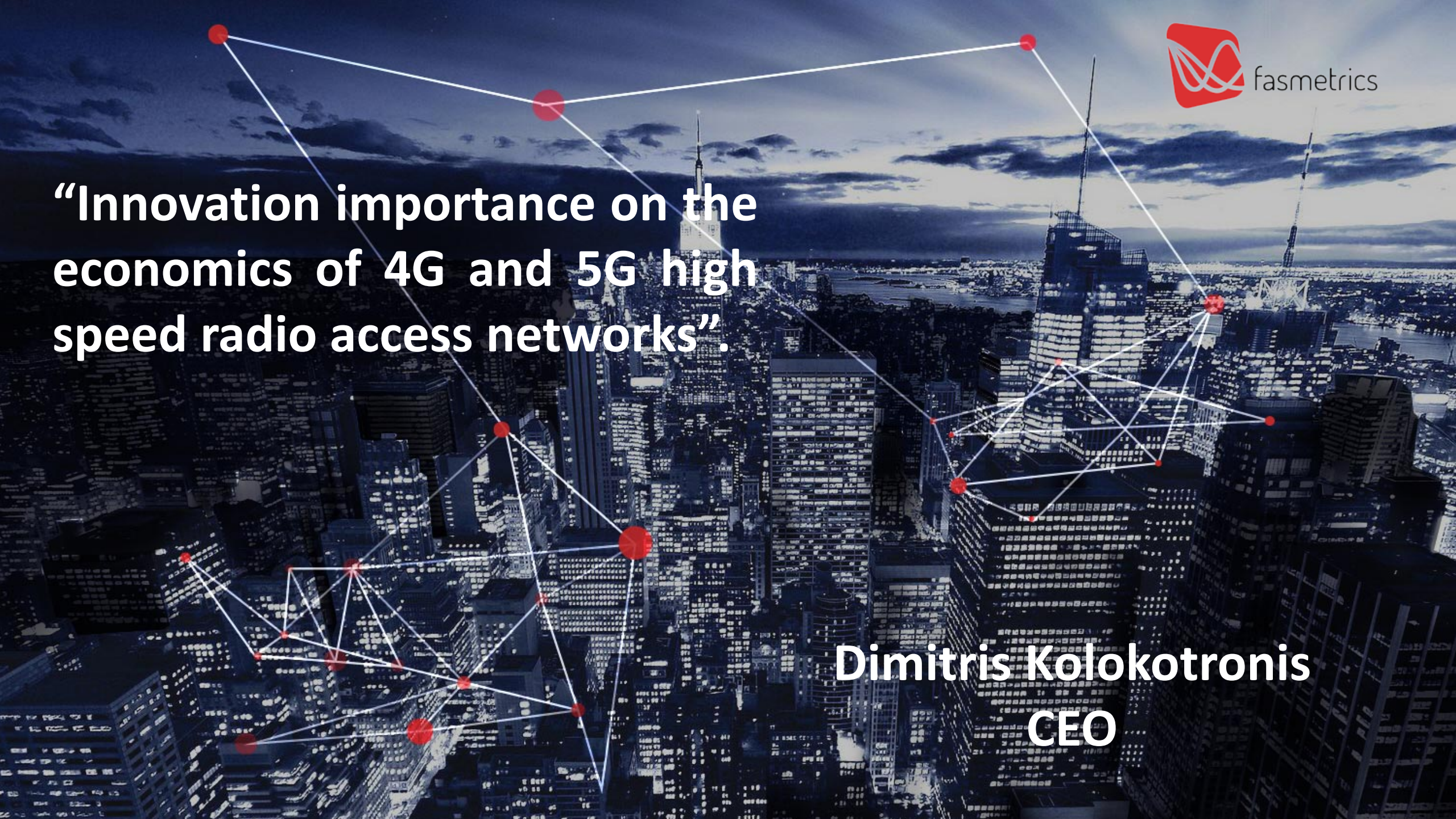
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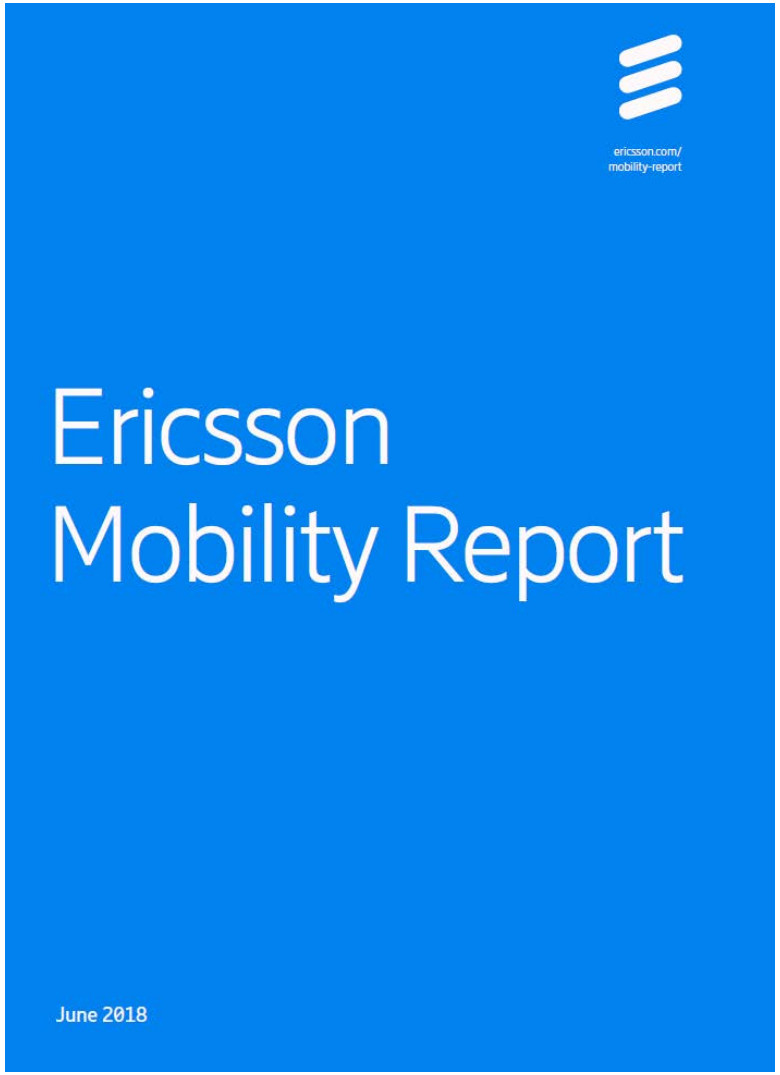
“Innovation importance on the economics of 4G and 5G high speed radio access networks”.
Dimitris Kolokotronis
CEO

The trend in the mobile communications industry…



	2017	2023	CAGR
Worldwide mobile subscriptions	7.8bn	8.9bn	2%
Worldwide smartphone subscriptions	4.3bn	7.2bn	9%
Worldwide mobile broadband subscriptions	5.3bn	8.3bn	8%
Worldwide LTE subscriptions	2.7bn	5.5bn	12%
Worldwide monthly data traffic per active smartphone	3.4GB	17GB	31%
Worldwide total monthly mobile data traffic	15EB	107EB	39%

*Source: Ericsson Mobility Report 2018

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…from Mobile Telephony…

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…to Mobile Internet…

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…but, Mobile…

How you choose an ISP?

Simple!!! By applying just 3 criteria…

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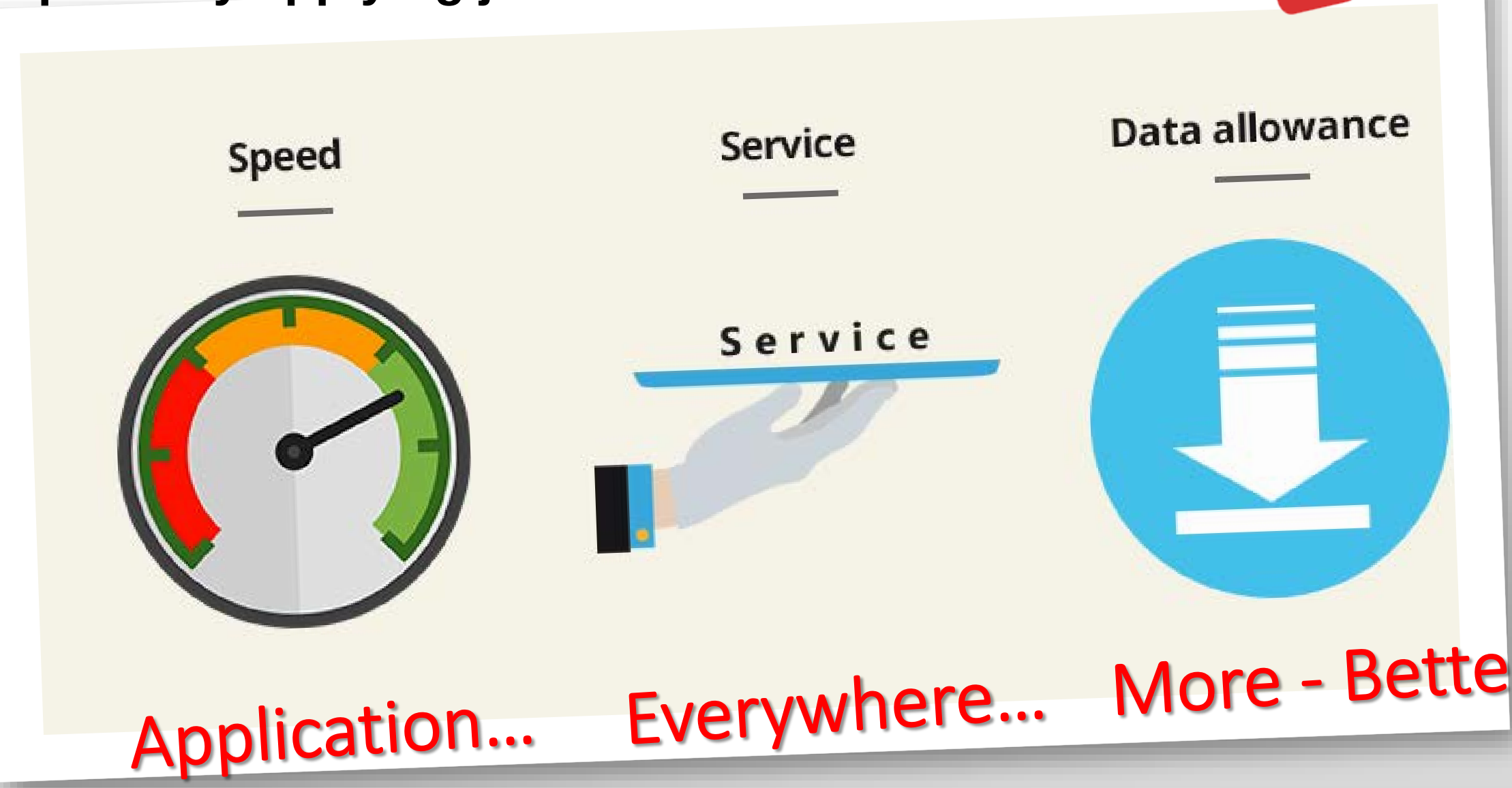
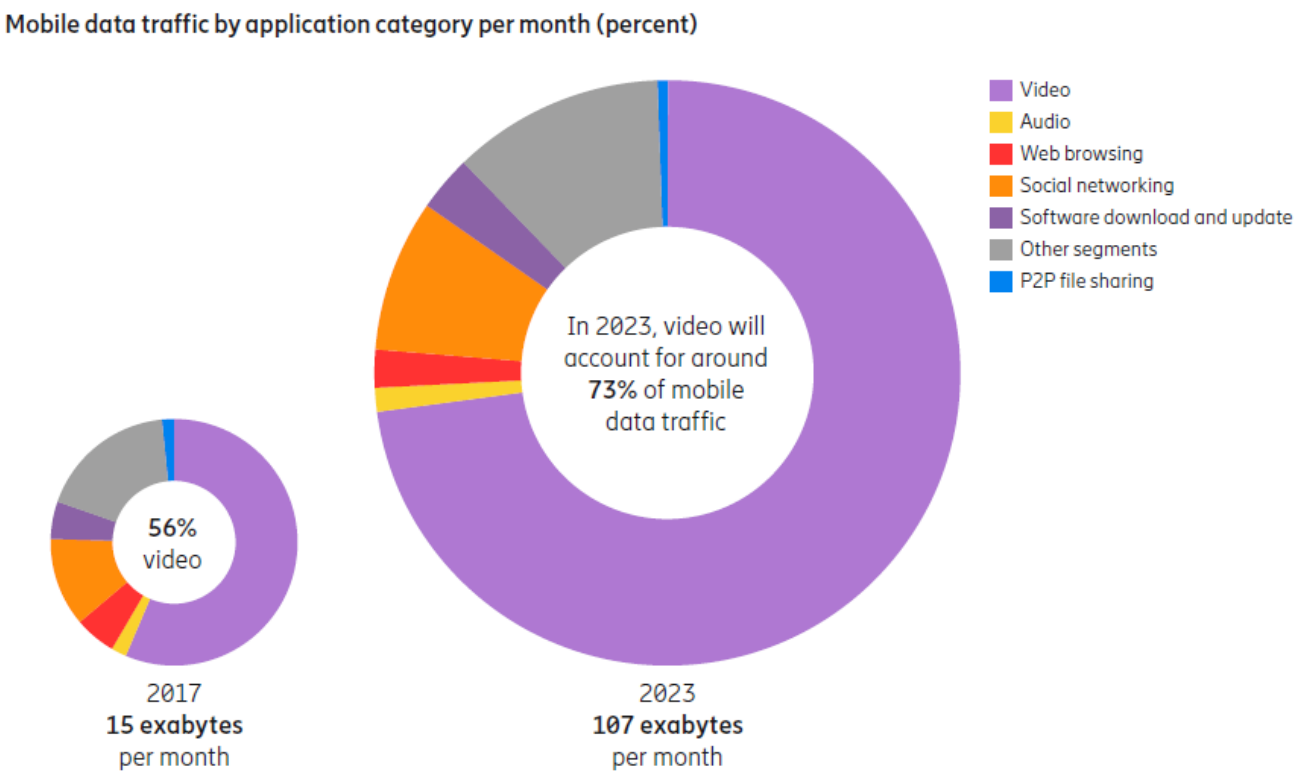
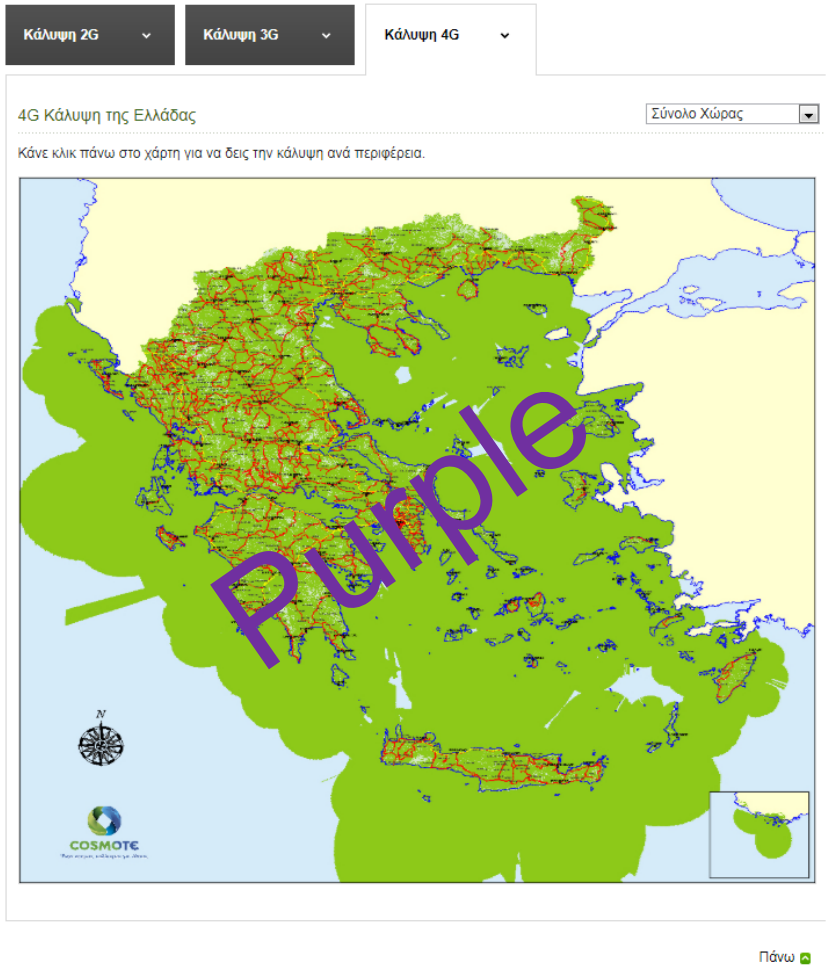


What color the coverage map needs to have?





*Source: Ericsson Mobility Report 2018

CERTIFICATE

P3 communications GmbH

Am Kraftversorgungsturm 3, D-52070 Aachen, Germany

hereby certifies that

Cosmote Mobile Telecommunications S.A.

Kifissias Av 99, Maroussi, PO 15124

Athens, Greece

achieved **„Best in Test“** with a

Total Score of **843 of 1000**

in the **Mobile Benchmark Greece 10/2017.**

(Score 336 of 400 in Telephony, Score 507 of 600 in Data Services)

P3 best in test 10/2017 Mobile Benchmark GREECE

CERTIFIED P3

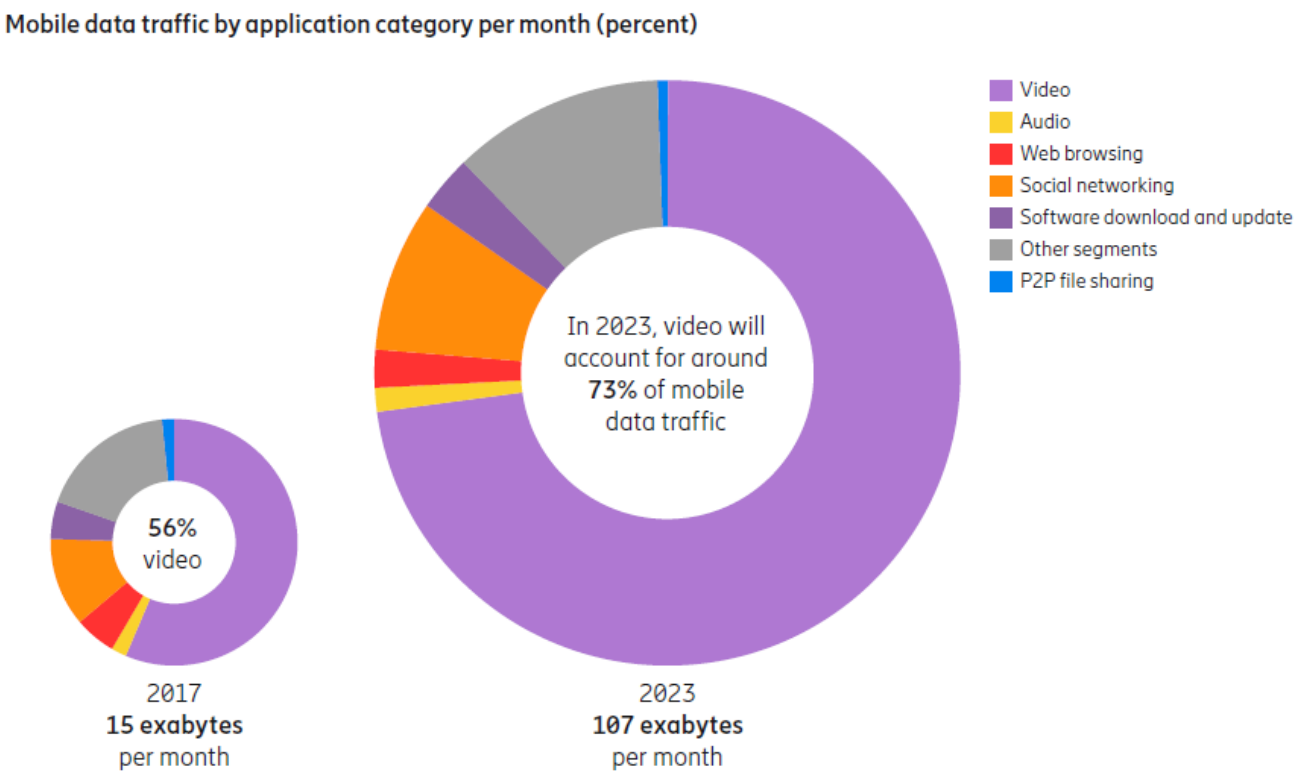
Maziar Kianzad

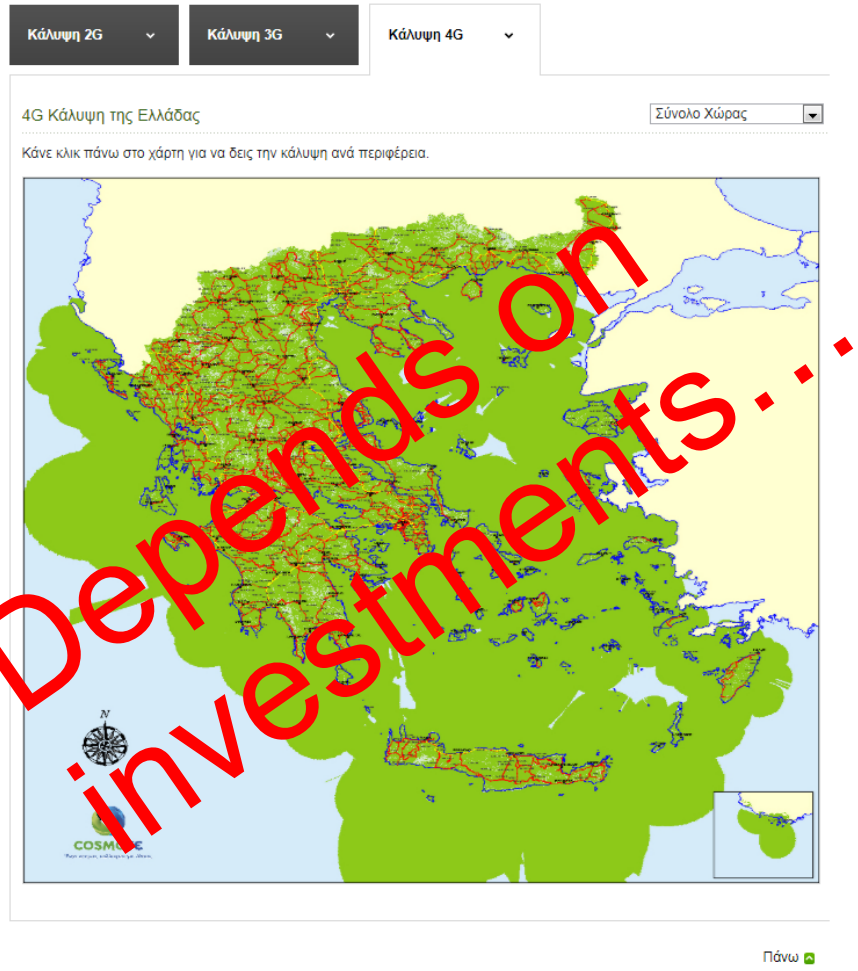
Head of Network Testing & Benchmarking

October 2017

Data Cities	KPI Name	Unit	Cosmote	Operator 2	Operator 3
HTTP Live Page DL	Qualifier	[%]	99,1	97,3	97,8
	Time to first Byte	[ms]	650	786	739
	KBytes first second	[KB]	357	361	290
HTTP Static Page DL	Qualifier	[%]	99,9	98,1	98,3
	Overall Session Time	[s]	1,2	1,4	1,7
HTTP file DL 3MB	Qualifier	[%]	99,9	99,0	98,5
	AVG Session Time	[s]	1,2	2,3	4,0
	90% faster than	[kbit/s]	13449	7255	2906
	10% faster than	[kbit/s]	63644	47244	34382
HTTP file UL 1MB	Qualifier	[%]	99,6	98,2	97,3
	AVG Session Time	[s]	1,4	1,9	2,3
	90% faster than	[kbit/s]	3121	1868	1566
	10% faster than	[kbit/s]	25974	20844	15829
HTTP DL FDTT 7s	Qualifier	[%]	[illegible]	[illegible]	97,1
	AVG throughput	[kbit/s]	59288	34669	[illegible]7684
	90% faster than	[kbit/s]	19468	[illegible]	3414
	10% faster than	[kbit/s]	107270	65848	38741
HTTP UL FDTT 7s	Qualifier	[%]	[illegible]	[illegible]	96,4
	AVG throughput	[kbit/s]	21899	15319	[illegible]0074
	90% faster than	[kbit/s]	3568	[illegible]	1679
	10% faster than	[kbit/s]	40258	30375	20353
YouTube	Qualifier	[%]	99,5	95,9	95,8
	Start Time	[s]	2,3	2,6	3,1
	Playouts w/o interruptions	[%]	100,0	98,3	98,0
	AVG Resolution	[p]	1078,8	1068,3	1050,0

What color the coverage map will be in 2023?





*Source: Ericsson Mobility Report 2018

Let’s see what happened the last 2-years…

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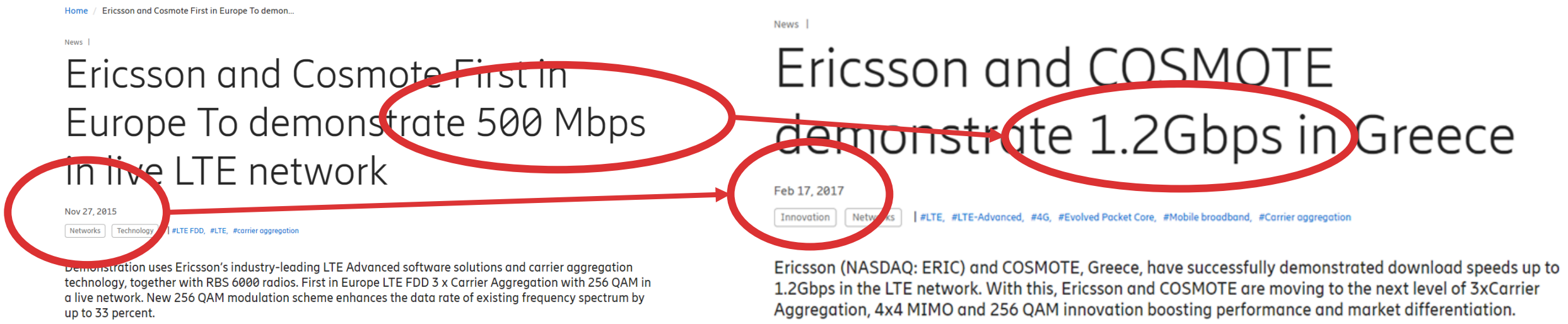
X2 Capacity



Home / Ericsson and Cosmote First in Europe To demon...

News |

Ericsson and Cosmote First in Europe To demonstrate 500 Mbps in live LTE network

Nov 27, 2015

Networks | Technology | #LTE FDD, #LTE, #carrier aggregation

Demonstration uses Ericsson’s industry-leading LTE Advanced software solutions and carrier aggregation technology, together with RBS 6000 radios. First in Europe LTE FDD 3 x Carrier Aggregation with 256 QAM in a live network. New 256 QAM modulation scheme enhances the data rate of existing frequency spectrum by up to 33 percent.

News |

Ericsson and COSMOTE demonstrate 1.2Gbps in Greece

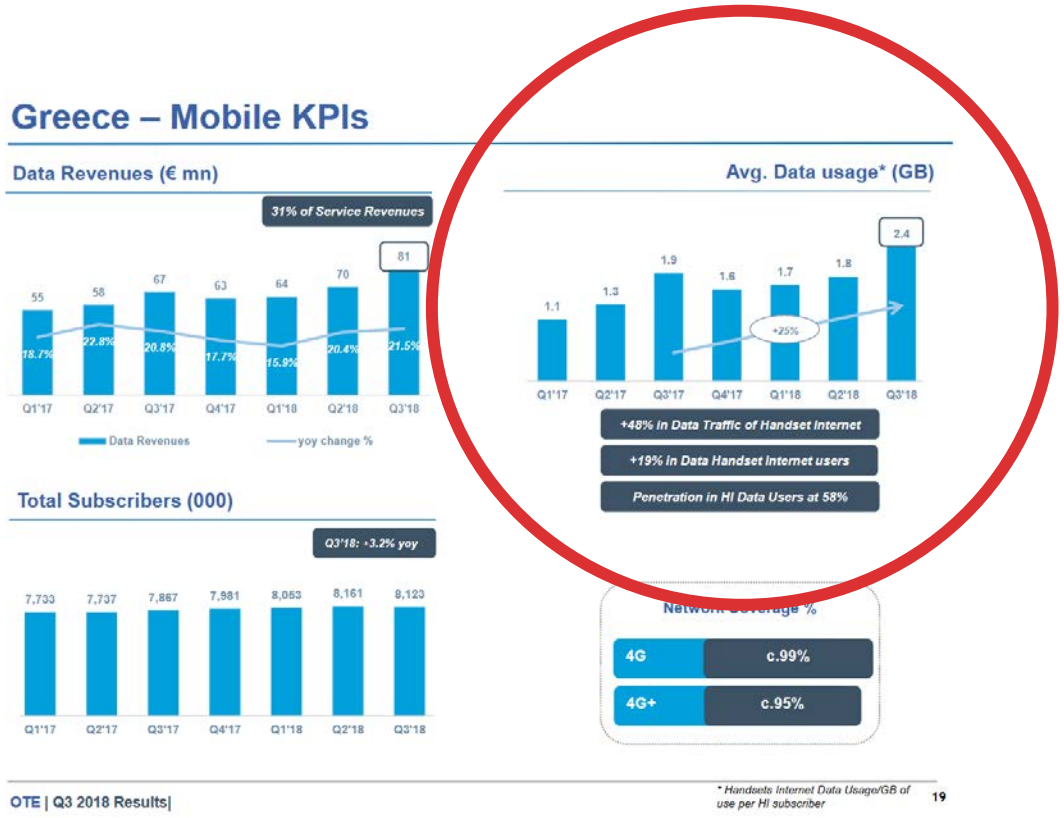
Feb 17, 2017

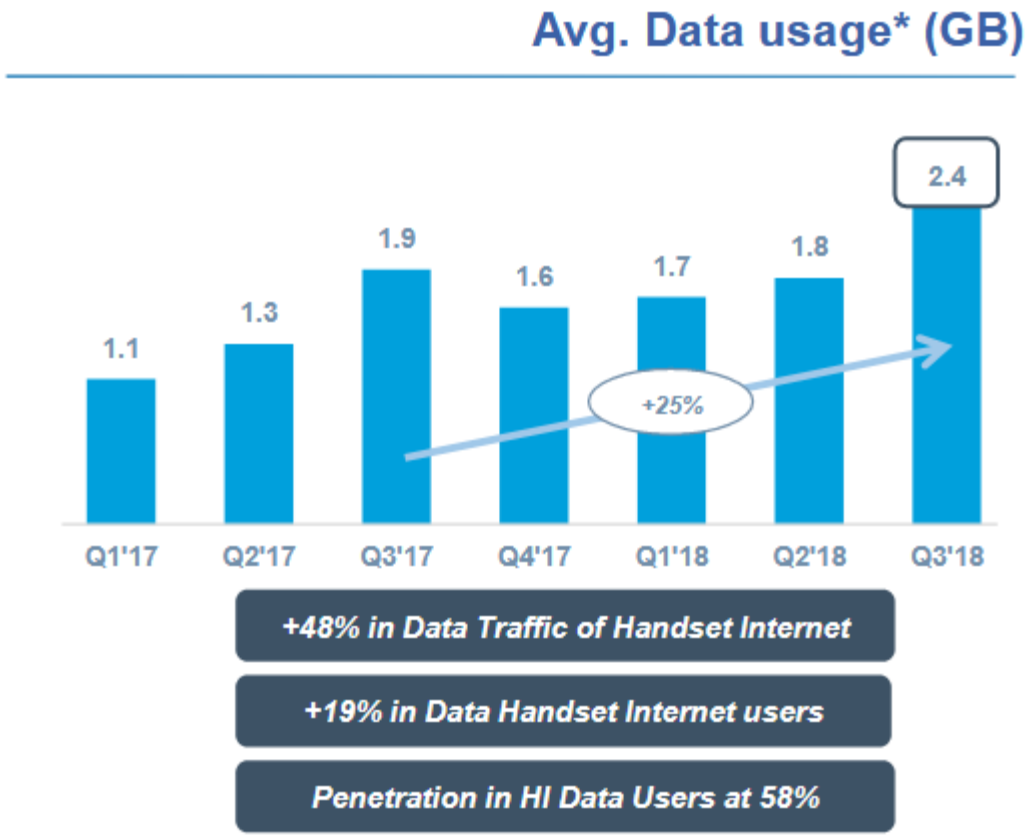
Innovation | Networks | #LTE, #LTE-Advanced, #4G, #Evolved Packet Core, #Mobile broadband, #Carrier aggregation

Ericsson (NASDAQ: ERIC) and COSMOTE, Greece, have successfully demonstrated download speeds up to 1.2Gbps in the LTE network. With this, Ericsson and COSMOTE are moving to the next level of 3xCarrier Aggregation, 4x4 MIMO and 256 QAM innovation boosting performance and market differentiation.

(…intense investments on network…)

Capacity to satisfy the increasing demand…





(…the path to 5G network speeds…)

How innovation optimize network economics?

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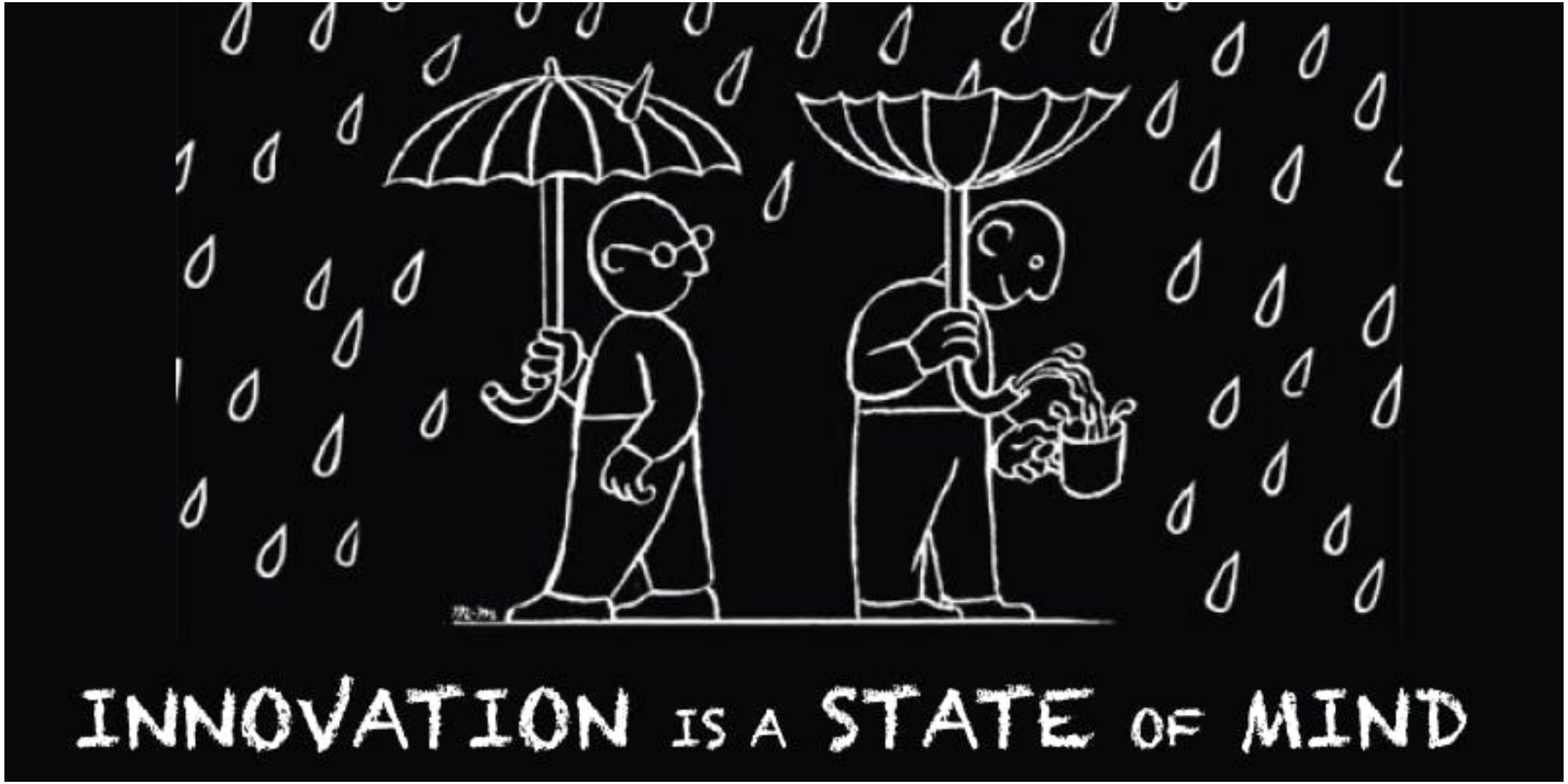

Simply by increasing Returns on Investments!

3skelion: X2 Capacity from innovation on existing networks!!!

X2 capacity from innovation: RoI calculations…

Network cost = A, Network capacity = B,
Network cost = Network capacity → A=B,

If Network capacity from innovation = 2B for Network cost = A,

Then A = 2B or B = A/2,

If A (investment) returns X€, then for 2B, X€ require A/2 investment,

<u>Therefore RoI doubles from innovation!!!</u>

UNFORTUNATELY WE CANNOT APPLY THIS INNOVATION TO THE MAINLAND GREECE BUT ONLY ON SEA AREAS


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Thank you for listening