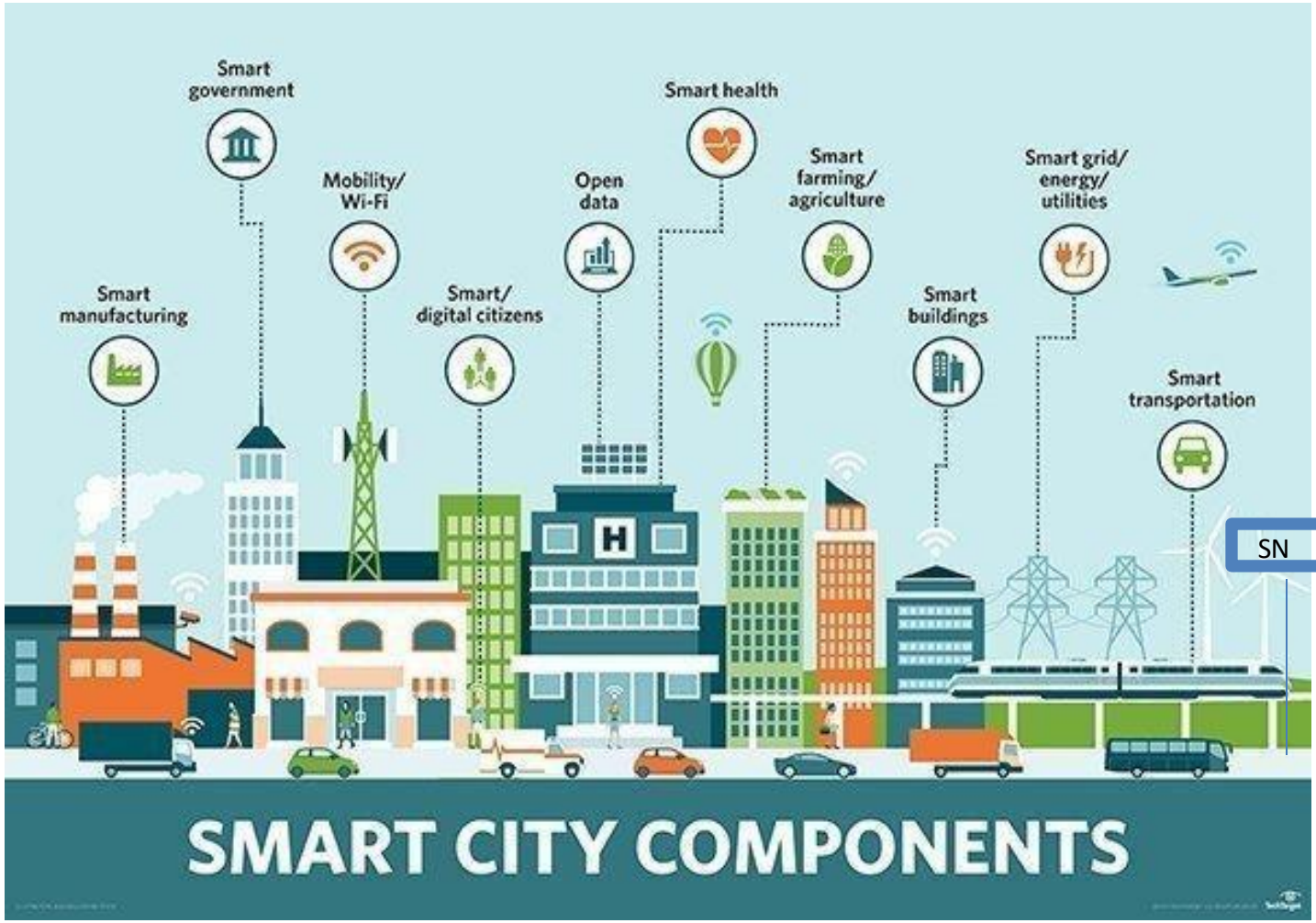
P2

Poster series

April

Elevating Safety Standards



SN

"RADIUS OF COVERAGE AUGMENTATION (1&2)"

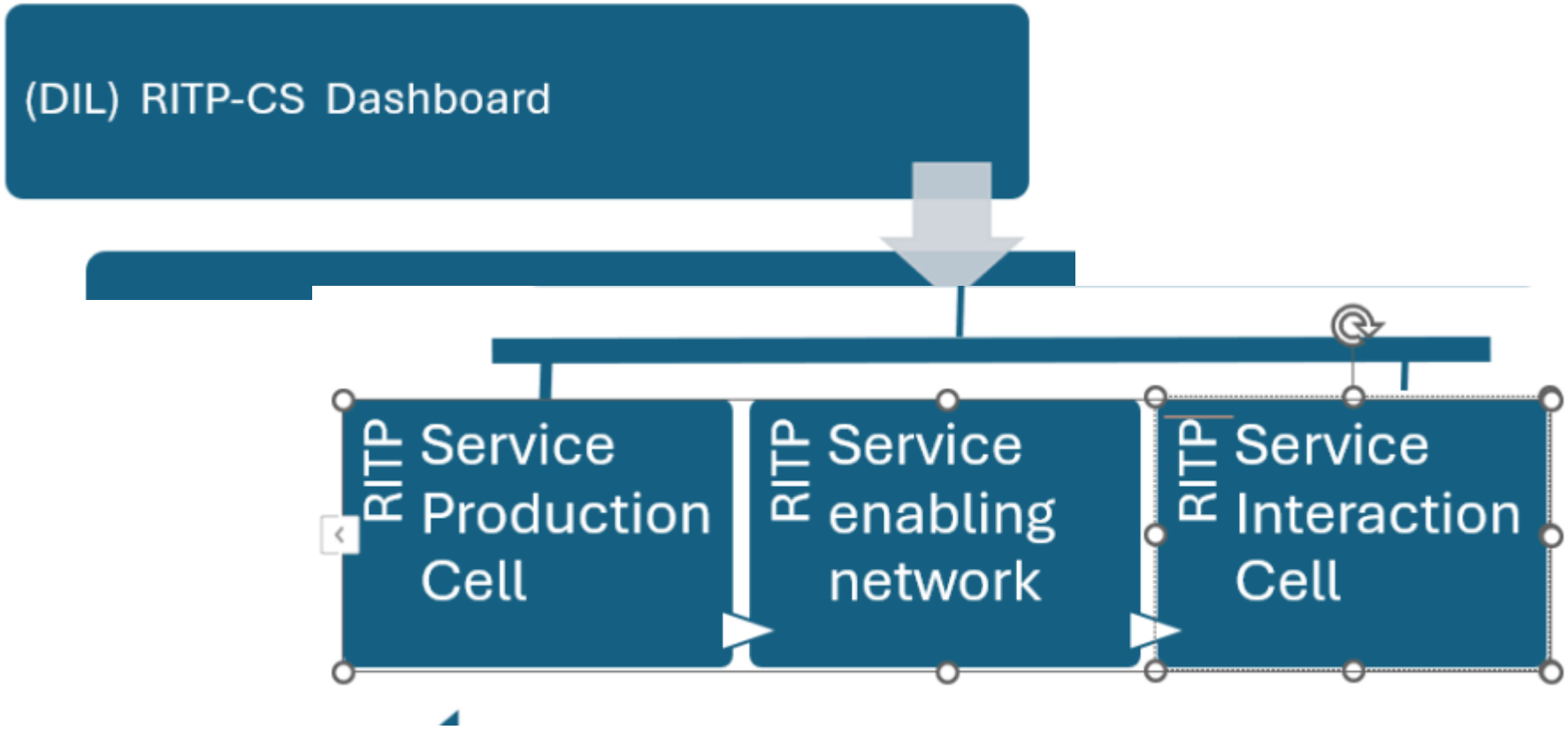
RADIUS OF COVERAGE AUGMENTATION

The resilience of a road network indicates the continued functionality of a road system for any evaluated **magnitude and consequences of a disruption**

There is no RITP works department that can address issues or mitigate them when the resilience of a road system is affected

RADIUS OF COVERAGE AUGMENTATION

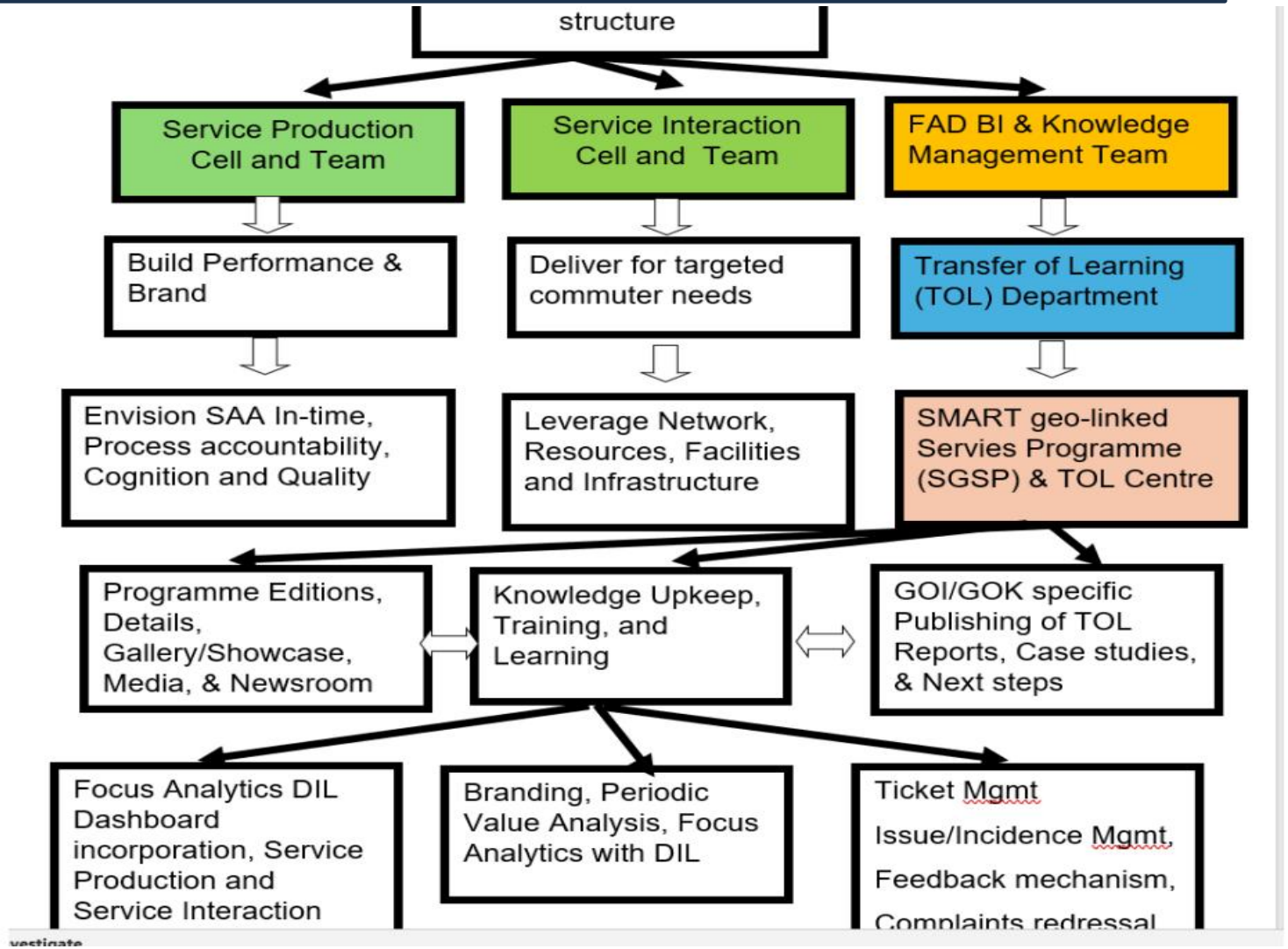
New RITP works department that can address issues or mitigate them when the resilience of a road system is affected



RADIUS OF COVERAGE AUGMENTATION

New RITP works department that can address issues or mitigate them when the resilience of a road system is affected via a foundation

RITP



CS

RADIUS OF COVERAGE AUGMENTATION

- Management Index Specification for Road Systems abbreviated as MIR outlines 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. Augmented RADIUS of coverage roads (WIP)

RADIUS OF COVERAGE AUGMENTATION

- **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

What if scenarios for types of traffic for
Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

RITP: Road Infrastructure Transformation Projects

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

- 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. RITP-CS specific Augmented RADIUS of coverage KPI(s) (WIP)

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

- 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 RITP evaluations to minimize RADIUS OF COVERAGE inefficiencies

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

- The MIR specification tries to balance MIR liabilities with MIR assets. To do this the specification introduces a new principle called "RADIUS OF COVERAGE augmentation" 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.
- The MIR specification integrates a Management index or RITP-CS indicator 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 RITP-CS Quality
- MTAAR: Mean Time to Alpha Assistance Resolution

Enabling to be done via RIT evaluations and RITP: Road Infrastructure Transformation Projects

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

- The MIR specification uses 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. Twin System Viewpoint Management for RITP-CS indicators

RADIUS OF COVERAGE EVALUATIONS ARE MADE POSSIBLE VIA TWIN SYSTEM

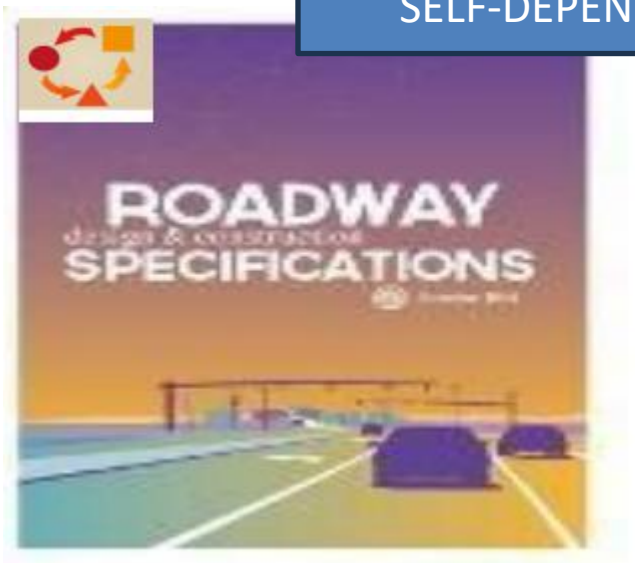
Enabling to be done via RIT evaluations and RITP: Road Infrastructure Transformation Projects

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

TRAFFIC MANAGEMENT OR COMMUTING ISSUES ARE NOT EVALUATED EARLIER

SELF-DEPENDENT



If OUR ROADS BECAME SOMETHING LIKE THIS

NEW RADIUS OF COVERAGE EVALUATIONS ARE MADE POSSIBLE VIA TWIN SYSTEM

TWIN SYSTEM ENABLED

ON THE ROAD

Twin System Enabling to be done via RIT evaluations and RITP: Road Infrastructure Transformation Projects

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

- As implementing the MIR specification will need big sized budgets that depend upon the RADIUS of coverage, the city's landscape planning & development, the diversity of it's road systems, the multi-varieties of the traffic and commuting differentiations, the proposal emphasizes that the civic bodies can plan for this

By Asking Residents/ Shops/ Businesses/Service Providers/Healthcare Service Providers/Service Centres to incorporate a Value Adding Solution called RITP-CS for RADIIOUS OF COVERAGE AUGMENTATION

The RADIUS OF COVERAGE AUGMENTATION helps address on-the-road issues like what is to be done for concerns such as MTTD, MTTP, MTTN & MTTR and feedback loops

Road Infrastructure Transformation Programme-Catalog Synergy (RITP-CS)

RADIUS OF COVERAGE AUGMENTATION

What if scenarios for types of traffic for
Being Repaired Roads
Being reconstructed Roads
Being white-topped Roads

NEW RITP Works department and new RITP-CS to help commuters relate to the changes/decisions to repair/reconstruct/resort to white topping, where different parameters in terms of Mean Time To…. Are identified and calculated

Fast Tracked SMART Resolution for a RADIUS of Coverage

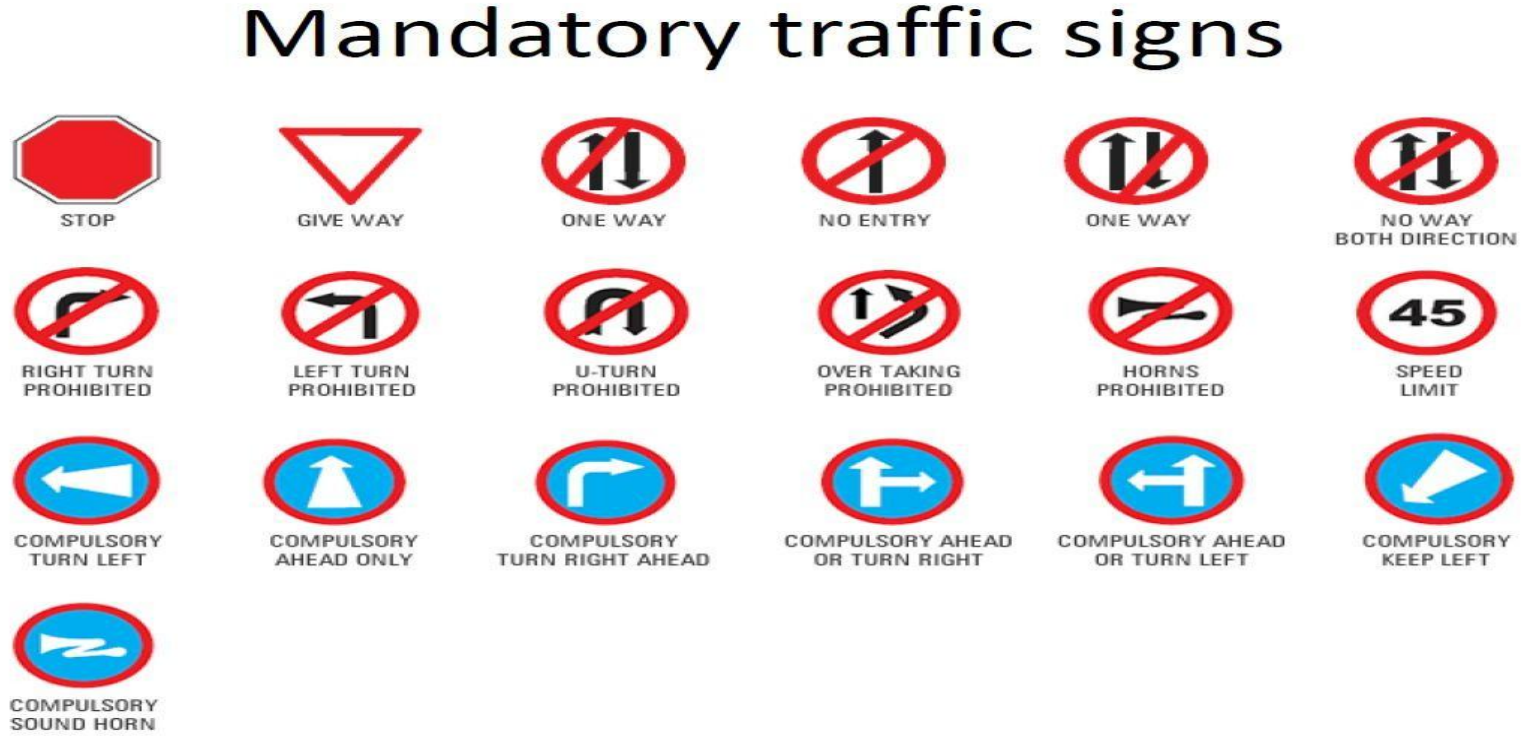
- Road Infrastructure Transformation Programme - Catalog Synergy (RITP-CS) as our proposal can provide
- 1. RITP-CS Tracking for managing incidental issues leading to inefficient road system logistics in the movement of goods
- 2. RITP-CS editioning by associates Key opinions, BI and CQI for the road system assurance that can minimize road system inefficiencies

RADIUS OF COVERAGE AUGMENTATION

- PIEV - Perception time, Intellection time, Emotion time, Volition (Final action) time
- Perception time - time required to perceive a situation or object
- Intellection time - time required to compare different thoughts, regroup thoughts and different points of understanding, register new "information, thoughts or sensations"
- Emotion time - time required to compare "emotional responses, sensations or disturbances"
- Volition time - time required for final action
- Proposed RITP-Catalog Synergy (RITP-CS) time – time required to evaluate RITP-CS Management for a RADIUS OF COVERAGE
- PIEV* time required depends upon aspects such as
- 1. Physical characteristics of the driver
- 2. Psychological factors influencing or affecting the driver, savings & safety interests
- 3. Environmental conditions, influencers, situations, road & traffic health
- 4. Purpose of trip, trip planning,
- 5. Type and speed of vehicle, condition and adherence to norms
- 6. New Votary specification and choices for traffic health
- 7. (Occupation based or Trends based) Self-assessment for fitness, drive guidance
- 8. Availability of feedback systems 9. Editioning of RITP-CS

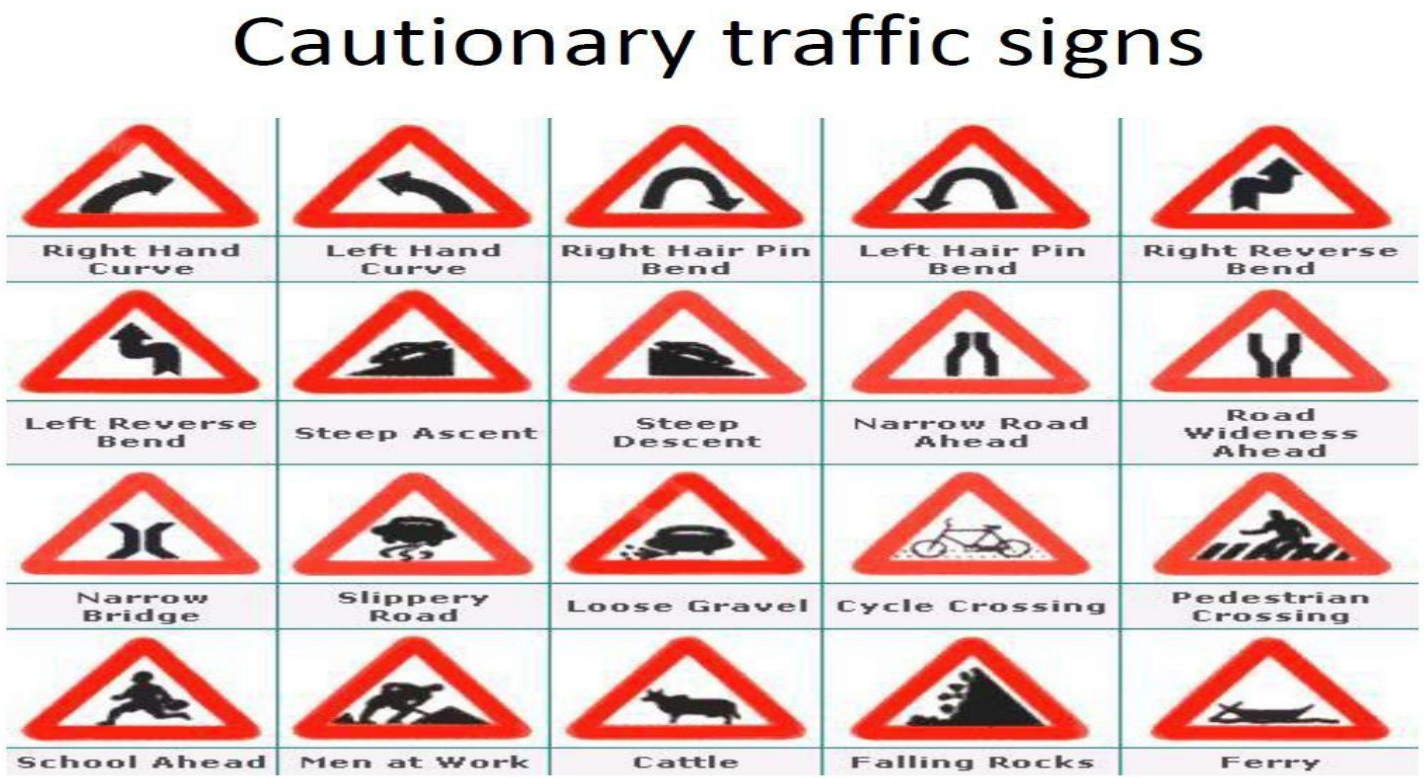
RADIUS OF COVERAGE AUGMENTATION

Most routes need continual awareness of the following mandatory traffic signs



RADIUS OF COVERAGE AUGMENTATION

Most routes need awareness of the following cautionary traffic signs



RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

- ❑Yawning
- ❑Inability to keep eyes open
- ❑Talking incoherently or inability to respond to questions from assisting team co-drivers
- ❑"Nodding off" and trouble keeping your head up
- ❑Inability to remember driving the last few laps/kilometers
- ❑Ending up too close to nearby cars
- ❑Missing route/road system/road signs or guided turns
- ❑Drifting into other lanes or onto rumble strips

- ❑ Inability to visualize traffic or interpret traffic signs from the line of sight distance
- ❑ Inability to visualize traffic due to blinding light sensitivity from the line of sight distance

RADIUS OF COVERAGE AUGMENTATION

As possible, deliberate within your organization/institution/ department/team that accidents can occur because of things like

1. decreased focus and attention (often brought on by obsession with depressing or unsettling thoughts);
2. anxiety, which frequently coexists with depression; irritability, agitation, or degeneration or afflicted retardation;
3. exhaustion from restless nights; and
4. weakness from inadequate food intake.
5. Furthermore, depressed individuals may take chances without thinking through the repercussions, attempt or make suicide gestures, and use alcohol or other substances that impair functioning as a coping mechanism for their suffering

RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

Most common reasons for night driving becoming an issue:

1.Cataracts - Cataracts scatter light inside the eye, causing glare, halos, and blurry vision.

2.Retinal Issues - Conditions like macular degeneration or diabetic retinopathy make it harder to see contrast and fine details in low light.

3.Dry Eyes - When your eyes are dry, light scatters across your cornea, making glare more intense and recovery from headlights slower.

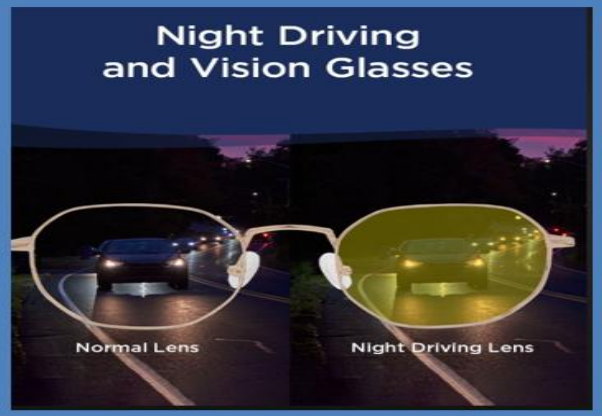
4.Outdated Prescription - Even a small change in your prescription can make night driving noticeably harder — especially when paired with aging eyes.

5.Undetected degenerative conditions like glaucoma

RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

ROAD SAFETY AND EYE WEAR FOR A DRIVER



Glasses with anti-reflective coatings or polarized lenses.

Yellow-Tinted Night Glasses

RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

ROAD SAFETY AND CONCERNING CONDITIONS FOR A DRIVER

RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

CONDITIONS TO BE CONSIDERED FOR SAFE COMMUTING BY ROAD

Driving in dusty road conditions
Driving in road systems degraded by salt/corrosive toxins/ emissions
Driving in the condition of inflowing dust/sand/ water
Driving in hilly or mountainous areas
Towing related driving conditions
Driving in afflicted conditions (like low fuel or undue contingency or contaminated fuel, degraded parts, poor or damaged head lights, ...)
Driving in frequent stop and start conditions or brake affected conditions
Driving in sunroof affected conditions

Driving in dealer-network-affected conditions
Driving in Emergency Services affected conditions
Driving in out-of-network-coverage conditions
Driving in reverse gear specifically conditions
Driving in journey parameter affected conditions
Driving in non-showcased conditions

Road Safety Assist enabled Data Solutions

RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

CONDITIONS TO BE CONSIDERED FOR HILL DRIVING CHARACTERISTICS

Strategically mapped conditions	Adversely affected conditions
Severely affected conditions	Communication network-affected conditions
Less dynamic conditions	Supply or Emergency Services affected condition
Associated hill or mountainous areas	Affected dealer network-coverage conditions
Storm afflicted conditions	Unknown Hill or Road System zoning of conditions
Contingency Solution lacking conditions	Trip or journey parameter affected conditions
Frequently affected or dynamic conditions	Not strategically showcased conditions
Vehicle safety affected conditions	Other Safety Continuum conditions

UAV enabled Perspective Imagery Data Solutions

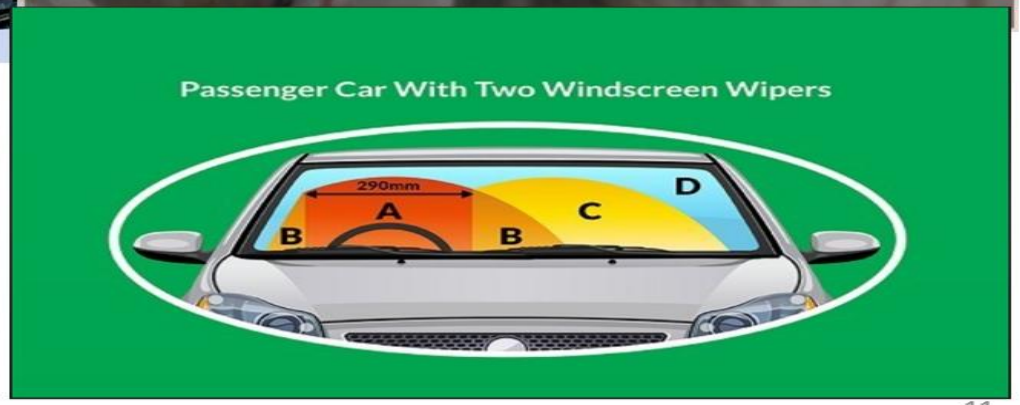
RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

ROAD SAFETY AND CONCERNING WINDSHIELD RISKS FOR A DRIVER

Windshield Wiper Failure

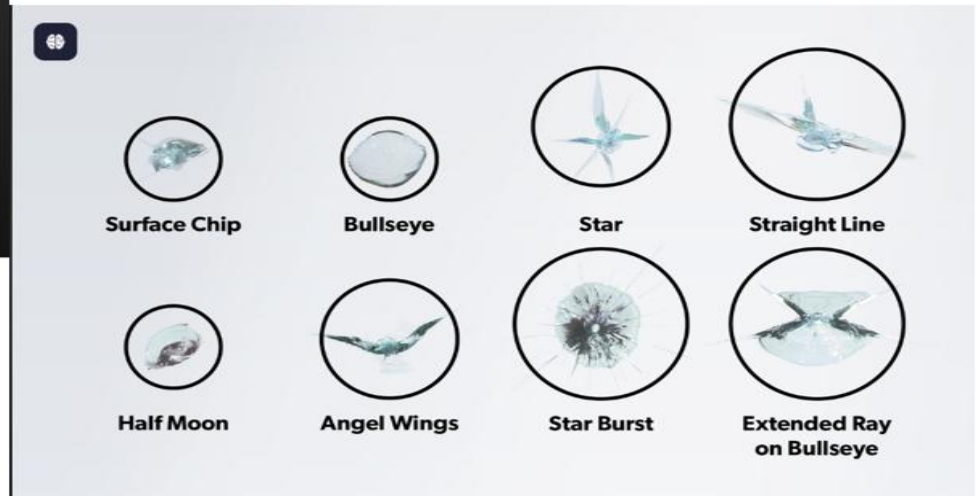
- When windshield wipers stop suddenly during rain or snow, the motorist should slow down, pull to a safe area off the roadway and turn on emergency flashers.



RADIUS OF COVERAGE AUGMENTATION

Most drivers need to be mindful of the following

ROAD SAFETY AND CONCERNING WINDSHIELD RISKS FOR A DRIVER



RADIUS OF COVERAGE AUGMENTATION

Most drivers/sudden need commuters need to be helped for the following

1. Sudden bends or curves where it is not possible to ensure clear visibility
2. Needing immediate repair roads/tracks with or without signs
3. Sudden vehicle/vehicles stopping with or without signs
4. Sudden crossings with or without signs
5. Sudden Speed regulators with or without signs
6. Sudden Medians or missing Barricades with or without signs

7. Unexpected road/track surface deterioration, which may demand options such as 2-wheelers being equipped with a Drag mode or (2 wheelers or 4 wheelers) being insightfully assisted by workflow illustrations in an interlink safety manual by the automobile dealer on what is to be done if the tyre gets punctured or is suddenly a risk to driving with or without pillion
8. Poorly maintained septic systems
9. Driving guidelines or identified-rules-violators, and lack of driving norms

RADIUS OF COVERAGE AUGMENTATION

Most drivers/sudden need commuters need to be helped for the following

10. Route/Road System/Road Hotspots
11. Lack of self-assessments of driver fitness with Route/Road System/Road guidance
12. Lack of feedback systems that alert or mitigate risks and hazards
13. Controlling of undue deviations in driving, sudden lane changes or undue colliding
14. ***Google Map inconsistencies for real world road system/route factors.***
15. ***Google Map's limited awareness of road fitness or relevance for the journey/route and any in location codification etc.***

RADIUS of Coverage Profiling Matrix

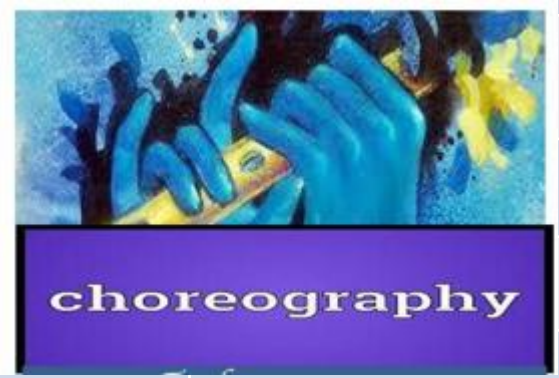
The RITP-CS Analytics strategy for risk mitigation is a proposal that adds data analytics to help road system/network/infrastructure projects be more Reflective, Recognizable, Reportable and Responsive.

It involves a Strategic Rationale to Catalyze RADIUS of Coverage profiling and transformation (via R+ Analytics and a RADIUS of Coverage Profile Card) to mitigate risk at the systems and people welfare level

Targeted audience: BBMP / GBA Road Infrastructure/ SMART Ward Management/ Traffic Engineering/ RTO's assistive departments

RADIUS of Coverage Profiling Matrix

Safety Promoting Factors	(A) Weight in Total Coverage (0.1 to 1.0)	Presently (B) Score	Weighted Score (A)x(B)	Required (C) Score	Weighted Score (A)x(C)
Route used fitness					
Distance travelled fitness					
Traffic control fitness					
Road Type fitness					
Road infrastructure fitness					
Risk Profile fitness					
SMART City Components fitness					
Evaluated disruption fitness on repair / reconstruction					
Emergency response fitness					
Trending need specific fitness					



RADIUS of Coverage Profiling Matrix

Need for Integrated Optimization

Need for Integrated Optimization

To address the need for Hazard or Dynamics Mitigation Systems, the Targeted management committee could design an **Integrated Optimization program** that takes into account the following considerations to meet the demand for field level dynamics identification and rating:

1. Analysis of the Time Motion Scale system of the DMS system and its commuter or route specific ecosystem to match demand or integrated optimized demand

2. Gathering and analysis of available data or TMS zone forecasts for Segmentation & Target Group needs for field level dynamics mitigation in terms of profiling

3. Inventory of (SMART Ward/Transportation and Logistics Networks/DMS Integration Centre (and its RADIUS of coverage) specific profiles, assets, equipment and systems

4. Identification of Optimization requirements (inclusive of DMS Integration)

5. Identification of Risk Mitigation requirements, NSSR(*) social responsibility forms

Need for Integrated Optimization

6. ***Identification of Condition Monitoring and Traceability requirements***
7. Identification of Preventive Maintenance requirements
8. Identification of Corrective Maintenance requirements
9. Preparation and filing of TMS parameters, checklists, system-level manuals and documentation
10. Need for Target Group Training
11. Need for Continual Safety Improvement for Expectations of risk / radius of coverage profile detailing, connected analytics information and quality promoting attributes are emerging to be important for road systems/networks and their value-stream-mapping with focus on

Perceived Quality Management /
Quality Acceleration
Forward Lifetime theory for commuting safely and sustainably
insights for any voice of commuter innovation

Need for Integrated Optimization

RADIUS of Coverage Assistance - Preventive Maintenance (PM) Program roleplay

1. Designing of procedures and identification of a plan & time intervals according to which PM must be carried out

2. Devising of schedules to allocate personnel and resources for the PM plan

3. Designing of Logs, Forms and Reports

4. Designing of a (decision-tree diagram specific) docking system for DMS analysis and Pronation Level Analysis

5. Designing of TMS / Zero Downtime systems and enablers (like KPIs/FMCEA/RCA)

6. Designing of a system for Condition and Traceability tracking

7. Designing of a system for Safety / Cost tracking

8. Designing of a system for DMS control

Need for Integrated Optimization

RADIUS of Coverage Assistance - Preventive Maintenance (PM) Program roleplay (continued)

9. Designing of a system for Sustainable utilization specific Inventory control

10. Designing of a system to gather and address feedback/complaints

11. Designing of a system to gather and assess data input for Continuous Safety Improvement

Need for Integrated Optimization

RADIUS of Coverage (ROC) Assistance - Corrective Maintenance (CM) Program roleplay

1. Developing of a system and suitable knowledge aids for (first-level and thereon corrective level / NSSR* level specific) condition, trouble shooting and fault analysis, which can be used alongside documentation provided by the target group

2. Deciding upon a system to suit nature of traffic, facility or building and developing of docking systems for ROC/DMS landscapes, and standard operating procedures for Integrated Optimization specific analysis and corrective action

3. Developing of a decision-tree specific system to analyze issues, incidences, hazards & risks specific to horizontal, vertical and end-to-end integration and thereon identify task breakdown with analysis of ROC/DMS specific systems, Human Machine Interfaces and nature of Data integration needed for optimization

Need for Integrated Optimization

RADIUS of Coverage Assistance - Corrective Maintenance (CM) Program roleplay

4. Deciding upon a system to suit nature of traffic, facility or building and developing of standard operating procedures **for Level of Repair/TMS model** specific analysis and corrective action

5. Developing of a system to analyze incidences, hazards & risks and thereon identify task breakdown with analysis of skills needed
6. Training and supervision to deliver (as per standard operating procedures) with required supportability (required sequence of operations, level of reliability & maintainability)

NOTE: Of specific importance is preparation of knowledge aids that detail aspects like TMS study, ROC/DMS lifecycle, ROC/DMS Performance Program/Close connect Value Stream mapping, Docking systems like the VPN/DMS landscapes, SMART Device and sensor settings for the ROC or DMS pilots / SMART Ward vision, Control settings for normal, docking and continual operations, Shutdown route procedure, Emergency alternates procedure and as relevant any ROC modeling, Data by IT/OT integration procedure for ROC, Safety Optimization procedure and/or Seasonal Change procedure referring to ROC profiling and Target group detailing**.**