**A05 – Smart Cities**

**Why Smart Cities Exist**

1. Blend Technology with Urban Society
2. Sustainability/Convenience
3. Making City Administration Accessible to the Public

**Smart Traffic Monitors**

Monitors are all over the city, giving data on traffic which can predict diversions, patterns, or heavy traffic. Can also give specific data on one car or person like where and how they drive, or what they’ve done on recording.

Can also be used to tag specific cars for helping police identify locations of specific people or where they were at certain times.

**Real Time Traffic Monitoring**

People aren’t able to monitor thousands of cameras at once, with the use of AI and other smart technology traffic can be actively monitored, analyzed, and predictions can be made real-time for accidents or patterns.

- Estimated Travel Time

- Accidents and Warnings

- Diversions or Blocked Roads

**Adaptive Traffic Signals**

Traffic Signals can be automatically switched to block off lanes or open others in response to traffic patterns. This can be used for events or important routes that need to be cleared, or block certain traffic for clearing out accidents.

**Efficient Energy Management**

**Smart Grids with AI Systems:**

Smart grids are able to react to usage or environment events, to predict how to manage the energy efficiently to prevent outages or reduce costs of energy within certain areas.

**Energy Efficient Homes/ Buildings:**

Can identify specific buildings that are using high or low power, and the reasons why neighborhoods or buildings are using that power.

**Public Safety:**

Can use smart surveillance and data to monitor and anticipate crime, issue warnings or evidence, and live-time updates to keep the general public safer. AI can also help track specific criminals, incriminate them, and make sure they’re able to be apprehended safely.

**Predictive Policing:**

Predicting crime, depending on time of year, week, or day, neighborhood trends, geography, population or recent events. This can lead to better distribution of police forces to relevant locations for faster responses.

**Waste Management:**

**Smart Bins:**

Smart bins can help automatically sort waste, which helps improve recycling and store data about type and average times waste is thrown away. They can also automatically notify when full to be picked up.

**Recycle Tracking**

Helps manage recycling with service notifications and requests, as well as make sure recyclables are brought to the right place. Gives data on how much material has been recycled, and efficient times and routes.

**Environmental Monitoring:**

Allows alerts and events to get sent out along the network for everybody in different areas to get relevant alerts.

**Air/Water Quality Alerts:**

Whenever leaks, or plants shut down, or other hazards are released into the water or air supply early alerts can be detected and go out immediately.

**Temperature:**

Severe cold or heat fronts coming into areas of the city can be broadcasted directly so people can predict what they’ll need for the day.

**Severe Weather Alerts:**

Alerts such as Hurricanes, Tornadoes, Floods, Heavy Thunderstorms can all be sent out and detected early so people can take action and stay safe.

**Public Transport:**

**Integrated Transit Systems:**

Integrate all public transit systems likeTrains, Buses, Ride Shares into info apps and find various routes for estimated arrivals depending on the mode of transport from point A to point B.

**Smart Ticketing:**

Able to switch tickets to an online system, that can automatically track from a schedule and alert you when your stop is approaching. This prevents accidentally missing a stop or getting confused on where you need to go.

**Healthcare:**

**Remote Health Monitoring:**

IPhones and other products can already detect crashes and call for help when needed.

If these could automatically identify the closest doctor, transport, ambulances or medical practitioner. This could contact a doctor that is just traveling nearby, so when there’s an accident it maximizes the chance of early help.

**Smart Hospitals:**

Allows quick appointments, finding doctors instantly through reviews and sees their availability schedules. This also makes the waiting room simple, being able to told exactly where to go through an app

**Citizen Engagement**

**Mobile Apps:**

Apps can get any service request like power, gas, weather, water, police, or etc based within their location. Citizen Services as well for reporting suspicious, annoying, or dangerous activities through mobile or online devices.

**Digital Kiosks:**

Kiosks are able to track, and collect data as well and serve as a point for people to report and access citizen services outside of a mobile phone. Sometimes equipped with cameras or audio sources to collect further information on who may be accessing it.

**Unsolved Problems in AI/Smart Cities**

**Least Perceived R.O.I.**

Due to increased cost of electricity, gas, and power it’s not seen as a worthy investment even with all the improvements

**Ethical AI Practices:**

It’s difficult to manage fairness and bias within AI since developers and trained data naturally include their own bias. AI driven decisions with personalized data gathered within a smart city may give unfair treatment based on this bias.

**Regulatory Ambiguities:**

**BIGGEST PROBLEM**

There should be very strong legal/ethical frameworks, with how much data is being stored and kept on individuals it can be used against you. Without these frameworks that data can easily be mis-used by singular or teams of people that have access to data all about you within a timeframe.

**Problems Created by AI.**

**Machine Learning Biases:**

From training data on stereotypes, unfair treatment, or racism it can lead to that bias getting mixed in.

**Data Breaches**

With how much data is stored, any breach can reveal a ton of information about an individual.

**Connected Systems/Lack of Transparency**

Requests through AI systems based on data could be approved/rejected and unavailable based on trends. Like if police are already dispatched somewhere due to a high crime rate on that day, or garbage trucks in an area where there’s a mess during that time too. Unique requests in areas that may not have much crime or trash could get possibly rejected. These may not always be clear, so people won’t know why their requests are getting rejected or approved.

**Recycle Tracking: California Recycle Fraud**

California implemented refund rewards for recycling, thousands of plastic products and trash was taken from outside California and then turned in for massive profits.

- 5 Cents for containers less than 24 ounces, 10 cents for 24 ounces or larger.

- Over 491 billion bottles were recycled since program started in 1986

- 377 Arrests since 2010

- Recent Case of $7.6 Million scheme from recyclables brought in from Arizona.

- Tracks claims and possible imports, as well as usual inspections to prevent

[Recycling fraud convicts ordered to pay California $140 million for bottle and can smuggling scheme - CalRecycle Home Page](https://calrecycle.ca.gov/2024/02/20/press-release-24-02/#:~:text=CalRecycle%20safeguards%20California's%20Beverage%20Container,with%20377%20arrests%20since%202010.)