

- Waste Management
- Safety & Security
- Public Resource Utilization
- Urban Mobility
- Health
- Skill Development
- Last Mile Connectivity
- UID & Service Delivery
- Urban Energy Needs

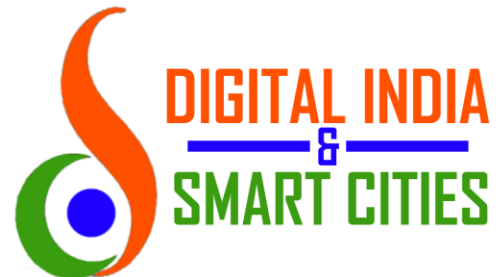


DISC TASK FORCE

FINAL REPORT

Presented By -

IIT ALUMNI ASSOCIATION, SOUTH KOREA



FOREWORD BY-

Mr. Vikram Doraiswami
(Ambassador of India to
the Republic of Korea)

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June 16, 2016

FOREWORD

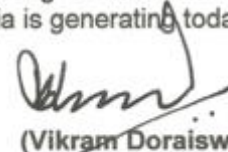
I am very pleased to be able to write a short foreword for this compilation of ideas on Digital India and Smart Cities, produced by the IIT alumni of Korea.

The application of technology to modern urban life, and more importantly adapting the infrastructure of governance, construction and indeed, daily living, to fully accommodate the revolution brought about by technology is an opportunity whose time has long since arrived. As Victor Hugo wrote, "no power on earth can stop an idea whose time has come"; this is precisely one such idea.

In perhaps no other country is the application of technology to improving day-to-day life, and the delivery of services to citizens, more relevant than India. Not only is India one of the biggest laboratories in the world for testing and validating the applicability of new technologies to improve human existence, it is also the world's largest ongoing transition from a predominantly rural country to an increasingly urban population. This makes the ideas in this compilation both thought-provoking and stimulating in their simplicity and innovativeness.

Perhaps no group of Indians can ever have a complete monopoly on either the right ideas or an acceptance of any set of suggested measures; this says as much about our inquisitiveness as well as our willingness to look for new and innovative solutions. However if there is one group of Indians with credentials to offer solutions for anything relating to technology, it would be alumni of the Indian Institute of Technology — IIT. We in India have long valued our IITs, if nothing else as an incubator for an environment that facilitates a problem-solving approach and disseminators of engineering skills at the highest standard. It is no surprise — at least to any Indian — that today 'Brand IIT' is recognised from Seoul to San Francisco and from Seattle to Sydney and everything in between.

I congratulate IIT Alumni in Korea for their willingness to contribute time and energy into thinking through solutions for the many challenges that India faces and for contributing to the excitement that a resurgent India is generating today.


(Vikram Doraiswami)

PREFACE

As Indians residing in a foreign country, we have always desired to contribute to our nation in whatever way we can. While some of us donate our hard-earned money for noble causes back home, few others are willing to give up the good work-life balance here and get back to India to solve meaningful problems. We, the members of the IIT Alumni Association in South Korea asked ourselves – “How else can we contribute to India? Can India ever be as advanced as Korea is?” The brief conversations gave birth to DISC – a task force where we sourced members solely based on their interest and talked about ideas centered around various pillars of **D**igital India & **S**mart Cities in India.

I was myself amazed by the huge enthusiastic participation of our members. Despite our full time jobs, our group meetings (mainly over the weekends) had near 100% turnout. We brainstormed (both in groups and individually) for 5 weeks on a number of ideas and settled on 30 relevant ones in diverse but relevant fields such as Waste Management, Safety and Security, Public Resource Utilization, Health, Urban Mobility, Skill Development.

I would like to thank all the DISC TF members and other members of our IIT alumni association for their unwavering support. On behalf of the IIT alumni association, I would like to extend special thanks to our India Embassy in South Korea – in particular to His Excellency, the Ambassador of India who took time out of his busy schedule to guide us when needed and to continuously motivate us to make an impact.

COURSE OF ACTION

Objectives

To come up with ideas on **D**igital India & **S**mart Cities (**DISC**)

Method

Listed 9 keywords (as below) relevant to Digital India & Smart Cities and deep dived into them to come up with ideas.

[Health, Waste Management, Last Mile Connectivity, Urban Mobility, Skill Development & Education, Digital Identity & Service Delivery, Safety & Security, Urban Energy Management, Public Resource Utilization]

Output

30 Ideas across 9 keywords with detailed slides on each idea

Next Steps

- Share the ideas with stakeholders in India
- Follow up with details when needed



DISC T/F Kick Off Meeting in Suwon,
South Korea



Interim Presentation to Deputy
Ambassador of India to South Korea



DISC T/F Final Presentation to the
Ambassador of India to Korea

DISC TASK FORCE



Pankaj Agarwal (TF Lead)

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B.Tech. 2004, IIT Kanpur

Pankaj Agarwal is a Creative Leader at Samsung, where his decade long career spanned across several roles – enthusiastic engineer, strategic innovation manager, and most recently an advisor to the CTO of Samsung. Pankaj is an inventor on over 40 international patent applications. He has a Bachelor of Technology degree in EE from IIT Kanpur, an MS from Seoul National University and an MBA from the Harvard Business School.



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B.Tech 2015,

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Jatin Garg is currently part of Samsung VD Business Unit in Suwon where he works on Big Data Analytics and Deep Learning. Apart from his job, he loves watching sitcoms, listening to bollywood music and playing chess. After coming to Korea, he has found new interests in travelling and cooking.



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Nupur Kala is currently an Electronics Engineer in Samsung RnD Campus, Seoul. A 2015 IIT Delhi graduate, she works in the area of human visual processing with especial focus on Virtual Reality and Augmented Reality devices. She has been highly active in social work during her college days, with experience in teaching and organising events. Recipient of the institute Gold Medal for her academic performance, she loves reading, travelling and yoga.



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Sudhakar Sah is a Researcher having more than 10 years of Research experience in the field of Parallel Computing, GPGPU based massive parallelization, Computer Vision and Machine Learning. He has filed for around 10 patents (3 granted) and published more than 15 research papers. He has a PhD degree in Computer Science from Symbiosis International University and Masters in Technology from IIT Delhi.



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Adiki Madhu Babu is a Product Manager with the Hyundai Motors Company HQ in Seoul where he is currently managing two new upcoming products (automobiles) for international markets. He finished his B.Tech (ME) from IIT Madras in 2012, and was selected for the “Global Blue Wave Program” by Hyundai, as part of which he pursued his MBA from Yonsei University in Seoul.



Parichay Kapoor
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Parichay Kapoor is currently working on Performance Optimizations in DMC R&D Centre at Samsung Electronics. He is a graduate of Computer Science, IIT Delhi 2014 batch. He enjoys traveling, exploring different cultures and eating different kinds of food.



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Manish Kumar Agrawal received his Masters (2009) and PhD (2014) in Mechanical Engineering from VJTI Mumbai and IIT Indore, respectively. Currently, he is serving as Senior Researcher in the field of Nuclear Thermal Hydraulic and System Safety at Environment and Energy Technology Inc., Daejeon, South Korea. He has authored over 11 research papers in reputed international journals and conference proceedings. His current research interests include the thermal hydraulics and multi-phase flow analysis of nuclear reactors.



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Vishnu Vinjam is an Engineer with Samsung Electronics in Seoul working on Internet of Things (IoT) solutions. A 2014 Computer Science IIT Bombay graduate, he was awarded Institutional Organizational Citation for leadership in non-profit initiatives. He is on constant lookout for new travel opportunities while eagerly grabbing every book and food recommendations."



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Vivek Agarwal is currently working as a software engineer at Samsung HQ, Suwon. A 2015 IIT Bombay graduate, he is employed with Visual Display team and primarily works in the field of data analysis and machine learning. His interest include painting and poetry.



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Prudhvitej Immadi is working on Smart Building Solutions at Samsung Electronics. He majored in Electrical Engineering at IIT Bombay. Earlier, he represented India at the 42nd International Physics Olympiad, Bangkok and was awarded a silver medal. He also was All India Rank -1 in IIT-JEE, 2011. When not at work, you can find him playing football/badminton or reading a book or traveling around places.



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Nishit Bhandari is software engineer working at Samsung Electronics, HQ in Suwon, South Korea. A 2015 IIT Bombay graduate, Nishit works is involved in handling android security by employing cryptographic techniques and secure key management. He is passionate about mathematic and algorithmic trading and loves to travel all around the globe. Apart from this, he is an amateur photographer who is always looking for new challenges.



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Prajwal A N is currently a software engineer at Samsung Electronics where he works on the Tizen Operating System. A graduate of IIT Bombay, he loves to solve algorithmic puzzles and explore the internal working of system software. He is also a trained musician and enjoys playing the violin. He loves exploring different cultures and intends to travel around the world.



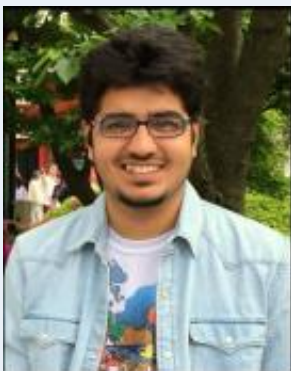
Kanishak Kataria

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Kanishak Kataria is currently working in the Core Intelligence Lab at the Samsung Korea Software R&D Center which aims at making intelligent services for future user-smart device interaction. He recently completed his B.Tech in Computer Science and Engineering from IIT Bombay and is an avid follower of sports mainly Cricket, Tennis and Football.



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Pawan Nagwani graduated from IIT Bombay in 2014 with a B.Tech in Computer Science and is since then working as a research associate in Software RnD Center at Samsung HQ. He is currently involved in work on text mining and information extraction for domain knowledge generation as part of the intelligence solution team. He is interested in broad domain of natural language processing and application of machine learning techniques for the same.



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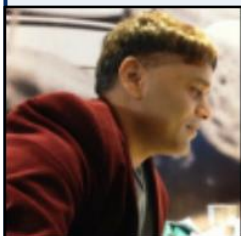
Sameer Agarwal graduated from IIT Bombay in 2014 and has since been working for Samsung's R&D center in Korea. He is currently working on energy saving algorithmic solutions for hotels using machine learning. He enjoys playing badminton and travelling around the world.



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Nilesh Kulkarni is currently with the Artificial Intelligence lab at Software R&D center, Samsung Electronics, South Korea. He completed his B.Tech in Computer Science and Engineering from IIT Bombay. Apart from academics he loves to play Soccer and Badminton, traveling to explore new places, hiking and reading fiction.



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Jalaj Jain spent most of his career in video signal processing, hardware design, understanding the Indian stock market and internet startups business model/valuation. He did his MS in Micro-electronics from IIT-Madras, India. He wishes to continue his career full time in startups and stock market going forward.



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Subhojit Chakladar works on state-of-the art technology in Samsung that is redefining how users interact with mobile devices using voice. He is a recipient of Samsung Mobile CTO's Award of Excellence in 2014 for his contribution in the field of Patents. He did his B.Tech from IIT Kharagpur and MS from Seoul National University, sponsored by the Samsung Global Scholarship Program, where he was the editor of the University English magazine.



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Jitendra Kumar is a B.Tech (honours) in Electronics and Communication Engg. from IIT, BHU, Varanasi. He is currently working on Bluetooth Low Energy in Convergence Technology R&D group in Samsung Electronics HQ. His areas of interests are Bluetooth, UMTS, GPS and WIFI in connectivity.

KEY DISC - IDEAS

KEY IDEAS



Waste Management
(3)



Health
(3)



Urban Mobility
(3)



UID & Service Delivery
(1)



Skill Development & Education
(5)



Safety & Security
(3)



Public Resource Utilization
(8)



Last Mile Connectivity
(1)



Urban Energy Needs
(3)



 One of the top 10 selected ideas

Keyword: Waste Management

Idea in Brief (What)

- Innovative food waste recycling technology using Salt-Tolerant Mushroom Strains



Benefits (Why)

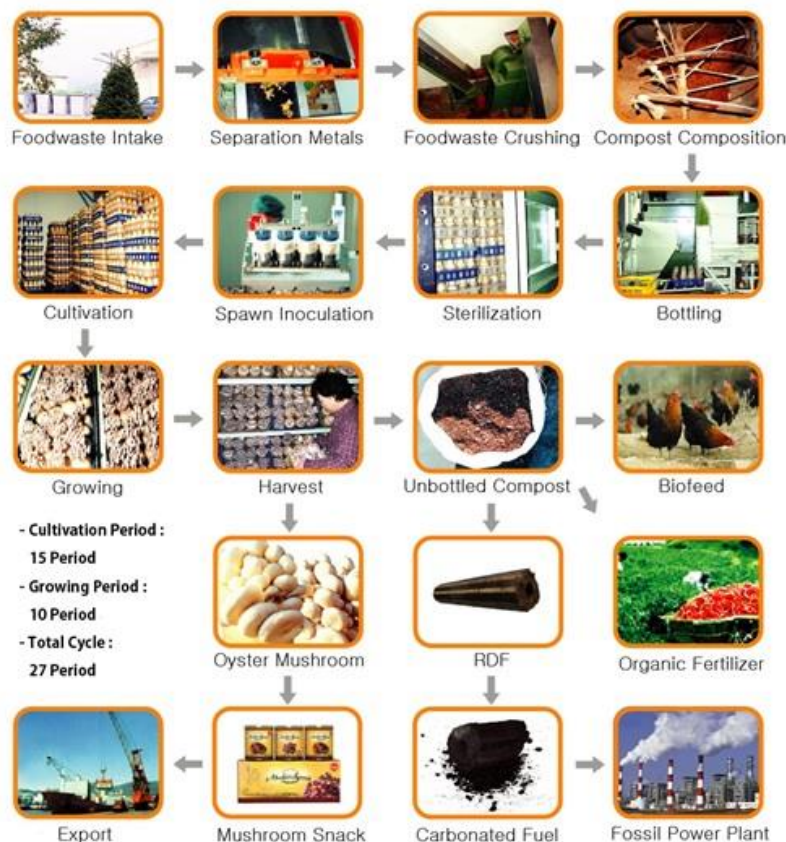
- Environment and Society friendly recycling of food waste
- Natural Eco-system food waste process technology
- Enhanced Economics through healthy well-being food and value added products
- Technology specially developed for wet and salty food waste

Enablers (How – Technology/Policy/Etc.)

Municipal food waste will be recycled to harvest mushroom using salt-tolerant mushroom strains under the controlled environment. The mushroom is harvested to produce healthy well-being food and can be sold in the market. The mushroom composed will further to be processed to produce Organic Fertilizers and Bio-feed for agriculture as well as RDF and Carbonated Bio-mass renewable energy

Illustration

Natural Eco-System Process for a Sustainable Earth Environment



Environment & Energy Technology, Inc.
www.en2t.com

Challenges

Education: The milestone is to educate people and develop awareness among them to separately collect food waste coming out during daily routine and all kind of non-recyclable waste.

Stakeholders

- **Society:** It's a perfect food waste management system. All the human community will be benefited by this technology
- **Farmer:** Organic fertilizers and Bio-feed can be used for agriculture purpose
- **Poor people:** RDF and Carbonated fuel can be used for cooking purpose by a large number of poor community
- **Government:** Mushroom, one of the outcome of the present recycling process can be sold into the market and can also be exported abroad as well being food

References

- www.en2t.com

Solutions to the Challenges

- Creating awareness amongst the people and educating them to collect all food waste in to green bag (recyclable) and all non-recyclable waste in to yellow bag



Green bag=हरा बैग= हरी सब्जी के लिए

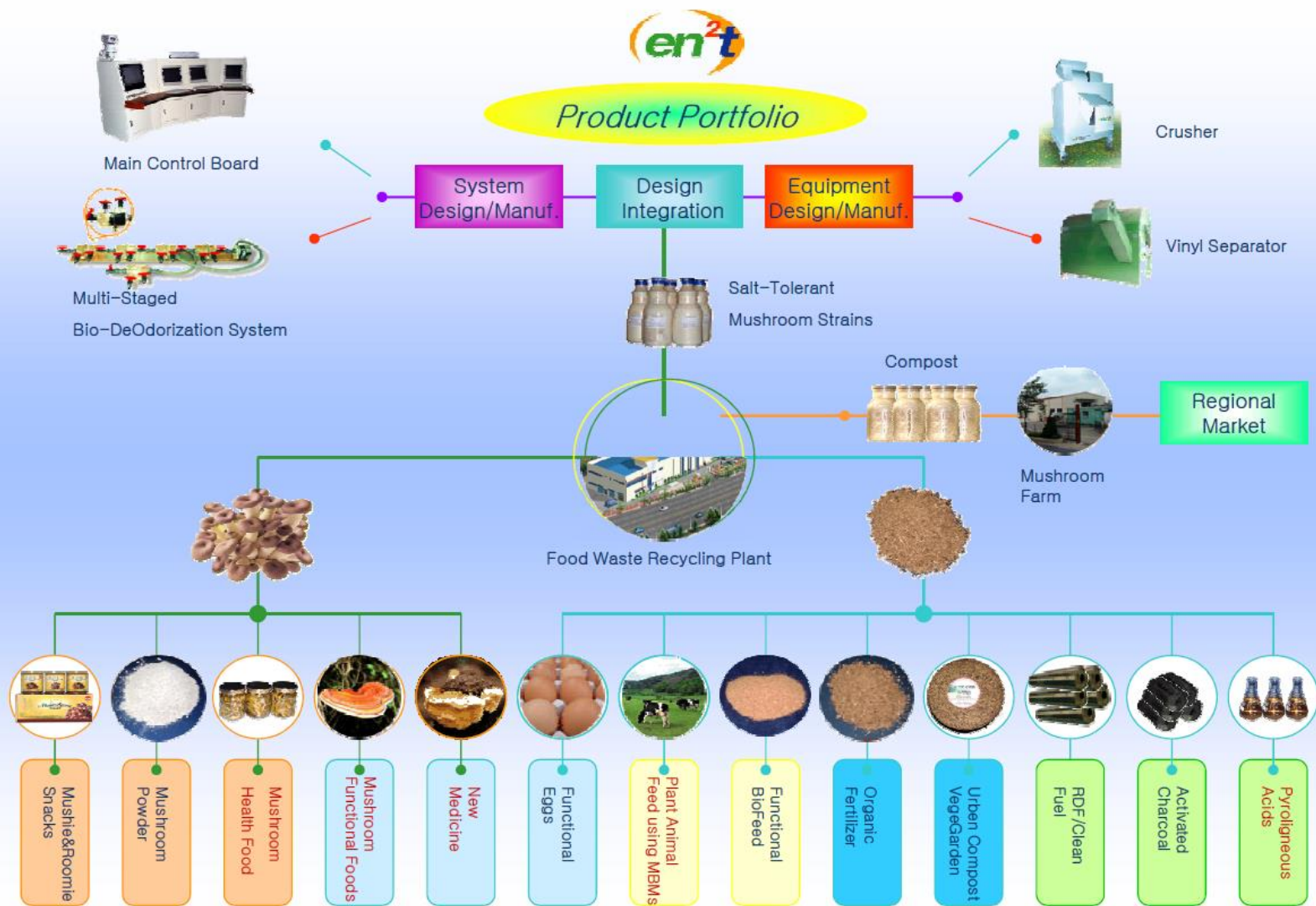


Yellow bag=पीला बैग=प्लास्टिक के लिए

- Government should provide recyclable green and yellow bags on highly subsidized rates to promote this concept
- Government and the youth has to educate people for collection of food waste using various audio visual aid and drama etc.



Others (Data/Visuals/...)



Environment & Energy Technology, Inc.

www.en2t.com

KEYWORD: WASTE MANAGEMENT

Idea in Brief (What)

- **Connect the entire city by an underground system of pipes which can suck garbage directly from people's apartments into the "Third Zone Automated Waste Collection Plant," where it is automatically processed.**

Benefits (Why)

- **Waste managed at its source**
- **No foul-smelling, dirty collection rooms and containers in the streets.**
- **No Behavior change required – People can forget about garbage management.**

Enablers (How – Technology/Policy/Etc.)

- **Pneumatic garbage collection system (in use in most countries)**

Illustration

Applied in Songdo Smart City in South Korea. Of the many futuristic elements of Songdo, one sticks out in particular—its waste management system. Doing away with the conventional process that involves trash bags and dump trucks, **every kitchen in the city has a pneumatic trash shoot** that funnels garbage to a central waste processing center. Once there, food waste is put to use for agricultural purposes while much of the rest of the trash is recycled.



Challenges

- High investment costs(both construction and maintenance)
- Abuse of the infrastructure leading to a possibility of blockages in tubes and drop off points

Stakeholders

- Supplier of Pneumatic Collection System (companies like Horizon Chute based in Pune)
- City Municipal Corporation
- End Users

References

<http://www.earthday.org/greencities/portfolio/songdo-south-korea-aims-worlds-greenest-city/>

<http://www.horizonchutes.com/underground.htm>

Demo Video

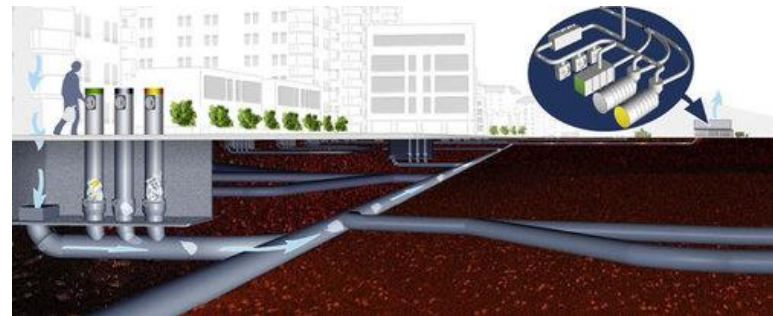
Link https://www.youtube.com/watch?feature=player_embedded&v=uYX3xL-OsxE

Solutions to the Challenges

- Try in select cities to show the return on investment for such a waste management system
- Educate people by running several information campaigns using posters, adverts in the mass media and meetings with neighborhood and business associations.

Others (Data/Visuals/...)

Another Illustration is as follows.



Some examples of cities where this system has already been adopted are the historical center of Leon, Zaragoza and Pamplona in Spain, and in Wembley, UK.



Keyword: Waste Management

Idea in Brief (What)

- Create categories of domestic garbage types (plastic, paper, food, bottles, etc.) and collect them separately
- Ideas to Implement them efficiently and convince people to follow them

Benefits (Why)

- Waste managed at its source
- Helps in separating recycled garbage from the non-recyclable ones as not separated waste is always dumped
- All the recycling companies work only on the separated waste
- Spreads the awareness of recycling

Implemented Schemes

- **PAY AS YOU THROW PENALIZE**
- **PAY AS YOU THROW INCENTIVIZE**
- **DOOR TO DOOR COLLECTION**

How To Do It In India - 1

Simplify the categories of waste : (KEEP IT SIMPLE)

- Food Waste
- Polybags and Plastic bottles
- Rest of the garbage

Illustration

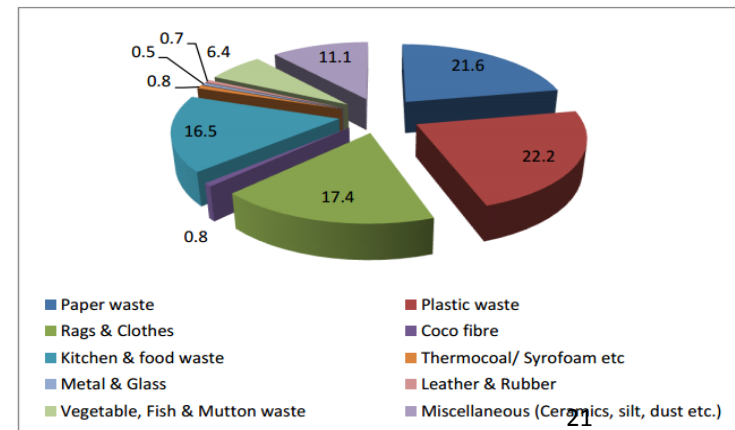


Domestic Garbage Bins – Waste management before it gets out of house

Domestic Garbage Bins – especially for food waste



Figure 6: Waste Category (Percentage) in Vijaywada



How To Do It In India - 2

- Incentivize : **Segregate the waste and get your water for free**
- **Door to Door Collection** – with rag pickers
- **Increase the cost of garbage bins for homes with no partitions**
- **decrease the cost of the garbage bins with more partitions**
- Teach this to kids at school and ask them to tell their parents. **(Kids love to teach their parents and parents hate being taught by their own children)**

References

- First hand experience (Categorization of garbage has been widely implemented in Korea and many other Developed countries).
- <http://www.aseic.org/rcntnews/UsrRcntNewsDtlR.do?ntccttSeq=554&sRange=1&sKeyword=>
- Alessandro Buccioli, Natalia Montinari, Marco Piovesan, “Do not trash the incentive! Monetary Incentives and Waste Sorting”, Scandinavian Journal of Economics, Forthcoming; Harvard Business School Research Paper Series No. 11-093
- <http://www.deccanchronicle.com/150513/nation-current-affairs/article/source-segregation-garbage-failed-visakhapatnam>
- Financing and Incentive Schemes for Municipal Waste Management, Final Report to Directorate General Environment, European Commission, Eunomia Research & Consulting Ltd. 120 Cotham Brow, Bristol BS6 6AR, UK
- <http://www.bbc.com/news/uk-34346309>

How To Do It In India - 3

- Need Support from Garbage Collectors
- Need support from Govt.
 - Multi-partition garbage Collecting trucks
 - Multi-partition garbage bins

Others (Data/Visuals/...)



Various bottle payment machines

[Pay for your subway ride by recycling a plastic bottle in Beijing, China.](#)



Keyword: Health

Idea in Brief (What)

- Make it mandatory for every household to have one ALL-IN-ONE health monitoring gadget. This can monitor vital signs along with any early signs of medical conditions like diabetes, hyper/hypo tension.
- Every adult in the house should use this once a month to check his condition. The data gets transmitted automatically to the health service provider and necessary action is taken.

Benefits (Why)

- Preventive Health Care should help save time and money for otherwise prospective patients.
- Any deviations from normal healthy conditions (Indicators: Blood Pressure, Oxygen Saturation, Heart Rate and Blood Glucose data) will motivate people to take corrective actions.

Enablers (How – Technology/Policy/Etc.)

- ALL-IN-ONE Health Monitoring Equipment
- Infrastructure that allows to share the data with the right stakeholders (hospitals, insurance, family members).

Illustration

Lot of companies are working on all-in-one health monitoring gadget. Below is an example of one such gadget.



Challenges

- Behavior Change : Expecting people to regularly monitor their body health.
- One Time cost of the device.

Stakeholders

- Product Maker
- Hospital
- Health Insurance Provider
- End User

References

<http://www.cremedinc.com/product/pc-303h/>

<http://www.cremedinc.com/wp-content/uploads/2015/10/CMI-PC-102.pdf>

http://www.amazon.com/LotFancy-Approved-Digital-Pressure-8-6-14-2/dp/B00FF04XFI/ref=sr_1_10?s=hpc&ie=UTF8&qid=1447858928&sr=1-10

Solutions to the Challenges

- Incentive people by giving them some health subsidies or setting lower premiums for their health insurance in exchange for regular health data.
- Create financing plans (via hospitals) so that users can pay in installments.

Others (Data/Visuals/...)

A cheaper version (around 1000 INR) of ALL-IN-ONE Health Monitor is shown below.



Keyword: Health

Idea in Brief (What)

Digitizing health record of all residents and making that available to the health service providers and national and private health Insurance providers and creating system and scheme for calculation and auto reimbursement of insurance amount electronically at the time of purchase of health services to the health service providers directly by private and national health insurance providers.

Benefits (Why)

No need to do the paperwork and provide proofs of availing health services and providing insurance details to settle or reimburse health related expenses with health insurance providers after availing health services covered by insurance but directly paid by the health insurance providers to the health service providers like the doctors, clinics, hospitals, medicine shops etc at the time of availing services just by showing resident identity card and quoting the resident identity number and no need to wait for the reimbursement amount to come afterwards.

Enablers (How – Technology/Policy/Etc.)

- Digital Database of residents health records including Name, date of Birth, National Health Insurance Number needs to be created and should be shared amongst national and private health insurance providers, Health Service providers like involved doctor, clinic, hospital, medicine shop etc and made accessible by resident identity card number say for example UUID.
- Insurance coverage calculation method and the coverage items and coverage percentage will be included in the billing software. Insurance coverage can be calculated automatically at the time of payment by the health insurance billing software.
- Direct payment of insurance coverage amount to be paid to the health service provider by national and private insurance provider.

Illustration

Person visiting a doctor while paying doctor consultation charges if 40% is covered by Health Insurance he just need to pay 60% of his charges and remaining 40% doctor gets directly from National Health Insurance. When person visits medicine shop then he just need to pay the medicine charges excluding insurance covered amount for that medicine or health product.

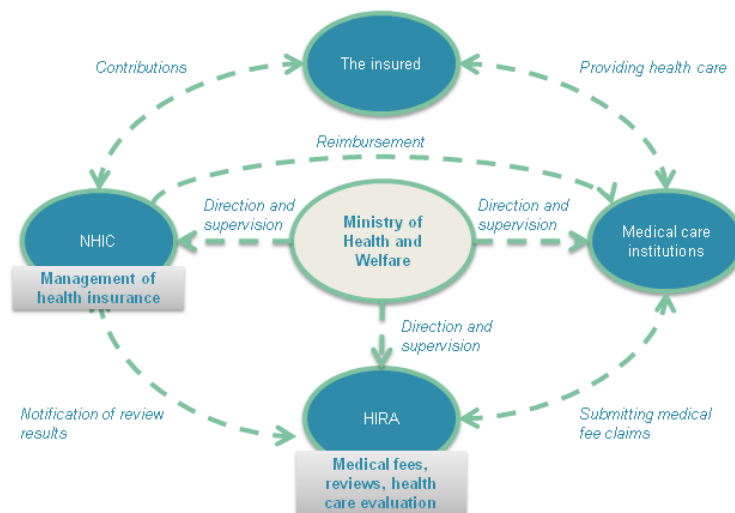


Resident identity card



National Health Insurance Details

Figure2: Structure of the National Health Insurance Program



Source: Song, Young Joo. "The South Korean Health Care System." JMAC, Vol. 52, NO. 3: 207. 2009.

Challenges

- Computerization of every clinic, hospital, medicine shops etc. and uninterrupted Electricity supply at these health service providers places.
- Unique Id for every residents and allowing access of individual health record with unique id number and maintaining privacy of individual health records.
- Policy formulation and Database development of insurance coverage items their ceiling amounts and updating annually. Sharing of data amongst service providers and the insurance providers Billing software development to calculate insurance claim amount.

Stakeholders

- Health service providers (clinics, hospitals, medicine shops...)
- National and Private Health Insurance Providers
- Government Health Ministry
- Health IT companies
- Residents

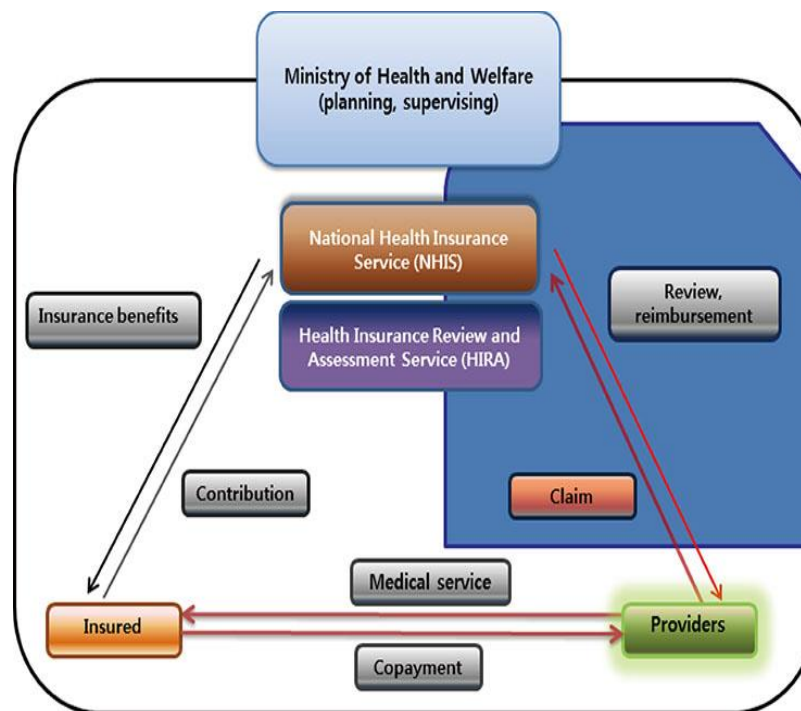
References

Korea National Health Insurance mandatorily covers all residents and charges insurance fee according to their income and provides same coverage to everyone irrespective of the amount of the contribution and directly pays the insurance amount to the health service provider at the time of availing health services and an individual just need provide resident identity card number to the health service provider be it doctor's clinic, hospital, medicine shops and so on. An individual is free to buy additional health insurance from private health insurers as per his need and capability to increase the insurance coverage.

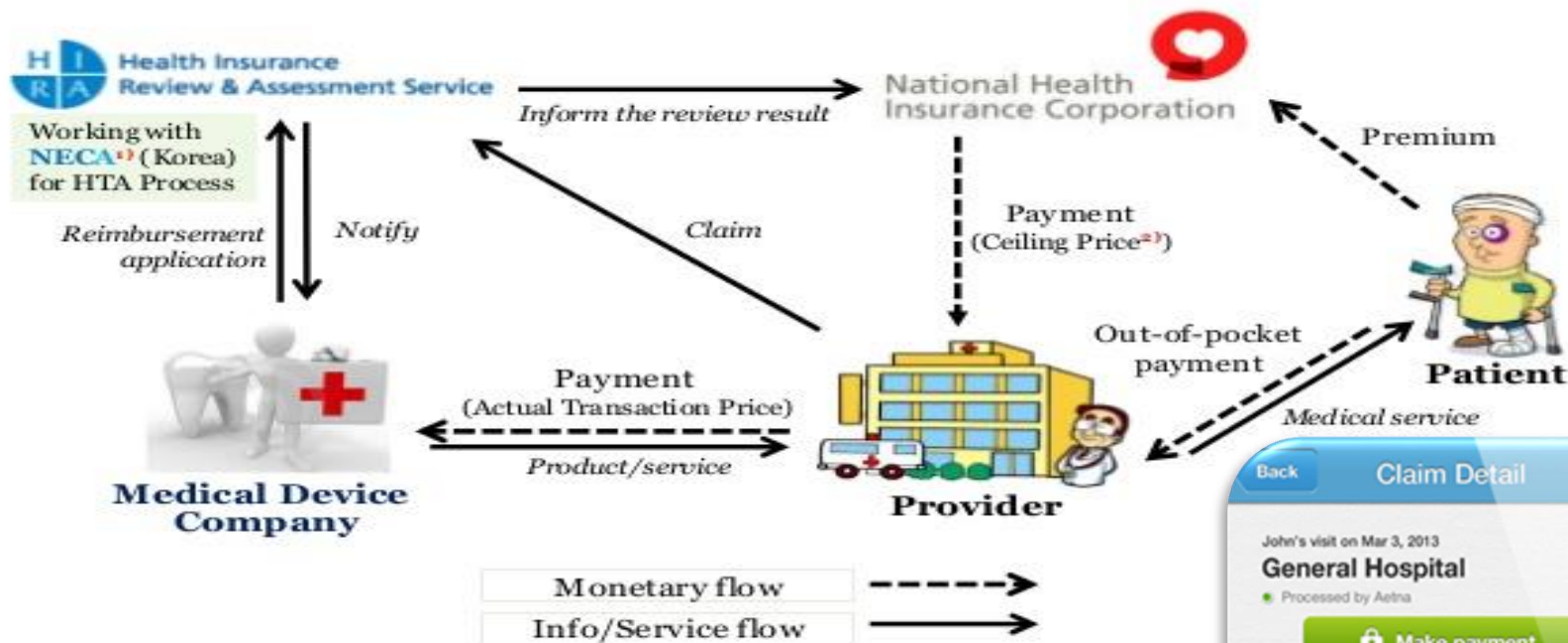
Solutions to the Challenges

- Mobile can be used as computing device in absence of electricity and computing facility. mobile application can be developed to access details and provide calculation for this purpose till computerization is done.
- UUID Aadhar card can be used as identity card and individual health record and insurance details can be accessed with that.
- Ministry of health to create national health insurance service and formulate policies and monitor implementation of health insurance contribution and claim amounts. IT companies can be entrusted to create database of individual records, method to access database and calculate insurance claim amount.

Others (Data/Visuals/...)



Korean Healthcare Delivery System



- ① National Evidence-based Healthcare Collaborating Agency
- ② Reimbursed at Actual Transaction Price (ATP) under published ceiling price.



Back Claim Detail

John's visit on Mar 3, 2013
General Hospital
Processed by Aetna

Make payment

✓ Mark as Paid ⌚ Remind me later

You owe \$346.56 >

THIS VISIT: \$346.56
\$347 SPENT \$153 REMAINING

Your plan covered \$853.44 >

Total charge \$1,200.00

Keyword: Health

Idea in Brief (What)

- Quick information release for citizens about “danger” areas in case of disasters or widespread of diseases
- Create application and platforms through which the information can be transmitted – mobile applications, SMS services, official website and other social media sources
- Regularly monitoring the situation and releasing the statistics and other relevant information on the official website

Benefits (Why)

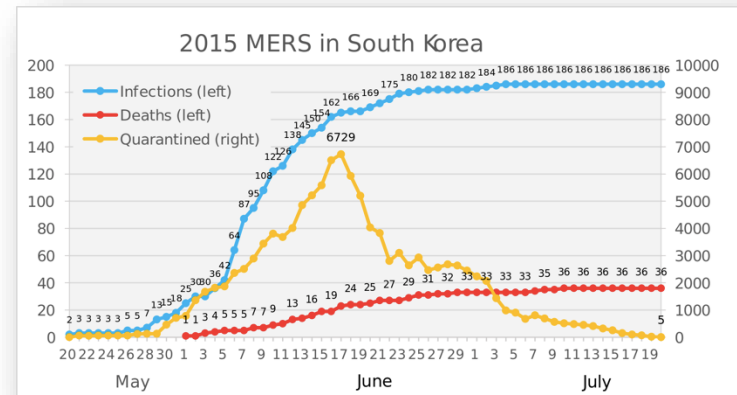
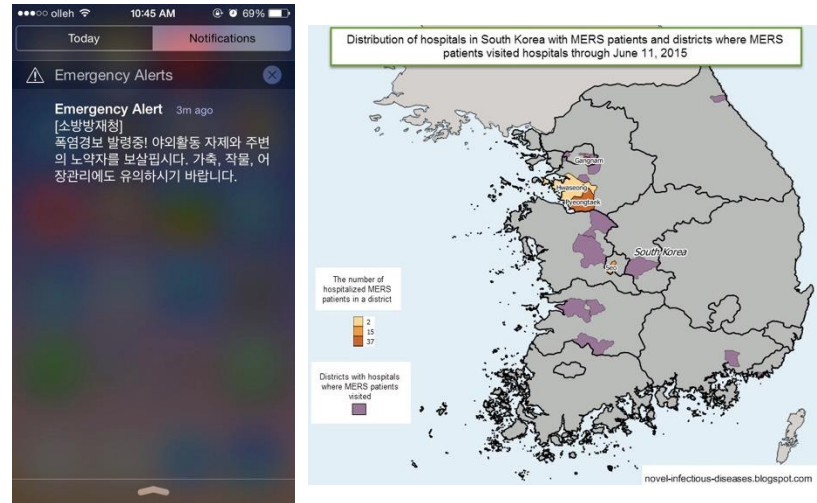
- Official centralized platform to spread information to the people
- Controlling the casualties and damage caused by such natural calamities
- Requires data to be collected in a well documented format which is good for future references

Enablers (How – Technology/Policy/Etc.)

- Data collection and monitoring techniques – using data from other departments such as Met department, Hospitals etc.
- Regular update of status from different hospitals
- Application development for different mobile platforms
- Developing and maintaining a government website for all the information and statistics
- Data about livestock diseases is present on the <https://data.gov.in> website but more data is required and it needs to be presented in a user-friendly way

Illustration

Illustration: Heatwave alert on phone and MERS related information dispatch in South Korea



Challenges

- Development of bug-free and good applications on various platforms with proper management
- Managing the website and ensuring no crash/high response time in case of high traffic
- Hospitals should update the status of reported patients regularly
- Regular monitoring and analysis of weather data to predict and inform about potential dangers

Stakeholders

- Citizens
- Hospitals
- Government

References

- <http://www.techwire.net/innovation/yoshida-san-francisco-department-public-health-unveils-heat-vulnerability-index.html>
- <http://www.healthmap.org/ebola/#timeline>
- <https://vimeo.com/27433633>

Solutions to the Challenges

- Hiring good developers in the government or delegating the development of applications and website to private sector
- Mobile tools or counting gadgets for hospital and staffs to maintain the count of patients and send the data to an online server
- Delegating the work to organizations like “healthmap” or using imitating their process for data collection

Others (Data/Visuals/...)

Disease Surveillance:

Formal reporting of notifiable infectious diseases is a requirement placed upon health care providers by many regional and national governments, and upon national governments by the World Health Organization to monitor spread as a result of the transmission of infectious agents

Some of the diseases covered under this:

Cholera

Plague

Yellow fever

Smallpox

Relapsing fever

Typhus

Polio

SARS

Keyword: Urban Mobility

Idea in Brief (What)

- Discounted Transport currency/coupons/card in Smart Cities common for all kinds of public transport. at discounted rates with expiry dates.

Benefits (Why)

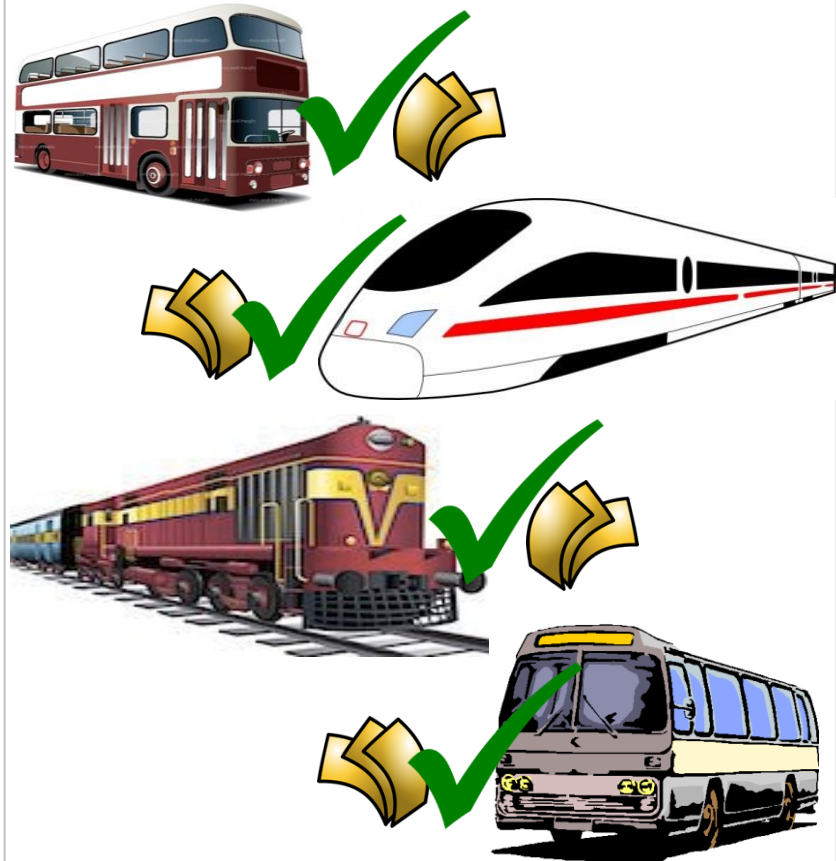
- Lesser price incentives for using public transport with convenience.
- Lesser use of private vehicles hence decrease in traffic congestion, air pollution and fuel wastage.

Enablers (How – Technology/Policy/Etc.)

- Coupon Vending counters or machines at public places, stations, bus stops etc.
- Coupon to real money conversion at depots for convenience of public transport staff.
- Card readers present in all public transport vehicles.

Illustration

Public Transport



Challenges

- Fake coupons usage.

Stakeholders

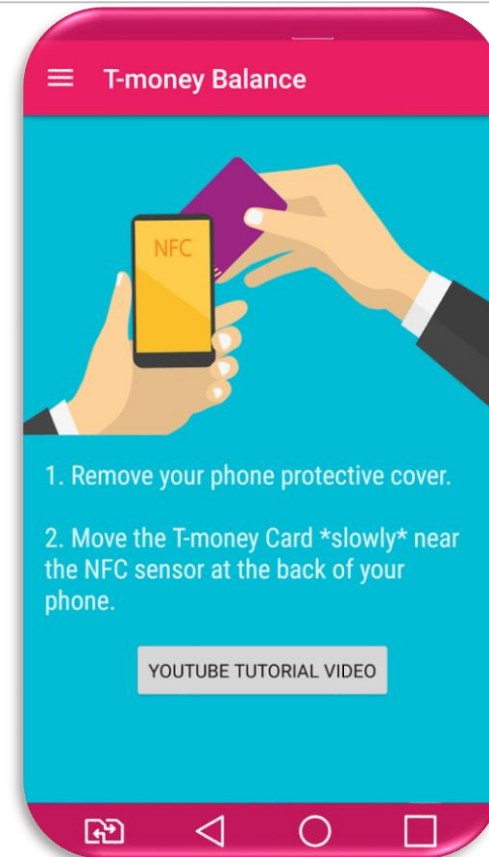
- Commuters
- Public Transport Staff
- Government

References

Concept is similar to T-money in Korea but coupons in addition to card keeping in mind the Indian Audience.

Illustration

T-Money



Keyword: Urban Mobility

Idea in Brief (What)

Dynamically Adjustable Lane Dividers on high traffic roads.

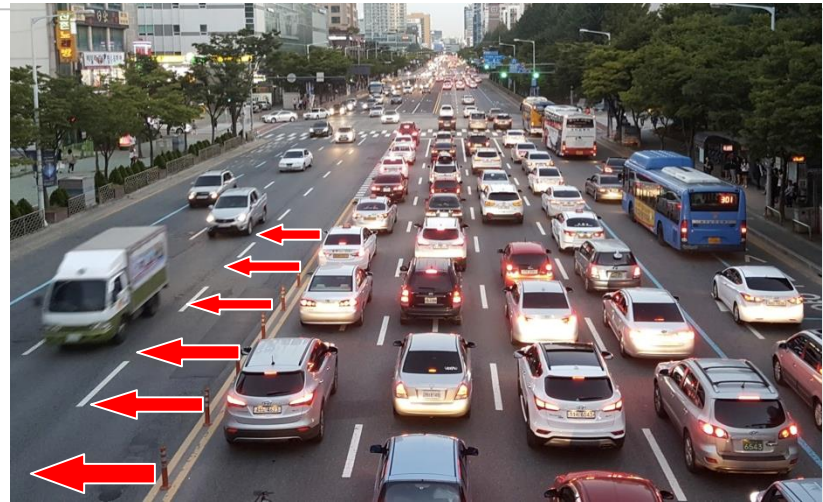
Benefits (Why)

- Traffic flows in one direction in morning peak hours while in opposite direction in evening and thus we often find that one lane is jam packed while adjacent lane is relatively vacant. Dividers can be shifted sideways resulting in less traffic Jam in both directions at respective peak hours.
- Easy to implement solution with no extra land required for roads.

Enablers (How – Technology/Policy/Etc.)

- Detection of traffic flow can be done manually or with help of sensors and cameras.
- Automatic divider shifting mechanism in case solid divider is required.
- Signboards showing different allocated lane directions can be dynamically updated if no solid divider required.

Illustration



Challenges

- Ensuring safety while changing lane directions.
- Awareness among people about changes.

Stakeholders

- Road commuters
- Maintenance staff
- Traffic Police

References

<https://www.youtube.com/watch?v=dl0Q2bDnBUc>

Solutions to the challenges

- Shifting of divider to be done at non-peak hours at moderate speed so as to avoid any accidents.
- Public announcement about change in lanes.

Others

Indian Scenario – Traffic in Office Hours



Keyword: Urban Mobility

Idea in Brief (What)

Non-stop Shuttle bus services between prime urban connectivity points such as Railway Stations, Airport, Bus Terminals etc. for the benefit of travellers, tourists etc.

Benefits (Why)

- Convenience and time saving for travellers.
- Promotion in tourism.

Enablers (How – Technology/Policy/Etc.)

- Dedicated shuttle buses and routes with sufficient frequency.
- Frequency can be dynamic dependent on flight and train schedules.

Illustration



Challenges

- Misuse by non travellers/local people.

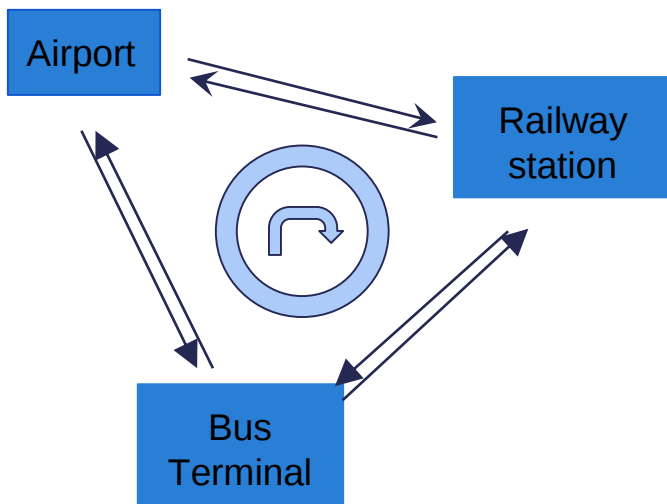
Possible solutions to the challenges

- Verification of people with valid flight and train tickets.

Stakeholders

- Airport, Railway Station, Bus terminal etc.
- Shuttle service staff
- Travellers
- Government

Others



Keyword: Digital Identity and Service Delivery

Idea in Brief (What)

- To have a unique biometric identification card for every person
- Will contain general information like date of birth, residing place, healthcare and will serve the purpose of ration card as well

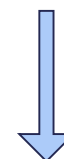
Benefits (Why)

- One card for all the information and government services
- Can be used as a replacement of ration card, get useful information at hospitals
- Gas, light and telephone connections, incentives and subsidies

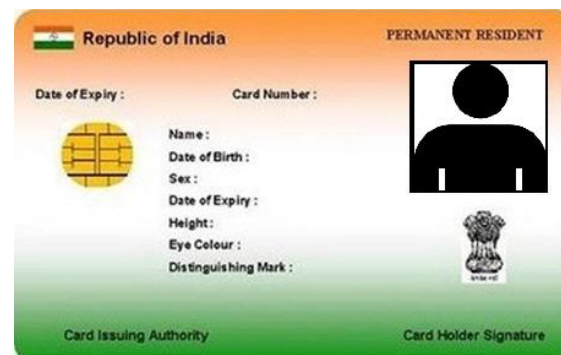
Enablers (How – Technology/Policy/Etc.)

- Biometric card readers required to read and write information on these cards.
- Have levels of permission on these readers so government institutions can only read and write information relevant to them.

Illustration



Biometric Card



Challenges

- Current AADHAR cards are not biometric, so no way to read information
- Number of people with AADHAR cards are still a very small fraction of total population.
- Making biometric readers with different level of permissions and avoiding information leak

Stakeholders

- Citizens
- Government
- Government institutions

References

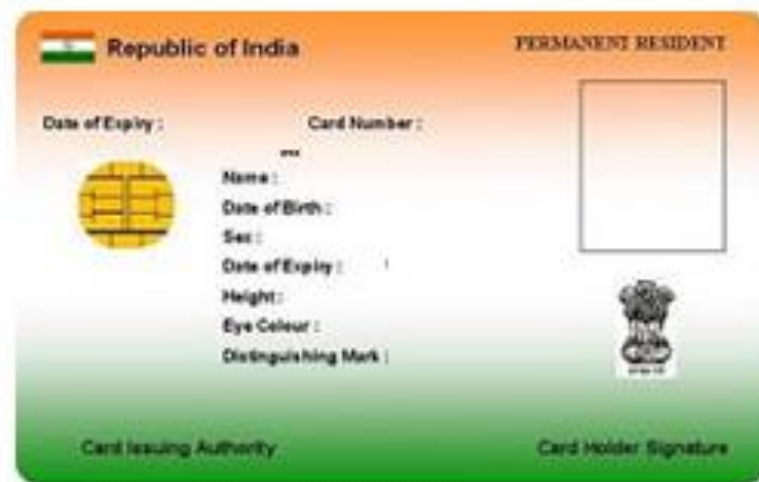
- Alien registration card(ARC) in South Korea
- Social security number in USA

Possible solutions to the challenges

- Roll back current version of aadhar cards and replace them with biometric cards with more information.
- Public awareness programs to have more and more people sign up for aadhar cards

Others

Aadhar Card



Keyword: Skill Development and Education

Idea in Brief (What)

- Encourage people to learn one extra skill apart from their main profession (Tailors, Mechanics, Electrician, Traditional industries etc).
- Government certified specialized short-term courses/training programs/exams for value addition certificates for all professions.

Benefits (Why)

- Can help in increasing employment
- Secondary skill can act as backup option for employment and also as hobby
- Encourage Traditional Industries
- Improve local economy by promoting local industries and Value addition (individual as well as society)

Enablers (How – Technology/Policy/Etc.)

- Employers can give monetary incentives on getting such certificates in their domain
- Promote learning one extra skill for all undergraduate/graduate students.
- Courses and Exams can be conducted online.

Illustration



Challenges

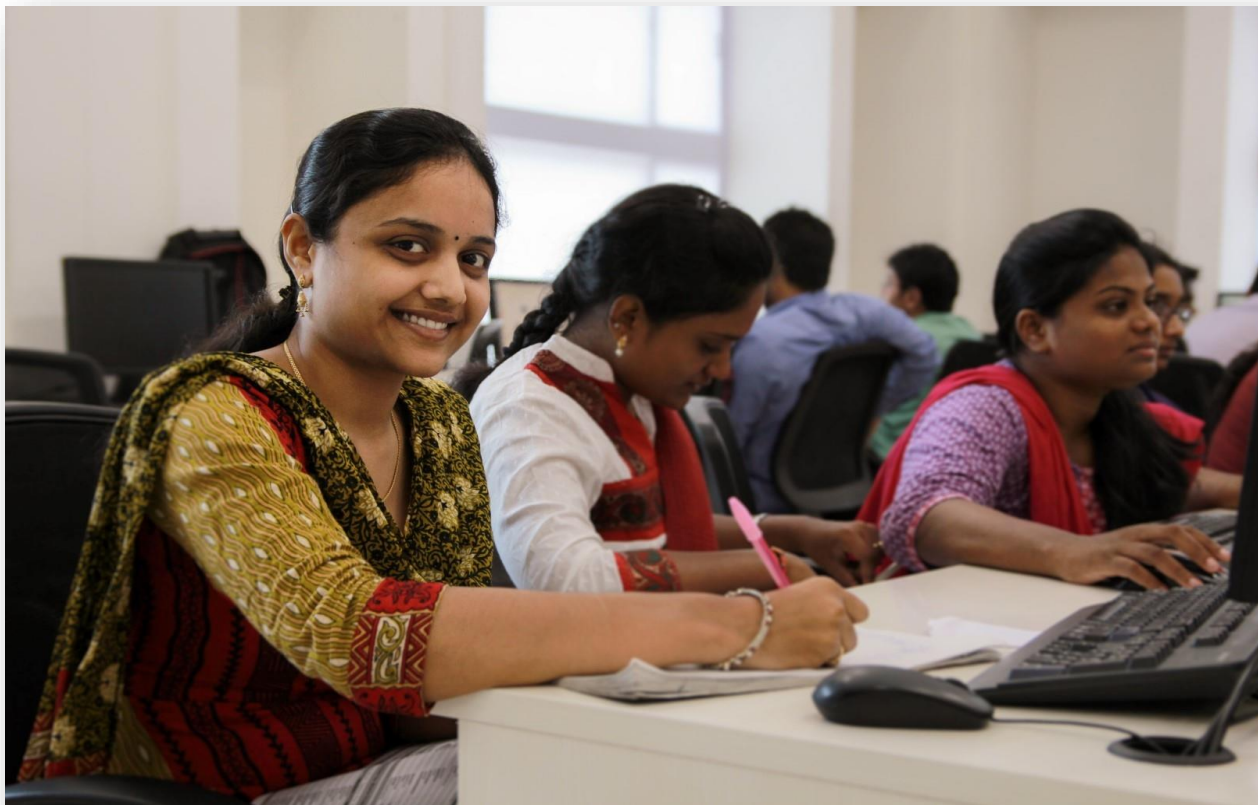
- Developing Courses for Non-conventional skills
- Establishing Certification system for the courses

Stakeholders

- Professionals/Employees
- Employers
- Training Program Conductors
- Government

Solutions to the Challenges

- For non-conventional skills, employ local professionals in respective fields
- Local industries can provide training programmes (like internships)
- Develop online courses for certification system



Keyword: Skill development and Education

Idea in Brief (What)

- Dedicated IT education and service program for elderly, middle-aged and physically handicapped
- Special course to get familiar with basics of IT such as using internet for search, email etc and to be able to use government service and their own daily lives
- Disabled and elderly can get services delivered through phone or chat

Benefits (Why)

- Including the huge chunk of experienced bunch contributes to the whole knowledge economy.
- Inclusivity for elderly in a rapidly changing/developing India.
- Loneliness and being left out feeling can be solved
- Similar services can be extended to sick, vulnerable groups and backward communities hence empowering them

Enablers (How – Technology/Policy/Etc.)

- Training centers with short term specially designed courses taught in an a very easy manner.
- Online content in regional languages is a must.
- Phone and chat based customer service centers

Illustration



Challenges

- Creating a culture of learning in the elderly is a challenge in itself.
- English language knowledge is too low in the target group.
- Maintaining the quality of the service centres, i.e., young people who won't lose patience at old folks.

Stakeholders

- Elderly, Disabled, Backward
- Training Program organisers
- Government
- Unemployed youth with IT education and knowledge.

References

- National Digital Literacy Mission
- <http://www.ndlm.in>
- <http://indiatoday.intoday.in/education/story/impacting-education/1/525613.html>

Possible solutions to the challenges

- Marketing in terms of proven examples where IT education changed the course of someone's (preferably old people) lives
- Content development in local languages and knowledge that aids solving local issues.

Others



Keyword: Skill development and Education

Idea in Brief (What)

- Specialized centers/institutes for local traditional arts/crafts in respective identified regions. For example Silk weaving Institute in Varanasi, Marble arts institute in Rajasthan, Carpet making institute in Kashmir etc
- Artisans/craftsmen from all over India can go and learn special skills from local artisans in these institutes.

Benefits (Why)

- Special skill development for all craftsmen.
- Employment for local artisans in their respective places.
- Promotion and Encouragement for traditional arts and crafts.
- Can be linked with value addition certificate idea.

Enablers (How – Technology/Policy/Etc.)

- Identifying regional skills and providing all the necessary technology for such institutes.
- Preparing teaching content(lectures and exams) for these specialised institutes.

Challenges

- Identifying regional skills and building all the necessary infrastructure for it.
- Fair conduction of the skill evaluation exam.
- Getting the budget approved from the concerned authorities.

References

https://en.wikipedia.org/wiki/New_Zealand_M%C4%81ori_Arts_and_Crafts_Institute

Illustration



Stakeholders

- Artisans
- Institute
- Trainees
- Government

Possible solutions to the challenges

- Exam can be conducted online with strict invigilation.
- Randomly selected set of 5 students from each class be evaluated.

Keyword: Skill development and Education

Idea in Brief (What)

- Annually conducting basic skills (reading, writing, mathematics) evaluation test in all primary students.
- Monetary Incentives for teachers based on
 - Attendance
 - Performance of the students in evaluation test

Benefits (Why)

- Problem of teacher absence in schools can be reduced.
- More Incentives for teachers will lead to better performance of students and vice versa.
- Evaluation will help improve the curriculum and teaching methods.
- Collection of data for future use.

Enablers (How – Technology/Policy/Etc.)

- Online conduction of the evaluation test. Ensuring accessibility for each school will require connectivity and computers.
- Evaluation can be conducted in collaboration with private firms.

Challenges

- Fair conduction of the skill evaluation exam.
- Budget limitation.

Stakeholders

- Students
- Teachers
- Evaluating Agency
- Government

References

<http://www.slideshare.net/Indian-CAG/bhavishyaji-25949230?ref=http://indiancag.org/manthan/entry/bhavishya-ii>

Illustration



Keyword: Skill development and Education

Idea in Brief (What)

- Campaign for Indian language content development on the web.
- Incentives to private organizations helping in this initiative.
- Subtitle creation in Indian languages for the online video lectures of NPTEL etc.

Benefits (Why)

- Local Indian Language Content will make internet more friendly and useful for everyone.
- Digital India will have wide coverage if everyone can access the internet in their own language.
- All students irrespective of the language can take advantage of online courses without any restriction.

Enablers (How – Technology/Policy/Etc.)

- All government websites should be translated in Indian languages. Also private websites should be incentivized to do the same.
- Improvement in automatic English-Indian languages machine translation can help in achieving this goal.
- State governments can take up role in their respective state languages.

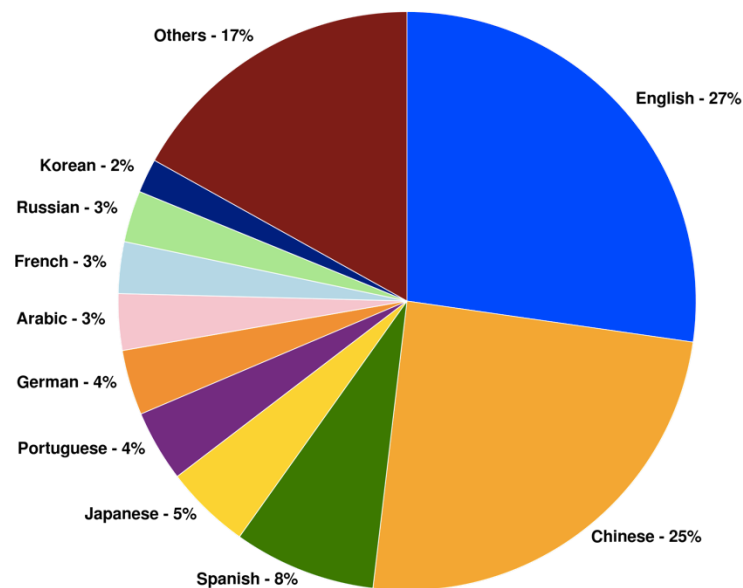
Challenges

- Ensuring quantity and quality of the content being generated under this initiative.

Stakeholders

- Internet Users
- Website owners/ Organizations
- Indian Language Universities
- Government

Illustration



मराठी मराठी हिन्दी
गुजराती తెలుగు లిపి മലയാളം
भाषा बाङ्ला
ଓଡ଼ିଆ ଶାସ୍ତ୍ର କన్నಡ ಸಂಸ್ಕೃತम्
விக்சிப்பீடியா اُردُو অসমীয়া



Possible solutions to the challenges

- Incentives should be given only after proper evaluation of the content.

References

<http://www.nextbigwhat.com/indian-regional-language-content-297/>

Keyword: Safety & Security

Idea in Brief (What)

- Integrated Grievance Redressal System : to address safety, crime, infrastructural issues
- Easy to use complaint filing and tracking system allowing anonymity
- Citizen feedback for crime zone classification and remedial measures
- Emergency contact points within every 100m

Motivation

- Easy to use and real time complaint filing system
- Ensuring quick response by designated authorities
- Anonymity encourages citizen activism
- Live stream interactions with police, bureaucrats, on secure server

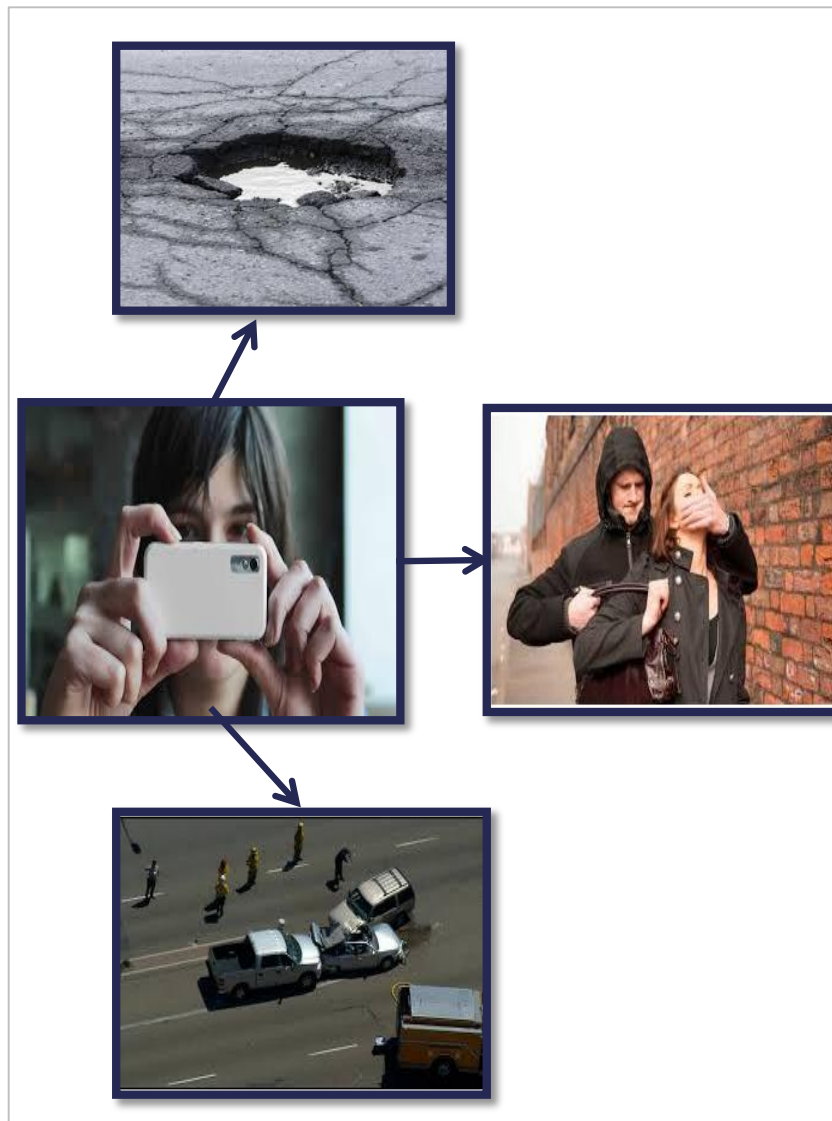
Enablers (How – Technology/Policy/Etc)

- To begin with everything can be integrated and provided in the form of an app or an IVR system
- An integrated database to maintain complaint records
- Emergency panels for help (calling ambulance, police, fire squad, etc.)
- Incorporating response to complaints in the performance evaluation of police/local bodies

Stakeholders

- Citizens – the users of the system, which in turn is customized according to their inputs
- Local municipal bodies, Police forces - respond to the various complaints filed

Illustration



Challenges

- User needs –
 1. Anonymity
 2. Ease of use
- Service provider needs-
 1. Efficient complaint handling
 2. Using user feedback for problem solving

Solutions to the Challenges

- Maintaining anonymity – When the user installs the app in his smart phone, he is provided with a unique ID and whenever he files a complaint this unique ID also goes into the system. This unique ID helps in maintaining anonymity and can later be used for flagging the defaulters.
- Complaint handling:
 1. Segregation: Classification algorithms to segregate complaints on the basis of location and category
 2. Tracking : Using unique id to track the status of a filed complain
 3. Multiple reporting of same incident: Location, evidence can be used to deal with multiple reporting of same incident
 4. False complaints : Flagging the device using unique id.
- Using feedback : We can have machine learning algorithms running at the back end that can use the complaint details to track which areas are more prone to particular types of crimes or infrastructural issues, this data can then be used to generate heat maps

References

Visuals

Report

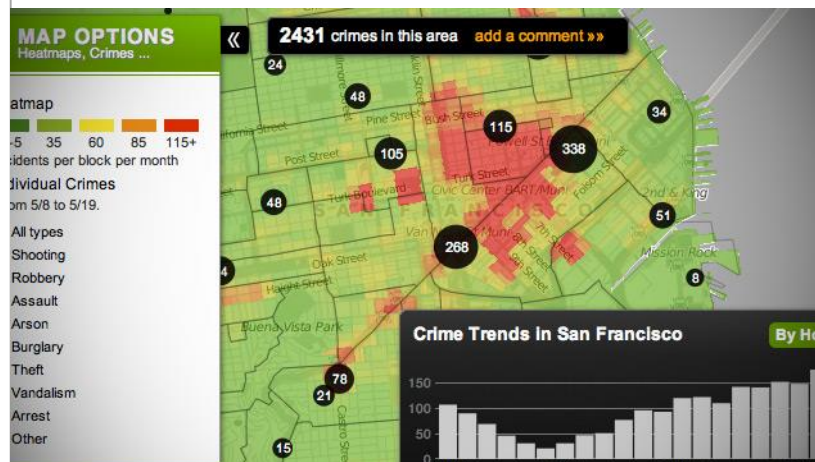
Category
▼

Location

Report details

Evidence upload

A sample interface



Example heat map

Keyword: Safety & Security

Idea in Brief (What)

- Enhance the capability of CCTV cameras with help of gesture recognition. Use gesture recognition to identify accidents, use of weapons in public place
- Place an emergency key button like in metro with CCTV cameras so that people can call for help (even anonymously)

Benefits (Why)

- Emergency situation can be identified early
- Better Estimation of Severity of situation by focusing on affected area
- Better estimation of resources required and coordination of different teams (health, police) can be estimated early
- Effective to induce response from common people as they can help by just pressing emergency button

Enablers (How – Technology/Policy/Etc.)

- Machine Learning models, some research already going on
- Buzzing of appropriate alarms so to focus on appropriate camera and also some nearby cameras
- good monitoring system in place

Challenges

- Effective Monitoring and Trained personnel to coordinate a emergency situation and also estimate resources required
- Arbitrary breaking/pressing of emergency button and subsequent replacing of button
- Developing Gesture Recognition Technology

Stakeholders

- CCTV Monitoring Personnel
- Police, Health and other Emergency handling departments
- Common People

Illustration



Solutions to the Challenges

- Proper Training programme for training people and also some drill sessions for training
- Don't use hammer instead keep a emergency button that connects to control line so people can explain situation . Also person can be simultaneously monitored on CCTV and misuse of button can be made a punishable offence
- Simple weapons and accidents can be detected, need to outsource the work

Keyword: Safety & Security

Idea in Brief (What)

A location based mobile app that provides smart mobility solutions to protect users from crimes and enhance mutual trusts, by

- Real time tracking throughout the journey
- Emergency alert when “deviation” happens
- Share your location and deviation with key stake holders and police, incase of emergency

Benefits (Why)

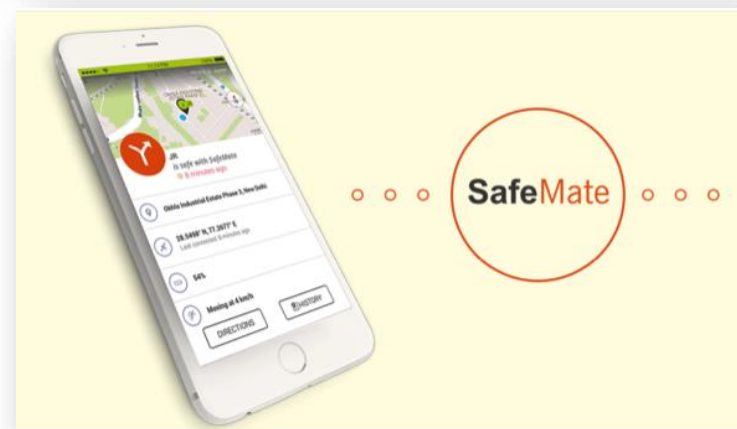
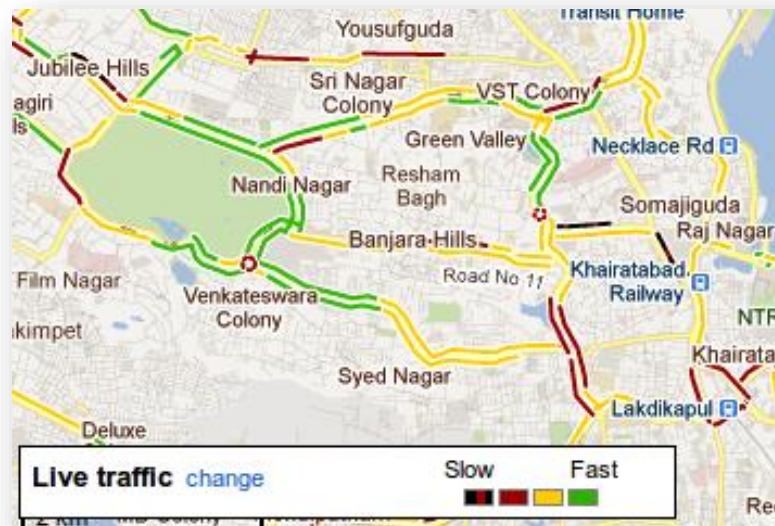
- We can create an environment where both the commuters and the driver feel safe during the journey
- We can earmark areas based on the frequency of crime rates and public ratings and as a result figure out risky or unsafe zones safety powered by big data. We can
- Introduce accountability to the journey as the passenger knows the basic identity of the driver, both of them know the intended route to be taken and both are aware of the consequences of unexpected events that can take place.
- A parent mode : where parents or family members can track the location of their loved ones.

Enablers (How – Technology/Policy/Etc.)

- Smart phones with network and GPS
- Ability to share the location with others
- Send emergency alerts and transmit location data
- Device can act as a black box

Illustration

Show how safe the route is



Challenges

How to expand its usage to functions beyond travel .e.g. To prevent crimes happening on the streets . Cost and monitoring services : Cost, accountability issues

Solutions to the Challenges

Need an additional functionality of an emergency button (volume buttons long tap etc.)

Stakeholders

- Maps based service provider . Eg. Map My India
- An emerg/vzb 4tency assistance service provider
- Making the app and monitoring it

Others (Data/Visuals/...)

How it works :

- 1) Book a cab on the app (Like kakao taxi)
- 2) You can choose the route you would prefer to take
- 3) Let your loved ones track you during the journey
- 4) In case of occurrence of unexpected events such as deviation from the intended route or prolonged non-movement, there would be an alert send to all stakeholders : the driver, passenger and the tracker
- 5) If approved by both driver and passenger the journey continues and the trackers doesn't bother
- 6) In case of no response from the passenger or deviation from the intended route, an alert can be sent by the tracker to the police.
- 7) For foreigners or tourists, who have no trackers, a special tracking service can be offered

Keyword: Public Resource Utilization

Idea in Brief (What)

Mobile app to find nearest toilet location, details of the facility and feedback about the facility. The app can also allow users to add new toilets if it is not in the database already. The app can also allow anyone to add private toilets (like in a hotel, restaurant etc.) to be used by someone who need it (after paying some extra charge). Another problem is change

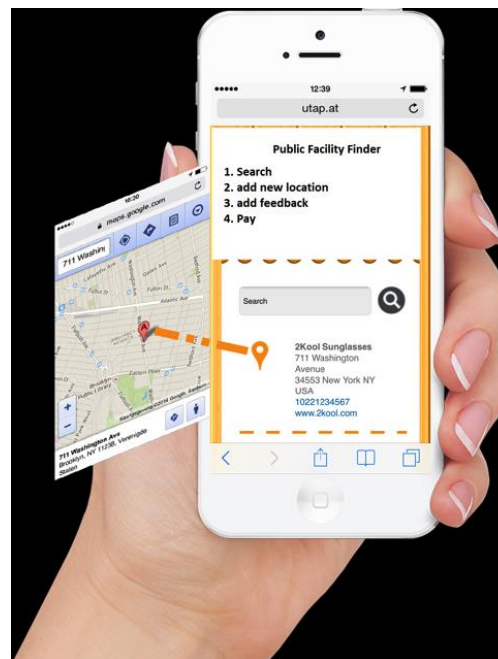
Benefits (Why)

First of all the number of toilets are less compared to the need and that too it is hard to locate and find. There are some mobile app and websites available but it solves just one purpose, to locate the toilet. However, getting private toilets to the pool of usable toilets (with extra charge) can solve some of the problems.

Enablers (How – Technology/Policy/Etc.)

- Mobile app – A mobile app with major toilet location and feedback to be launched with an option for user to add new toilet along with its location and feedback.
- Use may get some rewards for adding a new toilet (in any form) so as to motivate people to add to the database of existing toilets.
- Allow private toilets to add (on rental basis) their toilets in existing pool.
- Common payment option using mobile phone

Illustration



Public Utility Finder App

App to allow sharing private utilities for public use

Reward for populating the data

Simple and feasible payment options

Use app data to support adding directions boards on road

Challenges

Payment for toilet usage is always cumbersome and getting some online payment option might be expensive.

So the challenge is to use a cheap and simple payment option for payment towards the usage of toilet or public facility.

Stakeholders

Hotels, restaurants and private facility who would like to rent out for public usage

Municipal corporation

References

Toiletfinder.org – Similar app exists but we need to add private toilet and generalize it for public facility finder.

Solutions to the Challenges

NFC based lock code generation

Others (Data/Visuals/...)

NFC based lock code generation



Keyword: Public Resource Utilization

Idea in Brief (What)

Bicycle sharing stations for commercial complexes, parks.

Benefits (Why)

- Reduction in traffic on roads
- A step towards sustainable cities
- Reduction in use of private transport
- No more need to waste fuel looking for parking spots
- Saving the environment

Enablers (How – Technology/Policy/Etc.)

Advertisement and branding will pay a huge role in making this a idea useable among people.

- “No time for exercise, ride a bike”
- “Care for city, share for city”

Mobile applications to give nearby sharing locations

Illustration



New-york has system in place with revenue of over 3.7Million USD per month.

- 7000+ bicycles travelled over 2.2 million miles in one month
- Offsetting over 1 million pounds of carbon in the surrounding.

Challenges

- Maintenance
- User authentication
- Thefts
- Rebalancing & Prime locations for stations

Stakeholders

- Community --- Environment --- Government
- Business companies(Advertisements)

References

- [August-2015 Report CitiBike](#)
- [Planning guide for Bike Sharing](#)

Solutions to the Challenges

- Regular maintenance every fortnight
- Aadhaar ID/ Credit cards
- GPS enabled
- Understanding usage cycles

Cost Analysis

Sample Area	2.8	km ²
No-of Bicycle stations	20	
People working at BKC	600000	
No of Operating bicycles	350	
Cost of one cycle station	500000	Rs
Cost of one cycle + Maintain	2600	Rs
Office Staff	20	
Annual Salary/person	240000	Rs
Miscellaneous	5000000	Rs
Conversion Rate	0.05	
Total Setup Cost	20710000	

Carbon foot print reduction ~ CO₂ absorbed by 2 trees/ year for 5km cycle ride daily

Keyword: Public Resource Utilization

Idea in Brief (What)

Centralized credit points management systems.
Govt provides incentives to users of different technologies (solar energy, segregated waste disposal, public transport usage).
Link Aadhar card based identity to online credit system.
Different kinds of credits can be added to this central system, with each kind of credit linked to a certain kind of reward (different business discounts, final tax cut contribution, etc)

Benefits (Why)

Incentivization of important schemes will ensure some amount of success.
Linking credit usage to small businesses will ensure thriving of the small business in the early stages.

Enablers (How – Technology/Policy/Etc.)

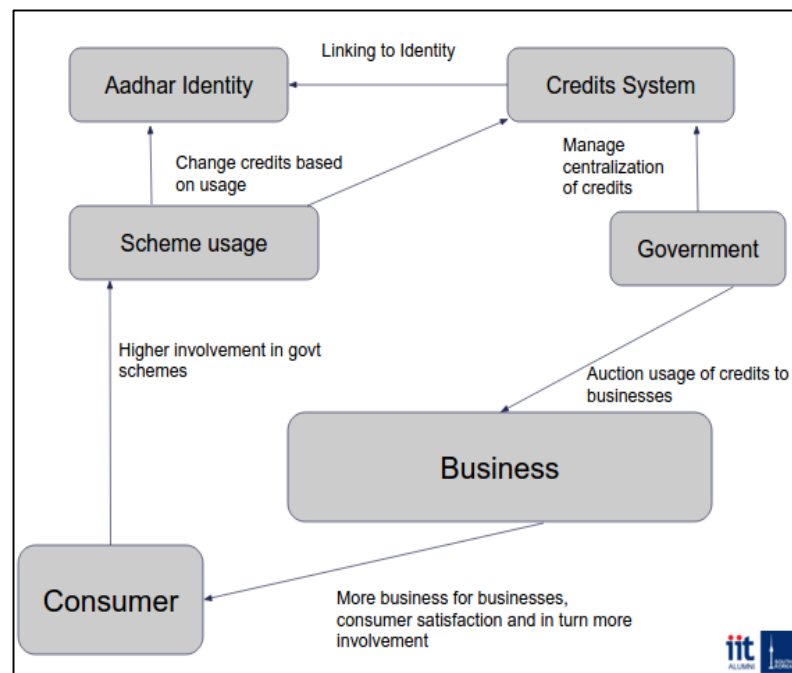
Linking credit system to Aadhar is simple (subsidy systems already do this).
Divide credits into different levels. This helps provide more incentives for users of costlier technology/schemes.
Link different levels to different rewards.

- Small businesses could be linked to these credits. Users get discounts with these credits, businesses thrive with more revenue and government subsidizes part of the discount
- Large businesses could be linked to these credits. New form of discounts for them, more business, higher user involvement in govt schemes. Many large businesses already do this in the form of credit card based discounts/membership based discount. Govt earns revenue from auctioning to large businesses.
- Tax cuts for the highest level of credits (solar energy usage)

Solutions to the Challenges

- The security measures planned by the govt for Aadhar could be extended
- To ensure transparency, e-auctions like in case of coal auctions can be followed
- This assistance can be a part of the “Start up, Stand up India” campaign

Illustration



Challenges

- Privacy of citizens. As the scheme is linked to Aadhar, credits accumulated could be used to profile a citizen
- Auctioning credits to large businesses. Basis of the auction is important. Possible avenue for corruption.
- Assistance to small businesses. Choosing the right businesses.

Stakeholders

- Major stakeholder is the Government
- Citizens
- Businesses

Keyword: Public Resource Utilization

Idea in Brief (What)

- **Linear Lego Parks** : Parks with length greater than width and whose constituents are customized as per the needs of all. They offer active recreation, beautiful vistas, a series of entertainments, commercial offerings and dining along the way while consuming limited space

Benefits (Why)

- -Deal with the urban space crunch
- -Mobile recreation, physical fitness
- -Capable of accommodating bikers and pedestrians
- -Beautification and conservation of green spaces, flood plains
- -Efficiently incorporate street vendors and road side shops
- -Property values enhanced over a greater area

Enablers (How – Technology/Policy/Etc)

- Use algorithms to figure out the best possible layout based on factors such as space, traffic, scenery, establishments
- Survey and research to choose the components of park as per the needs of citizens
- Modification of existing roads, local establishments to enable construction

Illustration



Challenges

- Finding space in a densely populated area
- Cater to the interest of diverse people
- Maintenance costs

Stakeholders

- Citizens : as users
- Municipal Corporations: Construction and maintenance of parks
- Local businesses :diners, street vendors,, citizens, they are the service providers in the park
- Road construction departments: CPWDs and SPWDs

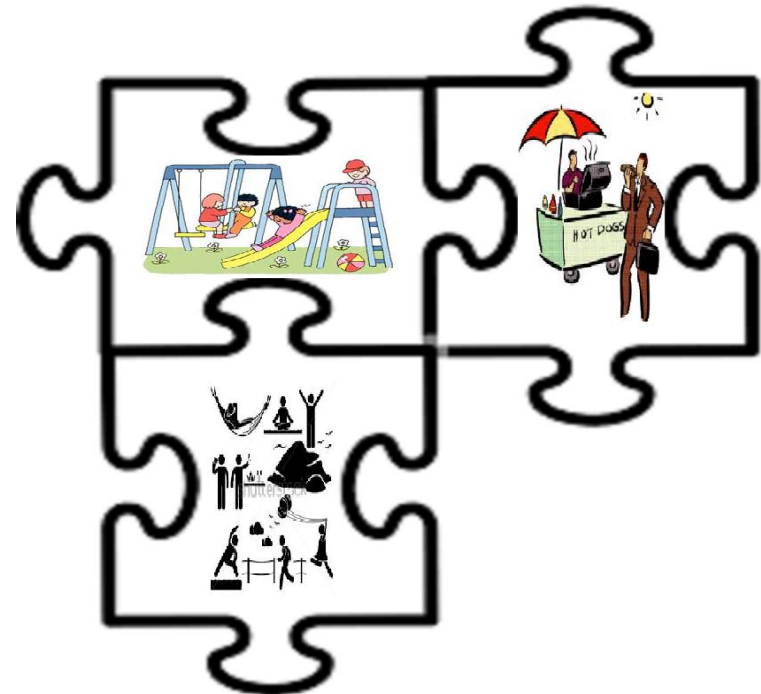
References

https://en.wikipedia.org/wiki/Linear_park
<http://blog.waterfrontoronto.ca/nbe/portal/wt/home/blog-home/posts/benefits+of+linear+parks+01>
<https://lhoustoun.wordpress.com/public-spaces/chapter-Surban-linear-parks-from-urban-land-magazine/>

Solutions to the Challenges

- Incorporating local shops, street vendors, diners, etc., in the park to save space occupied by them. Run the parks parallel to roads. In some areas the parks can be made in the form of overhead bridges
- Have a bag of ingredients to choose from, citizen's feedback to customize the park, can have theme based design
- Charging rents from shop owners; having advertisement hoardings

Others (Data/Visuals/...)



Keyword: Public Resource Utilization

Idea in Brief (What)

- Organize Education and awareness campaigns in Schools
- Use Wedding Halls for activity based campaigns (martial arts, yoga class)
- Install Exercise Machines, Chess tables, dancing fountains in all public park
- Installing Solar panels as roof of parking lots

Benefits (Why)

- Schools have all infrastructure for educational programs and for vocational training
- Wider Halls helpful for Activity campaigns. Also wedding halls remain empty for most part of the year
- More Effective use of parks and also leads to beautification of parks
- Provides shade to cars and also generate solar energy



Illustration



Challenges

- Proper management of school resources. Also building will be only available during nights or weekends
- Again Proper Management (Who owns what responsibility for tasks like cleaning, organizing other materials) is important
- Cost of Installation of solar panels

Solutions to the Challenges

- Proper coordination with school management and advance planning of all the activities. Also defining responsibilities clearly
- Administrative issues, can be resolved with planning
- Part of cost can be covered through advertisement

Others (Data/Visuals/...)

Stakeholders

- Owners of Buildings
- Management of School, Wedding halls
- Government
- Community organizers



Keyword: Public Resource Utilization

Idea in Brief (What)

Taiwan style road and building design where footpaths and/or two wheeler parking is inside a building under the roof of first floor., creating wider roads, safer footpaths and commerce during rain and heat. This design can be used for new streets, or when expanding roads when only ground floor can be modified.

Benefits (Why)

- No interruptions to commerce during rains or heat
- Promoting commerce on such streets
- Protection of pedestrians from vehicular traffic and accidents
- Encouraging two wheelers and cycles
- More space for vehicles on road
- Marked spots can be created for car parking and street vendors
- No need to destroy all building only ground floor

Enablers (How – Technology/Policy/Etc.)

- Building design adopting local styles to promote such streets
- Safe and affordable modifications to existing buildings
- Policy incentives in the form of tax breaks to building owners

Illustration



Walking near shops

Parking under roof of buildings



Challenges

1. Water logging in rains is a challenge (health and safety issue)
2. Getting consent of all existing building owners is a challenge
3. Buildings in India are small and not long for such design
4. City planners have to be educated on this new policy

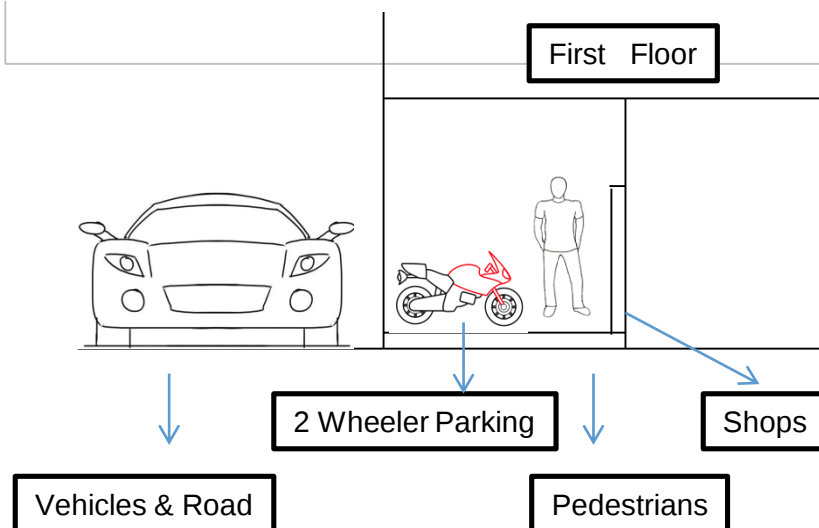
Stakeholders

- City Planners
- Building Owners
- Building Designers
- Pedestrians
- Vehicles

Solutions to the Challenges

1. Storm drains are to be built in such streets atleast
2. Punitive and Incentives provided to owners
3. Such buildings in main roads are to be discouraged
4. Central or State govt level directives would help

Others (Data/Visuals/...)



Keyword: Public Resource Utilization

Idea in Brief (What)

- Development of Websites of all the important cities in a state
- Efficient management of the website along with latest information about various infrastructure opportunities, tourism spots etc.
- Creating and using a well designed and neat template for all the websites with information provided in regional language for locals and English for other people
- Focus on information about small villages and tehsils falling in the district area

Benefits (Why)

- Easy availability of information for everyone
- Brings the low-level cities and tehsils to a bigger horizon where people around the world can get connected to these lesser-known places
- Chances to boost tourism and attract investment in the rural areas

Enablers (How – Technology/Policy/Etc.)

- Data collection about resources, cultures, tourist spots and other useful information about different cities
- Development of a template design to which existing sites can be ported and looking after regular maintenance.

Solutions to the Challenges

- Delegating work to private firms or hiring good web developers for website development
- Getting help from locals in an area through district administrative bodies such as Panchayats

Others (Data/Visuals/...)

- At present websites are hosted on <http://districts.nic.in> , which are not neat and vary a lot in their designs. Need to create a template design which can be used across all, in order to maintain uniformity

Illustration

Districts of India website



Challenges

- Creating an easy to navigate website template with good design
- Collection of information from small villages and tehsils

Stakeholders

- State government
- Tourists
- Citizens

References

- <http://districts.nic.in>

Keyword: Public Resource Utilization

Idea in Brief (What)

As car ownership increases in Smart Cities car-pooling/ride sharing becomes a very important way to combat traffic, share private resource for public use and eco-friendliness. Promote car-pooling using State RTC issued tickets with app based tracking and bus-stops as pickup and drop points. Guarantees safety and creates more options for public transport. Can include two-wheeler pickups too

Benefits (Why)

- Car owners gain additional income with added safety in sharing
- State RTC doesn't lose out on loss of customers (cut in tickets)
- Comfortable rides at affordable prices
- Taxis too can use this service creating additional more income
- Less number of cars and more people in a car
- Can encourage good behavior like seatbelts and helmet by making it compulsory or encourage it by drivers.

Enablers (How – Technology/Policy/Etc.)

1. App based tracking to ensure safety and availability
2. Payment processing for all ride-shares
3. Identify routes where car-pooling system would be efficient
4. Feedback system to improve system and weed-out bad behavior

Illustration

Passengers

Register for Service
(Background checks done)



Buy Tickets online/at stop



Stand in Line at designated spot
(wait for Car)



Pick Up and Drop at stops

Car/Bike Owners

Register for Service
(Background checks done)



Pickup passengers



Scan Tickets using App



Drop Passengers – Claim money



Challenges

1. Flexibility in ride stops
2. Reliability of available cars
3. Riding with Strangers – Safety
4. Issues with State Road Transport Corporation
5. Issues with Taxi Operators
6. Women Safety
7. Bad behavior and other issues

Stakeholders

- Car and Bike Owners
- Passengers
- Road Transport Corporation
- Bus-Stops and Roads

References

<https://en.wikipedia.org/wiki/Carpool>
<http://greenlivingideas.com/2015/07/22/15-best-apps-for-carpool-and-rideshare-in-2015/>

Solutions to the Challenges

1. Designate fixed bus-stops so that consistency is available
2. Incentivize sharing cars by less road toll – or tax breaks
3. Only registered verified people can avail the service
4. Make them part of the equation by having them make money
5. Encourage taxis to use the service with different pricing plan
6. Women only car-pooling can be encouraged
7. Feedback system and reviews can address the problem

Others (Data/Visuals/...)



Bike Sharing should be encouraged



Keyword: Last Mile Connectivity

Idea in Brief (What)

- Allocate drones carrying Wi-Fi Transmitters for a set of villages. The drones scan the entire allocated area in such a way that every village gets an hour (every day) or so access of Wi-Fi.
- Run the drone for only 8-10 hours in a day and more in times when connectivity to internet is helpful (during emergencies, harvest time, etc.)

Benefits (Why)

- Last Mile Connectivity
- Secondary benefits of last mile connectivity by connecting people with the information they need for their livelihood.

Technology Enablers (How)

- Drones. Facebook is also working on drones to provide Wi-Fi to the remote areas.

Challenges

- Cost

Stakeholders

- Drone Makers
- Government
- Village People

References

<http://en.dailypakistan.com.pk/technology/facebook-builds-internet-beaming-drone-for-remote-areas/>

Illustration



Facebook's Solar Powered Aquilla drone

Keyword: Urban Energy Needs

Idea in Brief (What)

Dynamically control the intensity of lights in public areas depending upon presence of people.

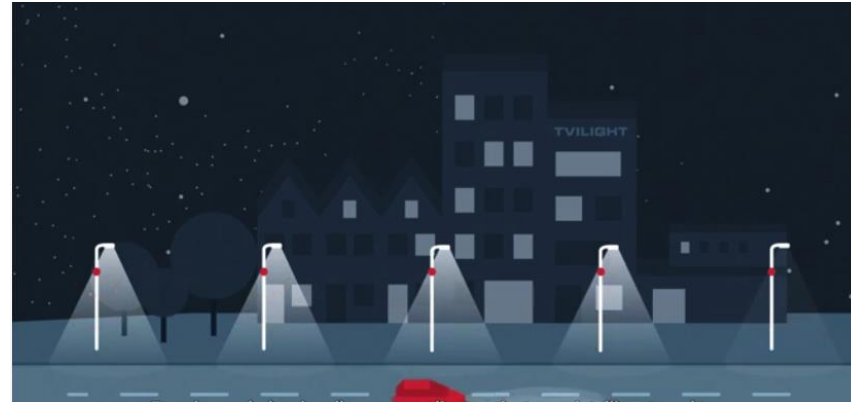
Benefits (Why)

- Most of light at night is wasted in illuminating the sky than the street/park.
- 20% of power consumed by street lights is only used 80% is wasted in lighting empty surroundings.
- Running one street light for 8 hrs ~ 1200Wh

Enablers (How – Technology/Policy/Etc.)

- Radar sensor to detect movement/Activity
- PLC (Power line communication) to centrally control and monitor the street lights

Illustration



Challenges

- Upgrading street lights and creating a central system for controlling.
- Configuration of streets lights and fail proof mechanisms.

Stakeholders

Community --- Environment --- Government
Business companies(Advertisements)

References

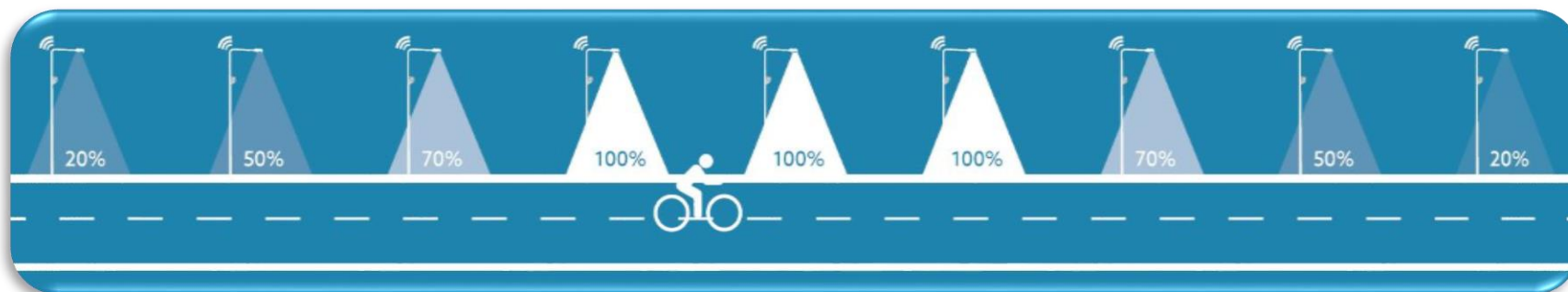
[Twilight](#) has already implemented this in some cities in Europe.

Solutions to the Challenges

PLC will help in creating a communication network over the exiting power lines.

Cost Analysis

- Energy consumed / day/ street light = 1200Wh
- Items required on every streets light:
 - WiFi Router (~ 700-800 Rs)
 - Radar sensor (1000 Rs)
- Total cost/street light = 1800Rs
- % Saving = 50%
- Electricity cost/day $\sim 6 \times (1200\text{Wh}/1000) \sim 7.2\text{Rs}$
- Saving per day = 3.6 Rs.
- Investment return ~ 500 days.



Keyword: Urban Energy Management

Idea in Brief (What)

- Use decentralized solar DC to solve electricity problems in cities. Provide low cost, 24*7 electricity using solar DC
- Install Uninterrupted DC Power Module which has an AC and a DC line at each home, the DC line powered by a solar panel supplying a decent power 24*7

Benefits (Why)

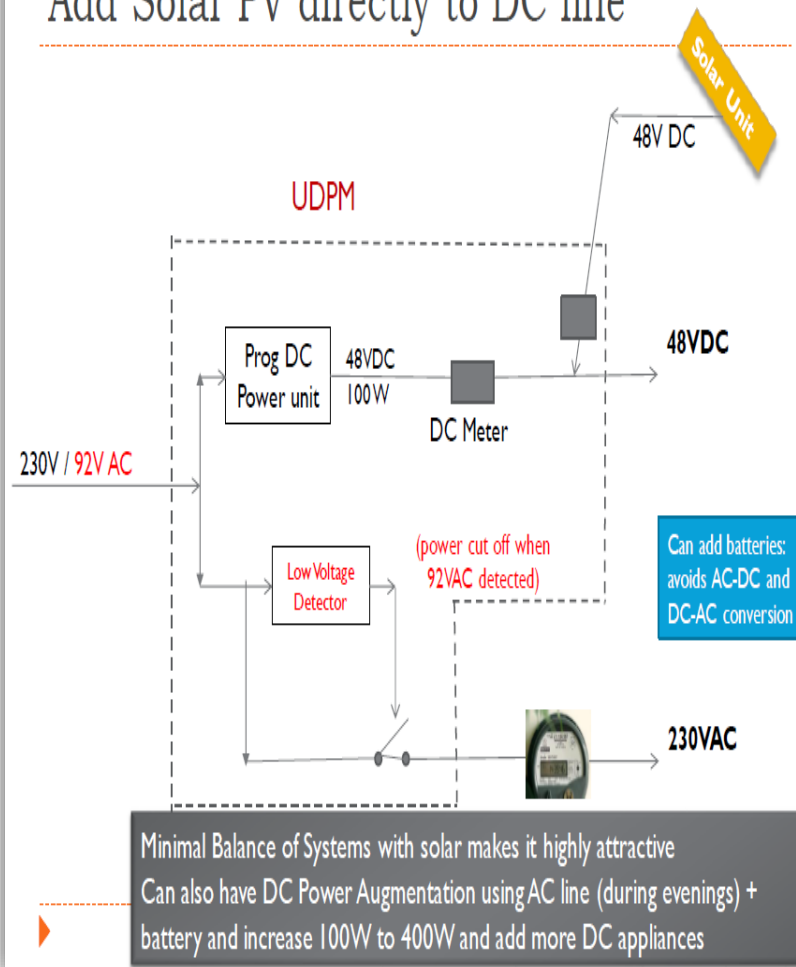
- Energy conservation (as AC – DC conversion losses are minimized)
- Reduced electricity bills
- Brown out instead of a black out (i.e., a minimum electric power 24*7) to even the remotest of household
- - Have green offices and apartments, as solar is renewable

Enablers (How – Technology/Policy/Etc)

- Installation of Uninterrupted DC Power Module at each home
- Changes in the power grid to support UDPM, a new DC line has to be laid out (we can get rid of this later by using solar panels)
- Solar panels
- DC equipments : lights, fans (most of the other electronics – phones, laptops, etc. work on DC)
- Developing standards for use of DC

Illustration

Add Solar PV directly to DC line



Challenges

- Convincing people for the shift
- Getting companies to manufacture DC fans and lights
- Developing standards for use as the rest of the world uses AC

Stakeholders

- Households – as a consumer of electricity
- Corporations - as a consumer of electricity
- Electricity board – electricity supplier, has to come up with a new cost structure
- Local Grid Station – installing the necessary infrastructure
- Academicians – for research and standardization

References

- http://tenet.res.in/Publications/Presentations/pdfs/UDC_Solar-Dc.pdf
- http://articles.economictimes.indiatimes.com/2014-01-28/news/46735119_1_dc-power-solar-energy-solar-power
- <https://www.youtube.com/watch?v=FRnr6zu0QiY>

Solutions to the Challenges

- An initial investment of around Rs. 1000 in UDPM, besides DC bulbs and fans, ensures 24*7 electricity, cost savings as AC-DC conversion losses are avoided
- Promote technology among people, as the demand increases, supply will increase
- Government should encourage academic community to come forward as this will solve a lot of India's power issues

Others (Data/Visuals/...)

Multiple Solar-DC Field Trials

- In off-grid situation as well as solar Inverterless UPS
 - OGH with 125W Solar panel, 1 kWh battery, 1 fan, two lights and a cell phone charger

Location: Irrukam Island, AP
of houses covered: 30
Date: January 2015



Site is close to India's prestigious Sriharikota Rocket Launch, yet there is no electricity for many residents. 23 out of 30 homes were off-grid

"Summer will never be hot anymore"



"Bye-Bye to eye straining Oil lamps. Now I can complete homework faster"



Keyword: Urban Energy Management

Idea in Brief (What)

- Charge Electricity based on Time of Use(at what time during the day electricity is used)
- Install proper high voltage lines in accordance to average load to reduce Line loss

Benefits (Why)

Ensure proper distribution of average Load
 Line loss results in loss of more than 25% energy currently in India ~ equal to 1.5% GDP (less than 6% for US)
 Proper load distribution results in less Line loss
 Smart meters help in reducing electricity stealing

Technology Enablers (How)

Smart Meters : A meter that signals high usage rate especially during peak usage times. A beep or blink when the rate of power usage is higher than the average or is abnormally high.

The meter should measure the usage during peak hours. So, if a household consumes less energy than allocated than the average consumption, then there should be some incentive.

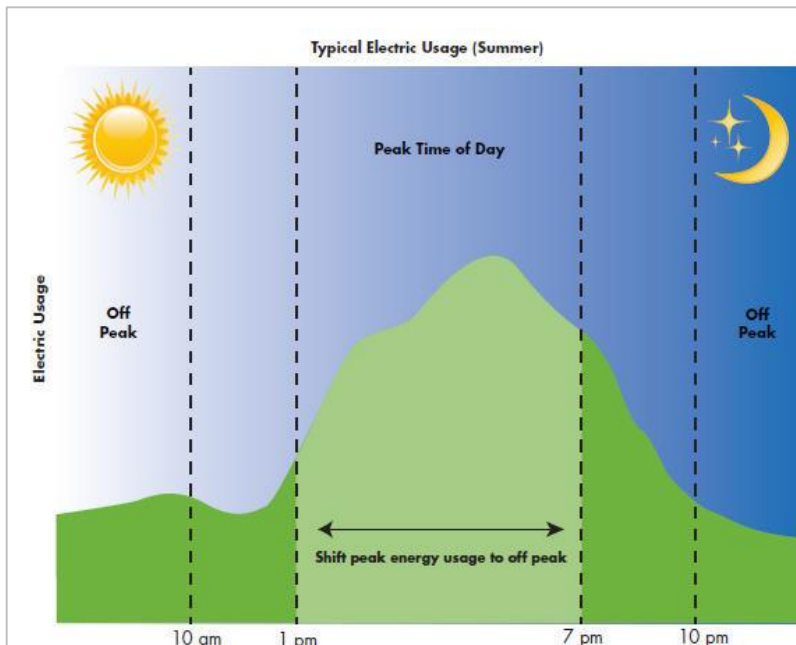
Slab wise rates only during peak hours. slabs not based on total usage but usage during peak hours.

Installation of High Voltage transmission lines

Stakeholders

- Households
- Energy companies
- Meter manufacturing companies

Illustration



Solutions to the Challenges

A sensor that measures the rate of energy usage during peak hours and blinks to alert the user to seek ways to reduce power consumption, if he/she chooses to.

Others (Data/Visuals/...)

1. Meters that can distinguish peak usage periods from the non-peak ones.
2. Meters that can measure the rate of usage of energy and alert in case of a high usage rate. we need a method to define this high usage rate for every household.



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