BANKY FOIBEN'I MADAGASIKARA

Project e-Ariary

Request For Information & Quotation

August 11th, 2021

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1. Purpose of this document

This document constitutes a formal Request For Information and Quotation to identify providers and integrators that can implement a CBDC technical solution for Banky Foiben'I Madagasikara (BFM)

The aim of this Request For Information and Quotation is to obtain from all bidders relevant information about functional, technical, operational and financial dimensions of the proposed solutions.

At the end of the RFI/RFQ process, Banky Foiben'I Madagasikara will use these materials to detail the mandatory and optional requirements for its solution and to build the estimated TCO of the external solution, with the final objective to launch a RFP that is aligned with the best practices of the market.

All responses to these RFI/RFQ as well as the attachments and appendices will be the property of Banky Foiben'I Madagasikara. No compensation of any kind whatsoever may be requested by the bidders.

The costs of preparing responses will be borne by the responding company and may not be invoiced to Banky Foiben'I Madagasikara regardless of the outcome of the consultation.

2. Context

2.1. Presentation of Banky Foiben'i Madagasikara

The Banky Foiben'i Madagasikara was created by ordinance N°73-025 of the Malagasy Republic.

The Banky Foiben'i Madagasikara thus takes over from the Institute of Malagasy Issue founded in May 1962 following the independence of Madagascar and which managed the management of the new Malagasy Franc on July 1, 1963.
The Institute of Issue Malagasy already took, at its creation, the succession of the old bank of Madagascar created in 1925.

The statutes of BFM were amended by amended Law N°94-004 of June 10, 1994, which enshrines the independence of the Malagasy financial institution in matters of monetary policy. Subsequently, Law No. 2016-004 of July 29, 2016 strengthens its institutional, operational, and financial independence in carrying out its general mission of ensuring the internal and external stability of the currency and implementing monetary policy.

The Banky Foiben'i Madagasikara performs the following functions:

- It exercises the privilege of issuing banknotes and coins having legal tender in the territory of Madagascar ;
- It is the bank of banks ;
- It is the state bank ;
- It manages the national foreign exchange reserve ;
- It guarantees the proper functioning of the banking and financial system ;
- It ensures the proper functioning of the payments system ;
- It ensures the General Secretariat of the Banking and Financial Supervision Commission.

2.2. Presentation of the e-Ariary project

BFM aims at promoting more inclusive access to regulated payments and formal financial services for underserved communities and socio-economic groups as well as reducing of the amount of cash in circulation. BFM has hence launched various projects targeting these objectives and is here exploring the introduction of a Central Bank Digital Currency (CBDC).

The e-Ariary project aims at making available to the Malagasy end users (individuals and enterprises), in addition to banknotes, a secure means of payment, easy to apply, accessible, with a legal tender in the national territory, and presenting the advantages offered by private payment solutions, while benefiting from the regulation and control of the Monetary Authority.

To this end, BFM is launching this call for RFI/RFQ, with a view to select at a further phase a CBDC technical solution provider or integrator.

The Malagasy context is marked by a plurality of actors and a strong presence of electronic money institutions and microfinance institutions in addition to banks.

The proposed solution must therefore be integrated into the current ecosystem while considering the specific context in Madagascar. Key figures are detailed below:

Main Features:

Of which a tenth lives in Antananarivo
19.6 mean age

Of the **population** live in **rural areas**

Of the **population** live in **urban areas**

Share of **informal** sector GDP

The **illiteracy rate of adults over 15**

Financial inclusion (banking rate):

Percentage of **banked population**

Percentage of Population **financially excluded** (**urban: 31%; rural: 46%)**

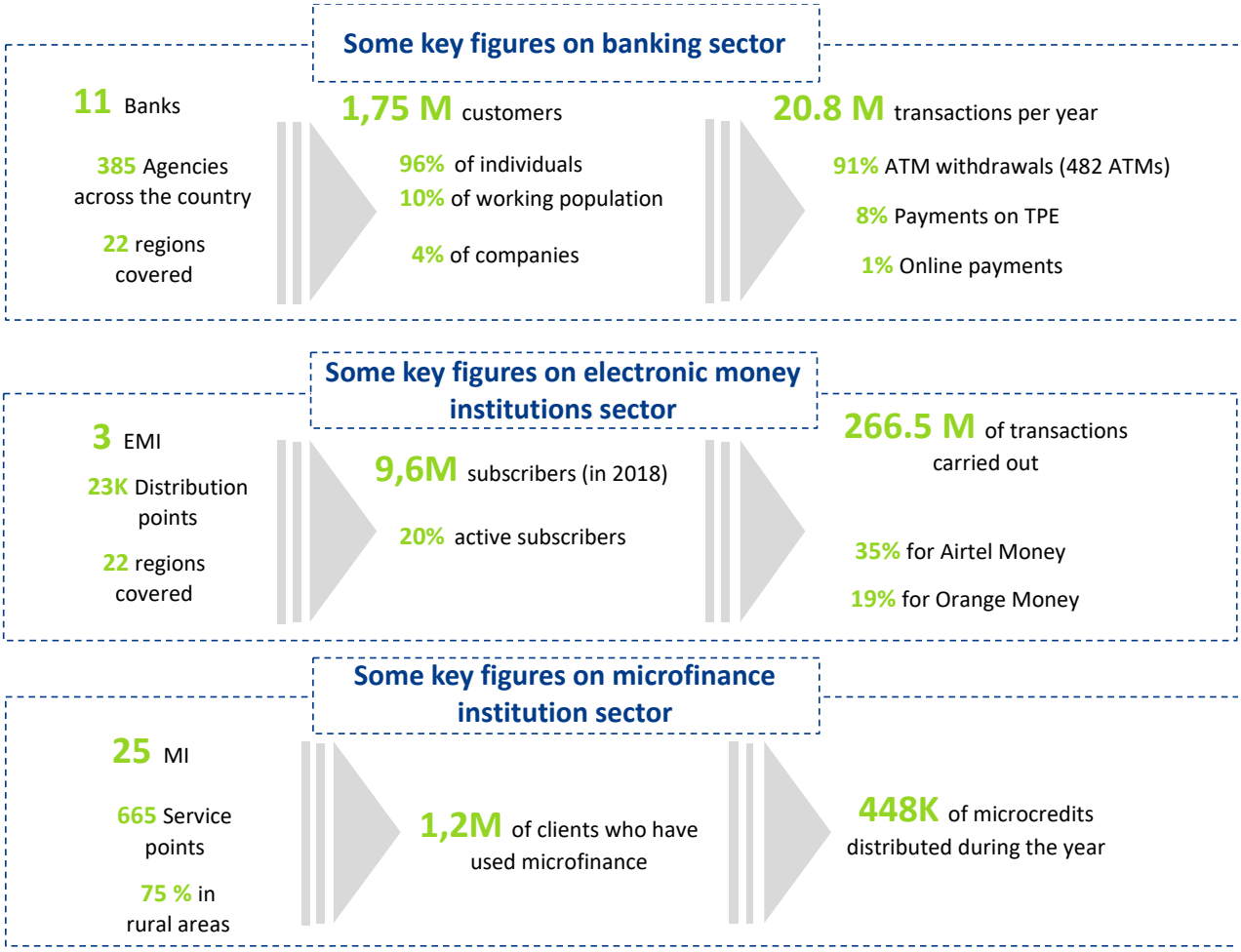
MFI penetration rate with households

ICT indicators:

Percentage of **population** with a **mobile phone**

Rate of **fixed or mobile internet users** within the population (+ 11% compared to 2019)

Of the **population has a Mobile Money account**



2.3. Objectives of the e-Ariary project

- **Improving financial inclusion**: by reducing transaction costs, by offering a more accessible, efficient, fast and low-risk service
- **Reducing costs of cash management:** by allowing the emergence of efficient dematerialized means of payment that would reduce the costs associated with the use of cash: printing, transport, sorting of banknotes and coins, etc.
- **Strengthening monetary sovereignty:** by offering a guaranteed and less volatile alternative to private currencies, such as Bitcoin, to a population that might be interested in these offers.
- **Developing of payment methods:** by providing a new form of central bank money, support for innovations in the fintech ecosystem

2.4. First key orientations

- The e-Ariary is **exchangeable** at par with the **Ariary** (local currency)
- The e-Ariary is designed as a **retail currency** (retail CBDC)
- The design is based on an **intermediated distribution model** making it possible to **use synergies** with the existing **distribution network** of **intermediaries** (Banks, Mobile Money providers, MFIs, other financial institutions)
- **The design is focused on domestic** use at first **but** with an **opening** for **cross-border** use in the **future**

- The e-Ariary must be **complementary** to **banknotes with a large network of agents providing cash in and cash out services**
- The high-level **architecture** choices remain at this stage open. All proposals and recommendations are welcome in this RFI/RFQ.

3. General information on Suppliers

Please respect the outline for the requested information below:

Information	Answers
Response submitted by	
Name of service provider	
Contact person	
Contact position	
Email address & Mobile phone	
Company information	
Annual income over the last 3 years	
Legal status and country of registration	
Number of employees	
Number of employees focused on CBDC technologies	
CBDC Solution & context information	
Do you have your own CBDC solution?	
Is this solution specific (developed for a particular customer) or is it a standard configurable solution?	
Have you already implemented it for a Central Bank?	
Is the solution already implemented or in the process of being implemented?	
Have you ever done similar projects?	
Are you able to lead a project in French?	
Have you already done a project in Madagascar?	
Have you ever had contact / exchange with the Madagascar central bank?	
If you are selected at the end of an RFP to do the project, would you foresee a local implementation team on site?	
Which estimated size of the proposed project team would you recommend on a first basis?	

4. Specific information requested

1.1. Below is a list of some of the functional and technical aspects that the Central Bank is willing to consider.

1.1.1. Aspects on the structure of the system

1.1.1.1. Proposed CBDC modelling and implementation mechanism (according to the BIS framework)

- Architecture: direct or indirect claim, operational role of the central bank.
- Transfer mechanism: account, token, mixed

1.1.1.2. Implementation approach of an intermediated distribution architecture

- Description of CBDC traffic and flow between stakeholders
- Recommendations on the implementation of the system governance: feedback from models implemented in other countries
- Recommendation on the granularity level of information traceability and anonymity: feedback from models implemented in other countries

1.1.1.3. Means and methods of storing and sharing accounts or digital assets, transactions, and customer information.

- Data storage: division of tasks and responsibilities among stakeholders.
- A description of the amount and nature of system information to which each stakeholder has access.

1.1.2. End-user experience aspects

1.1.2.1. Ability for the end user to directly manage CBDCs and the suitable technology supports.

- List suitable technology supports - smartphone, feature phone/ussd, card, etc.
- Descriptions of security requirements for suitable technology supports.

1.1.2.2. List the proposed use cases for end users.

1.1.2.3. End-to-end solutions delivered

- For end customers: solutions to create and manage accounts / wallets
- For intermediaries: solutions to manage cash in/cash out

1.1.2.4. End-user ability to execute offline transactions

- Description of the mechanisms used
- Requirements for the necessary technological support

1.1.3. Aspects on the transactions implementation and interactions with other systems

1.1.3.1. Mechanisms enabling P2P transactions between end-users, between the central bank and intermediaries and between intermediaries.

1.1.3.2. Interoperability with existing financial systems (bank IT, EMEs IT and other RGTS-type interbank systems)

1.1.3.3. List of proposed APIs, with a precision of the specific format, and the supported protocols.

1.1.3.4. Proposed mechanisms to ensure full interoperability between intermediaries involved in the distribution of CBDCs.

1.1.4. Technological aspects

1.1.4.1. Technology platform - based on DLT, blockchain or an existing "traditional" technology.

1.1.4.2. Description of the functional/operational architecture

- Means of issuing and distributing CBDCs
- Means of storing and executing CBDC transactions
- Participants (central bank, intermediaries, and end-users) connections and access to the network
- Register's structure.

1.1.4.3. Description of the technical architecture

1.1.4.4. Ability to process cross-border transactions.

- Interoperability with CBDCs in other countries
- Interoperability with traditional systems
  - Ability to subject to existing standards, such as VISA and Mastercard.

1.1.4.5. Ability to avoid double expenses.

- Online and offline (if applicable)

1.1.4.6. Ability to trace and verify (in terms of proof of issue and ownership) CBDCs.

1.1.4.7. Mechanisms to ensure the confidentiality of transactions, accounts, customer information, etc.

1.1.4.8. For solution providers, upgrade strategy:

- Continuous development, periodicity of updates, etc.

1.1.5. Infrastructure aspects

1.1.5.1. Description of the technical infrastructure
- Definition of server and data center requirements in the central banks and intermediaries' infrastructures.

1.1.5.2. Solution security level:
- Mechanisms to prevent fraud (creation of CBDCs by an unauthorized entity or person) and theft of CBDCs
- Mechanisms to secure registries and transactions
- Approach to store, transfer, and share data securely without compromising integrity and confidentiality

1.1.5.3. Solution performance level
- Ability to validate transactions quickly and efficiently.

1.1.5.4. Scalable capacity of the solution.
- Based on both the initial transaction volume and further needs.

1.1.5.5. Ability to perform transactions in real time.
- Means of ensuring an instant settlement that is finally and irrefutably effective.

1.1.5.6. Ability to remain operational
- 24 hours a day, 7 days a week
- Description of redundancy mechanisms proposed to maintain minimal functionality during telecommunications/network service disruptions or other disaster recovery scenarios

1.1.5.7. Means to meet industry standards on the overall system
- Transaction's structure and signature
- Data encryption
- Confidentiality of information.

1.1.5.8. Specific hardware needs

1.1.5.9. Ability to be deployed on cloud or on-premises infrastructure.

1.1.5.10. Technical operating conditions for the network participants (central bank and intermediaries)
- Server Installation
- Hardware installation
- System maintenance conditions

1.1.5.11. Definition of technical requirements in terms of infrastructure, particularly on the telecommunications aspect
- For the Central Bank
- For intermediaries.

1.1.5.12. Ability to interoperate with the existing system implemented with an SOA architecture.

5. Technical references

The technical references relating to similar projects must be presented in accordance with the tables below:

Client:		**Country:**
Project name:	**Project amount (in US$)** *please describe the scope of work related to this global amount and detail if possible the breakdown per* phase	**Year:**
Description of the project:		
Planning of the project: *(Project execution time, completion time of each phase, production time of the pilot phase, ...)*		
Description of the services provided by your company:		
Resources: *Which types of profiles were involved on your side? Which types of profiles had to be involved on client side?*		
Debt type *(Direct / Indirect)*		
Distribution intermediate *(Ex: banks, EME, …)*		
Technological support *(Token / Account)*		
Exchange support for the end user *(Mobile phone, credit card, …)*		
Technology: *(Ex: Blockchain, DLT, …)*		

You are welcomed to enclose a detailed description of the project (functional and technical high-level specifications) in your answer for any led project.

6. Solution costing

The costing of the proposed solution must be carried out following 4 level of subscribers/transactions detailed in the table below:

	1st level	2nd level	3rd level	4th level
Number of subscribers	1 M	5 M	8 M	10 M
Number of transactions per year	20 M	100 M	200 M	300 M

The proposed estimation grid is not exhaustive, we will leave you to complete it in detail with information specific to your solution, please the cost estimate must include the types of charges (BUILD and RUN):

BUILD costs

Types of charges	Estimated workload (man-days)	Estimated cost in US$
Infrastructure cost		
Configuration / parameterization cost		
Integration cost		
License cost		
Project management cost		

RUN costs

Types of charges	Estimated workload (man-days)	Estimated cost in US$
Infrastructure cost		
Maintenance cost		
Cost of licenses / subscriptions		
Cost of other services (To define)		

2. **Guidelines**

We look forward to receiving your answer to this RFI/RFQ and thank you in advance for your interest in BFM procurement opportunities. The submission deadline is 6th of September 2021; 4:00 PM (Madagascar time, UTC +3).

You are kindly requested to advise whether you intend to submit an answer by 25th of August. If that is not the case, BFM would appreciate your indicating the reason, for our records.

Your confirmation as well as your full response should be sent by email to:

sec.dag@bfm.mg with copy (cc) to apm.dag@bfm.mg, 1_DAG@bfm.mg and F.RAKOTOMANGA@bfm.mg

Any questions or request for additional information regarding this RFI/RFQ should be emailed to these addresses above before Monday, the 27th of August 2021 at 4 p.m. (Madagascar time, UTC +3).

Interested parties are encouraged to visit the Banky Foiben'i Madagasikara website to ensure that they receive all information updates related to this RFI/RFQ.