SNS COLLEGE OF ENGINEERING

An Autonomous Institution

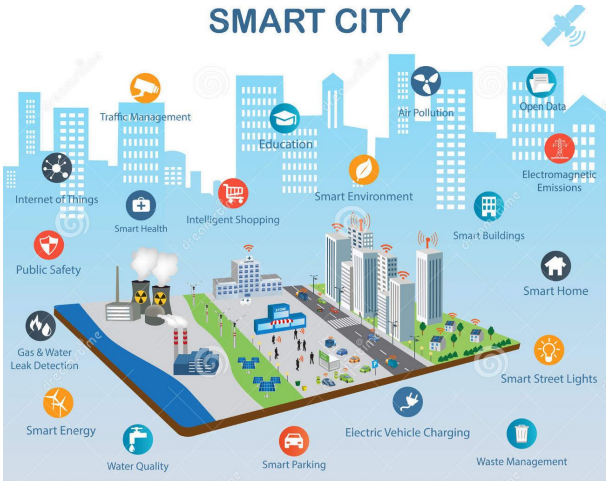
Coimbatore-107

19IT503-INTERNET OF THINGS

UNIT-1 IoT INTRODUCTION AND APPLICATIONS

Topic:6– Applications: City Automation, Automotive Applications and Home Automation

City Automation

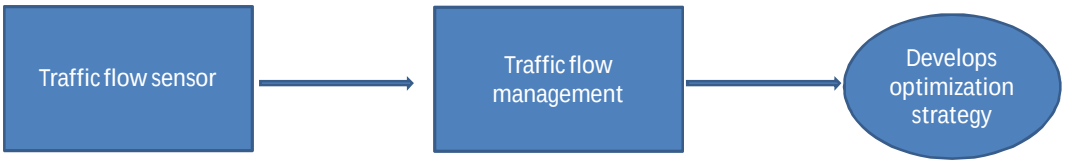


City Automation

- Some applications in this domain include but are not limited to the following:
- Traffic flow management system in combination with dynamic traffic light control
- Street light control
- Passenger information system for public transportation
- Passive surveillance

Traffic flow management system in combination with dynamic traffic light control

- The flow of road traffic within cities depends on a number of factors such as the number of vehicles on the road, the time and the day, the current or expected weather, current traffic issues and accidents, as well as road construction work.



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- The traffic flow management system can also interact with controllable traffic lights to extend or to reduce the green light period to increase the vehicle throughput on heavy used roads.
- Thus enabling cities to reduce fuel consumption, air pollution, congestions, and the time spent on the road

Street Light Control.

- Street lights are not required to shine at the same intensity to accomplish the intended safety goal.
- The intensity may depend on conditions such as moonlight or weather and movement of people.
- Adjusting the intensity helps to reduce the energy consumption and the expenditures incurred by a municipality.

Passenger Information System for Public Transportation.

- Public transportation vehicles, such as busses, subways, and commuter trains, operate on a schedule that may be impacted by external variables and, thus, have a degree of variability compared with a baseline formal schedule.
- Passengers need to know when their next connection is available; this information also allows passengers to select alternative connections in the case of longer delays.

Conti..

- In this application, the current locations of the various public transport vehicles are provided to the central system that is able to match the current location with the forecasted location at each time or at specific checkpoints.
- Based on the time difference, the system is able to calculate the current delay and the expected arrival time at the upcoming stops.
- The vehicle location can be captured via checkpoints on the regular track or via GPS/general packet radio service (GPRS) tracking devices.

Environmental sensors

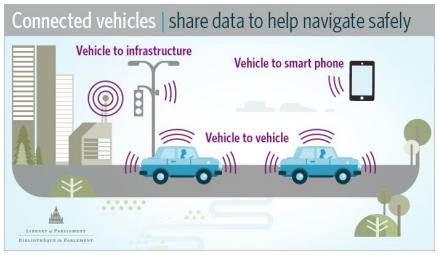
- thermal
- hygrometric
- anemometric
- sound
- gas
- particles
- light,
- other EM spectrum
- seismic

Activity sensors

- – pavement/roadway pressure
- – vehicle and pedestrian detection
- – parking space occupancy

AUTOMOTIVE APPLICATIONS

- M2M automotive and transportation applications focus on safety, security, connected navigation, and other vehicle services such as, but not limited to, insurance or road pricing, emergency assistance, fleet management, electric car charging management, and traffic optimization.



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- These applications typically entail IoT/M2M communication modules that are embedded into the car or the transportation equipment.
- Some of the technical challenges relate to mobility management and environmental hardware considerations.

Applications

- bCall (breakdown call)
- Stolen vehicle tracking (SVT)
- Remote diagnostics
  - Maintenance minder
  - Health check
  - Fault triggered
  - Enhanced bCall
  - Fleet management

- Vehicle-to-infrastructure communications
- Insurance services

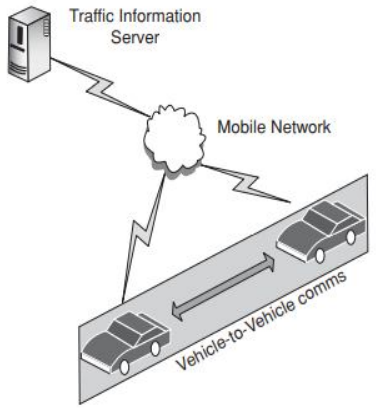


FIGURE Vehicle-to-infrastructure communications.

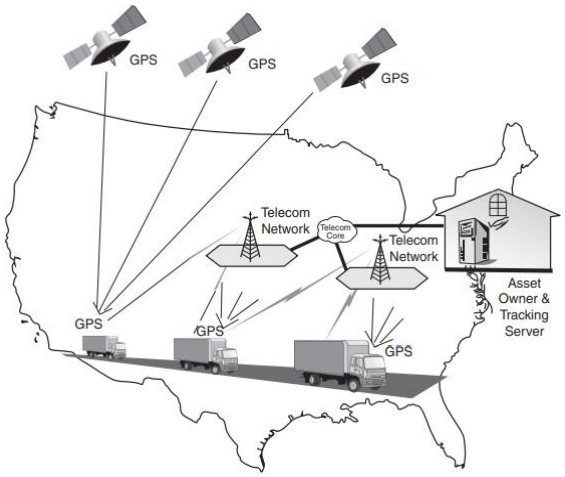
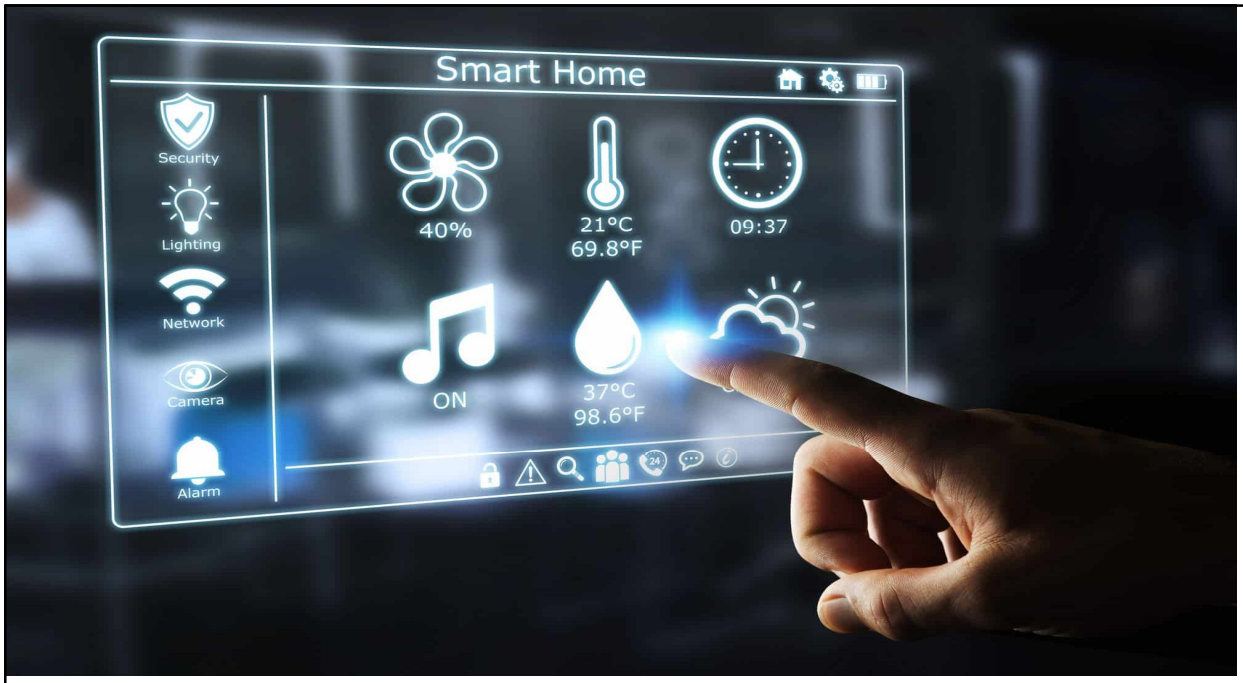


FIGURE Vehicular asset tracking.

HOME AUTOMATION

- Basic applications of the automated home include remote media control, heating control, lighting control (including low power landscape lighting control), and appliance control.
- Smart meters and energy efficiency
- Telehealth
- security and emergency services, Etc

are comes under this home automation category


Smart Home
Security
Lighting
Network
Camera
Alarm
40%
21°C
69.8°F
09:37
ON
37°C
98.6°F


Climate
Security
Lighting
Gadgets
Appliances
HOME CONTROL
21°C
Starter Kits
CONTROL
MODE
Routers

Conti…

- M2M communications is expected to play a major role in residences, where instrumentation of elements supporting daily living such as,
- comfort,
- health,
- security, and
- energy efficiency can improve the quality of life and the quality of experience

Home control applications

- Home control applications include but are not limited to:
- Lighting control
- Thermostat/HVAC
- White goods
- Appliance control
- In-home displays

Home security applications

- Door access phone
- Window locks
- Motion detector
- Smoke/fire alert
- Baby monitors
- Medical pendant

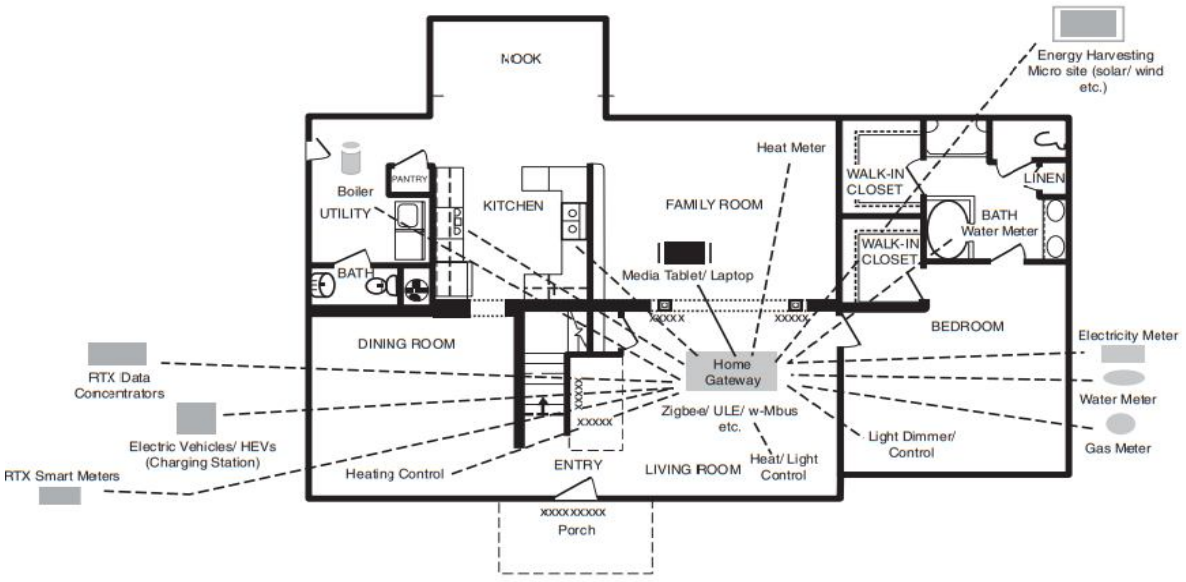


FIGURE Home automation example.

Thank you