

# National Consultant for development of Education Management Information System (EMIS) software

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UNICEF Cambodia

## 1. Background

The Ministry of Education, Youth and Sport (MoEYS), under the Framework of the National Strategic Development Plan of the Royal Government of Cambodia, developed the Education Strategic Plan (ESP) 2019-2023 with the ambition to develop human capital to lead the transformation of Cambodia into an upper middle income country by 2030 and a developed nation by 2050. The key factors in student learning in the 21st century and the Industrial Revolution 4.0 are high quality teachers and the improving the learning environment to support to learn effectively. Initiatives such as these require accurate and timely information in order to ensure that the correct decisions regarding planning and resources allocation in the education sector are taken, while also supporting the monitoring of learning outcomes.

As such, timely, accurate, meaningful and qualitative data on all aspects of the education system is required to help identify the strengths of the Cambodian Education system and more importantly to identify and address the weaknesses, particularly those pertaining to equity. Cambodia's Education system should supply managers and stakeholders at all levels of Cambodia's education sector with comprehensive, timely, accurate and up to date information and data for planning, resource allocation, monitoring and evaluation in order to support a strong culture of data-driven decision-making. This includes ability to track key development indicators for both national and international targets.

The importance of education data is further reinforced by Cambodia's commitment to achieve global Sustainable Development Goals (SDG) in all areas, including SDG4, which concerns ensuring the delivery of inclusive and equitable quality education. Achieving SDG4 would ensure inclusive and equitable quality education for all Cambodians by 2030. This will take considerable effort to reach vulnerable populations, including persons with disabilities, indigenous people, migrant children and poor children in rural areas. As such the further strengthening of Cambodia's information systems and capacity to utilize data derived from those systems is essential to addressing issues of equity and exclusion.

As such the further strengthening of Cambodia's information systems and capacity to coordinate and utilize data derived from those systems is essential to addressing issues of equity and inclusion. At present, the Ministry of Education, Youth and Sport (MoEYS) and Ministry of Labor (for TVET) oversees many disparate information and data systems which together provide information on the education

system throughout Cambodia. The systems are collectively referred to as Cambodia's EMIS; however, they are not formally recognized as a coherent system.

In Cambodia, MoEYS' EMIS Department has received support from UNICEF, the Asian Development Bank (ADB), and more recently, from the education Capacity Development Partnership Fund (CDPF III) funded by the EU, SIDA, USAID, Global Partnership for Education and UNICEF. EMIS development is guided by the five-year National EMIS Strategic and Development 2019 to 2023.

## 2. Purpose of the Assignment

The overall objective of the consultancy is to develop and upgrade the Education EMIS system to ensure effective data collection, reporting and utilization including for the education sector planning and M&E.

## 3. Work Assignments or Assignment Tasks

The consultant will:

- Develop a harmonized EMIS by combining public and private annual school census forms, Student Tracking System (STS), community pre-school, WASH, QEMIS, textbook, students with disability and climate change data inputting forms and database into one package.
- Prepare the system manuals for system administrator and user to support linkages between databases.
- Perform an external coding review of the EMIS with the objective of developing a report on methods for increasing speed and performance.
- Develop data and systems security procedures and mechanisms against hackers and/or system disruption
- Revise/upgrade the EMIS software, functionality, usage and maintenance procedures to make it operational both offline and online based on the EMIS Master Plan and the EMIS five-year National Strategy for the Development of Education Statistics (NSDES) 2019-2023.
- Implement other recommendations or suggestions made in the concept note on EMIS/HRMIS and Students Tracking System data harmonization.
- Test, maintain and recommend software improvements to ensure strong functionality and optimization of EMIS, addressing synchronization issues and other shortcomings of EMIS identified.
- Transition knowledge to the local support team and put in place the necessary mechanism for highly reliable software solution through training of EMIS teams in data collection, data entry and other relevant technical matters.
- The consultant will provide training and coaching to the EMIS staff on how to use the software for EMIS data changes.
- Provide technical support for system maintenance with the EMIS staff during the consultancy.
- Coordinate with a team of consultants, including the HRMIS and Student Tracking System consultants, to promote data harmonization, compatibility and optimization.

## 4. Qualifications of the Successful Candidate

- Master's Degree in a relevant field, namely information systems, computer science, data science and/or information technology.
- High competency in using Visual dBase, my-SQL Server, Web-based Technology and Statistical Software Packages
- At least 5 years of experience in a relevant field such as development of enterprise information systems, full stack developments, and Dev Ops.
- Experience in \*.Net and MySQL focusing on the following:

- Front end: HTML, CSS, JavaScript, React, Vue, Verify, Angular, Webpack, Bootstrap, Material UI
- Back End: Node, PHP, Java (Spring), ASP.NET, Redis
- Database: MySQL, MSSQL, Postgres, MongoDB, Elasticsearch, neo4j, RabbitMQ
- DEV OPS: NGINX, AWS, Azure, ELK, Ansible, Jenkins, Docker, Kubernetes, VMWare
- Mobile APP: Flutter Dart, React Native, Java SDK, Objective C Swift, Xamarin
- Reporting: Kibana, Microsoft Report, Microsoft BI
- GIS: Arc GIS, Map Info, Google Map API, OpenStreetMap API.
- Experience in development of HRMIS is an advantage but not required as is experience in development of systems in the sector of Education
- Evidence of analytical skills, such as data analysis, excellent planning, organizational and coordination skills
- Working verbal and written English and Khmer language skills
- Ability to work collaboratively with Development Partners and counterparts in government at national and at sub-national levels.
- Ability to deliver results amid tight deadlines.

## 5. Expected Deliverables:

The schedule of expected deliverables for this assignment are show in the table below.

No	Key deliverables for Submission to EMIS Department	Estimated Number of Working Days	Deadline for completion
1	<b>Deliverable #1:</b> The inception report, with a work plan of activities submitted.	10 days	30 Sep 2021
2	<b>Deliverable #2</b> 2.1 All data captured forms such as ASCF, Com-Pre, WASH, Students with Disability, Climate Change are incorporated with functions for user data entry, data cleansing, data verification, and basic required reports in online dashboard. 2.2 The school report card (SRC) is developed as an online web-form. 2.3 The original EMIS database is converted from MySQL into Visual dBase as required format fields. 2.4 A system firewall is developed and cisco hardware and software are managed to ensure EMIS system security. 2.5 Knowledge transferred to the local support team in order to update and change the system as required. 2.6 External coding review of the EMIS finalized. Findings and recommendations tracked in report, including methods for increasing speed and performance. 2.7 Software improvement is tested, recommended and maintained to ensure strong functionality and optimization of EMIS, addressing synchronization issues and other shortcomings of EMIS identified. 2.8 Login protocols and access to data for users at school, district, provincial and departmental levels are reviewed and proper login protocols and restrictions for EMIS for each type of user are developed.	30 days	15 Nov 2021
3	<b>Deliverable #3</b>	30 days	15 Jan 2022

	<p>3.1 Basic reports from EMIS yearbook, QEMIS, and Climate Change and other database are generated online for users.</p> <p>3.2 QEMIS database converted from the original MySQL database into Visual dBase as (required format fields) for generating required reports.</p> <p>3.3 The knowledge transferred to local support team to update and change the system as required.</p> <p>3.4 Data and systems security procedures and mechanisms against hackers are developed to prevent system disruption.</p>		
4	<p><b>Deliverable #4:</b> Upon completion of the following:</p> <p>4.1 A detailed user-friendly EMIS Manual explaining the day to day operations of the EMIS system for all stakeholders is produced.</p> <p>4.2 Knowledge transferred to the local support team and the necessary mechanism for highly reliable software solution through training of EMIS teams in data collection, data entry and other relevant technical matters are put in place.</p> <p>4.3 Collaborate with a team of consultants to provide inputs for the harmonization of EMIS/HRMIS/STS data.</p> <p>4.4 Specific National and Provincial Education Statistics and Indicators in the online dashboard are produced.</p> <p>4.5 The system manual for Admin and User levels to support the system operation is developed.</p>	30 days	15 Mar 2022
5	<p><b>Deliverable #5</b></p> <p>Final Report submitted (Max 15 pages without Annexes)</p>	10 days	15 May 2022

## 6. Payment Schedule linked to deliverables

Upon satisfactory receipt of deliverables verified by UNICEF and upon certification of monthly progress reports, payments will be made in accordance with the payment schedule below:

- 15% payment upon satisfactory completion of deliverable 1
- 30% payment upon satisfactory completion of deliverable 2
- 20% payment upon satisfactory completion of deliverable 3
- 20% payment upon satisfactory completion of deliverable 4
- 15% payment upon satisfactory completion of deliverable 5

## 7. Location and Duration

The duration of the assignment will be for one hundred and ten days (110) working days from 15 September 2021 to 31<sup>st</sup> May 2022 (part-time). The Consultant is required to be based at the Department of EMIS during the contract period. There is no travel foreseen for the consultant to perform this assignment.

## 8. Administrative Issues

The consultant is expected to have their own laptop and necessary work tools.

Consultancy fees shall be calculated based on the days estimated to complete the assignment in the Terms of Reference and shall be considered the maximum compensation as part of a lump sum contract and agreed on a work plan for submission of deliverables. No additional fees shall be paid to complete the assignment. Payment will be made upon delivery of all final products and full and satisfactory completion of the assignment.

Performance indicators: The Consultants' performance will be evaluated against the following criteria: timeliness and quality of the deliverables provided to UNICEF Cambodia as outlined above.

## **9. Contract supervisor and Other Stakeholders**

The Consultant will report directly to UNICEF Education Specialist who will be responsible for the final review of the deliverables and the certification of payments to the Consultant. The Consultant will work closely with the Director of EMIS Department and with relevant technical departments at MoEYS as well as the UNESCO's STEPCAM Project Student Tracking System.

The Consultant will be contracted under the Capacity Development Partnership Fund (CDPF) and will be required to work in such a way so as to maximize the impact and sustainability of the input by taking an approach that actively supports capacity development and ownership on the part of the EMIS department. In particular, the National technical adviser is required to:

- Work in close communication with the designated MoEYS manager, following the reporting lines;
- Take a mentoring approach that supports identified counterparts to progressively take the lead on key tasks;
- Work in close communication with other Advisers as well as others appointed under the CDPF and by other complementary programmes, in order to ensure coherence; and
- Collaborate effectively with other technical departments and relevant development partners including UNESCO's STEPCAM Student Tracking System.

## **10. Penalties for Underperformance**

Payment of fees to the Contractor under this contractor, including each instalment or periodic payment (if any), is subject to the Contractor's full and complete performance of his or her obligations under this contract with regard to such payment to UNICEF's satisfaction, and UNICEF's certification to that effect.

## **11. Termination of Contract**

This contract may be terminated by either party before its specified termination date by giving notice in writing to the other party. The period of notice shall be five (5) business days (in the UNICEF office engaging the Contractor) in the case of contracts for a total period of less than two (2) months and fourteen (14) business days (in the UNICEF office engaging the Contractor) in the case of contracts for a longer period; provided however that in the event of termination on the grounds of impropriety or other misconduct by the Contractor (including but not limited to breach by the Contractor of relevant UNICEF policies, procedures, and administrative instructions), UNICEF shall be entitled to terminate the contract without notice.

## **12. Submission of applications**

Interested candidates are kindly requested to apply and upload the following documents to: <http://www.unicef.org/about/employ/>

1. A letter of Interest (cover letter) with indication of applicant's ability, availability and start date
2. CV or Resume explaining how the applicants' background and experience are relevant to the consultancy work assignment and the qualifications, competencies, knowledge and skills
3. Example of applicant's performance evaluation reports or references of similar consultancy assignments or other references of similar consultancy assignments (if available).
4. A sample of similar prior work.
5. A fee proposal or price proposal by indicating daily rate (in US\$) to undertake the terms of reference above, fully inclusive of all expected costs related to the assignment. Applications submitted without a daily rate will not be considered.

### 13. Assessment Criteria

A two-stage procedure shall be utilized in evaluating technical assessment being completed prior to any price proposal being compared. The Contract shall be awarded to candidate obtaining the highest combined technical and financial scores, subject to the satisfactory result of the verification interview.

NOTE: For evaluation and selection method, the Cumulative Analysis Method (weight combined score method) shall be used for this recruitment:

- a) Technical Qualification: **max. 100 points**, weight (70 %)
- Education (**20 points**)
  - Relevant working experience (**30 points**)
  - Knowledge and Skills (**20 points**)
  - Quality of similar past work (**30 points**)

- b) Financial Proposal: **max. 100 points** weight (30 %)

The maximum number of points shall be allotted to the lowest Financial Proposal that is evaluated and compared among those technical qualified candidates who have attained a minimum **60 points** score in the technical evaluation. Other Financial Proposals will receive points in inverse proportion to the lowest price.

The Contract shall be awarded to candidate obtaining the highest combined technical and financial scores, subject to the satisfactory result of the verification interview.