

Smooth Power Plus

Leveraging a hybrid analog/digital power-control & monitoring system to solve or satisfy a real-world problem or need



```
SmoothPower.ug Recovery.c X: \g:\gmpy
Miscellaneous Files (Global Scope)
1 //MainProjectProgramV5p41d6.c - Batt & Sol Volts, timer on display
2 //Bug recovery solution: had done a /**/ at end to comment out the EEPROM stiff and had
3 //Troubleshooter/MPLab output indicated "MSDelay undefined symbol, but would not pop t
4 //Revamped Power Control, added logic to turn Q1 Q2 and Q3 on and off
5
6 //Next tasks
7 //EEProm subfunctions not implemented
8
9 #pragma config FOSC = INTIO67 //internal oscillator block, port function on RA6 and RA
10 #pragma config BORV = 27, PWRT = ON //brown-out-Reset volt = 2.7V
11 #pragma config WDTCN = ON //watchdog time able //pragma CONFIG3H<0> = 1
12 #pragma config PBADEN = ON //don't disable. Set to on so pin 36 can be solar input volt
13 #pragma config IESO = OFF //whatdoesitdo?
14
15 #pragma config LVP = OFF //Low Voltage Programming. Need to turn OFF to use pin 38 (RB5
16 #pragma config DEBUG = OFF //whatdoesitdo?
17 #pragma config HFOFST = OFF, MCLRE = OFF // fast start-up and MCLR pin disabled
18
19 //include <pic18f45k20.h>
20 //include <stdio.h>
21 //include <xc.h>
22 #define RX RC7
23 #define ldata PORTD //lcd data pins on PORTD
24 #define rs PORTBbits.RB0 //rs of lcd on PORTB0
```

.... an Application

Digital readout

34.900 ° X
-155.995 ° Y
2.600 ° Z
-0.005 ° W

Solar powered



User Input



Communications node



Transducer monitoring

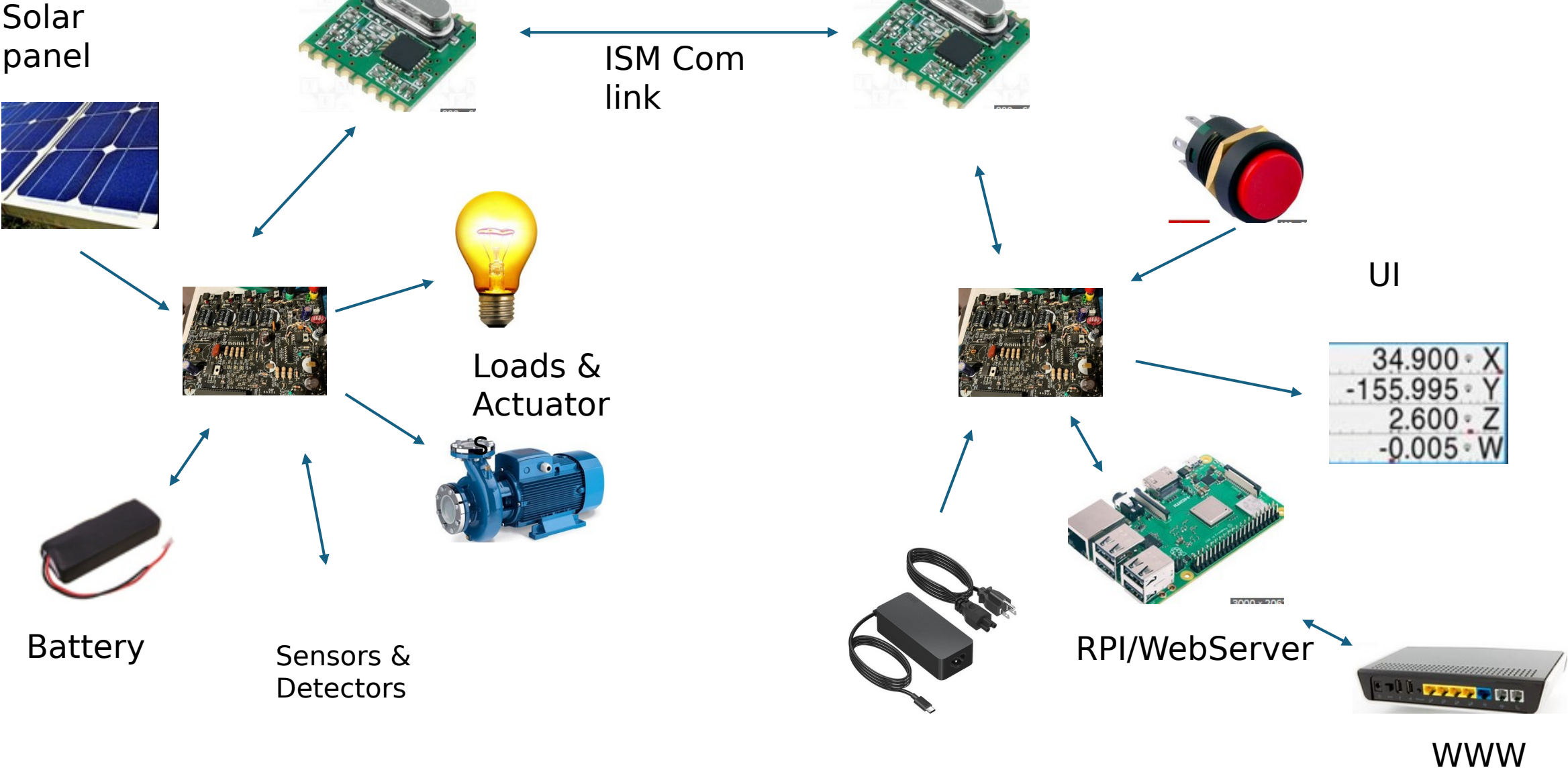
$$a = \frac{\Delta v}{\Delta t}$$

Load control

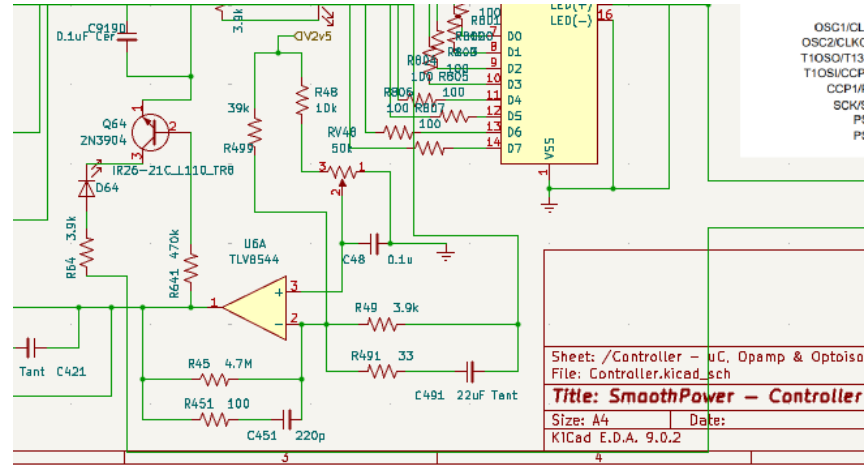


Charge Management

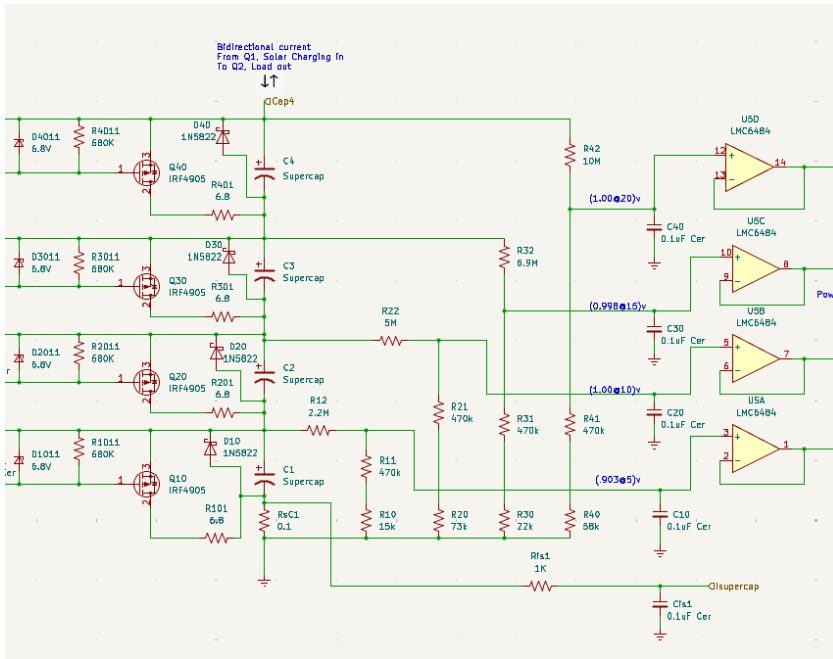




..... Do a
DEEP
DIVE



Ultra-low-power capabilities



Battery & Supercapacitor stack management & balancing...

Native A/D converters connected to stack

Research possibilities

