SCK Representation – 2026 Submission

AI-Powered ECTN Platform: Digitalizing Cargo Tracking and Customs Revenue Collection Across African Ports

1. Executive Summary

For decades, cargo tracking and customs documentation across African ports relied on fragmented, paper-based processes. This created systemic inefficiencies, revenue leakage, and a critical lack of visibility into inbound cargo flows.

In 2023, **SCK Representation**, in partnership with the **Djibouti Ports and Free Zones Authority (DPFZA)**, deployed a cloud-native, AI-powered Electronic Cargo Tracking Note (ECTN) platform.

This initiative transformed cargo governance from a reactive, post-arrival process into a **predictive, pre-departure intelligence system**, enabling authorities to validate and act on cargo data before vessels are loaded.

Measured outcomes:

- **+28% increase in customs duty collection**
- **–30% reduction in manual inspections**
- **–18% reduction in container dwell time**
- **Up to 35 days advance cargo visibility**

The project establishes a **new operational paradigm for ports**, combining digitalization, AI, and governance reform into a scalable model.

---

2. Problem: The “Blind Period” in Global Trade

A critical insight from this project is the identification of a structural weakness in traditional maritime logistics:

A 30-day “blind period” where authorities have no verified cargo information

Traditional System Limitations:

- Reliable data available only **4–5 days before arrival**
- Documents can be altered **after shipment departure**
- Limited ability to prevent:
    - Under-declaration
    - Fraud
    - Illicit trade

This results in:

- Revenue leakage (estimated $20M+ annually in Djibouti)
- Port congestion and inefficiencies
- Delayed enforcement actions

---

3. Innovation: From Blind Period → Window of Control

The ECTN platform fundamentally **reverses the timing of control**:

> From **post-arrival inspection** → to **pre-departure validation**

Core Transformation:

- **35 days of advance cargo intelligence**
- **100% pre-departure compliance checks**
- **+45% improvement in declaration accuracy**

AI-Powered Risk Engine Capabilities:

- Price anomaly detection (market vs invoice mismatch)
- Document inconsistency analysis
- Industry mismatch detection (e.g., exporter profile vs goods)
- Route deviation monitoring (sanctioned hubs, irregular routes)

These capabilities allow authorities to:

- Block high-risk cargo **before loading**
- Prioritize inspections based on risk scoring
- Ensure data integrity across the trade lifecycle

This is a **shift from enforcement to prevention**, which is a key innovation differentiator.

---

4. Vision and Leadership

This project reflects strong institutional and operational leadership:

Public Sector:

- DPFZA and customs authorities enabled a **national transition to digital governance**

Private Sector:

- SCK Representation delivered:
    - Full-stack system development
    - Deployment and integration
    - Training and operational support

Leadership Depth:

- Over **45 years of maritime expertise at executive level**
- Active operations across **25+ African countries**

Governance Model:

- Co-design with stakeholders
- Continuous iteration via “Port Innovation Labs”
- 24/7 operational support

This demonstrates **long-term vision, not just technical delivery**.

---

5. Measurable Impact (Core Jury Bonus Area)

The system delivers **clear, verified, and scalable impact**:

KPI	Before	After	Impact
Duty per TEU	$1,250	$1,600	**+28%**

Manual inspections	27%	19%	**–30%**
Dwell time	3.6 days	3.0 days	**–18%**
Data visibility	~4 days	35 days	**~9x improvement**
Declaration accuracy	43%	88%	**+45%**

Annualized fiscal impact:
≈ $23 million additional revenue

Additionally:

- New revenue stream: **$10M from ECTN fees**
- Zero infrastructure cost to government (self-funded model)

---

6. Sustainability and UN SDG Contribution

The project contributes directly to:

SDG 9 – Industry, Innovation & Infrastructure

- Establishes digital trade infrastructure across developing ports

SDG 16 – Strong Institutions

- Enhances transparency and reduces fraud
- Strengthens customs enforcement capabilities

SDG 8 – Economic Growth

- Increases national revenue without increasing tax rates

Additional sustainability benefits:

- Reduced paperwork and manual processing
- Optimized inspections → lower operational emissions

---

7. Stakeholder Engagement & Ecosystem Integration

The platform connects a **multi-layered ecosystem**:

Actors Integrated:

- Exporters
- Freight forwarders
- Shipping lines
- Customs authorities
- Port operators

Operational Model:

- Verified local agents in each country
- Native language and currency support
- Centralized technical operations + local expertise

Adoption Strategy:

- 60+ customs officers trained at launch
- 85+ freight forwarders onboarded
- Continuous user support and education

This ensures **high compliance and system adoption**.

---

8. Global Relevance and Replicability

The platform aligns with global cargo security standards:

- **USA:** Automated Manifest System (AMS)
- **EU:** Entry Summary Declaration (ENS)
- **Africa:** ECTN framework across 25+ countries

Scalability:

- Cloud-based → no infrastructure required

- Deployment timeline: **< 8 weeks**
- Active across **27 African countries**

This makes it a **globally transferable model**, especially for emerging markets.

---

9. Competitive Advantage

- **Full technology ownership (no third-party dependency)**
- **ISO 27001, 27017, 27018 + SOC compliance**
- **AI-driven verification engine (proprietary)**
- **Pan-African operational network**

Additionally:

- Continuous innovation roadmap (blockchain, green analytics, mobile access)

---

10. Conclusion

This project demonstrates that **port digitalization can deliver immediate, measurable, and scalable transformation**.

By addressing a fundamental structural issue—the “blind period”—the platform:

- Increases government revenue
- Strengthens border security
- Accelerates trade flows
- Enables data-driven port management

  It transforms cargo control from a **reactive process into a predictive system of governance.**

This positions the solution as a **global benchmark for sustainable, intelligent port operations**.