



PIARC Seminar on Road Asset Management Chandigarh

Road Information System (RIS)

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Design & Development Experience

by

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Presentation Structure

- ❖ Background
- ❖ Study Objective
- ❖ What is RIS
- ❖ RIS Design & Development Methodology
- ❖ RIS Use
- ❖ Way Forward
- ❖ Lessons Learnt

The Background

- ❖ India is Experiencing High Economic Growth
- ❖ Transport - Critical Infrastructure Need
- ❖ Road Transport Vital
- ❖ National Highways Development by NHAI
- ❖ NHAI felt the need for an information system to Collect, Collate, Analyze and Report for rational decision
- ❖ NHAI Initiated the Study on D & D of RIS
- ❖ Study by JV of CES – Parkman - PB
- ❖ CES as Lead Company

Study Objective

- ❖ **In the first instance:**
- ❖ **To select a suitable operating RIS in the international market, buy and customize to NHAI's requirements**
- ❖ **Study & Review of RIS – International & Domestic**
- ❖ **Change in Course Direction**
 - **During the study phase, the assignment was changed, at the suggestion of the World Bank, to develop the system indigenously**
 - **CES, along with JV Partners, took up the challenge and now the RIS has been designed, developed and installed in NHAI at RIS Data Center at Software Technology Park, Okhla, New Delhi**

What is RIS?

“A GIS Enabled System to Collect, Store and Process Highway Inventory, Condition, Traffic and related data for Planning, Programming & Monitoring Integrated with Economic Analysis (HDM-4)”

- ❖ **A Decision Support System (DSS) for Transport Infrastructure Planning and Management**
- ❖ **A Web based GIS enabled application software**
- ❖ **An articulate tool for Asset Inventorisation, Project Monitoring and maintenance of National Roadways**
- ❖ **A query based graphical Information resource**
- ❖ **An effective tool for Contract & Performance Management**
- ❖ **Tool for generation of Reports**
- ❖ **Answers Adhoc Queries**

RIS Design & Development Methodology

❖ RIS study was carried out in V phases:

- Phase I : User Requirement Study
- Phase II : System Development
- Phase III : Develop Database, Application to HDM-4, Other Modules & Selected Systems
- Phase IV : User Training
- Phase V : Develop Institutional Framework

❖ All phases ran concurrently

RIS Design & Development Methodology

❖ Stakeholders Survey & Workshop

- A large number of stakeholders all over the country was identified
- A detailed questionnaire was developed to elicit & understand the stakeholders appreciation of requirements of the proposed RIS
- The response was analyzed and a Working Paper prepared for discussion at the Workshop
- A stakeholders Workshop was held at NHAI
- More than 100 stakeholders representing wide spectrum interest groups participated
- Experts from the World Bank and Senior Officers of NHAI participated

Cont..

RIS Design & Development Methodology

- ❖ Extensive and valuable feedback and suggestions were received
- ❖ Stakeholders suggestions:
 - RIS – Important
 - Be Moderate. Don't be over-zealous
 - Select a few essential aspects
 - Provide flexibility
 - Adopt Modular Structure
 - Integration with HDM-4 important to extend usefulness of RIS
 - Outsource Data Updating
 - Training is important. Train the Trainers
 - Institutional Arrangement is important
 - Make easy access to information to all stakeholders & general public

Cont..

RIS Design & Development Methodology

- ❖ **Development of Data Dictionary**
 - **Data Requirement classified into:**
 - ✓ **Mandatory**
 - ✓ **Optional**
 - **About 300 attributes identified**

- ❖ **Development of Functional and Technical Design Specification for RIS**

Cont..

RIS Design & Development Methodology

❖ Primary Surveys

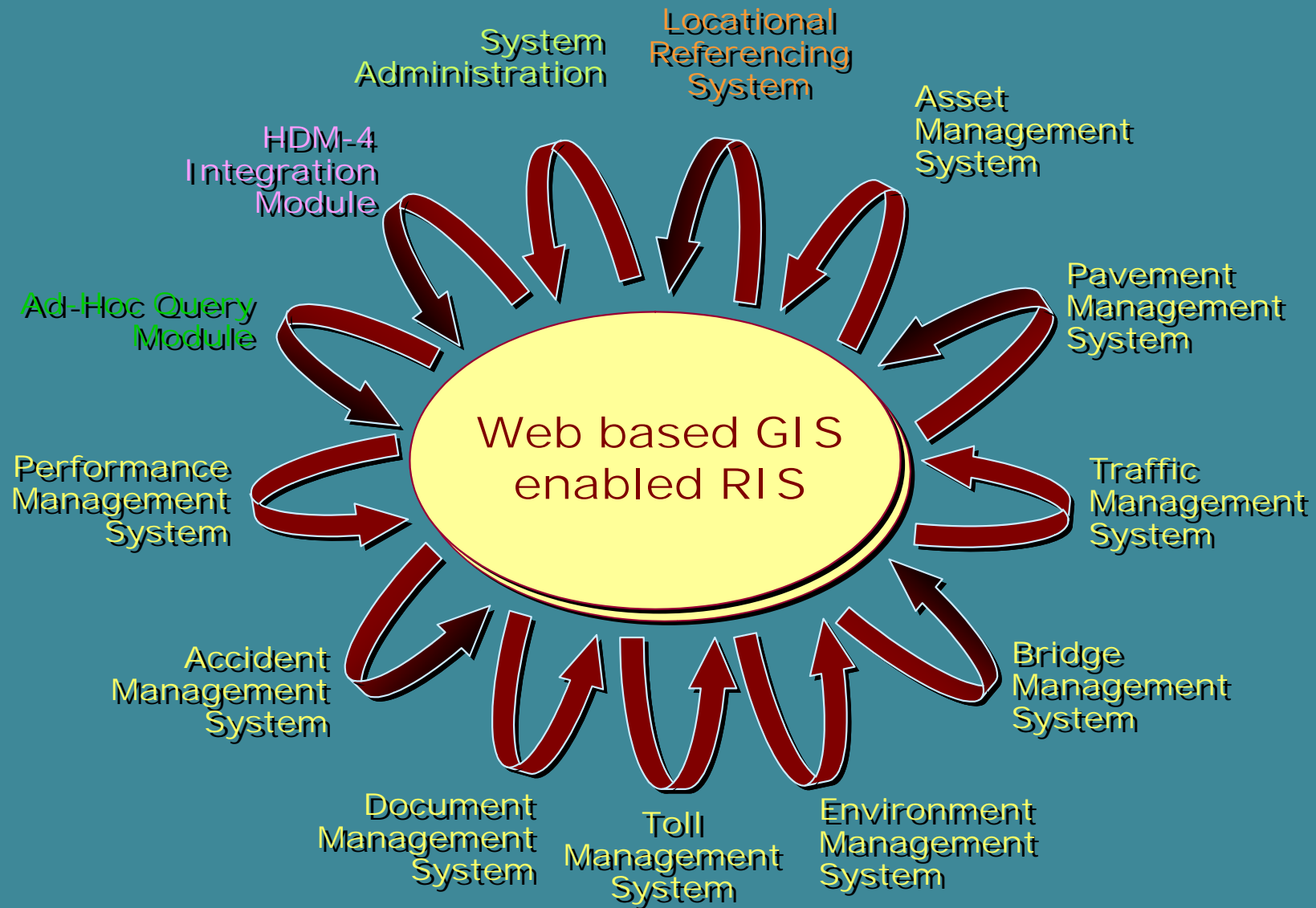
- Along the 4-lane completed stretches of GQ
- About 1159 km
- Surveys carried out:
 - ✓ Road Inventory
 - ✓ TVC
- Speed & Delay
- Axle Load
- Roughness
- Pavement Condition and Structural Assessment
- Bridge Inventory & Condition Assessment
- Surveys by Manual & Semi-automatic equipments

❖ Data Compilation from DPR Documents

❖ Road Alignment Plans

Cont..

RIS Modules



RIS Design & Development Methodology

- ❖ **RIS Testing & Certification**
 - Domain Certification by CRRI
 - Software Certification by Wipro

- ❖ **Training**
 - **3 Groups:**
 - ✓ Decision Making
 - ✓ Core
 - ✓ User
 - **International**
 - ✓ Visits to Highways Departments using RIS in USA
 - **Domestic**
 - ✓ Training of Trainers
 - ✓ Workshops

- ❖ **Institutional Arrangement**
 - **RIS Center in NHAI**

Cont..

RIS – Use Potentials

❖ Planning

- Identification of Road stretches for up gradation
- Level of Up gradation
- Prioritization
- Budgeting

❖ Monitoring Performance Indicators

- Traffic
- Level of Service
- Maintenance Requirement
- Frequency of Maintenance
- Pavement Condition
- Bridge Management
- Road Furniture

❖ Evaluation

❖ Maintenance Policy

❖ Contract Management

❖ Asset Management & Valuation

❖ Black Spot Identification (Accident Management Module)

❖ Environmental Monitoring

Strategic Planning Outputs

❖ Funding Requirements

- Long term expenditure plans
- Allocation between budget heads:
 - ✓ Maintenance, Improvement, Development, etc.
- Allocation between Regions/sub-networks
 - ✓ Northern, Eastern, Southern, regions, etc.
 - ✓ Primary, Secondary, Tertiary, etc.

❖ Long term performance trends

- Average network condition
- Performance indicators

Way Forward

- ❖ **Extension of RIS to all Expressways, National Highways and State Highways and to all classes of Roads in the long range and expansion to include attachment of video / still photographs of asset condition**
- ❖ **Establishment of RIS Centers in NHAI / MORTH / State Governments**
- ❖ **Traffic, Pavement & Other Surveys – Application of modern technology**

Way Forward

- ❖ Institutional Arrangements at the Centre and in all States
- ❖ Training of Professionals
- ❖ Integration with Future technologies (GPS, ITS, etc.)
- ❖ Attachment of Video / Still Photographs of Asset Condition
- ❖ Standardization of System Features amongst similar systems
- ❖ Education of Stakeholders

Lessons Learnt

- ❖ Design & Development of RIS has given valuable experience and knowledge
- ❖ Important to share with other potential users
- ❖ Client – Consultant Partnership (PPP) approach would achieve best results.
- ❖ Extensive and High Value Road Assets are being created.

RIS is essential for preservation & upgradation of Road Assets.

thank you