The Opportunities for the Internet of Things in Responding to the COVID-19 Pandemic

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About Us

Strategy of Things is a Silicon Valley based innovation firm that helps cities, communities and governments become smarter, safer, more responsive and resilient through science, breakthrough strategies and disruptive digital technologies.

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STRATEGY OF THINGS

Cities and Communities

Federal and State Government

Solutions and Technology Providers

The COVID-19 journey ahead of us
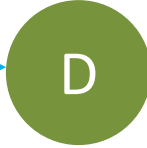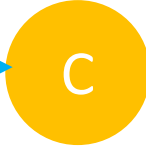
"State of Emergency" **"Lift Restrictions"** **"Vaccine Found"** **"New Normal"**

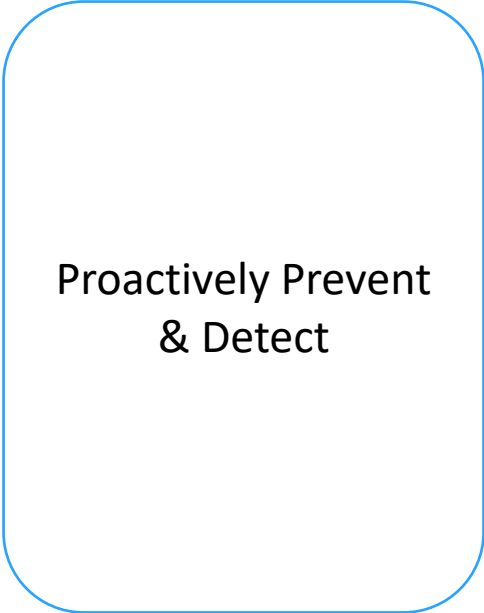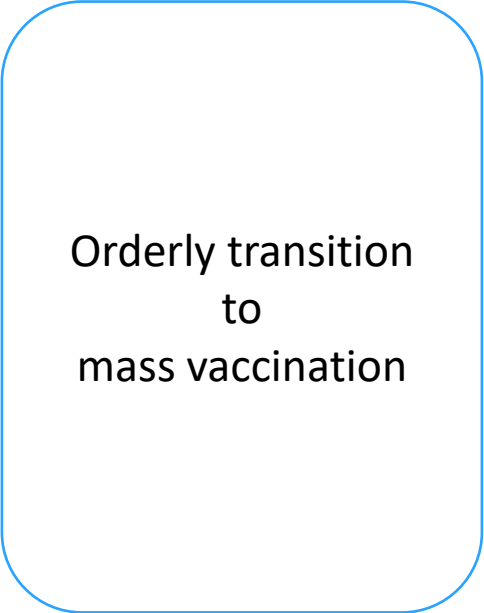(A) —~2 to 3 months→ (B) —~ 12 to 18 months→ (C) —~ 6 to 9 months→ (D)

Slow the Spread   **Pre-Vaccine New Normal**   **Vaccine to New Normal**   **New Normal & Beyond**

Buy time to grow care capacity

Balance easing with spreading

(may include multiple cycles of slow the spread)

Orderly transition to mass vaccination

Proactively Prevent & Detect
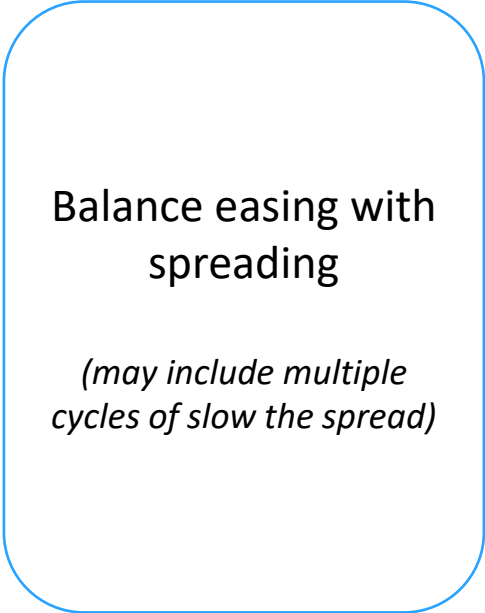
Containing COVID-19 until a vaccine is found

"State of Emergency"   **"Lift Restrictions"**   **"Vaccine Found"**   **"New Normal"**

A → ~2 to 3 months → **B** → ~ 12 to 18 months → **C** → ~ 6 to 9 months → **D**

Slow the Spread
Buy time to grow care capacity

Pre-Vaccine New Normal
Balance easing with spreading

Vaccine to New Normal
Orderly transition to mass vaccination

New Normal & Beyond
Proactively Prevent & Detect

Public Health System Readiness

New COVID-19 infections

Time

Key strategies in driving towards a recovery

"State of Emergency"   "Lift Restrictions"   "Vaccine Found"   "New Normal"

| A | ~2 to 3 months → | B | ~ 12 to 18 months → | C | ~ 6 to 9 months → | D |

Slow the Spread
Buy time to grow care capacity

Pre-Vaccine New Normal
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New Normal & Beyond
Proactively Prevent & Detect

Exposure avoidance and reduction – distancing, hygiene, personal protective equipment, isolation

Case by case group interventions – restriction easing, new restrictions

Prioritized Vaccinations

Health system readiness – testing, beds, ventilators, staffing

Agile Response: Early detection and contact tracing of new infections

Targeted intervention of vulnerable populations

Serological testing (who's immune) and therapeutics development

Vaccinations

Time

The reality today

- "New normal" is here (Pre-vaccine and Post-vaccine)

- Communities and public health system is underprepared and turning to technology for help

- Technology is a key component in medical response, community quality of life, economic, recovery and resilience at all levels

- Today's technology responses are "all over the place" and a structured collaboration approach is needed to fully respond

- A focused innovation ecosystem must be built

What capabilities are needed to respond to COVID-19?

Public health readiness and response capabilities – CDC defined
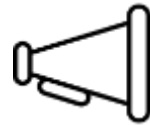
Community Resilience

- Community Preparedness
- Community Recovery

Incident Management

- Emergency Operations Coordination

Information Management

- Emergency Public Information and Warning
- Information Sharing

Countermeasures and Mitigation

- Medical Countermeasure Dispensing and Administration
- Medical Materiel Mgmt and Distribution
- Non-pharmaceutical interventions
- Responder safety and health

Surge Management

- Fatality Management
- Mass Care
- Medical Surge
- Volunteer Management

Bio-Surveillance

- Public Health Laboratory Testing
- Public Health Surveillance and Epidemiological Investigation

Reference: https://www.cdc.gov/cpr/readiness/00_docs/CDC_PreparednesResponseCapabilities_October2018_Final_508.pdf

The collaboration framework

	Community Resilience	Incident Management	Information Management	Counter-measures and Mitigation	Surge Management	Bio Surveillance
Innovation						
Community Engagement						
Data and Analytics						
Technology Infrastructure						

Source: White Paper: Responding to the COVID-19 pandemic - A collaboration framework for cities and solutions providers, https://strategyofthings.io/covid-19

Framework in action (examples)

	Community Resilience	Incident Management	Information Management	Counter-measures and Mitigation	Surge Management	Bio Surveillance
Innovation						
Community Engagement						
Data and Analytics						
Technology Infrastructure						

- Medical countermeasure dispensing and administration
- Medical materiel management and distribution
- Nonpharmaceutical interventions
- Responder safety and health

Reference: CDC

- Autonomous Robots
- Telehealth & remote patient monitoring
- Cleaning robots
- Drones for monitoring
- Home quarantine app

- COVID-19 screening website for community
- Government volunteer portal
- Online community portals

- Community Broadband to support "shelter in place"
- Cloud computing for vaccine development

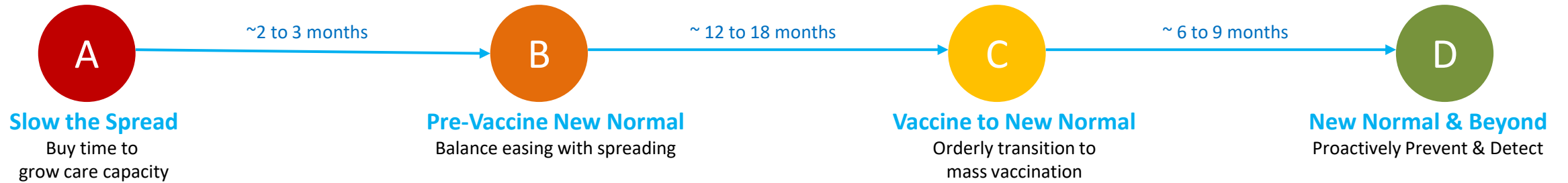Source: White Paper: Responding to the COVID-19 pandemic - A collaboration framework for cities and solutions providers, https://strategyofthings.io/covid-19

Where can IoT play? (Countermeasures Example)

"State of Emergency"

A

Slow the Spread
Buy time to grow care capacity

~2 to 3 months

"Lift Restrictions"

B

Pre-Vaccine New Normal
Balance easing with spreading

~ 12 to 18 months

"Vaccine Found"

C

Vaccine to New Normal
Orderly transition to mass vaccination

~ 6 to 9 months

"New Normal"

D

New Normal & Beyond
Proactively Prevent & Detect

"Targeted Intervention"

- Sensor Networks
- Analytics and insights
- Data Collection
- Corrective Measures

"Agile Response to New Outbreaks"

- Early Detection
- Rapid Deploy of Resources
- Care and Monitor

"Safe Space"

- Transit Stations
- Schools and Campuses
- Hospitals and Care Centers
- Shopping Centers and Districts
- Offices and Buildings
- Public Gathering Places
- Factories
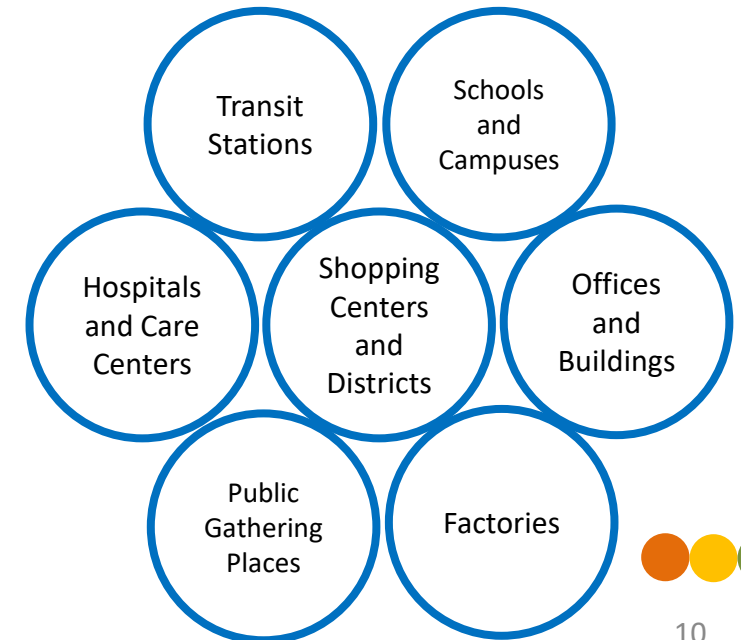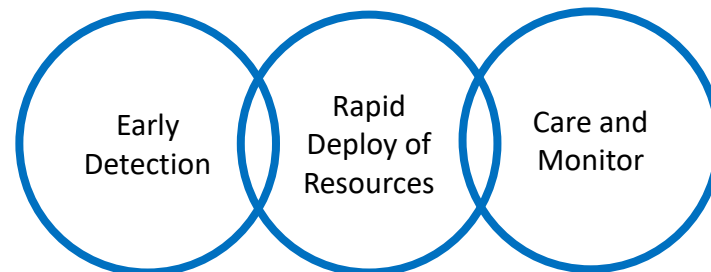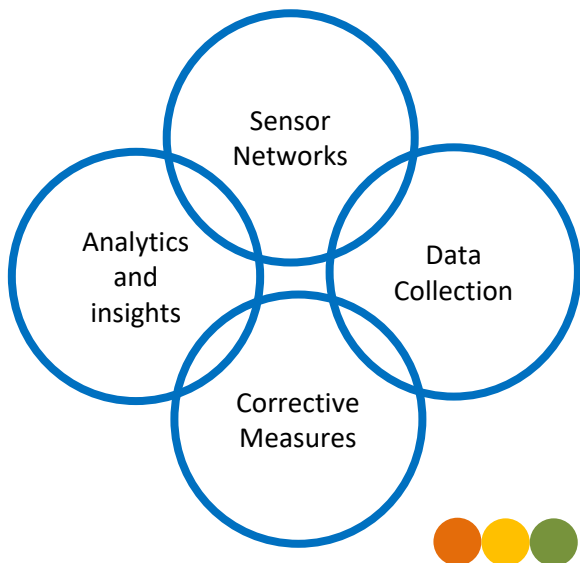
Where can IoT play? Safe Spaces Example

A **safe space** provides **peace of mind** to its occupants. It is a physical space that enables **people to come together** to work, collaborate, learn, and socialize in a way that **minimizes their health risk**.

Body Temperature Measurement

Sanitizing and Cleaning Robots

Asset Tracking and Management

Touchless Operations

Occupant Contact Tracing

Remote Health Monitoring and Care

Social Distance Monitoring

Occupancy Monitoring

Video Behavioral Analytics

What does a safe space look like? (examples)

Conference Room
- Policy: no more than 5 people at one time
- Technology – occupancy sensor to confirm # of people and notify of non-compliance
- Space layout – fewer chairs, physical barriers to limit chair placement, larger conference table

Rapid response
- Technology – contact tracing
- Policy – HR and legal
- Regulation – compliance with health and privacy reporting, information storage
- Practice – on site isolation rooms, telehealth doctors, onsite health safety representation

Frequently Touched Surfaces/Objects
- Policy – sanitize hands and offices often; clean surfaces every 2 hours
- Practice – hygiene stations every 200 ft
- Technology - Contactless and voice command ops

People and resources
- People – role of safe space "captain"
- Practices – education and awareness trainings
- Processes – monitor spaces frequently to determine what changes should be made
- Design/layout – isolation/quarantine rooms

Face Mask
- Policy – face masks must be worn in all common areas and conf rooms
- Technology – AI cameras to detect people not wearing facemasks
- Practice – store disposable facemasks with receptionist

Digital Signage
- Policy – employees must review signage everyday
- Practice – workspace performance metrics, health news, workspace changes posted every day
- Technology – digital signage monitors and content management system

Social Distancing
- Policy and health codes – employees must stay 6 ft apart
- Layout/design – cubicles and desks, workstations laid out to maximize separation, wider hallways for walking, smaller common spaces to discourage lingering and gathering
- Technology – AI cameras or sensors to detect employee separation distance

Contactless Operations
- Policy – minimize skin contact on everyday objects
- Building infrastructure – self opening doors, faucets, elevators
- Technology – voice command, mobile phone apps
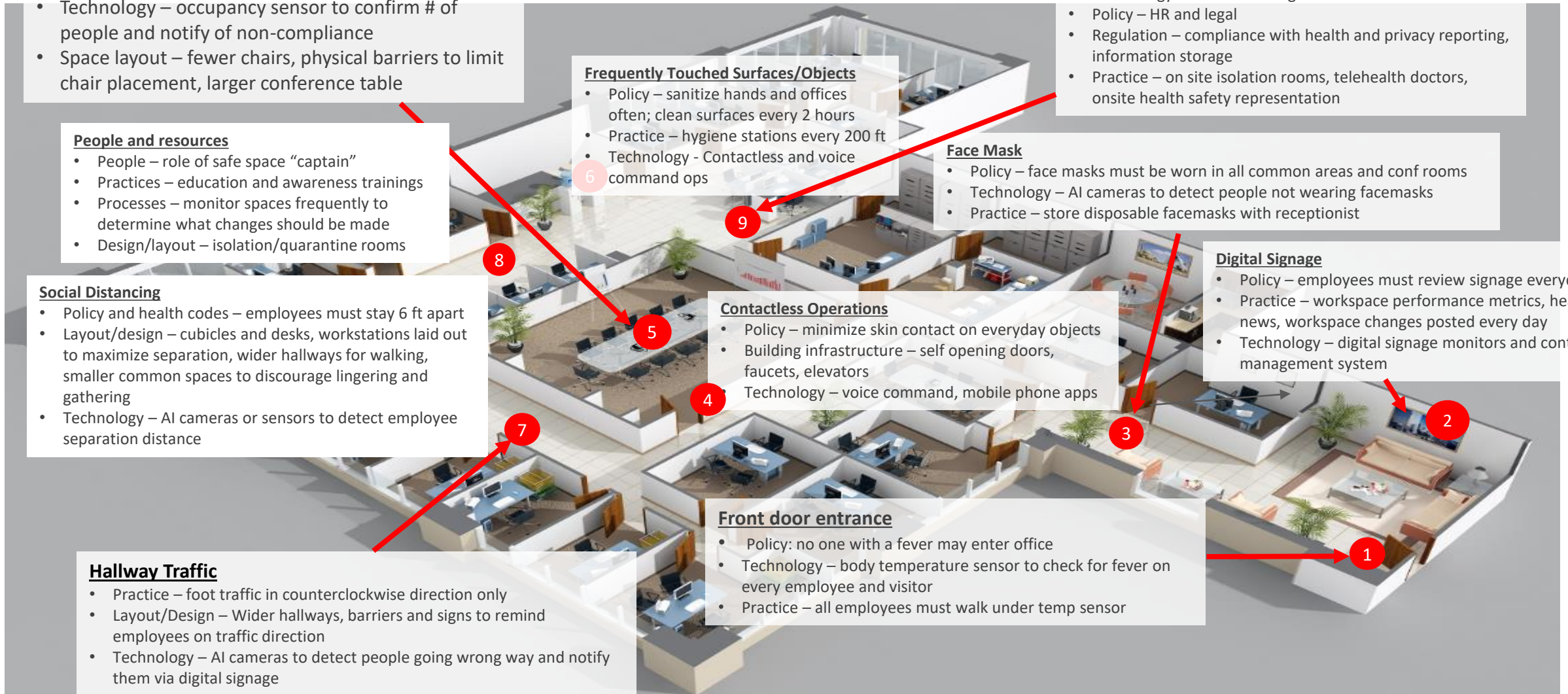
Front door entrance
- Policy: no one with a fever may enter office
- Technology – body temperature sensor to check for fever on every employee and visitor
- Practice – all employees must walk under temp sensor

Hallway Traffic
- Practice – foot traffic in counterclockwise direction only
- Layout/Design – Wider hallways, barriers and signs to remind employees on traffic direction
- Technology – AI cameras to detect people going wrong way and notify them via digital signage

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Example Day in the Life of a Safe Space (office)

B

Office/Cubicle

Furniture placement
Disposable paper pad
Hand sanitizers
Equipment cleaning routine
Voice command phones
No open spaces
Cleaning wipes

F

Restrooms

1 person at a time
Hand sanitizers and soap
Contactless faucets and towel dispensers
Facemasks on
Frequently cleaning schedule

Departure Area

Contactless door
Digital signage
Hand sanitizers
Frequent cleaning

A

Arrival and Reception

Daily health survey
Body temp scan
Contactless door
Digital signage
Hand sanitizers
Frequent cleaning
Social distancing

C

Group Meetings

Limited room occupancy
Contactless door
Hand sanitizer
Voice command AV
Disposable paper pads
Cleaning wipes
Furniture layout
Facemasks on
Social distancing

Lunch

< 3 people in eating together
<15 minutes together
Hand sanitizers
Cleaning wipes
Sit 6 ft apart/social distance
Replaceable paper pads
Few tables in lunch area
Contactless faucets
Wipe down microwave after each use

E

D

Break and/or Gathering Areas

< 3 minute gathering time
<3 people gathering
Facemasks on
Hand sanitizers
Cleaning Wipes
Social distancing
Frequent cleaning schedule

G

Copier/Printer Station/Supply Cabinet

1 person at a time
Hand sanitizers
Wipe down every use
Facemasks on
Hand sanitizers
Cleaning wipes
Frequent cleaning schedule

I

Hallways and Transit Areas

Single direction travel
Social distancing
No gathering or lingering
Facemasks on
Frequent cleaning schedule

H

Essential Safe Spaces

Healthcare

Doctor/dental offices
Hospitals
Specialty care centers
Senior homes

Industrial

Factories
Plants
Construction

Shopping/Retail

Shopping malls
Business districts
Retail chains

Transit

Buses
Trains
Airplanes
Transit Stations

Offices

Government
Corporate
Commercial

Education

K-12
Community Colleges
Universities

Where can IoT play? Agile Responses Example

An agile response detects new outbreaks early, quickly mobilizes the right resources to the affected communities, limits the spread, and effectively treats the afflicted.

Community Sentiment Detection

Tracking of medical and support personnel

Asset Tracking and Management

Location analytics and contact tracing

Wastewater Monitoring

Remote Health Monitoring and Care

Where can IoT play? Targeted Interventions Example

Targeted interventions are planned actions undertaken by community and healthcare responders for the specific benefit of select communities and groups.

Deploying air quality sensor network to identify potential communities for prioritized programs

Deploying location analytics to study people movement data to minimize COVID-19 exposure

Resources

- White Papers (https://strategyofthings.io/covid-19)

- Share with us your solutions that we can post to our online framework – https://strategyofthings.io/covid19-framework

- Questions/feedback at benson@strategyofthings.io

www.strategyofthings.io

https://strategyofthings.io/covid-19

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