

ICT Standards - Enabling Digital Transformation in India

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Role of Technology in Governance

Driving efficient public service delivery through emerging technologies



Improving Public Service Delivery: Emerging technologies like AI and Blockchain have the potential to **optimize digital welfare delivery** and increase administrative efficiency, enabling **citizen-centric services**



Driving Inclusive Development: Emerging technologies can **transcend traditional barriers** to inclusive development and enable large-scale social transformation for all



Improving Policy Making & Programs Evaluation: Emerging technologies enable evidence-based policy development, implementation and monitoring, **bringing targeted social benefits to citizens**



Empowering Digital Nagriks: Emerging Technologies enable improved citizen experiences and engagement with the government as Digital Nagriks



Enhancing Efficiency & Innovation: Technologies like drones, internet of things (IoT), robotics, etc. provide innovative models of governance, catalyzing digital innovation for public good & **creating new economic opportunities**

Digital India

Digital India: Building Blocks



Digital Public Goods

Innovative goods, services, and applications that build on top of the foundational infrastructure such as **Ayushman Bharat Digital Mission**



Digital Infrastructure

Foundational technology infrastructure consisting of **Identity, Payments, & Data exchange** that serve as the building blocks



Digital Guidelines/ Standards/ Frameworks

Standards and guidelines that ensure **interoperability** of applications and **whole-of-government** approach to digitization



Digital Policies/Strategies/Acts

Overall policies, strategies, and acts that serve as the **foundation for digital initiatives** and **govern the overall ecosystem** & institutions

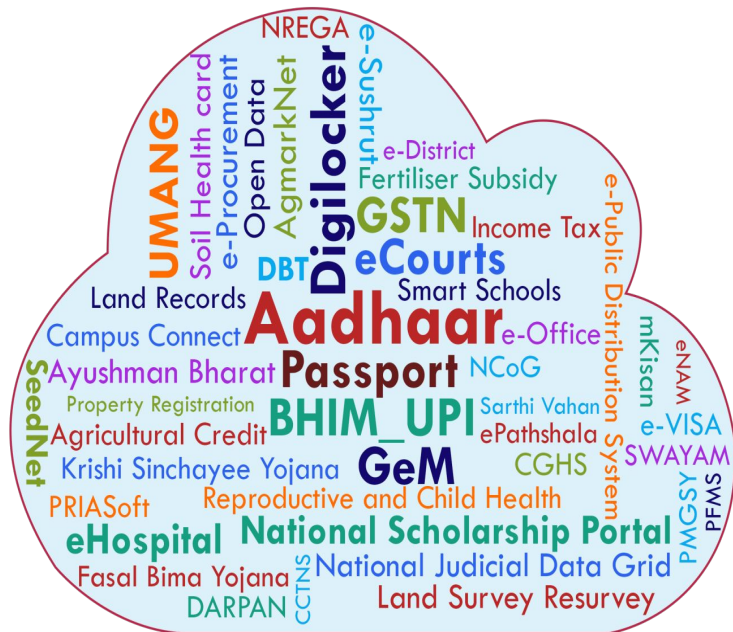
Digital India: Enabling Services

200+
Major projects

4030
Services

337 Mn
Average Daily
Transactions

On Demand
Services
From Central, State,
Local Government



- Bridge the Digital Divide
- Universal Coverage
- Single Sign on
- Enhance Experience
- End to end workflow
- Architecture InDEA
- Whole of Architecture
- Open API as a Catalyst
- Era of digital platforms

ICT Standards, Frameworks and Policies

1

Metadata and Data Standards – Demographic

The standards focus generic data elements common across all domain applications, generic data elements for Person Identification and generic data elements for Land Region Codification have been identified and standardized.

2

Metadata and Data Standards - for Health Domain

Identifies and defines data elements used in e-Governance systems in healthcare and the relevant code directories so as to bring uniformity in usage and context of data elements

3

Metadata and Data Standards for Rural Drinking Water and Sanitation

Identifies and defines entities pertaining to the Rural Drinking Water and Sanitation (RDWS) domain and the data elements required for uniquely identifying these entities

4

Strategy for National Open Digital Ecosystems (NODE)

The strategy for building open and secure digital delivery platforms anchored by transparent governance mechanisms which enable a community of partners to unlock innovative solutions, to transform societal outcomes.

5

Open Government Data Platform

Initially launched in 2012 to make government-collected non-personal data available to all Indians under an open licence. These datasets have been viewed more than 34 million times and downloaded more than 10 million times.

6

Policy on Open Application Programming Interfaces

Under the open API policy, the government has mandated use of open APIs for its various flagship programs. API Setu has been developed as an API platform to enable swift, transparent, safe and reliable information sharing across applications and to promote innovation by linking systems and data.

7

Interoperability Framework for e-Governance

This framework facilitates efficient data exchange and integration across different government platforms, enhancing the overall efficiency and effectiveness of e-Governance services

8

Standard for Accessibility in ICT Products and Services

The Standards covers accessibility requirements for web content and mobile apps, both closed and open systems compatible with or without assistive technology devices, and specifications for software, hardware, and facilities.

9

MeghRaj Policy

MeghRaj Policy provides strategic direction for adopting cloud services within the government sector. This policy aims to enhance the efficiency, agility, and cost-effectiveness of government IT services by leveraging cloud computing technologies.

India's ICT standards, guidelines, and policies ensure seamless interoperability of applications and promote a whole-of-government approach to digitization

10

Bureau of Indian Standards Artificial Intelligence Sectional Committee

A high-level overview of International Standards that address issues arising from AI ethical and societal concerns in the context of principles, processes and methods already adopted in this domain

11

Standard for Fairness Assessment and Rating of Artificial Intelligence Systems

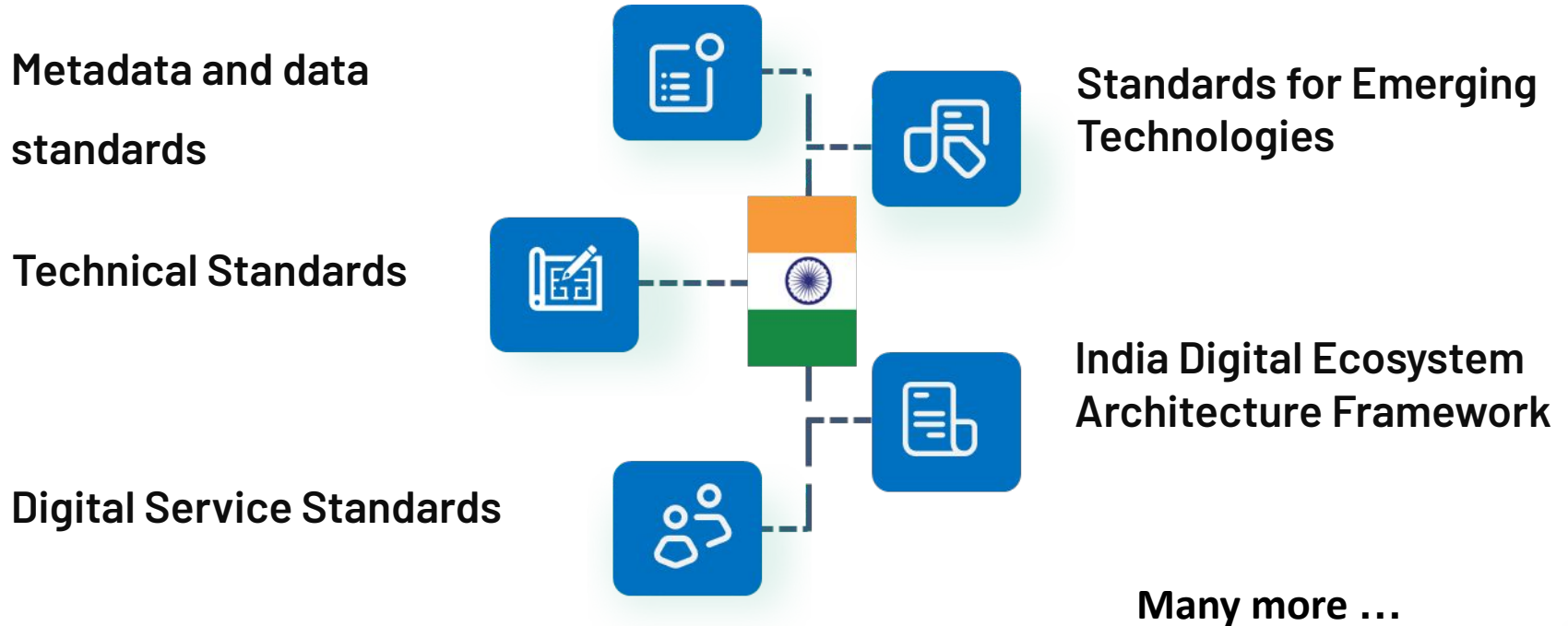
The standard provides a Voluntary Fairness Assessment of AI/ML systems and covers the applicable AI/ML systems with combined fairness rating metric for AI/ML systems to certify fairness in assessment systems

12

India Digital Ecosystem Architecture 2.0

A framework that enables Governments and private sector enterprises to design IT architectures that can span beyond their organisational boundaries and enable delivery of holistic and integrated services to customers.

Standards in ICT at Glance



Metadata and data standards



MDDS for Demographics



MDDS for Panchayati Raj



MDDS for School Education



MDDS for Health Domain



MDDS for Rural Drinking Water and Sanitation



EHR Standard

MDDS aim at standardization of eGov applications and databases

MDDS for School Education getting used in NDEAR; MDDS for Health getting used in ABDM

Technical standards (1/6)

Technical Standards for Interoperability Framework for E-Governance (IFEG) in India

- Presentation and Archival domain
- Technical standards for data integration domain
- Network Access and Security
- Additional information on IFEG as follows
 - Cascading Style Sheets (CSS)
 - DNS
 - DSA
 - HTML
 - HTTP / HTTPS
 - XHTML
 - XML – Encryption, Signature, Schema
 - XSL, XSLT
 - IPv4 and IPv6
 - ISO/IEC IS 10918-1:1994 (JPEG)
 - ISO/IEC 15948:2004 (PNG)

IFEG Technical Standards aims at interoperability

Technical standards (2/6)

Biometric Standards

- IRIS Image Data Standard
- Fingerprint Image Data Standard
- Face Image Data Standards



Biometric Standards used in DPI for Digital Identity - Aadhaar

Technical standards (3/6)

Localization and Language Technology Standard

- Fonts Standard
- Character Encoding Standard



Standards used in DPI for Language Localisation – Digital India Bhashini

Technical standards (4/6)

Standards and Specifications for Consent and e-Authentication

Covers

- User Provisioning and De-provisioning
- Credentials Handling
- Identity Attributes
- Session Policy
- Communication and Security
- Service Agreements
- Audit Requirements



<https://meripehchaan.gov.in/>

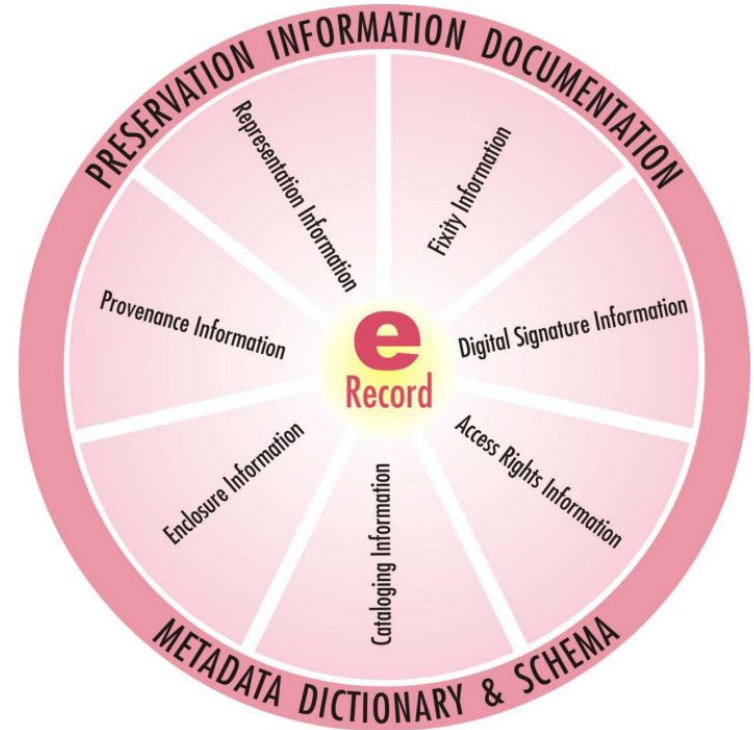
Standards used in National Single Sign-On – Meri Pehchaan

Technical standards (5/6)

Digital Preservation Standard

Covers

- Preservation Metadata
 - Catalogue information
 - Enclosures information
 - Provenance information
 - Representation information
 - Fixity information
 - Access right information
- Metadata dictionary and schema
- Summary of best practices and guidelines

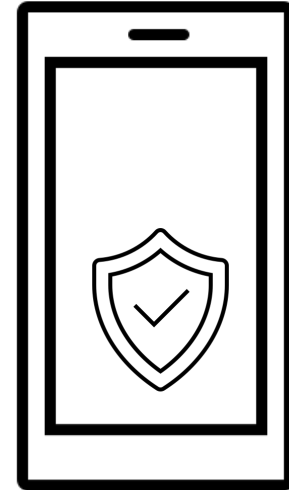


e-Governance Standards for Preservation Information Documentation of e-Records

Technical standards (6/6)

Adoption of Mobile AppSec Verification Standard (MASVS) of OWASP

- OWASP MASVS - the industry standard for mobile app security
- Trusted by Android, CREST, NIST (National Institute of Standards and Technology), iOXT (Internet of Secure Things)
- Government of India issued adoption guidelines on IWASP MASVS

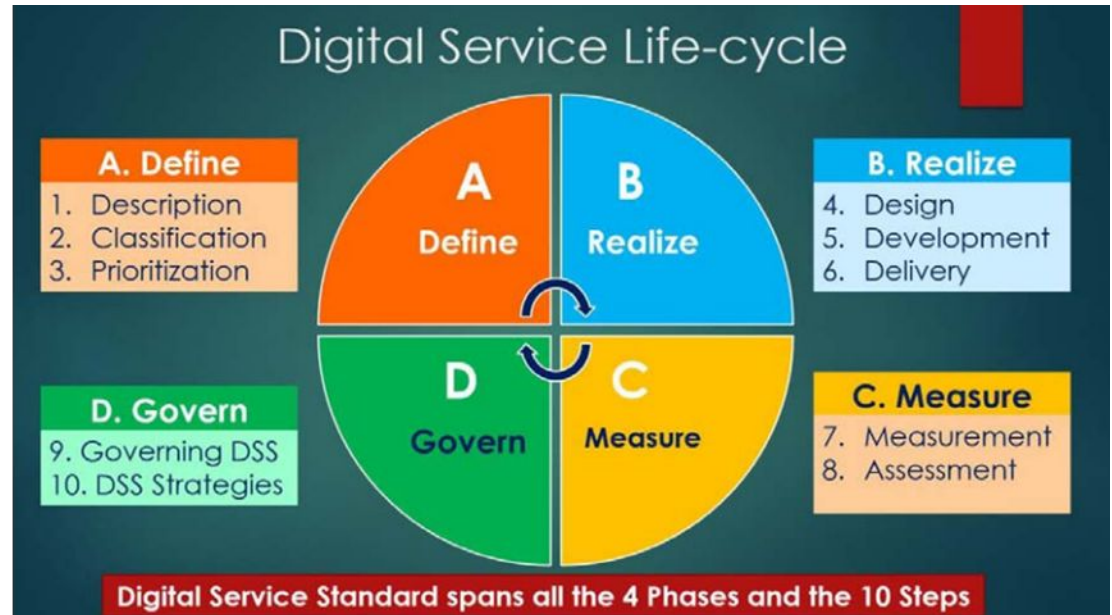


For design, development and deployment of secure mobile apps

Digital Service Standards

Digital Service Standards – notified vide Gazette on 1 March 2019

- Defining Digital Service
- Realizing a Digital Service
- Measuring and Assessing a Digital Service
- Governing a Digital Service



For uniformity, consistency, future proofing, inclusivity, accessibility and UX

Standard for Emerging Technologies

Fairness Assessment and Rating of Artificial Intelligence Systems – 7 July 2023

- Aligned on National Strategy on AI and INDIAai
- Standard called TEC 57050:2023 by DoT
- 3-step process
 - Bias risk assessment
 - Threshold determination for metrics and bias testing
 - System testing in different scenarios to ensure that it performs equally well for all individuals.

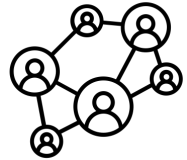


For trustworthy and responsible use of AI

Standard for Emerging Technologies

Adoption of national standards for M2M/IoT based on OneM2M latest standards

- TEC 30001:2022- 30035:2022
- Covers functional architecture, core protocol, security, base ontology, device configuration, feature catalogue, semantics support, interworking



13-digit numbering scheme for M2M SIMs (earlier, it used to be 10 digit)

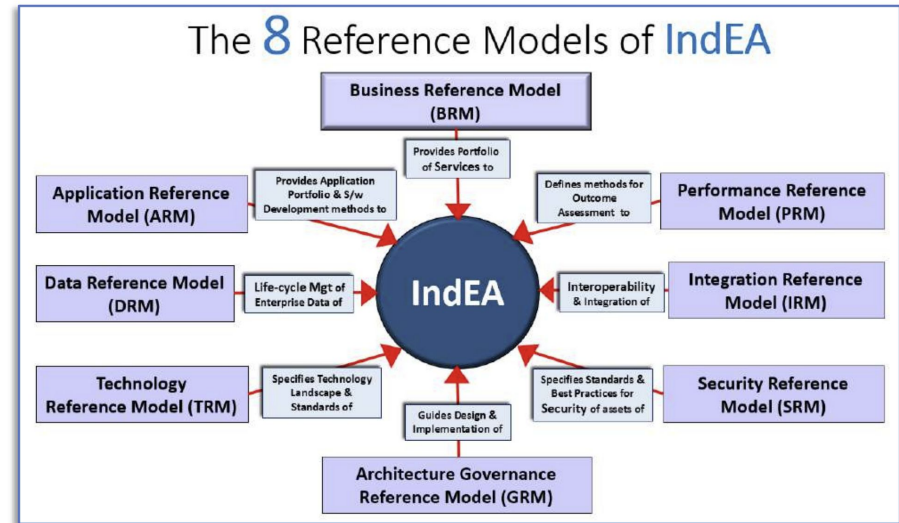
Country code 2 digit (+91)	M2M Identifier 3 digits	Licensee Identifier 4 digit (10000 blocks)	Device Number 6 digits (1 million)
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13-digit M2M numbering plan is implemented from 1st October 2018

For interoperability among IoT devices and communication

India Digital Ecosystem Architecture Framework

- A framework for developing a **holistic architecture** treating the Government as an **Enterprise of Enterprises**, which are functionally inter-related.
- **Designed** to be used by Central Ministries, State/Local Governments and PSUs
- A structured combination of **8 Reference Models** to define the requirements of various dimensions of the enterprise
- Aims to enable
 - **Boundaryless flow of information** within/ across departments/ Ministries
 - Provision of **integrated services** to the citizens & businesses
 - **Innovation** in service delivery



India Enterprise Architecture (IndEA 1.0) aims at ONE GOVERNMENT experience

InDEA 2.0 Building Blocks

IndEA Architecture Governance

IndEA Security Policies

8

1
0

IndEA Core

- IndEA Core Exchange
- National Core Registries
- National Core Directories
- Federated ID Registry
- IndEA Architecture Portal

2

IndEA Common Building Blocks (Citizen-facing)

- India Portal
- MyGov
- Umang
- 112 Call Centre

IndEA Common Building Blocks (Productivity)

- e-Office
- e-Mail, SMS
- Video Conference (VidYo)
- eTAAL

IndEA Common Building Blocks (Shared Applications, Infrastructure)

- PFMS
- GEM
- Meghraj

3

InDEA

Building Blocks
(43 BB's in 10 Groups)

4

IndEA Reference Building Blocks (Tools)

KMS, LMS, Search Engine, Service Plus
Analytics, Language Support Tools

IndEA Reference Building Blocks (Applications)

IndEA Sandbox, e-Courts
Payment Gateway, Consent Manager

5

Domain Ecosystems

Domain Cores
Domain Common Building Blocks
Domain Reference Building Blocks

6

State Core(s)

State Core Exchange
State Core Registries, State Core Directories
State ID Provider Registry, State Architecture Portal

7

State Digital Ecosystems

National Common/ Reference Applications adopted
Common/Ref Applications developed by State
Value-added Services of Private Sector
Infrastructure & Technology Services

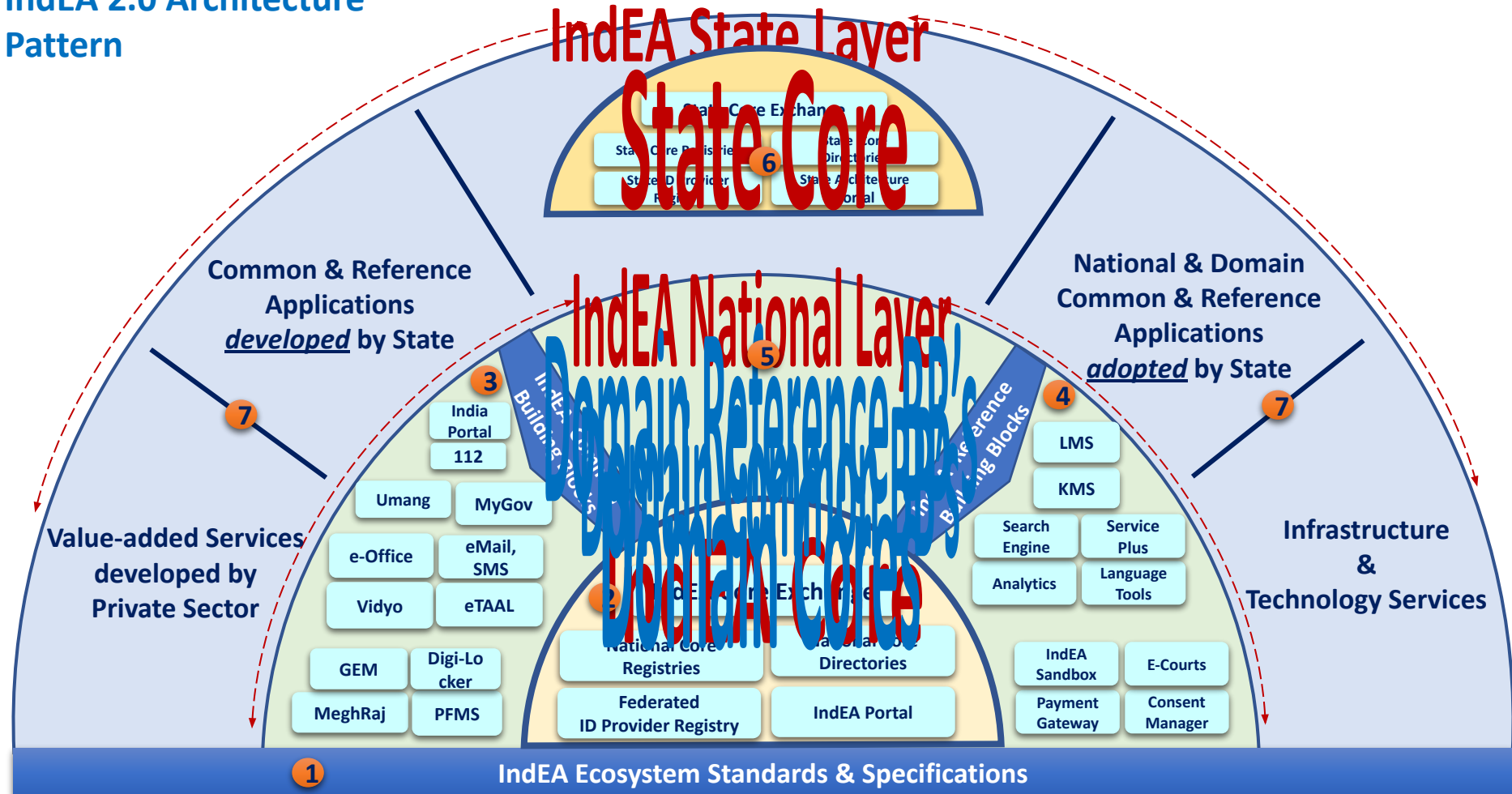
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Data Protection Frameworks

1

IndEA Ecosystem Standards & Specifications

IndEA 2.0 Architecture Pattern



Thank You



**Ministry of Electronics
& Information Technology**
Government of India