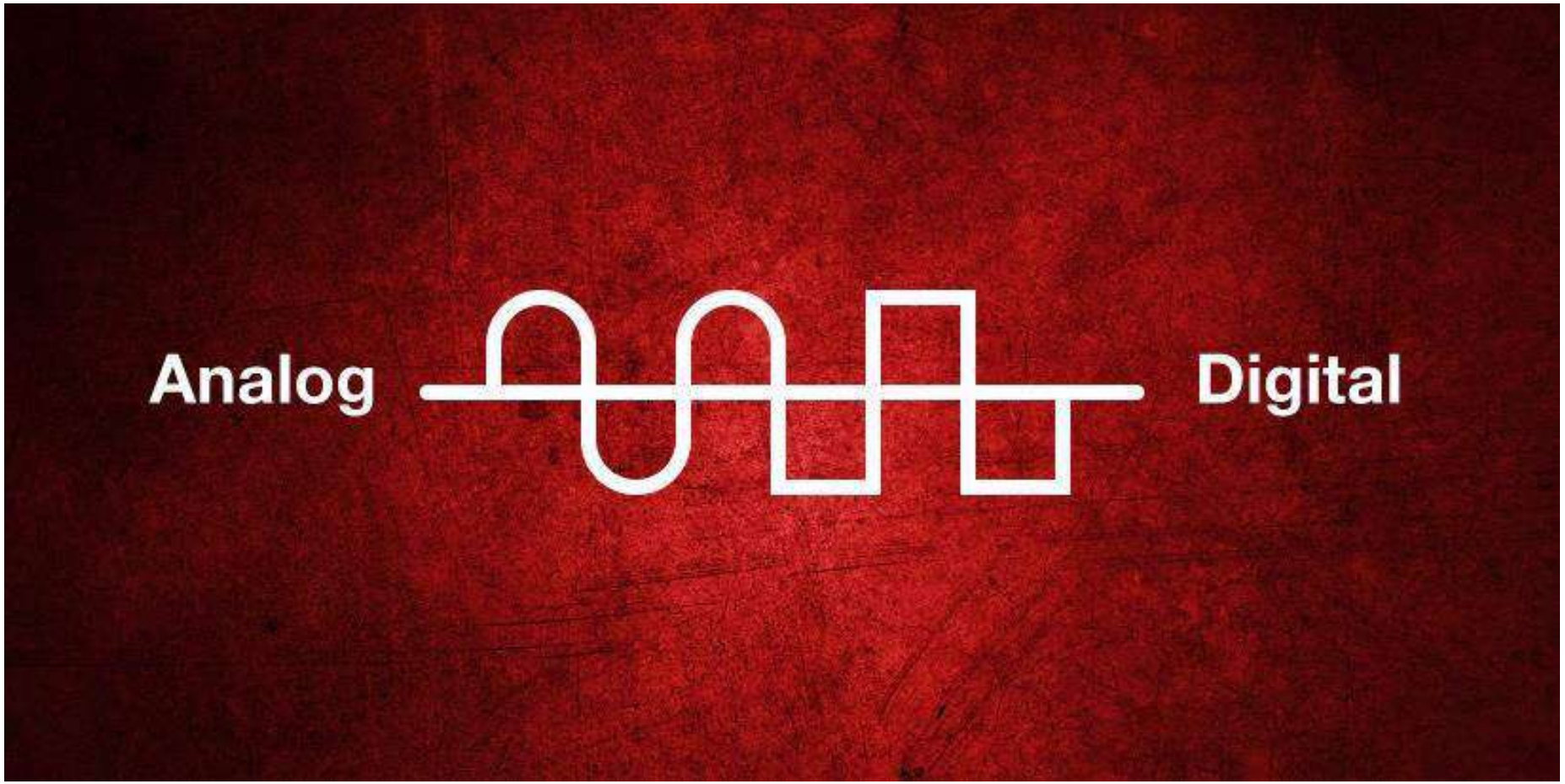
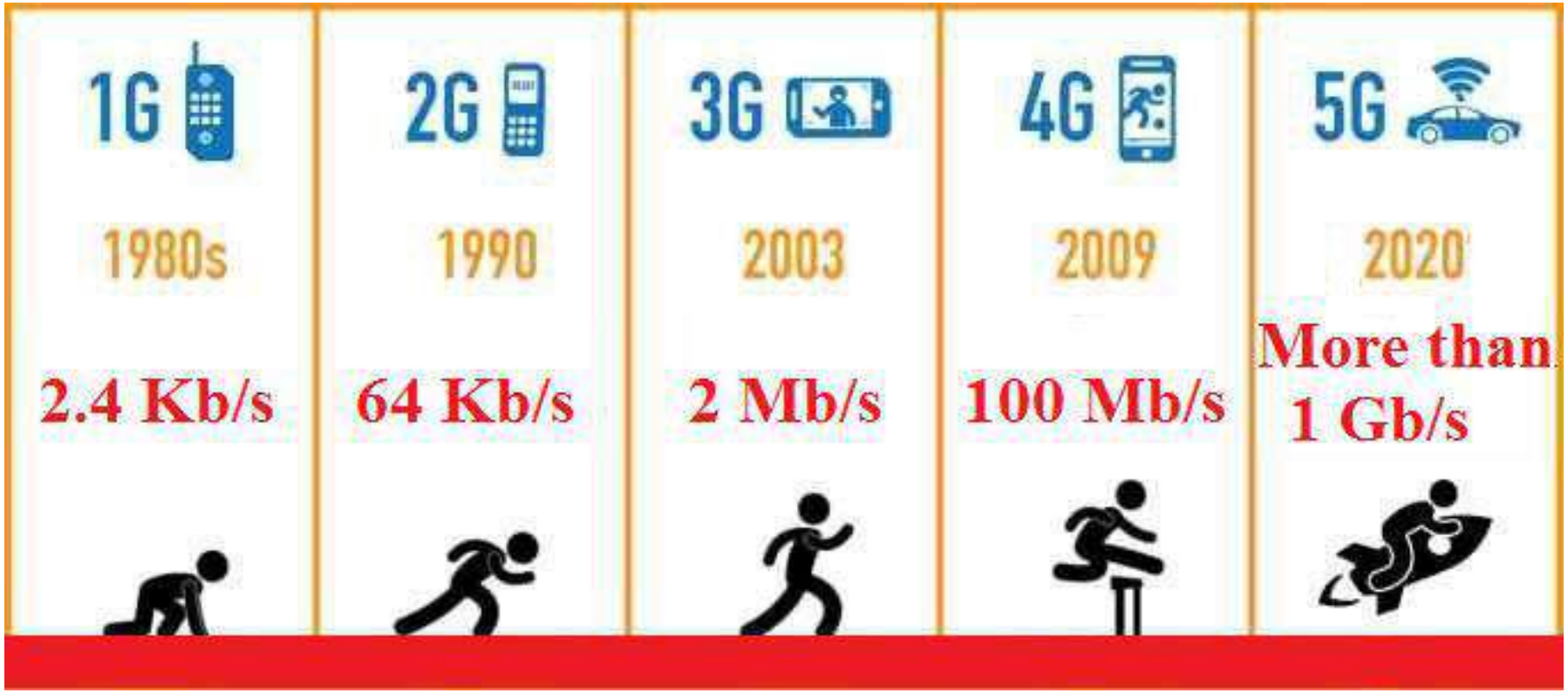
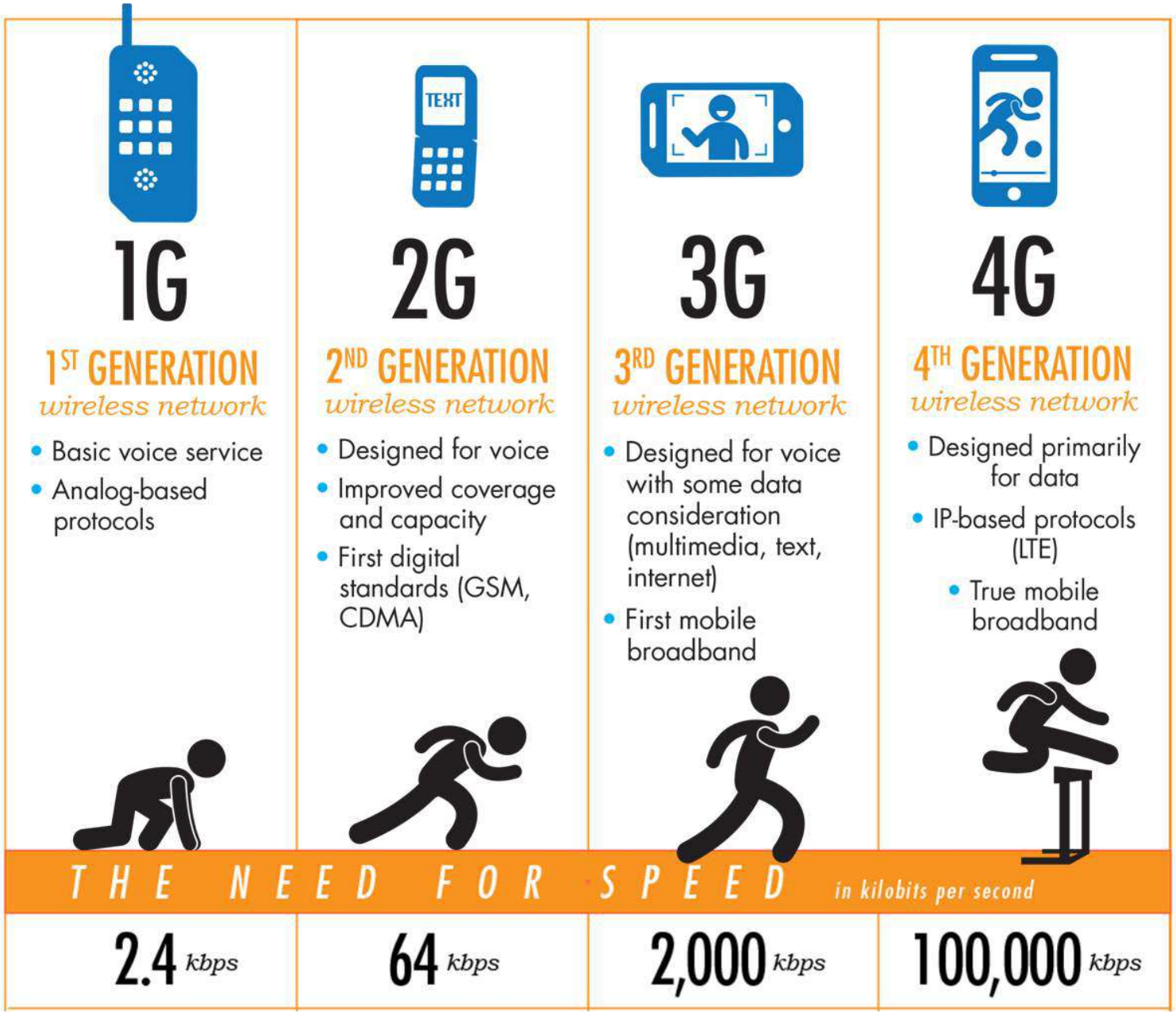
# PERUBAHAN2 YANG TERJADI

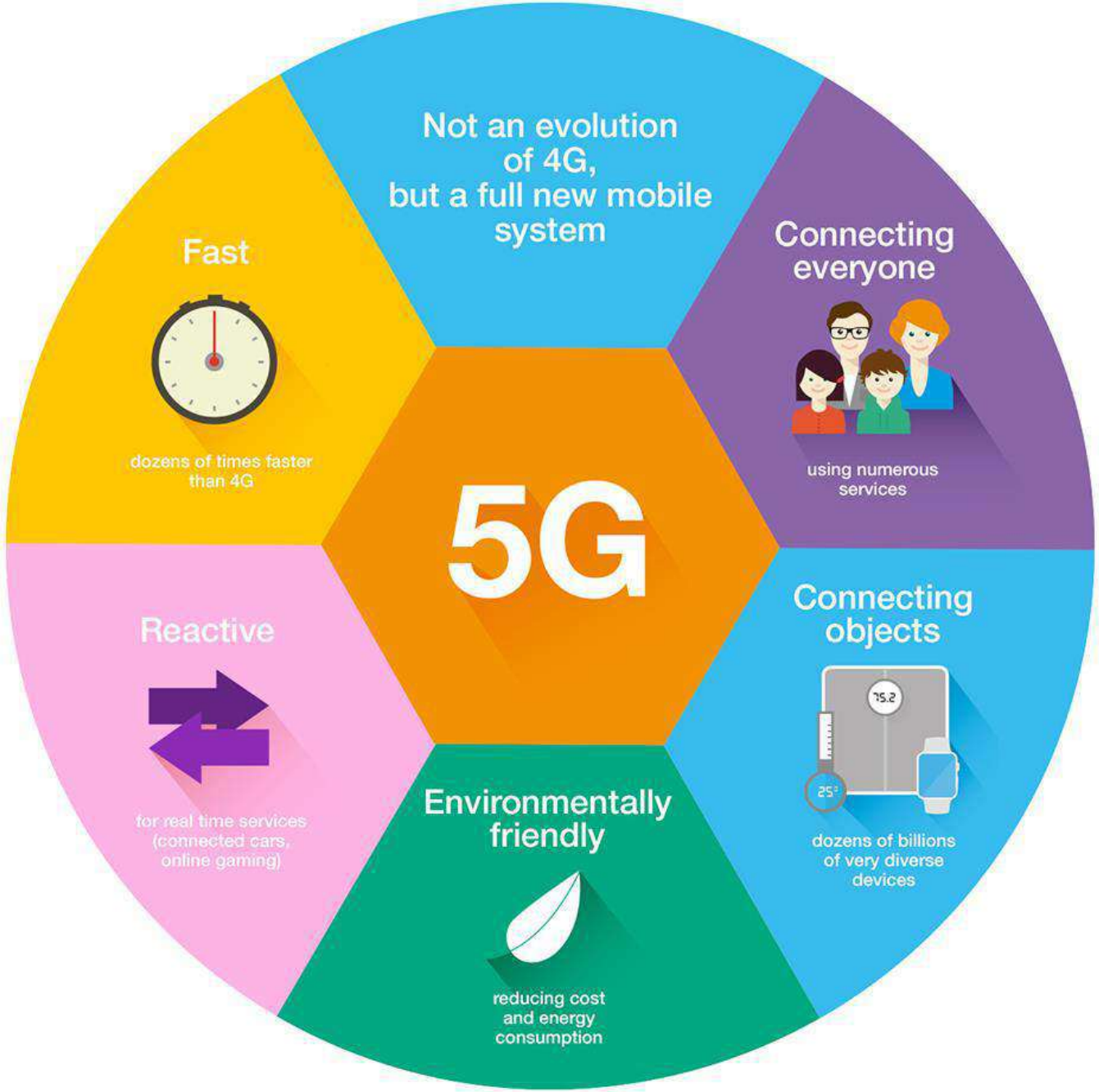
# PERUBAHAN 1



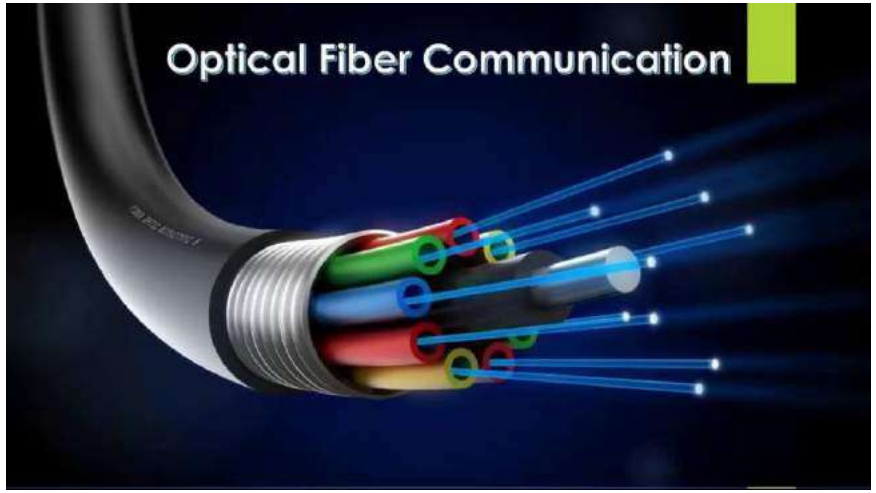
# PERUBAHAN 2

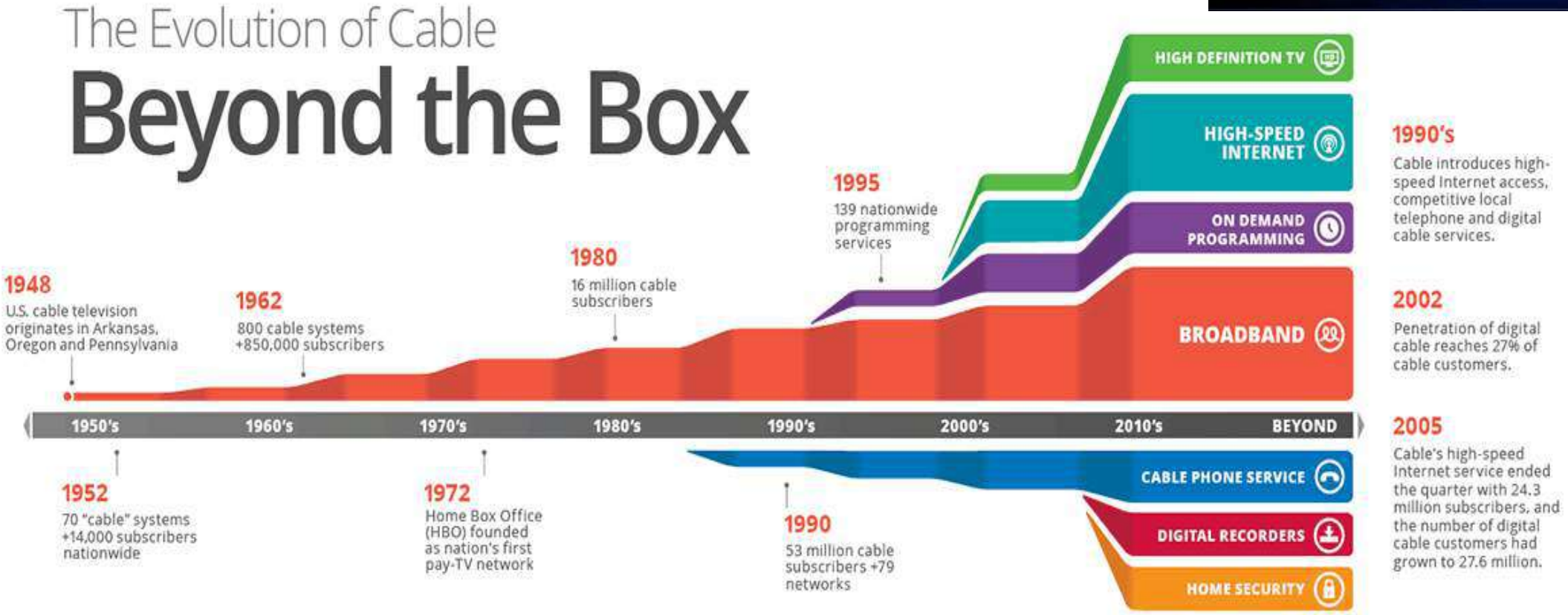

1G
1980s
2.4 Kb/s
2G
1990
64 Kb/s
3G
2003
2 Mb/s
4G
2009
100 Mb/s
5G
2020
More than
1 Gb/s


1G
1ST GENERATION
wireless network
• Basic voice service
• Analog-based protocols
2G
2ND GENERATION
wireless network
• Designed for voice
• Improved coverage and capacity
• First digital standards (GSM, CDMA)
3G
3RD GENERATION
wireless network
• Designed for voice with some data consideration (multimedia, text, internet)
• First mobile broadband
4G
4TH GENERATION
wireless network
• Designed primarily for data
• IP-based protocols (LTE)
• True mobile broadband
THE NEED FOR SPEED
in kilobits per second
2.4 kbps
64 kbps
2,000 kbps
100,000 kbps

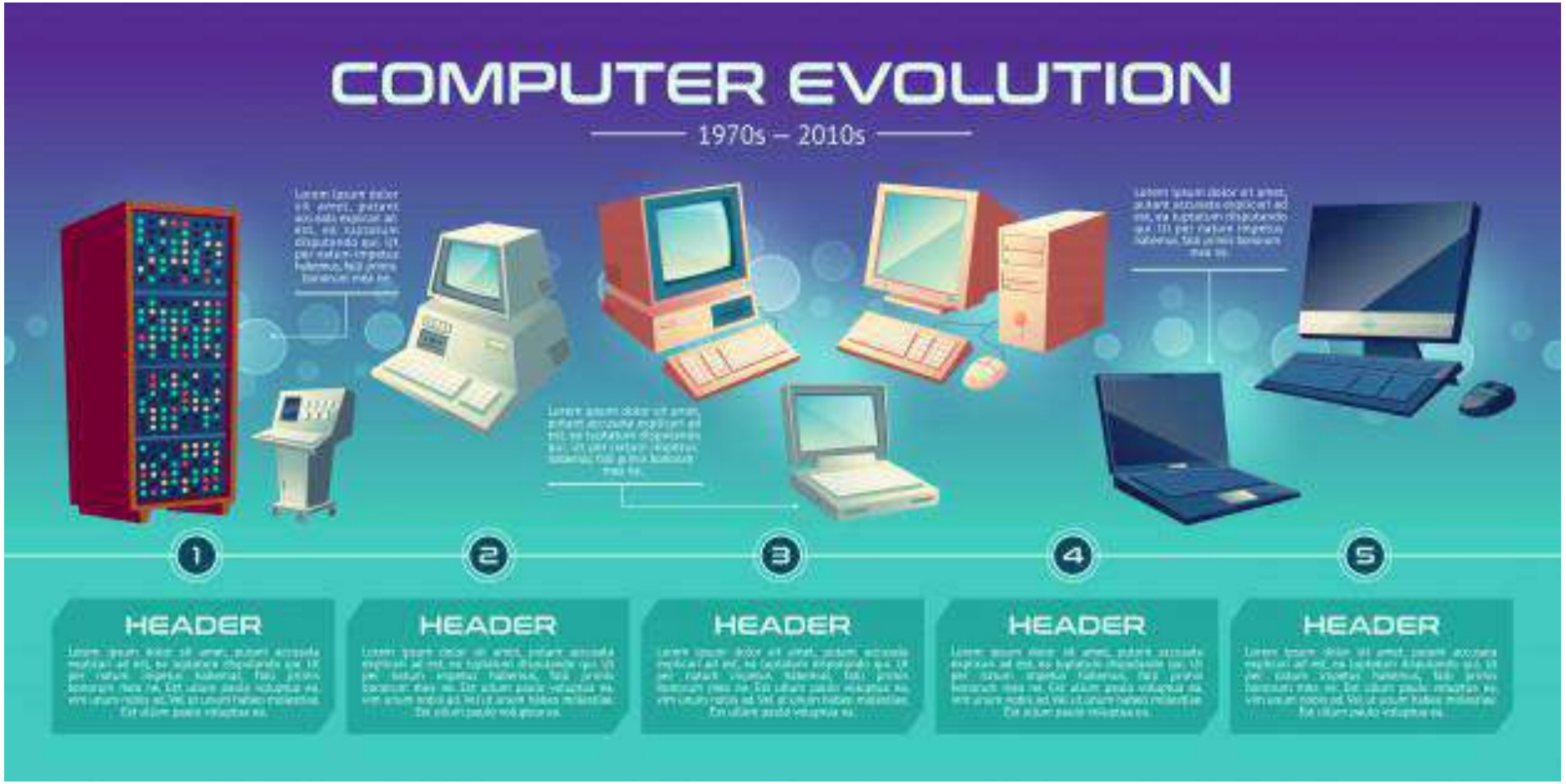

Not an evolution of 4G, but a full new mobile system
Fast
dozens of times faster than 4G
Connecting everyone
using numerous services
5G
Reactive
for real time services (connected cars, online gaming)
Connecting objects
dozens of billions of very diverse devices
Environmentally friendly
reducing cost and energy consumption

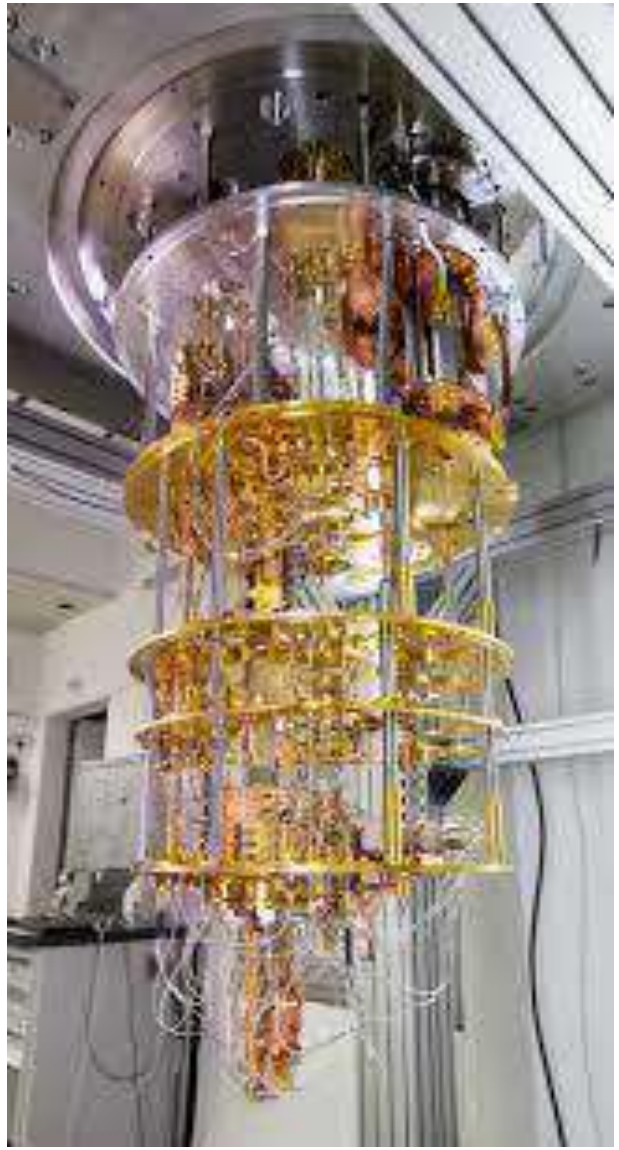
# PERUBAHAN 3


Optical Fiber Communication

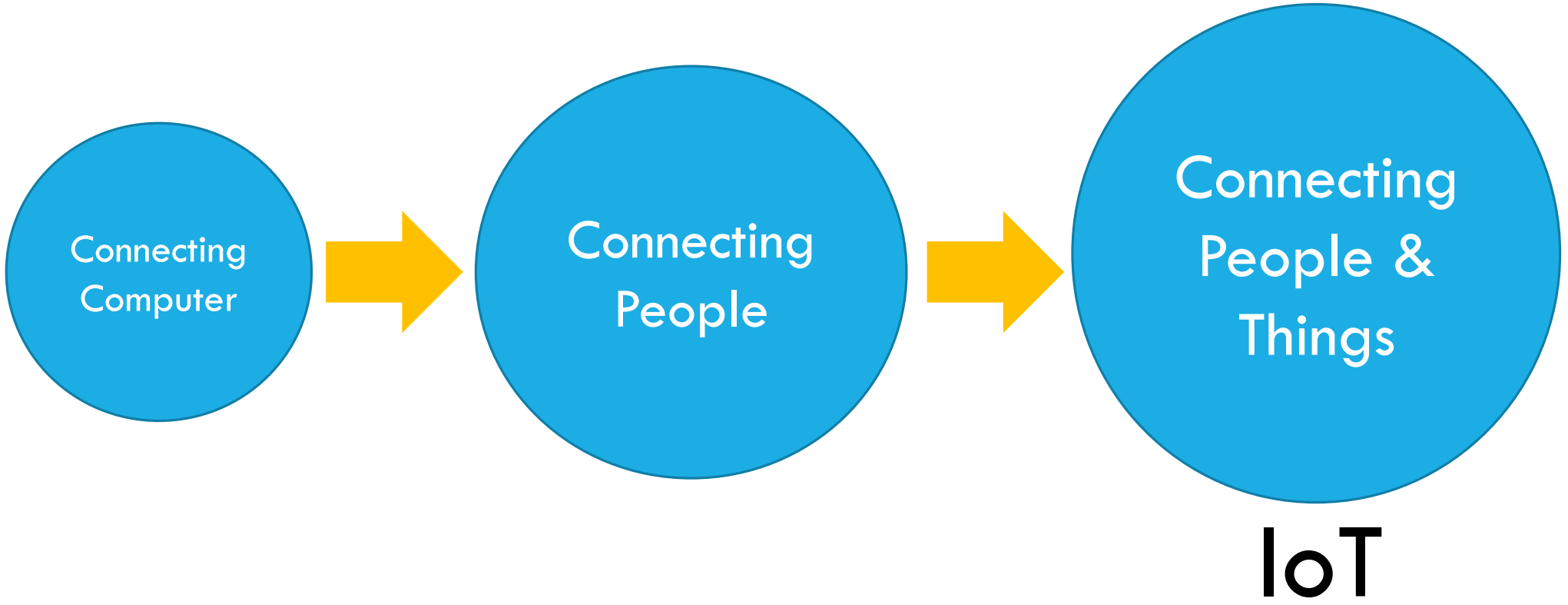

The Evolution of Cable
Beyond the Box
1948
U.S. cable television originates in Arkansas, Oregon and Pennsylvania
1952
70 "cable" systems +14,000 subscribers nationwide
1962
800 cable systems +850,000 subscribers
1972
Home Box Office (HBO) founded as nation's first pay-TV network
1980
16 million cable subscribers
1990
53 million cable subscribers +79 networks
1995
139 nationwide programming services
1950's
1960's
1970's
1980's
1990's
2000's
2010's
BEYOND
HIGH DEFINITION TV
HIGH-SPEED INTERNET
ON DEMAND PROGRAMMING
BROADBAND
CABLE PHONE SERVICE
DIGITAL RECORDERS
HOME SECURITY
1990's
Cable introduces high-speed Internet access, competitive local telephone and digital cable services.
2002
Penetration of digital cable reaches 27% of cable customers.
2005
Cable's high-speed Internet service ended the quarter with 24.3 million subscribers, and the number of digital cable customers had grown to 27.6 million.

# PERUBAHAN 4


COMPUTER EVOLUTION
1970s – 2010s
1
2
3
4
5
HEADER
HEADER
HEADER
HEADER
HEADER



# PERUBAHAN 5


Connecting Computer
Connecting People
Connecting People & Things
IoT

# TERIMA KASIH