



# Terms of Reference on

Research App Development for the Bach Mai Hospital Stroke Unit.

---

## 1. Introduction and Background Information

### 1.1. Humanity & Inclusion

Humanity and Inclusion (HI) – previously known as Handicap International- is an independent and impartial aid organization working in situations of poverty and exclusion, conflict and disaster. We work alongside people with disabilities and vulnerable populations, taking action and bearing witness in order to respond to their essential needs, improve their living conditions, and promote respect for their dignity and fundamental rights. HI is working in more than 60 countries all over the World.

HI has been working in Vietnam for over 30 years, mostly in the fields of health and prevention (mother and child health and road safety), rehabilitation (rehabilitation care for people with spinal cord injury and brain lesions), education (access to inclusive education for children with disabilities) and livelihoods (access to decent work for people with disabilities). Please visit our website for further information at [www.hi.org](http://www.hi.org)

### 1.2. Bach Mai Hospital (BMH)

Bach Mai Hospital (BMH) is a leading comprehensive general hospital, the highest level of the healthcare system, with more than 100 years of history with many leading specialists and staff with high qualifications. The hospital is the primary practice facility of Hanoi Medical University in the training of doctors, specialist training for medical doctor level 1 and 2, MD, PhD, and other specialties. The hospital has an important role in all professional operations of the health sector, especially the training of human resources and supportive missions. It is located in the Capital City of Vietnam, Hanoi.

The stroke unit of Bach is equipped with 55 beds in-patient facilities. In response to the large number of cases, the clinic can only offer emergency and acute care management. There are 13 doctors and 32 nurses working in the stroke unit. The rehabilitation unit, next to the stroke unit, offers acute rehabilitation services in the inpatient unit. After discharge stroke unit, a patient can continue to receive rehabilitation care at the rehabilitation unit.

To improve evidence-based practices, patient outcomes, and research capabilities, the Stroke Unit seeks to develop specialized application (app) that predicts the risk of initial or recurrent stroke at the individual patient level and serves as a centralized resource for health care providers of stroke algorithms and best care practices.

## 2. Research App Detail

### 2.1. Objective

The research app development aims to:

- Predict Individual Stroke Risk: Develop a risk calculator utilizing current patient data to predict the likelihood of initial stroke or imminent recurrent stroke at the individual patient level, thereby enabling timely and targeted healthcare interventions.
- Centralize Stroke Care Resources: Serve as a centralized source for healthcare providers, offering easy access to established stroke algorithms and best care practices to standardize and optimize patient management.

## 3. Scope of Work

The app development team will be responsible for:

### 1. Needs Assessment:

- Conduct interviews with clinicians, researchers, and administrative staff at the Stroke Unit to gain insights about the volume and complexity of data management for the research app. Additionally, discuss the installation and management of this app, which will be exclusively used for research purposes and separate from the existing data management system.

### 2. App Design and Development:

- Designing intuitive interfaces for clinicians to input, access, and analyse data efficiently; and also for stroke patient users to efficiently input.
- Building a secure database for patient records, including stroke outcomes, imaging results, and progress.
- Developing tools for research staff to perform data analytics and generate reports on patient trends and treatment efficacy.

### 3. Data Security & Compliance:

- Implementing stringent security measures to protect sensitive patient data in compliance with Vietnam's healthcare data privacy regulations (Regulation of Ministry of Health and Bach Mai Hospital).

### 4. Testing & Quality Assurance:

- Performing thorough testing, including user acceptance testing (UAT), with hospital staff to ensure the system meets operational needs.

## 5. Training & Support:

- Providing comprehensive training to the App users, including doctors, nurses, and administrative staff on the use of the app.
- Offering on-site technical support during the initial rollout phase.
- Implementing a robust bug management process and offering continuous maintenance and app updates for a period of three years from the date of delivery, ensuring optimal performance and the incorporation of necessary enhancements.

## 4. Deliverables and timeline

All deliverables are expected to be provided in both English and Vietnamese, a built-in translation facility with the app:

Deliverables	Description	Start time	Duration	End time
<b>4.1. Needs Assessment Report</b>	Based on discussions with the Stroke Unit	Week 0 (Contract signing)	1 week	End of Week 1
<b>4.2. App Prototype</b>	Demonstrates core functionalities required by Stroke Unit	Week 1 (after 4.1)	6 weeks	End of Week 7
<b>4.3. Fully Functional App</b>	A separate data management, analytics, and decision support tool	Week 7 (after 4.2)	3 weeks	End of Week 10
<b>4.4. Training Materials and User Manuals</b>	To assist staff in learning and utilizing the app	Week 10 (after 4.3)	1 week	End of Week 11
<b>4.5. Post-launch Support and Maintenance Plan</b>	Service level agreements for ongoing support	Week 11 (after 4.4)	1 week	End of Week 12

This software and all related materials are the intellectual property of Federation Handicap International and may not be copied, modified, or distributed without prior written permission.

## 5. Profile of the Developer

The selected app designers, developers (web frontend, smart phone app, backend), and data engineers must meet the following criteria:

- Proven experience in developing healthcare applications, particularly for research and clinical decision support applications. We will give preference to the developers who have experience developing and deploying the web-based or cross-platform (Android and iOS) mobile applications.
- Extensive experience in integrating healthcare software systems with research-oriented systems.
- Strong understanding of HL7 FHIR and healthcare interoperability protocols.
- In-depth knowledge of Vietnamese healthcare data security and protection laws and standards.
- Ability to produce clear and compliant technical documentation, which is critical in healthcare environments for audits, ethical review, and compliance reporting.
- Proficient in English (reading, writing, and speaking).
- Preferred Qualifications:
  - Proven experience working with REDCap is highly desirable.
  - Previous experience working with academic, clinical, or research institutions is desirable.
- Familiarity with integrating Machine Learning models for risk prediction, decision support, or data analytics in clinical settings.

## 6. Reporting

- The app developers/ engineers will provide bi-weekly progress reports (in bullet point format via email) to Humanity & Inclusion (HI).
- Regular meetings will be held with HI and Bach Mai Hospital (Research and Stroke Unit) to ensure both parties are consulted before each phase of the project and to validate every deliverable throughout the development process.

## 7. Proposal and Payment Modalities

The research app company should submit HI the financial proposal including every costs to produce the identified deliverable services (transportation, accommodation, personnel, translation, computer, printing questionnaires, specific tools/app, office materials...) and any applicable tax in the country (VAT or withholding tax).

Please note that no travel allowance (per diem) will be paid to the app development company, and they will be responsible for their own security in all countries, HI will not cover any insurance fee during the consultancy period.

The proposed payment modality is as follows:

- 1<sup>st</sup> payment: 20% after submission of validated needs assessment report (deliverable 4.1).
- 2<sup>nd</sup> payment 60% after submission of validated fully functional app and completion of training for Bach Mai Hospital Staff (deliverable 4.2, 4.3, 4.4).
- Final payment 20% after all deliverables and signing agreement of post service support (deliverable 4.5).

If the consultant requests a different payment instalment, and delivery plan, please mention it in the proposal.

Please note that the final payment is conditional on the validation of the final deliverable product and not solely on its submission. Validation means ensuring that the deliverables meet the quality standards as per the information provided above.

## 8. Application

Proposals from interested developers must include the following (all documents in English):

- i. Profile of the app development company or individual developer, along with a cover letter explaining how the expertise requirements in the ToR are met.
- ii. Curriculum Vitae (CV) detailing the consultant's (Individual Developer or Focal Developer if a company) experience and qualifications.
- iii. A comprehensive financial proposal, inclusive of all consultancy fees, transportation, and applicable taxes (VAT or withholding tax).
- iv. Legal registration documents of the company, identification document of legal representative, and financial statement of 2022, 2023, 2024. (for company)
- v. Methodological approach/work plan for the service.
- vi. Sample of previous work related to the required service.

Proposals must be submitted electronically to [procurement@vietnam.hi.org](mailto:procurement@vietnam.hi.org) with the subject line “**Consultancy on Research App Development – Candidate/agency’s full name**”.

## **9. Evaluation Procedure**

Evaluation of proposals will be made by a Selection Committee in two phases:

1. Administrative selection: The committee will first check completeness of the application and verify that all compulsory items listed above are included. Incomplete applications will not be considered for technical selection.
2. Technical and commercial selection: The best application will be selected based on the quality of the technical proposal, the competitiveness of the financial proposal, the skills and previous experiences of the consultant, the delivery lead time, the payment terms, and the demonstrated expertise of the applicant to successfully undertake the assignment.

Only candidates who pass the administrative selection will be considered for the technical assessment. Shortlisted applicants may be invited for an online interview (or offline interview).

HI reserves the right to contact the applicants for additional information or clarification before the final selection by the selection committee. After interview only selected candidate will be contacted.