

## **greenerthumb Design**

### **io**

#### **in**

Fans multiple programs' STDOUTs into one STDOUT.

#### **out**

Fans one program's STDOUT into STDOUTs to multiple programs.

### **bullhorn**

Allows data to be sent on a network from publishers to subscribers (3).

#### **publish**

Publishes data from STDIN to all subscribers.

#### **subscribe**

Receives data from a publisher to STDOUT.

### **sense**

Sensors write messages from the **greenerthumb** ICD to STDOUT. These are fanned into a **bullhorn/publisher** with **fan/in**. This allows sensors to be seamlessly excluded (1). Testing is also simplified since emulators that print to STDOUT can replace sensors or **bullhorn/subscriber**.

#### **air**

Senses the 'Air Status Message' (2a).

#### **soil**

Senses the 'Soil Moisture Status Message' (2b).

## **emulate**

Emulators allow simple testing the by excluding the network and sensors.

## **air**

Emulates the ‘Air Status Message’.

## **soil**

Emulates the ‘Soil Moisture Status Message’.

## **log**

Logs data from STDIN to a file. This can be used with **bullhorn/subscriber** and **fan/out** to log sensed data (4).

## **plot**

## **replay**

Plots ICD messages stored in a log file (5).