



How continuous monitoring and reporting allows occupants, owners and operators to tune in.

Anjanette Green, Director, Standard Development, RESET

A modern office lounge area featuring a large living wall on the left, a glass coffee table, and several leather chairs. The room has large windows on the right and a curved desk in the background. The ceiling has exposed wooden beams and track lighting. The text "tuning in..." is overlaid in the center.

tuning in...

For people to tune in,
information needs to
make sense.



*"I say to hell with it. If it can't be said
in English, it ain't worth saying at all."*

image credit: <https://www.cartoonstock.com/cartoonview.asp?catref=bron2824>



Signal vs. Noise

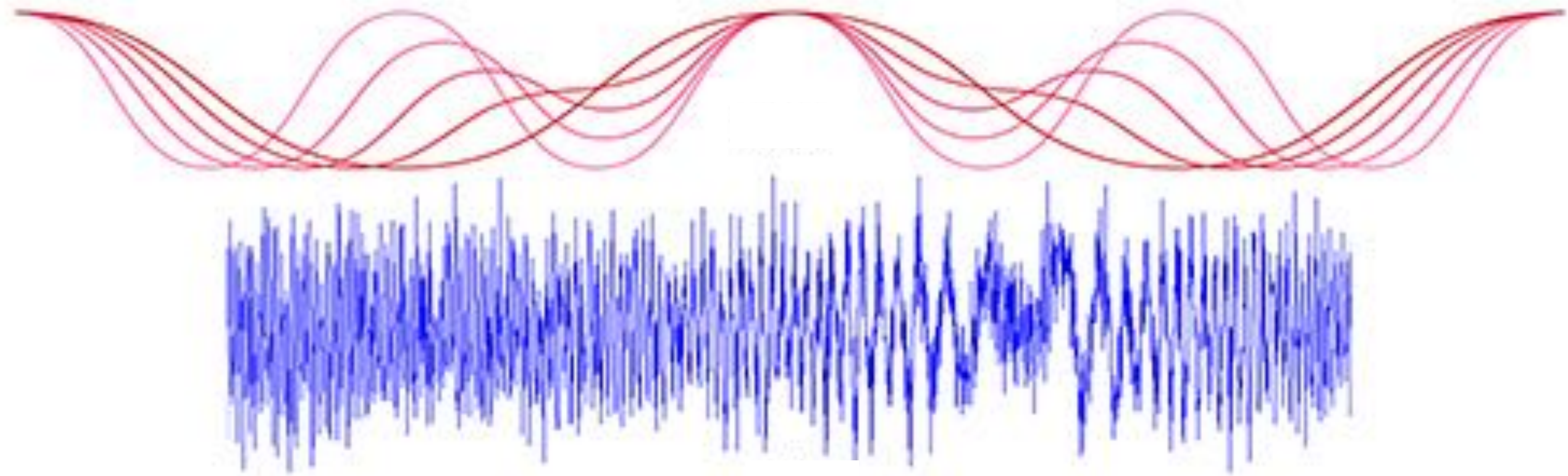


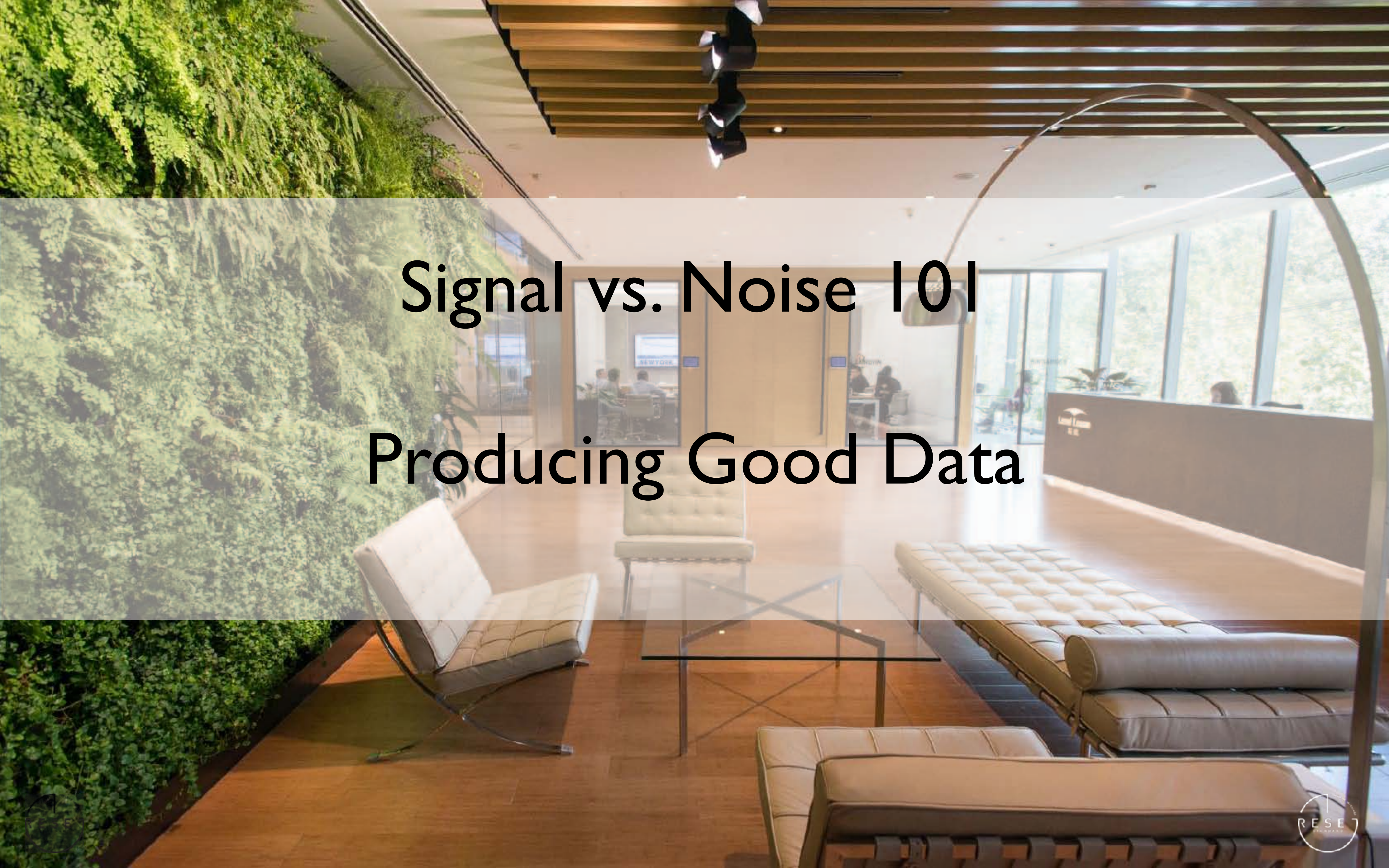
image credit: <https://www.qualitydigest.com/inside/innovation-column/signal-vs-noise-021617.html#>





A lot of noise



A modern office lounge area featuring a large living wall on the left, a glass-topped coffee table, and several tufted leather chairs. Large windows on the right provide a view of the outdoors. The ceiling has a wooden slat design with recessed lighting.

Signal vs. Noise 101

Producing Good Data



Measurably Healthy Buildings™



RESET™ Air - A Comprehensive Standard for Quality

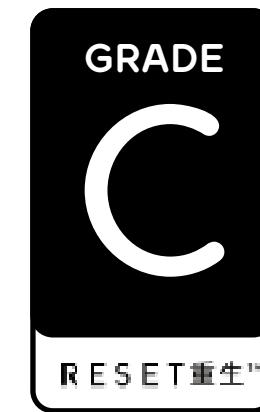
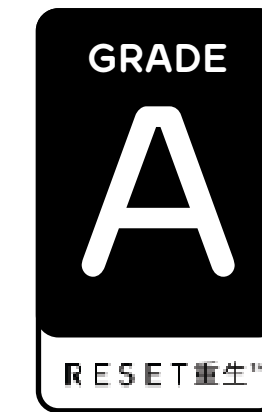
RESET™ tracks the pulse of buildings primarily via monitors and sets standards for their performance, installation, calibration and data reporting.



1. RESET™ Monitor Standards



R BUILDING GRADE
ACCREDITED MONITOR



2. RESET™ Installation & Maintenance Standards



RESET™ ASP

RESET™ Accredited Professionals (AP) are independent professionals trained to guide projects from the design of solutions through to installation & maintenance.



3. RESET™ Data Communication Standards



The RESET™ cloud collects data from accredited project networks and sub-clouds, analyses the data and reports the result.



RESET™ Modules

RESET™ can be implemented over-time, module by module. It does not attempt to do everything at once. Rather, it focuses on mastering and deploying one field of research at a time, starting with air.

Air

- PM2.5 Particulate Matter
Indoor / Outdoor
- TVOC Chemical Off-gassing
- CO₂ Carbon Dioxide
- CO Carbon Monoxide
- ... Other *

*RESET continuously tests sensors that detect other parameters of interest such as formaldehyde, Ozone and NO₂. New parameters are added as sensors are proven to meet the RESET Standard.

Comfort

- work in progress -

- RH% Relative Humidity
- °C Temperature
- lux Light intensity *(pilot only)*
- ct Color Temperature
(pilot only)
- dB Noise *(pilot only)*
- CO₂ Carbon Dioxide

Materials

- work in progress -

- TVOC Chemical Off-gassing
- i Material Ingredients
(pilot only)

Energy

- work in progress -

- HVAC HVAC load *(pilot only)*
- Lighting Lighting load *(pilot only)*

RESET™ Standard

RESET™ is an international performance based standard and certification program for healthy buildings measured in real-time. It can be applied to Commercial Interiors and/or Core & Shell.

Commercial Interiors

(New and Existing)



Office Interiors



Hotel rooms



Hospital rooms



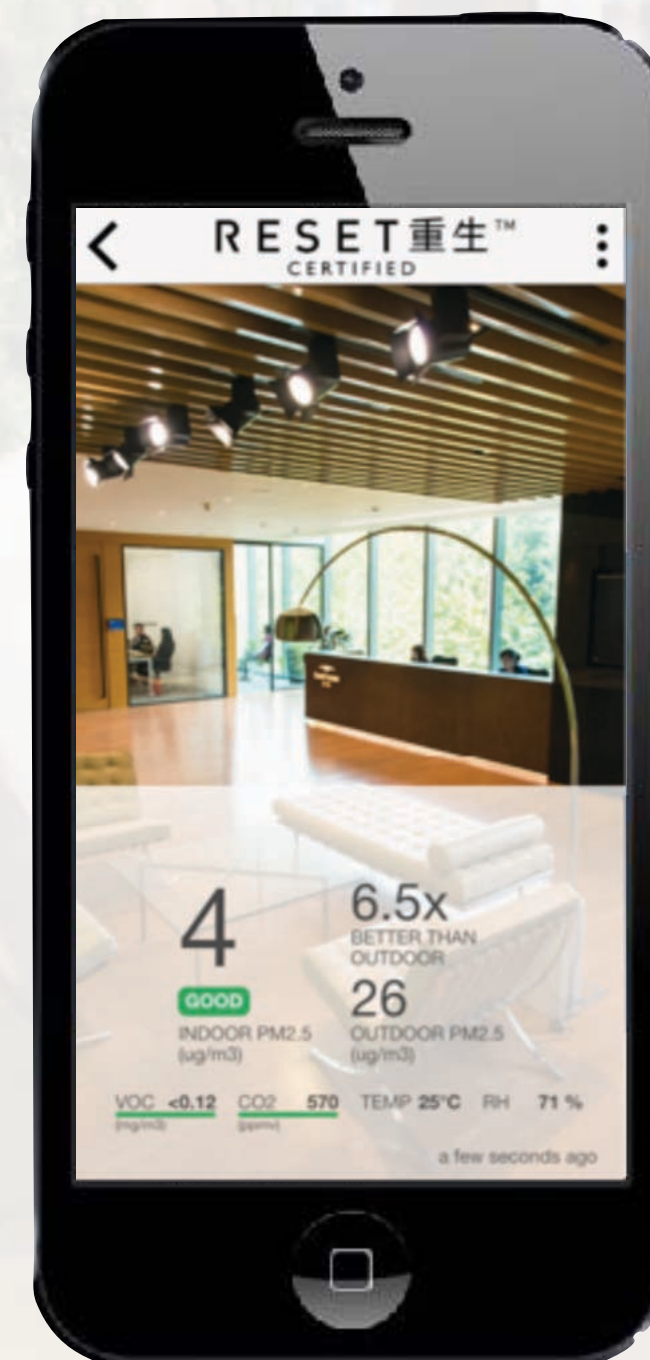
Classrooms



Gyms

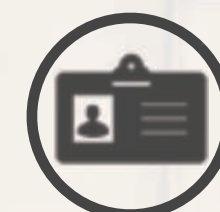


Retail



Core & Shell

(New and Existing)



Office Buildings



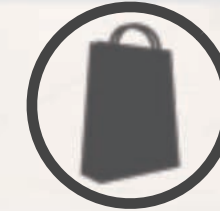
Hotels



Hospitals



Schools

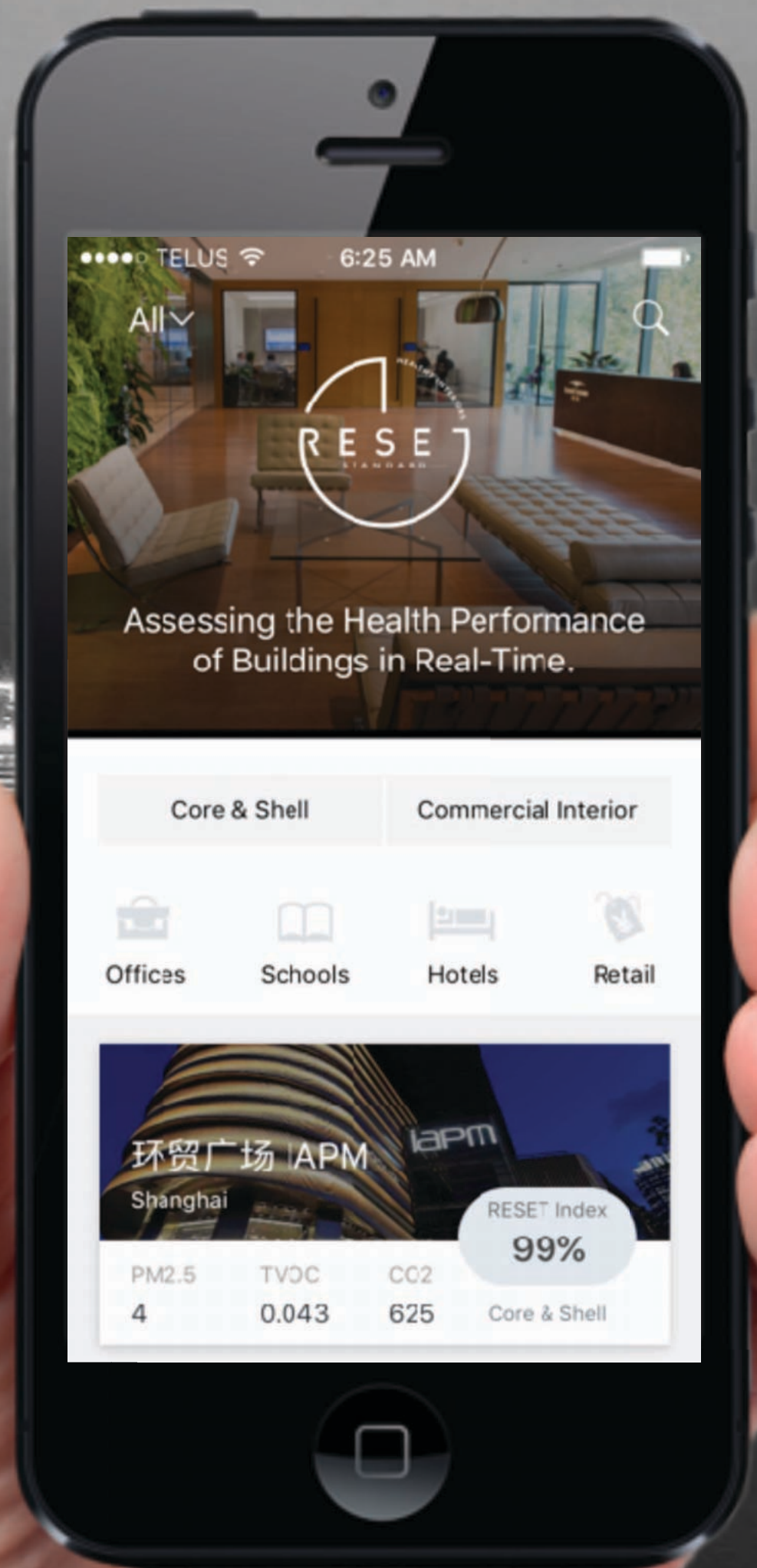


Shopping Malls



R
83%

R
82%



R
77%

R
96%

R
84%

*84% Optimized for health

91% R
88F

82% R
73F

88% R
50F

R
81%

R
94%



RESET™ Air - International Standard

Rapidly becoming the industry reference, the RESET™ Standard has been adopted into an international consortium for global monitoring standards.



green building council australia




RESET™ Air - International Standard



What is
good data?

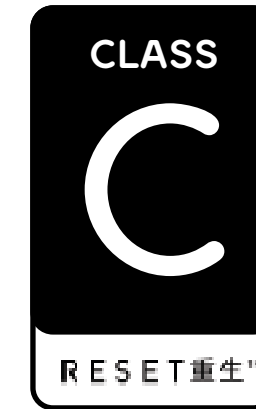
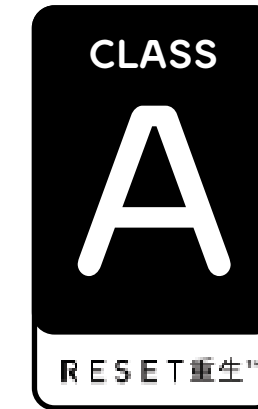
good data allows me to
make good decisions.



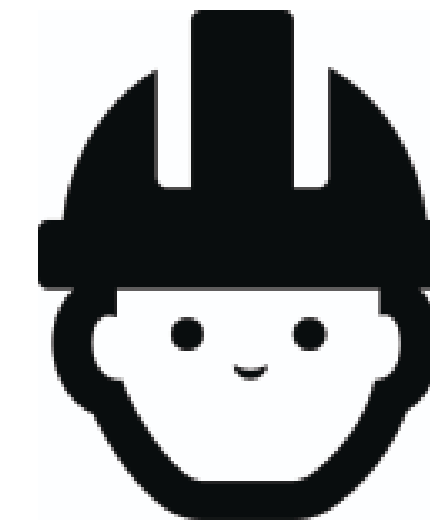
A photograph of a modern office kitchen. A woman in a green shirt is standing and handing a green cup to a woman in a grey shirt who is sitting at a white counter. The kitchen has wooden cabinets, a green tiled backsplash, and a window with a large vase of white lilies. The scene is overlaid with a semi-transparent white box containing text.

**Good data = Data that allows us to keep
occupants safe and operate buildings effectively**

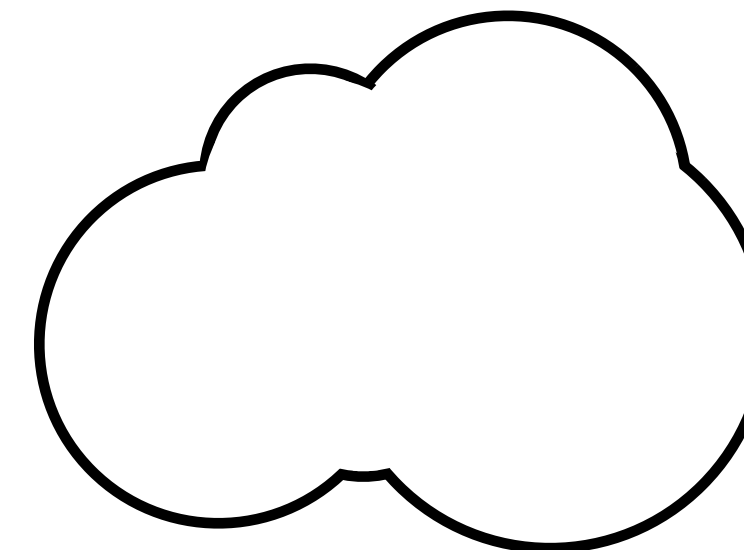
1. Monitor Performance



2. Location, Installation & Maintenance



3. Data Communication



I. Monitor Performance

Hardware + Software



GRADE C
Consumer Grade
NOT Acceptable for RESET™

Note: In this example the particle counter shows PM2.5 = 91 μg/m³, a 37% difference from Grade A.

GRADE A
Calibration Grade
Acceptable for RESET™

Note: In this example the particle counter shows PM2.5 = 144 μg/m³

GRADE B
Commercial Grade
Acceptable for RESET™

Note: In this example the particle counter shows PM2.5 = 139 μg/m³, a 3.7% difference from Grade A

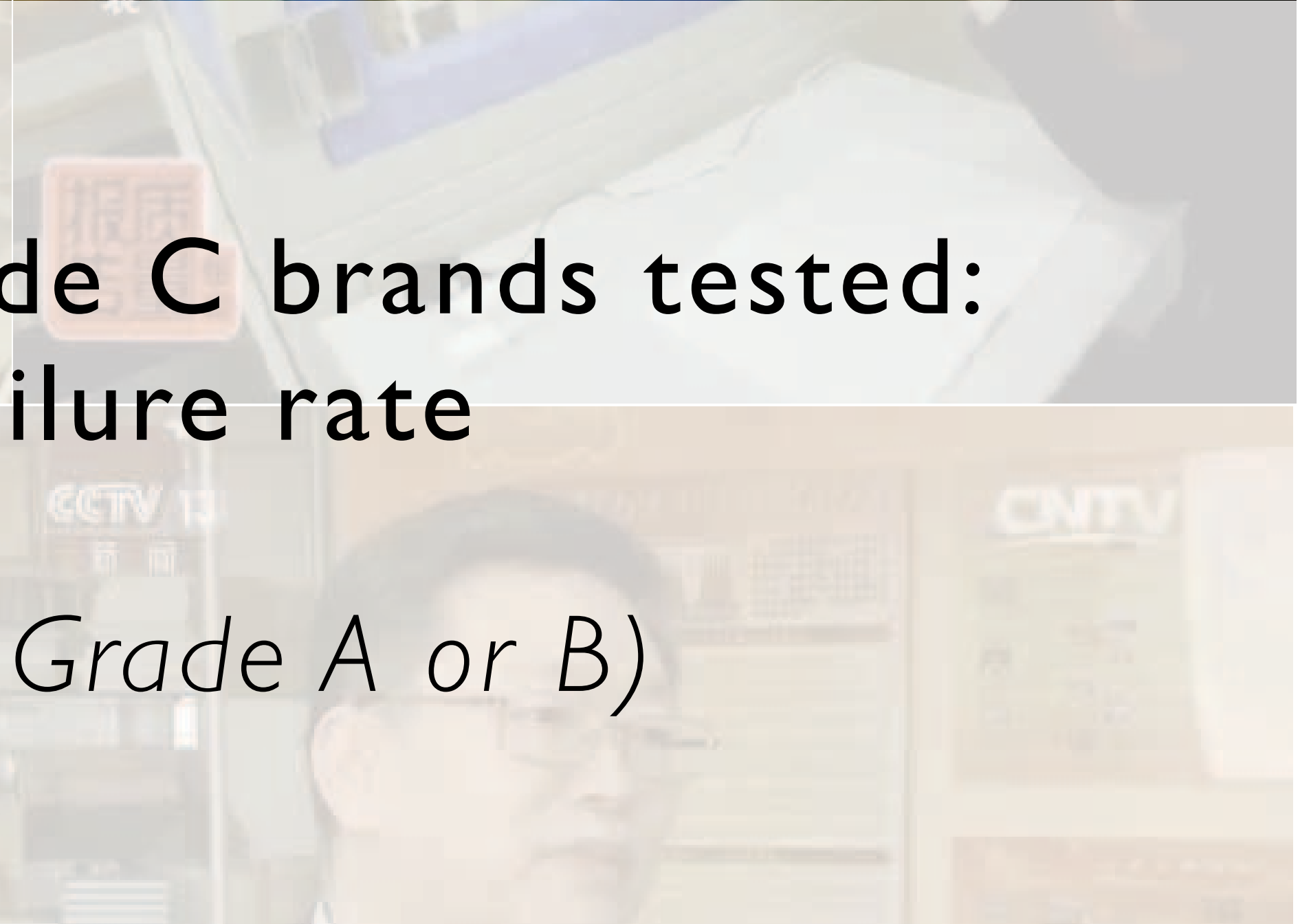
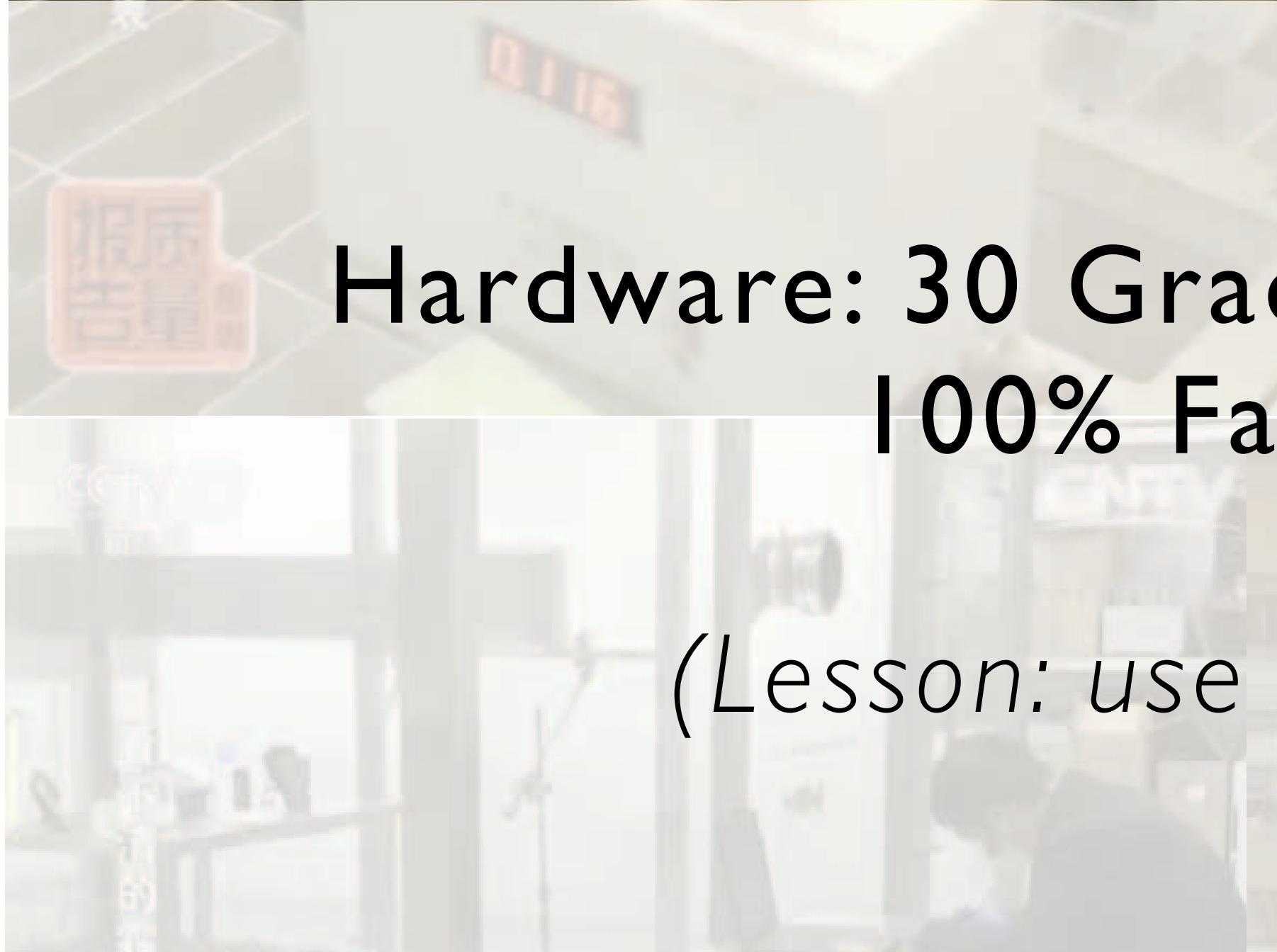






Hardware: 30 Grade C brands tested:
100% Failure rate

(Lesson: use Grade A or B)



Maintenance

All IAQ monitors drift. If you can't maintain them, don't run your building with them.



GRADE
A
RESET 重生™

CALIBRATION GRADE
✓



GRADE
B
RESET 重生™

COMMERCIAL GRADE
✓

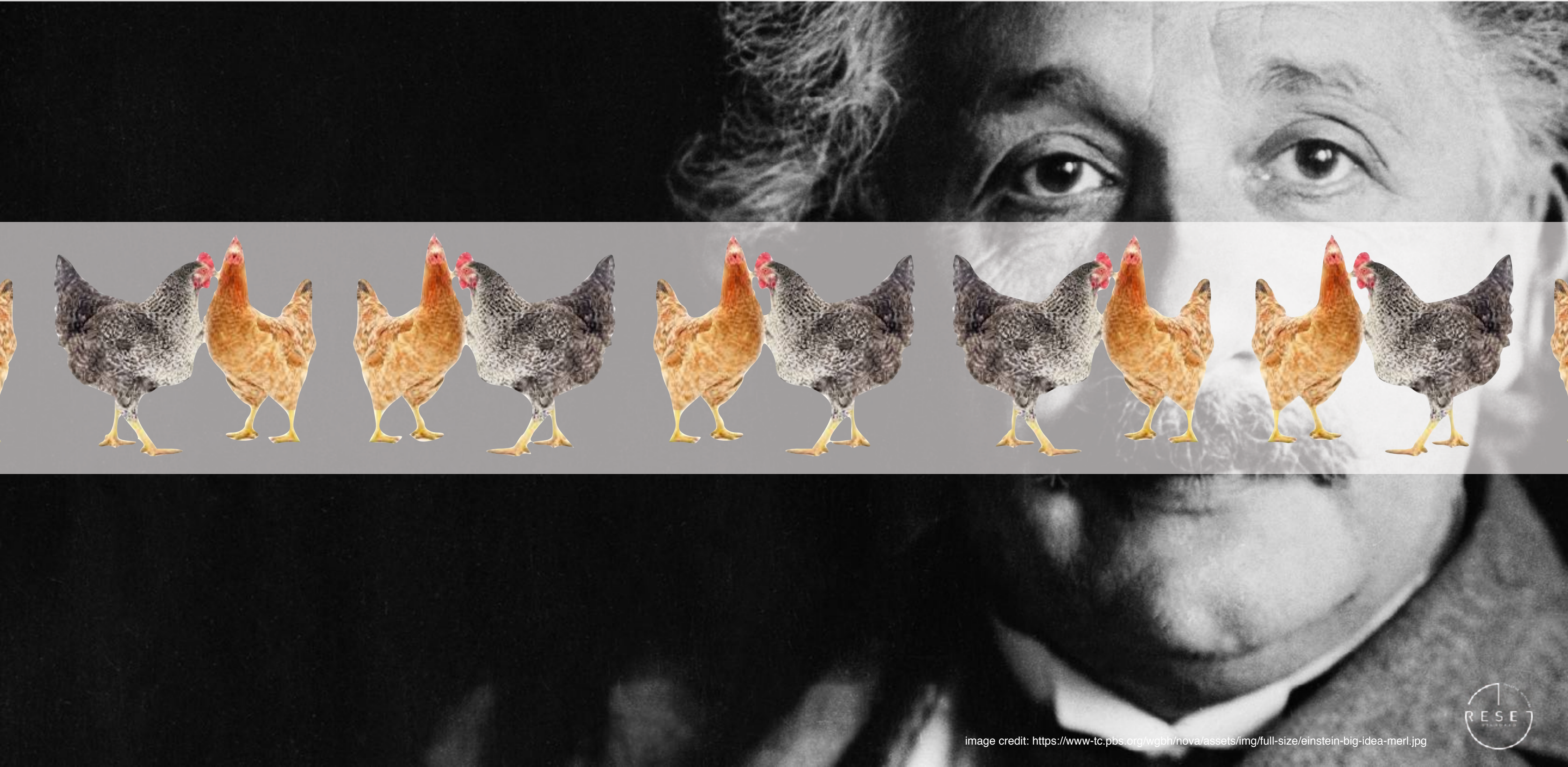
GRADE
C
RESET 重生™

CONSUMER GRADE
✗

Software: Beware of Big Data

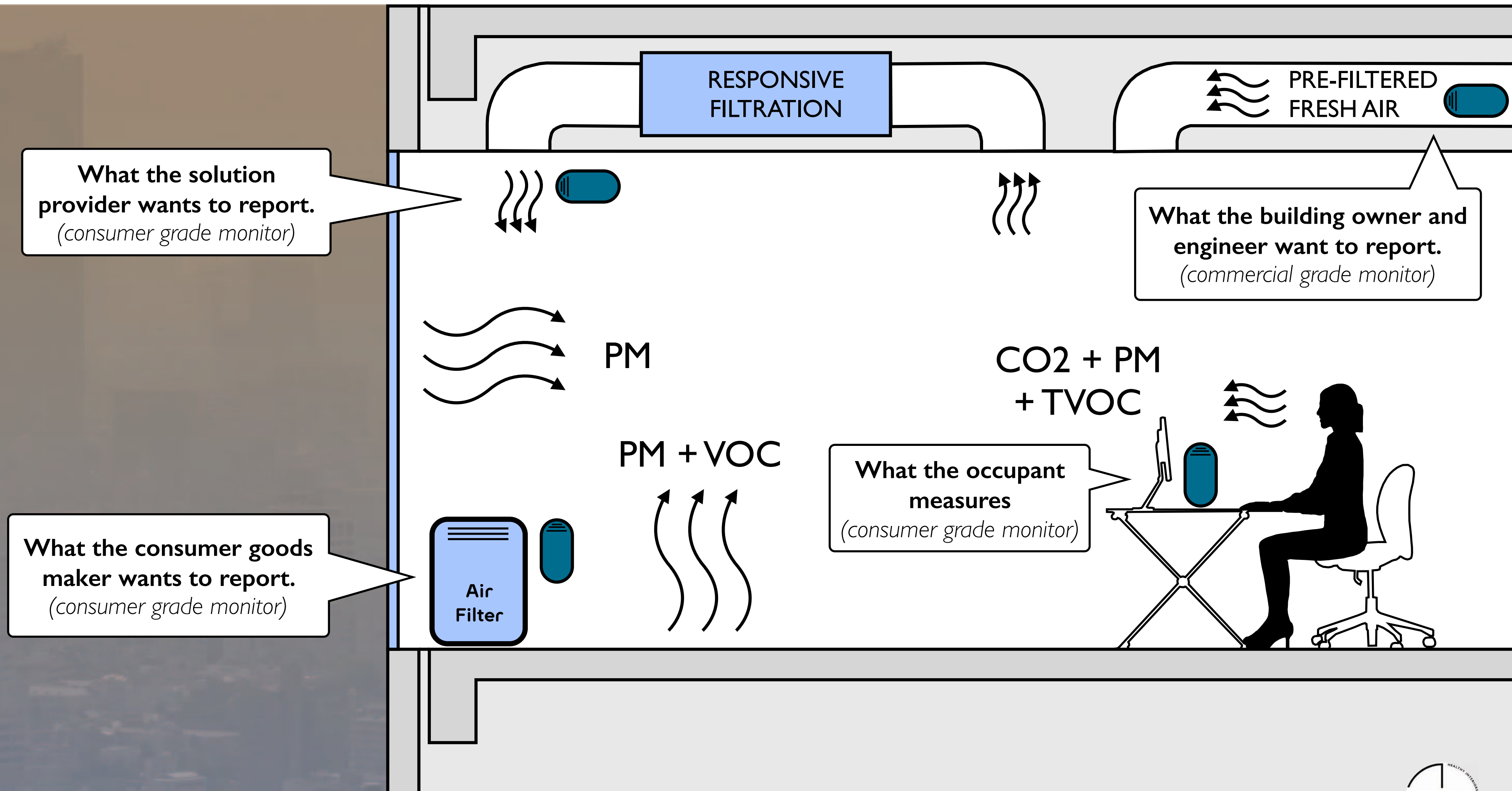
BIG DATA can't turn BAD DATA into GOOD DATA

Big data and the best of algorithms can't turn chicken brains into Einstein



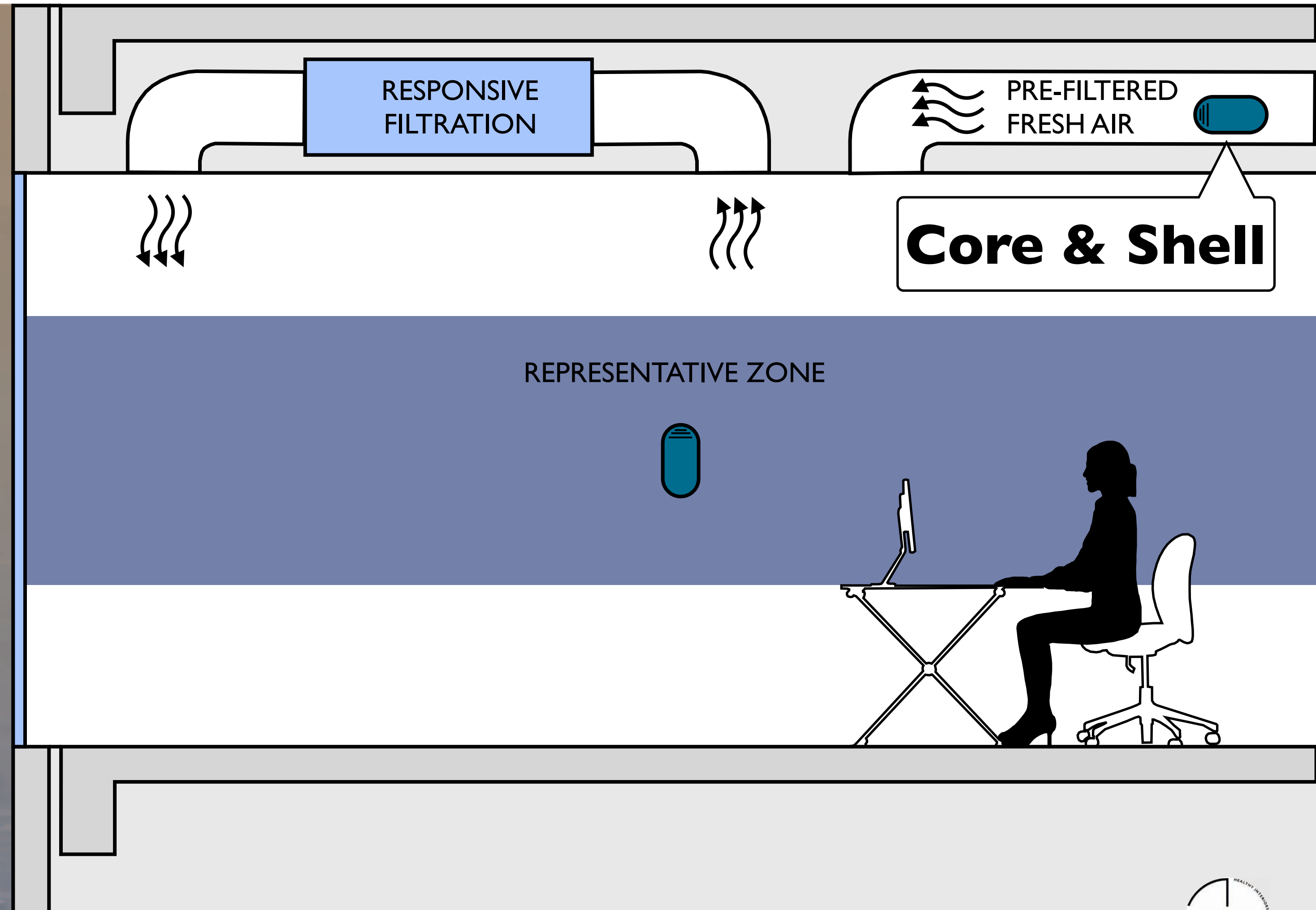
2. Location, Installation & Maintenance

Location: Competing Interests

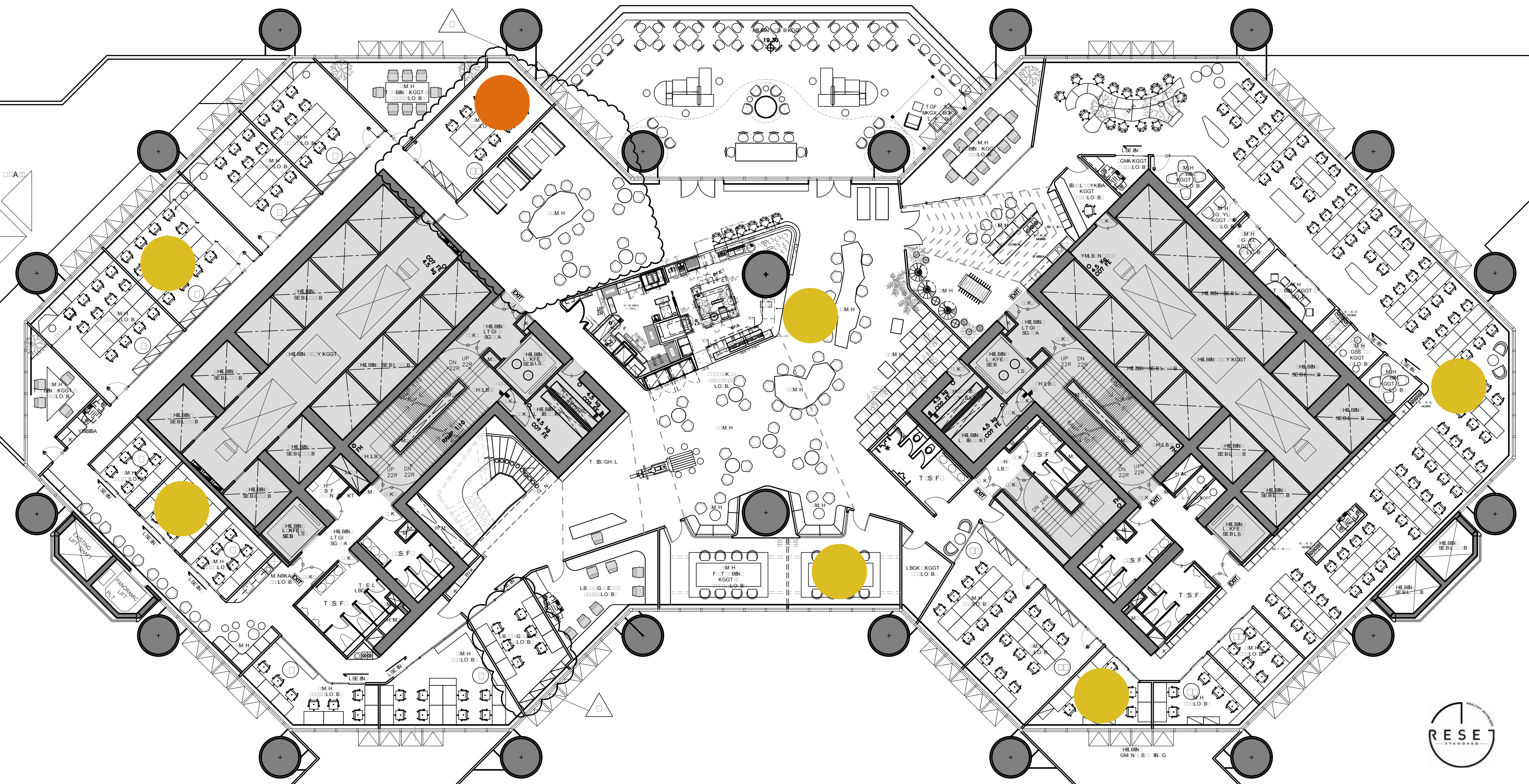


Location: Breathing Zone & Building Systems

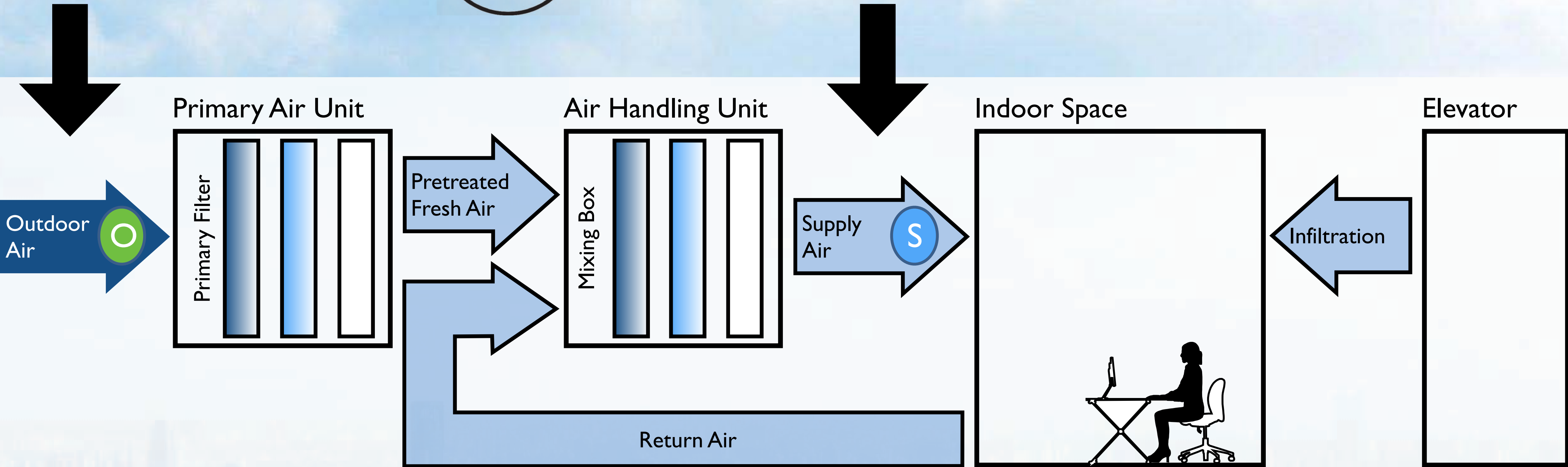
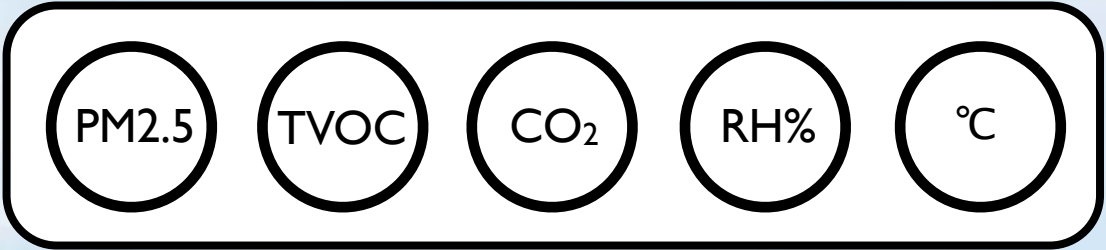
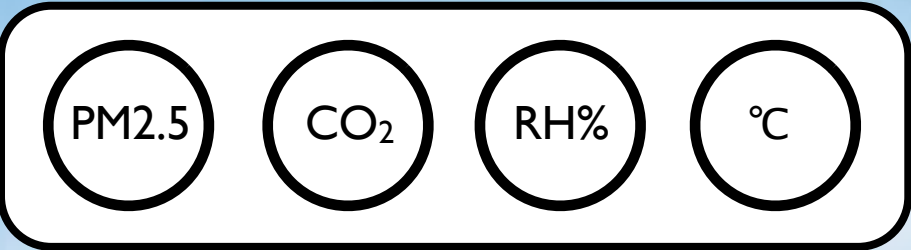
Commercial Interior



Location: Representative zones: Interiors



Location: Representative zones: Core & Shell



3. Data Reporting

REAL-TIME
MONITORING

TREND OVER TIME

VS.

LAB-TEST

POINT IN TIME



VS.



Indoor Environmental Quality Summary

Key		
	>10% over standard	
	+/- 10% of standard	
	< 10% under standard	

Air Quality												
Pollutant		PM2.5	PM10	Formaldehyde	Benzene	Ammonia	Radon	Toluene	Carbon Dioxide	TVOC	Relative Humidity	Temperature
Test point	Unit of Measure	µg/m ³	µg/m ³	mg/m ³	mg/m ³	mg/m ³	Bq/m ³	mg/m ³	ppm	mg/m ³	%	°C
	Limit of Detection	0.01	0.01	0.006	0.001	0.025	3.7	0.005	100	0.04	-	-
	Outdoors	71	128	-	-	-	-	-	-	-	61	29.2
1	Official meeting room	50	86	0.25	0.011	-	-	0.18	350	0.69	52	24.3
2	Laboratory	35	44	0.20	0.010	-	-	0.17	360	0.91	50	21.6
3	Staff area	54	132	0.20	0.019	0.03	36.7	0.07	350	0.91	50	26.1
Average		46	87	0.22	0.013	0.03	36.7	0.14	353	0.84	51	24.0
National Standard		≤75	150	≤0.10	≤0.09	≤0.20	400	≤0.2	≤1000	≤0.6	30-60	N/A
International Standard		≤35 (EPA)	50 (WHO)	≤0.12 (EPA)	N/A	≤1.9 (EPA)	100 (WHO)	≤8 (WHO)	≤1000 (ASHRAE)	≤0.5 (LEED)	30-55 (ASHRAE)	N/A



PM 2.5

Shanghai

PM 2.5

14

GOOD

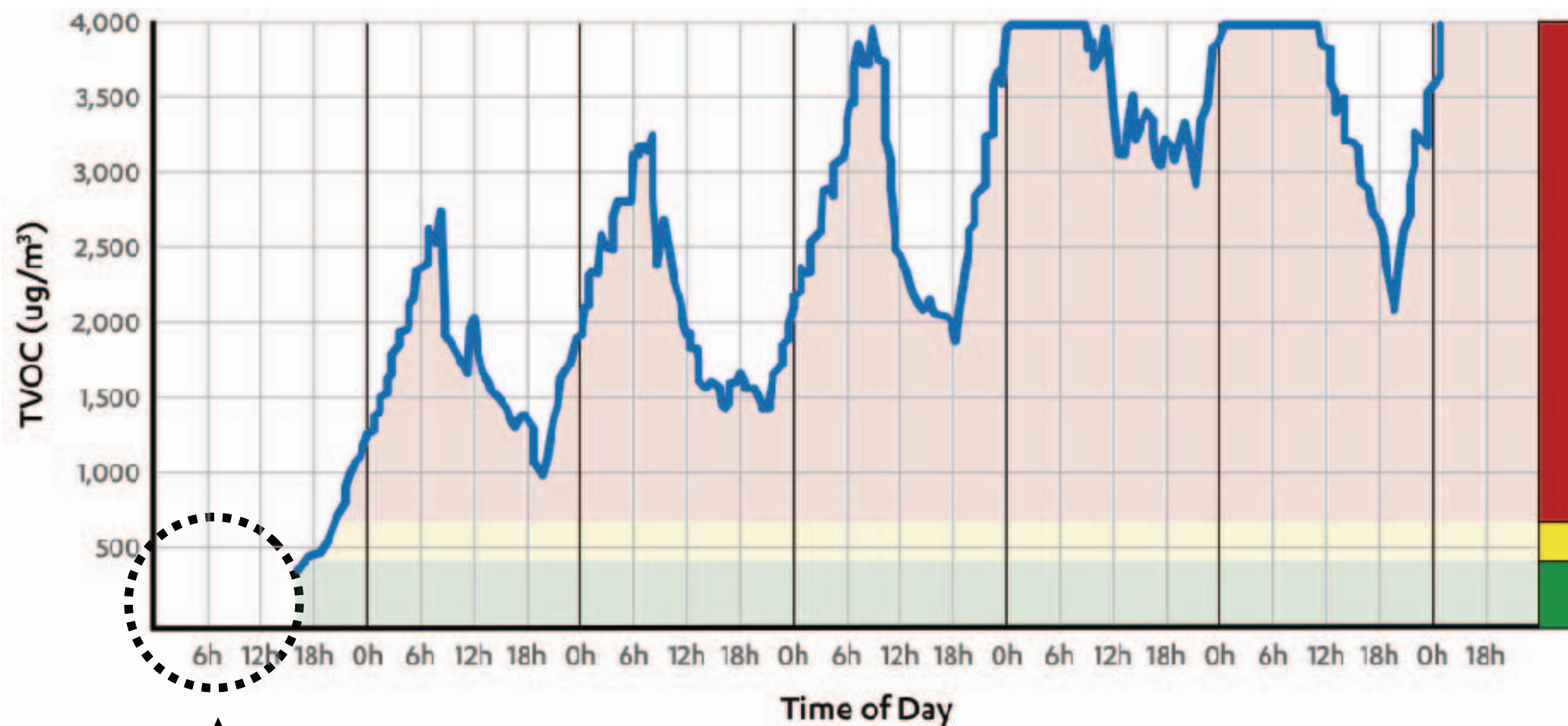
BETTER THAN

TVOC

CARBON DIOXIDE

TEMPERATURE

HUMIDITY



Flush Out

04/19 20:00

04/20 15:00

04/21 10:00

04/22 05:00

04/23

Image courtesy of Qlear. Graph courtesy of PureLiving



PM 2.5

Shanghai

PM 2.5

14

GOOD

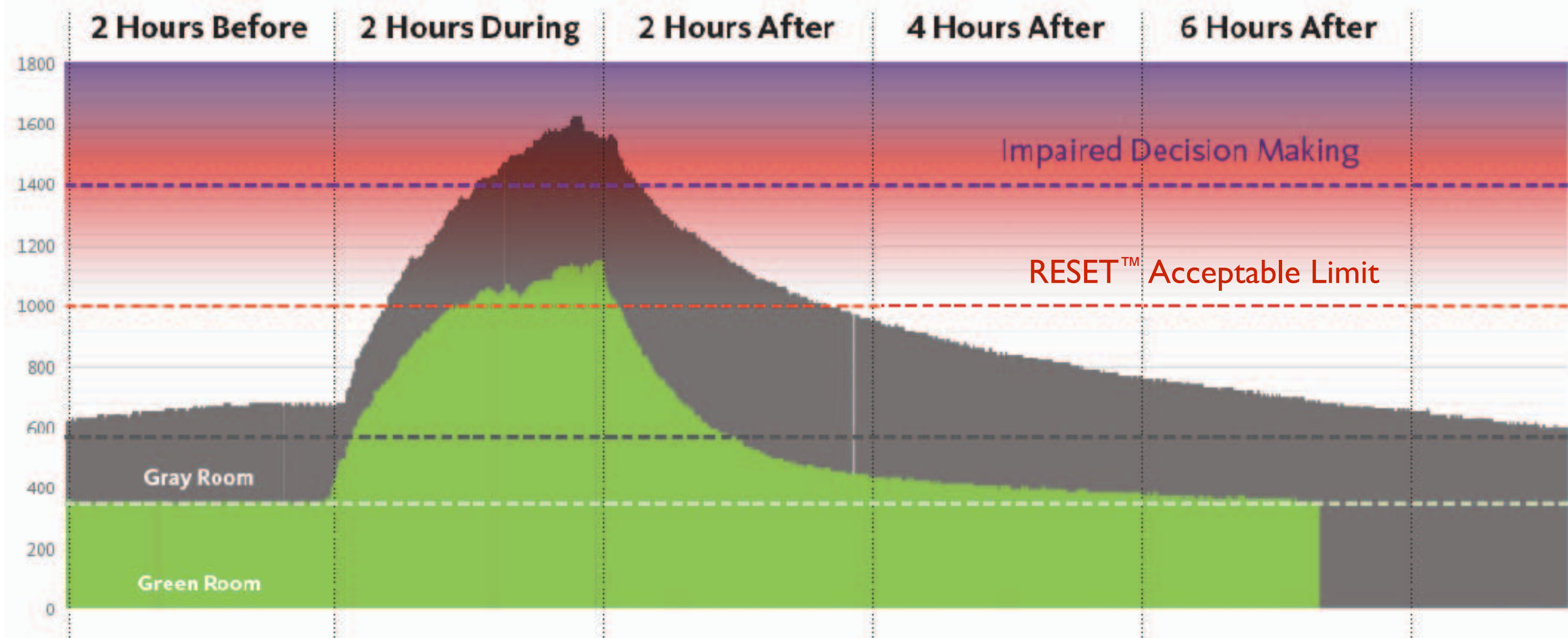
BETTER THAN

TVOC

CARBON DIOXIDE

TEMPERATURE

HUMIDITY

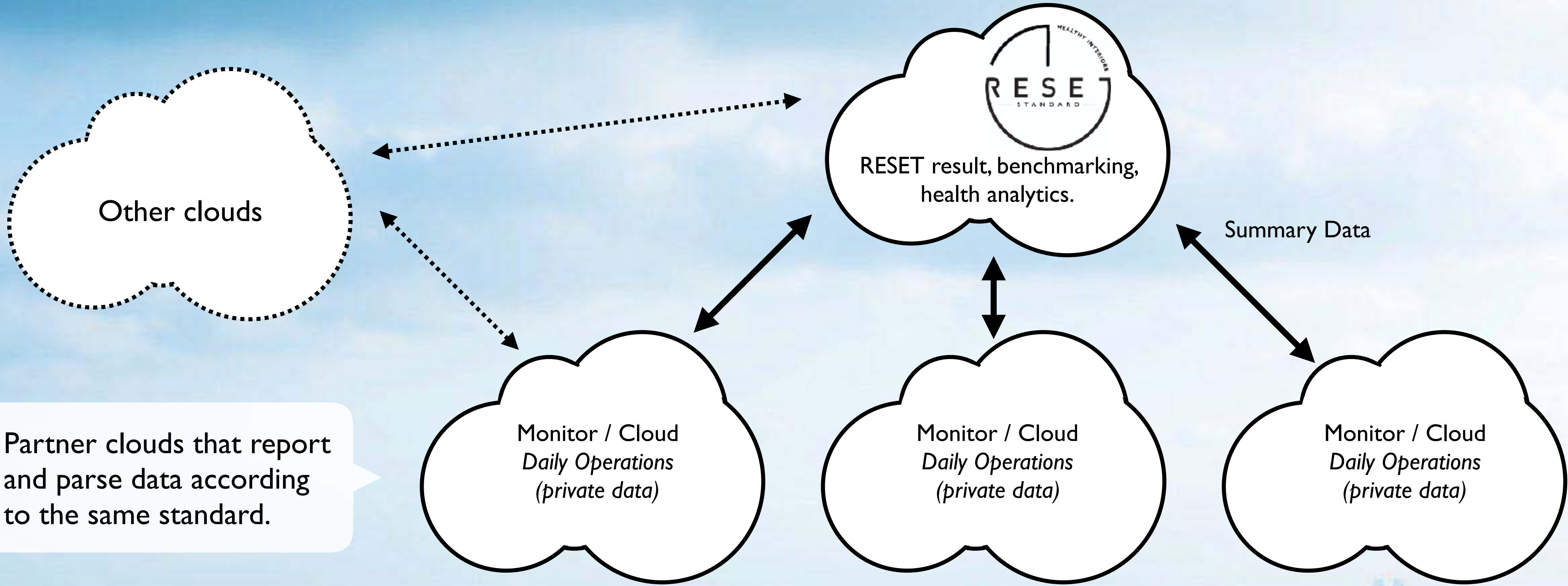


In this study, two identical conference rooms were compared, one with a green wall and one without. Both rooms were repeatedly occupied by the same three occupants. In the standard conference room (without green wall) CO₂ levels exceeded the limit required for impaired decision making.

0 04/19 01:00 04/19 20:00 04/20 15:00 04/21 10:00 04/22 05:00 04/23

Image courtesy of Qlear. Graph courtesy of Kyle Mertensmeyer / Gensler

Cloud to Cloud Structure



Partner clouds that report and parse data according to the same standard.

Monitors are installed and calibrated according to the same standard.



Data Intelligibility

Data loss: What's acceptable to be representative?

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██████ *Eyesight*

Report of the ████████ Meeting

By MISS ████████ SECOR, Secretary

A REGULAR ████████ of the Better Eyesight League ████████ held on October 14th at ████████ Avenue. Miss Kathleen ████████ President, presided. A number of ████████ were present, and for this reason the Secretary was requested to explain the Bates Method.

Among ████████ presented were the following: The prevalence of visual defects and eye-strain is evident to anyone who gives the matter his attention. Formerly, but one course of action was open to the sufferer—to visit an oculist, have his eyes tested, receive a prescription for ████████

██████ crutches. The efficiency ████████ at one of myopia, ████████ Dr. astigmatism-producing clock dial the patient can see cer- ████████ most clearly at one time, and others most clearly at another time. The lenses prescribed are such as "fit" the patient when his ████████ a certain number of degrees of astigmatism and myopia, for example. In order that the patient may see with the prescribed

Better ████████

17

shifting, swaying, swinging, sun treatment, and other methods involving the use of memory and imagination. These methods are described in Dr. Bates' book entitled "Perfect Sight Without Glasses."

Dr. E. G. Kessler (M.D.), expressed his gratitude for his son's cure. Dr. Kessler then discussed the importance of relaxation in securing mental rest. In this connection the doctor spoke of the use of the rocking chair, and quoted authorities who decried the "rocking habit." Dr. Bates expressed his belief that a moderate use of the rocking chair facilitates relaxation, if one "sees things moving" as he rocks; a moderate use of cradle-rocking and "swaying" was advocated for infants.

Dr. Bates demonstrated the long swing, and spoke of its helpfulness in securing relaxation. The long swing relieves eye-strain and other types of physical distress. When pain is very acute, visualization of the letters of the Snellen card is advised also. Miss Hurty discussed the work of A. Rollier, M.D., at his sanatorium at Leysin, Switzerland. Dr. Rollier uses sun treatment in curing tuberculosis; he finds, however, that additional results accrue, visual defects are corrected, and eye-strain re-

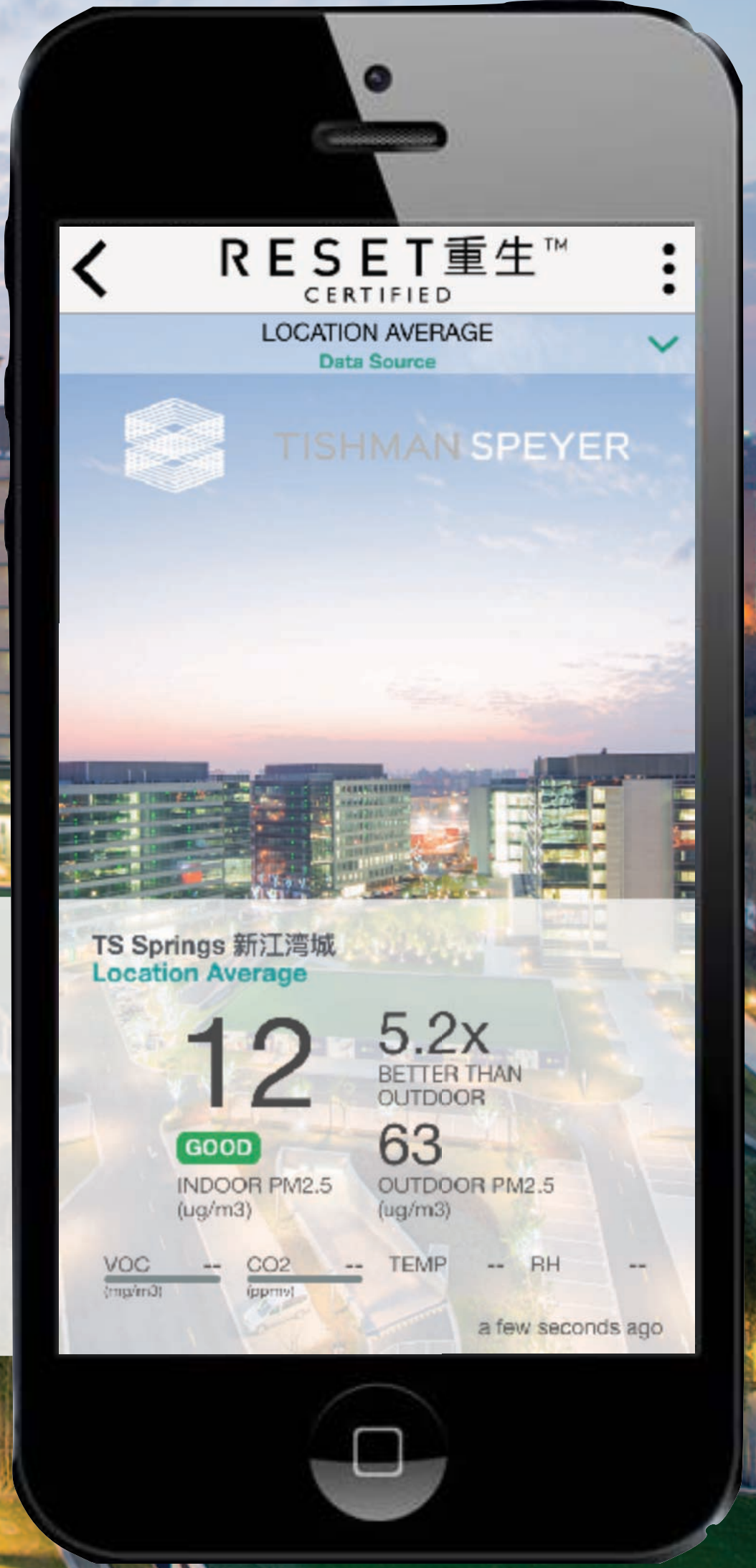
Standard for Data Communication



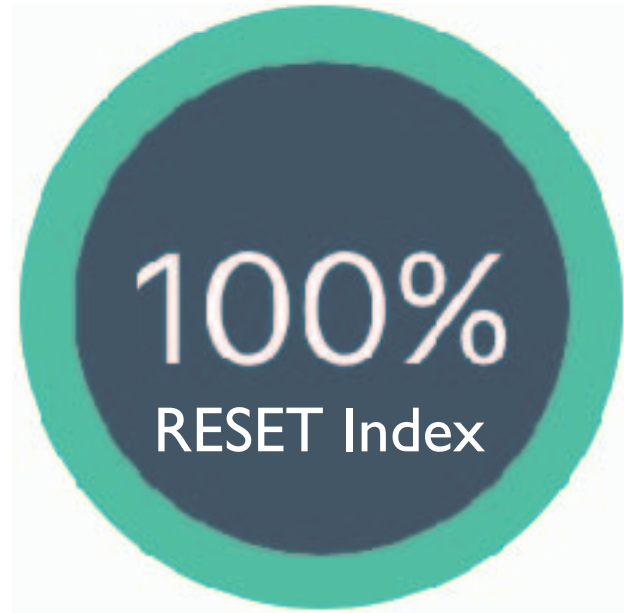



**TISHMAN SPEYER
THE SPRINGS**

World's first RESET Certified™ building for air quality



Engage your users...
Or they will engage you.



100% optimized for human health



Indoor 6.3x better than outdoor (PM2.5)



Air Quality of Tower I

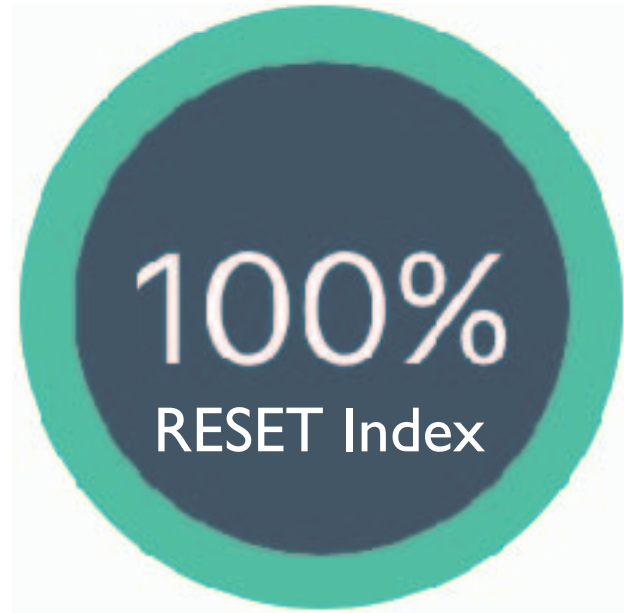
PM2.5	CO2	TVOC
28 $\mu\text{g}/\text{m}^3$	373 ppm	0.043 mg/m



Air Quality of Tenants (Avg.)

PM2.5	CO2	TVOC
3 $\mu\text{g}/\text{m}^3$	564 ppm	0.390 mg/m





100% optimized for human health



Indoor 6.3x better than outdoor (PM2.5)



Air Quality of Tower I

PM2.5	CO2	TVOC
28 $\mu\text{g}/\text{m}^3$	373 ppm	0.043 mg/m ³



Air Quality of Tenants (Avg.)

PM2.5	CO2	TVOC
3 $\mu\text{g}/\text{m}^3$	564 ppm	0.390 mg/m ³

What is your historic CO₂?



Summary

Continuous Feedback

Air + Energy + ...

New Reality:

“How effective is this building at keeping me healthy, everyday?”

The shift from design requirements to operational requirements creates new challenges & new opportunities



RESET 重生™
CERTIFIED



5

GOOD

INDOOR PM2.5
(ug/m3)

16.2x
BETTER THAN
OUTDOOR

81

OUTDOOR PM2.5
(ug/m3)

VOC <0.12 (mg/m3) CO2 520 (ppmv) TEMP 26°C RH 54 %

40 minutes ago

HEALTHY INTERIORS
RESET
STANDARD

Retail
Commercial Interior

HEALTHY INTERIORS
RESET
STANDARD





Schools



RESE 重生™
CERTIFIED

LOCATION AVERAGE ✓
Data Source



Dulwich College Suzhou
Location Average

10 **2.7x**
GOOD BETTER THAN
INDOOR PM2.5 OUTDOOR
(ug/m3) (ug/m3)

VOC -- CO2 **503** TEMP **28°C** RH **74 %**
(mg/m3) (ppmv)

a few seconds ago





Hotels

RESET 重生™
CERTIFIED

CORDIS

5
GOOD
INDOOR PM2.5
(ug/m3)

16.2x
BETTER THAN
OUTDOOR
81
OUTDOOR PM2.5
(ug/m3)

VOC <0.12 (mg/m3) CO2 520 (ppmv) TEMP 26°C RH 54 %

40 minutes ago





THINKING INSIDE THE BUILDING

Continuous Feedback

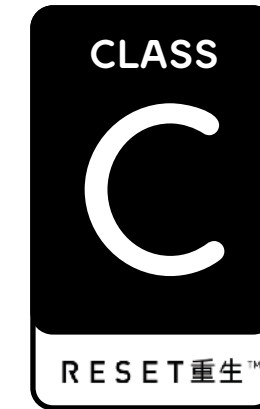
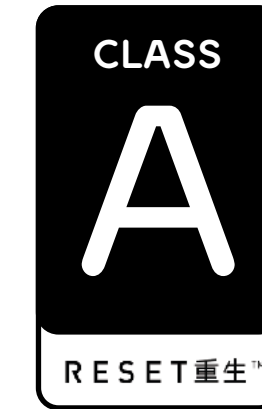
Air + Energy + ...

crusty the engineer
- the new hero -

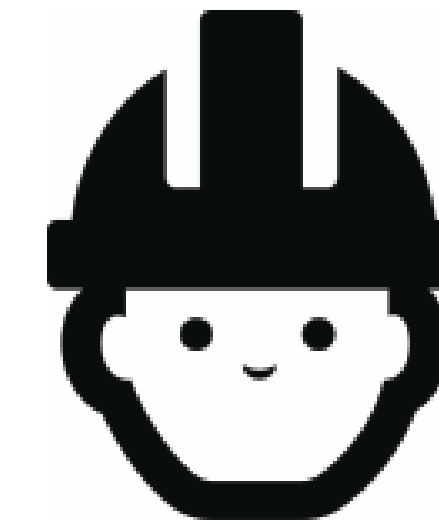


Can't do it without Good Data.

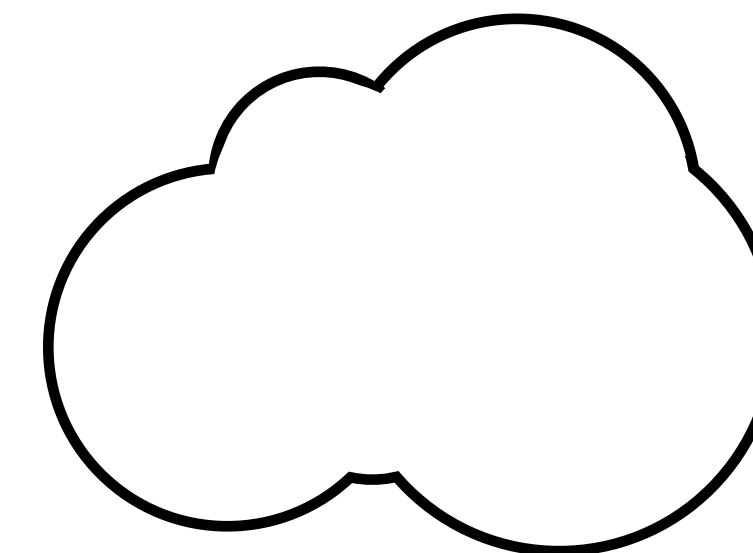
1. Monitor Performance Standards



2. Location, Installation & Maintenance Standards



3. Data Communication Standards





Standard for 'Good' Data.
www.reset.build / agreen@reset.build

