

4G era – Who got the most out of it?

5-year mobile service revenue trends for 143 operators present in EU28 & OECD markets

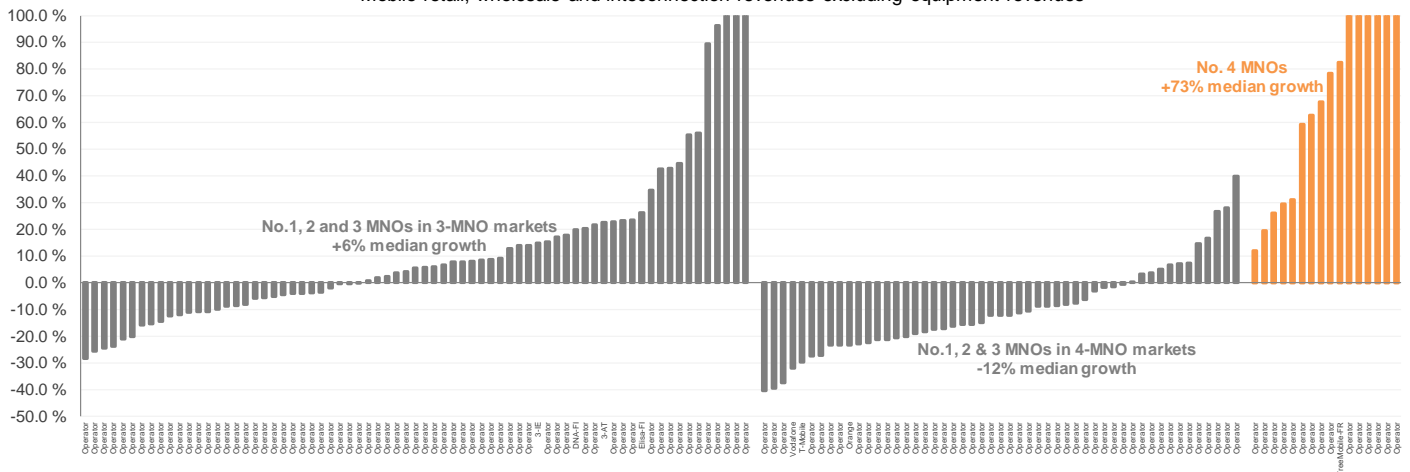
Finnish operators that executed 'unlimited everything' strategies were the undisputed champions of the 4G era 🏆

Rewheel research PRO study, 24th May 2019

- 4th MNOs got the most out of it, recording an average revenue growth of 73% the last 5 years, in declining markets!
- Incumbent (no.1, 2 and 3) operators in 4-MNO markets fared much worse than their peers in 3-MNO markets.
- While the mobile service revenue of incumbent (no.1, 2 and 3) operators in 4-MNO markets fell by an average of 12% the last 5 years, in 3-MNO markets it increased by an average of 6%.
- Worst hit were the incumbents in the 5-MNO Israeli and 4-MNO (until November 2018) Dutch markets.
- Were there any incumbent operators that managed to grow their revenue in 4-MNO markets where total revenue declined?
- Tele2 NL the no.4 MNO that was acquired by T-Mobile in 2018 more than doubled its revenue the last 5 years.
- Elsewhere, the Finnish operators and in particular Elisa recorded impressive double-digit revenue growth by executing mobile-centric 'unlimited everything' strategies.
- Hutchison-3 also recorded impressive double-digit revenue growth in its 4 to 3 consolidated Austrian and Irish markets.

Mobile service revenue growth (2018 vs. 2013) - EU28 & OECD operators

Mobile retail, wholesale and interconnection revenues excluding equipment revenues



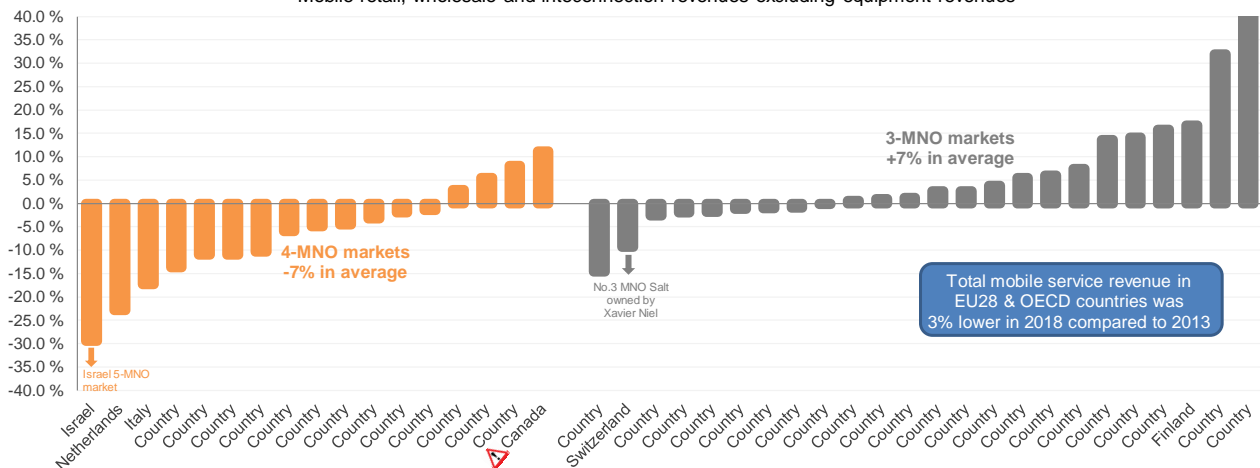
Source: Operator reports, regulator reports and Rewheel estimates

research.rewheel.fi © 2019

- In 4-MNO markets mobile service revenue fell by 7% the last 5 years, in 3-MNO markets revenues increased by 7%.
- Worst hit was the 5-MNO Israeli and 4-MNO Dutch markets, closely followed by other European 4-MNO markets such as Italy, France, Spain, UK, Denmark, Poland, etc.
- Total mobile service revenue across all 41 EU28 & OECD markets was down 3%.
- Mobile service revenue per capita (~average price paid by consumers) fell the most in the 5-MNO Israeli market followed by the 4-MNO Dutch, Australian and Italian markets.

Mobile service revenue growth (2018 vs. 2013) - EU28 & OECD countries

Mobile retail, wholesale and interconnection revenues excluding equipment revenues



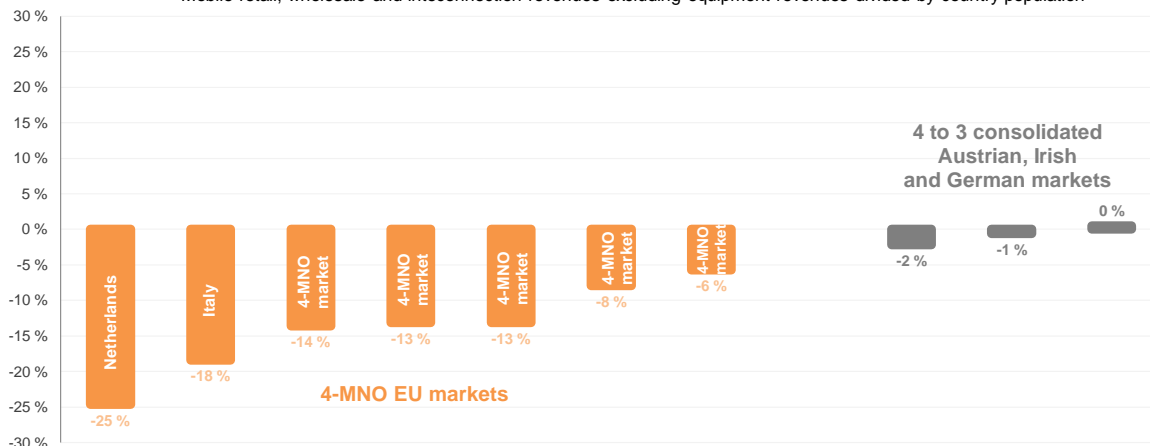
Source: Operator reports, regulator reports and Rewheel estimates

research.rewheel.fi © 2019

- While in the 4 to 3 consolidated Austrian, German and Irish markets consumers still pay in average roughly the same amount every month as they paid 5 years ago, in 4-MNO European markets consumers pay nowadays up to 7 EUR less and on top of that buy several or unlimited times more gigabytes than consumers in consolidated markets!

Mobile service revenue per capita growth (2018 vs. 2013) - EU28 & OECD

Mobile retail, wholesale and interconnection revenues excluding equipment revenues divided by country population



Source: Operator reports, regulator reports and Rewheel estimates
 Revenue in countries with different currencies was converted to EUR using 2018 market exchange rate for both 2018 and 2013

Market MNOs	MNO position	EU28	OECD	Country code	Operator group name	Mobile network operator (MNO) name	Mobile service revenue (retail revenue, wholesale revenue & interconnection revenue, excluding handset revenue) as reported in local currency or converted to local currency by using the reported exchange rates or annual average OFX rates (millions)					
							2013	2014	2015	2016	2017	2018
3	1	Yes	Yes	AT	TelekomAustria	A1-AT						
3	2	Yes	Yes	AT	DeutscheTelekom	T-Mobile-AT						
3	3	Yes	Yes	AT	Hutchison	3-AT						
4	1	Yes	Yes	AU	Telstra	Telstra-AU						
4	2	No	Yes	AU	SingTel	Optus-AU						
4	3	No	Yes	AU	VodafoneHutchison	Vodafone-AU						
4	X	No	Yes	AU	TPG	TPG-AU						
3	1	Yes	Yes	BE	Proximus	Proximus-BE						
3	2	Yes	Yes	BE	Orange	Orange-BE						
3	3	Yes	Yes	BE	LibertyGlobal	BASE-BE						
4	1	Yes	No	BG	TelekomAustria	A1-BG						
4	2	Yes	No	BG	PPF	Telenor-BG						
4	3	Yes	No	BG	Vivacom	Vivacom-BG						
4	X	Yes	No	BG	Bulsatcom	Bulsatcom-BG						
4	1	No	Yes	CA	RogersCommunications	Rogers-CA						
4	2	No	Yes	CA	BCE	Bell-CA						
4	3	No	Yes	CA	Telus	Telus-CA						
4	4	No	Yes	CA	Shaw	Freedom-CA						
3	1	No	Yes	CH	Swisscom	Swisscom-CH						
3	2	No	Yes	CH	Sunrise	Sunrise-CH						
3	3	No	Yes	CH	Ilid	Salt-CH						
4	1	No	Yes	CL	Telefonica	Movistar-CL						
4	2	No	Yes	CL	Entel	Entel-CL						
4	3	No	Yes	CL	AmericaMovil	Claro-CL						
4	4	No	Yes	CL	Novator	WOM-CL						
3	1	No	Yes	CY	CYTA	CYTA						
3	2	Yes	No	CY	Ilid	MTN-CY						
3	3	Yes	No	CY	Primetel	Primetel-CY						
3	1	Yes	Yes	CZ	DeutscheTelekom	T-Mobile-CZ						
3	2	Yes	Yes	CZ	PPF	O2-PPF-CZ						
3	3	Yes	Yes	CZ	Vodafone	Vodafone-CZ						
3	1	Yes	Yes	DE	DeutscheTelekom	T-Mobile-DE						
3	2	Yes	Yes	DE	Vodafone	Vodafone-DE						
3	3	Yes	Yes	DE	Telefonica	O2-DE						
3	X	Yes	Yes	DE	United-Interent	L&M-Drillisch-DE						
4	1	Yes	Yes	DK	TDC	TDC-DK						
4	2	Yes	Yes	DK	Telenor	Telenor-DK						
4	3	Yes	Yes	DK	TeliaCompany	Telia-DK						
4	4	Yes	Yes	DK	Hutchison	3-DK						
3	1	Yes	Yes	EE	TeliaCompany	Telia-EE						
3	2	Yes	Yes	EE	Elisa	Elisa-EE						
3	3	Yes	Yes	EE	Tele2	Tele2-EE						
3	1	Yes	Yes	EL	DeutscheTelekom	Cosmote-EL						
3	2	Yes	Yes	EL	Vodafone	Vodafone-EL						
3	3	Yes	Yes	EL	WindHellas	Wind-EL						
4	1	Yes	Yes	ES	Telefonica	Movistar-ES						
4	2	Yes	Yes	ES	Vodafone	Vodafone-ES						
4	3	Yes	Yes	ES	Orange	Orange-ES						
4	4	Yes	Yes	ES	Masmovil	Yoigo-ES						
3	1	Yes	Yes	FI	Elisa	Elisa-FI						
3	2	Yes	Yes	FI	TeliaCompany	Telia-FI						
3	3	Yes	Yes	FI	DNA	DNA-FI						
4	1	Yes	Yes	FR	Orange	Orange-FR						
4	2	Yes	Yes	FR	Altice	SFR-FR						
4	3	Yes	Yes	FR	BouyguesTelecom	BouyguesTelecom-FR						
4	4	Yes	Yes	FR	Ilid	FreeMobile-FR						
3	1	Yes	No	HR	DeutscheTelekom	T-Hrvatski-HR						
3	2	Yes	No	HR	TelekomAustria	A1-HR						
3	3	Yes	No	HR	Tele2	Tele2-HR						
3	1	Yes	Yes	HU	DeutscheTelekom	T-Mobile-HU						
3	2	Yes	Yes	HU	PPP	Telenor-HU						
3	3	Yes	Yes	HU	Vodafone	Vodafone-HU						
3	1	Yes	Yes	IE	Vodafone	Vodafone-IE						
3	2	Yes	Yes	IE	Hutchison	3-IE						
3	3	Yes	Yes	IE	Ilid	eir-IE						
5	1	No	Yes	IL	Cellcom	Cellcom-IL						
5	2	No	Yes	IL	Partner	Partner-IL						
5	3	No	Yes	IL	Bezeq	Pelephone-IL						
5	4	No	Yes	IL	Electra	GolanTelecom-IL						
5	5	No	Yes	IL	Altice	HotMobile-IL						
3	1	No	Yes	IS	Siminn	Siminn-IS						
3	2	No	Yes	IS	VodafoneIceland	VodafoneIceland-IS						
3	3	No	Yes	IS	Novator	Nova-IS						
4	1	Yes	Yes	IT	Telecomitalia	TIM-IT						
4	2	Yes	Yes	IT	Vodafone	Vodafone-IT						
4	3	Yes	Yes	IT	Hutchison	3-IT						
4	4	Yes	Yes	IT	Ilid	Ilid-IT						
3	1	No	Yes	JP	NTTdocomo	NTTdocomo-JP						
3	2	No	Yes	JP	KDDI	KDDI-JP						
3	3	No	Yes	JP	Softbank	Softbank-JP						
3	X	No	Yes	JP	Rakuten	Rakuten-JP						
3	1	No	Yes	KR	SKTelecom	SKTelecom-KR						
3	2	No	Yes	KR	KT	KT-KR						
3	3	No	Yes	KR	LGIplus	LGIplus-KR						
3	1	Yes	No	LT	Tele2	Tele2-LT						
3	2	Yes	No	LT	TeliaCompany	Telia-LT						
3	3	Yes	No	LT	BITE	BITE-LT						
3	1	Yes	Yes	LU	POSTLuxemburg	POSTLuxemburg-LU						
3	2	Yes	Yes	LU	Proximus	Tango-LU						
3	3	Yes	Yes	LU	Orange	Orange-LU						
3	1	Yes	Yes	LV	TeliaCompany	LMT-LV						
3	2	Yes	Yes	LV	Tele2	Tele2-LV						
3	3	Yes	Yes	LV	BITE	BITE-LV						
3	1	Yes	No	MT	Vodafone	Vodafone-MT						
3	2	Yes	No	MT	Go	Go-MT						
3	3	Yes	No	MT	Melita	Melita-MT						
3	1	No	Yes	MX	AmericaMovil	Telcel-MX						
3	2	No	Yes	MX	Telefonica	Movistar-MX						
3	3	No	Yes	MX	ATT	ATT-MX						
4	1	Yes	Yes	NL	KPN	KPN-NL						
4	2	Yes	Yes	NL	VodafoneZiggo	Vodafone-NL						
4	3	Yes	Yes	NL	DeutscheTelekom	T-Mobile-NL						
4	4	Yes	Yes	NL	Tele2	Tele2-NL						
3	1	No	Yes	NO	Telenor	Telenor-NO						
3	2	No	Yes	NO	TeliaCompany	Telia-NO						
3	3	No	Yes	NO	AccessIndustries	ice-NO						
3	1	No	Yes	NZ	Vodafone	Vodafone-NZ						
3	2	No	Yes	NZ	Spark	Spark-NZ						
3	3	No	Yes	NZ	2degrees	2degrees-NZ						
4	1	Yes	Yes	PL	Orange	Orange-PL						
4	2	Yes	Yes	PL	DeutscheTelekom	T-Mobile-PL						
4	3	Yes	Yes	PL	Polkomtel	Polkomtel-PL						
4	4	Yes	Yes	PL	Play	Play-PL						
3	1	Yes	Yes	PT	Altice	MEO-PT						
3	2	Yes	Yes	PT	Vodafone	Vodafone-PT						
3	3	Yes	Yes	PT	Nos	Nos-PT						
4	1	Yes	No	RO	Orange	Orange-RO						
4	2	Yes	No	RO	Vodafone	Vodafone-RO						
4	3	Yes	No	RO	DeutscheTelekom	T-Mobile-RO						
4	4	Yes	No	RO	RCS-RDS	RCS-RDS-RO						
4	1	Yes	Yes	SE	TeliaCompany	Telia-SE						
4	2	Yes	Yes	SE	Tele2	Tele2-SE						
4	3	Yes	Yes	SE	Telenor	Telenor-SE						
4	4	Yes	Yes	SE	Hutchison	3-SE						
4	1	Yes	Yes	SI	TelekomSlovenije	TelekomSlovenije-SI						
4	2	Yes	Yes	SI	TelekomAustria	A1-SI						
4	3	Yes	Yes	SI	Telemach	Telemach-SI						
4	4	Yes	Yes	SI	T2	T2-SI						
4	1	Yes	Yes	SK	Orange	Orange-SK						
4	2	Yes	Yes	SK	DeutscheTelekom	T-Mobile-SK						
4	3	Yes	Yes	SK	PPF	O2-PPF-SK						
4	4	Yes	Yes	SK	Swan	Swanmobile-SK						
3	1	No	Yes	TR	Turkcell	Turkcell-TR						
3	2	No	Yes	TR	Vodafone	Vodafone-TR						
3	3	No	Yes	TR	TurkTelecom	TurkTelecom-TR						
4	1	Yes	Yes	UK	BritishTelecom	EE-UK						
4	2	Yes	Yes	UK	Telefonica	O2-UK						
4	3	Yes	Yes	UK	Vodafone	Vodafone-UK						
4	4	Yes	Yes	UK	Hutchison	3-UK						
4	1	No	Yes	US	Verizon	Verizon-US						
4	2	No	Yes	US	ATT	ATT-US						
4	3	No	Yes	US	Softbank	Sprint-US						
4	4	No	Yes	US	DeutscheTelekom	T-Mobile-US						

Context

In this brief study we look back in time, into the prime years of the 4G era, with the aim of singling out the operators and markets that got the most of this truly transformative mobile technology. We used mobile service revenue growth/decline (2018 vs. 2013) as the key metric for picking winners and losers and attempt to shed light on the market structures (4 vs. 3 MNOs present) and operator strategies (unlimited mobile-centric vs. converged fixed-centric) that underpinned the observed revenue trends.

Back in 2013, GSMA in its 'The Mobile Economy 2013' report¹ forecasted that global mobile revenues would grow with a CAGR of 2.3% between 2012 and 2017, mainly driven by growth in the Asia Pacific region, as seen in the chart below.

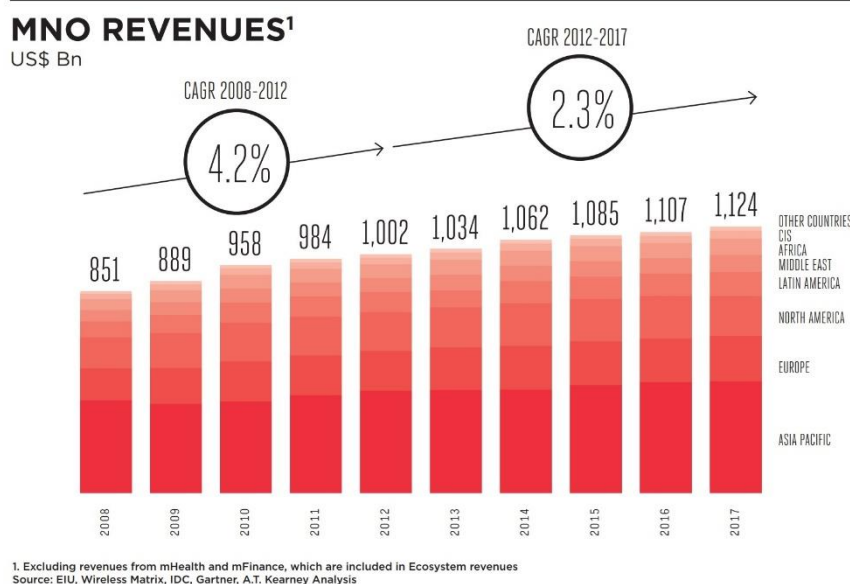


Figure 16

Interestingly, GSMA emphasized that “The roll out of 4G technology offers the potential for operators to enhance the services they provide **and potentially increase revenues.**” GSMA pointed out that “In some countries where 4G has already launched, significant Average Revenue Per User (ARPU) uplifts have been achieved, reflecting consumer demand and willingness to pay. This is mostly seen in North America, Scandinavia, Korea and Japan.”.

So, were consumers willing to pay more for 4G as GSMA and their advisors claimed back in 2013? Well that is a rhetorical question that neither us nor GSMA can convincingly ever answer. The question that can be answered though is: how much consumers ended up paying for 4G and was that higher or lower from what they used to pay for 3G? Or conversely, did operator revenues grow or decline during the 4G era?

Consumer willingness to pay has little to do with the underlying technology (2G, 3G, 4G, 5G, 6G, etc.). Unlimited plans that today enable a carefree internet usage anytime anywhere (in the 2G voice era they enabled care free voice usage) are shown, time and time again, to be the sweet spot to consumer satisfaction. A satisfied consumer may stick longer and might, just might, increase its willingness to pay a tiny bit more.

Now willingness to pay for a service should not be confused with the actual price that consumers do pay for that service. Prices paid in a mobile market are primarily driven by the market’s competition intensity. As we have repeatedly shown in our studies², the higher the number of mobile network operators present in the market the higher the competition intensity and the lower the prices.

So, who were the operators and markets that got the most out of the 4G era and on the back of what strategies? Unsurprisingly, as shown in the highlights above, the new kids on the block (i.e. 4th entrants) grew their revenue by 73% in average the last 5 years. Many incumbents in 3-MNO markets also grew their revenue by big double digits. However, were there any incumbent operators that managed to grow their revenue in 4-MNO markets where total revenue declined? If so, what were their strategies?

¹https://www.gsma.com/mobileeconomy/archive/GSMA_ME_2013.pdf

²http://research.rewheel.fi/insights/2019_jan_pro_4G_prices_as_a_function_of/

After all the 3G and 4G hype one will think that the industry learned its lessons. But some never cease to surprise us.

Techradar reported³ that “Ericsson believes⁴...In terms of a premium, the report suggests 5G users would be willing to pay as much as 20 per cent more than what they currently spend, with early adopters would accept a 32 per cent increase...”.

No, they won't, they will pay less than they paid for 4G, more of them will get unlimited data, get faster speeds and a fair amount of them will replace their fixed broadband at home with 5G mobile or fixed wireless broadband. That's it.

³<https://www.techradar.com/news/ericsson-consumers-will-pay-more-for-5g-and-there-are-use-cases>

⁴<https://www.ericsson.com/en/trends-and-insights/consumerlab/consumer-insights/reports/5g-consumer-potential>

Table of Contents

1	Methodology and input data	6
1.1	Methodology	6
1.2	Input data	9
2	Findings	12
2.1	Operators	12
2.2	Countries	19
2.3	4 to 3 consolidated Austrian, German and Irish markets versus 4-MNO European markets	25

Get the full report

The full 27-pages report is available for purchase. Please contact us at research@rewheel.fi or +358 44 203 2339

About Rewheel

*New radio spectrum bands, 4.5G and 5G technology, unlimited mobile data plans and the Internet of Things radically change mobile network operators' cost, revenue and profitability dynamics. **Rewheel's mission is to help operators prepare for the paradigm shift in network and spectrum strategy, spectrum valuation, network sharing, M&A, MVNO economics and mobile data pricing.***

Founded in 2009, Rewheel is a Finland based boutique management consultancy. Our clients are mainly European mobile network operators, telco groups, MVNO groups, sector regulators, governments, global internet firms, mobile data-centric start ups, PE and VC investors.

We delivered management consultancy work for clients in the United Kingdom, United States, Ireland, Switzerland, Finland, Sweden, Belgium, Greece, Poland, Slovenia, Hungary, Russia, Romania. Buyers of our research reports and related strategic workshops include many companies and authorities across Europe and worldwide.

Since 2010 we have been supporting a number of European challenger mobile operators in multiband (700, 700 SDL, 800, 900, 1400 SDL, 1800, 2600, 3.5 GHz) auctions with spectrum valuation and strategic advisory services.

Network economics metrics

For comprehensive data usage, spectrum usage and capacity utilisation metrics in EU28 and OECD markets visit

⇒ <http://research.rewheel.fi/networkeconomics/>

Recent research reports

The state of 4G pricing – 1H2019 – Digital Fuel Monitor 11th release

⇒ http://research.rewheel.fi/insights/2019_apr_pro_1h2019_release/

4G prices as a function market concentration, no. of MNOs, subscriber share, position, group affiliation and country general price level

⇒ http://research.rewheel.fi/insights/2019_jan_pro_4G_prices_as_a_function_of/

liad's 4th MNO venture into Italy – Will it pay off?

⇒ http://research.rewheel.fi/insights/2019_jan_pro_liad_italy/

T-Mobile and Tele2 4 to 3 mobile merger in the Netherlands – Competition concerns, efficiencies and effective remedies

⇒ http://research.rewheel.fi/insights/2018_nov_pro_tele2_t-mobile_nl/

The state of 4G pricing – 2H2018 – Digital Fuel Monitor 10th release

⇒ http://research.rewheel.fi/insights/2018_oct_pro_2h2018_release/

Capacity utilization and fixed-to-mobile broadband substitution potential with existing macro site grids – 2017

⇒ http://research.rewheel.fi/insights/2018_sep_pro_capacity/

The 4 to 3 consolidation effect – Ahead of the Commission's merger ruling Tele2 increased prices in the Netherlands

⇒ http://research.rewheel.fi/insights/2018_july_pro_T-mobile-Tele2_Netherlands/

The state of 4G pricing – 1H2018 – Digital Fuel Monitor 9th release

⇒ http://research.rewheel.fi/insights/2018_may_pro_1h2018_release/

Gigabyte price development in 4 to 3 consolidated versus 4-MNO European markets – September 2013 to March 2018

⇒ http://research.rewheel.fi/insights/2018_apr_pro_4to3_consolidation_vs_4MNO/

The state of 4G pricing – 2H2017 – Digital Fuel Monitor 8th release

⇒ http://research.rewheel.fi/insights/2017_nov_pro_2h2017_release/

Unlimited mobile data and near zero marginal cost – a paradigm shift in telco business models

⇒ http://research.rewheel.fi/insights/2017_sep_pro_near_zero_marginal_cost/

O2 – Ready to disrupt the German tight oligopoly market

⇒ http://research.rewheel.fi/insights/2017_apr_pro_o2_germany_turnaround/

Capacity utilization and fixed-to-mobile broadband substitution potential – A study of 64 European operators

⇒ http://research.rewheel.fi/insights/2017_mar_pro_network_utilisation_mimo/

Effective structural remedies for Hutchison-WIND 4 to 3 Italian mobile merger

⇒ http://research.rewheel.fi/insights/2016_sept_premium_italy_hutch_wind_merger/

Telenor Denmark – Turnaround strategy

⇒ http://research.rewheel.fi/insights/2016_apr_premium_telenor_denmark_turnaround/

For further research reports visit research.rewheel.fi To learn more about our consultancy's profile visit www.rewheel.fi or please contact us at research@rewheel.fi or +358442032339.