Cambridge
Centre
for Alternative
Finance

UNIVERSITY OF
CAMBRIDGE
Judge Business School

CAMBRIDGE SUPTECH LAB
ACCELERATING THE **DIGITAL TRANSFORMATION** OF FINANCIAL SUPERVISION

REQUEST FOR EXPRESSION OF INTEREST (REOI)

Next-generation AI-powered, chatbot supported, complaints management system for financial authorities

Project: Development of a working prototype of the next-generation AI-powered, chatbot supported, complaints management system ("the Project") serving two financial authorities in two countries (the "Agencies")

Description: A data warehouse and dashboard solution that brings natural language processing (NLP) and other artificial intelligence (AI) technologies to draw from new and historical complaints and surface trends that can be useful across departments, along with chatbot upgrades to augment the collection process.

Contracting Entity: University of Cambridge, Judge Business School

Countries and Agencies: TBC before vendor selection and contracting

Grant Value: US$135,000

Publication Date: 24 February 2023

Expression of Interest Deadline: 09 March 2023 23:59 GMT Time (UTC +0)

Project Implementation Dates: May 2023 – November 2023

Procurement Process Managed by: Cambridge SupTech Lab at the Centre for Alternative Finance, the University of Cambridge Judge Business School

Submission: Email all documents to the Cambridge SupTech Lab's Launchpad at suptech-launchpad@jbs.cam.ac.uk with subject line "REOI: Cambridge SupTech Lab – Next-Gen Complaints Management Project"

Language: All submissions must be written in English.

The Cambridge SupTech Lab

The Cambridge SupTech Lab ("the Lab") at the Cambridge Centre for Alternative Finance, the University of Cambridge Judge Business School, accelerates the digital transformation of financial supervision.

While financial services are becoming increasingly global, digital and complex, analogue processing and antiquated technologies in data gathering, validation, storage and analysis erode the analytical capabilities of supervisory agencies, who are often too late in protecting consumers from fraud and seeing signs of stress in the financial system, or miss the underlying causes. This is all happening while financial crime remains a trillion-dollar issue, and public agencies face new challenges such as the regulation and supervision of crypto assets, and monitoring environmental, social and governance (ESG) aspects of the financial industry's business.

The Lab aims to meet financial sector supervisors' needs by developing with them new methodologies and processes that further market oversight and empower consumers, and to deploy suptech applications that generate relevant, reliable, timely insights to inform their decisions. From research to executive education, to technical assistance, to crafting production-grade suptech solutions, we are committed to supporting the emergence and acceleration of the suptech ecosystem and to empowering a new generation of innovation leaders seeking to digitally transform financial supervision.

For more information about the Lab, please visit https://www.cambridgesuptechlab.org

SupTech Launchpad

To accelerate the growth of the suptech marketplace, the Lab partners with financial authorities and technology vendors to co-create and deploy cutting-edge, scalable suptech applications. Our team helps detail the technical specifications, de-risk procurement for all parties, and provide project management support and hands technical assistance including security testing. Furthermore, we provide the vendors with coaching and opportunities to engage with investors and other stakeholders.

The most transformative Proofs of Concept (POCs) developed through the Innovation Leadership Programme are selected for agile prototyping and deployment. The process involves global competitions to crowdsource ideas from technologists and identify the best implementation partners among both other financial authorities and vendors. The Lab's Launchpad largely builds on the experience of the RegTech for Regulators Accelerator (R^2A), which successfully developed groundbreaking applications by introducing an agile mode of collaboration between financial authorities and vendors.

For more information, please visit https://lab.ccaf.io/launchpad/

I. Project Description

The partnering Agencies aim to protect financial consumers' interests, empower financial consumers, and facilitate the development and enforcement of client-focused financial sectors.

The Agencies want to create a one stop platform for proactive supervision of consumer complaints. Beyond effective handling and resolution of complaints, it is also essential to explore opportunities to leverage modern technologies to access/analyse associated data in real-time to be able to identify potential market misconduct or growing risks to financial stability efficiently and accurately by aggregating market-wide data sets.

The Lab and the Agencies seek to develop a prototype next-generation complaints management utility solution (i.e., a dashboard with administrative and reporting capabilities, integration with existing complaints process, etc) for customer complaints.

The solution should entail two main components.

First, a **data warehouse, analytics, and dashboard solution is required to monitor all complaint channels** in a way that will provide visibility across relevant supervisory departments for effective complaints/enquiry handling as well formulating policies. More specifically, it should:

- Integrate already existing channels (phone calls/walk ins/emails) to the complaints management system for a coordinated complaint/enquiry handling approach.
- Connect to existing and planned complaints-adjacent data points such as FAQs from departments, emails, social media channels etc.
- Leverage APIs, NLP, machine learning, and AI tools to generate reports for use by relevant supervisory departments.

Second, a **chatbot application is to be upgraded and integrated with other channels.** One of the partnering Agencies has already deployed an advanced chatbot and primarily requires integration; the other one has a legacy chatbot using rule-based software that needs to be upgraded to a dynamic, intent-based chatbot as part of this Project. The chatbot portion of the solution should ensure the following value for:

i. Financial consumers to file complaints on financial product or services through a variety of channels in mixed language, and correspond with the Agencies in a manner through which they:

- Gain a fast turn-around time on their queries/complaint handling and obtain effective information
- Increase level of satisfaction for people who can access information on financial services/products easily, plus satisfaction on the complaint-handling mechanism.

ii. The Agencies to

- Improve customers' financial literacy

- Reduce cost and time spent on handling customers' queries

- improve financial sector business process through better consumer-handling process

- Improve the access to external dispute resolution process

- Enhance the ability to handle more queries and complaints due its operations on more platforms

- Enhance the ability to handle large volume of queries and complaints simultaneously

- Improve the customers' level of satisfaction due to ease in access of information on financial services/products

- Improve the customers' level of satisfaction with a better complaint-handling mechanism

- Provide information and updates on financial services and products in real time to customers

- Enable a fast turn-around time (anywhere and anytime – using cell phones)

- Improve the effectiveness of the information sharing/complaint handling.

## II. Description of Required Solution

Basic Requirements

By improving data quality and access and developing new tools for data visualization and analysis, the Project will support the Agencies' efforts to provide an improved access to a complaint system and especially:

- Address queries and complaints collected through all channels, including the chatbot

- Manage the structure and flow of automated conversations based on expertise and historical data, with support for multiple and mixed languages

- Use data and insights gathered through the chatbot for oversight and policy development purposes

- Expand the chatbot ability to handle consumer complaints, through creating an API that integrates with the Agencies' legacy consumer complaint portals

- Incorporate additional channels for monitoring market conduct (e.g. via social media) related to entities and topics identified in the complaints management system.

At the same time, the chatbot should be upgraded with an ability to assist users (in form of FAQs or otherwise) with the following:

- Consumer rights with regards to financial services adoption, usage, grievance redressal

- protection of data, code of conduct/fair practices code

- Standard information on financial products and services – do's and don'ts, pricing criteria, product features and benefits

- Information on government programs on financial inclusion including eligibility criteria, process to access the benefits under the concerned programs.

High-level architecture
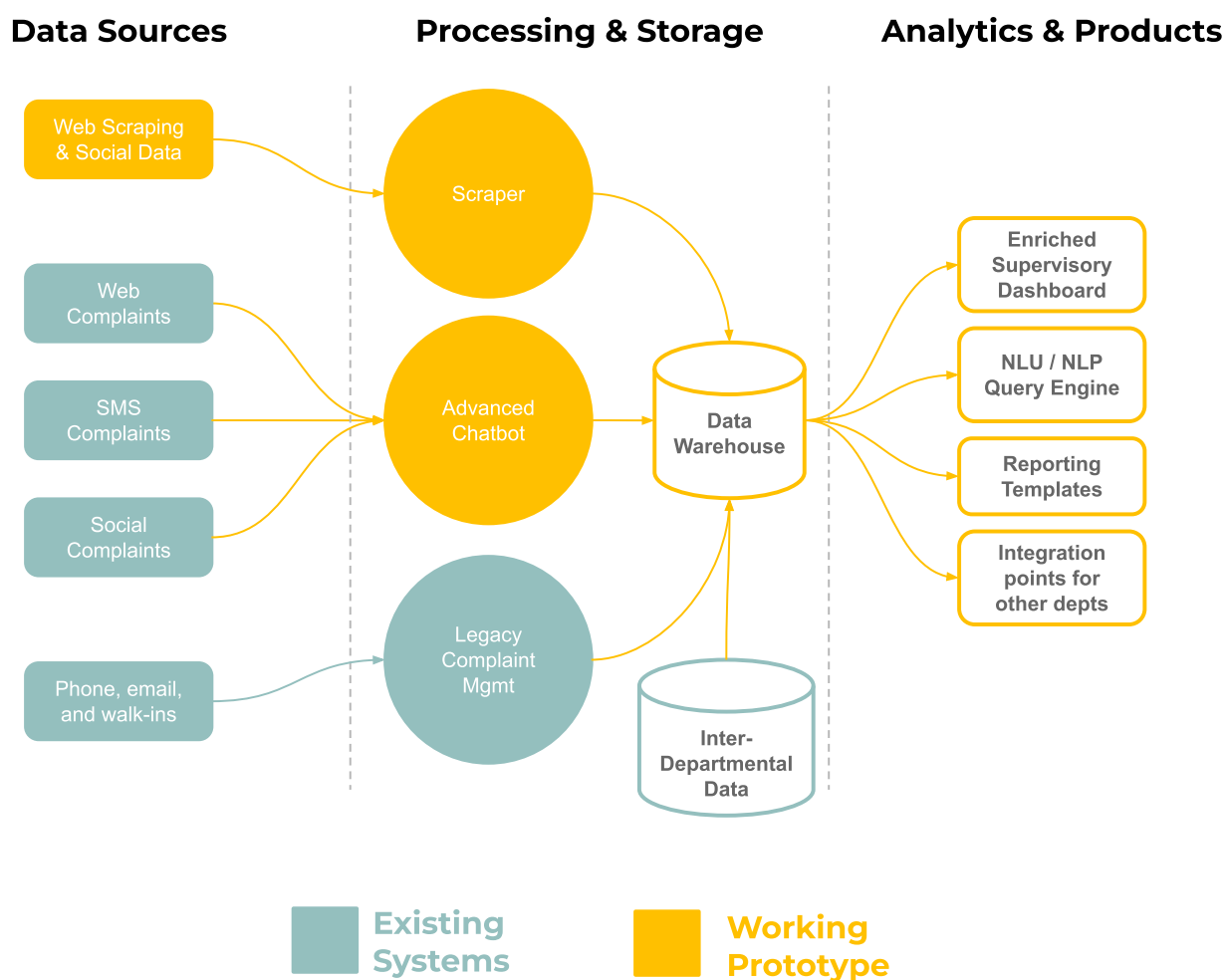
Key Technical Requirements

A more granular breakdown of the process follows:

COMPONENT	ID	FEATURE	DESCRIPTION	PRIORITY
Analytics & Products for Monitoring of Complaints Handling	1.1	Enriched Supervisory Dashboard	Complaints handling system must have dashboard with information effective, comprehensive, and up to date. It must be able to produce an accurate report on the process of resolving customer complaints.	HIGH
	1.2	Complaints Triage with NLU/NLP Query Engine	The Agencies must have a ticketing system to monitor the completion of complaints handling processes, that is able to be queried in dynamic and natural manner.	HIGH
	1.3	Advanced Analytics	Platform for modeling early detection of emerging trends in market conduct, leveraging NLP, ML, and other AI solutions	MED
Data Sources Integration and Automation of Processing and Storage	2.1	Data Warehouse	Create a storage mechanism for the data across complaints channels, with a schema informed by classified content of historical complaints data	HIGH
	2.2	API Connectors + Scrapers for introducing additional channels	Integrate the chatbot data with the Agencies' legacy consumer protection portals via a data warehouse, including FAQs from departments, phone calls, walk ins, emails, social media channels, etc.	MED
	2.3	Advanced chatbot	To connect to additional data points such that various scenarios and set answers can be used to train and add knowledge to the chatbot	MED

Scope limitations

In Scope:

- Integration of data sources and interdepartmental data via a data warehouse and APIs
- Enriched supervisory dashboard with NLU-based query engine for exploring and reporting on the data
- Reporting templates for consumer complaints and protection reporting purposes
- Planning and integration points for input of additional future data sources (pictured in grey above), and output to additional suptech products
- Development of web scraping and social media monitoring channels.

Out of Scope:

- Agencies will need to comply with data sovereignty and data sharing regulation in providing particularly sensitive data sources for the sake of the prototype.

III. Key vendor requirements

The Project requires a vendor with the capacity, relevant experience, and resources to design, develop, test, and deploy a prototype with the purpose of providing next-generation chatbot capabilities, along with data warehousing and dashboard capabilities.

General Launchpad qualifications

- Specificity: the competition is result oriented and the proposed solution needs to have a high level of detail and granularity with respect to the expected output.

- Precedent: the applicant needs to work on a novel solution.

- Geography: the vendor can be based in any jurisdiction. Data needs to be stored in an infrastructure compliant with the needs of the financial authority.

- Collaboration: the development of the solution should be conducted in collaboration with the team designated by the financial authority in each distinct phase.

- Sufficient experience to build an application that can serve the data needs of the financial authority, e.g.:

  o Integrate with existing application within a governmental entity

  o Allow the migration of existing data

  o Provide real time, on-demand support and the ability to generate reports or summary

  o Provide a high standard of application security

- Demonstrated ability to:

  o Manage product life cycle

  o Develop, complete, implement, maintain, and deliver the appropriate technologies

  o Properly write documentation

  o Maintain an enterprise ecosystem.

- Experience with:

  o Suptech solutions

  o Working with regulators and financial authorities

  o Frontend Development and UI/UX Design (as needed)

- o Data products and practical applications of analytics and data science (e.g., AI/ML)

- o Software engineering

- o Application architecture and devops

- o Program/project management and business analysis

- o Agile methodologies for application development

- o Application integration and performance tuning/optimization

- Knowledge including:

  - o Cybersecurity and secure application development coding standards

  - o Best practices in relevant fields to the solution at hand

- Resources:

  - o Technical expertise on related knowledge and experience

  - o Sufficient staffing and computing resources required by the identified feature and time requirements and constraints

  - o Sufficient specification of online, on-premises, and/or hybrid computing resources

  - o Adequate project management staffing based on requirements

  - o Software, hardware, network, and cloud computing licenses and subscriptions to cover development, implementation, and warranty period

- Project management:

  - o Methods that leverage agile delivery methodologies for project planning, design, building and testing, stakeholder engagement, and effective risk management to ensure on-time completion of the project without budget overrun.

<u>Engagement-specific requirements</u>

i. The vendor and proposal must ensure sufficient experience to build an application that can:

   - Process consumer complaint data in multiple and mixed languages

   - Integrate with existing applications within a governmental entity;

   - Allow the migration of existing data to a centralized data store (i.e. "warehouse")

   - Provide real time on demand support / ability to generate reports or summary analytics

   - Provide high standard of application security

ii. Demonstrated ability to:

- Manage product life cycle

- Develop, complete, implement, maintain, and turnover business intelligence, AI, and machine learning (ML) full stack solutions.

- Implement full stack solutions that span data components, business logic, automated and scheduled processing, orchestration, and user interface development and implementation

- Build chatbots that include natural language input and issue escalation;

- Intelligently design conversational user interfaces for non-technical and technical customers

- Properly write documentation

- Maintain an enterprise ecosystem

iii. Experience:

- Designing, building, tailoring, and deploying suptech solutions in other countries

- Working with regulators and financial authorities across jurisdictions

- Full stack development

- Data, Systems, Technical, and Application Architecture

- Program/Project Management and Business Analysis

- Data Analytics

- Artificial Intelligence/Machine Learning

iv. Knowledge:

- Natural language processing (NLP) and natural language understanding (NLU) best practices

- Schema development for data warehousing of supervisory data

- User experience design best practices for advanced data products

IV. Project Award

The successful applicant will:

- Be awarded **US$135,000** to develop and test the required solution. This is a fixed-sum contract, which is to cover all the applicant's expenses related to the development and testing work, including staff time, hardware, software, travel, and all other project-related expenses.

- Receive tailored coaching

- Be invited to the Lab's pitch day to connect with funders and to a demo day to present their products to potential clients

- Be listed in the Lab's online [Vendor Database](#).

- Be mentioned in a case study published by the University of Cambridge to share lessons from the project

- Engage with the suptech community through the Lab's hackathons and techsprints

- Be introduced to the global community of regulators and supervisors, investors, academics and development partners that are collaborating with the Cambridge SupTech Lab during other events hosted by the Cambridge Centre for Alternative Finance (CCAF).

V. Vendor Selection and Project Implementation

Timeline

Following the receipt of Expression of Interest submissions from qualified vendors, the University of Cambridge will shortlist three vendors. The vendors will be issued a Request for Proposals (RFP) on March 19th, 2023. The invited vendors will have ten days to submit their proposal. The winner of the RFP will be announced on May 2nd, 2023, with work commencing within three weeks. This Project will ultimately deliver a prototype that will be tested by the Agencies no later than November 2023.

Key features of this initiative

- Blind review process: A panel of expert reviewers will score anonymised proposals without knowing the name of the vendor submitting them.

- Competitor scorecard: Applications will be assessed by the panel using a set of scoring metrics and weighing the relative importance of each attribute.

- Rapid turnaround time: We will select the winning vendor and award 50% of the **US$135,000** within 48 days from submission of the final proposal. The last 50% of the award will be paid in one installment upon completion of the deliverables according to projected timelines.

Project Structure

The Project has four phases, elaborated below:

1. Kickoff and interface design, including technical integration specifications

2. Development of a working prototype

3. Integration and development of additional data analytics and/or visualization.

4. Testing and signoff of the working prototype.

Throughout all project stages, vendors are expected to meet weekly with key stakeholders of the Agencies as well as the Lab's team, to ensure close coordination and agility.

1. KICKOFF & INTERFACE DESIGN, INCLUDING TECHNICAL INTEGRATION SPECIFICATIONS

During the first phase, the selected vendor (in coordination with the Lab's Launchpad team) will gather requirements from the Agencies and produce an initial Design Document that includes integration and user interface specifications. This living document should include specifications for the client-facing portion of the prototype, communicated in a manner such that clients of the prototype can understand how to integrate with systems and processes, submit data, and use the system without necessarily understanding the entire architecture behind the software. This includes specifications for the data integration (analytics and visualization) phase of the project as well. This Document is to be shared as needed with any other key stakeholders (e.g., vendors of relevant software used by the Agencies, any financial institutions needing to integrate) to allow them to develop integrations and/or adapt existing software during the development phase. The design document should also include criteria for user acceptance testing for use during the testing phase.

2. DEVELOPMENT OF A WORKING PROTOTYPE

The selected vendor will build a working prototype that delivers on the requirements laid out in the REOI, RFP, Project Agreement, and any modifications to scope agreed during the previous Phase 1.

The Next-Gen Chatbot and Analytics system will first receive a small subset (a representative sample) of all data required in a controlled environment. Initial data being submitted via the system will be sample data to start, with real data only being introduced to the system once proper security protocols and data sharing agreements are in place. Starting with a prototype and a small data set will allow the vendor to quickly identify and address any unforeseen issues early in the Project development cycle.

Once agreements are in place, the data sources can be integrated, tested, and validated on real supervisory data.

The working prototype will also facilitate candid discussions among Project stakeholders regarding issues such as model interpretability, potential externalities, and the like.

3. INTEGRATION AND DEVELOPMENT OF ADDITIONAL DATA ANALYTICS AND/OR VISUALIZATION

Once the working prototype has been developed, tested, and accepted, the vendor will provide any analytics and visualization tools defined during the design stage.

Additionally, the selected vendor should (i) assess the needs of the Agencies to understand which dashboards, reports, and statistics are most useful and/or difficult to produce under the current IPS fraud detection system; and then (ii) propose and develop a prototype mechanism for extracting and visualizing this information from data consumed, processed, and produced by the Next-Gen Chatbot and Analytics working prototype. This could involve creating custom queries, scheduling the generation of reports, and outputting in various formats.

The final UI of the prototype must be done before the final tests of Phase 4.

4. TESTING AND SIGNOFF OF THE WORKING PROTOTYPE

Once the proof of concept has been completed to the satisfaction of the involved parties, integration and testing with real institutional data can begin. The working prototype will be tested with the Agencies, based on any user acceptance criteria defined during the design stage, to allow the vendor to ensure that the prototype Detector can handle the acceptance, reporting, and detection of fraud within real data before the it is scaled into full production. This approach also minimizes the risk of interruption due to unforeseen technology failure and serves to inform estimates of the cost to scale the prototype to a production-grade service.

A cyclical final test of the prototype and improvements by the developers must be done until the product is adherent to the functional specification document.

VI. Rules and guidelines

Submission Requirements

Interested vendors must demonstrate that they are qualified to perform the services required for the Project. In particular, interested vendors are asked to address the following requirements in their submission in a format capable of being read by Microsoft Word, which should together be **no more than 8 pages in length** (minimum 11-point font):

1. Company background (including technical and managerial capabilities of the executives).

2. A list of past projects representative of the experience of the company and the executives.

3. Information on the qualifications of key managers and staff to be involved in the Project, including whether they have experience working on suptech projects.

4. Summary of your working experience in the following geographies: (1) Philippines; (2) Indonesia; (3) Ghana; (4) Peru; (5) India.

5. Examples of prior experience related to the development of this solution prototype or similar technological solutions.

6. Indicative development / implementation schedule based on the timeline set out above.

7. Detailed description and examples of technical prowess that address both components of the key vendor requirements in section III.

All materials should highlight the relevance to the required solution described in this document.

Supporting documents may be submitted (e.g., company brochures, case studies, CVs, etc.) as attachments to the submission email. No page limits apply to these attachments, but evaluation will be based primarily on information included in the main body of the EOI.

Any questions prior to the submission deadline should be sent via email to Cambridge SupTech Lab's Launchpad at suptech-launchpad@jbs.cam.ac.uk with subject line "REOI: Cambridge SupTech Lab - Next-Gen Complaints Management Project".

Disclaimer

This document is not a request for proposals. The Lab reserves the right to edit, invalidate, terminate, and/or reissue this REOI at any time and for any reason. The Lab also reserves the right to select a vendor through an alternate method and/or adopt an alternate timeline for vendor selection that differs from the method and/or timeline described in this document, the websites of the Lab and Launchpad, and any other communications related with the process. Furthermore, the Lab expressly disclaims responsibility for any costs incurred by any vendor in responding to this REOI, regardless of whether the REOI is edited, invalidated, terminated, and/or reissued at any time and for any reason.