Smart City Dehradun

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***Abstract*:- During the latest years,smart city and digital city have been recurring topics,specially after 2010. Smart city development is used like strategy to improve the quality in the cities.sss This prentation examines the governance of infrastructure interdependencies is unfolding within cities in the UK. Our aim is too develop the city into the form of smart city. This would involve examining the type of interaction between three critical infrastructure sectors : Electricity,ICT and transport. Their future integration is a prerequisite for the development of smart grid,smart cities and electrical vehicle. Smart cities depend on smart grids to enable coordination between local authorities,infrastructure operators,those responsible for public safety and the public.**

INTRODUCTION

The Smart Cities project is creating an innovation network between governments and academic partners that is leading to excellence in the development and take-up of e-services and e-government, and which is setting new standards for e-service delivery .

All of the government partners are leading cities and regions with considerable experience in developing and delivering e-Government. Project partners want to improve their e-service-delivery by rethinking the basics of service delivery, by changing their innovation methodology, by transferring their best practices to other project partners, and by engaging with academic and research partners from the very beginning of this process.

OBJECTIVE

Once you have planned your project, turn your attention to developing several goals that will enable you to be successful. Goals should be SMART - specific, measurable, agreed upon, realistic and time-based.

A goal might be to hold a weekly project meeting with the key members of your team or to organise and run a continuous test programme throughout the project.

The acronym SMART has several slightly different variations, which can be used to provide a more comprehensive definition of goal setting:

S - specific, significant, stretching
M - measurable, meaningful, motivational
A - agreed upon, attainable, achievable, acceptable, action-oriented
R - realistic, relevant, reasonable, rewarding, results-oriented
T - time-based, time-bound, timely, tangible, trackable

CONCEPT OF PLASTIC ROAD

CONCEPT OF UTILISATION OF WASTE PLASTIC IN BITUMINOUS MIXES FOR ROAD CONSTRUCTION

This Concept of Utilization of Waste Plastic in Bituminous Mixes for Road Construction has been done since 2000 in India.

CONCEPT OF GEOSYNTHETICS

In times past, various types of materials have been added to soil in order to increase its stability, for use as an engineering construction material. But these materials such as plant fibres, wood shavings and cotton are bio-degradable and therefore have short service life. In only a few decades, geo synthetics (geo textiles, geo grids, and geo membranes) have joined the list of traditional civil engineering construction materials.

CONCEPT OF SOLAR PANELS

The state government has also come up with subsidies to urge people to use solar panels at their homes. It has also come up with a net metering concept. Under this concept, if production of power from a household will be more than consumption, then the surplus power will be supplied to grid. It will be supplied back from the grid at the time of requirement and the difference will be calculated in the final bill. Net metering has been a successful concept in Germany, where the 90 percent of solar power supply comes from roof tops.

CONCEPT OF SMART PARKING

A. ***Optimise parking space usage, improve the efficiency of your parking operations and help traffic in your city flow more freely with the next generation of smart parking. On-street parking.Smart Parking Limited (ASX:SPZ) technology ensures local authorities maximise efficiency, cut costs and increase revenues for street parking***

CONCEPT OF METRO

The major advantage of all these systems is their ability to move large numbers of people quickly. Obviously, the actual number of passengers moved will vary according to the frequency of the service and the number of coaches in each train.

Irrespective of which system you talk about if all their passengers had to find alternative transport the result (particularly in London) would be chaos. The roads would be the only alternative and they are already full, trying to put the people from trains onto those roads in simply

impossible. In fact, the various rail-borne systems in London are faster than using the equivalent road.

WHAT IS A SMART CITY

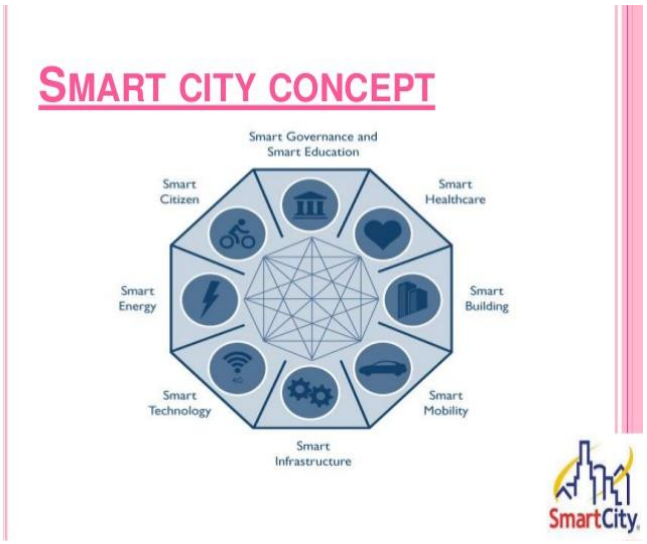
A **city** can be **defined** as '**smart**' when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement.

A 'smart city' is an urban region that is highly advanced in terms of overall infrastructure, **sustainable** real estate, communications and market viability. It is a city where information technology is the principal infrastructure and the basis for providing essential services to 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. These assets include local departments' information systems, schools, libraries, transportation systems, hospitals, power plants, water supply networks, waste management, law enforcement, and other community services.
Information and communication technology (ICT) is used to enhance quality, performance and interactivity of urban services, to reduce costs and resource consumption and to improve contact between citizens and government.

CONCEPT

The core infrastructure elements in a Smart City would include:



i. Adequate watr supply
ii. Assured electricity supply,
iii. sanitation, including solid waste management iv. efficient urban mobility and public transport,
v. affordable housing, especially for the poor,
vi. robust IT connectivity and digitalization,
vii. good governance, especially e-Governance and citizen participation,
viii. sustainable environment
, ix. safety and security of citizens, particularly women, children and the elderly, and x.
health and education.

The origin

The concept of smart cities originated at the time when the entire world was facing one of the worst economic crises. In 2008, IBM began work on a 'smarter cities' concept as part of its Smarter Planet initiative.

By the beginning of 2009, the concept had captivated the imagination of various nations across the globe.

Countries like South Korea, UAE and China began to invest heavily into their research and formation.

Today, a number of excellent precedents exist that India can emulate, such as those in Vienna, Aarhus, Amsterdam, Cairo, Lyon, Málaga, Malta, the Songdo International Business District near Seoul, Verona etc.

In India

The cities with ongoing or proposed smart cities include Kochi in Kerala, Ahmedabad in Gujarat, Aurangabad in Maharashtra, Manesar in Delhi NCR, Khushkera in Rajasthan, Krishnapatnam in Andhra Pradesh, Ponneri in Tamil Nadu and Tumkur in Karnataka.

Many of these cities will include special investment regions or special economic zones with modified regulations and tax structures to make it attractive for foreign investment.

This is essential because much of the funding for these projects will have to come from private developers and from abroad.

FEATURES OF SMART CITY

- Smart parking
- Intelligence transport system
- Traffic management
- Smart grid
- Smart lightning(solar)
- Waste water treatment
- Smart city maintenance
- Green environment

SMART CITY BUDGET

In the 2015-16 budget session the finance minister of india Mr. Arjun jaitely is allotted the 7,060 crores of rupees for the 100 smart cities. The Indian Prime Minister Mr. Narendra Modi is going to develop the 100 smart cities as Satellite Towns of larger Cities by modernizing the present cities.

Smart Cities Awas Yojna Mission was launched by Prime Minister Narendra Modi in June 2015.A total of 980 billion (US$15 billion) has been approved by the Indian Cabinet for development of 100 smart cities and rejuvenation of 500 others. 48,000 crore (US$7.5 billion) for the Smart Cities

mission and a total funding of ₹50,000 crore (US$7.8 billion) for the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) has been approved by the Cabinet.[2][3]

In the 2014 Union budget of India, Finance Minister Arun Jaitley allocated ₹7,016 crore (US$1.1 billion) for the 150 smart cities. However, only ₹9.24 billion (US$140 million) could be spent out of the allocated amount till February 2015. Hence, the 2015 Union budget of India allocated only 1.43 billion (US$22 million) for the project.

First batch of 20 cities selected in the second stage of competition will be provided with central assistance of 2 billion each during this financial year followed by 1 billion (US$16 million) per year during the next three years. The remaining money has to come from the states, urban bodies and the consortium that they form with corporate entities.Urban Development Ministry had earlier released ₹2 crore (US$310,000) each to mission cities for preparation of Smart City Plans.

TOP 10 SMART CITIES IN WORLD

- Vienna
- Toronto
- Paris
- New York
- London
- Tokyo
- Berlin
- Cpoenhagen
- Hong kong
- Barcelona

Taking a leaf from a concept implemented in neighbouring state Himachal Pradesh, the Dehradun Municipal Corporation (DMC) is mulling the possibility of putting to use plastic waste generated here for tarring roads and to rid the state capital of polythene menace. The practice involves mixing and melting of shredded plastic with bitumen (mixture used for road surfacing) to make relatively stronger and cost-effective road surfaces.

City mayor Vinod Chamoli has asked DMC officials to identify a patch of road in the city to test the viability of using plastic to tar roads. “I have asked the officials to select a road to check the feasibility of such a project on a pilot basis,” Chamoli told HT, adding that the test would be conducted after the monsoons.

In June, additional secretary Rakesh Kapoor, Himachal Pradesh government, had given a presentation to district administration and civic authorities on sustainable plastic waste management in HP where over 350 km of roads have been successfully tarred using plastic. The project has also won the Prime Minister’s Award for the State under Good Governance Practices.

Dehradun produces around 300 metric tons of garbage per day, of which at least 15% is said to be plastic waste. Poor implementation of the polythene ban at the city-level has only made the matters worse. “If we find the concept suitable for us, we will be able to put the plastic waste to some good use,” the mayor said, adding that agencies like the public works department will also be engaged in the testing.

The concept

According to ‘Sustainable Plastic Waste Management in Himachal Pradesh’ report, plastic waste is first collected and segregated followed by its shredding and subsequent mixing with bitumen, after which the mixture is heated to temperatures up to 160 degree Celsius.

Approximately one ton of plastic waste is used in tarring one kilometre of road, replacing 10% of bitumen in the process. Benefits

Tar mixed bitumen roads are said to have more strength and longevity than conventional bitumen roads with comparatively lesser wear and tear, especially during monsoons, said Kapoor.

“It also saves over `40,000 per km (by replacing bitumen with plastic),” Kapoor told HT, adding that consumption of plastic will also prevent frequent choking of drains in Doon caused by clogged polythene bags.

Eco-friendly move

Experts are looking forward to the testing and subsequent implementation of the eco-friendly concept in Doon. Waste management expert and co-founder of Waste Warriors organization Jodie Underhill said using plastic to make roads should be made ‘mandatory’ across the country as it would provide a solution for non-recyclable plastic.

Rajendra Singh Gusain, a consultant civil engineer based in Dehradun, said using plastic with tar tends to increase the resistance of roads to heavy rainfall and water stagnation. “Increased durability will prevent the frequent wearing and tearing of roads,” he said

Geosynthetics material(Use of Jute Geotextiles in Road Construction)

Geosynthetics are synthetic products used to stabilize terrain. They are generally polymeric products used to solve civil engineering problems.
This includes eight main product categories: geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners, geofoam, geocells and geocomposites. The polymeric nature of the products makes them suitable for use in the ground where high levels of durability are required.
They can also be used in exposed applications. Geosynthetics are available in a wide range of forms and materials.
These products have a wide range of applications and are currently used in many civil, geotechnical, transportation, geoenvironmental, hydraulic, and private development applications including roads, airfields, railroads, embankments, retaining structures, reservoirs, canals, dams, erosion control, sediment control, landfill liners, landfill covers, mining, aquaculture and agriculture.

- **Use of Jute Geotextiles in Road Construction**

  India is a large producer of jute. Jute is a low cost, renewable, biodegradable and eco-friendly natural product. Jute geotextiles are used in many geotechnical applications. A series of field experiments were carried out by CRRI using jute geotextiles for different functions, are described as follows: –

  Jute Geotextiles as Separator to Improve Pavement Performance

  The performance of pavements constructed on soft soils can be improved using jute geotextiles. Jute fabric when used as separator prevents the penetration of subgrade material into voids of granular base course. The permeability characteristic of the fabric also aids in faster dissipation of pore pressures and ensures better drainage which results in better long term performance of the pavement. Provision of fabric enables subgrade develops its full bearing capacity and thus controls rutting. Jute geotextile was used as a separator between subgrade and sub-base layers. Results showed negligible settlements of the pavement after six months under traffic and no signs of surface distress observed in the treated test section.

- **Jute Geotextiles for Ground Improvement**

  The field subsoil was soft silty clay and the water table was 0.5 m below the ground level, the whole area gets submerged during high tide. The highway constructed earlier faced problems of subsidence of the fill during construction, excessive post construction settlements and lateral spreading of fill material, etc. On the basis of settlement calculations, it was estimated that as much as 30 per cent of the fill sinks into the soft subsoil during construction itself, necessitating large quantities of costly fill material,thereby, pushing up the cost of construction. The problem was solved through the use of jute geotextiles. Monitoring of completed embankment i.e. both treated and control stretch showed better performance of road embankment constructed using jute geotextile.

- **Jute Geogrid for Erosion Control of Denuded Slopes**

  On the basis of field studies, conducted in the past by CRRI, it has been concluded that shallow sacrificial slides constitute a significant proportion of landslides in areas with moderate rainfall intensity and where soil cover is medium cohesive in nature. Surfacial slides extend to only a couple of metres below the slope surface and originate as a result of erosion from down flowing water over the denuded slopes. If erosion is allowed to proceed unchecked, there is every possibility that the damage may spread laterally thus increasing the depth of erosion, eventually resulting in a much larger damaged slope area. Vegetative turfing represents one of the most important corrective measures. In the case of freshly exposed cutting made for road construction, vegetative turfing is important, even as a preventive measure. In the case of deep-seated slides, however, vegetative turfing is only one of the techniques among available corrective measures and as such it can prove to be effective only when conjointly implemented with other corrective measures. Based on several field trials carried out by the Institute, the use of jute geogrid technique has been developed for treatment of erodible slopes as a part of landslide correction works.

- **Jute Geotextile for Drainage and Filtration Application**

  The field conditions were the stretch of hill road was located on debris slide area and debris consists of micacious sandy silt. A number of seepage points exist on the uphi ll as well as on downhill slopes. The road stretch was experiencing subsidence during the monsoon every year, including damages to the restraining structures. Breast walls constructed earlier had been damaged due to slip. To arrest the sinking of road pavement, a systematic network of roadside trench drains and cross trench drains were constructed using non-woven jute geotextiles. The trench drains were made of rubbles encapsulated in non-woven jute geotextiles to stop the finer particle entering into the voids of encapsulated rubbles, thereby preventing clogging the trench drains. The monitoring of field experiments on this particular stretch of treated road has shown very encouraging and satisfactory results.There has been no further sinking and subsidence of the road at this location after three years.

Types of geosynthetic maerial

1) Geotextiles

Geotextiles form one of the two largest groups of geosynthetics. They are textiles consisting of synthetic fibers rather than natural ones such as cotton, wool, or silk. This makes them less susceptible to bio-degradation. These synthetic fibers are made into flexible, porous fabrics by standard weaving machinery or are matted together in a random non woven manner. Some are also knitted. Geotextiles are porous to liquid flow across their manufactured plane and also within their thickness, but to a widely varying degree. There are at least 100 specific application areas for geotextiles that have been developed; however, the fabric always performs at least one of four discrete functions: separation, reinforcement, filtration, and/or drainage.

2) Geogrids

Geogrids represent a rapidly growing segment within geosynthetics. Rather than being a woven, nonwoven or knitted textile fabric, geogrids are polymers formed into a very open, gridlike configuration, i.e., they have large apertures between individual ribs in the transverse and longitudinal directions. Geogrids are (a) either stretched in one, two or three directions for improved physical properties, (b) made on weaving or knitting machinery by standard textile manufacturing methods, or (c) by laser or ultrasonically bonding rods or straps together. There are many specific application areas; however, geogrids function almost exclusively as reinforcement materials.

- *Geonets/Geospacers*

Geonets, and the related *geospacers* by some, constitute another specialized segment within the geosynthetics area. They are formed by a continuous extrusion of parallel sets of polymeric ribs at acute angles to one another. When the ribs are opened, relatively large apertures are formed into a netlike configuration. Two types are most common, either biplanar or triplanar. Alternatively many very different types of drainage cores are available. They consist of nubbed, dimpled or cuspated polymer sheets, three-dimensional networks of stiff polymer fibers in different configurations and small drainage pipes or spacers within geotextiles. Their design function is completely within the drainage area where they are used to convey liquids or gases of all types.

- *Geomembranes*

Geomembranes represent the other largest group of geosynthetics, and in dollar volume their sales are greater than that of geotextiles. Their growth in the United States and Germany was stimulated by governmental regulations originally enacted in the early 1980s for the lining of solid-waste landfills. The materials themselves are relatively thin, impervious sheets of polymeric material used primarily for linings and covers of liquids- or solid-storage facilities. This includes all types of landfills, surface impoundments, canals, and other containment facilities. Thus the primary function is always containment as a liquid or vapor barrier or both. The range of applications, however, is great, and in addition to the environmental area, applications are rapidly growing in geotechnical, transportation, hydraulic, and private development engineering (such as aquaculture, agriculture, heap leach mining, etc.).

- *Geosynthetic clay liners*

Geosynthetic clay liners, or GCLs, are an interesting juxtaposition of polymeric materials and natural soils. They are rolls of factory fabricated thin layers of bentonite clay sandwiched between two geotextiles or bonded to a geomembrane. Structural integrity of the subsequent composite is obtained by needle-punching, stitching or

adhesive bonding. GCLs are used as a composite component beneath a geomembrane or by themselves in geoenvironmental and containment applications as well as in transportation, geotechnical, hydraulic, and many private development applications.

Geofoam

Geofoam is a product created by a polymeric expansion process of polystyrene resulting in a "foam" consisting of many closed, but gas-filled, cells. The skeletal nature of the cell walls is the unexpanded polymeric material. The resulting product is generally in the form of large, but extremely light, blocks which are stacked side-by-side providing lightweight fill in numerous applications.

3)

4) Geocells

Geocells (also known as Cellular Confinement Systems) are three-dimensional honeycombed cellular structures that form a confinement system when infilled with compacted soil. Extruded from polymeric materials into strips welded together ultrasonically in series, the strips are expanded to form the stiff (and typically textured and perforated) walls of a flexible 3D cellular mattress. Infilled with soil, a new composite entity is created from the cell-soil interactions. The cellular confinement reduces the lateral movement of soil particles, thereby maintaining compaction and forms a stiffened mattress that distributes loads over a wider area. Traditionally used in slope protection and earth retention applications, geocells made from advanced polymers are being increasingly adopted for long-term road and rail load support. Much larger geocells are also made from stiff geotextiles sewn into similar, but larger, unit cells that are used for protection bunkers and walls.

Geocomposites

A geocomposite consists of a combination of geotextiles, geogrids, geonets and/or geomembranes in a factory fabricated unit. Also, any one of these four materials can be combined with another synthetic material (e.g., deformed plastic sheets or steel cables) or even with soil. As examples, a geonet or geospacer with geotextiles on both surfaces and a GCL consisting of a geotextile/bentonite/geotextile sandwich are both geocomposites. This specific category brings out the best creative efforts of the engineer and manufacturer. The application areas are numerous and constantly growing. The major functions encompass the entire range of functions listed for geosynthetics discussed previously: separation, reinforcement, filtration, drainage, and containment.

Geosynthetics are generally designed for a particular application by considering the primary function that can be provided. As seen in the accompanying table there are five primary functions given, but some groups suggest even more.

- **Separation** is the placement of a flexible geosynthetic material, like a porous geotextile, between dissimilar materials so that the integrity and functioning of both materials can remain intact or even be improved. Paved roads, unpaved roads, and railroad bases are common applications. Also, the use of thick nonwoven geotextiles for cushioning and protection of geomembranes is in this category. In addition, for most applications of geofoam and geocells, separation is the major function.

- **Reinforcement** is the synergistic improvement of a total system's strength created by the introduction of a geotextile, geogrid or geocell (all of which are good in tension) into a soil (that is good in compression, but poor in tension) or other disjointed and separated material.

- Applications of this function are in mechanically stabilized and retained earth walls and steep soil slopes; they can be combined with masonry facings to create vertical retaining walls. Also involved is the application of basal reinforcement over soft soils and over deep foundations for embankments and heavy surface loadings.

- Stiff polymer geogrids and geocells do not have to be held in tension to provide soil reinforcement, unlike geotextiles. Stiff 2D geogrid and 3D geocells interlock with the aggregate particles and the reinforcement mechanism is one of confinement of the aggregate.

- The resulting mechanically stabilized aggregate layer exhibits improved loadbearing performance.

- Stiff polymer geogrids, with very open apertures, in addition to three-dimensional geocells made from various polymers are also increasingly specified in unpaved and paved roadways, load platforms and railway ballast, where the improved loadbearing characteristics significantly reduce the requirements

for high quality, imported aggregate fills, thus reducing the carbon footprint of the construction.

Filtration is the equilibrium soil-to-geotextile interaction that allows for adequate liquid flow without soil loss, across the plane of the geotextile over a service lifetime compatible with the application under consideration. Filtration applications are highway underdrain systems, retaining wall drainage, landfill leachate collection systems, as silt fences and curtains, and as flexible forms for bags, tubes and containers.

Drainage is the equilibrium soil-to-geosynthetic system that allows for adequate liquid flow without soil loss, within the plane of the geosynthetic over a service lifetime compatible with the application under consideration. Geopipe highlights this function, and also geonets, geocomposites and very thick geotextiles. Drainage applications for these different geosynthetics are retaining walls, sport fields, dams, canals, reservoirs, and capillary breaks. Also to be noted is that sheet, edge and wick drains are geocomposites used for various soil and rock drainage situations.

Containment involves geomembranes, geosynthetic clay liners, or some geocomposites which function as liquid or gas barriers. Landfill liners and covers make critical use of these geosynthetics. All hydraulic applications (tunnels, dams, canals, surface impoundments, and floating covers) use these geosynthetics as well.

Advantages

The manufactured quality control of geosynthetics in a controlled factory environment is a great advantage over outdoor soil and rock construction. Most factories are ISO 9000 certified and have their own in-house quality programs as well.

- The low thickness of geosynthetics, as compared to their natural soil counterparts, is an advantage insofar as light weight on the subgrade, less airspace used, and avoidance of quarried sand, gravel, and clay soil materials.
- The ease of geosynthetic installation is significant in comparison to thick soil layers (sands, gravels, or clays) requiring large earthmoving equipment.
- Published standards (test methods, guides, and specifications) are well advanced in standards-setting organizations like ISO, ASTM, and GSI.
- Design methods are currently available from many publication sources as well as universities which teach stand-alone courses in geosynthetics or have integrated geosynthetics in traditional geotechnical, geoenvironmental, and hydraulic engineering courses.
- When comparing geosynthetic designs to alternative natural soil designs there are usually cost advantages and invariably sustainability (lower CO_2 footprint) advantages.

SOLAR PANEL

Solar panels absorb the sunlight as a source of energy to generate electricity or heat.

A photovoltaic (PV) module is a packaged, connect assembly of typically 6x10 photovoltaic solar cells.

Photovoltaic modules constitute the photovoltaic array of a photovoltaic system that generates and supplies solar electricity in commercial and residential applications.

Each module is rated by its DC output power under standard test conditions (STC), and typically ranges from 100 to 365 Watts (W). The efficiency of a module determines the area of a module given the same rated output – an 8% efficient 230 W module will have twice the area of a 16% efficient 230 W module. There are a few commercially available solar modules that exceed efficiency of 22%and reportedly also exceeding 24%.

A single solar module can produce only a limited amount of power; most installations contain multiple modules.

A photovoltaic system typically includes an array of photovoltaic modules, an inverter, a battery pack for storage, interconnection wiring, and optionally a solar tracking mechanism.

The most common application of solar panels is solar water heating systems.

The price of solar power has continued to fall so that in many countries it is cheaper than ordinary fossil fuel electricity from the grid (there is "grid parity").

SOLAR POWER

Solar power is the conversion of energy from sunlight into electricity, either directly using photovoltaics (PV), or indirectly using concentrated solar power. Concentrated solar power systems use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the photovoltaic effect.

The International Energy Agency projected in 2014 that under its "high renewables" scenario, by 2050, solar photovoltaics and concentrated solar power would contribute about 16 and 11 percent, respectively, of the worldwide electricity consumption, and solar would be the world's largest source of electricity. Most solar installations would be in China and India.

SOLAR PANEL

SMART PARKING

A truly smart parking system should not only be aware of the occupancy status of each parking space, but also be able to guide the user to it. All of this should happen with no human intervention. A smart solution would have the following parts:

Occupancy sensors

As mentioned before each parking space should be taken into account by the system. Multiple types of sensors can be used for this work. However, the accuracy of the sensors cannot be compromised upon, a minimum number of false positives is a must. As the number of sensors increases their cost will reduce drastically. When the status of the sensors changes they will report it to a gateway device.

5) Gateway devices

These gateway devices will be used to collect the status from the sensors and then send them to the server. The gateways will work on wireless technology to transmit the status. A single gateway device will be used to collect the readings of multiple sensors. A single gateway fetching the status of up to 500 sensors will be considered as a good solution.

TRAFFIC MANAGEMENT

Current methods for controlling traffic, specifically at intersections, will not be able to take advantage of the increased sensitivity and precision of autonomous vehicles as compared to human drivers. K. Dresner[3] describe an autonomoud intersection management system.Drivers and intersections in this mechanism are treated as autonomous agents in a multiagent system. In this multiagent system, intersections use a new reservation-based approach built around a detailed communication protocol. Demonstrate in simulation that new mechanism has the potential to significantly outperform current intersectioncontrol technology—traffic lights and stop signs. It subsumes the most popular current methods of intersection control. the basis of the city population and the growth rate of the overall urban population in the country.Globally, more people live in urban areas than in rural areas.Levels of urbanization vary greatly acrossregions.

Most megacities and large citiesare located in the global South. One in five urban dwellers worldwide lives in a medium-sized city with 1 million to 5 million inhabitants.Some cities have experienced population decline since 2000, most of which are located in low-fertility countries of Asia and Europe with stagnating or declining populations.Diversified policies to plan for and manage the spatial distribution of the population and internal migration are needed.Policies aimed at a more balanced distribution of urban growth.

SMART TRAFFIC LIGHT

Smart traffic lights or **Intelligent traffic lights** are a vehicle traffic control system that combines traditional traffic lights with an array of sensors and artificial intelligence to intelligently route vehicle and pedestrian traffic. A technology for smart traffic signals has been developed at Carnegie Mellon University and is being used in a pilot project in Pittsburgh in an effort to reduce vehicle emissions in the city. Unlike other dynamic control signals that adjust the timing and phasing of lights according to limits that are set in controller programming, this system combines existing technology with artificial intelligence.

The signals communicate with each other and adapt to changing traffic conditions to reduce the amount of time that cars spend idling. Using fiber optic video receivers similar to those already employed in dynamic control systems, the new technology monitors vehicle numbers and makes changes in real time to avoid congestion wherever possible. Initial results from the pilot study are encouraging: the amount of time that motorists spent idling at lights was reduced by 40% and travel times across the city were reduced by 26%.

TRAFFIC CONJECTION SOLUTION : FLYOVER

FLYOVER AT BALLUPUR CHAWK

The ***Flyover*** Construction Project is being carried out to ease traffic congestion in the city. It has a six month maximum time frame due to an upcoming international summit being held in the city (Liverpool DQ 2010). For the duration of the main construction process, the route would be closed down and another route would be found for commuters to help keep them safe from construction hazards, and at the same time help to speed up the project since the commuters would no longer be an obstacle.

METRO PROJECT IN DEHRADUN

II. METRO PROJECT LINKING ROORKEE, HARIDWAR, RISHIKESH, DEHRADUN WOULD BE SOON

Chief Minister Harish Rawat today said the ambitious **metro project** linking four cities would soon be a reality and commuters would be pleased to use this modern transport facility from Roorkee, Haridwar, Rishikesh to Dehradun.

He stated this at the Jail Yatra Sammelan organised in the memory Congress veterans who were imprisoned from 1977 to 1980 for taking part in the agitation against then the Janta Party government.

Rawat recalled the 1977 to 1980 Congress agitation led by Indira Gandhi against the Janta Party-led Union government and the historic rally addressed by her at the Jwalapur Inter College ground in Haridwar four decades ago. More than 3,000 party workers attended the rally.

The Chief Minister said Prime Minister Narendra Modi had failed to live up to the expectations of the people. “Rising inflation, poverty, communal harmony to foreign policy, the Narendra Modi-led BJP government has been found wanting on all fronts.

Now, people are waiting to teach the BJP a lesson in the upcoming Assembly elections in Uttar Pradesh and Uttarakhand,” said Rawat.Former legislator Ambrish Kumar, convener of the felicitation ceremony, said Indira Gandhi had brought the Congress back to power at the Centre from Haridwar only and today Harish Rawat was on the way to repeat the feat”.

Former municipal chairperson Satpal Brahamchari, party leaders Kiran Singh, Chaudhari Rajendra Singh, Murali Manohar, Tosh Jain, Monika Jain, Poonam Bhagat along with district party office-bearers were present.

Earlier, the Chief Minister presided over a convention of the District Mahanagar Congress booth-level party workers at Jwalapur. Along with Pradesh Congress Committee chairperson Kishore Upadhyay, former Union minister Suresh Pachauri, Harish Rawat gave booth management tips to the party workers and boosted their morale.

Rawat said grass-roots workers were vital to the party’s electoral success. Upadhyay said booth-level management was being given major focus in all 70 Assembly segments.

Mahanagar unit president Anshul Shrikunj, PCC general secretary OP Chauhan, PCC vice-president Dr Santosh Chauhan, senior party district leaders Poonam Bhagat, Rajbeer Chauhan, Naeem Qureshi, BS Tejiyan, Mahesh Pratap Rana, Ashish Chaudhari, Yashwant Saini, Kailash Pradhan, Tarun Nayyar, Ashok Upadhyay, Bharat Taneja, Rao Affaq Ali, Sunil Arora, Ambika Pandey and Laxman Pundir attended the meeting.

Later the Chief Minister reached Gautam Farm at Kankhal to attend the 93rd Chaturmas Prakotsava religious function of Jagad Guru Shankaracharya Swarupanand Saraswati Maharaj.

CONCLUSION

The term smart city has attracted a lot of attention in recent years. Since the end of the last century many cities have initiated smart city initiatives.

A useful definition to start to call a city "smart" is when "investments in human and social capital and traditional (transportation) and modern (ICT) infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory government"