Engineering for change

in Digital World

Destination Unknown

by Er. Pankaj Kumar

About the theme

- September 15 celebrated every **year** in the country since 1967 as “Engineers’ Day” to commemorate the birthday of the legendary engineer Sir Mokshagundam Visvesvaraya.

- ‘Change’ is the most *important* challenge faced by the engineers of a developing India. Keeping in view of the rapid transformation and innovation at international level, engineers of our country should be prepared to cope-up with the changes.

- Therefore the theme “Engineers for Change” calls upon the engineers to be the harbinger for the change by exploring the disruptive technologies in all engineering sectors to enable India to lead the crusade of mitigation of climate change.

About The Institution of Engineers

- The Institution Marching towards 100 Year's (1920-Till Now)
- Any Engineering Graduate can apply/upgrade for Membership of Institution.
- Associate Membership allows to participate in activities of Institution, Use Accommodation facility, IEI Journals & More
- Charted Engineer Membership: provides value addition during the empanelment as Valuer, Loss Assessor with various Government bodies and Financial Institutions.
- Other Memberships : FIE, MIE, AMIE, MTIE, AMTIE, CEng (India), Int PEng (India), PEng (India)

Benefits: Professional development, Peer Network of Engineers, Knowledge resources, Access to Technical Publications, Grants for Members, Use of IEI Facility like accommodation.

HELLO!

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I am here for knowledge sharing about the Today's Theme
'Engineering for change in Digital world "

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Why Engineering for change

- Engineering is important. It is also challenging and exciting. Engineers use models provided by science combined with innovative thinking to solve problems and create new designs that benefit humanity.

Albert Einstein said “Scientists investigate that which already is; Engineers create that which has never been ”.

It is “Science ” to describe electromagnetic radiation, but it is “Engineering ” to build a radio & more. Engineers at every stage of changes worked.

Engineering for change in Digital World

Digitalization impacts individuals, businesses, and society as a whole. This implies huge challenges with changes– and at the same time – promising chances for companies and Very true for Engineers.

Digitalization = Huge challenges with changes + Promising chances

Engineering is alive with all phases of change from Identify, design, and implement process improvements: automating manual processes, optimizing data delivery, re-designing infrastructure for greater scalability, etc.

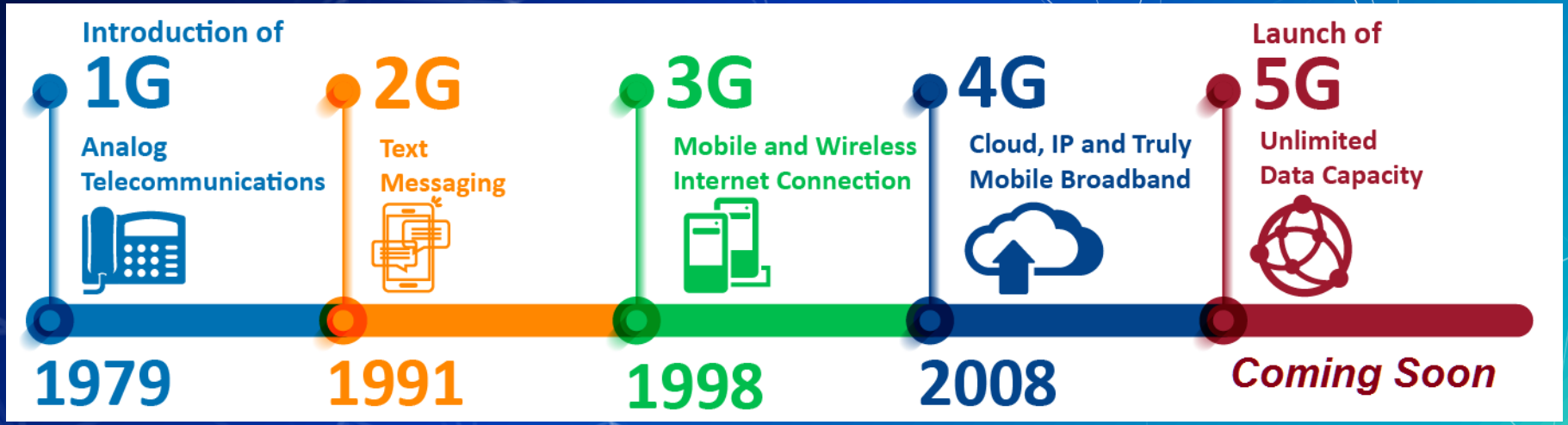
Facts = Challenges + Chances for Engineer's in communication

In India 2G users in the country estimated 500 million.

https://www.indiatoday.in

Jio **5G** services in **India will** be live by mid-2020

https://m.dailyhunt.in



Facts = Challenges + Chances for Engineer's in Payment method

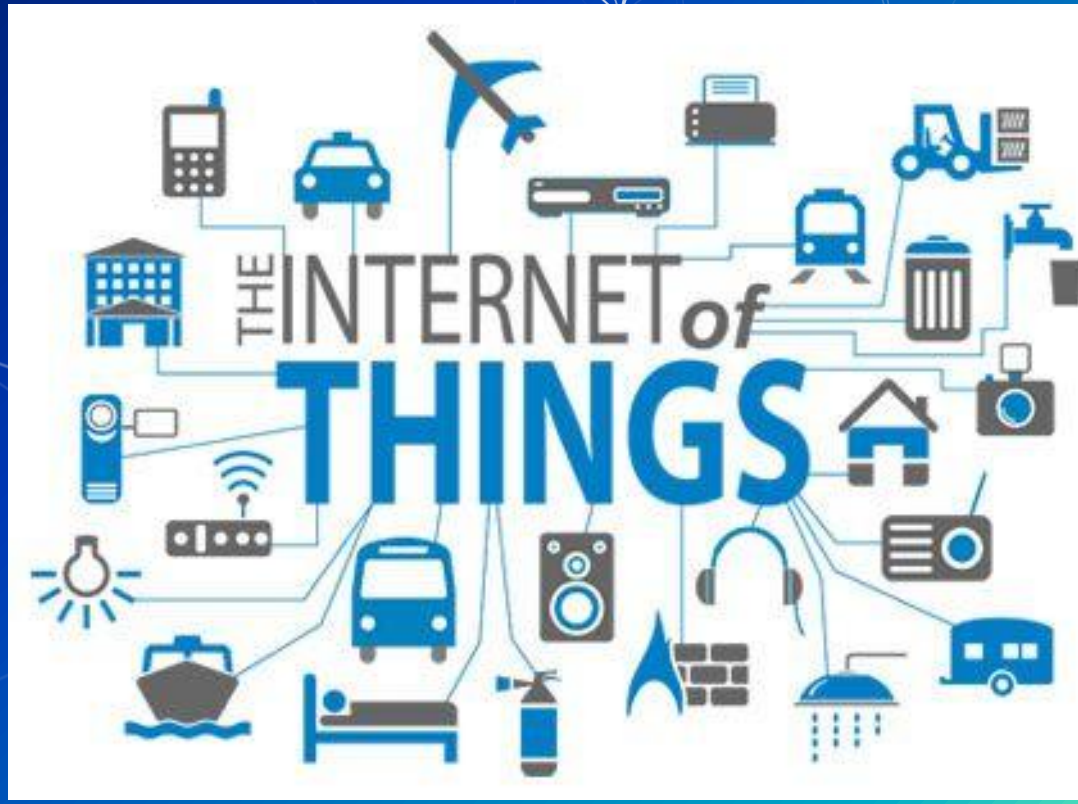
Facts = Challenges + Chances for Engineer’s in computer Technology

Facts = Challenges + Chances for Engineer’s in Robotics

Facts = Challenges + Chances for Engineer’s in Digital Market

Facts = Challenges + Chances for Engineer's in Data storage

Facts = Challenges + Chances for Engineer’s in IOT Devices



Digitalization Requires Mastering Six Fields of Action

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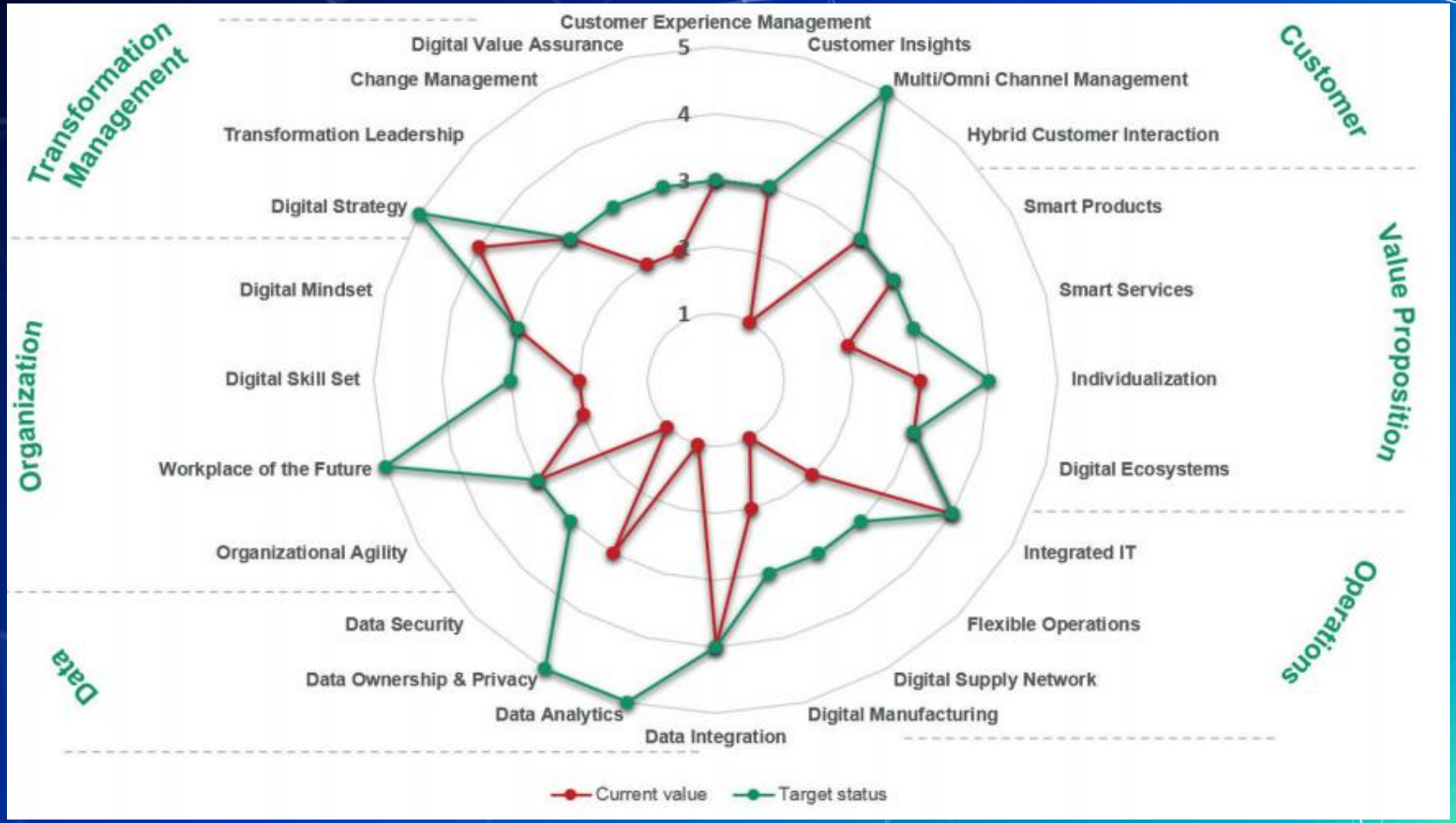

Big concern+ Opportunity for Engineers – E waste

We seen in last few slides many devices we are producing for our daily use. these have led to manifold problems including the problem of massive amount of hazardous waste and other wastes generated from electric products. It constitutes a serious challenge to the modern societies and require coordinated effects to address it for achieving sustainable development.

65 cities generate more than 60% of the total E-Waste in India.

Among the top ten cities generating E-Waste, Mumbai ranks first followed by Delhi, Bengaluru, Chennai, Kolkata, Ahmedabad, Hyderabad, Pune, Surat & Nagpur.

- Main source of electronic waste in India are the government, public and private (Industrial) sectors – 70%

Contribution of individual house hold – 15%

- Rest being contributed by manufacturers.
- Generation of E-Waste in 2012 in India – 8 lakh tonnes –
- Annual growth rate of E-Waste generation – 10%
- - E-Waste highly complex to handle - Pollutants and their occurrence in waste electrical and electronic equipment

- Out of total E-Waste volume in India –

Television - 68%

Desktop

Server - 27%

Imports - 2%

Mobile - 1%

- It is estimated that more than 50MT E-Waste is generated globally every year

- Additionally E-Waste from discarded mobile phones would be about seven times higher than 2007 levels in China and in India 18 timers higher by 2020

- Such predictions highlight the urgent need to address the problem of E-Waste in developing countries like India where the collection and management of E-Waste and the recycling process is yet to be properly regulated - It may cause rising environmental damage and health problems of E-Waste recycling if left to the vagaries of the informal sector

- The concept of Extended Producer Responsibility (EPR) - The EPR is an environment protection strategy that makes the producer responsible for the entire life cycle of the product, specially for take back, recycle and final disposal of the product - State Pollution Control Boards were made responsible for enforcement of the guideline
- EPR principle will apply Collection of E Waste
- Generated during manufacturing
- Generated from the end of life products
- Such E Wastes are channelized to a registered refurbisher or dismantler or recycler
- Individual identification code for product tracking
- Provide contact details of dealers and authorized collection centers to consumers
- Finance and organise the system
- Ensure safe transportation, storage
- Submit annual return

Responsibilities of the producer

- Extended Producer Responsibility
- Responsibilities of the collection centers
- Responsibilities of dismantler
- Responsibilities of recycler
- Reduction in the use of Hazardous Substances in the Manufacture of Electrical and Electronic equipment.

- The quantum of wastes generated over the past several years have posed an ever increasing threat to environment and public health.
- CPCB have identified over 88 critically polluted industrial zones
- As far as e-waste is concerned, it has emerged as one of the fastest growing waste streams worldwide today
- As long as electronic products continue to contain an assortment of toxic chemicals and are designed without recycling aspect, they would pose a threat to environment and public health at their end-of-life
- Repeated awareness programme through print, Digital and electronic media is the need of the hour

Waste minimization in industries involves adopting: 1. Inventory management

2. Production process modification

3. Volume reduction

4. Recovery and reuse

5. Rethinking on procedures of designing the product (flat computers)

6. Use of renewable material and energy

7. Creating electronic components and peripherals of biodegradable material

8. Looking at a green packaging option

9. Utilizing a minimum packaging material

Role Engineering for change in Digital World & E-waste

- If we as engineers do not know, understand, articulate, or discuss the values that are driving our efforts, then we are far less likely to create lasting solutions to the problems
- India is placed in a very interesting position. The need of the hour is an urgent approach to the e-waste hazard by technical and policy-level interventions, implementation and capacity building and increase in public awareness such that it can convert this challenge into an opportunity to show the world that India is ready to deal with future problems and can set global credible standards concerning environmental and occupational health.

On the way to digitalization, Engineers taking ewaste control

WANT BIG IMPACT?
Engineering for Big changes always required

THANKS!

Any questions?

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