Contents

Executive Summary

A large number of initiatives are being undertaken at Center, State and Local Levels to foster use of Digital Technologies to in the context of Smart Cities. To make Cities in India Smart, we need an integrated approach to modernize city infrastructure, and leverage technology to improve efficiency and capacity of city services. Governance reforms in transparency, efficiency, effectiveness, service predictability, citizen convenience and accountability form a key backbone for the smarter cities. Technology is a key enabler for these reforms.

Given the renewed push as a part of the Smart City and Amrut, a large number of additional cities are expected to embrace Municipal eGovernance. Over the years, there has been a proliferation of technology solutions across different ULBs and will further increase in the years ahead.

Currently Municipal eGovernance standards do not exist that can make these systems interoperable as well as bring a certain quality standard in the tools, features and functionalities to these Municipal eGovernance modules.

The objective of this paper is to spur a debate and discussion amongst System Integrators, eGovernance Product companies, consulting agencies, academia and others having experience and interest in the Municipal eGovernance sector, leading to formulation of standards in use of "Digital Technologies" in the context of ULBs.

This will have the benefit of enabling the ULB's to pick the best solution for individual modules based on their needs; foster competition; enable third parties to build solutions based on the available standards; and provide information across ULB's in a common format that will enable data to be analyzed and reported in a common format.

The **objectives** of this initiative would be to develop:

- A baseline set of functionalities (core) that need to be part of any Digital Smart City eGovernance Solution being adopted for efficient functioning of a ULB. (Some examples but not limited to Property Tax, Public Grievance Redressal, Financial Accounting, etc.)
- Define standards for Application Programme Interfaces (APIs) relevant to the above baseline functionalities. Make these Open APIs publicly available to foster the development of municipal modules and allied products such as mobile applications, GIS applications by Center/State/Local governments, as well as NGOs and private sector entities.

Municipal Services

'City'zens interact with the Municipalities for their day to day governance needs and it affects their quality of life the most.

Essential Solutions needed by the Municipality

Public Grievance & Redressal (PGR)

To function smoothly and ensure that the citizens do not face problems in the daily lives, the municipality needs to listen to the problems being faced by them and resolve them efficiently and effectively. This is fundamental to the satisfied citizens of a municipality.

PGR is an essential system that helps the municipality to achieve the above objective.

Property Tax Management System

Financial Management System

Asset Management System

License Management System

Birth and Death Information System

Building Plan Approval

Stores & Purchasing

Water Management

Public Works Management System

Public Grievance & Redressal System

Open features
- Register Complaint
- Get Complaint Details for a given complaint number
- Update Complaint

End Points

Endpoint	HTTP Method	Description
/complainttypes	GET	Gets the list of complaint types serviced by the city.
/complaint	POST	Submit a Complaints Registration Request
/complaint/{complaintnumber}	GET	Get complaint Details For a Specific complaint number
/compliant/{complaintnumber}	POST	Update an existing complaint

Example for each of the end point

Get the list of Complaint Types
Returns the list of category of complaint types serviced by the city.

Example
..../complainttypes

Success Message:

```
[
  {
   "code":"001",
   "name":"Potholes on the road",
   "description":"There are potholes on the road causing inconvenience to the citizen."
  },
  {
   "code":"002",
   "name":"Street Lights not working",
   "description":"The street light is not working."
```

```
  },
  {
    "code":"003",
    "name":"Garbage on the street",
    "description":"The garbage is lying on the street"
  }
]
```

Post complaint

Register a complaint with the city for a selected service type

Example

```
[
{
   "citizen": {
      "name": "Shakthi Vaishnavi",
      "mobile": "123456789",
      "email": "abcd@gmail.com"
   },
   "complaint": {
      "code": "001",
      "location": {
         "lat": 12.9797732,
         "long": 77.6402478
      }
   },
   "description": "There is a huge pile of garden waste placed at this junction. The lorry has not come for
      the past few weeks."
}
]
```

Success Message:

The /complaints contains the following response:-

```
[
{
      "complaintNumber": "ABZ995",
    "timeToResolve": "15 March 2015 23:59:59",
    "message" : "Thank you for your submission. We apologize for the inconvenience caused to you. We
    will resolve the complaint by 15 March 2015."
}
]
```

Failure Message:

```
[
{
      message : "Mandatory Field: Location missing for the complaint type: Removal of garbage. "
}
```

]

Schema:
```
{
  "$schema": "http://json-schema.org/draft-03/schema#",
  "name": "complaint",
  "type": "object",
  "properties": {
    "citizen": {
      "type": "object",
      "properties": {
        "name": {
          "type": "string",
          "description": "Complainant Name",
          "required": true
        },
        "mobile": {
          "type": "string",
          "description": "Complainant Mobile no",
          "required": true
        },
        "email": {
          "type": "string",
          "description": "Complainant email id",
          "required": false
        }
      }
    },
    "complaint": {
      "code": "object",
      "properties": {
        "type": {
          "type": "string",
          "description": "Complaint type",
          "required": false
        },
        "location": {
          "type": "object",
          "properties": {
            "lat": {
              "type": "decimal"
            },
            "long": {
              "type": "decimal"
            },
            "addressString" {
            "type": "string",
              "description": "location of the complaint",
```

```
              "required": true
            }
         },
         "description": {
            "type": "string",
            "description": "Complaint Details",
            "required": true
         }
      }
   }   } }
```

ToDo

1. Images of the complaint to be incorporated in the post request.

Get a complaint
Post:

Example:
/complaints/ABZ995

Success Message:
```
[
{
   "citizen": {
      "name": "Shakthi Vaishnavi",
      "mobile": "123456789",
      "email": "abcd@gmail.com"
   },
   "complaint": {
      "number" : "ABZ995",
      "code": "003",
      "complaintDescription": "Removal of garbage",
      "complainttime": "10 March 2015 16:30:23",
      "timeToResolve": "15 March 2015 23:59:59",
      "status": "Redressed",
      "lastUpdateOn": "15 March 2015 15:35:34" ,
      "redressedOn": "15 March 2015 15:35:34" ,
      "updateBy": "Ramaswamy, Health Office Zone 4",
       "comments": "The garbage has been removed. The contractor has been instructed to pick up the
garbage regularly",
      "location": {
         "lat": 12.9797732,
         "long": 77.6402478,
          "Zone" : "Zone 4",
          "Ward" : "Ward 29",
          "Street": "Indira Nagar"
      },
   "department" : "Solid Waste Management"
```

```
    }
  }
]
```

Failure Message
```
{
        message : "Complaint Does not Exist with requested Complaint Number "
}
```

Open Data for the PGR System

All the complaints in the system will be 'anonymized' by stripping all the personal information identifying a complaint and put out in the open data format as described below. This will help the independent citizens, media and academicians & researchers to download the data, perform analysis and do it consistently for the ULB's. This will also help in analyzing data across ULB's.

```
[
  "complaint": {
      "code": "003",
      "complaintDescription": "Removal of garbage",
      "complainttime": "10 March 2015 16:30:23",
      "timeToResolve": "15 March 2015 23:59:59",
      "status": "Redressed",
      "lastUpdateOn": "15 March 2015 15:35:34" ,
      "redressedOn": "15 March 2015 15:35:34"
      "location": {
         "lat": 12.9797732,
         "long": 77.6402478,
      "Zone" : "Zone 4",
      "Ward" : "Ward 29",
      "Street": "Indira Nagar"
      },
  "department" : "Solid Waste Management"
   }
}
]
```

Property Tax Management System

Open features
- Create New Property
- Get Property Details
- Get Property Bill
- Make Payment
- Get Receipt

Webservice Endpoints

Endpoint	HTTP Method	Description
/property	POST	Creates new property
/property/{propertyid}	GET	Get the property particulars for a given property identified by propertyid
/property/bill/{propertyid}	GET	Get the Property bill for for a given property identified by propertyid
/property/payment/{propertyid}&{bilnumber}	POST	Make a payment for a given property and bill number
/property/receipt/{receipt}	GET	Get the receipt details

Example for each of the end point

Open Data

Property Number:

Property Group:

Property Sub group:

Area:

Locality:

Ward:

Street:

Property Type:

Current tax:

Current tax due:

Total arrears due:

Advance paid:

Total balance:

Last paid installment and date:

Open Data for the Public works System

Open features of a Public Works System
- Suggest Work
- View Work for a given Project Code or Work Order
- Post Supplier Bill

Webservice Endpoints for the Public works System

Open Data for Public Works System
Asset:

- Asset Code
- Asset Name
- Lat Long:

Work Details:

- Work Name:
- Work Description
- Project Code:
- Work Estimate Value:
- Estimate Date:
- Nature of work: Capital works – new asset, MPLADS, MPACDS
- Type of work: Roads, Foot path, Storm water drain
- Financing source: Own sources, Loans, Grants, Deposit works
- Scheme:
- Sub scheme:
- Work Order Number
- Work Order Date
- Work Order Amount
- Contract Period
- Contractor Name
- Contractor Code
- Current status: Estimate approved, Tendered, work order issued, Work in Progress, Work Completed
- % of work completed:
- Site Handed over date
- Work Commencement Date
- Work completion date:

- Payment released so far:
- Defect Liability period (in years)

Financial Management System

Open features of a Financial Management System

End Points for a Financial Management System

Open Data for the Financial Management System

Voucher information:

General ledger (based on voucher header)

Financial reports:

Trial balance report

Income and expenditure report

Balance sheet

Budgeting report – budget for each combination with so far utilized amount and balance available

Building Plan Approval

Open features

End Points

Expose plan submission number and check the status of application

Expose plan submission number and collect the challan amount

Expose plan submission number and print the building permit order.

Open Data

Application details:

Application date

Plan submission number

Property number

Zone

Ward

Area

Street

Survey Number

Application status:

Site inspection scheduled date

Site inspection date

Letter to party number

Letter to party date

Letter to party sent date

Letter to party reply received date

Letter to CMDA created date

Letter to CMDA sent date

Letter to CMDA reply received date

Challan notice sent date

Signature date

Order preparation date

Order issued to the applicant date

Plan permit approval number

Building permit approval number

Building approval order date

Unconsidered order prepared date

Unconsidered order approved date

Unconsidered order issued date

Asset management System

Open Features

End Points
Search and view an asset

Open Data

Asset Information:

Asset code

Asset Name

Category

Zone

Ward

Asset status

Asset Value

Stores & Purchasing

Open Features

End Points

Open data

Material indent:

Receipt indent

Receipt indent created date

Receipt indent approved date

Quotation and order:

Quotation information

Purchase order number

Budget allocated / so far utilized and balance

Material receipt and issue:

IMRN number

IMRN date

Issue indent created date

Issue indent approved date

Material issue number

Material issue date

Birth and Death

Open Features

End Points

Birth registration

Death registration

Status of the application by application number

Status of application for adding the name in the certificate

Open data

Date wise birth rate with sex and hospital information

Date wise death rate with sex and hospital information

Information for cause of death (immediate and antecedent cause):

Manner of death: Natural/Accident/Suicide:

Was associated to pregnancy (If she delivered):

Age of the person deceased:

Location of birth and death:

Zone

Ward

Area

Birth and death application view and status

License management system

Open Features

End Points

Open data

Application date

Zone

Ward

Area

Street

Trade name

Building type

Property tax number

PTNAN Number

Trade Area/Weight of premises

Motor installed

Objection raised

Status of application :

Status of license : Renewed /Expired