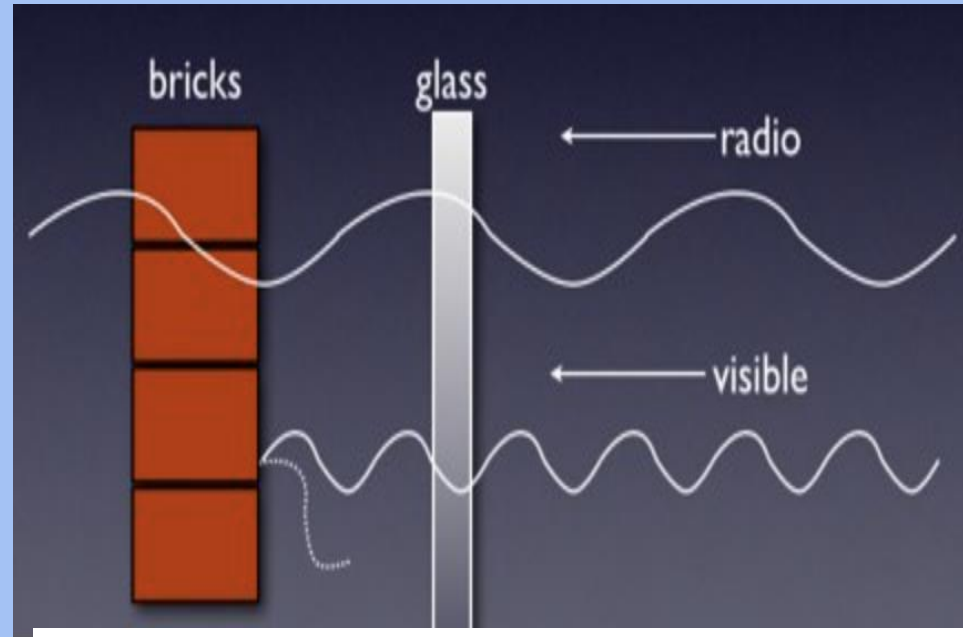


HOW HAVE HUMANS COMMUNICATED IN THE PAST?

On a scrap of paper make a list of types of communication.

REMEMBER, RADIO WAVES ARE LIGHT WAVES!

- Type of Electromagnetic Radiation
- Longest Wavelength
- Lowest Frequency
- Communication devices like televisions, cell phones, and radios use radio waves by converting them into mechanical vibrations that turn into sound waves that we hear.



VISIBLE LIGHT AND RADIO WAVES GOING TOWARDS GLASS AND BRICK. LIGHT CAN GO THROUGH GLASS, BUT NOT BRICK. THE RADIO WAVES CAN GO THROUGH BOTH (A RADIO WORKS INSIDE, DOESN'T IT?).

[HTTPS://WWW.WIRED.COM/2009/09/LIGHT-AND-WAVES-AT-A-BASIC-LEVEL/](https://www.wired.com/2009/09/light-and-waves-at-a-basic-level/)

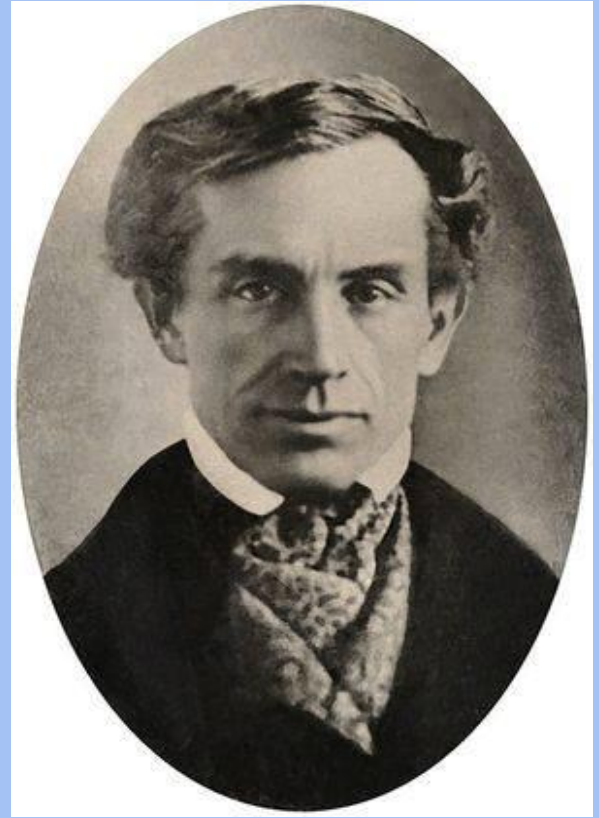
RADIO SPECTRUM

How it all began

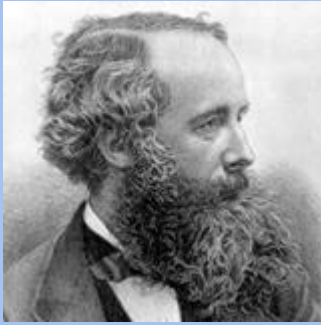


HISTORY OF MORSE CODE AND RADIO WAVES

- Samuel F.B. Morse invented electric telegraph in 1833.
- 6 more years to standardize the code, which was limited to dots and dashes
- 1843, Morse is given \$30,000 from Congress to establish 1st long distance communication through electric and wire
- Morse sends first Morse code from Washington DC, to Baltimore MD, May 24, 1844



HISTORY OF MORSE CODE AND RADIO WAVES



- 1864 James Clerk Maxwell, experimental physics professor published a theory stating that electromagnetic currents could be perceived at a distance



- Late 1880's, German physicist Heinrich Hertz succeeded in producing electromagnetic waves and confirmed Maxwell's theory

HISTORY OF MORSE CODE AND RADIO WAVES

- Shortly after, Guglielmo Marconi, an Italian inventor began short-distance broadcasts in his own backyard
- September 1899, telegraphed results of American Cup Yacht races from a ship at sea to a land based station without travelling through wire (Wireless Communication!)



RADIO SPECTRUM

Our Precious Resource



UNITED STATES FREQUENCY ALLOCATIONS

THE RADIO SPECTRUM

RADIO SERVICES COLOR LEGEND

AERONAUTICAL MOBILE	AIR-SATELLITE	RADIOASTRONOMY
AERONAUTICAL MOBILE SATELLITE	LAND MOBILE	RADIOCOMMUNICATION SATELLITE
AERONAUTICAL RADIONAVIGATION	LAND MOBILE SATELLITE	RADIOLOCATION
AMATEUR	MARITIME MOBILE	RADIOLOCATION SATELLITE
AMATEUR SATELLITE	MARITIME MOBILE SATELLITE	RADIONAVIGATION
BROADCASTING	MARITIME RADIOCOMMUNICATION	RADIONAVIGATION SATELLITE
BROADCASTING SATELLITE	METEOROLOGICAL SATELLITE	SPACE OPERATION
EARTH EXPLORATION SATELLITE	METEOROLOGICAL SATELLITE	SPACE RESEARCH
FIXED	MOBILE	STANDBY FREQUENCY AND TIME SIGNAL
FIXED SATELLITE	MOBILE SATELLITE	STANDBY FREQUENCY AND TIME SIGNAL

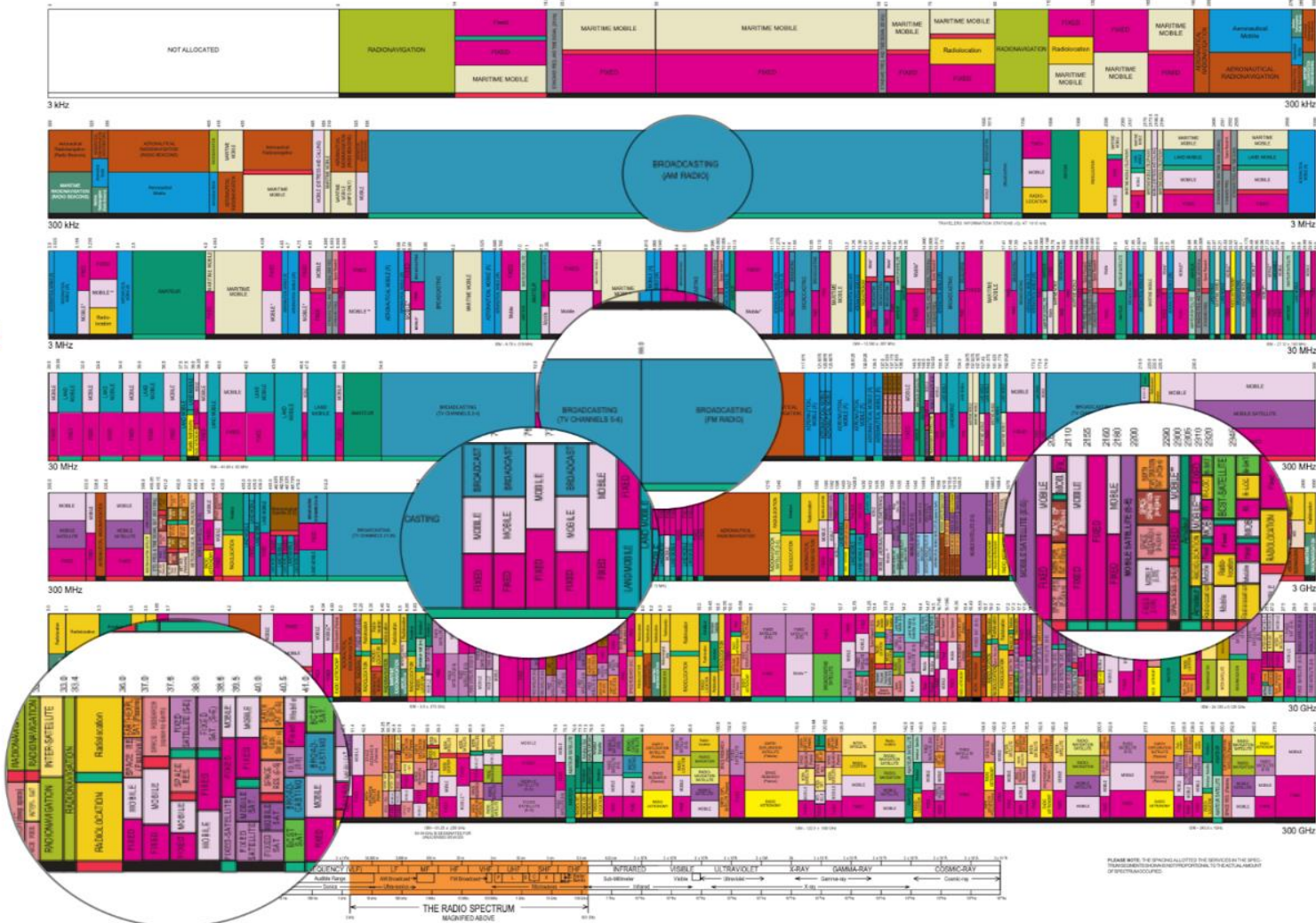
ACTIVITY CODE

GOVERNMENT EXCLUSIVE	GOVERNMENT-NON-GOVERNMENT SHARED
NON-GOVERNMENT EXCLUSIVE	

ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	DESCRIPTION
Primary	FIXED	Capital Letters
Secondary	Mobile	For Capital with lower case letters






This chart is a graphic representation published as part of the Table of Frequency Allocations used by the FCC and is not a regulatory document. It does not constitute any part of the FCC's rules and regulations. It is intended to provide a general overview of the radio spectrum and is not intended to be used for legal purposes. For more information, please contact the FCC.



REGULATED BY

1. FCC (Federal Communications Commission) - Regulates interstate and international communications through cable, radio, television, satellite, and wire.
2. NTIA (National Telecommunications and Information Administration) - Responsible by law for advising the President on telecommunications and information policy issues.

RADIO SERVICES COLOR LEGEND

 AERONAUTICAL MOBILE	 INTER-SATELLITE	 RADIO ASTRONOMY
 AERONAUTICAL MOBILE SATELLITE	 LAND MOBILE	 RADIODETERMINATION SATELLITE
 AERONAUTICAL RADIONAVIGATION	 LAND MOBILE SATELLITE	 RADIOLOCATION
 AMATEUR	 MARITIME MOBILE	 RADIOLOCATION SATELLITE
 AMATEUR SATELLITE	 MARITIME MOBILE SATELLITE	 RADIONAVIGATION
 BROADCASTING	 MARITIME RADIONAVIGATION	 RADIONAVIGATION SATELLITE
 BROADCASTING SATELLITE	 METEOROLOGICAL AIDS	 SPACE OPERATION
 EARTH EXPLORATION SATELLITE	 METEOROLOGICAL SATELLITE	 SPACE RESEARCH
 FIXED	 MOBILE	 STANDARD FREQUENCY AND TIME SIGNAL
 FIXED SATELLITE	 MOBILE SATELLITE	 STANDARD FREQUENCY AND TIME SIGNAL SATELLITE

ACTIVITY CODE

 GOVERNMENT EXCLUSIVE	 GOVERNMENT/NON-GOVERNMENT SHARED
 NON-GOVERNMENT EXCLUSIVE	