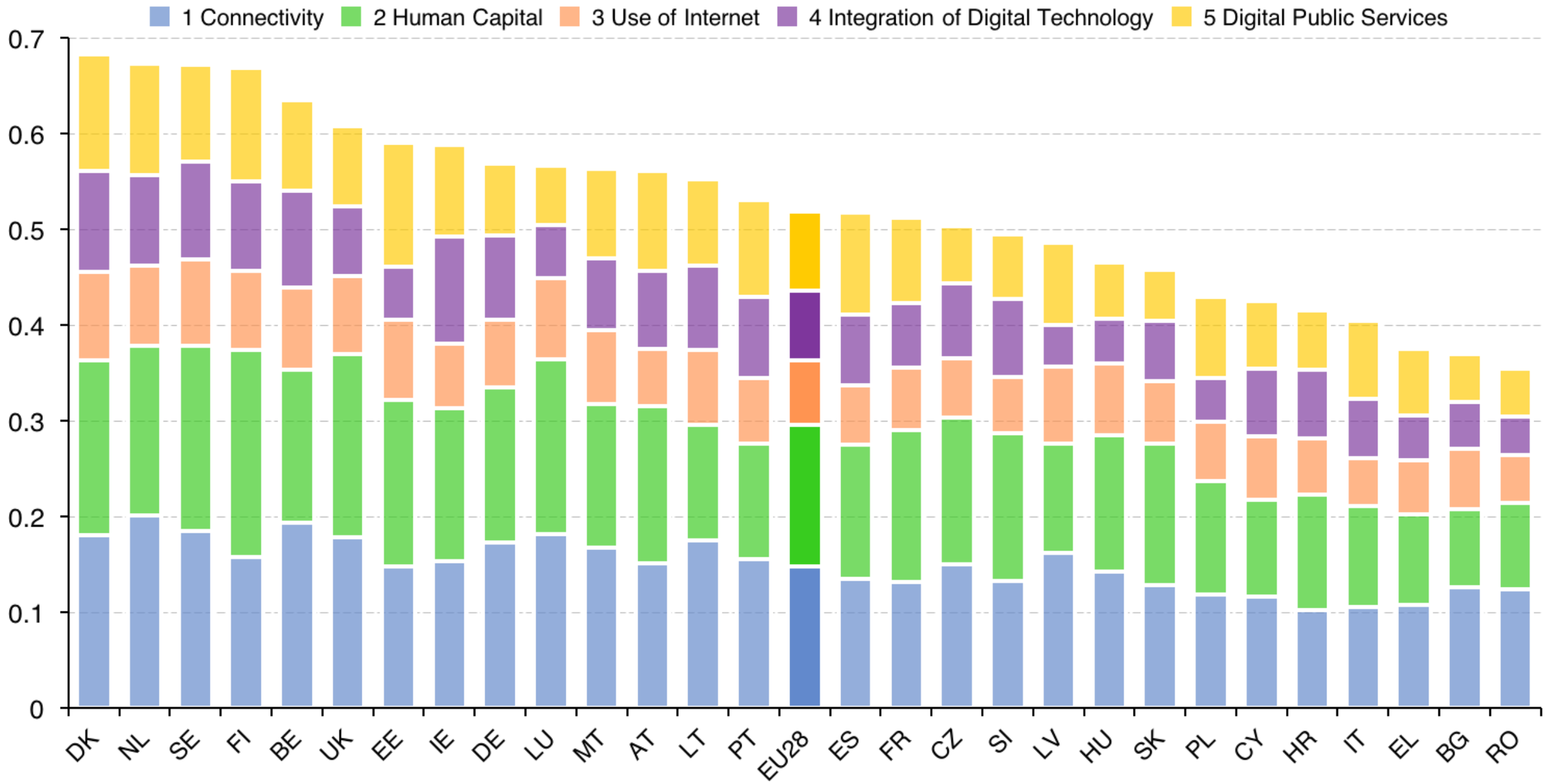
DESI 2016 - Ranking of EU countries



- DESI 2016 is based mostly on data from 2015
- Country scores range between a minimum of 0 and a maximum of 1

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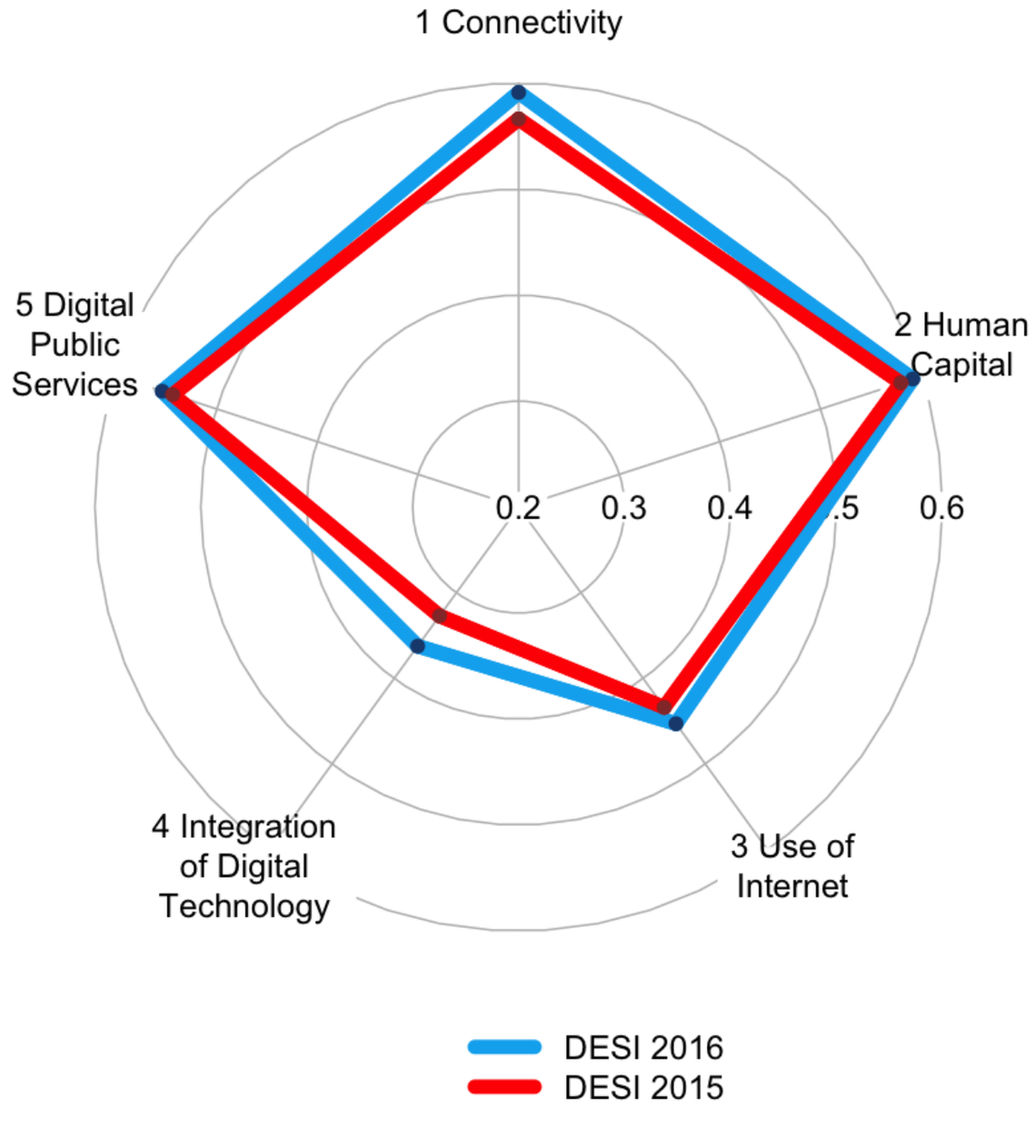
The European Union is progressing

- **EU score is up** to 0.52 (from 0.50 in 2015)
- But **EU progress slowed down**:
  - Growth of 0.02 from 2015 to 2016
  - Compared to 0.04 from 2014 to 2015

- Overall improvement mostly driven by **Connectivity** and **Integration of Digital Technology** by businesses,
  - growth of 0.025 and 0.035 respectively

- Developments in **Online Public Services** and **Human Capital** have all but stagnated this year
  - growth of 0.01 and 0.012 respectively



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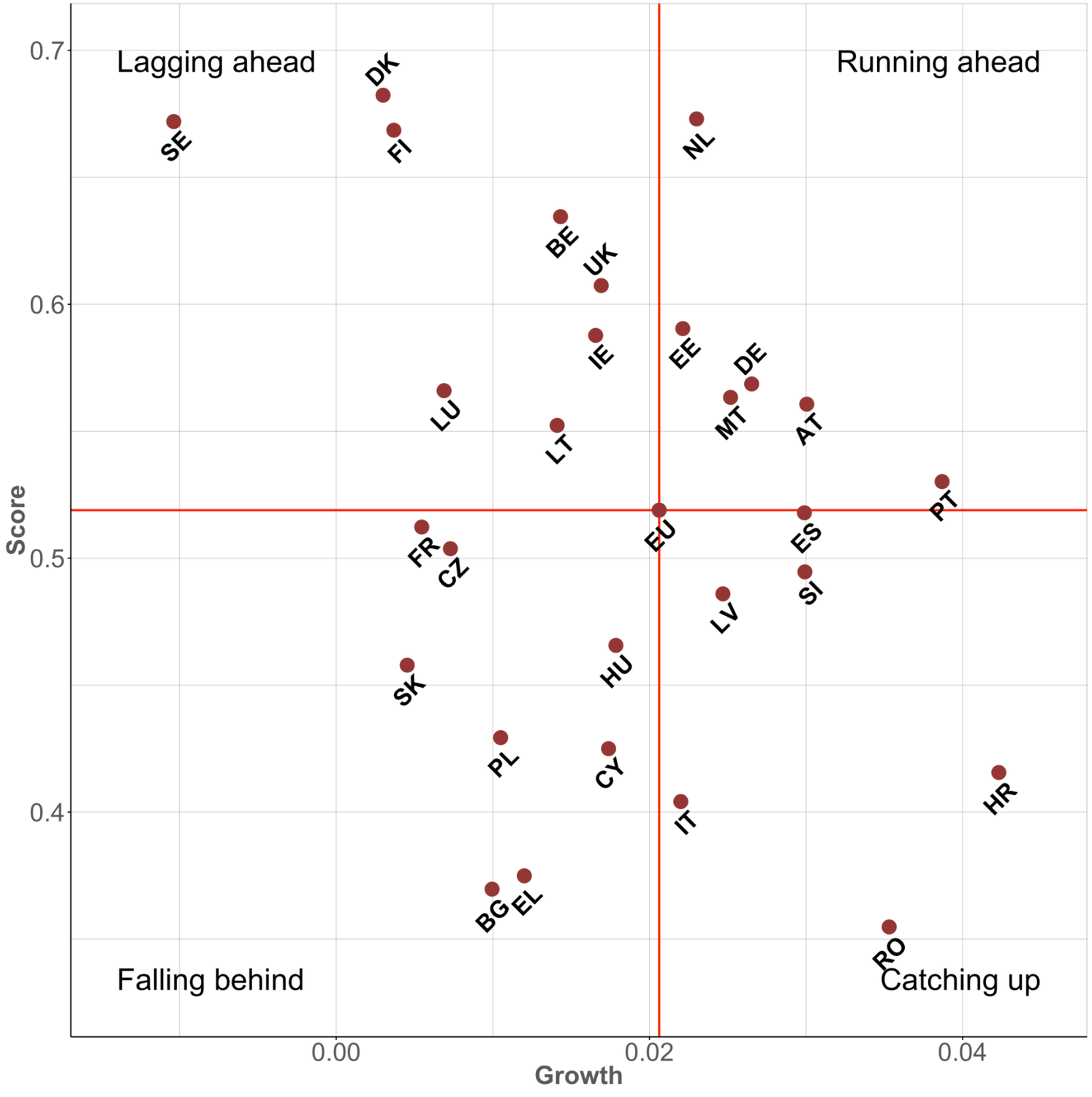
Clusters: Performance vs. Progress

- **Running ahead**
  - Above EU and growing faster than the EU
  - AT DE EE MT NL PT
- **Lagging ahead**
  - Above EU, but growing slower than the EU
  - BE DK FI IE LT LU SE UK
- **Catching up**
  - Below EU but growing faster than the EU
  - ES HR IT LV RO SI
- **Falling behind**
  - Below EU and growing slower than the EU
  - BG CY CZ EL FR HU PL SK



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I-DESI: adding an international dimension

- Digital Economy is a global phenomenon
  - Review the digital performance of the EU on a global level
    - Leverage the potential of the digital economy in Europe
    - Identify room for improvement

- The I-DESI
  - Compares the EU to 15 other countries:
    - Australia, Brazil, Canada, China, Iceland, Israel, Japan, Korea (Rep.), Mexico, New Zealand, Norway, Russia, Switzerland, Turkey and the United States.
  - Follows the same structure as the existing DESI
  - Differs significantly with respect to the indicators used
    - Differences in data collection and definitions when moving outside of Europe
  - Developed using a tiered approach for 2014 and 2015

Tier-1	*EU28 countries*	Japan	Korea (Rep.)	United States	Australia	Canada	Iceland	Norway	Switzerland
Tier-2	*Tier-1 countries*	Brazil	China	New Zealand	Mexico	Israel	Russia	Turkey	

Structure of the I-DESI

Main dimensions	Sub-dimensions	Indicators	Tier-1 2015	Tier-1 2014	Tier-2 2015	Tier-2 2014
1. Connectivity	1.1. Fixed Broadband	1.1.1. Fixed BB Coverage	●	●		
		1.1.2. Fixed BB Subscriptions	●	●	●	●
	1.2. Mobile Broadband	1.2.1. Mobile BB Subscriptions	●	●	●	●
		1.2.2. 3G Coverage	●	●	●	
	1.3. Speed	1.3.1. Average Connection Speed	●	●	●	●
		1.3.2. Fast BB Subscriptions	●	●	●	●
	1.4. Affordability	1.4.1. Fixed BB Subscription charge	●	●	●	●
2. Human Capital	2.1. Basic Skills and Usage	2.1.1. Daily Internet Users	●	●	●	●
		2.1.2. Regular Internet Users	●	●	●	●
	2.2. Advanced skills and development	2.2.1. ICT specialists	●	●		
		2.2.2. STEM graduates	●	●	●	●
3. Use of Internet	3.1. Content	3.1.1. Reading News Online	●	●		
		3.1.2. Music, Videos and Games	●	●	●	●
		3.1.3. Video on Demand	●		●	
	3.2. Communication	3.2.1. Social Networks	●	●	●	●
	3.3. Transactions	3.3.1. Online Banking	●	●	●	●
		3.3.2. Purchase online products	●	●	●	●
4. Integration of Digital Technology	4.1. Business digitization	4.1.1. Electronic Information Sharing	●			
		4.1.2. RFID	●			
		4.1.3. Social Media	●			
		4.1.4. Online Presence	●	●	●	
		4.1.5. Cloud Services	●			
	4.2. eCommerce	4.2.1. SMEs Selling Online	●	●	●	●
		4.2.2. eCommerce Turnover	●	●		
5. Digital Public Services	5.1. eGovernment	5.1.1. eGovernment Users	●	●	●	●
		5.1.2. Transactional services	●	●	●	●
		5.1.3. Connected Services	●	●	●	●
		5.1.4. Open Data	●	●	●	●

Challenges: Data

- Gathering the data, cleaning the data, aligning the data…
  - European Commission (Eurostat)
  - ITU World Telecommunication/ICT Indicators database
  - Akamai: analysis of broadband adoption and speeds
  - World Bank WDI
  - Google Consumer Barometer administered by TNS
  - OECD World Indicators of Skills for Employment (WISE) database
  - OECD Science, Technology and Industry Scoreboard
  - OECD Measuring the Digital Economy: A New Perspective
  - OECD Digital Economy Outlook
  - UN eGovernment Survey
  - Global Open Data Index

  - National statistical institutes of extra-EU countries

Challenges: Comparability

- Indicators in the I-DESI portray the same phenomena as those in the DESI
  - But the specific definitions of many of them are not exactly the same
- The I-DESI comprises fewer indicators than the DESI
  - 28 indicators in Tier-1 / 18 indicators in Tier-2
- **Scores and rankings of EU countries are not necessarily the same in the I-DESI as in the DESI**
  - Still, there is high correlation between the indices (for EU countries)

		Tier-1		Tier-2	
		2015	**2014**	**2015**	**2014**
Overall index	**score**	93%	92%	92%	90%
	rank	94%	91%	93%	91%

- Very high potential for misinterpretation of results
  - "Why is my country doing better/worse in the I-DESI than in the DESI?"

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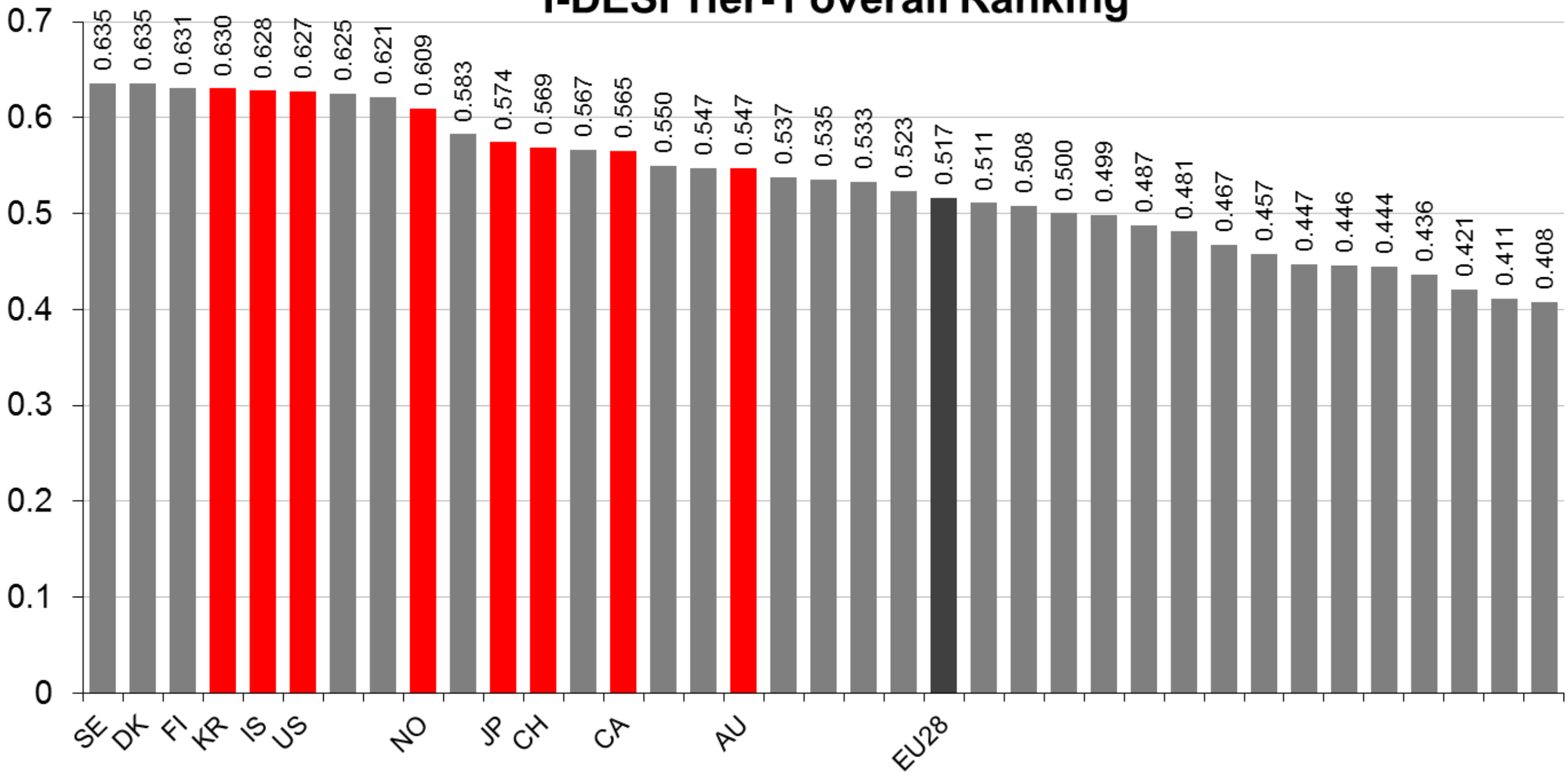
I-DESI Tier-1 overall Ranking



- Top EU performers also lead globally, but the EU as a whole has ample room for improvement
- **Connectivity**: KR and JP ahead of all EU countries, only AU below EU average.
- **Human Capital**: top EU countries are world leaders, all external countries ahead of EU average.
- **Use of Internet**: AU is the best non-European country in 10th place. US, KR and JP below EU average.
- **Integration of Digital Technology**: US is world leader, followed by top EU countries. Only CA below EU average.
- **Digital Public Services**: 5 EU countries in the top 10, all external countries ahead of EU average.

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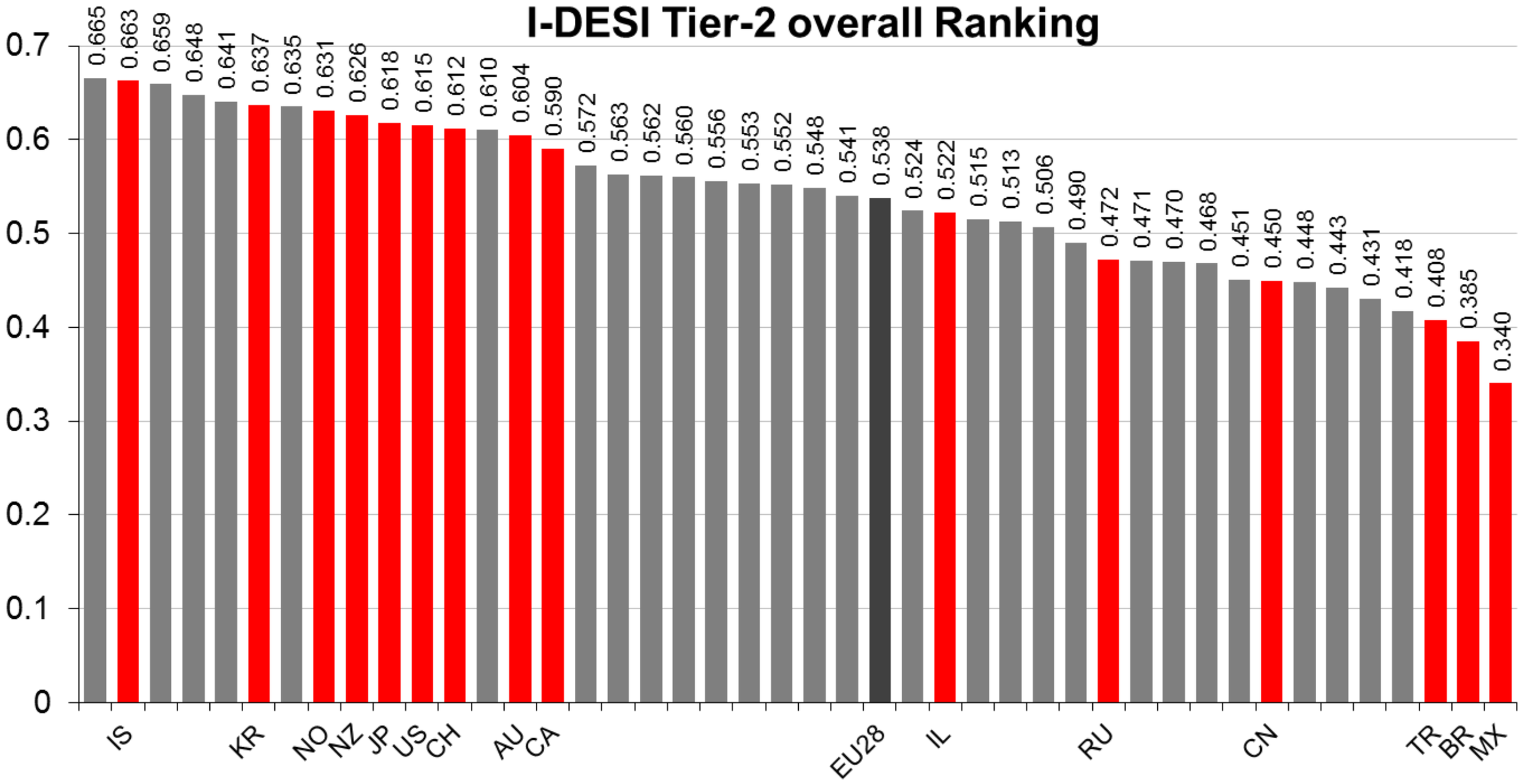

- Roughly the same message as in Tier-1
  - Top EU performers also lead globally, but the EU as a whole has ample room for improvement
- NZ reaches the top 10 (9th position)
- IL, RU, CN, TR, BR and MX all below the EU average
- Only TR, BR and MX perform below all EU countries

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