LOCUS 2018

LOCUS 2018 THEME DRAFT

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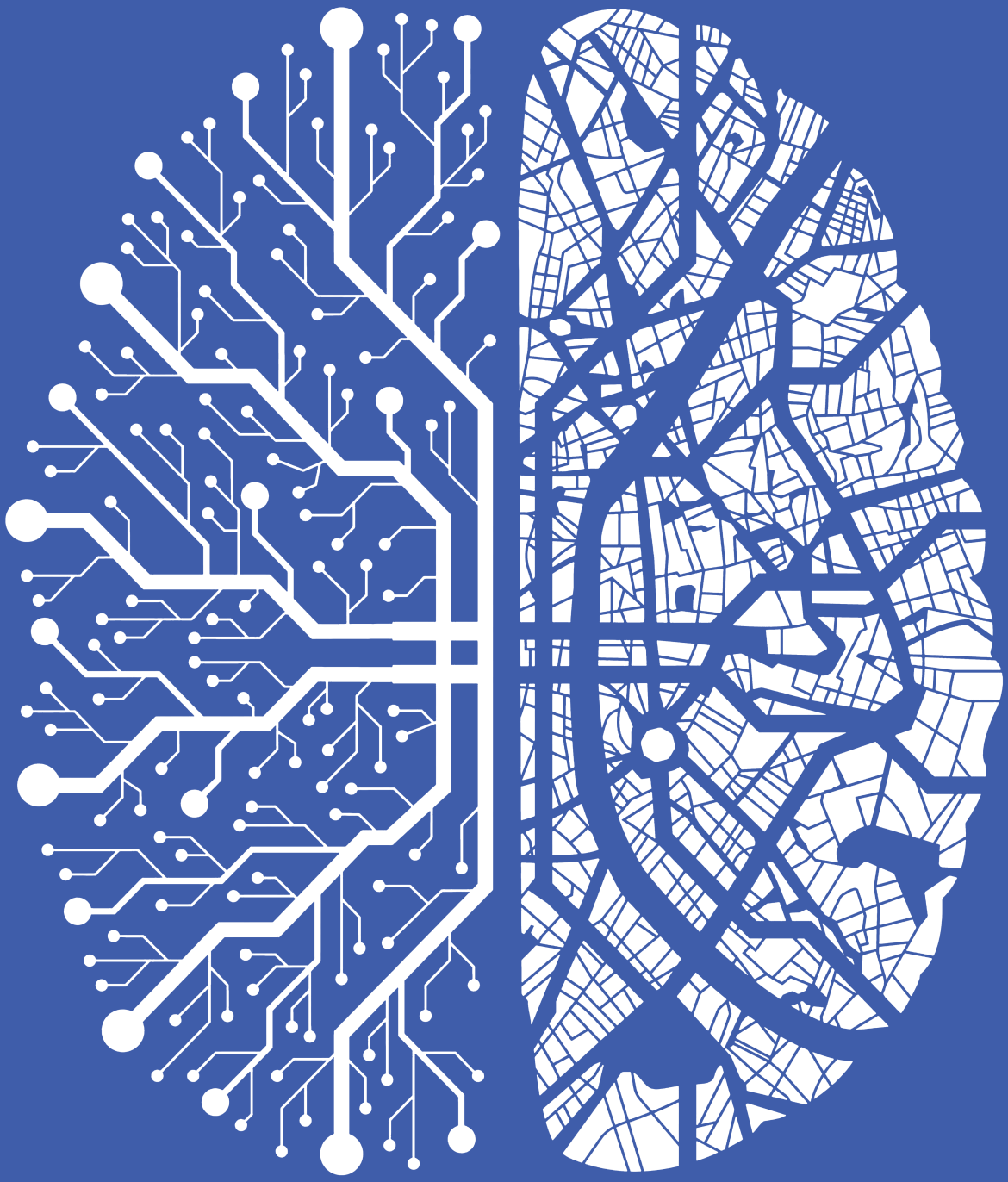

Smart City

Using Information, Communication and Technology

What is **Smart City**?

At the age of smartphones and internet, smart city can be put into words as an urban area which uses different electronic devices and sensors to collect and retrieve information used to manage assets and resources effectively. People are connected with each other via internet or communication lines. They receive different kinds of services both from government associated authorities and private sectors through internet. Smart cities are implementing concepts of e-commerce, e-governance, e-learning etc. to improve fundamental aspects of living like health, commodities, services, education etc.

The concept of smart city covers numerous sectors. LOCUS 2018 has decided to make its theme

"Smart City: Information and Technology"

to focus on the technological aspect of the concept.

Concept of smart city varies from people to people, country to country and depends on the level of development, willingness to change and reform, available resources and aspirations of the city residents. In 20th and 21st century, smart cities are those which have implemented state of art technologies in a manner that positively impacts the community and improves the lifestyle of people. As technology is changing rapidly who knows what these benchmarks be after 10 or 15 years. Fields such as artificial intelligence, robotics, alternative energy solutions, internet of things are developing so fast that, they may be a necessity for smartness of the city in near future.

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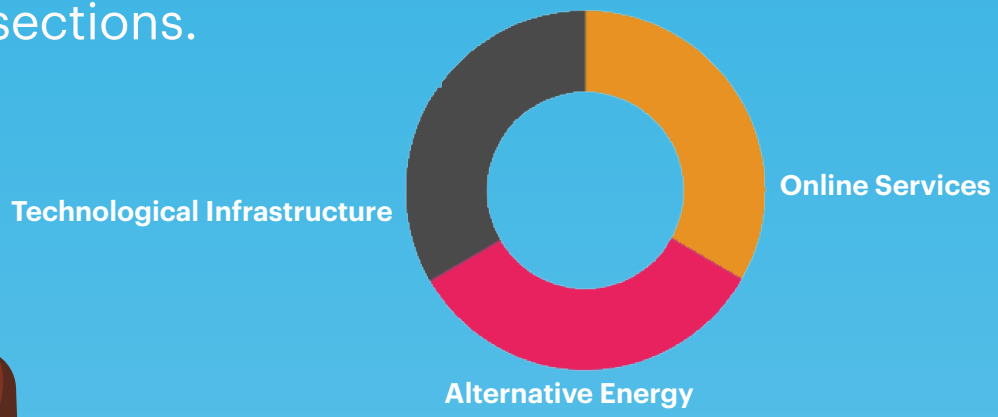
1. Technological Infrastructure

We have categorized the theme into three sections.



It includes the facilities of communication, computing, data collection etc. It ensures the collection, computation and delivery of information from different sectors to public.

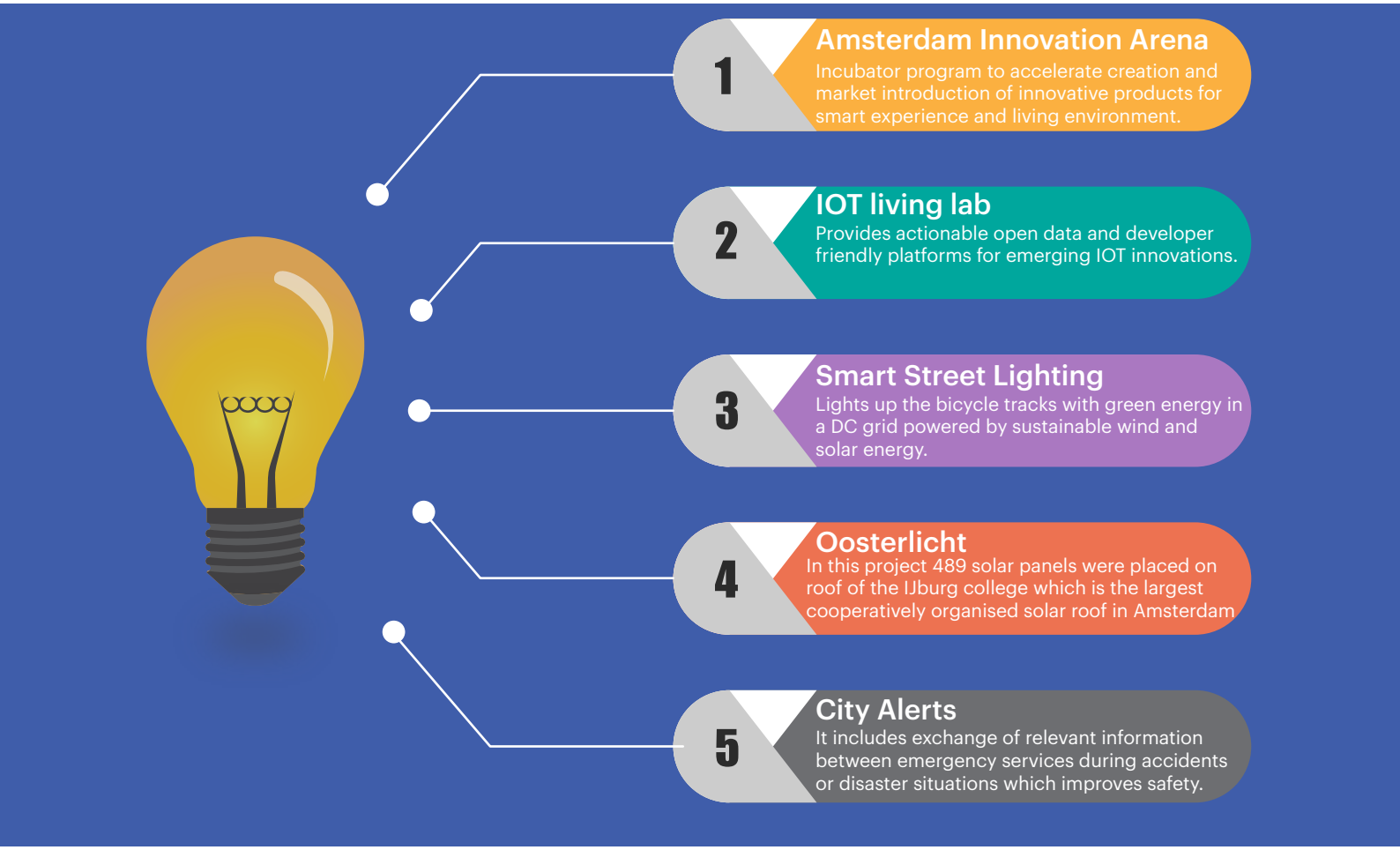
Different data collection sensors are placed in several locations of the city which send raw data to the data centers through various means of communication. These data are analysed, studied and inferred to a conclusion by using state of art algorithms and computing machines. Then, these meaningful information are used to solve problems in daily operation of different authorities as well as that of general public.

Examples of these infrastructures are internet connection, data centers, telecommunications, interconnected sensors, etc. A city must excel in the technological aspect so that it can collect real time data to solve problems in real time. Traffic and transportation management, water supply management, waste management, electricity load management etc. require a fair bit amount of data for processing and making decisions based on that information.

Case Study

Amsterdam

The capital of Netherlands, started its smart city initiative in 2009 which currently includes more than 170 projects *(https://amsterdamsmartcity.com/project)*. These projects run on an interconnected platform through wireless devices to enhance the city's real time decision making abilities. City of Amsterdam received "European Capital of Innovation (iCapital)" award from European Commission in the year 2016 for its initiative. **Some of the notable projects in Amsterdam that exercise the modern technologies are:**



2. Alternative Energy Source

Energy resources are indispensable for a city to sustain. For better efficiency and environment friendly scenario a city should reduce the use of fossil fuels and increase usage of clean energy resources such as solar, wind, etc. These alternatives are intended to address concerns about such fossil fuels, such as its high carbon dioxide emissions, an important factor in global warming.

Case Study

Masdar City, UAE

Masdar City project started back in 2006 which relies on solar and other renewable energy sources.Masdar City hosts the headquarters of the International Renewable Energy Agency (IRENA). The city is designed to be a hub for cleantech companies. Masdar City is in part powered by clean energy generated from a 10 MW solar power plant on site and 1 MW solar rooftop system. Harnessing the sun's rays, the plant produces 17,500MWh of clean electricity annually and diverts 7,350 tonnes of carbon emissions per year.

3. Online Services

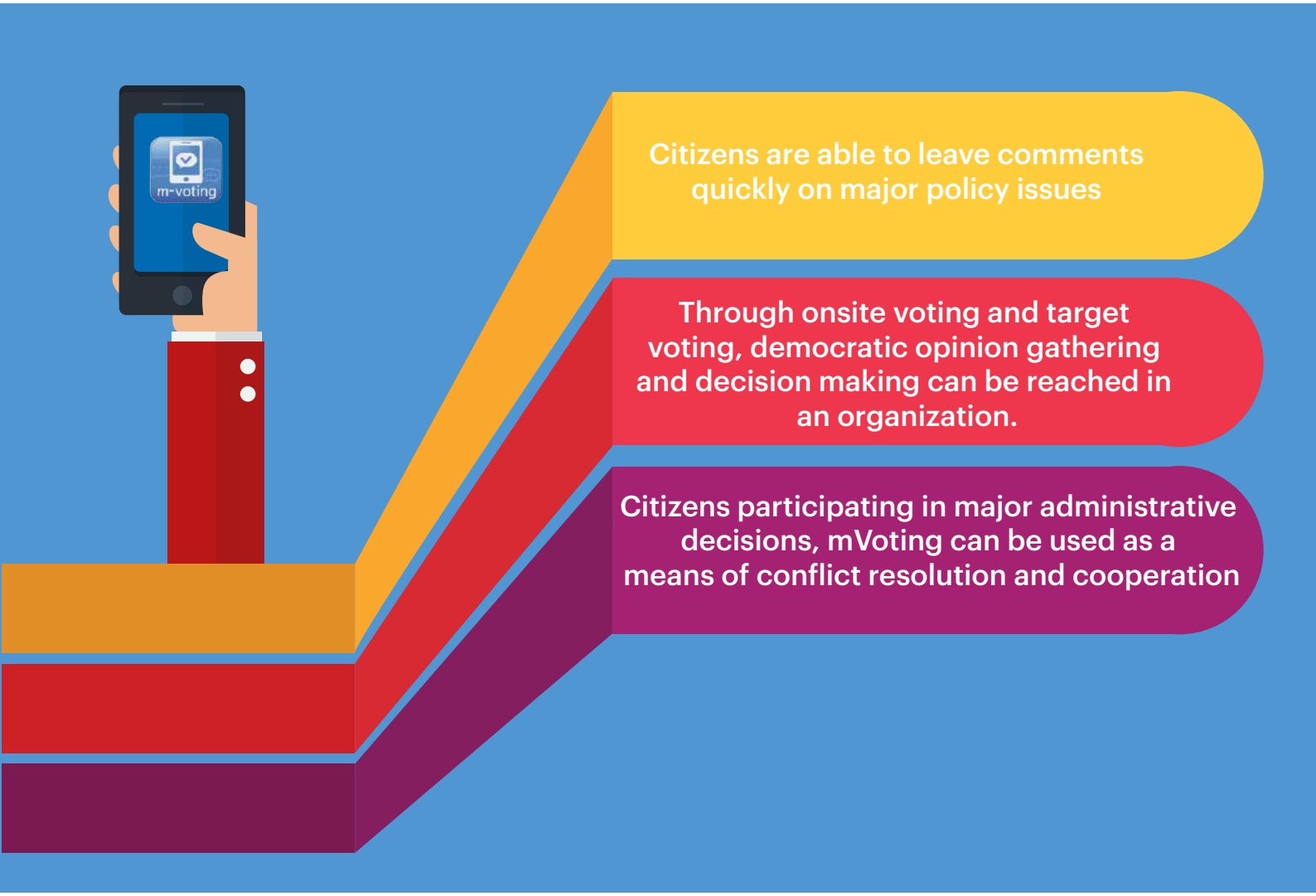
It includes government as well as other institutions such as schools, universities, business firms, non-profit organisations providing services using modern electronic methods. Services under e-governance are easily accessible in internet via websites or mobile app with not much hassle of paper works.

Case Study

Seoul

Seoul has one of the world's most effective e-governance facility. Under the policy 'Open Government 2.0' Seoul city has made more than 8.8 million government reports and documents on its website for searching and browsing by October 2016. It has 4529 datasets available on the portal which are accessed around 950 million times a year.

Major Achievements Of **M-Voting**



The city also promotes public engagement through social networking sites. The government's Seoul Social Media Center (http://social.seoul.go.kr) is a central platform that integrates the government's **44 social media accounts,** including the Mayor's accounts, for greater efficiency in handling citizen queries, opinions and requests. Seoul citizens also have the option of voting for policies and proposals on their mobile phones using a smartphone app, **M-Voting.** In 2015, statistics showed that **3,828 voting agendas** had been posted on M-Voting — **3,571 by citizens, 257 by the government** — and **610,000 citizens** had participated in voting.

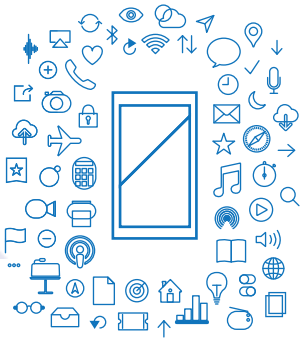
Present Context of Nepal

The concept of smart city was introduced by Nepal government for the first time in 2012. National agenda to develop smart cities in Nepal first appeared in 2072-73 fiscal year's budget speech. Nepal Government has proposed to build four smart cities within the outskirts of Kathmandu valley, and some other smart cities all over the country. For a developing country like Nepal to thrive in this concept, farsighted planning, better technological infrastructure and mass awareness among public is necessary.

Today, we can see few progress made in smart city initiative in Nepal but these are only in fragments. It is necessary to work with a broader plan and in larger scale for effective implementation. Some of the notable achievements are:

Technological Infrastructure

The recent Nepal Telecommunication Authority data shows the internet penetration in the country of 58%. Similarly the mobile penetration is 125% but that does not necessarily means the mobile coverage is everywhere. Different telecom companies and ISPs are providing internet services throughout the nation.



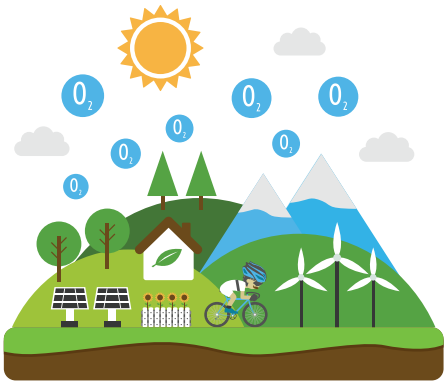
Online Services

E-banking is practised in major cities of the country. Different commercial banks provide services like mobile banking in mobile app with the functionality of transferring money, balance enquiry, paying commodities etc. With the rise of payment options such as e-sewa, khalti.com, ipay etc. methods of transactions are online.

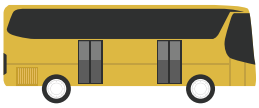
Online businesses like daraz.com.np, hamrobazaar.com, foodmandu etc. are some of the top e-commerce businesses of Nepal. Different news portals like ekantipur, setopati, onlinekhabar etc. are top websites visited in Nepal.

Alternative Energy Solutions

Solar street lights are being installed in the major cities of Nepal which operate from dusk to dawn i.e. the lights automatically switch on after sunset and switch off after sunrise. This is a step towards a brighter roads in a smart city. Different cities now feature electric vehicles as main means of transportation within the city.



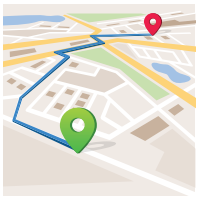
Obstacles



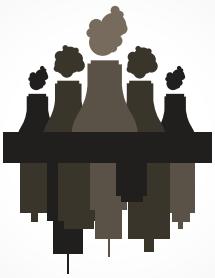
Transportation in major cities like Kathmandu has always been tiresome due to long traffic jams that people have to face at multiple places. Smart traffic light system could be used to manage traffic. Similarly, suggesting alternate paths from highly busy roads so as to distribute traffic throughout the roads and consequently manage the traffic, is highly realized but not implemented in Nepal.

To get any government service, still primitive paper based methods are practised. These services can be faster and more efficient, if implemented using online platform.

The metering system for electricity, water etc. are still manual though some progress have been made. Smart metering system can be used for such purposes as well as the payment can also be done online. The fault detection in the electric lines can also be made easier through the use of smart grid system.



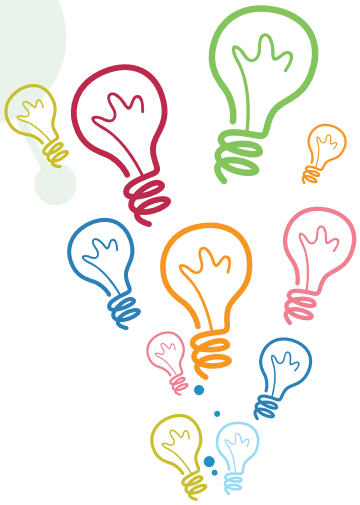
Maps and addressing system in cities of Nepal are not digital yet, so that it is still difficult to locate specific houses and locations. This is quite an obstacle for e-commerce and other service delivery.



Wastes from households and industries are not properly managed causing pollution.

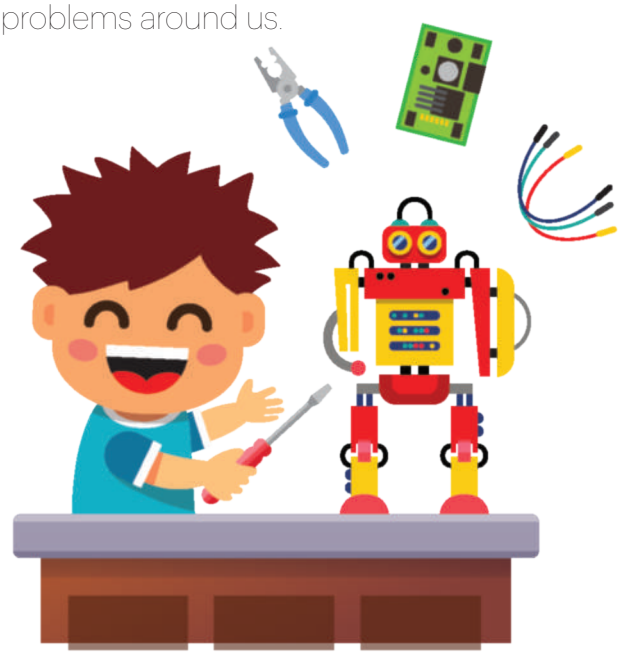
What can **YOU** do ?

LOCUS exhibition is a great platform for tech enthusiasts, students of undergraduate and high school level to showcase their work and talent in modern technologies. It all starts with a problem, an idea to solve that problem and hard work to accomplish the project. Similar to previous exhibitions of LOCUS, we will have project competition in hardware and software; each in thematic and open category.



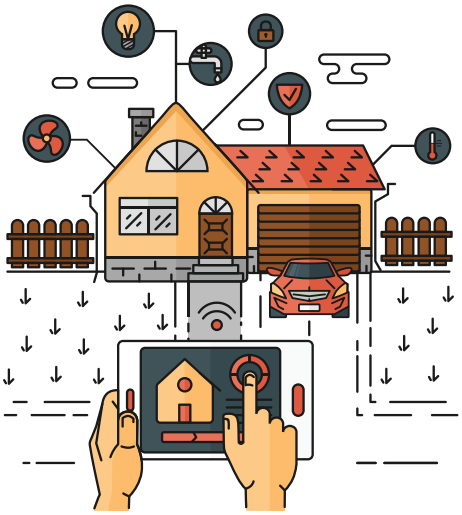
LOCUS 2018 is based on the theme "Smart City: Information and Technology" specialising on three categories: Technological Infrastructure, Online Services and Alternative Energy Solutions. Each of these categories have endless possibilities. As a student, we encourage you to come up with fresh perspective to existing problems, build a prototype and showcase yourself in the competition.

Technology has progressed to a great extent up to this date. But, we are not too away from the technological innovations happening around the world. An average Nepalese family has access to smartphones and access to internet. With power outage drastically reduced, it is a great time technical students like us to pounce upon the situation by coming up with a better solution for problems around us.



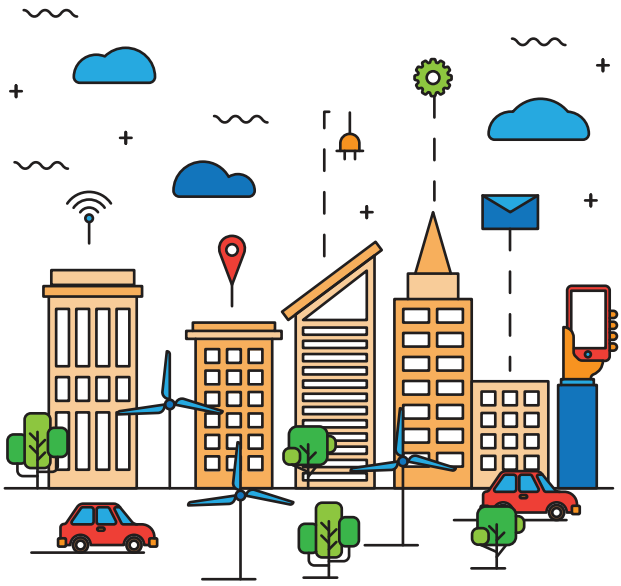
Services that we have to use daily are not digital, we still buy our commodities the primitive way, we still spend hours of time waiting in queues, we still follow traditional methods to pay our bills, we still have problems managing wastes, we still have to breathe filthy air. These are problems we are waiting someone else to solve for us. But we must realise that these are not our problems, these are our opportunities. Opportunity to bring a unique solution that fits our needs, our culture and our expectations. LOCUS 2018 encourages you all to identify a problem, build a team, come up with an idea and act on it. LOCUS as always will organize various pre-events and different sessions to help you achieve

SMART CITY
THEME OF LOCUS



Why LOCUS has focused this time on Smart City?

LOCUS is a student organisation of computer, electrical and electronics and communication engineering faculty in Pulchowk Campus, Institute of Engineering. As a leading student organisation in technological field LOCUS has always devoted itself in widespread use of technology for sustainable, eco-friendly and energy-efficient society. Unlike earlier years of LOCUS we are narrowing our theme to a specific topic "Smart City: Information and Technology", this year.



Smart City has been quite a buzzword in recent times, due to extensive use of the phrase in recent elections. Some people may wonder whether LOCUS might have shifted itself from student projects to some fancy phrases. But we in LOCUS believe that it is necessary for students of technical background to step up and raise knowledge level of the mass on the topic of Smart City. People must understand Smart City is not just Free WiFi. It requires extensive planning, better understanding and implementation to achieve ground results.

LOCUS 2018 shall conduct different events, seminars and its main exhibition based on this theme. We expect huge support from faculty members and students for successful conduct of this edition of LOCUS.

SMART CITY

Technologial Infrastructure

Alternative Energy

Online Services

LOCUS 2018