



AEC Forum 2025

Pradhan Mantri
Gram Sadak Yojana



INTEGRATED DIGITAL SOLUTIONS FOR
RURAL ASSETS : The Road To Digital
Transformation , Management & Road
Safety

21-22 Aug 2025

EXCELLENCE IN GOVERNMENT PROCESS RE-ENGINEERING FOR DIGITAL INFORMATION...



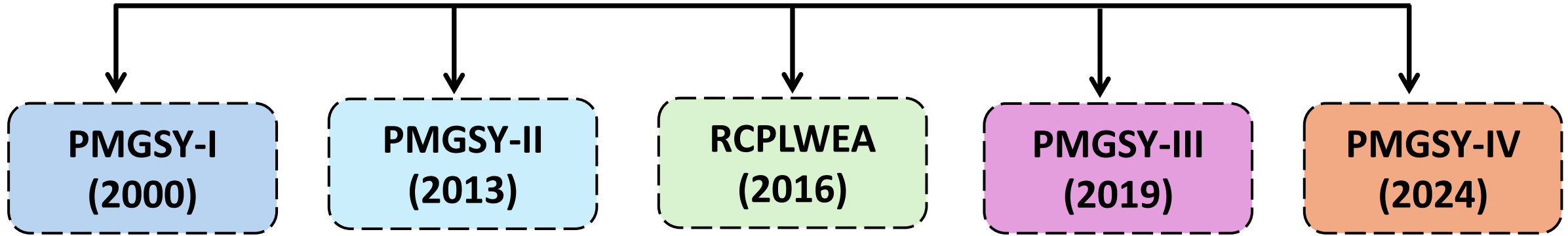
The National Rural Roads Development Agency (NRRDA) was established in 2002 to provide technical and management support for the implementation of PMGSY. It has been renamed as the National Rural Infrastructure Development Agency (NRIDA) in 2017.

Objectives of NRIDA:

- Provide all round rural connectivity to unconnected habitations across the country as envisaged in the PMGSY scheme.
- Focus on quality and maintenance of rural roads constructed under the PMGSY Scheme.
- Promote research and development in the areas of rural road construction and maintenance in a cost-effective manner, through collaboration with scientific and technical institutions.
- Promote the use of green and new technologies in rural roads construction.
- Become a centre of excellence in the sphere of rural roads construction.



PMGSY AT GLANCE



PMGSY-I (2000): Provided all-weather road connectivity to rural habitations, targeting **1,78,184** habitations with **6,44,796 km** roads.

PMGSY-II (2013): Focused on upgrading **50,000 km** of rural roads to improve connectivity and efficiency.

RCPLWEA (2016): To enhance road connectivity in 44 worst LWE-affected and adjoining districts across 9 States (**12,227 km**).

PMGSY-III (2019): Strengthened **1,25,000 km** of major rural roads linking habitations to markets, schools, and hospitals.

PMGSY-IV (2024-2029): Aims to connect **25,000 habitations** with **62,500 km** of all-weather roads for socio-economic development.

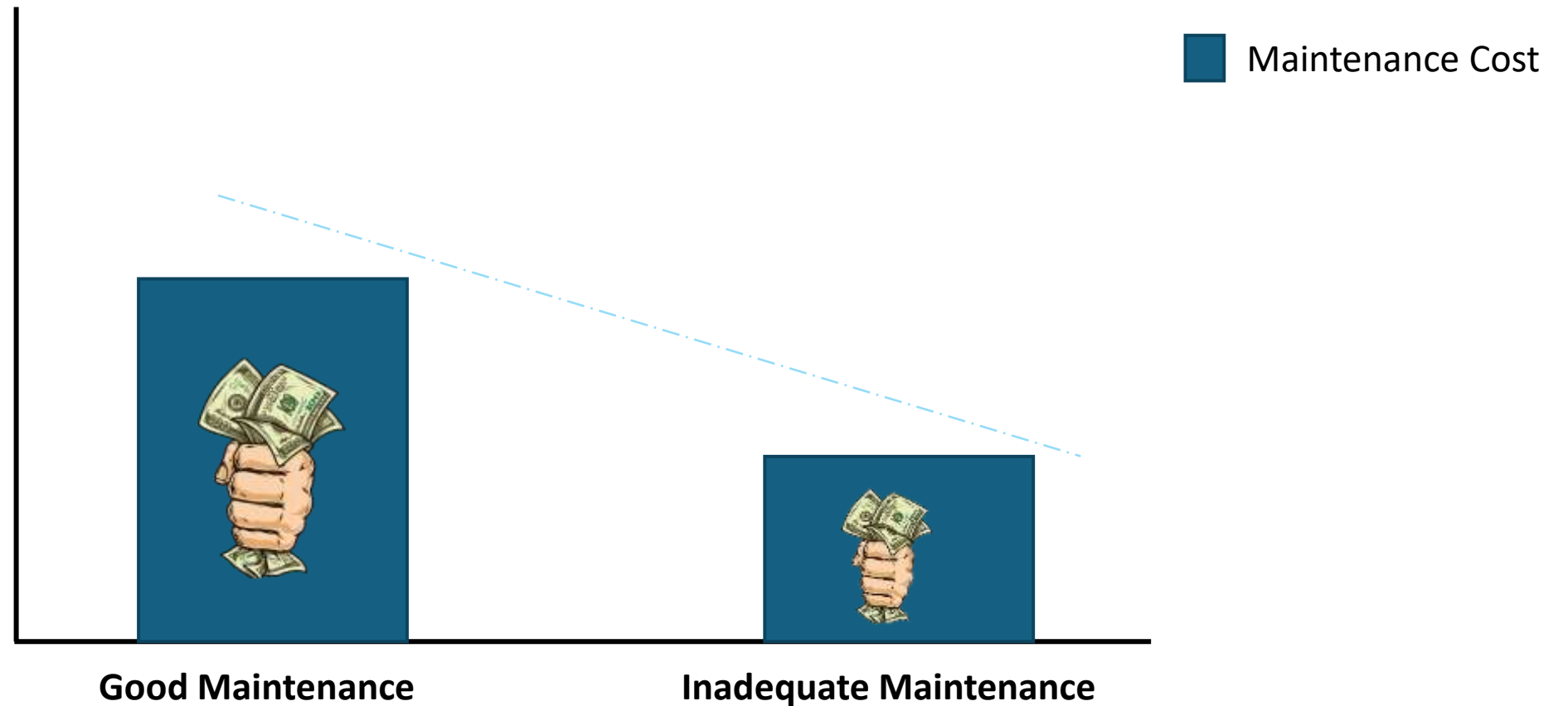
NECESSITY OF MAINTENANCE

The basic objective of road maintenance is to ensure the road that has been constructed or improved, is to the extent possible kept in its original condition. All roads require maintenance as they are subjected to traffic and the forces of weather. Even with the highest possible quality of construction, maintenance is essential to get optimum service from the road structure during its design life.

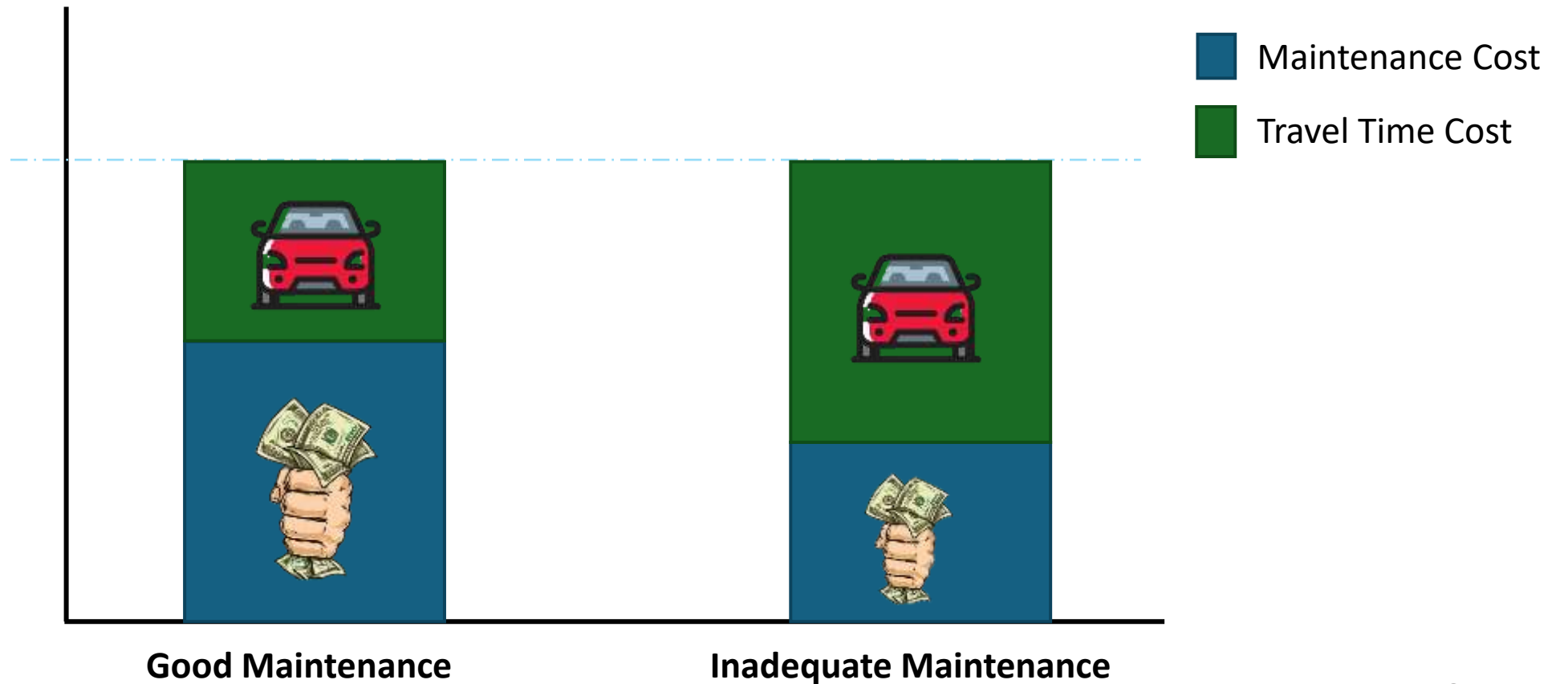
The purpose of road maintenance is to ensure that the road remains serviceable until the end of its design life. Maintenance therefore performs the important function of:

- Prolonging the life of the road by reducing the rate of deterioration (both on carriageway as well as off-carriageway), thereby safeguarding previous investments in construction and rehabilitation;
- Lowering the cost of operating vehicles on the road by providing a smooth running surface;
- Keeping the road open on a continuous basis by preventing it from becoming impassable.

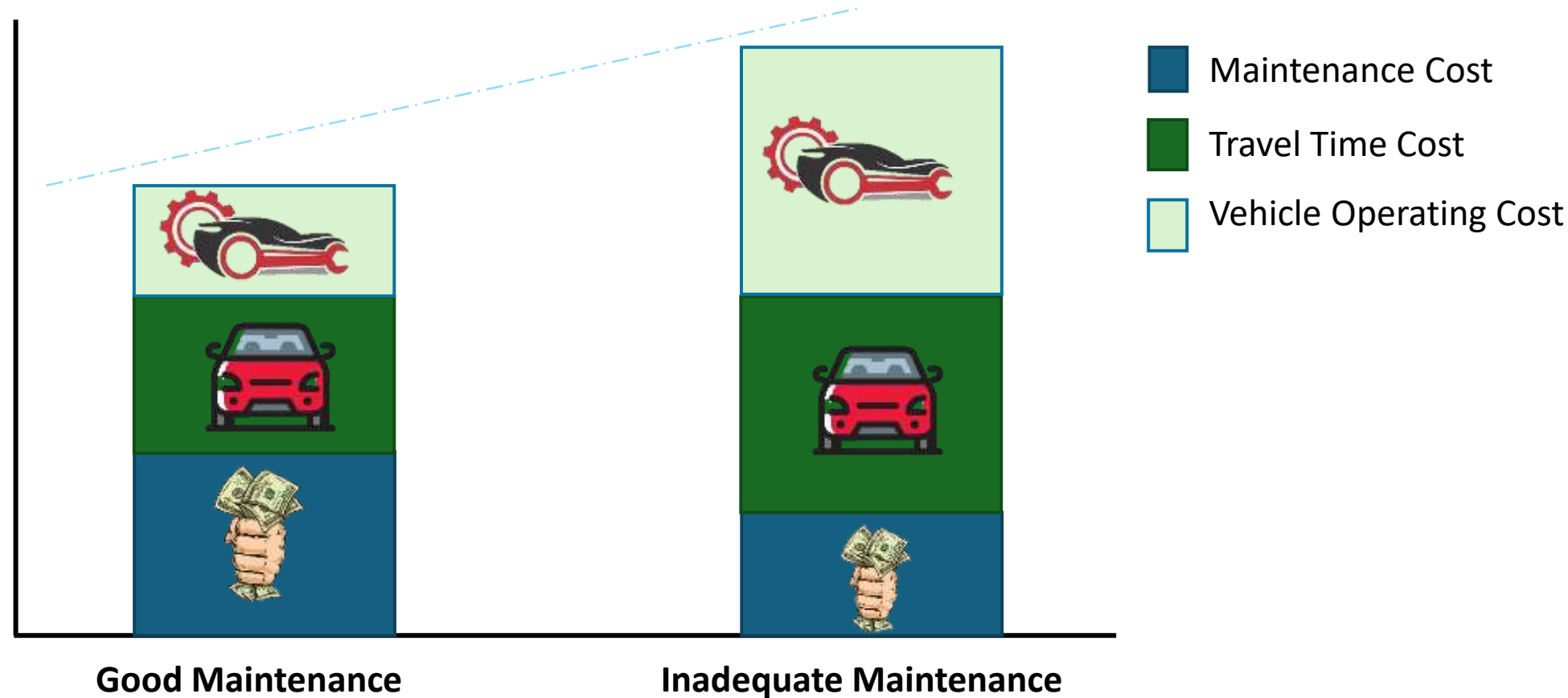
BENEFITS OF MAINTENANCE



BENEFITS OF MAINTENANCE

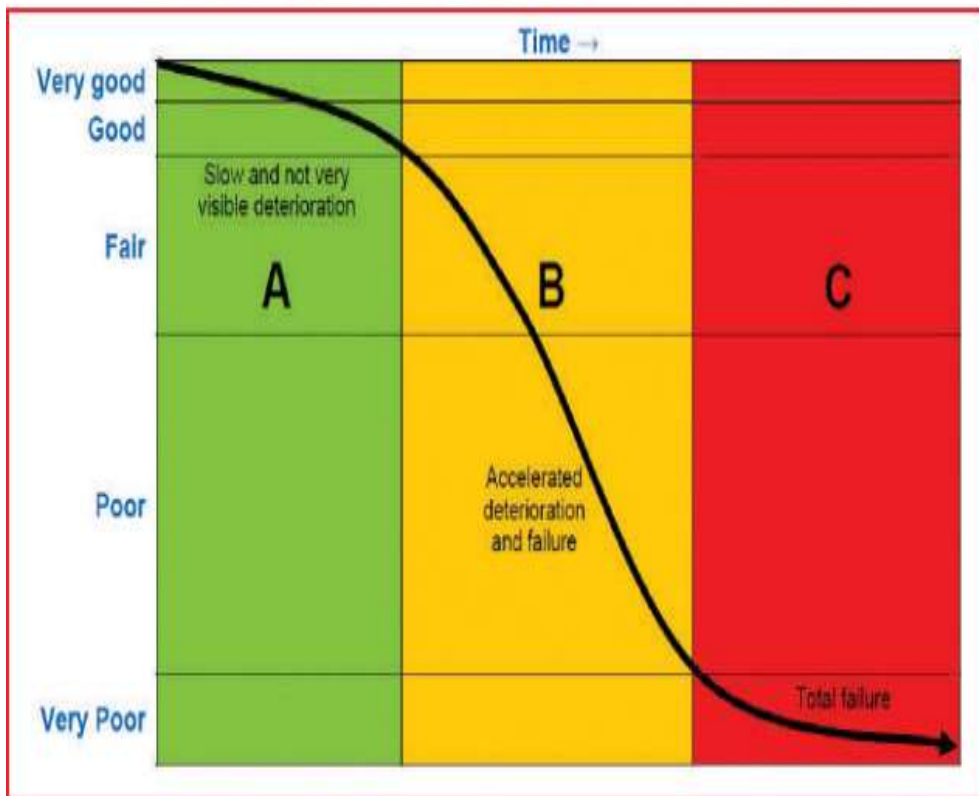


BENEFITS OF MAINTENANCE



BENEFITS OF MAINTENANCE

Figure 1: *Illustration of deterioration effects on a non-maintained road*



PHASE 1

- Road deterioration is generally slow at first and not very visible, taking the form of wear and tear and minor damage to the road surface and the drainage system. Because the damage to the road is minimum the road user tends not to make a fuss on the deterioration, despite the gradual increase of isolated minor failures. As a result of no maintenance intervention, the road deteriorates from a very good to a fair condition.

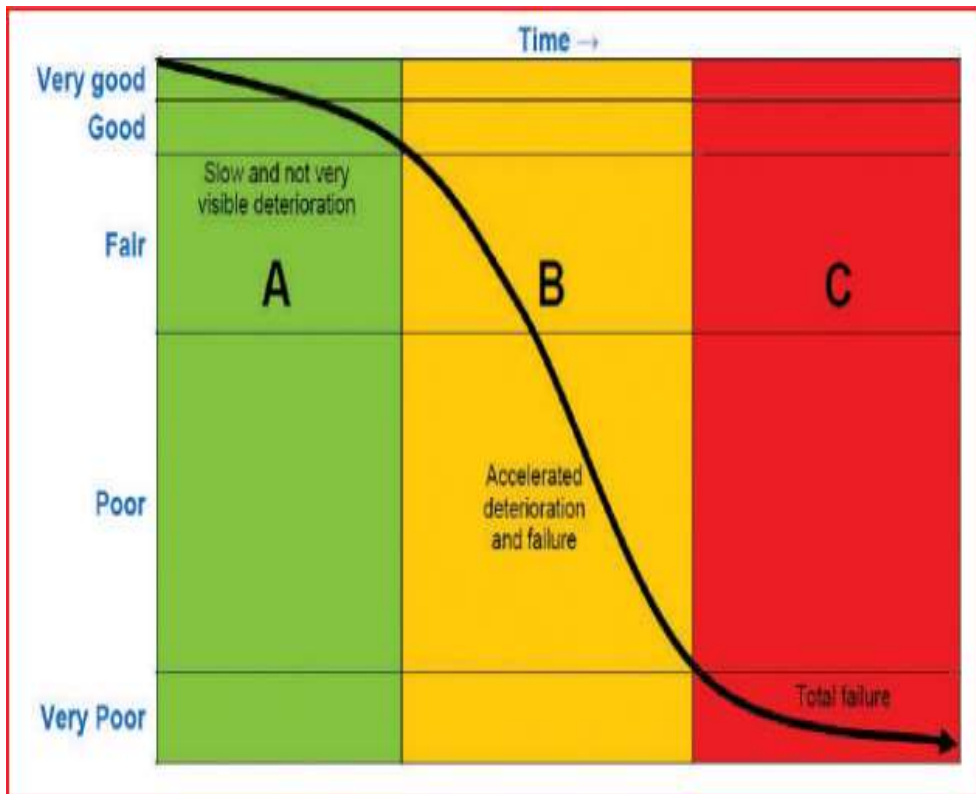
BENEFITS OF MAINTENANCE

PHASE 2

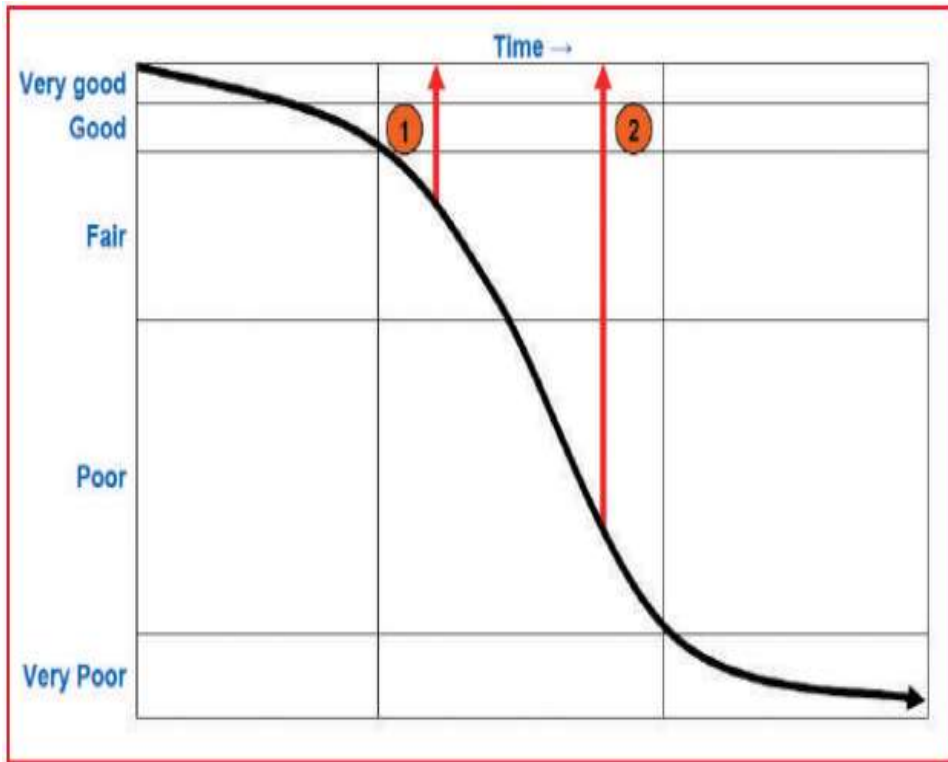
- At this time the rate of deterioration tends to increase, as the road base and the foundations of the physical road structures start to become affected and thus damaging and weakening the road and making it more susceptible to damage by traffic. Although the damage to the road can be observed at various scattered locations at the beginning of this phase, it spreads out until the entire road can be said to be in poor condition.

PHASE 3

- Once the road condition has become very poor, the deterioration tends to decrease, as traffic levels goes down severely, and because there is little left to deteriorate.



BENEFITS OF MAINTENANCE



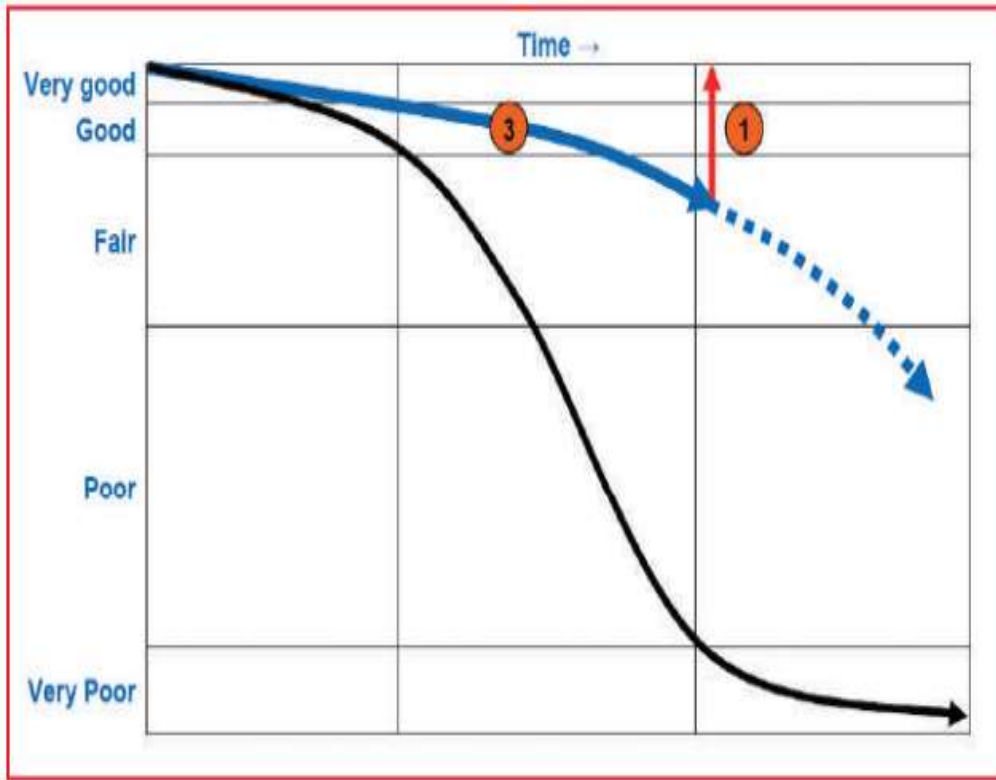
- The condition of the road can be improved by carrying out corrective maintenance. Repairs are made to the road surface and shoulder, the drainage system and other physical road structures.
- The more deteriorated the road is, the more intensive and thus costly the repairs will be.

• For arrow 1- Maintenance when the road is still in good or fair condition may entail patching potholes and minor repairs to the drainage system and other road structures.

• For arrow 2- Maintenance carried out once the road is already in poor condition, is likely to entail complete resurfacing and possible reconstruction of the road base.

The distance from the line (in black colour) indicating the road condition and thus increase in the cost of this maintenance.

BENEFITS OF MAINTENANCE



- By carrying out regular routine maintenance the deterioration of the road is slowed down considerably, as can be seen in the **blue line**.
- Consequently, the corrective maintenance is required less frequently (arrow 1) leading to reduced overall maintenance costs, and the road is generally in better condition, resulting in lower travel times and costs.

MAINTENANCE TYPES

Road maintenance comprises activities to keep pavement, shoulders, slopes and drainage facilities and all other structures and property within the road margins as near as possible to their “as-constructed” or renewed condition. It includes minor repairs and improvements to eliminate the cause of defects and to avoid excessive repetition of maintenance efforts. For management and operational convenience, road maintenance is categorized as....



MAINTENANCE TYPES

1

ROUTINE MAINTENANCE

Routine Maintenance is required continuously on every road whatever its engineering characteristics or traffic volume. Routine maintenance activities are usually small-scale, widely dispersed, and often performed using manual labour. The need for routine maintenance to a large degree can be forecast and is scheduled at fixed time intervals during the year.

The frequency of activities varies Routine maintenance activities are further defined as

Cyclic Activities

Performed at predetermined intervals throughout the year purely as a preventive measure because of events we know will occur.

e.g. cleaning drains before and during seasonal rainfall.

Reactive Activities

Performed in response to a triggering condition that requires action before the problem gets out of hand

e.g. blocked culvert, crack sealing and pothole patching.

MAINTENANCE TYPES

1

ROUTINE MAINTENANCE

Maintenance activities are also categorized based on where the works are located:

Off-carriageway works



Consist of maintaining shoulders and drains, including repairs to drainage and other structures in the roadside area, side slopes and all surface areas within the road reserve. Most off-carriageway maintenance is normally a routine activity, although occasionally some major overhauls are required.

On-carriageway works

Relate to road pavement and surface repairs. This work mainly consists of maintaining a good running surface on the road, free from any obstructions and damage and with the necessary camber or cross-fall to secure proper surface drainage.



MAINTENANCE TYPES

1

ROUTINE MAINTENANCE

Routine Maintenance Activities

Season	Priority	Maintenance Activity	Where	Season	Priority	Maintenance Activity	Where
Before the rainy season	1	▪ Clean culvert and other cross-drainage	Off-carriageway	End of rainy season	1	▪ Repair erosion on shoulders, side slopes and in drains	Off-carriageway
	2	▪ Clean side drains and mitre drains	Off-carriageway		2	▪ Repair retaining walls	Off-carriageway
	3	▪ Clean and repair shoulders	Off-carriageway		3	▪ Cut grass and clear bush	Off-carriageway
	4	▪ Repair erosion on side drain slopes and in drains	Off-carriageway	During dry season	1	▪ Repair drainage structures	Off-carriageway
	5	▪ Patch potholes and seal cracks	On-carriageway		2	▪ Repair road shoulders and surface/carriageway edges	On/Off-carriageway
	6	▪ White wash road furniture	Off-carriageway		3	▪ Patch potholes and seal cracks	On-carriageway
During rainy season	1	▪ Inspect and remove obstacles from roadway and drains	On/Off-carriageway				
	2	▪ Clean culverts and other cross drainage	Off-carriageway				
	3	▪ Clean side drains, cut-off drains and mitre drains	Off-carriageway				
	4	▪ Repair side drain erosion	Off-carriageway				

MAINTENANCE TYPES

2

PERIODIC RENEWAL

Covers major maintenance jobs that are to be done at an **interval of a few years**.

Routine and recurrent repair and maintenance cannot always maintain the road condition, those types of repair and maintenance jobs that call for relatively a lot of work fall under this.

- Maintenance work is to be done....

5-7 Yr.

Once every five to seven years on **blacktopped roads**,

3-5 Yr.

Once every three to five years on **gravelled roads**,

2-3 Yr.

Once every two to three years on **earthen/rough weather roads**, considering the condition of the road.

Jobs usually require skilled workforce

MAINTENANCE TYPES

2

PERIODIC RENEWAL

Periodic Maintenance Activities



3

EMERGENCY MAINTENANCE



Emergency maintenance is done in situations when movement is stalled due to unexpected natural or accidental obstructions on the road

MAINTENANCE TYPES



The maintenance that is carried out to immediately open the road to traffic and operate the disturbed traffic and protect the road from additional damage and loss when traffic movement comes to a standstill due to an obstruction or closure of the road due to any natural or unforeseen cause or there is a danger of damage and loss to the road.



3

**EMERGENCY
MAINTENANCE**

MAINTENANCE TYPES

Maintenance and Cleaning of Road Surface

Maintenance of Embankment

if disrupted, or the possibility of its being closed increases, due to damage to the embankment from a flood, landslide or any other cause.

Maintenance of Cut Slope

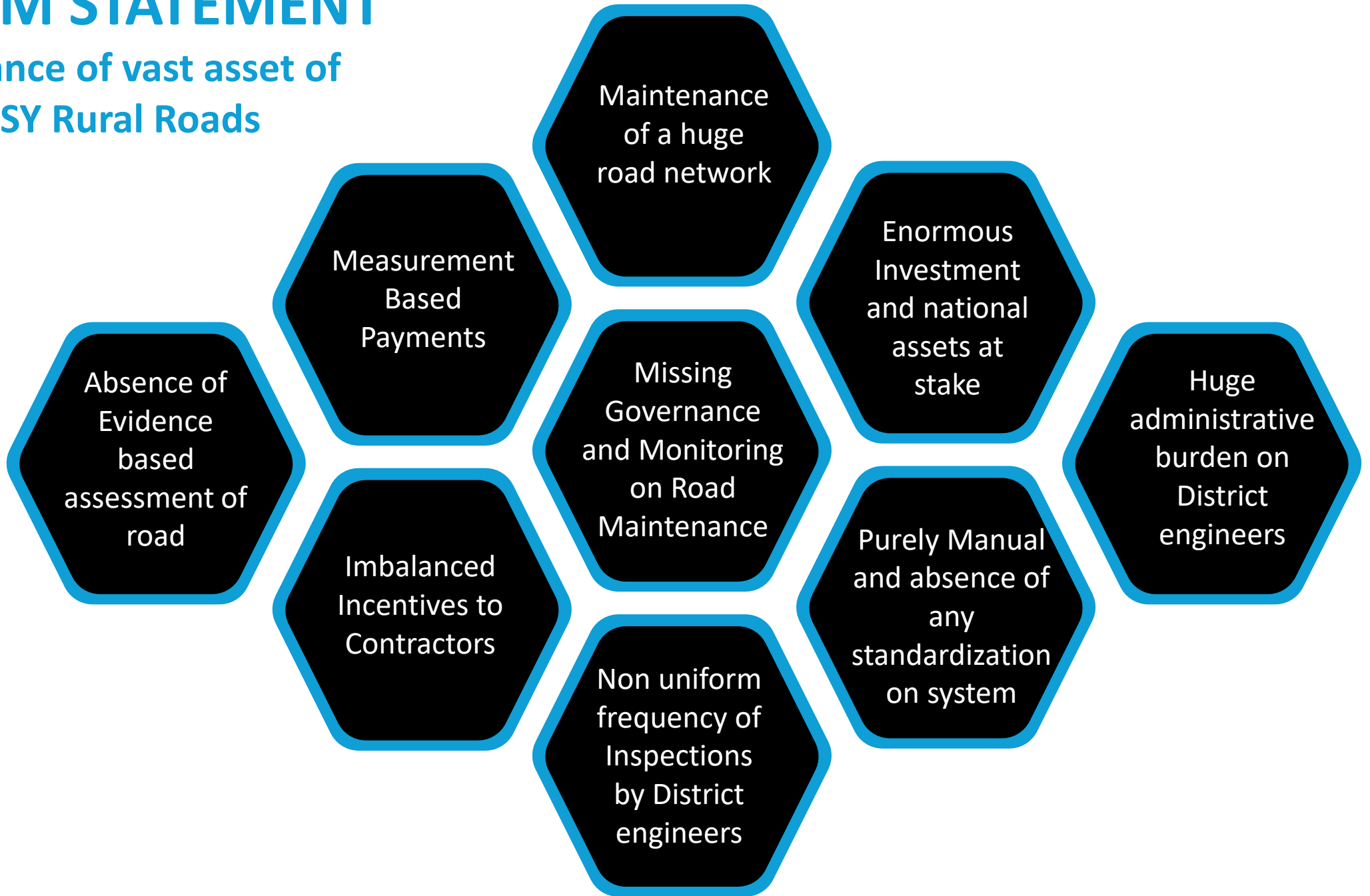
if traffic is obstructed, or is likely to be obstructed, due to cracks in the cut slope or due to damage to the cut slope through the collapse of a drain or support wall

Diversion Construction

if any part of a bridge or road has collapsed, preventing vehicles from driving over them

PROBLEM STATEMENT

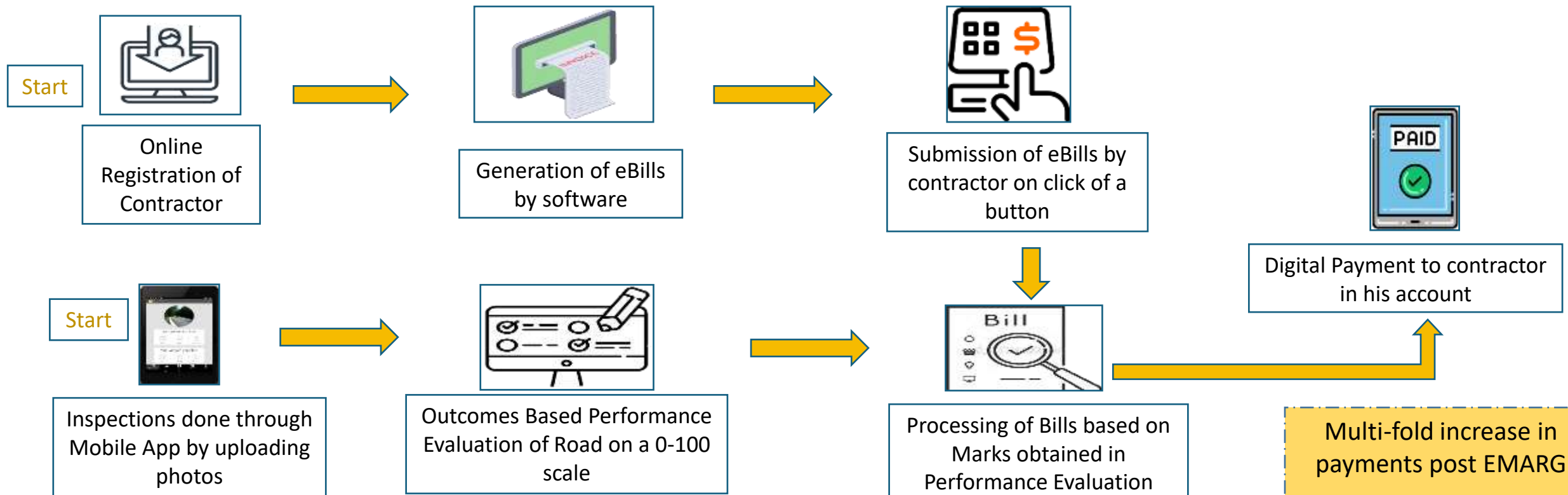
Maintenance of vast asset of PMGSY Rural Roads



Maintenance of PMGSY Roads



- Each PMGSY road has 5 years routine maintenance period as part of the construction agreement with same contractor.
- With PMGSY-III, 5 + 5 Year contracts including periodic renewal.
- All States have issued a Maintenance Policy which must align with the SoP issued by the Ministry/NRIDA.
- e-MARG – end to end online system for ease of doing business in maintenance.



Maintenance through e-MARG



Ministry of Rural Development
Government of India

सत्यमेव जयते

eMARG

electronic Maintenance of Rural Roads under PMGSY

Road to Rural Digital Transformation



PRACHIN MANTRI
GRAM SADAK Yojana

The Electronic Maintenance of Rural Roads (**e-MARG**) is an evidence-based digital platform ensuring transparent and efficient rural road maintenance under PMGSY.

- Performance-Based Maintenance Contracts (**PBMC**) enforce contractor accountability.
- PIUs and contractors can conduct inspections, generate bills, obtain approvals, and process payments digitally.
- Ensures contractor compliance with road maintenance obligations.
- **₹4,400 crore** has been spent on rural road maintenance through e-MARG.
- **Total savings of ₹1,818 crore** achieved through:
 - **₹848 crore** saved via performance-based assessment.
 - **₹970 crore** saved from bills not submitted on time by contractors.

e-MARG enhances transparency, efficiency, and cost savings in rural road maintenance.

Initiatives for improving maintenance



- **State MoUs for Maintenance under PMGSY-III** – States commit to funding five years of routine maintenance, followed by an additional five years, including periodic renewal.
- **Advocacy for Post-5-Year Maintenance Funding** – Continuous engagement with states to ensure adequate budgetary provisions for road maintenance beyond the initial five-year period.
- **Financial Incentives for High-Performing States** – Rewards states based on physical progress, financial performance, and commitment to long-term road maintenance.

Initiatives for improving maintenance



State MoUs for Maintenance under PMGSY-III –

States commit to funding five years of routine maintenance, followed by an additional five years, including periodic renewal.

Advocacy for Post-5-Year Maintenance Funding –

Continuous engagement with states to ensure adequate budgetary provisions for road maintenance beyond the initial five-year period.

Financial Incentives for High-Performing States –

Rewards states based on physical progress, financial performance, and commitment to long-term road maintenance.



Promotes access to economic and Social Services



Increased Agricultural Income



Productive Employment Opportunities for Rural population



Sustainable Poverty Reduction



Pradhan Mantri
Gram Sadak Yojana

Rural Road Connectivity



7,84,028
PMGSY Road Length in km



1,80,360
Habitations Connected



390,619 Cr.
Asset Value worth

7,84,052 km

Road Length Constructed

13%

India's overall Road Network

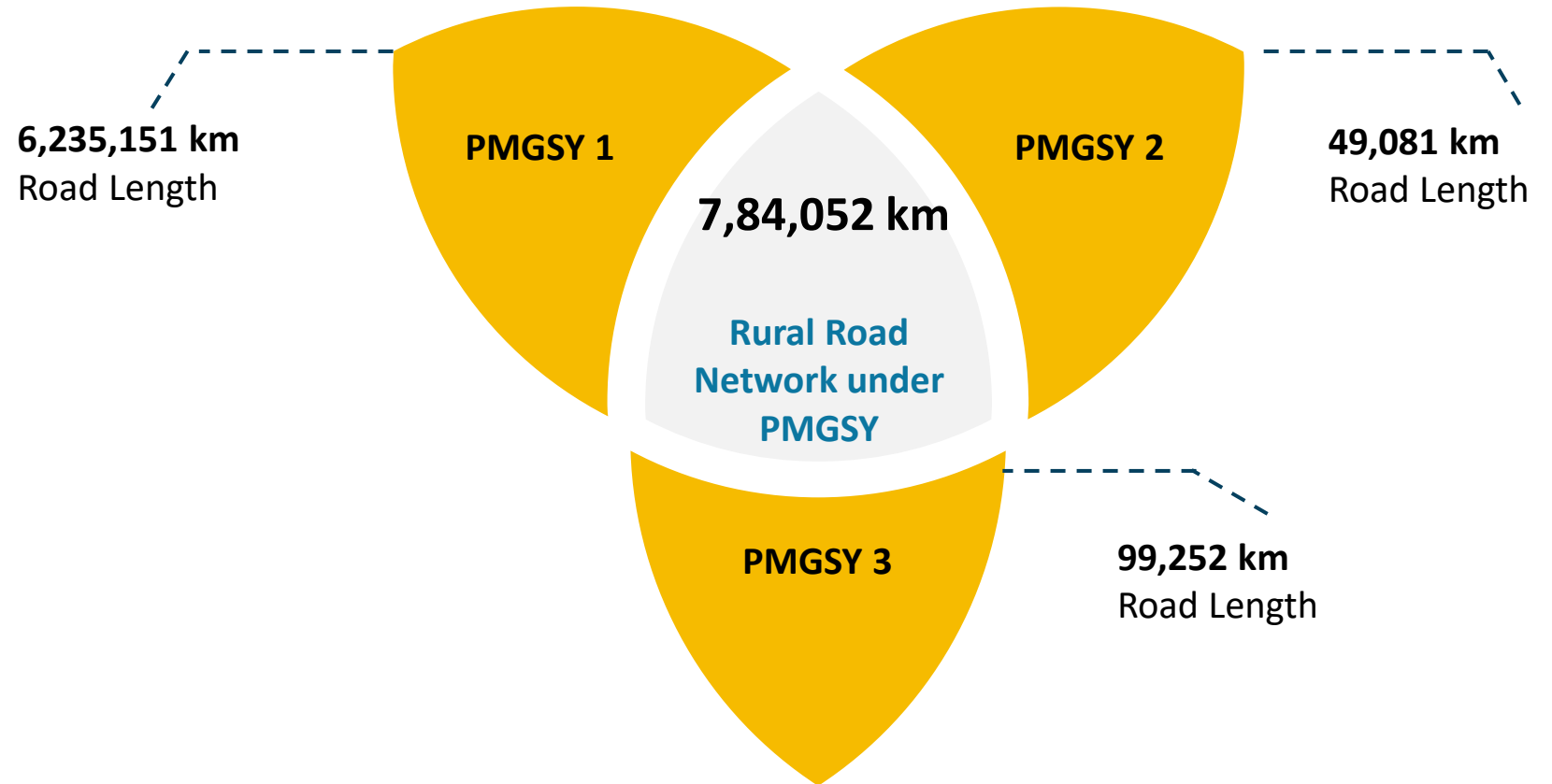
5 Years

Defect Liability Period for a Road

4,55,821km

Roads in DLP

Road Length Segmentation based on Phase of scheme



58.13% of the Road length constructed under PMGSY is currently under Maintenance period

RE-ENGINEERING RURAL ROAD MAINTENANCE

DATA ANALYTICS FOR
EFFECTIVE MONITORING

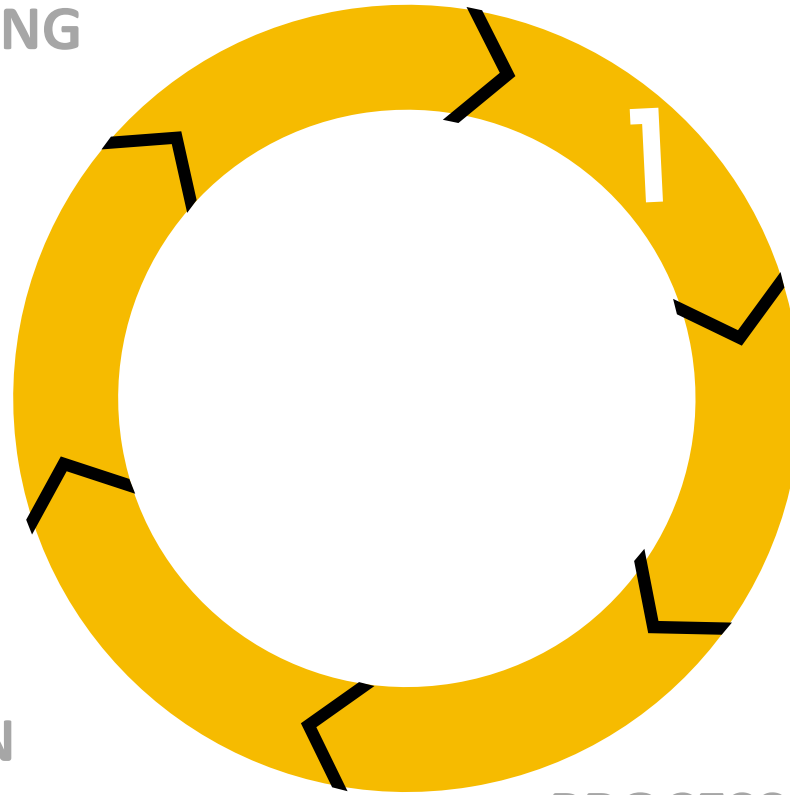
**PERFORMANCE BASED
MAINTENANCE
CONTRACT**

SMS NOTIFICATIONS &
REMINDERS TO ENSURE NO
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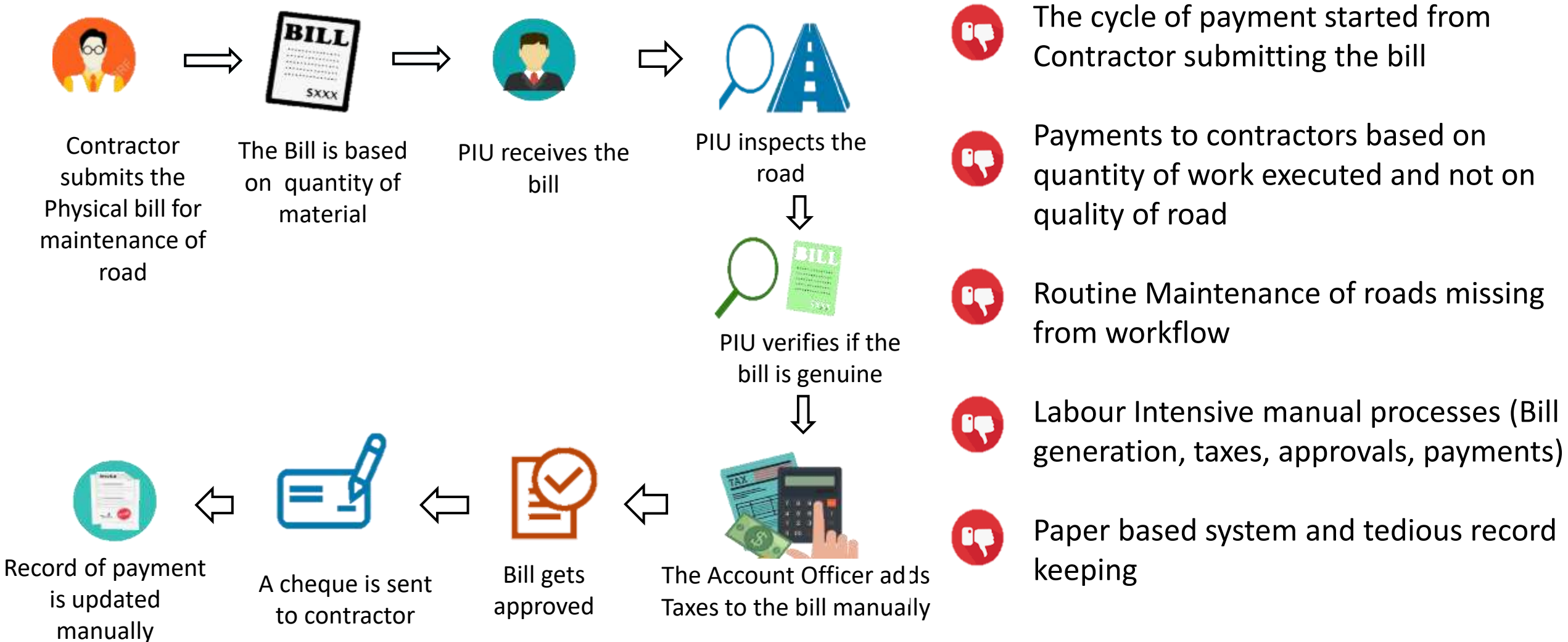
PLATFORM
DIGITALISATION

MOBILE APPLICATION
BASED INSPECTIONS

PROCESS AUTOMATION
& OPTIMISATION



BILL OF QUANTITIES (BOQ) MECHANISM IN PRACTICE BEFORE eMARG



EXAMPLES OF MANUAL BILLS GENERATED AND KEPT FOR RECORDS



Executive Engineer
R.W.D. Works Div. Patna
10/3/17

1st year maintenance.

Name of work - L.O.SZ to Sivanil
 Package No - BR-26A-279
 Agency - Astha construction corp
 Development put later.
 Date of measurement - 15/7/16

1. Restoration of raincubs:

2x1.5	1x3.0x1.80x0.15	=	8.10 m ³
	2x1.5x1.75x0.15	=	7.875 "
	2x2.0x1.85x0.15	=	11.10 "
	1x1.8x1.80x0.15	=	4.86 "
	2x2.5x1.75x0.15	=	13.125 "
	3x1.5x1.80x0.15	=	12.15 "
	2x2.2x1.70x0.15	=	11.22 "
	1x3.0x1.80x0.15	=	8.10 "
			<u>76.53 m³</u>

Continuation

Scanned by CamScanner

Date of Inception by pro DNMS - 31-07-2017
 31-7-2016 to 31-7-2017

Maint. Bill for construction and Maint. of road from Chhatrigarh to Baha Sankh (Stage 2nd) PKG. no JK 13-82
 Maint. Amt = 0.56 lacs.

NO	Description of items	Rate	Amount
01	Removal of Slips from road surface and its disposal	5% ✓	2800 ✓
02	Maint. of bituminous surface road and/or gravel road and/or wear road incldy. filling of potholes and patch repairs etc as per clause 1104 of the spec. frictn.	55000 ✓	22400 ✓
03	Mowing up of grass, shrubs, stopping along cut from the shoulder surface to the edge of the road as per clause 1105 of the spec. frictn.	5% ✓	2800 ✓
04	Restoration of drains, 70% of rain cuts with soil, masonry, gravel etc as per clause 1102 of the spec. frictn.	5% ✓	2800 ✓
05	While making guard stones, grading etc.	5% ✓	2800 ✓
06	While making and proper planting of trees of trees, cutting of branches.	2% ✓	1120 ✓
07	Maint. of drains as per clause 1104 of the spec.	5% ✓	2800 ✓
08	Maint. of culverts and canals as per clause 1101 and 1102 of the spec. frictn.	1% ✓	560 ✓
09	Maint. of road signs as per clause 1110 of the spec. frictn.	1% ✓	560 ✓
10	Maint. of kilometer stone as per clause 1112 of the spec. frictn.	1% ✓	560 ✓
11	Clearance of snow and frost, adequate watering at the rate of 4 times per km.	3% ✓	1680 ✓

Total = 4.56 lacs

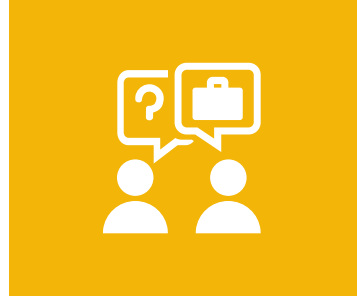
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HOT MIX PLANT GOLPORA LASJAN, BUDGAM - 191101

SWITCHING TO PERFORMANCE BASED MAINTENANCE CONTRACTS



**OUTCOMES BASED
MONITORING**



**EVIDENCE BASED
ASSESSMENT OF
ROAD**



**QUALITY IN
CONSTRUCTION IS
REWARDED**



**NO REQUIREMENT
FOR DETAILED
MEASUREMENT**

Payment made to the contractor based on the condition of road maintained by the contractor

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

CRITERIA FOR PAYMENT

PE-1
(JAN)



No Payment for the entire road, as two stretches get <80 marks

PE-1
(JAN)



$$\frac{70+82+81+83+82*0.6}{4.6} = 79.3$$

No Payment for the entire road, as avg marks of entire road <80

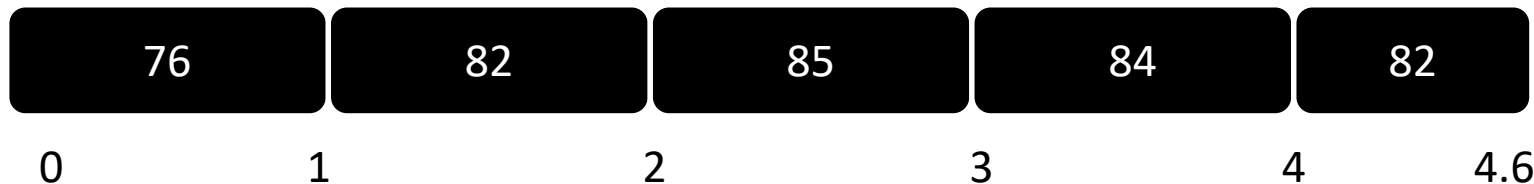
PE-1
(JAN)



$$\frac{78+82+85+84+82*0.6}{4.6} = 82.2$$

82.2% of the Payment to be done against the bill amount raised

PE-2
(MAR)



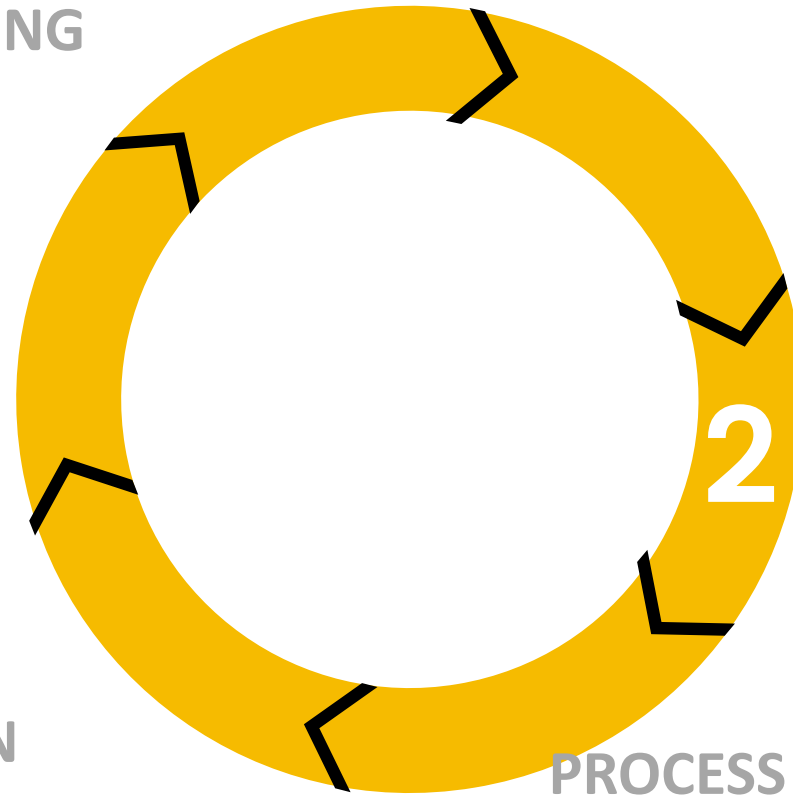
No Payment as same stretch gets <80 marks in two successive PE

RE-ENGINEERING RURAL ROAD MAINTENANCE

DATA ANALYTICS FOR
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PERFORMANCE BASED
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SMS NOTIFICATIONS &
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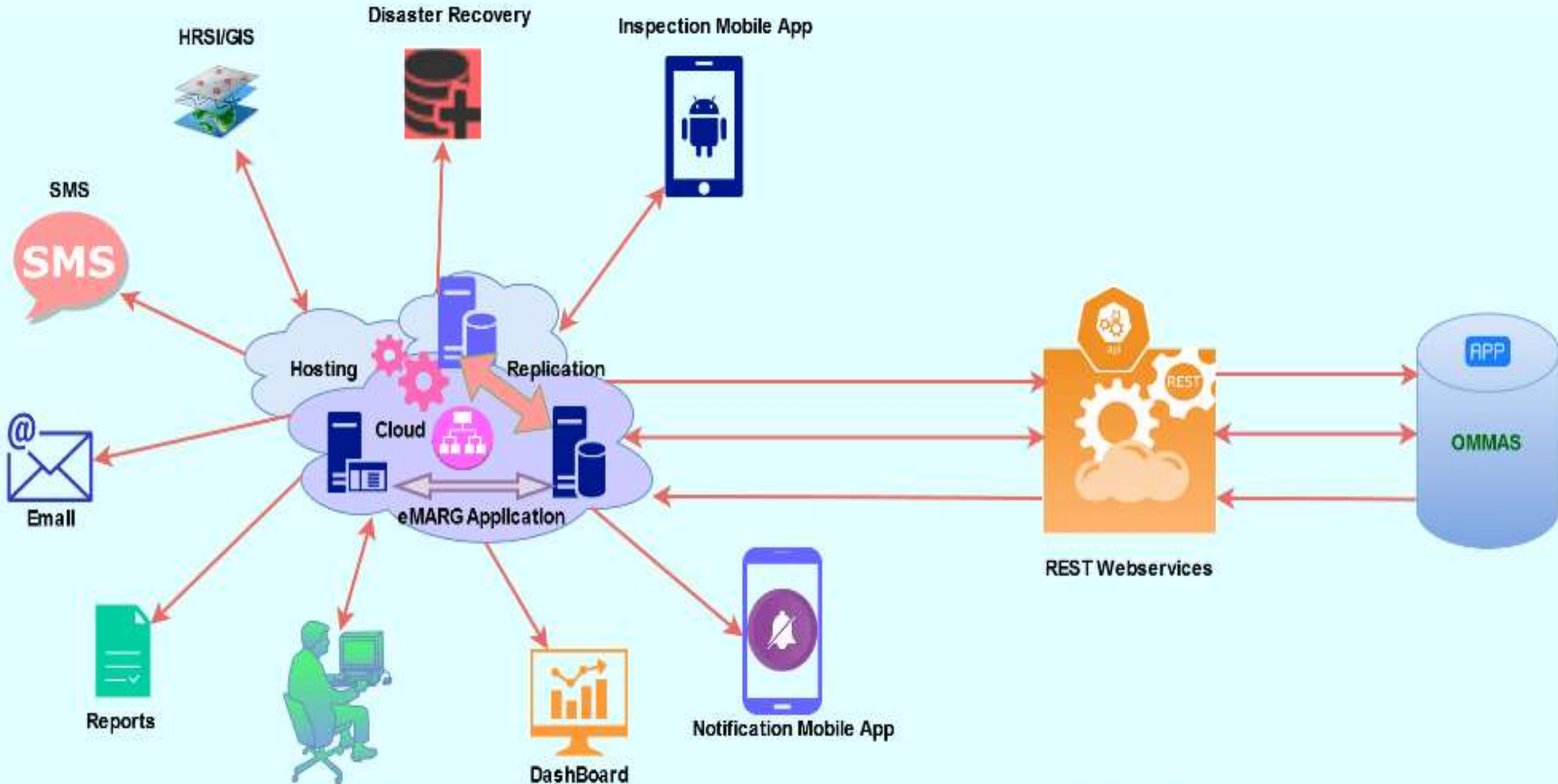


**PLATFORM
DIGITALISATION**

MOBILE APPLICATION
BASED INSPECTIONS

PROCESS AUTOMATION
& OPTIMIZATION

eMARG ARCHITECTURE



RE-ENGINEERING RURAL ROAD MAINTENANCE

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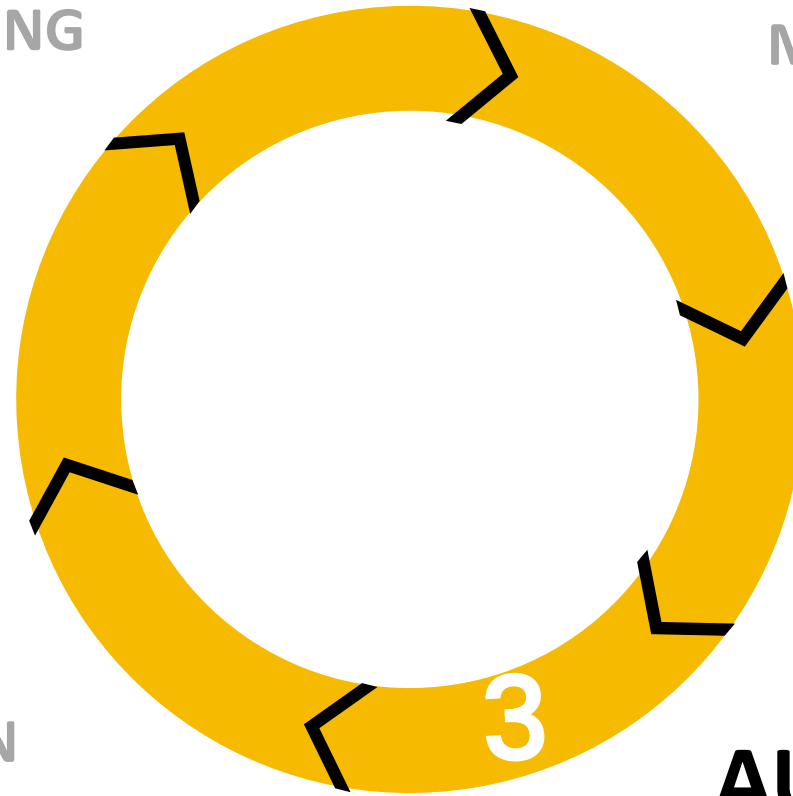
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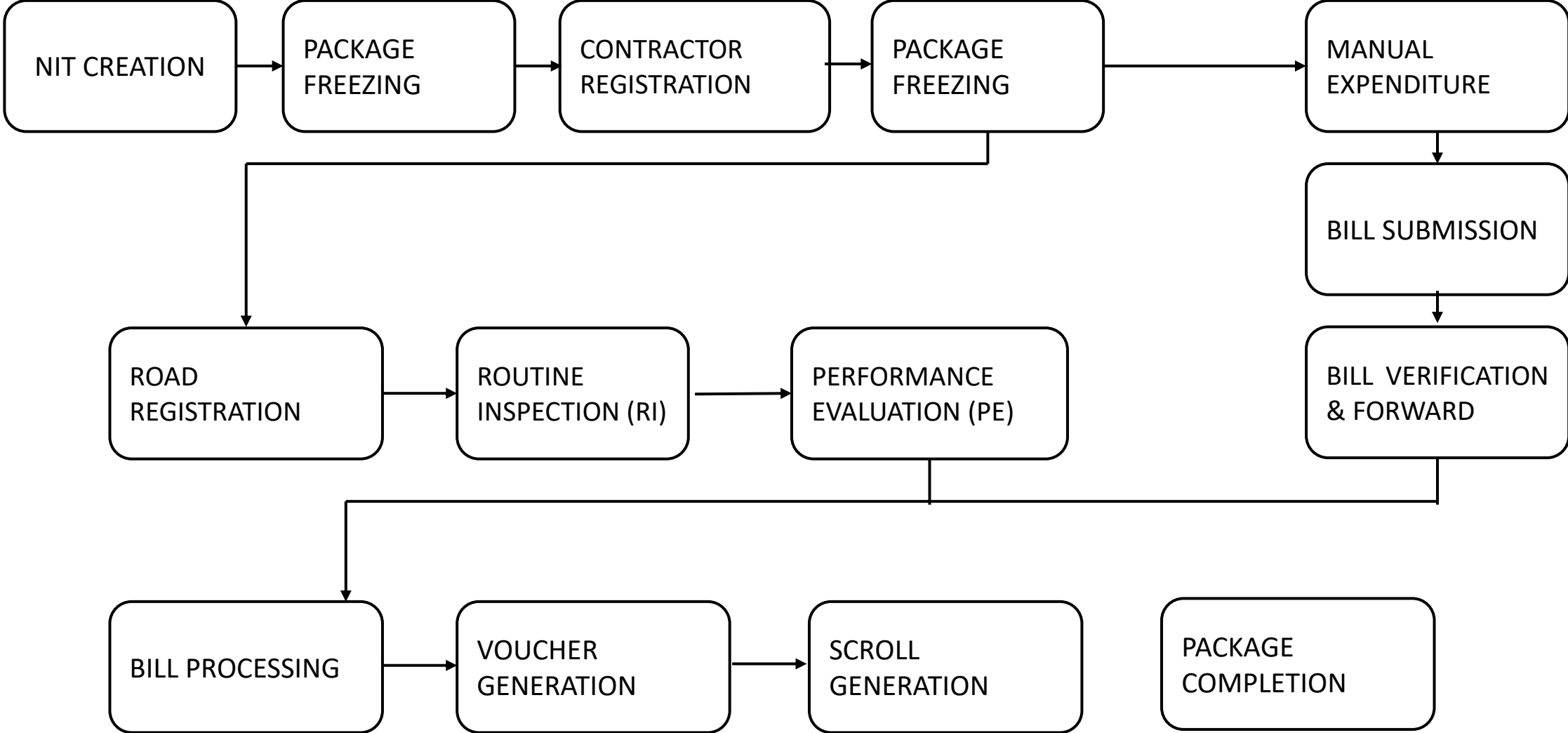
PLATFORM DIGITALIZATION

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**PROCESS
AUTOMATION &
OPTIMIZATION**



A GIS-based enterprise and e-governance solution to assist the officials and contractors in carrying out and monitoring maintenance of road works under PMGSY

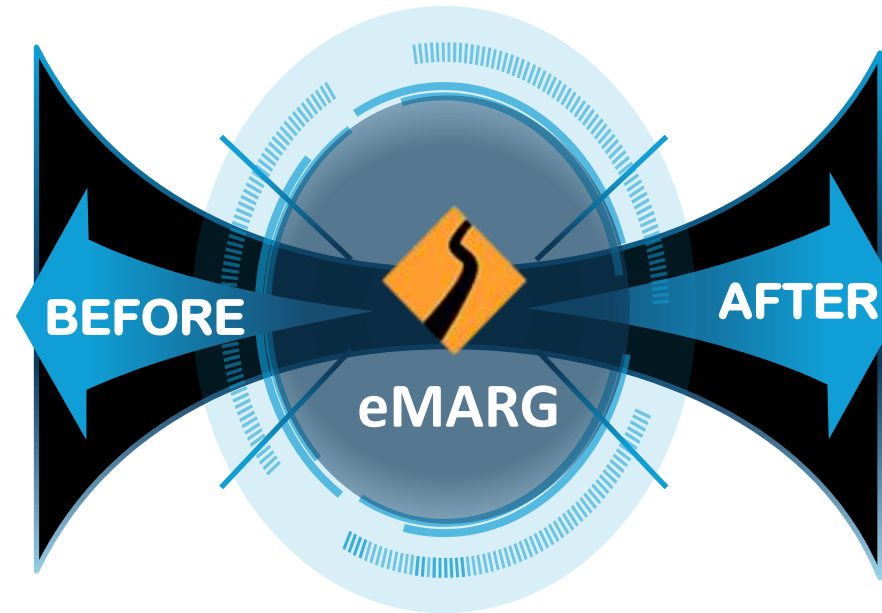


AUTOMATED BILL SUBMISSIONS

Bills calculated and submitted manually by contractor

Requires a lot of effort as every month bill had to be submitted

No control / record on frequency of Bill submission or date of bill submission to make it eligible for payment



Bill calculated automatically every month by the system

Automatic notification sent to the contractor on his registered mobile at the end of every month

Submission of Bill by contractor on click of a button which is OTP based

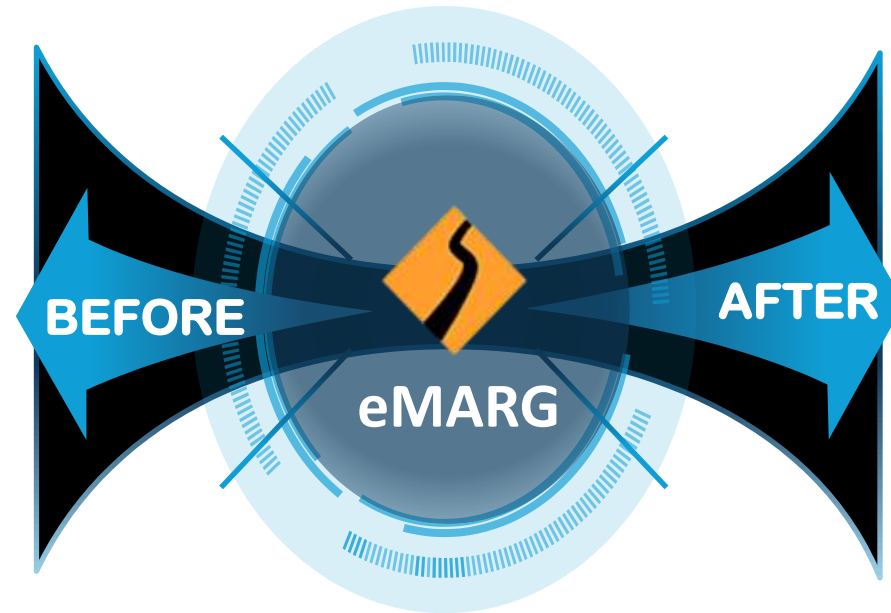
ROUTINE INSPECTIONS

Non Uniform frequency of inspections by Engineers

Absence of a system to keep records of past inspections done

Manipulation in bill submission dates due to absence of authentic records

No evidence of poor or good maintenance of roads



Bi-monthly Inspections done through eMARG mobile app

Geo-tagged and time stamped photographs of the road is taken and accordingly grading is done

Automatic notifications to the Engineer every two months to carry the inspection

Inspections are independent of the bill submission process by the contractor

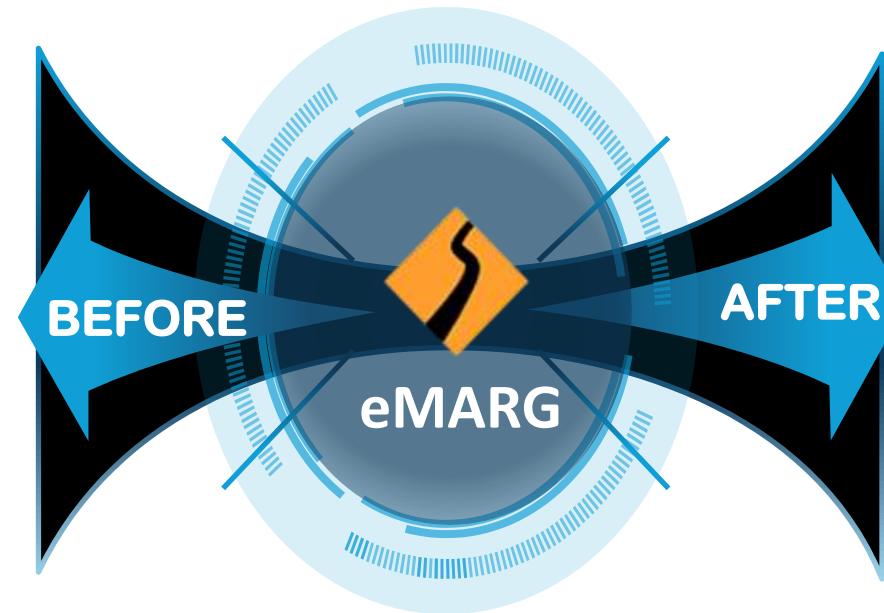
Intimation to contractor in case of "Unsatisfactory (U)/Satisfactory but Requires Improvement (SRI) "

Past records of all roads with their geotagged time-stamped pictures directly visible on GIS

BILL PROCESSING & APPROVALS

Done Manually by Engineers against the bill raised by contractor

Mostly done on the basis of volume of work executed



Done on the basis of marks obtained by roads out of 100 during Performance Evaluation based on photographs and grading of Routine Inspections

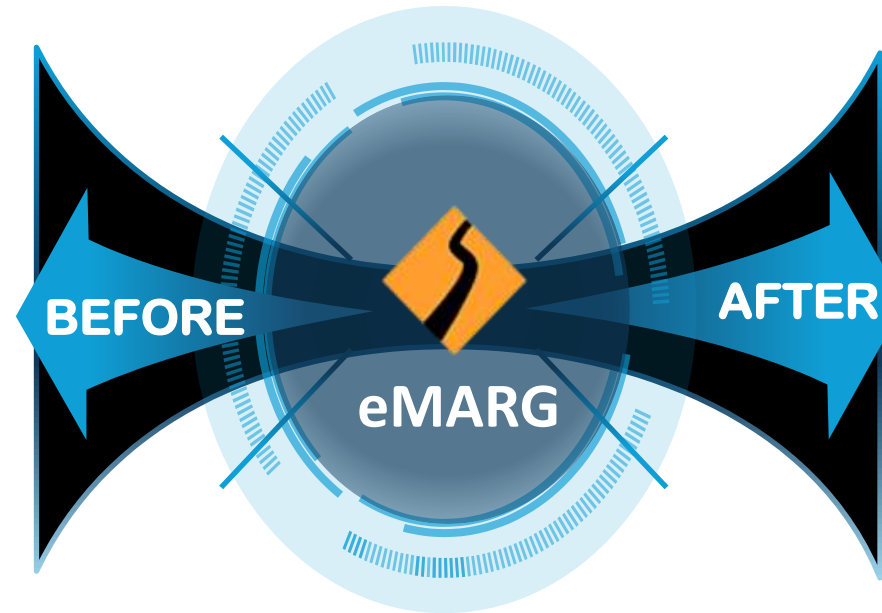
All the photographs and grading from Routine Inspections displayed at the time of awarding marks

Final approved amount of Bill automatically calculated by the system based on marks obtained in Performance Evaluation out of 100

Bill amount is proportionately adjusted for marks between 80 to 100 and is reduced to zero for marks less than 80

VOUCHER & SCROLL GENERATION

Done Manually by Account Officer after deducting taxes manually from the approved Bill Amount

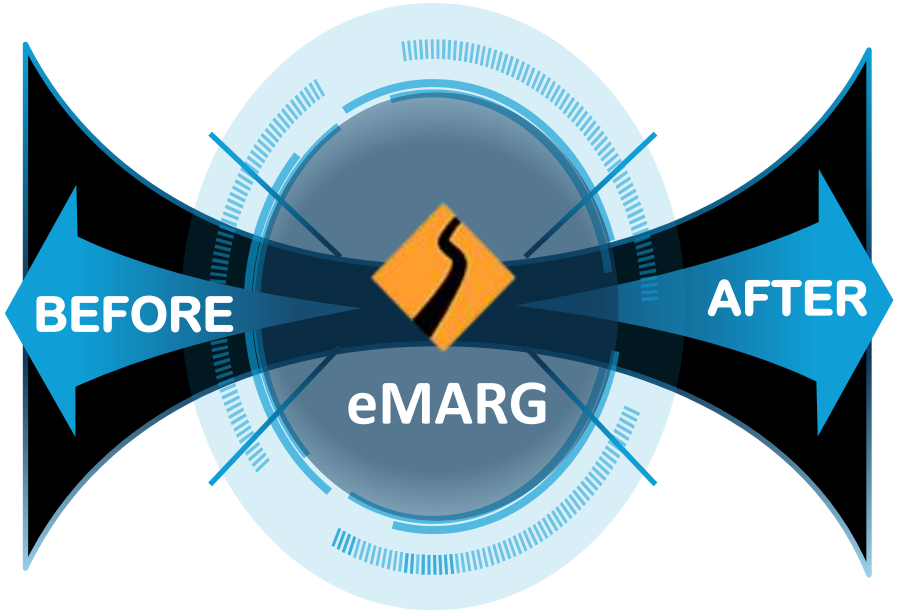


Generated by automatic tax deductions on the approved Bill amount

Voucher is generated only after bills of 6 continuous months are processed by Engineer

PAYMENT TO CONTRACTORS

Done Manually by Cheque Payment



Automatic payment to contractor once the Voucher is digitally signed and sent to bank

The record of the details of payment made is kept in system and can be accessed any time

RE-ENGINEERING RURAL ROAD MAINTENANCE

DATA ANALYTICS FOR
EFFECTIVE MONITORING

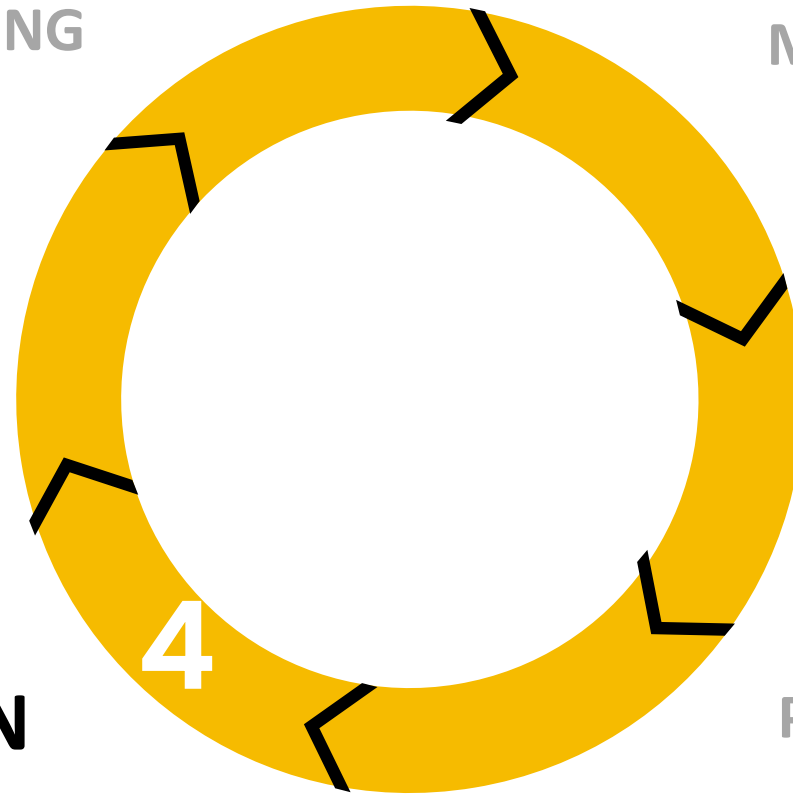
PERFORMANCE BASED
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PLATFORM DIGITALIZATION

**MOBILE APPLICATION
BASED INSPECTIONS**

PROCESS AUTOMATION &
OPTIMIZATION



eMARG IT system is also supplemented with an eMARG Mobile app, which mandates the district engineers to take geo-tagged photographs of the roads as part of routine inspections of roads done every two months

Step-1: Login to app

Step-2: Registration of Road

Step-3: Select Routine Inspection

Step-4: Select State, District, Package no., Road

Step-5: Select Km

Step-6: Activity Inspected

Step-7: Enter Grading

Step-8: Take Images(2 Images) and save

10:57 AM

Routine Inspection

Activity Inspected

- Condition of road in respect of Pot holes/ Patch repair
 Satisfactory Unsatisfactory
- Condition of road in respect of Rain cuts/ Shoulder repair
 Satisfactory Unsatisfactory
- Condition of jungle clearance on shoulders and side slopes
 Satisfactory Unsatisfactory
- Condition of road in respect of C.C Payment maintenance
 Satisfactory Unsatisfactory
- Condition of road in respect of C.D structure maintenance
 Satisfactory Unsatisfactory

BACK NEXT

11:00 AM

Routine Inspection

Activity Inspected

Overall Grading :
 Satisfactory Unsatisfactory SRI

SRI : Satisfaction Requires Improvement

Overall Remark :
Inspection done

Constraints if any :
Na

Inspection Date :
01-10-2019 10:59:43

Camera
first Image preview

BACK RESET SAVE

11:00 AM

Routine Inspection

Inspection done

Constraints if any :
Na

Inspection Date :
01-10-2019 10:59:43

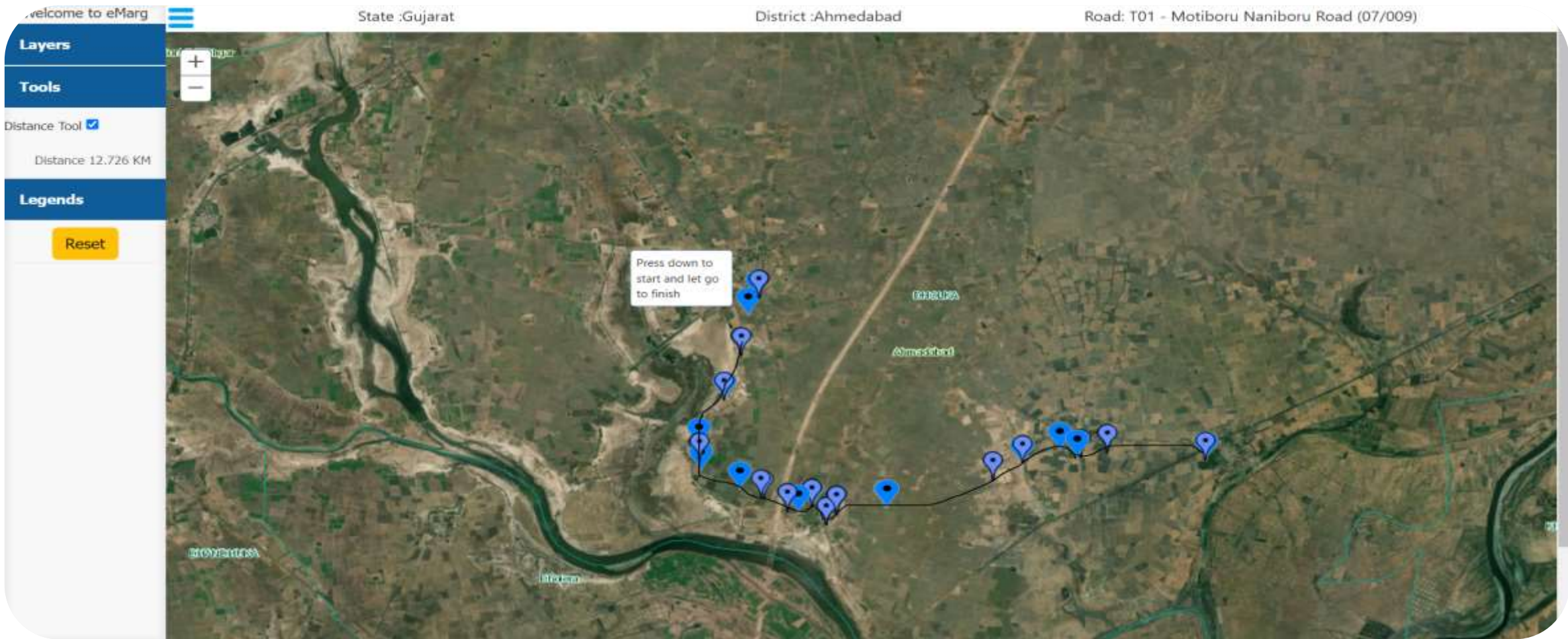
Camera
first Image preview
second Image preview

BACK RESET SAVE

ROUTINE INSPECTIONS – ROAD PICTURES AVAILABLE ON GIS FOR MONITORING

State: Gujarat
District: Ahmedabad
Block: Dholka
Road Name: T01 -Motibaru Naniboru Road (07/009)

Package No: GJ-01-01
Length: 14.78 km
Maintenance Start Date: 01-11-2015
Maintenance End Date: 30-10-2020




ROUTINE INSPECTIONS – ROAD PICTURES AVAILABLE ON GIS FOR MONITORING


Inspection Analysis

District Name: Chittoor Block Name: Rama Kuppam

emarg.gov.in/user/query/AndReport/MapViewTIPE.htm



Routine Inspection Profile

Road Name	(HRL 21)HRL 21 - Vylapuram to Kamalaka boarder via Kilakpodu(6.511km)
Chamage Inspected(in Km.)	4.400 - 4.800
Insp. No	RI-AP-5260-5
Insp.Type	Mandatory
Grade	Satisfactory
Insp. Date	25/02/2020
Inspection Image	 Zoom Image

RE-ENGINEERING RURAL ROAD MAINTENANCE

DATA ANALYTICS FOR
EFFECTIVE MONITORING

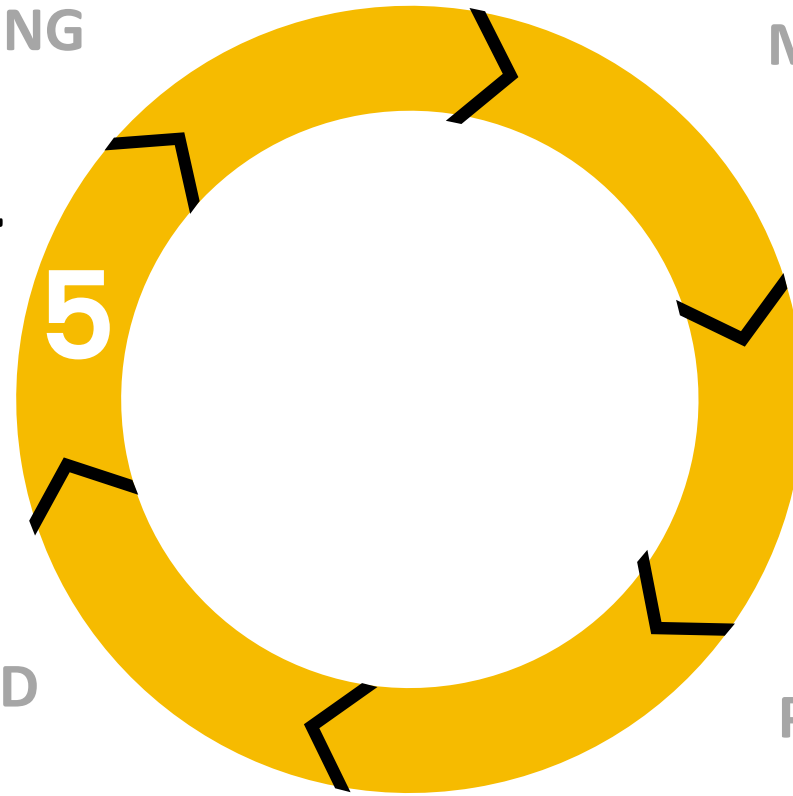
PERFORMANCE BASED
MAINTENANCE CONTRACT

**SMS NOTIFICATIONS &
REMINDERS**

PLATFORM DIGITALIZATION

MOBILE APPLICATION BASED
INSPECTIONS

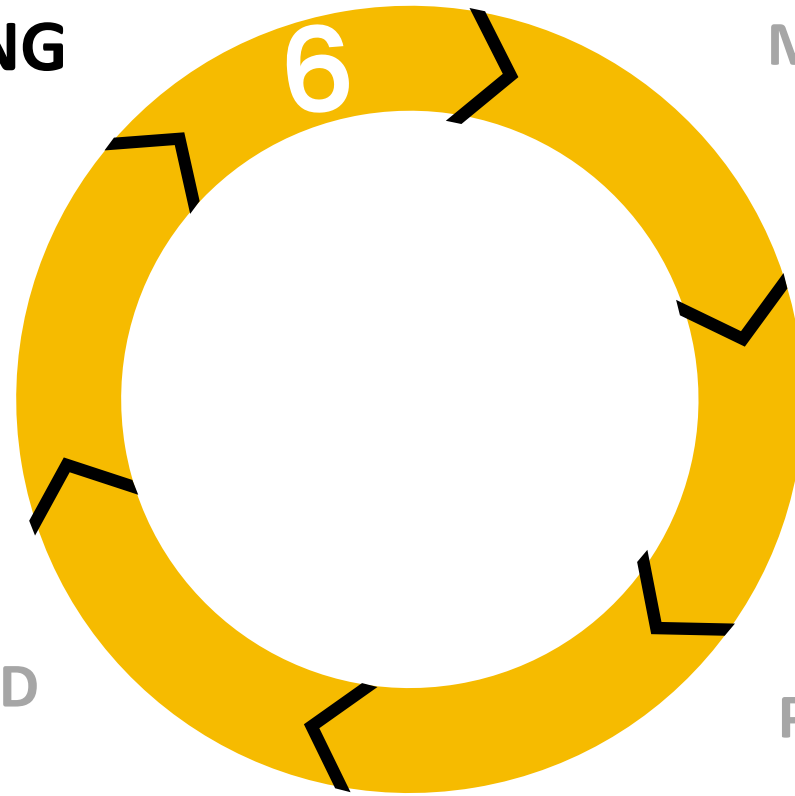
PROCESS AUTOMATION &
OPTIMIZATION



RE-ENGINEERING RURAL ROAD MAINTENANCE

**DATA ANALYTICS FOR
EFFECTIVE MONITORING**

PERFORMANCE BASED
MAINTENANCE CONTRACT






SMS NOTIFICATIONS &
REMINDERS

PLATFORM DIGITALIZATION





MOBILE APPLICATION BASED
INSPECTIONS

PROCESS AUTOMATION &
OPTIMIZATION

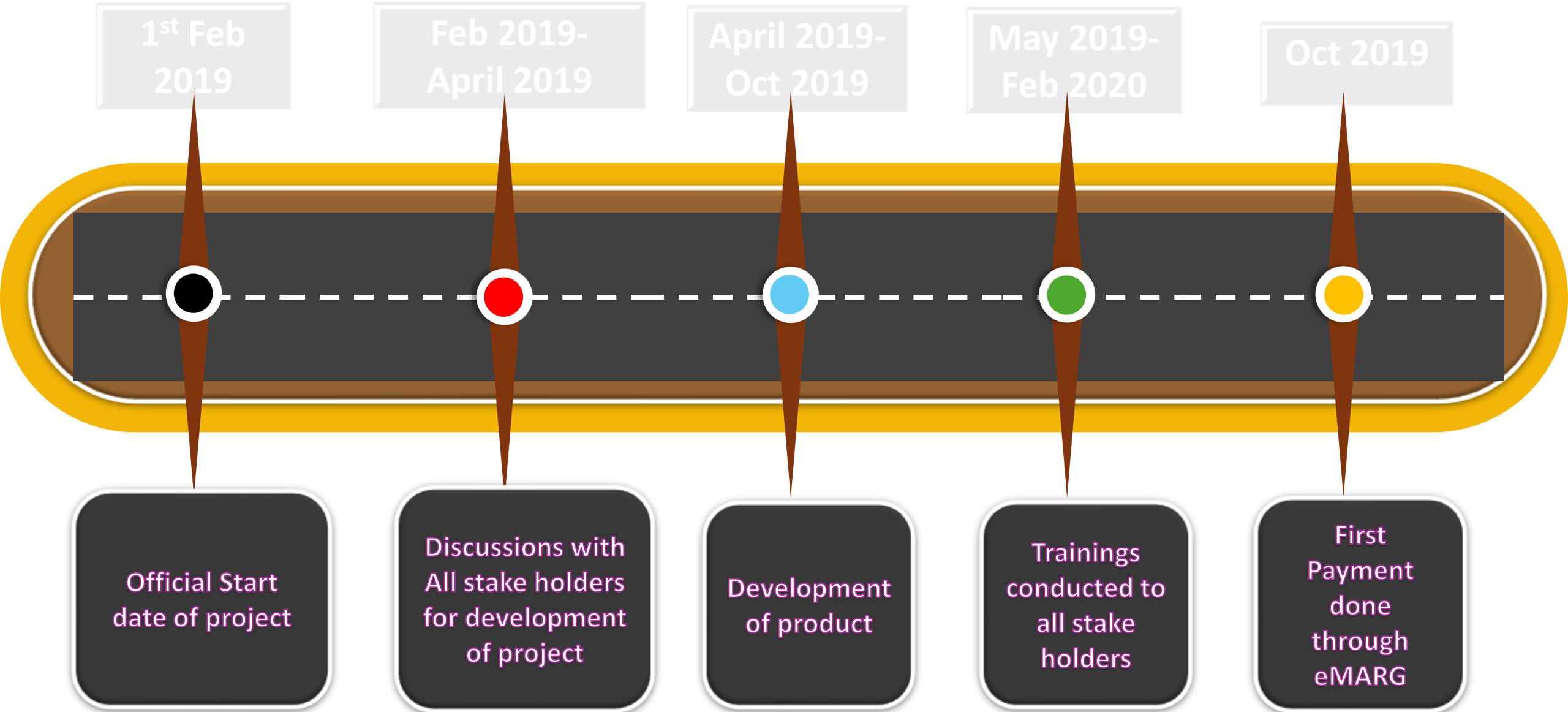
Government Process Re-engineering (Pre-Post)

Process	Before	After
<p>Bill Submission</p> 	<ul style="list-style-type: none"> • Bills submitted manually based on labour/ material involved in maintenance • No control / record of date or frequency of Bill submission 	<ul style="list-style-type: none"> • eBill submitted in one click online with fixed maximum monthly amount • Monthly alerts for bill submission • No dispute around date of submission of bill
<p>Routine Inspections</p> 	<ul style="list-style-type: none"> • Inspection triggered by bill submission. A bad road without bill submitted will not be inspected • No permanent record or evidence of routine inspection 	<ul style="list-style-type: none"> • Bi-monthly Inspections done through eMARG mobile app with geo-tagged photos • Mobile notifications for reminders
<p>Verification of Work & Bill</p> 	<ul style="list-style-type: none"> • Primarily on the basis of volume /labour/material of work executed ie based on inputs • Done Manually by Engineers against the bill raised by contractor 	<ul style="list-style-type: none"> • Bill amount calculated by system based on marks awarded in Performance Evaluation ie outcomes • Photographs clicked in RI are used as base for this evaluation

Government Process Re-engineering (Pre-Post)

Voucher Generation 	<ul style="list-style-type: none">• Done Manually by Account Officer after deducting taxes manually from the approved Bill Amount	<ul style="list-style-type: none">• System generated with automatic tax deductions etc under Account Officer Login & DSC for digital signing of vouchers
Payments 	<ul style="list-style-type: none">• Done manually by Cheque Payment and then entered into online accounting software	<ul style="list-style-type: none">• Directly into contractors account; single account per contractor.• Transaction sent to accounting software automatically by API
Cost Saving 	<ul style="list-style-type: none">• Payments made for periods where road was not maintained because of lack of routine evidence	<ul style="list-style-type: none">• Payment only based on months where minimum serviceability or performance is ensured
Data Analytics 	<ul style="list-style-type: none">• Only limited to total expenditure against roads	<ul style="list-style-type: none">• Process level monitoring: Reports, reviews, photographs and GIS

JOURNEY OF IMPLEMENTATION



Guidelines to Engineers for taking Routine Inspection photos for e MARG:



DO'S

✓ Clicked in proper daylight

✓ Clicked in landscape mode

✓ Clicked standing on the road and not from a vehicle

✓ Is not blurred or have glares

✓ No vehicles or other objects on road



DON'TS

× Do not click pictures in the dark or low lighting conditions

× Ensure that the pictures are clicked in landscape mode. Take extra caution not to flip or rotate the pictures.

× Do not click pictures from inside a vehicle or when on it, as it might subject them to blurring, glare etc.

× Pictures should not be blurred, have Don't glares due to the sun or other camera related defects.

× Do not click pictures of milestones, sign boards etc. Make sure that the surface of the road is the primary focus of the picture.



Billing And Payment Status

Billing And Payment Status

Bills Pending at Contractor

(9713)

Bills Submitted

(2316959)

Bills in Process

(415384)

Auto Submitted Bills

(275169)

W.E.F 10.10.2023

Scrolls Pending at Bank

(7129)

Payment Disbursed (in Lakhs.)

(440073.34724)

Pending Payments Cycles / Vouchers
Period

(62025)

Roads having Zero Payment Bills

(41849)

DASHBOARD AND MIS REPORTS

*As on 18.08.2025

DASHBOARD AND MIS REPORTS

***As on 18.08.2025**

Data Verification

Data Verification

Packages (Roads) pushed in eMARG
(64783) (77069)

OMMAS Data Error
(173)

Correction Required at OMMAS Level
(340)

Pending at PIU Engineering Staff
(649)

Pending at PIU Incharge
(53)

Freezed by PIU Incharge
(37624)

Road Inspection Status

Road-wise Inspection status

Road Registration
(67923)

RI Mandatory
(62483)

RI Optional
(19915)

PE
(64450)

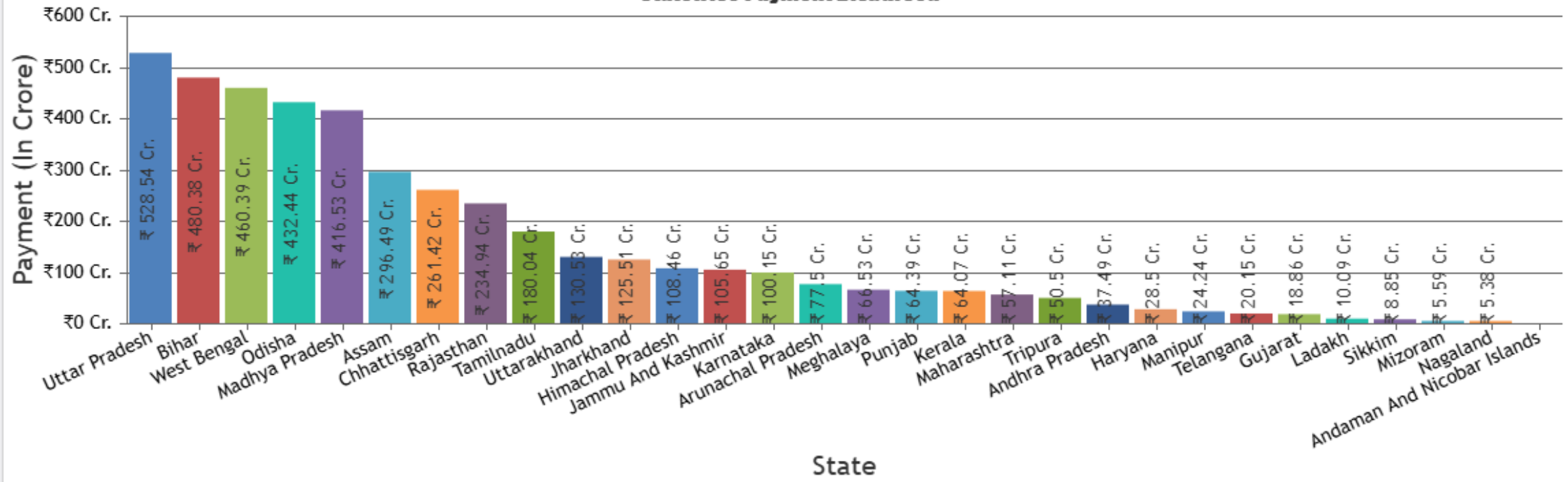
Feedback
(2720)

No RI(M)
(67583)

Analytics of PMGSY Roads under DLP Maintenance

Total Payment Disbursed : ₹ 4400.72 Crore

Statewise Payment Disbursed



Source : eMARG 18-Aug-2025, 12:48:24 pm

DASHBOARD AND MIS REPORTS

*As on 18.08.2025

MAINTENANCE OF RURAL ROADS THROUGH eMARG

DEFECT
LIABILITY
PERIOD

eMARG

POST-DEFECT
LIABILITY
PERIOD



Defect liability period

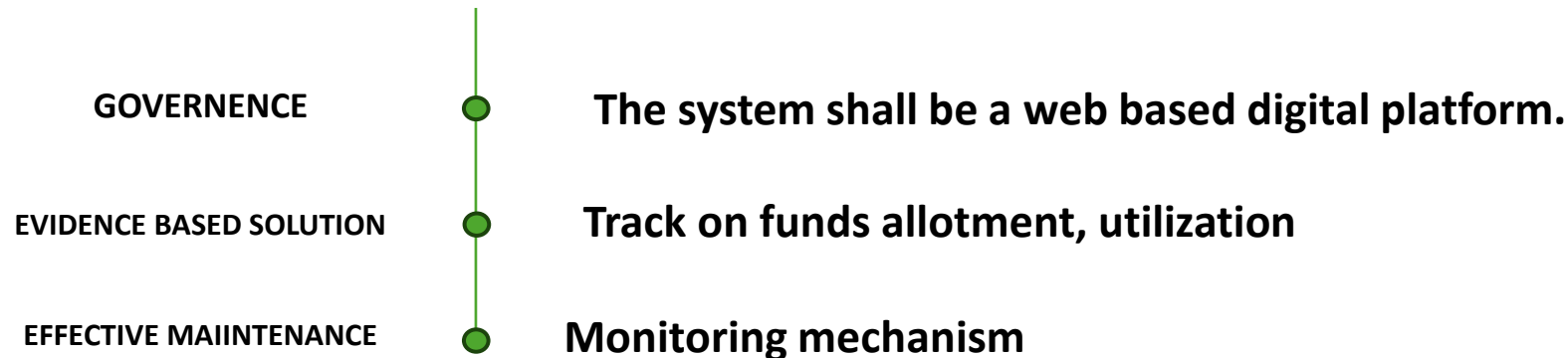


Standard Operating Procedure (SoP)

PMGSY, for the first time brought in the concept of **Defects Liability Period**, where the contractor is obligated to carry out maintenance of the road constructed by him/her for the first **Five years** and also rectify any deficiencies noticed during this period.

Objectives of the Standard Operating Procedure(SOP)

❖ The large network of increasing maintenance as well as proper effective monitoring system.



The SoP defines the guidelines for carrying out the DLP Maintenance of PMGSY roads through eMARG

Defect liability period



Standard Operating Procedure (SoP)



PERFORMANCE BASED MAINTENANCE
CONTRACT (PBMC)

Payments are based on how well the contractor manages to comply with the performance standards or service levels defined in the contract, and not on piece work.

In PBMC the contractor has to keep road in good riding condition throughout the year. No separate measurements are required and

only routine inspection has to be done bimonthly. Any deficiency found during inspection is to be attended by the contractor. The payments are based on predefined [performance matrix](#).

❑ Execution of PBMC:

Every 2 Month

PE along
with RI



For PE, road divided in
to km wise segments



During PE, Maintenance
condition of road
evaluated by PE



If PE < 80 for any segment
or entire road, no
payment should be
made



If PE < 80 for 3rd time,
action against contractor
should be taken

Defect liability period



Standard Operating Procedure (SoP)

Performance matrixes for the Performance Evaluation of Roads

Sr No.	Name of Item/Activity	Performance Index
1	Maintenance of Bituminous surface road and / or gravel road and/or WBM road including filling potholes and patch repairs etc. as per clause 1904, 1906 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	50
2	Restoration of rain cuts and dressing of side slopes/berms as per clause 1902 of the Specifications. (As per Annexure-14.1 of Operation manual)	10
3	Making up of berms/shoulders as per clause 1903 of the (As per Annexure-14.1 of Operation manual)	20
4	Maintenance of drains as per clause 1907 of the Specifications. (As per Annexure-14.1 of Operation manual)	3
5	Maintenance of culverts and cause ways as per clause 1908 and 1909 of the MoRD (As per Annexure-14.1 of Operation manual)	4
6	Maintenance of guard rails and parapet rails as per clause 1911 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	1
7	Maintenance of road signs, speed breakers, standing trees adjacent to road wherever required as per clause 1910 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	2
8	Maintenance of 200 m and Kilo Meter stones as per clause 1912 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	2
9	Cutting of branches of trees, shrubs and trimming of grass and weeds etc. as per clause 1914 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	3
10	White washing parapets of Works including CD (As per Annexure-14.1 of Operation manual)	2
11	Painting of guard stones	2
12	Re-fixing displaced guard stones	1
	Total	100

Remarks By Inspecting Officer

:

Remarks By PIU Incharge

:

Defect liability period



Standard Operating Procedure (SoP)

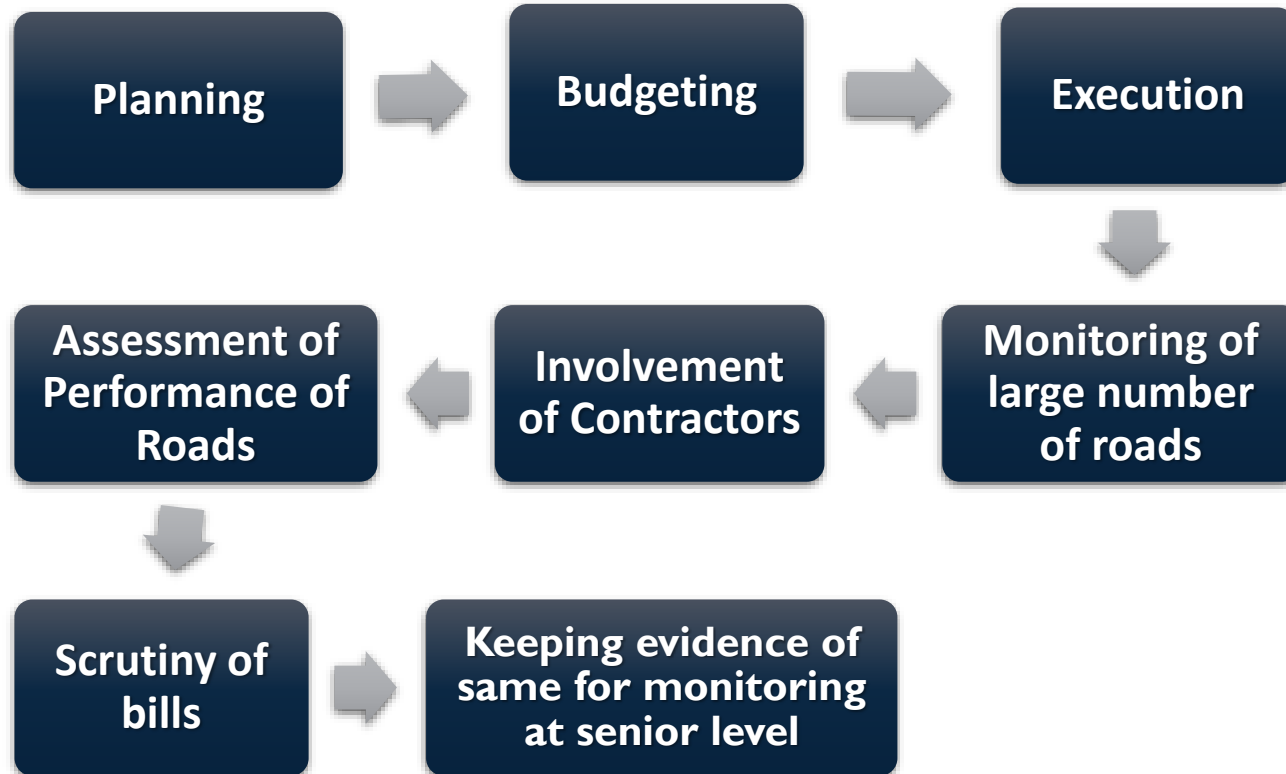
Restoration of rain cuts and dressing of berms as per clause 1902 of the Specifications.	Once generally after rains
Making up of shoulders as per clause 1903 of the Specifications.	As and when required
Maintenance of Bituminous surface road and / or gravel road and/or WBM road including filling pot holes and patch repairs e	As and when required
Maintenance of drains as per clause 1907 of the Specifications.	Twice
Maintenance of culverts and cause ways as per clause 1908 and 1909 of the Specifications.	Twice
Maintenance of road signs as per clause 1910 of the Specifications.	Repairing once in every two years
Maintenance of guard rails and parapet Rails as per clause 1911 of the Specifications	Repairing once in every two years

White washing guard stones	Twice in a year
Re-fixing displaced guard stones	Once in a year
White washing parapets of C.D. Works	Once in a year
Maintenance of 200 m and Kilo Meter stones as per clause 1912 of the Specifications.	Repairing once in every two years

Defect liability period



Standard Operating Procedure (SoP)



This software will provide the inspection details as well as payment details of each and every road. The software will be used by all SRRDAs.

Defect liability period



Standard Operating Procedure (SoP)

The relevant clauses in SBD for maintenance during DLP are reproduced below

Clause 32. Correction of Defects noticed during the Defects Liability Period and Routine Maintenance of Roads for five years.

- 32.1 The Engineer shall give notice to the Contractor for any Defects before the end of the Defects Liability Period, which begins from the Completion Date and ends after five years. The Defects Liability Period shall be **extended** for as long as the Defects remain to be corrected.
- 32.2 Every time notice of Defect/Defects is given, the Contractor shall **correct** the notified Defect/Defects within the duration of time specified by the Engineer's notice.
- 32.3 The Contractor shall do the routine maintenance of roads, including pavement, road sides and cross drains including surface drains to the required standards and in the manner as defined in clause 1.1 and keep the entire road surface and structure in Defect free condition during the entire maintenance period which begins from the **Completion Date and ends after five years.**

Defect liability period



Standard Operating Procedure (SoP)

The relevant clauses in SBD for maintenance during DLP are reproduced below

Clause 32. Correction of Defects noticed during the Defects Liability Period and Routine Maintenance of Roads for five years.

32.4 The routine maintenance standards shall meet the following **minimum requirements**:-

- I. Potholes on the road surface to be repaired soon after these appear or brought to his notice either during the Contractor's monthly inspection or by the Engineer.
- II. Road shoulders to be maintained in proper condition to make them free from excessive edge drop offs, roughness, scouring or potholes.
- III. Cleaning of surface drains including reshaping to maintain free flow of water.
- IV. Cleaning of culverts and pits for free flow of water.
- V. Maintenance of road signs, pavement markings and other traffic control devices
- VI. Any other maintenance operation required to keep the road traffic worthy at all times during the maintenance period.

Defect liability period



Standard Operating Procedure (SoP)

The relevant clauses in SBD for maintenance during DLP are reproduced below

Clause 32. Correction of Defects noticed during the Defects Liability Period and Routine Maintenance of Roads for five years.

32.5 To fulfill the objectives laid down in sub clauses 32.3 and 32.4 above, the Contractor shall undertake detailed inspection of the roads at least once in a month. The Engineer can increase this frequency in case of **emergency**. The Contractor shall forward to the Engineer, the record of inspection and rectification each month. The Contractor shall pay particular attention on those road sections which are likely to be damaged or inundated during rainy season.

32.6 The Engineer may issue notice to the Contractor to carry out **maintenance of defects**, if any, noticed in his inspection, or brought to his notice. The Contractor shall remove the defects within the period specified in the notice and submit to the Engineer a compliance report.

Clause 33 : Uncorrected Defects

33.1 If the contractor has not corrected a defect pertaining to Defect Liability Period under clause 32.1 and clause 32.2 of these Conditions of Contract, to the satisfaction of the engineer, within the time specified in the engineer's notice, the engineer will assess the cost of having the defect corrected, and the **contractor will pay this amount, on correction of the Defect.**

Defect liability period



Standard Operating Procedure (SoP)

The relevant clauses in SBD for maintenance during DLP are reproduced below

Clause 38 (a) & (c): The provision of submission of bills by contractor is as per condition in :

38 (a)

The Contractor shall submit to the Engineer a **bill every month** for the routine maintenance of the roads from the date the maintenance period starts i.e. from completion date as defined in Clause 1.1, it will be supported with a copy of the record of the Contractor's monthly inspection and other instructions received from the Engineer.

38 (C)

If the bill for a month is not received from the Contractor by the 10th day of the succeeding month or/ and if the Engineer has not certified that the Contractor has carried out the maintenance work for defects brought to his notice under clause 32.6 within specified period, **no payment** will become due to the Contractor for that month.

In case the contractor fails in keeping road in good and serviceable condition and does not attend defects, strict action will be taken against the defaulting contractor as per SBD.

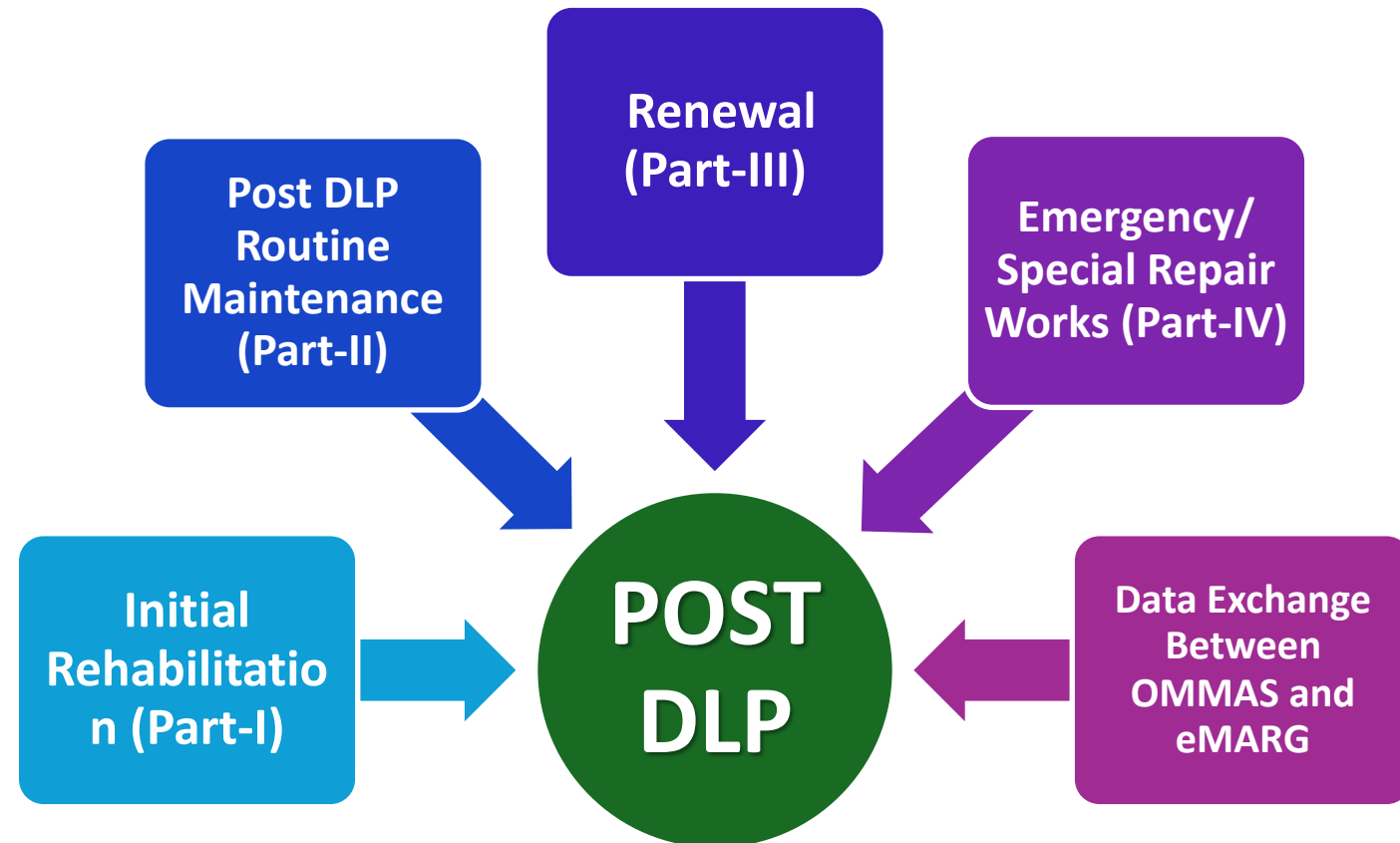
POST-Defect liability period



Standard Operating Procedure (SoP)



Types of Maintenance Activities covered in post DLP maintenance





Initial Rehabilitation (Part-I):

BOQ METHOD

This will consists of items required for improvement in road which may include:-

- Up gradation/Replacement of existing structures
- Construction of left out portion of the roads (due to land dispute of any other reason).
- Construction of protection works etc.
- Conversion of existing BT pavement to CC pavement due to extension of habitation area.
- The items pertaining to road safety if not provided earlier
- Any other improvement required for road users.

Post DLP Routine Maintenance (Part-II)

PBMC METHOD

Cyclic activities

- Are performed at a predetermined interval throughout the year purely as a preventive measure because of events that are known in prior to occur

(e.g. cleaning drains before and during seasonal rainfall), and are scheduled at fixed times during the year.

Reactive activities

- are performed in response to a triggering condition that requires action before the problem gets out of hand .

(e.g. blocked culvert, crack sealing and pothole patching)

POST-Defect liability period



Standard Operating Procedure (SoP)

Renewal (Part-III):

BOQ METHOD

Periodic renewal is planned in segments of the road, in such a manner that BT surface of every road of the package can be renewed with same surfacing usually in first 3 or 4 years of completion of DLP.

Guidelines for Routine Maintenance:

- **Stretch Selection**
 - The In-charge officer should visit all roads and depending on present surface condition, traffic and other aspects affecting maintenance condition
 - The selected segment must be technically ready to accept new surface
- **Execution of Renewal Works**
 - Following IRC/IS codes and Manuals of PMGSY.
 - Use of Plastic Waste, Cold Mix technology
 - The renewal in any segment cannot be proposed till completion of five years after previous renewal/bitumen work

Emergency/ Special Repair works (Part-IV):

PBMC METHOD

Special Repairs works may consist of following:-

- I. Clearing of landslides
- II. Repair/Reconstruction of damaged part of the road/ retaining/breast walls
- III. Repair/Reconstruction of damaged drains

Such type of works shall be carried out from NDRF/SDRF. State may also allocate separate fund for this purpose.

**Lump sum provision for unforeseen works under maintenance during 5 years contract period
10-20% of total cost**

10-20% of
Total Cost

Payment of Emergency Work:

- Works shall be included item rate / (%) on SOR.
- Work is to be executed as per BoQ rates and measurements be entered in measurement book and accordingly bill is prepared and paid after due quality checks.
- financial evaluation process as per NRIDA standard Bid Document.

eMARG National AI

eMARG introduced a new alert system at the national level to help PIU in-charge (Executive Engineer) carefully approve the PE marks on eMARG.

The portal will show an alert to the PIU in – charge when it thinks the PE marks given by the PIU in-charge is not appropriate as per the road section quality.



The alert will NOT come in all cases. The alert only comes when the portal thinks the marks being approved by PIU in-charge is not appropriate with the section quality based on the images uploaded by the JE.

The PIU in-charge can either decide to:



Accept the warning and change the marks



Reject the warning and proceed with his own marks



The alert might **NOT always be right.**

The PIU in-charge should always consider the on ground condition of the road and their engineering judgement before finally submitting the PE score.

eMARG National AI

Case 1 – Road Condition Good But Marks on Lower Side



Sr No.	Name of Item/Activity	Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road and / or gravel road and/or WBM road including filling potholes and patch repairs etc. as per clause 1904, 1906 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	40	35.0	35.0
2	Restoration of rain cuts and dressing of side slopes/biems as per clause 1902 of the Specifications. (As per Annexure-14.1 of Operation manual)	5	2.0	2.0
3	Making up of berms/shoulders as per clause 1903 of the (As per Annexure-14.1 of Operation manual) * Includes Land slide/Slips (Hill side)- Less than 3 Cum in each instance for hilly states	20	10.0	10.0
4	Maintenance of drains as per clause 1907 of the Specifications (As per Annexure-14.1 of Operation manual)	6	4.0	4.0
5	Maintenance of culverts and cause ways as per clause 1908 and 1909 of the MoRD (As per Annexure-14.1 of Operation manual)	10	10.0	10.0
6	Maintenance of guard rails and parapet rails as per clause 1911 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	1	1.0	1.0
7	Maintenance of road signs, speed breakers, standing trees adjacent to road wherever required as per clause 1910 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	4	2.0	2.0
8	Maintenance of 200 m and Kilo Meter stones as per clause 1912 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	2	1.0	1.0
9	Cutting of branches of trees, shrubs and trimming of grass and weeds etc. as per clause 1914 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	5	2.0	2.0
10	White washing parapets of Works including CD (As per Annexure-14.1 of Operation manual)	3	2.0	2.0
11	Painting of guard stones	1	0.0	0.0
12	Re-fixing displaced guard stones	1	1.0	1.0
Total		100	70	70

Remarks By Inspecting Officer

patches need repair and shoulders need clearance

Remarks By PIU Incharge

marks proper as given by the inspecting officer

Approve

Back

eMARG National AI

Case 1 – Road Condition Good But Marks on Lower Side

Sr No.	Name of Item/Activity	Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road	40	35.0	35.0
2	Restoration of rain cuts and dressing of s	5	2.0	2.0
3	Making up of berms/shoulders as per cla	20	10.0	10.0
4	Maintenance of drains as per clause 190	8	4.0	4.0
5	Maintenance of culverts and cause ways	10	10.0	10.0
6	Maintenance of guard rails and parapet	1	1.0	1.0
7	Maintenance of road signs, speed breake	4	2.0	2.0
8	Maintenance of 200 m and Kilo Meter st	2	1.0	1.0
9	Cutting of branches of trees, shrubs and	5	2.0	2.0
10	White washing parapets of Works includi	3	2.0	2.0
11	Painting of guard stones	1	0.0	0.0
12	Re-fixing displaced guard stones	1	1.0	1.0
		100	70	70

ALERT!

Portal suspects condition of road section as per RI photographs appears good, but PE marks entered by PIU-incharge (70.00) is on a **lower side**. Please verify the overall condition of the road with respect JE/AE before finalizing PE marks.

Note: To enable approval or editing - Please see RI photographs once again. 📷

Are you sure you still want to approve your marks (70.00)?

Approve with 70.00 Marks
Edit Marks

Remarks By Ins

Remarks By PIU Incharge

marks proper as given by the inspecting officer

Approve

Back

Activate Winc

eMARG National AI

Case 1 – Road Condition Good But Marks on Lower Side

Sr No.			Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road and / or g	<p>Portal suspects condition of road section as per RI photographs appears good, but PE marks entered by PIU-incharge (70.00) is on a lower side. Please verify the overall condition of the road with respect JE/AE before finalizing PE marks.</p> <p>Note: To enable approval or editing - Please see RI photographs once again. 📷</p> <p>Are you sure you still want to approve your marks (70.00)?</p> <p>Reasons for continuing with same marks*:</p> <input type="text"/> <p><i>Reason for the given marks is mandatory. Min 20 and max 200 characters long.</i></p> <p>Approve with 70.00 Marks Edit Marks</p>	40	35.0	35.0
2	Restoration of rain cuts and dressing of side slopes		5	2.0	2.0
3	Making up of berms/shoulders as per clause 1903 o		20	10.0	10.0
4	Maintenance of drains as per clause 1907 of the Sp		8	4.0	4.0
5	Maintenance of culverts and cause ways as per cla		10	10.0	10.0
6	Maintenance of guard rails and parapet rails as per		1	1.0	1.0
7	Maintenance of road signs, speed breakers, standin		4	2.0	2.0
8	Maintenance of 200 m and Kilo Meter stones as pe		2	1.0	1.0
9	Cutting of branches of trees, shrubs and trimming		5	2.0	2.0
10	White washing parapets of Works including CD (A		3	2.0	2.0
11	Painting of guard stones		1	0.0	0.0
12	Re-fixing displaced guard stones		1	1.0	1.0
			100	70	70

Remarks By Inspecting Officer:

Remarks By PIU Incharge: marks proper as given by the inspecting officer

Approve Back

Activate Winc

eMARG National AI

Case I – Road Condition Good But Marks on Lower Side

EXAMPLE

State -Andhra Pradesh

District – Anantapur, Package –AP02PIII 24,
Road Name - T10-Uravakonda to
Vajrakarur via Shiaksanipalli,J
Rampuram,Tatrakal and Ganjikunta (10.89
km), Chainage – 2

PIU Comments - Grass on Shoulders and
High berms. Hm, Km stones are not visible.

Inspecting Officer Marks - 85



PE Marks before Warning - 79



PE Marks Post Warning - 80

eMARG National AI

Case 2 – Road Condition Poor But Higher Marks



Sr.No.	Name of Item/Activity	Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road and / or gravel road and/or WBM road including filling potholes and patch repairs etc. as per clause 1904-1906 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	40	NCRIM	30.0
2	Restoration of rain cuts and dressing of side slopes/terms as per clause 1902 of the Specifications. (As per Annexure-14.1 of Operation manual)	5	NCRIM	4.0
3	Making up of berms/shoulders as per clause 1903 of the (As per Annexure-14.1 of Operation manual)* Includes Land slide/Slips (Hill side)- Less than 3 Cum in each instance for hilly states	20	NCRIM	18.0
4	Maintenance of drains as per clause 1907 of the Specifications. (As per Annexure-14.1 of Operation manual)	8	NCRIM	7.0
5	Maintenance of culverts and cause ways as per clause 1908 and 1909 of the MoRD (As per Annexure-14.1 of Operation manual)	10	NCRIM	8.0
6	Maintenance of guard rails and parapet rails as per clause 1911 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	1	NCRIM	1.0
7	Maintenance of road signs, speed breakers, standing trees adjacent to road wherever required as per clause 1910 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	4	NCRIM	2.0
8	Maintenance of 200 m and Kilo Meter stones as per clause 1912 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	2	NCRIM	1.0
9	Cutting of branches of trees, shrubs and trimming of grass and weeds etc. as per clause 1914 of the MoRD Specifications (As per Annexure-14.1 of Operation manual)	5	NCRIM	4.0
10	White washing parapets of Works including CD (As per Annexure-14.1 of Operation manual)	3	NCRIM	2.0
11	Painting of guard stones	1	NCRIM	1.0
12	Re-fixing displaced guard stones	1	NCRIM	1.0
Total		100	0	87

Remarks By Inspecting Officer :

Remarks By PIU Incharge :

Approve

Back

eMARG National AI

Case 2 – Road Condition Poor But Higher Marks

Sr No.		Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road and / or gravel road a	40	NO R/M	36.0
2	Restoration of rain cuts and dressing of side slopes/berms as p	5	NO R/M	4.0
3	Making up of berms/shoulders as per clause 1903 of the (As p	20	NO R/M	18.0
4	Maintenance of drains as per clause 1907 of the Specifications	8	NO R/M	7.0
5	Maintenance of culverts and cause ways as per clause 1908 an	10	NO R/M	8.0
6	Maintenance of guard rails and parapet rails as per clause 1911	1	NO R/M	1.0
7	Maintenance of road signs, speed breakers, standing trees adjs	4	NO R/M	2.0
8	Maintenance of 200 m and Kilo Meter stones as per clause 191	2	NO R/M	1.0
9	Cutting of branches of trees, shrubs and trimming of grass and	5	NO R/M	4.0
10	White washing parapets of Works including CD (As per Annex	3	NO R/M	2.0
11	Painting of guard stones	1	NO R/M	1.0
12	Re-fixing displaced guard stones	1	NO R/M	1.0
		100	0	87

ALERT!

Portal suspects condition of road section as per RI photographs appears poor, but PE marks entered by PIU-incharge (87.00) is on **higher side**. Please discuss with JE/PE and verify shoulder, jungle clearance, and main carriageway condition before finalizing PF marks.

Note: To enable approval or editing - Please see RI photographs once again. 📷

Are you sure you still want to approve your marks (87.00)?

Remarks By Inspecting Officer

Remarks By PIU Incharge

Approach road inaccessible due to bad condition of the road.

Activate Win

eMARG National AI

Case 2 – Road Condition Poor But Higher Marks

Sr No.		Performance Index	Marks By Inspecting Officer	Approved Marks
1	Maintenance of Bituminous surface road and / or gravel road and	40	NO R/M	36.0
2	Restoration of rain cuts and dressing of side slopes/biems as per c	5	NO R/M	4.0
3	Making up of berms/shoulders as per clause 1903 of the (As per A	20	NO R/M	18.0
4	Maintenance of drains as per clause 1907 of the Specifications. (A	8	NO R/M	7.0
5	Maintenance of culverts and cause ways as per clause 1908 and 19	10	NO R/M	8.0
6	Maintenance of guard rails and parapet rails as per clause 1911 of	1	NO R/M	1.0
7	Maintenance of road signs, speed breakers, standing trees adjacer	4	NO R/M	2.0
8	Maintenance of 200 m and Kilo Meter stones as per clause 1912 o	2	NO R/M	1.0
9	Cutting of branches of trees, shrubs and trimming of grass and we	5	NO R/M	4.0
10	White washing parapets of Works including CD (As per Annexure-	3	NO R/M	2.0
11	Painting of guard stones	1	NO R/M	1.0
12	Re-fixing displaced guard stones	1	NO R/M	1.0
		100	0	87

ALERT!

Portal suspects condition of road section as per RI photographs appears poor, but PE marks entered by PIU-incharge (87.00) is on higher side. Please discuss with JE/PE and verify shoulder, jungle clearance, and main carriageway condition before finalizing PF marks.

Note: To enable approval or editing - Please see RI photographs once again.

Are you sure you still want to approve your marks (87.00)?

Reasons for continuing with same marks*:

Reason for the given marks is mandatory. Min 20 and max 200 characters long.

Remarks By Inspecting Officer

Remarks By PIU Incharge

Activate Winc

eMARG National AI

Case II – Road Condition Poor But Marks on Higher Side

EXAMPLE

State -Meghalaya

District – West Khasi Hills, Package – MG070304, Road Name (L032) L032- Malangkhone to Bamil (10.0 km), Chainage – 1

PIU Comments - the contractor did not repaired the potholes

Inspecting Officer Marks - 80



PE Marks before Warning - 80



PE Marks Post Warning - 64

eMARG National AI

Case 3 – One Image Good and One Image is Bad But Higher Marks

EXAMPLE

State -Madhya Pradesh

District – – Ganjam, Package – OR11273,
Road Name - (L083) L083-NH-59 to
Adipanka (13.765 km), Chainage – 13

PIU Comments - Berm to be cleaned
properly

Inspecting Officer Marks - 97



PE Marks before Warning - 97



PE Marks Post Warning - 83

CITIZEN CENTRIC APPROACH IN eMARG



DESIGN AND IMPLEMENTATION OF EMARG IN PBMC SYSTEM

Citizen-Centric Features



Recognizing the importance of public involvement, eMARG integrates mechanisms for citizen feedback. Road users can report issues such as potholes or drainage problems through the platform, which are then logged as maintenance requests. This feature empowers citizens to participate actively in the maintenance process, enhancing accountability and responsiveness.

Implementation Strategy



- **Modular Development:** The system was developed in phases, incorporating feedback from pilot projects and training sessions.
- **Training and Capacity Building:** Over **15,000** engineers and contractors were trained to use eMARG, ensuring smooth adoption.
- **Integration with Existing Systems:** eMARG was seamlessly integrated with the PMGSY's Online Management, Monitoring, and Accounting System (OMMAS) to enable data exchange and interoperability.

OUTCOMES OF eMARG IMPLEMENTATION

Improved
Maintenance Quality

Operational Efficiency

Transparency and
Accountability

Citizen
Empowerment

Scalability and
Replicability

Socio-Economic
Benefits

Quantitative Impact

- The scale of eMARG's impact is evident from the following metrics:

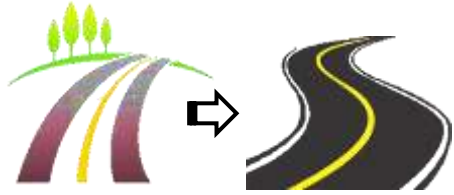
1. Roads Covered: Over **1,07,027** roads, spanning **4,55,821** kilometers are managed under eMARG.

2. Bills Processed: **23,16,959** bills have been submitted digitally, processed and paid streamlining payment workflows.

3. Payments Released: **₹4,400 Crores have been disbursed** to contractors through the system since its launch in April 2020, ensuring timely compensation-MARG has resulted into **savings of more than Rs 1,818.14 Crore** , whereas total payment released so far through e MARG is Rs 4,400 Crores.

- The savings of Rs 1,818.14 Crore , has been possible through enforcement of timely maintenance, strict enforcement of contractual provisions, transparency and participation of all stakeholders including citizens participation in evidence-based objective system of road maintenance in Performance Baed maintenance contracting system in PMGSY.

RECOMMENDATIONS AND FUTURE DIRECTIONS



Expand eMARG
Beyond Rural Roads



Strengthen
Citizen
Engagement



Leverage Advanced
Technologies



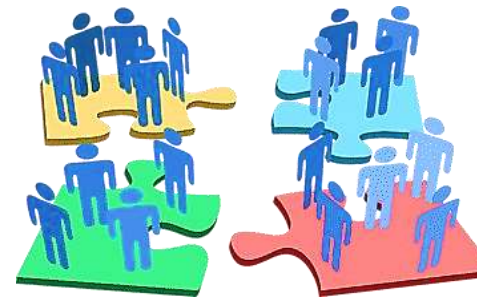
Strengthen Monitoring
and Compliance
Mechanisms



Capacity Building
and Training



Ensure Policy
and Financial
Support



Foster Collaboration
Among Stakeholders

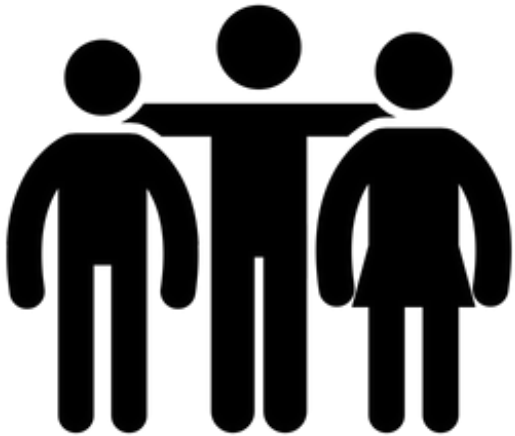


Future Research
Directions

Conclusions

The key result areas and achievements in rural roads maintenance are summarized as below,

- ❑ The digitization of manual workflows, reducing administrative delays and ensuring timely contractor payments.
- ❑ Evidence-based evaluations using geo-tagged photographs and GIS integration, enhancing transparency and accountability.
- ❑ Citizen-centric features that empower rural populations to participate in infrastructure governance.
- ❑ Linking payments to performance outcomes aligns contractor incentives with long-term infrastructure quality.



Citizen Participation

-
- **By continuing to build on eMARG's principles and lessons, India has the opportunity to lead the way in technology-driven governance and infrastructure management. The future of public infrastructure lies in systems like eMARG, where accountability and inclusivity meet the transformative potential of digital technologies.**

AWARDS



Economic Times PSU Leadership & Excellence Awards (Silver) for Smart Governance Adoption 2024.



Data Center Champion Awards-2023



Technology Sabha Excellence Awards in Enterprise Applications 2024



National Award for e-Governance 2021



Geosmart Infrastructure Excellence Awards under Excellence in Project Operational and Maintenances -2022



Technology Sabha Excellence Awards in Artificial Intelligence 2025



e-MARG Bags National Award for e-Governance 2021



SKOCH Gold award under the category-excellence in Governance-2020



19th CSI SIG e-Governance Award 2021 under category Central Government Project.

Thank You