16th World Meeting

LISBOA 2010

MAY 25/28

Sharing the road
16th World Meeting
International Road Federation

www.irf2010.com
Implementation of the Road Asset Management System in the Sindh province of Pakistan

Konsta Sirvio, Khalid Huda
BACKGROUND

- Works and Services Department (WSD) of the Government of Sindh is responsible for over 11,000 kms of roads
- Indirectly overseeing 17,000 kms of roads
- Over 1200 bridges and 10,000 culverts
PROJECT SETUP

In ADB funded project ”Sindh Road Sector Development Programme” (2005-2009) one component was development of Road Assets Management System (RAMS)

• The overall objectives of were initiating institutional reforms, establishing efficient resource management systems, preserving road assets, increasing road safety, improving governance, community development and environmental management.
SUCCESS FACTORS OF RAMS

- A) Technology
- B) People
- C) Processes
INFORMATION SYSTEMS

1. Requirement Analysis
2. System Design
3. System Development
4. System Testing and Implementation
5. System Use
6. System Disposition
## Leading Roles

<table>
<thead>
<tr>
<th>Requirement Analysis</th>
<th>Technology</th>
<th>People</th>
<th>Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement Analysis</td>
<td>A1</td>
<td>B1</td>
<td>C1</td>
</tr>
<tr>
<td>System Design</td>
<td>A2</td>
<td>B2</td>
<td>C2</td>
</tr>
<tr>
<td>System Development</td>
<td>A3</td>
<td>B3</td>
<td>C3</td>
</tr>
<tr>
<td>System Testing</td>
<td>A4</td>
<td>B4</td>
<td>C4</td>
</tr>
<tr>
<td>System Use</td>
<td>A5</td>
<td>B5</td>
<td>C5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Client</th>
<th>Consultant</th>
<th>Both</th>
</tr>
</thead>
</table>

1. REQUIREMENT ANALYSIS

- The requirements from the client's side were to establish a RMMS being as close to the previous system as possible, a separate Bridge Management System (BMS) due to increased data under collection and a proper GIS. The idea was to keep everything as simple as possible due to restricted resources and future financing.
2. SYSTEM DESIGN
3. SYSTEM DEVELOPMENT

The development was done in 3 stages within 1 year so that each time the current version was installed on the clients' computer. The team included a Bridge Expert, GIS Expert, Road Maintenance Expert and Road Asset Management System Expert and they contributed with an input between 1 to 3 months. Crucial issue in this stage was a close cooperation with the client and taking flexibly into consideration the arising needs.
4. SYSTEM TESTING AND IMPLEMENTATION

- System testing occurred in several steps. The first testing is done by the developers during the development so that the systems run and they produce the desired outcome.

- The final systems were installed and training was given to the end users at the end of the whole institutional development project.
SYSTEMS
5. SYSTEM USE (1)

- During the testing and implementation the systems were used for strategic analysis and maintenance programming of a 5-year maintenance plan for 9,850 km of roads, 1,237 bridges and 10,467 culverts. The data was collected from December 2007 to June 2008 and this activity was entirely outsourced to the private sector.
5. SYSTEM USE (2)

- It was noticed that around 2% of the surveyed roads were in very poor, 11% in poor, 46% in fair, 33% in good and 8% in very good condition, whilst the average IRI was 7.3 for the surveyed road network of 7479 km. Bridges were generally in better condition as 1% of the bridges were in very poor, 1 in poor, 6% in fair, 19% in good and 72% in very good condition and 1% were not evaluated.
5. SYSTEM USE (3)

According to the strategic analysis based on IRI value around 22 Billion Pakistani Rupees (360 Million US Dollars) is required to get the average IRI to 4.5 by the year 2015. For the 5-year maintenance plan around 6.3 Billion Pakistani Rupees should be invested in road maintenance and 1.5 Billion Pakistani Rupees in bridge and culvert maintenance. The surveyed network, maintenance plan and condition after maintenance were presented on maps produced by the GIS.
LESSONS LEARNT
(TECHNOLOGY)

- System testing takes long => project scheduling
- Survey data quality problems => training and clear instructions
- Simple is often more practical and off-the-shelf packages are not always the right solution
LESSONS LEARNT (PEOPLE)

• Inter-disciplinary team required
• Implementation quality and speed is greatly improved when the client already has skilled people committed to road asset management
LESSONS LEARNT (PROCESS)

• No sufficient funds for maintenance works
• Lack of commitment from Provincial Government to sponsor road related data collection and maintenance activities
• Lack of private sector involvement
• Lack of coordination
• Frequent transfers and postings of staff
• Road maintenance is not sexy enough