

# The Impact of World War One on Military Communications

Professor Andy Sutton CEng FIET MITP FBCS

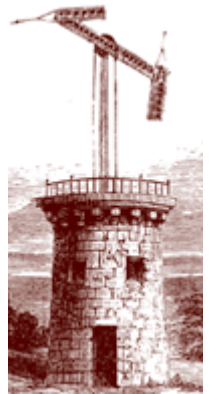
# Contents

- Pre-World War 1 military communications
- Royal Engineers Signal Service
- World War 1, a new form of warfare
- Outcome of World War 1 on British military communications
- The Royal Corps of Signals



# The need for communications

- Conscription by France under Napoleon in the 1790s caused a sudden increase in the size of field armies
- Fronts became wider, weapons became more sophisticated; as essential administration developed and tails became longer, the need for communications began to be felt
- In the Peninsula, Wellington introduced a scheduled despatch system operated by Dragoons detached from their regiments
- Early visual telegraph machines were introduced however, runners and horse-men remained the main means of communication
- In the field of visual telegraph; Claud Chappe gave France the lead in 1792 with his Radiated Telegraph machine along routes from Paris
- This started a revolution in military communications



# Telegraph Units RE

## 1870 - 1884

- In 1870 the Government suddenly feared becoming involved in the Franco-Prussian war, and the financial straightjacket, always worn in peace by the British Army, was loosened a little
- C Telegraph Troop, RE, came into being under Captain Montague Lambert on 1<sup>st</sup> September 1870, with the duty of providing telegraph communications for the field army
- At the same time, the Government decided to purchase the private telegraph companies of the United Kingdom, collectively they were disorganised, and individually inefficient.
- To improve the situation the GPO Telegraph was formed however it was short of operators and the line systems were in disrepair
- A suggestion that the Royal Engineers could help by lending men was eagerly accepted and the 34<sup>th</sup> Company, RE, joined the GPO
- This started a long-term relationship between the GPO and British Army
- 1871 - The formation of the Society of Telegraph Engineers (now the IET)

# The Telegraph Battalion RE

1884 - 1899

- In 1884, C Troop and the Postal Telegraph Companies were amalgamated to form the 1<sup>st</sup> and 2<sup>nd</sup> Divisions, respectively, of the Telegraph Battalion, RE, their roles remained unchanged
- Major Beresford, RE, officer commanding the 2<sup>nd</sup> Division, asked for suggestions for a device or crest for the Telegraph Battalions
- His own suggestion of the figure of Mercury proved most popular, and it was adopted for use on special occasions, notepaper etc.
- Above the figure was the crown while below it there was a scroll with the words:



RE - Telegraph Battalion - Ubique

# The South African War

1899 - 1902

- Strategically, telegraph was used for communications back to the Home Government by submarine cable. In theatre, land line was used to control formations down to the level of divisions and occasionally lower later in the war
- Civil telephones were used extensively in many of the large cities such as during the defence of Ladysmith, and lines between Pretoria and Johannesburg were greatly increased. During the Boer War the Telegraph Battalion's section laid 18,000 miles of telegraph and telephone cable. A total of 13,500,000 messages were handled in 4 years and the Battalion grew in strength from 600 to 2,500 men
- The first time a telegraph battalion provided technical and strategic communications for the army was when General French used telegraph and telephones to control artillery fire. Telegraph and telephone wires for the railway defences were added to the existing railway routes which were used extensively
- As the war progressed the whole of the Telegraph Service was put under military control based on the four Provinces
- The despatch service was a major means of communications at all levels. Horses, trains and runners were all important elements of the communications system

# Royal Engineers Signal Service

1902 - 1914

- The realisation that the struggle for power in Europe would inevitably lead to a major war/conflict coincided with the acceptance that upon the communications of a modern army depends its victory or defeat
- After some discussion it was decided that rather than form a new corps, the service would be provided by a Royal Engineers Signal Service, this new unit was formed in 1908



*Loading Telegraph Poles*



*Signaller testing the telephone-wires*

# The Great War (WW1)

## 1914 - 1918

- The summer of 1914 was glorious, war seemed impossible until a turn of event which started with the assassination of the Crown Prince of Austria-Hungary in Sarajevo
- The events which followed resulted in Britain being at war with Germany from 4<sup>th</sup> August...
- The British Expeditionary Force (BEF) was deployed around Mons on the 22<sup>nd</sup> August 1914
- To serve the BEF a GHQ signal company, two headquarters signal companies, six divisional signal companies, one cavalry signal company, eight cable and five airline sections and one lines communication signal company were formed and sent to France
- Whilst initial expectation were for a short war, these hopes quickly faded as a new form of warfare emerged; trench warfare



# RE Signal Service at the start of war

- The Signal Service at the start of the war was primarily a Telegraph Service however by the end of the war the telephone was the main means of communication on the Western Front
- Wireless was playing an increasingly important role too, particularly for communicating with the aircraft of the Royal Flying Corps which, in 1918 became the Royal Air Force
- Strength in 1914 was <6,000 officers and men



# WW1 telecommunications

- The Signal Service was trained and equipped to operate in a mobile role, moving forward with an advancing army, laying telegraph lines from cable wagons, often under enemy fire
- The deadlock which resulted in years of trench warfare changed the work of the Signal Service and placed significant demands on its resources
- In 1914 a signal office at a typical Corps HQ would consider 100 messages a day to be busy, by 1918 the average daily number of messages had reached 4,500\*



# Early telephones

- Some military telephones were available at the start of the war, these were manufactured by Ericsson who had been supplying the British Army since the Boer war of 1899 - 1902, unfortunately there was nowhere near the quantity of instruments required to meet demand
- During the early days of the war, civilian telephones were deployed to meet the immediate needs for battlefield communications, however these instruments were not designed for the harsh environment in which they operated
- Many of these civilian telephones were replaced, as soon as possible, with specially designed instruments such as field magneto telephones and buzzer systems for use with Morse code.





# WW1 trench telephones

**Telephone Set D Mark III**  
**Made by Sterling (?)**



**Telephone No 110**  
**Made by British Post Office**



# Repairing field telephones lines during a gas attack at the front

- The American soldiers working before us, safe from the gas hanging thickly around them because they are wearing the very effective American gas masks, are performing a task frequently demanded of military linemen



# The introduction of electronic warfare?

- The use of telephones on the battlefield presented new security risks as the enemy could easily intercept the communications
- Thousands of casualties resulted from intercepted telephone conversations until army staff started to speak in code to minimise this risk
- Engineers worked to improve the design of telephone cables to prevent the leakage of signals...



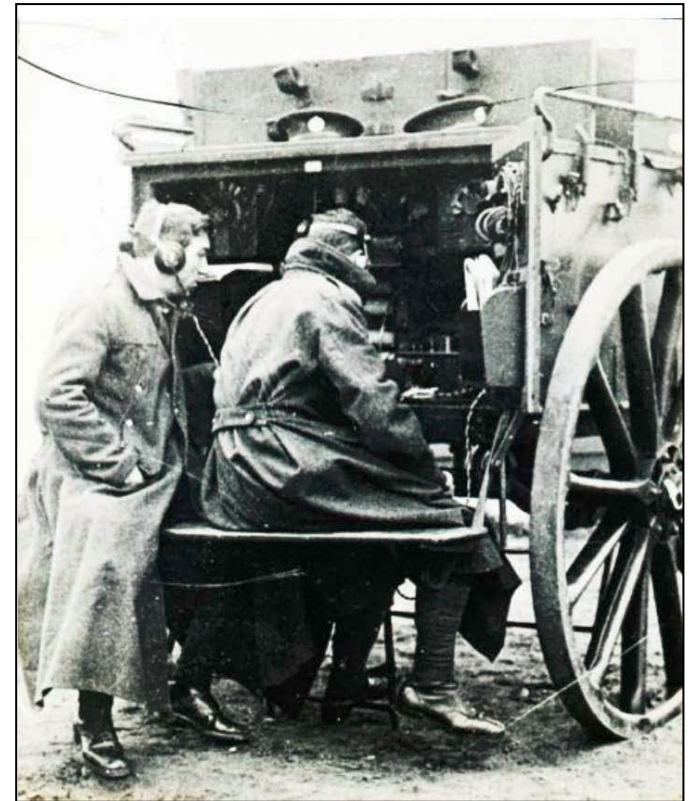
# The FullerPhone

- Hastily conducted experiments carried out within the Allied lines left no doubt about the cause of the leakage, and measures against eavesdropping were rapidly introduced by using metallic circuits (twisted pair of wires instead of an earth return) within 3 miles from the front line.
- The ultimate solution to this problem came toward the end of 1915 when Captain A.C. Fuller devised the Fullerphone. In October 1915 Fuller brought two prototypes to 5 Corps in Flanders. His invention was tested on a five mile loop of cable, part of which ran in the water-filled moat of Ypres



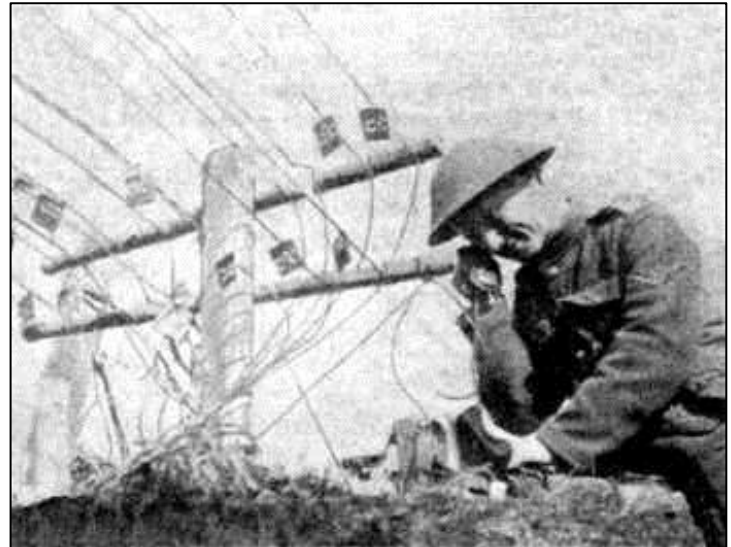


# WW1 wireless communications





# From Pigeons and telegraphs to telephones and wireless...



# Good communications wins wars...

- After a rather disorganised start with a Signals Section that was not at all prepared for war on a large scale, and even less for the unforeseen vagaries of trench warfare, the RESS slowly organised itself and adopted new and more appropriate methodologies
- These changes brought about the necessary better intercommunication structures that help to dispel the disastrous 'Fog of War' syndrome and put the commander and the commanded into a closer working relationship



# Formation of the Royal Signals

- The post-war evaluation of the lessons of the war included a more realistic appreciation of the role of the Signallers and their contribution on, and beyond, the battlefield
- This ultimately led to the long delayed creation of a Corps of Signals on the 28<sup>th</sup> June 1920 (shortly after conferred by royal approval as the Royal Corps of Signals (5<sup>th</sup> August 1920)) dedicated to British military communications around the Globe





This statue was unveiled on 10<sup>th</sup> July 1975 by HM The Queen to commemorate the 50<sup>th</sup> anniversary of The Royal Corps of Signals in Catterick – However, it's now in Blandford...



# Royal Signals badges

1921 - 1946



1946 - 1954

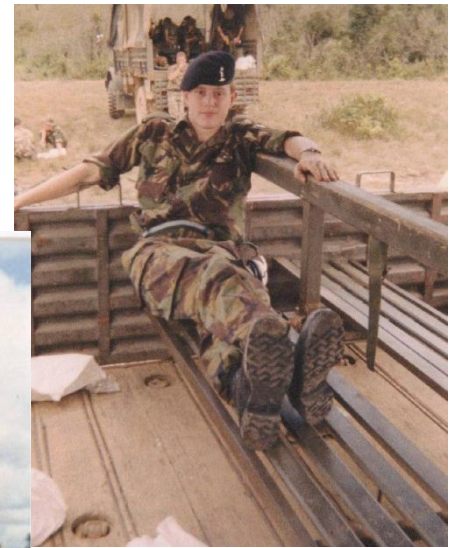
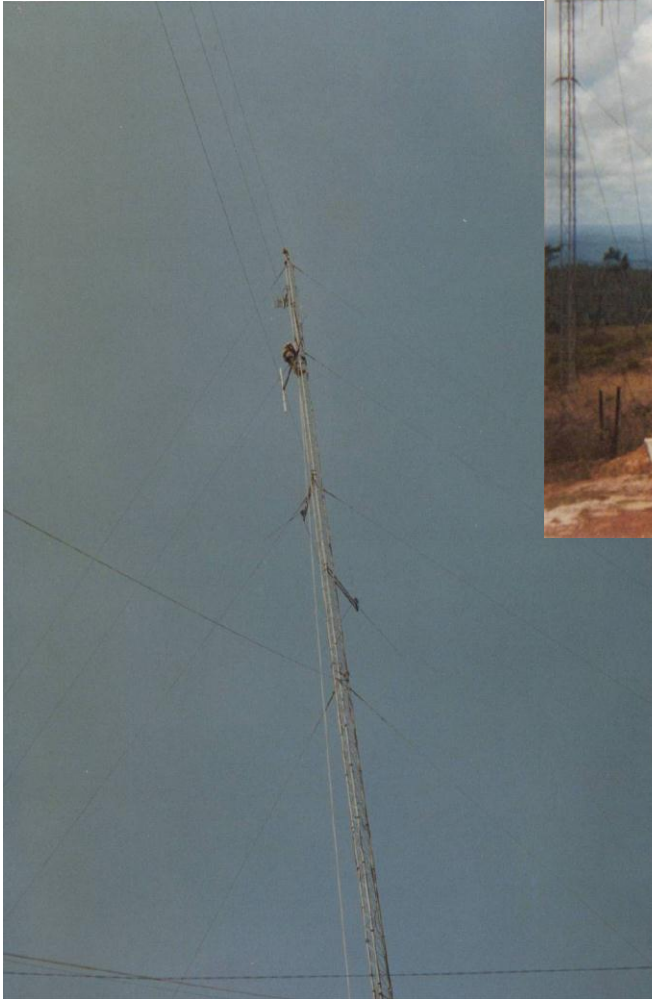


1954 - current date



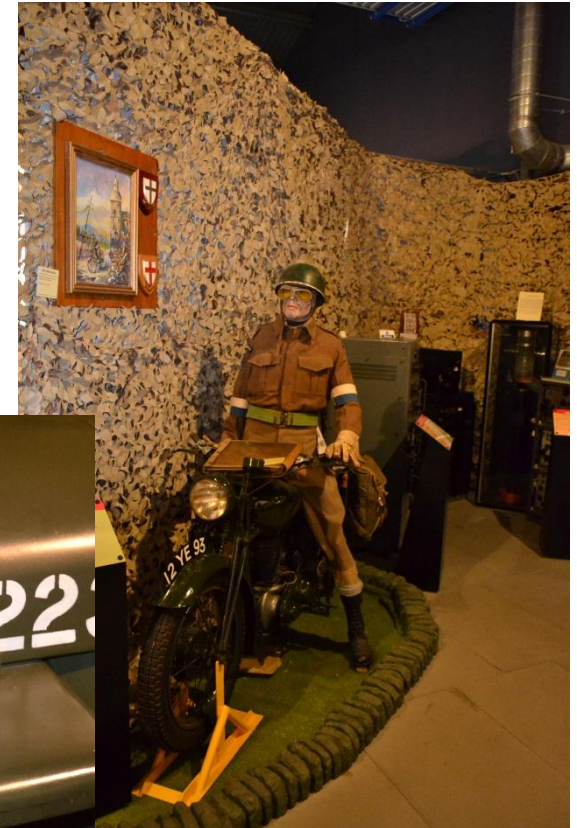


# A young telecoms tech...





# Photos from RSA event



# Royal Signals Museum

The Royal Signals museum is located at Blandford Camp in Dorset where you can follow the story of military communications from the days of the Shutter Telegraph through the events of World War 1 and World War 2, through to the present day

<http://royalsignalsmuseum.co.uk>





# Summary

- World War 1 was a technological war; from advances in military communications to the use of aircraft at war and introduction of the tank
- Many of the techniques adopted in WW1 were further developed during the 1920's and '30's
- The need for the message to get through quickly and accurately is even more essential today as the pace and complexity of warfare evolves - this is fundamental to military communications and as such the Royal Signals Corps motto is 'Certa Cito' which translates to 'Swift and Sure'.



# Further information

- Call to Arms - A History of Military Communications from the Crimean War to the Present Day
- Headdress, Badges and Embellishments of the Royal Corps of Signals
- Work of RE in the European War, 1914 – 19: The Signal Service (France)
- The Royal Corps of Signals – Unit Histories of the Corps (1920 – 2001) and its Antecedents
- Royal Signals Museum: <http://royalsignalsmuseum.co.uk>
- BT Archive, an interview with BT head of heritage and archives, David Hay: <http://letstalk.globalservices.bt.com/en/2014/08/trenches-home-front-story-british-communication-technology-world-war-one/>
- Royal Signals badges: <http://www.signalsbadges.co.uk/>
- Innovating in Combat - Telecommunications and intellectual property in the First World War: <http://blogs.mhs.ox.ac.uk/innovatingincombat/>

<http://www.engagingwithcommunications.com/>

# Thank You

[a.sutton@salford.ac.uk](mailto:a.sutton@salford.ac.uk)