Request for Proposal (RFP)

Selection of Managed Services Provider (MSP) to design, develop, implement, operate and maintain PM-JAY IT 2.0 Solution

Volume I – Scope of Work

RFP No: S-12019/29/2019

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The information contained in this Request for Proposal (RFP) Document is being provided to interested bidders on the terms and conditions set out in this Tender. The purpose of this Tender Document (hereinafter called RFP: Request for Proposal) is to provide interested parties with information that may be useful to them in making their pre-qualification, technical and financial offers pursuant to this RFP.

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The Bidders shall bear all costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the NHA or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and the NHA shall not be liable in any manner whatsoever for the same or for any other costs or other expenses

incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

About this RFP

This RFP is meant to invite proposals from interested organizations capable of delivering 'scope of work' for PM-JAY IT 2.0 described herein. The content of this RFP has been documented as a set of three (III) volumes explained below.

- **RFP Volume I:** Scope of Work: Volume I of RFP provides details on the proposed scope of work and other requirements that NHA deems necessary to share with the potential bidders.
- **RFP Volume II:** Evaluation and Bidding Process: Volume II of RFP provides details that may be needed by the potential bidders to understand their eligibility, bidding process and formats for preparing the bids.
- **RFP Volume III:** Contractual and Legal Specifications: Volume III of RFP provides the contractual and legal terms that NHA wishes to specify at this stage.

This is Volume I of the RFP

Abbreviations

Abbreviation	Description
PM-JAY	Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana
API	Application Program Interface
AUA	Authentication User Agency
BCP	Business Continuity Plan
BIS	Beneficiary Identification System
BMGF	Bill & Melinda Gates Foundation
BoM	Bill of Material
BYOD	Bring Your Own Device
CCS/CDT	Call Center Software/Call Disposition Tool
CDAC	Centre for Development for Advanced Computing
CDSS	Clinical Decision Support System
CHAI	Clinton Health Access Initiative
HCP	Health claims Platform
CSC	Common Service Centre
DICOM	Digital Imaging and Communications in Medicine
DSS	Digital Service Standard
EMS	Enterprise Management System
FCS	Fraud Control System
FHIR	Fast Healthcare Interoperability Resources
FRS	Functional Requirements Specifications
GCC	Government Community Cloud
GOI	Government of India
HEM	Hospital Empanelment Module
EHR	Electronic Health Record
HIV	Human Immunodeficiency Virus

Abbreviation	Description
HMIS	Hospital Management Information System
IAM	Identity and Access Management
IndEA	India Enterprise Architecture
IRDA	Insurance Regulatory and Development Authority of India
ISA	Implementation Support Agency
ISPIRT	Indian Software Products Industry Round Table
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
IVRS	Interactive Voice Response System
LOINC	Logical Observation Identifiers Names and Codes
MCI	Medical Council of India
MDDS	Metadata and Data Standards
MeitY	Ministry of Electronics and Information Technology
MIS	Management Information System
MoHFW	Ministry of Health & Family Welfare
MRI	Magnetic Resonance Imaging
MSP	Managed Service Provider
NAFU	National Anti-Fraud Unit
NDHE	National Digital Health Eco-system
NHA	National Health Authority
NHDB	National Health Digital Blueprint
NIC	National Informatics Centre
PHI	Personal Health Information
PHR	Personal Health Record
PII	Personal Identifiable Information
PMAM	Pradhan Mantri Aarogya Mitras
PMC	Program Management Consultant

Abbreviation	Description
POC	Privacy Operation Center
RFP	Request for Proposal
RSBY	Rashtriya Suraksha Bima Yojana
SAFU	State Anti-Fraud Unit
SDO	Standards Development Organizations
SECC	Socio-Economic Caste Census
SHA	State Health Agency
SLA	Service Level Agreement
SNOMED CT	Systemized Nomenclature of Medicine – Clinical Terms
SOP	Standard Operating Procedure
SP	Service Provider
SRS	System Requirements Specifications
STQC	Standardization Testing and Quality Certification
TCL	Tata Communication Limited
TCS	Tata Consultancy Services Limited
TMS	Transaction Management System
TPA	Third Party Agency
UAT	User Acceptance Testing
UIDAI	Unique Identification Authority of India
WBS	Work Breakdown Structure
WHO	World Health Organization
WHOFIC	WHO Family of International Classifications

Table of Contents

Tables of Figures

Tables of Tables

1 Program Background

1.1 Ayushman Bharat

Ayushman Bharat, a flagship scheme of Government of India was launched as recommended by the National Health Policy 2017, to achieve the vision of Universal Health Coverage (UHC). This initiative has been designed so as to meet SDG and its underlining commitment, which is "leave no one behind".

Ayushman Bharat is an attempt to move from sectoral and segmented approach of health service delivery to a comprehensive need-based health care service. Ayushman Bharat aims to undertake path breaking interventions to holistically address health (covering prevention, promotion and ambulatory care), at primary, secondary and tertiary level. Ayushman Bharat adopts a continuum of care approach, comprising of two inter-related components, viz:

- **Health and Wellness Centres (HWCs):** In February 2018, the Government of India announced the creation of 1,50,000 Health and Wellness Centres (HWCs) by transforming existing Sub Centres and Primary Health Centres. These centres would deliver Comprehensive Primary Health Care (CPHC) bringing healthcare closer to the homes of people covering both maternal and child health services and non-communicable diseases, including free essential drugs and diagnostic services.

  Health and Wellness Centers, are envisaged to deliver an expanded range of services to address the primary health care needs of the entire population in their area, expanding access, universality and equity close to the community. The emphasis of health promotion and prevention is designed to bring focus on keeping people healthy by engaging and empowering individuals and communities to choose healthy behaviors and make changes that reduce the risk of developing chronic diseases and morbidities.

- **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** The second component under Ayushman Bharat is PM-JAY, which aims at providing health insurance cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization to over 10.74 crores poor and vulnerable families (approximately 50 crore beneficiaries). There is no cap on the family size under the scheme. This scheme was earlier known as National Health Protection Scheme (NHPS) before it was rechristened as PM-JAY. This scheme was launched on 23rd September 2018 by the Hon'ble Prime Minister Shri Narendra Modi in Ranchi, Jharkhand.

  PM-JAY has been rolled out for the bottom 40% of poor and vulnerable population. The households included are based on the deprivation and occupational criteria of Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas respectively. The scheme subsumed then existing Rashtriya Swasthya Bima Yojana (RSBY), launched in 2008. Therefore, the coverage mentioned under PM-JAY also includes families that were covered in RSBY but were not present in the SECC 2011 database. PM-JAY is completely funded by the Government, and cost of implementation is shared between Central and State Governments.

1.2 Pradhan Mantri Jan Arogya Yojana (PM-JAY)

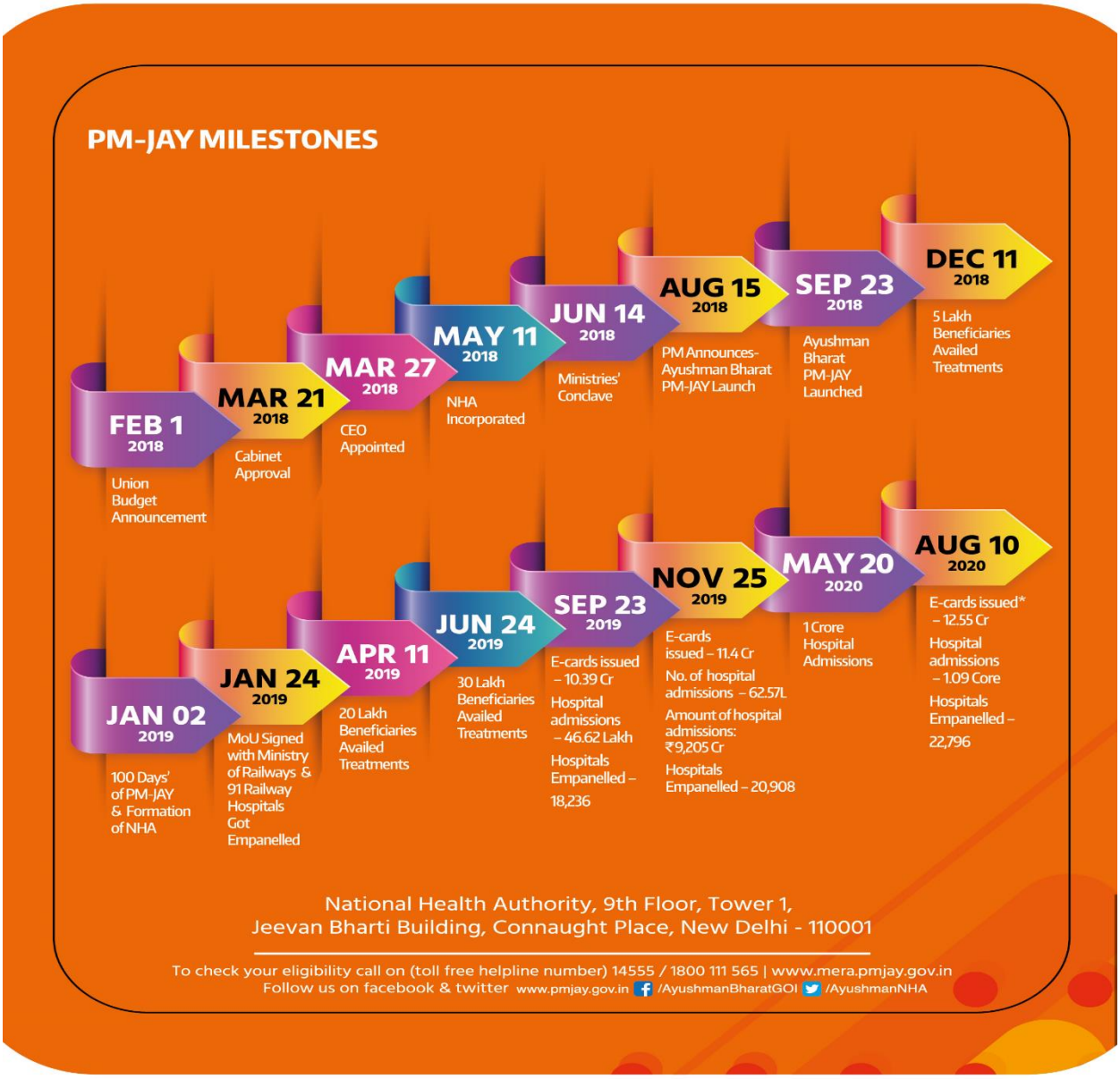


Figure 1: PM-JAY Chronology

Key features of PM-JAY

- World's largest health insurance/ assurance scheme fully financed by the government.
- Provides cover of Rs. 5 lakhs per family per year, for secondary and tertiary care hospitalization across public and private empa neled hospitals in India.
- Over 10.74 crore poor and vulnerable entitled families (approximately 50 crore beneficiaries) are eligible for these benefits.
- Provides cashless access to health care services for the beneficiary at the point of service.

- Will help reduce catastrophic expenditure for hospitalizations, which pushes 6 crore people into poverty each year, and will help mitigate the financial risk arising out of catastrophic health episodes.
- No restrictions on family size, age or gender.
- All pre-existing conditions are covered from day one.
- Covers up to 3 days of pre-hospitalization and 15 days post-hospitalization expenses such as diagnostics and medicines.
- Benefits of the scheme are portable across the country i.e. a beneficiary can visit any empaneled public or private hospital for cashless treatment.
- Public hospitals are reimbursed for the healthcare services at par with the private hospitals.

1.3 National Health Authority

National Health Authority is the apex body responsible for implementing India's flagship public health insurance/assurance scheme 'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana'. National Health Authority is the successor of National Health Agency, which was functioning as a registered society since 23rd May 2018. Pursuant to Cabinet decision for full functional autonomy, National Health Agency was reconstituted as the National Health Authority on 2nd January 2019, under Gazette Notification Registered No. DL –(N) 04/0007/2003-18.

NHA has been set-up to implement the PM-JAY at the national level. An attached office of the Ministry of Health and Family Welfare with full functional autonomy, NHA is governed by a Governing Board chaired by the Union Minister for Health and Family Welfare. Chief Executive Officer (CEO), an officer in the rank of Secretary to the Government of India manages its affairs. The CEO is the Ex-Office Member Secretary to the Governing Board. To implement the scheme in the State, State Health Agencies (SHAs) in the form of a society/trust have been set up by the States. SHAs have full operational autonomy over implementation of the scheme in the State including extending the coverage to non SECC beneficiaries.

Key functions of NHA:

- Formulation of various operational guidelines related to PM-JAY, model documents and contracts to ensure standardization and interoperability.
- Determine the central ceiling for premium (or maximum central contribution for trusts) per family per year to be provided to the States/ UTs and review it from time to time, based on the field evidence and actuarial analysis.
- Develop, and enforce compliance with, standards for treatment protocols, quality protocols, minimum documentation protocols, data sharing protocols, data privacy and security protocols, fraud prevention and control including penal provisions etc.
- Develop mechanisms for strategic purchasing of health care services through PM-JAY, so as to get best return of Government's investment. Create conducive conditions for strategic purchasing by preparing list of packages and their rates and updating those from time to time using a transparent, predictable and evidence-based process. Set up effective and efficient mechanisms to pay to the health care providers through electronic payment systems.
- Set up systems and processes for convergence of PM-JAY with other health insurance / assurance schemes. This will include schemes being implemented by both states and central governments.

National Health Authority will also develop a path to converge PM-JAY with schemes targeting both formal and informal sector workers.

- Build a state-of-the-art health information technology ecosystem with requisite foundational components on which PM-JAY and other health systems can be hosted/ linked; Information Technology standards will be developed in consultation with MeitY.
- Explore options including ways to link PM-JAY with the larger health care system, especially primary care, in consultation with Ministry of Health and Family Welfare.
- Work closely with Insurance Regulatory and Development Authority (IRDA) on development and implementation of Health Insurance Regulations targeting insurance companies, Third Party Administrators, hospitals and other stakeholders.
- Effective implementation of PM-JAY across the country and its regular monitoring including taking course corrective actions, as and when required.
- Coordination with various State Governments on a regular basis for implementation of PM-JAY.
- Capacity building of State Health Agencies and other stakeholders continuously.
- Carrying out awareness activities for informing beneficiaries and other stakeholders about the schemes.
- Prevention, detection and control of frauds and abuse.
- Grievance redressal for all stakeholders at various levels.
- PM-JAY will act as Data fiduciary and will be responsible for security of the personal data and health records.
- Set up an efficient monitoring system for the scheme
- Stimulate cross learning, share of best practices amongst states and documentation of these practices.
- Ensure interoperability, standardization and convergence amongst schemes of central ministries.
- Conduct and facilitate policy relevant research and evaluation studies including knowledge sharing and information dissemination at national and international levels.
- Develop strategic partnerships and collaboration with central and state governments, other public and private institutions including not-for-profit institutions, banks, insurance companies, academic institutions including universities, missions, think tanks, and other national and international bodies of repute in areas relevant to the objectives of PM-JAY.
- Generate evidence for the policymakers from schemes data and other research/evaluations so as to facilitate evidence-based-decision making and policy formulation by the Government.
- Act as apex body for State Health Agencies that have been set up to implement PM-JAY.
- Take any decision related to the implementation of the scheme, recruitment rules and hiring of staff, disbursement of grant in aid to the states, and issue relevant directions from time to time, as required.
- Any other activities as assigned by the Government of India from time to time.

1.4 Organizational Structure

The National Health Authority is divided into seven verticals. These cover the operational as well as the support functions for the organization in implementing PM-JAY. Each vertical in headed by an Executive Director and staffed by personnel skilled and experienced in their specific area of work. These are Finance, Administration, Policy & Knowledge Management, Information Technology, Beneficiary Empowerment,

Hospital Networking & Quality Assurance, and State Partnerships. Bidders may see the NHA organogram at https://pmjay.gov.in/about/organogram

1.5 Key Stakeholders

The following are the ecosystem stakeholders of NHA for the successful implementation of PM-JAY across the nation:

1. **Ministry of Health & Family Welfare (MoHFW):** As an attached office, NHA actively seeks policy related inputs on matters pertaining to the implementation of PM-JAY from MoHFW.
2. **Insurance Regulatory Development Authority of India (IRDA):** NHA and IRDAI collaboratively work through working groups in developing health insurance regulations such as minimum set of standards with respect to health information and claim processing targeting insurance companies, TPAs, hospitals and other stakeholders.
3. **Other Government Agencies/ Departments/ Ministries:** Given the national context of PM-JAY, NHA actively seeks inputs from other Central Government agencies/ departments/ ministries, such as NITI Aayog, MeitY etc. to constructively progress the implementation of PM-JAY.
4. **State Health Agency (SHA):** SHAs have been constituted in each State/ UT to ensure timely, quality and successful delivery of services under PM-JAY. Their key functions include but not limited to establishing beneficiary eligibility, golden record creation, claim approval (as applicable), hospital empanelment and any fraud investigations to be undertaken by the State Anti-Fraud Unit (SAFU).
5. **Implementation Support Agency & Third-Party Agency:** As part of the scheme design, States/UTs can choose the implementation model viz insurance / assurance (trust). This further requires SHAs to appoint ISA/ TPA as necessary in the state to implement the scheme and support ground functionaries in effectively carrying out their duties.
6. **Development Partners:** Development agencies actively work with the NHA in the areas of strategy, policy, implementation, capacity building, and program delivery. These development partners are - GIZ, World Bank, WHO, BMGF, CHAI and ISPIRT.
7. **Hospitals:** Public and private hospitals in India are the 'points of service delivery' under PM-JAY. They are encouraged to empanel through hospital empanelment system, wherein the applications undergo an approval by the concerned SHA. Once empaneled, hospitals get access for beneficiary identification and beneficiary treatment under state approved packages/ rates.
8. **Program Management Consultants:** NHA has engaged the services of PMCs to provide technical and functional support for successful implementation and smooth operations. The following PMCs work with the NHA:

    - Technology – PricewaterhouseCoopers Pvt. Ltd. (PwC)
    - Functional – IQVIA
    - IEC – Ogilvy and Mather (O&M)

9. **Information Technology Partners:** The following IT partners work with the NHA to design, develop, maintain and operate PM-JAY solutions:

    - National Informatics Centre (NIC): Responsible for design, development and maintenance of Beneficiary Identification System (BIS), which is hosted and managed at NIC datacenter.

- Centre for Development of Advanced Computing (CDAC): Responsible for providing robust search functionalities among all SECC records. This functionality is used by the BIS as well as 'Am I Eligible' (MERA) applications.
- Tata Consultancy Services (TCS): Engaged with NHA to implement multiple applications/modules including hospital empanelment, hospital transaction management, portability, data warehouse, mobile app etc.
- Tata Communications Ltd. (TCL): Responsible to provide data center services on an IaaS / PaaS model. The solution is deployed on a Government Community Cloud (GCC) provided by TCL which includes network, infrastructure with middleware components and security layers.
- Medi Assist India TPA Pvt. Ltd.: Responsible for providing call center services to NHA. Primary services include eligibility check, nearest hospital, beneficiary feedback etc. Both inbound and outbound call services are provided by the partner.
- Anti-Fraud Analytics Partner: Engaged to identify suspicious cases/ transactions/ data abnormalities and report to the National Anti-Fraud Unit (NAFU).

10. **Beneficiaries:** PM-JAY has been rolled out for the bottom 40% of poor and vulnerable population (approx. 10.74 crores households). The inclusion of households is based on the deprivation and occupational criteria of the Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas, respectively. This number also includes families that were covered in the RSBY but were not present in the SECC 2011 database. However, many states are already implementing their own health insurance schemes with a set of beneficiaries already identified and thus, States have been provided the flexibility to use their own database for PM-JAY.

2 PM-JAY IT Ecosystem

2.1 Current IT Ecosystem

In order to enable the effective, efficient and transparent service delivery under the PM-JAY, NHA has developed comprehensive IT based solutions that are designed to help States/UTs rapidly implement the PM-JAY scheme which includes a layer of core IT systems/ platforms was developed/ made available for integration, for use by States. These include-

1. Hospital Empanelment System (HEM)
2. Beneficiary Identification System (BIS)
3. Transaction Management System (TMS)
4. Integration using API gateway for internal as well as external system
5. Other supporting applications / components – data warehouse, MIS & analytics, fraud detection etc.

States have the flexibility to use NHA provided IT system or their existing IT platform. In all cases, States are required to provide data to the NHA in a standardized format that enables monitoring the scheme on a set of common parameters. Since the scheme's launch, the IT system is a backbone to the scheme implementation throughout the nation and it also uses various business intelligence tools.

The robust IT ecosystem includes end-to-end information security and privacy of personally identifiable data for beneficiaries, portability, grievance management and anti-fraud measures, etc. Under the scheme the states were allowed to deploy any beneficiary database of their choice with the requirement that it can interoperate with BIS through open APIs. The process allowed the States to fully retain their existing software while providing all the necessary data to NHA required for monitoring and evaluation of the scheme. Current PM-JAY IT ecosystem is developed and maintained by IT partners and deployed either on NIC Cloud or on GCC provided by M/s TCL. The infrastructure available through NHAs CSP is provided at Annexure IV (Infrastructure available through NHAs CSP).

For a detailed understanding of the PM-JAY scheme and the existing IT systems, the bidders are requested to read various documents published by NHA on https://www.pmjay.gov.in/ and the below sub-sections.

2.2 Beneficiary Identification System (BIS)

BIS helps in identifying and verifying beneficiaries to create authenticated beneficiary registry. A detailed BIS process flow is explained as under-

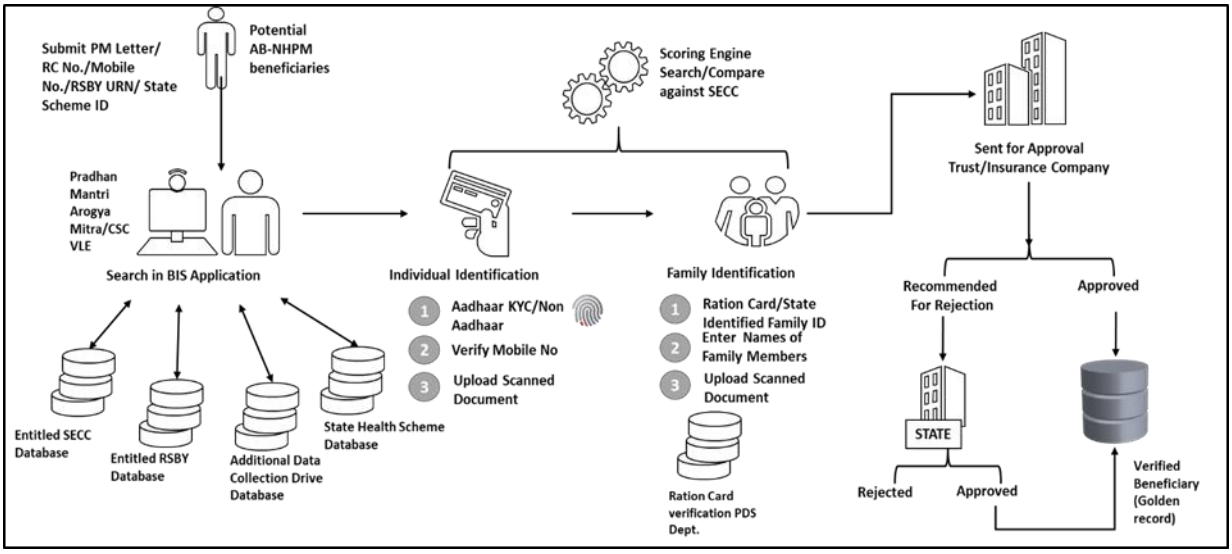


Figure 2: BIS Process Flow

1. Beneficiary Identification System works on a maker-checker mechanism, where operator (PMAM/CSC) act as makers and state approvers/SHA act as checkers.
2. The operator searches in the beneficiary database (SECC, RSBY, ADCD, State Health Scheme database) to determine if the person is enlisted as beneficiary.
3. Search can be performed by Name, Location, Ration Card No or Mobile number (collected during additional data collection drive) or ID printed on the PM letter sent to family or RSBY URN or any other state scheme ID (for states that have integrated their state schemes with PM-JAY)
4. If the beneficiary's name is found in the AB PM-JAY list, Aadhaar (or an alternative government ID) and Ration Card (or an alternative family ID) is collected against the Name / Family.
5. The operator sends the linked record for approval to the Insurance Company / Trust (also known as state approvers). The beneficiary will be advised to wait for approval from the insurance company/ trust.
6. The Insurance company / Trust will setup a beneficiary approval team that works on defined service level on turnaround time. The AB PM-JAY details and the information from the ID is presented to the verifier. The Insurance company / Trust can either approve or recommend a case for rejection with reason.
7. All cases recommended for rejection is then scrutinized by a State Health Agency (SHA) that works on defined service levels on turnaround time. The SHA will either accept rejection or approve with reason.
8. The e-card of the identified beneficiary is then printed with the unique ID under AB PM-JAY and handed over to the beneficiary to serve as a proof for verification for future reference.

2.3 Am I Eligible – MERA

MERA PM-JAY is an online portal, developed by C-DAC, for beneficiaries and citizens to check their eligibility under the PM-JAY scheme. The program runs on phonetic search to enable ease of navigation. Facilities available under MERA PM-JAY

1. To check if a person is entitled for benefits under PM-JAY, one can login on this portal using their own mobile number. Link to the online portal: https://mera.pmjay.gov.in/search/login
2. Three modes of search are available to check if beneficiary is enlisted in the beneficiary database. The search operates on search by name, search by ration card number and search by mobile number.
3. If the citizen is eligible, they can claim benefits under the scheme and get their PM-JAY e-Cards at the nearest empaneled hospital or Common Service Centre (CSC)
4. List of all empaneled hospitals is available on this portal.

2.4 Transaction Management System (TMS)

TMS enables PMAM to register beneficiary for availing treatment in hospital, raise pre-authorization, file treatment details, raise claim to the TPA for further processing of claim requests sent by hospitals. It also provides an efficient and systematic of approving the claims process by SHA and making payments to the hospitals through banks. The detailed transaction workflow under TMS is as under-

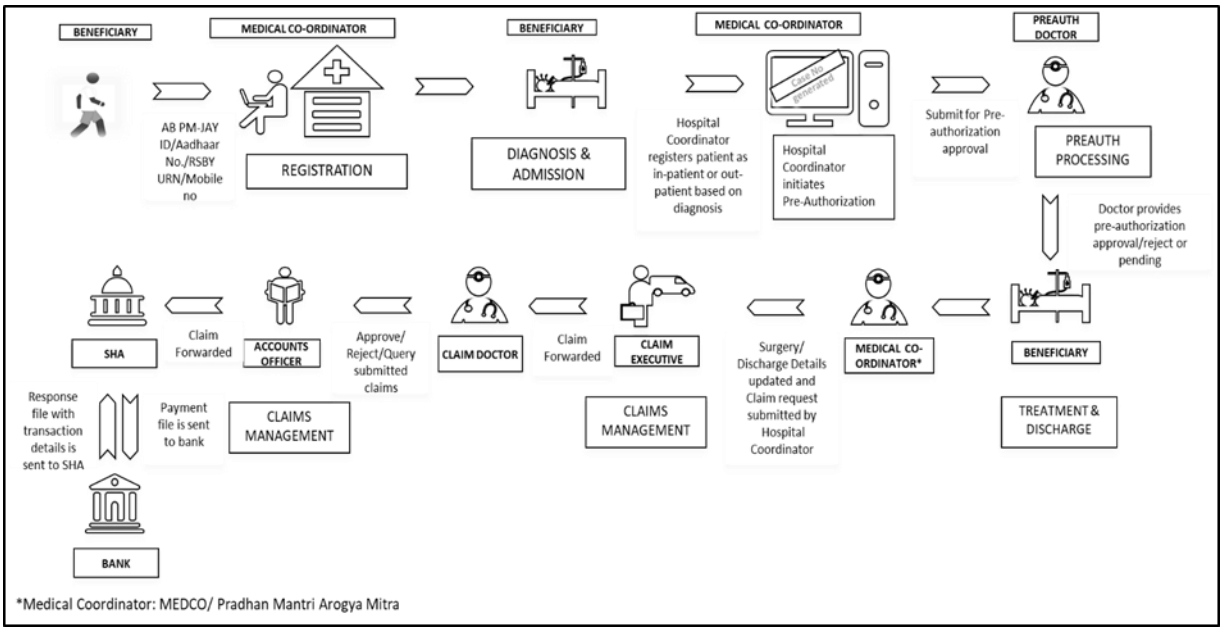


Figure 3: TMS Work Flow

The below steps describe the work flow-

1. PMAM/Medco retrieves the beneficiary details from BIS and registers the patient in TMS
2. Patient is then diagnosed and identified as an in-patient or out-patient.
3. Pre-AUTH's are raised for in-patients so that the treatment can start.
4. Pre-auth panel doctor approves, rejects or can raise query to the PMAM.
5. Beneficiary treatment starts after approval from PreAuth panel doctor.

6. After the treatment, PMAM updates TMS with patient's treatment details and raise a claim.
7. Claim panel doctor approves, rejects or can raise query to PMAM
8. Approved claims are then forwarded to Account officer for validating documents associated with the claim
9. Account officer then forwards the claim to SHA for approval and release of funds.
10. Bank makes claim transactions to the hospitals.

2.5 Hospital Empanelment Management (HEM)

For providing the benefits envisaged under the Scheme, the State Health Agency (SHA) through State Empanelment Committee (SEC) empanels private and public health care service providers/hospitals in their respective State/UTs as per the guidelines.

The states are free to decide the mode of verification of empanelment application, conducting the physical verification either through District Empanelment Committee (DEC) or using the selected insurance company (Insurance Model), under the broad mandate of the instructions provided in these guidelines.

A web-based platform Hospital Empanelment Management (HEM) have been developed for registration of a healthcare provider willing to get empaneled under the PM-JAY. The hospital must register through this portal as the first step of empanelment as, it is the interface for application. Every hospital needs to visit the web portal and create an account for themselves.

The hospital/healthcare provider must show willingness to empanel the hospital under PM-JAY by visiting the web portal using URL https://hospitals.pmjay.gov.in. After hospital's consent for empanelment, the system will allow to register the hospital.

After successful submission of all the relevant information, the system will allow to create an account for the hospital. An exclusive hospital reference number and password will be sent to registered mobile number and email id. Using these credentials, the hospital has to login in to the system to start filling the application form with following sections:

1. User section
2. Hospital Basic Information
3. Financial Details
4. Specialties offered
5. Licenses and Certifications
6. Civil Infrastructure
7. Medical Infrastructure
8. General Services
9. Man-Power Details

Unless the hospital submits the application the status of the application would be in draft.

HEM Process Flow after submission of the empanelment application:

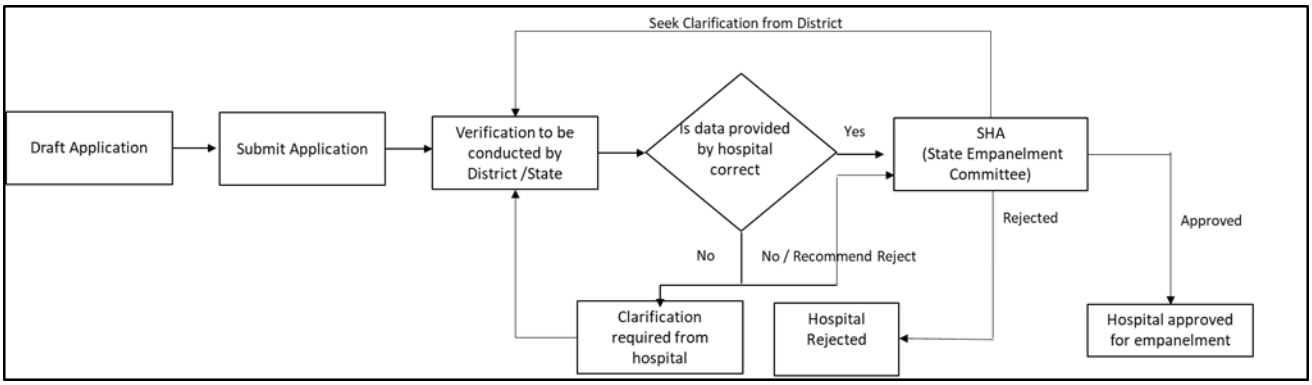


Figure 4: HEM Process flow

1. Upon submission of application by the hospital the status of application changes from draft to submitted
2. Before the verification process is initiated by the district/state, the hospital has an option to withdraw the application i.e. within 15 days of submitting the application
3. The documents uploaded have to be correlated with physical-verification of original documents produced by the hospital. In case of shortfalls in documents, the DEC (District Empanelment Committee) may return the application to the hospital for rectifying any errors in the documents using seek clarification from hospital option in the portal
4. The DEC will physically inspect the premises of the hospital and verify the physical presence of the details entered in the empanelment application, including but not limited to equipment, human resources, service standards and quality and submit a report in a said format through the portal along with supporting pictures/videos/document scans
5. In case during inspection, it is found that hospital has not applied for one or more specialties, but the same facilities are available, then the hospital will be instructed to apply for the missing specialties within a stipulated a timeline (i.e. 7 days from the inspection date)
6. The team will recommend whether hospital should be empaneled based on their field-based inspection/verification report
7. DEC team will submit its final inspection report to the state. The district nodal officer has to upload the reports through the portal login assigned to him/her
8. The DEC will then forward the application along with its recommendation to the SEC
9. The SEC (State Empanelment Committee) will consider, among other things, the reports submitted by the DEC and recommendation approve or reject or seek clarification from district
10. If SEC approves the application, the hospital would be empaneled under the scheme. This process is completed within 30 days of receiving such application.

2.6 Call Centre

1. A Call Centre with Toll free number 14555/1800111565 has been established by NHA which is currently operating from Hyderabad, Bangalore and Kolkata.
2. It aims to ensure that the beneficiaries and other stakeholders have seamless and timely access to the required information and access of services.
3. It has enabled geo-location facility which automatically identifies the caller by location and routes the call to the nearest Call Centre.

4. Currently 24/7 support is provided in Hindi and English languages. The average inbound call is around 6000 per day and has a capacity to make 35000 outbound calls per day.
5. State Call Centres in UP East, Himachal Pradesh, Goa and Maharashtra have integrated with NHAs call centre through geo-location routing which ensures that calls landing on the NHAs call centre from these locations are diverted to the State Call Centre's which are administered by SHA.

The below diagram depicts the inbound call process flow:

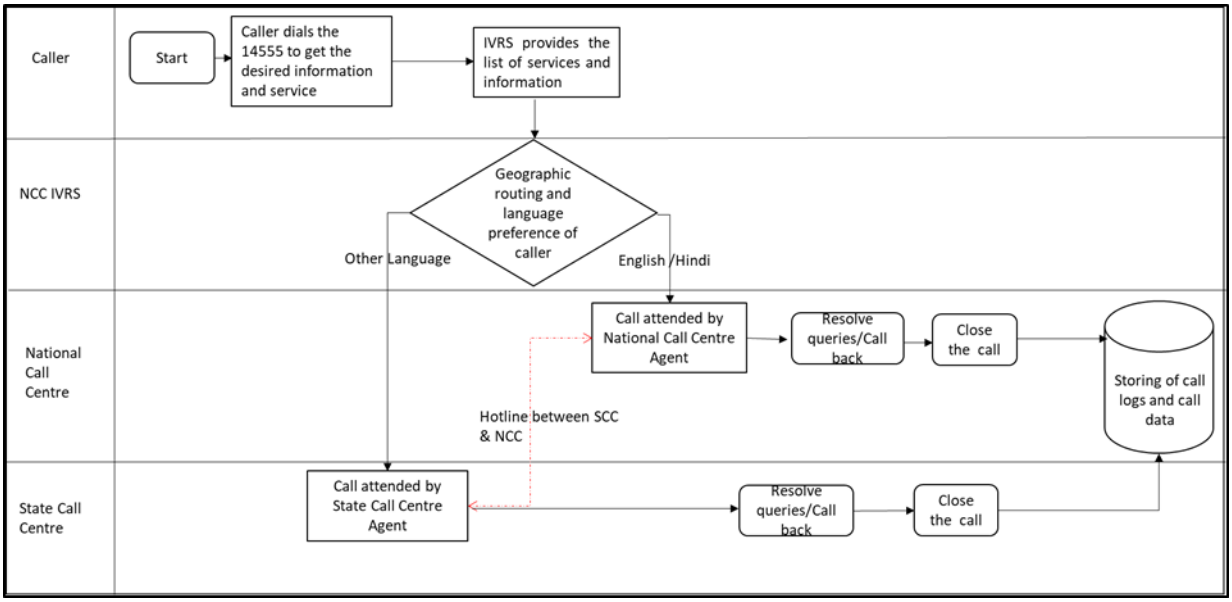


Figure 5: Inbound call process flow

NHA has also developed and deployed call disposition tool to support the functionality of call centre. This tool helps call centre executives to:

1. Tag the various types of calls landing on NHA toll free number 14555
2. Capture various fields like money being collected by the hospital, treatment being denied etc. which in turn helps NHA analyze and attend to such cases
3. Track outbound calls being made by call centre executives
4. Register system-based escalation of complaints/grievances (based on timeframe for resolution/ nature of grievance/ automatic escalation based on escalation matrix) and record their closure/resolution in the national portal.

2.7 Grievance Portal

1. NHA has developed Grievance Redressal Guidelines and has established a Central Grievance Redressal Management System (CGRMS). NHA has the sole prerogative for subsequent amendments to Guidelines.
2. Central Grievance Redressal Management System (CGRMS) refers to system developed by NHA for registering, processing, managing, monitoring and redressing all grievances under the AB PM-JAY.
3. Grievances can be filed by any party directly or indirectly involved with the AB PM-JAY or any stakeholder

The below diagram depicts the process flow for CGRMS:

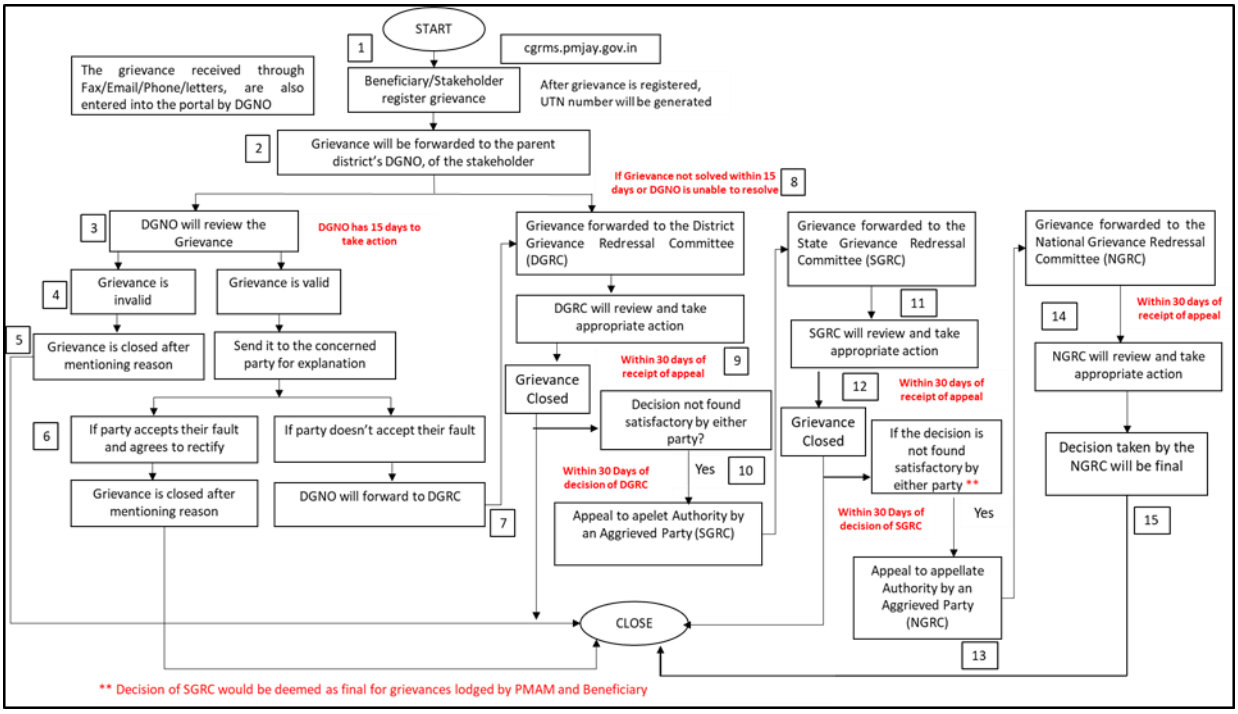


Figure 6: CGRMS process flow

1. If any stakeholder has a grievance against AB PM-JAY scheme, processes, operations etc. a grievance can be lodged through the online CGRMS portal. The grievance received through Fax/Email/Phone/letters, are also entered into the portal by District Grievance Nodal Officer (DGNO)
2. The CGRMS will automatically:
    a) Generate a Unique Ticket Number (UTN)
    b) Categorize the nature of the grievance
    c) An e-mail / letter / SMS to be sent to the appropriate stakeholder to which such category of grievance is to be referred (including updating on phone) as per the Grievance Redressal Matrix
3. All grievances, irrespective of the means through which it is lodged, shall be forwarded to the concerned DGNO with a copy to the State Grievance Nodal Officer (SGNO).
4. DGNO will review the grievance
5. Valid grievance shall be sent to the concerned party for explanation.
6. DGNO has to act on the grievance within 15 days of the receipt
7. If the decision of DGNO is accepted by the party and agrees to rectify, the grievance will be closed after mentioning the reason.
8. If the party does not accept their fault, DGNO will forward the case to District Grievance Redressal Committee (DGRC)
9. If the grievance is not resolved within 15 days of receipt or if DGNO is unable to resolve the same, the system will automatically transfer the grievance to DGRC
10. DGRC will review and take appropriate action within 30 days of receipt of the appeal

11. If the decision of the DGRC is found satisfactory by both the parties, the grievance will be closed, else either of the party can reopen the case with the appellate authority, State Grievance Redressal Committee (SGRC) within 30 days of decision of DGRC.
12. Grievances forwarded to the SGRC will be reviewed and appropriate action will be taken within 30 days of receipt of the appeal
13. If the decision of the SGRC is found satisfactory by both the parties, the grievance will be closed. In case of grievance filed by beneficiary and PMAM against any stakeholder, SGRC is final decision-making authority
14. If either of the party is not satisfied with the decision of SGRC, they can reopen the case with the appellate authority, National Grievance Redressal Committee (NGRC) within 30 days of decision of SGRC.
15. Grievances forwarded to the NGRC will be reviewed and appropriate action will be taken within 30 days of receipt of the appeal
16. Decision taken by NGRC will be the final

2.8 Fraud Control System

1. FCS is developed for enabling NHA to have broad oversight of PM-JAY operations with respect to fraud control and the objectives of this system is as under:
    a) Developing robust model contracts with fraud management clauses, punitive action and claw-back provisions;
    b) Institutionalizing effective internal control methods;
2. Data mining and analytics support including analyzing inter-state anomalies;
3. The Business Capabilities and Functionalities of FCS are-

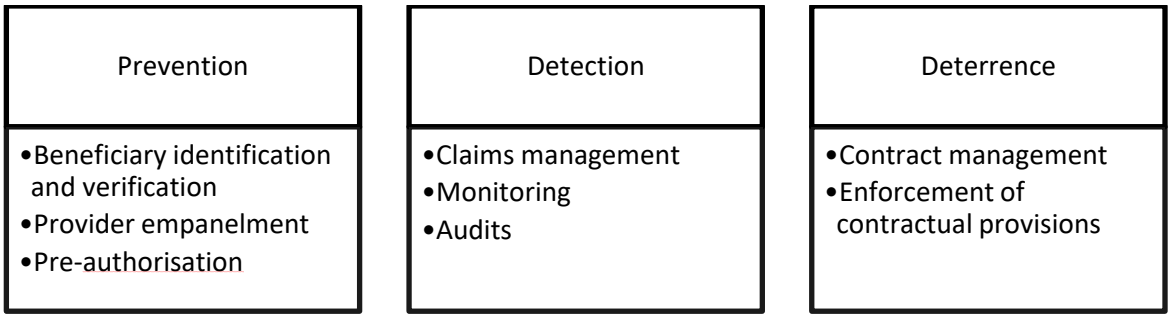


Figure 7: Fraud control system

4. FMS is used by NHA and SHA authorities to prevent, detect and deter fraud in different stages of a claim.
5. National Anti-Fraud Unit (NAFU) and State Anti-Fraud Unit (SAFU) for medical audit and vigilance at the state level and to have Vigilance and Investigation Officers at district level.
6. In case SHA is implementing scheme under insurance model or through Implementing Support Agency (ISA), the District Vigilance and Investigation Officer may be from the insurance company or ISA as part of service level agreement.

2.9 Open API Integrations

1. NHA ecosystem has adopted integrations basis open API framework.
2. API Gateway is the component built to integrate all PM-JAY applications within the IT-landscape as well as all external integrations required. Existing PM-JAY applications interact with each other via API gateway, whereas external systems such as UIDAI, State Systems also interact with PM-JAY set of applications using API gateway.

2.10 National Data Warehouse

1. National Data Warehouse (NDWH) is set up by NHA to store, integrate and analyze data generated and captured by various modules of PM-JAY scheme.
2. The main objective of NDWH is to capture data from PM-JAY modules such as BIS, TMS, HEM and call centre and provide a platform to enable stakeholders to analyze performance, take policy level decisions and act upon the weak points which is hampering the progress and success of the scheme.
3. This central repository act as a single source of truth for various stakeholders of NHA such as State users, Insights, Fraud Control System, Call Centre, Innovation Unit etc.
4. Insights- dashboards developed by NHA that drives analytical visualization. The NDWH is used by following to generate useful insights, but not limited to-

    a) Insights/ Analytics Team
    b) National Anti-Fraud Unit (NAFU)
    c) State Anti-Fraud Unit (SAFU)

2.11 INSIGHTS

1. Insights team of NHA provides visualization of data to analyze performance, understand the coverage of schemes etc.
2. Insights use data analysis to develop reporting framework that generates various permutation and combinations of the reports. Insights team provides useful details on scheme performance in various states.
3. Insights dashboard helps in policy making. It provides visualization into pricing of packages, utilization of scheme in states etc. which helps in effective implementation of PM-JAY.

2.12 PM-JAY Website/Portal

The PM-JAY website (www.pmjay.gov.in) is developed and maintained by NHA. Note- bidder is requested to visit the website for detailed understanding.

2.13 Mobile App

1. PM-JAY mobile is available on google play store
2. Key features include-

    a) Locating nearby empaneled hospitals
    b) Check Eligibility
    c) Frequently Asked Questions (FAQ's)

d) About PM-JAY
e) Get help

2.14 IMPACT Portal

1. IMPACT portal helps in monitoring the performance of the insurance side stakeholders in the PM-JAY scheme
2. It provides detailed scoring and rating framework for the performance of stakeholders.
3. It provides NHA, SHA, Insurers, ISA and TPA to view insights of efficiency, performance and overall rating relevant to them
4. It provides supervisory authorities to flag important issues/messages etc. to the relevant entities.
5. It provides NHA to collate and collect important information relevant to the IMPACT objectives otherwise not available on the current database from the Insurer, ISA and TPA's.
6. The portal captures information on infrastructure, human resource, operational parameters and training outcomes of each IC, ISA and TPA through input fields provided in their respective login.
7. Turn Around Time in claim processing and settlement, productivity of human resource and volume of work is analyzed using the data fetched from TMS for each ISA, IC and TPA.
8. Based on these information performance rating of the IC, ISA and TPA is done and visualized in the portal.

2.15 Current IT ecosystem interactions

The below diagram depicts the current IT ecosystem interaction:

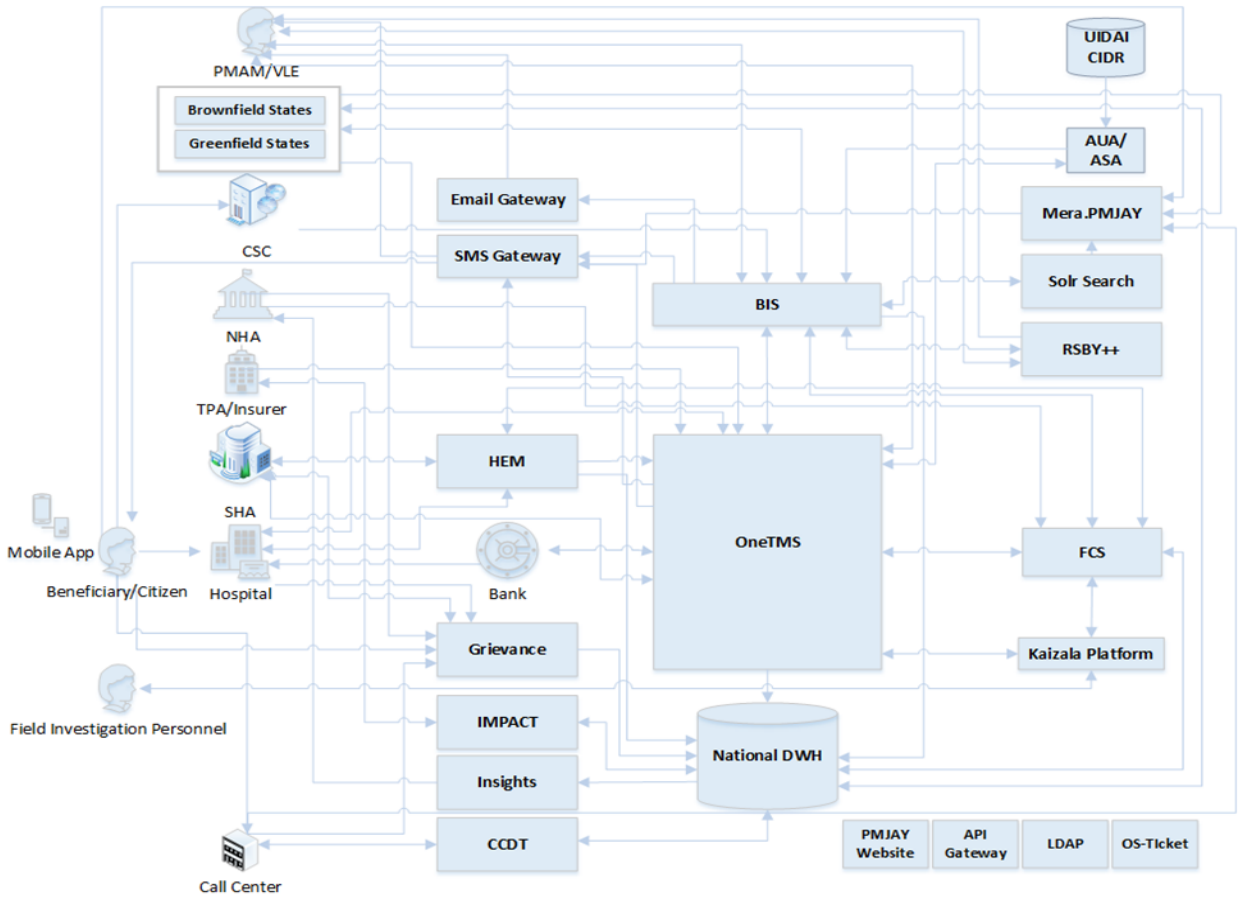


Figure 8: Overview of Current IT Ecosystem Interactions

The below table provides details on interaction of various systems within the IT eco-system-

Source Entity	Target Entity	Interaction Detail
Beneficiary	MERA	• Beneficiaries check their eligibility through the MERA portal- https://mera.pmjay.gov.in/search/login.
MERA	Solr search	• MERA searches SECC/RSBY data through Solr Search Application implemented by C-DAC. • Solr Search engine implemented for SECC/RSBY database along with state specific beneficiaries' database for robust and effective search results.
MERA	SMS Gateway	• Details are sent to the beneficiaries which are found eligible through SMS on the registered mobile no. of the beneficiary. • Eligible beneficiaries can then visit the nearest PMAM/VLE(CSC) and get their PM-JAY card made.

Source Entity	Target Entity	Interaction Detail
PMAM/VLE (CSC)	BIS (for greenfield states) or BIS equivalent (for Brownfield states)	• Authorized person (CSC-VLE, PMAM) uses the BIS application (or its equivalent in brownfield state) to confirm the eligibility, searches for the beneficiary using different search parameters such as PM-JAY ID (if available) mobile number (captured during ADCD), HH_ID, ration card or any other state specific ID (such as Samagra ID in MP, Bhamashah ID for Rajasthan) . • For eligible beneficiaries the authorized person issues the PM-JAY beneficiary card.
BIS	Solr Search	• BIS invokes Solr search API and searches for the beneficiary based on the search criteria provided.
BIS	Other State beneficiary sources	• BIS connects to state specific data sources to retrieve the data of the eligible beneficiaries. • Note that the other such sources are state specific sources which have extended the insurance coverage apart from the SECC data.
State DB/API Gateway	BIS	• BIS receives eligible family details via State Scheme Integrated API for states that have expanded their beneficiary base from SECC & RSBY
State DB/API Gateway	MERA	• BIS receives eligible family details via State Scheme Integrated API for states that have expanded their beneficiary base from SECC & RSBY
RSBY ++	BIS	• RSBY++ is used by PMAM/CSC to search Beneficiary Data from BIS for Kerala. Kerala state has its own beneficiary database used under RSBY scheme.
BIS	AUA/ASA/Aadhar Services	• BIS utilizes Aadhaar services to do dual factor authentications of PMAM, VLE etc. who are authorized personnel. Aadhar services are used to verify the beneficiary as a e-KYC. Here, NHA is AUA but NIC is technology provider for AUA / ASA and authentication services.
BIS	SMS/Email Gateway	• Beneficiary receives confirmation SMS (Record Created, e-Card approved, record rejected, e-Card disabled) PMAM, ISA, SHA received OTP for login
BIS	NDWH	• Beneficiary data is pushed into NDWH from BIS databases. NDWH in return, help BIS application to show aggregate count of beneficiaries identified on BIS Dashboard.
BIS	TMS	• One TMS retrieves beneficiary details from BIS through PM-JAY ID or other parameters. For emergency cases where the eligible beneficiary do not have PM-JAY card, One TMS registers the beneficiary to BIS for creating a golden record. This data is pushed in BIS

Source Entity	Target Entity	Interaction Detail
HEM	TMS	• HEM pushes hospital's financial data (account number), hospital's specialties to One TMS. This is a nightly activity.
Beneficiary	Hospital	• Beneficiary visits hospital when beneficiary requires health services.
Hospital	TMS	• Hospital staff/PMAM uses TMS to register the beneficiary having a PM-JAY ID. It raises the pre-auth for the patient. For portability cases, the hospital staff uses NTMS (National TMS) for registration and for further steps. Hospital staff also raises claim from the One TMS application. TMS application is used by ISA/TPA/trust etc. to do pre-auth, adjudication etc. which is a configurable based on state specific requirements.
TMS	SMS/Gateway	• One TMS sends SMS to beneficiaries at multiple checkpoints during health service delivery.
TMS	Bank	• The SHA approves the claims raised using TMS. Payment files having SHA approved transactions are sent to banks to make payments to the hospitals. Bank sends response file having UTR number for each transaction to SHA. Response files are uploaded in TMS to change the transaction status to 'Claim paid'. Most of the states have automated their payment integration with banks.
TMS	AUA/ASA/Aadhar Services	• TMS uses Aadhar Services (AUA/ASA) for eKYC for PMAM/Beneficiary
TMS	Green Field States	• Green field states use One TMS from registering patients till raising a claim post treatment. For states where Scheme is expanded, One TMS is integrated with State systems
TMS	National DWH	• Transactional data on which MIS reports are generated is pushed to DWH through a batch job which runs at regular intervals
TMS	FCS	• Several roles can flag cases as suspicious cases to FCS. FCS currently utilizes the TMS platform to push suspicious cases onto the bucket of NAFU and SAFU. Various FCS requirements from a Fraud prevention perspective are implemented in TMS.
TMS	Kaizala	• Field Investigation officer is registered in Kaizala by providing contact number. Field Investigation survey form is filled and uploaded in Kaizala which then are updated in One TMS.

Source Entity	Target Entity	Interaction Detail
Field Investigation Officer	Kaizala	• Field Investigation Personnel then works on the assigned case and submits their report which gets reflected in the TMS.
FCS	BIS	• Fraud Control is required to interact with BIS to enable to view and sync beneficiary data FCS can block the PM-JAY card if the suspicion is confirmed
FCS	HEM	• Fraud Control is required to interact with HEM to enable actions against hospitals like DE empanelment, suspension, issue show cause etc.
TMS	HEM	• HEM pushes de empaneled hospital data to TMS
HEM	QCI	• Mandatory fields of Hospital in HEM is sent to QCI for accreditation certificate from QCI. QCI returns back the certificate to NHA as well as provide verified hospital data back to HEM.
HEM	DWH	• HEM Application Data is sent to NDWH for reporting, analytics
Call Centre Executive	CCDT	• Call-centre executive uses CDT to retrieve details of the caller and logs feedback in CDT.
CCDT	DWH	• Data from DWH is pulled from CCDT related to TMS, BIS, CGRMS
Beneficiary, SHA, NHA, TPA	CGRMS	• Log grievances and process grievance.
CGRMS	DWH	• CGRMS, IMPACT Portal, CCDT Application Data is sent to NDWH for reporting, analytics
NDWH	State Users	• NDWH pushes state specific data to State Data warehouse which is used for dashboards, reporting and analytical activities by Greenfield state. Data from Brown field is captured directly into NDWH.
NDWH	Insights	• State and National level dashboards and reports related to BIS, TMS, HEM and CCDT created by Insights uses data from NDWH which is consumed by various stakeholders i.e. SHA, NHA
NDWH	FCS	• FCS uses NDWH data to have a data repository and analyze data to create check points to identify fraud activities. NDWH receives FCS data for Insights & Analytics
NDWH	CDT	• CDT portal retrieves beneficiary details from NDWH for outbound calls. Manual process of extracting and uploading data from BIS is eliminated with this mechanism in place.

Source Entity	Target Entity	Interaction Detail
		NDWH pulls data from CCDT to create insights, report & dashboards
DWH	IMPACT Portal	• PreAuth/Claims TAT from NDWH being populated in IMPACT
Mobile App	PMAM/VLE	• To check Eligibility of a citizen, register a Beneficiary, Bio authentication during submission and discharge in a hospital, file in app discharge summary, claim submission and maintain patient file on the internet
Mobile App	Beneficiary	• Help Beneficiary find Nearby Hospital, search for his eligibility, call Centre, log grievances, check his profile, wallet balance, HER, print eCard
Mobile App	SHA, NHA, ISA TPA	• The mobile App will have interactions with SHA, NHA and ISAs to publish insights, submit claim information
Open LDAP	All Applications	• Some applications in the PM-JAY IT-ecosystem uses LDAP for common login capability.
API-Gateway	All internal and External Applications	• API-Gateway is used for all internal and external API integrations within PM-JAY IT ecosystem as well as other state specific or external systems.
PM-JAY IT-users	OS-Ticket	• OS ticket is used to log all IT-support tickets. OS-ticket can be reached at (https://support.pmjay.gov.in/)

Table 1:Current IT ecosystem interactions details

2.16 Key challenges in current IT ecosystem

The present IT systems/ sub-systems have been running for more than a year (launched on 23rd September 2018). While the systems have been able to keep pace with the dynamic nature of user and process requirements, it is felt that a technology refresh is required to overcome challenges such as:

1. Architectural challenges
2. Robustness and Sustainability
3. Scalability
4. Need based Innovation
5. Standardization and Integrations
6. Security and Privacy
7. User Experience
8. Compliance to standards

3 Key Design Requirements for PM-JAY IT 2.0

This section outlines the key design requirements at a broad level. The MSP must be able to deliver the key design requirements, as part of PM-JAY IT 2.0, as specified in this section.

Note: All bidders are required to demonstrate the compliance of the following design requirements in their proposed technical bid.

1. **Health Standards:** Ministry of Health & Family Welfare has published 'National Digital Health Blueprint (NDHB)[1]' which envisages transformation of the health sector in a digitally-enabled manner through adoption of 'minimum viable set of standards' which will allow for the eco-system partners to interoperate seamlessly. The proposed PM-JAY IT 2.0 solution should adopt the following standards in respect of health information (including, but not limited to):

    a) FHIR Release 4
    b) SNOMED-CT
    c) ICD-10 (and future updates)
    d) LOINC Standards
    e) EHR Standards (2016)

    Data definitions under the PMJAY IT 2.0 should be compliant to FHIR / HL7 standards

2. **Electronic Claim (e-Claim):** e-Claim forms will be part of standards to be used by the industry for any health insurance claims. NHA, IRDAI and representatives from the industry will work together to publish the final version of these forms which shall be designed and implemented by the MSP as part of PM-JAY IT 2.0 solution. However, the MSP shall design the PM-JAY IT 2.0 system in such a way that it enables both digitization and digital mode.
3. **Agile and DevOps Methodology:** The MSP shall design, develop, implement, operate and maintain PM-JAY IT 2.0 solution using Agile methodology. Also, it is preferred to use and implement IndEA methodology[2] and Agile IndEA methodology[3] for development of PM-JAY IT 2.0 solution. The MSP shall also follow DevOps which must use CBCD (Continuous build and continuous deploy) methodology with a view to enhance collaboration during the project design, development, implementation and maintenance. The MSP shall prepare a detailed product/portfolio backlog which should include an exhaustive and mutually exclusive list of epics, user stories, tasks etc.
4. **Micro-Services Architecture:** PM-JAY IT 2.0 should be developed on a micro-services architecture that structures the components/ applications as a collection of loosely coupled services which are independently deployable. The MSP shall ensure that all logics are broken into small components and wired through an asynchronous workflow to facilitate quick execution. The solution must be developed so as to facilitate the release of resources and handling of failures at a micro level, allowing for each of components to be run across a cluster of virtual machines which should allow seamless scaling based on usage. Real-time data exchange through open APIs between applications/ micro-services should be enabled. Microservices should leverage appropriate framework such as containers,

[1] https://mohfw.gov.in/newshighlights/final-report-national-digital-health-blueprint-ndhb
[2] http://egovstandards.gov.in/sites/default/files/IndEA%20Framework%201.0.pdf
[3] http://egovstandards.gov.in/sites/default/files/Agile%20IndEA%20Framework%20V%201.0_0.pdf

container orchestration, open tracing, secure services communication between microservices, advance deployment topology etc.

5. **Cloud Native:** NHA, through CSP, shall provide containers for solution deployment. MSP to design, develop and implement PM-JAY IT 2.0 system as cloud native by leveraging containers technology to provided by NHAs cloud, to ensure zero downtime and continuous operations.
6. **Open Standards:** The PM-JAY IT 2.0 system must be designed following open standards, as per the policy of Open Standards[4], to the extent feasible and in line with overall system requirements set out in this RFP, in order to provide for good interoperability with multiple platforms and avoid any technology or technology provider lock-in.
7. **Product selection and consideration for Open Source Software (OSS):** As per GOI policy on adoption of open source software, NHA shall prefer Open Source Software (OSS) in comparison to Closed Source Software (CSS). Proprietary products may only be used when necessary to achieve scale, performance and reliability. Every such proprietary or CSS component/ service/ product/ framework/ MSP pre-existing product or work must be wrapped in a vendor neutral API so that at any time such CSS product can be replaced without affecting rest of the system. In addition, there must be at least 2 independent OEM products available using same standard/API before it can be used to ensure system is not locked in to single vendor implementation. While the bidder may choose Bespoke/ COTS (Commercial Off the Shelf)/ OSS, it is however clarified that as per Government of India's policy[5] (Policy on adoption of OSS), it is preferred that PM-JAY IT 2.0 solution is based on OSS. The following conditions are specified for product selection by MSP:

    a) In case any component is proposed as CSS (Closed Source Software)/ COTS the bidders are required to provide adequate justification (as per table provided in Volume-II for technical bids submission) for exclusion of OSS in their bid response. For any CSS/COTS product the bidders are required to submit data sheets of the respective product(s) in their technical proposal.
    b) If any product is quoted then it should exist in the Leaders Quadrant of Gartner's Magic Quadrant or Leaders Wave of Forrester Wave or Leader in IDC MarketScape, for their categories of products. Submission of a copy of relevant section of the analyst report along with technical proposal is mandatory. The reports that can be referenced should be published in the last 3 years i.e. calendar year 2017 or 2018 or 2019 onwards. Recency of the reports would take precedence (e.g. availability of at least 4 products in the leader space of any one or across three analyst reports in 2019 would take precedence over any of the 2018 reports)
    c) In case less than 4 distinct products are available across the Leaders Quadrant of Gartner's Magic Quadrant or Leaders Wave of Forrester Wave or Leader in IDC MarketScape combined which meet the requirements of the solution as set out in the RFP, MSP may propose the products from the next category of these analysts reports i.e. Challengers Quadrant of Gartner's Magic Quadrant or Strong Performers Wave of Forrester Wave or Major Players in IDC MarketScape
    d) In the case where In case where less than 4 distinct products are available across the Challengers Quadrant of Gartner's Magic Quadrant or Strong Performers Wave of Forrester Wave or Major Players in IDC MarketScape OR Gartner Quadrant/ Forrester Wave/ IDC

[4] http://egovstandards.gov.in/sites/default/files/Policy%20on%20Open%20Standards%20for%20e-Governance.pdf
[5] https://www.meity.gov.in/writereaddata/files/policy_on_adoption_of_oss.pdf

MarketScape report (for the product or category of product) does not exist for any specific product or category of product OR if any OSS is proposed by the bidder THEN the bidder has to mandatorily provide at least 2 case studies of similar complexity, sensitivity and scale where the proposed product is successfully implemented and is in operations for at least last two years i.e. financial year 2018-19 and 2019-20. The case study should provide

i. Name of the client
ii. Description of the solution
iii. Scale of the solution in terms of size, number of transactions, data and users being handled
iv. Details of the scenario for which the product is being used
v. Supporting evidence of having the product in operations satisfactorily from the client

Bidders to submit these details in their technical proposal.

e) In any of the cases above, any product (software) proposed by the MSP should not be End of Life or End of Support and the respective OEM has to provide an undertaking to this effect as part of the technical proposal submission. During the course of the implementation or the operations of the project, if any of the products is declared as End of Life or End of Support, the MSP has to replace the product at its own cost.

8. **Digital Service Standards (DSS)**: DSS[6] adoption ensures uniformity, consistency, comprehensiveness and excellence in the definition, realization, measurement and governance of digital services. It suggests graduating from e-Service Ecosystem to Integrated Digital Services Ecosystem. It is required that the MSP refers and adopt DSS and define the services to a further granular level based on the framework provided within.
9. **API-base Integration Architecture**: The bidders are required to adopt an API-based Integration Architecture to enable multiple stakeholders interoperate with ease, subject to necessary permissions, privileges and consents. The following benefits are envisaged from an API based integration-

a) Consumption across technologies and platforms (mobile, tablets, desktops, etc.) based on the individual requirements
b) Automated upload and download of data
c) Ability to adapt to changing business rules and end user usage models
d) Integration with customer software (ERP, Accounting systems) that health service providers, governments and other stakeholders of the ecosystem are already using for their day to day activities.

10. **Portability, Nonrepudiation, Immutability, Verifiability and Explainability**: The MSP should ensure the following-

a) PM-JAY IT 2.0 must be designed in a way that allows feature of portability to the beneficiaries which allows them to avail health care services (as per the defined package) across the country through empaneled public and private healthcare service providers
b) Any record once created cannot be deleted or modified without following due process.
c) All created records must be traceable to its creator unambiguously.

[6] http://egovstandards.gov.in/sites/default/files/Digital%20Service%20Standard%20Version%201.0.pdf

d) Data should be reliable and verifiable
e) The system must support explainability of decisions.

11. **Extendibility:** The proposed solution should be able to extendable to other public and private health schemes/ programs as per NHA requirements and its vision. Proposed solution should be able to extend through configurations without impacting its existing setup and performance.
12. **Innovation:** One of the key responsibilities of the MSP shall be to generate innovative methods in the design, development and operations of PM-JAY IT 2.0 in order to improve and make it more efficient, transparent and easy with an objective to reduce arrears of work. NHA envisages the MSP to deliver PM-JAY IT 2.0 as a continuously improving system and to accomplish the same new and innovative methods are required which may also include usage of new age technologies such as AI and IoT. The MSP shall from time to time submit ideations on PM-JAY IT 2.0 which, if approved by NHA, may be implemented by MSP as pilot and then on full-scale. The MSP may be required to include new services/functionalities (with open API), as a result of innovation, within the existing technology. New technologies may also replace existing services as well.
13. **Security and Privacy by Design:** The envisaged solution involves collection, processing and storage of sensitive information including Personal Identifiable Information (PII), Personal Health Information (PHI), and Financial information during different stages of the process. In addition, multiple stakeholders will require access to this data during different stages. Considering the sensitivity of the data pertaining to residents, it is prudent to protect information from breaches that may have severe ramifications. It is required that MSP should take measures from the design phase itself to ensure security & privacy of beneficiaries' data. Beneficiaries' PII and health data is required to be always kept encrypted even within PM-JAY data centers. MSP shall embed the principle of Security & Privacy by design into the integrated solution by complying with NHA Information Security Policy & Data Privacy Policy, copies of which will be shared with the successful bidder/MSP on NDA terms.

    a) **Security by Design:** At the strategy level, following design considerations are to be taken-

        i. Zero-Trust Architecture for the integrated ecosystem

    b) **Privacy by Design:** MSP to ensure data protection requirements as part of the design and implementation of eco-systems, services, products and business practices. Privacy by design has to be built into the development process in which the following privacy considerations are reviewed, privacy impact is assessed and approved for any changes or significant developments:

        i. The type of data being collected
        ii. The amount of data being collected
        iii. Where the data is being stored
        iv. How long the data will be stored

    c) **Data Governance & Lifecycle Management**

        i. **Classify:** Health data across digital health ecosystem are sensitive in nature. MSP to ensure the envisaged solution is designed beyond the traditional approach to data classification to acknowledge the changing risk profile of data elements based on factors such as location, data commingling, regulatory requirements etc. All patient care (medical) systems, business systems and applications that store and process or

transmit EHR (e.g., pharmacy, infection control, cancer registry, MRI, CTI, Ultrasound) must be classified and protected with appropriate security controls.

ii. **Protect:** Protection strategies to be aligned with the entire digital health ecosystem's overall risk profile and the defined sensitivity levels of the data, focusing on the most sensitive data first. Protection need to be flexible and must support the overall business objectives. The technical solution shall leverage universal, authenticable, non-repudiable, and digital identities to allow interoperability across service providers. Follow principle of least privilege, need to know, least trust, mandatory access control and separation of duties.

iii. **Govern**: Put the appropriate governance structure in place that is right sized to the goals and objectives of the integrated solution must allow defining and managing quality, consistency, usability, privacy, and availability of Personal Health data across the information lifecycle. A focus on "data use" considers the risks and opportunities in the growing use of data to drive value across the PM-JAY ecosystem.

iv. **Operate & Monitor**: Ongoing operation and monitoring of the program is an evolution, driven by changes in factors such as the regulatory landscape, threats and vulnerabilities, new technologies, new third parties, new uses of the data and new data types introduced into the environment.

v. **Discover:** Leveraging both "top down" (e.g. surveys, interviews, document reviews) and "bottom up" (e.g. automated data scanning) methods to uncover information about the expected and unexpected places data moves through the ecosystem and present a visual depiction of data flows.

d) **Data Enablement with Privacy Preservation Techniques:** MSP must ensure Applications are designed in a manner to support data masking, anonymization, pseudonymization and de-identification or any other privacy perseverance technology in the system. Tools to protect privacy of data must be in-built in the solution and best-practice guidelines to be in place for the users (hospitals, insurers, and other stakeholders) to ensure privacy of data. Keep component part of PM-JAY IT system and operation of business practices visible and transparent. When the data are shared/used for analytics, anonymization of data is done to protect privacy. Databases must support secure data storage supporting encryption technology.

e) **Beneficiary empowerment:** MSP must design the solution enabling PM-JAY or other health scheme beneficiaries of our country, to seek correction, amendments, or deletion of their data where it is inaccurate; be able to obtain a copy of their personal data. Beneficiaries should be at the center of any data sharing and should be given adequate control and decision-making power on how data associated with them is shared. Build privacy measures directly into any given PM-JAY system or HCP platform

i. Anticipate and prevent privacy-invasive events before they happen.

ii. Embed privacy into the design and architecture of PM-JAY system and business practices.

iii. No change shall be effected without Privacy and security assessment

f) **Tamper-proof audit logs**: The solution must support tamper proof audit logs. The transaction logs shall be time stamped and digitally signed by NHA making them tamper proof. Any

change must make the digital signature invalid. The logs must hash chained to further enhance the immutability of the logs and make changing logs at a later date an extremely tedious and difficult task. The log must be pseudonymize to protect privacy but should be able to trace the user in the event a transaction is contested.

4 Portfolio of Services

This section lists out an indicative list of services to be provided by the PM-JAY IT 2.0 system and includes the 'as-is' list of services as well. While NHA has made all possible efforts to ensure that the major services are captured completely. However, there could be few changes (both additions and deletions) to the stated services and final list of business services shall be signed-off between the NHA and the MSP prior to commencement of the system development.

Note-

1. The MSP has to re-configure, define and describe the 'to be' services so as to bring them on par with the best practices in each service area.
2. MSP shall add new services possible with the latest technologies, especially mobile and AI. This will be in addition to the integration of the services mentioned below so as to maximize the convenience of the user-groups.
3. The template for Portfolio of Services given in Section 4.6 of IndEA Framework document (Business Reference Model) shall be referred to by the MSP to prepare the Portfolio of Services in a standard format, customizing the format provided in IndEA appropriately to suit PM-JAY 2.0 requirements.
4. MSP shall engage a team of UX experts in all phases – Define, Design, Develop and Deliver while designing the 'to-be' services. Some of the key considerations include, but not limited to:
    a) Easy identification and mapping of beneficiaries in an intuitive fashion, over app / portal / kiosks.
    b) Beneficiary being able to check the complete details of treatments, medication and all other details in an anytime, anywhere manner.
    c) Real-time analytics of transactions drilled down to the hospital level by specialty
    d) Completely monitored and controlled environment for a health assurance service provider with details of transactions, claims, payments, reconciliation etc. in an integrated manner.
5. The requirements of Digital Service Standard shall be confirmed by the MSP in all phases – Define, Design, Develop, Deliver.
6. MSP will be required to prepare an exhaustive list of services required for realizing the Continuum of Care and HWC-PM-JAY Integration. Also, the integration of PM-JAY IT 2.0 with NDHB building blocks shall also enable a number of services and they may be added in the portfolio.

The following are the indicative services (stakeholder wise) envisaged under PM-JAY IT 2.0-

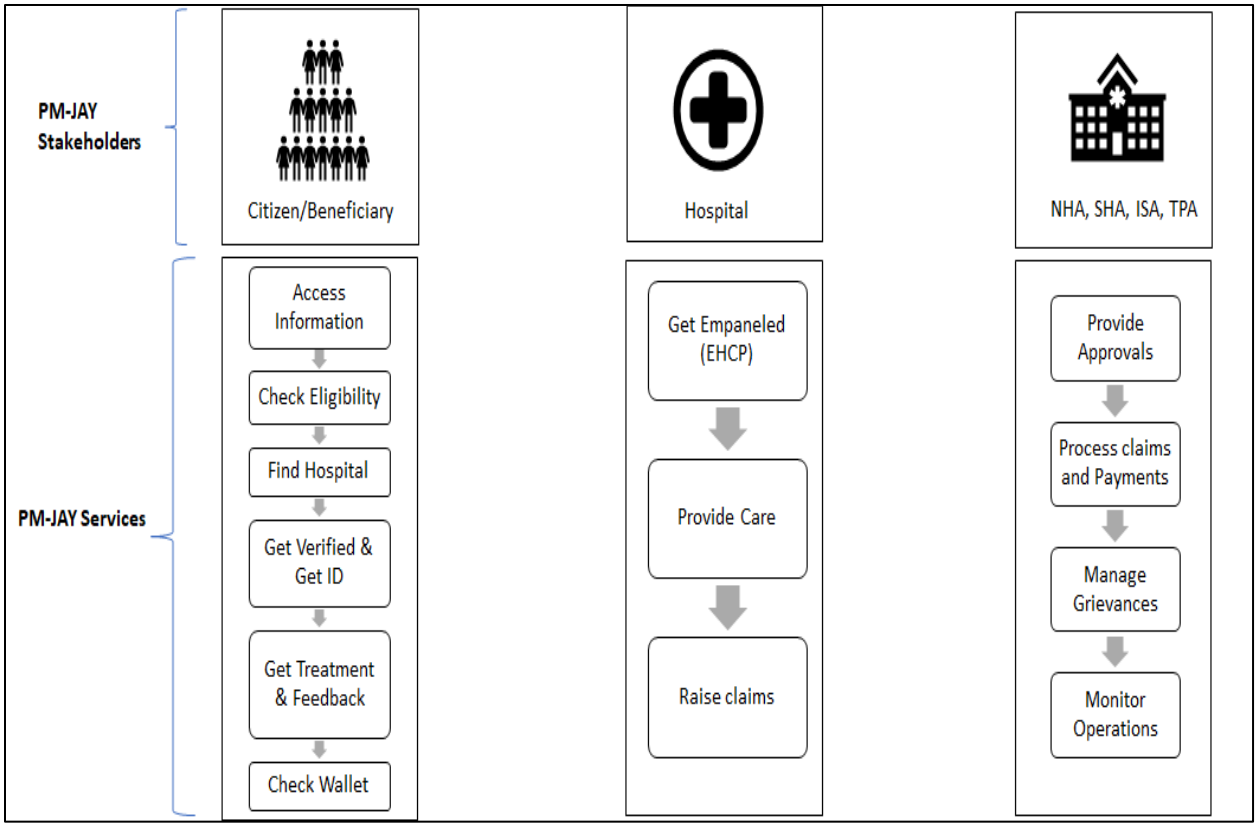


Figure 9: Portfolio of services in terms of Modules (Indicative)

4.1.1 Resident/Beneficiary Services

#	Service	Brief description
SR 01	Access Information and Grievances	Information regarding • PM-JAY scheme • NHA • Helpline details • Tenders, resources, documents etc. • Events, what's new, contact details • Check wallet balance (mobile app for beneficiary) • Register grievances, feedbacks
SR 02	Check Eligibility	To allow citizen to search PM-JAY database and ascertain their eligibility as beneficiary for PM-JAY
SR 03	Find Hospital	Search for EHCP • State/District wise • Type • Specialty

#	Service	Brief description
		• Tag EHCP in the vicinity for easy access
SR 04	Get Verified and ID	Search, identify and verify- • To check whether a person is covered under PM-JAY scheme or not. • If found, then e-cards are issued to the beneficiary (golden record). • Facility for change of address, mobile number and contact person details
SR 05	Get Treatment and feedback	• Patient registration • Treatment and discharge • Provide feedback on the quality of care
SR 06	Check Wallet	• Check the balance of insurance cover available for the family (and individual, if applicable)

Table 2: Resident/Beneficiary Services

4.1.2 EHCP/Hospital Services

#	Service	Brief description
SR 07	Get empaneled and Certified	• Registration and approval of hospitals for empanelment. • Update hospital profile • Hospital Quality Assurance (certification through QCI) are also being made available in this system. • QoC Ratings, audit and compliance
SR 08	Provide care	Only the hospitals empaneled under PM-JAY scheme are eligible to provide care to beneficiaries. It includes- • In-patient (diagnosis) • Pre-authorization, • Diagnosis, treatment and discharge • Health claims • Access EHR of patients with consent
SR 09	Raise claims	• Hospital Claims • Payment and settlement • Access the list of claims pending for payment, with age

Table 3: EHCP/Hospital Services

4.1.3 NHA, SHA, TPA, ISA Services

#	Service	Brief description
SR 10	Provide Approvals	Approvals for- • Approve/Reject for Beneficiary identification • Approve/Reject/Query the submitted claims • Approve/Reject/Query for empanelment
SR 11	Processing claims and payments	• Processing claims • Process payment through bank • Payment settlement
SR 12	Manage Grievances	• Processing, managing and monitoring redressing all grievances under the AB PM-JAY.
SR 13	Monitor Operations	• To monitor implementation, operations of PM-JAY scheme and identify frauds for smooth functioning of the scheme • Monitor key performance indicators (to be suggested by MSP after as-is study)

Table 4: NHA, SHA, TPA, ISA Services

5 Scope of Work

This section provides the **scope of work** to be executed by the MSP during the contract period. It is clarified that the scope of work is not exhaustive, and the MSP shall undertake such other tasks, within the scope of the RFP, as may be necessary to implement the scope and the project efficiently and effectively in order to achieve the desired outcomes of the project.

The following are identified as the broad areas of scope of work to be undertaken by the MSP:

1. MSP On-boarding
2. Solution Design, Development and Implementation
3. Infrastructure Requirements
4. Data and Application Migration
5. Acceptance, Gradual Roll-Out and Go-Live
6. Operations and Continuous Enhancements
7. Information Security and Data Privacy
8. Audit and Certifications
9. Transition and Exit Management

The supporting Annexures are listed below-

1. Annexure I – Solution Requirements
2. Annexure II– Capacity Building Requirements
3. Annexure III– Service Level Metrics (SLAs)

4. Annexure IV– Infrastructure Available through NHAs CSP
5. Annexure V– Volumetrics
6. Annexure VI– IT Security Requirements

5.1 MSP On-boarding

1. The MSP shall complete all contractual requirements for a timely onboarding.
2. The MSP shall deploy all the proposed Key Manpower. NHA shall provide for a seating capacity for up to 15 resources at NHA Office. The remaining team will need to operate from an offsite location (offsite shall mean MSP premises). Details of proposed key manpower requirements (which shall be deployed ta NHA) are provided as below-

#	Profile	Min. Experience	Responsibility
1	Project Director	15+ years of experience in IT industry out of this min 5 years of experience must be in healthcare insurance IT systems project.	Overall responsible for project. He shall be the single point of contact between MSP and NHA.
2	Project Manager - Solution development	1. 10+ years of experience in IT industry out of this min. 6 years of experience in leading solution development in healthcare insurance IT systems project. 2. Must be an Agile Certified Practitioner (ACP) from project management institute (PMI-ACP) or equivalent	Overall responsible for solution development of the PM-JAY 2.0 project.
3	Scrum Master/Agile lead	1. 5+ years of experience in IT industry 2. Must be an Agile Certified Practitioner (ACP) from project management institute (PMI-ACP) or equivalent. 3.Must be a Certified Scrum Professional. 4. Min 4+ years of experience in implementing agile methodology	1. Responsible for ensuring agile development. 2. Responsible to execute the backlog and make sure that deliverables are on-time 3. Coordination between Product owner and team.

#	Profile	Min. Experience	Responsibility
4	Product Owner	1. 7+ years of experience in IT industry 2. Must be an Agile Certified Practitioner (ACP) from project management institute (PMI-ACP) or equivalent . 3. Must have done minimum 3 projects as Product owner in healthcare insurance IT projects in agile.	Responsible for gathering requirements from NHA and converting them in to epics, defining Stories and prioritizing the Team Backlog to streamline the execution of project
5	Solution Architect	1. 10+ years of experience in IT industry out of this min. 6 years of experience as enterprise solution architect in designing micro services-based architecture and containerization for at least two healthcare insurance IT systems project. 2. Must be TOGAF 9 certified	1. Responsible for translating requirements in to architecture and describing it through design artifacts and implementing the same for PM-JAY IT 2.0 2. Responsible for behavior of all the applications of the system, their integrations with the various components, mapping of applications to the business functions
6	Operations Manager	1. 10+ years of experience in IT industry out of this min. 6 years of experience in leading operations of government e-governance projects. 2. Must have lead operations of at least one project in healthcare insurance domain	Responsible for Operations and maintenance of the project
7	UI/UX Lead	7+ years of experience in UI/UX domain.	Shall be responsible for design task flows, information architecture, visual language and interactions for the platform. Leads creation of wireframes and low fidelity design for testing and high-fidelity pixel perfect mockups for further development etc.
8	Datawarehouse Architect	10+ years of experience as a Database administrator/ warehouse. 3+ years of	Responsible for designing, creating, deploying and managing the data architecture.

#	Profile	Min. Experience	Responsibility
		experience in working with big data systems.	
9	Capacity Building Lead	5+ years of experience in healthcare management	Overall responsible for capacity building of various stakeholders in PM-JAY
10	Security Architect	1 Minimum 10 years of experience in IT Industry 2 Out of this at least 5 years minimum experience in designing/implementing IT security solutions 3 Should have done at least 3 projects in enterprise security in Indian PSU/ Government Departments	He shall be responsible for ensuring IT security for the project
11	Design Thinking Experts (Designer specialist)	Minimum 7 years' experience in delivery using human centered design principles.	• Lead the entire problem-solving process. • Leads user research, opportunity framing, solutioning finding, user testing and design iteration. • Leads user centric research using ethnography or mixed methods research techniques. • Leads user testing. • Documents research and user testing findings
12	Medical Experts	MBBS doctors with minimum 5 years' experience in healthcare.	• Responsible to ensure usability of PM-JAY IT 2.0 applications both in terms of application designing and UI/UX of solution components and user journey mapping. • Additionally, they shall ensure that applications facilitate the seamless exchange of information between care providers, patients and other stakeholders.

#	Profile	Min. Experience	Responsibility
			• Experts may also be required to consult on-field doctors, physicians under PM-JAY EHCPs • The MSP shall leverage the medical experts right from the designing of the applications.
13	Developer	1. Minimum 2 years of experience in development in DevOps environment 2. Should have worked as a developer in DevOps environment in at least 1 project in healthcare insurance domain.	Responsible for solution development
14	Quality Assurance Or Quality Control lead (QA/QC Lead)	1. Minimum 2 years of experience in testing/QA in DevOps environment 2. Should have worked as a tester/QA in DevOps environment in at least 1 project in healthcare insurance domain.	Responsible for testing/ Quality

Table 5: Manpower Requirements

3. MSP to propose resources to be deployed on the project along with their CVs format as prescribed in Volume II of this RFP. Once the resources are approved by NHA then only the same shall be deployed on the project. All proposed CVs must be duly signed by the Head of Human Resources of the MSP. NHA reserves the right to ask MSP to replace any resource, any-time during the execution of project, to which the MSP shall always comply with. All resources deployed by the MSP should be working with the MSP and not a fresh hire i.e. hired in the last 1 year from the effective date of contract.
4. Different profiles need to be proposed against different roles. All resources proposed by the bidder must be deployed on the project. NHA shall reserve the right to interview resources proposed by the Bidder.
5. NHA does not encourage replacement of resources unless it has been explicitly asked for by NHA. If, however, due to some pressing needs, the MSP proposes a replacement of resource, and if concurred by NHA, the proposed resource shall have similar/ better profile as compared to the resource being replaced with regards to Academic Profile, Relevant Work Experience and Relevant Technical Expertise.
6. The resources proposed shall necessarily be Indian citizens. The MSP shall undertake necessary due diligence to ensure that the personnel deployed have a high level of integrity and high standard of trustworthiness. Bidders should note that, during any subsequent stages of this procurement, NHA may ask for background check and/or security verification (Police verification) of resources proposed

by the Bidder and Bidders needs to comply with the same. This is necessary considering the criticality of the Project.

7. Resources deployed by the selected bidder shall bring their own end user computing devices. The end user computing devices (laptops / desktops) should have appropriate security solutions such as (Anti-Virus – Anti Malware etc.) to avoid security breach.
8. The MSP shall finalize the **Project Governance Framework** in conjunction with NHA and implement a **Project Management Tool** to cover aspects of governance, project deliverables, milestones, service levels and payments. The MSP shall ensure that NHA resources are well-versed with the operational aspects of the proposed Project Management Tool.

    a) The MSP shall prepare a detailed project plan to NHA, for approval, at the start of the project and ensure it is updated on a monthly basis.
    b) For timely completion of the project it is specified that NHA shall provide sign-offs or review comments/feedbacks (as the case may be) on various deliverables/milestones/submissions (except invoice) of MSP within 7 working days from the date of submission by MSP. The time of 7 days must be accounted by MSP within the due date/timeline of its deliverable(s)/milestones/submissions. If, in case, NHA, takes more than 7 working days then in such case the penalty shall not be applicable on the MSP.
    c) The Project Steering Committee (PSC) shall be established by NHA which will consist of senior stakeholders from the NHA, its nominated agencies and the MSP. The MSP will nominate senior stakeholder from their organization and other partners in the eco-system to be a part of the PSC.
    d) The MSP shall participate in monthly Steering Committee meetings and update the Steering Committee on Project progress, Risk parameters (if any), Resource deployment and plan, immediate tasks, and any obstacles in the project. The Steering committee meeting will be a forum for seeking approval for project decisions on major changes etc.
    e) The MSP shall circulate progress reports at agreed intervals to the NHA and other stakeholders.
    f) The MSP shall develop a Risk Management Plan and identify, analyze and evaluate the project risks, developing cost effective strategies and action plans to mitigate those risks. The MSP shall carry out a Program Risk Assessment exercise and document the Risk profile of the project based on the risk appetite and prepare and share the enterprise risk register. The MSP shall develop an issues management procedure to identify, track, and resolve all issues faced on the project. The Risk management plan and issue management procedure shall be carried out in consultation with the NHA.

9. The MSP shall finalize a **Knowledge Transfer Plan** in conjunction with NHA and subsequently complete the knowledge transfer with respect to existing PM-JAY IT ecosystem.

5.2 Solution Design, Development and Implementation

1. The MSP shall design the solution keeping in view the **Key Design Requirements** as mentioned in Section 3 of Volume I of this RFP.
2. The following list of solution components needs to be designed, developed and implemented by the MSP-

a) Beneficiary Identification System (BIS)
b) Hospital Empanelment Management System (HEMS)
c) Transaction Management System (TMS) - Provider
d) Transaction Management System (TMS) - Payer
e) Health claims platform
f) IMPACT
g) e-Referral system
h) Visualization and Analytics tool
i) Integrated Website/Portal
j) Mobile App
k) Virtual assistant
l) Grievance Redressal Management System (GRMS)
m) Feedback and Survey Management System (FSMS)
n) SAMVAAD
o) IT Helpdesk
p) Call Disposition Tool (CDT)
q) Learning Management System
r) Project Management tool
s) Agile development and release management tool
t) Big Data
u) Enterprise search
v) Business Process Management Tool
w) Application Performance Management Tool
x) Digital signature certificate
y) E-Sign
z) AUA Gateway
aa) ASA Services
bb) Integration with internal and external Systems

3. Additionally, the MSP is required to mandatorily sub-contract services of a UIDAI empaneled 'Live ASA'- Authentication Service Agency (ASA), as and when requested by NHA for providing Aadhaar based authentication services and e-KYC services
4. The MSP shall deploy an **Agile Development and Release Management Tool** for the project and translate all PM-JAY IT 2.0 solution requirements into a Product Backlog consisting of Epics, User Stories, tasks etc.
5. The MSP shall maintain the **Agile Release Train** in the form of product and sprint backlog.
6. The MSP shall build the solution in compliance with the requirements outlined in this RFP. During the design stage, the MSP shall build prototypes of selected key modules and obtain a sign-off from the NHA. MSP shall ensure all features, functionalities and data of PM-JAY IT 1.0 to be available in the PM-JAY IT 2.0 solution till go-live time of PM-JAY IT 2.0 to ensure business continuity and seamless experience to end users
7. While developing the application the MSP shall comply with the processes as per CMMi Level 5.
8. The Intellectual Property Rights (IPR) of the source code of the developed solution would reside with NHA. In case any proposed solution component is CSS/ COTS product, the IPR of any customization

done on the CSS/ COTS product would reside with NHA along with perpetual rights (till technology migration) to use of proposed CSS/COTS product.

5.3 Infrastructure Requirements

1. The MSP is required to setup the multiple environments within NHA GCC:
    a) Development Environment
    b) Testing Environment
    c) Staging Environment
    d) Sandbox Environment
    e) Production Environment
    f) Training Environment
2. The MSP shall carry out a detailed assessment of the IT Infrastructure requirements (VM's and/or quantity- NHAs Cloud) to meet the scope of work and service levels and provide a detailed infrastructure sizing (VMs and/or quantity) to NHA at the time of deployment and also in the technical bid.
3. The list of infrastructure presently available on NHAs CSP is provided in Annexure VI (Infrastructure available through NHAs CSP).
    a) It is expressively clarified that since the PM-JAY IT 2.0 solution is to be deployed on NHAs cloud the bidder is not required to propose components specified at section 7.4.1, 7.4.2, 7.4.3, 7.4.5, 7.4.6, 7.4.7 of volume I of the RFP and is ONLY required to propose quantities/VMs against these components as the same shall be provisioned by NHA through NHAs GCC at no additional cost to the MSP
    b) The bidder(s) have the option to propose the components mentioned in section 7.4.4 (available with NHAs CSP) or otherwise may propose new and/or additional components as well required for the PM-JAY IT 2.0 solution, in which case such additional licenses/products shall not be provided by NHA and the cost/delivery/implementation/support shall be the responsibility of the MSP and no additional amount shall be paid by NHA to the MSP for the same. The quantity of licenses mentioned in section 7.4.4 are indicative only and the MSP (in case these products are proposed by MSP) shall be provided the licenses (at zero cost, including support) required for implementation of its solution. If any component is proposed from 7.6.4 then the bidder shall specify the same in the commercial bid with cost as zero.
4. Intimating to NHA for scale up/down of VM's, on the basis the project requirements, shall be the responsibility of MSP.
5. DR environment can be used along with DC to meet service levels/performance of the system in either active-active or active-passive as per MSPs proposal. MSP to ensure that performance of DR must be 100%.
6. Based on the assessment given by MSP and its own assessment NHA shall get the infrastructure provisioned through its CSP for PM-JAY IT 2.0.
7. The MSP needs to establish the P2P connectivity between its offsite development location/s and the NHA GCC provider location, if required (at its own cost). NHAs GCC - DC is located at Delhi and DR at Mumbai.

8. MSP shall assess the sizing requirements for various OSS/products/ tools/ software's required to fulfil the requirements of the solution and scope of work. The MSP will be responsible for supplying all the required enterprise class licenses (for all environments including development, test, production etc.) of the application and related software products as well as subsequent installation in order to meet requirements of the project.
9. MSP shall ensure requisite support from the OEMs (for proposed COTS) for various aspects of project including but not limited to configuration, customization, sizing, performance tuning and implementation support.
10. The MSP shall perform periodic audits to measure license compliance against the number of valid end user software licenses and ensure consistency with the terms and conditions of license agreements, volume purchase agreements, and other mutually agreed upon licensed software terms and conditions. The MSP shall report any exceptions to license terms and conditions at the right time to NHA. However, the responsibility of license compliance solely lies with the MSP. Any financial penalty imposed on NHA during the contract period due to license non-compliance shall be borne by the MSP.
11. The MSP shall (for COTS and OSS products) factor in product license, support, maintenance, customization, configuration, deployment and product expertise and knowledge and other requirements as may deemed fit by MSP, basis his own assessment. The agreement of the bidder with the OEM shall include provisions for adequate knowledge transfer from the OEM to the bidder and to the NHA IT Team in respect of the features of the COTS/OSS Product and the methods for its customization and configuration
12. The MSP shall take adequate steps to ensure that none of the proposed solution part is declared "End-of-Sale and/or life and/or support" by the respective OEM at any time during the contract period. In case it happens, MSP shall replace the component with equivalent or better component and ensure that there is no impact on the operations and performance.
13. The MSP needs to procure and manage all software licenses that they have proposed in the bid response for all environments stated above. The license of the proposed/ deployed Solution should be an enterprise level on perpetual basis (till technology migration) in name of NHA including Annual Technical Support (ATS) for entire project duration.
14. The system **software licenses** mentioned in the Bill of Materials shall be genuine, **perpetual (till technology migration),** full use and should provide upgrades, patches, fixes, security patches and updates directly from the OEM.
15. The MSP shall ensure that there is 24x7 support from the OEMs, in India, of all the components which will be proposed by MSP.

5.4 Data and Application Migration

5.4.1 Before Go-Live - Data only

1. The MSP shall be responsible to migrate the data from existing solution to new solution before Go-Live at no extra cost to NHA.
2. The MSP needs to define the data conversion process in technical proposal which should include (but not be limited to) the conversion standards, conversion approach, data cleaning approach, environment analysis, data quality strategy, conversion plan etc.
3. Existing dataset will be provided on 'As-Is-Where-Is' basis. The MSP shall analyze the existing data and provide mapping of existing data with new data.

4. The MSP shall provide mechanism to extract, transform and load data into the new system. Data cleansing is required to ensure that exiting system data conforms to the rules of data conversion. This process may involve manual and/or automatic updates to legacy system data.
5. Data cleansing should be an ongoing business activity and as long as the existing systems are active, there is the potential that previously cleansed data issues are reintroduced. Once the verification is complete, the MSP will need do the verification of new data. In case of any discrepancy it will be highlighted and resolved to ensure completeness and correctness.

5.4.2 During CSP Exit (Application and Data)

1. NHA currently has a GCC provider (CSP) with a fixed term contract. To this effect NHA may engage a new CSP (on GCC/Private/VPC) or may deploy its own on-premise infrastructure- as shall be decided by NHA.
2. During such an exit of the current CSP the MSP shall be required to migrate the applications and data then existing to the new infrastructure (to be procured by NHA) at no extra cost to NHA.

5.5 Acceptance, Gradual Roll-out and Go-Live

5.5.1 Solution Acceptance

1. Solution acceptance shall be conducted for each user story, each sprint release and of the final solution. There shall be multi-stage client acceptance during the agile development of PM-JAY IT 2.0 solution as defined under:

Stage	Details	Acceptance by
Acceptance of each sprint release (pre and post go-live)	Acceptance of each release of a sprint (including acceptance of each user story). User acceptance testing shall be conducted for each sprint even for the new enhancements after go-live till the end of contract.	MSP to develop 'test plan' and the acceptance shall be provided by NHA
Final Solution acceptance	Final acceptance of the entire solution by NHA and/or a 3rd party agency appointed by NHA	MSP to develop 'test plan' and the acceptance shall be provided by NHA or an Independent 3rd party agency (external audit) appointed by NHA

Table 6: Solution/Sprint Acceptance Stages

2. MSP shall develop 'Acceptance Test Plan' for each of the stages described above and shall submit the same to NHA, for approval. Acceptance shall be conducted after the sprint demo by MSP, as part of sprint review. MSP shall undertake the suggested corrective action and host the revised release.
3. Before approval, NHA may decide to modify the Acceptance Test Plan, by adding, deleting or modifying any test criteria in the plan, and inform the MSP accordingly.

4. Once approved by NHA, the Acceptance Test Plan will be used by NHA or a 3rd party agency to conduct the acceptance tests. The MSP should be able to demonstrate the success of the acceptance test requirements on any of the applications under PM-JAY IT 2.0 solution.
5. Criteria for acceptance of a user story must include, but not limited to scope of tests to be completed, code review, compliance to coding standards and any necessary documentation. Criteria for acceptance of 'solution' is defined below.

Requirement	Criteria of Acceptance
Solution Requirements Review	• The system developed/customized by MSP shall be reviewed and verified by the third party agency ("agency") against the product/portfolio backlog signed-off between NHA and MSP. • One of the key inputs for this testing shall be the traceability matrix to be developed by the MSP for the system. • Apart from Traceability Matrix, MSP may develop its own testing plans for validation of compliance of system against the defined requirements.
IT Infrastructure (software components) Compliance Review	• The agency shall perform the Infrastructure Compliance Review to verify the conformity of the Infrastructure supplied by the MSP against the requirements and specifications provided in the RFP and/or as proposed in the proposal submitted by MSP. • It will be required of the MSP that it validates the infrastructure component from the corresponding OEM to ensure that installation and configuration has been done in line with the guidelines and according to the best practices as proposed by the OEM. The MSP shall provide NHA with the OEM's certification clearly certifying the same. • It is clarified that the engagement of the OEM to get this validation and certification done shall be the responsibility of MSP, and the MSP shall accordingly factor in the necessary costs in its commercial proposal. • Compliance review shall not absolve MSP from ensuring that proposed solution meets the Service Levels requirements.
Application Benchmarking	The MSP should benchmark the application software API's to meet the scalability requirements outlined below: i. The PM-JAY IT 2.0 applications/components shall be benchmarked by MSP, using its own tools and cost, on twice the applicable concurrency and transactions. Simulated data covering real life scenarios should be used for all benchmarks. In case the system fails to handle the expected loads, the MSP will have to undertake corrective action. ii. Application benchmarking of individual applications is required to be achieved for each application (as per defined milestones) within 3 months of go-Live of such individual applications/solution components meeting the twice level of applicable concurrency and/or transactions.

Requirement	Criteria of Acceptance
	iii. Overall system benchmarking to be achieved after full go-live within a period of 3 months from full go-live iv. The same shall be done on year on year basis (post go-live). v. If the system developed by MSP is not able to meet performance of each applications (concurrency and transactions) at any point of time (measured on monthly basis on staging environment) then the MSP shall augment the capability of the solution as well as software licenses to meet the performance/benchmark. The cost for such additional expenses shall be borne by the MSP only. vi. The MSP will bear the costs of such benchmarking. vii. The MSP, in the bid and also during project initiation needs to share the details of the benchmarking plan including the parameters to be tested with the NHA. Inputs from the NHA will be incorporated by the MSP before performing the benchmarking exercise.
Performance and Load	• Performance is another key requirement for the system and agency shall review the performance of the deployed solution against certain key parameters defined in requirements and the service level metrics described in this RFP • Such parameters include request response time, work-flow processing time, concurrent sessions, disaster recovery supported by the system etc. • Performance and Load testing shall be conducted on business transactions and concurrency- once before go-live and thereafter every 6 months • The performance review also includes verification of scalability provisioned in the system for catering to the requirements of all applications and HCP volume growth in future.
IT Security (including penetration and load testing)	The system developed/customized shall be audited by a STQC/CERT-In empaneled 3rd party agency (to be engaged by MSP) from a security and controls perspective. Such audit shall also include the IT infrastructure (software components) deployed for the system. Following are the broad activities to be performed by the Agency as part of Security Review. The security review shall subject the system for the following activities: • Audit of Application security mechanisms • Assessment of authentication mechanism provided in the application /components/modules • Assessment of data encryption mechanisms implemented for the solution • During the O&M phase, vulnerability assessment and penetration testing will need to be conducted on a yearly basis.

Requirement	Criteria of Acceptance
	• The solution must pass web application security testing for the portal and security configuration review of the baseline infrastructure. • Assessment of data access privileges, retention periods and archival mechanisms • Application security features incorporated etc. • Various performance parameters such as transaction response time, throughput, hits per second and transactions per second etc. should be considered.
Availability	• The system should be designed to remove all single point failures. • Appropriate redundancy shall be built into all the components to provide the ability to recover from failures. • The agency shall perform various tests to verify the availability of the services in case of component failures. • The agency shall also verify the availability of PM-JAY IT 2.0 services to all the users.
Manageability review	• The agency shall verify the manageability of the system and its supporting infrastructure deployed using any enterprise management system proposed by the MSP. • The manageability requirements such as remote monitoring, administration, configuration, fault identification etc. shall have to be tested out.
Service Levels Monitoring System	• The agency shall also test the system for its capability to meet the desired service levels (SLAs). • The agency may carry out this test through the SLA tool implemented by MSP.
Project documentation	• The Agency shall review the project documents developed by MSP such as Product back log, sprint backlog, design, source code, installation, training and administration manuals, version control etc.
Data Quality	• The Agency shall perform the Data Quality Assessment for the entire data • The errors/gaps identified during the Data Quality Assessment shall be addressed by MSP before moving the data into production environment.

Table 7: Criteria for Acceptance

6. Any issues/gaps identified by the NHA or 3rd party agency, in any of the above areas, shall be addressed by the MSP to the complete satisfaction of NHA.
7. During Operations and Continuous Enhancement, the MSP shall also conduct regression testing of the solution on a yearly basis (from the date of Go-Live) and shall submit the result to NHA.

8. The cost of third-party agency (if appointed by NHA) shall be borne by NHA.
9. All tools/environment required for testing shall be provided by the MSP. The MSP needs to prepare and provide all requisite information/documents to third party auditor and ensure that there is no delay in overall schedule.
10. No single point of failure to be ensured at the application and database levels
11. Post Go-Live, the Production environment should not be used for testing and training purpose. If any production data is used for testing, it should be masked should be protected. Detailed process in this regard including security requirement should be provided by the MSP in its technical proposal.
12. The cost of rectification of non-compliances shall be borne by the MSP.

5.5.2 Gradual Roll-Out

1. Upon user acceptance and/or 3rd party acceptance the solution is required to be rolled out in the country (across states/UT's for adoption).
2. Gradual roll-out shall mean roll-out of PM-JAY 2.0 solution across various states including

    a) Capacity building and readiness of states for PM-JAY IT 2.0 solution
    b) Pilot roll-out of 2 (two) weeks for 2 (two) district per state initially and then gradual roll-out for the remaining districts. Pilot locations to be mutually agreed upon between NHA and MSP

5.5.3 Go-Live

1. Go-Live shall mean commissioning of all the solution components of PM-JAY IT 2.0 envisaged in this RFP. Commissioning is defined as the process of complete development/deployment of the solution, UAT, training and readiness of all stakeholders for go-live including successful running of the solution component-wise and in its entirety
2. PM-JAY IT 2.0 system shall be deemed commissioned/go-live only once the PM-JAY IT 2.0 system is complete roll-out, at all locations and with all its modules/components
3. It is clarified that during pre Go-live (Design, Development, testing, roll-out) some solution components, as per defined milestones in section 6 (Deliverables, Milestones and Payments) of this volume of the RFP, shall be moved to production environment earlier then the full go-live where the roll-out shall begin for such individual applications. Once roll-out is achieved such applications shall be eligible for operations and maintenance to which the MSP shall provide for till the end of contract. However once full go-live is achieved the operations and maintenance (for the entire PM-JAY IT 2.0 solution) shall be for a period of 5 (five) years from full go-live.
4. All Pre Go-Live deliverables and milestones specified in section 6 (Deliverables, Milestones and Payments) of this volume of the RFP, delivered by MSP, are accepted by NHA.
5. After the Go-live of the solution, the MSP will start providing continuous operations and maintenance services as per the service levels.

5.6 Continuous Operations and Enhancements

The Continuous Operations and enhancement of the PM-JAY IT 2.0 (system) shall begin after go-live (however some applications (as mentioned in section 6 of volume I), shall be roll-out by MSP before the go-live of the complete PM-JAY IT 2.0 solution and once such applications are successfully rolled out the MSP shall begin their operations and maintenance to ensure business continuity). The MSP shall be responsible for the overall administration, day to day operations, monitoring, maintenance, MIS

generation, backup, recovery, etc. of the deployed enterprise IT systems and ensure the desired service levels. The MSP shall provide services for the system developed, starting from the Go-live date for a period of 5 years. The MSP shall be required to provide, but not limited to, the following-

5.6.1 Continuous Operations

Operations of PM-JAY IT 2.0 include, but not limited to, the following-

1. Operations shall mean 'business as usual' of PM-JAY IT 2.0 project. The system developed and implemented by the MSP shall deliver all the business services of PM-JAY IT 2.0 to its end users and the MSP shall maintain the system always and every time in order to meet the service levels
2. It shall also include- production monitoring, troubleshooting and addressing functionality/availability and performance issues etc.
3. MSP shall ensure continuous operations and zero downtime
4. The MSP shall maintain the system (PM-JAY IT 2.0) such that the service levels are achieved all the time and perform changes and upgrades to the applications as requested by the NHA team or as per the business requirements.
5. The MSP shall deploy a team of resources for operations till the end of contract period/exit management. It shall be the responsibility of the MSP to scale up the team as and when required for smooth project execution throughout the duration (at no extra cost to NHA).
6. MSP shall be responsible for compliance to service levels (refer Annexure III (Service Level Metrics) of volume 1 of the RFP)
7. To deploy and manage helpdesk for addressing the issues and incidents raised by users; resolve such issues and report the status to NHA on a periodic basis. All tickets related to any issue/complaint/observation about the system shall be maintained in an ITIL v3/4 compliant comprehensive ticketing solution.
8. All the ITSM documentation should be compliant with ITIL v3/4 framework and the same to be submitted to NHA at periodic intervals (as mutually agreed) and with necessary updates.
9. To generate Business Intelligence & MIS Reports as per format agreed by NHA
10. Tune and stabilize the system to meet the performance expectations/service levels
11. All patches, updates and upgrades from OEMs shall be implemented by the MSP. Technical upgrades of installation to the new version, as and when required, shall be done by the MSP. Any version upgrades of the software/tool/application will be done by the MSP after seeking prior approval from the NHA and submitting the impact assessment of an upgrade as such.
12. Any changes/upgrades to the software performed shall be subject to comprehensive and integrated testing by the MSP in order to ensure that the changes implemented in the system meets the specified requirements and do not impact any other existing functions of the system. A detailed process in this regard will be finalized by the MSP in consultation with the NHA.
13. The MSP shall maintain version control and configuration information for application software and any relevant system documentation. Access of the same will be made available to NHA and will be used by NHA team as single point of source for such information.
14. A backlog shall be maintained by the MSP in the solution shall be periodically submitted to the NHA team.
15. MSP shall be responsible for maintaining all the master data, registries, data bases and directories etc.

5.6.2 Enhancement

The following items would not be considered as change in scope of work-

1. Minor enhancements
2. Routine functional changes.
3. Any changes to application code that may be required because of patches to licensed software being used (if any)
4. Rectification of the defects pointed out by the NHA and carrying out functional enhancements suggested by the NHA, relating to items of work falling within the purview of the defined Scope of Work of MSP.
5. Any software changes required due to problems/bugs in the developed software/application or product will not be considered as part of change control and will have to be rectified by the MSP at no additional cost (even if it requires any enhancements/customizations).
6. Update web-portal & Application: design and content, layout, color schema, input forms, etc.
7. Minor changes in software required as a result of any legislative, administrative, policy changes in the process and workflow.
8. All changes that go into systems / sub systems / applications for bug – fixes / improvement /feature enhancement / performance related / etc. shall also be assessed for security compliance prior to placing in production environment or go - live.

The MSP shall be responsible for continuous enhancement and new developments in PM-JAY IT 2.0 system including, but not limited to, the following (NHA will collate and review the enhancement requests and initiate change control process accordingly. The decision of NHA in this regard shall be final and the MSP shall adhere to it):

1. Addition of new functionalities/ features/ modules required by the NHA as per business needs
2. Third-party Application integration. APIs based Integration with any internal or external system (if so, required by NHA) shall be done by the MSP
3. Modification/ up-gradation/ enhancement in the Process or functionality or to upgrade the application performance
4. Any upgrades/major changes to the solution shall be planned by the MSP while ensuring that the SLA requirements are met.
5. The MSP will inform the NHA (at least on a monthly basis) about any new updates/upgrades available for all software components of the solution along with a detailed action report.
6. MSP to deliver updated user manuals and training manuals so as to reflect on-going changes/enhancements

5.7 Convergence of PM-JAY with other National/State schemes

NHA plays a critical role in fostering linkages as well as convergence of PMJAY with health and related programs of the Central and State Governments wherein other scheme beneficiaries will be able to access services at PM-JAY empaneled Hospitals and vice versa. MSP must design, develop and implement the PM-JAY IT 2.0 system in a way that it enables convergence in an easy, fast and effective way.

5.8 Information Security and Data Privacy

Considering the sensitivity of the data pertaining to residents of India processed at one point or the other, makes it important to protect the information, processed at different stages by multiple stakeholders, from breaches that may have severe ramifications on human lives and jeopardize the entire program. The MSP shall ensure the following-

1. The MSP shall embed the principle of Security & Privacy by design into the PM-JAY IT 2.0 solution by complying with NHA Information Security Policy & Data Privacy Policy and as per Information security requirements specified in annexure VI of this volume of the RFP.
2. The CSP shall be responsible for perimeter security. And MSP shall be responsible for all other security
3. The MSP shall be responsible for protecting information and information systems from unauthorized access, use, disclosure, disruption, modification or destruction, thereby achieving the three-pronged goals of Confidentiality, Integrity and Availability.
4. The MSP shall provide end to end encryption of data from rest, to motion to transit and ensure effective encryption key management using HSM.
5. The MSP shall adhere to Aadhaar Act, MeitY guidelines, NHA information security and Data privacy policy and will comply with any standards and regulations notified by Govt of India and NHA.

5.9 Audits and Certifications

5.9.1 Audits

1. The NHA reserves the right to conduct audit through any STQC/CERT-In empaneled agency
2. NHA reserves the right to conduct internal audit by giving an advance notice of 48 hours to the MSP The MSP shall cooperate, provide necessary support and close the findings of the audit

#	Audit	Frequency
1	Web/Mobile Application Security Assessment	• Once before go-live • Post go-live- Quarterly
2	Secure Code Review	Annual
3	ISO 27001 Audit report	Annual

Table 8: Audits

3. MSP shall comply with all compliance, audit requirements against the applicable standards before or after go-live.
4. MSP shall provision an option for online audit
5. MSP shall comply with all compliance, audit requirements against the applicable standards before or after go-live

5.9.2 Certifications

1. NHA envisages the PM-JAY IT 2.0 project to be ISO 27001:2013 certified (within 6 months from go-live). It is clarified that only the cost of third-party auditor to certify PM-JAY 2.0 for ISO 27001 shall be borne by NHA and the MSP shall support the certification.

5.10 Transition and Exit Management

1. The bidders shall submit a structured & detailed Transition and Exit Management plan along with the technical proposal.
2. The MSP needs to update the Transition and Exit management on a half yearly basis or earlier in case of major changes during the entire contract duration. This plan needs to be discussed and approved by the NHA.
3. At the end of the contract period or during the contract period, if the contract with the MSP is terminated in full or in part and any other MSP is identified or selected by NHA for providing services related to the MSP's scope of work, the MSP shall ensure that a proper and satisfactory handover is made to the other new MSP. In case the NHA wishes to take over the project itself, then MSP has to ensure proper transition to the NHA team.
4. All risk during transition stage shall be properly documented by the MSP and mitigation measures shall be planned in advance so as to ensure a smooth transition without any service disruption.
5. The transition & exit management period will start 6 months before the normal expiration of the contract.
6. The MSP will provide shadow support for at least three months and secondary support for an additional three months before the end of the O&M period or termination of the contract, as applicable at no additional cost to the NHA.
7. MSP needs to close all critical open issues as on date of exit. All other open issues as on date of Exit shall be listed and provided to the NHA.
8. The MSP shall provide necessary knowledge transfer and transition support. The deliverables are indicated below, including but not limited to:

    a) Updated transition plan on periodic basis
    b) Complete documentation for the entire system handed over to the new MSP
    c) Handover of the list of complete inventories of all assets created for the project.
    d) Detailed walk-throughs and demos for the entire solution.
    e) Hand-over of the entire software including design documents, source code, program files, configuration files, setup files, project documentation, etc.

9. Knowledge transfer of the system to the incoming MSP to the satisfaction of the NHA per the specified timelines.
10. The MSP shall be released from the project once successful transition is completed by meeting the parameters defined for successful transition and transition sign-off is provided by the NHA.
11. NHA reserves the right to insist the retention of up to 5 key resources of MSP for a period of 6 months beyond the closure of the contract, in case NHA is of the opinion that the knowledge transfer has not been completed satisfactorily during the exit management period. This will be at no extra cost to NHA.

6 Deliverables, Milestones and Payment Terms

This section outlines the deliverables, payment milestones, timelines and payment terms for the Project PM-JAY IT 2.0 ("project"):

1. The PM-JAY IT 2.0 project is planned to be implemented as a service complete with all the services, components and infrastructure required for delivery of the envisaged activities under the PM-JAY IT 2.0.
2. Overall the implementation of project is envisaged as pre Go-live (Design, Development, testing, roll-out phase (including operations and maintenance of some application till full go-live is achieved) and Post go-live phases (Continuous Operations, maintenance and enhancement phase).
3. Pre go-live shall be up to T + 12 months (assuming 'T' to be a date in calendar which denotes date of on-boarding of the MSP)
4. Post go-live the MSP shall operate, maintain and continuously enhance the system for a period of 5 years from date of go-live i.e. up to T + 72 months.
5. Payments to MSP during post and pre go-live are linked to achieving service levels by MSP and the payments shall be (refer Annexure III (Service Level Metrics), volume-1) accordingly made to the MSP.
6. The supply, installation, design, development, testing, commissioning, enhancement and maintenance of the solution are part of the scope for the MSP for a period of 12 months for pre go-live and 5 years (post go-live) with a two (2) year extension (on same terms and condition) on a year on year basis as per the need of NHA and agreed upon between NHA and the MSP. The cost for any development activities, software licenses, effort, maintenance etc. would remain the same during the extension period.
7. The complete solution would be hosted on the NHAs GCC infrastructure. The system will be owned by NHA and NHA shall retain the strategic control over the design, development and operations of the project through the full term of the project.
8. During the operational life of the project the NHA's role shall be to monitor the performance of the MSP and enforce the terms of the contract.

6.1 Payment Terms

1. The payments to MSP and its payment schedule shall be as per the terms defined in this section of the RFP.
2. The MSP will sign a MSA (Master Service Agreement), which shall include the Service Levels and the MSP will be compensated for meeting the prescribed service levels, subject to the performance of MSPs solution for the project as reflected by the Service Levels metrics and payment terms defined in this RFP and/or the contract agreement between MSP and NHA.
3. All payments agreed to be made by NHA to the MSP in accordance with the commercial bid (please refer Annexure IV of volume II of this RFP) shall be inclusive of all statutory levies, duties, taxes and other charges whenever levied/applicable except GST.
4. GST shall be paid (as per applicable rate) to the MSP by NHA on their invoices however all other taxes, cesses, levies, duties and any other incidental direct/indirect costs shall be borne by the MSP.
5. NHA shall make payments after withholding tax deductible at source as appropriate as per the applicable taxation laws.

6. No payments shall be done for any kind of reworks, due to errors or non-compliances attributable to MSP.
7. Payments as stipulated herein shall be subject to meeting the milestones, service levels (before go-live) and service levels (post go-live) by the MSP and appropriations to the amount being paid shall be done (if applicable). Any penalties/ liquidated damages, as applicable, for delay and non-performance, as per the criteria mentioned in this RFP document, will be deducted from the payments for the respective milestones/financial quarters.
8. Advance payments will not be made.
9. In case of disputed items, the disputed amount shall be withheld and will be paid only after settlement of the dispute.
10. MSP will execute the work as per RFP with rates/prices discovered in commercial bid. No extra payment will be considered by NHA.

6.2 Payments applicable during Pre Go-Live

1. This section specifies the milestones/deliverables for the MSP
2. Payments during pre go-Live are linked to milestones (defined in this section) and service levels (refer Annexure III, 7.3.1 (Service Level Metrics- pre go-live)).
3. Payments shall be applicable only if the relevant milestones/deliverables are delivered to NHA subject to service levels.
4. The below table describes various milestones/deliverables and associated payments-

    a) Assume T to be a time in calendar when the MSP is on-boarded on the project.
    b) Payments are specified as % of component A of the commercial bid
    c) It is clarified that a particular milestone/deliverable as per below table shall be deemed to be completed if all preceding (preceding in terms of 'time') deliverable/milestone of that particular deliverable/milestone are completed along with completion of that milestone/activity.
    d) T + x denotes 'T + x calendar months' where 'T' is the date of on-boarding of MSP
    e) Timelines (in the below table) indicate- maximum time allotted to complete a milestone/deliverable.
    f) The milestone/deliverables specified in below table shall be subject to IT Infrastructure readiness by NHAs CSP.
    g) It is clarified that applicable amount shall be paid to MSP only after completion of a particular milestone. E.g. Payments for milestone 1 shall only be paid only when all the deliverables/activities, Agile IndEA Artefacts, other actions (as provided in below table) are completed by the MSP.

Milestone	Timeline (in months)	Deliverables/ Activities to be completed					Payment (as a % of Pre-Golive (component A) Cost)
		Domain Components	**Support Components**	**Technology Components**	**Agile IndEA Artefacts**	**Other Actions**	
1	T+3	1. BIS (Beta) 2. HCP (Beta) 3. HCP (Sandbox Release)	1. Visualization & Analytics Tool	1. Project Management Tool 2. Agile Development & Release Management Tool 3. Big Data 4. Enterprise Search	**Enterprise Artefacts** 1. Business Vision Statement 2. Architecture Principles & Strategy 3. Governance Structure 4. Implementation Strategy & Plan 5. Product Roadmap **Artefacts for Milestone 1 Components (continuous enhancement through Milestone 2-3)** 6. Service Portfolio & Service Levels 7. BPR 8. Data Architecture & Design 9. Application Architecture & Design 10. Technology Architecture & Design 11. Application Development	1. On-board and deploy the proposed key manpower 2. Complete knowledge transfer on PM-JAY IT 1.0 3. Prepare Project Governance Framework 4. Setup Sandbox Environment	**20%**

Milestone	Timeline (in months)	Deliverables/ Activities to be completed					Payment (as a % of Pre-Golive (component A) Cost)
		Domain Components	**Support Components**	**Technology Components**	**Agile IndEA Artefacts**	**Other Actions**	
2	T+6	1. BIS (Prod) 2. TMS Provider (Beta) 3. TMS Payer (Beta) 4. HEM (Beta)	1. Integrated Website/ Portal (Beta) 2. Mobile App (Beta) 3. IT Helpdesk Solution 4. Learning Management System	1. Business Process Management Tool 2. Digital Signature Certificate 3. AUA Gateway 4. ASA Services 5. e-Sign	**Enterprise Artefacts** 1. Security Architecture 2. Privacy Architecture 3. Integration Architecture 4. Data Migration Strategy & Plan **Artefacts for Milestone 2 Components (continuous enhancement through Milestone 3-4)** 5. Service Portfolio & Service Levels 6. BPR 7. Data Architecture & Design 8. Application Architecture & Design 9. Technology Architecture & Design 10. Application Development	1. UAT and Data Migration for Milestone 1 Components 2. Roll-out of BIS	**20%**

Milestone	Timeline (in months)	Deliverables/ Activities to be completed					Payment (as a % of Pre-Golive (component A) Cost)
		Domain Components	**Support Components**	**Technology Components**	**Agile IndEA Artefacts**	**Other Actions**	
3	T+9	1. HCP (Prod) 2. TMS Payer (Prod) 3. TMS Provider (Prod) 4. HEM (Prod) 5. IMPACT 6. e-Referral System	1. Integrated Website/ Portal (Prod) 2. Mobile App (Prod) 3. Grievance Redressal Management System 4. Feedback & Survey Management System 5. SAMVAAD 6. Virtual Assistant 7. Call Disposition Tool	1. Application Performance Management Tool	**Enterprise Artefacts** 1. Enhancement, harmonization & integration of EA's developed in Milestone 1 & 2 **Artefacts for Milestone 3 Components (continuous enhancement through Milestone 4)** 2. Service Portfolio & Service Levels 3. BPR 4. Data Architecture & Design 5. Application Architecture & Design 6. Technology Architecture & Design 7. Application Development	1. Integrations with external and internal solutions/ applications/ environments/ components 2. UAT and Data Migration for Milestone 2 Components 3. Roll-out of components moved to production	**20%**
4	T+12	1. Gradual Roll Out / Adoption across States 2. Capacity Building and Stakeholder Engagement 3. Go-Live of PMJAY IT 2.0			**Enhancement & Consolidation of Artefacts and documentation done in Milsestone 1-3**	1. Replication of DR	**40%**
TOTAL (MILESTONE 1 to 4)							**100%**

Table 9: Pre Go-Live Milestone

6.3 Incentive

An incentive shall be paid to MSP if the MSP achieves the go-live and roll-out at an early date as below-

Timeline achieved by MSP for go-live	Incentive Applicable (as % of component A of the commercial bid)
If go-live is achieved before T + 10 months	5% incentive
If go-live is achieved before T + 11 months	2.5% incentive

Table 10: Incentives (early go-live)

6.4 Payments during Post Go-Live: Continuous Operations and enhancement

Quarterly payments to the MSP, during Post Go-Live shall be made as under-

1. Total payment quoted by the successful bidder in component B of the commercial bid equated to quarterly payments (20 EQIs.) linked to the successful completion of the following deliverables and the MSP meeting the service levels specified at Annexure III (Service Level Metrics)

#	Deliverables	Frequency	Timeline
1.	Operations and Maintenance plan for PM-JAY 2.0	Once at the initiation of post go-live phase and thereafter every year.	Yearly and at initiation i.e. within 2 days from go-live
2.	Attendance report of all resources deployed on-site	Quarterly	Within 2 days of the end of every quarter
3.	Development/ Enhancement/ up-gradation/ modification reports along with updated design documents & user manuals	Monthly	Within 2 days of the end of every month
4.	Issue Tracker & Log reports of help desk, Call resolved, unresolved and escalated issues.	Monthly	Within 2 days of the end of every month
5.	Service level compliance reports	Quarterly	Within 7 days of the end of every quarter
6.	Data and Application migration	Once	At the time of on-boarding of new CSP
7.	Details on capacity building activities taken up by the MSP	Quarterly	Within 2 days of the end of every quarter
8.	Peak load test plan	Yearly	Yearly

#	Deliverables	Frequency	Timeline
9.	Penetration testing plan	Yearly	Yearly
10	Performance and load testing	Every 6 months	Every 6 months
11	Application benchmarking	Yearly	Yearly
12	Reports on various tests performed for PM-JAY solution along with the results and plan for addressing the issues identified during testing, parallel run tests.	Quarterly	Within 2 days of the end of every quarter
13	Post Go-Live, at regular intervals following deliverables are required: • Updated system design documents, specifications, • Latest source code, application deployment files, configuration files for entire solution • Updated user manuals, administration manuals, training manuals etc. • Software change logs etc.	Monthly	Within 2 days of the end of every month
14	Facilitation of periodic audits for following: • Security • Application and infrastructure performance	As per audit cycle.	As per audit cycle.

Table 11: Deliverables (Post go-live)

2. Payment to MSP for ASA services shall be paid as a per transaction rate as per the rate quoted by the MSP in its commercial bid subject to the MSP meeting the service levels for ASA services as specified in Annexure III (Service Level Metrics).

6.5 Other Costs

S. No	Cost Element	Terms of payments
1.	Cost of 3rd Party audit	• Cost for 3rd party audit shall be borne by the NHA
2.	Any additional Costs	• No additional cost for any reason would be paid/ payable by NHA unless specifically approved by NHA as a part of the change control process. • No invoice for extra work/charge order on account of change order will be submitted by the MSP unless the said extra work /change order has

S. No	Cost Element	Terms of payments
		been authorized/ approved by the NHA in writing in accordance with Volume III of this RFP on change order.
3.	Payments to sub-contractors	• NHA shall not be responsible / obligated for making any payments or any other related obligations under this Contract to the MSP's sub-contractors (including OEM for any software component). • The MSP shall be fully liable and responsible for meeting all such obligations and all payments to be made to its sub-contractors and any other third party engaged by the MSP in any way connected with the discharge of the MSP's obligation under the contract and in any manner whatsoever
4.	Taxes and Statutory Payments	• The MSP shall bear all personal/income taxes levied or imposed on its personnel, sub-contractor's personnel, service providers (as per applicable law) etc. on account of payment received under this contract. • The MSP shall bear all income/corporate taxes, levied or imposed on the MSP (as per applicable law) on account of payments received by it from the NHA for the work done under this contract. • No payment on account of customs duties, exchange rate fluctuations or any other tax other than GST shall be payable to the MSP
5.	Change in Taxes etc.	• Change in duties/taxes under changes in law by Government of India, invoice on account of change in GST (either increase or decrease) under change in law shall be submitted by the MSP along with all the necessary supporting documents in a single invoice after payment of all duties/taxes.

Table 12: Other costs

7 Annexures

7.1 Annexure I: Solution Requirements

The PM-JAY IT 2.0 system (The usage of the word “System” or “Solution” in this section or elsewhere in the RFP shall refer to PM-JAY IT 2.0 system) is to be designed, developed, tested, implemented and rolled out throughout the country with an objective to promote openness, transparency and implement standards in the PM-JAY ecosystem. This section outlines the ‘to-be’ solution requirements of the proposed PM-JAY IT 2.0 system. Besides, this section, PM-JAY IT 2.0 solution requirements also includes requirements which are described in subsequent Annexures and the bidders are expected to read all the requirements in a harmonious way. The selected bidder should be able to deliver at the minimum the solution requirements specified herein and shall submit its compliance against the solution requirements in its technical bid.

The MSP should note that the requirements as set-out in this RFP are not exhaustive and it shall be required to do a detailed assessment of the system and provide a detailed requirement specifications/product backlog for each of the feature/requirements. The MSP while designing the system must deliver its product backlog, sprints backlog, user stories etc. which should be in line with the requirements specified in the RFP. The following diagram depicts the envisaged solution requirements-

Note-

1. MSP must design the solution to be enabled using single sign-on (SSO). SSO shall be provided by NHA and the MSP must integrate the PM-JAY IT 2.0 with the same to enable single sign on (SSO).
2. One of the fundamental requirements of solution for the PM-JAY IT 2.0 Project is its scalability. The architecture should be proven to be scalable and capable of delivering high-performance as and when the number of users and transaction increase.
3. System should facilitate work-flow based approval wherein the transactions initiated can be approved online by the approving authority and subsequently posted.

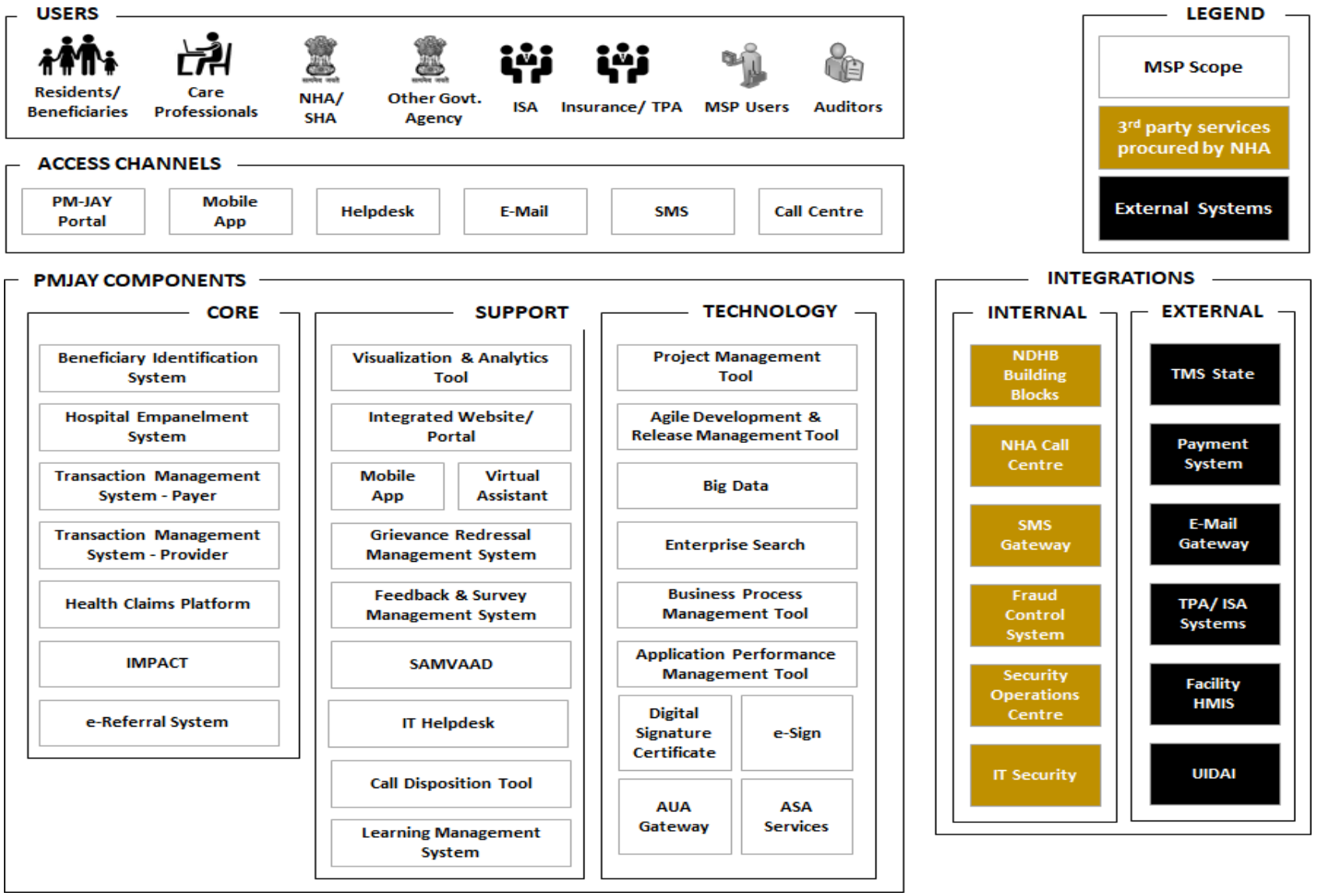


Figure 10: Envisaged Solution for PM-JAY IT 2.0

7.1.1 PM-JAY IT 2.0: Users

The following are the users who will be using the PM-JAY IT 2.0 system-

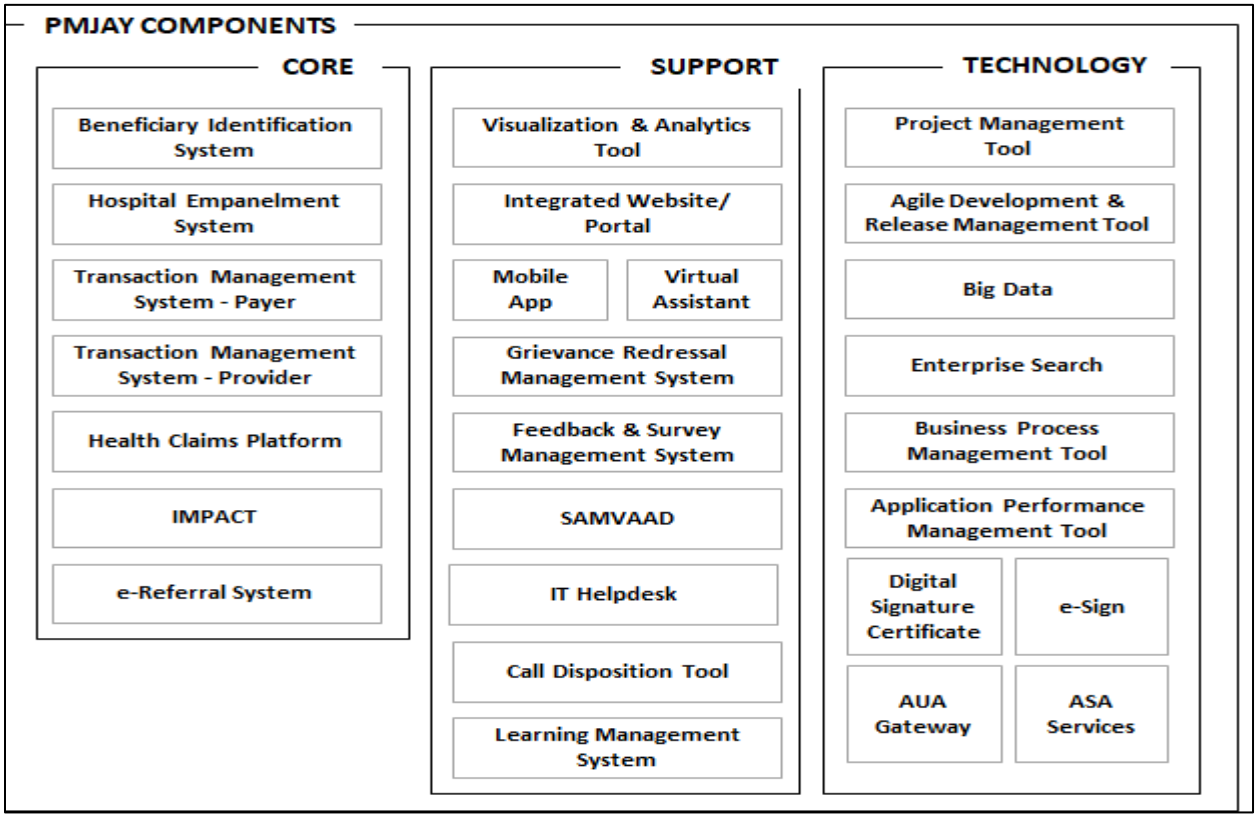
1. **Resident/ Beneficiary-** Patient, Family Member, Beneficiary, Resident of India
2. **Care Professionals-**
    a) Medco- A representative of EHCP who acts as a coordinator between PMAM and EHCP
    b) Hospitals/EHCP- Empaneled Health care provider (Provider)– EHCP, Clinic, Diagnostic Centre
    c) Doctor and health workforce- who provides treatment to the beneficiary
    d) PMAM- Pradhan Mantri Arogya Mitra- A certified healthcare professional, appointed by SHA, for assisting beneficiaries at EHCP
3. **Institutions-**
    a) NHA- National Health Authority (Including NAFU and 3rd party service providers of NHA users)
    b) SHA- State Health Agencies (includes SAFU users and field investigator also)
    c) ISAs- Implementation Support Agencies – States/UT's have choice to appoint a dedicated ISA for implementation of PM-JAY
    d) Other Government Agency/Department- Any other government agency which uses the PM-JAY IT 2.0 specific applications for their own projects or in case of convergence with PM-JAY
4. **Insurance/TPA**- Insurance companies and/or third-party administrator which processes insurance claims
5. **MSP Users-** users of the MSPs team
6. **Auditors-** For conducting medical/claim/BIS audits

7.1.2 PM-JAY IT 2.0: Access Channels

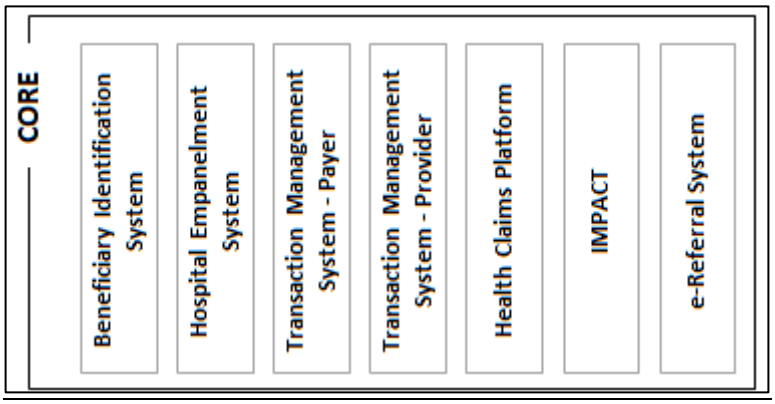
Access Channel	Description
PM-JAY website/Integrated portal	**1** The MSP shall develop, implement and maintain a website/portal of PM-JAY as part of the proposed PM-JAY IT 2.0 solution to provide best in class user experience and API enabled interfaces to all the stakeholders of PM-JAY IT 2.0 in terms of information, transactions, compliance and services. **2** The Proposed PM-JAY website/portal shall be the gateway through which all the applications (as specified above) shall be enabled for its stakeholders.

Access Channel	Description
Mobile App	NHA envisages development of mobile apps where the user can access the various features of PM-JAY IT 2.0
Helpdesk	The MSP shall be responsible to setup and run a centralized IT helpdesk as a part of PM-JAY IT 2.0 solution, which will be accessed through an IT Helpdesk portal as well as a Helpdesk application to be developed by the MSP to facilitate logging of incident tickets (regarding any queries, errors, incidents and application/infrastructure IT/ operations related issues)
Email and SMS	The MSP needs to deliver e-mail and SMS services that can be used for OTP authentication and notifications and for delivering emails
Call Center	Users can register enquiries, grievances through NHAs call center (toll free number)

7.1.3 PM-JAY IT 2.0 Solution Components



CORE COMPONENTS



7.1.3.1 Beneficiary Identification System

1. Beneficiary Identification System (BIS) is a process of collecting KYC information of an individual and validating their eligibility against an eligibility database. For example, the SECC and RSBY database are used in PM-JAY to approve/reject applications. PM-JAY aims to target about 10.74 crore poor, deprived rural families and identified occupational category of urban workers' families as per the latest Socio-Economic Caste Census (SECC) data. Additionally, all families enrolled under RSBY that do not feature in the targeted groups as per SECC data are also included.
2. For Beneficiary Identification System (BIS), NHA, in PM-JAY IT 2.0, aims to leverage new technologies, develop new techniques for on-boarding of new institutes or organizations and eliminate existing system redundancies in order to enhance user experience, system workflow, building a robust, secure yet easy to integrate platform for beneficiary management and enable ease of expansion in terms of beneficiary base and infrastructure.
3. The BIS shall have the following stakeholders (Indicative but not exhaustive):

    a) Residents
    b) Beneficiaries
    c) Medco
    d) NHA/ SHA
    e) e-Card Issue Partners
    f) SHA/ State-Approver
    g) Pradhan Mantri Arogya Mitra (PMAM)
    h) Call Center
    i) Helpdesk
    j) Admin

BIS shall be based on the following envisaged functional requirements and plans to implement a National database with the following information

4. The PM-JAY IT BIS system must be studied to ensure there is a clear understanding of existing functionalities. BIS guidelines have been published and are available at link: https://www.pmjay.gov.in/sites/default/files/201807/GuidelinesonProcessofBeneficiaryIdentification_0.pdf. The BIS process is briefly described below:

a) Search for a potential beneficiary in eligibility databases such as SECC, RSBY, State databases, ESIC etc.
b) SECC and RSBY datasets are indexed and available via a search system developed by CDAC. This shall be continued to be hosted and used by the new BIS application. Other datasets are maintained by concerned stakeholders and accessible via APIs.
c) Collect KYC data via Aadhaar or non-Aadhaar documents for the beneficiary
d) Obtain the Unique ID (Generated by NDHB building blocks) if already generated or create a new one
e) Collect the family document for the user and link Unique ID to family ID. Attempt should be to validate ONLINE the family ID quoted by the beneficiary by interfacing with the related databases like the PDS and family-based State Schemes.
f) Generate a match score between the Eligibility Record and KYC documents
g) Auto-Approve the record and update eligibility if the match score is above a threshold
h) Route record for manual approval if the match score is below the threshold
i) Inform beneficiary and BIS operator on the status throughout the process
j) Support Approval / Rejection at ISA and SHA levels as per the guidelines

5. BIS Application must use the Unique ID APIs and services described above
6. Also, if any additional database is getting integrated with PM-JAY from states or any other scheme(s) that has to be crawled under search functionality by the MSP.
7. PMJAY ID to generated from the system should be compliant to the proposed HID (health ID) format proposed HID system under NDHB building blocks.
8. BIS is expected to be operated by over 1,000,000 operators across various organizations who will be allowed to issue PM-JAY e-cards as per the Guidelines for Institutions to issue PM-JAY e-Cards (link: https://pmjay.gov.in/sites/default/files/2019-10/Open_e-Card_Generation_Guidelines_v4.pdf). A role management system where operators can sign up and the approval of the operators is done by the appropriate organization is required. BIS requires that every operator's KYC including Aadhaar details is available with NHA. Each operator must perform a bio-auth to gain access to the application or APIs. Audit trails on all records in BIS must be linked with the operator responsible for those changes. The role management must use the integrated IDAM solution proposed in the RFP.
9. e-Cards shall be issued by approved operators using one of the following:

    a) Beneficiary Identification System (BIS) Web Application – MSP must develop solution catering to As-Is functionalities as well as the functionalities defined in this section of the RFP
    b) Beneficiary Identification System (BIS) Mobile Application – A new smartphone application (android only) catering all functionalities of the web application as well as mobile SDK for mobile authentication

10. Beneficiaries can obtain an e-Card via self-enrollment.
11. A web and mobile interface on the lines of mera.pmjay (MERA) should be available for users to apply via self-enrollment. The system should allow for KYC collection and linkage with eligibility of the respective scheme. Following requirements may be adhered to-

    a) Web and mobile based enablement

b) The application (MERA) must have capability to search SECC/RSBY along with state specific beneficiaries' database (and other databases in cases of convergence) data through search application (MSP will research existing methodology and will configure various methodology)
c) Also, if any additional database is getting integrated with PM-JAY from states or any other scheme(s) that has be crawled under search engine by bidder.
d) Details are sent to the beneficiaries which are found eligible through SMS/ e-Mail on the registered mobile no. of the beneficiary.

12. BIS should enable authorized third parties to develop BIS applications using APIs to be provided by PM-JAY IT 2.0.

7.1.3.1.1 De-duplication (Aadhaar and Non- Aadhaar)

1. For BIS, a de-duplication mechanism shall be envisaged by the selected MSP to eliminate any redundant and duplicate beneficiary information from the beneficiary database along with the de-duplication check of the beneficiary records in real-time at the time of beneficiary verification. The purpose of this check shall be to ensure that only the first unique instance of any data is retained and used for any future purpose and references. The de-duplication checks shall be of two types:

    a) Aadhaar based deduplication: In this type of de-duplication mechanism, the Aadhaar details, like biometric (fingerprint or iris), name, address, etc., of the verified or potential beneficiary shall act as the single source of truth and as a unique data instance for any required future references.
    b) Non-Aadhaar based De-duplication: In this type of de-duplication mechanism, the MSP shall use demographic, photograph, contact information etc. in order to de-duplicate records.

7.1.3.1.2 Family and Relationship Management

1. The MSP for BIS shall develop a functionality in order to maintain, customize, delete and update the family details and relationship status of the respective beneficiaries against its family members. The functionality shall update the relationship status among the family members as and when required or changed by the respective beneficiary with necessary proofs, approvals and documents.

7.1.3.1.3 Roles based Access Management

1. For the BIS solution, there shall be a functionality under roles management module for the management of authorization and access controls corresponding to roles and responsibilities of different stakeholder. The stakeholder shall get the view of the dashboards and content as well as features, functionality and action points pertaining to their roles and responsibilities only.
2. Role Based Access Control shall be used in order to restrict system access to unauthorized users i.e., any user not having the access or rights to any specific module shall not be allowed to access the proposed system
3. Role-based access control shall exist to ensure access to information resources of PM-JAY and NHA are granted on a need to know basis, and to prevent unauthorized entities from accessing NHA's sensitive information resources. All access requests shall require authorization based on limits defined by NHA. Any response to such requests shall be in compliance with NHA's Information Security policies and guidelines.

7.1.3.1.4 BIS Audit Module for SAFU

BIS should have a built-in SAFU (State anti-fraud unit) module to enable seamless due diligence on suspect triggered e-cards. MSP to ensure the following requirements to be built in the BIS-

1. The triggers on suspicious cases shall be developed by NAFU (National anti-fraud unit- NHA) on the PM-JAY e-cards in BIS.
2. BIS audit module should have a functionality to share the identified suspicious cards/cases with State Anti-Fraud Unit via BIS portal for due diligence.
3. BIS audit module should provide required access to case details, as per business rules to be finalized with NHA, to SAFU users for conducting due diligence. Further the module must enable the transfer of cases to SHA also as per business rules to be finalized with NHA
4. Following actions to be enabled for SAFU users on such cases-
    a) **Dismiss the suspicion:** Based on SAFU's analysis the SAFU user may dismiss the case
    b) **Disabling the card:** SAFU user may recommend the disabling the card
5. BIS and TMS system must also be integrated to notify approvers (PPD- Pre-authorization panel doctor and CPD- claim panel doctor) in TMS during patient registration or the claim initiation on a suspicious card to help them take informed decision during transaction approvals.

7.1.3.1.5 Analytics and Reporting

1. The scope of the MSP shall cater to the following indicative list of analysis which will be required by NHA and its stakeholders along with the respective reporting:

S. No.	Type of Report
1.	State level user performance for BIS (PMAMs, ISA, SHA users) monitoring
	a. BIS approver performance monitoring
	b. BIS user performance monitoring
2.	State level dashboards and reports
3.	District level summaries and trends
4.	Block level dashboard and reports
5.	Village level dashboards and reports
6.	Village BIS e-cards generation monitoring
7.	BIS user performance monitoring
8.	Raw data of all BIS records
9.	Monthly/weekly/daily summary dashboards for record creation/approval
10.	Record creator user performance dashboard
11.	Record approver user performance dashboard

S. No.	Type of Report
12.	Dashboards and reports on e-Card issue partners (for example Uber - VLEs)

Table 13: BIS Indicative Reports

7.1.3.1.6 Performance and Scalability

1. BIS is a critical application that must be deliver high availability, reliability and low latency performance. With over a million application users, the system must be designed to scale and store over a billion Unique IDs, the relevant documents for proof of benefits.

7.1.3.1.7 Internal and External Integration Services

1. The BIS solution shall use or integrate with core modules and submodules of envisaged PM-JAY IT 2.0 solution through a various set of APIs exposed between such modules and developed by the MSP for real time exchange of data and information and avoid any kind of data duplication.
2. The following are the illustrative (but not exhaustive) modules and functionalities under PM-JAY IT 2.0 solution to be integrated with proposed BIS solution:

Integration Touchpoint	Description
Vendor's Application	BIS solution to perform PM-JAY beneficiary identification drives for left over beneficiary verification and e-card generation
PDS System	For identification, authentication and verification of ration card holders online w.r.t the PDS databases maintained by the States
Call Center	For beneficiary grievance redressal (inbound and outbound calls) and reporting purposes
State System	API integration for beneficiary data and information in-warding and database maintenance
TMS 2.0	API integration with proposed TMS application for beneficiary data validation and authentication during claim processing
LMS	API integration with LMS in order to redirect beneficiaries/ user to their corresponding training modules for capacity building purposes
Big Data	API integration for beneficiary data and information extraction for authentication and validation purposes while ensuring privacy requirements
HEM	API integration for verification and authentication of empaneled hospitals and quality check purposes
Aadhaar Services (UIDAI)	API integration for Aadhaar based e-KYC
Program Management/ SLA Management	API integration with SLA monitoring tool for MSP's performance monitoring and services delivery checks for BIS solution

Integration Touchpoint	Description
Central Grievance Redressal Management System (CGRMS)	API integration with CGRMS for online grievance and dispute reporting from the portal itself and in-warding of alerts and notification of the same
Feedback & Survey	API integration for in-warding of beneficiary feedbacks and survey results from the envisaged Feedback and Survey functionality defined in the RFP
Support Team	Integration with the envisaged support team for PM-JAY IT 2.0 for BIS related issues and grievance redressal along with BIS data reporting purposes
LGD	API integration with LGD for user's data in-warding purposes catering to region wise (rural and urban) beneficiary bifurcation and information extraction
HCP	API integration with proposed HCP to prevent beneficiary verification de-duplication and health insurance package validation for reporting and fraud detection against a particular beneficiary

Table 14: BIS Integration Touchpoints

7.1.3.2 Hospital Empanelment System

Under PM-JAY IT 2.0 (scheme) the inpatient treatment is provided to beneficiaries by the empaneled hospitals so as to provide the benefits envisaged under the Scheme in which the State Health Agency (SHA) empanels private and public health care service providers (EHCP) and facilities in their respective State/UTs. A set of guidelines prescribes for empanelment are specified here- https://www.pmjay.gov.in/sites/default/files/2019-04/NHA_Guidelines_on_Process_of_Empanelment_for_Hospital_Revised_0.pdf

The empanelment is carried out using the HEM module provided by NHA or by the state specific IT Systems developed by respective states/UT's. Hospital Empanelment is a pivotal module which is critical for empanelment of public and private hospital and health facilities engaged in providing health care service delivery to patients under the PM-JAY scheme. The states are free to decide the mode of verification of empanelment application, conducting the physical verification either through District Empanelment Committee (DEC) or using the selected insurance company (Insurance Model), under the broad mandate of the instructions provided in these guidelines.

The HEM Module to be developed by MSP must deliver the below requirements-

7.1.3.2.1 Registration

1. The Registration Modules will help the Hospital to submit an online application for Empanelment under the scheme. It should provide the facility of online submission of the registration form. It should also allow user to enter and save the details before submissions so that user can save the details and submit later. The Key features of Registration Module are as follows.

    c) **Registration Form** – The online registration form of Hospital empanelment with all required details like Name, Geo-location, specialty, number of beds, man-power details, infrastructure,

certification and licenses etc. HEM should have facility to capture the Geo Location automatically and fetching details from NIN/Rohini ID. System should be able to fetch and authenticate information from source system via integration through API's like doctor's registration number from sources like MCI etc. against the registries, PAN Card verification against NSDL, Aadhaar services etc. Where ever possible system should fetch and prepopulate fields from various state schemes and registries.

d) It should also have capabilities to integrate with various state schemes and their systems to avoid duplication of effort during the registration process.
e) Save Details –The User can fill the necessary fields in the online submission form and can save the details before final submission. The saved details will be stored so that user can submit the same later as well.
f) Submit Application – Once the entire details are filled in the system, Hospital can submit the form and will get a unique application/enrollment number.
g) Notification alerts – The system should be capable enough to deliver notification alerts as and when the stage of application changes as below. The user should get a notification on registered mobile number, email address and on screen pop up. This notification should also be sent to approval authorities for prompt action.

    i. Draft application
    ii. Submitted
    iii. Under district verification
    iv. Clarification required from hospital
    v. Application approved
    vi. Application rejected

It is clarified that-

1. SMS and email gateway shall be provided by NHA at no cost to MSP
2. All costs related to sending SMS and E-mail shall be borne by NHA.

7.1.3.2.2 Verification

1. The Verification Module should provide facilities to conduct the field verification and verify the sanity of the details provided by the hospital for Empanelment. This module will be used by the approving authority for Empanelment of the hospital. The key features of the Verification module are as follows:

    a) Field verification: DEC /TPAs/ISAs shall conduct a field verification of hospital by visiting the hospital and verifying complete information provided by Hospital during registration process. A standard verification application shall be provided by MSP which can work on mobile, tablets or other handheld devices during verification visit in online / offline mode. During verification, application shall get geo-tagged information to images, documents etc. Field investigation officer (FIO) from DEC/TPA/ISAs should able to capture as much as information which all are relevant to verify and can able to save / submit. 'In time and out time' of verification officer should be captured along with the Geo coordinates to ensure that field verification is being duly completed. This could be done using geo tagging capabilities.
    b) Matching and Verification- Once the details from filed investigation are received then the SHA user can conduct a verification by comparing the field investigation data with details provided by the hospital for empanelment. If the information matched, then approving authority can

process further for empanelment. The verification module should have facility to fetch and validate information from Aadhar/PAN Card and NIN/ROHINI Data Base through standard open API.

c) The system should enable digital signatures so that report uploaded by the on-field verification officer can be digitally signed.

1.1.2.6.3 Empanelment/ De – empanelment

1. A Hospital would be empaneled as a network hospital (EHCP) with the approval of the respective State Health Authority if it adheres with the minimum criteria. The empanelment and de-empanelment module must provide the facility to approve or reject or seek clarification to re-apply.
2. The empanelment and de-empanelment option will be available only with the competent authority. De-empanelment process can be initiated by ISAs/TPAs/SHA after conducting proper disciplinary proceedings against empaneled hospitals on misrepresentation of claims, fraudulent billing, wrongful beneficiary identification, overcharging, unnecessary procedures, false/misdiagnosis, referral misuse and other frauds that impact delivery of care to eligible beneficiaries.
3. Once the application for empanelment has been submitted, a time should be triggered in the system so that verification process starts on time (If verification overshoots the timer the same should be automatically reported to the higher competent authorities). This would ensure compliance to the turnaround time (TAT) for empanelment. An appropriate configurable workflow should be designed for the HEM module.

7.1.3.2.3 QCI Integration

1. QCI (Quality Council of India) is the organization which provide certification to the Hospital based on the assessment conducted on quality parameters. The integration functionality will provide API-based 'integration' with QCI portal for fetching the certification details for the hospital. If the hospital has provided all necessary documents, then QCI will be able to find all mandatory details about the hospital. Users like SHA and Hospital can also fetch the details of the validation assessment conducted by QCI for the certification.
2. This integration will encourage empaneled hospitals to apply for accreditation- that is Bronze/Silver/Gold certification.
3. Main Features in this module will be as follows:

    a) QCI Integration – This feature will help in fetching the data from QCI on quality parameters based on their assessment of the facility.

    b) Alerts/ Notification- This feature will provide timely alerts and notification on assessment dates, document submissions and any other information regarding quality certificates etc.

7.1.3.2.4 Update Details

1. Once the Hospital is empaneled with PM-JAY, it may require updating the details regarding specialties, number of beds and doctors etc. The "Update" Module will provide facility to Add, delete and edit the details to the hospital.
2. In case of Hospital demands to exclude the facility from PM-JAY then update module will provide facility for voluntary withdrawal from the scheme.
3. To ensure data integrity, information available in Hospital Empanelment Management should be updated regularly in terms of basic information, specialty, capacity, man-power, details, bed strength etc.

4. The Module will have following features.

    a) Add Details- In case of additional details to be enter regarding new specialties added into the hospital of number of beds increased of new doctors have joined then user can use Add feature to update such details
    b) Delete Details- In case of reduction of beds or specialty then also Hospital can delete details from their registration form

7.1.3.2.5 Withdrawal

1. In case of Hospital decides to withdraw from the scheme. Hospital can voluntarily de empaneled from the scheme. Once withdrawn from the scheme hospital has to go through complete registration again for empanelment.

1.1.2.6.7 Analytics and Reporting

1. The option for generating the customized reports through filters should also be available for Hospital Empanelment Management. Comprehensive dashboard with real time updates not limited to following should be designed-

    a) Nearby empaneled hospitals
    b) Number of beds available
    c) Doctors availability
    d) Ratings and reviews by the beneficiaries on EHCP
    e) Facilities available
    f) Specialties
    g) Performance and utilization of hospital

2. Insights from enriched hospital data should help in expansion of hospital networks in areas where there is a demand and supply challenge. System should help in predicting the geographies where there is lack in care being provided so as to enable better utilization of hospitals and to improve the quality of care.

7.1.3.3 Health Claims Platform

1. Joint Working Group (JWG)[7] of NHA and IRDAI has recommended creation of Health Claims Platform (HCP), e-claims, health records, digital contracts etc. Their adoption shall provide a set of digital services which shall ensure common standards for claim processing.
2. The HCP shall act as a gateway (with validation and routing capabilities) for the ecosystem wherein the insurers/ TPAs shall send responses for each e-claim via the HCP.
3. It is envisaged that HCP shall be used as a public good. MSP must design, develop and implement the HCP accordingly.
4. HCP shall act as claims and personal health data information exchange gateway wherein –

    a) Health providers submit their e-Claims
    b) Payers (Insurers and TPAs) receive e-claims via standard APIs

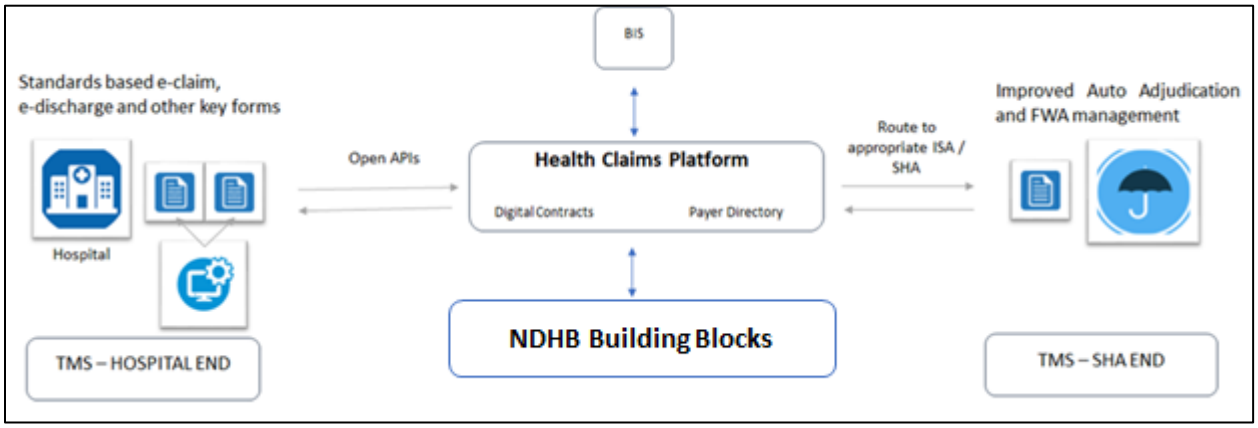
[7] https://www.pmjay.gov.in/sites/default/files/2019-09/Sub%20Group%20on%20Common%20IT%20Infrastructure%20Report_11-09-19.pdf

c) Exchange of personal health data takes place using a federated architecture, subject to conformance with the applicable regulatory requirements regarding data protection and privacy.

d) Approvals, Denials, Queries, payments, status etc.

shall be exchanged between various users of PM-JAY IT ecosystem via the HCP.

5. HCP shall take care of an individual's health data exchange among multiple states in case of portability of health care services. In case of portability of health care services, payer and provider states shall exchange data via HCP.
6. HCP shall validate the incoming e-claim document, route it to the appropriate Insurer / TPA for processing and collect data required for SLA monitoring by NHA. HCP shall be integrated with all necessary components in order to deliver its functionality.
7. To summarize, HCP workflow can be depicted as follows:



8. MSP shall adhere to following design principles for HCP:

a) **Non-repudiability** - the objective of the HCP is to build trust in the claims process.

i. All claim forms will be digitally signed to ensure that the sources of claims are not in question. Both the Provider and the treating doctor will sign digitally.

ii. All adjudication decisions are also digitally signed. Any changes in decision will only be recognized in the context of a resubmission of a claim.

iii. **Verifiability & Explainability**- Adjudication decisions should be explainable & easily verifiable by third parties.

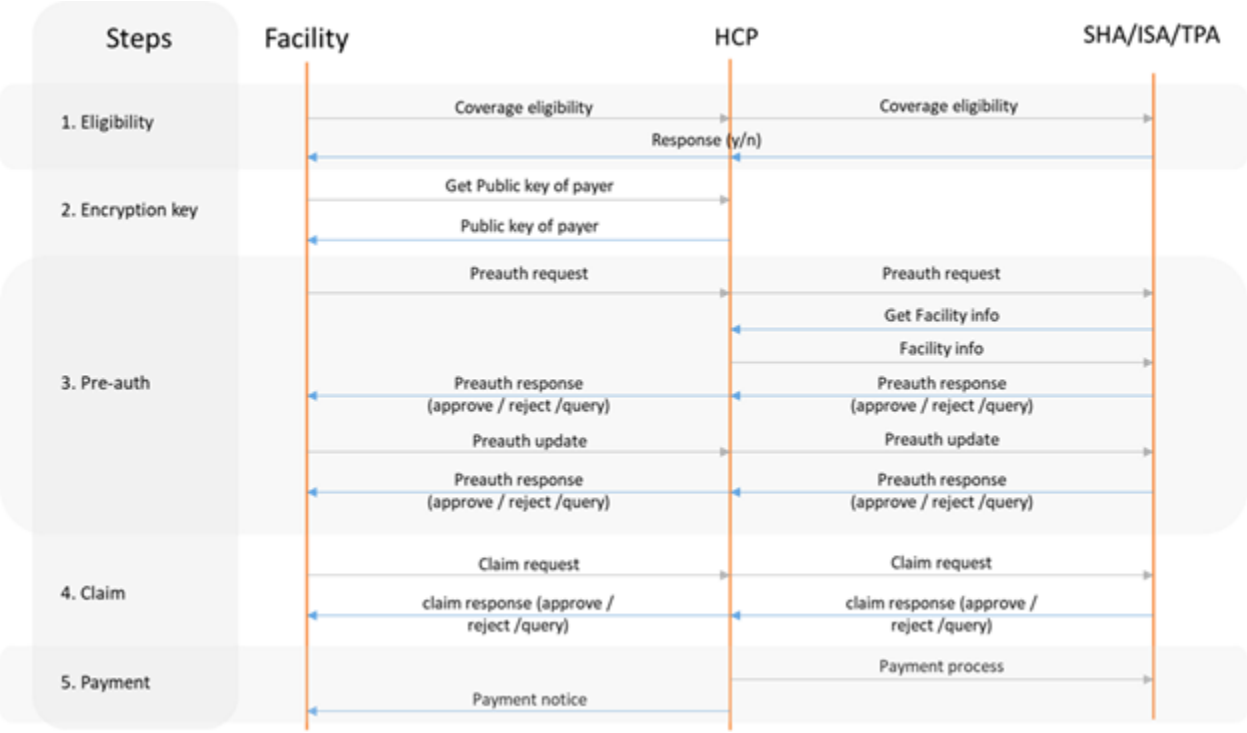
iv. **Extensible and Flexible Schemas**- The schemas used to design the e-claim or other forms should be versioned and allow for incorporating changes in the future

v. **Open APIs and Standards**- Document formats for eClaims, e-discharge or other forms as well as APIs will be published with open access to everyone in the ecosystem. Sandbox access to Health Claims Platform should be available as per defined timelines in section-6 (Deliverables, Milestones and Payments).

vi. **Strong Data Privacy**- eClaims will contain lots of sensitive data. Encryption is recommended to ensure that the Health Claims Platform Provider does not have access to any data beyond what is required for routing and monitoring purposes.

vii. **Consented Data Sharing**- Where necessary the Health Claims Platform must adopt electronic consent collection from consumers to share any data.

9. The Health Claims platform (HCP) is expected to provide following set of digital services. The information context and data flows are modelled based on FHIR 4 standards. This is for illustration purpose to enable the bidders to understand the scope of HCP in ecosystem.



The above diagram is explained as under-

a) **Coverage Eligibility**: HCP shall ensure to check beneficiary eligibility before sending the request to SHA/ISAs/TPAs for any action. This will be on real time basis through integration with BIS using open APIs.

b) **Get Public Key:** All Facilities and Insurers working in the PM-JAY ecosystem will need to have a pair of keys (Public and Private) for document encryption. The HCP shall provide a digital service where any Facility or an Insurer shall obtain the public key of another Facility or Insurer via the HCP and use it for sending encrypted claim documents.

c) **Pre-auth Service:** Empaneled PM-JAY Facilities shall send an e-claim form duly filled out to be routed to the appropriate SHA/TPA/Insurer for further processing. The HCP processor may provide acceptance or rejection for pre-authorization or share a query. The HCP also measures the SLAs for pre-auth and claim processing. The SLA data will be made available by the HCP to the SHA/TPA/Insurer as well as the regulators.

d) **Claim Service**: Empaneled PM-JAY Facilities shall send an e-claim form duly filled out for processing a claim including the discharge summary and other mandatory attachments. The document shall be routed to appropriate processor (SHA/TPA / Insurer) for claim processing. Once approved, the SHA/TPA/Insurer makes the payment to the Facility. The payment notice to the facility shall be sent via the HCP.

e) **Facility Info:** The Insurer requires detailed information about a facility's capabilities including what specialties they provide, infrastructure, the manpower they have, etc. For improved adjudication this information needs to be in a machine-readable format. Standard e-Facility

form shall capture all the information that insurers require. The HCP will provide a digital service to store e-Facility forms including tracking what information in the form has been verified / audited by TPAs or other entities on the field. The HCP will integrate with the Facility Directory via APIs

f) **Package Details:** Application that is used to create e-Claim forms will require to apply certain validations and restrictions during the creation of the e-Claim form depending on the Health Benefits Package. In PM-JAY, only approved packages and prices must be displayed. Packages reserved for public facilities must not be shown to private facilities etc. A standard Policy Markup Language (PML) shall be used by insurers to describe the key elements of their policy.

g) **Digital Contract Management**: Insurance companies and TPAs sign bi-party and tri-party agreements with each facility. The digital management service from the HCP will allow parties to put up a digital version of these MOU for signing by the parties. Each party can sign using their digital signature with the HCP. The signed version of the contract can be retrieved by any of the signing parties on request from the HCP. The digital contract management service is designed to move the industry to a paperless contract and also improve efficiency and time it takes to empanel Facilities. Hash capturing and secure management on a document/contract should be a functionality made available to ensure multiple digital signature on the same contract. ESP (e-sign service provider) and ASP (application service provider) services for e-signature and digital signatures respectively are to be provided by the MSP, price for which needs to be quoted as part of the commercial bid format.

h) **Payment and Reconciliation**: Once the PM-JAY beneficiary claim is approved by the SHA/ISA/TPA, the payment instruction shall be triggered. The HCP must integrate with the Payer's Bank and be able to place a payment instruction with the appropriate credentials. Once payment is disbursed by the bank, the UTR is updated against the transaction and the payment confirmation notice will be sent via HCP. This ensures end to end tracking from claim initiation to payment.

i) **Smart Contracts:** The HCP must be able to implement smart contracting – It must be able to block amounts for a transaction at time of pre-auth in the payers account and release it to the provider once the transaction is approved as per SLAs. This will be used by the ecosystem to ensure highly reliable payments for the industry. Amounts shall be released post approval of a claim by the ISA / SHA. Enabling of smart contracts should be possible on per payer / scheme basis.

j) **Notifications:** Payers and providers use notification APIs from the HCP to message and communicate information. The HCP maintains the queue and status of notifications for all parties.

10. All APIs used and documents used in the workflow like e-claims, PML, etc. must be well documented and made available openly to the developer community.
11. The MSP must maintain a sandbox for HCP that enables the ecosystem to develop and test their software against the HCP.
12. The HCP must integrate with the big data and provide transaction level data (de-identified/anonymized) to the big data. SLAs management, analytics and insights are expected to be derived from the data that flows between Payer and Providers.
13. The MSP must provision for interactive dashboards access to which based on user restriction/role Based Access

7.1.3.4 Transaction Management System (TMS) – Provider

1. The TMS Provider Application will be designed for Hospitals to manage the claims lifecycle end-to-end. TMS Provider may incorporate additional features that can support Hospital Management System and cater to the entire patient lifecycle in small hospitals.
2. The TMS Application shall be designed by the MSP emphasizing the user experience and ease of use requirements of the Health ecosystem players. PM-JAY has both high volume and small hospitals.
3. The MSP must understand the requirements of the hospital users and ensure the TMS-Provider application meets the requirements for these hospitals to manage claims Furthermore, as part of this project it is mandated that the solution proposed by the MSP shall be extendable to all the players in the Health ecosystem like Ministry of Health and Family Welfare, CGHS, ESIC etc. and any customization to the workflow shall be considered as part of continuous improvement lifecycle.
4. TMS-Provider is expected to be available and work in offline and poor network connectivity modes. TMS-Provider may be delivered as a Windows application or a Web application with offline support.
5. The TMS Provider Application will encompass the entire lifecycle and engagement with beneficiaries and shall have modules/ functionalities not limited to Patient Registration, Patient Pre-Authorization, Treatment, Patient Discharge, Claims, Payments, MIS Reports and Dashboards.

The TMS to be developed by MSP must deliver the following requirements:

Note- TMS system should be compliant with EMR, EHR, PHR and Data Policy under NDHB building blocks.

7.1.3.4.1 Patient Registration

1. Patient registration module shall allow the User (PMAM) to check the eligibility / validity of a beneficiary in the system from BIS application through integration, and once validated allow the PMAM to register the patient for treatment.
2. During beneficiary registration phase, beneficiary verification shall be done using Authentication methods supported by the associated Unique IDs. This includes Aadhaar Auth, Face Auth and OTP based auth depending on the situation.
3. Using the Registration Module, the user should have the facility to search for existing patients and add new patients to the system. The patient registration module shall allow the user to capture the following necessary information such as Name, Age, Sex, Address, Mobile Number, Government issued ID proof, State Name, District Name, Facility Name, Date of Registration etc. as necessary to validate the information being pulled from the BIS application. Besides this, the module should conform to the relevant standards (resources) defined by the FHIR Release 4 and specified in the NDHB Report.
4. The system should display the available registration details / Patient registration information already existing in the database when any of the above parameters matches, during the registration process.
5. The Patient Registration module should have the functionality to support telephonic and emergency case scenarios where a patient Auth cannot be performed immediately.

7.1.3.4.2 Pre-Authorization

1. The pre-authorization process requires validation of patient details and eligibility for treatment under the scheme. This module shall allow the Hospital to raise a request for seeking Pre-Authorization / In-Principle approval from the ISA/ TPA / SHA before proceeding ahead with the treatment of the patient.
2. The Pre-Authorization form shall capture all the relevant information required in the eClaim form.

3. NHA updates the Health Benefit packages from time to time. These are available via the HCP as a PML. TMS-Provider must use the PML intelligently in the UI to ensure that pre-auth forms are filled out correctly. This includes the following validations

    a) Diagnosis is coded in ICD 10 / 11
    b) Only packages as defined in the HBP for the beneficiary state are allowed
    c) Prices are shown as the HBP of the state
    d) Display package prices considering any incentives applicable to the provider
    e) Apply package specific restrictions including reservations, stratifications and package specific implants
    f) Restrict package across Medical / Surgical specialties from being claimed together
    g) Show the correct price when multiple procedures are selected
    h) Notify the user of age / gender / once in a lifetime related restriction on packages

4. Once the e-Claim form has been created and digitally signed by the hospital and treating doctor, the application should submit the Pre-Authorization request form through HCP. The HCP returns a transaction id. The application must save the ID and refresh the status.
5. Proposed solution shall have flexibility to incorporate changes as suggested by NHA during the project duration.
6. The envisaged scenarios which need to be catered by the TMS include:

    a) Rejection - Pre-Authorization is rejected by the provider based on the eligibility criteria mismatch or wrong or missing information in the pre-auth request. In case of rejection, hospital will be required/notified to resubmit the request.
    b) Query - The provider may ask the hospital to submit some necessary information which is either critical or may be missing in the request submitted by the hospital executive. in this case hospital can resolve the query within stipulated time frame for the same claim request. No new request will be required
    c) Approval - In case of approval, the hospital may proceed with the treatment

7.1.3.4.3 Treatment & Discharge

1. This functionality shall encompass and capture all the relevant details pertaining to the treatment provided to the beneficiary under a package/ procedure as identified and approved during Pre-Authorization stage.
2. It shall facilitate capturing of relevant medical information, clinical datasets as part of the treatment. TMS-Provider may submit clinical data to the beneficiaries health record and shall support to creation of longitudinal Health Record (EHR) for the beneficiary. This module shall capture all the relevant information regarding the treatment provide to beneficiary.
3. The system must allow the Provider to enhance the claim by adding additional packages or extending the number of days and type of ward.
4. NHA is working towards introducing Standard treatment workflows for packages. The TMS-Provider application must be able to collect data from the user and enforce these workflows.
5. The module shall capture all the relevant information for Claims Processing and Settlement. This module shall also capture and generate the e-discharge Summary of the patient post his treatment.
6. NHA requires that patient physical presence must be verified using authentication methods that are part of the Unique ID. The authentication result is part of the e-claim document.

7.1.3.4.4 Claim Processing

1. Once the treatment is complete the patient is verified, and discharge is processed. The next step is to raise a claim to the ISA / SHA for validation and settlement.
2. The e-Claim form shall be submitted to the HCP which shall carry out necessary validations and check for necessary information like Treatment Codes, Disease Codes, Patient Details and other necessary fields as required in the e-Claims form.
3. The Claim Processing module shall facilitate and enable information transmission/ exchange in a standardized format using the HCP with the "Payer/ Insurance Company" and shall provide the payer with an option to accept / reject/ or send a query against the claim.
4. The following scenarios and functionality need to be catered by this module

    a) Claim Rejection: the claim request can be rejected by the payer based on the eligibility criteria mismatch or wrong or missing information in the claim. In case of rejection, hospital would be required/notified to re-submit the claim.
    b) Claim Query: The provider may ask the hospital to submit some necessary information which is either critical or may be missing in the e-Claim form submitted by the hospital. In this case hospital can resolve the query within stipulated time frame for the same claim request.
    c) Claim Acceptance: In case of acceptance, the necessary payment shall be processed.
    d) Claim processing should cater to the entire claim lifecycle components from Claim Form Generation to updating Claim Response based on the above-mentioned scenarios.

7.1.3.4.5 Payment and Settlement

1. Once the payment is approved, the claim should be made in a transparent and seamless manner. The entire payment and settlement transaction lifecycle should be stored and retained in the system. Once the claim is approved the payment and remittance details shall be obtained from the HCP.
2. The MSP shall be required to study the existing One TMS application and ensure that all the features available to Hospitals are available/incorporated or catered to by the new TMS Application.

7.1.3.4.6 OPD

7.1.3.4.6.1 E-prescription (Issue and Claims)

To reduce paper transaction e-prescription (for OPD) shall be developed as part of TMS provider application which shall provide for electronic generation, transmission and filling of a medical prescription. The feature must be enabled through using e-sign only.

7.1.3.4.6.2 Claims Re-imbursement

TMS provider must provision for claims re-imbursements for OPDs.

7.1.3.4.7 Analytics and Reporting

1. TMS Provider shall show status of transactions, cases that need attention, payment and reconciliation related reports that help the provider understand what is happening with his Health claims
2. The TMS Provider app must display notifications either auto generated or manually posted to the provider by the ISA / Insurer / SHA.

7.1.3.5 Transaction Management System – Payer

Note- TMS system should be compliant with EMR, EHR, PHR and Data Policy under NDHB building blocks

1. The TMS Payer Application is designed for ISA / Insurer / SHA to process and the claims lifecycle end-to-end. TMS Payer will incorporate features that can support strong Fraud waste and abuse management, medical audits, field verification of cases, etc.
2. The TMS Application shall be designed by the MSP emphasizing the user experience and ease of use requirements of the Health ecosystem players.

7.1.3.5.1 Pre-Authorization

1. TMS Payer shall show the number of cases pending for pre-authorization and allow a processor to pick a case from the queue or may be auto-allocated to the next processor in the queue. MSP to finalize work flow in consultation with NHA.
2. Priority / Emergency cases must be moved to the head of the queue. (Priority cases- as may be decided by NHA and /or SHA)
3. A pre-auth request may need to go through multiple roles who validate different elements of the pre-authorization request like say a claims executive role and a pre-authorization doctor role.
4. Routing of pre-auth by specialty to specific executives must be possible
5. The pre-auth document and all attachment must be presented in a quick easy to read and adjudicate layout
6. The Payer application must automatically check and highlight to the processor sections that must be paid more attention including previous claims history of the beneficiary. It should be able to integrate with mandatory documents and standard treatment workflows defined for a particular package procedure/disease code and validate the submitted Pre-auth against the same. The system must integrate with the Fraud control system (FCS). All pre-auth requests shall be scored by the FCS (fraud control system) in real time and hence the integrations (PM-JAY IT 2.0 and FCS) must deliver real time data exchange. The presentation of the claim to the user should vary based on the risk score, Wallet amount, Patient History, Patient authentication confirmation must be presented for each case.
7. The pre-auth processor can request for a field investigation to be triggered for a case. TMS-Payer must integrate with a field investigation module and the results of the investigator must be displayed to the processor.
8. The System should also have the capability to generate real time alerts at the time of claim registration/ pre-auth and the alerts should also be shown to the relevant entities/ stages i.e. pre-auth, claim registration, processing and payments in the life cycle of the claim. The real time alerts/ display generated risk score envisioned will be rule based i.e. can be based on a single rule on in combination of multiple rules derived from a linear equation. The system should also be flexible to accept any changes in these rules from time to time, as may be defined by NHA.
9. The rules of the risk score may be provided by NHA which may be a result of a single rule or combination of the rules i.e. based on linear equation.
10. If an e-card is flagged as suspicious in the BIS, then an alert is to be generated at the time of registration and the users should be able to highlight such claims as suspicious one.
11. Pre-auth Doctor decision must be tracked and recorded. The response must be sent back via the HCP

    a) Rejection - Pre-Authorization is rejected by the provider based on the eligibility criteria mismatch or wrong or missing information in the pre-auth request or any other reason as observed by the processor. In case of rejection, hospital will be required/notified to resubmit the request.

b) Query - The processor may ask the hospital to submit some necessary information which is either critical or may be missing or inadequately provided in the request submitted by the hospital executive. in this case hospital resolve the query within stipulated time frame for the same claim request. No new request will be required
c) Approval - In case of approval, the hospital may proceed with the treatment as per approval

7.1.3.5.2 Claim Processing

1. Claims raised by hospitals shall come into a queue for processing
2. Response to queries and claims that are close to SLA must be prioritized for processing
3. Each claim may go thru multiple levels of validation by different roles like claims executive, claims doctor, specialist committee, etc.
4. Routing of claim by specialty to specific executives must be possible
5. The claim document and all attachment must be presented in a quick easy to read and adjudicate layout
6. The Payer application must automatically check and highlight to the processor sections that must be paid more attention. It should be able to integrate with mandatory documents and standard treatment workflows defined for a particular package procedure/disease code and validate the submitted claim against the same.
7. The system must integrate with the Fraud control system (FCS). All pre-auth requests shall be scored by the FCS (fraud control system) in real time and hence the integrations (PM-JAY IT 2.0 and FCS) must deliver real time data exchange. The presentation of the claim to the user should vary based on the risk score, Wallet amount, Patient History, Patient authentication confirmation must be presented for each case.
8. The claim processor can approve, reject or raise a query for a case. The decisions must be recorded
9. The claim processor may also forward a case for field investigation. The results of the investigation must be displayed to the processor as well in TMS / Audit module to the processor in real time upon submission from investigator.
10. TMS Payer must support validations of Standard treatment workflows (STW) based on the case. The processor will be guided to answer specific questions and verify specific elements of the claim to ensure the Provider has followed the STWs.
11. The amount to be paid should be auto calculated by the system and validated by the processor and includes partial payment scenarios.
12. TMS Payer system should be capable of auto-adjudication of claims, should have configurable rules for supporting the same for claims submitted for different package procedures.
13. The status and response to the claim is communicated via the HCP.

7.1.3.5.3 Payment and Settlement

1. Once the payment is approved, the claim should be settled in a transparent and seamless manner.
2. Payment processing should have a maker – checker model between an accounts officer and final approver.
3. Payer provides instructions to the HCP which has the integration with Payer Bank to initiate the payment. Audit trail of entire payment and settlement transaction lifecycle should be stored and retained in the system. Once the claim is approved the payment and remittance details shall be displayed by the application

4. TMS-Payer shall also provide the functionality of "Recovery and Adjustments"; this shall entail providing the facility to Insurance Company, State Health Authority to recover payments from the Hospital in case of any Fraud Cases, incase incorrect payment has been credited to the hospital due to human/ technology error.
5. It shall also provide an option of Adjustments considering the business rules which needs to be finalized in consultation with NHA.
6. The MSP shall be required to ensure that all the features as available in the existing Transaction Management System are incorporated or catered to by the new TMS Application.

7.1.3.5.4 Analytics and Reporting

1. The analytics and dashboards are critical and pivotal components of TMS Payer Application. The TMS Application shall be required to provide relevant reports for Monitoring & Evaluation at the Hospital/ District/ State/ National level on a real time basis.
2. The reports and dashboards should cater to the requirements of the Insurance Company, State Health Authority, National Health Authority and support them in the management of claims processing.

7.1.3.5.5 Medical Auditing

1. Medical auditing entails conducting internal or external reviews of coding accuracy, policies, and procedures to ensure of running an efficient and liability-free health care operations. There is an existing Medical audit (including the Anti-fraud suspicious case processing workflow i.e. SAFU portal) functionality available in Current PM-JAY System.
2. The MSP should ensure of incorporating all the existing features and functionalities of Medical audit from current system in PM-JAY 2.0. In the medical audit module, the MSP should ensure following functions-

    a) At least 5 % of the total cases hospitalized to be audited. Out of which 2% direct audit and 2% audits done by TPA/SHA/ISA. These cases will be selected randomly
    b) All the medical audit forms approved by NHA should be available to the auditors for medical audits
    c) Each auditor will have a separate unique login and a defined procedure should be available for audits
    d) The system should allow to update the fields in the audit forms as the audit forms are subject to modification by NHA at any time

3. Medical auditing entails conducting internal or external reviews of coding accuracy, policies, and procedures, quality of care to ensure of running an efficient and liability-free health care operations.
4. The MSP shall ensure to incorporate and enhance all the existing features and functionalities of Medical Auditing from current system to PM-JAY IT 2.0 system as per the standards and shall be compatible with the proposed functional & technical requirements defined in the RFP. In the proposed Medical Audit module, the MSP shall ensure to develop and maintain the following indicative feature and functionalities-

    a) The Insurer/ TPA shall perform medical audits on at least 5% of the total cases hospitalized. Accordingly, the SHA shall perform audits on 2% direct audit and 2% of audits done by TPA/ISA. These cases shall be selected randomly
    b) All the Medical Audit forms developed by the MSP and approved by NHA shall be made available to the auditors for medical audits in their respective dashboards

c) The MSP shall design and develop digital Medical audit forms along with specific quality check fields and case specific indicators during the development phase to be used for the audits by the respective SHA auditors. MSAP shall study, analyze, modify and enhance the existing Medical Audit Forms (refer link: https://www.pmjay.gov.in/sites/default/files/2018-12/Fraud_Investigation_and_Medical_Audit_Manual.pdf) in consultation with NHA catering to functionalities/ requirements mentioned in this section of the RFP
d) The system shall have customizable fields in Medical Audit forms made available by the MSP in order to cater to any modifications required by NHA at any point of time during the course of the contract. It should be possible to mask the identity of beneficiary and hospital from the auditor.
e) Each auditor shall have a separate unique login IDs and a defined procedure shall be made available for Medical Audits by the MSP. Auditor may be an internal or external resource to PMJAY system.
f) The SHA auditors shall perform Medical Audits under three indicative audit checks i.e., hospital care check pertaining to the quality of care of the facility, hospital eligibility check pertaining to ability and appropriateness as per the empanelment documents provided by the facility and audit of treatment procedures as per the pre-defined Standard Treatment Guidelines. These checks shall be updated and modified as and when required by NHA during the course of the contract
g) There shall be Geo location tagging feature with time stamp of the particular date and time period of the audit for the SHA auditors in order to track and ensure the facilities to be audited
h) The MSP shall develop a hierarchical model process flow, consisting of SHA auditors, SHA supervisors and NHA, to ensure high quality, accuracy and non-repudiability of medical audits procedures and results
i) There shall be a functionality and process flow, to be developed by the MSP, for SHA auditors to upload audit reports digitally for the SHA supervisors to crosscheck against the reports provided by the empaneled facility
j) The MSP shall perform checks and analysis on audit reports digitally provided by the SHA auditors and SHA supervisors in a timely manner and shall carry out necessary actions or modifications/ enhancements accordingly
k) The Medical Audit team shall work with anti-fraud cell to enable fraud-trigger based review and audit of cases to be undertaken by the MMRC (Mortality and Morbidity Review Committee)
l) The MSP shall also maintain a central repository of the medical audit reports received from the auditors in order to perform analysis and validations as and when required in future

Other features (to be provisioned by MSP as part of solution)-

1. Submission of mandatory documents may be defined by NHA as per STG (standard treatment guidelines)
2. Integration of KPI and penalties in the systems as per SLA
3. Functionality for Auto claim Adjudication
4. Productivity reports of users
5. A robust checklist should be integrated in the system with data validation
6. Color based buckets for priority processing

7. Comprehensive audit to be integrated with TMS so that medical, claims, field auditors can audit on real time basis. Audit reports should also be available on the system
8. Auto reminders /Auto rejections /Auto notifications through Email/SMS on various triggers

7.1.3.5.6 Audit Module- SAFU

1. SAFU portal to be built in the TMS-Payer for enabling seamless due diligence on suspect triggered cases
2. The triggers on suspicious cases shall be developed by NAFU (National anti-fraud unit- NHA) on the cases in TMS for identification of suspicious cases
3. TMS audit module should have a functionality to share the identified suspicious cases with State Anti-Fraud Unit via TMS portal for due diligence.
4. Such cases may be removed from the normal TMS workflow to prevent claim payment before due diligence.
5. Following actions to be enabled for SAFU users on such cases (in TMS audit module)-

    a) **Confirm Fraud-** Confirm the suspicious case as fraudulent and provide detailed remarks. The case moves back to relevant approver login and is to be rejected.
    b) **Dismiss the Case–** Close the case as non-fraudulent and provide detailed remarks. The case moves to the relevant approver login and follows its normal course.
    c) **Process with Partial Amount**– SAFU has an option to process the claim by approving partial amount and provide a recommended approval amount. The case moves back to TMS workflow and claim approver can process the claim by approving the maximum amount recommended.
    d) SAFU/SHA must be able to provide detailed remarks and observation
    e) **Desk Audit –** A role called SAFU Doctor shall be created that should allow SHA to send the suspicious cases for desk audit. A list of package wise questionnaire shall be enabled. SAFU/SHA user should be enabled to provides detailed remarks and observations regarding the suspicious case and SHA users should be able to decision based on the questions answered by SHA users and remarks provided.
    f) **Send for Field Verification–**Once the case is sent for Field investigation, the case is available in the Field Investigation Mobile App, where the case is picked up by a field investigation officer. S/he investigates the case and furnish the field verification report and sends back to SHA users in TMS for action. Action on the case shared with SHA through this portal must be initiated and closed at the earliest possible.

7.1.3.6 IMPACT (Insurer Monitoring and Performance and compliance tracking) Portal

1. With an objective to Monitor the performances of insurers and TPA IMPACT portal is consti , Portal will provide access to NHA, SHA, Insurer, TPAs and ISAs for monitoring the performances on following parameters-

    a) Provide insights on efficiency, performance of Insurers, ISAs and TPAs
    b) Flag important issues/messages for immediate course correction
    c) Collate and reflect the information on Infrastructure: HR deployment by Insurer/TPAs
    d) Collate and reflect capacity building workshops conducted for PMAM, Medicos, Approvers, Claim Executives.
    e) Scoring: Ranking of Insurers, TPAS and States based on the key indicators

f) Audits & Investigations: Details of audits and investigations conducted by Insurers and TPAs

2. The Portal will be used by Insurers, TPA, ISA and SHA. The Monitoring of the performances of ISA/TPA/IC will be done by SHA.
3. SHA will create a scheme in the system, select the model for implementation in the system and set the parameters for the evaluation of the performances of ISA/IC/TPA
4. SHA Will further evaluate the report and will have rights to Accept/Reject the report.
5. The other stakeholder apart from SHA will enter details against the parameters defined by the SHA in the system and submit timely reports to SHA. Key stakeholders include-

S. No.	Stakeholder	Permission
1	SHA	Login, Create Scheme, set evaluation parameters, enter the values for evaluation based on SLA, raise queries, accept/ reject report, View dashboard
2	ISA	Login, enter details against parameters, submit reports, raise queries, accept/ reject report, View Dashboard
3	Insurance company	Login, set evaluation parameters for TPA enter details against parameters, submit reports, raise queries, accept/reject report
4	TPA	Login, enter details against parameters, submit report.

6. Dashboard to review the performances will be available to all stakeholders based on their roles.

7.1.3.7 e-Referral System (Continuum of care)

1. In order to achieve Universal Health Coverage, PM-JAY IT 2.0 system shall develop systems that enable Continuum of Care across primary, secondary and tertiary services. Communication on referrals is achieved by adoption of a standardized e-referral format and the Referral system. The following scenarios describe how continuum of care works

    a) **Forward Referral** – Primary care centres who which to refer a patient to a higher level centre fill out a e-referral form. The form can be created by any software being used at the primary care centre. The e-referral must identify the patient using the Unique ID, the referring facility must be part of the facility directory. The referral contains details of the findings at the primary care centre and the recommended centre for the patient to seek treatment. The e-referral form is digitally signed and submitted to the referral system. The e-referral is also part of the patient's health record and must show up when they access their record. When the patient arrives at a higher centre, the application at these centres query the Health record or referral system for any e-referrals using the Unique ID. The referral system captures the fact that the patient has turned up at a higher centre and is seeking care.

    b) **Backward Referral** – When a provider is discharging a patient post treatment, they are expected to create an e-referral form with details of the follow up care to be provided by a primary care centre. The form is then digitally signed and issued as part of the Health record and the referral system. If the patient goes to a primary care facility, the software at the facility can retrieve the form from either the Health record or referral system. Care

instructions as prescribed in the form can then be delivered by the centre. In all cases the Referral system is notified that the patient has sought care and tracking metrics can be obtained.

The Referral system must generate reports on both forward and backward referrals

Support Components

7.1.3.8 Visualization and Analytics Tool

1. The MIS and Reporting System shall be designed, developed and deployed in line with solution architecture of PM-JAY IT 2.0. MIS & reporting system is proposed to be highly modular, scalable and integrated software application, deployed centrally, having the necessary interfaces for all the stakeholders through appropriate channels.
2. The Managed Service Provider shall carry out a detailed requirement to review the MIS and reporting requirements for all modules.
3. The Managed Service Provider shall produce a detailed design specification, including detailing the MIS & reporting module to be developed, system architecture design, design principles/considerations, etc.
4. Regarding MIS & reporting system, the Managed Service Provider shall also perform the following:
    a) Propose, design and implement an integrated module
    b) Perform integration with internal and external systems' data sources for MIS & Reporting
    c) Master Data Management for all applications under NHA
5. The solution must have self-service client services such as system and data status dashboards, electronic data dictionaries, and manual data upload (if necessary).
6. The solution must have analytics and dynamic reporting for reporting carried out by the NHA Employees (Insights, IT, Admin, Strategy, Quality etc.) and NHA Management.
7. The MSP should propose tools that allow customizable reports. The generation of the report shall not impair the System performance.
8. The MIS & reporting module should allow NHA to customize notification of certain indicator that NHA is interested in to trigger activities / actions.
9. All functions should have their report function and allow for exportable format such as pdf, excel etc.
10. The MSP has to prepare detail requirements around reports and also study NHA KPIs (as per policy) to define required reports, dashboard capability to meet the NHA's business needs.
11. The MIS & reporting module should have a user interface to extract data based on the data required for self-analytics and report generation
12. A scheduled (monthly, quarterly) reports needs to be extracted based on the agreed format and quantum and submitted to the NHA for KPI (as per policy)tracking purposes

13. The MIS & reporting module should also allow for ad-hoc queries pertaining to the module for quick access to real time information and allow users to put in parameter to view the data from different perspectives.
14. The MSP shall ensure inter-operability between the MIS & reporting module with NHA systems includes PM-JAY IT 2.0 system and external department systems.
15. The MIS & reporting module shall build requisite connectors (if required) to connect multiple data sources, if necessary and allow dashboard and reporting.
16. The MIS & reporting module shall extract the contents of the data file and perform simple validation checks, but not limited to:

    a) Checks for missing information;
    b) Checks for negative or zero values; and
    c) Checks for incompatible data type

17. The MSP shall propose and implement validation process and test strategies for structured and unstructured data validation, based on the gathered data information across multiple data sources, subject to NHA's inputs and approval.
18. The MIS & reporting module shall include a data loading component to capture, store and access the data streaming.
19. The MIS & reporting module shall have the ability to support large volumes of data, understanding the taxonomy content and new types of data sources and performance that allows it to explore data in high volumes, with wide varieties of the aggregated data collected for discovery and analytics, data visualization and reporting purposes as required by the NHA.
20. The MIS & reporting module shall provide data sources configuration changes and schedule of data refreshes to help optimize the performance and utilization of the System.
21. The MSP shall assess and identify potential data privacy in accordance to the NHA's data classification and propose security measures to protect the data and privacy and de-identify the sensitive information in the MIS & reporting module.
22. The MSP shall propose and implement methods to create anonymous identifier to omit the personal data of individuals, without possibility of being re-associated with individuals.
23. The MIS & reporting module shall include a visualization and reporting component to minimally support the following business intelligence output:

    a) Reports;
    b) User Predictive;
    c) Analysis Development;
    d) Query.

24. The Managed Service Provider shall ensure the compatibility for the information output to be rendered on the desktop, handheld and mobile devices.
25. The design and layout of the information outputs shall be clear, intuitive and interactive displays to facilitate ease of navigation and analysis by the users.
26. The Managed Service Provider shall work with the users to develop the statistical and analytics reports, and information outputs as required by the NHA.
27. The Managed Service Provider shall fine-tune all reporting and information outputs required such that their execution, refreshing of reports and presentation to users is optimized.

28. Proposed solution will enable the senior officials and other specific user groups with the facility of dashboard to provide snapshots of business and key parameters to be monitored. Dashboard shall mandatorily be dynamic and are expected to have the rich visual representation and analysis capability. These dashboards shall be available in mobile devices.

S.No.	Report Category	Usage Method	User Group
1	Canned Reports	Static Reports to be stored in a file server in the form of web reports, using a scheduler, Excel or PDF documents. Ad-hoc reports would be generated by Visualization team on request.	All
2	Analytic Reports	Power users should have capability to generate Ad-hoc reports. Interactive analysis on published reports	Power Users, Consumption Users, Privileged Users
3	Dashboards	Dashboard to be published on the BI portal Drill down of a metric should be possible Drill down of operational reports might be required	Power Users, Consumption Users, Privileged Users

Table 15: Illustrative Dashboard Capabilities

29. Users should have capability for publishing as well as subscribing to the standard reports which can then be sent to the requestor in a pre-defined format.

S.No.	Subject Area	Requirement
1	Augment the Multi-dimensional mode of Enterprise reporting	Enable authorized users in handling of multi-dimensional reporting (i.e. slicing and dicing the data) with drill-down, drill-up and drill-across facilities; current tool provides these utilities to certain extent, department wishes to enhance these Enable generation of report on temporal, sectoral and geographic trends whenever possible Reports should be end-point agnostic (Desktop/Laptop/Mobile/ any OS)
2	Incorporate visualization of data through multiple dashboards,	Visualization of patterns, trends etc., by identifying statistically significant clusters and entities, should be introduced through highly interactive visual platforms Visual platforms should have the capability to access data from repository, ODS Source seamlessly and in a manner, which is

S.No.	Subject Area	Requirement
	interactive intelligence platforms	independent of the underlying source. It should have the capability to support reporting Unidentified attributes and patterns need to be discovered which will go into the dashboards for driving the generation of more insights Dashboards should be refreshed based on updated data and should reach end users on scheduled basis, including being pushed to the mobile devices; certain dashboards need to be automated to further send results through e-mails Authorized users can make changes to the visualization parameters; modular capabilities should be a part of the visualization platforms to facilitate a few power users to generate visualization by their own
4	Incorporation of 360 Reports	Reporting to incorporate 360 in view of reports and have a consolidated report repository which links all information and enables 360-degree report view
5	Interactive Reporting	Enable interactive reports Simple business-term driven interface for creation of adhoc queries on data sources
6	Mobility in Reporting	Provide a mobile interface for delivering designated reports and dashboards to mobile devices of authorized users
7	Reporting through web services	Reporting Portal/ dashboards can be made available through web services on secured hosting sites, platforms etc.

Table 16: Illustrative Standard Reports

30. Below is indicative list of reports which is required by NHA and its stakeholders.

S. No.	Type of Report
1	Overall PM-JAY KPIs (as per policy) monitoring
2	Overall and state performance monitoring and trends
3	District performance monitoring
4	Portability cases monitoring
5	Facility Activity monitoring
6	Empanelment activity monitoring

S. No.	Type of Report
7	Master list of all hospitals empaneled under the scheme
8	Master list of all CRs across PM-JAY applications
9	Demographic profiling of SECC data
10	State's transaction data report
11	Hospital branding monitoring status
12	SHA and banks payment monitoring
13	Call Centre monitoring
14	Raw data accessibility to NHA operations division
15	List of Case IDs of revoked cases in Chhattisgarh
16	District Dashboard Replicated for MSBY data in Chhattisgarh
17	ISA/TPA Performance monitoring
18	Oncology packages utilization monitoring
19	State level utilization of 1393 packages
20	Specialties utilization report
21	Fill rates of key HEM variables - state level
22	National Health Care Providers (NHCPs) unpaid claims monitoring
23	Unspecified packages utilization monitoring
24	Few frauds triggers monitoring
25	Hospitals specialties utilization against empaneled specialties
26	Pre-Auth & Claim Rejection Report
27	State-wise Hospital Utilization
28	State level user performance for BIS (PMAMs, ISA, SHA users) monitoring
29	Gujarat BIS approver performance monitoring
30	Gujarat BIS user performance monitoring
31	Village BIS ecards generated by village monitoring
32	Kerala BIS user performance monitoring
33	Uber VLEs user performance monitoring

S. No.	Type of Report
34	Raw data of all BIS records
35	Ecards generated at ULB level in Gujarat
36	Village BIS ecards generation monitoring
37	TMS Users performance monitoring
38	Downloading state level KPIs (as per policy) for state fact sheets
39	Downloading state level KPIs (as per policy) for state fact sheets
40	API Data flow monitoring for states using their own TMS
41	Dashboard to monitor progress of data quality action items
42	Dashboard to monitor data quality issues in HEM data
43	Dashboard to monitor data quality issues procedure and specialty mapping
44	Dashboard to monitor usage and performance of all insight's dashboards

Table 17: Indicative List of Reports

31. Additionally, the MSP shall bring visualization tool and licenses for creating various dashboards which shall be used only by NHA internal developers (approx. users- 25). The payment of each license shall be done as per actual usage only. Following are some of the expected features of Visualization and Reporting tool –

    a) The tool should have robust visualizations such as graphs, charts, and histograms.
    b) The tool should have slicing and dicing features facilitating ad hoc management reporting on the fly.
    c) The tool should have basic statistical modelling properties, so that users can create clusters, regression analysis, and other modelling techniques dynamically.
    d) The tool should output data in various formats.
    e) The tool should have geo-spatial visualization capabilities with drill down functionality to National till district level. The tool should have capabilities to ingest custom maps.
    f) The reports generated by the system should be made accessible through API or an interface (for portal) to be viewed by the authorized users. The tool should enable different types of users to perform analysis on data across the Enterprise without the need to subset/sample/create multiple views of data. The interface for the authorized users should be simple with user friendly features such as drop-down list, drag and drop utilities etc., and should be built with focus on users with elementary statistical knowledge.
    g) Visualization tool should take care of multiple views of relevant cubes, packages etc.
    h) The management console should be web-based and should not require any client installation.
    i) The solution shall provide a common management console to monitor multiple systems in Test, Development, and Production systems across multiple instances and across locations

j) Proposed solution should be capable of seamless integration with leading Office tools both for import and export of data and reports in multiple formats.
k) The solution should allow data to be accessed from any industry standard data source using native connectors. It should also allow data load jobs to be scheduled to automate the process of loading data into the system for Analysis
l) Data Visualization tool capable of interactive visualizations. Preference would be given to tools with auto charting facilities.
m) The visualization and reporting solution should integrate a market leading Data Visualization tool capable of interactive visualizations. The tool should have auto charting facilities.
n) Solution should be capable of generating highly formatted, interactive reports/dashboards with or without parameters. Should also have strong ad hoc report generating capabilities.
o) The solution should have the ability to format (page size, row, columns, fonts, colors, tables etc.), allow data manipulation (slice & dice multidimensional data on the fly, pivoting, sorting, ranking, rearranging columns, etc.). The solution should have drill-down capabilities (ability to drill down to various levels of a hierarchy).
p) The solution should have the capability of raising exception alarms (e.g. email notification). Should provide for exception reporting (ability to set certain thresholds).
q) The solution should have user friendly GUI to allow easy generation of reports and exporting capabilities (ability to export resulting data to other applications such as Excel, Notes, CSV.).
r) The solution should have integration capabilities with RBAC functionality e.g. ability to integrate in existing portal.
s) The solution should be able to publish all the reports on the portal and can archive reports.
t) The solution should be able to distribute reports and have the ability to save data for later use or to a local PC/laptop or for other users to view. It should support offline viewing. It should be able to send reports electronically to other users.
u) The solution should be able to sort/filter without re-querying.
v) The solution should have the ability to schedule reports.
w) The solution should provide for a browser-based interface to view reports.
x) Visualization tool should have capability of providing visualization backed by discovery-based models.
y) Reporting tool to incorporate 360 in view of EDW reports and have a consolidated report repository which links all information and enables 360-degree report view.
z) The solution should Enable users to perform data analysis in their desktops with MS Office capabilities; this requires the need of appropriate tools/ report structures which will enable the users to perform basic data analysis at their desktops.

7.1.3.9 Integrated Website/Portal

1. The MSP shall develop, implement and maintain a website/portal of PM-JAY as part of the proposed PM-JAY IT 2.0 solution to provide best in class user experience and API enabled interfaces to all the stakeholders of PM-JAY IT 2.0 in terms of information, transactions, compliance and services.
2. The Proposed PM-JAY website/portal shall be the gateway through which all the applications (as specified above) shall be enabled for its stakeholders. Currently a website/portal is being managed by NHA (refer- https://www.pmjay.gov.in/). Bidders are requested to visit the existing website for a detailed understanding of the existing functionalities. The MSP shall in-built all the services as are

currently present on the website and additionally the requirements/services provisioned in this RFP in the new Integrated website/portal. However, it is clarified that a new website/portal shall be developed by the MSP.

3. It is clarified that all the existing functionalities, processes, interfaces and requirements currently being handled by PM-JAY website and additional requirements as laid out in this RFP shall be a part of scope of work for the new MSP.
4. The following are the envisaged requirements for the integrated web-portal/website-

    a) NHA envisages to provide a more sophisticated and enhanced user experience and simplified content management while meeting high standards for design quality and visual aesthetics by transforming it in to a new portal.
    b) Create a user journey map to better understand the touchpoints and interactions between various users.
    c) Implement a suitable user experience analysis tool to measure interaction between user and user interface of the website to optimize its design periodically.
    d) The design proposed by MSP shall be intuitive in nature which allows users to interact with website with convenience and ease.
    e) MSP's UI design shall ensure consistent look and feel of the website including color schemes, graphic elements, and navigations tools that provide straight forward and minimal navigation
    f) The proposed UI design shall provide navigational support to differently abled users visiting PM-JAY website.
    g) MSP must also develop a light version for low speed connections. The portal should identify and adjust accordingly to the speed of internet connection of the user.
    h) MSP shall design user experience-led interface that groups and presents information in a logical manner utilizing industry best practices
    i) The proposed portal would be accessed over the internet, mobile phone and API services exposed by NHA.
    j) User Management: The portal must provide for user management- creation, deletion, managing, login (using OTP) etc. The Portal shall be able to identify user credential and redirect to the relevant content as per user profile. User should be able to set preferred language so that the content will be visible to user as per the same
    k) The MSP shall deploy dedicated team for content creation and moderation.
    l) Search: The portal shall provide for a search engine with advanced full-text search capabilities. The search engine shall be able to search for content within the portal including documents. The BOTs, VAs and other AI based tools shall be integrated for this purpose so as to fetch the desired information, content, interface access pages, LMS content or links, etc. The search functionality should support content search with features like auto-completion, partial words and phrases, etc.
    m) Portal should support content archiving capabilities.
    n) The MSP to enable provision of sending/ push notifications to the user so that user can get notification of any update/ News/ Circulars, etc. with an 'opt-in' provision.
    o) The portal shall support document linking capabilities (static, dynamic, and/or other)
    p) Near to me module (using Maps): A module shall be rendered in portal that displays rules, policies, initiatives, alerts, reports and announcements like nearest empaneled hospital, Nearest places for registrations, etc.

q) Calendar and Events: The Portal shall have a module/ NHA calendar from where users can view various present and future event timelines happening in a particular area as selected
r) Social Media Integration: MSP to integrate RSS feeds for Social Networking Websites such as Facebook, Twitter, etc.
s) The MSP to promote the PM-JAY portal on social media platforms like Facebook, twitter, etc.
t) Abuse Flagging: Portal should be able to flag inappropriate use of content and shall not allow users to post abusive content.
u) Feedback Management: The solution shall have a feedback management component which would allow users to provide feedback related to different applications,
v) Reports: Department users shall be able to fetch reports for the modules within PM-JAY 2.0 by integrated Application Programming Interface (API) infrastructure to be provisioned by the MSP. API based data exchange to be established for all inter-module and intra-module existing data in-warding requirements. Future augmentation of data in-warding will also be considered to be part of scope of work of this RFP
w) Personalized Dashboards: The portal solution shall support display of personalized content for registered users based on their roles and responsibilities through Role Based Access Management (RBAC)
x) User Experience: MSP to develop and maintain interactive Portal display/ interface. The proposed portal shall support use of modules/ widgets that can be placed onto pages that provide static, dynamic or interactive content. Users shall be able to re-arrange widgets on a portal page with easy to use drag and drop functionality. The Portal shall adopt the UX Standards specified in the DSS Standard notified by MeitY.
y) Multilingual: Portal shall support multilingual capabilities (Hindi & English). A dropdown for selecting English/Hindi to be included on home page to allow the end users to select the language in which portal content shall be displayed.
z) Multi-channel Support: Portal shall come with built in responsive design capabilities. The portal and modules deployed on portal shall be compatible with desktop, mobile (all Operating Systems), tablets, etc.
aa) Seamless Integration Capabilities: Portal shall be able to expose its services to third party systems/applications approved by NHA through APIs. Portal shall be able to integrate seamlessly with any other application in real-time.
bb) The portal shall be disabled friendly and shall comply with WCAG (Web Content Accessibility Guidelines) from W3. It should cater to following set of users:

    i. Blind users: These set of users would access the portal using screen readers hence the portal shall be technologically enabled to allow screen readers to read the html code.
    ii. Users with Partial or poor sight: Such users may need to enlarge the fonts on the portal hence, the portal shall be suitably enabled to allow the browser to enlarge the portal fonts.
    iii. Color blind users: The portal shall avoid colors that are invisible to users with Deuteranope, Protanope or Tritanope type of color vision.
    iv. Deaf users: The transcripts for Audios on the portal should be provided for the benefit of such users. The BOTs and VAs including the voice-to-text and text-to-voice converters shall be developed under the scope of this RFP for this purpose.

cc) Usability: The solution shall provide clear layout and organized display of content. The solution shall provide consistent experience across all Digital Platforms in the scope of this RFP. The solution shall be easy and intuitive to learn (The degree to which the solution can be used without specific training)

dd) Design Thinking Approach: Design thinking approach and methodology to be taken by the MSP for designing UI/ UX of the PM-JAY IT 2.0 portal. The MSP shall focus on utilization of professional UI/ UX designers and design thinking experts to create graphically intuitive, aesthetically appealing and clutter free design for the PM-JAY IT 2.0 portal and mobile app. The UI/ UX design shall be finalized in consultation with NHA. The appearance of the Portal and Mobile App will take into consideration the need for Human Centered Design (HCD) applying Design Thinking Principles & Methodology

ee) The MSP shall mandatorily provision for design thinking experts, who would in consultation of users of existing portal and mobile application, study and design an interactive, easy to use and user centric portal and mobile application layout and navigation. Design thinking experts shall perform Design thinking activities and exercise across lifecycle of solution development, operation and maintenance for continuous improvement and enhancement of the solution

ff) The portal should not allow concurrent sessions for same user. The system should automatically log out a user in case of session breakdowns (e.g. communication failure, high inactivity period)

gg) The portal should implement security features, such as password complexity, automatic blocking (temporary/ permanent) of user logins after given number of unsuccessful login attempts. For such purposes, the defined set of rules and protocols shall be developed by the MSP for the approval of NHA

hh) The portal should be fully compliant with Guidelines of Indian Government Websites (GIGW) standards

ii) The portal shall not allow concurrent sessions for the same user. The system shall automatically log out a customer in case of session breakdowns (for e.g. communication failure, high inactivity period, etc.)

jj) The portal shall support workflow, rule engines using tools so that it can be integrated and configured accordingly.

kk) Shall have multilingual capability in the web portal; Portal shall be in English and Hindi and have the capability to support other UTF-8 /UNICODE (and others as applicable) compliant languages.

ll) The portal shall implement security features, such as password complexity, automatic blocking (temporary/ permanent) of user logins after given number of unsuccessful login attempts (should be parameterized), controlled access to content stored on the portal, logging of security incidents, etc.

mm) The portal shall support responsive design to access application through web, mobile, tab etc.

nn) The portal shall support responsive design to access application through web, mobile, tab etc. It shall support the leading browsers such as Internet Explorer, Firefox, Safari, Chrome etc.

oo) The portal shall provide search engine with advanced full-text search capabilities. The search engine shall be able to search for requests within the portal.

pp) It Shall provide support for comprehensive audit trail features such as –

i. Daily activities log shall be merged into the history log files
ii. Date, time and user-stamped transaction checklist shall be generated for different transactions
iii. All transaction screens shall display system information
iv. Daily activity reports shall be provided to highlight all the transactions being processed during the day
v. Unsuccessful attempts to log-in to the system shall be recorded

qq) Portal shall be compatible with popular mobile devices Operating systems (compatibility with iOS, Android and Windows Mobile)
rr) Shall authenticate users from Active Directory/LDAP, claim based authentication.
ss) Shall support GIGW, W3C guidelines.
tt) Shall support a broad range of standards, preferably open standards.
uu) Shall be able to address multiple sources crawling and searching like databases, file systems, content/document repositories, web application and web portals, email systems.
vv) Shall have capability to integrate with Geo location to get longitude and latitude information.
ww) Shall have capability for caching web pages and other relevant content using dedicated cache server for delivering seamless end user experience across the business services.

7.1.3.10 Mobile App

1. In order to facilitate accessing and downloading PM-JAY mobile Applications, an App Store is envisaged creating a central repository of its mobile applications. This repository, known as APP Store (to be enabled on PM-JAY website/Integrated portal from where end user can download these mobile applications), shall contain all details about the applications such as, functionality, services, size, etc., and be accessible to general public. PM-JAY App Store vision for "to be a one-stop-shop for Mobile Apps useful to beneficiaries, Insurance agencies, Hospitals, SHA and Doctors.
2. The App store developed by MSP should have the following features which are outlined below but not limited to-

a) System shall provide a repository for hosting all PM-JAY mobile Apps
b) System shall provide an option to Create a new app repository
c) System shall provide an option to Add new apps/media to the repository
d) System shall provide an option to Update existing apps/media to the repository
e) System shall provide an option to Update the description and metadata of apps/media
f) System shall provide an option to Remove apps/media from the repository
g) System shall provide a functionality to customize the services to be listed based on the user experience
h) Shall provide predefined and common functionalities for mobile applications such as APIs for user management, files, custom objects, email, photos, social integrations, analytics, push notifications, geo-location, enterprise integration etc.
i) Shall provide version management across all apps and shall generate alert for each update
j) Shall have capability to Send messages across multiple mobile platforms (iOS, Android, etc.)
k) Shall support adding and updating metadata required to manage apps in APP Store. For example, name, description, version, OS, keywords, etc.
l) The solution must be able to detect and enforce device environment conditions such as

i. Minimum or specific operating system versions.
ii. Presence or absence of other applications.
iii. Detection and removal of malware from the device environment.
iv. Commercial Application Store (enable/disable)

m) The Mobile Application shall provide an intuitive and user-friendly GUI that enables users to navigate and apply actions with ease. The GUI shall be responsive with very little or no delays or time lag at launch or whilst navigating through screens
n) It shall enable ease of configuration and changes to existing GUIs, and support the introduction of new screens
o) Incorporate analytics into mobile app, to track and identify users experience and actions
p) Network level security, traffic shall be encrypted using secured connectivity
q) Application shall ensure compatibility with all platforms such as Windows, Android, & iOS etc.
r) Solution shall develop resolution independent design structure i.e. Mobile Application shall adjust itself automatically as per the screen dimensions and resolution of the device.
s) Shall support authentication using digital signatures
t) Shall have facility to download and upload files, including e-Forms

Below is illustrative list of mobile apps envisaged for different stakeholders in NHA with key functionalities. Detailed requirements will be discussed with MSP during project implementation.

7.1.3.10.1 Mobile App Features Accessible to a Citizen (Unverified Beneficiary)

1. Check Eligibility – Allows user to check his/her eligibility for the PM-JAY scheme.
2. Hospital Locator - Enable a user to locate nearby hospitals empaneled under the PM-JAY scheme. The Hospital Locator will be integrated with the Location Maps API and the location services of the device and will be interactive vis-a-vis the Hospital Details. Upon interacting with any nearby hospital icon, a pop up would open showing the following details such as:

    a) Hospital Name, Hospital Address, Hospital Contact Number
    b) Hospital Infrastructure including and not limited to Hospital Bed Strength, ICU Availability, Diagnostics, Blood Bank, Pharmacy.
    c) Hospital Doctor List with details including and not limited to Qualification, Brief Experience Details and Specialization.

3. Hospital Search (Specialty) - Enable user to search for Hospitals nearby or by “specialty”
4. Nearest Verification Centre Locator - This will let the user search for the nearby PM-JAY Enrolment Centers to let him verify himself and/or add family members for the scheme. This feature is intended to support efforts to increase the outreach of PM-JAY to the beneficiaries.
5. Emergency/SOS/Ambulance Support - A person can contact the nearest hospitals/health centers by the press of a single button. This feature is intended to be a lifesaver in cases of emergency, saving precious moments in emergency cases.
6. Grievance Features – An entity in the NHA ecosystem shall be able to raise and track grievance. This feature is intended to allow the user to raise their grievance on a user-friendly platform.
7. Contact Us - This feature user to carry-out in-app calling to the helpline of PM-JAY through a single key.
8. About PM-JAY - This feature shows details about the scheme PM-JAY, testimonials, articles about the reach and can be used a promotional space.

9. FAQ's - This feature shows a comprehensive list of FAQs' on the NHA and the PM-JAY to the user.
10. Find Health and Wellness Centers

7.1.3.10.2 Mobile App Features available to Verified PM-JAY Beneficiary

1. Security –This would be accessible to Beneficiary after providing Mobile Login and OTP. The sensitive information like PM-JAY card, PHR will only be available after providing second level security i.e. 4 Digit PIN (Marked in **)
2. User Login - The basic login will be through the mobile number of the beneficiary and an OTP system with/without auto-detection of OTP.
3. Default Profile - Default/Basic profile will show a person's basic details like Name, Age, Date of Birth, Family Information, PM-JAY ID, Phone Number
4. Enhance Profile- The user will be given freedom to edit the fields NOT under the basic profile including and not limited to Weight, Height, Blood Group, Email-ID and Address.
5. Book Appointment at Empaneled Hospital - The patient should be able to book appointment at empaneled hospitals including patients who are non-PM-JAY beneficiaries. This will help enhance the popularity of the app and make the app more inclusive. It would also be a good measure towards improving healthcare accessibility and management of patients in the country.
6. **PM-JAY Card - The user should be able to access an e-copy of their PM-JAY card in High-Resolution with Bar Code and QR Code in machine readable format/quality.
7. **Treatment Details - The section will let the user access the Pre-auth requests raised on their treatments, the treatment in progress and the claim filed on their behalf. The section would also show the status of requests and claims as approved/rejected in the section.
8. **Wallet - Display the detailed wallet transaction for the Beneficiary. Treatment details ca be masked to protect the PHR of the beneficiary
9. **Access Personal Health Record - The patient should be able to access their treatment history records and documents including prescriptions, treatment administered, doctors. This may prove to be a milestone in transparency in the medical system and a huge step towards empowerment of the patient. If there is a need to access any patient's record, he would have to provide his consent before it can be accessed by any party/authority.

7.1.3.10.3 Mobile App Features available for Pradhan Mantri Arogya Mitra

1. Check Eligibility- PMAM shall be able to check the eligibility of the patient for the scheme in a similar fashion to the check eligibility of the beneficiary side.
2. Verify Beneficiary- PMAM shall be able to upload all the relevant information and request a beneficiary verification through the app. The PMAM can also do an e-KYC through a mobile fingerprint device, scanning the QR Code and/or other methods.
3. Print/Share E-Card- PMAM shall be able to print the e-Card of the beneficiary through the app and/or share it through other online modes with the beneficiary.
4. Bio-Authenticate- The app shall support a mobile fingerprint scanner and be able to perform functions related to bio-authentication through the app including e-KYC, Pre-Auth Bio Authenticate, Bio-Auth during treatment, discharge etc.
5. Pre-Auth Form- The app shall support in-app filling of the pre-authorization form for the beneficiary and sending it for approval.
6. Claim Form and Discharge Summary- The app shall support in-app filling of the discharge form and send it for approval to the concerned authority.

7. Maintain Patient File- PMAM shall be able to create and maintain a patient file for a given patient for reference. The file may be deleted from the PMAM's account after a certain period.
8. Track Process Status- PMAM shall be able to view the status of pre-auth, claims and silver records of the processes initiated by them.
9. Capture Photo of Beneficiary – PMAM shall be able to capture live-photo of a beneficiary and send the same to the NHA Hosted Applications for analysis and display in the web application

7.1.3.10.4 Mobile App features for Doctors

1. Doctor's Profile - Doctor Profile would be entered and will facilitate option of verifying qualification, specialty and hospital details. Each doctor will have the patient & his associated treatment documents on the application
2. Access to Patient History Record Database
3. Bio Auth – Application should be capable of facilitating Bio auth during Patient registration and discharge
4. Patient Tracking – Since the patient database is stored on the application, the app can notify doctors about the upcoming treatment cycle of those patients

7.1.3.10.5 Mobile App features for Insurance Companies (ISA/TPA)

1. Check Insurance Contracts – The app can be used to check validity of Insurance contract with the states and be able to receive Push notification as it approaches expiry
2. Track Claims – View information on Claim status (Received/Pending/Settled)

7.1.3.10.6 Mobile App Features for State and National Health Authorities

State Health Authorities

1. Dashboard, Analytics & Reports – Apart from state reporting, state should also be able to analyze user behavior for parameters such as grievances resolved
2. Open and Pending Cases to be Approved/Rejected
3. Districts Performance report
4. Insights report (Monthly, Daily transactions, Claims Value raised, Claims Value Approved Claims Pending etc.)

National Health Authority

1. State Performance reports
2. Insight report (Monthly, Daily transactions, Claims Value raised, Claims Value Approved Claims Pending etc.)

7.1.3.10.7 Capacity Building for Our Resources on Ground (Arogya Mitras, Doctors, Asha Workers)

1. It is imperative that the team local support group staff are engaged through the continuous learning that can be accessed at their own pace. This can be achieved by designing applications to support

    a) Micro courses – Quick content interface for training or information disbursal
    b) Polls and Surveys – They can be organizing to measure effectiveness of decision or to gather feedback from the staff

7.1.3.10.8 General Features for all Stakeholders

1. Notifications: - The app should enable notifications to be sent out on:
    a) Claim Approval/Submission
    b) Final Claim Approval and Wallet Deduction
    c) Appointment Status
    d) Grievance Redressal which routes the grievances to IT Helpdesk
    e) General News and Information to be sent by the NHA
2. Voice of Customer – Mobiles can be used to take regular Beneficiary feedback surveys about the scheme, and it would also be a channel for citizens to voice out their grievance
3. A version of the mobile would also be available for the other Stakeholders. The app can be launched as a part of the suite with separate version for Hospitals, ISA, Doctors and Team on the ground.

7.1.3.11 Virtual Assistants

MSP shall design, develop and implement virtual assistant which shall be enabled on integrated portal (including all applications to be enabled on the integrated portal), mobile apps and popular chat platforms such as WhatsApp.

Virtual Assistant to have the following functionalities (but not limited to the following)-

1. In order to provide an interactive helpdesk platform it is intended to design and implement self-learning Virtual Assistant using neural networks machine learning technologies and other innovative technologies to reduce manual effort.
2. Should be able to provide a convenient and easy to use interface to various users to interact with Virtual Assistant.
3. MSP shall use the historical data of grievances and their resolutions for training the Virtual Assistant at the time of launch.
4. MSP must design, develop and implement virtual assistant for each PM-JAY IT 2.0 application/solution component
5. To demonstrate a clear understanding of user needs and provide appropriate responses.
6. Should be able to accept users service requests such as beneficiary's eligibility check requests, queries related to PM-JAY, how to register grievances and provide appropriate links to users
7. Should be available on 24 x 7 x 365 basis (i.e. throughout the year)
8. Generate unique tracking IDs for each request raised.
9. Automatically forward the captured service requests to attending officials for resolutions
10. Integration with popular chat platforms to capture and respond to queries. Must provide seamless experience across integrated portal, mobile app and chat platforms
11. Provide need-based assistance to various users in using functionalities of various applications under PM-JAY such as filling forms etc.
12. Captcha / anti-spam feature
13. Dynamically understand simple English query and convert an English sentence into a machine-friendly query, then going through relevant data to find the necessary information, and finally returning the answer in a natural language sentence.
14. Due care must be taken to prevent the Virtual Assistant in preventing to learn the usage of abusive words/language.
15. Must be capable of taking a natural language question.

16. Must be capable of taking a generic question template and providing a generic answer template.
17. Must be capable of taking a generic answer template and populating it with information from the database to form an answer.
18. Click-to-call feature for PM-JAY mobile app users to directly connect with helpdesk and/or call center
19. Overall accuracy of Virtual Assistant shall be calculated by dividing total right answers by total number of questions asked using a simulated test. Overall accuracy should be more than 70%.

7.1.3.12 Grievance Redressal Management System (GRMS)

1. With an objective to provide a forum for resolving disputes and grievances from beneficiaries, providers and other stakeholders involved in PM-JAY, a Central Grievance Redressal Management System (CGRMS) is constituted to ensure efficient, transparent and speedy redressal of grievances in a time bound manner. To facilitate this process a robust portal is developed to receive and address the grievances.
2. Grievances can be categorized as following:
    a) Online grievances shall be registered directly in the portal by the stake holders
    b) Offline grievances shall have come through different channels like Letters, Emails, SMS- About the status, Inbound calls received in Call center, Outbound call from call center (Should be recorded and saved), Social Media
3. All the grievances reported offline will be entered in the portal by the concerned nodal officer by logging into the portal. Each stakeholder, except beneficiary and PMAM will have a Portal Login ID and Password, to raise or redress the grievance. Key stakeholders include-

S. No.	Stakeholder	Permission
1	Beneficiary	Register, view, reopen, send reminders, can add comments and print status of grievance without login
2	PMAM	
3	Empaneled Healthcare Provider (EHCP)	Login, register complaint, view, reply and print status of grievance
4	Call Center	
5	Insurance Company (IC)	Login & Register complaint and print view reported grievances
6	Implementation Support Agency (ISA) /TPA	
7	District Grievance Nodal Officer (DGNO)	Login & Register complaint and view reported Grievances, acknowledge, forward, escalate(DGNO & SGNO), update, closed and print status of grievance
8	State Grievance Nodal Officer (SGNO)	
9	National Grievance Nodal Officer (NGNO)	
10	Social media Team (NHA)	Login, register complaint, view, reply and print status of grievance

S. No.	Stakeholder	Permission
11	SHA	Login & reply view the status of grievances and print
12	Others interested in PM-JAY	Register, view and print status of grievance without login

Table 18: Indicative list of Stakeholder & Permissions (Grievance)

Additionally, the following features needs to be incorporated by MSP-

1. Auto fetching details of beneficiary through PMJAY ID at the time of registration (OTP based)
2. Linking CGRMS with TMS for fetching case details at the time of registration of grievance
3. Status update through automated SMS to complainants
4. Automatic periodical reminders to officers through SMS & Emails
5. Auto escalation of cases to next level if unresolved within TAT (Turn around time)
6. Color coding of grievances based on status
7. Comprehensive dashboards for all officers
8. Comprehensive report download option
9. SOS cases be linked with TMS for better monitoring and instant action.
10. Grievance shall be integrated to social media platform to register automatic complaints.
11. Integration of CPGRAMS and CGRMS portal
12. Multi lingual website (for grievance registration)
13. Responsive design
14. Chatbot should be integrated with grievance portal
15. Customization in the system should be available as in when required
16. Feedback mechanism/ pages should be available for grievance cases

7.1.3.13 Feedback and Survey Management System

As part of the Beneficiary Empowerment Guidelines, it is proposed that feedback is collected from the beneficiary to understand their experience and satisfaction levels in availing services under PM-JAY and to use beneficiary feedback to improve the services being provided under PM-JAY. Mechanisms to seek beneficiary feedback shall include:

1. Interactive SMS – Collection of feedback from the beneficiaries regarding services at various touch points through TMS, BIS, CGRMS and CCDT using interactive SMS system. MSP is required to develop a system to collect feedback through interactive SMS.
2. Social media platform– Collection of feedback from the beneficiaries regarding services at various touch points through TMS, BIS and CCDT using WhatsApp & Social media platform. MSP is required to develop a system to collect feedback.
3. Feedback through Letter from beneficiaries – It is envisaged to collect the feedback from the beneficiaries through OMR based feedback form which will be sent to beneficiaries through Indian Post. Once the filled form received from beneficiaries same shall be scanned and data captured, and analysis shall be done. A separate tool needs to be developed by MSP for data sharing and analysis.
4. Web-based feedback form/Mobile Application: Feedback will also be collected through a web-based form from beneficiaries. The link to web-based form/mobile application form will be sent to

beneficiaries through auto SMS. The MSP will be responsible for developing feedback form on web as well mobile application and integrate with other applications to send auto SMS.

5. In the PM-JAY IT 2.0 system, the data for the beneficiary feedback shall be provided to National Call Center through and NHA through a dynamic web portal, to be developed by MSP, using integrated API services in order to ensure real time or near real time data access and transfer
6. In the PM-JAY IT 2.0 system, the data for the beneficiary feedback or the survey shall be provided to National Call Center or respective stakeholder responsible for Feedback collection/ survey through and NHA through a dynamic web portal, to be developed by MSP, using integrated API services in order to ensure real time or near real time data access and transfer.
7. In case of standalone survey other than call center mode a customizable survey page through which NHA can add or delete the Question and response to the question should be developed. Also there should have a facility in the system though which NHA can perform the following-

    a) Change the last date of response submission
    b) Create the shareable link of the survey page.
    c) Live monitoring of response submission

8. In the envisaged PM-JAY IT 2.0 system, the MSP shall take the following indicative features into account:

    a) The beneficiary shall have an option of giving service review and feedback on the benefits and services under PM-JAY scheme and rate the treatment availed on the basis of parameters like quality of treatment, service delivery, ease of access, etc.
    b) The system shall have a rating mechanism that would rate the hospital and doctors on the basis of their treatment quality, service delivery time, etc.
    c) For feedback session, the MSP shall categorize the feedback on a scale of 1 to 10, where 10 shall denote excellent and 1 shall denote unsatisfactory
    d) The beneficiary shall be able to give feedback and take survey through a link which shall be made available through SMS services, mobile app as well as various web portals (like HEM, CGRMS, MERA, etc.) by the MSP
    e) The MSP shall also be able to perform feedbacks and surveys provided by the call center through outbound calls and store the same in a standardized format for further processing
    f) The MSP shall repeatedly notify the beneficiary in a defined time interval of 1 day in case the feedback is not received by the beneficiary or any information mismatch
    g) The Turn Around Time (TAT) for the feedback processing shall be limited to maximum of 1 day by the MSP and the pain areas identified through surveys and feedbacks shall be handled appropriately or communicated to the respective teams/ authorities
    h) The MSP shall develop an intelligent active IVRS system to contact and collect feedback from respective beneficiaries at various touch points (like golden card created, on discharge, etc.) under PM-JAY and perform necessary standardized surveys among stakeholders for service delivery enhancements
    i) The MSP shall also develop a mobile application for feedbacks and surveys where the NHA can provide customizable forms for the approved third-party agencies to perform on-field surveys and feedbacks and upload the results on to the app for further processing and insights

j) The feedback received shall be processed by MSP for service improvement insights and made available to NHA as well as other external and internal integration partner approved by NHA for improvement and enhancement of PM-JAY services

7.1.3.13.1 Social Media

1. Social Sentiment analysis is the use of natural language processing (NLP) to analyze social conversations online and determine deeper context as they apply to a topic, brand or theme.
2. At its most basic, sentiment analysis is social media analytics that involves checking how many negative and positive keywords are present in a chunk of conversation. If there are more positive keywords than negative, it is considered positive content.
3. In-depth analysis involves finding opinions in social media content and extracting the sentiment they contain. An opinion is made up of a target, also called a topic, and a sentiment on the topic.
4. The MSP is required to suggest a solution catering to the below mentioned requirements (not limited) to:

    a) Sentiment analysis Solution should leverage open source information for improving compliance.
    b) It should get information from subscription/free based databases, Social Media
    c) The system should be capable of crawling open source information.
    d) The system should be capable of discovering trends and sentiments from open source information.
    e) The system should have crawling capabilities which shall be able to retrieve Web pages that go many layers deep originating from a specific URL.
    f) The crawler should be able to fill information seeking forms automatically such as user id, password etc. to retrieve relevant information from the web.
    g) The system should have the capability to crawl the URLs specified by authorized users in intervals as specified by the user and gather information in the format defined by the user.
    h) The system should have the capability to enable user to define the relevant content categories to index while crawling on the web.
    i) The system should have the ability to define a “markup” so that only specific tags (such as the body and article tags) get retrieved and unnecessary content such as recurring banners, titles etc. can be filtered.
    j) The system should be able to retrieve not only social media content, but also related social media metadata (followers, friends, demographics, comments etc.).
    k) The system should be capable of content extraction to extract the meaningful part of the content.
    l) The system should quickly and responsibly extract from web pages without causing harm to the host environment.
    m) The system should support real-time crawling and crawling in intervals as directed by the user.
    n) The system should have the capability to search the content available on the web, or the web pages already downloaded into a pre-defined directory based on relevance of content and pre-defined rules.
    o) The system should allow searching for specific terms and words, and searches for “mentions” on specific sites and regions, with specific page titles and so on.

p) The system should be capable of sentiment analysis, categorization, topic analysis, comparing queries, alerts, influencer analysis etc.
q) The system should able to integrate with other PM-JAY IT 2.0 supporting modules like grievance, helpdesk, portal etc. so that relevant information from social media channels can redirect to right place with right person for action or notification.

5. The scope of work pertaining to this section to be executed by MSP in accordance with the applicable laws.

7.1.3.14 Samvaad Portal

NHA envisages a unified communication & Collaboration platform for PM-JAY i.e. Samvaad Portal.

7.1.3.14.1 Objective and Background

Communication and collaboration between the States/UTs and the NHA are essential elements of the PM-JAY ecosystem that has allowed it to function smoothly while staying true to the spirit of co-operative federalism since its inception. This has been made possible by the tireless efforts of stakeholders across the SHAs and the divisions of the NHA. A few process improvements were identified to help these resources manage their work seamlessly and strive towards operational excellence.

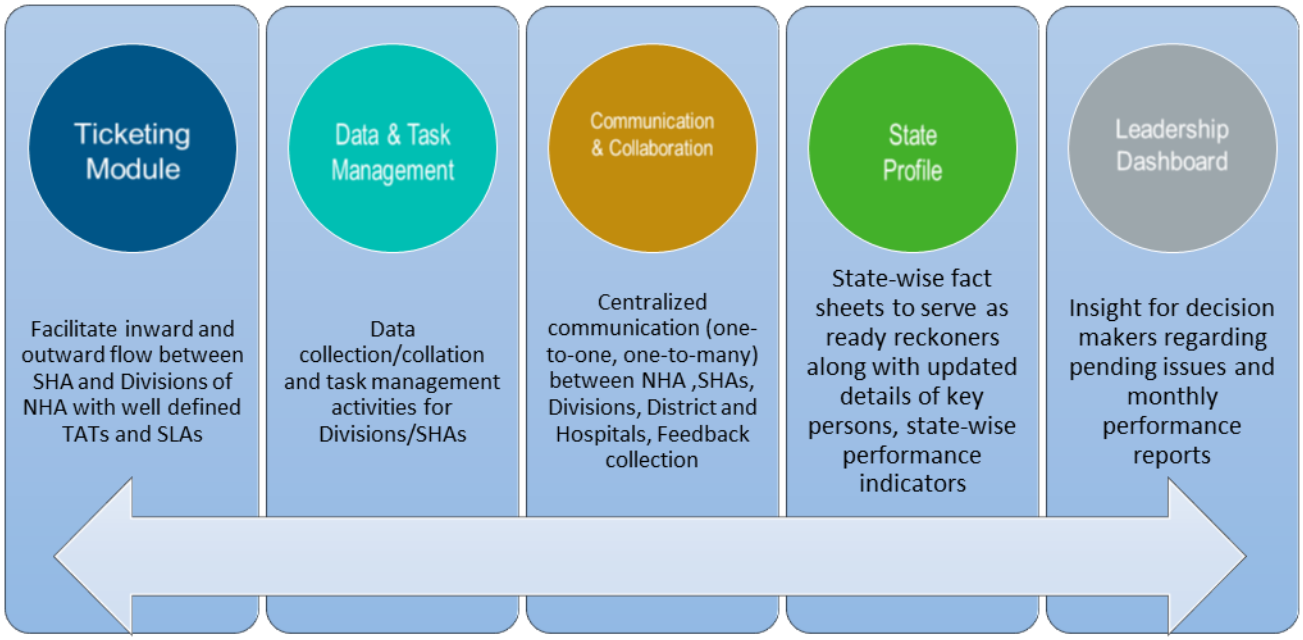
1. Issue resolution is a core element of the roles and responsibilities of resources and streamlining this will improve efficiency and reduce workload for the users. Issue resolution can be expedited with pre-defined forms for collecting mandatory information, which can be made available to the end users to help them structure their requirements
2. A common knowledge repository can fast track access to static and dynamic information. If important documents such as policy guidelines, process notes, OMs, event notifications etc. are available on a common place, it can be easily accessed by the stakeholders at the SHAs or the divisions.
3. Defined turn-around-time (TAT) and service level agreement (SLA) are hallmarks of a transparent and effective system. If these parameters are well defined and their implementation is properly tracked, it will help foster clarity and certainty across the ecosystem.
4. There are several important activities at either SHA or NHA which require multi-tasking across different teams. A common platform that enables users to view calendars, schedule meetings, make notes and work collaboratively will lead to must faster resolutions of such complex multi-stakeholder issues.
5. Task involving participation of multiple stakeholders may at times get delayed due to different reasons. A tracking mechanism will however allow close monitoring of all open issues and encourage the stakeholders to embrace greater ownership of their tasks.
6. Stakeholders across the implementation ecosystem be kept abreast of important updates such as events, policy changes, key personnel changes, press releases etc. through a common forum.
7. The leadership at SHAs and the NHA are often fully immersed in the day to day operational activities related to scheme. Due to this they might not have time to review important information related to the functioning of the scheme. A consolidated dashboard will however help them access such information readily and make strategic interventions when necessary.
8. Several communications have to be sent to different stakeholders at district level or hospital level. A formal platform for sending such communication may help in smoothen the flow of information. Feedback related to different aspects of implementation can be collected through this platform.

In order to address the abovementioned challenges, NHA is envisaging a robust and flexible IT platform SAMVAAD which will be a one stop gateway for all formal communication among different stakeholders of scheme implementation ecosystem.

Samvaad is a bedrock platform that enables communication and collaboration to happen and to become more productive. Samvaad will empower stakeholders to work more efficiently by utilizing collaborative tools and communication forums. SAMVAAD will be integrated with existing platforms of NHA. SAMVAAD will serve as a knowledge repository for the users. Thus, SAMVAAD will evolve into a unified interface for all the stakeholders across the AB PM-JAY ecosystem.

Samvaad platform should has security mechanism to ensure that only trusted and authorised person can access the system using SSO login.

7.1.3.14.2 Key Modules of Samvaad Portal



7.1.3.14.3 Key Stakeholder

1. All division of National Health Authority
2. State Health Agencies (SHAs)
3. District Implementation Units (DIUs)
4. Insurance Companies
5. Third Party Administrator (TPA)
6. Implementation Support Agencies (ISAs)
7. Empaneled Health Care Providers (EHCP)
8. Development Partners
9. Project Management Units (PMUs) at NHA and SHAs

7.1.3.14.4 Key Requirements (Samvaad)

Sno.	Samvaad Functionality	Description
1	Ticketing Module	*Facilitate inward and outward flow of requirement between SHAs and division of NHA*
1.1	Incident Management	*This will be integrated with task management or ticketing module suitably*
1.2	Service Request	*This will be designed to facilitate querying and clarifications*
1.3	Change Requests	*More of an IT division specific request, this will be integrated with ticketing and constitute the last step of a ticket and task workflow process*
1.4	Prioritization of Request by NHA/SHA Leadership	*This is meant as a fast-tracking option for high priority data gathering or task management exercises*
1.5	SLA on Tickets	*SLA (Service Level Agreement) status information: SLAs on majority of tickets (service requests, change requests etc.) will be standardized*
1.6	Tagging of tickets	*Ticket tags – to allow for easy organization of tickets and user can quickly spot popular or common issues. They should also be allowed 115agging the tickets by automatically recommending Knowledge Base item depending on the tags assigned refer point# 6.2 below*
1.7	Customisable ticket templates	*Not all tickets are the same. Based on nature of ticket i.e. IT, Medical (HNQA), Operation, NAFU. These templates can also be combined as needed if the ticket is related to multiple divisions*
1.8	Public and private actions on tickets	*All ticket conversations need to be seen by the requester. That also doesn't mean they should happen out of the system. Provision should be there to keep ticket conversations in the system with private actions or for a public.*
1.9	Related Ticket	*Interface should allow concerned divisions to search repetitive requests with feature of system automatically detect the related tickets that will allow divisions to reply to them faster also will save time.*
1.10	Multi-channel accessibility	*Other than web ticket can be requested either through Email and SMS (optional),*
1.11	Dependency	*During the resolution of ticket, user should be able to mark dependency wrt resolution of the ticket.*
1.12	Customisable Workflow	*Essential feature, workflow for IT, may differ to workflow of other divisions, therefore division should be able to customise the workflow. User should have control on the workflow. User should be able to drag and drop the customized blocks with pre-defined roles, and assign the role to different user. User should be able to save the workflow with a particular name and use it latter on.*
2	Work Group Management	
2.1	Creation of standard NHA and SHA workgroups	*Work group classification must be done during the inception phase to a matrixed deliberation as per hierarchy and responsibilities such NAFU/SAFU, HNQA (NHA) and HNQA (SHA), IT (NHA) and IT (SHA), CEO (NHA), ED (NHA), GM (NHA), State Coordinator etc,*

2.2	Creation of standard NHA and SHA work functions or positions	*Working positions will be created at NHA and SHAs which shall be grouped with in the working groups for e.g. an "IEC Coordinator" position will always be mapped into the IEC division at SHA and NHA*
2.3	Mapping of resources into work functions or positions	*No resource can exist in the system without being mapped to a particular position*
2.4	Creation of custom collaborative workgroups	*Custom workgroups can also be created at NHA and SHA levels. These are not standard work group with clear delineration of work but rather collaborative units setup to deal with a particular project*
2.5	Interface for customising/configuring the Work Groups, and resources	*System should allow to add and modify these above information (2.1-2.4) any time via admin rights.*
3	Users and Rights Management	
3.1	Matrix approach for classification, role based access	*Users will have rights and privileges defines as per their position and their location. For e.g. CEO (SHA) Bihar will have certain rights as a CEO and also because he/she is mapped to Bihar*
3.2	Personal user space	*This will function like a drive where user can store important documents or files; There must be sufficient space to upload and store large files such as campaign materials etc*
3.3	Access Management	*Administrators can demarcate certain storage space as common access. For other spaces use retain rights to grant access to all, or select individuals*
3.4	Transferability of user rights	*User rights are transferable at the time of demitting an office or a position*
3.5	Interface for User Management	*System should allow to add and modify these above information (3.1-3.4) any time via admin interface.*
4	Meeting Management	
4.1	Meeting Scheduling	*Meetings will have to be scheduled on SAMVAAD with concerned PoC getting adequate visibility into the calendars of all participants. Participants can schedule meetings as part of the ticket or a task.*
4.2	Calendar Integration	*Calendar functionality will be integrated with SAMVAAD*
4.3	Calendar Visibility	- *Calendar visibility for leaderships at NHA, Divisional and SHA will be defined by the leadership (restricted to specific individuals teams only or /public) –* - *E.g. 1 - Calendar visibility of GM (State Coordination) will be available to CEO, ACEO, Dy. CEO, other Divisional leaders and member of GM, State* - *Coordination team* - *E.g. 2 - Calendar visibility of CEO, ACEO, Dy CEO (NHA) will be available to CEO (SHA) and vice versa* - *E.g. 3 - Calendar visibility of CEO SHA will be available to his SHA team members and NHA leaderships only*

4.4	Conducting Meetings by Integration with VC Systems/Tools	- *Meetings will occur on SAMVAAD by embedding tools like Teams, Webex etc so that users won't have to navigate across multiple platform* - *Meeting tools will be embedded across all platforms of SAMVAAD including ticketing and task management*
4.5	External Users	- *There must be a mechanism for external users to join meetings scheduled on SAMVAAD* - *This can involve either a temporary login page or a meeting window* - *Audit logs will be maintained to ensure no untoward logins take place*
4.6	Minutes of Meeting Form	- *Minutes of Meeting will exist as a form to be filled by participants deemed compulsory* - *This form can be circulated across all participants and approved before finalization and publication* - *The MoM can continue as a thread in case the same conversations extend to other days* - *Participants can record their dissent on MoM* - *MoM should have section for new tasks*
4.7	Action Taken Report	- *The entire list of activities emanating from the minutes of meeting must be mapped into an action taken report with tagging to the meeting participants* - *These activities will appear as tasks in the participants dashboard*
4.8	Dashboard	- *Input for Leadership dashboard : Count of total meeting conducted in over last week and on click list of divisions wise summery of meetings in chronological orders.* - *On click on of particular meeting the topic, participants and actionable point to be displayed*
5	Landing Page	*Immediately post login users will access this page*
5.1	User Dashboard	*Integrated dashboard with relevant parameters*
5.2	NHA | SHA View	*NHA user will have a customized/restricted SHA view and vice versa*
5.3	User Tools	*Integrated with meetings, pending tasks and tickets, minutes of meeting and activity taken reports*
5.4	Activity Stream/Broadcast	*This is like a broadcast with activities announcement | Broadcasts can be NHA or Customized to SHAs| Divisions*
5.5	Notifications	*Notifications can be restricted as well as universalized*
5.6	Blog/Comment Feature	*This can serve as a platform to facilitate dialogue within the AB PM-JAY ecosystem*
5.7	Meeting calendar	*Calendar of scheduled/upcoming meetings*
5.8	Insight dashboard	*Customized implementation details about the scheme tailor made for each of the users, sourced from INSIGITS dashboard*
5.9	Customisable User dashboard	*User should be allowed to choose the what all items (calendars, todo, task list etc) should be shown on his dashboard/ landing page*
6	Knowledge Management and Document Repository	

6.1	Institutional Memory	*Important decisions must be committed to institutional memory to serve as guide points*
6.2	Knowledge Tracker	*All actions taken to resolve a task or a ticket can be recorded into a knowledge repository portal.* *Knowledge base to be accessible via an interactive interface, i.e. if SHA user has a query or any hospital facing some technical issue so before raising a ticket or incident user should be allowed to search the previously closed resolved ticket via an interactive interface i.e. chat box*
	Document Repository	*This includes full list of guidelines, SOPs, OMs etc. that can be*
7	Task Management	
7.1	Task Assignment	*- There should be various ways for creating a task* *- As a specific data requirements from division(s), SHA(s), Hospital(s), and other stakeholders* *- Tasks can be assigned on the basis of tickets* *- As activities emanating from a MoM discussion* *- As a subtask which is part of a bigger tasks* *- As part of a larger project* *- As group task* *All tasks, subtasks, activities etc will appear as a task to the assignment user, each task must have an ID and a traceability to a preceding event.* *In case of fresh tasks, there has to be a note written that captures reasons for creation of the task*
7.2	Task Assignment Logic	*- Divisions and States can develop their standard workflows which will be defined for their work groups* *- Tasks can also have a customized workflow as per the requirements of users, with an interactive workflow management where process and actor(s) may be dragged to create a workflow.*
7.3	Subtasking	- *Subtasking must a be flexible and dynamic process* - *Subtasking must allow for breaking up a task into multiple sub-tasks (e.g. HNQA division allocates HBP Package Mapping as Subtask 1 (Resource 1) and Subtask 2 (Resource 2)) or creating multiple tasks of the same nature with common task ID for different users (e.g. GM (State Coordination asks for Covid data from 32 States/UTs)*
7.4	Visualization	*Task, subtask and assigned users buckets must be visually enabled so as to facilitate drag and drop into a common window*
7.5	Form builder facility	- *Task can be defined where a specific information gathering exercise is being undertake so a customized form needs to go out with the task* - *This can be developed using a integrated Form Builder function;* - *Provision to save as draft, resubmit any time before the deadline* - *Division should be able to analyse and represent the collated data using tool similar to power BI*

7.6	Task Roles	- *Every task will have multiple roles that are attached to it* - *Task Creator - Ideally this is the person who has created a task and transferred it a division* - *Task Owner - This could be the division or workgroup leader who will assign to a team mate Task Resolver - This is the team mater who has been assigned that task by his superior* - *Task Observer - This can be a person who is deputed by the Task Owner to observe the tasking flow* - *Task Reviewer - This can be someone who is asked by the Task Creator to review the submitted task and status of pendency as a part of his dashboard*
7.7	Workflow Management	- *Workflow can be role & Rule based*
7.8	Dynamic task assignment grouping	- *Workflows can be customized for specific user groups e.g. public hospital grouping, private hospital grouping, list of hospitals in Madhubani district etc.*
7.9	Task Delegation	- *A task owner can delegate his tasks to a subordinate or a colleague who will be in charge of reviewing the task and ensuring closure of the same*
7.10	Task Status Change Notifications	- *This is something that could be visible to Task Owner or delegated person or Task reviewer to view change in status such as "Not Started", "In progress", "Not completed"*
7.11	Task Multi closure	- *There must be an option to ensure multi closure of all tasks*
7.12	Task Self Assignment	- *Any user can create a task and assign to herself or himself*
7.13	Task scheduler	- *Configurable task scheduler to activate and deactivate a task/ sub task*
7.14	Repetitive and sequential task	- *System should allow scheduling a repetitive and sequential task*
8	State Profile	State-wise fact sheet updated with important indicators and contacts details of key personnel
8.1	*State Profile Dashboard - Insights Dashboard*	*Static Information* - *Web Portal with Static Information -SECC/RSBY beneficiaries, hospital database, best practices and innovations (State, District and Hospital)* *Dynamic* - *Insight : public dashboard* - *List of de-empanelled hospitals* - *In-out portability interstate and instar state portability* - *Integration of Insight public dashboard and State Dataware house (SDWH) using APIs*
8.2	Web Portal with Dynamic Information	- *COVID-19 Tracker etc.* - *IEC Campaigns, Social Media, State specific PR, and Success stories beneficiary, hospitals, foot soldiers.* - *Configurable interface with rights to the M&E team for management of State portal, with provision to validate the state specific information using task management*

8.3	Directory -DoHFW, SHA Key People, DIU teams, Hospital Administrators	- *Auto alert to the concerned official for change in officers at SHA, DoFW*
8.4	Dashboard Management Interface	- *Configurable interface with rights to the M&E team for management of State portal, with provision to validate the state specific information using task management*
9	Leadership Dashboard & Reports	Holistic insights and performance reports for decision makers at Centre and State
9.1	Analytical Dashboards	- *Dashboard Manger should be able to select the parameter relevant for leader dashboard as per the requirements. This should be configurable.* - *Based on selected parameters, Data will be retrieved from Insight dashboard using APIs*
9.2	Performance Dashboards	
9.3	Hospital Performance Dashboard	
9.4	Public Dashboard	- *Integration of NHA Insight dashboard and National Data ware house (NDWH) using APIs*
9.5	Timesheet (KPI & KRA Management)	- *Division wise pendency of Tickets, task, and highlighting the tickets, task pending beyond SLA*
9.6	Scheduled and past meeting calendar	- Please refer point number 4.8
9.7	Dashboard Management interface	- *Configurable interface with rights to the M&E team for management of Leadership dashboard*
10	Integration of existing Tools:	- *Integration of exiting tools developed by NHA division for implementation of PM-JAY RADAR, FACTS, Kaizala, PM-JAY medical audit App, Mobile App, LMS, CGRMS etc.*

7.1.3.15 IT Helpdesk

1. The MSP shall be responsible to setup and run a centralized IT helpdesk as a part of PM-JAY IT 2.0 solution, which will be accessed through an IT Helpdesk portal as well, Helpdesk application to be developed by the MSP and a toll free number to facilitate logging of incident tickets (regarding any queries, errors, incidents and application/infrastructure IT/ operations related issues) by the following indicative stakeholders of the system:

    a) PMAM
    b) CSC-VLEs
    c) NHA
    d) SHA
    e) Hospitals
    f) ISA/ TPA
    g) Or any other agency or department

2. The proposed IT Helpdesk solution shall be developed with the following minimum functionalities and features:

a) The proposed helpdesk portal shall be accessible by users from different geographical regions in India. The services shall be primarily required for raising technical issue tickets through the helpdesk portal and resolve the same as per the standard operating procedures to be developed by the MSP, but at times might require making outbound calls.
b) The MSP shall maintain and operate an offsite IT Helpdesk setup and the site shall be owned by the MSP. All the necessary amenities and furniture requirements along with all other IT related components, like desktops, printers, IVRS, helpdesk related software, etc., required for an operational helpdesk support, shall be the responsibility of the MSP.
c) The MSP will ensure 24 x 7 functioning and uptime of proposed IT helpdesk system and shall put necessary backup system and procedures in place in case of any downtime exigency
d) The MSP shall provide access of the envisaged IT Helpdesk system to NHA through a personalized dashboard which will showcase category wise, application wise, date wise tickets generated along with their status i.e., closed/ open/ converted to CR, etc.
e) The MSP shall provide helpdesk portal support in English and Hindi languages and shall have the capability to extend it to other languages as per the discretion of NHA.
f) The IT Helpdesk agents shall provide support from an offsite location owned and operated by the MSP.
g) For any query ticket generated on the helpdesk portal, it will try to provide basic services to the end users based on Standard Operating Procedure (SOP) developed and provided by the MSP. The application and Infrastructure IT related queries which cannot be handled using the provided SOP shall be routed to the country-based application and Infrastructure IT support team of the MSP, for L2/ L3 support
h) Any incident breaching the defined SLAs, and which are exceptional in nature (highly critical, wider spread, etc.) shall be escalated as per defined escalation matrix
i) It is envisaged to set-up a toll free number (which shall be accessible to end users through role based access controls). The Inbound telephony costs (meterable) related to Toll-Free Number (service provider shall be selected by NHA) shall be borne by NHA and all other cost/expense are to be borne by MSP. Cost of the entire necessary infrastructure such as IVRS, Software, Application, Dialer, CRM, Office, space, workstation, softphone, PRIs, headsets, connectivity etc. shall be borne by the MSP.
j) The MSP shall make arrangements for proper training focused on soft skills of helpdesk agents before handling them the helpdesk; exposure to related application in order to prepare the IT Helpdesk agents for different type of queries, and service request.
k) The MSP must ensure that the agents clearly articulate the words in a most professional way when (if required) talking to the NHA stakeholders. They must avoid the use of jargons or slangs for the understanding of the stakeholders.
l) The proposed helpdesk portal is required to be integrated with the SLA monitoring tool and comply with the defined SLAs/Service Levels for IT Helpdesk as detailed in Annexure III (Service Level Metrics) of Volume I of the RFP of the RFP

3. Selection and Deployment of Manpower

a) The MSP shall select & arrange for the skilled and qualified manpower required to operate the proposed helpdesk.

b) The manpower deployed by the MSP for the NHA Helpdesk should comply with minimum qualification as mentioned in the table below:
c) All candidate profiles could be audited by the NHA on an adhoc basis.
d) The MSP shall provide monthly productivity/ performance reports for each of the IT Helpdesk agent to NHA.

4. Helpdesk Services for Application Support- The MSP shall provide the following features and operational services for user's assistance in the envisaged helpdesk support solution:

a) Helpdesk Portal & Application Operational Services:

i. The helpdesk software shall maintain complete history of all tickets received through the portal against user queries, service requests, etc.
ii. A unique ticket ID number shall be generated, for all service requests/ grievances received, in order to be tracked until their closure.
iii. All the issues/ queries on logging shall be assigned to a helpdesk agent along with the acknowledgement to the user with service ticket number through an email/ SMS immediately on call logging.
iv. The IT Helpdesk software and portal shall be responsible for notifying the ticket status/ query resolution status to the respective user over email/ SMS at specified intervals of time.
v. The IT Helpdesk agent shall capture all relevant user's information and customer communication recordings (if any) for future improvement and continuous enhancement of service delivery of the system over time
vi. The MSP shall provide or hand over all the data maintained, of the proposed IT Helpdesk system, to NHA at the time of completion of the contract duration.

b) AI/ ML based BOTs & Virtual Assistants:

i. The MSP shall design, develop, deploy and constantly train VAs and BOTs to assist users for their L0 & L1 level grievance and query resolution on the proposed helpdesk portal and application. VAs and BOTs shall have the following indicative functionalities:
ii. Hand hold the user for generic queries
iii. Auto-registering of grievances/ service requests, etc.
iv. The VAs and BOTs shall also have the facility of call back option. The outbound call in this case shall be made by the agent and not any IVRS.
v. VAs and BOTs, with the help of Artificial Intelligence and Deep Learning shall be enhanced and continuously trained over time to improve stakeholder experience and to reduce manual effort and ticket resolution time of the IT Helpdesk system.

c) Continuous Improvements- The MSP shall prepare a knowledge base for frequently reported problems along with the resolution steps/ procedures of the same.

i. On a quarterly basis, MSP shall carry out the analysis of helpdesk tickets (open and closed) to identify the recurring incidents and conduct a root cause analysis on the same. The MSP shall submit a report to NHA with the analysis and provide inputs to NHA on user training requirements, awareness messages to be posted on the

proposed helpdesk portal, redesign recommendations and/ or application enhancements (functional/ design) based on the analysis. The objective of the analysis shall be to address the reoccurring incidents and enhance the speed and quality of the delivery of services to the end users.

ii. As and when required, the MSP shall provide any additional manpower required to meet the output requirements of the scope and the SLAs/Service Levels Metrics as defined in Annexure III (Service Level Metrics) of Volume 1 of the RFP, at no extra cost to NHA

d) The MSP shall establish policies and procedures, jointly with CSP, which is to be used for helpdesk in the event of a disaster to protect and ensure continuation of services. The MSP shall take care of the operations team operating from a location provided by the MSP in case of a disaster. An alternate facility may be maintained by MSP to maintain the continuity of services as below-

i. At least 25% of the Normal operational status has to be restored within first 12 hours of the disaster.
ii. The proposed IT Helpdesk desk shall be at least 75% operational within 24 hours from the point of time of occurrence of the disaster.

e) This helpdesk shall also provide and cover the aspects of regular helpdesk which includes but not limited to:

i. Location of the helpdesk
ii. Infrastructure requirements
iii. IT Helpdesk Web Portal & Application
iv. Helpdesk Management Software
v. Email/SMS/Chat response System
vi. Computers, phone sets, head sets, etc.
vii. Reporting and Monitoring
viii. Quality Management
ix. Security and Privacy
x. Audit trail

5. **Remote Support Technology-** Additionally the MSP shall deploy an application/tool which provides remote support technology so that IT support team shall be able to have unrestricted remote access of any connected device at any time using internet and remote access shall provide to fix issues remotely, eliminating the need for telephonic and long conversations and intervention. The tool must provide for remote support/access, Security (with SSO), collaboration features, remote device management (team chat etc.) etc.

7.1.3.16 Call Disposition Tool (CDT)

1. In the envisaged PM-JAY 2.0 IT system, the Call Centre Software (CCS/CDT) shall be leveraged as a system for managing and storing personalized communication records, between the beneficiaries and the Government, wherein the beneficiaries shall attain knowledge of how to avail the desired benefits from the service providers and provide their feedback.
2. CCS/CDT shall have the following sub-modules-

a) Customer Relationship Management (CRM): CRM solution software shall be used to manage the services for both incoming and outgoing calls. The CRM solution shall provide a platform for registration of cases (or tickets) and maintenance of records of each interaction undertaken. The steps for specific processes/ workflows and the escalation matrix shall be made available as part of the solution and shall be customizable as per the requirements. The CRM solution shall provide a single view dashboard to key personnel identified by NHA at various levels such as Centre, State, etc. to view and monitor the status of each registered ticket (or case). A provision to customize CRM page should also be there so that NHA can create a new CRM page for short term or one-time outbound calling campaign as per need.
b) The MSP shall provide Secure File Transfer Protocol (SFTP) access to Call center designated person. Call center will provide the incoming and outbound calls recordings to NHA on regular period. This SFTP solution provided by MSP will be used to get those call recordings to NHA for audit and quality purpose and to transfer the calling data from NHA for various outbound calling campaign to Call Centre Service Provider. Attached storage should be extendable as per NHA requirements. The MSP has to ensure there should not be any loss of information at any point of time.
c) Reporting: Reporting is one of the most pivotal and key components of the proposed Call Centre Software and has two broad components:
    i. Inward Reporting (Call Centre performance): Refers to the MIS reports and information which shall help in assessing the performance of the call center vis-à-vis the defined Service Level Agreements (SLAs) for identified parameters
    ii. Outward Reporting: This refers to the key parameters and measurement aspects to assess the functional performance of the specific processes and workflows with a view to identify intervention areas and fix accountability within the system. For the proposed call center, this will be customized and driven as per the defined follow-up guidelines and help in identifying the overall list of open, closed, pending beyond time, etc. (cases or tickets) based on location

3. Integration with Big Data & Grievance Application: The MSP shall be required to integrate with and utilize the data available in big data and facilitate outbound calls to beneficiaries for potential grievances detected along with the generation of their Unique Reference Number (URN).
4. Grievance Redressal: The MSP shall be able to recognize or detect grievance related calls and route it to Central Grievance Redressal Management System (CGRMS) for further resolution and future references. There shall be a feature of real time tracking and monitoring of grievance through caller's ticket ID at every stage of the query resolution.
5. There should have facility to calculate the service levels on real time basis as per the existing RFP(s) with call center.
6. A reference module through which CCEs (call center executives) can check the details of any States while on call. (Call Centre Knowledge Portal)
7. The call disposition tool solution should be accessible from outside NHA network also so that the solution can be provided to State Call Centre of SHA while integrating State Call Centre with PM-JAY Helpline (14555)
8. The CDT should be enabled for remote working as well - Mobile and web compatible
9. CDT must have integrated training module

a) A module for training content
b) Training and Knowledge test for CCEs, certificate issuing facility and customizable for NHA
c) Efficient enough to share the same with State Call Centre also.
d) A module to check the details of CCE including CV, work experience and Date of Joining etc.

10. Quality monitoring module

a) Call listening and audit
b) A module for Quality score calculation module and Rankings of Agents
c) Tool for Agents performance and quality review including assessing communication skill, Sentiment Analysis etc.
d) Integration with state call centers should be there for exchange of data through APIs.

7.1.3.17 Learning Management System

1. NHA envisages to put in place a web based and mobile based systemic learning methodology. The objective is to design, develop and implement a web and mobile based 'Learning Management System (LMS)' platform for PM-JAY 2.0 with following features-

a) e-learn platform along with e-learning platform
b) Audio-visual based learnings through content and platform delivery
c) Chat and voice bots/ Virtual assistants for quick search responses and personalized service handling
d) Agent based online focused discussions
e) Content hosting i.e. Written documents (manuals, etc. supported in word, pdf etc.) in iframes with progress tracking MP4 videos & other formats
f) Bookmark resources by users (learners) for easy reference
g) The platform shall be developed for administration, documentation, tracking, reporting and delivery of educational courses or training programs across delivery channels such as webinar sessions, self-paced learning or offline workshops and classroom sessions.
h) Access channels (user registration and login-based access through SSO with workflow based approvals)

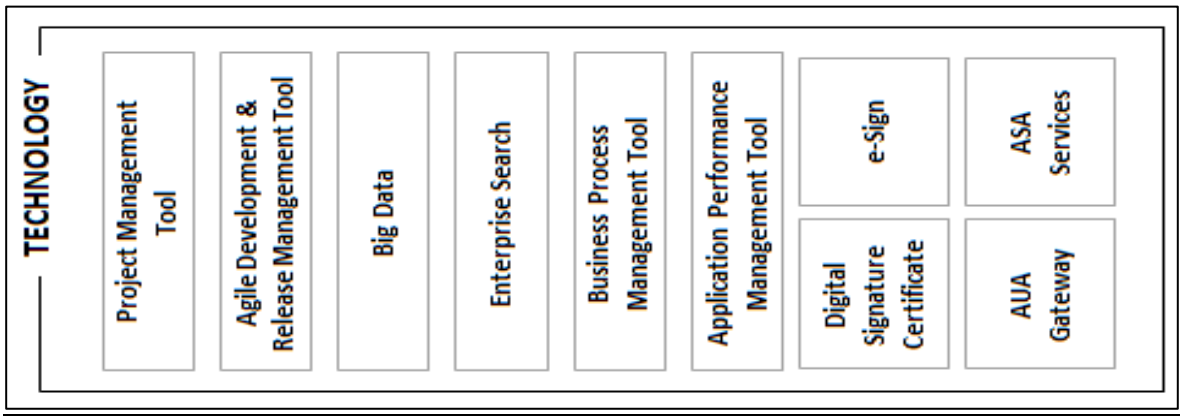
i. Dedicated web portal with user role and category-based registration and login-based access through email and mobile no. validation
ii. Mobile App.

i) Design, development, implementation, hosting of SCORM/AICC compliant e-Learning lessons, e-Capsules, mobile nuggets
j) The LMS solution must enable mandatory e-learns (with course based structure) with qualifying assessment methodology and trainings
k) The platform shall provide training results review and corrections post assessment.
l) The platform shall store log of user assessment activity with data fields like number of attempts, re-attempts, total no. of learners/ trainers passing/ failing representation, etc. and shall provide ability to download the reports corresponding to the user.
m) The platform shall have an option to automatically generate certificate based on passing percentage of the user & meeting other qualifying criteria's with a unique certificate number along with the ability to verify certificates for external personnel using on QR code

n) AI/ ML based chat and voice bots and virtual agent-based query handling services along with an online focused discussion with inputs from entire PM-JAY 2.0 ecosystem
o) The platform shall facilitate customized notifications of activity and announcements of e-learnings, available courses, etc. to the respective stakeholders through multi-channel communication
p) The platform shall have a feedback mechanism so that the end users are able to rate the e-learnings and can point out any redundancies or suggest any change. For each e-learning session, the platform shall categorize the feedback on a scale of 1 to 10, where 10 shall denote excellent and 1 shall denote unsatisfactory and the e-learning session shall be considered effective only after the cumulative score of the feedback as an outcome of the process (sum of all feedback divided by number of attendees) is more than 7.5.
q) Content Management: The e-learning modules shall facilitate easy to understand and comprehensive descriptions with examples, step by step guidance of processes and services, voice (English and Hindi and further can be extended to regional languages if needed by the NHA) to support learning, videos, infographic and hyperlinked details to other modules facilitating learning of current module that a stakeholder is referring.

    i. The platform shall have the enterprise class search ability i.e. to search across various content, pages, and courses
    ii. The platform shall have discussion forum for users to ask questions, raise queries and share best practices.
    iii. The platform shall facilitate the ability to take surveys and polls for feedback and consultation.
    iv. An inbuilt calendar shall have links to assignments, activity due dates and upcoming events (training sessions)
    v. The platform shall have ability to author courses/ content and assessments limited to selected restricted roles
    vi. The platform shall have the ability to create classroom sessions linked to a course or exclusive classroom courses/trainings where student can be enrolled or sign up for the course and attendance, course progress with certificates to be approved by the teachers
    vii. It shall also provide virtual sessions type of training such as webinars
    viii. Creation of folders / sub-folders along with uploading and organizing of user-based content and assessments
    ix. Application/modules training prototype for hands on training using dummy data
    x. Shall enable blended learning for learners through use of combination of training formats such as online & classroom/virtual accompanied with tracking of progress and qualification criteria's such as assessments & completion of prescribed activities and other course elements for certification.
    xi. User friendly UI & UX
    xii. Course replication & modification functionality
    xiii. API Integration with other tools & platforms (internal & external)
    xiv. User profile-wise dashboards
    xv. Module on user & course management with approval flows

Technology Components



7.1.3.18 Project Management Tool (PMT)

1. NHA is expecting a centralized real time Project Management tool which will provide status of each task under multiple activities, issue associated, identified risk so that necessary action can be taken to ensure timely and successful execution of project. This tool will be used by NHA for all program includes PM-JAY IT 2.0 and other programs under PM-JAY etc. Proposed Project Management tool should have following features:
2. MSP should understand existing project management process and develop work flow for effective utilization of tool. MSP should implement complete workflow development for end to end project management with email integration for every project phase completion.
3. Change/enhancement in work flow to be supported during the support contract.
4. Tool should be integrated with other tools that are used in NHA like service desk tool to import change request and incident data.
5. Tool should have in built document management system for storing project documents with version controlling.
6. Tool should have provision to create home page for each of the project and links to all important project documents to be available on home page
7. Tool should be able to import/ export plans created in MS project and Microsoft Excel.
8. Tool should be able to integrate with agile tool in future.
9. It should have the capability to create projects, plan projects (including creation of graphics), calculate efforts and budget for a project, risk management, release management, work breakdown structure and task management.

SLA Management

1. The MSP shall be required to propose/ develop and SLA Management and Monitoring Tool to ensure adherence to SLA outlined in the RFP and generate requisite reports for decision making. SLA monitoring tool should enable NHA to have a unified view of the entire Solution SLAs. The key function shall be to measure the performance of the PM JAY 2.0 system vis-à-vis the SLA's/service levels specified in the RFP. The amount payable to the MSP shall be regulated after applying the penalties arising out of shortfalls in meeting individual SLA's/service levels.
2. The functionalities of SLA Management Tool envisaged in this RFP include the following:

SLA Manager

a) The SLA Manager should allow real-time monitoring and adherence to SLAs as outlined in the RFP (Functional and Technical SLA, Operational SLA, Infrastructure SLAs) to the bidder.
b) The tool should be configurable and shall allow the MSP to make necessary changes to configurations to meet the requirements and SLA definitions outlined in the RFP
c) The SLA Manager should allow role-based customization and access to stakeholders
d) The tool should have the capability to compute the penalty amount as per the SLA defined the RFP and provide reports as per requirement of SLA on a real time basis.
e) The SLA monitoring tool should be able to monitor all the service levels defined in the service level agreement, on a real time basis, through integration with the related servers providing various services contained in the SLA.
f) The proposed tool should provide comprehensive and end-to-end management of all the components for each service including network, systems, application and Infrastructure.
g) The proposed tool should allow changing the parameters of the measurement and should allow adding new SLAs on need basis.

Alerts & Notifications

a) The tool should have the facility to generate and trigger alerts/ notifications to concerned stakeholders in a time-bound manner as per SLA conditions
b) The tools should have the capability to integrate with various IT modules as proposed in the RFP and have the facility of monitoring and management of “Infrastructure” related SLAs

Reports

a) Tool should generate the SLA Management and Monitoring report at the end of every month and every quarter which is to be shared with NHA. The proposed tool should provide the following performance reports, in addition to SLA report.
    i. Executive Summary report
    ii. Capacity Planning report which provides a view of under-and-over-utilized elements
    iii. Availability report
b) The tool should provide an integrated performance view for all the managed systems and networks along with the various threshold violations alarms in them. It should be possible to drill-down into the performance view to execute context specific reports.
c) The proposed tool should be able to monitor various operating system parameters.
d) The proposed tool should provide self-monitoring wherein it will track critical status such as (but not limited to):
    i. CPU utilization
    ii. Memory capacity
    iii. File system space and other important data
e) The indicative services as part of this support are as below:
    i. System Administration, Maintenance & Management Services
    ii. Application Monitoring Services
    iii. Storage Administration and Management Services

iv. Replication, Backup and Restore Services

f) To cater to the Audit & traceability, the tool should facilitate generation of following monthly reports:

i. Availability report for the cloud services
ii. Resource utilization report, application performance report
iii. Incident analysis report
iv. Security Assessment report, etc.

7.1.3.19 Agile Development and Release Management Tool

1. MSP shall follow automated release management processes and best practices during the duration of the contract. MSP shall make provisions for automation tools to perform automated release management in each of the following software development life cycles across multiple environments i.e. Dev, Test/UAT, Pre-Prod, Prod and Disaster Recovery environment

a) Development
b) Build
c) Testing
d) Release
e) Deployment
f) Monitoring

7.1.3.19.1 Continuous Integration and Continuous Delivery (CI/CD) in DevOps

1. In the development phase, MSP shall comply with the CI/CD software development methodology.
2. Both Continuous Integration and Continuous Delivery shall focus on automating mundane processes to allow Developers release updates in small batches on a regular basis. In CI the codes from different sources shall be integrated and then built and tested. If the test fails, the code shall return for review, and in case of success the build shall be ready to proceed to deployment. With CD MSP shall automate the full delivery lifecycle up until production.
3. Within each Sprint, delivery and deployment will follow DevOps. Continuous development and Integration, Continuous testing, Continuous Deployment and Continuous monitoring will happen for the code build, testing, deployment and monitoring activities respectively within the Sprint.

7.1.3.20 Big Data

1. The MSP should have the operational data store
2. The information management needs to be highly robust. As shown, separate data stores need to be maintained for Master Data, Transactional data and Audit information.
3. The reporting database needs to be separate from the live application (transaction) databases.
4. The database should be able to handle large volumes of data
5. The data access layer should maintain a loose coupling with the business logic layer.
6. The design should ensure that any data is easily searchable and there is proper indexing done on the database.
7. The data layer should be reliable, scalable and should have failover and recovery facilities. The database may have a need for distributed processing of large data sets.
8. MSP shall build Data virtualization tool as an approach to data management that shall allow PM-JAY IT 2.0 applications to retrieve and manipulate data without requiring technical details about the data,

such as how it is formatted at source, or where it is physically located, and can provide a single customer view (or single view of any other entity) of the overall data.

9. PM-JAY IT 2.0 shall have robust, scalable national data warehouse (NDWH) to store, integrate and analyze data generated and captured under PM-JAY scheme. NDWH shall have data from applications which are part of MSP scope as well as from those applications which are not part of MSP scope but being used by system like MERA, and Internal NHA IT etc.
10. Keeping in view the sensitivity of the health data processed by the PM-JAY Scheme/ system, the MSP must take utmost precautions in the security and privacy of data. The following requirements shall be met in the minimum by the MSP while designing big data architecture:

    a) Only encrypted, anonymized or de-identified data of beneficiaries should be allowed to be drawn into the Datawarehouse.
    b) Under no circumstances, personally identifiable information shall be collected, stored or processed in the Datawarehouse.
    c) Appropriate technologies, including HSM, should be deployed to maintain the security and privacy of health data.
    d) The Standards specified in the NDHB in relation to Privacy and Security of patient data shall be complied with. (Pl refer to section 3.5 of the NDHB Report)
    e) Cases requiring the identification of the beneficiary, like those relating to fraud or those individual cases requiring special attention, shall be notified to the designated authority of the NHA, who shall take appropriate steps to de-identify the record(s) and initiate necessary action thereon.
    f) Under no circumstances, the data in the DW should be shared with any other agency for whatever purposes. To this end, all the employees assigned to work in the Datawarehouse application shall sign an NDA.
    g) MSP shall follow the SoP to be prescribed by NHA for the retention, archival and deletion of data no longer required to be kept in the Datawarehouse.

11. Data Management-

    a) The system should integrate data from multiple source systems enabling a central view across the enterprise.
    b) The system should maintain copy of information from the source transaction systems.
    c) The data stored in the data warehouse should be sanitized (either at source or before storing into the data warehouse) with the intend of privacy protection. The data should be encrypted. Only anonymized/de-identified data to be available through DWH ensuring privacy, security and confidentiality of the data.
    d) The system should store and manage all types of structured and unstructured information and enable query of information.
    e) System should also have the capability to ingest and store information.
    f) The system should support large data sizes in petabytes.
    g) The system should support backup and recovery of data.
    h) The system should maintain the audit history of the data and its lineage for historical analysis.
    i) The solution should be modelled to a level of abstraction that supports modifications to the data model as more data subject areas are added.

j) Data in the warehouse should be fully qualified with consistent definitions and conformed dimensions across the warehouse to allow multiple systems to use it in a variety of contexts.
k) Identify and detect Non-validated data, standardize and help in de-duplication of data to obtain single view of the data.

12. Data Integration-

a) The system should have integration with enterprise components like Database and other parts of the proposed solution wherever integration is required.
b) The system should provide support to leading ETL/ELT tools.
c) The system should provide support and tight integration capabilities with leading BI and Analytical tools.

13. Analytics-

a) The system should be able to provide mixed work load, e.g. when data is being inserted into a table and the same table being queried without degradation in performance.
b) The system should support in-database analytics to process complex functions.
c) It must facilitate real time Information and data sharing for MIS, reporting and dashboard purpose to NHA and other stakeholders.

14. Data Warehouse Security:

a) Ensure data classification in Data Warehouse
b) Ensure partitioning of data by splitting it into separate tables such as sensitive and non-sensitive
c) Each layer to be protected with adequate security controls as per NHA IS Policy and industry best practices
d) Stringent user access control must be implemented with Role-based principle, so that users of the warehouse can only access data they need to do their jobs.
e) Security implications involved during all data movement shall be evaluated and addressed prior movement
f) Data shall be encrypted at Database level as well as storage level.
g) Ensure the solution designed is in compliance to Drafted Data Protection Bill of India and IT Act 2000 and its amendments.

15. MSP shall develop a Centralized Logging Solution that consolidates all the log data and pushes it to one central, accessible, and easy-to-use interface. Logs for all the applications shall be captured and stored on a centralized logging solution to facilitate easier and quicker debugging.

a) Daily activities log shall be merged into the history log files
b) Date and time stamp of the event, event ID, User ID, event action and transaction details, IPD address, source IP address shall be generated for different transactions
c) Daily activity reports shall be provided to highlight all the transactions being processed during the day
d) Unsuccessful attempts to log-in into the system shall be recorded
e) Audit log shall be enabled for every platform and applications of PM-JAY IT 2.0 solution
f) Audit log shall be archived as per the record retention policy of the NHA

g) Any information which is classified as sensitive shall not be captured in logs. In case required, adequate security measures/ exceptions/ approvals should be taken from the NHA management.
h) Procedures shall be implemented for monitoring system use to ensure that users are only performing processes that have been explicitly authorized.
i) All log data shall be reviewed at least quarterly and exceptions shall be brought to the notice of the management.
j) All logs shall be retained as per the agreed retention policy.
k) Systems shall be monitored, and information security events shall be recorded to ensure conformity to access policy and standards.
l) Monitoring of systems shall be in line with various policies and procedures that are part of the Information Security Management System and any other critical activities.
m) NHA shall have the authority to monitor network traffic and the personnel of NHA shall be advised regarding their network traffic being monitored.
n) NHA shall comply with all relevant legal requirements applicable to its monitoring activities.
o) Logging facilities and log information shall be protected against tampering, deletion and unauthorized access.
p) Log information shall be stored securely in order to prevent tampering.
q) Audit logs shall be archived as per the record retention.
r) Officer logs and fault logging shall be enabled for identification of information system problems.
s) Information systems shall be configured in such a way that the system administrator and system operator activities are logged.
t) Administrator and operator logs shall be reviewed monthly.
u) The computer clock of all systems, applications, servers, security solutions, network devices etc. shall be synchronized with a centralized logging solution and Network Time Protocol (NTP) aligned with relevant time zone.

16. The PM-JAY IT 2.0 solution should have built-in, or integrated tools for enterprise grade ETL operations from a large array of traditional and non-traditional data sources and should have high performance transformation capabilities.

a) Proposed solution shall have admin user interface to configure and manage
b) Shall able to handle complex data management
c) Shall able to create connection with any data source Excel, FTP, SharePoint, Salesforce, SAP, Cloud, Hadoop, MQ, LDAP, and web services etc.
d) Shall have built-in Data Quality tasks such as validation, profiling, and statistical analysis of the data
e) Shall have workflow to configure as per requirement
f) Shall have capability to run at scheduled times, re-run when failed, and limit the execution duration etc.
g) Shall have capability to execute bulk loading, caching, partitioning, high availability, etc.
h) Shall have management and administration e.g. source code control and repository, managing the nodes in the grid, administering and deploying the ETL packages to Dev, Test and Production environments.

i) Shall have data quality management capability
j) Shall able to do effective reporting where to provide timely and effective reports about data and all data management activities

7.1.3.21 Enterprise Search

1. The MSP shall provide a unified enterprise class search engine which will deliver relevant search results against user's request and queries:
2. The proposed system must support an enterprise class search facility using role-based access and Search of open/published content shall be available to citizens, without login.
3. Enterprise search facility shall be able to crawl across pages and application based on respective relevance.
4. The MSP shall provide search result in less than 1-2 seconds upon request as agreed with NHA
5. The proposed PM-JAY system shall provide search engine with advanced full-text search capabilities.
6. The search engine shall be able to search for content within the database, file systems, documents, etc.
7. The search engine shall have advanced full text search capability
8. The search engine should be optimized for large volume / high traffic
9. Shall have capability to do near real time indexing
10. Shall have highly scalable and zero fault tolerance
11. Shall have administrative capability to manage, configure and enable caching as required
12. Shall have real time monitoring logging

7.1.3.22 Business Process Management Tool

1. There is a need for implementing workflows (including some complex ones) efficiently, with possible routing/ exchange of information, and involving all the stakeholders of the system along with NHA officials. The Workflows should be flexible enough to allow upward flow and downward flow of processes and inclusion of new actors which can be done through changes in configuration. All these factors – dynamism of business requirements, need for multi-users and complex workflows, high frequency of business processes getting executed, involvement of multiple stakeholders in a business process/ workflow, would require a Business Process Management in the overall architecture of the solution.
2. The flexible architecture of the Workflow Services will allow to model and automate sophisticated business processes. BPM solution will help define processes that loop, branch into parallel flows and rendezvous, decompose into sub-flows, and branch on task results, time out, and more.
3. Expressing business rules in the process model will enable model-driven integration. Workflow Services acting as a system integration hub can apply the business rules to control and route objects between applications and systems with minimal intrusion into those applications and systems. Following are the key features desired in workflow & rule engine platform –

    a) Support easy workflow configuration, its maintenance, and need based modification, addition alteration of the steps.
    b) The BPM solution shall support process modelling based on BPMN2 notation standard.
    c) The BPM solution shall have facility to simulate a process before launching it so that appropriate changes can be made based on findings.

d) The BPM solution shall provide REST API's for individual application components so that it can communicate to any other technology layer seamlessly.
e) The BPM solution shall have capabilities which will enable business activity monitoring and capture audit trail of all transactions as well. Web based dashboard shall be made available for accessing all reports.
f) The BPM solutions shall provide dashboard view for showing multiple reports. Dashboard view and content can be customized for individuals.
g) The BPM solutions shall support container-based deployment along with other components.

4. Following requirements to be delivered by the proposed BPM-

a) It should act as a single central repository for managing business processes
b) These workflows, implemented using BPM tool, may require integration with external systems
c) It should be able to process architecture modelling capabilities
d) It should be able to share and publish various processes
e) It must be able to implement ("orchestrate") the process, based upon the model,
f) Workflows should be able to handle navigation, authorization, notification and critical-path analysis of defined business processes.
g) Each step of the workflow must produce audit records
h) It should generate various standard and ad-hoc reports in multiple document formats e.g. .xlsx, .docx, .pptx, pdf, html
i) It must implement process governance (e.g. access control, version control and audit trail)
j) It should analyze process metrics and optimize processes
k) The application should have the provision of regular monitoring of different business processes as meaningful dashboards.
l) The proposed solution should offer both process activity monitoring and performance monitoring features.
m) The system shall be capable of identifying, reporting inefficient processes and operations and/or those with high level of error and omission
n) Proposed solution should support automated message and information routing capabilities based on pre-defined rules like sequential routing, parallel routing, rule based routing etc.
o) Proposed solution should have capabilities to allocate and distribute generated tasks to users and user groups.
p) The task allocation methods may be through pull or push model in offering or allocating mode randomly or in round-robin mechanism.
q) Participants of the task can be specified during design time statically or during run time using expressions or through organization entity identification process. System shall offer capability to specify time limit to a task.

7.1.3.23 Application Performance Management Tool

PM-JAY IT 2.0 envisages a high volumetric transaction and expects its IT infrastructure and all systems, applications, servers etc. to be error free and in working stage. The APM tool shall monitor and provide reports and alerts for assessing the system health. Following are the expected features of APM tool.

1. It should be flexible to monitor the applications

2. It should be able to report application errors and exceptions
3. It should be able to provide for a real time monitoring system for reporting of all the technical Service levels mentioned in the RFP. It should provide for real time dashboards (with access to NHA users as well) for monitoring all application levels.
4. It should be able to conduct real time performance monitoring of applications, servers and systems
5. It should provide for end user monitoring to get better insights into overall application performance, as well as how the user is using the application
6. It should provide capabilities to track all the transactions across all layers of the IT infrastructure.
7. Provide Key Performance Indicators related to system, application and service availability management
8. User Dashboard - Ability to tailor per user, drill-down into details, and/or perform ad-hoc analysis of performance data
9. Intuitive, attractive and feature rich web client to enable rapid adoption

7.1.3.24 Digital Signature Certificate and e-Sign

1. The proposed solution shall support advanced user authentication mechanisms, which shall include Digital Signature Certificates and e-sign.
2. This provides the opportunity for introduction of digital signature certificates and e-sign, to be provided by the MSP, which may be used for roles requiring high degree of information security for authentication, non-repudiation and integrity.
3. Additionally, the NHA shall provide an HSM (Hardware Security Module) appliance-based solution for MSP to safeguard and managing digital keys for strong authentication along with the below mentioned specifications:

    a) Class 2 certificates: shall be provided, only in case of an exception, for both personnel and private individuals use to authenticate the information in the application provided by the user
    b) The DSC issued shall be FIPS140/2 compliant
    c) Class 3 Certificate: shall be issued to individuals as well as organizations as high assurance certificates

4. eSign shall facilitate electronically signing a document by an Aadhaar holder using an online service. Aadhaar ID is mandatory for availing this service

7.1.3.25 Aadhar AUA and ASA Services Requirements

Presently, NHA is a Global AUA with UIDAI for obtaining Aadhaar Authentication services under PM-JAY 1.0 and continues to envisage the same under PM-JAY IT 2.0 project. The MSP shall implement AUA gateway services and ASA services.

7.1.3.25.1 Brief on Aadhaar Authentication Process

1. As a part of authentication services rollout strategy, UIDAI engages with Authentication User Agencies (AUA), who would deliver services to their beneficiaries by using Aadhaar based model for verification and Authentication Service Agencies (ASAs) are the entities that have established secure leased line connectivity with the CIDR (UIDAI database) as per UIDAI's standards and specifications.
2. ASAs offer their UIDAI-compliant network connectivity as a service to Authentication User Agencies and transmit AUAs' authentication requests to CIDR. Only entities contracted with UIDAI as ASAs shall send authentication requests to the CIDR; no other entity can directly communicate with CIDR.

3. The selected Agency is expected to start with an understanding of the functionality offered by Aadhaar authentication and assist NHA to provide AUA/KUA services to its beneficiaries. The Key milestone outcomes of the engagement include the following:

    a) Design and development of NHA AUA gateway; Capture the data required for Aadhaar authentication and form an xml request block to be sent to CIDR
    b) End to end testing with UIDAI pre-production environment
    c) End to end testing with UIDAI production environment
    d) Maintenance of Authentication logs as per Aadhaar Act 2016
    e) Facilitate the process for audit and security specifications
    f) Ensure Inclusion and Avoid Service Disruption
    g) Facilitate the process for procurement of certified authentication devices (hardware & Software) for Environment setup
    h) Support in closing of all the non-compliances reported by Third Party Auditor as per the UIDAI rules and regulations
    i) Setup of Aadhaar Data Vault (ADV) for NHA
    j) Secure License key using HSM
    k) Ensure compliance to Aadhaar Act, 2016, Aadhaar (Authentication) Regulations, 2016, Aadhaar (Data Security) Regulations, 2016, Aadhaar (Sharing of Information) Regulations, 2016 and all UIDAI circulars
    l) Fraud monitoring (Ex: any violation to Aadhaar act 2016 or its regulations)

7.1.3.25.2 Scope of Services

The MSP is responsible for the following scope of services as part of the RFP:

1. Setting up of the authentication infrastructure for NHA for seamless Authentication/Electronic Know Your Customer (eKYC) services and any other related service provided by UIDAI.

    a) Preparing Auth request based on the latest API published by UIDAI using inputs from Sub AUA/devices (uid, tid, sa, data, hmac etc.).
    b) Digitally Signing Authentication request
    c) Routing Authentication Request to ASA
    d) Receiving response from ASA and forwarding the same to NHA/Sub AUA.

2. Performing the test cases for AUA and KUA as per UIDAI guidelines
3. Support NHA to conduct the CISA Audit annually and for submission of audit report to UIDAI
4. The solution should support Android, Web, Windows, iOS, Linux or any other OS used by PM-JAY ecosystem
5. Integration support to Android, Web, Windows, iOS, Linux or any other OS used by PM-JAY ecosystem shall be provided providing the required Web-Services in compliance with UIDAI
6. Integration support for client applications with the RD Service to validate the device
7. The Service Provider shall ensure that the solution provided works with heterogeneous devices and works with wide range of Biometric scanners (Fingerprint- Contact and Contactless, Iris, etc.) for capturing the Identity (Finger prints, iris, etc.).
8. AUA and KUA services can be provided:

    a) Authentication and e-KYC with Fingerprint

b) Authentication and e-KYC with IRIS
c) Authentication and e-KYC with OTP
d) Demographic Matching

9. Discover one or more partner(s) who can provide ASA services to NHA
10. Deploy & manage ASA(s) for NHA to place authentication request with UIDAI
11. Designing & incorporating Aadhaar Exception Handling features/parameters in the Application
12. Incorporate all the changes in the Aadhaar eco-system as and when changes are suggested by UIDAI/ASA.
13. Broad components/services of AUA gateway to be developed by the selected agency:

    a) Validation component to validate input received from Sub AUA/Devices to prepare Auth request correctly.
    b) An auditing component to store request/response/failure and other key information which are allowed by UIDAI like uid, tid, auth request date time, auth response date time etc. for auditing purposes.
    c) An independent component for digital signing of authentication request
    d) A component for MIS and Fraud Monitoring to generate various reports for stakeholders (UIDAI, ASA, SubAUA etc.) and monitoring service quality.

14. An AUA request/response handler to handle request receive from Sub-AUA / Devices and response received from ASA.

7.1.3.25.3 Mandatory Encryption Process for AUA

1. Authentication devices deployed by AUA/e-KYC User Agency (AUA/KUA) must initiate the authentication request and create encrypted PID block before forwarding it to authentications server of AUA/KUA for processing of specific transaction (OTP/Biometric/Demographic) and creation of auth XML as per UIDAI Authentication API.
2. To ensure the security of Aadhaar authentication eco-system, UIDAI has mandated the usage of Hardware Security Module (HSM) for digital signing of Auth XML and decryption of e-KYC data.
3. For digital signing of Auth XML, Authentication request shall be digitally signed by the requesting entity (AUA/KUA) and/ or by the ASA using HSM. However, to decrypt the e-KYC response data received from UIDAI, the AUA shall necessarily use its own HSM. The service provider is responsible for configuration of HSM, provide the necessary updates, and maintain the same.

7.1.3.25.4 Mandatory Information Security Requirements for AUA

Following are the mandatory security requirements for AUA:

1. Aadhaar number should never be used as a domain specific identifier
2. In the case of operator-assisted devices, operators should be authenticated using mechanisms such as password, Aadhaar authentication, etc.
3. The service provider has to prepare an API as per the latest API standards issued by UIDAI to be deployed across multiple touch points of the application for where the AUA/KUA Services are provided. The features of such an API is to:

    a) PID block captured for Aadhaar authentication should be encrypted during capture and should never be sent in the clear over a network

b) The encrypted PID block should not be stored unless it is for buffered authentication for a short period, currently configured as 24 hours
c) Biometric and OTP data captured for the purposes of Aadhaar authentication should not be stored on any permanent storage or database
d) The meta-data and the responses should be logged for audit purposes
e) Network between AUA and ASA should be secure

4. The fingerprint image/Template captured during authentication process will be confirming to ISO Standards as specified by UIDAI.UIDAI has published Information Security Policy Specifications and Standards for AUAs and Authentication Devices being deployed by AUAs. The software has to comply to UIDAI Information Standards & guidelines. Instructions for providing Authentication/e-KYC Services by AUA to SUBAUA's and other entities
5. The Service provider is directed to strictly observe the following instructions while providing authentication services to Sub-AUAs or other entities:
6. The AUA/KUA shall ensure that;

a) The application to be used for Aadhaar authentication by AUA/KUA is to be developed by the service provider and digitally signed by AUA/KUA
b) The application should not store any biometric data under any circumstance and biometrics/PID Block is to be encrypted at front end device/ client level only
c) The application does not relay any authentication request with stored biometric data under any circumstance
d) The service provider has to provide support and close any compliances as reported by third party auditor
e) In case, if the third-party audit report / UIDAI notices misuse or illegal sharing of license key by the Service provider, the contracting authority shall invoke termination clause (refer Volume III of this RFP) and will terminate the contract with the service provider and shall take necessary steps to black list the service provider
f) The Service provider shall ensure that no test transactions on UIDAI's production environment shall be performed

7.1.3.25.5 Management of Technical Support

1. The service provider is responsible for complete support for the solution during the contract period. The service provider is responsible for providing all the necessary updates and recommendations as and when UIDAI issues new regulations/guidelines and the service provider shall comply to the same.

2. The MSP must coordinate with NHA for maintaining the health of the application during the contract period.

7.1.3.25.6 Roles and Responsibilities / Obligations of Service provider

1. Technical Requirements:

a) The authentication application being used for the purpose of authentication must be developed and digitally signed by the Service Provider

b) Biometrics/PID block must be captured and encrypted at the front-end device/client level

c) AUA/ KUA does not perform any test transactions on UIDAI's production environment and instead uses pre-production for the same

d) The authentication application does not store and/or replays biometric data

e) Sharing of e-KYC data with other entities is done in compliance with Regulation number 16 of Aadhaar (Authentication) Regulations, 2016

f) Sharing of license key must not be conducted for e-KYC authentication. For every sub-AUA a separate license key is to be used.

g) Encryption of data in motion and at rest including PID block

2. Data Privacy requirements:

a) Consent of the Aadhaar number holder to be sought and stored as per Aadhaar Act, 2016.

b) Sharing of data with third party only after taking separate consent from Aadhaar number holder and explicit permission from UIDAI.

c) Aadhaar number and e-KYC information of the Aadhaar number holder must be stored in Aadhaar Data Vault as per UIDAI guidelines.

3. Aadhaar Authentication logs:

a) Service Provider shall maintain logs of the authentication transactions processed by NHA, containing: the Aadhaar number against which authentication is sought, specified parameters of authentication request submitted, specified parameters received as authentication response, the record of disclosure of information to the Aadhaar number holder at the time of authentication, record of consent of the Aadhaar number holder for authentication but shall not, in any event, retain the PID information.

b) The logs of authentication transactions shall be maintained for a period of 2 (two) years.

c) Upon expiry of the period specified in above point, the logs shall be archived for a period of five (5) years.

4. Aadhaar Application and Infrastructure logs:

a) Service provider shall maintain the Aadhaar server, Aadhaar database, network devices and Application logs as per NHA Information Security Policy and other relevant procedures.

5. Version Control:

a) The application software shall be version controlled, adopting the industry standard practices like Version Control System (VCS), Source Code Management System and Software Configuration Management (SCM) in this regard.

b) The System shall permit the latest versions of the application and source code to be reposted with NHA, with appropriate logs maintained for each change.

6. Role Segregation:

a) The roles of different personnel responsible for designing, coding, accepting the changes and authorizing the changes to be carried out into the production environment shall be clearly defined by the Service Provider.

7. Security Administration and Network Administration:

a) Requirements of ISO 27001 shall be strictly complied with by the Service Provider while designing a detailed Risk Assessment and Management Plan, a Statement of Applicability (SoA) and an Operational Procedures Document, together to form the ISMS. The Service Provider shall get the ISMS design documents signed-off by NHA.

b) The core activities relating to security administration like assigning roles and privileges, configuration management in relation to all the security assets like firewalls, routers, switches, IPS and IDS, shall be carried out only after the prior approval of NHA.

8. Application Audit:

a) Audit of the authentication application to done by STQC/ CERT-In certified information system auditor(s) on an annual basis and audit compliance report is submitted to UIDAI.

b) All changes to application shall be carried out after a review and pre-assessment by the Service Provider.

c) The system shall allow conducting post-implementation review and audit in select cases that have resulted in a major change to check the completeness and correctness of the administrative tasks performed and ensuring that all and only those necessary components have been installed on the system.

d) User manuals, Design documents, Operational manuals and Aadhaar based training manuals / handbooks

e) Customize and maintain the requisite Software Solution as per the requirements of the RFP

f) Provide necessary support for the resolution of bugs, patches & upgrades of the software solution.

g) Maintain the business continuity.

h) Monitoring the links of AUA/ASA and co-ordinate with UIDAI.

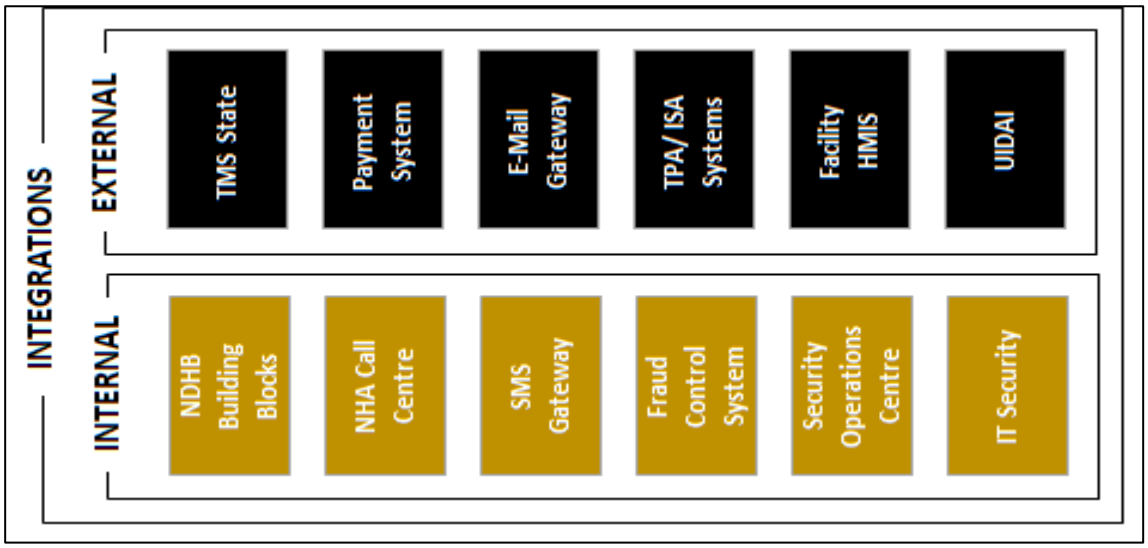
i) Ensuring the SLAs for downtime of system, software development/ customization, Management and quality control of all services and Meet the defined SLAs for the performance of the system.

j) Meet the defined Technical Specifications for the IT Infrastructure.

k) Ensure that all cases of noncompliance (if any) reported in the first round of TPA security audit are closed so that approval is received at least by the second round of TPA security audit and timelines are not violated.

7.1.4 Integration Requirements

Integration of PM-JAY IT 2.0 with external and internal systems (forward and backward linkages) shall be done using APIs. The following are the systems which are required to be integrated with PM-JAY IT 2.0 eco-system-



Internal Systems

7.1.4.1 NDHB Building Blocks

1. The NDHB building blocks will implement the digital building blocks required for healthcare and make them accessible as digital public goods to both the public and private ecosystem. The National Digital Health Blueprint identifies several of the building blocks required to be developed for this purpose.
2. The building blocks will be available as a collection of cloud-based services. Each service will provide just one capability across multiple health services, accessible via simple open APIs compatible with global standards. Together these will create a powerful framework to enable better healthcare delivery and management for the country
3. Bidders are requested to refer the NDHB report (Refer https://main.mohfw.gov.in/sites/default/files/Final%20NDHB%20report_0.pdf) for understanding of building blocks proposed therein to which PM-JAY IT 2.0 shall be integrated bi-directionally (through open APIs).
4. Standards published by NHA/Government of India in respect of implementation of NDHB building blocks may be adopted in consultation with NHA.
5. The NDHB building blocks is being implemented by the National Health Authority under the guidance of the Ministry of Health and Family Welfare. The MSP needs to ensure that PMJAY IT 2.0 integrated with such building blocks. The following requirements are indicative in nature and the PM-JAY IT 2.0 should have the capability and flexibility to integrate with all other building blocks of NDHB in future-

7.1.4.1.1 Health ID

1. Every patient who is part of PMJAY or any other convergence scheme being managed by NHA must have their beneficiary cards linked with the Health ID system. The scheme can either replace their

scheme ID with the Health ID or link their scheme ID to the Health ID of the individual. If the scheme is notified say under section 7 of the Aadhaar act, the integration must ensure that the Health ID must be mandatorily linked against Aadhaar.

2. The Health ID system offers several open APIs which can be used to integrate PMJAY IT 2.0 applications with the same. MSP shall be provided following but not limited to APIs in order to integrate Health ID with PM-JAY IT 2.0 applications

    a) API for search and creation of Health ID with Aadhaar based and non-Aadhaar along with appropriate deduplication checks
    b) API to update citizen info linked against the Health ID like mobile no., address, name, Age, gender, etc.
    c) API to add/ remove link of an Aadhaar against Health ID
    d) API to disable Health ID
    e) API to search for Health ID using various parameters
    f) API to get printable card image of Health ID
    g) API to link a nominee to a Health ID
    h) API to link a relationship with another health ID

The Application must identify opportunities to update information in the Health ID system including demographic information, contact info, nominees and relationships.

7.1.4.1.2 Health Registries

PMJAY IT 2.0 Applications will require to integrate with the following registries under NDHB Building blocks-

Digi-Doctor

1. Digi-Doctor shall be a single repository for all the details of the doctors enrolled in nation across all systems of medicine. This registry shall record all the relevant details of the doctors such as name, qualifications, name of the institutions of qualifications, specializations, registration number with State medical councils, years of experience, etc.
2. Doctors will be able to update their records and create an e-sign to use to stamp clinical documents such as OPD/diagnosis paper, treatment sheets, ICU, surgical notes and discharge summary.
3. Digi-Doctor will offer a set of open APIs that provide access to public information to a doctor and a set of authorized APIs that allow to update doctor information, e-Sign document etc.

PMJAY IT 2.0 applications must

1. Ensure that PM-JAY IT 2.0 applications should have the capability to facilitate enrolment of doctors (in PM-JAY eco-system) in Digi-doctor. This also helps reduce fraud and abuse and ensures that only verified doctors are providing care to patients under the scheme
2. Enable e-signing of documents under PMJAY and other convergence schemes including for e-Claim documents, discharge summaries, etc.
3. Enable linking between the doctor and the facilities to ensure the correct information on which doctor is practicing at which facility.
4. Integrate with the Digi-doctor APIs to achieve the above capabilities.

7.1.4.1.3 Health Facility Registry (HFR)

1. The facility directory shall be the one repository for all the details of facilities across the nation. This registry shall record all the relevant details of the facilities and allow facilities to create, access, update and validate their profile information as required through a web interface.
2. All the changes occurring will be maintained with version control of the system, which will help to make the system more transparent and accountable.
3. The Health Facility registry is designed to contain all the information required for empanelment across both public and private health insurance systems.
4. NDHB building blocks system is also working to ensure all data in the health facility registry is verified using a statutory health facility auditor.
5. The empanelment system (HEM) in PMJAY IT 2.0 is expected to leverage the Health Facility Registry.
6. Access to full data of a facility requires consented access from the health facility owner.
7. PMJAY IT 2.0 applications are expected to collect the consent as part of their application form and pass on the same via the APIs of the HFR.
8. The APIs provide full machine readable data for all the data fields including the verification status. If any additional verification is being done as part of the empanelment process, the PMJAY IT 2.0 Application must also update the empanelment info / verification info in the Health Information registry.

7.1.4.1.4 Health Data and Health Records

1. A federated health records exchange system that will enable patient data to be held at point of care or closest possible location where it was created, with complete access and control of the records being based on patient consent. Health care providers are expected to adopt software that enables them to become Health Information Providers (HIPs) and provide digital versions of any documents given to patients including diagnostic reports, discharge summaries, clinical notes, prescriptions, and immunization records.
2. The Health Records system consists of a Consent Manager that allows all health information to be shared only with the users consent.

Every Health Claim in the PM-JAY IT 2.0 system will consists of

1. The e-Claim document – this provides information required for processing a claim including details of the beneficiary, provider, date of admission, diagnosis, procedure performed, claim amount, etc.
2. Clinical Documents – These clinical documents provide proof on the diagnosis and the need for the particular procedure being claimed.

It is required that every PMJAY or convergence hospital which wants to perform cashless claims will require to become a Health Information provider. All documents that are part of the required clinical documents for a claim would be shared with the patient via the health record framework. This ensures that the patient is aware of the treatment being provided to him and also gets portability on his health records. The e-claim document must be submitted along with a electronic consent artefact that provides the payer with full access to all the documents related to the episode outlined in the e-claim. The payer will be able to fetch the records using the consent artefact from the health record system. Open APIs are available on the Health Record system for integration of the same.

Additionally, the MSP must provide the below components of PM-JAY IT 2.0 as shared services to NDHB building blocks-

a) Health Claims Platform
b) AUA
c) ASA
d) Digital Signature Services

7.1.4.2 NHA Call Center

NHA runs a national toll-free number. Call center services are provided by a 3rd party vendor to NHA. PM-JAY IT 2.0 system to integrate with the call center solutions provided by such 3rd party.

7.1.4.3 Fraud Control System

NHA is currently developing fraud control system (FCS) using analytics solutions. FCS shall help in identifying and reducing financial leakages through fraudulent claims and fake e-cards under PM-JAY scheme. The solution shall flag suspicious claims & e-cards using advanced analytical methods. The system shall deliver triggers for identifying frauds using analytical capabilities. FCS shall provide all suspect/confirmed fraudulent transactions/entities involved in committing fraud under PM-JAY with workflow enabled end to end tracking and closure. PM-JAY IT 2.0 needs to be integrated with the same.

1. PM-JAY IT 2.0 shall establish forward and backward (bi-directional) linkages with FCS through APIs.
2. FCS shall ingest data from various components/applications under PM-JAY IT 2.0
3. Forensic triggers will be run on the data and will raised in the form of suspicious cases. Some of the use cases are defined as under-

    a) Suspicious case information shall flow into TMS-Payer or BIS (as applicable) via API and will flag the active claims into suspicious claims
    b) Once the claims are flagged as suspicious, for TMS (Payer)- they must move out of the regular processing queue and then shall reside in SAFU's bucket.
    c) Once the e-cards are flagged as suspicious, TMS (Payer) must simultaneously flag such cases pertaining to those e-cards as suspicious for approvers.
    d) Once case comes into SAFU's bucket, SAFU will either dismiss the case /e-card and mark as fraud or trigger field investigation- in both TMS and BIS
    e) In case the claim is marked as dismissed, case will flow back in normal workflow
    f) In case the e-card is marked as dismissed, TMS suspicious flag shall be take-off
    g) In case of a fraud case will go to claims processor (HCP) for final rejection and on the amount as suggested by the processor (HCP) a recovery process will get initiated
    h) In case SAFU pushes the case for field investigation, information will flow into the mobile app and once the investigation is completed the information will flow back into TMS or BIS (as applicable) from the same.
    i) Upon receiving the information, the SAFU will again have option to dismiss the cases, mark as fraud or send for medical audit.
    j) Other use cases, including but not limited to-
        i. Interact with FCS for ingesting suspicious cases via API
        ii. Interact with FCS to update the status of suspicious case in FCS

iii. Interact with field investigation app to send case information and receive information from field investigator
iv. Interact with accounts module to update recovery/penalty in case a claim was found as suspicious.
v. Interact with HEM to issue showcase/suspension and de-empanelment notices
vi. The system should be compatible and integrated to push and receive data with other system of NHA such as FCS (fraud control system of NHA).
vii. Big data should be compatible and integrated to provide/share structured data from TMS and BIS to FCS (fraud control system of NHA).
viii. Big data should be compatible to provide unstructured data i.e. images, documents, audio, video files data both for TMS and BIS to FCS system.

7.1.4.4 IT Security and Security Operations Center

NHA envisages an IT security service provider and Security operations center to which the MSP shall integrate PM-JAY IT 2.0 system. The following components shall be delivered by IT security service provider and Security operations center-

1. Anti-APT
2. NAC
3. PIM/PAM
4. IDAM (with SSO)
5. DAM
6. DLP
7. DNS
8. Web gateway
9. Packet Capture Solution
10. VDI
11. SOAR
12. Anti-Ransomware
13. IPS/ IDS
14. SOC Services (including SIEM)

External Systems

7.1.4.5 TMS State

Some state implement their own Transaction Management System to which PM-JAY IT 2.0 system needs to be integrated by the MSP.

7.1.4.6 TPA/ISA System

IT System implemented by TPAs and ISAs in all parts of country under PM-JAY

7.1.4.7 Facility HMIS

HMIS implemented by various EHCP's- The MSP shall integrate PM-JAY IT 2.0 with such HMIS.

7.1.4.8 UIDAI

ASA integration with UIDAI

7.1.4.9 External Payment Systems (PFMS etc.)

1. In the envisaged PM-JAY 2.0 solution, the proposed system shall integrate with any required payment methods including Bank Integrations, Public Financial Management System (PFMS), NEFT, IMPS, UPI etc. for payments related to all transactions
2. The MSP shall make provisions for integration with third-party gateways and provide payment services as per the guidelines of the proposed PM-JAY system and the NHA mandate
3. The payment services shall conduct payments between the insurer and a health care service provider
4. Shall support a unified interface to integrate with all Payment Service Providers
5. Shall support integration with Payment Service Providers using web services over secured protocols such as HTTPS
6. Shall manage messages exchange between UI and payment service providers
7. Shall support beneficiary's payment transactions tracking against various services
8. Shall provide and preserve all logs for all transactions performed through the Payment Gateway for future financial dispute resolution that might arise between entities and either beneficiaries or Payment Service Providers
9. Shall support redundant Payment Discovery
10. Shall submit Periodic Reconciliation Report to government entities
11. Shall provide transaction reports to monitor and track payments
12. Shall support and provide fraud screening features, necessary alert mechanism

7.1.4.10 Integration with SMS and e-Mail gateway

1. SMS and e-mail services are available both via NIC and NHAs CSP. MSP is required to integrate with these existing services.
2. The MSP needs to integrate with SMS services that can be used for OTP authentication and notifications
3. All the SMS based services (alerts and notifications) shall be available as part of the solution
4. The SMS gateway must be as per prevailing TRAI/DoT norms
5. Shall contain required detail/ information targeted to the applicant or other stakeholders
6. Shall support automated alerts to set up triggers that will automatically send out reminders
7. Shall support all necessary features like resending SMS in case of any failure
8. The service shall be instantaneous with almost no waiting time
9. Must have common features like non-acceptance of landline numbers., unacceptable mobile numbers, etc.

7.2 Annexure II: Capacity Building Requirements

7.2.1.1 Objective

1. To promote an environment that increases the capacity of users to receive and possess knowledge and skills as well as to become qualified in planning, developing, implementing and sustaining health-related activities of PM-JAY 2.0 system.

7.2.1.2 Scope of Capacity Building & Training

1. PM-JAY 2.0 Application software is expected to be user friendly and simple to use so that users can access it without any extensive training. However, some minimum training will be required for smooth transition from the existing system to the new system which will be developed as part of this section of the RFP.
2. The purpose of this section is to define the minimum scope of work for training and capacity building to be implemented at various levels namely:

    a) Pradhan Mantri Aarogya Mitras (PMAMs) at hospitals
    b) Hospitals staffs
    c) State Health Agencies (SHA) employees
    d) State Health Agencies – IT team
    e) Implementing Service Agencies at States/ UTs or TPAs
    f) National Health Authority (NHA) employees
    g) Call Center(s) personnel
    h) National Health Authority (NHA) – State coordinators
    i) National Health Authority (NHA) – Training Staffs
    j) National Health Authority (NHA) – IT and PMCs
    k) District Implementation units

3. The MSP scope of work also includes preparing the necessary documentation and aid required for successful delivery of such trainings.
4. The MSP shall train the identified master trainees and the master trainers shall train its respective stakeholders before & after go-live of PM-JAY IT 2.0.

7.2.1.3 Overall Program Methodology and Type of Trainings

1. Overall the training focus shall be of the following methodology:

    a) Problem based– Shall cover end user's problem specific contents
    b) Competency based – Shall cover detailed trainings on all competencies.

2. The capacity building program shall be implemented in two modes viz.

    a) F2F (including virtual sessions) – Face to face capacity building wherein the agency's dedicated resource team shall visit the master trainee location and impart trainings on a face to face basis as per the calendar provided by the MSP to NHA for its due approval
    b) Online- Creation of an online web based 'Learning Management System (LMS)' platform for PM-JAY 2.0 users. The MSP shall not take more than 10 days for creation of any additional problem based online content for educational and training purposes. All the trainings from

MSP to master trainers and then master trainers to respective stakeholders along with the necessary certifications shall be provided through LMS portal's dedicated user and roles-based learning content defined in this section below.

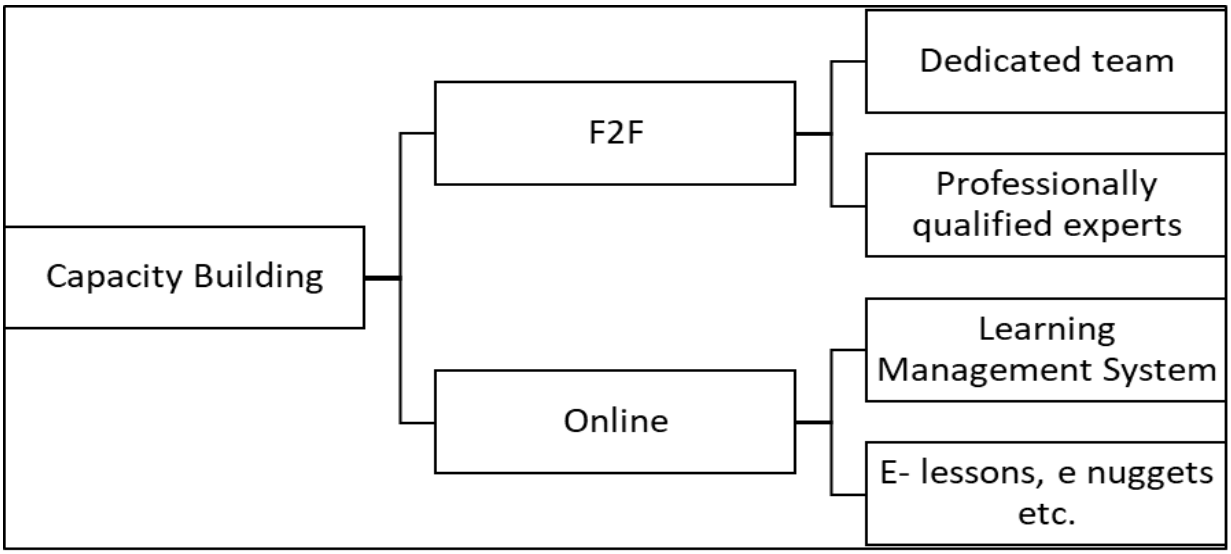


Figure 11: Illustrative Capacity Building framework

3. The trainings shall be divided into functional and technical based trainings as defined in the below table:

Type of Training	Relevant Stakeholder	Scope
Functional	All	• Application level details and functional aspects of the system • Training system and Dynamic reporting
Technical	• NHA/ SHA/ Hospitals Technical staff • NHA Technical team	• Technical details • API details • Integration requirements • System operations • Security controls • Privacy controls

Table 19: Types of Trainings

4. The MSP shall also design a calendar of training activities at the start of every year and perform detailed review of training content for stakeholders at every 6 months in consultation with NHA. The calendar design shall identify the type of training, topics to be covered and the details on trainee, master trainer and the venue.
5. The training calendar shall be prepared in the following indicative format which can be modified or enhanced as and when required by NHA during the course of the contract:

#	Training (Basic/Advance)	Topic	Dates	Trainer	Trainee	Venue

Table 20: Training Calendar Format

6. The training program shall be designed to be of the following types –

    a) Basic – Covering the overview and basic processes about the system. It shall cover the basic details and overview of the respective topics so as to provide a basic exposure to the users regarding the relevant topic.
    b) Advanced – Covering the advanced and detailed functionalities and use cases about the system. The advanced training shall be in extensive details about the topics to be covered by the MSP for the stakeholders, as applicable.

7. The following shall be taken into account by the MSP:

    a) The MSP and the master trainer shall ensure that for a particular topic a trainee has completed basic training before the advanced training is provided.
    b) The trainings shall have different type of randomized questions such as Multiple-Choice Questions (MCQ), mix and match, scenario based, case-based tests (simulation), etc.
    c) There shall be an option to re-attempt the assessment or trainings by the users.
    d) The MSP shall be required to design, develop and implement the Learning Management System (LMS) platform and design course specification document along with the list of trainings, plan of implementation and e-learnings schedule for the approval of NHA as per the project timelines mentioned in this RFP
    e) The MSP shall create necessary performance support material such as user manual, job aids, online reference manual, frequently asked questions, training documentation etc.
    f) The MSP shall also prepare a tool kit and training material for the purpose of training which shall be distributed to all the users based on their roles and responsibilities
    g) The MSP shall submit a training completion report to NHA after completion of every training and shall keep a track report of all the trainings conducted.

7.2.1.4 Capacity Building Team

1. The MSP shall deploy a team of adept professionals dedicated exclusively for capacity building for PM-JAY 2.0 with following features-

    a) The MSP shall bring personnel at least qualified with Master of Public Health or MBA (Health care) degree with B. Tech
    b) The MSP shall train Master trainers through LMS with complete knowledge of all domains to provide relevant trainings to the end users/ trainee. The list of Master trainers shall be provided by the MSP to NHA for its due approval.
    c) The task of the master trainers shall be to be a single point of contact for the training purpose or any other query of their respective specialized areas.
    d) The trainings would be conducted at a location decided by the NHA/SHAs and other relevant stakeholders. The MSP has to consider the cost of travel, boarding/lodging and copies of training material, etc. in the overall cost for training. The NHA/ relevant stakeholders would

only arrange for the conference room/space with internet connectivity for the training including one projector.

7.2.1.5 Learning Management System (LMS): PM-JAY 2.0

1. NHA envisages to put in place a web and mobile based systemic learning methodology. The objective is to design, develop, implement and maintain a web and mobile based 'Learning Management System (LMS)' platform for PM-JAY 2.0 with following features-

    a) e-learn platform along with e-learning training content
    b) Audio-visual based learnings
    c) Chat and voice bots/ Virtual assistants for quick search responses and personalized service handling
    d) Agent based online focused discussions
    e) Written documents (manuals in PDF formats, etc.)
    f) Bookmark resources by users for easy reference

7.2.1.6 Other Key Features of the proposed 'Learning Management System (LMS)' platform

1. The platform shall be developed for administration, documentation, tracking, reporting and delivery of educational courses or training programs.
2. Access channels (user registration and login-based access- integrated with RBAC)

    a) Dedicated web portal with user role and category-based registration and login-based access through email and mobile no. validation
    b) Mobile App.

3. Design and development of SCORM/AICC compliant e-Learning lessons, e-Capsules, mobile nuggets
4. The MSP shall provide mandatory e-learns with qualifying assessment methodology and trainings
5. The platform shall provide training results review and corrections post assessment
6. The platform shall store log of user assessment activity with data fields like number of attempts, re-attempts, total no. of learners/ trainers passing/ failing representation, etc. and shall provide ability to download the reports corresponding to the user
7. The platform shall have an option to automatically generate certificate based on passing percentage of the user with a unique certificate number along with the ability to verify certificates for external personnel using an QR code
8. AI/ ML based chat and voice bots and virtual agent-based query handling services along with an online focused discussion with inputs/ results from entire PM-JAY IT 2.0 ecosystem
9. The platform shall facilitate system generated and customized notifications of activity and announcements of e-learnings, available courses, etc. to the respective stakeholders through multi-channel communication
10. Map trainings to KPIs: The MSP shall ensure that the training sessions are target oriented. By having KPIs associated with the training program, the MSP shall be able to estimate the status of problems and opportunities for improvement.
11. Feedback mechanism: The MSP shall also develop a feedback mechanism so that the end users or the callers are able to rate the e-learnings and trainings and can point out any redundancies or suggest any change. The MSP shall timely prepare such performance measurement mechanism to check the effectiveness of the training sessions.

a) After each training session, feedback will be sought from each of the attendees through a link available on the LMS portal. One member of the stakeholder group would be involved in the feedback process and he/she has to oversee the feedback process. The feedback received would be reported to the NHA for each training session.
b) For each training session, the MSP shall categorize the feedback on a scale of 1 to 10, where 10 shall denote excellent and 1 shall denote unsatisfactory.
c) The training session shall be considered effective only after the cumulative score of the feedback as an outcome of the process (sum of all feedback divided by number of attendees) is more than 7.5. A feedback form shall be made compulsory in consultation with NHA.
d) The MSP shall submit a training completion report and feedback forms to NHA after completion of every F2F and online LMS training and shall keep a track report of the same.

12. Content Management: The e-learning modules shall facilitate easy to understand and comprehensive descriptions with examples, step by step guidance of processes and services, voice (English and Hindi and further can be extended to regional languages if needed by the NHA) to support learning, videos, infographic and hyperlinked details to other modules facilitating learning of current module that the stakeholder is referring.

    a) The platform shall have the enterprise class search ability i.e. to search across various content, pages, and courses
    b) The platform shall have discussion forum for users to ask questions, raise queries and share best practices.
    c) The platform shall facilitate the ability to take surveys and polls for feedback and consultation.
    d) An inbuilt calendar shall have links to assignments, activity due dates and upcoming events (training sessions), etc.
    e) The platform shall have ability to author courses/ content and assessments limited to selected restricted roles
    f) The platform shall have the ability to create classroom sessions linked to a course or exclusive classroom courses/trainings where users can sign up for the course and attendance, course progress with certificates to be generated through LMS
    g) It shall also provide virtual sessions type of training such as webinars
    h) Creation of folders / sub-folders along with uploading and organizing of user-based content and assessments
    i) Application/modules training prototype for hands on training using dummy data

13. Platform Administration: The e-Lessons, e-capsules, m-nuggets developed shall also be of cross platform compatibility (i.e. Android, Windows, Blackberry, iOS etc.,) and must be compatible with major browsers (i.e. IE, Mozilla Firefox, Google Chrome, Safari etc.).

    a) The envisaged platform shall be integrated with global leading plagiarism detection tools.
    b) The platform shall have API integration with other NHA IT systems i.e. BIS & TMS, etc. to inform learner about mandatory courses, updates / change release notes, deadlines and ease of performance review
    c) The platform shall be able to support at least 2,000 users at any point in time. Flexibility and scalability of user load needs to be part of design of the platform.

d) The platform shall facilitate bulk user registration using csv, xml or xls file upload
e) The platform shall have an ability to suspend/ activate accounts through necessary admin approval procedures
f) All the tools and functionalities of the platform shall be checked for an update periodically every 6 months.
g) The design, naming conventions, file organization (size and type etc.), functional requirements, content formation, content presentation and placement of objects shall be done as per the guidelines of the department.
h) The platform shall provide role-based dashboards for users such as NHA, SHA, Districts, ISA etc. to take relevant actions, identify training status, completion, etc.

7.2.1.7 Stakeholders and Trainers

14. The MSP shall make a detailed plan of training delivery as per project timeline. The following table depicts the indicative number of stakeholders to be trained by the Master Trainers through LMS platform.
15. These numbers and the scope of training would be revised and finalized during the project initiation phase in consultation with NHA.

Stakeholders	#	Remarks
State Health Agencies	33 states/ UTs	Assumed 5 people at SHA level & 2-3 people for IT team
Implementation Support Agency (ISA) / Third Party Agency (TPA) /Insurer	80,000+	N.A
Hospitals	15,000	50% public & 50% private
PMAMs	70,000+	Across all hospitals

Table 21: Indicative Number of Stakeholders

Stakeholders	#	Remarks
CSC team	100-200 trainers	Training delivery to CSC master trainers who intern deliver trainings to CSC VLEs (~2,00,000) across India MSP shall provide training with complete knowledge of all domains for awareness and overall understanding of the proposed system to CSC team
National Health Authority	140 trainers	N.A
Call Center	500 trainers	N. A

Table 22: Indicative Number of Master Trainers

16. On-Site Support

a) The MSP has to ensure that required resources/ master trainers shall always be present during an on-site support period and shall be fluent in English and Hindi. The visit schedule for these resources shall be decided by MSP according to the yearly training calendar in consultation with NHA.
b) This team shall be based at each site for the duration mentioned and shall be available during official working hours. The team shall provide all application related support to the users during transition from the existing system to the new system. These resources shall have at least 5 years of experience in application development/application support. Before deployment of these resources, the MSP need to train these resources for at least 15 days and details of these trainings shall be provided to the NHA for the approval.

7.3 Annexure III: Service Level Metrics

The Annexure provides for service level metrics (or "Performance metrics") for the MSP to be delivered by the MSP--

1. Service levels are defined in 3 categories and are applicable accordingly as defined herein:
    a) Service levels applicable during pre go-live
    b) Service level applicable during post go-live
    c) Service level applicable for ASA services (as and when AUA and ASA services are requested by NHA)
2. For the purpose of service levels requirement, the following terms shall have the meaning set forth below-

#	Term	Definition
1.	Uptime	It shall mean the time period for which the specified services / components/modules/application with specified technical and service standards are available to the NHA.
2.	Downtime	It shall mean the time period for which the specified services /components/modules/application with specified technical and service standards are not available to the NHA.
3.	Incident	Refers to any events/abnormalities in the functioning of the Application that may lead to disruption in normal operations.
4.	Response Time	It shall mean the time interval between the time the incident is reported to the Helpdesk and the time an engineer is assigned to the call.
5.	Resolution time	It shall mean the time taken (after the incident has been reported at the Helpdesk), in resolving (diagnosing, troubleshooting and fixing) and conveying the same to the end user. Average response time = [resolution time of incident 1 + resolution time of incident 2 + …. N] / Total number of incidents raised in a quarter.
6.	Quarterly service level monitoring	Average of the month wise scores shall be taken for the quarterly measurement. All service levels detailed in this section shall be measured on a quarterly basis

Table 23: Definitions applicable for 'Service Levels'

3. If the performance of the system/services is degraded significantly at any given point in time during the contract and if the immediate measures are not implemented and issues are not rectified to the complete satisfaction of NHA or an agency designated by it, then NHA will have the right to take appropriate corrective actions/penalty/LD's including termination of the contract

7.3.1 Service levels applicable during pre go-live

Note-

1. The service levels stated in below table shall be applicable during pre go-live phase
2. The service levels specify the expected levels of service (Target) to be achieved by the MSP
3. Payments payable to the MSP, during pre go-live period, is linked to the compliance with the service levels metrics laid down herein
4. One Service level cannot be offset against the other service level within a reporting period/quarter.
5. The applicable liquidated damages shall be deducted from the MSPs payment during pre go-live phase
6. Liquidated damages are capped at 10% of the total cost of pre go-live. It is to be noted that if the overall Liquidated damages applicable during pre go-live exceeds 10% of the quarterly payment then NHA shall have the right to terminate the contract. NHA reserves the right to modify the service levels in terms of addition, alteration or deletion of certain parameters, based on mutual consent of both the parties i.e. NHA and MSP.

#	Service Level Parameter	Target	Measurement	Applicable liquidated damage's
1	Timely Completion of-Milestones	As per timelines defined in the section 6 (Deliverables, Milestones and Payment Terms) of volume 1 of the RFP. Except for go-live milestone.	Calculated on the basis of actual number of days of delay.	**For Milestones (except go-live milestone)-** a) Within defined timelines - Nil b) Delay of 15 days - 2% of milestone value c) >15 days & <=30 days - 5% of milestone value d) >30 days - 10% of milestone value e) Beyond delay of 30 days, there will be an additional penalty of 1% of milestone value per day
2	User Acceptance Testing	Working of business functionalities on the first release provided for a UAT	Number of failed test cases during UAT	a) >0% & <=10% of the total test cases- No LD's b) >10% & <=15% - 0.5% LD of the corresponding application development cost b) >15% & <=20% - 0.75% LD of the corresponding application development cost c) For every additional 1% failure of test cases beyond 4%, 0.25% LD of the corresponding application development cost will be levied as additional liquidated damages. *Maximum LD to be 4% of the corresponding application development to which the milestone is linked.*

#	Service Level Parameter	Target	Measurement	Applicable liquidated damage's
3	Delay in go-live	T + 12	Measured as the difference between time for go-live (as specified in RFP) and the actual date of Go-Live	**For go-live-** a) Within defined timelines - Nil b) Delay of 15 days - 2.5% of total contract value c) >15 days & <=30 days - 5% of total contract value d) >30 days - 10% of total contract value

Table 24: Service Levels- Pre Go-Live

7.3.2 Service levels applicable during post go-live

Note-

1. The service levels stated in below table shall be applicable during post go-live phase and shall be measured on a quarterly basis
2. The service levels specify the expected levels of service to be achieved by the MSP
3. This expected level is also called the baseline service level. The service levels also specify the limits and metrics for lower / higher performance and breach levels
4. Payments payable to the MSP, during post go-live period, is linked to the compliance with the service levels metrics laid down herein
5. For a quarter where the score is below 100 it will not be offset against a score in another quarter above 100. For e.g. in one quarter, if the score is 95 and in other quarter score is 100. Then the penalty will be applied for 5 points and the final score will not be the average for the two quarter for the purpose of calculation of penalty. Also, one Service level cannot be offset against the other service level within a reporting period/quarter.
6. The following are the applicable penalties-

#	Service level Score/point Range	Deduction Penalty (on component B of the commercial bid)
1	<100 and >=90	0.5 % penalty for every point < 100
2	<90 and >= 65	1% Penalty for every Point <90 and >=65
Example: SLA Score of 85 will lead to a Penalty of 10%		

Table 25: Penalty Structure- Service Levels

7. Penalties are capped at 10% of the quarterly payment. It is to be noted that if the overall penalty applicable in any quarter during the currency of the contract exceeds 10% of the quarterly payment; then NHA shall have the right to terminate the contract. NHA reserves the right to modify the service levels in terms of addition, alteration or deletion of certain parameters, based on mutual consent of both the parties i.e. NHA and MSP.

8. For the purpose of final calculation, the service Level score will be scaled to 100 and that score will be considered final. For e.g. if the service level score achieved by MSP is 300 out of a total of 380 then the score out of 100 shall scaled as- 300*100/380=79
9. From T+9 to T+12 shall be the service baselining period for the MSP and the below mentioned service levels shall be applicable with no payment and zero penalty during this period. MSP shall demonstrate achieving the service levels during this period.

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
Solution Effectiveness										
1	Availability of all applications and APIs (Including web portals and back end modules) and their functionalities and services at end user	100%	10	<100% and >99.5%	2	NA	NA	<99.5% and >=95% For each additional drop of 1% in performance below 95%, additional 2% of the Quarterly Payment shall be levied as additional Liquidated Damages.	0	Zero downtime to be ensured by the MSP. It is clarified that No planned and un-planned downtime shall be allowed.
2	Average page loading time, using APM tool (for at least 5% random end users) for all web/portal application.	3 seconds	9	3-10 seconds	5	<1 second	10	>10 seconds	0	Time must be captured at end user site only.

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
3	Transaction response time of all APIs measured from gateway	2 seconds	9	between >2 to <=8 seconds	5	<1 second	10	>8 seconds	0	MSP to deploy such tools.
4	Transaction response time for uploading any attachment (up to 2 mb size) till success at end users	<=20 seconds	10	>20 seconds and <=30 seconds	5	NA	NA	>30 seconds	0	
5	Content upload/update on PM-JAY website (once the content is approved by NHA)	<=5 minutes	10	>5 minutes & <=7 minutes	5	NA	NA	>7 minutes	0	MSP to submit a report on all change made in a quarter
6	Timely delivery of sprint release for new enhancements	No delay	**10**	If delay is- >1 day & <=4 day	**8**	NA	NA	If delay is - >8 days	0	Calculated on the basis of actual number of days of delay measured in a quarter for each sprint in the applicable quarter.
				>4 days & <=8 days	**5**					
IT Security										
7	Maximum time to upgrade after patch is released by OEM	100%	10	<100% and >=99%	6	NA	NA	<99%	0	Severity shall be defined by MSP and approved by NHA To be measured

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
										as under- (number of devices requiring patches that were updated within timeline / Total number of devices that required patching) Timeline- Critical Severity- 24 hours Medium Severity- 48 hours Low severity- 15 days
8	Restoration support during backup testing	within 24 hours of testing	10	>24 hours and <=36 hours	6	NA	NA	>36 hours	0	Quarterly
9	All vulnerabilities under scope of MSP should be remediated (identified during WASA, VAPT, any other security audit)	High risk- within 1 week of reported Medium and	10	High risk- within 2 weeks of reported Medium and low risk- 15	5	NA	NA	High risk- beyond two weeks Medium and low risk- beyond 15 days after	0	Quarterly

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
		low risk- end of quarter		days beyond quarter				end of quarter		
10	Web Application security testing: Quarterly WASA Report	100% web application testing	10	<100% and >=80%	5	NA	NA	<80%	0	No of application / API for which WASA is not conducted Period of measurement: Quarterly
Helpdesk										
11	Service ticket resolution time (Defined as request for configuration requested through tickets)	Based on severity- Critical- within 4 hours High- within 24 hours Medium- within 48 hours Low-within 96 hours	10	Based on severity- Critical- >4 hours and <6 hours High- >24 hours and <36 hours Medium- >48 hours and <60 hours Low->96 hours and < 108 hours	5	NA	NA	Based on severity- Critical- >6 hours High- >36 hours Medium- >60 hours Low->108 hours	0	1. Average Time taken to resolve a ticket/incident logged 2. Measured based on average closure time of a service ticket in each category per month. 3. This is calculated for all tickets/incidents reported within

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
										the reporting quarter (24x7)
12	Incident resolution time (Defined as functionality in production not working as expected)	Based on severity- Critical (P1)- within 2 hours High (P2)- within 8 hours Medium(P3)- within 24 hours Low(P4)- within 48 hours	10	Based on severity- Critical (P1)- >2 hours and <6 hours High (P2)- > 8 hours and <12 hours Medium(P3)- >24 hours and <36 hours Low(P4)->48 hours and < 60 hours	5	NA	NA	Based on severity- Critical (P1)- >6 hours High (P2)- > 12 hours Medium(P3)- >36 hours Low(P4)->60 hours	0	1. Average Time taken to resolve a ticket/incident logged 2. Measured based on average closure time of a service ticket in each category per month. 3. This is calculated for all tickets/incidents reported within the reporting quarter (24x7)

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
13	Helpdesk feedback (as per rating given by trainees on a scale of 10)	7.5/10	10	<7.5 and >=3	6	NA	NA	<3	0	Quarterly
Capacity building										
14	Delivery of all trainings/capacity building in a quarter as per the agreed training calendar	100%	10	<100% and >90%	7	NA	NA	<90%	0	Quarterly
15	Training and capacity building feedback (as per rating given by trainees on a scale of 10)	7.5/10	10	<7.5 and >=3	6	NA	NA	<3	0	Quarterly (Will be measured by feedback rating given by the trainees during online and face to face training.)
16	Regular updation of content in LMS	<=24 hours	8	>24 hours and < =36 hours	6	<12 hours	10	>36 hours	0	Quarterly
API Gateways										
17	Bi-directional data exchange using APIs (Internal or external systems/micro-services/sub-systems/databases/big data)	<10 seconds	9	> 10 seconds and <1 minute	6	< 6 seconds	10	>= 1 minutes	0	Quarterly

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
18	API gateway uptime	100%	10	<100% and >99.5%	5	NA	NA	<99.5% and >=95% For each additional drop of 1% in performance below 95%, additional 2% of the Quarterly Payment shall be levied as additional Liquidated Damages.	0	Quarterly
19	API (Service) Responsiveness	<40 ms	10	>=40ms and <=60 ms	8	NA	NA	>60 ms	0	Quarterly
20	API gateway service error	0%	10	>0% and <=1%	5	NA	NA	>1%	0	Quarterly
Manpower										
21	Man power availability - key resources (Manpower availability measures the availability of the required	100% attendance	10	Attendance <100% and >95%	8	NA	NA	Attendance <95%	5	Quarterly (Except for leaves approved by NHA)

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
	resources as proposed by the MSP in its proposal.)									
22	Replacement of resources (approved by NHA). Outgoing resource to exit only when proper handover, KT is done with the incoming resource.	Within 15 days of such approval	10	>15 days and <25 days	9	NA	NA	>25 days	0	Quarterly
ASA										
23	Set-up and provisioning of ASA services and AUA Gateway, with provisioning of required connectivity with the selected CSP (as and when requested by NHA)	Within 7 days from the date of request by NHA	10	Delay - >7 days and <=14 days	7	NA	NA	Delay - beyond 30 days	0	This will be calculated on basis of days of delay
				<14 days and <=30 days	4					
24	Availability/ up-time of ASA services and/or AUA Gateway	100.00%	10	<100 and >=99%	6	NA	NA	<99%	0	Will be measured through mutually agreed reports. Service levels penalties shall be applicable on the per transaction rate
25	ASA services and/or AUA gateway response time	<20 ms	10	>20 ms and <=40 ms	6	NA	NA	>=40 ms	0	

#	Service level parameter	Baseline		Low performance		High performance		Breach		Measurement
		Target	score	Target	Credit	Target	Credit	Target	score	
										discovered for the ASA services.

Table 26: Service Levels- Post Go-Live

7.4 Annexure IV: Infrastructure Available Through NHAs CSP

The following items are available through NHAs GCC. MSP is expected to bring any additional components required for the solution.

7.4.1 IaaS

Windows OS

Sr. No.	vCPU	RAM (in GB)	Storage (in GB)
1	2	4	80
2	2	8	80
3	2	16	80
4	4	8	80
5	4	16	80
6	4	16	500
7	6	12	500
8	6	64	1024
9	8	16	80
10	8	32	500
11	8	32	1024
12	8	64	200
13	8	64	1024
14	12	64	500
15	12	64	1024
16	16	64	250
17	32	128	1024
18	128	256	1024

Linux OS

Sr. No.	vCPU	RAM (in GB)	Storage (in GB)
1	2	4	80
2	2	8	80
3	2	16	80
4	4	8	80
5	4	16	80
6	4	16	500
7	6	12	500
8	6	64	1024
9	8	16	80
10	8	32	500
11	8	32	1024
12	8	64	200
13	8	64	1024
14	12	64	500
15	12	64	1024
16	16	64	250
17	32	128	1024
18	128	256	1024

7.4.2 Bandwidth

Sr. No.	Category	Bandwidth
1	Internet	100 Mbps burstable up to 150 Mbps
2	Internet	150 Mbps burstable up to 300 Mbps
3	Internet	300 Mbps burstable up to 500 Mbps
4	Internet	500 Mbps burstable up to 1 Gbps
5	Internet	1 Gbps (Internet)

Sr. No.	Category	Bandwidth
6	Internet	2 Gbps (Internet)
7	Replication	10 Mbps
8	Replication	20 Mbps
9	Replication	50 Mbps
10	Replication	100 Mbps
11	Replication	200 Mbps
12	Replication	300 Mbps
13	Replication	500 Mbps
14	Replication	1 Gbps

7.4.3 Storage

Sr. No.	Package Name	Storage
1	Object Storage	1 TB
2	Disk Storage	50 GB, 121 to 400 IOPS
3	Disk Storage	500 GB, 401 to 800 IOPS
4	Disk Storage	1000 GB, 1201 to 2000 IOPS
5	SDD Storage	200 GB, 401 to 800 IOPS
6	SDD Storage	500 GB, 1201 to 2000 IOPS

7.4.4 Software Licenses

Sr. No.	Software Name	No. of License (per socket/per vCPU)
1	Apache	25
2	Liferay	25
3	Jboss EAP	25
4	OpenLDAP	25
5	OpenAM	25
6	PostgreSQL	25

Sr. No.	Software Name	No. of License (per socket/per vCPU)
7	Tomcat	25
8	API Gateway (WSO2/Kong) It is clarified that currently NHA is using API gateway solution of Red Hat 3 scale. Bidders have the option to propose the same apart from Kong/WSO2.	10

7.4.5 Gateways

Sr. No.	Description
1	SMS Gateway
2	E-Mail Gateway
3	HSM

7.4.6 Firewall and LB

Sr. No.	Description	Throughput
1	H/W Load Balancer	25 Mbps
2	H/W Load Balancer	50 Mbps
3	H/W Load Balancer	100 Mbps
4	H/W Load Balancer	200 Mbps
5	H/W Load Balancer	300 Mbps
6	H/W Load Balancer	500 Mbps
7	H/W Load Balancer	1 Gbps
8	H/W Load Balancer	2 Gbps
9	Firewall	10 Mbps
10	Firewall	25 Mbps
11	Firewall	50 Mbps

Sr. No.	Description	Throughput
12	Firewall	100 Mbps
13	Firewall	200 Mbps
14	Firewall	300 Mbps
15	Firewall	500 Mbps
16	Firewall	1 Gbps
17	Firewall	2 Gbps

7.4.7 Other Services

Sr. No.	Description	Indicative Quantity
1	SSL certificate (wild card covering domain and sub-domains)	25
2	Public IP	25
3	VPN	500

7.5 Annexure V: Volumetrics

Note-

1. The following volumetric pertains to the PM-JAY IT 1.0 system volumes and bidders may make their own assumptions and projections.
2. The volumes are scalable (user base and transactions) and extendable as per the on-going implementation of the scheme.
3. Bidders to consider 15% growth rate year-on-year across all volumes of all components. However, it shall be the responsibility of the MSP to ensure managing further enhancements in transactions, if any.

Transactional Data (as of date July 2020):

TMS (Volumes)

#	Parameter	Value
1.	Maximum number of Registration in one day	29,237
2.	Maximum number of successful Pre Auth in one day	26,595

3.	Maximum number of discharges in one day	22,262
4.	Claims	
a)	maximum Claims submitted in one day	24,523
b)	maximum claims approved in one day	25336
c)	Maximum claims paid in one day	155,960

Table 27:TMS transaction data

HEM (Volumes)

#	Parameter	Value
1.	Total Number of Registered hospitals	22,886
2.	Total number of submitted Application	1,537
3.	Total Number of Applications rejected	2,620
4.	Total number of Application due for validation	681

Table 28: HEM transaction data

BIS (Volumes)

#	Parameter	Value
1.	Total number of cards generated in one day (Maximum)	4,70,024
2.	Total number of users (PMAM)	20,265
3.	Total number of users (PMAM+ISA+SHA+E-GRAM+PMAM-KERALA)	42,834
4.	Total users including CSC	1,50,036

Table 29: BIS transaction data

Application	**Volume (as per PM-JAY IT 1.0 System)**	**User_Types**
BIS	1. # of transactions- 500000 e-cards per day 2. # of PMAM- 50000 3. # of CSC- 250000 4. # of SHA, ISA- 1000 users	Beneficiary, PMAM, CSC, VLE, SHA, ISA.
HEM	# of hospitals- 30000 It may also be extended to other facilities such as HWC, PHC, other hospitals etc.	Hospitals, SHA

Application	Volume (as per PM-JAY IT 1.0 System)	User_Types
TMS- Provider	1. # of Hospitals- 30000 2. # of Doctors- 100000 3. # of Medco- 50000 4. # PMAM- 50000	Doctors, Medco, PMAM, hospitals
TMS- Payer	1. # of SHA, ISA- 1000 users 2. # of TPA/Insurance-700	ISA, SHA, TPA/Insurance
Integrated Website/Portal	# of visitors- 5071647 (since sept 2018) MERA Application- 1. # of logins- 25000/day 2. # of users- 17368210	All users
Mobile App	# installations- 10.2 lakhs	All users
Call Disposition Tool (CDT)	1. Average # of incoming calls- 10316 2. Average # of outgoing calls- 27464 3. peak (incoming)- 109628 - per day 4. peak (outgoing)- 78169 - per day 5. Total no. of calls answered by NHA call center- 6367744 6. # of call center users (peak)- 698+	Call center users, NHA
e-Referral (Continuum of Care) System	Users in health workforce directory	Users in health workforce directory
Grievance Redressal Management System (GRMS)	1. # Grievance- 45 tickets/day 2. 29,000 total grievance registered (till 19th July 2020) 3. Total grievance resolved- 27567 4. Pending grievance- 1452	All users

Application	Volume (as per PM-JAY IT 1.0 System)	User_Types
Learning Management System	1. Medco- 45,000 2. Hospitals- 21,788 3. Doctors- 100,000 4. PMAM- 45,000 5. NHA- 200 6. SHA- 200 7. ISA- 255 8. Insurance+ TPA- 700 9. Call center agent- 600 10. Helpdesk user- 20 11. Insights- 130 Note- The solution shall also be extended to health workforce	As per left side column
Feedback and Survey Management System (FSMS)	1. Medco- 45,000 2. Hospitals- 21,788 3. Doctors- 100,000 4. PMAM- 45,000 5. NHA- 200 6. SHA- 200 7. ISA- 255 8. Insurance+ TPA- 700 9. Call center agent- 600 10. Helpdesk user- 20 11. Insights- 130 Note- Shall be extended to health workforce	
IT Helpdesk	Per day peak- 300 tickets per day (in current PM-JAY IT 1.0)	Medco Hospitals Doctors PMAM NHA SHA ISA Insurance+ TPA Call center agent Insights

Application	Volume (as per PM-JAY IT 1.0 System)	User_Types
Digital Signature Certificate	1. Hospitals- 21,788 2. Doctors- 100,000 3. SHA- 200 4. ISA- 255 5. Insurance+ TPA- 700 Note- Shall be extended to health workforce	
Impact	NHA-1 SHA-33 ISA/Insurance Company-33 TPA-33	

Table 30: Volumetrics

Details available on existing database of PM-JAY-

Name of the Module	Number of records per module	Average number of records created per day	Data size for each transaction
TMS	63,23,903	13,200	20 kb
HEM	1,12,193	60	5kb
CGRMS	28,982	35	510 bytes
BIS	8,45,47,334	1,27,330	23KB - 60KB

Name of the Module	Unstructured Data
TMS	17TB
HEM	193GB
CGRMS	16GB

Name of the Module	Total DB Size	Remarks
TMS	498 GB	Structured data
HEM	5.3 GB	Structured data

Name of the Module	Total DB Size	Remarks
CGRMS	0.27 GB	Structured data
BIS	24,180 GB	Structured data + Unstructured data
Call center software	6 GB	Structured data

Other Volumetrics are provided in below table-

Applications / Modules	Components	Operating System	Production - DC				Other Environments (Staging, Dev, Test)			
			# of VMs	Virtual Cores	Memory (in GB)	Storage Utilization (in GB)	# of VMs	Cores	Memory (in GB)	Storage Utilization (in GB)
PM-JAY Website	Web server	RHEL 7.7	1	16	32	100	Not available			
	Database	RHEL 7.7	1	8	32	200				
NDWH	Database	RHEL 7.4	2	24	192	610000	Not available			
API Dashboard	Web server	RHEL 7.7	2	16	24	500	1	8	24	250
	Database	RHEL 7.7	2	16	64	1000	1	8	32	500
Ticketing Tool	Web+DB(same server)	CentOS 7.6	1	16	64	2000	1	8	32	1000
Hospital Dashboard	Web server	RHEL 7.7	1	16	32	100	Not available			
	Database	RHEL 7.7	1	16	32	500				
Impact	Web server	RHEL 7.6	2	8	16	160	Not available			
	Database	RHEL 7.6	2	8	32	400				
API Gateway	Web+DB	RHEL 7.4, 7.6,7.7	23	84	752	10250	3(Staging)+ 8 (Test)	12(Staging) 32(Test)	128(staging) 192(Test)	600(Staging) 1234(Test)
DWH API	Web server	RHEL 7.4	1	8	16	80	2(Test)	6	16	144
	Database	RHEL 7.4	2	36	128	2048	1(Test)	8	64	97
MERA	Web server	CentOS 7.5	17	108	248	7950	5(Staging)+ 5 (Test)	64(staging) 28(Test)	128(Staging) 64(Test)	2500(staging) 3800(Test)
	Database	CentOS 7.5	2	16	32	1700	Not available			
Mobile	Web server	RHEL 7.6	2	32	96	500	Not available			
	Database	RHEL 7.6	2	32	64	1000				
HelpDesk	App Server	RHEL 7.4	1	2	8	200	Not available			
Call centre/CCDT	App Server	RHEL 7.4	2	8	32	200	Not available			
CGRMS	Web server	RHEL 7.6	2	8	32	200	Not available			

Applications / Modules	Components	Operating System	Production - DC				Other Environments (Staging, Dev, Test)			
			# of VMs	Virtual Cores	Memory (in GB)	Storage Utilization (in GB)	# of VMs	Cores	Memory (in GB)	Storage Utilization (in GB)
	Database	RHEL 7.6	2	8	32	1000				
HEM	Web server	RHEL 7.4	2	32	64	200	1(staging)+1(Test)	16(staging) 16(Test)	32(staging) 32(Test)	100(staging) 100(Test)
	Database	RHEL 7.4	2	16	128	200	1(staging)+1(Test)	8(staging) 8(Test)	64(staging) 64(Test)	100(staging) 100(Test)
TMS	Web server	RHEL 7.4, 7.6	55	440	880	4620	22(Staging)	86	344	2147
	Database	RHEL 7.4, 7.6	36	456	2304	34972	19	152	608	4897
BIS	App Servers	29 VM=RHEL 7.8 3 VM=RHEL 7.1	32	376	1456GB	1713GB(/ partition)	3	40	144GB	1145GB(/ Partition)
	Database Servers	28 VM= RHEL 7.1 1 VM = RHEL 7.3 9 VM=RHEL 7.7 11 VM =RHEL 7.8	49	1448	7895 GB	115 TB(Approx)	2	32	2 TB	128 GB

7.6 Annexure VI: IT Security Requirements

1. MSP shall comply with NHA's IS & data privacy policies in force from time to time as applicable. NHA shall share the relevant guidelines and standards with the MSP once institutionalized.
2. MSP shall ensure that the Application/Solution components have capability to ensure compliance against NHA IS (Information Security) policy such as encryption (Data at rest, Data at transit & Data at use), anonymization, DLP (data leak prevention) etc.
3. MSP shall upon reasonable request by NHA or his/her nominee(s) participate in regular meetings when information technology security & Data Privacy matters are reviewed.
4. MSP shall promptly report in writing to NHA any act or omission which they are aware that could have an adverse effect on the proper conduct of information technology security at NHA
5. MSP shall use reasonable endeavors to report forthwith in writing to all the partners / sub-contractors about the civil and criminal liabilities accruing due to any unauthorized access (including unauthorized persons who are employees of any Party) or interference with NHA's data, facilities or Confidential Information
6. MSP shall ensure that they have informed NHA prior 24 hours of any resource having access to NHA environment is relieving the project or MSP's organization
7. MSP shall comply with all MeitY guidelines related to information security & data privacy.
8. Right to Audit : NHA or its nominated agency shall have the right to audit and inspect suppliers, agents and third party facilities (if any), data centers, documents, records, procedures and systems relating to the provision under this RFP, but only to the extent related to the scope of work stated in the RFP, as shall be reasonably necessary to verify-

    a) The security, integrity and availability of all data processed, held or conveyed by the MSP on behalf of NHA and documentation related thereto;
    b) That the actual level of performance of the services is the same as specified in the service levels defined in annexure III of volume I of this RFP;
    c) That the MSP has complied with the relevant technical standards, and has adequate internal controls in place; and
    d) The compliance of the MSP with any other obligation under the contract.
    e) Security audit and implementation audit of the system shall be done once each year, the cost of which shall be borne by the MSP.
    f) For the avoidance of doubt the audit rights under this schedule shall not include access to the MSP's profit margins or overheads, any confidential information relating to the MSP employees, or minutes of its internal Board or Board committee meetings including internal audit, or such other information of commercial-in-confidence nature which are not relevant to the Services associated with any obligation under the contract

Data Security & Privacy Requirements

MSP shall be responsible to protect the privacy, confidentiality, and security of the NHAs data. MSP must comply with international standards for data protection including ISO 27001, and applicable regulations including IT Act and Amendments, Aadhaar Act (as applicable) and Regulations, and proposed data privacy act and regulations including Data Protection Act and other applicable laws and regulations, which the NHA may want the MSP to comply with. MSP shall ensure that these security and privacy requirements are been adequately implemented across the setup. The effectiveness shall be evaluated on a regular

basis to ensure the continuity of security and privacy requirements. The MSP shall ensure the security and privacy requirements including, but not limited to, the following-

1. Ensure the compliance to security requirements as detailed above and also to requirements and guidelines published by NHA from time to time. MSP shall also ensure the compliance to upcoming security and privacy requirements as and when these become applicable.
2. Setup an assurance process to periodically review the compliance to security and privacy requirements.
3. Ensure that during the development of the PM-JAY IT 2.0 solution has been performed using securing coding practices and through development methodology
4. MSP shall be responsible for maintenance of all software managed with latest updates, specifically related to security vulnerabilities.
5. Host the systems and devices processing the data within the data centers located in India.
6. Ensure policies & procedures for secure disposition of electronic data on which the data resides (e.g., wiping hard drive, or other method of destruction)
7. Ensure maintenance of system and application audit logs in line with applicable regulations including IT Act and Amendments, Aadhaar Act (as applicable), and any other Regulations made applicable from time to time.
8. Ensure in case of any incident / breach notification timely (Not more than 24 hrs of identification) intimate appropriate stakeholders of NHA and respond to incidents / breach as per the Regulatory requirements, and international best practices.
9. NHA shall have authority to conduct (or through external agency) periodical assessment of the security requirements to ensure compliance with security policies, procedures, and Regulations.
10. MSP shall have an appropriate contingency plan (including backup) to recover the application services / data as and when required (including during any disaster)

The MSP shall keep the confidentiality, maintain secrecy of all confidential information and shall not, at any time, divulge such or any part thereof to any third party except as may be compelled by any court of competent jurisdiction, or as otherwise required by law, and shall also ensure that same is not disclosed to any person voluntarily, accidentally or by mistake.

1. Compliance with Aadhaar Act (as applicable) and Regulations: The MSP and all their associates and/or sub-contractors shall comply with the relevant provisions of the Aadhaar Act 2016 and the Aadhaar Regulations 2016, while receiving, transmitting, storing, processing or handling Aadhaar Data. Without prejudice to the specific provisions of the Act and the Regulations, the following provisions are brought to the notice of the MSP.

    a) Any individual, entity or agency, which is in possession of Aadhaar number(s) of Aadhaar number holders, shall ensure security and confidentiality of the Aadhaar numbers and of any record or database containing the Aadhaar numbers.
    b) Any individual, entity or agency, which is in possession of Aadhaar number(s) of Aadhaar number holders shall not make public any database or record containing the Aadhaar numbers of individuals, unless the Aadhaar numbers have been redacted or blacked out through appropriate means, both in print and electronic form.
    c) Such individual, agency or entity shall not share the Aadhaar number with any person or entity.

d) No entity, including a requesting entity, shall require an individual to transmit his Aadhaar number over the Internet unless such transmission is secure and the Aadhaar number is transmitted in encrypted form except where transmission is required for correction of errors or redressal of grievances. No entity, including a requesting entity, shall retain Aadhaar numbers or any document or database containing Aadhaar numbers for longer than is necessary for the purpose specified to the Aadhaar number holder at the time of obtaining consent.

2. Strategic Control of Operations to be provisioned - The final strategic control and governance shall still be with NHA for all its IT landscape management and operations. For ensuring strategic control of the operations –

a) Approval of NHA shall be taken prior making changes / modifications of the deployed solution, database, data, configurations, security solutions etc. of the Government Community Cloud where such changes may affect the solutions of NHA.
b) NHA shall own the super admin access of the application
c) For any changes (including auto-provisioning and others that may or may not need prior approval) to the underlying cloud infrastructure, software, etc. under the scope of the MSP, that has the potential to affect the Service Levels (performance, availability, etc.), NHA shall get alerts / notifications from the MSP, both as advance alerts and post implementation alerts.
d) NHA at its discretion may involve further users to facilitate the strategic control.