NEPRA Resource Management Pvt. Ltd. (NRMPL)

Presentation by:
Sandeep Patel, Founder & CEO, NEPRA
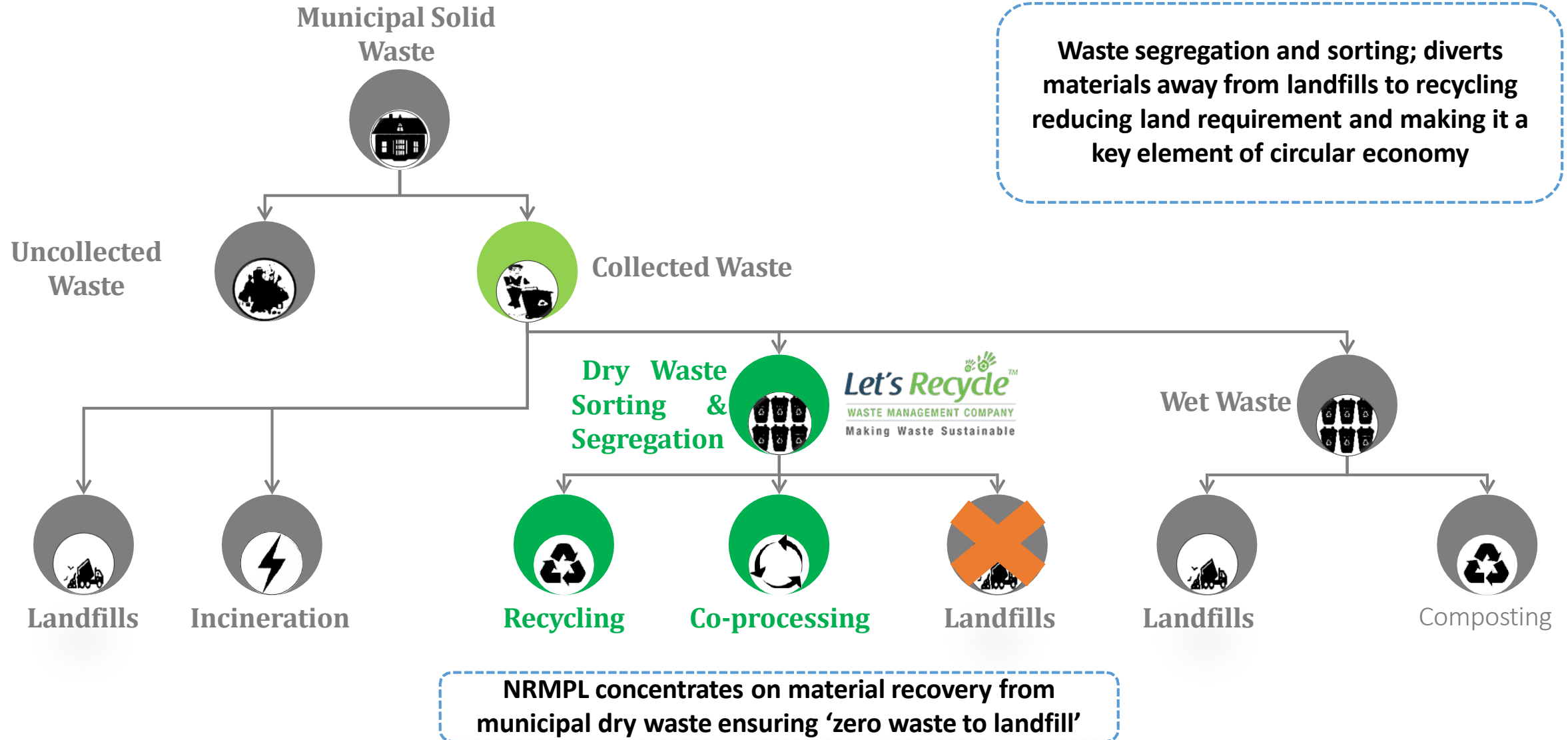https://www.linkedin.com/in/sapatel/?originalSubdomain=in

For NRMPL's brief introduction: https://youtu.be/eqQ_uxIMUuY

NEPRA is a unique proposition in the Indian Waste Management Context

Waste segregation and sorting; diverts materials away from landfills to recycling reducing land requirement and making it a key element of circular economy

Municipal Solid Waste

Uncollected Waste

Collected Waste

Dry Waste Sorting & Segregation

Let's Recycle™
WASTE MANAGEMENT COMPANY
Making Waste Sustainable

Wet Waste

Landfills

Incineration

Recycling

Co-processing

Landfills

Landfills

Composting

NRMPL concentrates on material recovery from municipal dry waste ensuring 'zero waste to landfill'

The Current Dry Waste Value Chain is highly unorganized and inefficient

NEPRA

Waste Generators	Unorganized supply chain	Waste Consumers

Waste Generators
- Households
- Commercial Establishments
- Industry

Unorganized supply chain

Dustbins → Waste Pickers → Kabariwalas → Scrap Dealers

Waste Consumers
- Aggregators
- Recyclers
- Industry
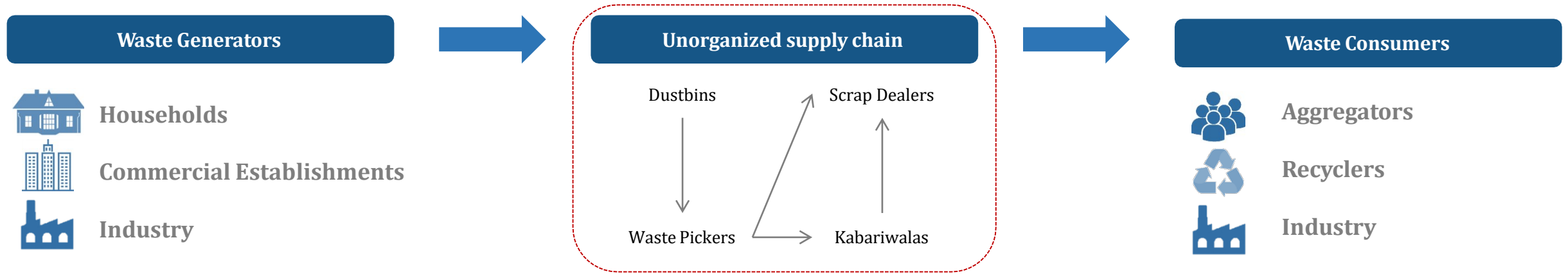
NEPRA - Successfully Organizing the Value Chain to Enhance Efficiency

Waste Generators	Nepra's processing	Waste Consumer

Waste Generators
- Households
- Commercial Establishments
- Industry

Nepra's processing

Collection & Consolidation → Sorting & Segregation → Processing → End products

70+ -products (PET, HDPE, LDPE, Paper and Metals)

Waste Consumer
- Industry
- Recyclers
- Aggregators
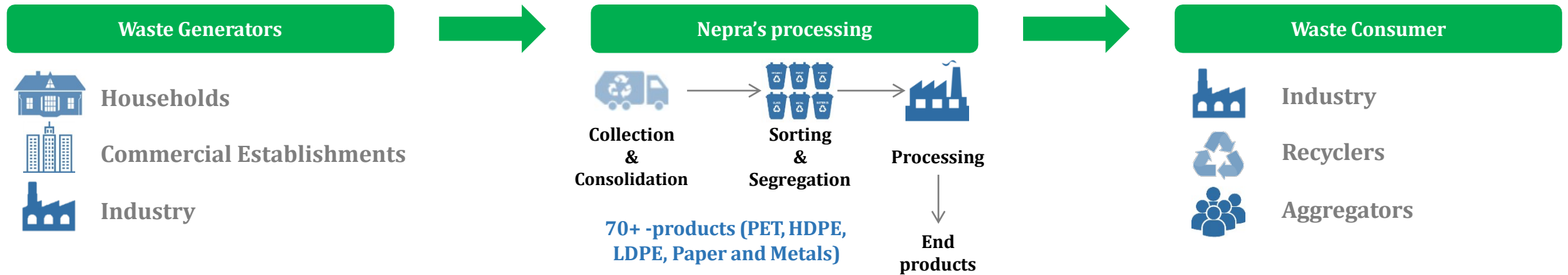
Directly Linking Waste Generators to Recyclers - Eliminating Inefficient Intermediation

Leveraging Technology for Driving Efficiencies and Increasing Transparency

NEPRA

Real Time Monitoring
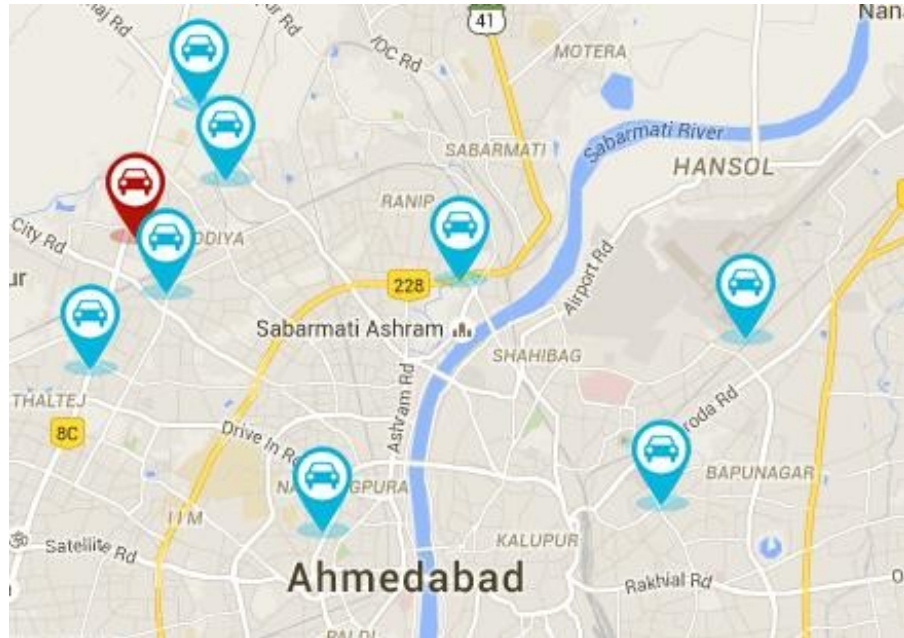
Helps NEPRA monitor the location of collection agents, waste collector and scheduled pickup calls in real time

Android Application

Local Language Application

Customized ERP Solution

Group	Particular	Weight(%)	Gross Qty	Inert(%)	Net Qty	Purchase@	Purchase Amt
	Magazines Waste - Regular	0.00%	2.60	0%	2.60	7.00	18.20
Corporate Waste	RDF - non-recyclable	4.84%	4250.00	0%	4250.00	-0.01	-42.50
Corporate Waste	Corporate Waste - Bottom Mix	3.96%	3592.43	3.28%	3474.66	3.37	11698.14
Corporate Waste	CW Disposal - FREWAS	39.42%	34840.49	0.64%	34617.60	0.01	344.57
Glass	Glass Waste - PS	1.14%	1000.10	0.00%	1000.09	1.98	1980.09
Metal	Oil Tin / Dabbo - Undamaged	0.03%	25.00	0%	25.00	14.44	361.00
Metal	Iron Waste Patra - Regular	0.30%	264.00	0%	264.00	13.00	3432.00
Metal	Brass Waste - Pital	1.94%	1700.00	0%	1700.00	25.17	42789.00
Paper	Newspaper Waste - Regular	0.04%	38.90	3.50%	37.54	9.40	352.83
Paper	Cardboard Waste - REGULAR	15.43%	13577.20	0.16%	13555.20	8.58	116251.69
Paper	White A4 Paper - Regular	0.16%	147.45	3.63%	142.10	5.48	779.00
Paper	Duplex - Regular	0.53%	519.18	9.72%	468.74	5.98	2801.78
Plastic	No 1 Pet Bottle - Waste	1.17%	1207.90	14.98%	1026.90	27.69	28439.40
Plastic	Mixed Milk/water Pouches - Dirty	3.50%	3125.69	1.58%	3076.21	3.95	12163.86
Plastic	Ramakda / Plastic - Rigid	6.21%	5590.53	2.44%	5453.85	10.91	59505.26
Plastic	Plastic Can 5 Ltr - Regular	0.01%	10.00	0%	10.00	5.00	50.00
Plastic	Plastic Can 15 Ltr - Regular	0.00%	1.00	0%	1.00	10.00	10.00
Plastic	Mixed Roadside Plastic Film - Dirty	0.34%	336.55	10.76%	300.33	5.75	1726.31
Plastic	Mixed Rafia Waste - bags	3.49%	3119.30	1.66%	3067.65	10.88	33366.60
Plastic	Black Rigid Plastic - Regular	0.22%	213.50	11.18%	189.63	4.00	758.52
Plastic	Plastic - Industrial	1.16%	1020.00	0%	1020.00	30.00	30600.00
Plastic	Dull LDPE - Regular	0.22%	219.18	12.55%	191.67	15.00	2874.99
Plastic	Colour mix roadside plastic - dirty	0.29%	286.20	11.89%	252.18	6.00	1513.08

Real-time information of the collection-mix to enable operations and sales planning

Key Features

Email/SMS notifications for transparency	Real time sync with server	Key in weight of materials to know exact payments	Easy to use due to images of waste materials	Standard predefined pricing	Available in Local Language & English

NEPRA

NEPRA's MRF use state-of-the-art technologies like Optical Sorting enabling it to sort and segregate waste at scale
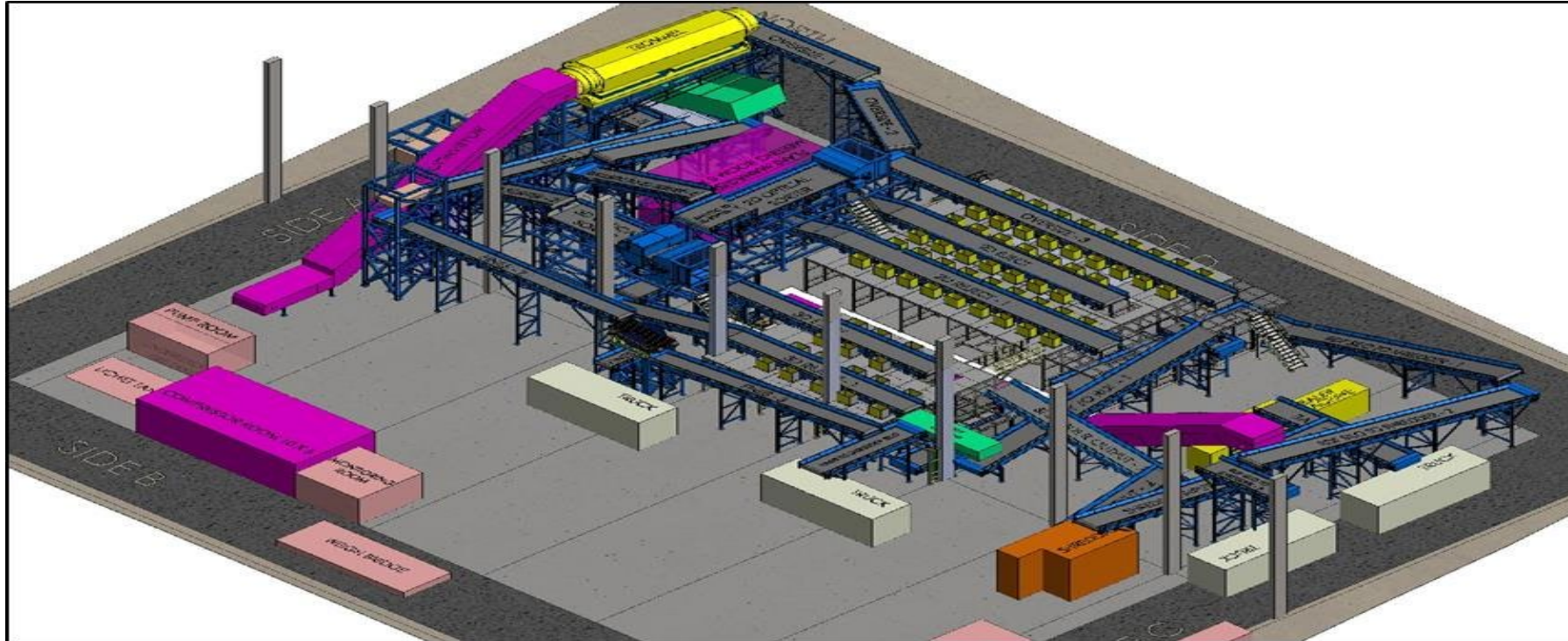
Ahmedabad – 100 TPD)

Indore 300 TPD

Work ongoing for Jamnagar, Pune, Bhopal, Ahmedabad unit 3 and Mumbai plants,

Project Team - Developments & Learnings

- **Capable in developing MRF's – In House**

- Established & Growing team of designers, engineers (civil, mechanical, electric), supervisors, fitters / welders who have now have gained experience of erecting and commissioning of various MRF's with us.
- **MRF is completely conceptualized & designed by our in house team of designers.**

Project Team - Developments & Learnings

- Constantly analyzing and improving quality, execution of work using modern technology for erection & commissioning

With a wide array of products recovered from waste; NEPRA is India's leading "zero waste to landfill" company

Product profile of Nepra - Key Products

End use

Key processes by Nepra

1 Plastic Rigid

PET Bottles are separated → **PET Bales** → T Shirts | Fabric

Segregation of plastics into HDPE, PP, ABS, HIPS, PVC, etc. → Color Based Sorting → **Plastic Granules** → HDPE Articles | PP Articles

2 Plastic Films

Segregation of plastics into LDPE, PP &BOPP, LLDPE etc. → **Plastic Lumps** → Tarpaulin | Pipes

3 Paper

→ **Paper Baling** → Recycled paper

4 Metals, Glass etc

Segregation of metals → **Aluminium Bale** → Recycled cans

5 RDF

Rest of the waste is sent to cement plants/boilers as an RDF (Fuel) → Sent to cement plants

NEPRA

IRS | ISHITVA ROBOTICS SYSTEMS

Sort with Volume and Purity

www.ishitva.in   info@ishitva.in

November 2019

NEPRA's founder Sandeep Patel is an investor in IRS, whose technology is used in it's operations.

The technology is used for segregation and sorting, replacing the need of manual labour. Hence, ensuring safety and better hygiene of the labourers. At the same time increasing efficiency and scale of the process.

We **SORT** to Create **VALUE**

ISHITVA Robotic Systems Private Limited

Artificial Intelligence, Machine Learning and IoT

Wharton India STARTUP CHALLENGE

2021, Winner Wharton India Startup Challenge

WASTE 20/20
Waste, but not wasted.

2020, Winner Global waste-tech startup challenge

2019, Nasscom Winner Environment Tech4 Good

NVIDIA.
INCEPTION PROGRAM

PLUGANDPLAY

ALLIANCE TO END PLASTIC WASTE

Contact us:

sandip@ishitva.in
info@ishitva.in

Ishitva[1]
Designs & Builds
Automated Solutions
for SORTING of DRY WASTE using
Artificial Intelligence, Machine Learning and IoT.

[1] Meaning of **Ishitva** (Sanskrit word) – Divine Power / Super Natural Power to rule over all the Human being / Things

NETRA® Machine Vision provides sorting instructions using ishitvaAI® algorithm to SUKA® and YUTA®
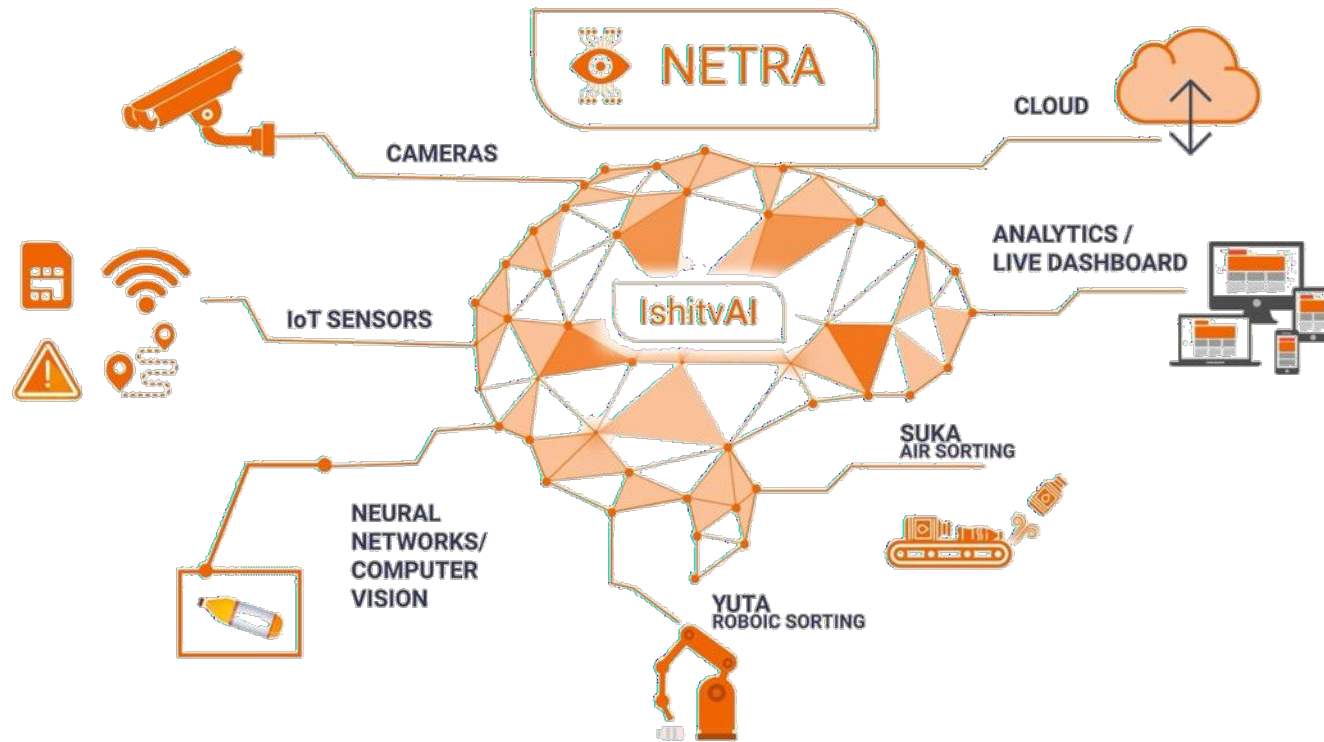
AI powered waste recognition tool for **monitoring, auditing and sorting**

Empowering MRF operators with **real time analytics and actionable insights**

Ability to capture information from a very high speed conveyor belt

Easy **Retrofit in existing MRF** setup

How Humans See on Conveyor
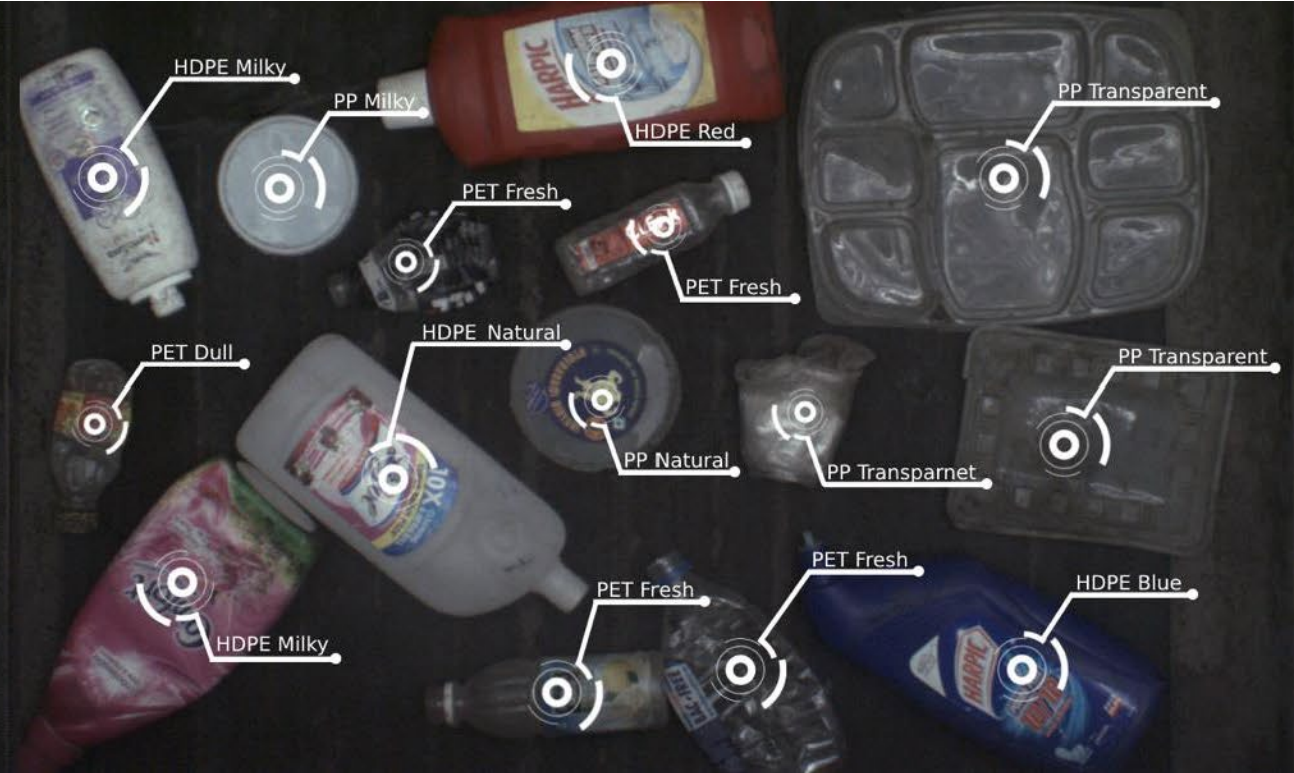
NETRA using Neural Networks
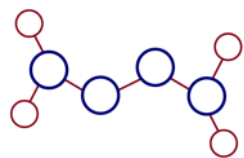
Polymer

Shape & Size

Color

Multi-layered

Flexibles

Brand

NETRA™ Vision

SUKA®
Artificial Intelligence

IRS
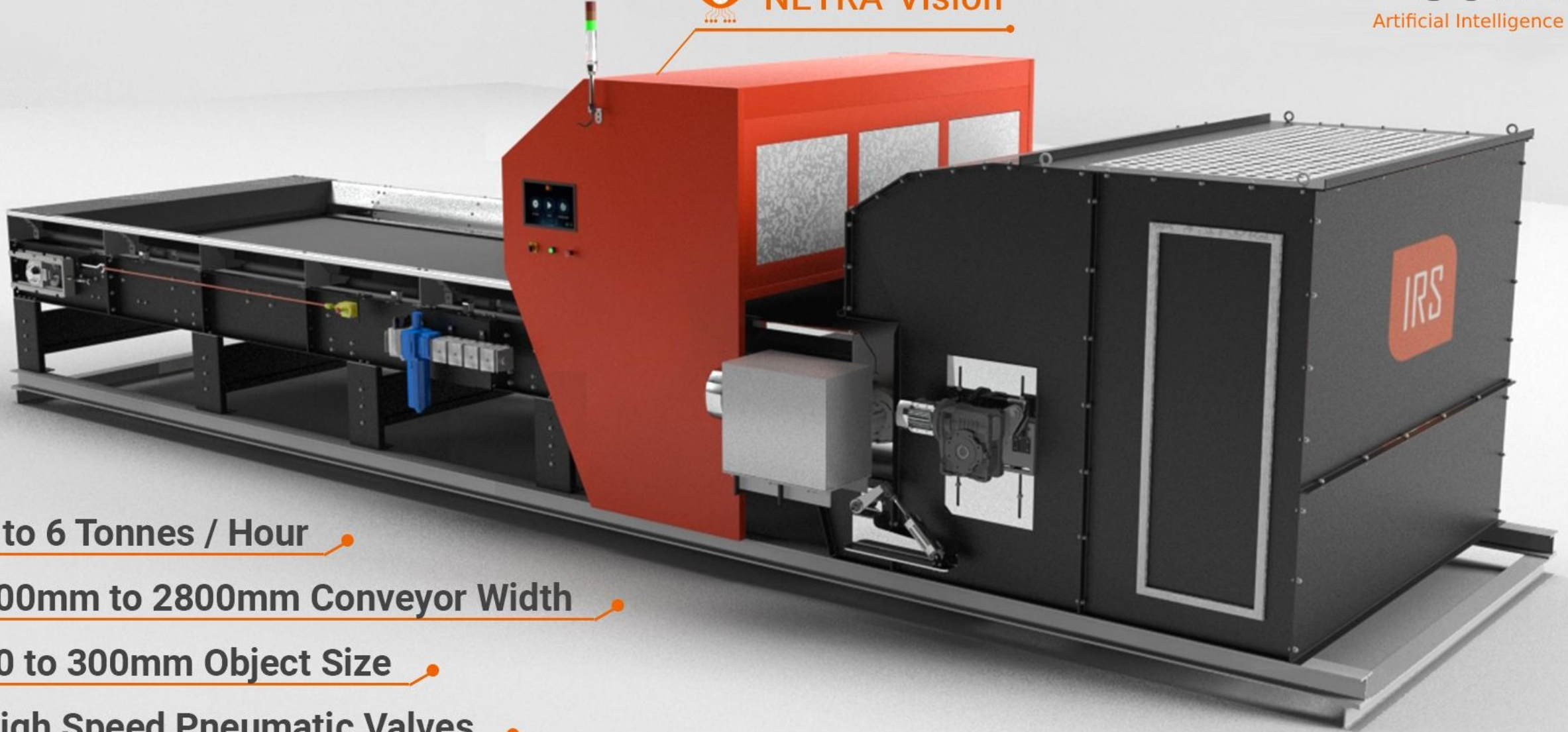
1 to 6 Tonnes / Hour

800mm to 2800mm Conveyor Width

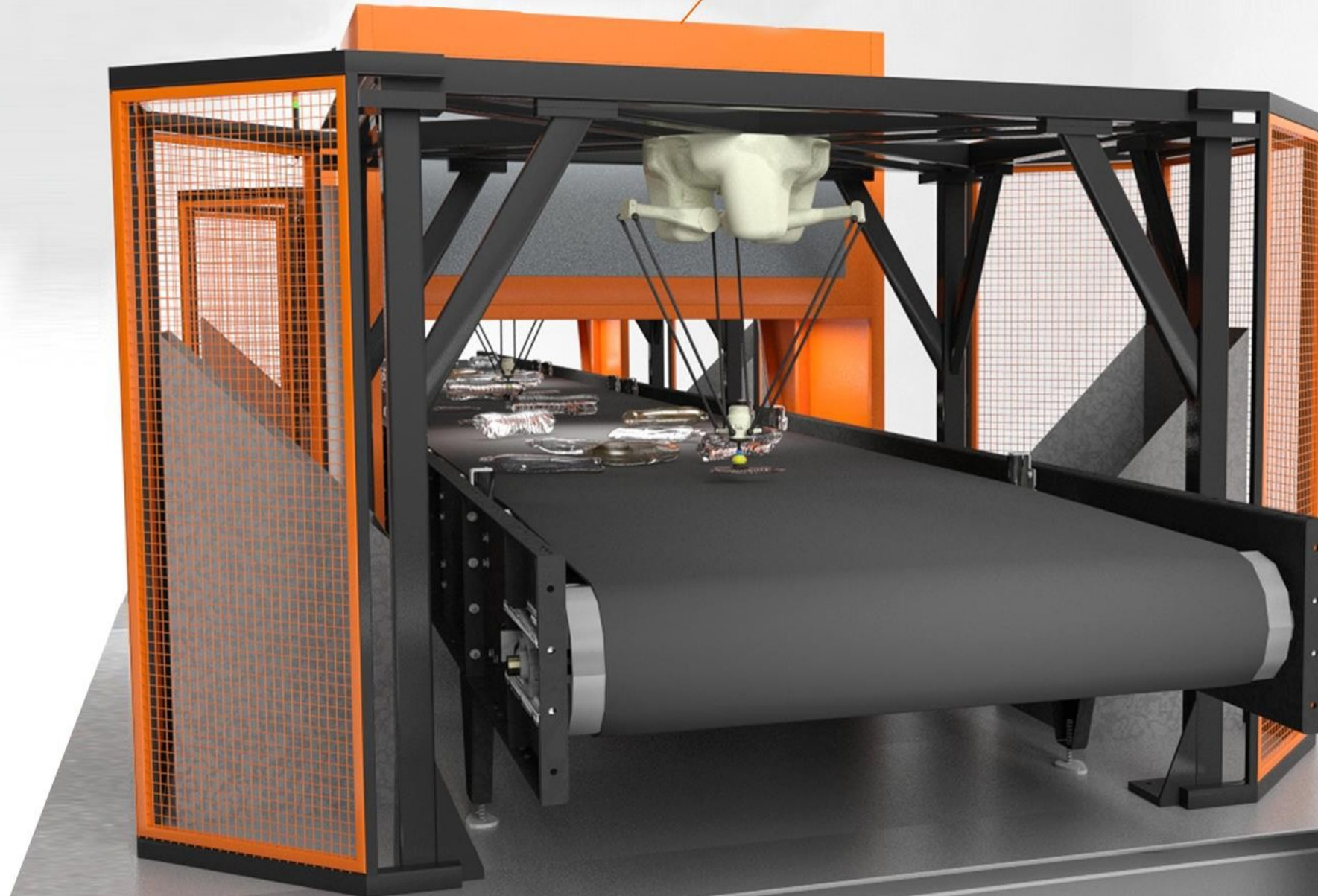30 to 300mm Object Size

High Speed Pneumatic Valves

www.ishitva.in

NETRA™ Vision

YUTA™

AI powered Robotic Sorting

- 5000 Picks/Hour
- 90% Efficiency
- 5.5Kg Payload
- 24 Hour/day
- Customized Gripper

www.ishitva.in

MICRO MSW OPERATION

FLEXIBLES & MLP

PET AGGREGATOR & RECYCLERS

BIOME WAST

SMALL MSW OPERATION

MIXED PAPER

MIXED PLASTICS

SHOES WAST

Top 10 AI Startups in India
bisinfotech.com · 5 min read

10 INDIAN STARTUPS THAT ARE LEADING THE AI RACE: 2021

URBANTECH BYTES
Volume 3, June 2021

URBAN LIVEABILITY FORUM

10 INDIAN URBANTECH STARTUPS

URBAN ENVIRONMENT SOLUTIONS

Technology Startups Leading The Urban Digital Transformation Journey

Knowledge Partner

UIL
INNOVATE URBAN

Urban Digital Technology Initiative

We **SORT** to Create **VALUE**

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Artificial Intelligence, Machine Learning and IoT

2021, Winner Wharton India Startup Challenge

2020, Winner Global waste-tech startup challenge

2019, Nasscom Winner Environment Tech4 Good

Contact us:

sandip@ishitva.in
info@ishitva.in

NEPRA

Compounding Plastic to make new products

NRMPL has also tied up with different recyclers and industries to which it sells its processed plastic and other dry waste material to be used as raw materials to make new products.

A few glimpses of our activities are as follows:

Our on-field research and Waste Picker Integration has helped develop an inclusive platform for the waste management sector.
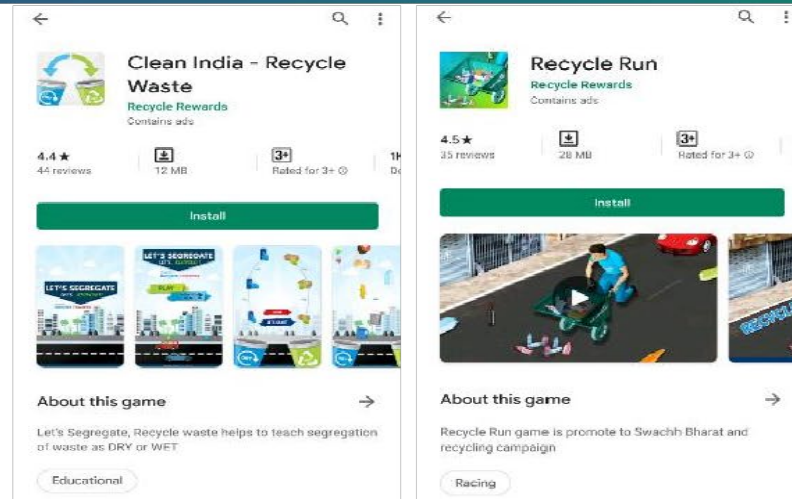
Games designed that teaches importance and techniques of segregation in a fun manner.

Waste Pickers Awareness Programs

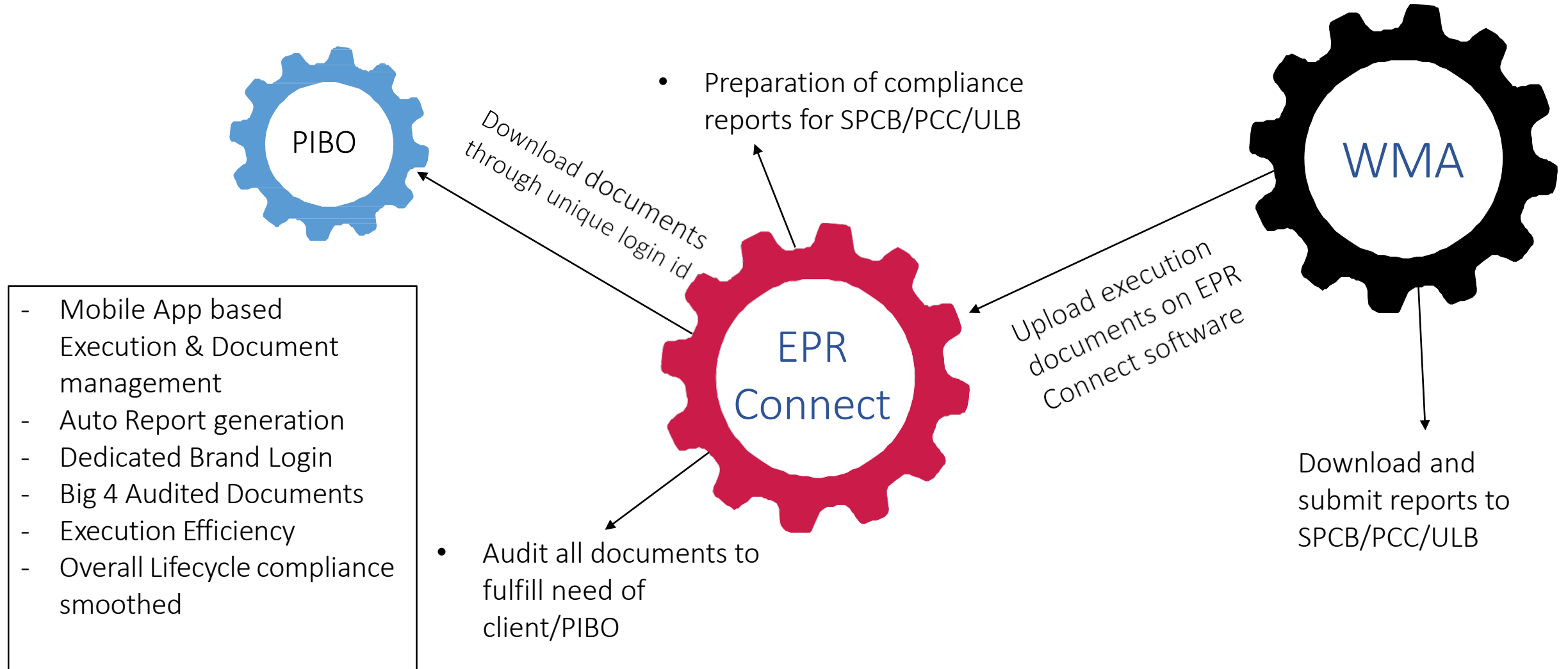*Mass Awareness Campaigns at the Household Level*

Awareness Activities and sessions with Municipal Bodies

NEPRA's schools programs are designed with the aim to create awareness and ensuring collection of waste

Number of Dry Waste Management Education Initiative conducted in 2019

	Name of the state/ Union Territory	Number of School/universities
1.	Maharashtra	52
2.	West Bengal	24
3.	Gujarat	20
4.	Uttar Pradesh	7
5.	Karnataka	5
6.	Delhi (NCR)	3
7.	Rajasthan	3
8.	Madhya Pradesh	2
	Total number of schools/ Universities	116

EPR CONNECT Platform

PIBO

WMA

EPR Connect

- Preparation of compliance reports for SPCB/PCC/ULB

Download documents through unique login id

Upload execution documents on EPR Connect software

Download and submit reports to SPCB/PCC/ULB

- Audit all documents to fulfill need of client/PIBO

- Mobile App based Execution & Document management
- Auto Report generation
- Dedicated Brand Login
- Big 4 Audited Documents
- Execution Efficiency
- Overall Lifecycle compliance smoothed

EPR connect
Towards a Sustainable Future

PARTNERS

EPR Connect & EPR Trac.

EPR Connect – Advisory:
- Help companies comply to PWM Rules, 2016 & amendment of 2018.
- EPR Calculator for accurate liability calculation.

EPR Trac.:
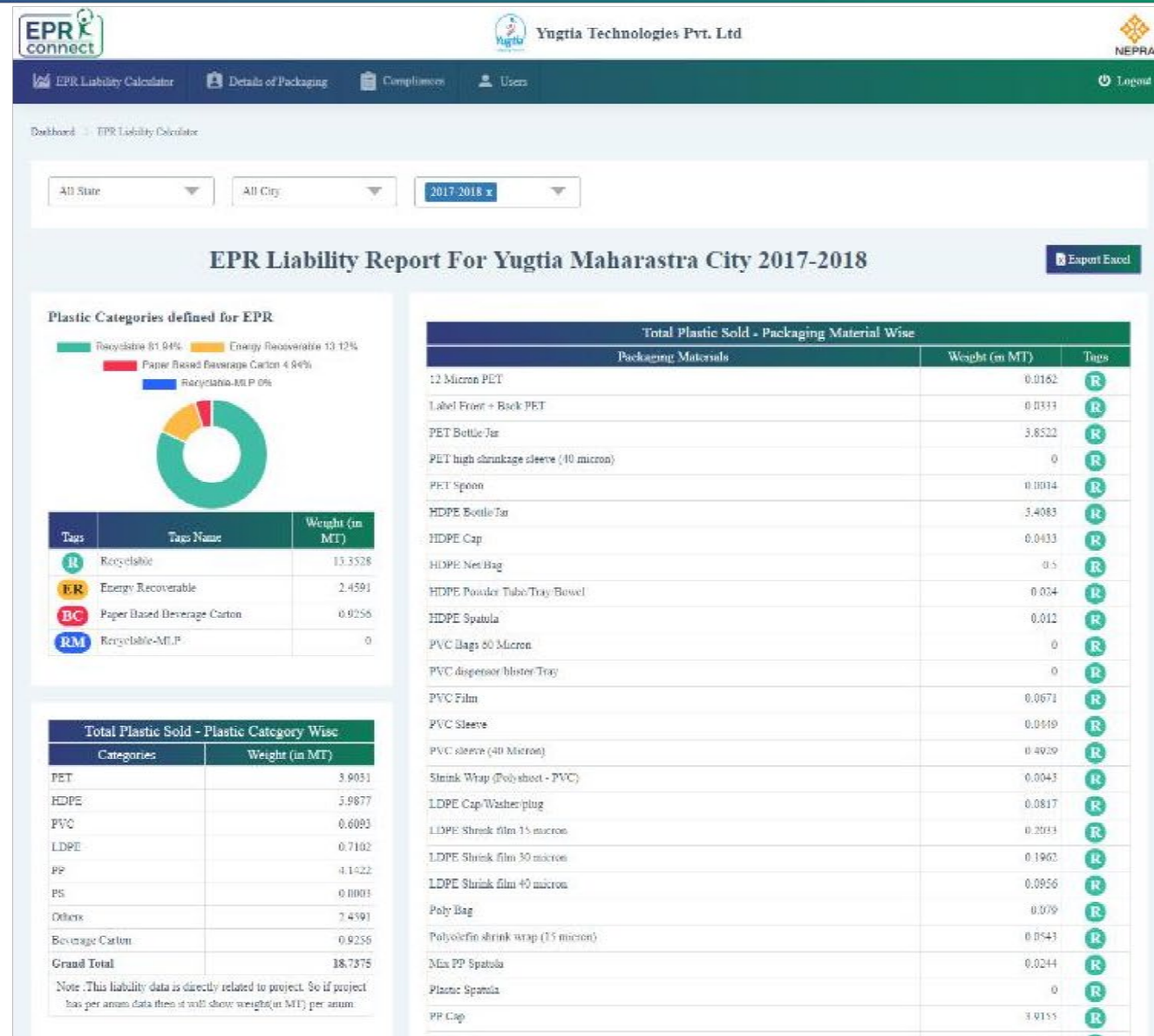- Help companies collect post-consumer plastic waste at scale.
- Developed software for transparency & traceability.

EPR Connect & EPR Trac.

NEPRA Eco-system

NEPRA Resource Management

- Waste Mgmt Business – City Level
  - Collection
  - Sorting
  - Recycling

NEPRA Environmental Solutions

- Advisory & Compliance for Waste Mgmt.
- Waste - Control Facility Mgmt / Scrap Mgmt
- Low footprint washing tech.

Ishitva Robotic Systems

- Automation – AI based high speed sorting solutions
- AI based circular traceability
- Smart collection mechanism and tools

Recycle Rewards

- On demand waste pickup
- App based D2C platform
- Monetizing the customer consumption pattern

Polymer Solutions

- Compounding - Circular Economy – Automotive & household Sector

NEPRA Foundation

- Awareness, Waste Picker Welfare, Training & Development,

NEPRA

Forbes INDIA Leadership Awards 2019

Winner of :-
Entrepreneur With
Social Impact

Whistleblowing or Crying Wolf at Infosys?

PRICE ₹250
DECEMBER 6, 2019

Forbes INDIA

Shiv Nadar,
HCL Technologies

Anil Rai
Gupta,
Havells
India

Saugata
Gupta,
Marico
Ltd

Manu
Kumar
Jain,
Xiaomi

Good to Great

The winners of the 2019
Forbes India Leadership Awards

ES Ranganathan, Indraprastha Gas

Sandeep
Patel,
Nepra

Nadia
Chauhan,
Parle
Agro

Bhaskar
Bhat,
Titan

(From left): Sujeet Kumar,
Amod Malviya & Vaibhav Gupta, Udaan

Network18   www.forbesindia.com

ISSN 2278-0440

"Anyone who is ideating, creating this plant or collecting waste,
comes under the category of a Swachh Bharat entrepreneur."

SANDEEP PATEL, CEO, NEPRA RESOURCE MANAGEMENT PRIVATE LIMITED

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DECEMBER 6, 2019 · FORBES INDIA

Winner - MRAI Recycling Crusader Award- 2020

Winner - Garbage Guru under Safaigiri Awards 2019

NEPRA Resource Management Pvt. Ltd. (NRMPL)