ASSESSING THE MATURITY LEVEL OF THE HOSPITAL INFORMATION SYSTEM IN SELECTED HOSPITALS IN TUNISIA

TERMS OF REFERENCE

1. Background

The Hospital Information Management System (HIMS) serves as a foundational element for establishing resilient and secure healthcare systems, playing a crucial role in advancing Universal Health Coverage (UHC). HIMS forms the backbone of informed decision-making across health policy, management, and clinical care by effectively collecting, standardizing, coding, and managing information pertinent to health indicators, determinants, and overall health systems. Strengthening the capacity of the national HIMS to gather reliable and comprehensive data is imperative for enhancing health systems. Tunisia has been actively working on the implementation of HIMS, with a specific focus on electronic medical records in recent years.

A recent review and assessment mission by WHO of the health information and digital health systems in Tunisia occurred from May 28 to June 2, 2023. The primary objectives of the mission included evaluating the current Health Information Systems (HIS) at both central and regional levels, identifying strengths within the existing system, and identifying areas for improvement. Among the key recommendations of the mission was the endorsement of supporting the ongoing development of a national Digital Health Strategy in collaboration with the Ministry of Health (MOH). Additionally, it was advised to enhance the role of the Information Technology Center of the MOH (CIMS) by providing capacity-building initiatives and reinforcing its mandate to reinforce the HIMS.

Following the outcomes of the mission and in the pursuit of continuous improvement in the HIMS, CIMS requested the support of WHO to assess the maturity of various HIMS applications and their adoption levels. The HIMS assessment will be conducted in three public hospitals of the second and third lines, namely the Regional Hospital of Ben Arous, Charles Nicole University Hospital, and the Habib Thameur University Hospital.

CIMS selected the Charles Nicolle University Hospital because of its high capacity, the complete deployment of HMIS applications and its reputation as a reference hospital in digital matters. Likewise, Habib Thameur Hospital was selected due to its average capacity, digitalization and optimal adaptation for effective assessment. Finally, the Ben Arous Regional Hospital was chosen for its reputation as a reference in the digital field despite its second-line status.

CIMS is actively involved in tasks such as developing and implementing the HIMS, and digital health services, as well as providing ongoing assistance and training for healthcare professionals. The center actively contributes to enhancing the quality of healthcare while supporting healthcare professionals in their digital transformation projects with confidence and security.

CIMS and WHO intend to utilize international benchmarks and norms to measure performance and compare results against global standards to carry out the HIMS assessment. In this context, WHO plans to engage a consulting firm or organization specializing in assessments of the maturity of the HIMS.

2. Composition of the hospital management system in Tunisia

The Tunisian HIMS includes 4 subsystems:

- Medical-administrative information system: appointments, outpatient care, admission
- Medical information system: DMI, Santé-Lab, RIS, STKMED, Accessoire, ANAPATH
- Management Information System: 12 applications for the administrative, financial, and accounting management of a hospital: billing, Hemodialysis, administrative management of food products, financial management, management of fixed assets, monitoring of recoveries, budgetary management, accounting management, supply management, management of sampling vouchers, management of stocks, management, and biomedical maintenance.
- Management information system and decision-making support

3. Objectives

The objectives of the mission are as follows:

a. **Assessment of HIMS Subsystems Compared to HIMSS International Standards:**
   - Evaluate governance, workforce, data generation and utilization, interoperability, data security, predictive analytics, level of adoption, and person-enabled health in each selected hospital against HIMSS solutions.
   - Utilize modules and solutions like the Electronic Medical Record Adoption Model (EMRAM), Continuity of Care Maturity Model (CCMM), Infrastructure Adoption Model (INFRAM), Digital Imaging Adoption Model (DIAM), and Analytics Maturity Adoption Model (AMAM).

b. **Measurement of HIMS Dimensions and Indicators:**
   - Assess governance, workforce, interoperability, predictive analytics, and person-enabled health dimensions and indicators.

c. **Evaluation of HIMS Maturity in Public Hospitals:**
   - Evaluate the maturity of HIMS utilization in selected public hospitals using internationally recognized standards and norms such as HIMSS benchmarks.

d. **Identification of Strengths and Weaknesses in HIMS Utilization:**
   - Identify strengths and weaknesses in HIMS utilization and adoption in each hospital.
   - Formulate recommendations to enhance practices across the data cycle: from data generation to outputs, resources, predictive analytics governance, and staffing.

e. Provide quantitative and qualitative indicators to assess the overall performance of HIMS in Tunisian hospitals.

f. Generate an audit report with an action plan to address the shortcomings identified by the assessment.

g. **Conduct training for the CIMS technical team**, consisting of IT correspondents from three hospitals and engineers from the Department of Studies and Development.

4. Methods of work:

To achieve these objectives, the following methods will be used:

- The selected bidder is requested to start with a review of the literature and consultation with other partners (e.g. John Snow Inc.) and to review WHO documents about HIS and SCORE results for Tunisia, also published national documents about the national context in Tunisia (PNS , livre blanc de dialogue societal).
- Selection of international benchmarks: standards and criteria defined by international norms.

- Data collection: Relevant data will be collected in each selected public hospital, including information on available functionalities, effective use of HIMS interoperability, and data security. Data collection will be carried out through various approaches, including:
    - Study of relevant documentation, such as security policies and standard operational procedures
    - Analysis of current information management and information system processes
    - Interviews with relevant personnel and stakeholders
    - Surveys of users of different information systems, and possibly patients as beneficiaries of healthcare services
    - Field/hospital visits and conduct different interviews with key stakeholders.
- The selected organization is required to perform technical tests and analyses of the information systems deployed in each hospital subject to the audit mission.
- Evaluation according to benchmarks: The collected data will be used to assess the maturity of HIMS usage and its adoption level in each hospital based on selected international benchmarks by HIMSS. Each hospital will be classified based on these evaluations and HIMSS solutions (EMRAM, CCMM, digital indicators, etc.).
- Comparative analysis: A comparative analysis will be conducted to identify differences between hospitals in terms of maturity and adoption of HIMS. This will highlight areas requiring specific improvements.
- Recommendations and action plan: Based on the evaluation results, specific recommendations will be formulated to enhance the adoption and use of HIMS and the capacity of CIMS. An action plan will be developed to implement these recommendations in each selected hospital. The action plan will initially be rolled out to the selected hospitals only.
- Once the bidder is selected, a presentation of the offer (technical + financial) to the WHO team is required.

5. Stakeholders

The target audience for the HIMS assessment includes:

- Managers and teams from CIMS.
- Management and IT teams of selected public hospitals.
- Healthcare professionals using the HIMS in the selected hospitals.
- Decision-makers from the MOH and other stakeholders involved in the adoption of information technologies.

6. Deliverables

During the HIMS mission, the service provider must provide the following deliverables:

1. Training for CIMS Technical Team:

Conduct training for the CIMS technical team, consisting of IT correspondents from three hospitals and engineers from the Department of Studies and Development.

- The service provider will conduct training for the CIMS technical team, comprising 10 individuals (IT engineers (attaché) from three hospitals and engineers from the research and development department in CIMS).

- Training will cover various HIMSS models (EMRAM: Electronic Medical Record Adoption Model, CCMM: Continuity of Care Maturity Model, AMAM: Ambulatory Maturity Model) used to assess components of hospital information systems.
- The focus will be on preparing the team for the evaluation mission of hospital information system maturity in the three hospitals.
- Emphasis will be placed on understanding evaluation criteria, data collection, and analysis to assess the existing system against international standards.
- The training will equip the team with the necessary skills to effectively conduct assessments according to the different HIMSS models.
- **Pre-Training Report:**
  Identify areas for improvement in CIMS capacities and outline training themes.
- **Training Program Details:**
  Provide a comprehensive overview of the training program, including detailed content, methodologies, and evaluation mechanisms.
- **Post-Training Report:**
  Highlight the areas of improvement post-training and present evaluation results to showcase the impact of the training.

2. Initial Audit Report and evaluation mission
   - Overview of audit mission objectives.
   - Scope covered by the mission.
   - Stakeholders involved.
   - Methodologies used for evaluation.
   - Explanation of international models for assessing hospital information system components.

3. Maturity Assessment Report
   - Detailed description of maturity model/models used.
   - Assessment of information system maturity in specific areas.
   - Description of the level of adoption of information technologies.

4. Gaps/challenges Identification Report
   - Identify gaps in compliance with international standards.
   - Classification of gaps based on severity and impact on compliance.

5. Recommendations and Strategic Action Plan Report

Develop a strategic action plan for CIMS' Leadership in HIMS

a. **Strategic Role Definition:**

- Define CIMS's leadership role in HIS.
- Emphasize innovation, collaboration, and thought leadership.

b. **Strategic Recommendations and Objectives:**

- Identify clear objectives to enhance CIMS's capacities and influence.
- Expand service offerings, enhance technological capabilities, and foster strategic partnerships.

c. **Compliance Improvement Recommendations:**

- Implement robust data security measures.

- Ensure regulatory adherence and promote best practices in healthcare delivery.

Detailed Action Plan

d. **Assessment and Gap Analysis:**

- Conduct a comprehensive assessment of CIMS's current capacities.
- Identify deficiencies in compliance, technology, and strategic positioning.

e. **Implementation Steps:**

- Develop a detailed plan with timelines, responsible parties, and key performance indicators.
- Address deficiencies systematically to drive improvement.

f. **Training and Development:**

- Implement training programs to enhance staff competencies in compliance, technology utilization, and strategic planning.

g. **Monitoring and Evaluation:**

- Establish mechanisms for monitoring progress and evaluating outcomes.
- Make necessary adjustments to ensure the success of the action plan.

- Specific recommendations for improving compliance of HIS.
- Detailed action plan outlining steps to address deficiencies for the concerned hospitals.

6. Risk Assessment Report

- Detailed description of risks associated with non-compliance.
- Explanation of potential risks, likelihood of occurrence, and impact on operations.
- Recommendations to mitigate identified risks.

7. Process Mapping Report

- Mapping of current health information management processes.
- Highlight areas requiring improvement to comply with international standards.

9. Final Technical Report

Final Technical Deliverable with Evaluation Results and Validated Action Plan: As part of the project, the final technical deliverable includes the evaluation results along with the validated action plan.

10. Certification or Attestation:

- Provide a certificate or attestation confirming the hospital's compliance level with international standards where applicable.

7. Qualifications, experience, and languages

a. Qualifications and experience

Technical selection specifications

- Service providers with confirmed expertise in health information system.
- Experience in evaluating the maturity of hospital information systems using international models in the last 5 years.
- Availability of consultants meeting the expertise requirements for the mission.

b. References

- Providers participating in the consultation must have references in providing service and consulting in health information systems.
- Specifically, experience in auditing health information systems based on international models.
- Presentation of three references for similar missions in the last 5 years.
- Documentation of all references, including client details, country of origin, mission objectives, and completion dates.

c. Profile Types

- Project Director:
    - Minimum qualifications: University degree (BAC + 5) and a minimum of 10 years of experience in project management and consulting in digital health.
    - Expertise in digital health, digital transformation, and implementation of HIMS platforms.
    - Responsibilities include overall project direction, user training, and contractual, and operational commitments.
    - Acts as the main contact for the MOH regarding the project.

- Two Expert Consultants in Hospital Information System Maturity Evaluation:
    - Each consultant must have at least 5 years of experience in evaluating the maturity of hospital information systems based on international standards.

d. Minimum mandatory qualifications for international certifications:

To be considered for selection, the evaluating firm must possess HIMSS professional certifications, and all staff/professionals engaged in the project must hold one or more of the following four certifications:

1. CAHIMS – Certified associate in healthcare information and management systems
2. CPHIMS – Certified Professional in Healthcare Information and Management Systems
3. CPHIMS-CA – Certified Professional in Healthcare Information and Management Systems – Canada
4. CPDHTS – Certified Professional in Digital Health Transformation Strategy

These certifications are mandatory criteria for selection, demonstrating the expertise and competency required to effectively execute the project objectives. Candidates lacking these certifications will not be considered for participation in the evaluation process.

e. Language:

- Essential: The working language for the service provider will be the French language and all technical documentation must be provided in the French language.
- Desirable: Expert English knowledge.

8. Duration of the support

7 months (1 June 2024 – 31 December 2024)

9. Payment schedule:

Deliverable	Date	% of total
Countersigned contract	01 june 2024	0%
Initial Audit Report and evaluation mission (field visits + meetings) • Overview of audit mission objectives. • Scope covered by the mission. • Stakeholders involved. • Methodologies used for evaluation. • Explanation of international models for assessing hospital information system components.	20 June 2024	10%
Fianl Assessment Report • Detailed description of maturity model/models used. • Assessment of information system maturity in specific areas. • Description of the level of adoption of information technologies.	30 July 2024	20%
Gaps/challenges Identification Report • Identify gaps in compliance with international standards. • Classification of gaps based on severity and impact on compliance.	15 August 2024	10%
Training for CIMS Technical Team (10 participants):		
Pre-Training Report: Identify areas for improvement in CIMS capacities and outline training themes.	01 september 2024	10%
Training Program Details: Provide a comprehensive overview of the training program, including detailed content, methodologies, and evaluation mechanisms.	15 septmeber 2024	10%
Post-Training Report: Highlight the areas of improvement post-training and present evaluation results to showcase the impact of the training	31 novemeber 2024	10%
Recommendations and Strategic Action Plan Report	15 December 2024	15%
Risk Assessment Report and final Process Mapping Report	31 Decemeber 2024	15%

10. Technical Supervision

Responsible Officer:	Mr Henrik Axelson, Health Systems Adviser	Email:	axelsonh@who.int
BC Manager:	DR Ibrahim EL Ziq, WHO Representative	Email:	elziqi@who.int

11. Place of assignment: Tunisia, Tunis with complementary remote work.