Basic Guidelines for FPV Camera Setup

- Note: I'll make this guide more step-by-step and detailed once I have the quad itself and some of the parts required to mount the camera so I can understand it physically. For now, I came up with this basic outline of stuff we need to get.

- Main source used for this document: https://forum.bitcraze.io/viewtopic.php?f=6&t=491

- To Buy: *(total price for everything to mount the camera on the quad including shipping should be around $200)*
  - Camera
    - Price: $54.00
    - PAL system 762×572 pixels
    - Comes with cable
    - Weight: 1 gram
    - Has UV+IR filter lens for daylight and non-filtered lens for night vision
  - Transmitter
    - Price: $29.00
    - Size: 20x20x4mm
    - 10mw, 5.8gHz, Audio Video Transmitter module
    - Weight: 1.2 g
    - Current: 70mA
    - 8 channels
  - OR here's and even smaller 2.4gHz nano video transmitter for $34.99
  - 5V Step-Up Voltage Regulator
    - Price: $3.95
    - Boosts voltage as low as 2.5 V to 5 V
  - Lens
    - Price: $14.90
    - Weight: 1.5 g
  - Receiver
    - Price: $26.90
    - 5.8gHz A/V Receiver Module
    - Sensitivity: -90dBm
    - Size: 28x21x3mm
    - Voltage: 3.2v - 5.5v
    - Current: Current: 170 mah
    - RFin: 50 Ohm
  - Digitizer
    - Price: > $49.67

        - Hauppauge 610 USB-Live 2 Analog Video Digitizer and Video Capture Device
        - To watch, capture, or record live video
    - Camera Holder
        - Price: $4.04
        - 3-D Printed

- Connections:
    - Flie Pin 17 DGNG wired to
        - Regulator GND
        - TX GND
    - Flie Pin 16 VCOM wired to a slide switch wired to
        - Regulator VIN
    - Regulator VOUT wired to
        - Cam VIN
        - TX VIN
    - TX GND_cam and TX VID wire to Cam GND and Can VID respectively
- Software:
    - Flie driver node
        - Written in python. Communicates with the flie. Advertises crazyflie logs as ROS messages, changes parameters on flie and forwards control commands.
    - Dynamic reconfigure
        - Interface to change flie params (http://ros.org/wiki/dynamic_reconfigure)
    - Flie control node
        - Listens to joystick messages and converts them into flie commands; has different settings (eg sensitivity, etc)
    - C++ GUI mode
        - Listens to logs and camera data, uses QGL Widget to draw everything
    - usb_cam node
        - outputs digitized image (http://www.ros.org/wiki/usb_cam)
    - ps3joy
        - Bluetooth driver for sony gamepad (http://www.ros.org/wiki/ps3joy)