**Step1 Understand and Define the Problem - Deliverables:**  
  
1.1 Problem Statement

For effective operations of animal shelters, it is vital to ensure that the animals are fed on time and in right proportions. It is challenging to ensure that these animals are regularly fed due to dependency on staff, limited tools for monitoring and irregular feeding schedules. Present feeding mechanism do not cater to the problem of whether the animals have eaten or whether the food was not dispensed.

To address this problem there is a need of implementing a cost effective, automated pet feeder system.

1.2 Assumptions

* Pet feeder system is only capable of dispensing one type of pet food at a time.
* The system dispenses fixed portion of food per feeding cycle.
* To ensure monitoring of food consumption, there is an underlying assumption that the pets will consume food once the food is dispensed.
* The staff is required to prefill food in the system.
* The pet feeder system does not provide accurate monitoring due to the use of low cost sensors

1.3 Input

* Timetable of feeding food – Durations for which the food should be dispensed during the day.
* Timers – The amount of food that needs to be dispensed at regular intervals.
* Power supply to run the pet feeder system.
* Manual refill of food by staff
* Servo motors – To control food portion that the system releases.
* Sensors – To manage the amount of food that is dispensed.
* Clock – To ensure times at which the food is dispensed.

1.4 Output

* Feeding trays where the food will be dispensed.
* LEDs to display notifications if the food dispense is complete or if a refill is required.
* Alert mechanism to raise notifications for low food levels in the feeder.
* Data log to monitor the feeding mechanism.

1.5 Diagram

Timetable of food to be fed, Clock

Timers for dispensing food timely

Servo Motor – To determine the food portion release

Sensors – To manage weight of the food dispensed.

Power Supply

Feeding Tray

LED Display for alerts and notifications

Data log

Automated Pet Feeder System