

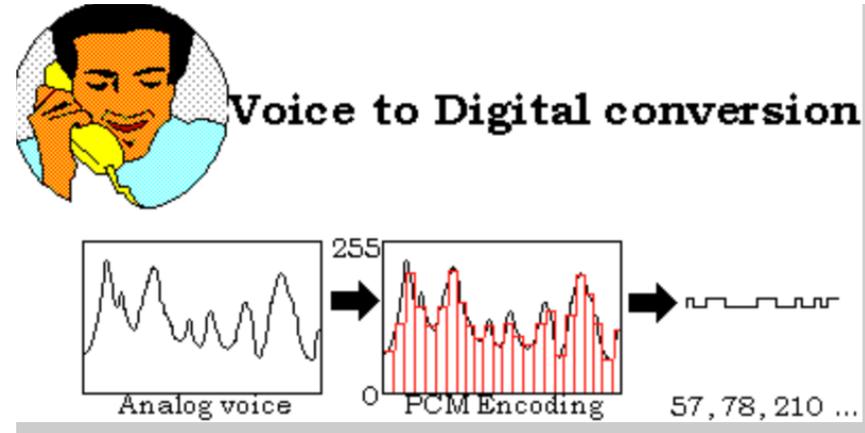
Smartphones

Mendlesham Computer Club

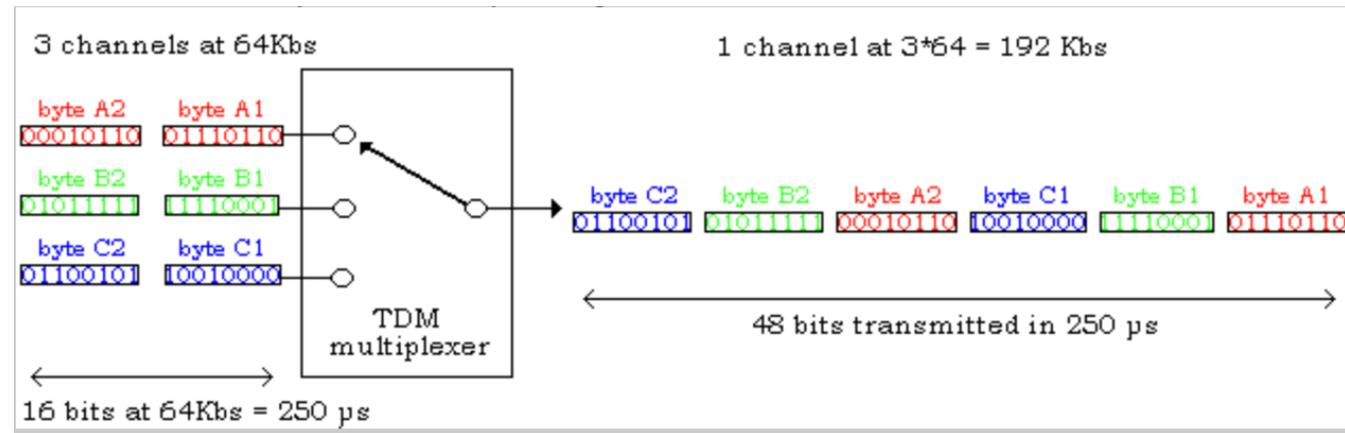
By Giles Godart-Brown

Key enabling technologies.

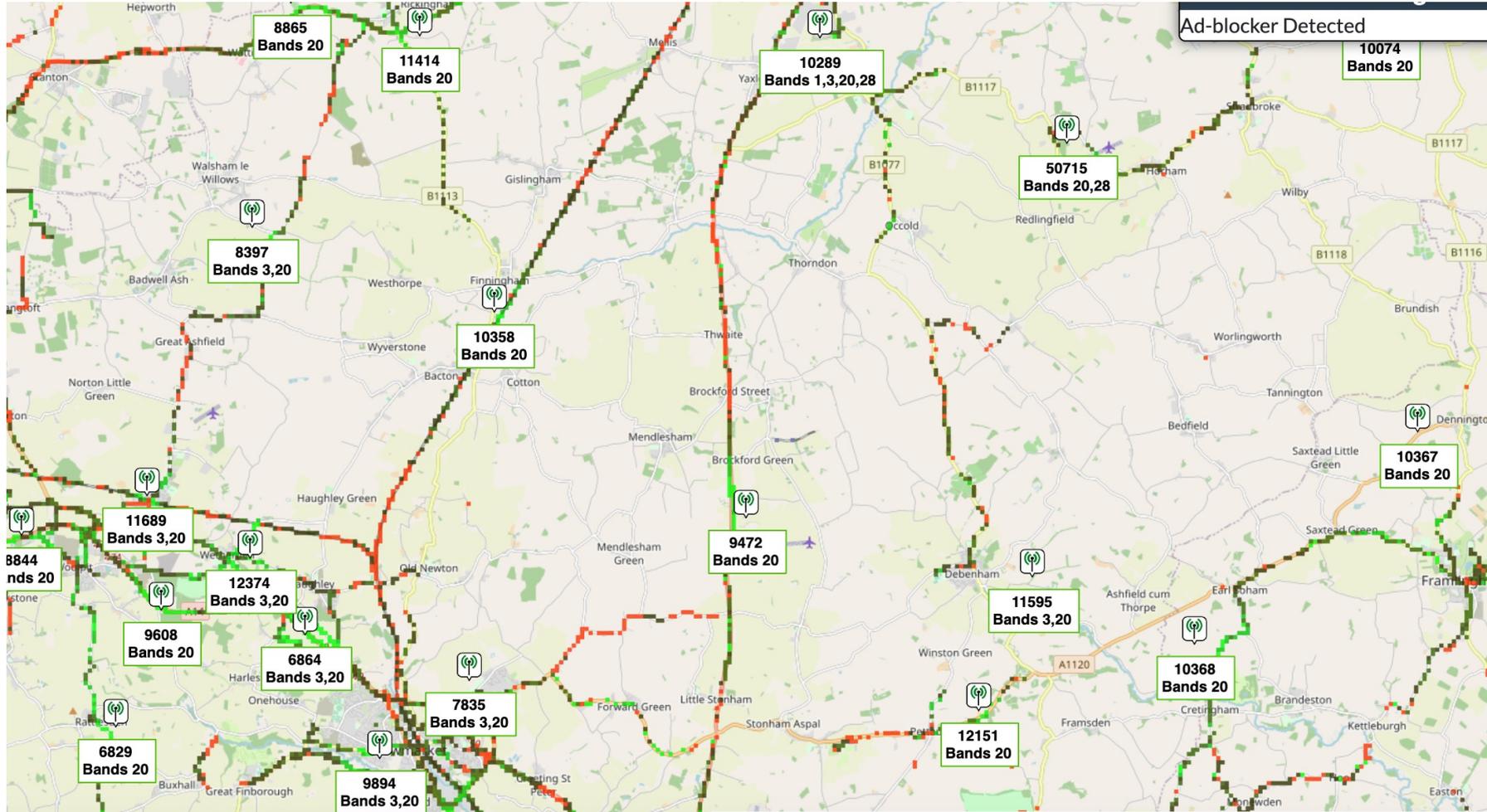
- Digital voice



- Multiplexing



Cellular Radio



Early cell phones

- The cell phone was invented by Martin Cooper in 1984 when he was working for Motorola after patenting the techniques needed for multiplexing phone calls.
- The same year the Motorola Dynatac 800 X became the first mass market cell phone.
- These now sell for over £100,000 on Ebay.



The Smart phone

As cell phones become more popular, techniques were added to make use of their digital capabilities, this led to them being called smart phones;

- Short Message Service (SMS) aka text.
- Multi Media Messaging service (MMS). An extension to SMS for longer messages, photos and video
- A browser to access the internet
- Additional radio transmitters and receivers
 - WIFI
 - Bluetooth for peripherals such as wireless headphones
 - Global Positioning System (GPS)
 - Near field Communications (NFC) for payments.
- Applications

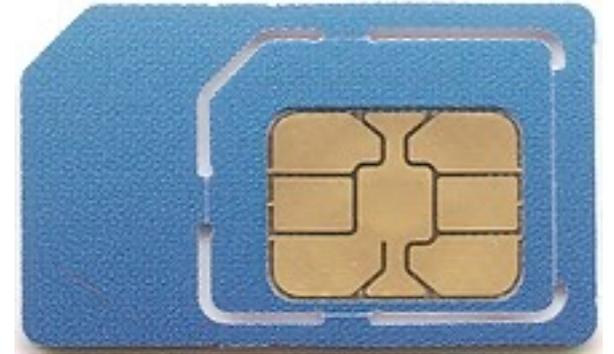
History of the Smartphone

- The first mass market smartphone was the iPhone, introduced by Steve Jobs in January 2007, it was based on Apples iOS operating system and a full version of their Safari Browser
- Samsung joined with the first Galaxy in 2009 which was based on the Google Android Platform
- At first smartphones were locked into the network that you bought them from, so you couldn't easily change from say Vodafone to Cellnet, nor load software not approved by Apple or Google. This was seen as a challenge by hackers who quickly developed 'Jailbreaks' that got around this.
- Apple and Google countered this by making it possible to swap networks and Sim cards and making it very easy and cheap to develop software and get it approved by themselves and then into their respective stores, the Mobile App industry was born.



The SIM card

- SIM = Subscriber Identity Module, and it does just that, it personalises the generic smartphone with your information, basically a number that uniquely identifies you, along with some security information, network information, PIN numbers and passwords.
- In the beginning it was also used to hold your phone book and other data, but this has now all moved into the cloud so if you change SIM it can still be retrieved.
- Over the years they have got smaller and now the physical card is now being phased out and replaced by a downloaded 'eSIM' which is securely stored in the phone's internal memory so cannot be removed.
- Phones that support both SIM and e-SIM can therefore have 2 numbers with just one physical SIM, e.g. a French SIM and a UK e-SIM.



What is a Mobile App?

- Mobile Apps are software designed to run on a Smartphone or Tablet.
- There are 3 funding methods
 - Completely Free
 - Advertising funded
 - Paid-for
- Most Paid-for Apps have a free version with less functionality or Adverts, consequently it is very rare that you need to buy an App.
- If you do have to pay, or there are in-App purchases e.g. Parking apps, then the purchase goes through the normal phone store (Apple store or Google Play) or is charged to the Credit Card you have associated with the App.
- We will deal with these in another session.

Two-Factor Authentication

Mendlesham Computer Club

By Giles Godart-Brown

What is 2-Factor Authentication ?

- 2 Factor Authentication (sometimes called Multi Factor Authentication or MFA) is based on “something you know (a password) and something you own (a mobile phone or email account) thus doubling the security of the connection. Increasingly web sites that involve money or private data will implement this.
- How it works
 - When you register on a web site, in addition to your password, you also register your email address and mobile phone number.
 - When you log into the site, it first asks for your password (factor 1), then sends you a text or email.
 - The text or email contains a code (usually a 6 digit number) that you must enter into the web site in order to log on. This confirms that whoever is logging in also has your mobile phone (factor 2).
- If you are in an area with poor mobile coverage, some sites allow you to specify an email address instead of mobile number. If you get a new phone, don't forget to update the number on the web sites that use it.

Phone Wallets

Mendlesham Computer Club

By Giles Godart-Brown

What is a Phone wallet?

- Wherever you see this sign, provided you have set up an Apple or Google Wallet, you can use your phone to make contactless payments instead of a credit card.
- They both hold details of your credit cards.
- As well as cards they can hold other information such as train tickets, and Covid passes.
- Smart watches have the same payment functionality.



Face recognition

- Use face recognition if possible.
- Face recognition only works on more modern phones e.g. iPhone 11 and above, Google Pixel 6, Samsung Galaxy S21, OnePlus 9, Xiaomi Redmi Note 10 Pro

Additional slides

Frequencies

The UK spectrum

- Interesting frequencies
 - Cell phones 800Mhz, 1800Mhz, 2100Mhz
 - Bluetooth 2.45Ghz
 - Wifi 2.4GhZ and 5Ghz
 - Sky TV 10 Ghz to 11Ghz

Added slides and links

- Photos of the Mendlesham mast
- UK radio spectrum
- Cell sites

Diversion Fireworks

Mendlesham Computer Club

By Giles Godart-Brown

Fireworks

There are 2 type of fireworks show in France

- Feu d'Artifice – straightforward fireworks
e.g. Masters of fire winners 2023 8;50 and 13:50
- Spectaculars – e.g. Group F at Versailles
Marie Antoinette, Venice, Cyrano de Bergerac