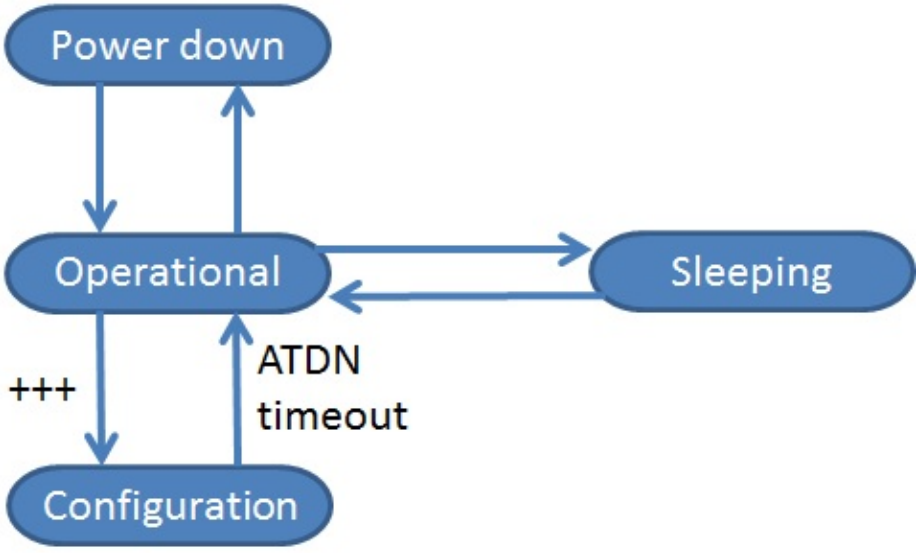
Untangling configuration from communication

The first thing most of us do when we get our radio module connected is to try and see if it works. And most of us do this by sending "+++" to the radio module and seeing "OK" as a response. From the questions we are getting, it then seems very easy to believe that "+++" is required for everthing to do with the radio unit. To help clear up this often occurring confusion, consider the following:

Ciseco radio modules have two serial "ends", one wired and typically connected to a micro-controller or computer, the other wireless and communicating with other Ciseco radio modules. The "+++" command and any following AT commands are issued over the wired (local) connection and used for configuration of the local device only. They are not sent over the wireless connection to other radio modules.

Let's next take a look at what states Ciseco radio modules can be in. There are basically four states, as shown in the diagram below:



1. **Power down** - obviously nothing happens in this state.
2. **Operational** - this is the mode the radio is in after power-up. What the radio module does in this mode depends on the configuration and on the firmware which has been loaded.
    - The transparent serial firmware simply passes all data from the wired Tx line over the radio connection to other radio units, and all data received on the radio to the wired Rx line. All data is passed through, except the string used to move the radio unit to configuration mode (by default this is the "+++" string). To be clear, the transparent serial firmware does not respond to any LLAP or Pinata messages, as they are simply seen as data and passed through.
    - Other Ciseco firmware personalities, such as a temperature sensor, or a relay controller, are configured to adhere to a set of LLAP wireless messages (see the message protocol section in the Document Index). To be clear, the other (LLAP) personalities also only respond to AT commands over the wired serial interface, any other wired serial communication is ignored.
3. **Sleeping** - depending on the configuration and/or the personality firmware, a radio may be sleeping and alternate between sleeping and operational mode. When it is sleeping it won't be able to send or receive any data or respond to AT commands.
4. **Configuration** - a mode used to change the settings of the radio module. The default

command string "+++" is used to get into this mode and the command ATDN (AT done) to get back to operational mode. If the radio module gets no AT commands for a default period of 5 seconds, it returns to operational mode also. To get a good understanding of all the configuration options and the way they get applied please refer to the SRF configuration guide, which equally applies to the XRF.

For most of us who receive SRFs or XRFs with transparent serial firmware, it should be possible to power them up and get serial communications between them happening without having to change any of the configuration. So try that first before getting lost in AT commands, node names, PANIDs etc. Just keep it simple, life is complicated enough!