AWARDS SCHEME FOR EXEMPLARY IMPLEMENTATION OF e-GOVERNANCE INITIATIVES

NAME OF CATEGORY- 'INNOVATIVE USE OF GIS TECHNOLOGY IN e-GOVERNANCE'

1. Coverage – Geographical and Demographic :-

(i) Comprehensiveness of reach of delivery centres,

> The Software is being used by Punjab Pollution Control Board (PPCB), Health care facilities along with four Common Bio-Medical Waste Treatment Facilities in the state.

(ii) Number of delivery centers

> There are around 5000 delivery centers i.e. all Health care facilities, four Common Bio-Medical Waste Treatment Facilities and PPCB in the State.

(iii) Geographical

(a)National level – Number of State covered

1

(b) State/UT level- Number of District covered

22

(c) District level- Number of Blocks covered

142

Please give specific details:-

- Collection of Bio-Medical waste using Hand Held Terminal (HHT) with in-built Bar-Code scanner.

- Colour coded bags as per different categories of Bio-Medical waste are scanned after placing them on weighing balance. Manifest slip of collected waste is generated according to colour coding.

- Vehicle of the Common Bio-Medical Waste Treatment Facility is equipped with a GPS tracking device to track the route and location of the vehicle.

- The manifest so generated is available online within a time frame of 2-3 minutes for PPCB to track location of driver and quantity of waste lifted from that particular Health Care Facility.

- The manifest is handed over to the Health Care Facility for keeping record.

- The colour coding wise waste so lifted is again re-scanned at Common Bio-Medical Waste Treatment Facility (CBWTF) for matching the quantity lifted from Health Care Facility (HCF) and quantity which has been received at CBWTF before treatment of the waste with a view to ensure no en-route pilferage of waste takes place during the course of its

> movement from HCF to the Facility.
>
> - The weight matching report is also available for checking by PPCB.

(iv) Demographic spread (percentage of population covered)

> 100 % Health Care Facilities are being covered using this software.

2. Situation Before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project):

> Following problems were observed which triggered to conceptualize this project
> - There were problems that the source of waste collection data was not reliable as the existing system was manual based.
> - The accurate amount of waste generation, collection, and transportation by the 4 Common Bio-Medical Waste Treatment Facilities was not there due to manual based system.
> - There were problems that the location of the driver/picker of the facility cannot be tracked at the point of filling/recording manual slips.
> - The waste collection report was taking long time in compiling and moreover the information was not authentic.
> - There was no way to detect pilferage of Bio-Medical Waste.

3. **Scope of Services** (Relevance of application for e-governance, extent to which service is delivered through GIS)

> - Collection of Bio-Medical Waste from Health Care Facilities can be checked online on real time basis after few minutes.
> - Also each vehicle of the Common Bio-Medical Waste Treatment Facility has GPS tracking system and thus its location can be tracked.
> - Data of location of vehicle & collection data through software can be co-related.

4. Strategy Adopted

(i) The details of base line study done,

> The baseline study was done on the
> - Amount of waste generation, collection, and transportation by the 4 Common Bio-Medical Waste Treatment Facilities in the State.
> - Analyzation of source of data.
> - Tracking of waste generation from Health Care Facilities & its transportation to the Common Bio-Medical Waste Treatment Facility for final disposal within prescribed time period.
> - Amount of time and manpower consumption in compiling Waste

Collection Reports in different formats.

(ii) Problems identified,

There were problems that the source of data was not reliable as the existing system was manual based. The accurate amount of waste generation, collection, and transportation by the 4 Common Bio-Medical Waste Treatment Facilities was not there. The location of the driver/picker of the facility could not be tracked at the point of filling/recording manual slips. The waste collection report was taking long time in compiling and moreover the information was not authentic.

(iii) Roll out/implementation model,

A Bar-Code Software which can be co-related with the GPS data was developed named **"First"** for collection, tracking and management of bio-medical waste on real time basis.

(iv) Communication and dissemination strategy and approach used.):

The PPCB is the prescribed authority for the effective implementation of the Bio-Medical Waste (Management & Handling) Rules, 1998 and directions were issued to all Health care facilities for compulsory use of the Software by providing Bar-Code on each disposal bag.

5. **Technology Platform used-**

(i) Description,

.Net C#, asp .Net, php, SQL, embedded C, MYSQL-5.5 and RDLC reports.

(ii) Interoperability

Web Services, listener and RDLC

(iii) Security concerns

- Authentication & Authorization for the users
- Data Collected is converted to Encrypted form
- Loading of new page containing dynamic content is encrypted.
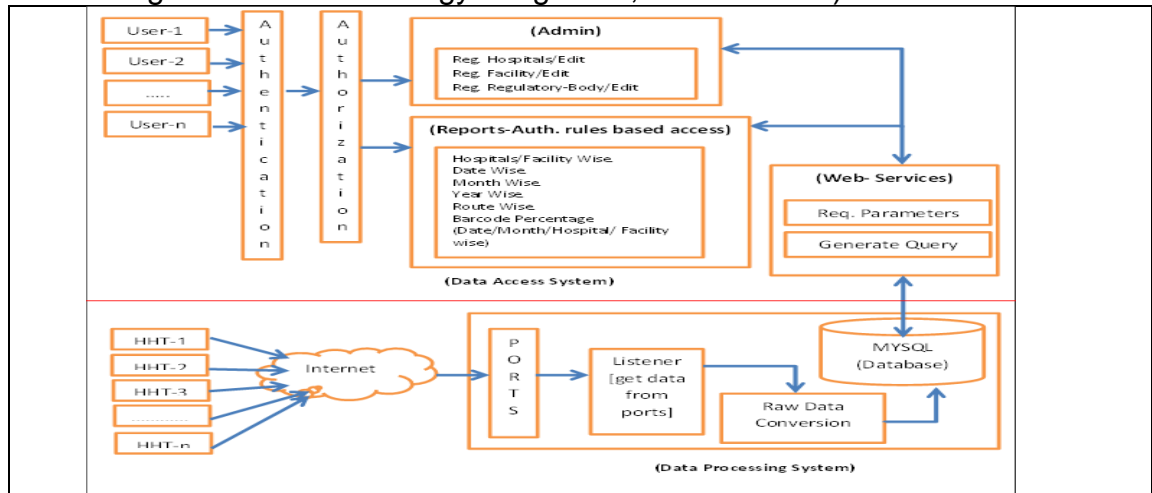
(iv) Any issue with the technology used

No issue

(v) Service level Agreements(SLAs) (Give details about presence of SLA, whether documented, whether referred etc. #)

> Yes, SLAs has been signed between PPCB & Software Company M/s Butterfly Softwares LLP and documented.

6. **Demonstrate Innovation in use of GIS Technology for e-Gov** (Give details of technology used - Architecture, Platform, Open Source tools, Front-end development, Remote Sensing & Mobile Technology integration, SMS & email)

- Net Framework Platform was used to build the Software.
- MYSQL Database is used as Open Source Tool.
- GPRS is used to send data to the server.
- SQL Server 2008 is used to run back end applications and receive data from ports
- Android based Hand Held Terminal is developed for auto-enhancement.
- Auto generated emails are being sent to registered users.

7. **Interoperability & security** (Give details about ability to leverage sharing amongst stakeholders in accordance with map policy, Token services, SSL)

> All users have been granted access to the federation metadata. The federation metadata contains information about the public key of the token signing certificate, the endpoints that are exposed by the STS, and what claims are issued.

8. **Scalability** (Give details with respect to technology (Platform, Hardware & software) & data (high and low Geographical and Demographic scale))

> **Technology**
> - .Net framework
> - Hand Held Terminal with inbuilt scanner & printer

- Android & Embedded based systems

Data

- Some of the reports are mentioned below:
  - ➢ Route wise
  - ➢ Client wise
  - ➢ District wise
  - ➢ Facility wise
  - ➢ Year wise
  - ➢ Month wise
  - ➢ Date wise
  - ➢ 72 hours zero waste
  - ➢ 48 hours no collection
  - ➢ Daily missing HCFs

9. **Sustainability & adaptability** (Give details w.r.t architecture/ technology, updation of spatial data, training, human resource, research, local language)

- ➢ The Software is user friendly and Health care facilities (HCFs) have been directed to provide bar-Code on each bag for disposal of Bio-Medical Waste.
- ➢ The HCFs can check their disposal data after obtaining membership on the software on daily/monthly/annual basis.
- ➢ The drivers & other staff of the facility were provided training in English and Punjabi through multiple training sessions for using Hand Held Terminal for scanning of Bar-Code and use of Software.

10. **Adaptability Analysis**

   (i) Measures to ensure adaptability and scalability

   - ➢ All the Health care facilities were directed to provide Bar-Code Sticker on the Color Coded bags.
   - ➢ All the Common Bio-Medical Waste Treatment Facilities were asked to collect waste using Hand Held Terminals only for effective implementation of Bar Code System.

   (ii) Measures to ensure reliability

   PPCB's Regional Offices & EPA Office monitors the collection on regular basis.

   (iii) Restrictions, if any, in replication and or scalability

   The Software data for whole State is available to regulatory body i.e. PPCB only. However, the Health Care facilities and Common Bio-

Medical Waste Treatment Facilities operators have access to their own respective data and are restricted to access data of other facilities.

(iv) Risk Analysis

Operational Risks:
- Failure to address priority conflicts
- Failure to resolve the responsibilities
- Insufficient resources
- No proper subject training
- No resource planning
- No communication in team.

Technical risks:
- Continuous changing requirements
- No advanced technology available or the existing technology is in initial stages.
- Product is complex to implement.
- Difficult project modules integration.

Programmatic Risks:
- Government rule changes.

11. **Accountability** (Give details in regard to roles, responsibility, facility for audit trails)

Roles have been provided to four user types i.e. Regulatory Bodies, Admin, Facilities & Members.

Members: Accessibility has been provided to view its own reports and keep record.

Facilities: Accessibility has been provided to view the reports of all the respective members and monitor its data.

Regulatory Bodies: Accessibility has been provided to view the reports of all the Facilities and monitor the proper use of software.

Admin: Accessibility has been provided to create new facilities, members, update password of the members and facilities and informing regulatory bodies about unscrupulous activities.

Facility for Audit Trials

 Reports based on route wise, client wise, district wise, facility wise, year wise, month wise, and date wise have been provided in the Software.

12. **New Models of service delivery** (Give details about Public/ private/ NGO/ academic linkages/ citizens)
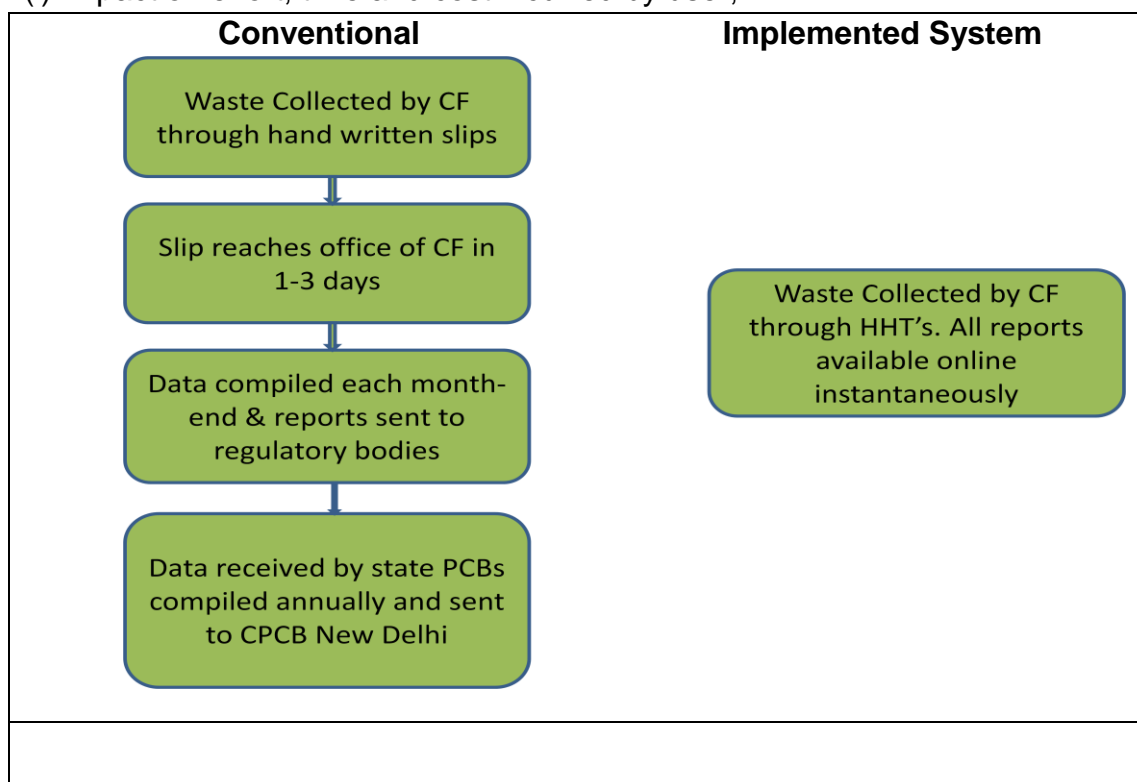
Public- All Health Care Facilities in the State. Govt.- PPCB Private- Four Common Bio-Medical Waste Treatment Facilities

13. Citizen Centricity (Give specific details on the following#)

(i) Impact on effort, time and cost incurred by user,

Conventional	Implemented System
Waste Collected by CF through hand written slips Slip reaches office of CF in 1-3 days Data compiled each month-end & reports sent to regulatory bodies Data received by state PCBs compiled annually and sent to CPCB New Delhi	Waste Collected by CF through HHT's. All reports available online instantaneously

(ii) Feedback/grievance redressal mechanism,

Facilities contact the Software Company for any grievance redressal.

 (iii) Audit Trails,

As per requirement, the Health care facility can obtain Annual data of Bio-Medical waste from Software for filing Annual return under Bio-Medical Waste (Management & Handling) Rules, 1998.

(iv) Interactive platform for service delivery,

Web & Window Based

(v) Stakeholder consultation

Regular consultation is being obtained from Stakeholders for necessary updations/modifications in the reports.

14. Efficiency Enhancement (Give specific details about the following #)

    (i) Volume of transactions processed,

Approx. 3150000 nos.

    (ii) Coping with transaction volume growth

Transaction volume growth has a significant effect on the database. 2-3 personals have to constantly monitor the data coming in to the server.

    (iii) Time taken to process transactions,

2 Years

    (iv) Accuracy of output,

99.99%

    (v) Number of delays in service delivery

Nil

15. User convenience (Give specific details about the followings #)

    (i) Service delivery channels (Web, email, SMS etc.)

Web & E-mail Based

    (ii) Completeness of information provided to the users,

Based on roles of the users. Roles have been provided to four user types i.e. Regulatory Bodies, Admin, Facilities & Members.

    (iii) Accessibility (Time Window),

Standby time of 5 minutes after login.

    (iv) Distance required to travel to Access Points

System can be accessed from anywhere using internet connection.

    (v) Facility for online/offline download and online submission of forms,

Facility has been provided to each user for downloading reports online.

    (vi) status tracking

- Reports based on route wise, client wise, district wise, facility wise, year wise, month wise, date wise, nil waste report and 72 hours zero waste has been provided in the Software. This data is tracked online by Punjab Pollution Control Board to check any violation.
- Status can be tracked through live support on the website or by

contacting the Software Company through email or by phone.

16. **Result Achieved/ Value Delivered** to the beneficiary of the project-(share the results, matrices, key learning's, feedback and stakeholders statements that show a positive difference is being made etc):

(i) To organization

This system allows online monitoring for the Punjab Pollution Control Board, daily tracking the Bio-Medical Waste generation and collection. Through the means of this software, it has become possible to identify the Health care facilities which are skipped by the Common Bio-Medical Waste Treatment Facilities from the mandatory daily collection. It has become possible for the facilities to ensure that 100% waste collected reaches their facility for treatment.

(ii) To citizen

This system allows online monitoring for the Health Care Facilities to daily track the Bio-Medical Waste generation, collection and keeping record to be furnished with Annual Reports.

(iii) Other stakeholders

This system allows online monitoring for the Common Bio-Medical Waste Treatment Facilities to daily track the Bio-Medical Waste generation and collection.

17. Extent to which the Objective of the Project is fulfilled-(benefit to the target audience i.e.G2G, G2C, G2B, G2E or any other, size and category of population/stakeholder benefited etc):

The target of the project has almost been achieved to its full extent except some problems in Hand Held Terminals. The target audience in this case is G2C.

18. Comparative Analysis of earlier Vs new system with respect to the BPR, Change Management, Outcome/benefit, Change in legal system, rules and regulations

Shortcomings	Solutions
• No Provision to get updated list of occupiers.	• 24x7 access to the updated list of occupiers & bed strength.
• Regulatory body puts time & efforts for collection and compilation of data.	• Waste collected data uploaded to the server within minutes of collection.
• Manual compilation of annual reports by state PCB's before sending to CPCB New Delhi.	• Data compilation and annual reports generated automatically.

• Hand written waste slips could be manipulated.	• HHT generated slips give tamper-proof time, date & weight, and even location.
• Hand Written slips had to be preserved by occupiers for entire year.	• No need to preserve slips as all data is always available online.
• Violation of rules regarding non-collection of waste beyond stipulated time (48 hrs) could not be detected.	• Online daily violation report generated for overdue collection.
• No provision for managing authorizations to occupiers.	• Applications by occupiers and issue/renewals of authorizations by regulatory body can be facilitated online.
• Vehicles had to be tracked on field by officers of regulatory body to check collection.	• Single officer can monitor online minute by minute activity of any number of vehicles.
• Discrepancy in waste collected and reaching treatment facilities could not be known	• Detection of pilferage of recyclable waste, if any, is reported while re-scanning.

19. Other distinctive features/ accomplishments of the project:

The skipping of waste collection from HCEs were tracked & monitored and brought under control through remedial legal action. Hence the complaints of around 5000 health Care facilities were brought to nil.

This is just an indicative list of indicators. Applicant can add on more information based on suitability of the project nominated.