What is a Smart City

- There is no single consensus definition of a smart city, but there is some agreement that a smart city is one in which information and communication technology (ICT) facilitates improved insight into and control over the various systems that affect the lives of residents.

A **smart city** is an urban development vision to integrate **information and communication technology** (ICT) and **Internet of Things** (IoT) technology in a secure fashion to manage a city's assets.

*To be fully “smart,” a city must be “connected.”*
Cities across the world are deploying technology to gather data trying to become cleaner, reduce traffic, and improve urban life. Starting with energy management, to disaster preparedness, to public safety, to parking spot assistance, to paying bills online, to facilitate emergency vehicle movement, and much more.

Elements of a Smart City:

- A neighborhood in a smart city:
  - A smart traffic crossing sensitive to traffic volume
  - Synchronized traffic lights for smooth flow
  - Emergency vehicle priority access
Optical Based Traffic Signal Preemption System For Emergency And Transit Vehicles

Connected Transportation

- Connected vehicles and travelers will be able to share data with all sorts of equipment, and be able to procure mobility as a service, whenever wherever.
Vancouver Can Do This

Stockholm City Traffic Management

The system allows buses that are more than a minute behind schedule to automatically receive priority at traffic lights
US Deployment: Smart Lamppost with Camera

Camera provides surveillance and locates empty parking spaces

Smart Trash Can in Baltimore, USA

Reduces the number of times a trash can needs to be emptied.
Smart Trash Can in Stockholm, Sweden

Regular trash cans need to be emptied 1–3 times per day. Smart ones only need to be emptied four times a week.

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Yokohama, Japan Smart City Demonstration

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A Building Energy Management Platform

- HVAC
- Lighting loads
- Plug loads
- Sensors/power meters
- Water meters
- PV & storage
- Security camera

Source: www.bemcontrols.com

Smart Cities in India (60)

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What is Normal  The New Normal

Synergy

IEEE Smart Cities

Synergy

IEEE Smart Village
Power a Village, Empower Community
Smart/Connected City

- A smart/connected city is a system of interconnected systems including:
  - Employment
  - Health care
  - Retail/entertainment
  - Public services
  - Residences
  - Energy distribution
  - Transportation

- The system of systems is tied together by information and communications technologies (ICT) that transmit and process data about all sorts of activities within the city.

Introducing Technology

- Enables light after sunset using solar micro-grids
- Illuminates kitchens, schools and clinics
- Lets communities live cleaner, safer, and more prosperous lives
- Stimulates local commerce and builds new enterprises
Solar Nanogrid in Bangladesh

ICT-based power meter and bill payment using smart phones

Expanding Education

- Creating a network of engineers, entrepreneurs, and practitioners
- Facilitating ongoing learning and mentorship for continued success
- Innovative Global Classroom helps people around the world access the internet and educational resources
IEEE Smart Village Success Story
Global Himalayan Expedition, India

Lingshed Monastery – Ladakh Region, Indian Himalayas – Elevation 12,000 feet.
Founded in 1440
Illuminated with IEEE Smart Village in 2016
Global Himalayan Expedition

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Villagers working with LED Lights

Loads served by roof-top Solar Photovoltaics
Locally Driven Initiatives

- Development of local technicians and entrepreneurs at the grass-roots level:
  To create local stakeholder for promoting, installing and providing efficient after-sales service of the technologies.

- Local capacity development and creation of green jobs:
  Local entrepreneurs, especially women are offered financial and technical assistance to set-up a renewable energy technology business.

Ownership by Citizens

Source: Grameen Shakti, Bangladesh
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Life Changing Experience

“The customers love coming to my shop, now that I have bright light. “They can see what they are buying and what I have in stock. And they can watch television and charge mobile phones. My sales have gone up by at least 50.”

Children’s Library in a Boat with Solar-powered Light

Source: Grameen Shakti, Bangladesh

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The Connected City Village

A connected city village is one where all relevant city village systems— utilities, transportation, employment, health care, public safety, education, and others—are capable of communicating with each other to allow coordination and reduce waste.
Thank You

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