

## TERMS OF REFERENCE

### **Backend Modifications to Support the Business Model for the Caribbean Digital Transformation Institute**

#### **1. BACKGROUND INFORMATION AND JUSTIFICATION**

##### **1.1 Relevant Background**

The Caribbean Export Development Agency (hereinafter "Caribbean Export" or "the Agency"), in a strategic partnership with the Inter-American Development Bank (IDB), is committed to the institutionalization and long-term viability of the Caribbean Digital Transformation Institute (CDTI). As a regional initiative, the CDTI is designed to serve as a catalyst for digital innovation, providing micro, small, and medium enterprises (MSMEs) with the diagnostic tools and training necessary to compete in an increasingly data-driven global economy. This initiative is established within the broader context of the "Fourth Industrial Revolution," where digital maturity is no longer an auxiliary advantage but a foundational requirement for business resilience and regional economic stability.

The Caribbean's digital landscape is characterized by a significant "Digital Paradox." While internet connectivity growth in Small Island Developing States (SIDS) has outpaced the global average—rising at 8.4 percent annually—the actual adoption of digital tools for productive business use remains uneven. MSMEs in the region, particularly those led by women and situated in rural areas, face systemic barriers to entry. These include limited capacity to assess the financial viability of digital investments, a scarcity of specialized human capital with advanced technical skills, and deep-seated information asymmetries where firms lack knowledge of available technologies and service providers.

Furthermore, the regional regulatory environment often lags behind the velocity of technological advancement, creating a climate of uncertainty that hinders the deployment of sustainable, data-driven technologies. The CDTI positions itself as a "Regional Public Good" (RPG) to bridge these gaps. By offering a standardized "Digital Check-up" tool and a suite of e-learning courses, the Institute enables firms to assess their maturity across dimensions such as communication channels, people and organization, and data analytics. However, to transform from a donor-funded project into a permanent fixture of the regional economy, the CDTI must address the "Margin Growth Paradox"—the tension between investing in sustainability and maintaining operational profit margins.

## **1.2 The Team’s Mission**

The Caribbean Export Development Agency, in partnership with the Inter-American Development Bank, has developed the Caribbean Digital Transformation Institute (CDTI) — a regional initiative designed to accelerate digital adoption and innovation among Caribbean businesses.

The CDTI is established as a regional public good, specifically designed to transform MSMEs through digital adoption. The team’s mission is to ensure long-term sustainability through the development of a viable business model, an effective organizational framework, and strong public–private partnerships. Ensuring the sustainability of the CDTI is critical because it transforms the initiative from a short-term project into a lasting regional public good. A sustainable CDTI guarantees that MSMEs will continue to access vital digital skills, tools, and networks beyond the life of initial donor funding. This continuity not only builds long-term competitiveness and resilience among Caribbean businesses but also strengthens trust and engagement from stakeholders who need assurance that the platform will remain available and relevant. Moreover, sustainability ensures that the resources invested yield enduring impact, enabling the CDTI to evolve with changing technologies and business practices while consistently supporting the digital transformation of the region’s MSMEs.

A central part of this mission is to enhance the relevance and impact of the CDTI by strengthening its course offerings, improving user engagement and retention, and aligning its services with evolving business practices. The CDTI Platform and the Digital Maturity Check-up Tool will play a key role in ensuring that services are well-informed, actionable, and responsive to the needs of Caribbean MSMEs.

## **1.3 Contracting Authority**

The contracting authority for this assignment is the Caribbean Export Development Agency (*hereinafter* Caribbean Export/the Agency).

## **1.4 Beneficiary Countries**

IDB Caribbean Countries: Belize, Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

## 2. OBJECTIVE, PURPOSE AND EXPECTED RESULTS

### 2.1 Overall Objectives

The overall objective of the Technical Implementation Consultant is to operationalize and execute the necessary back end modifications required to transform the CDTI from a donor-funded project into a self-sustaining, revenue-generating digital entity. This will allow the building of the actual technical architecture that allows the CDTI platform to process transactions, manage tiered access, and monitor financial health in real-time.

This objective is achieved through four primary goals:

1. **Translating Strategy into Code:** Converting the Strategy Consultant's revenue models and Functional Requirements Document (FRD) into a high-level Technical Requirements Document (TRD) that serves as the final build-map.
2. **Building the Revenue Engine:** Developing custom, modular backend logic that enables the platform to support diverse monetization streams, such as "Pay-per-Service" and "Subscription" access models for Caribbean MSMEs.
3. **Enabling Regional Commerce:** Integrating a secure, multi-currency payment infrastructure specifically designed to handle the complexities of cross-border Caribbean transactions.
4. **Empowering Data-Driven Management:** Implementing a "Sustainability Dashboard" that provides CDTI leadership with real-time backend reporting on revenue versus operational costs, ensuring the platform remains financially viable over the long term.

### 2.2 Specific Objectives and Scope of Work

The specific objectives of the Consultancy are:

- **Architecture Evolution:** To transform the existing CDTI backend into a modular, service-oriented architecture capable of supporting diverse commercial transactions and user tiers.
- **Monetization Readiness:** To implement the logic required for "Pay-per-Service," recurring subscriptions, and B2B content licensing as defined by the Sustainability Strategist.
- **Regional Financial Integration:** To establish a secure, multi-currency payment gateway that mitigates the "Financial Constraints" often faced by Caribbean MSMEs.
- **Operational Transparency:** To provide management with a "Sustainability Dashboard" for real-time visibility into the platform's financial health and "Margin Growth Paradox".

The scope of works for this Consultancy are:

***Phase I: Requirement Translation & Technical Blueprinting***

- Review of Strategic Frameworks: Analyze the Functional Requirements Document (FRD) and revenue models produced by the Strategy Consultant.
- Technical Requirements Document (TRD): Translate the high-level business needs into a granular TRD, specifying system architecture, API schemas, and data security protocols.
- Functional Audit Alignment: Refine the technical roadmap based on the initial functional audit of existing CDTI infrastructure to ensure compatibility.

***Phase II: Modular Development for Access Control***

- Revenue Module Integration: Develop and deploy custom backend modules to support 'Pay-per-Service', 'Subscription', and 'Freemium' access tiers.
- Automated User Tiering: Implement logic for automated provisioning and de-provisioning of resources based on payment status or certification pathways.

***Phase III: Regional Financial Infrastructure***

- Multi-Currency Payment Engine: Integrate a secure, Caribbean-optimized payment gateway capable of handling transactions across IDB member countries (including Barbados, Jamaica, Guyana, and others).
- Security Compliance: Ensure all financial integrations adhere to "Secure-by-Design" principles and regional data governance standards.

***Phase IV: Sustainability & Reporting Dashboard***

- Internal Management Backend: Review existing CDTI dashboard and integrate system to track and display key performance indicators (KPIs).
- Financial Tracking: Enable automated reporting that compares real-time revenue generation against operational costs to support the "Operational Sustainability Model".

### 2.3 Purpose of consultancy and expected results

The purpose of this consultancy is to ensure the CDTI becomes a self-sustaining entity that stimulates ongoing digital adoption and innovation among Caribbean MSMEs beyond the life of initial donor funding.

### 2.4 Expected Results

The Consultant is expected to deliver a fully functional, enterprise-grade backend infrastructure that achieves the following outcomes:

- **Operationalized Revenue Infrastructure:** The implementation of a backend environment capable of executing "Pay-per-Service," recurring "Subscriptions," and "B2B Licensing" models without manual intervention.
- **Regional Transactional Capability:** A secure, live payment engine that successfully processes transactions in multiple Caribbean currencies, effectively bridging the regional "Digital Paradox" and financial barriers.
- **Technical Alignment with Strategy:** A comprehensive *Technical Requirements Document (TRD)* that serves as a permanent technical blueprint, translating the "Sustainability Business Model" into code-level specifications.
- **Automated User Lifecycle Management:** A robust entitlement engine that automatically manages MSME access levels, certifications, and adaptive learning pathways based on their payment tier or partnership status.
- **Financial Oversight & Sustainability Analytics:** An internal **Sustainability Dashboard** that empowers management with real-time data on revenue versus operational costs, enabling data-driven decisions to solve the "Margin Growth Paradox".
- **Platform Resilience and Security:** A "Secure-by-Design" backend that ensures data privacy for MSMEs and adheres to international and regional data governance standards.

### 3. ASSUMPTIONS AND RISKS AND MITIGATION

#### 3.1 Assumptions

The Consultant is expected to deliver a fully functional, enterprise-grade backend infrastructure that achieves the following outcomes:

- Timely Access to Existing Platform Architecture and Source Code:** The Agency will provide the Consultant with complete and timely access to the existing CDTI platform, including its backend source code, database schemas, API documentation, hosting environments, administrative credentials, and any relevant third-party service configurations. It is assumed such access will be granted under appropriate confidentiality and data-handling arrangements sufficiently early to enable the technical assessment.
- Provision of Legacy Functional Audits and Technical Documentation:** It is assumed that all prior functional audits, technical assessments, and documentation of legacy constraints affecting the existing CDTI infrastructure will be made available to the Consultant at inception.
- Stability and Continuity of the Existing Technical Environment:** It is assumed that the existing CDTI hosting infrastructure, platform services, and supporting third-party licenses will remain operational and stable throughout the assignment, and that no concurrent, undisclosed modifications will be made to the production environment by other parties in a manner that conflicts with or compromises the work under this Consultancy.

#### 3.2 Risks & Mitigation

Risk Category	Risk Description	Mitigation Strategy
<p align="center"><b>Financial Risk</b></p>	<p>Delays or challenges in integrating secure multi-currency payment gateways and transaction processing systems may affect the platform’s ability to operationalize its revenue-generating functions.</p>	<p>Engage payment service providers early, validate technical and regulatory requirements during project inception, and conduct comprehensive testing before deployment to ensure functionality and</p>

		compliance.
<b>Technical Risk</b>	Compatibility issues between the proposed backend modifications and the existing CDTI infrastructure may require additional development effort or result in implementation delays.	Conduct a comprehensive technical assessment at the outset of the assignment and adopt a modular, service-oriented architecture that supports seamless integration with existing systems.
	Cybersecurity vulnerabilities and data privacy risks may arise from the introduction of payment processing functionality and enhanced user management systems.	Implement secure-by-design principles, encryption of sensitive data, secure authentication mechanisms, and ensure compliance with applicable data protection and cybersecurity standards.
<b>Operational Risk</b>	Delays in stakeholder approvals, access to technical documentation, or third-party dependencies may impact project timelines and delivery of key milestones.	Establish clear governance arrangements, define approval timelines and responsibilities, maintain regular project coordination meetings, and proactively monitor dependencies throughout implementation.

## 4. DELIVERABLES

### 4.1 Deliverables

The consultant will be responsible for the delivery of the following:

- **Deliverable 1: Inception Report & Technical Requirements Document (TRD)**
  - a) *Strategy Review*: A technical analysis of the Strategist's revenue models to ensure architectural feasibility.
  - b) *TRD Development*: Translation of business logic into a granular TRD, including database schema updates, API specifications, and security protocols.
  - c) *Functional Audit Baseline*: A report detailing the specific backend modifications required to resolve legacy constraints identified in previous audits.
  
- **Deliverable 2: Modular Revenue & Access Control Engine**
  - a) *Monetization Modules*: Implementation of custom backend modules to facilitate 'Pay-per-Service' and 'Subscription' access to CDTI resources.
  - b) *Entitlement Logic*: Development of automated logic for user-tiering, granting or revoking access to e-learning and diagnostic tools based on real-time payment status.
  - c) *B2B Licensing API*: Creation of secure endpoints to allow for bulk licensing and content syndication with regional partners.
  
- **Deliverable 3: Integrated Multi-Currency Payment Infrastructure**
  - a) *Gateway Integration*: Deployment of a secure, Caribbean-optimized payment engine capable of processing transactions in multiple currencies.
  - b) *Financial Security Compliance*: Implementation of "Secure-by-Design" protocols and end-to-end encryption for all MSME financial data.
  - c) *Automated Billing*: A backend system for generating tax-compliant digital invoices and transaction receipts.

- **Deliverable 4: Sustainability Management Dashboard**

- a) Review of current CDTI dashboard
- b) *Internal Reporting Backend*: A management-facing interface that aggregates real-time data from all revenue modules.
- c) *Revenue vs. Cost Analytics*: Visualized tracking of real-time revenue versus operational and content maintenance costs to monitor long-term viability.
- d) *Engagement Metrics*: Integration of backend tracking for user retention, course completion, and "Freemium" to "Premium" conversion rates.

- **Deliverable 5: Technical Handover & Final Documentation**

- a) *Source Code & Repository*: Delivery of finalized, commented source code for all backend modifications.
- b) *Maintenance Manual*: A comprehensive guide for the CDTI permanent technical team covering system maintenance, API updates, and security patching.
- c) *Phased Deployment Report*: Final report on the successful transition of the platform to a live commercial environment.

## **5. PROJECT MANAGEMENT AND REPORTING**

### **5.1 Management structure**

The Manager – Technical Programmes will retain overall responsibility for the overall project. Day-to-day supervision of this project is the responsibility of the Innovation, Digital Business Officer, who will communicate progress to the Manager – Technical Programmes.

### **5.2 Reporting**

A monthly written progress report outlining key activities undertaken, progress made, and results achieved, must be submitted to Innovation, Digital Business Officer.

### **6. Payment timeline:**

Payments will be made upon delivery and acceptance by Caribbean Export based on the following

deliverables.

<b>Payment plan</b>	
<b><i>Deliverables</i></b>	<b>%</b>
<u>Deliverable 1:</u> <b><i>Inception Report &amp; Technical Requirements Document (TRD)</i></b>	10
<u>Deliverable 2:</u> <b><i>Modular Revenue &amp; Access Control Engine</i></b>	35
<u>Deliverable 3:</u> <b><i>Integrated Multi-Currency Payment Infrastructure</i></b>	35
<u>Deliverable 4:</u> <b><i>Sustainability Management Dashboard</i></b>	10
<u>Deliverable 5:</u> <b><i>Technical Handover &amp; Final Documentation</i></b>	10
<b>TOTAL</b>	100%

## 7. REQUIREMENTS

### 7.1 Qualifications and Work Experience

A qualified individual, with a strong technical background in full-stack software engineering, backend systems architecture, and the integration of financial technology solutions.

The consultant must meet the following minimum qualifications and experience:

- The consultant should possess a postgraduate degree (Master's or equivalent) in Computer Science, Software Engineering, Information Technology, or a related technical field.
- Professional certifications in Cloud Architecture (AWS/Azure/GCP), Cybersecurity (Secure-by-Design), or Full-Stack Development will be considered a significant asset.

The consultant must demonstrate substantial professional experience, including:

- At least 5–10 years of relevant experience in software development, backend systems engineering, and managing complex digital transformation implementations.
- Proven experience in building and deploying monetization engines, including automated logic for "Pay-per-Service," recurring subscriptions, and tiered user access.
- Demonstrated expertise in API development and system architecture evolution, specifically transforming monolithic structures into modular, service-oriented environments.
- Experience in integrating secure, multi-currency payment gateways and managing the technical complexities of regional or cross-border financial transactions.
- Proficiency in developing management dashboards and data visualization tools that track real-time financial KPIs and operational analytics.

In addition, the consultant should have:

- Experience developing technical solutions for MSMEs, e-learning systems (LMS), or regional digital platforms.
- Strong understanding of the Caribbean digital landscape, including technical constraints related to regional payment processing and data governance standards.

The consultant must also demonstrate the following competencies:

- Technical Translation: Ability to convert complex business models into efficient, scalable, and commented source code.
- Project Management: Proven ability to manage technical sprints independently and deliver high-quality backend infrastructure within tight timelines.
- Technical Communication: Excellent ability to produce high-quality technical blueprints, API schemas, and maintenance guides.

The consultant must be fluent in English.

### **7.2 Contract Duration**

Five (5) months, with payment based on deliverables.

### **7.3 Location**

Remote

## **8. MONITORING AND EVALUATION**

The Consultancy will be monitored and evaluated by Caribbean Export over the duration of the project. Performance on the project will be measured by satisfactory completion and timely submission of the deliverables outlined in Sections 4, and as outlined within the work plan submitted. Feedback, other than acceptance, on each submitted deliverable is not a requirement

for the continuation of the project. However, in some instances the Consultant may need to integrate any feedback into the subsequent deliverables. The Contracting Authority will provide feedback to the consultant within ten (10) working days of receipt of the final report.

## **9. PUBLICATION OF INFORMATION**

To participate in any activity executed or supported by Caribbean Export, you hereby agree that any information and personal data that you share and is collected by the Agency will be processed for the purpose of reporting the outcomes and impact of your projects and/or participation. Please note that Caribbean Export reserves the right to publish the Contractor's/Participant's name and address, the purpose and nature of the activity, and financial arrangements, in accordance with Caribbean Export's Personal Data Protection Policy. [Personal Data Protection Policy](https://content.carib-export.com/download/personal-data-protection-policy/). (<https://content.carib-export.com/download/personal-data-protection-policy/>). Derogation from publication of this information may be granted if it could endanger the Contractor/Participant or harm his/her commercial interests.

## **10. DECLARATION**

To participate in any procurement undertaken by Caribbean Export, all applicants must complete and submit to the agency the Applicant Declaration Form. <https://content.carib-export.com/download/applicant-declaration-form/>

To apply, please download the full Terms of Reference (TOR) and submit the required documentation, including the:

- Curriculum Vitae
- Financial Proposal
- Applicant Declaration Form

Submit these documents to [info.cdti@carib-export.com](mailto:info.cdti@carib-export.com), copied to Jonathan Seecharan – Innovation and Digital Business Officer at [jseecharan@carib-export.com](mailto:jseecharan@carib-export.com).

The submission deadline is **11:59 PM (AST) on 13<sup>th</sup> July 2026**.