📘 Accelerator Program Curriculum

EMURGO x UNDP Blockchain Accelerator
Prepared by:
Version: April 2025

🎯 Purpose

This curriculum is designed to equip SDG-focused innovators with practical skills to deploy blockchain-based solutions using the Cardano stack. It combines theory, case studies, and hands-on development using existing Cardano dev tools and open source projects.

📚 Detailed Modules

📦 Module 1: Blockchain Fundamentals in the SDG Context

🎓 Learning Outcomes

- Grasp the structure of decentralized networks and public blockchains.
- Understand the role of blockchain in enhancing transparency, accountability, and traceability in SDG sectors.
- Understand the core value proposition of Cardano.

🔍 Subtopics

- What is blockchain? Immutable ledgers and distributed trust
- Public vs. private blockchains
- Blockchain and SDGs: value alignment
- How Cardano is different:
    - Proof-of-Stake (Ouroboros) and sustainability
    - eUTXO model: parallel transaction logic and security
    - Native assets: minting tokens without smart contracts

🛠️ Practical Exercise

- Map your SDG challenge to a blockchain benefit (e.g. transparency, identity, DeFi access)
- Explore Cardano block explorer and trace a token transaction
- Read & Reflect: Read a summary of the eUTXO model and list 2 differences between eUTXO and account-based models (e.g., Ethereum).
- Use Cardano Docs or Aiken Intro Guide as a starting point.

🧪 Sample Output

- Written 1-pager: “Why blockchain and why Cardano for my challenge?”

🎤 Module 2: Ongoing Mentorship, Pitch Practice, and Go-to-Market

🎓 Learning Outcomes

- Continuously refine your blockchain solution with guidance from technical and strategic mentors.
- Evolve your pitch and go-to-market strategy in parallel with your product development.
- Prepare early for funding, partnerships, or deployment pathways beyond the program.

🔁 How It Works

This module runs **in parallel with all other modules**. Participants will receive regular feedback and support through scheduled mentor check-ins, peer reviews, and pitch workshops. Strategic guidance will evolve with your product, ensuring you're ready for real-world traction by Demo Day.

🔍 Activities

- Weekly mentorship sessions: technical architecture, UX/UI, compliance, and SDG alignment
- Rolling pitch practice sessions with feedback from external, EMURGO and UNDP mentors
- Go-to-market guidance: refining value proposition, target user segments, and growth channels
- Funding landscape deep-dives: Catalyst, NGOs, corporate partnerships, and grant opportunities

🛠️ Deliverables

- Progressively improved pitch deck and narrative
- Final pitch deck (challenge, solution, tech stack, impact, and user journey)
- Public GitHub repository with demo video
- Feedback log from mentor sessions

🧪 Sample Output

- Live pitch at Demo Day
- Ongoing mentor scorecards with improvement tracking
- Go-to-market action plan (drafted by end of accelerator)

🔐 Module 3: Smart Contracts on Cardano – Plutus, Aiken & Marlowe

🎓 Learning Outcomes

- Know when to use Plutus or Marlowe or Aiken based on solution needs
- Learn how to structure on-chain logic and user roles
- Understand cost, security, and lifecycle implications

🔍 Subtopics

- What is Plutus? Haskell-based, typed smart contracts
- Plutus architecture
    - Datum, Redeemer, Validator model
    - Contract state transitions
- Introduction to Marlowe:
    - Domain-specific language for finance
    - No-code / low-code approach to escrow and milestone payments
- Introduction to Aiken:
    - Custom DSL with a moderate learning curve
    - Focus on readability and security
    - Easy integration with Lucid and CLI tools
- Comparison Table:

Feature	Plutus	Marlowe	Aiken
Language	Haskell	DSL	Custom DSL
Use Case	Custom logic	Finance workflows	Custom logic
Learning Curve	High	Low	Moderate
Tooling	Plutus Playground	Marlowe Playground	Aiken CLI & VSCode Plugin

🛠️ Practical Exercise

- Run a milestone-based grant payout contract in Marlowe Playground
- Fork a basic Plutus escrow contract and modify validation logic

🧪 Sample Output

- Submit GitHub link to forked Plutus/Marlowe contract
- 5-minute screen recording explaining your changes

⚙️ Module 4: AI for blockchain, SDKs & APIs,

🎓 Learning Outcomes

- Use SDKs and APIs to build frontends and integrate smart contracts
- How to Use AI tools for frontend development (intro to 0dev)

🔍 **Subtopics**

Cardano SDKs:

- Lucid (JS SDK): build and sign transactions from a browser
- Cardano Serialization Library
- Mesh SDK for composable dApp components

APIs:

- GraphQL: query transactions, addresses, assets
- Koios / Blockfrost for easier integration

🛠️ **Practical Exercise**

- Use MeshJS example contracts (e.g., Escrow, NFT Minting)
- Issue a test NFT or run an escrow flow using public repos

🧪 **Sample Output**

- GitHub repo: working PoC using Mesh or Aiken examples
- Demo video: wallet interaction or contract lifecycle

🌍 Module 5: Case Studies – Blockchain + SDG in the Field

🎓 **Learning Outcomes**

- Understand real-world implementations
- Identify failure points and best practices
- Map learnings to your own context

🔍 **Real Case Studies**

1. Veridian - Digital Identity on Cardano

- Verifiable credentials for secure, enterprise-ready verifications
- Authentic communications and verifiable identity protocols

2.Changeblock – Tokenized Carbon Credits on Cardano

- **Tokenized carbon credits linked to climate mitigation in Africa**
- **Partnered with local suppliers and buyers**
- **On-chain transparency for payments, token ownership, and impact verification**

3. House Africa – Affordable Housing on-chain

- **Real estate NFTs linked to affordable housing development in Africa**
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- **Partnered with local developers and financiers**

4. Afriex – Cross-border Payments & Remittance

- Immigrant focused remittance network to Nigeria, Ghana, Ethiopia and Cameroon.
- Enables individuals to send and receive funds transparently
- Built on-chain with a focus on intellectual property, access, and transparency

🛠️ Practical Exercise

- Pick one case study. Write a 2-paragraph “what worked / what to change”
- Identify which tools were used or could be added

🧪 Sample Output

- Slide deck: "My SDG Challenge + What I learned from [X] Case Study"

🧩 Module 6: Implementation Design & Architecture

🎓 Learning Outcomes

- Design full-stack blockchain apps for SDG challenges
- Plan backend, wallet, VC and token interactions
- Document and collaborate effectively

🔍 Topics Covered

- Smart contract lifecycle
- DID and VC flow (Veridian, Catalyst libraries)
- GitHub project setup and documentation standards
- CI/CD, testing, and staging environments

🛠️ Practical Exercise

- Complete an implementation canvas:
    - Roles, data flows, token logic, wallet interactions, VC issuance
- Draft your README + architecture diagram
- Start tracking progress in GitHub Projects

🧪 Sample Output

- Repo with `architecture.md`, `README.md`, and sample flow diagram

🗓️ Accelerator Program Timeline (May 2025 - Feb 2026)

Module / Event	May 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26
Cohort 1	Start									
Module 1: Blockchain Fundamentals										
Module 2: Mentorship, Pitch & Go-to-Market										
Module 3: Smart Contracts (Plutus/Marlowe/Aiken)										
Module 4: SDKs, APIs & AI Tools										
Module 5: SDG Case Studies										
Module 6: Implementation Design & Architecture										
RPPS - PoC Sprint (Cohort 1)										
Cohort 1 Final Demos + Evaluation					End					
Cohort 2						Start				
Module 1: Blockchain Fundamentals										
Module 2: Mentorship, Pitch & Go-to-Market										
Module 3: Smart Contracts (Plutus/Marlowe/Aiken)										
Module 4: SDKs, APIs & AI Tools										
Module 5: SDG Case Studies										
Module 6: Implementation Design & Architecture										
RPPS - PoC Sprint (Cohort 2)										
Cohort 2 Final Demos + Evaluation										End

Sample 3 weeks for Cohort 1

Week	Live Session Title	Day	Time (UTC+4)	Presenter	Position
1	Welcome & Orientation + Blockchain for SDG Impact	Monday	10:00–11:00	Ahmed M. Amer	CEO, EMURGO Labs
	Immutable Ledgers & Distributed Trust (Theory + Use Cases)	Wednesday	14:00–15:30	Ahmed Hadded	Product Manager, EMURGO Labs
2	Public vs. Private Blockchains + UNDP Use	Monday	10:00–11:00	Yosuke Yoshida	CEO, EMURGO Africa

	Cases				
	How Cardano is Different – eUTXO + Sustainability	Wednesday	14:00–15:30	Tasos Valinos	CTO, EMURGO Labs
3	Native Assets + Mapping SDG Challenges to Blockchain Tools	Monday	10:00–11:30	Tasos Valinos	CTO, EMURGO Labs
	Workshop: Drafting Your "Why Blockchain, Why Cardano" 1-Pager	Wednesday	14:00–15:00	Ahmed Hadded	Product Manager, EMURGO Labs

*Mentorship, pitch and go-to market will take place on a weekly basis after mentors are matched with founders 2-4 weeks into the program

**To account for different time zones, some sessions will be live, while others will be pre-recorded

Community Mentors and Coaches

Name	Position	Organization
Zushan Hashmi	Founder	Tokeo
Yoram Ben Zvi	Strategy and BD	Connectality, ELKsconnect.com, Andamio
Chetan Padindala	Strategy Consultant and Advisor	-
Nathaniel Minton	CEO	Flux Point Studios, Inc.
Jon Kravetz	CEO	CSWAP Dex
Jo Allum	Founder Director	Venture Centre
Apex	CEO	Titans
Alex Pestchanker	Co Founder, CTO	Token Allies
Ivica Zafirovski	COO	Farmroll.io
Alex Maaza	Sustainability Lead	Cardano Foundation

Other Potential Mentors and Coaches

Name	Position	Organization
Ismael Belkhayat	CEO	Chari

Djamel Mohand	Former COO	Foodics
George Payne	Head of Accelerator	Adaverse
Vincent Li	Founding Partner	Adaverse
Driss Temsamani	Head of Digital	Citi
An Luu	Director	Ginar Solution
Ilan Benhalim	Co-Founder & Partner	VeePee
Basmah Alsinaidi	Managing Partner	Impact46
Waleed A. Alballaa	Investor	Sukna Ventures
Serena Sebastiani	Director - Financial Services Advisory	PwC
Sam Corcoran	Co-Founder	cander
Dave Parker	Managing Partner	DKParker LLC
Pavel Kaminsky	Advisory Board Member	Merchant Payments Ecosystem
Abrar Khan	CEO	Rockville Technologies

Github Markdown

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# 📘 Accelerator Program Curriculum

**EMURGO x UNDP Blockchain Accelerator**
_Prepared by:_
_Version: April 2025_

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## 🎯 Purpose
This curriculum is designed to equip SDG-focused innovators with practical skills to deploy blockchain-based solutions using the Cardano stack. It combines theory, case studies, and hands-on development using existing Cardano dev tools and open source projects.
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## 📚 Detailed Modules

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### 📦 Module 1: Blockchain Fundamentals in the SDG Context

#### 🎓 Learning Outcomes
- Grasp the structure of decentralized networks and public blockchains
- Understand the role of blockchain in enhancing transparency, accountability, and traceability in SDG sectors
- Understand the core value proposition of Cardano

#### 🔍 Subtopics
- What is blockchain? Immutable ledgers and distributed trust
- Public vs. private blockchains
- Blockchain and SDGs: value alignment
- How Cardano is different:
  - Proof-of-Stake (Ouroboros) and sustainability
  - eUTXO model: parallel transaction logic and security
  - Native assets: minting tokens without smart contracts

#### 🛠️ Practical Exercise
- Map your SDG challenge to a blockchain benefit (e.g. transparency, identity, DeFi access)
- Explore Cardano block explorer and trace a token transaction
- Read & Reflect: Compare eUTXO and account-based models using Cardano Docs and Aiken Guide

#### 🧪 Sample Output
- Written 1-pager: "Why blockchain and why Cardano for my challenge?"

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### 🎤 Module 2: Ongoing Mentorship, Pitch Practice, and Go-to-Market

#### 🎓 Learning Outcomes
- Continuously refine your blockchain solution with guidance from technical and strategic mentors
- Evolve your pitch and go-to-market strategy in parallel with your product development
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- Prepare early for funding, partnerships, or deployment pathways beyond the program

#### 🔁 How It Works
This module runs **in parallel** with all others. Mentors provide weekly feedback on
product, pitch, GTM, and strategy.

#### 🔍 Activities
- Weekly mentorship sessions: tech, UX/UI, compliance, SDG alignment
- Pitch practice with EMURGO/UNDP + external mentors
- Go-to-market guidance: user segmentation, partnership strategy, value messaging
- Funding deep-dives: Catalyst, NGO grants, ecosystem funds

#### 🛠️ Deliverables
- Progressive pitch iterations
- Final demo-ready pitch deck
- GitHub repo with video
- Feedback log from mentors

#### 🧪 Sample Output
- Live pitch at Demo Day
- Scorecards with tracked feedback
- Go-to-market plan v1

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### 🔐 Module 3: Smart Contracts on Cardano - Plutus, Aiken & Marlowe

#### 🎓 Learning Outcomes
- Know when to use Plutus, Marlowe, or Aiken based on needs
- Understand smart contract architecture: roles, state, validation
- Explore trade-offs in learning curve, tooling, and cost

#### 🔍 Subtopics
- What is Plutus? Haskell-based, typed contracts
- Plutus architecture: Datum, Redeemer, Validator
- Intro to Marlowe: DSL for finance, low-code milestone logic
- Intro to Aiken: readable DSL with CLI tools, fast testing

#### Comparison Table

| Feature       | Plutus  | Marlowe | Aiken        |
|---------------|---------|---------|--------------|
| Language      | Haskell | DSL     | Custom DSL   |
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| Use Case       | Custom   | Finance | Custom logic |
| Learning Curve| High     | Low     | Moderate     |
| Tooling        | Playground | Playground | CLI + VSCode |

#### 🛠️ Practical Exercise
- Run a milestone grant payout in Marlowe Playground
- Fork and modify a Plutus escrow
- Use Aiken starter template to build a simple validator

#### 🧪 Sample Output
- GitHub link to contract changes
- 5-minute walkthrough video

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### ⚙️ Module 4: AI for Blockchain, SDKs & APIs

#### 🎓 Learning Outcomes
- Use SDKs and APIs to connect smart contracts to frontends
- Learn how AI tools like 0dev accelerate prototyping

#### 🔍 Subtopics
- SDKs:
  - Lucid (browser-based transaction building)
  - Cardano Serialization Lib
  - Mesh SDK (composable frontend dApp components)
- APIs:
  - GraphQL (query chains)
  - Koios / Blockfrost (chain access for devs)

#### 🛠️ Practical Exercise
- Use MeshJS example (e.g., Escrow, NFT Minting)
- Fork and deploy test NFT contract
- AI prompt exercise: build wallet dashboard UI using 0dev or similar

#### 🧪 Sample Output
- Working GitHub repo (NFT/escrow demo)
- Video: testnet contract interaction
- Screens or prompt logs from AI build assistant

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## 🌍 Module 5: Case Studies – Blockchain + SDG in the Field

### 🎓 Learning Outcomes
- Understand real-world implementations
- Identify failure points and best practices
- Map insights to your own context

### 🔍 Real Case Studies
1. **Veridian** – Digital Identity on Cardano
   - Verifiable credentials for enterprise-grade KYC/AML
   - Authentic comms, DID registries

2. **Changeblock** – Tokenized Carbon Credits
   - Carbon credits tied to mitigation projects
   - On-chain payments, proof of ownership and impact

3. **House Africa** – Affordable Housing NFTs
   - Tokenized real estate projects for transparency
   - Verified property titles, partner with local builders

4. **Afriex** – Cross-Border Remittances
   - Crypto-based remittance to/from Africa
   - Focused on Nigeria, Ghana, Ethiopia, Cameroon

### 🛠️ Practical Exercise
- Choose one case study
- Write 2-paragraph “What worked / What could improve”
- Map tools (VCs, tokens, smart contracts) used or needed

### 🧪 Sample Output
- 1-slide summary: “My SDG Challenge + What I learned from [Case Study]”

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## 🧩 Module 6: Implementation Design & Architecture

### 🎓 Learning Outcomes
- Design full-stack blockchain apps for SDG use cases
- Define actors, data flows, contracts, and wallets
- Document builds for teams and mentors

### 🔍 Topics Covered
- Smart contract lifecycle: deploy, validate, evolve
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- Identity flows: DID, VC issuance, revocation
- GitHub standards: READMEs, architecture.md, GitHub Projects
- CI/CD, testing, staging & review flows

### 🛠️ Practical Exercise
- Fill an implementation canvas:
  - Roles
  - Data flows
  - Token logic
  - Wallet interaction
  - VC issuance paths
- Draft your architecture.md and repo structure

### 🧪 Sample Output
- Public GitHub with architecture.md, README.md
- MVP structure with task tracking enabled
- Diagram of roles + flow

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## 🗓️ Accelerator Program Timeline (May 2025 – Feb 2026)

### 🟢 Cohort 1

- **May 2025**
  - ✅ Program Launch
  - 📦 Module 1: *Blockchain Fundamentals in the SDG Context* begins
  - 🎤 Module 2: *Ongoing Mentorship, Pitch Practice & Go-to-Market* begins (runs May–Sep)

- **June 2025**
  - 📦 Module 1 continues
  - 🔐 Module 3: *Smart Contracts on Cardano (Plutus, Aiken & Marlowe)* begins
  - 🎤 Module 2 ongoing

- **July 2025**
  - 🔐 Module 3 continues
  - ⚙️ Module 4: *AI for Blockchain, SDKs & APIs* begins
  - 🌍 Module 5: *Case Studies – Blockchain + SDG in the Field* begins
  - 🧩 Module 6: *Implementation Design & Architecture* begins
  - 🎤 Module 2 ongoing

- **August 2025**
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  - ⚙️ Module 4 continues
  - 🌍 Module 5 continues
  - 🧩 Module 6 continues
  - 🚀 RPPS: *PoC Sprint (Cohort 1)* begins
  - 🎤 Module 2 ongoing

- **September 2025**
  - 🚀 RPPS continues
  - 🎓 Final Demos + Evaluation
  - 🟢 Cohort 1 ends

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### 🟣 Cohort 2

- **October 2025**
  - ✅ Cohort 2 Launch
  - 📦 Module 1: *Blockchain Fundamentals in the SDG Context* begins
  - 🎤 Module 2: *Ongoing Mentorship, Pitch Practice & Go-to-Market* begins (runs Oct–Feb)

- **November 2025**
  - 📦 Module 1 continues
  - 🔐 Module 3: *Smart Contracts on Cardano (Plutus, Aiken & Marlowe)* begins
  - 🎤 Module 2 ongoing

- **December 2025**
  - 🔐 Module 3 continues
  - ⚙️ Module 4: *AI for Blockchain, SDKs & APIs* begins
  - 🎤 Module 2 ongoing

- **January 2026**
  - ⚙️ Module 4 continues
  - 🌍 Module 5: *Case Studies – Blockchain + SDG in the Field* begins
  - 🧩 Module 6: *Implementation Design & Architecture* begins
  - 🎤 Module 2 ongoing

- **February 2026**
  - 🌍 Module 5 continues
  - 🧩 Module 6 continues
  - 🚀 RPPS: *PoC Sprint (Cohort 2)*
  - 🎓 Final Demos + Evaluation
  - 🟣 Cohort 2 ends
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> 💡 *Mentorship, pitch, and go-to-market sessions will take place weekly once
mentors are matched with founders (2–4 weeks into the program).*
> 🌐 *Some sessions will be pre-recorded to accommodate different time zones.*

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## 👥 Primary Community Mentors and Coaches

| Name               | Position                          | Organization
|
|--------------------|-----------------------------------|-----------------------------
-------------|
| Zushan Hashmi      | Founder                           | Tokeo
|
| Yoram Ben Zvi      | Strategy and BD                   | Connectality,
ELKsconnect.com, Andamio   |
| Chetan Padindala   | Strategy Consultant               | –
|
| Nathaniel Minton   | CEO                               | Flux Point Studios, Inc.
|
| Jon Kravetz        | CEO                               | CSWAP Dex
|
| Jo Allum           | Founder Director                  | Venture Centre
|
| Apex               | CEO                               | Titans
|
| Alex Pestchanker   | Co-Founder, CTO                   | Token Allies
|
| Ivica Zafirovski   | COO                               | Farmroll.io
|
| Alex Maaza         | Sustainability Lead               | Cardano Foundation
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## 🌍 Other Mentors and Advisors

| Name                | Position                                 | Organization
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|---------------------|------------------------------------------|-----------------------
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Ismael Belkhayat	CEO	Chari
Djamel Mohand	Former COO	Foodics
George Payne	Head of Accelerator	Adaverse
Vincent Li	Founding Partner	Adaverse
Driss Temsamani	Head of Digital	Citi
An Luu	Director	Ginar Solution
Ilan Benhalim	Co-Founder & Partner	VeePee
Basmah Alsinaidi	Managing Partner	Impact46
Waleed A. Alballaa	Investor	Sukna Ventures
Serena Sebastiani	Director – Financial Services Advisory	PwC
Sam Corcoran	Co-Founder	cander
Dave Parker	Managing Partner	DKParker LLC
Pavel Kaminsky	Advisory Board Member	Merchant Payments Ecosystem
Abrar Khan	CEO	Rockville Technologies
