



Pradhan Mantri  
Gram Sadak Yojana

## Rural Road Connectivity

7,78,625 km  
of roads sanctioned

6,81,984 km  
roads constructed

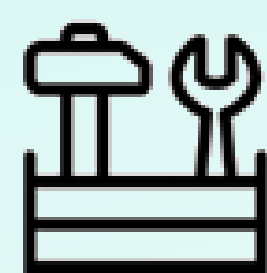
3,40,370 Cr  
Asset value worth

12% of India's entire  
road network

1,78,000+ habitations  
connected

40.5 Cr population  
(48% rural population) benefitted

## PMGSY Roads: Lifeline of Rural India



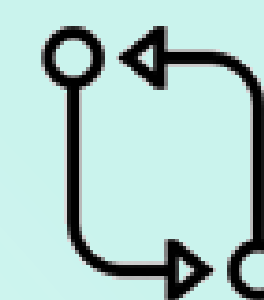
Promotes access  
to economic and  
Social Services



Increased  
Agricultural  
Income

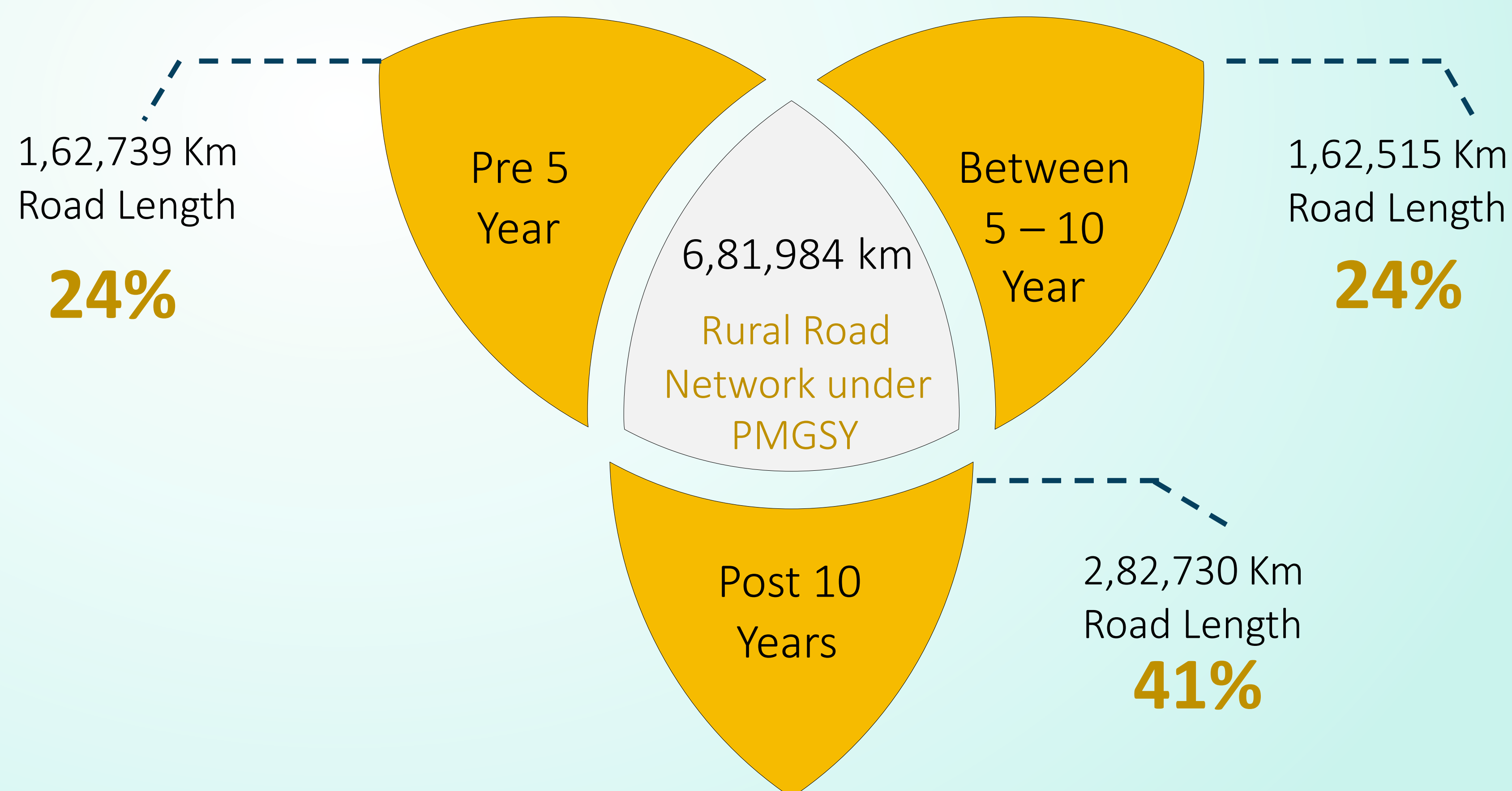


Productive Employment  
Opportunities for Rural  
population



Sustainable  
Poverty Reduction

### Asset Created in PMGSY Scheme

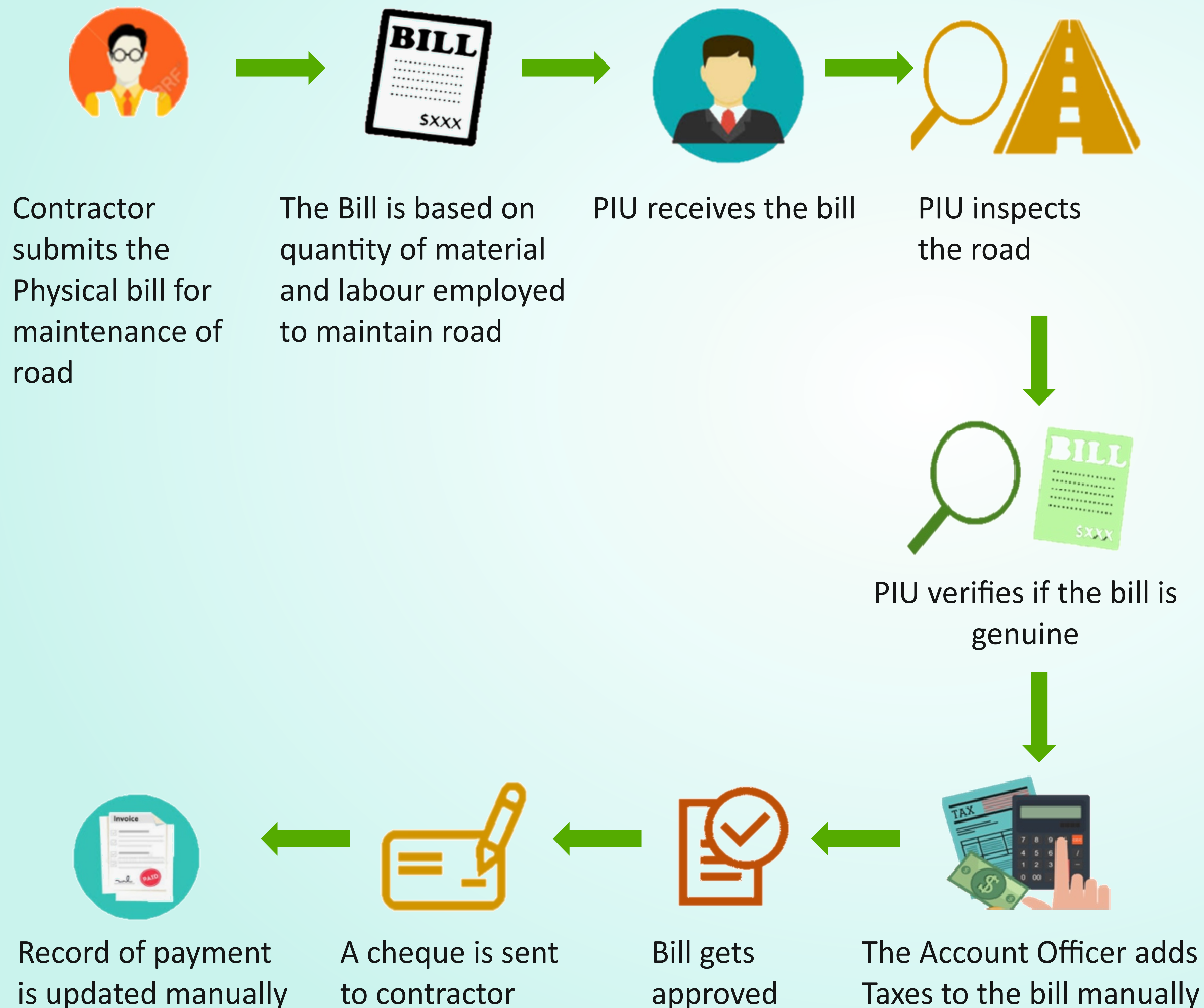


**Salient Feature of PMGSY- Five year Guarantee period with construction  
Routine maintenance of roads is key to preserving assets for design life**



# MAINTENANCE BEFORE eMARG

## BILL OF QUANTITIES (BOQ)



- Payments to contractors based on quantity of work executed and not on quality of road
- Misaligned incentive for contractor to construct low quality road so that more money can be made during maintenance
- Road Inspection dependent on Bill submission by contractor
- Administrators dependent on PIU feedback
- Maintenance is low priority high volume work



# SWITCHING TO PERFORMANCE BASED MAINTENANCE CONTRACTS (PBMC)

**FOCUS ON OUTCOMES AND NOT INPUTS –  
BECAUSE THAT IS WHAT MATTERS FOR THE CITIZENS**

## BOQ system (OLD)



- INPUT BASED
- MEASURE THE SIZE OF THE POTHOLE FILLING AND MATERIAL INVOLVED
- PAY CONTRACTOR BASED ON THE SAME
- NO GUARANTEE ROAD IS IN GOOD CONDITION

**High Administrative Burden**

## PBMC (NEW)



- OUTCOME BASED
- MEASURE IF THE ROAD FINALLY IS IN GOOD CONDITION OR NOT
- UNRELATED TO HOW MUCH EFFORT CONTRACTOR PUT IN BRING ROAD TO GOOD CONDITION

**High Administrative Burden**

## PERFORMANCE RUBRIC FOR MAINTENANCE OF ROAD



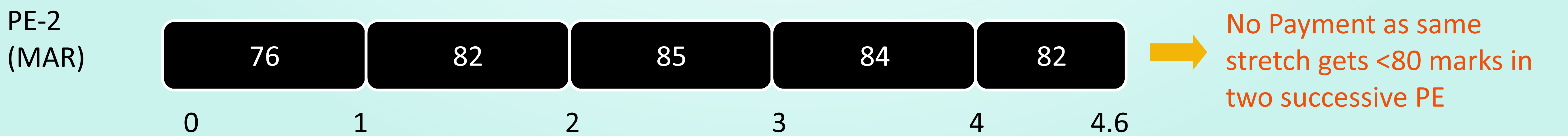
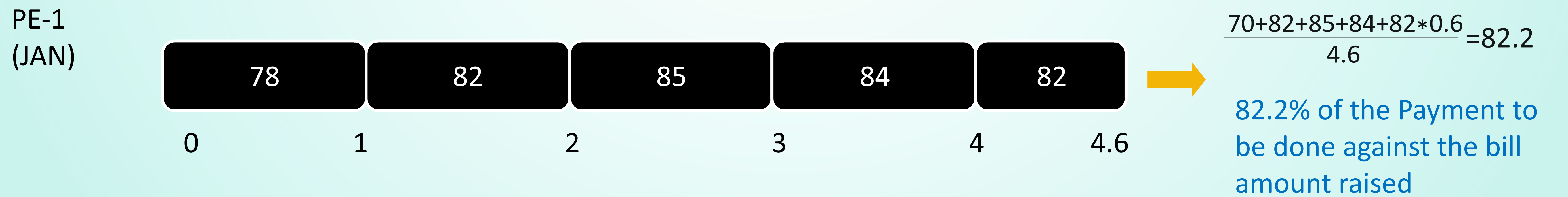
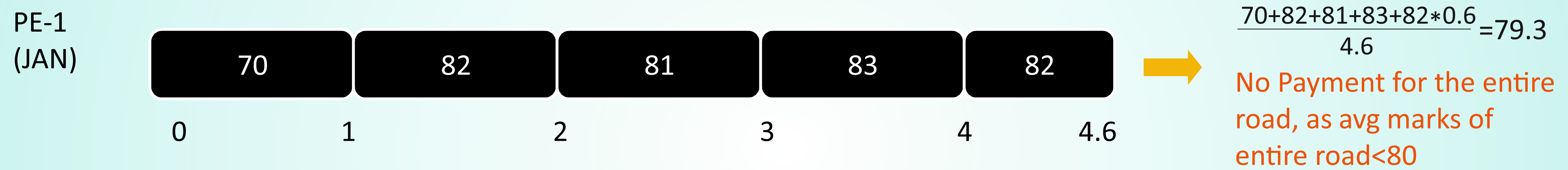
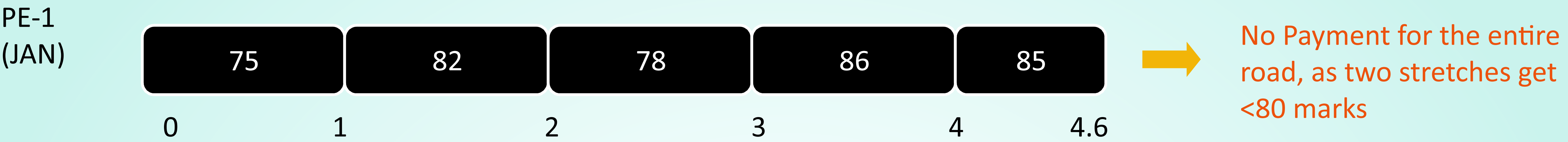
S.No	Parameters	Marks
1	Maintenance of surface of road including filling potholes and patch repairs etc.	50
2	Making up of berms/shoulders	20
3	Restoration of rain cuts and dressing of side slopes/berms	10
4	Maintenance of drains	3
5	Maintenance of culverts and cause ways	4
6	Miscellaneous	13
TOTAL		100



Score (?)/100	Payment
< 80	NIL
Between 80-100 (say 85)	85% of maintenance amount



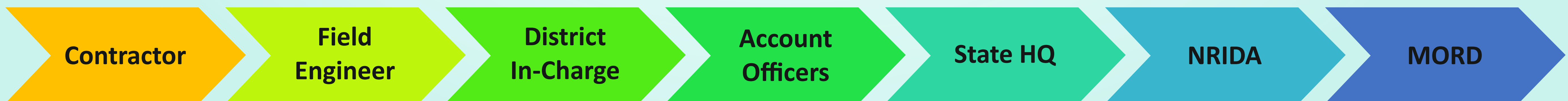
# CRITERIA FOR PAYMENT



# eMARG

## Electronic Maintenance of Rural Roads

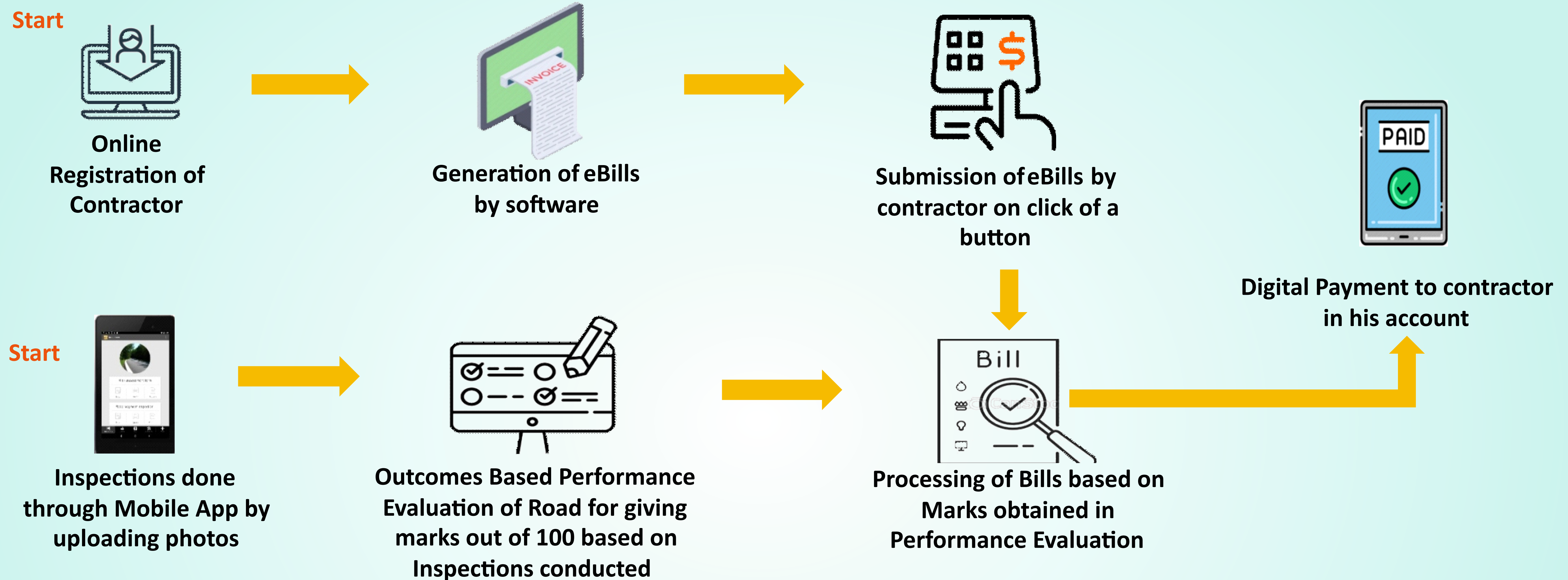
- ➔ IT re-engineering for all functions related to the execution, monitoring and management of rural road maintenance centered around outcomes and evidence.
- ➔ End to end digitization of all processes related to maintenance from billing, verification of work, final payment to contractors and monitoring.
- ➔ Fusion of multiple e-governance technologies such as Web ERP, GIS, mobile apps, SMS, digital payments and accounting.
- ➔ Creation of Login credentials for all the stake holders.



Stakeholders



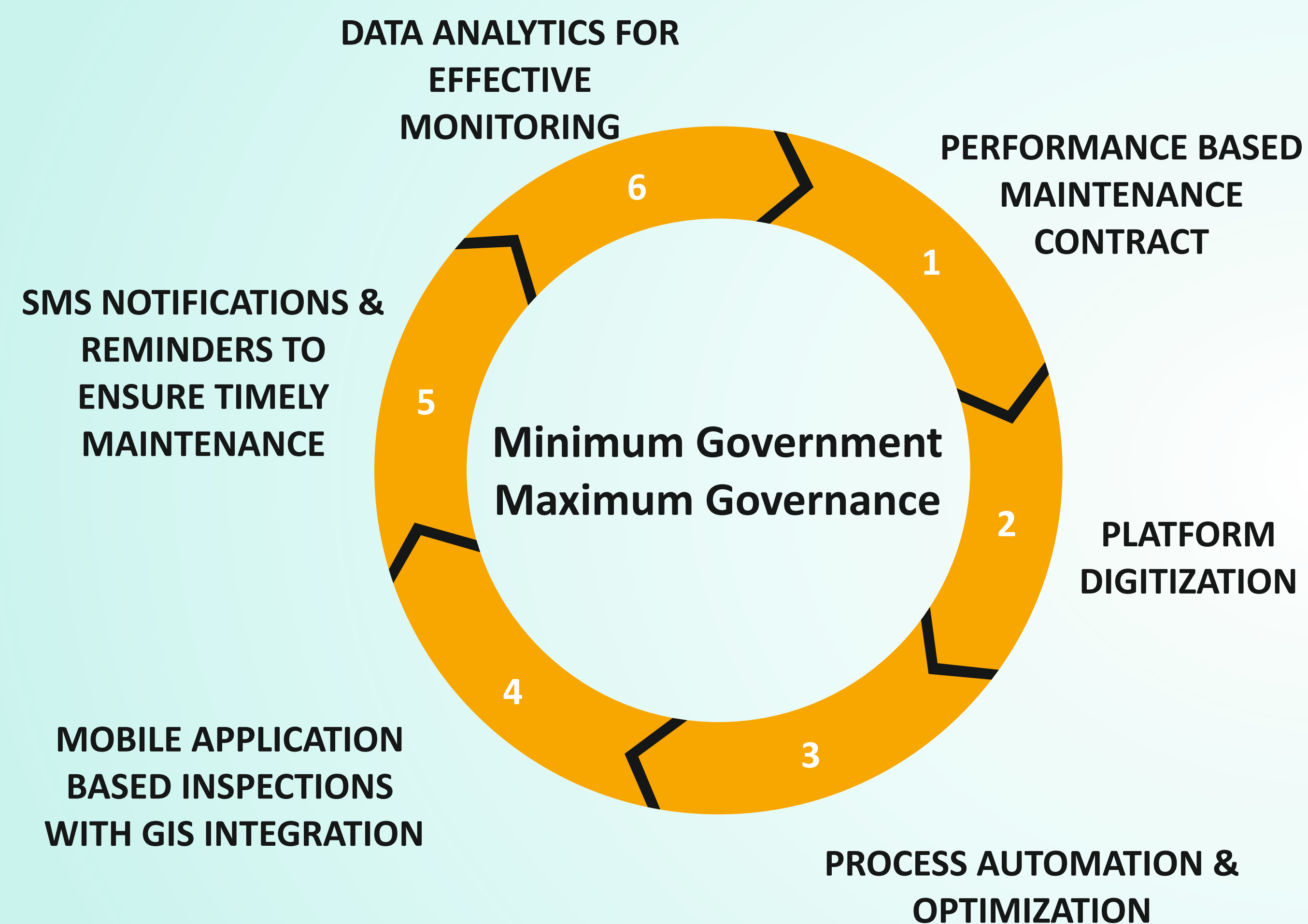
# MAINTENANCE AFTER eMARG



- 👍 Measuring outcomes is easier than measuring inputs
- 👍 Contractor incentivized to construct better road such that less inputs in maintaining road but still gets good outcomes
- 👍 Delinking of Billing and inspection
- 👍 Evidence based assessment of roads
- 👍 Digitization of entire process
- 👍 eBill Generation and Submission
- 👍 Digital Payments with DSC
- 👍 System generated vouchers based on score leading to less to-fro between account officers and District Engineers on amount

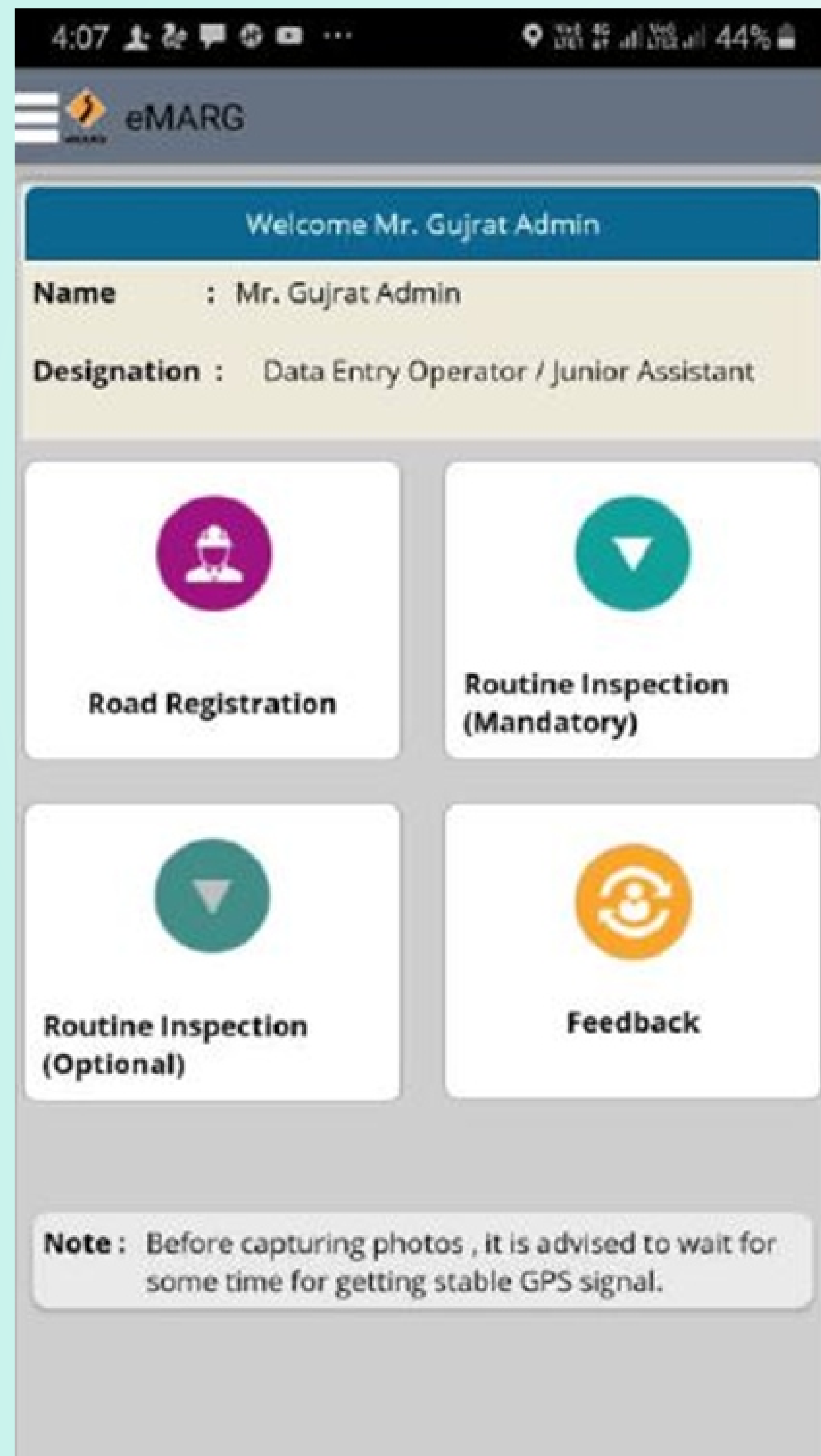


# FEATURES OF eMARG



# USE OF APP AND MOBILE TECHNOLOGY

## eMARG MOBILE APP FOR CONDUCTING ROUTINE INSPECTIONS



- 📍 Location for conducting inspections for every km auto generated by app
- 📍 Two geo-tagged photographs per kilometer clicked
- 📍 Each stretch is graded as Satisfactory/Unsatisfactory
- 📍 App operates in offline mode and provision to upload photographs later when one comes in network area
- 📍 District/State/Centre can conduct additional inspections on random road visits

## SMS NOTIFICATIONS

- ✉ SMS Notifications to contractors for submitting the bills every month
- ✉ SMS Notifications to district engineers to conduct Routine Inspections every two months
- ✉ SMS Notification to contractors in case the road gets Unsatisfactory grading in inspection
- ✉ Every payment related transaction authenticated with OTP



# ROUTINE INSPECTIONS – ROAD PICTURES AVAILABLE ON GOOGLE MAP FOR MONITORING

Inspection Analysis


District Name: Chittoor


Block Name: Rama Kuppam

Tools

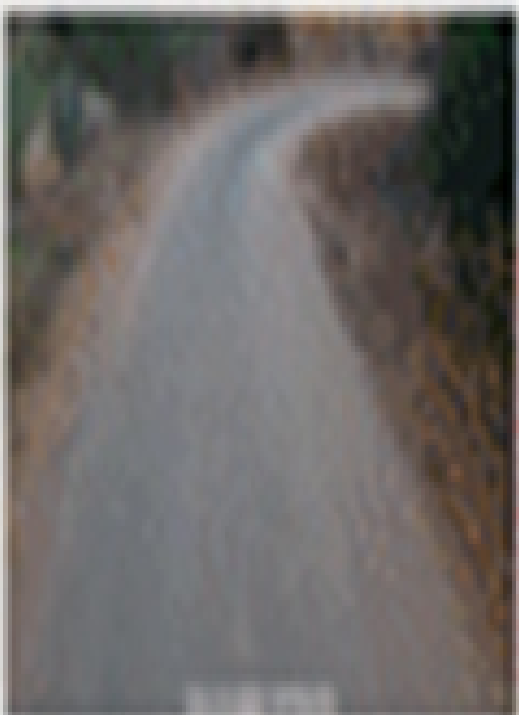
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Routine Inspection Profile

Road Name	(MRL 21) MRL 21 - Vijayapuram to Karnataka boarder via Kilakpodu (6.531km )
Chainage Inspected(in Km.)	4.400 - 4.600
Insp. No	R1-AP-5260-5
Insp.Type	Mandatory
Grade	Satisfactory
Insp. Date	25/02/2020
Inspection Image	



# MONITORING AND DATA ANALYTICS



Package Verification, Contractor Registration, no. of DSC enrolled

Status of Pending, cleared and paid bills

Inspection Analysis of RIs and PEs conducted

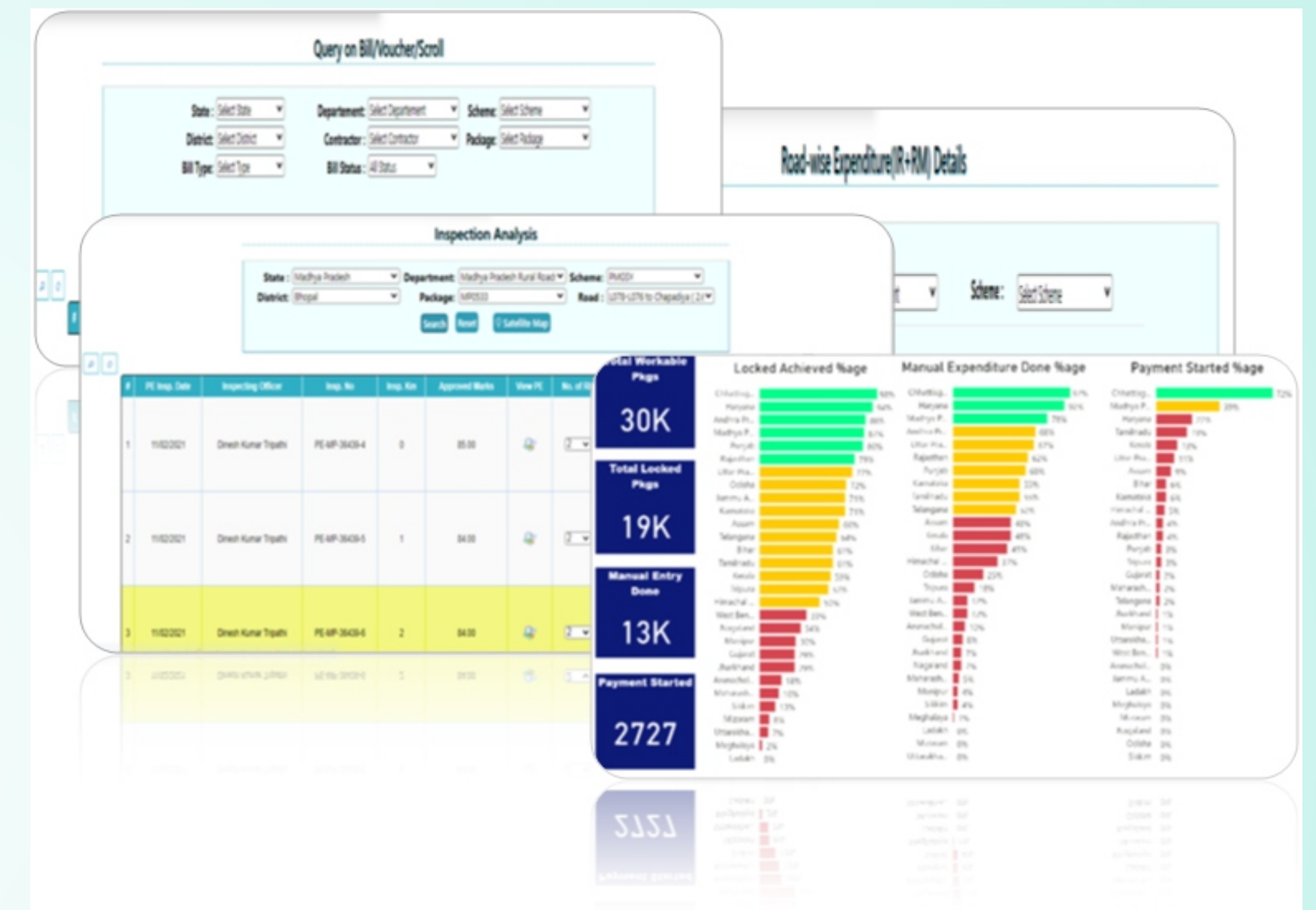
Bills with zero payments (less than 80 marks)

Packages Pending for Payment for more than 6 months

Liability projections for next Financial Years

Dashboards and User Level Action Oriented Task sheets

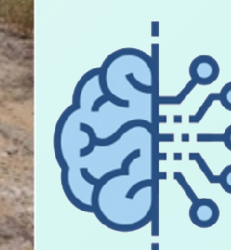
More than 30 reports available in system for efficient monitoring by States and Ministry



PowerBI integration



{Prediction: Poor  
Confidence: 92%}



Pilot in 2 Districts to use AI to classify road condition based on pictures to flag anomalous performance evaluations. Eg. 100 marks for this picture.



# PROGRESS MADE SO FAR



## Milestone of 1000 Cr Payment through eMARG Achieved

**29**

States and UTs  
making payments

**1,330**

Engineers from 737  
districts PAN India  
using eMARG

**13,038**

Contractors  
registered  
on eMARG

**1,96,000 km**

Road available in  
eMARG for payments

**5,07,242**

Routine Inspections  
carried out

**10,00,000+**

Photographs on  
record for seeing the  
condition of roads

**8,91,539**

Bills Submitted  
by contractors  
across country

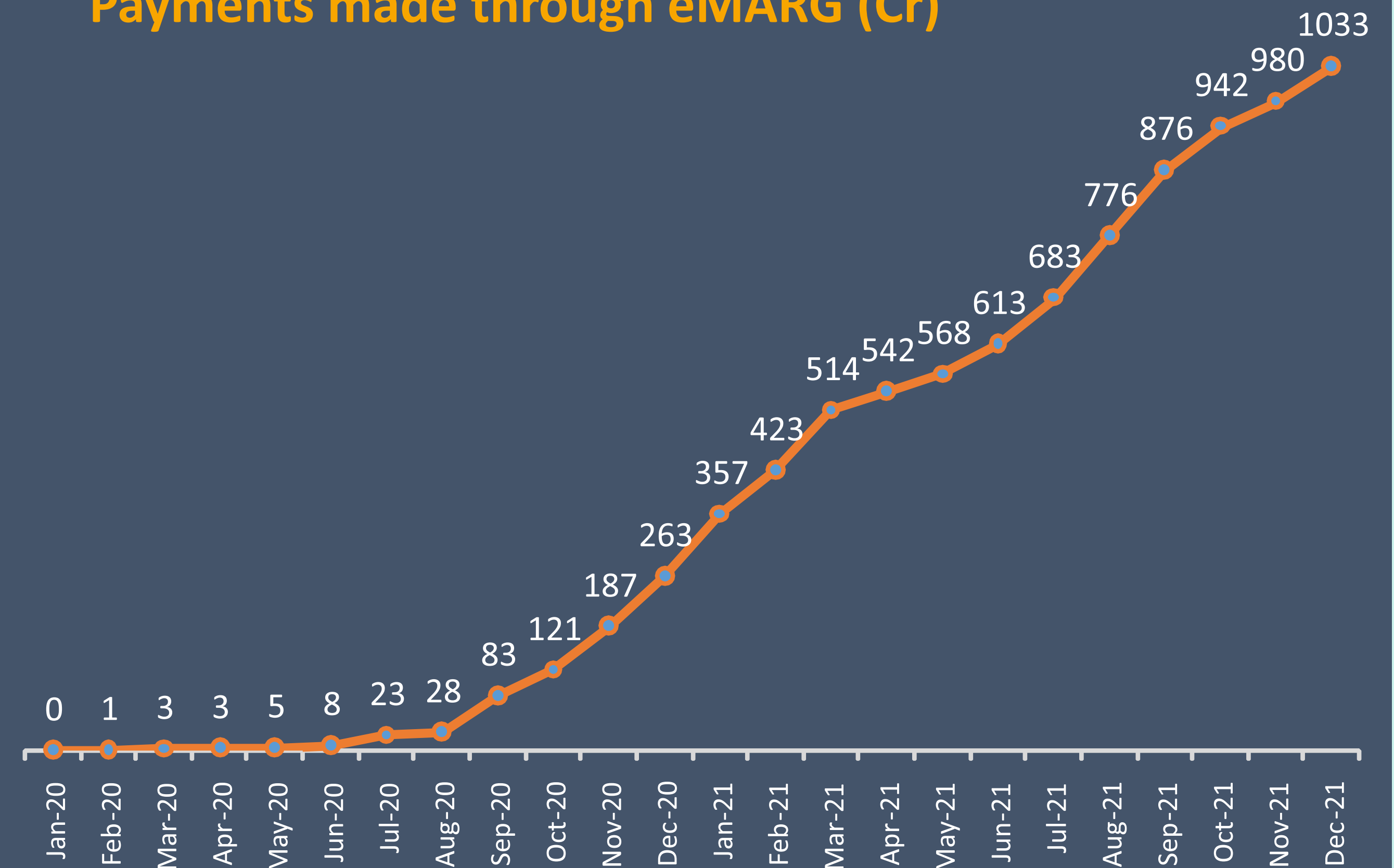
**1,033 Cr**

Payments  
disbursed  
Nationally

**5,662**

Zero Payment  
Roads

### Payments made through eMARG (Cr)



**480 Cr**

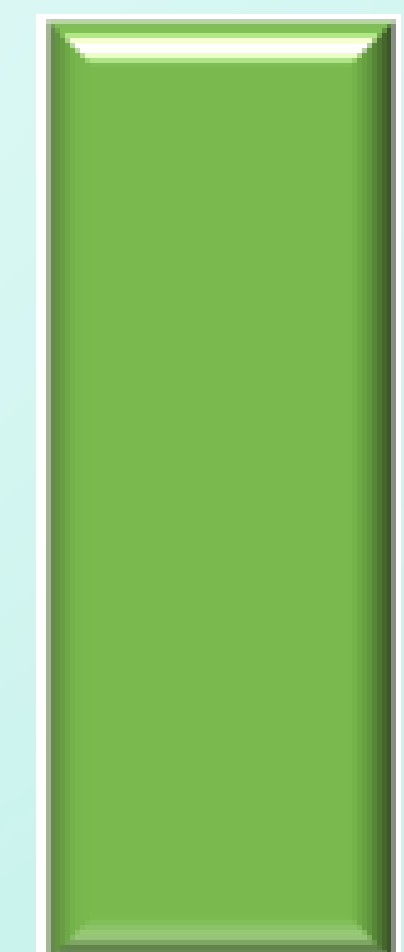


2019-20



30% Increase in  
COVID year

**622 Cr**



2020-21

**Total Expenditure on maintenance**



# AWARDS AND RECOGNITION SO FAR

**Gold Award Winners for Skoch Awards 2020**

**Silver Award Winners for National Awards for eGovernance 2021**

**Award of Appreciation, 19th CSI SIG eGovernance Awards 2021**

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