





Workshop on Best practices for successfully implementing of Broadband network

(Rabat-Morocco, 4-5 March 2014)

ITU Interactive Terrestrial Transmission Map (Optical fibres and Microwaves)

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Introduction

- With the landing of submarine cables in many countries and the expansion of national and cross-border fiber backbone networks in addition to mobile and wireless services, broadband connectivity is achieving significant progress
- Creating online Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps will serve as a powerful tool for all concerned stakeholders for facilitating the development of the Broadband connectivity worldwide
- Thanks to collaboration between ITU and Regional Organization as well as all related Stakeholders, it was finalized and released an authoritative, cutting-edge ICT-data mapping platform to take stock of national backbone connectivity as well as of other key metrics of the ICT sector
- Data collection for building the online Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps is performed with the contribution of concerned operators and Administrations through a public and transparent validation process

Project Scope

Research + processing + creation of maps of core terrestrial transmission networks for the following ITU regions:

- Arab region
- CIS region
- Asia Pacific region
- North America region
- Latin America and the Caribbean region
- Africa region
- Maps will be published in various ITU documents and reports, and in 2D and 3D web map formats
- Indicators derived from the map can be published through the map itself and in various ITU publications

Product Advantages (1)

- Demonstrating ICT connectivity current status around the globe + monitoring their evolution over time
- Providing accessible multi-criteria analysis based on robust and reliable evidence
- Empowering network planners, policy makers and regulators from developing countries with tools to assess the status of national connectivity and to identify gaps

possibility to design targeted strategies and implementation programs that expand the reach and increase the use of broadband

Product Advantages (2)

- Providing industry with a powerful tool to assess market opportunities = management tool for :
 - making investment decisions
 - promoting broadband
 - achieving universal connectivity

Offering an informed insight to abundant, current data on global ICT connectivity to all interested stakeholders

Online Interactive Terrestrial Transmission Maps (screenshot)



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Sources: UN Map base layer The base map for this infographic is based on the UNmap database, of the United Nations Cartographic Section. The UNmap0 is prepared at a scale of 1:1,000,000. UNmap is being updated on a continuous basis. <u>Transmission Map data</u> The data for building the infographics have been collected through: primary sources: Reply to an official request for information (RFI) document has been sent to all Regions outlining the puppose of the project for operators, indicating what level of datail is required, and what format the data is to be published. Secondary sources: On average, around 25 to 40% of the data was readily available in the public domain, from operator websites, annual reports, company presentations, and presentations at industry conferences. Partnership: A number of organizations do already research and produce transmission network maps for particular countries or regions, for various technical reasons. Wherever possible, partnerships with these organizations were established, to seek permission to display their network maps work through the ITU world transmission map. The collection of data as well as their validation from Concerned Operators/Administrations is currently a work in progress. The source for the Asian Highway and Trans-Asian Railway networks is the ESCAP Secretariat.

Base Layer 1 : UN Map (UN Cartographic Service)



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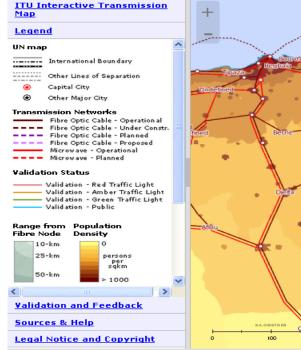
Base Layer 2 : Natural Earth

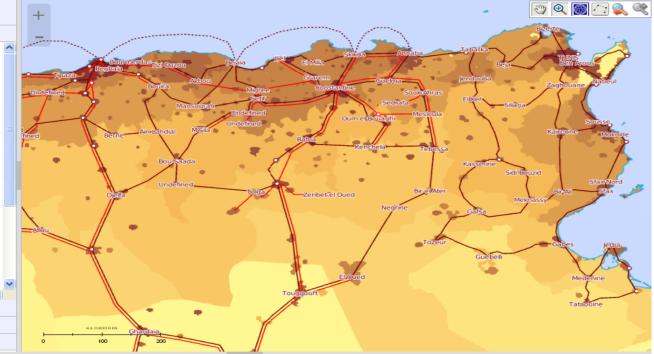


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Base Layer 3 : Population Density





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Possibility to compare the location of transmission networks against the population they serve

Indicators generation

Indicators are produced at the country or regional level, and in annual intervals

➔ track changes in terrestrial transmission networks deployment of over time

- List of indicators
 - fiber optic cable length (Route kilometers)
 - Node locations
 - Equipment type of terrestrial transmission network
 - Network capacity per channel (bit rate)
 - Number of optical fibers within the cable
 - Operational status of transmission network
 - Percentage of population within reach of transmission networks

Source: Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013 Rabat, Morocco, 4-5 March 2014

Example 1: Global Status November 2013



Welcome to the ITU Interactive Transmission Map. Select map layers below and navigate using the icons in the map window.

Alternatively, visit the <u>Google Earth</u> <u>version</u>

Base Layer

ON Map
Natural Earth

Overlays

Population density

Asian Highway

Trans-Asian Railway

🗹 World Transmission Links

Transmission Labels

Line data

<u>Legend</u>
Sources & Help
Legal Notice and Copyright



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Rabat, Morocco, 4-5 March 2014

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Example 2: Arab Region Status November 2013

ITU Interactive Transmission Map



Welcome to the ITU Interactive Transmission Map. Select map layers below and navigate using the icons in the map window.

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Base Layer

💽 UN Map

🔘 Natural Earth

Overlays

Population density

Asian Highway

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Sources & Help

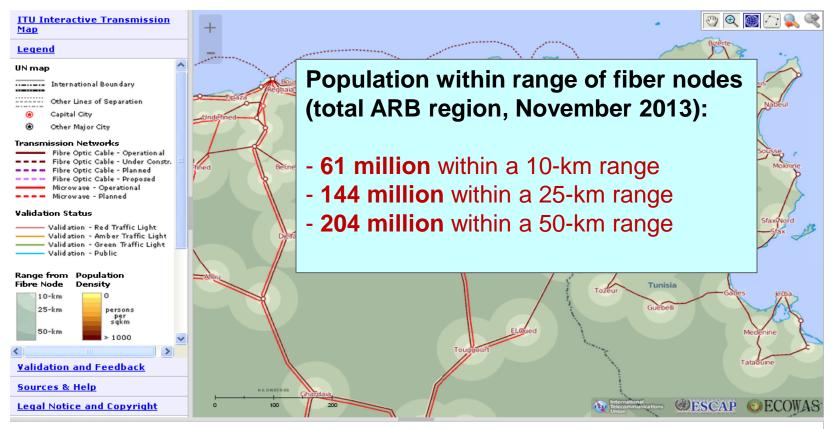
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ive ap layers e icons in		Status as at November 2013 (ARB Region): 🏹	-
Earth	$\left(\right)$		5
	K	> 856 transmission links	56
	and have	> 754 nodes	
	2 miles	> 13 countries	
	1 th	> 17 network operators	
		> 197,272 route kilometres	
		Kry K	

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Example 3: Range to Nodes Arab Region - November 2013 (1)



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Example 3: Range to Nodes Arab Region - November 2013 (2)

									-
	Country	Route-Km	10-km Range	25-km Range	50-Km Range	10-km Range	25-km Range	50-Km Range	
	Units	Km	Per Cent	Per Cent	Per Cent	Inhabitants	Inhabitants	Inhabitants	
<	Algeria	77,700	31.8	69.7	93.5	12,479,002	27,345,498	36,651,140	
	Bahrain	97	75.0	94.1	100.0	999,312	1,253,717	1,332,067	ĺ
	Comoros	607	32.3	60.8	90.6	237,204	447,007	665,689	ĺ
	Djibouti	248	75.3	84.2	94.0	657,539	734,558	820,814	
<	Egypt	27,000	24.6	63.8	88.3	20,220,842	52,364,831	72,460,857	
	Iraq	n.a.	12.6	38.1	59.7	4,239,435	12,849,073	20,170,808	ĺ
	Jordan	1,134	69.4	90.0	96.8	5,050,582	6,546,207	7,037,121	ĺ
	Kuwait	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
	Lebanon	1,800	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Libya	13,943	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Mauritania	704	13.6	27.2	37.9	528,600	1,058,785	1,474,421	ĺ
	Morocco	30,410	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Oman	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Qatar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Saudi Arabia	25,257	15.2	54.5	80.7	4,388,527	15,720,423	23,263,436	ĺ
	Somalia	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ĺ
	Sudan	15,060	17.9	36.1	56.5	6,798,169	13,696,467	21,460,130	ĺ
	Syria	n.a.	7.8	21.0	35.5	1,703,144	4,604,732	7,782,608	ĺ
<	Tunisia	3,312	34.1	68.5	97.5	3,749,494	7,528,244	10,723,958	
	UAE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
	Yemen	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.
	Total	197,272	16.7	39.4	55.7	61,051,850	144,149,542	203,843,049	

Data Collection (1)



Primary sources: Operators

An official request for information (RFI) document is drafted outlining the purpose of the project for operators and indicating:

- Required details level
- format of data to be published in

Secondary sources

- On average around 25 40% of the data is readily available in the public domain (operator websites, annual reports, company presentations, presentations at industry conferences...)
- Presentations made at ITU workshops and events, some of which may not be publicly available (restricted to TIES users)

Data Collection (2)

Partnership

- It is beneficial to seek partnership with organizations having already do research and produce transmission network maps for particular countries or regions, for various technical reasons
- Seeking permission to display organizations network maps work through the ITU world transmission map

Feedback Loop

- Gathering information when operators provide feedback on maps which have been published
- Both positive and negative feedback is useful



Maps Validation



- Operators are the only organizations which are capable of validating (or invalidating) maps of their own network infrastructure
- In the case of non-response from a network operator regarding information which is readily available in the public domain, it may be possible that regulatory authorities are able to validate or invalidate the information
- Validation process : ITU Regional Office is asked to :
 - notify the operators that the map of their network has been added to the regional map
 - invite them to log in to TIES <u>https://www.itu.int/itu-d/tnd-map/</u> to check and validate the network, and send a confirmation that they have no objection for this information to be included

Maps Validation (Example)

Leave a reply Source: Tunisie Telecom (TT) 2013. Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte Bizerte C.Tunis 40WL Kelibia 32.WL Beja Beja C.Tunis 40WL Kelibia 32.WL Beja C.Tunis	VALIDATION HOME	TRANSMISSION MAP	LATEST ACTIVITY	USER GUIDE	INDICATORS	RESEARCH STATUS
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32WL Sidi Bouzid	1	32WL		Nord		<u>New Zealand Nicaragua Niger</u> Nigeria _{Oman} Pakistan _{Palau}

Conclusion

- The creation of a Interactive Terrestrial (Optical fibers and Microwave) Transmission Map would be beneficial for all broadband actors (operators, policy makers, regulators...) especially in developing countries
- This map will constitute an important reference work that allows the generation of useful and meaningful indicators of broadband supply
- The development of such map requires the contribution of operators and telecom organizations all over the world that will be involved in the data collection and/or validation process
- For this purpose, telecom operators within the Arab region are invited to contribute in this map development by providing required updated data about their networks and participate in the validation process in order to benefit from the numerous map advantages
- Data collection should be continuing for including further information in addition to covering Europe as well as North America (starting in 2014)

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Thank You For Your Attention

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