

u3a Computing Group

Alan Hopwood, 3 July 2025

Agenda



Welcome

Current News, Issues and Questions

Next Meeting

Topic: Landline removal

Discussion

Presentation Agenda

Landline switch to Digital

- What is this all about?
- UK Telephone Network Evolution
- The New Choices and what stays the same
- The Changeover
- VOIP providers
- More Information

What is this all about?

What is the Landline switchover programme

- UK transition from analogue to digital landlines, or
- Moving landline phones to digital technology

What is a landline?

- A landline is the term given to the traditional phone line most people have either in their homes or in their offices. It's a physical phone line that has a BT Openreach socket placed within the home or office where you can connect a telephone handset

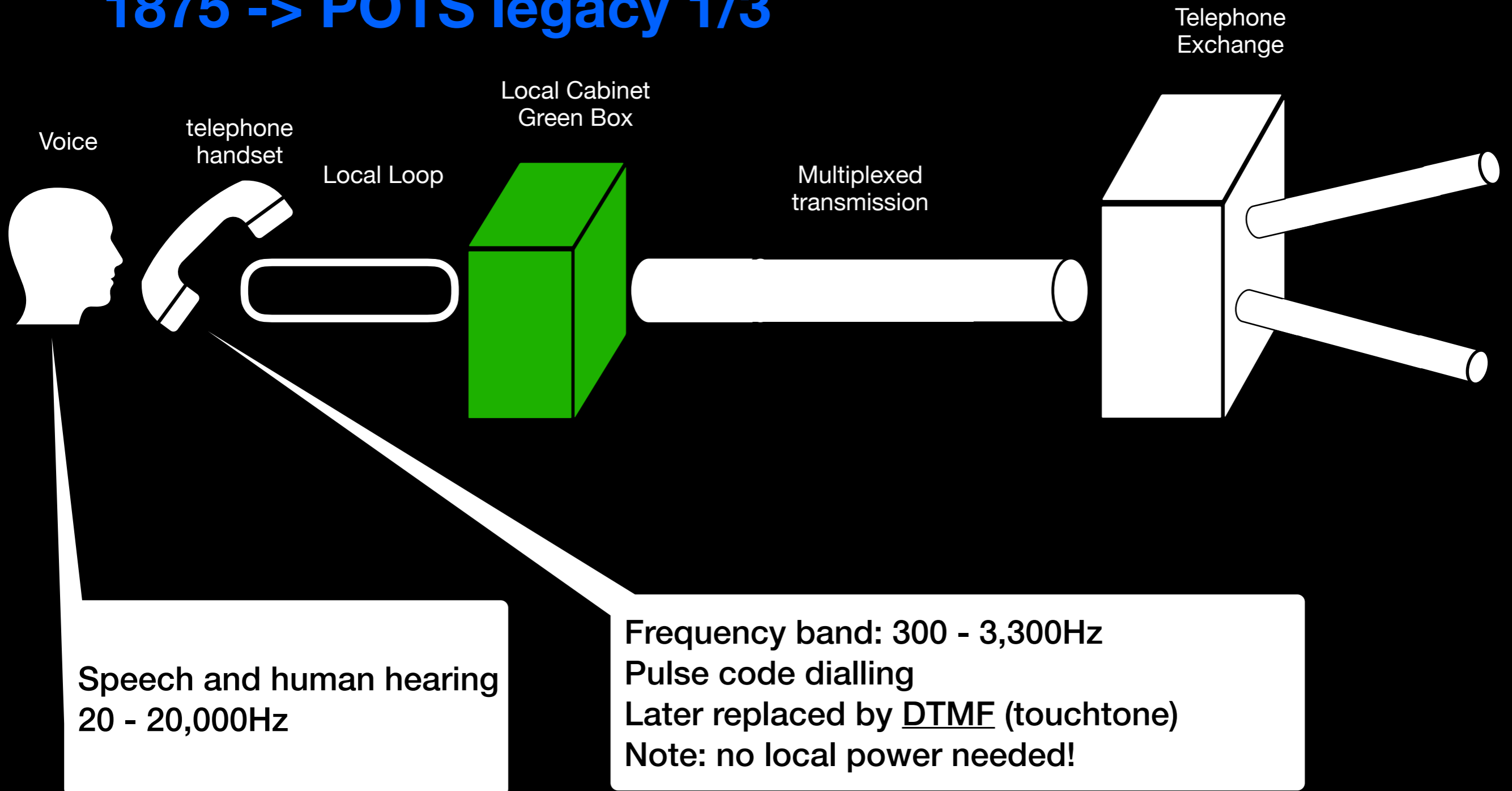
Main Transitions

Telecoms Network Evolution

- 1875 PSTN, Public Switched Telephone Network, also called POTS, Plain Old Telephone Service
 - *analogue circuit switching core*
- 1985 ISDN: Integrated Services Digital Network
 - *digital circuit switch core*
- 2017 VOIP: Voice over Internet Protocol
 - *digital Internet packet switching & routing core*

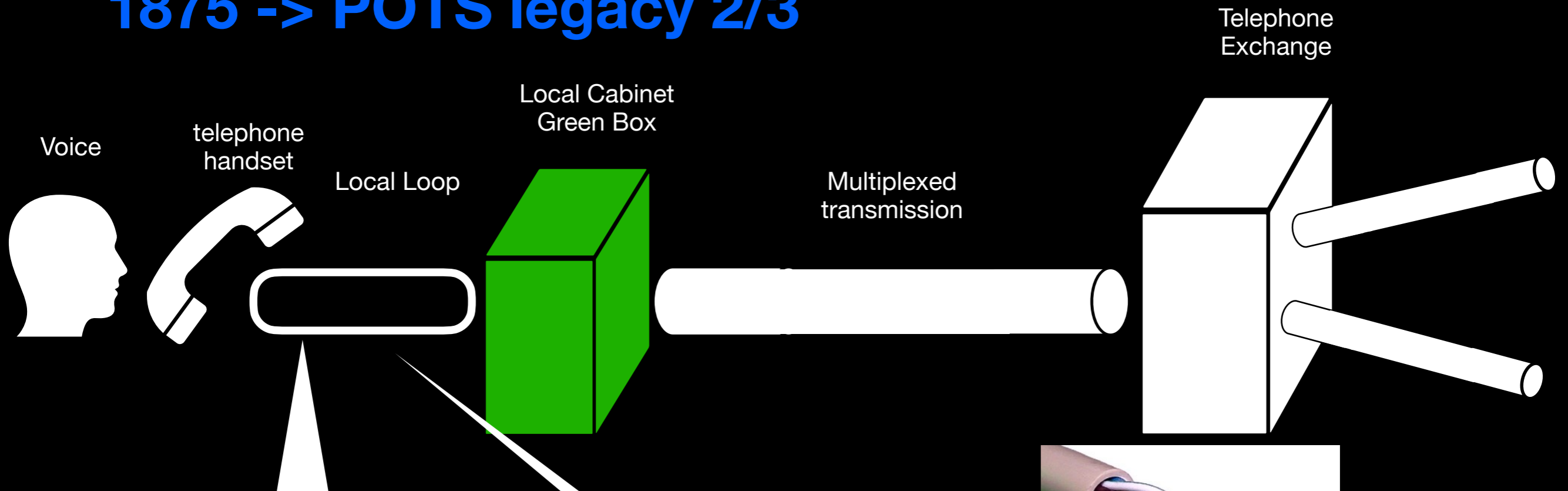
Plain Old Telephone Service

1875 -> POTS legacy 1/3

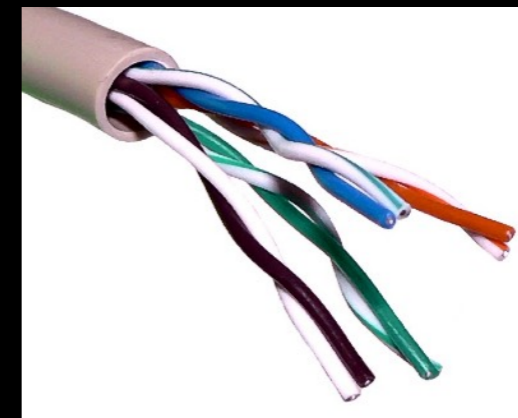


Plain Old Telephone Service

1875 -> POTS legacy 2/3



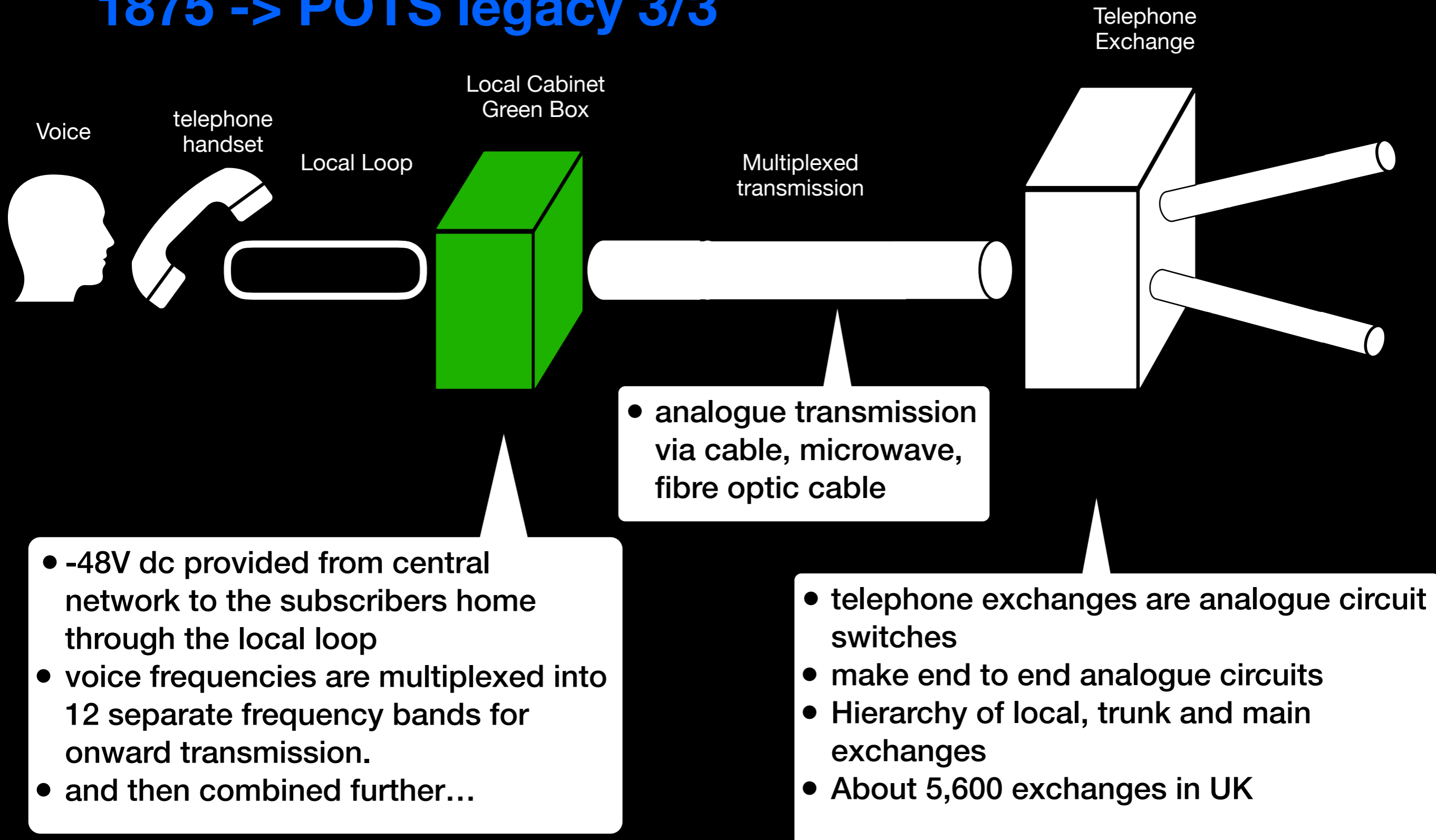
- Connection between house and local cabinet
- Copper *twisted pair* cable
- Each pair, different rate of twist
- Reduces electromagnetic radiation from the pair and crosstalk between neighbouring pairs and improves rejection of external electromagnetic interference.
- used as a *balanced line - bidirectional transmission*
- Invented by Alexander Graham Bell



Typically grouped into 25 pairs with standard colour coding
Variations developed: CAT1 to CAT 8.2
Transmission freq: 400Khz to 2 Ghz
UTP = Unshielded

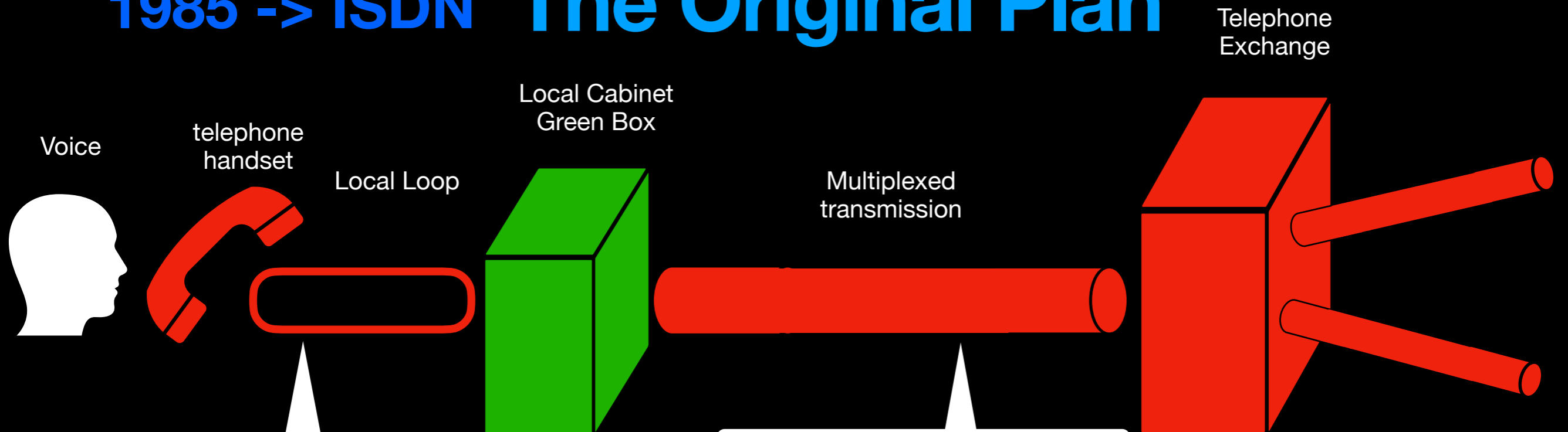
Plain Old Telephone Service

1875 -> POTS legacy 3/3



Integrated Services Digital Network

1985 -> ISDN The Original Plan



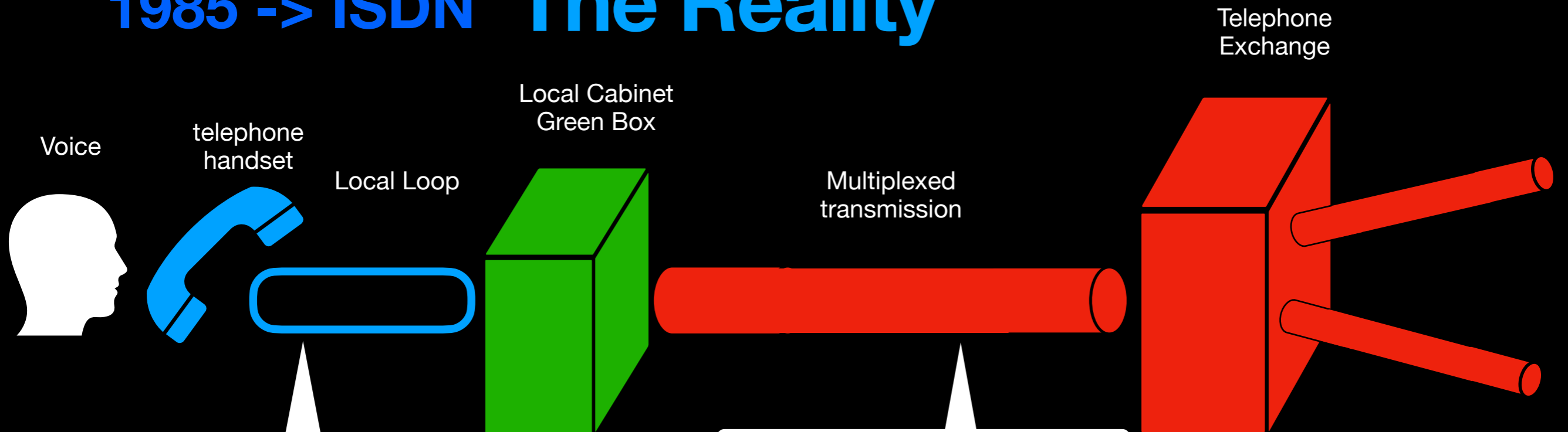
- Local loop is a (BRI) 128Kbps service divided into 2 x 64Kbps bearer channels and 1 x 16Kbps signalling channel
- ISDN handset has analogue to digital (and reverse) converter
- Pulse Code Modulation, 8Khz sampling rate, 8 bit quantisation into 64Kbps bit stream.
- Second (or both) bearer channels can be used for data (in X.25)

- Digital transmission via cable, microwave, fibre optic cable

- telephone exchanges are DIGITAL circuit switches
- make end to end DIGITAL circuits
- Hierarchy of local, trunk and main exchanges

Integrated Services Digital Network

1985 -> ISDN The Reality



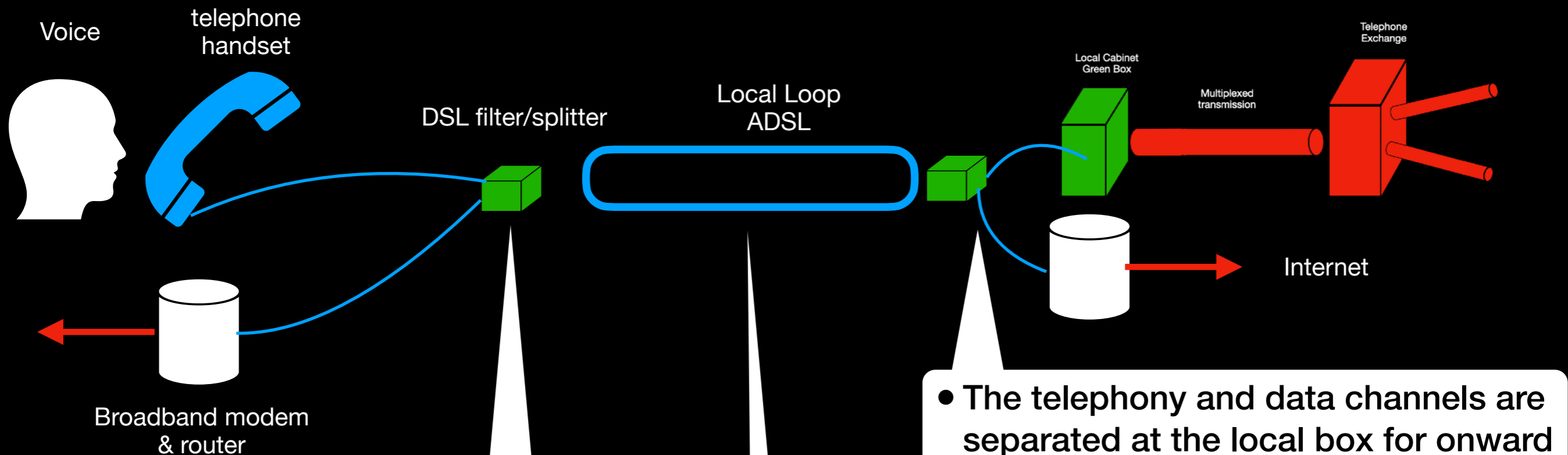
- ISDN systems sold into businesses, typically those with office exchanges
- Home users stayed with analogue PSTN connections
- A to D interface in the local cabinet.

- Digital transmission via cable, microwave, fibre optic cable

- telephone exchanges are DIGITAL circuit switches
- make end to end DIGITAL circuits
- Hierarchy of local, trunk and main exchanges

Integrated Services Digital Network

1985 -> ISDN Extensions - 1



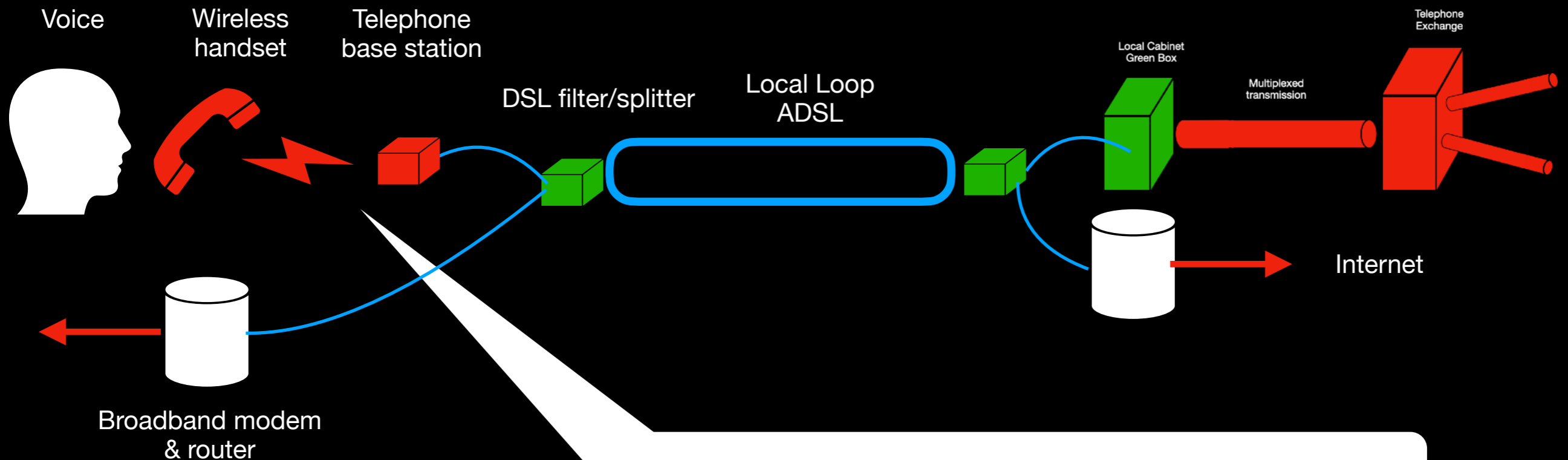
- DSL Filter ensures voice and broadband modem frequencies do not interfere with each other

- The telephony and data channels are separated at the local box for onward transmission

- ADSL works over standard twisted pair
- 26.075 kHz to 137.825 kHz is used for upstream, 138–1104 kHz for downstream communication
- ADSL2 can support up to 24Mbps down and 3.5Mbps upstream

Integrated Services Digital Network

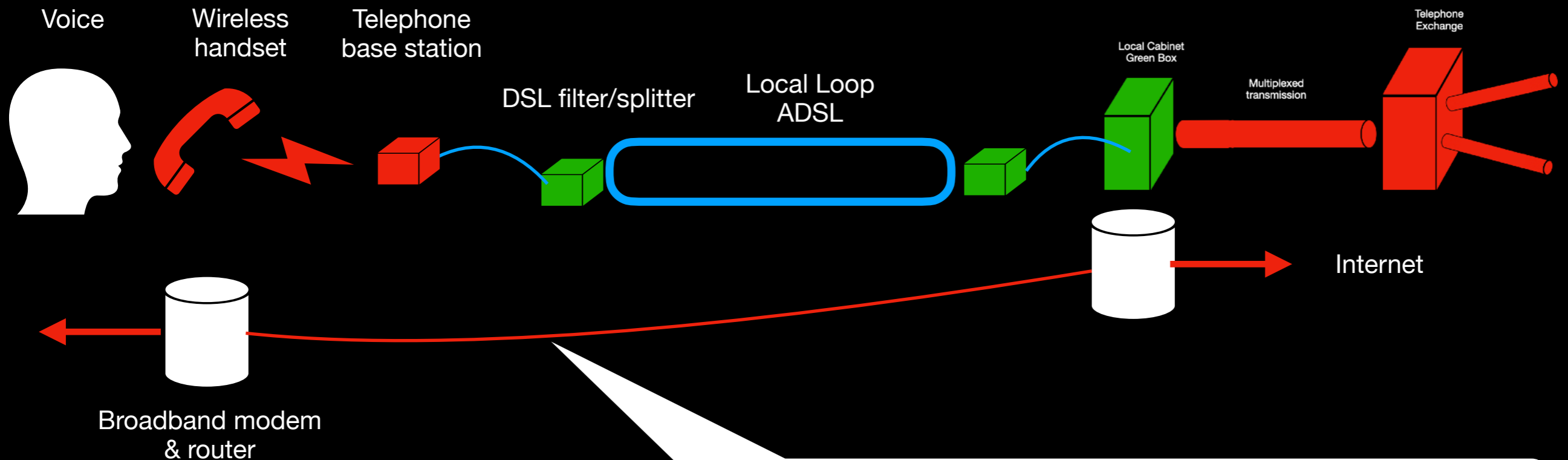
1985 -> ISDN Extensions - 2



- Wireless phones connect to the BT phone socket via a base station.
- Most wireless phones use DECT Digital Enhanced Cordless Telecommunications.
- High quality sound, good range and not dependent on WiFi

Integrated Services Digital Network

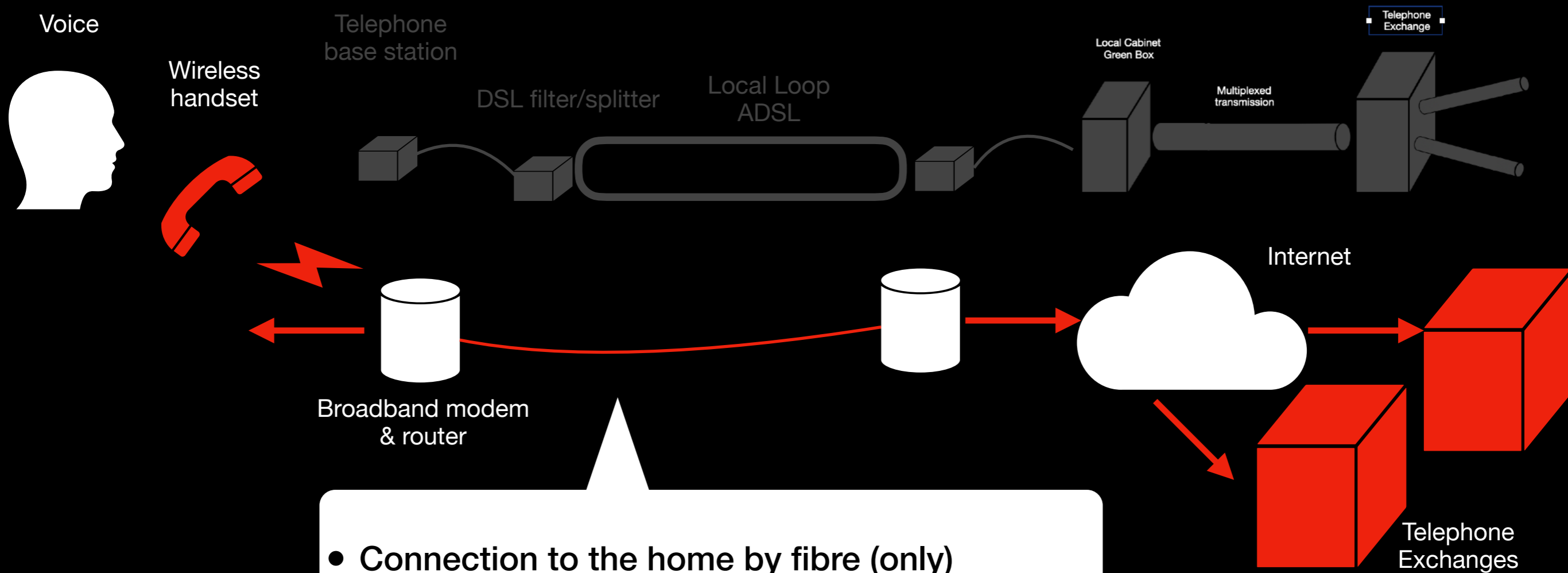
1985 -> ISDN Extensions - 3



- Full Fibre is provided when fibre optic cable goes all the way to the home
- Completely separate to legacy telephone network
- Speed generally limited only by router capability.

Digital Landlines - VOIP

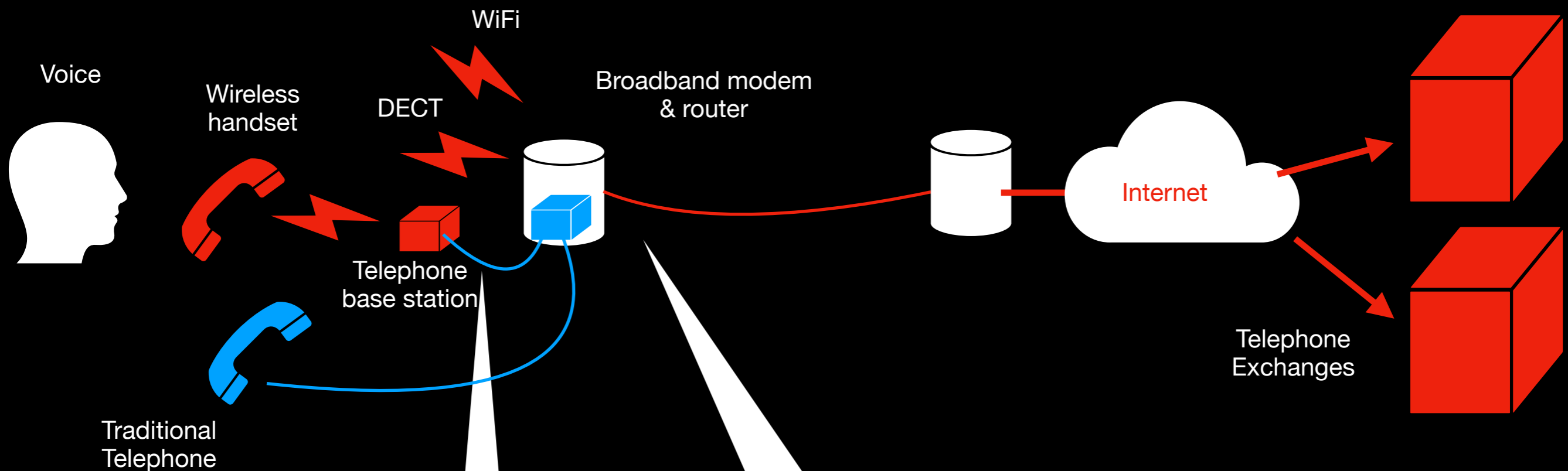
2017 -> VOIP The Plan



- Connection to the home by fibre (only)
- voice calls use VOIP, Voice Over Internet Protocol
- Telephone exchanges become internet hubs managing addressing

Digital Landlines - VOIP

2017 -> VOIP The Realisation



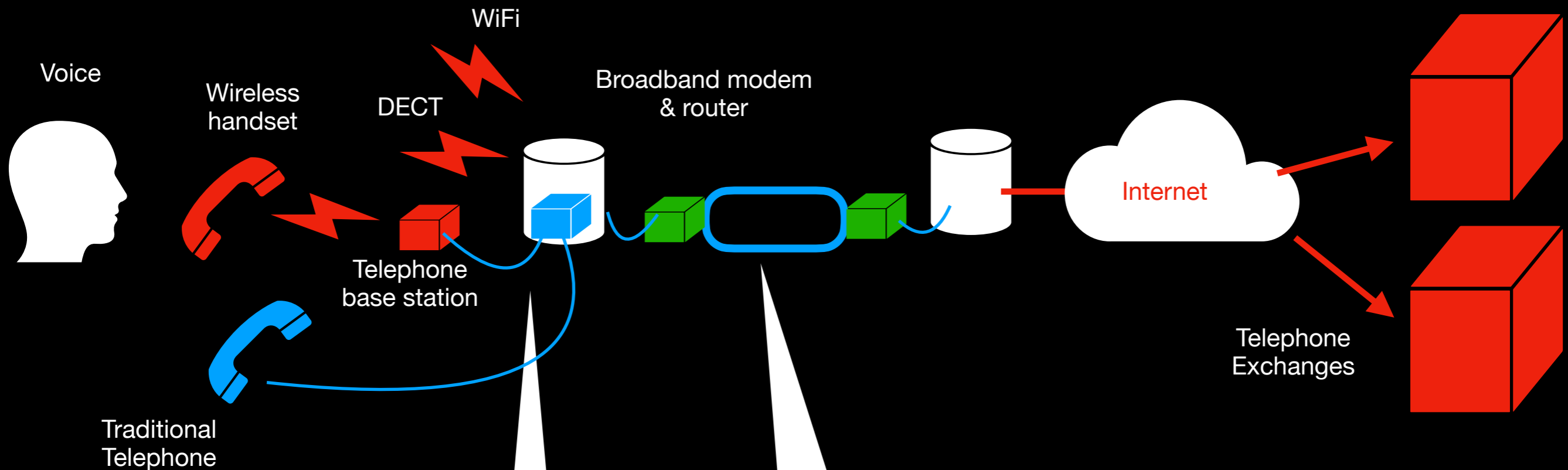
- 48V dc provided by router
- Router powered from normal home supply

Router has multiple interfaces:

- Wireless - WiFi, DECT
- Connectors
 - Ethernet
 - BT socket for phones and other legacy devices e.g. burglar alarm

Digital Landlines - VOIP

2017 -> ISDN The Legacy Option

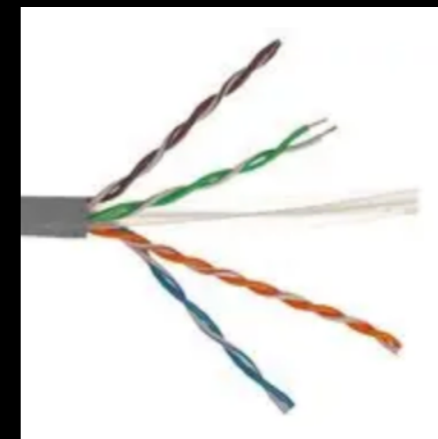


- Equipment and config in home is the same except speed limitation

- Retains the use of the copper cable
- ADSL over twisted pair
- Speed limited to 24Mbps up and 3.5M down max (often lower)
- “standard” voice channel ignored
- No dc power supplied

A reminder about Legacy

- Telephones - vast majority have “BT” connector
- Copper twisted pair to homes - 21 million
(Estimate 35% of homes have full fibre)
- BT Master socket and legacy equipment



The New Choices

1/3

- You don't need a "landline"
 - For your broadband connection
 - For telephone calls - use mobile instead
- You may wish to retain a "landline"
 - To keep a local telephone number
 - If mobile signal is weak at home
 - to connect legacy devices, e.g. burglar alarms, lifeline alarms,
but need contingency for power outages

Providers are required by Ofcom to ensure access to emergency services for at least an hour during a power cut for vulnerable customers (e.g., via battery backup units, hybrid phones).

The New Choices

2/3

- New VOIP providers offer new service variations
- Connect mobile phones to receive home calls in and away from home.
- Call to home number can ring multiple landlines and mobile phones
- Smartphone app to call from anywhere via “home” phone service
- Automatic callback to allow people to call you on your account

The New Choices

3/3

- If you have a broadband link - either fibre or ADSL - then telephone is an add on.
- If you don't have a broadband link, then the telephone service will provide one - limited to the VOIP connection

What stays the same

and what doesn't

- Your (perhaps new) router will have a BT socket
- All existing telephones will work as normal using that socket
- You can keep your existing telephone number

but

- not work in power outage

The changeover

- Timing: Aiming for completion by early 2027
- You don't need to take action until your provider contacts you.
- Except contact your provider and inform them if you or someone in your household is vulnerable or uses analogue-dependent devices.
- Test Connectivity: If you're concerned about power cuts, discuss backup options with your provider. Consider if you have a reliable mobile phone.
- Provider will propose a solution to match your current service
*And probably try and sell you bigger, better, faster, more expensive. - **But it should be cheaper!***

VOIP providers

All the existing landline providers

Plus

Specialist VOIP providers
(Use existing broadband)

- Vonage
- Phonely
- Voipfone
- freeola
- premitel
- Xinix



More Information

- Ofcom: www.ofcom.org.uk (search for "digital landlines")
- GOV.UK: www.gov.uk/guidance/moving-landlines-to-digital-technologies
- Charities/Support Groups: Age UK, Which, AbilityNet, etc., offer advice for vulnerable individuals
 - <https://www.ageuk.org.uk/information-advice/money-legal/consumer-issues/changes-to-landline-telephones/>
 - <https://www.which.co.uk/reviews/broadband/article/digital-voice-and-the-landline-phone-switch-off-what-it-means-for-you-aPSOH8k1i6Vv>

Thank You