



India's perspective on IoT in smart cities program

Emerging IoT solutions in developing countries

Some Facts



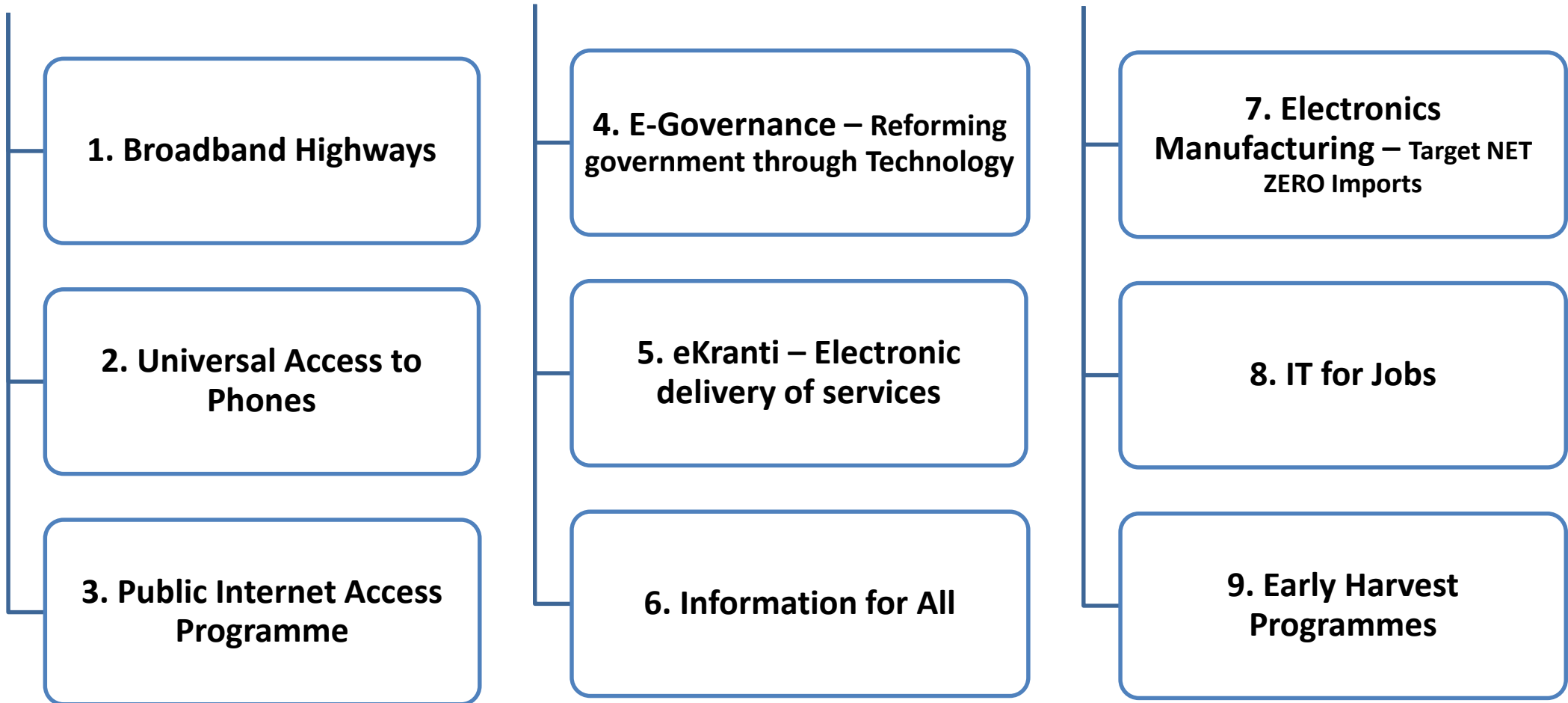
- **Population** 2nd Highest [1,326,801,576 (2016)]
- **Area** 7th Largest
- **States** 31 States
- **Languages** 325 Languages spoken, 1652 dialects
- **Age Structure** 28.6% (<14 yrs) 63.6% (15-64 yrs)
- **GDP** \$2.45 trillion (2017) 6th largest
- **GDP** \$9.49 trillion (PPP; 2017) 3d largest
- **GDP Growth** > 7% since 2014
- **Exports** \$272.4 billion (2015)
- **Export partners** European Union (16.9%): USA (15.2%)
- **Import** China (15.8%); EU (11.2)

National Priority Programs (40)

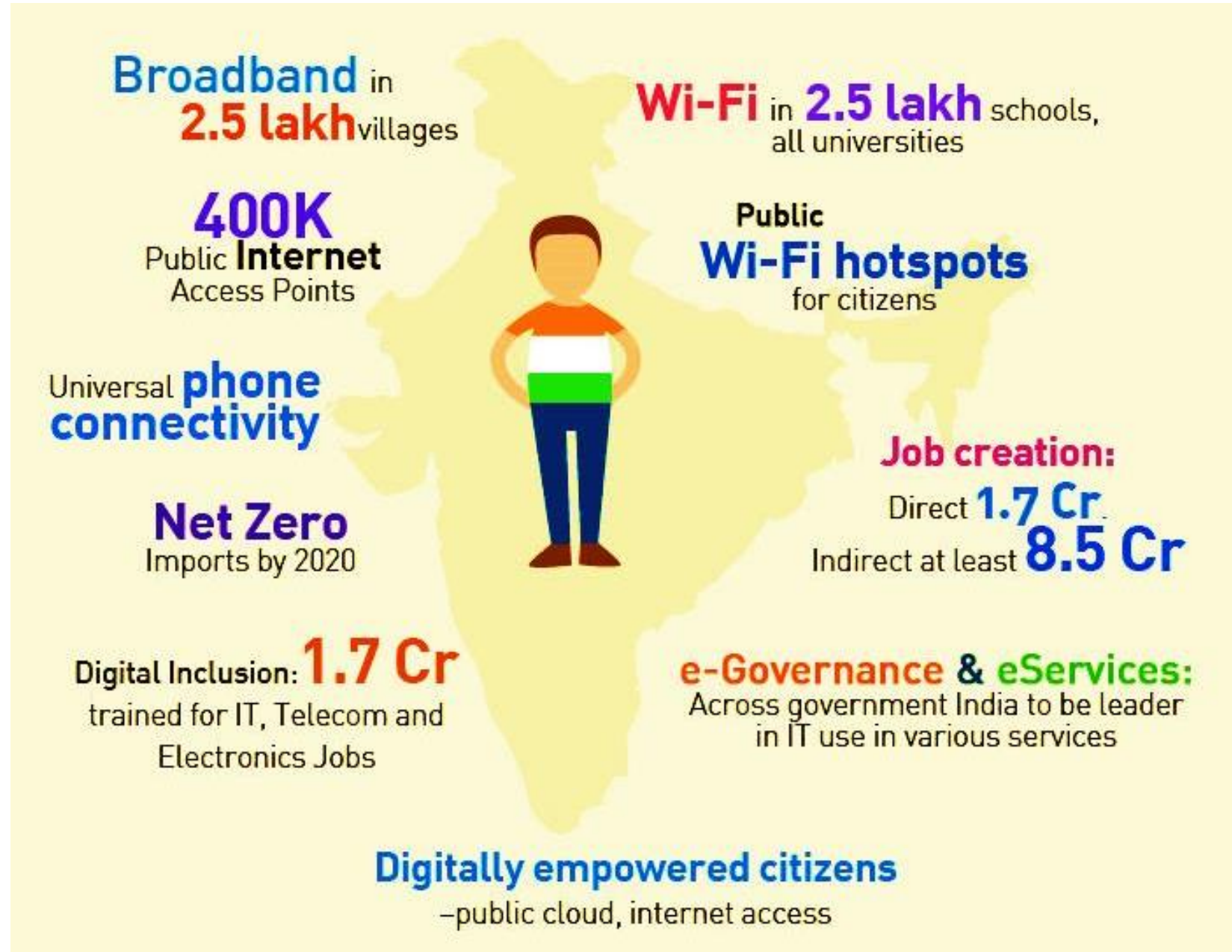
- Make in India
- **Digital India**
- Skill India
- Start up India
- Swachh Bharat
- **Smart Cities**
- Jan Dhan Yojana
- PM Adarsh Gram Yojana
- Gram Jyoti Yojana
- Fasal Bima Yojana

Digital India

- Digital Infrastructure as a Utility to Every
- Citizen Services on Demand
- Digital Empowerment of Citizens



How Digital India going to benefit common man



Progress so far

Internet users

- 500m (June 2017)
- 1.18 billion (Feb 2017)

Telecom subscriber base
-mobile and landline
combined



Growing Digital India

डिजिटल इंडिया के बढ़ते कदम



As on 08 Feb 2017



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Smart Cities Mission

- Smart City is a subset of “Digital India” program
- Develop 100 [smart cities](#) as satellite towns of larger cities by modernising them
- Both will lead development of the IoT industry ecosystem in the country
- A total of US\$15 billion has been approved
- Selection Process: All India City Challenge competition
- First batch of 20 cities were selected known as "20 Lighthouse Cities"
- In the next rounds 78 other cities were added (Totaling 98 cities)

EU partnerships

- France - to develop cities of Chandigarh, Puducherry and Nagpur
- Sweden - to develop states like Karnataka, Telangana and Maharashtra.
- Spain - Delhi into a Smart City
- Germany - to develop cities of Bhubaneswar, Kochi and Coimbatore.
- The Netherlands — Shown interest in investing in India for developing smart cities.
- Italy - to invest of \$1.2 trillion over the next 20 years in its own initiatives.

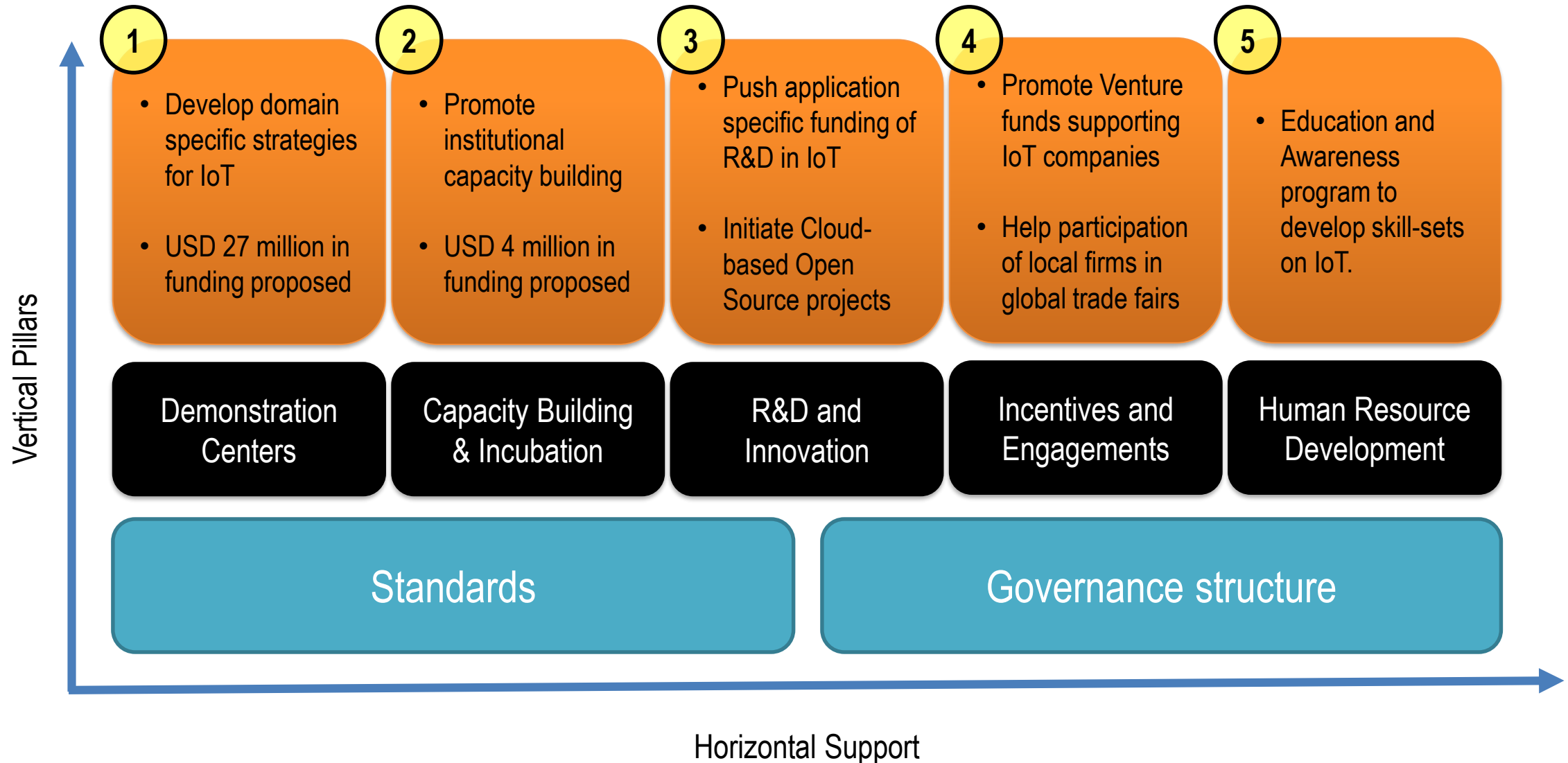
IoT is key to the planning of smart cities

- IoT has huge potential in planning of smart cities
- Clean infrastructure, free from pollution and congestion.
- Make the city sustainable for future generations.
- High quality connectivity for converting data to actionable information for:
 - City-wide command and control operation.
 - Unique user experiences.
 - Management of assets and their services in a supply chain.
 - Health, safety and many more possibilities.

IoT policy of India

- The policy objectives envisions:
 - Creating IoT industry worth USD 15 billion by 2020 (5-6% of world's IoT industry).
 - Developing IoT specific skill-sets for domestic and international markets.
 - Undertaking R&D for all the assisting technologies.
 - Developing IoT products specific to Indian needs in all possible domains.
- Already set up Incubation centers (National Centers of Excellence - CosE) under the PPP mode, with NASSCOM and other industry associations for supporting the IoT industry.
- This policy is expected to impact B2B and B2C businesses with data from billions sensors being processed by various IoT platforms.
- Smart City mission opens a trillions of dollars in opportunity.

Indian IoT policy framework



India experience

Waste management at Indore city

- 400 GPS enabled vehicles used for waste collection over a pre-defined route.
- Waste is now used in power generation.

ISRO geo-tag 10 million MGNREGA assets for online recording and monitoring of assets. The assets created range from plantations, rural infrastructure, water harvesting structures, flood control measures such as check dams etc., infrastructure for the community and assets promoting sustainable livelihood.

- The Adani Group commissioned the world's largest solar plant in a single location – 648 MW;
- used IoT for unified digital backbone for monitoring and controlling equipment across the plant, including inverters, switchyard, switchgears and weather stations.

Gujarat International Finance Tec-City (GIFT) being developed to provide high quality physical infrastructure (electricity, water, gas, district cooling, roads, telecoms and broadband) so that finance and tech firms can relocate their operations there. IoT is a mainstay in providing the user experience at GIFT; Intelligent Building Management Systems (IBMS) and 3-floor command and control centre

- Digital interconnection of two power plants (Vedanta's Talwandi Sabo Power Plant in Punjab + Bharat Aluminum Company Ltd.'s plant in Chhattisgarh)
- will enable proactive maintenance to (Reduce unplanned outages; Optimize costs; Increase availability of Vedanta's power assets)

Jaipur Smart City project gets digitally-advanced crime control room; using sensory feed from cameras to do video surveillance, vehicle tracking, crowd management, crime detection and monitoring of crime scene.

Issues

- Global cooperation on developing standards around iot technologies, process, interoperability and services like:
 - Spectrum energy communication protocols standards
 - Standards for communication within and outside the cloud.
 - International quality/integrity standards for data creation, data traceability.
 - Standards for energy consumption
 - Device security and safety, Data privacy, Data accuracy & Integrity and Security standards.
- Strong Legal framework (privacy law should be redrafted in view of evolving IoT paradigm)
- Facilitate R&D and innovation, including support for start-ups as well as for global players.
- To make interoperable global IoT ecosystem - Interoperability among IoT technologies has to be part of the vision

We welcome



Clustering partnerships in PPP mode



Foster research in
variety of areas



Sponsored research
(MEITY, EU H2020,
WAGGLE)



Ecosystem for collaborations



Foster entrepreneurship



A reference model of Smart Campus

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Thanks

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