





“ ”

“ 2021 IPv6 ”

“ ”

02

^

2021-2023





2021 10 11 -12

"

"

" 2021

IPv6

"

"

"

IPv6

" IPv6

" " IPv6

" " IPv6

"

IPv6"

"

IPv6

IPv6

IPv6

IPv6

22.87%

IPv6

2021 8

IPv6

5.51

54.52%

IPv6

20Tbps

LTE

IPv6

10Tbps

22.87%

IPv6

100

IPv6

IPv6



10 11

"

IPv6

"

IPv6

IPv6

IETF

ISOC





1

1700

2015

2020

15%

2

— —
2.4

2020

3

100%



12



10 8

"

"

2020

5G

"

"

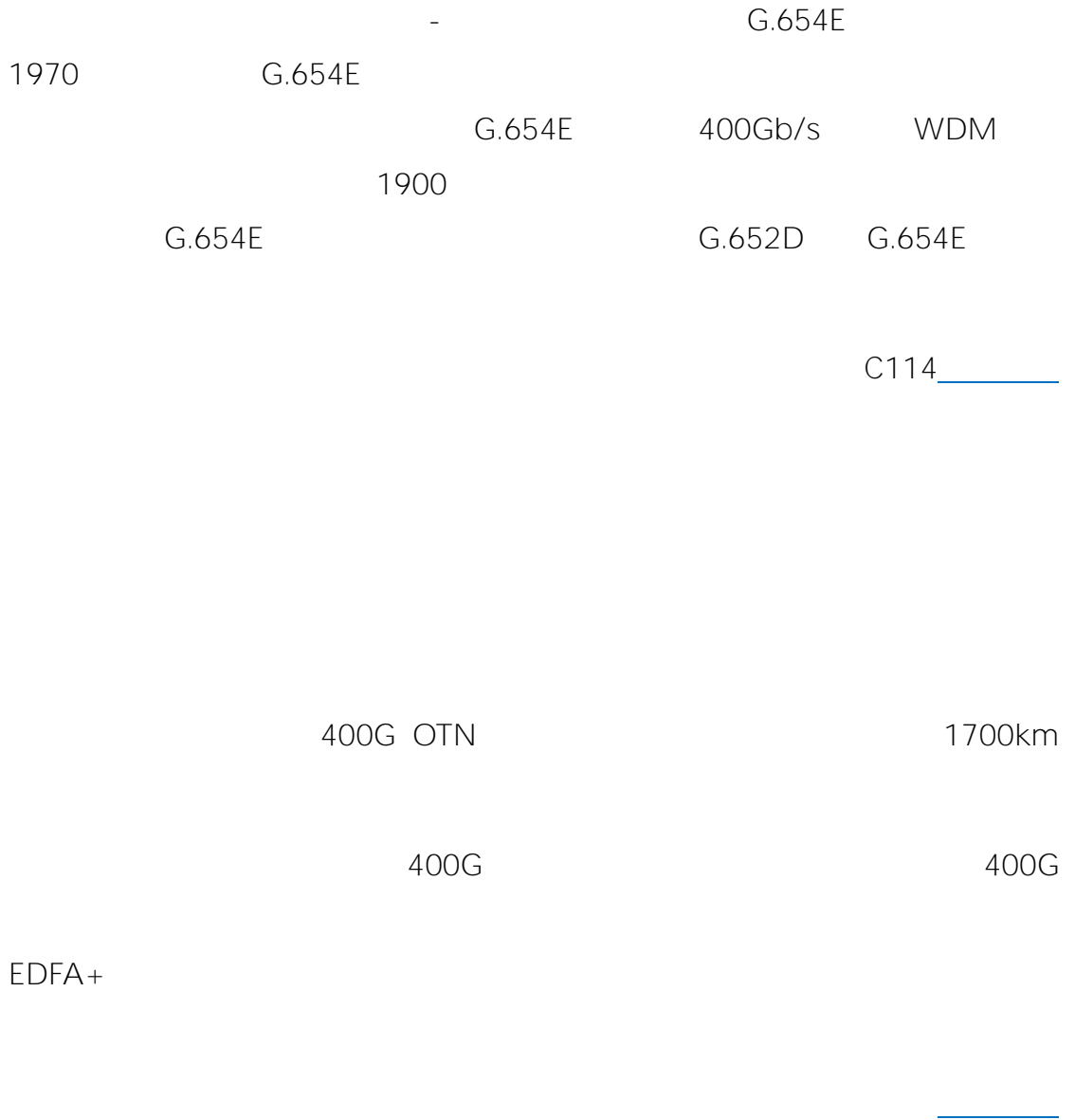
3

5G

2021 9 16

46.67%

6





7

22

2025

10%

"

"

"

"

"

"

"

"

"

"





2021 2

(2021-2025) 7

2021 8

" "



	1	2
3		1
2	3	
1	2	3
	1	2
3		





GÉANT 800G
GÉANT

GÉANT NREN
30% GÉANT 7PB

GÉANT_____

CMI Facebook MTN GlobalConnect Orange stc
Telecom Egypt Vodafone WIOCC 2Africa 2Africa
2Africa PEARLS
2Africa 45,000

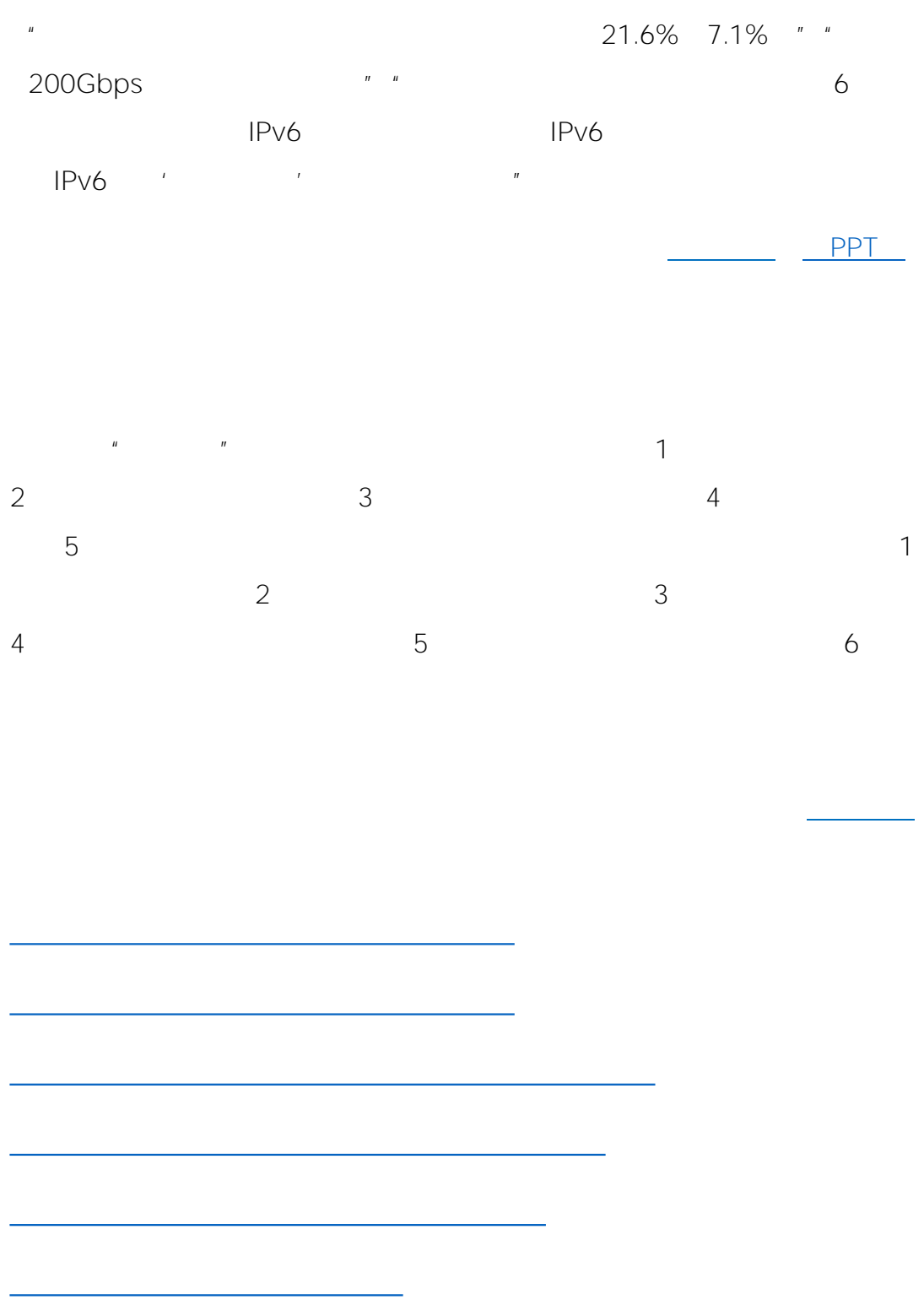
C114_____

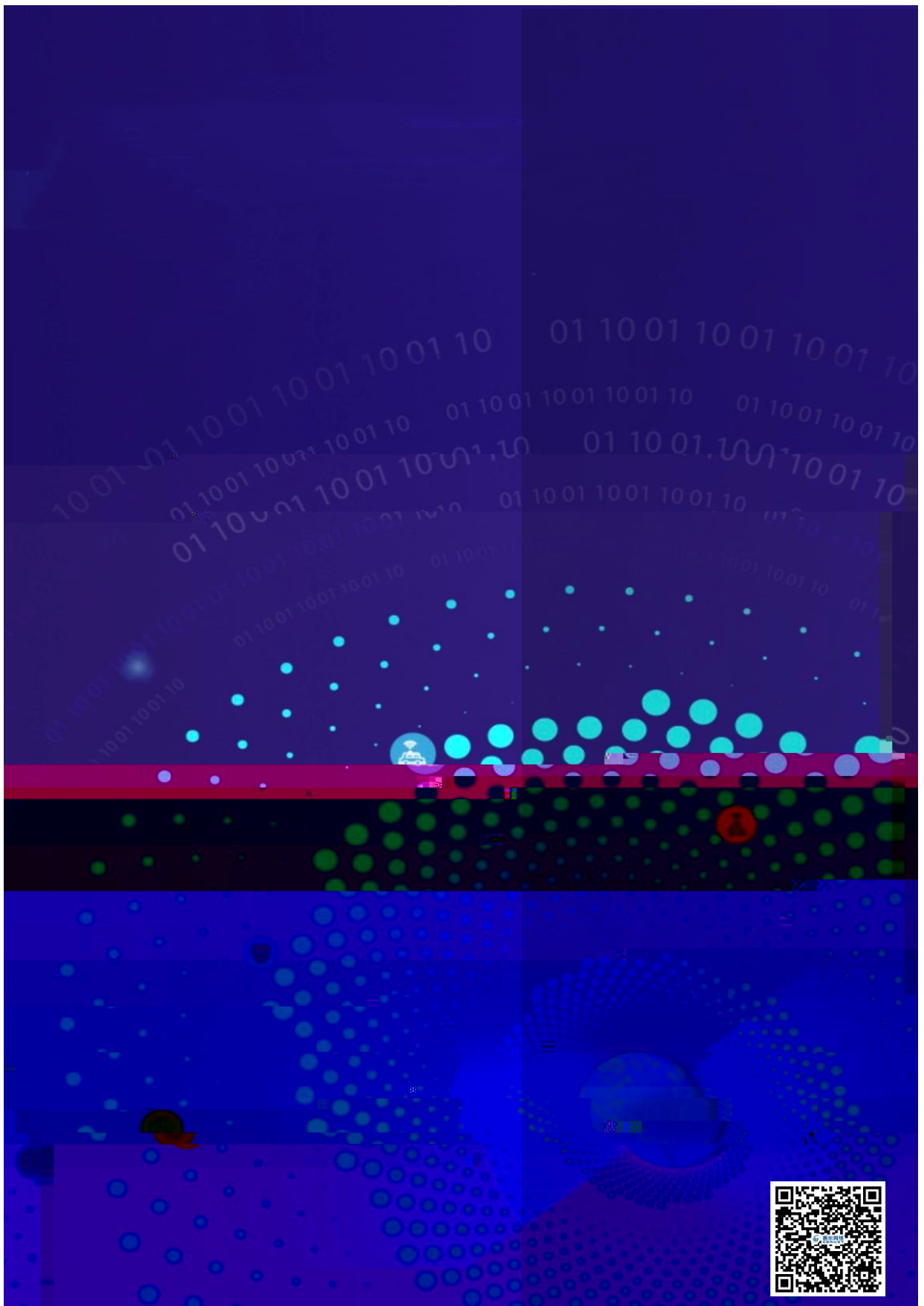
66%
" " " " " "
wifi 21% / 16% (49%)
14% / 12%

Jisc_____

2021 6 17 6GHz
480MHz 2021 12 1
Wi-Fi (
5G 500MHz Wi-Fi)
Wi-Fi 5G

Omdia_____





6260 3794

scgl@cernet.com

