Working Principle :

- A five channel input to the system
- An Opto-isolator module to reduce the high voltage input to a 0-5 volt range signal
- Arduino starts keeping track of each of the channels as soon as its powered up
- At any instance, if the Arduino finds at least a single channel status changed from the previous loop, it sends a message using the GSM module. Message contains the status of the whole system.
- Each time, the message will be a string of length the same as the number of channels and each character will be either '0' or '1', which is self-explanatory.
- An android app, which will be granted permission to read messages from a specific number (that is dedicated to the GSM module) will check for new messages continuously.
- When there is a new message, depending on the received string, App dashboard will update the channel status.

Probable challenges - subject to testing on various test cases -

- Network strength at the place system will be deployed.
- Synchronization issue of Android app with messages or GSM module with Arduino, when each channel status changes very frequently.

Estimated Components required :

1. Opto Isolator Module
2. Arduino Uno/Nano
3. GSM module SIM800L with extended Antenna cable