Meshtastic in Kamloops

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- Meshtastic is related to LoRa. LoRa "Long-Range" was developed about 10 years ago in France to allow wireless communication between IoT devices. Uses spread spectrum modulation similar to CSS (Chirp spread spectrum). Operates in non-licensed ISM bands, 902-928 MHz in US and Canada.

- LoRaWAN is a network protocol that allows communication between sensors and other devices, Gateways and Internet.

- Meshtastic (Mesh + fantastic) is an alternative protocol to LoRaWAN that uses similar devices to allow text messaging across a meshed network of LoRa devices. Messages can be be encrypted. The original use was for groups of people outside of cell coverage to exchange short message and track each other's location (hiking, off-road and even hang-gliding). But part of the recent interest is driven by emergency communication when communications infrastructure is down.

- I first heard about it about 2 years ago on Andreass Spiess' Youtube Channel. There was a bit of a flap in certain three letter organizations about it being used for nefarious things due to the encryption. Then late last year it started to take off, to the point that boards were unobtainable for a while.

- The "device" is a small board that includes a LoRa transceiver. They are relatively cheap ($20 to $50 US). They are low power and are operated in conjunction with an app on a phone or tablet (there is also a command

line interface in Linux). The board communicates with the App via blue tooth or WiFi.

- A few months ago, Trevor told me at the club breakfast that he had set up a node at his home in Pineview. I then asked Kyle if he was interested in setting up a few nodes to play around and see how it would work in the complex terrain around Kamloops.

- We found 6 Heltec V3 LoRa boards available for the 915 MHz ISM band and they arrived a few weeks ago. Brock VA7AV and Dave VE7LTW took two of them so we could spread them around Kamloops. We are now up to 8, and we are seeing around a dozen or so other nodes in Kamloops.

- What have we learned so far? Well given they are operating at 906 MHz, the stock antenna is laughable (and tuned to 868 MHz, the European LoRa band), and they are very low power (we think 100 mW), it is no surprise that line of sight (well almost) is needed to communicate. We have been rigging up some ground plane antennas and they are a big improvement. At the moment we are able to communicate over distances up to 3 km or so. We cannot communicate between Sahali (where Kyle and Brock's nodes are) and downtown where I am. I was able to communicate with them when I was up in Sahali, and I was able to communicate with Trevor as he drove down summit and over to the North Shore. For reasons we do not understand, I can send messages from downtown up to Kyle and Brock, but I cannot receive their replies.

- Next step is to use a higher gain commercial antenna I have purchased to see if we can find a good site for a repeater (all nodes on the mesh are really repeaters)that will allow us routinely communicate across the whole of Kamloops. The KARC repeater site on Dufferin may be a good site based on some modelling I have done.

- We'll keep you posted. Kyle has set up a Facebook site (search Kamloops and Area Facebook). If you want to join in, or get more information about what we are doing, just get hold of us.

If you just want to jump right in, these are the best sources to start. Just look for the videos on Meshtastic.

The home site.
https://meshtastic.org/

Andreas Spiess.
https://www.youtube.com/@AndreasSpiess

Andy Kirby.
https://www.youtube.com/@andykirby

The Comms Channel TC2.
https://www.youtube.com/@The_Comms_Channel