

# Voipfuture Qrystal

VoLTE & VoWifi | Demo-Report

Voipfuture technology uses fixed time slicing to create atomic units of media quality.

This means that each time slice of each stream of each call running through the network delivers data – summaries relying on hundreds of metrics and indicators.

These quality summaries each 5 seconds allow an adjustable depth of view.

- An aggregated “KPI” view to express precise performance of service and infrastructure
- A detailed view delivering root causes to pin point problem sources and impact level

The aggregation to different levels does not only makes sense in a vertical respect. It provides data for very different use cases.

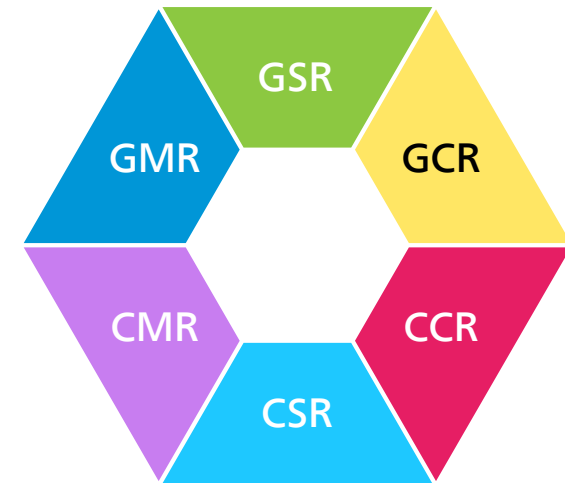
- For example, call quality data is essential for customer experience management, but less helpful for root cause analysis.
- Time slice and session data on the other hand give valuable insights into the overall network and service quality and provide a better high-level overview.

Every time slice is a quality summary relying on hundreds of metrics and indicators. Every call, every stream delivers data – each 5 second.

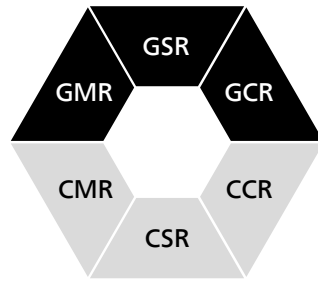
Whereas there are well defined KPIs to assess a network's SIP signaling performance there is no comparable means to determine media quality.

Therefore Voipfuture introduces a new KPI system which offers different perspectives on the media quality of a VoIP service.

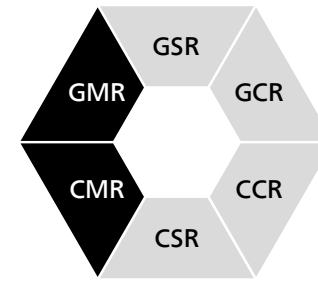
It not only explains different quality perspectives but provides KPIs to translate information into action.



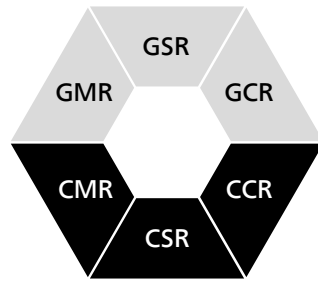
- Good Minute Ratio
- Good Stream Ratio
- Good Call Ratio
- Critical Minute Ratio
- Critical Stream Ratio
- Critical Call Ratio



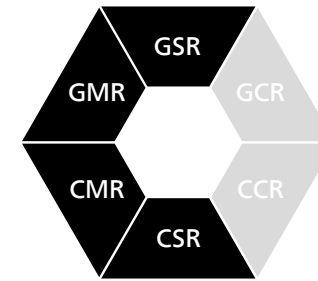
**Service Perspective** How do your customers judge your service?



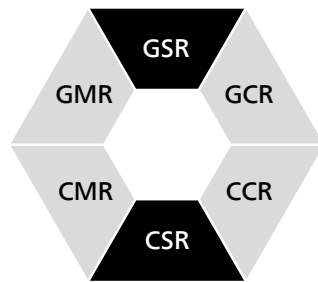
**Volume Perspective** How is the overall quality in terms of call minutes?



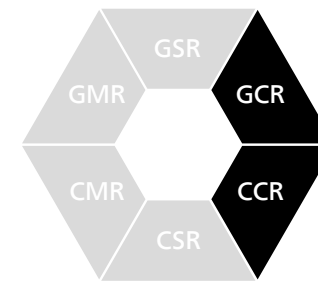
**Network Perspective** How is the network's transport quality and how does it influence the user experience?



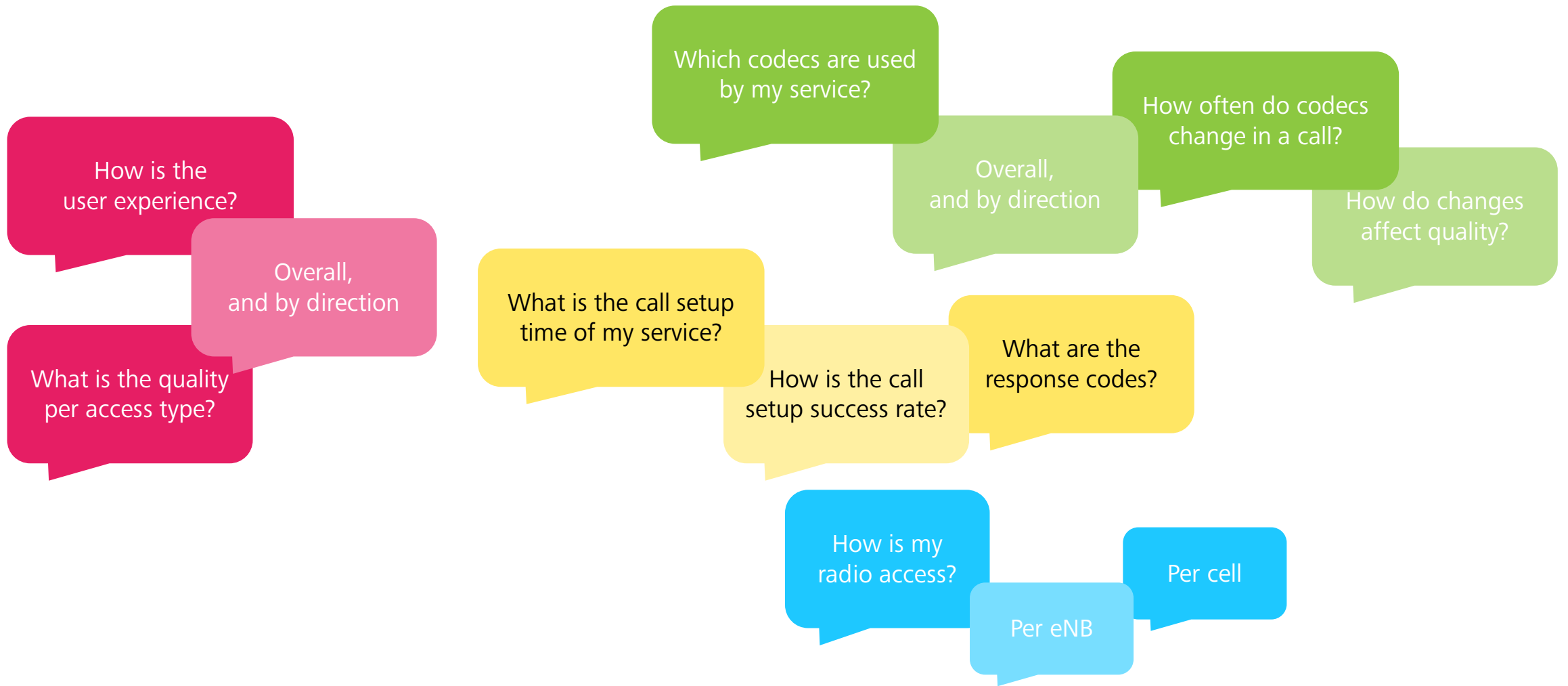
**Mid-point Perspective** How is traffic quality in a specific network segment?



**Session Perspective** Do issues stem from persistent issues or isolated incidents?



**End-to-end Perspective** How is the overall quality per call?



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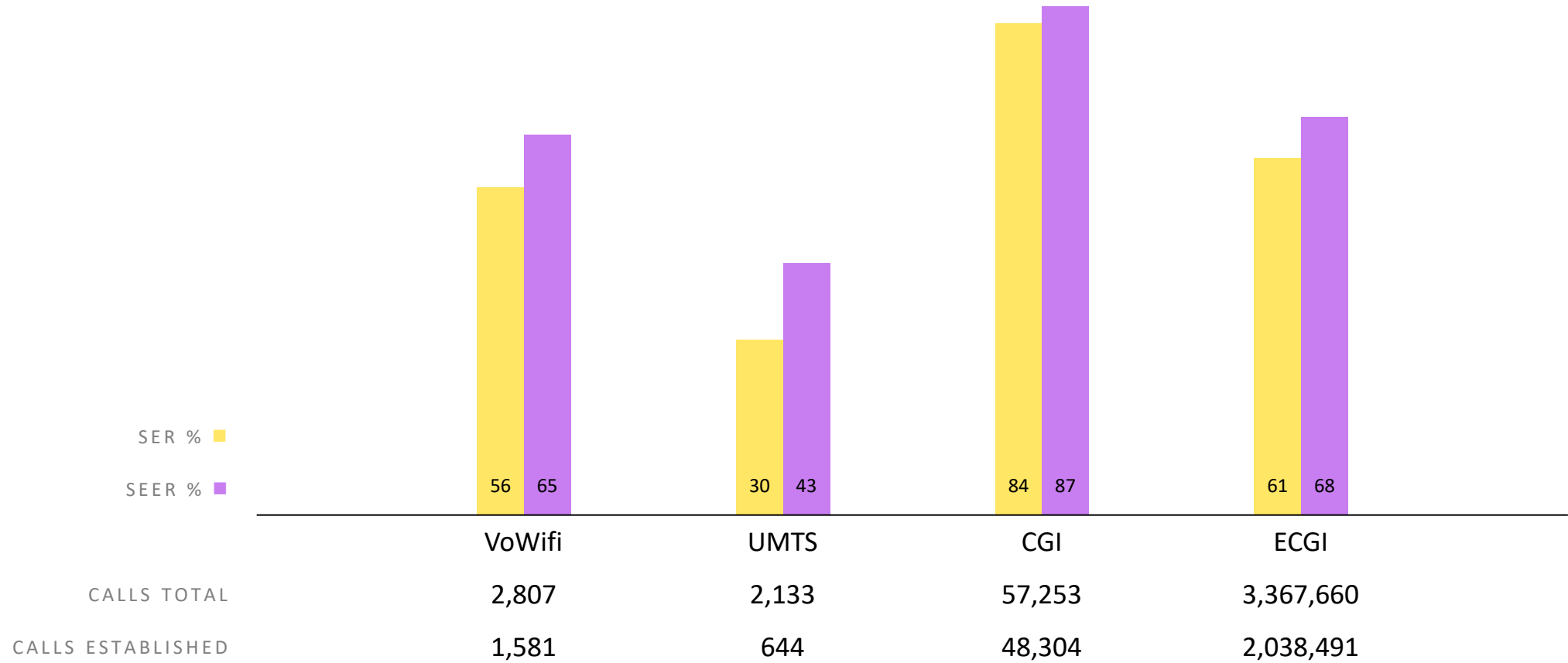
EXAMPLE

1 HOUR		total calls	establ. calls	ACD s	SER %	SEER %	SSRD s	FSRD s	CMR (dl) %	CMR (ul) %
VoWifi		4450	2549	106	57	64	1.5	3.6	6	6
UMTS		728	381	51	52	66	3.6	4.8	4	16
CGI		54.370	31.834	111	59	68	2.7	3.3	3	0
ECGI		139.977	89.724	105	64	72	1.6	<b>8.8</b>	8	<b>8%</b>
OTHER		93.043	51.889	105	56	72	2.7	3.5	2	0
TOTAL		292.568	176.377	106	60	71	2.1	5.7	7	6

dl = downlink  
ul = uplink

Frustrating 9 seconds for failed session requests

8% of all VoLTE call minutes with critical impairments



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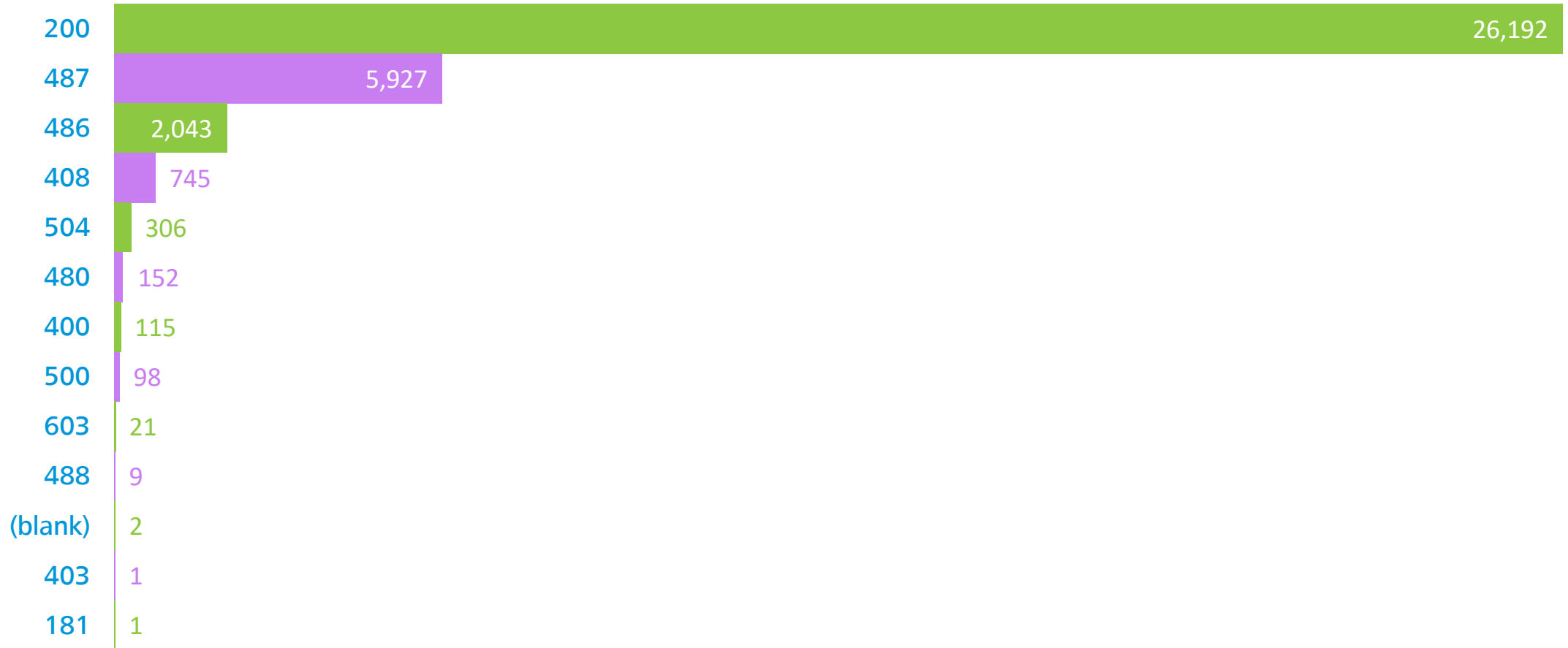
EXAMPLE





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EXAMPLE




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EXAMPLE

	CALLS ESTBL	ACD s	CMR %	GMR %	CLASS 1* MOS minutes	CLASS 2 MOS minutes	CLASS 3 MOS minutes	CLASS 4 MOS minutes	CLASS 5 MOS minutes
VOLTE	27%	134	9	0.16	79	435	106	1	0
UPLINK			16	0	77	202	53	0	0
DOWNLINK			2**	0.29	2	285	53	1	0

MOS <3.10	MOS ≥3.10	MOS ≥3.60	MOS ≥4.03	MOS ≥4.34
				

WLAN uplink clearly shows more critical transport impairments

\* Voice quality is typically expressed in terms of the mean opinion score (MOS) – MOS classes express user experience from class 1 “nearly all users dissatisfied” to class 5 “very satisfied”

\*\* Value “0” is best: (almost) no minutes with critical technical impairments

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EXAMPLE

		VoWifi	UMTS	CGI	ECGI	OTHER	TOTAL
CALLS WITH RTP	UPLINK	98.2%	99.0	99.8%	98.9%	97.6%	98.8%
	DOWNLINK	99.1	99.7	99.3%	99.6%	98.5	99.4%
CALLS WITH MISSING RTP	UPLINK	3.2%	1.2%	2.0%	1.1%	2.8%	1.6%
	DOWNLINK	3.0%	1.1%	0	2.1%	0.9%	
CALLS WITH NO RTP	UPLINK	0.9%	1.0%	0.2%	1.1%	2.4%	1.2%
	DOWNLINK	1.8%	0.3%	0.7%	0.4%	1.5%	0.7%

Indication for single sided calls!

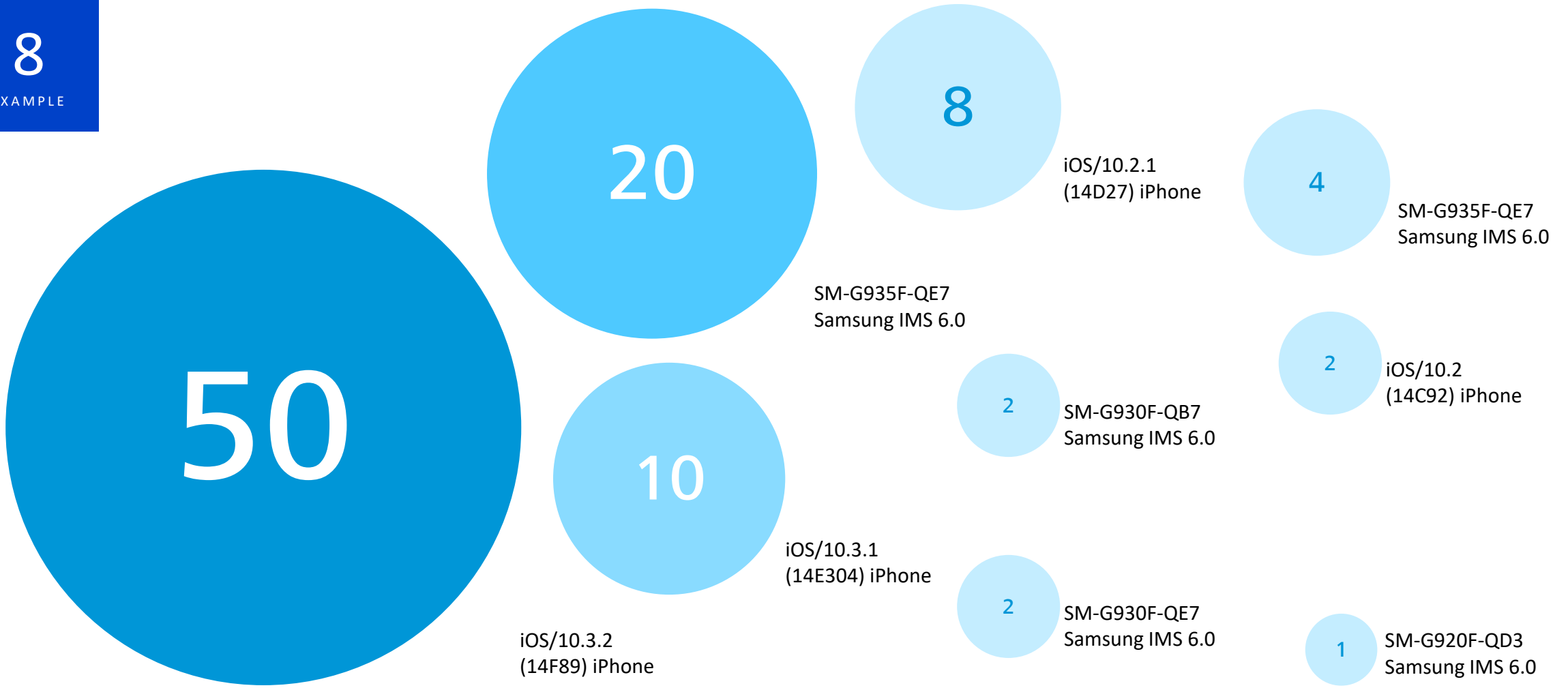
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EXAMPLE

	VoWIFI	UMTS	CGI	ECGI	OTHER	GRAND TOTAL
TOTAL CALLS	2,807	2,133	57,253	3,367,660	15,487	3,445,340
ESTABLISHED CALLS	1,581	644	48,304	2,038,491	9,852	2,089,872
UNIQUE SUBSCRIBERS	731	1,885	33,787	278,950	12,165	327,518
DEVICE TYPES	6	10	29	40	20	105

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EXAMPLE



### VoLTE Minutes and Average R-Factor by eNodeB



Table View

enbid	totalminutes	cmr	avgrfactor
1	86	15	85
10	63	17	69
100	95	4	72
1001	190	6	66
1003	517	2	90
1004	6	0	76
1005	5	20	52
1006	13	7	75
101	101	32	68
1012	318	0	70
1018	6	50	23
1020	8	12	53
1023	17	5	64
1029	4	25	69
103	27	62	42
1038	71	7	72
1039	19	10	81
104	10	20	55
1040	155	9	63
1047	13	0	86
1049	31	22	64
1050	12	16	46
1055	24	33	51
1056	8	12	82
106	53	11	67
1067	59	3	77
1069	4	25	47
107	28	14	76

Select | Average R-Factor




THANK YOU FOR YOUR ATTENTION