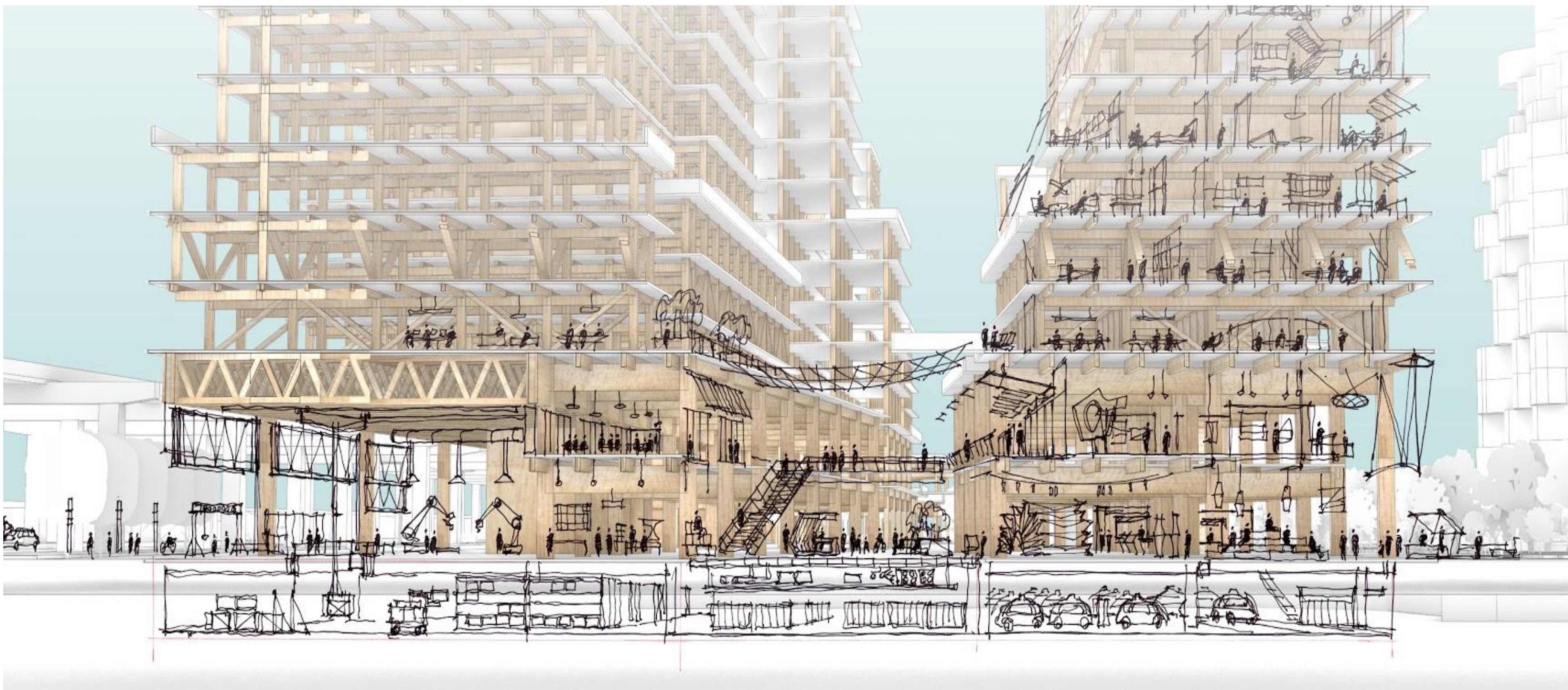
Building Efficiency



Data Use Case Description

Building management systems that monitor equipment data often store data without integrating it into other systems like lighting. These siloed systems make it hard to drive improvements to energy consumption, comfort, or generally useful insights on the way buildings operate. Energy in most buildings is unmanaged or controlled by predetermined schedules and settings, regardless of holidays or seasons, in a "set it and leave it" approach. Furthermore, customers often can't access their real-time consumption data. A **home (or office) scheduler** can reduce energy use in buildings, whether commercial or residential, by learning preferences to balance energy use across appliances, lighting, and temperature to allow people feel comfortable at home and prevents GHG-intensive peaks and high energy bills. Residents can opt out of using this system, but may be subject to higher energy use. The scheduler can also be used by commercial tenants to dynamically modify set points for HVAC, lighting, cooling, and shading based on the office needs.

What might be measured?

1. Smoke, temperature, air quality (CO2, VOCs, humidity, and carbon monoxide) sensors.
2. Occupancy sensors and light sensors in offices.
3. Circuit, appliance, or plug-load level sensors to monitor how much energy appliances are using, including when on standby and switched off.

Who are the potential data users?

- Building management systems
- Third-party thermostat cloud services
- Third-party lighting cloud services
- Utility companies
- Third-party applications and entrepreneurs
- Residents and office employees who set preferences based on historical use and real-time energy consumption

How is this data beneficial?

1. Smoke, temperature, air quality (CO2, VOCs, humidity, and carbon monoxide) sensors inform HVAC to ensure that spaces are ventilated and comfortable.
2. To determine when heating, cooling, convenience plug loads, and lighting changes can save energy, there are occupancy sensors and integrations with access control systems.
3. Light sensors and solar radiation data help prevent glare, help manage temperatures, and control lights and shades.
4. Plug-load monitors help to reduce energy use and spend on convenience electronics, such as computer monitor use at night.
5. Residents can opt-in to a home scheduler to create an energy budget and accept energy, and money, saving changes.

Sidewalk Labs' Civic Data Trust Proposal:

Sidewalk Labs recommends that an independent entity control, manage, and make publicly accessible all data that could reasonably be considered a public asset. In addition to the protections provided to all Canadians through Canadian privacy laws, we propose that a set of rules apply to all entities operating in Quayside, including Sidewalk Labs. With the Civic Data Trust, we move away from entities, including Sidewalk Labs, solely owning and controlling these assets.

Should data be allowed to be collected for this purpose? Why? Why not? What should be required?

Transportation

Data Use Case Description

Data-driven insights on live and historical movement can be collected from both citizens and sensors from the environment to better understand, manage and regulate traffic flow. Drop-offs and pick-ups are one of the largest drivers of traffic congestion. A **dynamic curb system** uses real-time, historical, and projected data in combination with input from traffic management operators to optimize the regulations and pricing of the curb. To create safe streets that prioritize pedestrian safety, assess time to cross the street, and eliminate unnecessary waits, **mobility sensors** (using lidar, radar, and computer vision, which either don't detect any personal data, or are de-identified at source) are integrated with dynamic, **adaptive traffic signals**.

What might be measured?

1. Real-time data from existing sources, such as traffic volume and speed, transit delays, emergency dispatches, weather patterns.
2. In-pavement occupancy sensors detect the presence of vehicles without identifying specific vehicles.
3. Presence detectors send a signal to hold a green light for pedestrians or cyclists to ensure safety - or for transit priority.
4. License plate readers so cities can regulate and enforce traffic laws.

Who are the potential data users?

- Emergency services
- Municipal regulation enforcement (e.g. parking)
- Municipal and provincial transportation agencies
- Autonomous vehicle fleet management companies
- Third party application and entrepreneurs

How is this data beneficial?

1. To reduce the negative impacts of illegal double parking, license plate readers will send some information directly to enforcement agencies.
2. Dynamic curbs, relying on in-pavement occupancy sensors, will be able to route vehicles to empty spaces, to ensure that pick-ups and drop-offs are efficient and don't impede traffic flow.
3. Adaptive traffic signals will hold the "walk" signal for people who need extra time to safely cross the street.
4. A "mobility management system" coordinates all the roads, signals, lanes, and trip options, ensuring a safe, efficient experience for everyone in line with local city and neighborhood objectives.

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Public Life

Data Use Case Description

Understanding how people use parks, plazas, and other types of neighbourhood spaces, through **Public Life Studies**, enables communities, practitioners, and governments alike to understand the impact of design and programming on public life and better target resources. Urbanists have a decades-long tradition of using data to understand how people interact with parks and public spaces by conducting targeted studies to answer specific questions that have improved cities around the world. New technologies have the potential to make measuring public life easier, quicker, and more comprehensive.

What might be measured?

1. Participatory or crowd-sourced data collected through smart phone apps.
2. People counts, for example how many bicyclists are using a bike path or are using a park area.
3. GPS devices in bike-sharing programs.
4. Inductive loops that measure the change in the magnetic field when metal (such as bike wheels) passes over them.
5. Camera vision, lidar, radar detect passing objects and classifies objects based on shape. Infrared sensors detect passing pedestrians or cyclists based on temperature.
6. Public life studies - designing studies and documenting through observation how public spaces are used.
7. User and participant intercept surveys.

Who are the potential data users?

- Municipalities, provinces, and national governments who operate public spaces
- Design, planning and engineering professionals who design public spaces, or researchers interested in the impact of built environment on public life and community well-being
- Non-profit organizations and community groups who help program or activate public spaces
- Private entities that program and operate open spaces, such as shopping malls and amusement parks.
- Third-party applications and entrepreneurs

How is this data beneficial?

1. Data on how people interact with and use the urban environment can inform and shape how the design and policy of cities meet the needs of their residents. For example, park usage counts can inform maintenance schedules and revitalization efforts.
2. Data can show long-term trends and be used to spur direct investment and to demonstrate to stakeholders and decision-makers how facilities are being used.
3. Public life data enables communities to measure the impacts of their efforts to program, activate and improve public spaces, and help increase civic participation.
4. Public life data recorded in accordance with published data standards makes it possible to share and compare how public spaces are utilized, making it possible to enable more practitioners to incorporate people-centered metrics into their work.

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Yes		Yes, if…			No	
Use Case	Because…	Use Case	What conditions are needed?	Because…	Use Case	Because…