**TECHNIAL PECIFICATION OF THE COIN BETING MACHINE**

# Aims

* 1. To create a functional prototype of a connected betting machine that accepts coins

# Objectives

* 1. List device functions including dimensions, backup battery support, security, inputs, connectivity and coin capacity.
  2. Sketching
     1. Sketch outer view of device with dimensions
     2. Sketch function block diagram of electronics
     3. Sketch basic (simplified) algorithm of functionality
  3. Component Selection
     1. Select components needed for casing
     2. Select main electronic components
  4. Design
     1. Design electronics in CAD
     2. Design coin acceptor mechanism in CAD
     3. Design coin dispenser mechanism in CAD
     4. Design comprehensive algorithm of functionality
  5. Development and unit tests
     1. Develop outer casing from locally available mateials eg angle irons, sheet metal
     2. Develop and test coin acceptor mechanism
     3. Develop and test coin dispenser mechanism
     4. Develop and test electronics
     5. Develop and test software
        1. Embedded software for the uC
        2. Software for embedded communication module
        3. Software for remote monitoring. (PC &/or phone)
  6. Integrated Testing and debugging
  7. Deploy

1. Device functions
   1. Dimensions and size
      1. Maximum width –
      2. Maximum height –
   2. Power
      1. Device should be powered by 220V, 50Hz electricity
      2. Device should also have a backup 12V or 6V rechargeable battery for backup power, capable of lasting the device up to 12 hours.
   3. User interface
      1. Device should have a physical push buttons for users to place their bets.
         1. Alternatively, users can use a knob for selection.
         2. The buttons / knob should be locally designed with easily available materials.
      2. Device should have speakers for sound output
      3. Device should have a digital display to display
         1. The coins accepted (7 segment display)
      4. Device should have a minimum of 16 LED outputs which the user can select.
      5. Start button should be a handle, manufactured from locally available / salvaged components
   4. Payments
      1. Device should be able to accept all coins, present and future. The coin/token accepting mechanism should:
         1. Have a 98% accuracy of detection.
         2. Be able to detect fake coins/tokens from real ones.
         3. Accept coins having a diameter up to 35mm
         4. Measure directly or indirectly:
            1. Coin/token diameter.
            2. Coin/token mass
            3. Coin/token electromagnetic properties and/or their absence
         5. Be trainable i.e have a function to feed it with coins and train it to accept particular coin values.
         6. Reject coins via a separate slot from that which it accepts the coins
      2. Device should have the *potential capability* of accepting virtual tokens (electronic)
   5. Connectivity and Data
      1. Device should be cloud connected via internet, enabling remote control and monitoring of the device by an administrator.
      2. Connectivity should use th MQTT protocol.
      3. Device should have a local encrypted backup copy of the data it has gathered, including but not limited to, fake coins rejected, coins accepted, coins dispensed to winners, tempering and errors.
   6. Security
      1. Device should have physical security via a lock and key mechanism or alternatively, an electromagnetic lock
      2. Device should have a physical and OTA pin that can facilitate the dispensing of all collected tokens without physical access/unlocking of the device
      3. Device should have temper detection and an alarm function that triggers if physical temper is detected
   7. Software updates
      1. Device should be able to accept OTA updates
      2. Device should have USB update port