

## Terms of Reference (TOR)

### Development Fellowship Information System Integrated to Support Transparent and Accountable Fellowship Management

#### 1. Purpose

The purpose of this assignment is to support the Directorate of Health Workforce Quality, Directorate General of Health Workforce (Ditjen SDMKG), Ministry of Health (MoH) of Indonesia, in strengthening the quality and governance of health sector fellowship programs and improving monitoring and management of competency development through digitalization of fellowship information systems, integrated with the national health information ecosystem.

This assignment aims to advance effective, equitable, and sustainable fellowship programs aligned with national health service system needs, while establishing a unified digital ecosystem that supports fellowship planning, implementation, monitoring, and competency development for medical specialists. The assignment will complement and extend existing national digital platforms by integrating fellowship processes with SATUSEHAT SDMKG (health workforce) data ecosystem.

The key objectives include:

- a. Develop fellowship information system that support the end-to-end implementation of medical specialist fellowship programs, including registration, selection process, monitoring, and management of fellowship seats. The system will also facilitate collegiums and hosting hospitals in providing recommendations and issuing Letters of Acceptance (LoA), while supporting health workforce fulfillment for national priority programs through real-time monitoring of available fellowship opportunities.
- b. Ensure interoperability of the Fellowship Information System with national digital health and health workforce platforms, including SATUSEHAT SDMKG and related systems, to enable integrated data exchange, real-time monitoring of fellowship deployment, and improved governance of medical specialist training programs.

#### 2. Background

The MoH has a mandate to improve the quality and equitable distribution of health human resources to meet national health service needs. Fellowship scholarships for specialist doctors constitute one of the strategic mechanisms to strengthen subspecialty expertise and support national health priorities. Fellowship programs are designed to strengthen referral health services and improve access to subspecialist care across regions. As of recent program implementation, 1747 fellowship-trained specialist doctors have been deployed across Indonesia, while approximately 1300 additional fellowship graduates are still required to meet national service targets.

However, current fellowship implementation is constrained by fragmented and partially digitalized processes across multiple stakeholders. Registration is only partially supported by the SATUSEHAT SDMKG Platform, while recruitment, verification, selection, and payment monitoring remain largely manual and disconnected across stakeholders. This creates inefficiencies, limited transparency, and risks of data inconsistency that constraint effective monitoring and governance of fellowship programs.

To address these gaps, the strengthening and further development of an integrated Fellowship Information System within SATUSEHAT SDMKG (health workforce) ecosystem is required to improve

the management of fellowship programs. The system will function as a digital gateway for fellowship program management, integrating with SATUSEHAT SDMM and related platforms to enable structured, transparent, and auditable end-to-end fellowship management aligning with Indonesia's digital health transformation agenda.

Through the system, MoH will be able to generate reliable and timely data on the fellowship training pipeline, including the number of candidates, training capacity, fellowship placement, and completion of outcomes. This information is essential for the MoH to monitor the production and development of fellow specialist competencies and to align fellowship investments with national health service priorities.

The system will also support evidence-based health workforce planning by enabling the MoH to track fellowship outputs, identify gaps in specialist and subspecialist capacity, and better align training opportunities with national service delivery needs, including strengthening referral services and expanding access to specialist care across regions, particularly in underserved and remote areas.

### **3. Planned Timeline**

Estimated Start Date: May 2026

End Date: April 2027

The total project duration is 12 months, consisting of approximately 4 months for system development and implementation by the contracted provider, followed by server hand over to Centre of Data and Information Technology (Pusdatin) MoH, and warranty and technical support period.

### **4. Scope of Work and Deliverables**

Under the guidance of the Directorate of Health Workforce Quality, Directorate General of Health Workforce (Ditjen SDMM) MoH and relevant technical unit at WHO Indonesia, the contracted provider will support the design, development, integration, and implementation of the Fellowship Information System as part of the SATUSEHAT SDMM ecosystem.

The assignment includes system requirements analysis, system development and configuration, integration with relevant national platforms, system implementation, data migration, training, and system handover. The system is expected to support transparent and efficient management of fellowship programs and provide reliable data for monitoring and planning of specialist competency development.

The scope of work consists of the following components.

#### **4.1 Preparatory Coordination and Activity Planning**

This component focuses on initial coordination and planning with key stakeholders to ensure a shared understanding of objectives, scope, and expected outputs.

Activities include:

- Coordination meetings with the Directorate of Health workforce quality, the Directorate General of Health workforce, Pusdatin, MoH and other relevant stakeholders to discuss activity preparation, implementation, and alignment with the SATUSEHAT SDMM ecosystem.
- Discussions to clarify the scope of work, sequencing of activities, and coordination arrangements for the assignment.

Deliverables:

- An agreed detailed activity plan, including timeline and coordination arrangements.

*Note:*

*The preparatory coordination and activity planning will be supported by up to 2 hybrid meetings at the Directorate of Health workforce quality office, with a maximum of 15 participants per meeting.*

#### **4.2 Requirements Analysis and System Design**

The activity aims to define detailed system requirements that reflect operational workflows across stakeholders, including the Directorate of Health Workforce Quality, collegiums, hospitals, and fellowship participants.

Activities include:

- Map current fellowship business processes and workflows and identify digitalization needs
- Define user roles, access hierarchy, and authorization protocols.
- Develop functional requirement specifications and system architecture design.
- Define interoperability requirements with SATUSEHAT APIs and HRH datasets.
- Define data governance and cybersecurity requirements aligned with national standards.
- Prepare a system implementation approach and risk mitigation plan.

Deliverables:

- Approved Functional Requirements Specification (FRS).
- Validated workflow diagrams and user journey maps.
- System Architecture and Technical Design Document.

*Note:*

*Desk Work (internal preparation, system development, and technical coordination) with technical consultations with relevant stakeholder as needed*

#### **4.3 System Development and Configuration**

This phase focuses on the development and configuration of the Fellowship Information System based on approved specifications. The contractor shall develop modular system components enabling end-to-end digital management of fellowship program within a secure and scalable environment.

Activities include:

- Develop and configure system modules based on the approved Functional Requirements Specification.
- Configure user roles, access control, and system workflows.
- Develop system interfaces and integration components with relevant platforms.
- Conduct internal system testing and configuration adjustments during development


System modules to be developed:

No	System module	Description
1	Dashboard	Displays real-time fellowship program status (available quota, number of participants)


2	Registration	Manages participant application and admission process both in-country and abroad, queues, and timelines
3	Integration (SATUSEHAT SDMK, LMS, SIBK/Sistem Informasi Beasiswa Kemenkes)	Merges separate apps into one integrated system. enables interoperability and data exchange between the Fellowship Information System and relevant national platforms.
4	Fellowship Lifecycle Tracking	Tracks participants from registration to completion of fellowship and place of posting
5	College and Host Hospital	Allows colleges and host hospitals to conduct assessments and issue recommendation in one platform
6	Letter of Acceptance issuance	Allows host hospitals to issue LoA (Letters of Acceptance) directly through the app.
7	Payment Monitoring	supports monitoring of scholarship payments managed through to SIBK (payments incl. tuition fee, living allowance, transport)
8	Participant Activity	Fellowship participants log activities in the app.
9	Fellowship management	Enables the fellowship management team to monitors all processes and issues decisions within the app.

Deliverables:

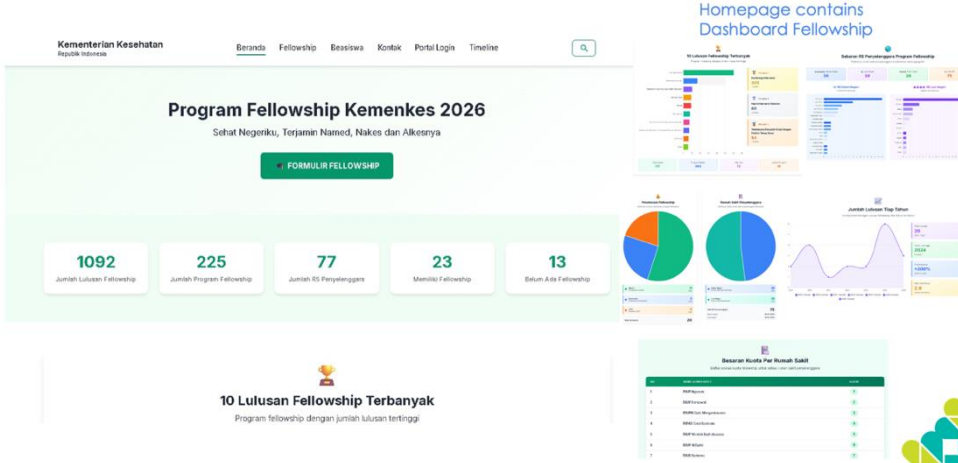
- Developed and configured Fellowship Information System modules as described above.
- Audit trail functionality enabling complete logging of user activities, approvals and data changes within the system.
- System configuration documentation and technical setup.
- System ready for integration and testing.



**Design Web Fellowship Information System (1/4)**  
[s.kemkes.go.id/SimulasiAplikasiFellowship2026](https://s.kemkes.go.id/SimulasiAplikasiFellowship2026)



Homepage contains Dashboard Fellowship



A prototype of the fellowship information system developed by MoH can be accessed at <https://s.kemkes.go.id/SimulasiAplikasiFellowship2026>

This prototype illustrates the initial system concept and key functional modules to support fellowship program management. The contractor is expected to further develop and refine the system based on the approved requirements and system design.

Note:

*Desk Work (system development and configuration), with technical consultations with relevant stakeholder as needed*

#### **4.4 Integration and Testing**

This phase ensures interoperability between the Fellowship Information System and SATUSEHAT SDMK, including SIBK.

Activities include:

- Configure and operationalize system interoperability between the Fellowship Information System, SATUSEHAT SDMK, and SIBK through API integration, data mapping, authentication setup, and alignment with national digital health interoperability standards
- Conduct end-to-end integration testing to ensure secure, accurate, and real-time data exchange across systems, including performance testing and coordination with relevant MoH system owners.
- Facilitate User Acceptance Testing (UAT) through relevant stakeholders' validation sessions to confirm system functionality and readiness prior to deployment.
- Address technical issues identified during integration testing, UAT, and perform necessary system adjustments.

Deliverables:

- Fully functional and validated system integration between the Fellowship Information System, SATUSEHAT SDMK, and SIBK.
- Integration and User Acceptance Testing (UAT) Report, including testing results and issue resolution.

Note:

*The testing will be supported by dissemination meetings at the Directorate of Health workforce quality office, with a maximum of 30 participants.*

#### **4.5 System Implementation and Data Migration**

This phase ensures the fellowship information system, is successfully deployed, and that existing fellowship participant data are securely migrated to new system.

Activities include:

- Plan and execute secure system deployment within the MoH digital infrastructure.
- Conduct secure data migration to ensure all existing fellowship participant data are accurately transferred to the new system.
- Validate migrated data to ensure data completeness, accuracy, and integrity during the transition to the new Fellowship Information System.

Deliverables:

Data Migration and System Implementation Report, confirming successful deployment and data migration with validated data integrity.

Note:

Migration activities shall be coordinated with MoH system administrators to ensure continuity of services. *Desk Work (internal preparation, system development), with technical consultations with relevant stakeholder as needed*

#### **4.6 Training and User Support**

This phase strengthens institutional capacity to ensure effective adoption and sustainable use of the system by national and subnational stakeholders. Training shall focus on operational competency, system administration, and troubleshooting to enable independent system management by MoH.

Activities include:

- Conduct user and administrator training sessions for MoH teams, professional collegiums, and partner hospitals, including hands-on system operation and troubleshooting.
- Establish a user support mechanism during the initial operational period, including issue tracking and system usage monitoring.
- Provide technical guidance and documentation to support system administration and operational management.
- Provide post-deployment technical support during the initial operational period to address system issues and minor system adjustments following system launch up to three months after system launch.

Deliverables:

- Technical Documentation Package, including system architecture documentation, user manuals, and administrator guides aligned with the deployed Fellowship Information System.
- Training completion report, including training materials and participant records.

Note:

The training will be supported by 1 dissemination meetings at the Directorate of Health workforce quality office, with a maximum of 30 participants.

#### **4.7 Handover and Project Closure**

This phase formalizes the transfer of the Fellowship Information System to MoH and ensures operational readiness/sustainability through complete documentation, knowledge transfer, and system acceptance. The contractor shall ensure MoH ownership and long-term maintainability of the system.

Activities include:

- Conduct final system verification and acceptance review covering all system modules, integrations, and platform functionalities.
- Transfer system source code, configuration files, and other technical assets to MoH.
- Conduct knowledge transfer sessions for relevant MoH technical teams to support future system maintenance and management.

- Deliver final project documentation and support the system acceptance and project closure process.

Deliverables:

- System Handover Package including server, source code, system configuration files, and related technical assets from the provider to Pusdatin, MoH.
- Final Project Completion and Acceptance Report, confirming system handover and operational readiness.

Note:

The project closure will be supported by meeting at the Directorate of Health Workforce, with a maximum of 40 participants.

Deliverable Output:

A fully functional Fellowship Information System containing the modules, deployed within the MoH digital infrastructure, and compliant with national interoperability standards and data governance requirements.

## 5. Requirements – Planning and the Evaluation Criteria

To undertake the above-mentioned key tasks listed under #4, the vendor/consultant should demonstrate.

- a. capability to design scalable and secure system architecture integrated with national platforms (e.g., SATUSEHAT, LMS, and related systems)
- b. strong understanding of fellowship business processes, including registration, multi-stage selection, LOA issuance, scholarship processing, monitoring, and reporting
- c. experience in developing and integrating web-based government systems, particularly within the health sector
- d. familiarity with digital governance standard, including data protection, audit trails mechanisms, and role-based access control in accordance with SPBE or relevant regulatory frameworks
- e. clear and feasible development and implementation approach covering system design, development, integration, testing, deployment, and handover

The proposal should address the criteria in this #5 Requirement – Planning and the Evaluation Criteria and the Annex 1 Evaluation Criteria.

To ensure quality and timeliness of work, the project will require continuous interaction and consultation with Directorate of Health Workforce Quality – DG Health Workforce, Pusdatin, MoH, and involvement of the WHO technical unit/experts.

## 6. Characteristics of Provider

The assignment shall be undertaken by a legally registered company or institution in Indonesia with demonstrated capacity and experience relevant to the scope of work described in this ToR. The provider is expected to demonstrate both technical expertise in digital system development and an understanding of health system and workforce program contexts.

The Provider must demonstrate:

*Mandatory*

- Familiarity with health workforce regulations, management systems, or program related to fellowship, scholarship or professional training of health workers.

- Proven experience in the design and implementation of government-scale web-based information systems, preferably in the health sector.
- Demonstrated experience in developing integrated digital platforms covering end-to-end workflows such as registration, selection, monitoring, reporting, and financial management.
- Proven experience in system integration and interoperability, preferably with national digital health platforms such as SATUSEHAT or comparable systems.
- Demonstrated understanding of digital governance, data protection, audit trail mechanisms, and compliance with SPBE or relevant regulatory standards.

*Desirable*

- Prior experience working with the Ministry of Health, other government institutions, or international organizations.
- Experience facilitating stakeholder consultations, system validation workshops, or multi-institutional coordination processes.
- Ability to work with multidisciplinary teams combining digital health, information systems, and public health or health workforce expertise.

The Provider is expected to work closely with the Ministry of Health, particularly the Directorate of Health Workforce Quality and relevant technical units such as Pusdatin, and to coordinate with professional collegiums, partner hospitals, and WHO throughout the assignment. The Provider shall assign a multidisciplinary team with adequate technical and operational capacity, with clearly defined roles and responsibilities, to ensure effective system integration with SATUSEHAT and timely delivery of all agreed outputs.

The implementation team shall include the following specialists:

1. Team Leader (1 person, allocated time: 4 months)

Task :

- Provide overall technical and managerial leadership for the development of the Fellowship Information System, ensuring the system design, functionality, and outputs respond to the operational needs of the Directorate of Health Workforce Quality
- Lead the planning, development, and implementation of the system architecture, ensuring integration with SATU SEHAT SDMK
- Coordinate the multidisciplinary development team (Project Manager/Enterprise/ Solution Architect, Business/System Analyst, UI-UX Designer/Frontend Developer/DevOps, Backend Developer/Database Engineer/Integration Specialist/IT Security Specialist, Quality Assurance/Technical Writer/Change Management & Training Specialist, and Administration & Finance Staff) to ensure timely delivery of project milestones and system components.
- Maintain regular coordination and communication with the Directorate of Health Workforce Quality, Pusdatin, and WHO Indonesia to ensure alignment with program objectives and technical requirements.

Qualification:

- Education/training: At least a Master's degree in Public Health, Health Informatics, Information Systems, Computer Science, or other relevant fields.
- Strong understanding of health workforce development programs, particularly fellowship or competency development programs under the Directorate General of Health Workforce.

- Experience: At least 5 years in MOH application development, with significant experience in working with Ditjen SDMK.
2. Project Manager / Enterprise / Solution Architect (1 person, allocated time: 4 months)
- Tasks:
- Overall delivery of information system, stakeholder management, SPBE compliance, risk mitigation, MoH reporting
  - Microservices design, SATUSEHAT FHIR integration, PostgreSQL HA architecture, SPBE level 4
- Qualification:
- Education/Training: Bachelor in Information Technology, Management, or Enterprise Architecture.
  - Experience: Minimum 5 years of project management experience, health information systems, and enterprise systems experience.
  - Certifications: Project management or enterprise architecture certifications (e.g., PMP, PRINCE2, Scrum, TOGAF, or equivalent) is desirable.
3. Business / System Analyst (1 person, allocated time: 4 months)
- Tasks:
- Conduct requirements gathering and develop BPMN (Business Process Model and Notation) workflows, LoA process mapping, and GRB data specifications.
  - Develop use case design, ERD modelling, API specifications, and RBAC design.
- Qualification:
- Education/Training: Bachelor's degree in Informatics, Information Systems, or related field.
  - Experience: Minimum 5 years of experience in health workforce programs and system analysis.
  - Certifications: Business analysis or system modelling certifications (e.g., CBAP, BPMN/UML or equivalent) is desirable.
4. UI-UX Designer / Frontend Developer / DevOps (1 person, allocated time: 4 months)
- Tasks:
- Develop role-based dashboards using a mobile-first PWA (Progressive Web App) approach, ensuring accessibility (WCAG 2.1) and appropriate health UX patterns.
  - Develop role-based dashboards with real-time updates, mobile PWA functionality, and health data visualization features.
  - Implement and manage cloud deployment and continuous integration pipelines to support reliable system deployment and monitoring.
- Qualification:
- Education/Training: Bachelor's degree in Design Communication, Informatics, or related field.
  - Experience: Minimum 3 years of experience in health app design, PWA development, cloud health infra.
  - Certifications: Modern web frameworks (e.g., React, Vue, or equivalent) and cloud or DevOps platforms (e.g., Kubernetes, CI/CD tools, or equivalent) is desirable.
5. Backend Developer / Database Engineer / Integration Specialist / IT Security Specialist (1 person, allocated time: 4 months)

Tasks:

- Develop microservices using Laravel/Node, implement REST APIs, workflow engine, and FHIR HL7 integration.
- Set up and manage HA cluster configuration, database partitioning, materialized views for GRB, and performance tuning for high transaction volumes.
- Implement FHIR Practitioner mapping, SIBK webhook, SATUSEHAT SDMK synchronization, and API gateway integration.
- Implement and maintain database and application security mechanisms including RLS PostgreSQL, OWASP Top 10 compliance, WAF configuration, SPBE clearance audit, and MFA SSO.

Qualification:

- Education/Training: Bachelor's degree in Informatics, Computer Science, or related field.
- Experience: Minimum 3 years of experience in backend health systems, PostgreSQL production, SATUSEHAT integration, health IT security
- Certifications: Modern backend development frameworks (e.g., Laravel, Node.js, or equivalent), relational databases (e.g., PostgreSQL or equivalent), and API integration standards (e.g., FHIR HL7, OAuth2, or equivalent) is desirable.

6. Quality Assurance / Technical Writer / Change Management & Training Specialist (1 person, allocated time: 4 months)

Tasks:

- Conduct JavaScript-based testing framework used to verify the entire flow of a web application from the user's perspective, ensuring that all components and services work together as a cohesive whole (E2E testing using Cypress), load testing for 1000 concurrent users, FHIR validation, and security scanning.
- Prepare SPBE tender documents, API documentation, user manuals, GRB reports, and as-built drawings.
- Facilitate stakeholder training for MoH, hospitals, and collegiums, support UAT facilitation, SOP development, and post-go-live support.

Qualification:

- Education/Training: Bachelor's degree in Informatics, Information Systems, Management, or related field.
- Experience: Minimum 3 years of experience in system testing, documentation, or training.
- Certifications: Quality assurance, documentation, or change management certifications (e.g., ISTQB, Prosci, or equivalent) is desirable.

7. Administration and Finance Staff (1 person, allocated time: 4 months)

Tasks:

- Handling the administration and finance issue, including organizing the meeting, financial report, project mid-term, and final report (1 person)

Qualification:

- Education/Training: Bachelor's degree in Business, Administration, or related subject
- Experience: At least 2 years experiences of administrative support (including arrange the meeting – e.g., invitation, travel, and meeting venue; logistics, document management, financial reporting) for government, UN, or NGO activity is desirable.

All experts must demonstrate experience in government-scale digital systems.

Qualifications and Role for SI Fellowship IT Team Positions based on MoH SPBE requirements for health IT specialists. Minimum education, certifications, experience, and specific roles defined for 4-month accelerated project.

CVs and relevant experience to the above characteristics should be submitted with the proposal.

Information about the roles/responsibilities and the proportionate time that will be dedicated to the project should also be included in the submission and in the financial proposal.

## EVALUATION CRITERIA

CATEGORY	MAX. POINTS	MIN. PASS POINTS
<b>1. Organizational Capacity</b>	<b>10</b>	
1.1. Institutional profile indicating relevant experience related to digital health system development, health workforce information systems, fellowship or scholarship management systems, or comparable government-scale information systems in Indonesia, including a list of relevant previous assignments. Previous experience working with UN agency or other international organizations is preferable.	8	
1.2. Clarity of the institution's rationale for undertaking this assignment and alignment of its background with the objectives of developing the Fellowship Information System.	2	
<b>2. Quality of the Technical Proposal</b>	<b>50</b>	
<b>The proposal should address and reflect the quality of following item:</b>		
2.1. Demonstrated understanding of the objectives, scope, and expected outputs of the assignment, including the purpose of developing Fellowship information system	12	
2.2. Proposed approach and methodology for implementing the assignment across all components, including preparatory coordination, requirement analysis and system design, system development and configuration, integration and testing, system implementation and data migration, training and user support, and handover and project closure.	14	
2.3 Proposed approach for engaging relevant stakeholders, including government units and other key actors, through meetings, FGDs, and workshops, and for ensuring meaningful inputs into the information system development process.	12	
2.4. Gantt chart describing the implementation timeline, including alignment with the indicative sequencing outlined in this ToR, key task and specific allocation of human resources for each phase. Consider the feasibility and practicality of the proposed timeline and activities	7	
2.5. Anticipated project risks and mitigation measures and quality assurance	5	
<b>3. Resources and Key Personnel</b>	<b>10</b>	
3.1 Full CVs of proposed team members demonstrating relevant education and experience, with a clear team structure and assignment of roles and responsibilities across the proposed timeline as reflected in the Gantt chart. (#2.4)	6	
3.2 Description of institutional resources available to support the assignment, including internal technical support, administrative capacity, and relevant tools or systems.	4	
<b>TECHNICAL PROPOSAL</b>	<b>80</b>	<b>60</b>
<b>FINANCIAL PROPOSAL</b>	<b>20</b>	
<b>TOTAL MARKS</b>	<b>100</b>	