**E) INTEGRATION**

**E.1) PHYSICAL INTEGRATION**

Transmitter terminal will contain following elements:

* Raspberry Pi 3: For image taking, division and feeding the LEDs
* 1 LED for Communication with Vehicle
* 1 Photodiode for receiving feedback from the Vehicle
* Driver Circuitry for LED and photodiode

Vehicle will contain following elements:

* Arduino Mega for controlling the Vehicle and carrying the received data packets
* 1 Photodiode for Communication with Transmitter
* 1 LED for giving feedback to the terminal (states that loading the data is completed)
* 1 LED for communication with the receiver
* 1 Photodiode for receiving feedback from the Receiver
* Driver Circuitry for LED and photodiode

Receiver terminal will contain following elements:

* Raspberry Pi Zero for image reconstruction
* LCD for displaying the image
* 1 Photodiode for communication with Vehicle
* 1 LED for giving feedback to the Vehicle (states that loading the data is completed)
* Driver Circuitry for LED and photodiode

At last the stage of the physical integration, there will be 3 main bodies to be integrated: Transmitter terminal, vehicle terminal and receiver terminal. All of them will be aligned on the same physically guided track (i.e. rail). At that point, alignment of the LED’s on the transmitter with the photodiodes on the vehicle is very important for the accuracy of the communication. Same situation is valid for the other end of the vehicle and receiver terminal. To obtain full alignment, all of the bodies will be produced appropriately. Also, since all bodies have its own power source, there will be no power distribution line between terminals and vehicle. Overall system tests and optimizations will follow the physical integration.