

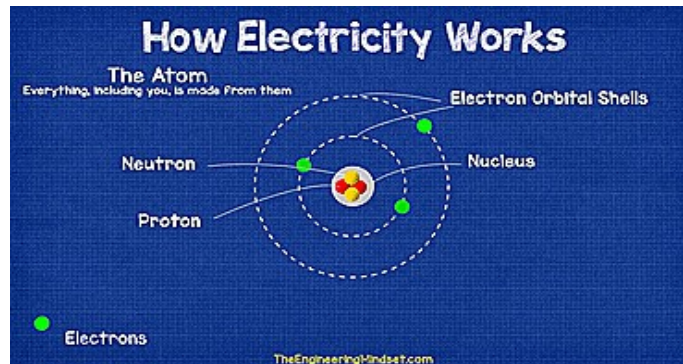
# Youngsters and Teenagers! May I have your attention please?



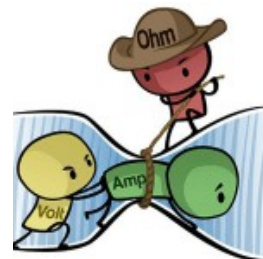
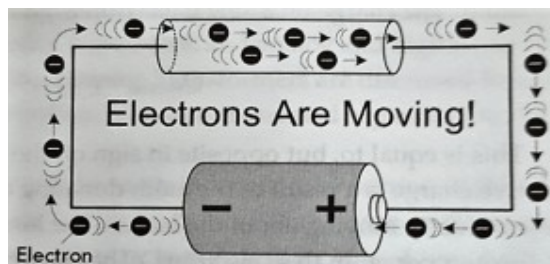
Have you ever wondered, what makes it possible to have a conversation with your friends on Discord, Snapchat or Instagram?



Guess what? It can be all traced to free electron flows. Yes, those pesky components of the atoms:

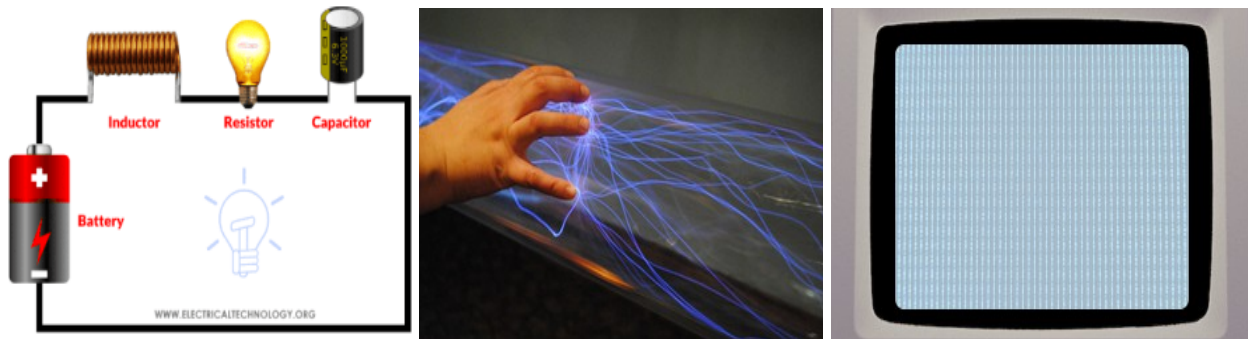


Well, this is where it starts. Electrons encounter resistance on the journey, from negative to positive polarity:



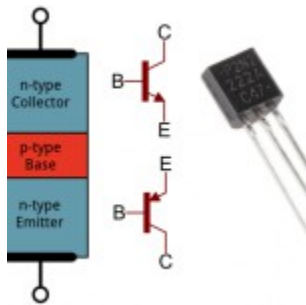
## So you think, “what is so exciting about this”?

All it takes is to connect a few electronic components to unleash some real magic.

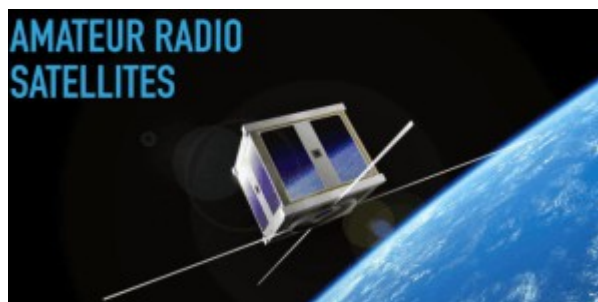


Yes it takes some effort, patience, perseverance, and learning. If you aspire to become a tech wizard, you must start with electronic components:

- resistors
- capacitors
- inductors
- transistors (if you are adventurous enough, even electronic vacuum tubes)



Imagine you can build a signal transmitter and receiver (if you combine the two, becomes a transceiver), move to a distant place and still be able to communicate with your friends. Yes, even if the distance becomes thousands of miles. Outer space? Not an issue! If you are fortunate enough to travel to the International space station, you can still communicate with your fellow citizens on earth.



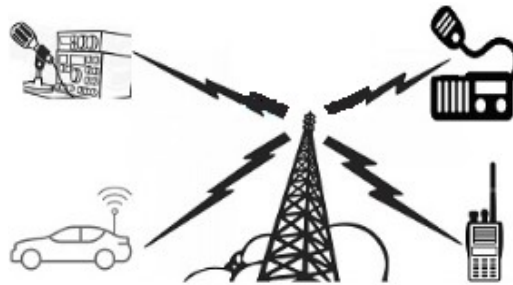
In case you are afraid of heights, just say hello to an astronaut and have a chit chat about what was served for breakfast up above the sky.



*Now, in my book, this is really cool! Are you with me?*

“That’s one small step for man, one giant leap for mankind.” – Neil Armstrong – Astronaut

### How about building something much cooler than the existing social network platforms?



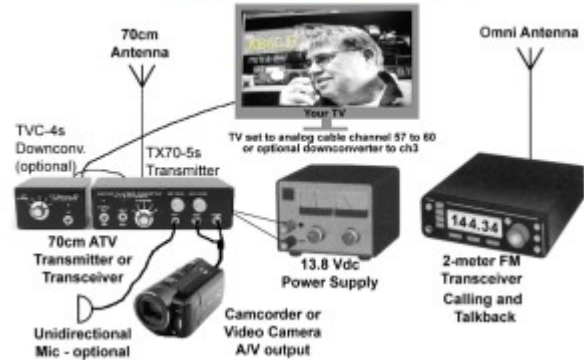
Yes, you can build your own communication channel. You can manage it to make sure only people with same common interest join. No commercial disruptions, no targeted marketing intrusions! You can even remote control your model airplane or boat with a radio!

This is fairly easy to accomplish with a bit of dedication. You will be able to transmit sound, pictures and even video. **Why not setup your Amateur TV channel?** This is not blowing smoke, fairly easy to do with a bit of work and learning.





### 70cm ATV Base Station Example



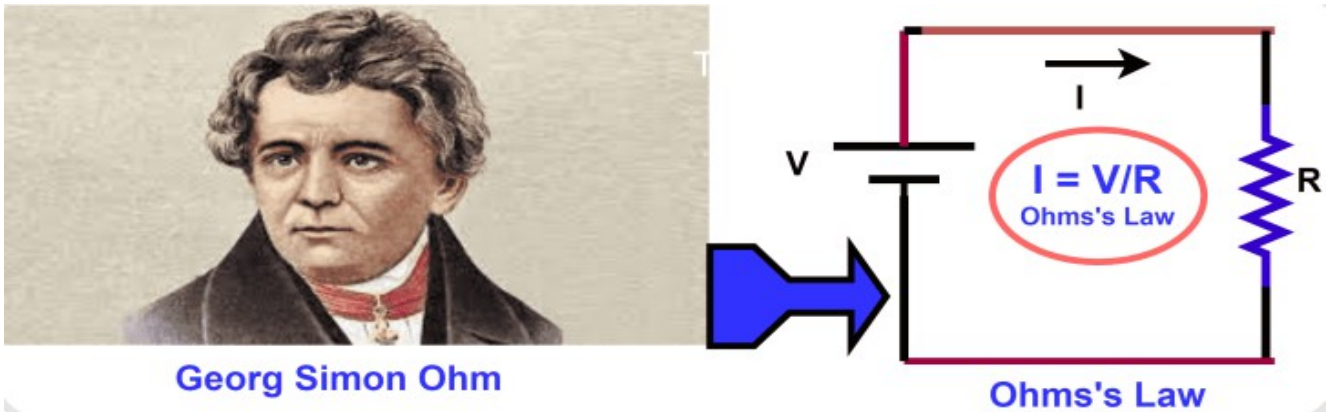
For a start learn a bit of electronics theory. Next you need to understand how sound and video images can travel several thousand of miles with the speed of light. Really? Yes, for real, with the help of electromagnetic radio waves.



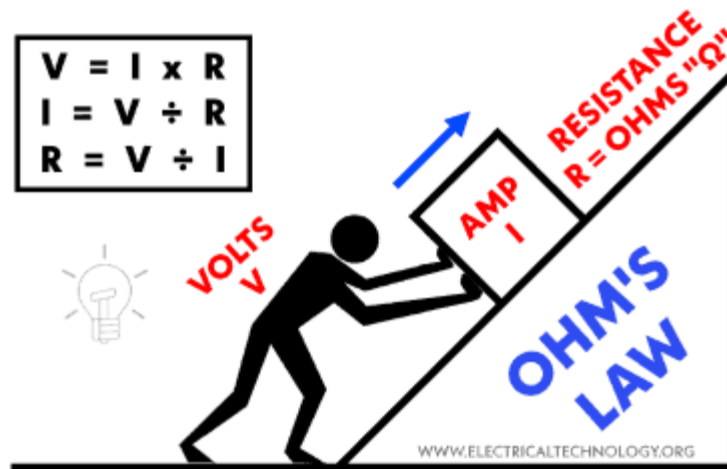
**Did I get your attention?**



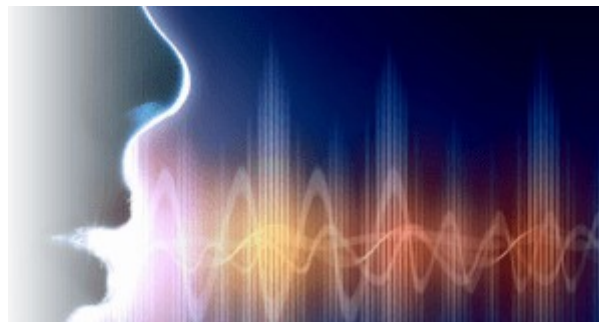
## How cool is Ohm's law?



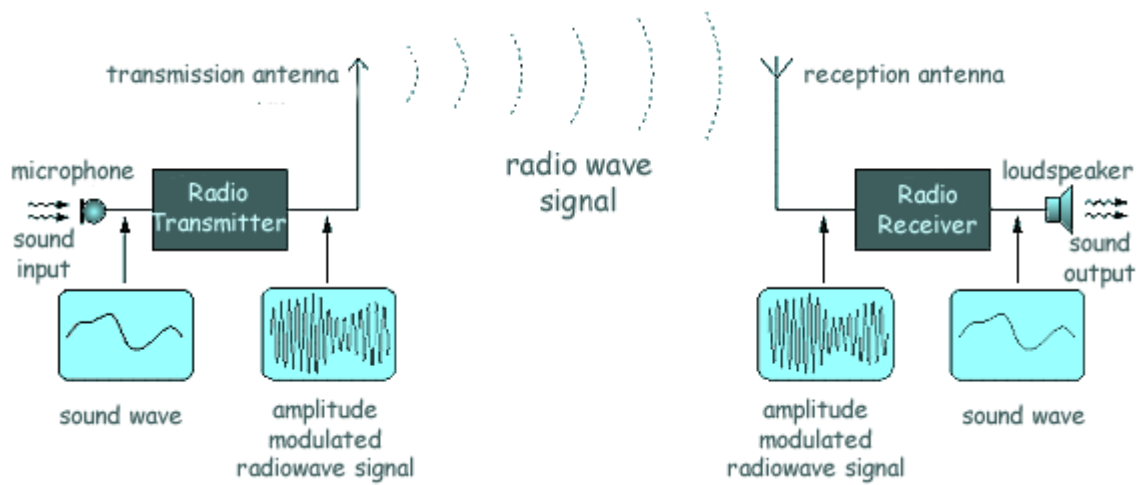
There are several ways to look at Ohm's discovery and use it to your advantage:



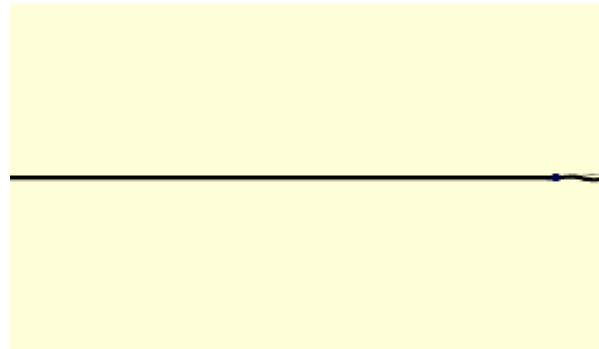
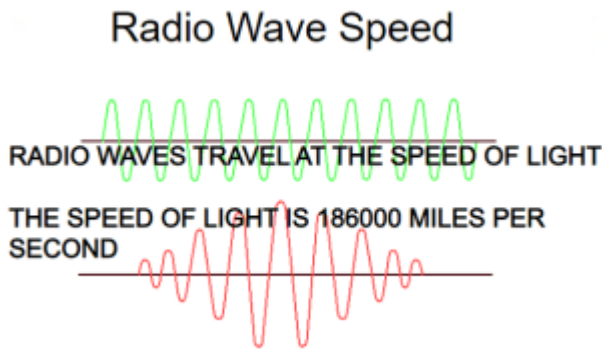
OK, OK! So electrons move due to a potential difference between different points of an electrical circuit and this creates a current flow. How does this relate to sound?



Good question! You are sharp! We are here, to learn about the intricacy of converting sound to electromagnetic radio waves, propagate if from a transmitter antenna to a receiver antenna and convert it back to audible sound on your computer, radio or TV.



The speed of sound in the air is 331 m/s at 0°C, and it grows 0.6 m/s for each °C.

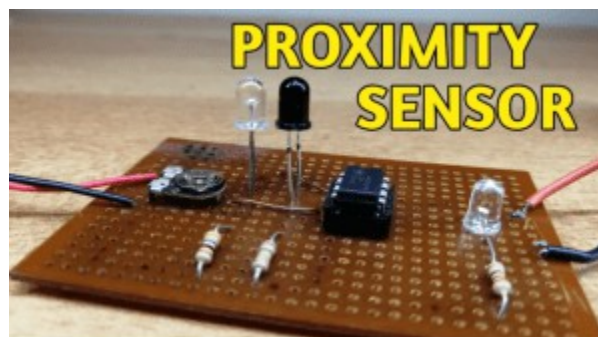


The speed of light is 299,792,458 meters per second. Now that is fast!

I think by now you got a hang of sound theory and how it travels on top of radio wave signals at the speed of light.

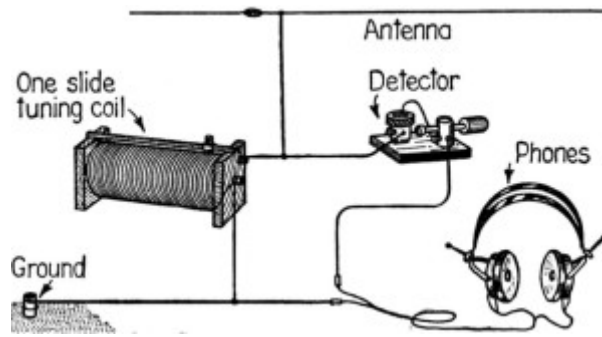
**You say, "this is already a lot of stuff". How does this help me?**

How about building an electronic circuit that will alert you when someone approaches your room (maybe a sneaky brother or sis, oh no, mom or dad)?

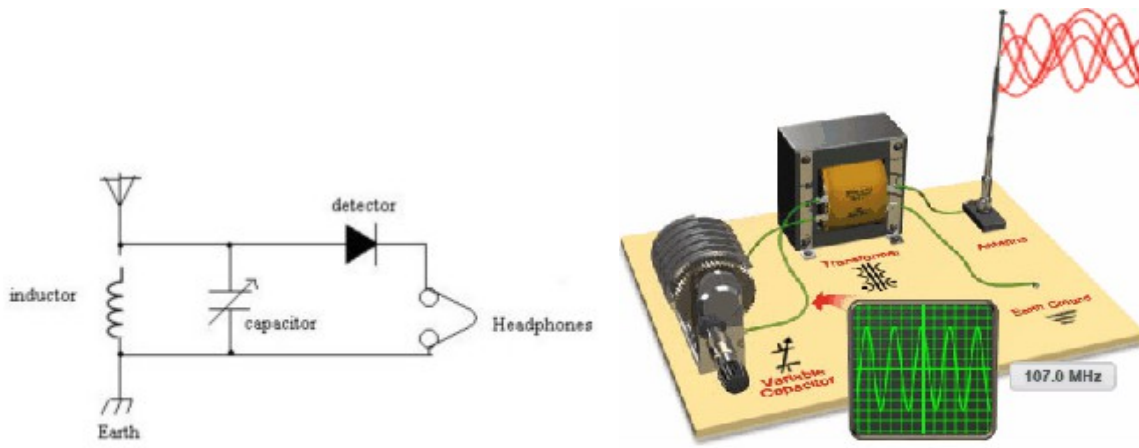


OK, what am I thinking. You are a role model child, have nothing to hide.

Lets build a radio receiver instead:



What? You do not like to listen to music, talk radio and all the commercials on the air? Ha, you are hard to please! You must like to talk, right? At least with your “friends”. OK, we are getting somewhere! How about we learn how to build a radio receiver and transmitter so you can have those important private conversations with your buddies? Setup your “own” radio channel. Isn’t that something?



If I raised your attention to radio technology, check out the South Orange Amateur Association's Elmer Saturdays : <https://www.soara.org/activities/soara-saturdays>.

What is an ELMER? “An Elmer is a person who nurtures, mentors, coaches or provides personal assistance to ham radio operators. Introduced by Rod Newkirk, W9BRD (now also VA3ZBB) the term “Elmer” first appeared in the March 1971 issue of QST. Newkirk called them, “the unsung fathers of Amateur Radio”.

As you can see, the term is not very old. Prior to the first use of Elmer, what were these folks called? Many have suggested teacher, mentor, tutor, guide, helper and sage? All are appropriate, but first and foremost they are called friend.”

Let your friends know what a cool gem you dug out! Join the SOARA club to learn about technology.

Thanks for spending your valuable time on this site!