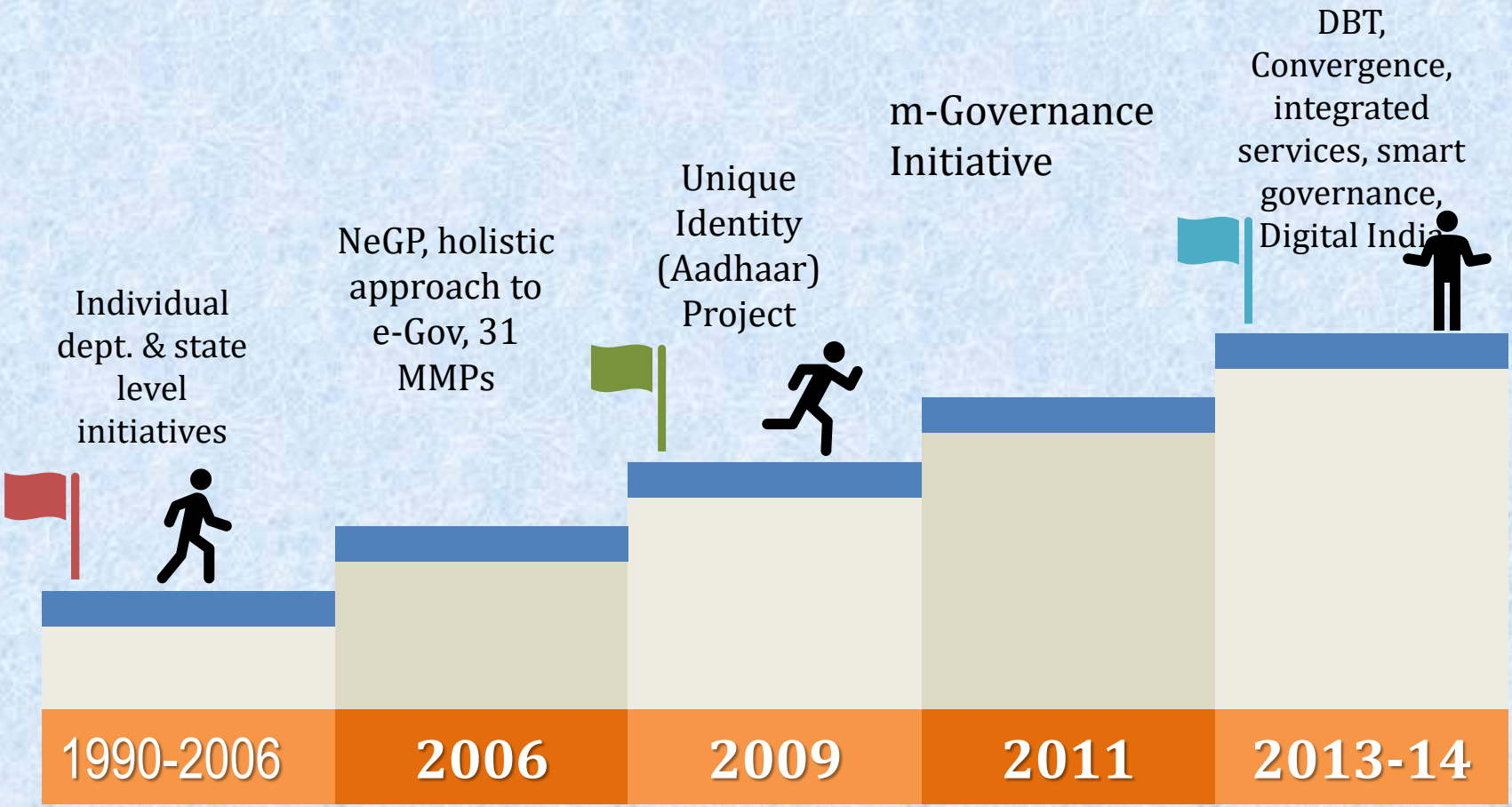
M-Governance

Evolution of e-Governance in India



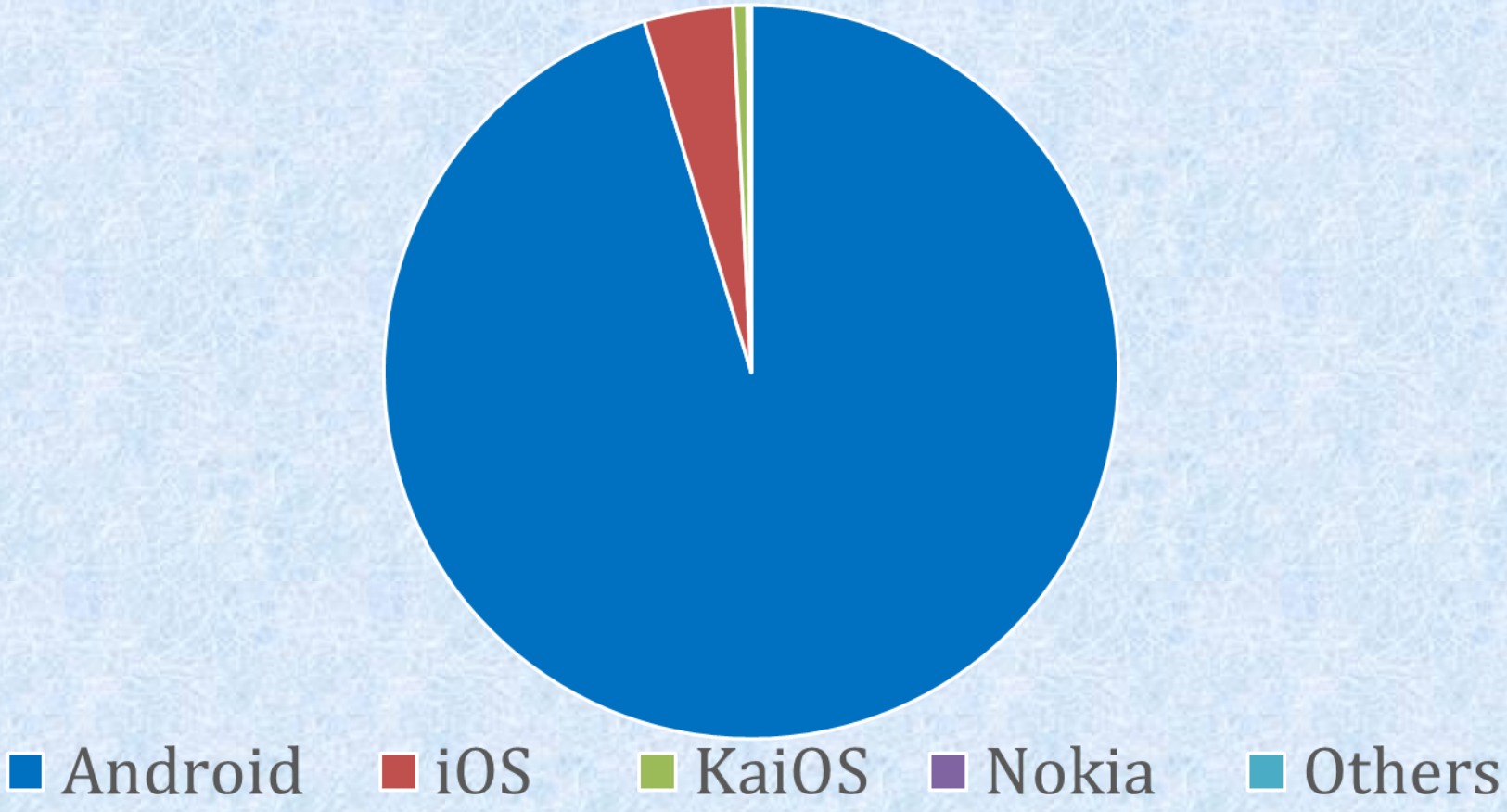
Mobile Phone: Emerging Channel for Service Delivery

Low-end mobile phones are often referred to as feature phones, and offer basic telephony.

Handsets with more advanced computing ability through the use of native software applications became known as smart phones

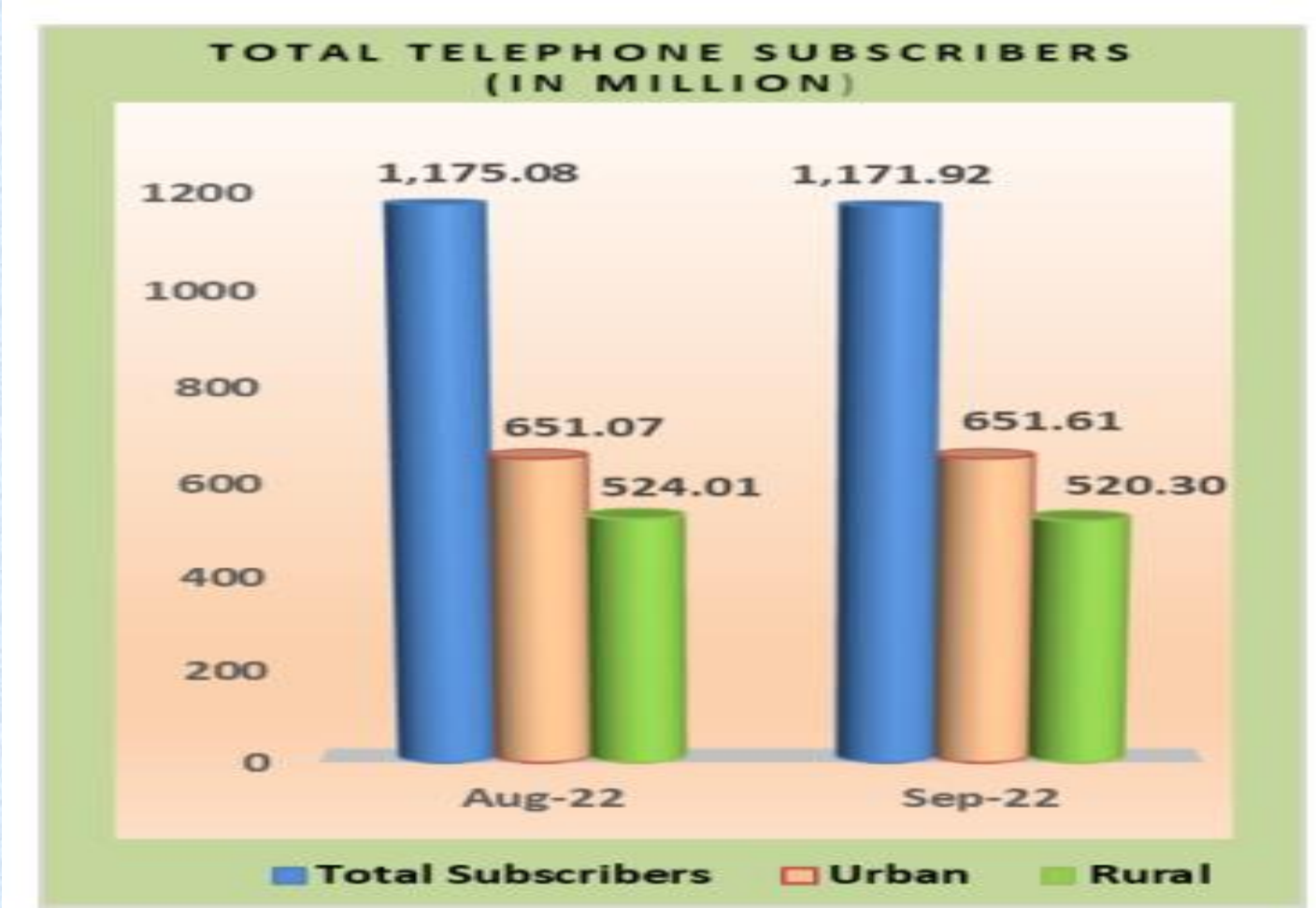
Available OS

Mobile Platform Market share in India



Background

The number of telephone subscribers in India decreased from 1,175.08 million at the end of August-22



Urban v/s Rural Subscribers

Vision Statement

"Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man".

INTRODUCTION TO M-GOVERNANCE

m-Governance is the use of mobile or wireless to improve Governance service and information "anytime, anywhere". M-Governance is not a replacement for e-Governance, rather it complements e-Governance. m-Governance takes electronic services and makes them available via mobile technologies using devices such as mobile phones

m-Governance framework of Government

The Ministry of Electronics and Information Technology developed and notified the framework for Mobile Governance in February, 2012.

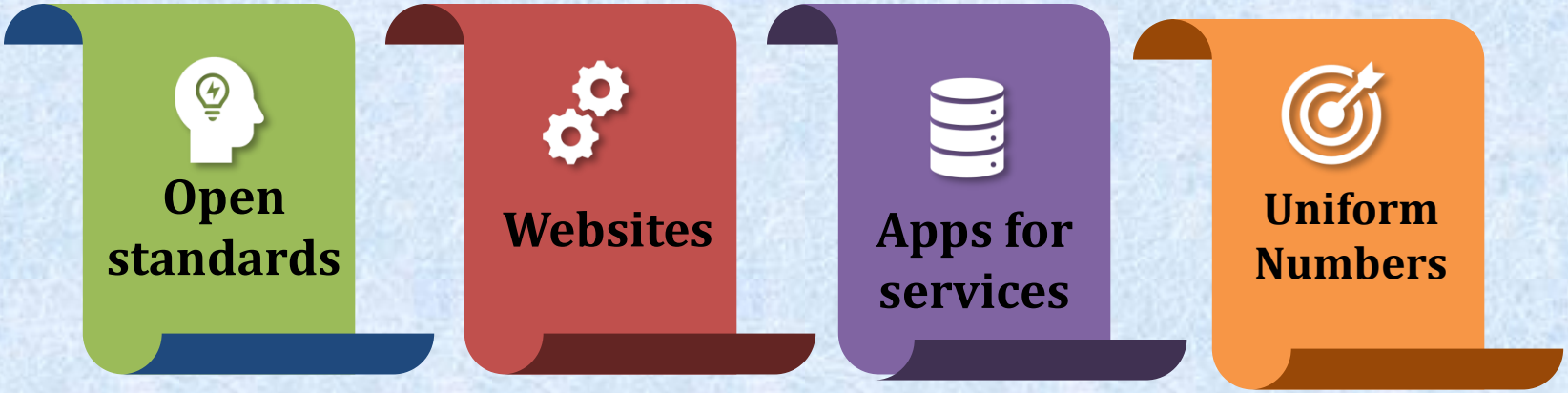
Aims to utilize the massive reach of mobile phones and harness the potential of mobile applications to enable easy and round-the-clock access to public services, especially in the rural areas .

- Web sites of all Government Departments and Agencies shall be made mobile-compliant, using the "One Web" approach.
- Open standards shall be adopted for mobile applications for ensuring the inter-operability of applications across various operating systems and devices as per the Government Policy on Open Standards for e-Governance.
- Uniform/ single pre-designated numbers (long and short codes) shall be used for mobile-based services to ensure convenience.
- All Government Departments and Agencies shall develop and deploy mobile applications for providing all their public services through mobile devices to the extent feasible on the mobile platform. They shall also specify the service levels for such services.

Objectives of m-Governance

m-Governance in India

Main Measures taken by MeitY



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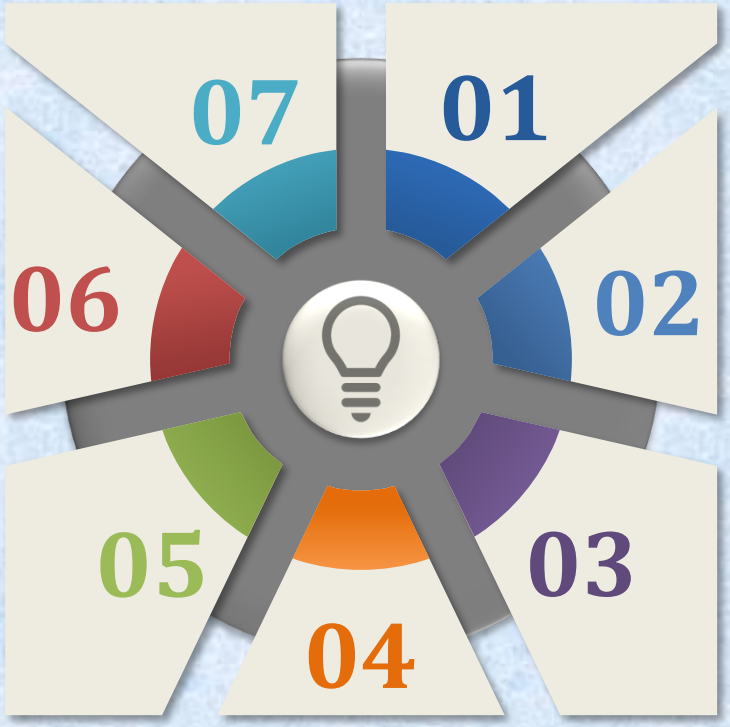
Uniform/ single pre-designated numbers (long and short codes) shall be used for mobile-based services to ensure convenience

Methods of Data collection

FIXED FORMAT SMS BASED

JAVA MICRO EDITION PLATFORM (J2ME) APPLICATION BASED

MOBILE OPERATING SYSTEM BASED



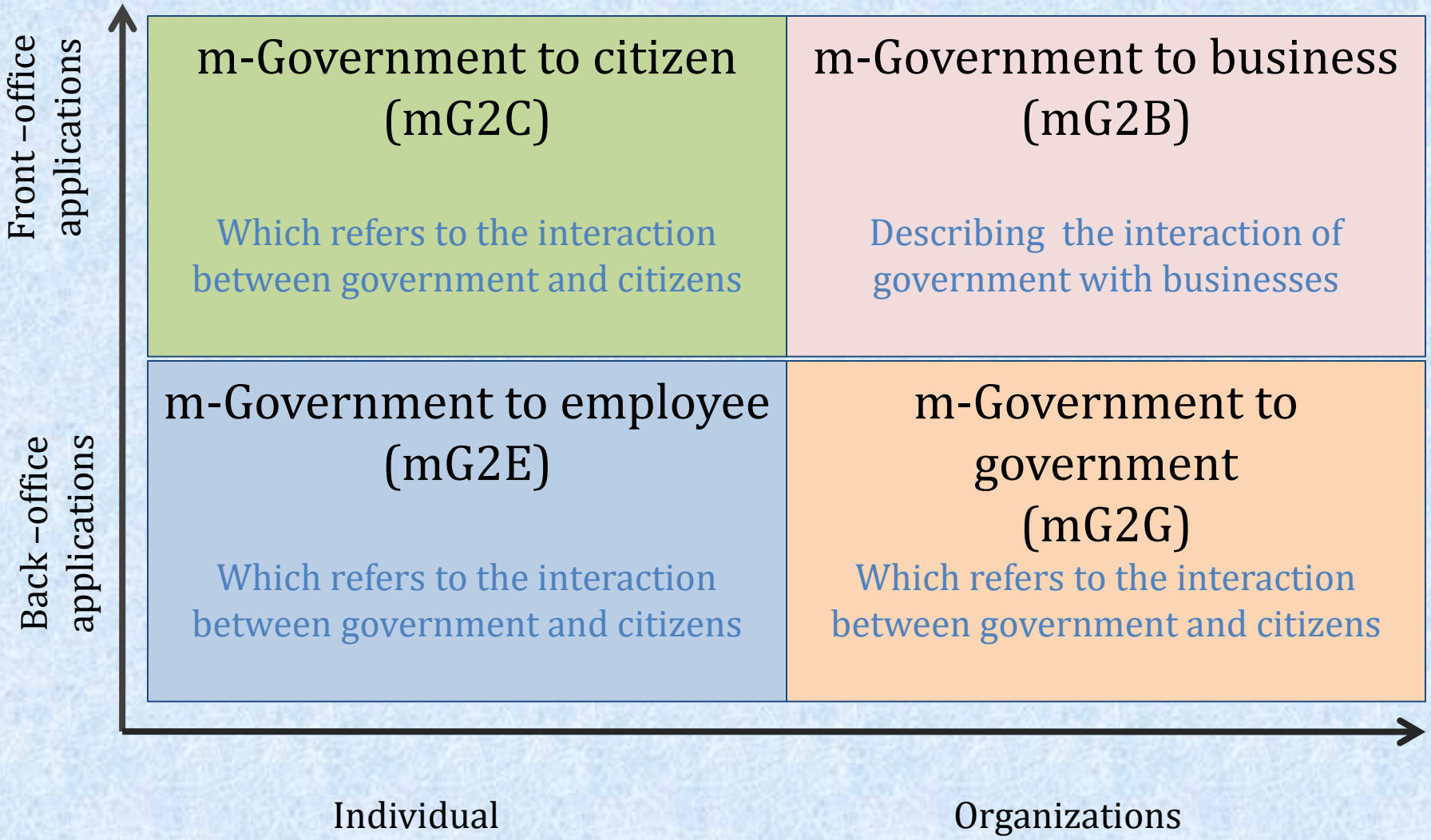
USSD BASED FORMS

WIRELESS INTERNET GATEWAY (WIG) BASED

VOICE-BASED

WEB-BASED

Delivery models of m-Governance



Introduction to Mobile Seva

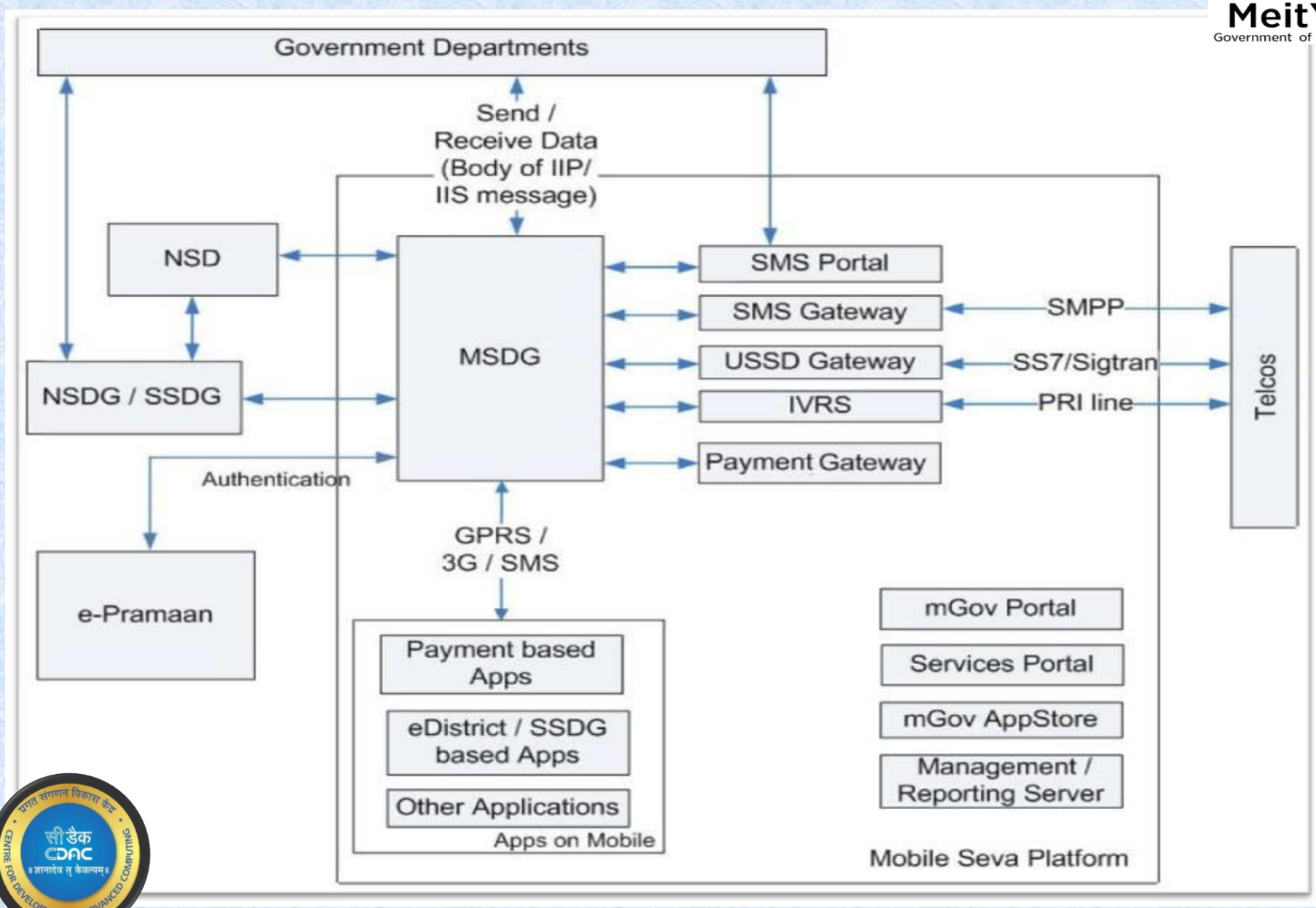
"Mobile Seva is an innovative initiative aimed at mainstreaming mobile governance in the country. It provides an integrated whole-of-government platform for all Government departments and agencies in the country for delivery of public services to citizens and businesses over mobile devices "

Value Proposition

Services Offerings

Mobile Service Delivery Gateway (MSDG) forms the basis for the Mobile Seva Platform.
The following services are offered by Mobile Seva:

SMS Gateway	Mobile App Store	Mobile Payment systems	Unstructured Supplementary Service Data (USSD)	Interactive voice response Service (IVRS) Inbound Call Outbound Call	Planned Channels Location based services (LBS) Cell broadcasting MMS


Government Departments
Send / Receive Data (Body of IIP/ IIS message)
NSD
NSDG / SSDG
MSDG
SMS Portal
SMS Gateway
USSD Gateway
IVRS
Payment Gateway
SMPP
SS7/Sigtran
PRI line
Telcos
Authentication
e-Pramaan
GPRS / 3G / SMS
Payment based Apps
eDistrict / SSDG based Apps
Other Applications
Apps on Mobile
mGov Portal
Services Portal
mGov AppStore
Management / Reporting Server
Mobile Seva Platform

Delivery Channels

Short Messaging Service (SMS)

- Short Messaging Service (SMS) is a text messaging service component of phone, web, or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between mobile devices.

- It needs little bandwidth
- works well in poor signal areas
- easy and inexpensive to implement
- Users need only a mobile phone
- Localization can also be easily accomplished on SMS
- providing a range of services in different areas like submission of forms, alerts and notifications ,certificates, pensions, land records, etc
- The text limit of current SMS for English text is 160 characters
- in **Unicode** a single message has **70 characters limit**

Types of SMS Based Services

Informational

Pure information based services aimed at providing generic or specific information to the users about various activities

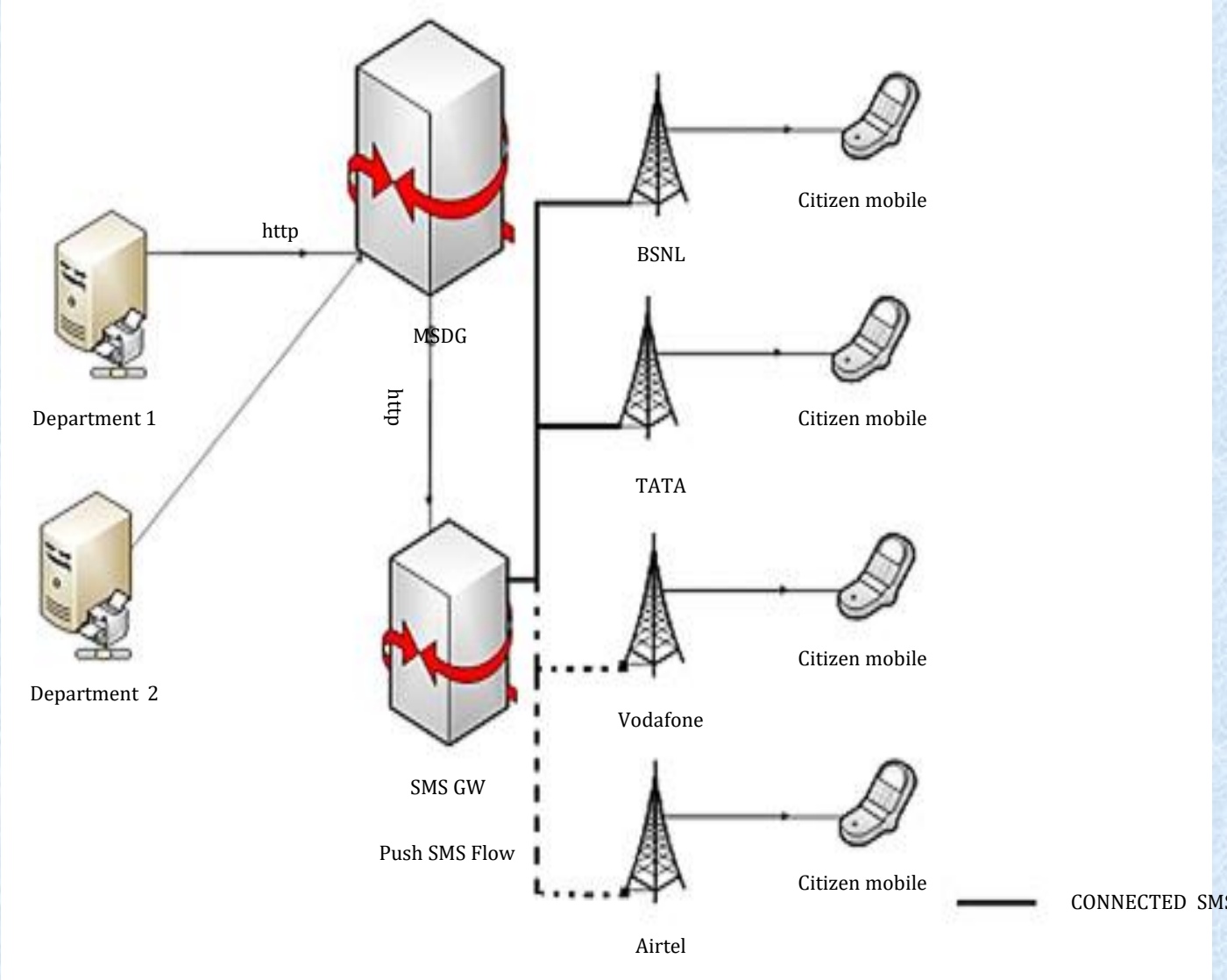
Interactional

Aimed at user requests for the status of a particular transaction or activity

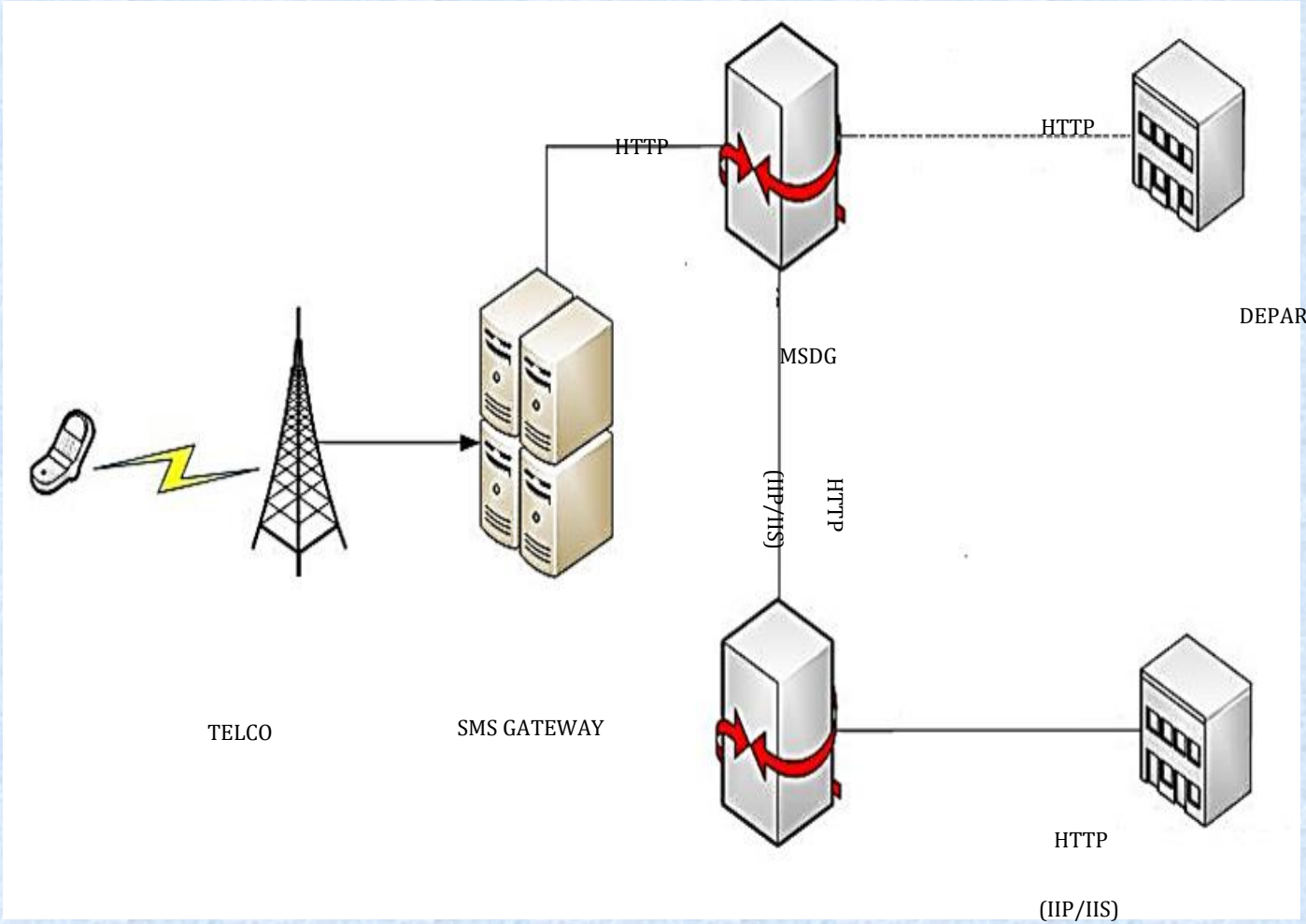
Transactional

Ultimately result in a transaction based on the request from the user with or without payment of a fee

PUSH SMS Service: Flow



PULL SMS Service: Flow



SMS Based Service's standards

01

- The range of protocols supported should allow the solution to be deployed on digital wireless networks based on GSM, IS-41 (D-AMPS, CDMA) and TDMA standards. There are next generation wireless systems like LTE and LTE Advanced

02

- Using SMS Gateway, there should be provision for interchange messages with other systems such as Internet email (Capable of supporting POP3, IMAP4, SMTP (with or without SSL)), the web etc

Distributed ledger technology (DLT)

Distributed ledger technology (DLT) is a digital system for keeping and managing the record of sender IDs and template. TRAI has introduced an advanced extension of the Blockchain – Distributed Ledger Technology (DLT) to prevent spam

- **Principal Entity -**It's the organization who's sending SMS to the customers. As per the updated TRAI rules every entity has to be registered with the telecom operators in the DLT platform.
- **Header (Sender ID) registration**: Messages are classified into promotional, transactional which are registered, and every header gets a unique Header ID that is shared across other DLT platforms seamlessly.
- **Content Template Registration**: Entities are required to register all their templates on the DLT system. Every template gets a unique Template ID that is shared across other DLT platforms uniformly.

Machine-to-Machine (**M2M**)

- **AIS-140**: Intelligent Transportation Systems (ITS)

Multimedia Messaging Service (MMS)

Multimedia Messaging Service, or MMS, refers to a way of sending messages that include multimedia content to and from mobile phones. It is supported by GPRS enabled and newer Devices .

- MMS is implemented using a combination of WAP and SMS technologies
- MMS enables multimedia messages containing content such as pictures, graphics, music, images, and ringtones
- The MMS standard, based on 3GPP & WAP Forum standards, includes :

01	02	03
• An MMS mail client on the device	• a WAP - gateway for sending & receiving messages	• Multimedia Messaging Service Center (MMSC) for storing, trans-coding and relaying messages

Termination of MMS Service

With the increase in use Whatsapp (free messaging services) MMS service has been closed by all telecom operators in a phased manner starting from year 2016.

WhatsApp Business API

WhatsApp divides its messages into two categories:

1. **Template Messages** - A conversation that initiates from a Department sending a user a message outside the 24-hour customer service window. Messages that initiate a business-initiated conversation will require a message template.

2. **Session Messages** -A conversation that initiates in response to a user message. Whenever a business replies to a user within the 24-hour customer service window,

Unstructured Supplementary Service Data (USSD)

- Unstructured Supplementary Service Data is a technology unique to GSM
- USSD provides session-based communication, enabling a variety of applications
- USSD messages are up to 182 alphanumeric characters in length
- USSD supports menu-based applications facilitating more user interactions
- It is neither a phone-based nor a SIM-based feature
- almost seven times faster than SMS
- Messages received on the mobile phone are not stored.

Unstructured Supplementary Service Data (USSD)

Definition

- **A GSM communication technology** used to send messages between a mobile phone and an application server in the network
- It is similar to SMS, but USSD is session oriented as well as Interactive.

Advantages

- Session oriented and a menu based service
- Flexible to design dynamic menus
- Accessible directly from phone and extremely user friendly
- Very Secure and almost 7 times faster than conventional SMS

Number

- 166 Service available on:
  - TATA Docomo GSM
  - MTNL Mumbai
  - Idea
  - Vodafone
  - Videocon
  - Aircel

Interactive Voice Response Service

Definition

It is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via keypad

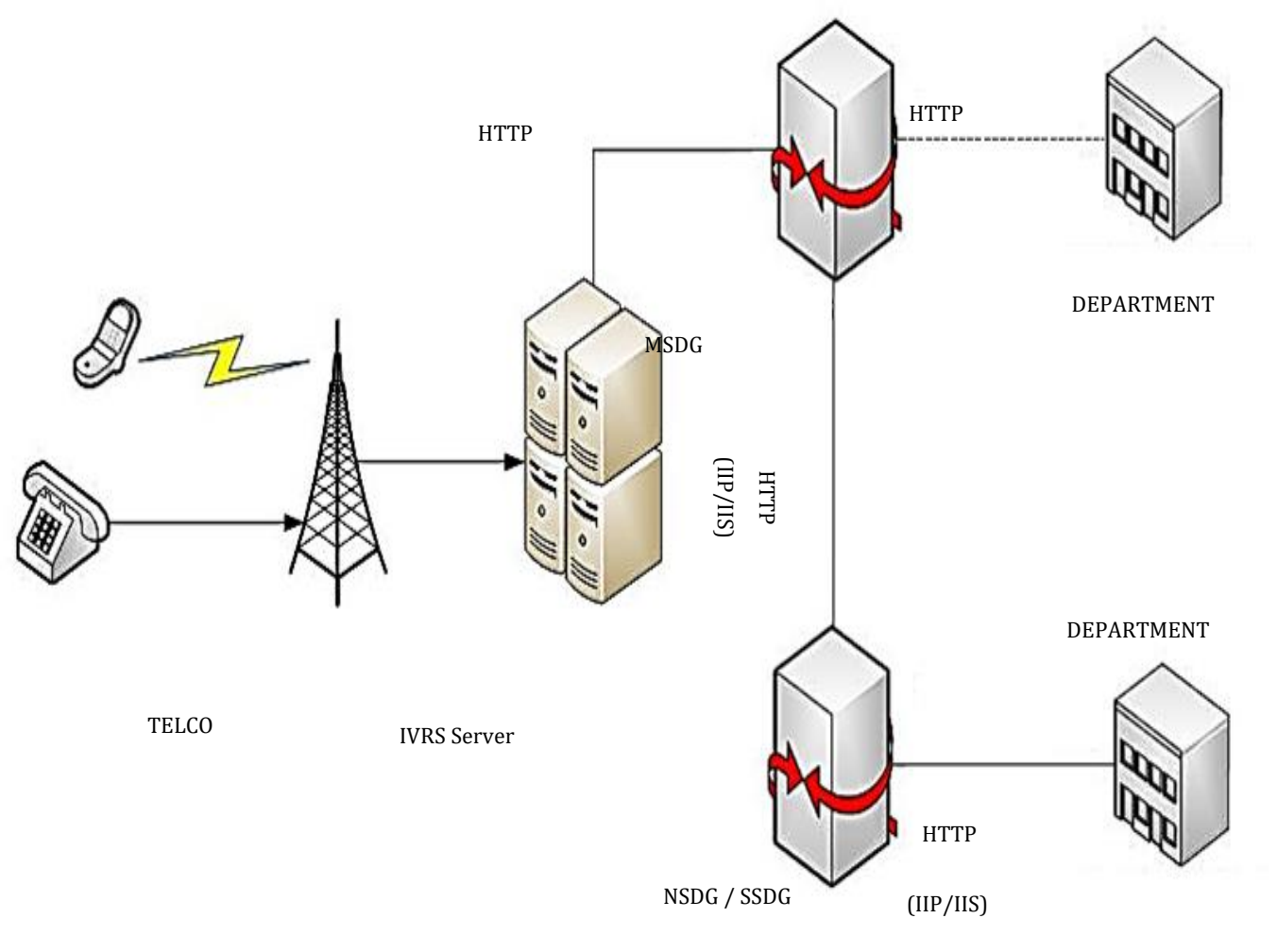
Advantages

- A menu based service with flexibility to design dynamic menus
- Intelligent call routing allows users to reach the right agent
- Save organizations' time and money by freeing employees up for other duties
- Enhance customer satisfaction by giving quick response

Type

- Push Outbound Call : Department will originate pre-recorded voice call to citizen.
- Menu Driven Pull Call : Citizen can request for specific information through IVRS services. Citizen can avail this service by calling our IVRS number 166 / 022-26209367
- Missed Call : Citizen can give missed call to a number then department will initiate outbound call on that number

IVRS Service: Flow

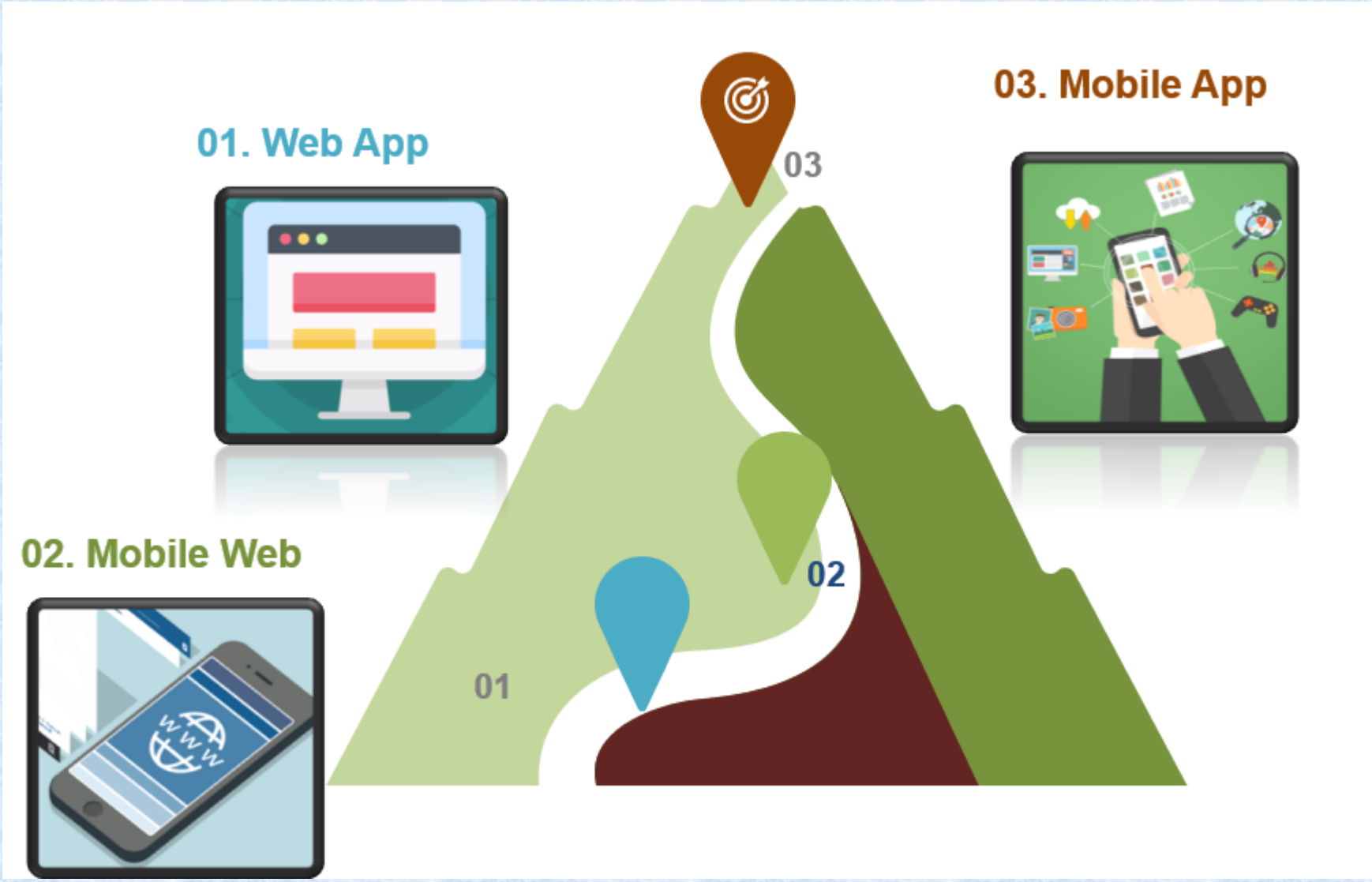


Mobile Application (m-Apps)

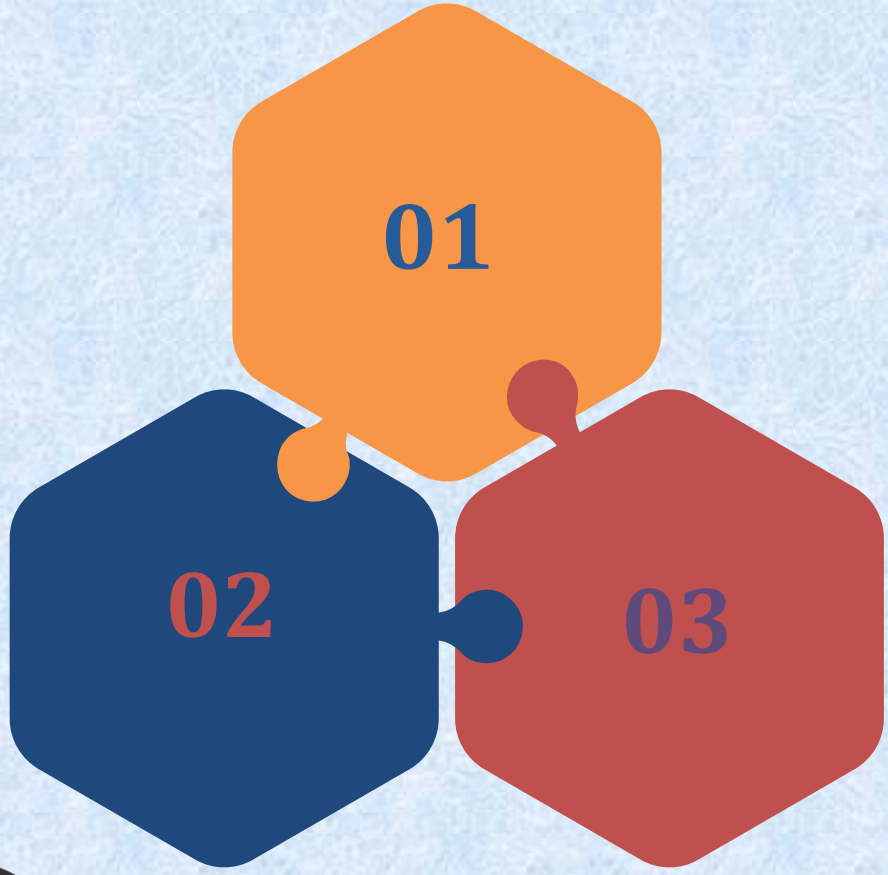
Mobile First

Mobile-First approach involves designing a desktop site starting with the mobile version, which is then adapted to larger screens (contrary to the traditional approach of starting with a desktop site and then adapting it to smaller screens). Mobile-first approach means building your website with your mobile users with the main goal of improving these mobile users' experience on site.

Digital Transformation: Mobile Apps



Types of m-Apps

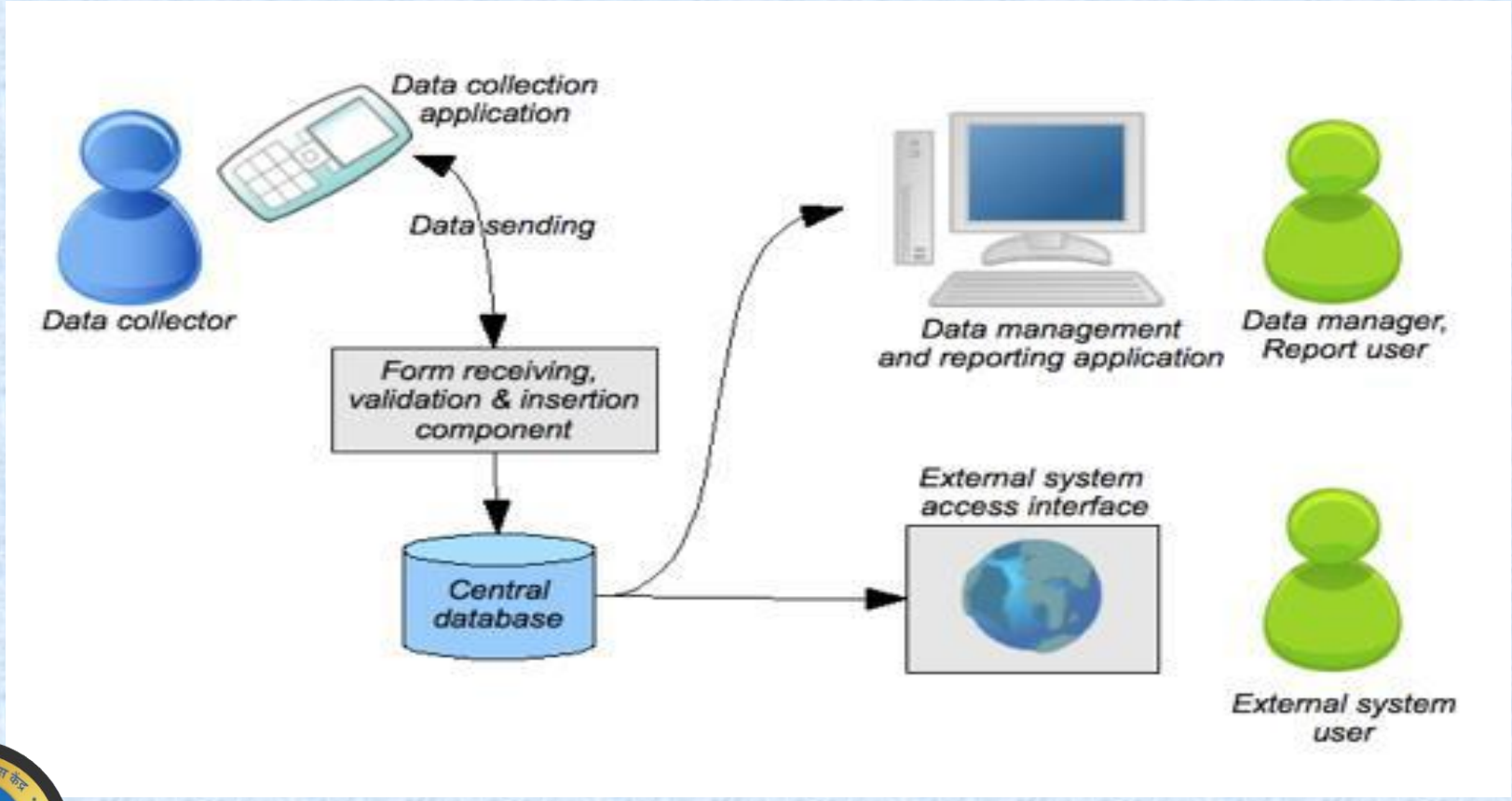


Pre installed during manufacture

Downloaded by users from various mobile software distribution platforms

Delivered as web applications using server-side or client-side processing to provide an "application-like" experience within a Web browser

Data Collection: m-forms



Generic Mobile Application

Geo-Fencing Digital Broadcast : Government departments will promote their services and reach out to a significant portion of the population in an effective manner. Any new service enabled on the platform will need to be notified / popularized via Facebook social media platform. Geo fencing allows automatic alerts to be generated based on the location-based service (LBS) defined coordinates of a geographic area.

Geo-location based Attendance Mobile Application : This Attendance system uses reverse geo location tagging with image recognition technology. Employee will click their photo mark attendance. Application also uploading their work report. Employee as well as their reporting managers can use this app to check the subordinate's attendance record. This way Authority will be intimated if attendance is forged or marked at different location other than allocated. Department can download report from websites and API for integration.

Feedback Poll Management Mobile Application: This system directly connects government department to citizen for collecting feedback for their various services, activities and programs. This app allows department to create a poll and share to citizens. After citizen's locked response department can analyze their results in app.

Complaint Management System Mobile Application : This app allows citizen to log their complaints with image of the problem area. Also citizen can track the status of their complaints. This way department can directly manage the complaints they receive via app.

Mobile Applications

MeitY
Government of India

UMANG(Unifi...
NeGD (National...

Aarogya Setu
MeitY

DigiLocker
MeitY

BHIM Making...
NPCI - BHIM

MyGov
MyGov

CMS
Telecom Regula...

OLabs
CDAC

M-Kavach 2
C-DAC Hyderab...

mSeva AppStore

MeitY
Government of India

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CDAC

mEcoHP
: Economics and...

HPPSC
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Press Releases ...
: Information an...

eGazette Rajp...
: Department of...

HPVC
NIC

eTransfers Em...
Department of ...

ePension HP G...
Department of ...

Namma Nilagiri
NIC

KOOTTAM
NIC

Green Rameswaram
NIC

SAMOOGAM ...
NIC

OFFICIALS DIR...
GIRIS INFORMA...

CDAC
CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

Why a National AppStore ?

Vision of "Aatma Nirbhar Bharat"

Integrated Domains

Flow of Hosting Application

Various testing levels will ensure before publishing that the App

- Is not harmful
- Is not related to gambling etc
- Is secured

Security Measures in Mobile Seva AppStore

Data Storage

Secure Communication

Identification of Dangerous Permissions

Secure App Logic

Cryptographic Algorithms & Proper Platform Usage

Secure Authentication & Authorization

Integrity Check

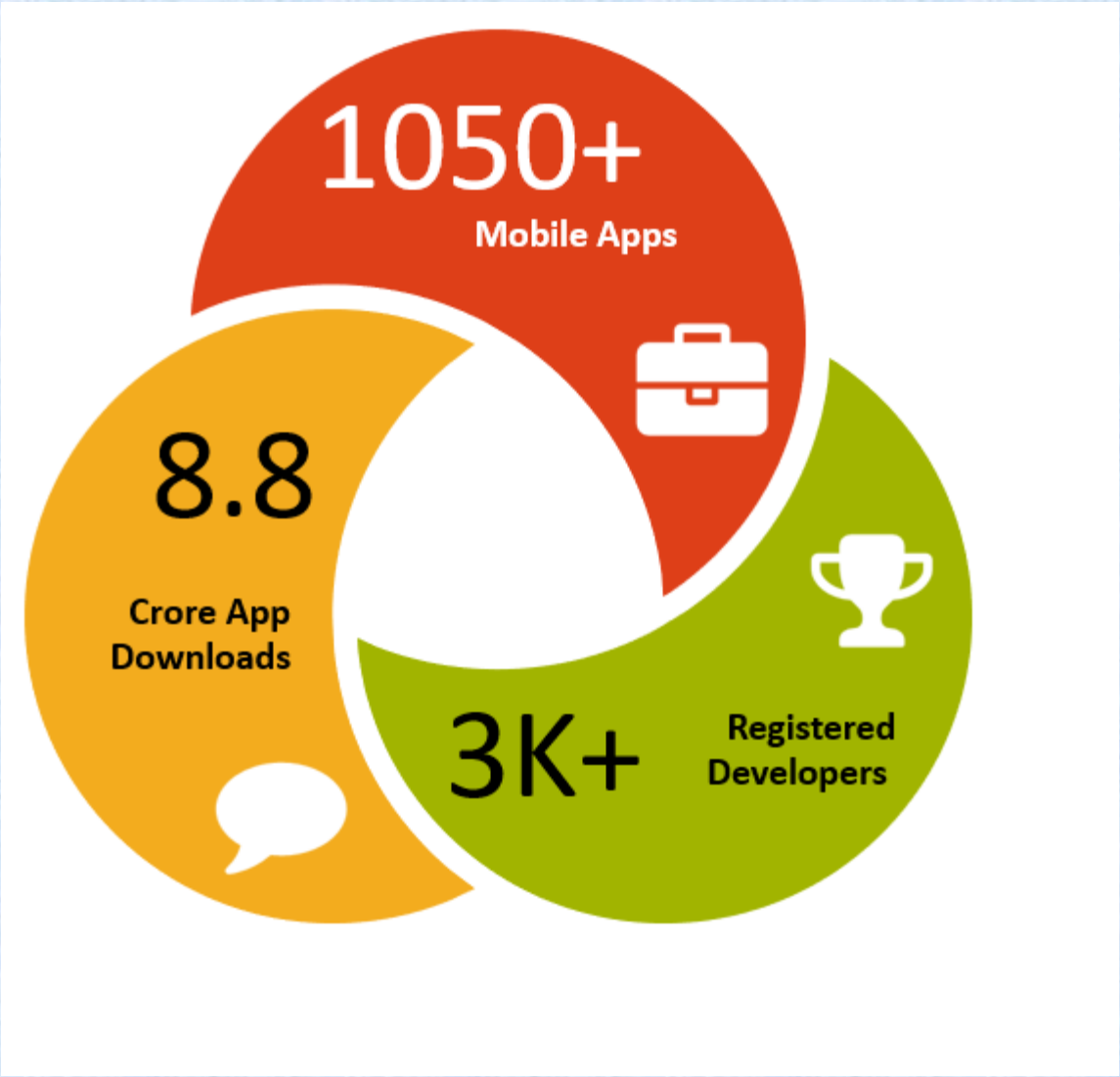
Major focus is to host Security Centric Mobile Applications by performing security audits based on the OWASP industry best practices.

Features of Mobile Seva AppStore

MeitY
Government of India

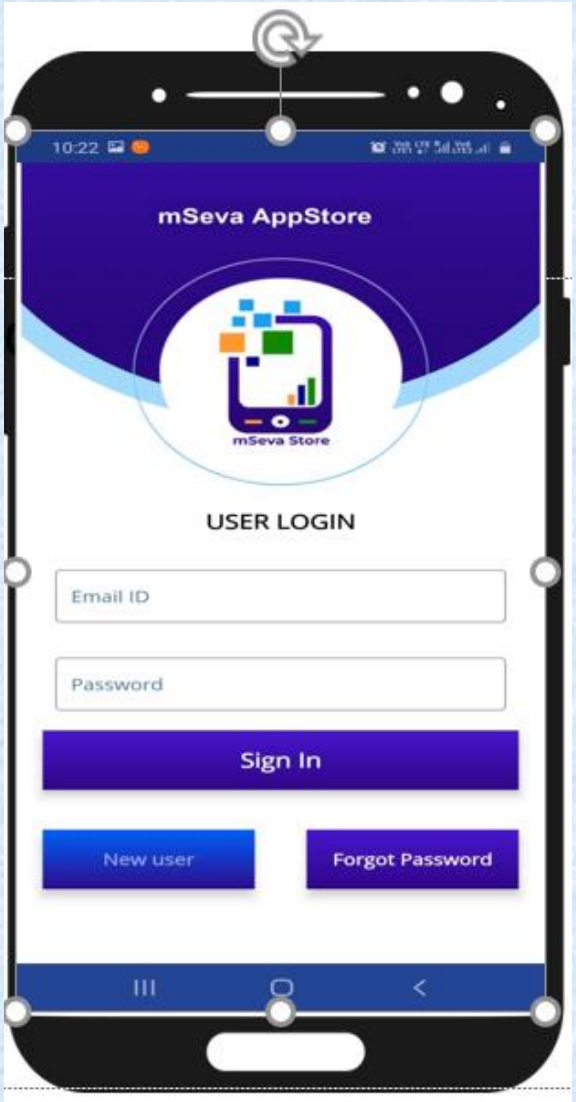
- Hosting of App based on State, Category and Platform wise
- Host Android and iOS App at single platform
- In-House Testing gives Assurance of Privacy
- Get App Update Facility via code Integration
- Separate Dashboard for developers
- Allowing only signed APK files for assurance of Duplicity
- Closed Beta release available
- A full fledge Test Report is being shared with Developers for apps
- Release Management available

mSeva AppStore- Figures to Mention



Modes to Access Apps

Store Apps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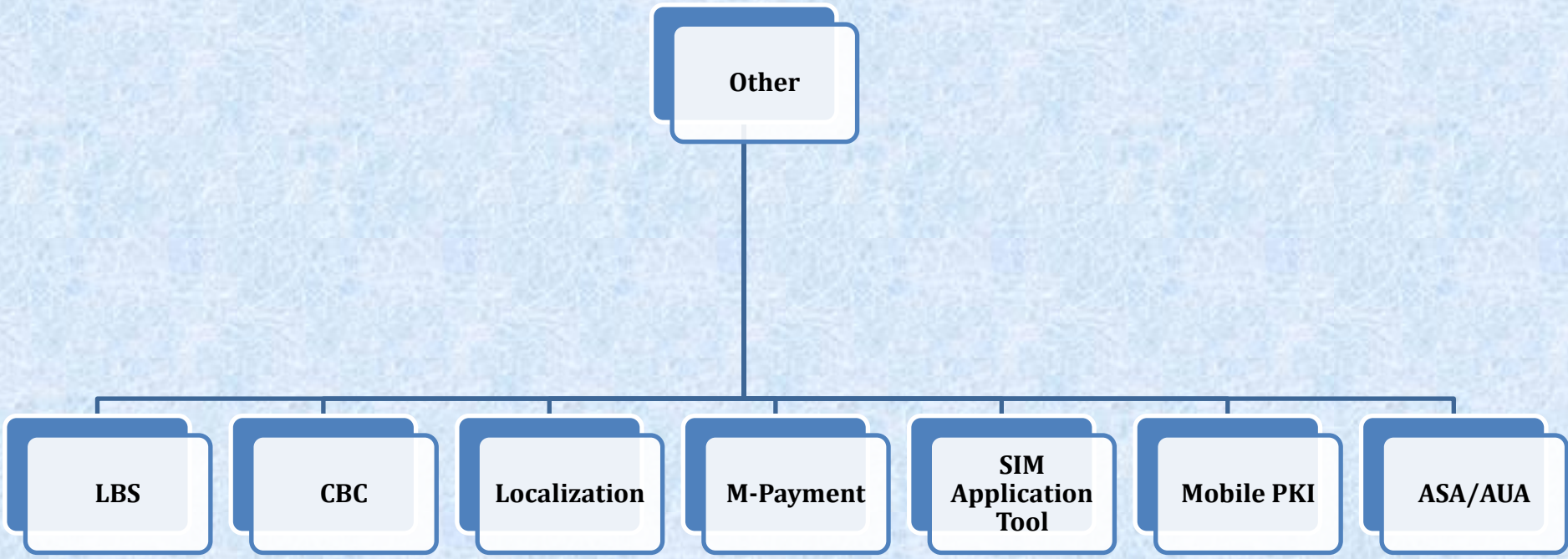
mSeva AppStore
mSeva Store
USER LOGIN
Email ID
Password
Sign In
New user
Forgot Password

Other Technologies



Location Based Services

"Location-based services (LBS) denote services offered to mobile users according to their geographic location. LBS give the possibility of a two way communication and interaction. Therefore the user tells the service provider his actual context like the kind of information he needs, his preferences and his position. This helps the provider of such location services to deliver information tailored to the user needs. LBS enables to retrieve and share information related to their current position. "

Components of LBS

Cell Broadcast Center

Cell Broadcast is a mobile technology which allows text messages to be broadcasted to all mobile handsets and similar devices within a designated geographical area ”

A one-to-many geographically focused service, in contrast to SMS which is a one-to-one or one-to-few service

It utilizes minimum network resources for message broadcast and provides instantaneous delivery to all subscribers in a geographic area

Cell Broadcast message is an unconfirmed push service

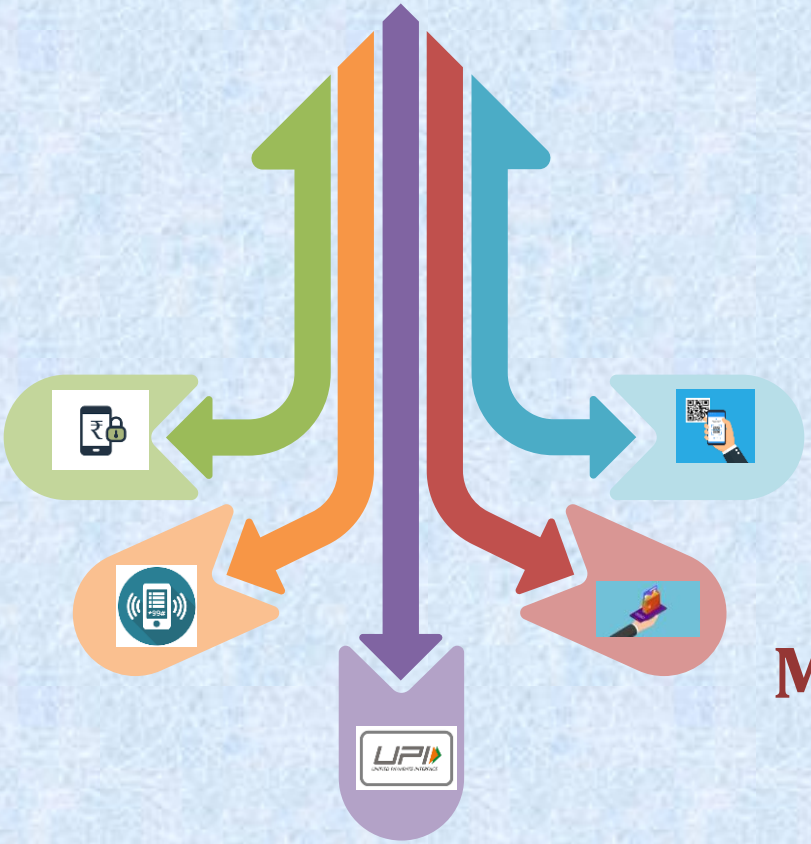
SMS-CB messaging is a mobile technology feature defined by the ETSI’s GSM committee and is part of the GSM standard

m-Payment

“A mobile payment is a money payment made for a product or service through a portable electronic device such as a tablet or cell phone. The basic aim of mobile payments is to enable micropayments on low-end mobile devices which support only voice and text, in addition to higher end phones which could support web-browsing or Java application capabilities”

Types of m-Payment

Mobile Banking



QR Code

USSD (*99#)

Mobile Wallet

UPI

SIM Application ToolKit

"The SIM Application Toolkit is a standard set of commands, under GSM, which defines how the card should interact with the outside world and extends the communication protocol between the card and the handset"

Mobile PKI

A PKI enabled mobile solution facilitates Digital Signature and authentication for mobile applications, where transactions can take place directly from a mobile phone

01

The Mobile phone is used as a device for creation and storage of private credentials of the user. These credentials are then used for authenticating and digitally signing transactions

02

The options for enablement of PKI in mobile includes hardware implementations like Cryptographic SIM, Memory card as Cryptographic token and software implementations such as software cryptographic module in Mobile Phone.

03

Cryptographic SIM based digital signatures requires a tie-up with the mobile operator for enabling this service

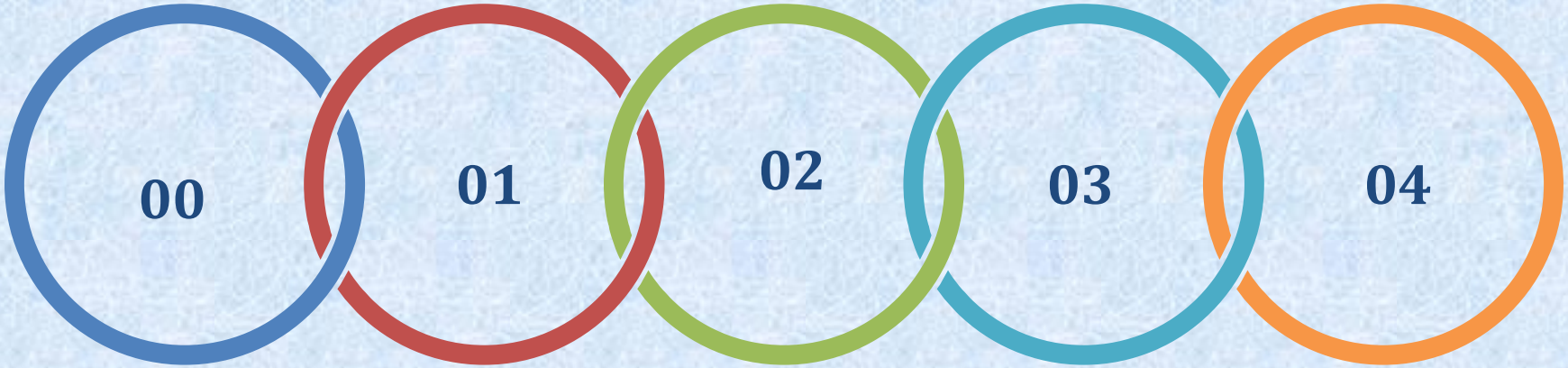
04

e-Authentication

Electronic Authentication (or “e-Authentication”) is the process of electronic identification of a user. E-Authentication provides a simple, convenient and secure way for the users to access government services via Internet/mobile. An authenticated identity is linked to the online services delivered by government agencies through the process of “Authorization”

Levels of Application Sensitivity

e- Authentication in Mobile Based Applications



Level 0

No authentication needed. Used with SMS, USSD, IVRS

Level 1

Mechanism using username and password. The user would receive the username & password after successful enrolment in e-Pramaan

Level 2

A user will prove her identity using username, password and OTP

Level 3

User needs to prove her identity through username and password plus a user's digital certificate

Level 4

The citizen will prove her identity using a two factor authentication which will necessarily include biometrics as one of the factors while the other factor could either be a soft token (OTP) or a username/password.

THANK YOU

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