Zeptive
System architecture drawings
Bill White
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Color coding

Operational view
Needs and constraints imposed from outside the system, aka marketing requirements, customer requirements
Includes all stakeholders, and any other entities that influence the design or are affected by the system

Functional view
Features of the system presented to the stakeholders in response to their requirements

Constructional view
What tangible parts and subsystems are used to construct the system

Stakeholders

1) School policy makers
2) Facility staff
3) IT staff
4) Installers
5) Vapers
6) Vandals
7) Students, parents
8) IT staff
9) Regulators

External needs & constraints

School policy makers
1) Eliminate vaping from the school premises
2) Remove the habitat available for vaping
3) Have confidence that the problem is being solved

Facility & IT staff, installers
1) Ease of installation
2) Reliability
3) Ease of maintenance

Students
1) Deserve a quiet drama-free experience

Vandals
1) Will dislodge the detector
2) Will disable the detector through blunt force or penetration

Vapers
1) Prefer to be undiscovered
2) Will direct smoke away from detector
3) Will direct smoke into flushing toilet

Regulators
1) Any issues?

System functions

1) Provide instrumentation in potential habitat
2) Timely report detection events
3) Regular summary reports
4) Demonstrable false pos/neg rate

1) Wireless, battery operated
2) Provide all mounting hardware
3) Provide key tools (like drill bit)
4) Convenient battery replacement
5) Regular self-test
6) Ease data transfer format (csv?)

1) Mount using masonry or butterfly anchors
2) Use tamper-proof screws
3) Case penetrations (PIR) should be screwed and glued
4) Case openings should be smaller than X mm (maybe pencil size)
5) Wire cage provides distancing and trauma resistance
6) Report dislodgment

1) Provide guidance on instrument placement and density

Instrumentation

- Particle Sensor
  - Sensirion SPS30
- Vape sensor
  - Spec Sensors IAQ_100

Reporting

- Audio alarm
  - Mallory PK-20A35EWQ
- Backhaul
- Cloud aggregation
- Phone app
- Reports TBD

Self-protection

- Packaging
  - Hardware
  - Case
  - Cage
  - Installation tools
- Accelerometer Assembly ACCEL-02
  - LP2985-33DBVR
  - ADXL345

Battery life

- Power management
  - Sentient Things IoT Node
  - Battery
  - Charging circuit
  - PIR Panasonic EKMB1306111K