**Zigbee Wireless Communication**

According to general wikipedia info; a Zigbee compatible device network shall use 3 main devices to provide wireless communication;

Coordinator – Every network must have one

Router – Can be used as an itermediate device to pass data for longer distances (Won’t be necessary for now)

End device – Every embedded device to be monitored must have one

According to these details, a network can be star or tree type, and we will probably use star type network for our prototype. In star type network, there stands a coordinator device at center, sending and receiving data from end devices around it. Data consistency, security and routing of data from coordinator to end device (and vice versa) is not our responsibility at this point, we’ll have to use just program an MCU device to carry out communication protocols accordingly.

Microchip Web Page for Zigbee Compatible Devices:

<http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=2664&param=en520422&redirects=zigbee>

**Hardware details**

As programming details are not very well defined, hardware type is not certain for these devices either. Many vendors produce them as microchips, so we may need to port them on an electronic circuit ourselves, or we may get one like FreeScale MC13214, which combines a programmable MCU and RF transreceiver.

Page for FreeScale MC13214

<http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=MC13214&fsrch>=1

**Programming**

Many Zigbee compatible device vendors such as Texas Instruments, Freescale etc. use a type of embedded C to control their devices. Although they don’t use any general and well managed API, logic behind their system is quite similar. Certain function calls are made for request/send protocols between devices, with predetermined device id parameters applied due to the network preferences. Package size, latency are pretty much detailed for us to deal with right now. Other than that, APIs and cross compilers for different vendors exist, but there is no common tool for many of them, so we just need to wait until we get our devices and their manuals etc.

Few intro slides regarding embedded C usage on Zigbee supported devices exist online, one of them is located at:

<http://www.zigbee.org/zigbee/en/events/documents/April2006_ESC_Presentations/WIR-901Gillman.pdf>

**Documentation**

We may need to consult some hard copy documents for a quickstart in this business. Few books exist in our library as an electronic resource as well. One of them is “Zigbee Wireless Networking”:

<https://library.metu.edu.tr/search~S4?/Xzigbee&searchscope=4&SORT=D/Xzigbee&searchscope=4&SORT=D&SUBKEY=zigbee/1%2C18%2C18%2CB/frameset&FF=Xzigbee&searchscope=4&SORT=D&5%2C5%2C>

An advertisement through an overview of this book seems to prove its worth. Good starting point...

<http://www.eetimes.com/design/embedded-internet-design/4201087/ZigBee-applications--Part-1-Sending-and-receiving-data>

Notes:

* A summary of important aspects covered in this document will be provided for weekly report tomorrow.
* As details of these devices are quite huge, we may need to skip getting into too much detail in proposal report -due date is on Tuesday-.

Anıl Ulutürk