Training Needs Assessment for Electric Buses in India

Round Table Discussion

Urban Mobility India, Lucknow | 17th Nov, 2019

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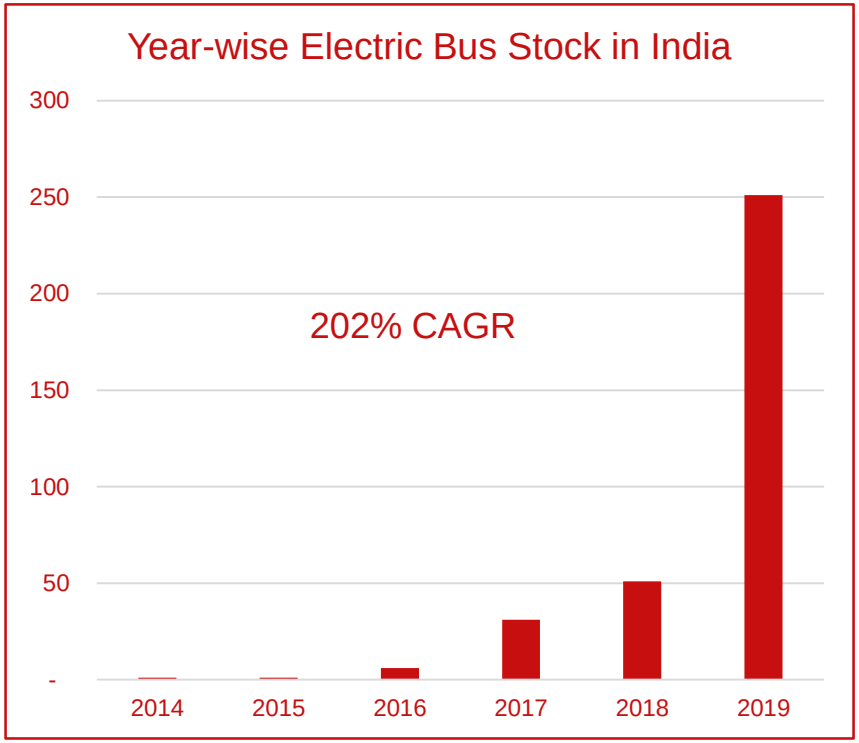
India has 250+ existing e-Buses and another 7,000+ in pipeline. With focus on PT and need to almost double its bus fleet size, it has OPPORTUNITY to leapfrog and become 2nd largest global player in e-Buses.

- FAME II good demand catalyst: **INR 3,545 cr.** for 7,090 e-Buses by 2022 (5,595 e-buses sanctioned in **64 cities**)
- Local supply chain gradually building up. **100% localization target by Apr 2021**.
- Gradual improving **price performance** will make e-Buses also better economic option over diesel

- Big Opportunity for India to leapfrog and transition from diesel to electric buses:
  - ❑ Make ongoing spent on e-Buses successful through **efficient integration in STUs/ SPVs/ Cities** (How?)
  - ❑ Target **100% e-Bus** mix of annual bus fleet addition (from when?)



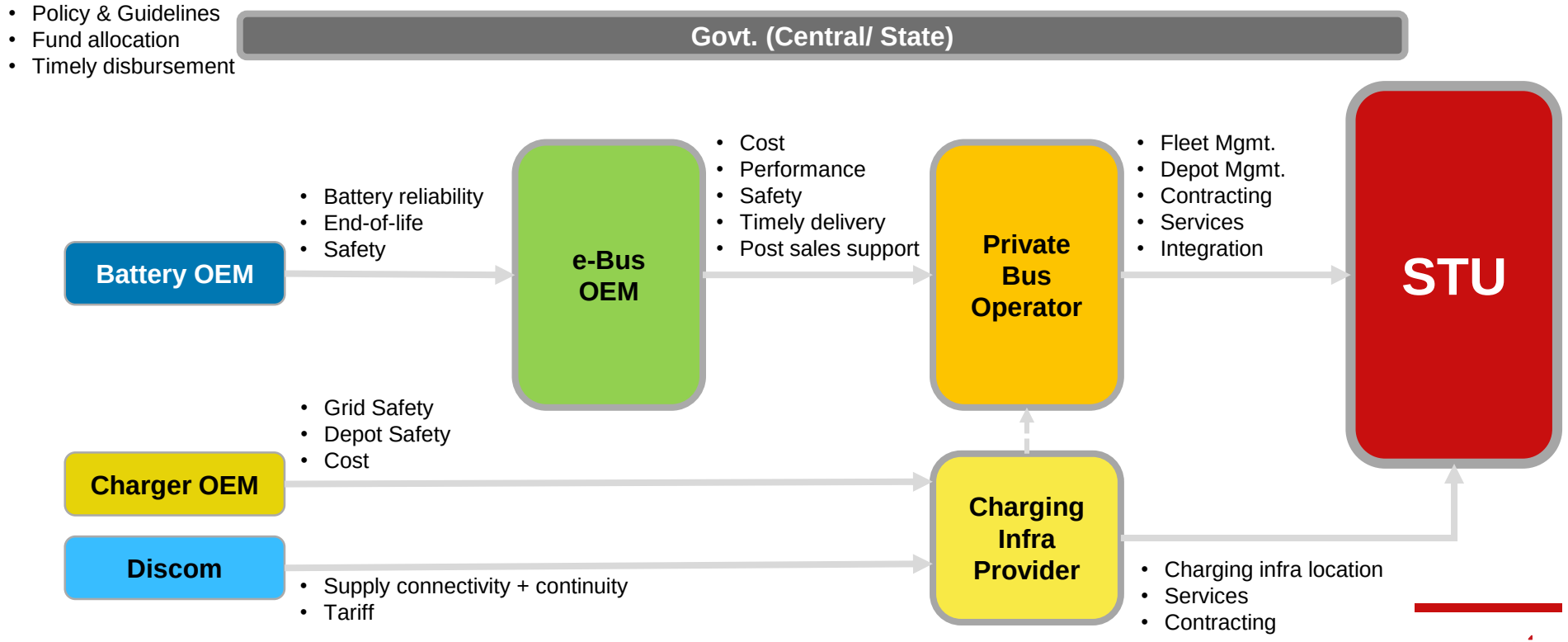
Multiple challenges are being faced with current e-Buses deployment, some originating from New Technology risk at OEM side and more due to LACK of Planning and Execution CAPACITY in STUs/ SPVs/ Cities

- Cities unable to rate the OEMs/ suppliers (high variation in costs; e-Bus performance challenges; delayed delivery from order; post supply services; non availability of historical data of e-bus performance)
- Cities unable to do proper route planning and scheduling/ dispatch (range uncertainty of e-Buses)
- Route and scheduling have to be curtailed against planning (due to battery under performance; Kolkata, Lucknow)
- Hassles with Depot and Charging infrastructure setup and operations (Load shedding hampering e-bus operations; Land allocation for Depot and en-route charging)
- Unawareness of safety aspects (Fire incidence in battery; Kolkata)

1 Diesel Bus
= ? E-Buses

e-Bus value chain has multiple Players and they all interact with STUs legacy systems, processes and people. STUs/ SPVs are DEPENDENT on them for 1) Funds 2) robust e-Buses 3) reliable Infra 4) healthy Contract 5) quality Services

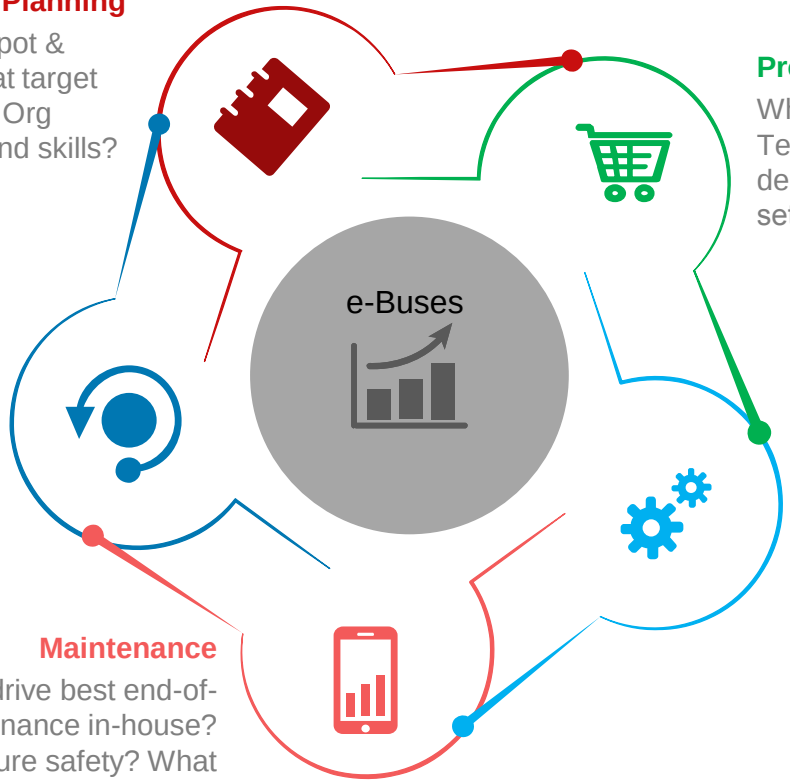
e-Bus related Touch-points of STUs with different Players



Different LIFE CYCLE stages of e-Buses will need to be looked into deeply and appropriate strong processes for different roles of people will need to be developed. TRAINING for all stages and processes will be important.

Planning

What Technology? What Depot & Charging Infra - where? What target over years? What change in Org structure? What resources and skills? How to fund?



Procurement

What Specs? How design & execute Tenders? How design Contracts? How drive delivery? How drive hand holding, Training & setup? …

Scrap/ Recycle

What end-of-life for battery/ e-bus/ charger? When to scrap ICE buses? How to reuse/ recycle e-Bus & LIBs?

Operations

How route planning? How scheduling & dispatch? How driving for best battery life? How Charging? How Depot operations? How ensure safety? What SLAs, KPIs? What changes in Tariffs? …

Maintenance

How to monitor performance? How to drive best end-of-life performance? How to do maintenance in-house? When battery replacement? How ensure safety? What inventory?...

Strong Need for a Comprehensive Program

to
UPSKILL STUs/Operators

for improved e-Buses Adoption and Integration

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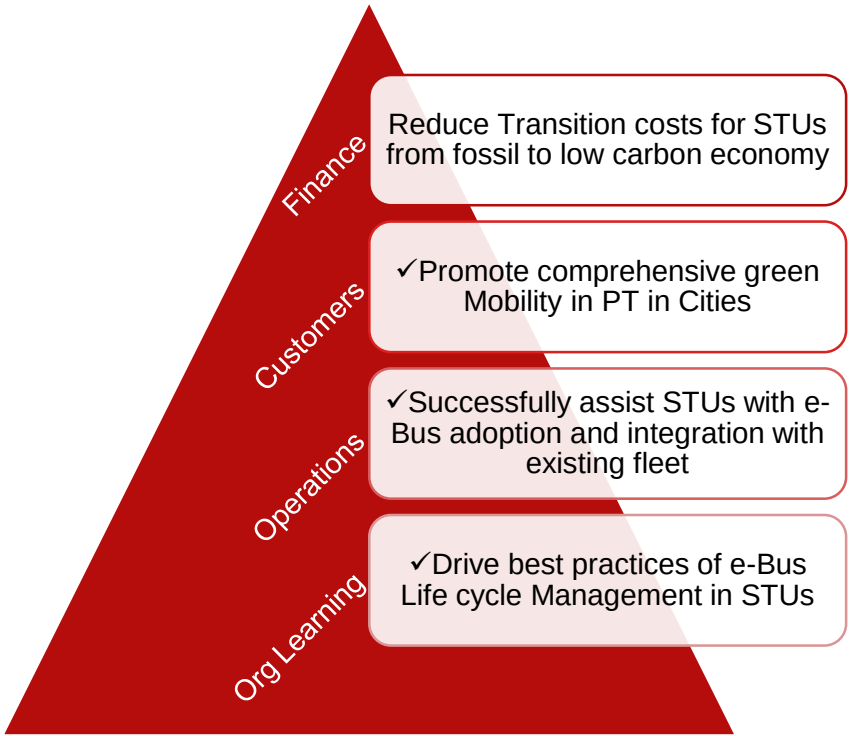
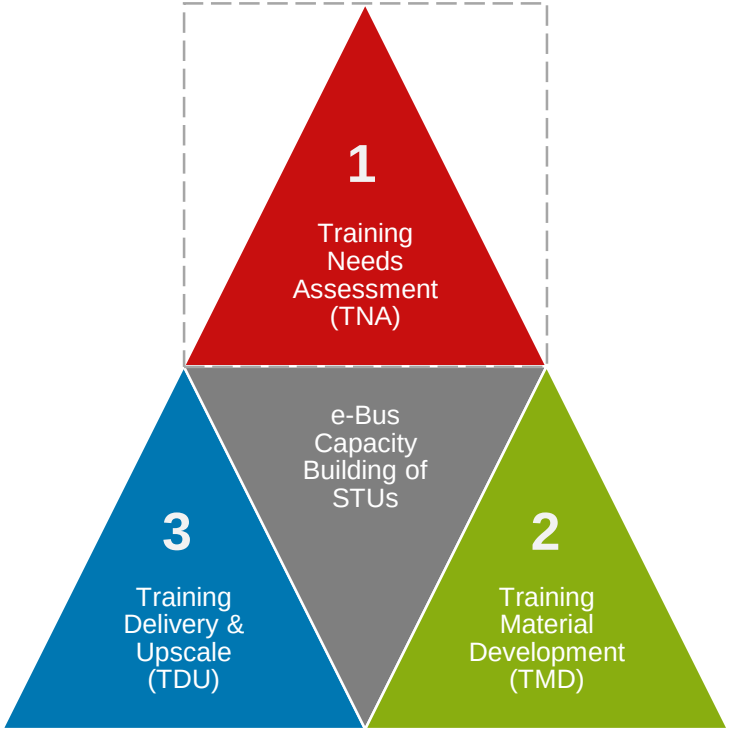
This GIZ supported Program's objective will be to build sustainable ecosystem for e-Buses in India with TRAINING as important component. It will have 3 Components, starting with Training Need Assessment (TNA) study.



Objectives

First focus for the study and also for this Round Table



Components

Key OUTCOMES

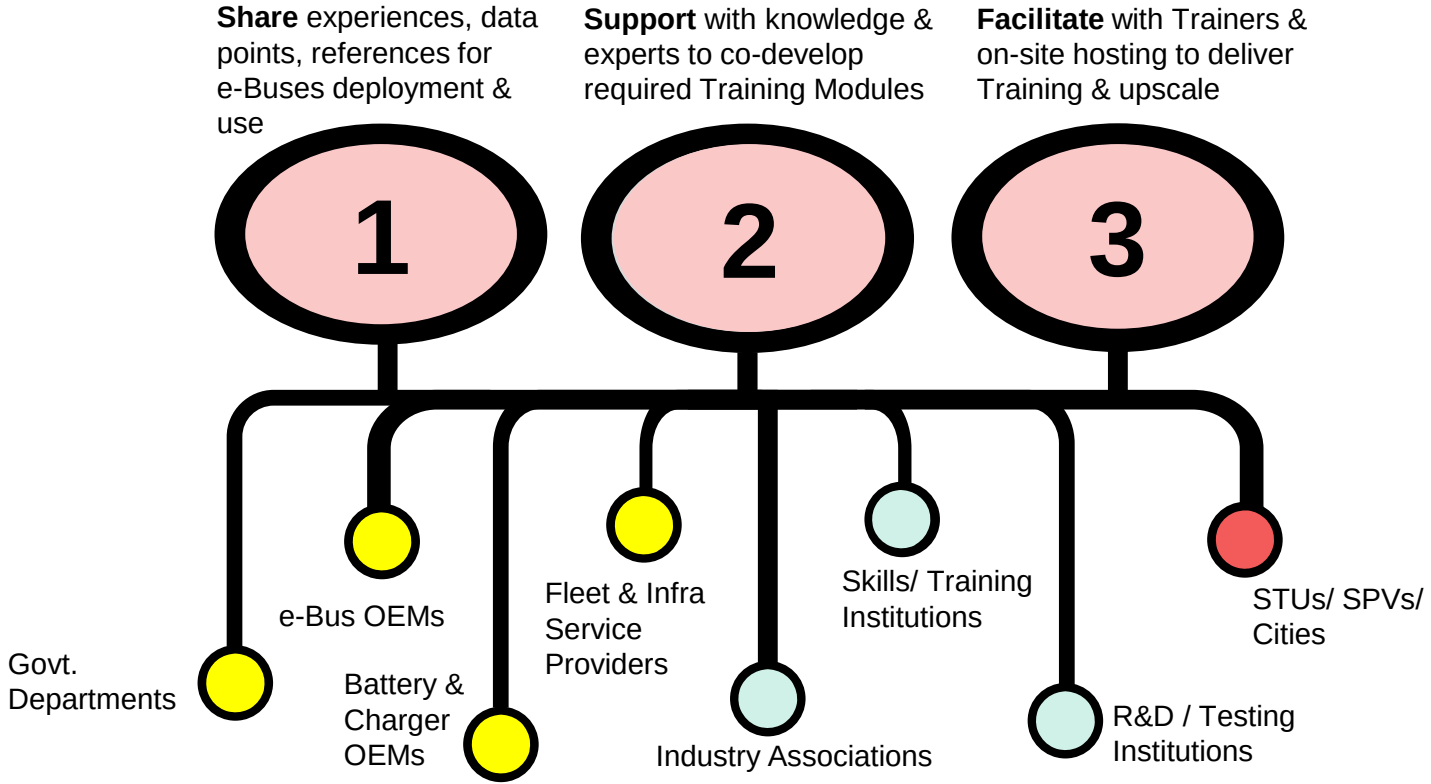
Gap Assessment Report and suggestive TNA for STUs as seen by **Supply side stakeholders**

Gap Assessment Report with TNA for STUs as seen by **STUs across Departments and Hierarchies**

Development of **Training Program** for strengthening e-Bus learning and deployment by STUs in India

10.Compilation of **Toolkit** to allow STU to assess their skills on e-Bus Management, and overall Readiness

JOIN Hands to make e-Buses successful in India



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Federal Ministry for Economic Cooperation and Development

Round Table discussion on
Training Needs Assessment for Electric Buses

Urban Mobility India (UMI) 2019 Conference & Expo

Indira Gandhi Pratishthan, Lucknow, Hall: Moon II

17 Nov 2019 | Time 11:30 – 13:00

The focus of Round table is to identify **Training Needs Areas** across e-Bus Life cycle Management by STUs to Improve Overall Adoption & Integration.

Key discussion by experts

- Experience with e-Buses - Tendering, Delivery, Operations and Maintenance
- Operational and Financial Performance of e-Buses - Expectations vs. Actuals
- e-Bus Charging Infrastructure Setup and Management
- Skills and Training Requirements for e-Bus Management
- Battery Reliability and e-Bus Performance: Best Practices

SPEAKERS

Roland Haas
Senior Technical Advisor - GIZ

Naga Satyam
ED, Olectra GreenTech

H. K. Gupta
CGM - HRTC

Krishna Kumar
EVSE Head - Exicom

Dr. Prabhjot Kaur
Co-founder & CEO - Esmito

Arindam Lahiri
CEO - ASDC

Chairperson

Mr. Roland Haas, Senior Technical Advisor - GIZ

Moderators

Mr. Laghu Parashar, Senior Technical Advisor - GIZ

Mr. Rahul Bagdia, MD - pManifold

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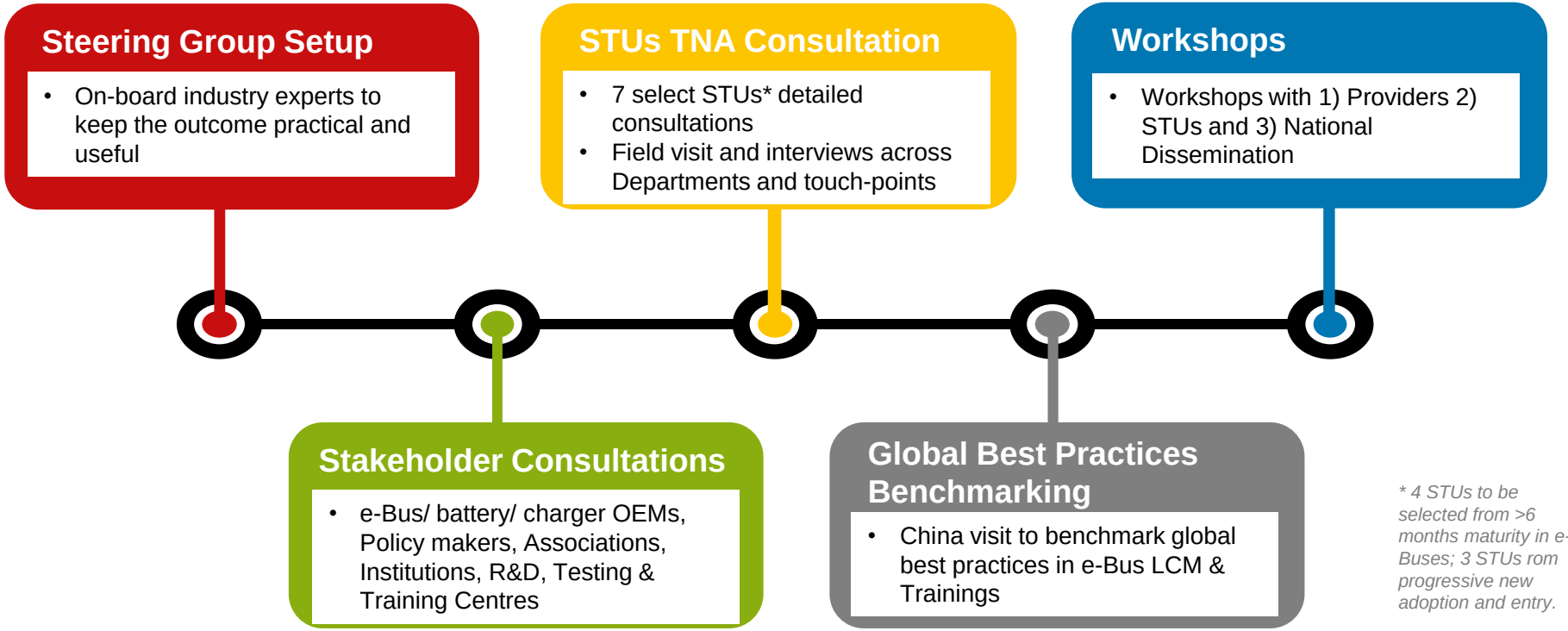
THANK YOU

Deep on-ground consultation with Industry and STUs to build a framework of e-Bus Responsibility Matrix for different roles at STU; assessing multiple STUs (on different adoption curve) for skill gaps; identification of Training Areas



** 4 STUs to be selected from >6 months maturity in e-Buses; 3 STUs rom progressive new adoption and entry.*