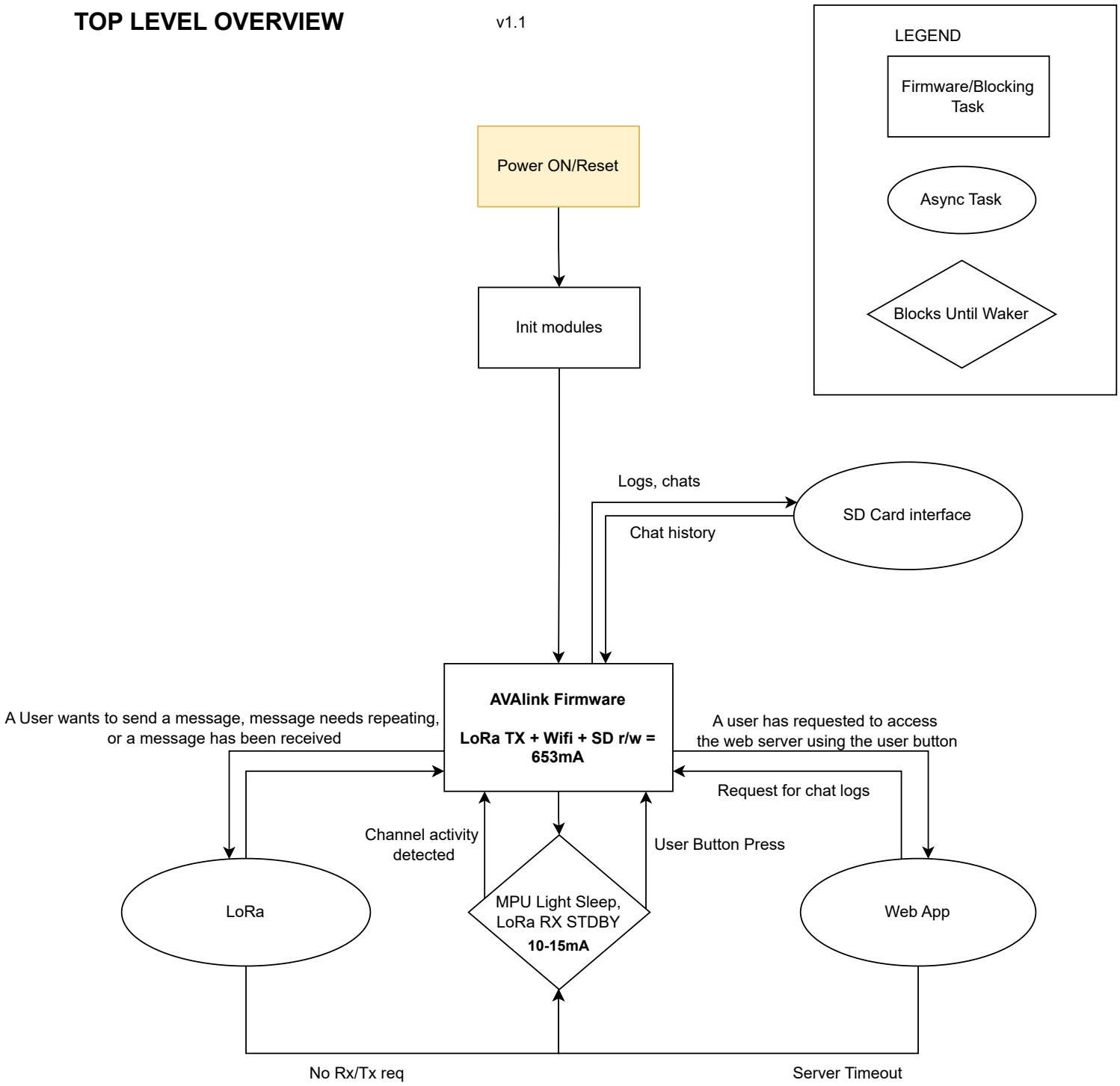
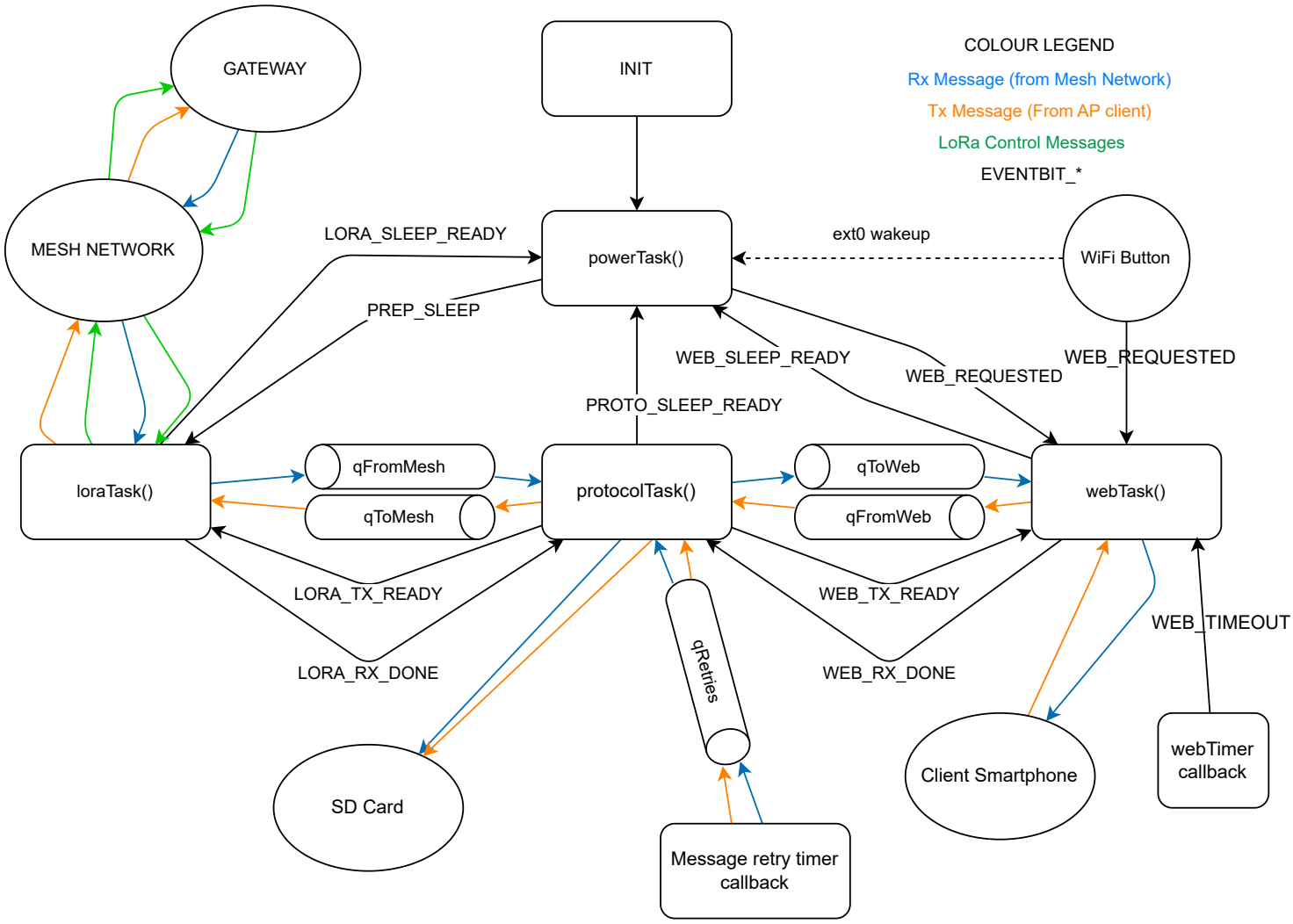
TOP LEVEL OVERVIEW

v1.1



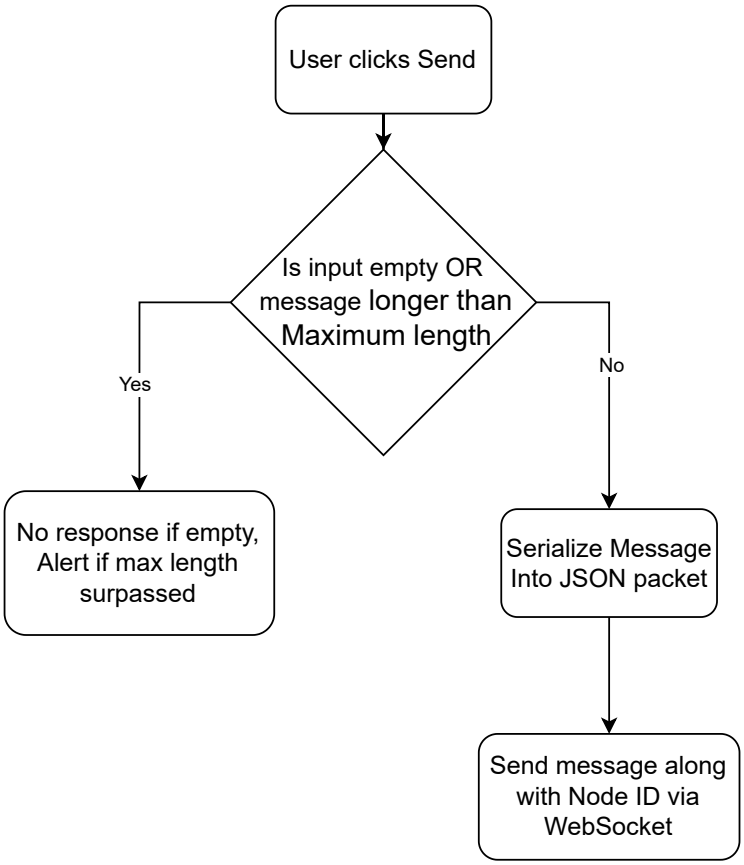
FloraNet FIRMWARE v2.0 December 6 2024



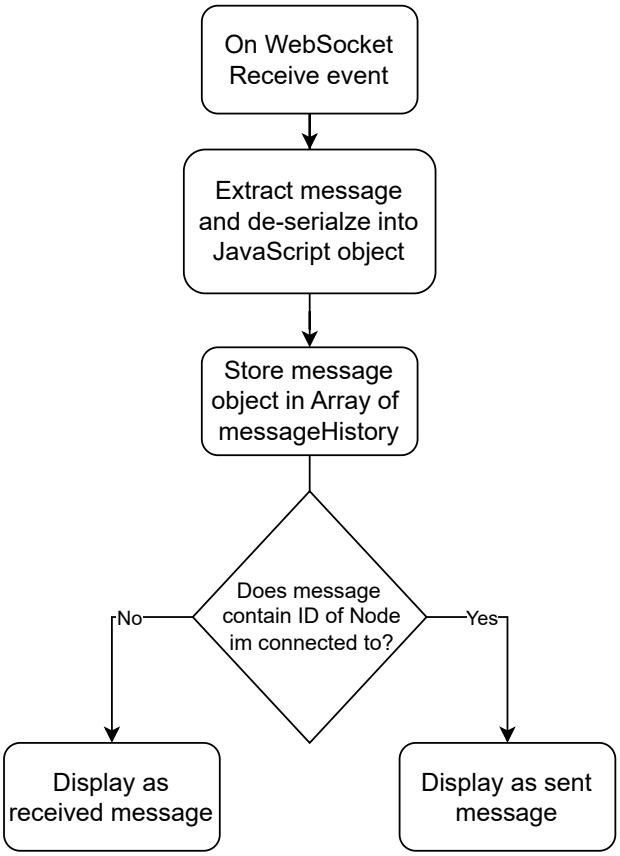
Web App Overview

v1.1

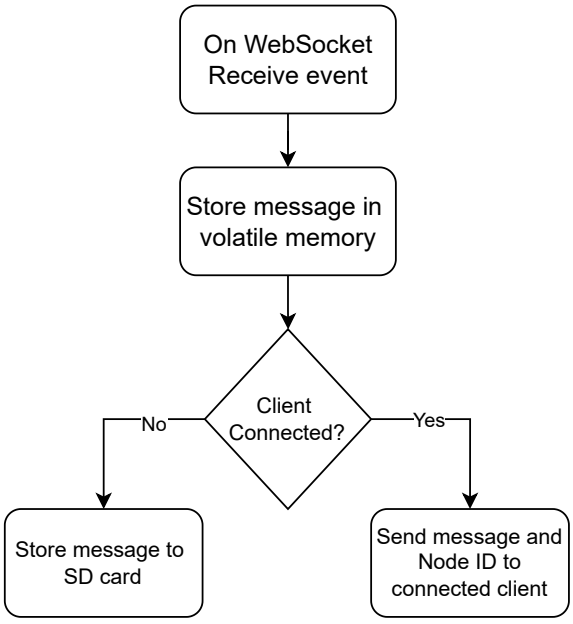
Client Send



Client Receive

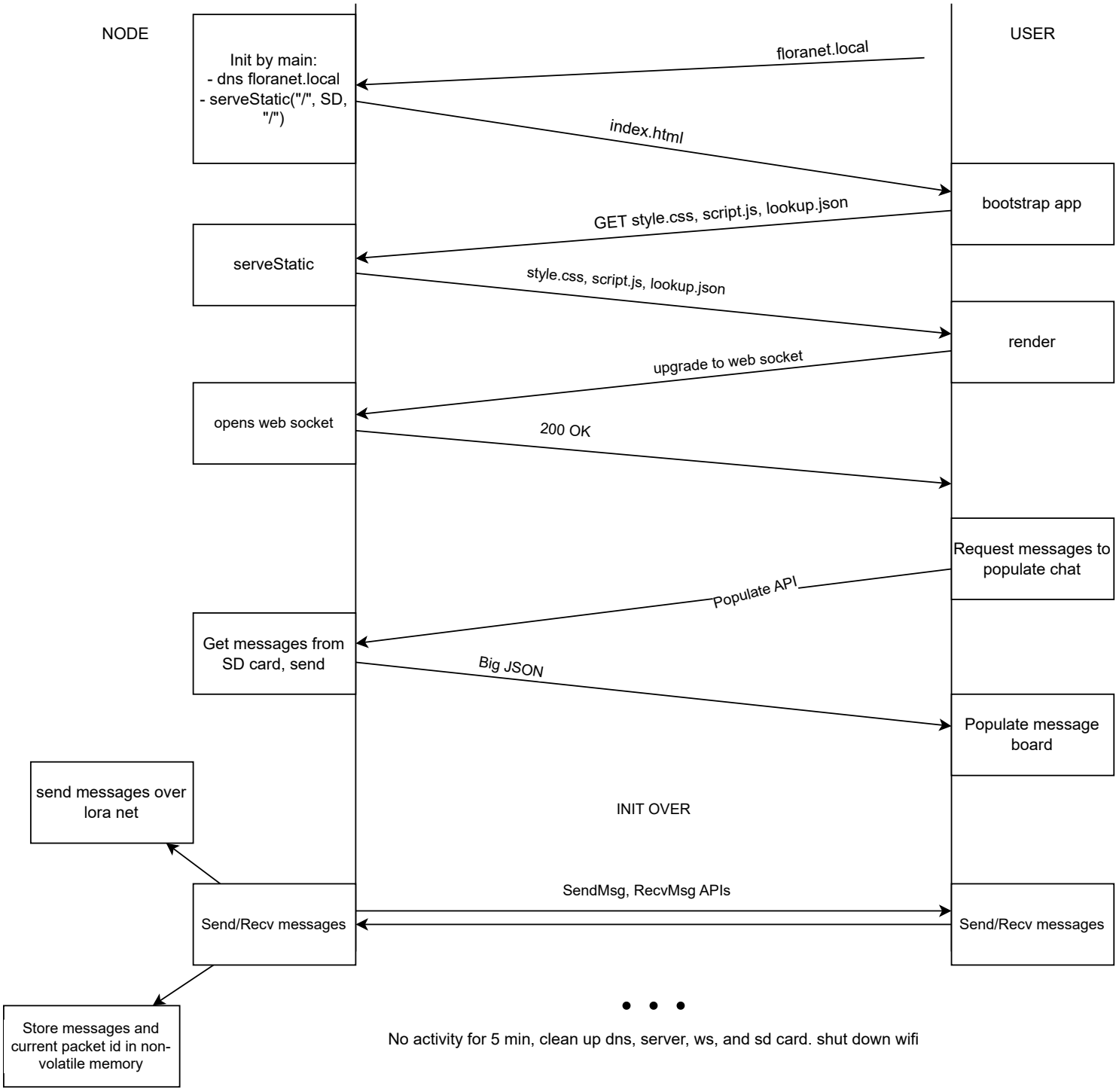


Server Transactions



Application Layer

v1.2 - December 14 2024



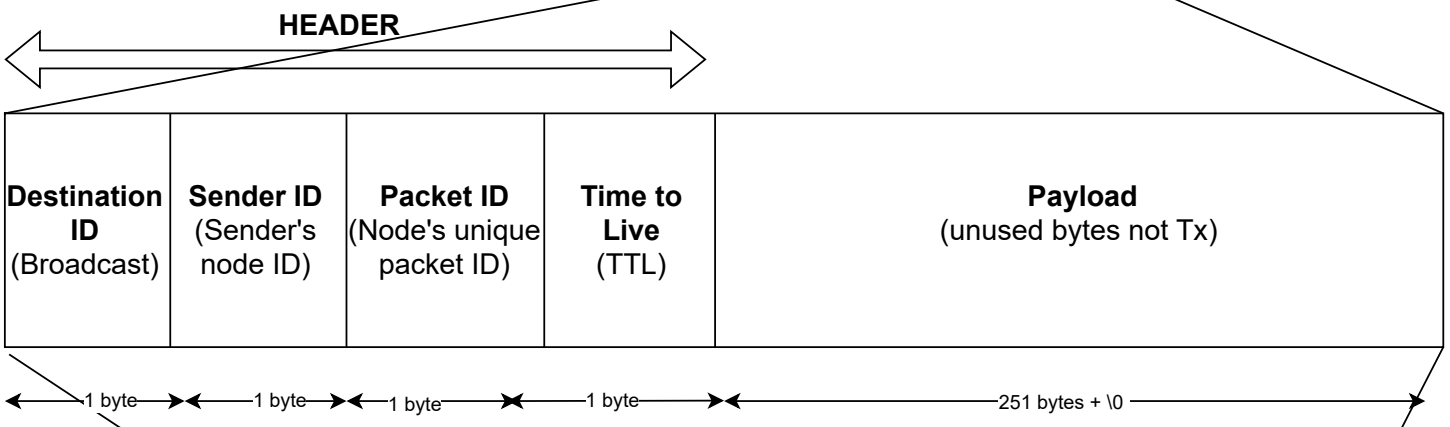
Network Stack v1.1 December 10 2024

Layer 3
APPLICATION (Web Task)

Message Object

Message Object

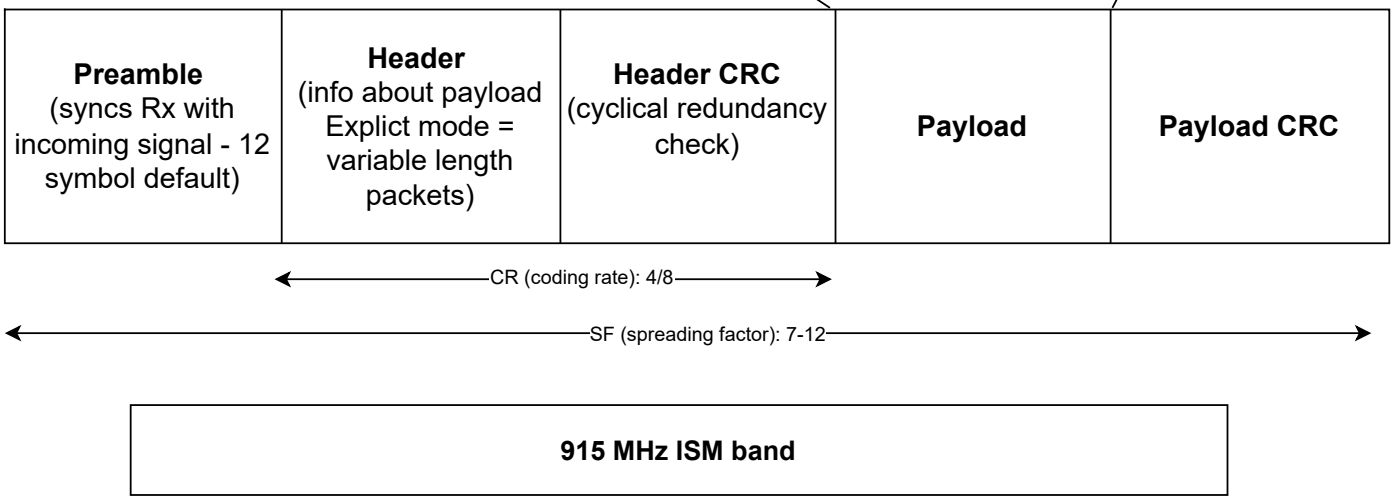
Layer 2
TRANSPORT (Protocol & LoRa Tasks)



Layer 1
PHYSICAL

HANDLED BY SEMTECH SX1262

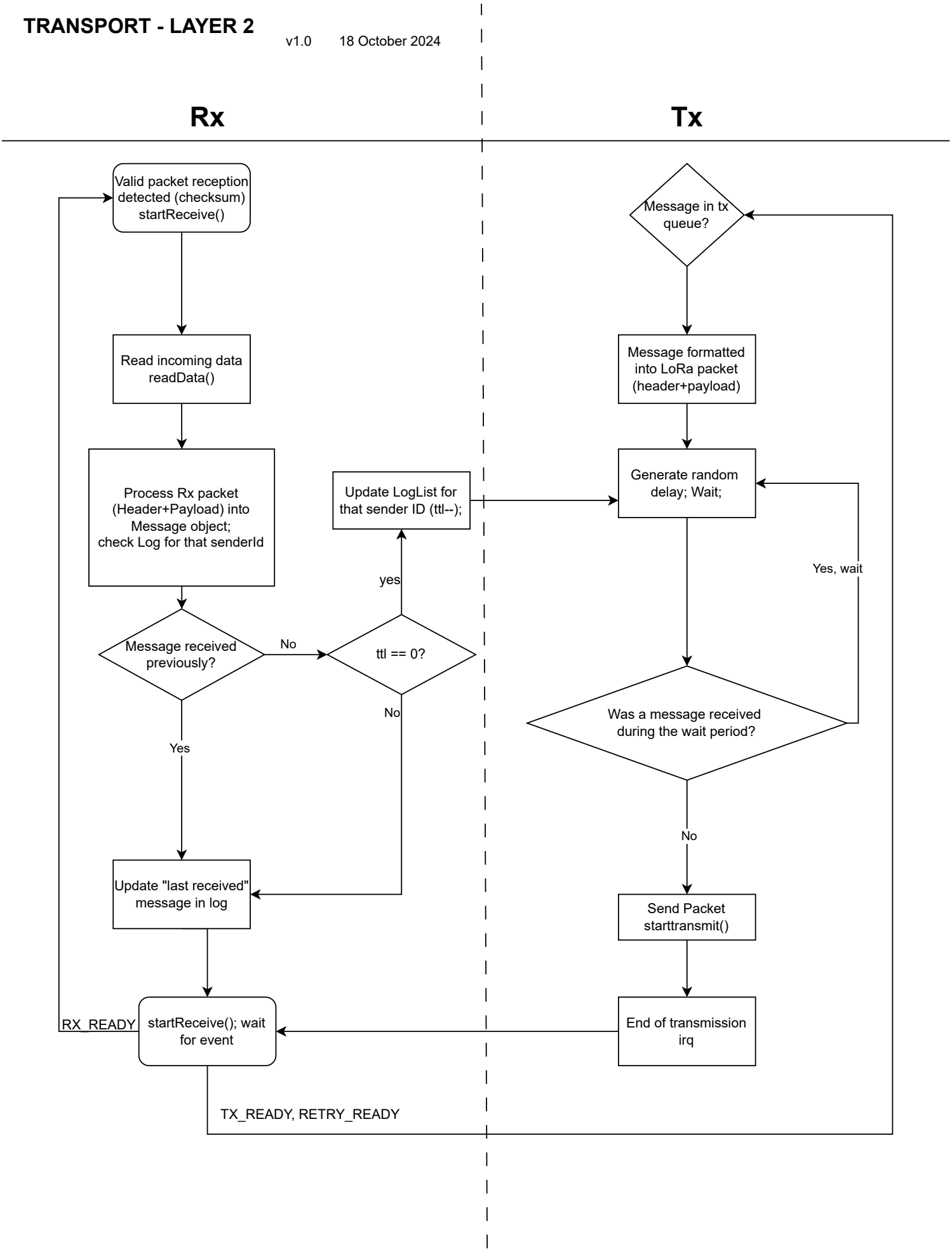
RadioLib (interfacing library between Layer 1&2)
LONG FAST (high resilience to noise)
Frequency: 915Mhz
Preamble size: 16bit
Sync word: custom
data rate: 1.07 kbps
SF/symbols: 11/2048
CR: 4/5
BW: 250 kHz
Power: 30dB
(meshtastic/firmware/src/mesh/sx126xinterface.cpp)
(meshtastic/firmware/src/mesh/RadioLibRF95.cpp)



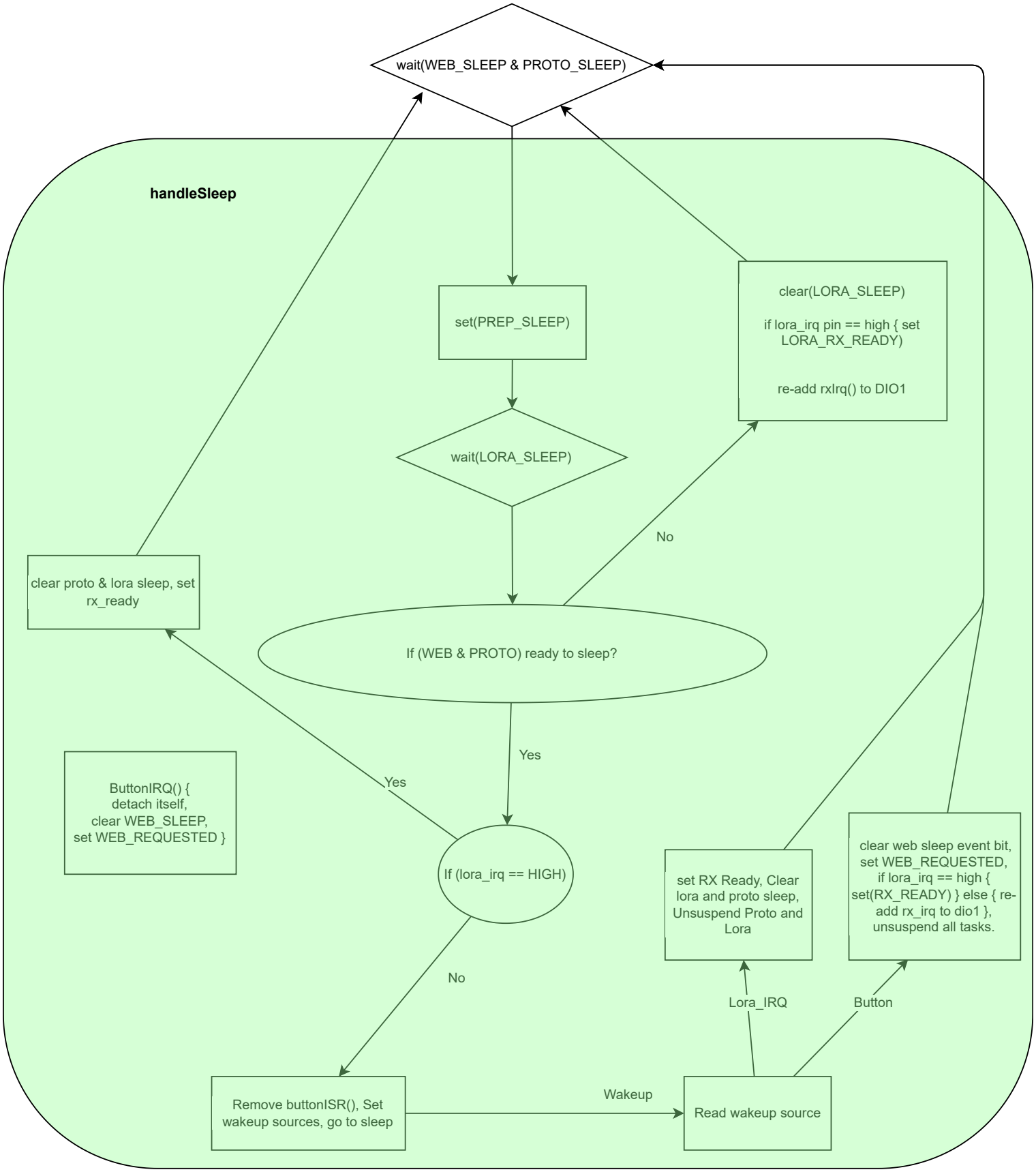
915 MHz ISM band

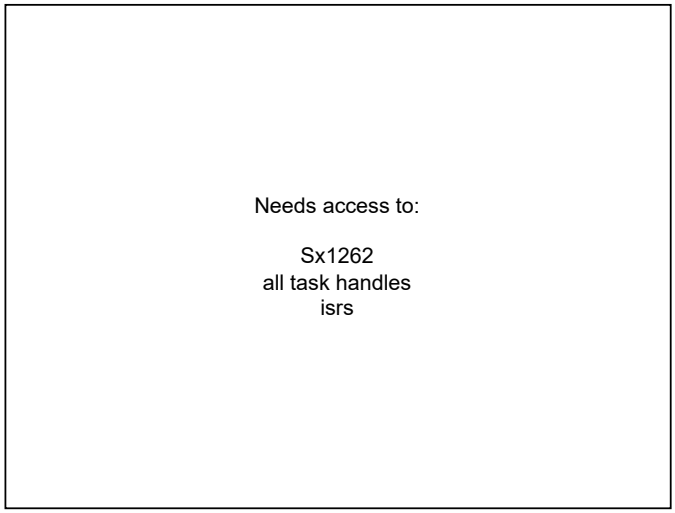
TRANSPORT - LAYER 2

v1.0 18 October 2024

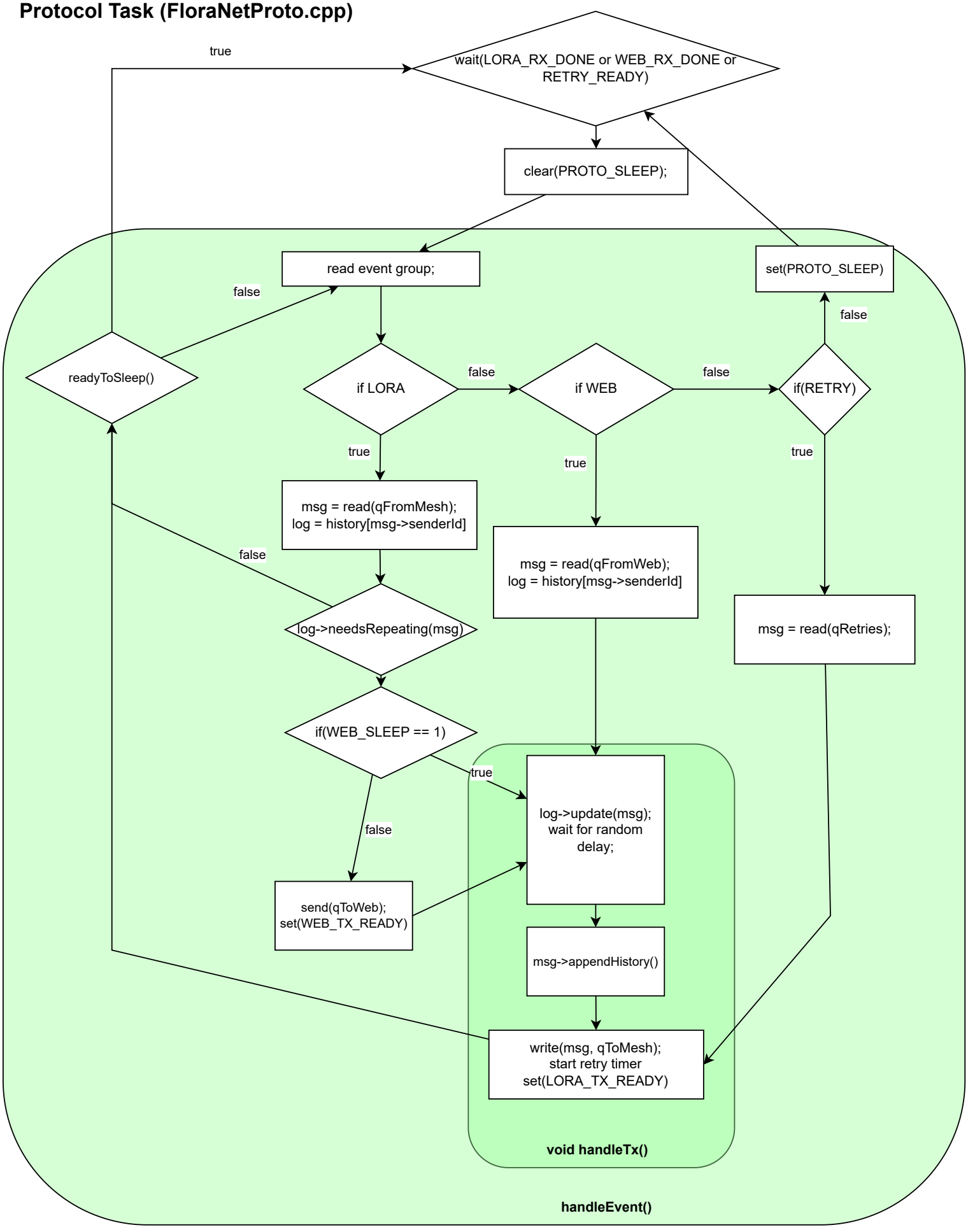


Power Management Task (FloraNetPower.cpp)




Needs access to:
Sx1262
all task handles
isrs

Protocol Task (FloraNetProto.cpp)



Timer callback

LogEntry* id = pvTimerGetTimerID;
send(id->msg, qRetry);
set(RETRY_READY);

bool readyToSleep()

uint8_t queuesClear = 0;

len(qFromMesh) == 0
true
clear(LORA_RX_DONE);
queuesClear++;

false

len(qFromWeb) == 0
true
clear(WEB_RX_DONE);
queuesClear++;

false

if len(qRetries) == 0
true
clear(RETRY_READY);
queuesClear++;

false

queuesClear == 3
false
return false

true

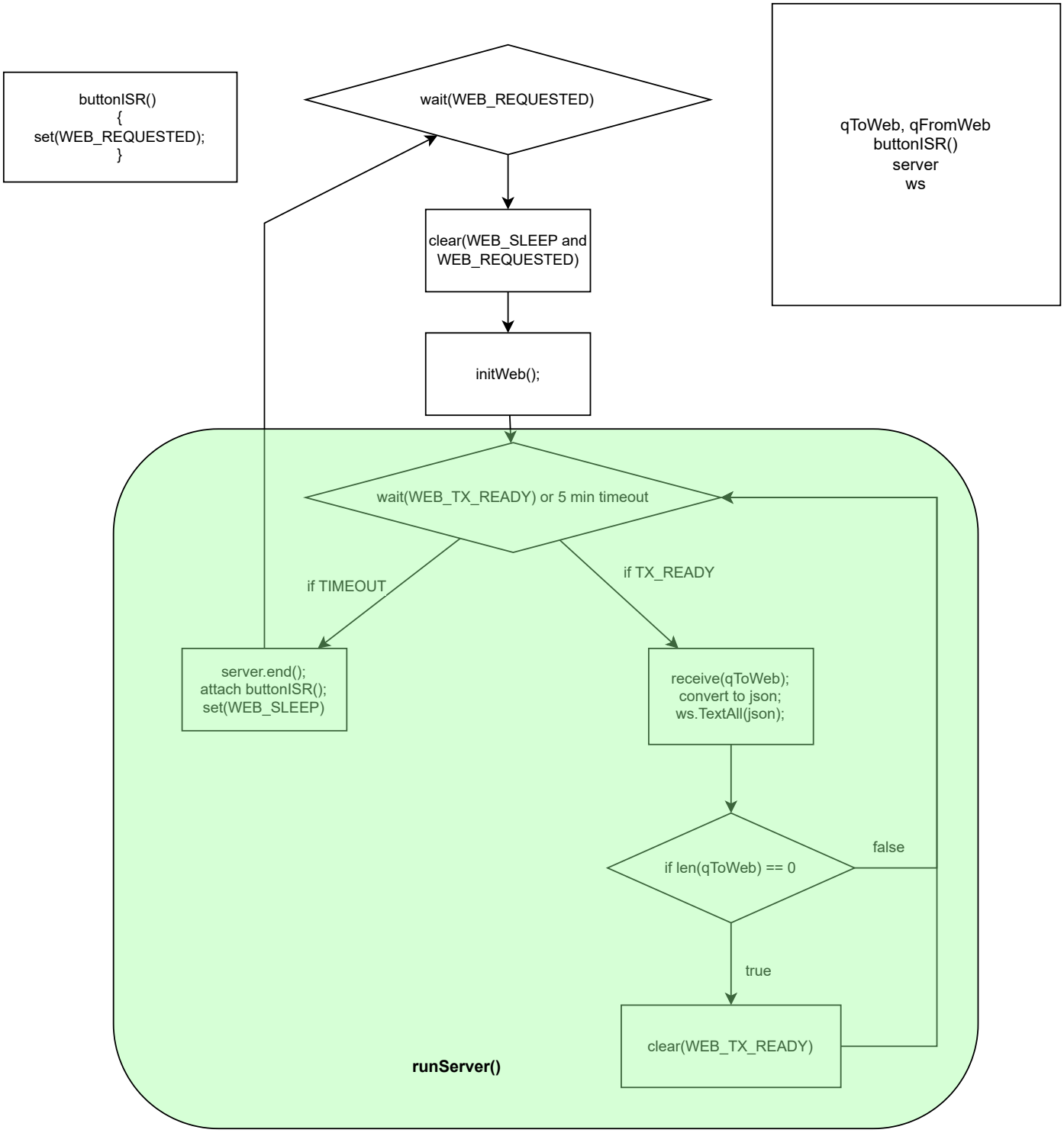
wait(LORA_RX_DONE, WEB_RX_DONE, RETRY, timeout(MAX_RETRY));

timeout?
false
return false

true

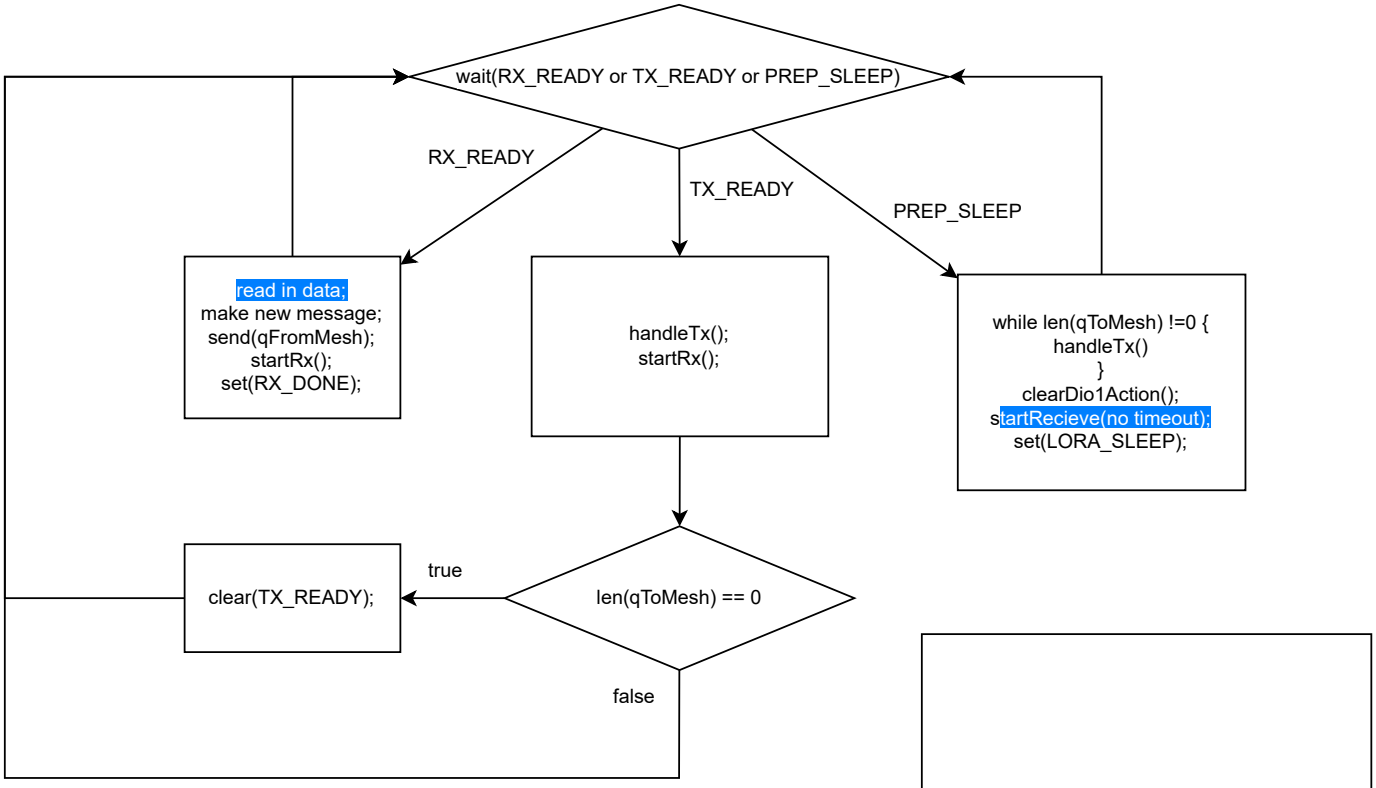
set(PROTO_SLEEP);
return true;

Web Task (FloraNetWeb.cpp)



LoRa Task (FloraNetRadio.cpp)

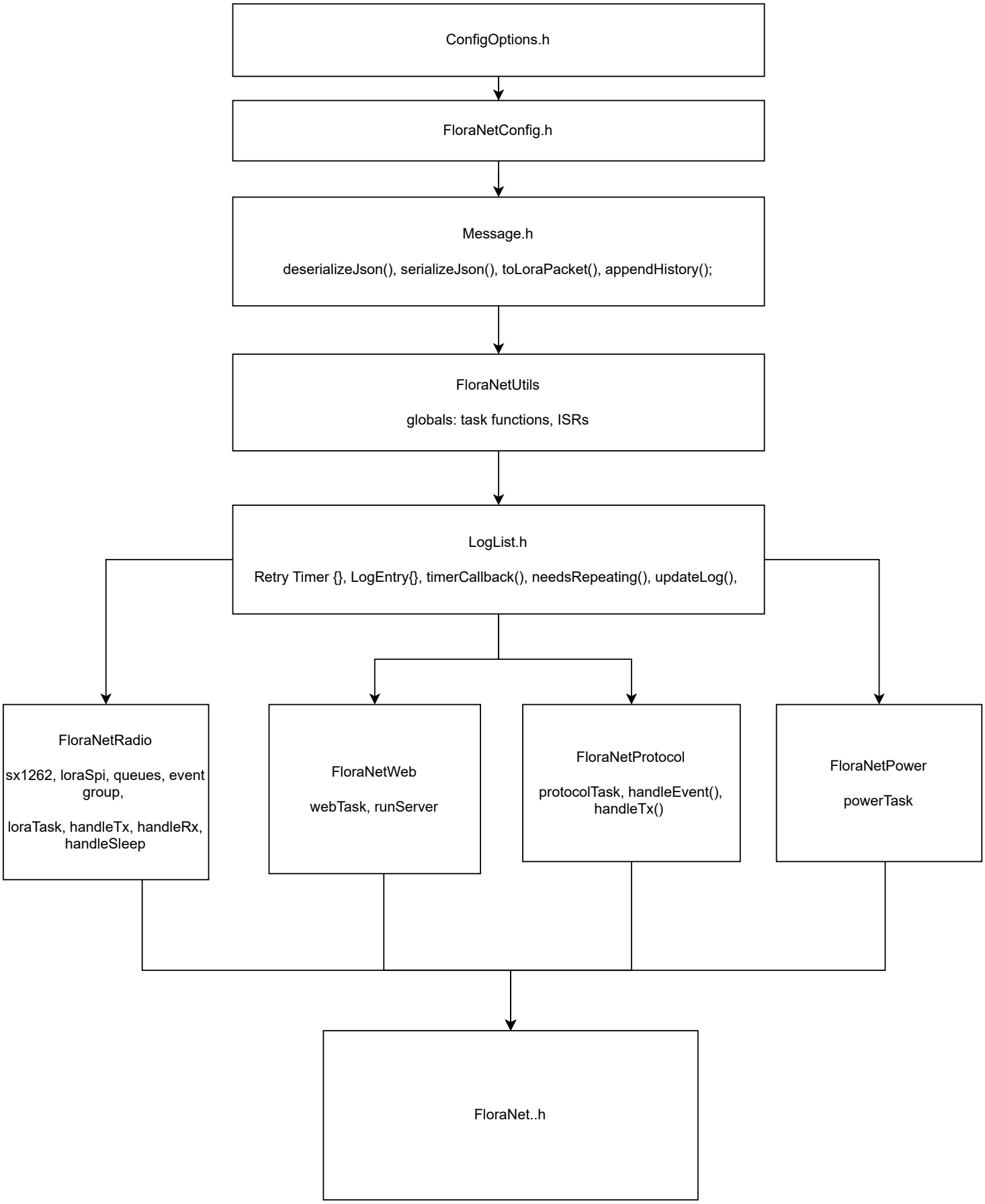
CRITICAL SECTION



Needs access to:

radio
loraSPI
qToMesh, qFromMesh,
eventgroup
Lora ISRs

startRx()
{
clear RX_READY;
attach RX ISR() to DIO1;
startReceive(single);
}

handleTx()
{
msg = receive(qToMesh);
convert to lora packet;
startTransmit(msg);
wait(TX_DONE);
}

#include Filetree