NSC Certified Respondent Level 1 – Road System responsiveness

Proposal for NSC to ensure transformative implementation of the NSSR RS programme

By
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K S Venkatram & Aakkash K V
M: 9342867666
Email: venkataoec@gmail.com
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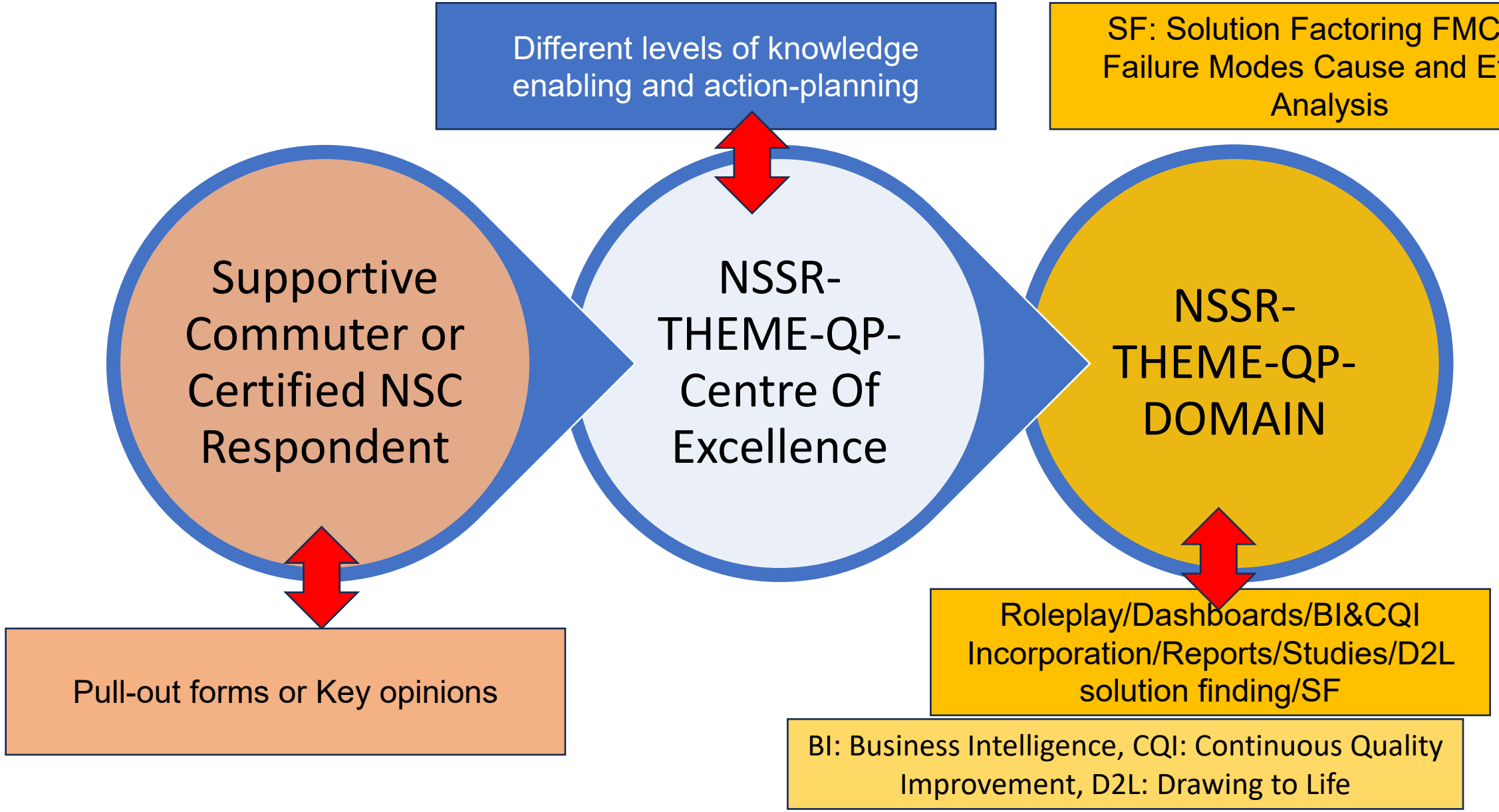
NSSR Themes – Quality Promotion driving CRM

- **Target group: The NSSR Themes Quality Promotion insight is targeted towards a new concept National Safety Social Responsibility vertica**l to drive (a) predictive, (b) open-survey & (c) feedback… learning & analytics related quality promotion in or for enveloping ecosystems.
- The interested parties or stakeholders of these enveloping ecosystems being the National Safety Council (NSC), BBMP Roads Infrastructure-Projects, BBMP Traffic Engineering, BESCOM, BWSSB, Healthcare Providers, Medical Supplies Providers, Civic Amenity Providers, Banking institutions, Educational institutions, Corporate commuters, automobile dealers and manufacturers, IWST, KSFES (Karnataka State Fire and Emergency Services) etc

BBMP: Bruhat Bengaluru Mahanagara Palike
BESCOM: Bengaluru Electricity Supply Company Ltf
BWSSB: Bengaluru Water Supply and Sewarage Board

Response a for NSSR THEME



NSC Certified Respondent Level 1 - Improving Road system responsiveness

Understanding Road Systems

- For the climate change in the years ahead, the insight is that a Management Index Specification for Road Systems abbreviated as MIR can outline a design specification to mitigate hazards in a road system, where different aspects of a road system are considered.

- The purpose of any road being to help commuters, movement of goods or main stream vehicles travel from one point to another. Any road has different types of traffic, which can be outlined as follows

- **Types of traffic distances**
- 1. Short distance traffic or traffic within a neighborhood
- 2. Medium distance traffic (inter-neighborhood, inter-zonal regions or intra-city)
- 3. Long distance traffic (be it a National Highway, State Highway, District Roadway which in turn is intra-district or inter-district)
- 4. Millennium concepts like NICE roads, Ring roads, Flyovers, Road corridors
- 5. Evolving RADIUS of coverage roads

Understanding Road Systems

- **Types of traffic**
- 1. Trucks, Goods and Freight carrying vehicles
- 2. Government and Private Buses
- 3. Mini buses, vans
- 4. Cars, taxis
- 5. Auto rickshaws
- 6. 2-wheelers
- 7. Cycles, Cycle rickshaws
- 8. Animal driven carts
- 9 Free or herded Livestock
- 7. Additionally Feeder traffic, Freight carrying traffic, Inter-state or Inter-city Passenger traffic, Emergency response traffic, Tube or Elevated Rail traffic

Understanding Road Systems

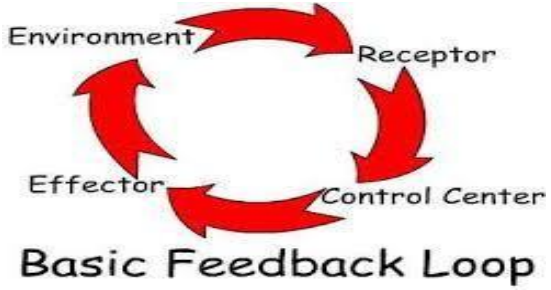
- Every road has certain MIR assets and certain MIR liabilities, where MIR assets help road system utilization and performance, whereas MIR liabilities are always or sometimes hazardous if not suitable for a road configuration or can pose a risk to people using a road system.

- The MIR specification terms the following as **MIR assets**
- 1. Road configuration databases and/or cloud based systems
- 2. Traffic signals and traffic control systems
- 3. Disaster mitigation systems and Emergency Response systems
- 4. Defect liability based feedback systems
- 5. Planned Road signs, Billboards/Hoardings, Signages
- 6. Evolving RADIUS of coverage Key Performance Indicators or KPI(s)

Understanding Road Systems

- The MIR specification terms the following as **MIR liabilities**
- 1. Unplanned Lanes, Road Medians
- 2. Unplanned Bordering Road Barricades
- 3. Unplanned Speed breakers or Road Humps
- 4. Unplanned or poorly constructed Pavements
- 5. Poorly maintained Manholes & Sewer systems
- 6. Impediment causing Elevated or Tube Railway infrastructure
- 7. Unmanned or poorly maintained Railway crossings
- 8. Poorly maintained Bridges and Tunnels*
- 9. Poorly maintained Trees and Greenery
- 10. Hotspots (locations that need converged administration to address the need to mitigate climate change, rising pollution levels, rising CO_2 levels, poor air quality, accident trends, traffic problems, incidences of crime, issues with road system arboriculture)
- 11. No Road Infrastructure Transformation evaluations to minimize RADIUS OF COVERAGE inefficiencies

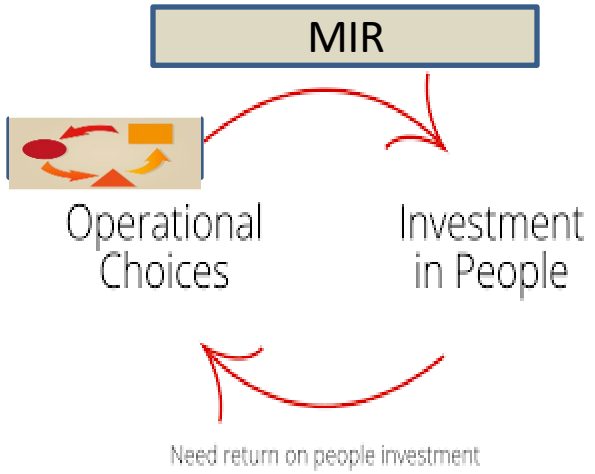
Understanding Road Systems



Basic Feedback Loop

- An MIR specification can balance MIR liabilities with MIR assets. To do this the specification will need to brainstorm for a new principle called "RADIUS OF COVERAGE " and "defect liability", where the nature of planning, implementation, commissioning, performance and SMART Resolution, maintenance and/or reengineering are all evaluated via the need to perform reliably, effectively for route assurance for a specific radius of coverage, improve safety and mitigate hazard or risk.
- An MIR specification can integrate a Management index or defect liability indicator with each road system, where different parameters such as MTTD, MTTP, MTTN & MTTR and feedback loops all decide the balance.
- **Abbreviations and their meanings:**
- MTTD: Mean Time to Detection MTTP: Mean Time to Prioritize
- MTTN: Mean Time to Network needed Engineering infrastructure and resources
- MTTR: Mean Time to Resolution
- MTTCOPQ: Mean Time to Cost of Poor Quality
- MTAAR: Mean Time to Alpha Assistance Resolution (for afflicted or aged commuters)

Understanding Road Systems



- An MIR specification can use the following core indicators and systems to define a road system configuration
- 1. Nature of planning
- 2. Defect liability systems
- 3. Associated planning, risk mitigation, repair and/or restoration programmes
- 4. Traffic management systems
- 5. ACCIDENT RELIEF, EMERGENCY RESPONSE AND ASSISTANCE systems
- 6. Viewpoint Management for road system issues or incidence indicators

Nature of planning (Rated as a crucial influencer):

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( ) **Design standards compliance** (width of road, margins for pillars, gradient designs, curves designs, median designs, arboriculture safety, pedestrian and passenger safety, safe commuting between 2 points, reasonable time taken to travel from one point to another, enablers for vehicles that use renewable energy)

( ) **Accountability for Traffic factors** (speed standards set for road systems, reaction time based on PIEV*, navigation standards, safe stopping sight distance, safe overtaking or passing, safe sight distance for entry into any associated intersections, feedback systems)

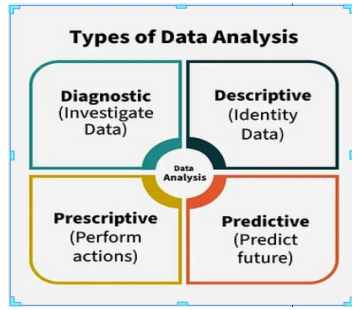
( ) **Accountability for Environment factors** (sentinel screening and risk mitigation for unforeseen snow fall, hailstorms, heavy rainfall, thunder storm and lightning arrestors, ease of maintenance despite severe weather conditions)

( ) **Maintenance Systems reliability** (proper design out maintenance, risk mitigation & maintenance, inspection and maintenance of extensions, gradient-design validation, policy for emergency services, policy for disaster management services)

( ) **Quality of associated Drainage systems** (design and implementation after consideration of water table, sub-grade soil, reinforced earth, nature of geo-grids that are to be used in the road construction, management of seepage flow & capillary rise, reliable impervious wearing surface of road with aggregators and binders)

( ) **Quality of traffic signalling systems** ("(Google Earth related) satellite imagery, or drone flight imagery or sentinel sensor feedback based" Risk Mitigation Desk notifications and proactive responses by the traffic management network, by nature of design "intelligent signaling solutions" that decide as to how traffic has to be managed or routed in case there is a disaster, accident, or in a case where part of the road or road system is rendered unusable)

Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers



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( ) **Satisfactory Emergency Response planning** (Equipped with signage and barricade deployment, contact numbers for nearest "ambulance services, hospital, police station, fire department, disaster management department", availability of first aid provisions, equipped with fire extinguishers & fire fighting facilities, equipped with smoke alarm systems, equipped with sentinel sensors, has clearance for air lift to save life, has collapsible floor/ground escalation systems at designed locations to help evacuate passengers from elevated metro railways)

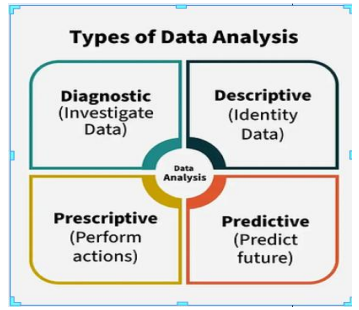
b. Nature of congestion (Rated as important negative influences):

( ) Perennial congestion ( ) Seasonal congestion
( ) Time-based congestion
( ) Incidence specific congestion
( ) Feeder Traffic specific congestion
( ) Goods/Freight movement specific congestion
( ) Congestion due to other influences

Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers

c. Stabilizing aspects (Rated as positive influences):

( ) Has a Management Index Specification ( ) Has satellite images
( ) Included in Google maps ( ) Is of good quality
( ) Has multiple-lanes
( ) Has sensor-enabled medians or bordering road barricades
( ) Has reliable traffic signals
( ) Has SMART Meters for immersive TEPO
( ) Accountable traffic intervention possible at location
( ) Not in close proximity to industries
( ) Not in close proximity to rivers and other rainfall affected water bodies,
( ) Has storm water drains
( ) Has well maintained manholes and septic systems
( ) Not affected by festivities
( ) No pedestrian sidewalks
( ) No encroachment



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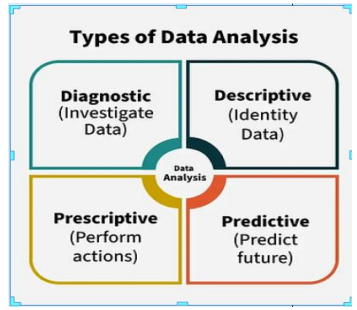
( ) No alteration
( ) Not sidelined by trees
( ) No afflicted by dumping of industrial waste
( ) Not afflicted by dumping of public waste
( ) Has a proper sewage system

d. Probable Hazards (Rated as very important negative influences):

( ) Is an inter-link for other roads or routes etc
( ) Is in close proximity to neighboring states
( ) Is in probable or escalated tension areas
( ) Is a sensitive area (where satellite imagery a threat)
( ) Is in close proximity to an industrial cluster
( ) With curving meanders
( ) Has a steep incline with improper entry or exit
( ) Has underlying dangerous landforms
( ) Is in close proximity to dangerous landforms
( ) Has a history of unattended potholes ( ) Has potholes
( ) Is sidelined by less maintained trees
( ) Is in close proximity to rivers and other rainfall affected water bodies
( ) Is in close proximity to marshes or swamps
( ) Is part of a bridge or connects to a bridge
( ) No storm water drains
( ) Has poorly maintained manholes and septic systems
( ) Afflicted by incidences of bottlenecks
( ) Is difficult to manage via surveillance
( ) **Is prone to crime** (due to lack of surveillance/being a remote location/ lack of traffic signals/lack of lighting)
( ) **Is prone to accidents** (due to lack of sufficient planning for pedestrian and passenger safety)

Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers



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Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers

e. Associated planning, risk mitigation, repair and/or restoration programmes

The addressing of problems is either well-planned or not well-planned, where there are selective classifications that can help identify issue levels for the commuter:

Planned (Rated as positive influences)
( ) Forecast based
( ) Control Room based
( ) In time surveillance based

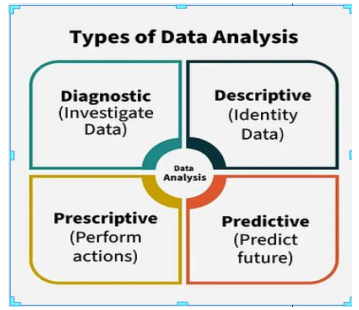
Not well-planned (Rated as very important negative influence)
( ) Only reciprocal (where problems are addressed in a reactive manner)
( ) Only when problems are escalated
( ) Only when mass grievances are reported

f. Signage deployed to mitigate risks to commuters or people
( ) **Road signs identifying traffic safety norms** (one-way or two-way signs, permitted timings, speed limits, rules for pedestrian and passenger safety, rules about overtaking, rules against cutting lanes, rules for parking, signage about low visibility zone, low height clearance and load levels)

( ) **Signage for accident relief, emergency response and assistance** (like contact information for the nearest "ambulance services, hospital, police station, fire department, disaster management department", associated civic body)

( ) **Signage and barricades around (perimeter) of potholes, poor quality manholes and septic systems**

( ) **Signage with precautionary and must know information about ring road, flyover, bridge, tunnel, subway, metro track, tram track, and level crossing**



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Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers

Defect liability systems (Rated as a crucial influencer):

( ) **Road system/route utilization analytics / guidelines**

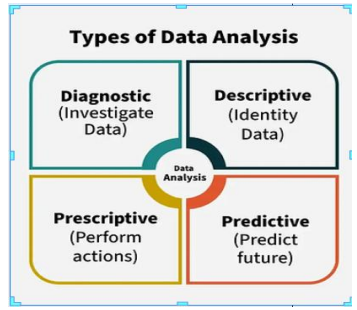
( ) **Associated Heavy Rain/Storm/Disaster Warning analytics / guidelines**

( ) Associated **Road system/route utilization related FESA / unplanned for driving conditions- based planning analytics / guidelines**

( ) Associated or **critical NOC compliance/ commissioning status analytics / guidelines**

( ) Associated or **critical NOC compliance/ commissioning status specific planning-evaluation-resolution schedules**

( ) Associated or **critical Transformational solutions or Civic Amenities enabling**



Traffic Management strategy (Rated as a crucial influencer):

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( ) Current solutions for traffic management and road system/route utilization

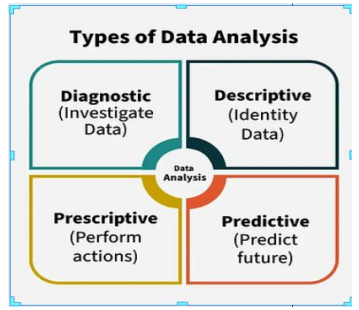
( ) OTA Theme based solutions for traffic management and road system/route utilization

( ) Commuter subscribed-for solutions for traffic management and road system/route utilization

( ) Building/Site/Plot owners/associations subscribed-for solutions for NOC adherence/NSSR Theme incorporation

( ) Strategic-Tactical-Operational intelligence specific Infrastructure and/or Data Management

Strategic-Tactical-Operational intelligence Infrastructure and/or Data Management influencers



Notes for Road System Responsiveness

Field book pertinence

Notes for Road System Responsiveness

Field book pertinence

Notes for design for Road System Responsiveness

Field book pertinence

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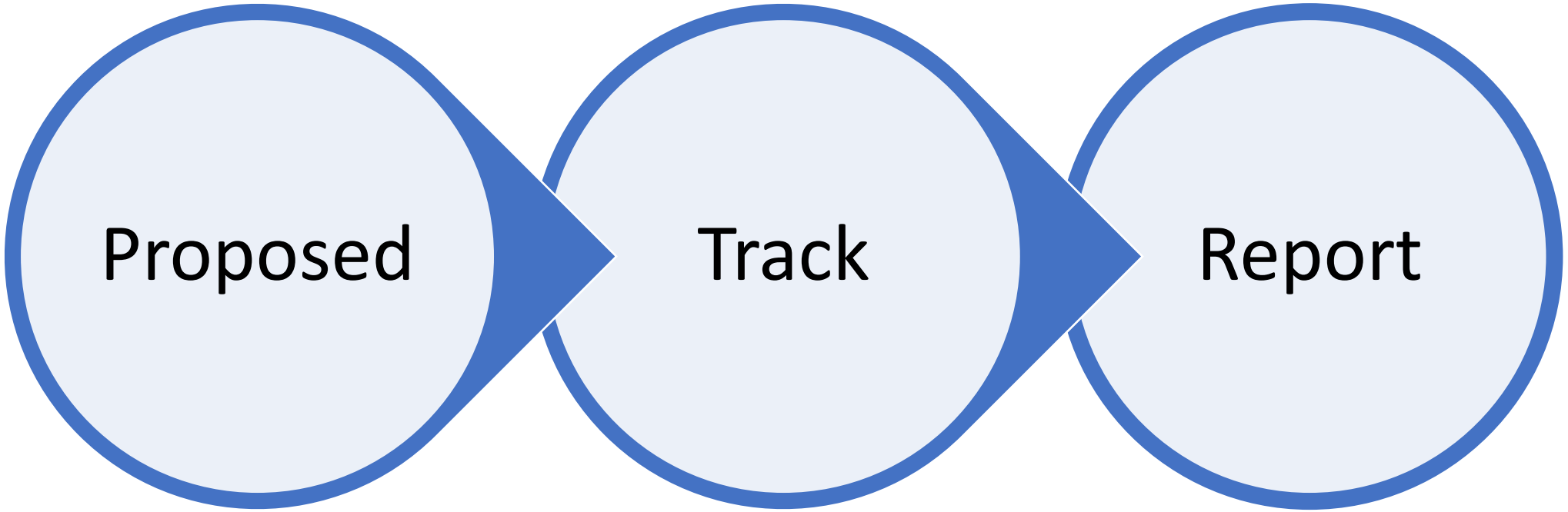
Field book pertinence

Notes for design for Road System Responsiveness

The Level 1 Course / Certification can also include different sections such as

Nature of planning, BI and CQI incorporation in a SMART Ward Field Book for urban locations and a SMART Grid Field Book for non-urban locations

Field book pertinence


Proposed
Track
Report

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Track Report

- **<u>Reporting a complaint about accountability for traffic factors</u>**
- **Road system name:** **Road system Id:**
- **Date of submission:** **Time of submission:**
- **Mapping from:**
- **Mapped till:**
- **Mapping pending:**
- **Type of road system:** Road/Stretch/Route/Ring road /Highway
- **Type of transportation that uses road system:** Public transport/Private transport/Pooled transport/Personal transport/Priority transport
- **Added commuting systems:** Overhead Metro/Underground Subway/Tram
- **Current Risk Health:** Assisting signs satisfactory**/**Acceptable driving conditions/Other reports/Do not know
- **Health details: …**

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Track Report

- **<u>Reporting a complaint about accountability for traffic factors</u>**
- **Traffic signs concern/ issues with driving in poor conditions:**
- **Associated images (to be uploaded in.jpeg format with details on location):**

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Track Report

- **<u>Reporting a complaint about accountability for traffic factors</u>**
- **Nature of congestion (Rated as important negative influences):**
- ( ) Perennial congestion
- ( ) Seasonal congestion
- ( ) Time-based congestion
- ( ) Incidence specific congestion
- ( ) Feeder Traffic specific congestion
- ( ) Goods/Freight movement specific congestion
- ( ) Congestion due to other influences / conditional dynamics

Impact on

- ❑ Sustainable Development & Growth
- ❑ Socio Economic Solutions
- ❑ Traffic Control
- ❑ Supply chaining
- ❑ TMS Logistics
- ❑ Environmental quality
- ❑ Incidence Response / Mitigation
- ❑ Fire fighting (amenity specific) / Fire Department response

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Track Report

- **<u>Reporting a complaint about accountability for traffic factors</u>**
- **Required Signage deployed to mitigate risks to commuters or people**
- ( ) **Road signs identifying traffic safety norms** (signage about sharp curves, bends, gradients, narrowing, low visibility zone, low height clearance and load levels)
- ( ) **Signage for accident relief, emergency response and assistance** (like contact information for the nearest "ambulance services, hospital, police station, fire department, disaster management department", associated civic body)
- ( ) **Signage and barricades around (perimeter) of potholes, poor quality manholes and septic systems**
- ( ) **Signage with precautionary and must know information about ring road, flyover, bridge, tunnel, subway, metro track, tram track, and level crossing**
- **( ) Other issues impacting unregulated driving/track report:**

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) - Proposed Track Report

NSSR-RS-Id:

Date of report: **Time of report:**

( ) Quality levels

Details: For example **"Good/Moderate/Poor/Hazardous"** with added details

( ) Traffic volume levels
Details: For example **"Heavy/Moderate/Low volume/Controlled"** with added details

( ) Pollution levels
Details: For example **"High/Moderate/Normal/Uncontrolled"** with added details

( ) Accidents or incidence (even crimes) trends
Details: For example **"High/Moderate/Rare/Controlled"** with added details

( ) Possible route diversions
Details: For example **"Arterial arrangement/Alternate deviations/Service roads/Flyovers/Recommended by intervention diversions"** with added details

( ) Commuter comfort levels (specific to Commuter profile)

Details: For example **"High volume related stress levels/Moderate volume related stress levels/Normal volume related stress levels/Uncontrolled volume related stress levels/Repair work related stress levels/Breakdown of vehicles related stress levels/Ambulance or Emergency Response or Special need vehicles related stress levels/Climate change related stress levels/Disaster conditions related stress levels/Escalated tension related stress levels..."** with added details

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) - Proposed Track Report

( ) Availability of alternate transportation services
Details: For example **"Overhead Metro/Underground Subway/Tram"** with added details

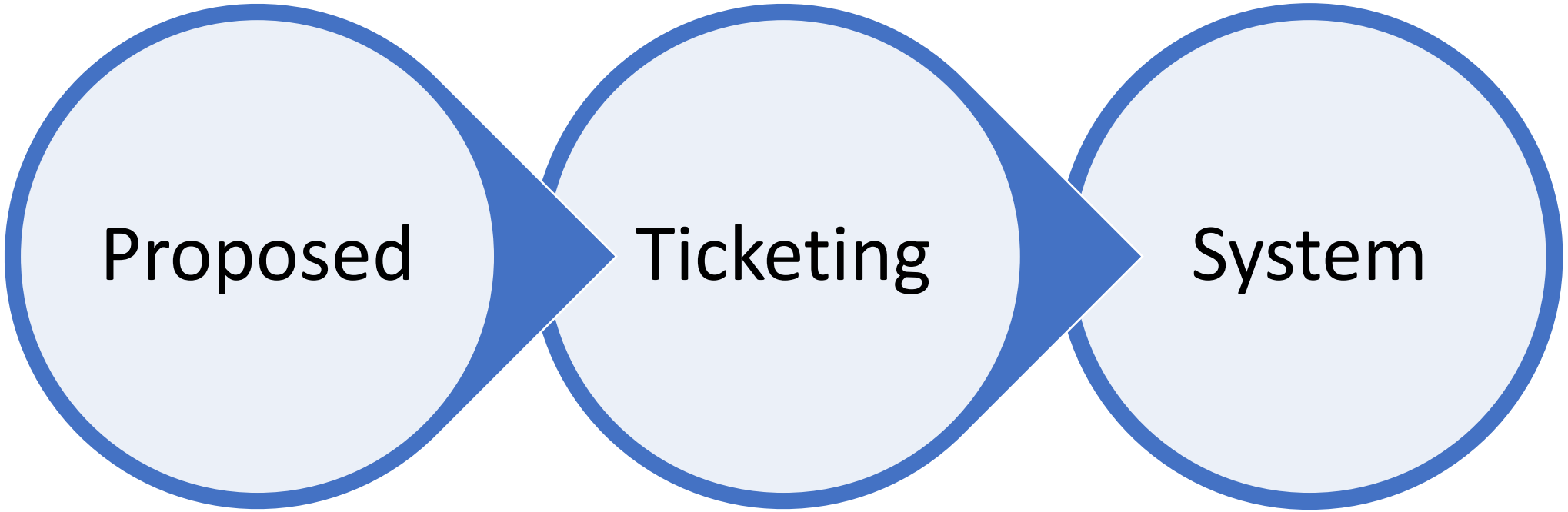
A Votary Track is a Road System that is being reported about for NSSR-RS responsiveness

( ) Availability of emergency response services
Details: For example **"Equipped with first aid provisions/Has clearance for air lift/Equipped with fire extinguishers/Equipped with smoke alarm systems/Equipped with sentinel sensors"** with added details

( ) Afflicted due to weather forecasts
Details: For example **"Harsh weather conditions, high ambient temperatures, poor quality of air, low visibility levels, high speed wind velocity, heavy rainfall leading to flood like situations, water logging, overflowing of sewage drains"** with added details

( ) Vital network and signal coverage
Details: For example **"Normal Votary Track connectivity/Failing Votary Track connectivity/Problematic Votary Track connectivity/ Normal Emergency Response connectivity/ Failing Emergency Response connectivity/ Problematic Emergency Response connectivity/Good quality signal strength reported for most mobile services/Complaints recorded for most mobile services/Poor quality signal strength due to weather forecasts"** with added details

( ) Vehicle indicators
Details: For example **"Normal for road system configuration/ Problematic for road system configuration/ Problematic for unmapped road system configuration/Complaints recorded for road system configuration"** with added details


Proposed
Ticketing
System

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Ticketing system

IMPORTANT DETAILS FOR ROAD SYSTEM RESPONSIVENESS

NSSR-RS Ticket Id: DIP-RSM-Email Id/Whatsapp **Source: NSSR-RS-HANDBOOK/DESK**

NSSR-RS Id:

Ticket status: Open/Closed/Escalated/Needs details/Not available

Date of submission: **Time of submission:**

Road system name: **Road system Id:**

Problems faced for reasons such as:
( ) Quality levels
( ) Traffic volume levels ( ) Pollution levels

( ) Accidents or incidence (even crimes) trends
( ) Possible route diversions

( ) Impacted Commuter comfort levels (specific to Commuter profile) ( ) Non-availability of alternate transportation services
( ) Non-availability of emergency response services ( ) Non-availability of drive guidance services
( ) Afflicted due to weather forecasts
( ) Faulty vital network and signal coverage
( ) Vehicle indicators (problems related to Commuter Health and Lifespan Dynamics)

Drive India NSSR-RS Unit 7 (Driving conditions responsiveness) – Proposed Ticketing system

( ) **<u>Management of (negative influence specific) Key indicators</u>**
[ ] Nature of congestion [ ] Probable Hazards
[ ] Lack of Signage deployment ( ) Repair or restoration

[ ] Interpretations on Fuel consumption
[ ] Lack of support for renewable energy or battery powered vehicles

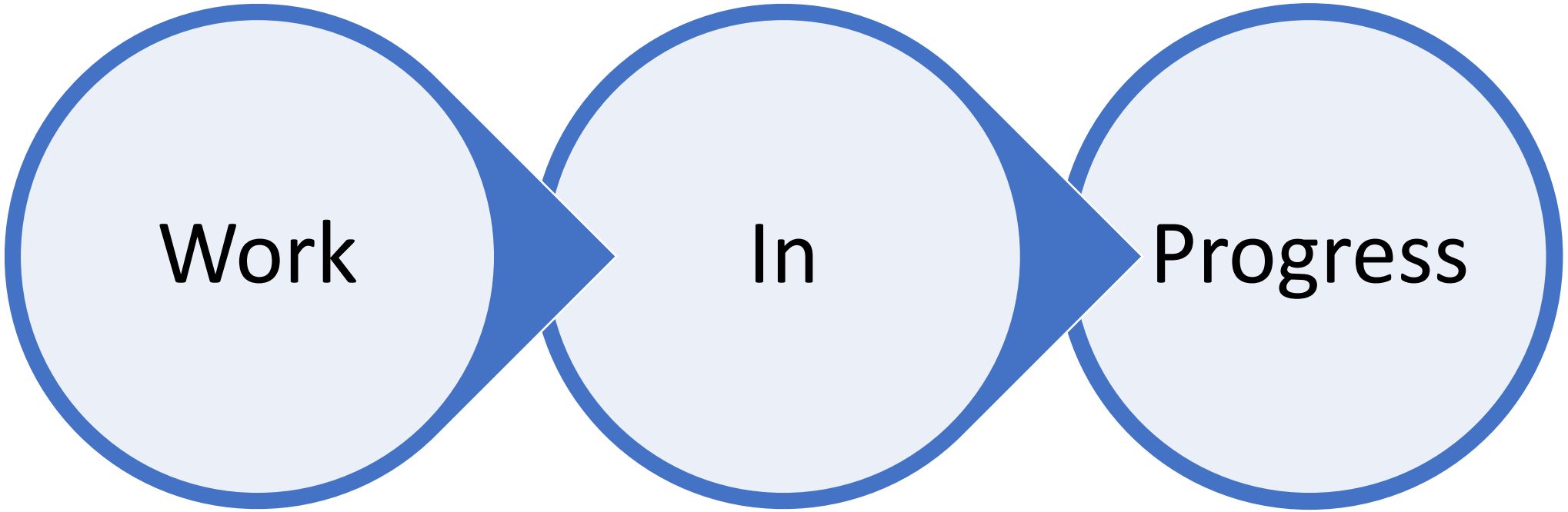
( ) <u>Sustainable infrastructure (positive influence specific) Key indicators</u>
[ ] Stabilizing aspects
[ ] Planning behind repair or restoration [ ] Signage and barricade deployment

[ ] Traffic management advisory
[ ] Pedestrian and Commuter safety [ ] Associated Traffic Management
( ) Accident relief, Emergency response and assistance

RoadMIR and RoadKPI framework

Details of problems faced:

Resolution sought:


Work
In
Progress