Thought Leadership Program
Digital Asset Platform Initiative
Why?

- Disruption
- Innovation

- Future of assets
- Future of markets
- Future of money

Platform
Digital
Efficiency
Our Vision for the Future

Sustainability

Sharing Economy
Circular Economy
High Value Creation

Digital Asset Platform
Broadening Access and Scope to Reach More People

- **Full KYC**
  - Name
  - Citizen ID
- **Full KYC + Suitability Test**
  - Investment
- **Full KYC Banking**
- **Expand**
  - + Tel Number
  - + E-mail
  - Food & Transport
  - + Address
  - + ID Card
  - Medicine
- **Payment & Settlement**
  - + Name
  - + Citizen ID
  - Donation

---

2 - SET Digital Asset Platform
Business Use Cases: Start Small and Expand

- Mass R&D Fund Raising
- Public Donation

- R&D Fund Raising
- Staff Donation

- Internal R&D Funding
- Corporate Donation
- Internal Settlement

- Global R&D Fundraising
- Foreign Securities
- Global Donation
- Global ESG Products

- Group Settlement & Custody in CLMV

- Internal
- Domestic
- International

- B to B
- ... to limited C
- ... to wider C
Agenda

1 - Introduction
2 – SET Digital Asset Platform
3 – Introduction to DLT
4 – Business Applications of DLT
5 – Global Ecosystem and Trends
6 – Deep Dive: Tokenization of Assets
7 – Regulatory Landscape
8 - Conclusion
9 – Q & A

3rd October 2019
What is the current state of DLT?
Traditional payment process between two parties

A payment requires multiple stages: this is time-consuming and can induce errors.

Ledger

Ledger

Ledger

Ledger

Bank

Correspondent bank

Correspondent bank

Bank
The core of Distributed Ledger Technology

The core of DLT is that all transactions of a specific asset are recorded in one shared distributed database.
Different types of DLT networks

- **Public Blockchain**
  - Bitcoin (9,000 nodes), Ethereum (16,000 nodes)
  - Everybody can set up a node; unrestricted
  - Geographically dispersed
  - No legal body, no access by government
  - **Large network, lower throughput**

- **Enterprise Blockchain**
  - Consortium of banks (e.g. 50 nodes)
  - Only selected parties can participate
  - Nodes are participants and have a legal entity
  - Legal entity that is liable and can be contacted
  - **Slim network, higher throughput**

---

1Note: The term Blockchain is used here synonymously with DLT
A simple smart contract to transfer any type of asset

```solidity
// Initialize contract without initial supply
Function SimpleToken() public {

    // Send coins
    Function transfer(address _to, uint256 _value) public returns (bool success) {
        require(_to != address(0));
        balanceOf[msg.sender] = balanceOf[msg.sender].sub(_value);
        balanceOf[_to] = balanceOf[_to].add(_value);
        Transfer(msg.sender, _to, _value);
        return true;
    }

    Function transferFrom(address _from, address _to, uint256 _value) public returns (bool success) {
        require(_to != address(0));
        balanceOf[_to] = balanceOf[_to].add(_value);
        balanceOf[_from] = balanceOf[_from].sub(_value);
        allowance[_from][msg.sender] = allowance[_from][msg.sender].sub(_value);
        Transfer(_from, _to, _value);
        return true;
    }

    // Approve that others can transfer _value tokens for the msg.sender
    function approve(address _spender, uint256 _value) public returns (bool success) {
        require(_value >= 0) || (allowance[msg.sender][_spender] == 0);
        allowance[msg.sender][_spender] = _value;
        Approval(msg.sender, _spender, _value);
        return true;
    }
}
```
The most important aspects of DLT

1. Record keeping technology
2. Capitalized register
   (i.e. registry organizing ownership of money or assets)
3. Programmable money, tokenized assets
How does a transaction currently works? (2-3 days)

1. Shares from A to Clearinghouse
2. Money from Clearinghouse to IT system 1
3. Approval from Clearinghouse to IT system 1
4. Money from IT system 1 to IT system 2
5. Shares from IT system 2 to B

How does a transaction work on a DLT system? (within seconds)

1. Shares from A to Atomic Swap
2. Smart contract from Atomic Swap to B
3. Money from Atomic Swap to DLT system
4. Shares from DLT system to B
How does current system work for money transfers?

Traditional system for one purpose:
- Password
  - Online brokerage
    - Portfolio account number
    - Transferred stock

DLT system for multiple purposes:
- Private key
  - Wallet
  - Public key
    - Transferred tokens
      - Stocks

Extended uses:
- Baht, Euro, US dollar
- Securities
- Vouchers
- Car access
Where have tokens been used and where will they be used?

- Investment token; security token
- Stable coin (digital Euro)
- Utility token
- cryptocurrency, cryptoasset

- Software license (Nothing)
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Digital share registry and transfer of shares today

ABC Ltd.

Holding
500 Shares / 1'100 USD

Class A | 300 Shares | 3 USD | 3 %

Class B | 200 Shares | 1 USD | 16 %

Voting

ABC Ltd.

Holding
100 Shares / 300 USD

Class A | 100 Shares | 3 USD | 1 %

Class B | 0 Shares | 1 USD | 0 %

Voting
Business case overview - Distributed Ledger Technology

- Proof of ownership and a marketplace for sales and purchase of digital assets
- Enables authenticity of a review through trustworthy endorsements for employee peer review
- Decentralized prediction platform for the share markets, politics, etc.
- Decentralized patient records management
- Proof of ownership for digital content (Art, pictures and images)
- Digitizing assets: Improves anti-counterfeit measures (Consumer electronics, automotive, degree verification)
- Digitizing company incorporation, transfer of equity/ownership and governance
- Enables authenticity of a review (Helps users engage, share and collect feedback)
- Decentralized internet and computing resources to every home and business

Examples for use cases in the area of digital assets

Source: GrowthPraxis
Business cases for digital assets - Distributed Ledger Technology

- Proof of ownership for digital content storage and delivery
- Digital security trading ownership and transfer
- Digitization of documents/contracts and proof of ownership for transfers
- Proof of ownership and a marketplace for sales and purchase of digital assets
- Proof of ownership for digital content (Art, pictures and images)
- Digitizing assets: Improves anti-counterfeit measures (Consumer electronics, automotive, degree verification)
- Digitizing company incorporation, transfer of equity/ownership and governance

Source: GrowthPraxis
## Use case 1 – Plastic Bank

<table>
<thead>
<tr>
<th>Details</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instrument:</strong></td>
<td>Tokenized plastic credit</td>
</tr>
<tr>
<td><strong>Lead Operator:</strong></td>
<td>Plastic Bank</td>
</tr>
<tr>
<td><strong>Partners:</strong></td>
<td>Cognition Foundry</td>
</tr>
<tr>
<td><strong>Countries:</strong></td>
<td>Haiti, Philippines, Indonesia</td>
</tr>
<tr>
<td><strong>Volume:</strong></td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Year:</strong></td>
<td>Founded 2013</td>
</tr>
<tr>
<td></td>
<td>Permissioned network built using Hyperledger Fabric, hosted by IBM Blockchain</td>
</tr>
</tbody>
</table>

**Benefits:**
- Further incentivise plastic collection and recycling
- Transparent allocation of tokenized plastic credits
- Peer-to-peer transfer of tokenized plastic credits

**Description**

Developed a system of token rewards based on Blockchain that monetizes plastic waste and records transactions at the micro-level. As these micro-transactions add up, they form the credits that the waste collectors use to earn useful goods that can help them to transcend poverty.
# Use case 2 – Bond-i

## Details

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Tokenized bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Operator</td>
<td>World Bank</td>
</tr>
<tr>
<td>Partners</td>
<td>CBA, RBC Capital Markets, TD Securities, other investors</td>
</tr>
<tr>
<td>Countries</td>
<td>Australia</td>
</tr>
<tr>
<td>Volume</td>
<td>$ 108m</td>
</tr>
<tr>
<td>Year</td>
<td>2018 / 2019</td>
</tr>
</tbody>
</table>

## Technology

- Permissioned platform built on a modified version of the Ethereum codebase

## Benefits

- Reduced underwriting cost
- Reduced settlement and counterparty risk
- Emergence of secondary market trading

## Description

Automation of processes related to the purchase and ownership transfer of bonds using DLT. 4 nodes, all run by the WB and CBA. A 5th and 6th node might be run by TD Securities and the Reserve Bank of Australia (observer node).
Use case 3 – Daura

**Details**

- **Instrument:** Tokenized stock
- **Lead Operator:** Daura / Sygnum
- **Partners:** Swisscom, Deutsche Börse, Custodigit
- **Countries:** Switzerland
- **Volume:** -
- **Year:** 2019

**Technology**

- Private Blockchain system

**Benefits:**

- Reduced issuing costs
- Reduced transaction costs
- Fungibility of shares

**Description**

Dematerialized digital shares (or "C-shares") are issued and transferred via a private Blockchain platform between registered daura users by means of a tripartite transfer agreement (OTC), represented by cryptographic tokens and irreversibly stored on the DLT.
Use case 4 – Fundament Group

Details

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Subordinated token-based bonds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Operator</td>
<td>Fundament Group</td>
</tr>
<tr>
<td>Partners</td>
<td>Not disclosed</td>
</tr>
<tr>
<td>Countries</td>
<td>Germany</td>
</tr>
<tr>
<td>Volume</td>
<td>€250m (planned)</td>
</tr>
<tr>
<td>Year</td>
<td>2019</td>
</tr>
</tbody>
</table>

Technology

- Public Ethereum Blockchain (ERC-20)

Benefits:

- Reduced issuing costs
- Reduced transaction costs
- Fungibility of securities

Description

Fully regulated and approved Primary Market transaction for issuing a tokenized portfolio of German Commercial Real Estate – which generates a planned annual yield of 4% plus returns from possible sales revenues. Dividends will either be paid in Ether or EUR.
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An overview of the Blockchain market

**Application level**
- Derivatives
  - CME Group
  - Cboe
- Custodial services
  - Fidelity
  - BitGo
- Investment funds
  - BlockTower
  - Sequoia Capital
  - Bitspark
- Other
  - Alibaba.com
  - Tencent
  - bp
  - Amazon

**Network level**
- Open and permissionless
  - BITMAIN
  - ViaBTC
  - Casa
  - Infura
- Closed and permissioned
  - we.trade
  - J.P. Morgan
  - Nasdaq
  - ASX
  - THE WORLD BANK

**Protocol level**
- Open-source
  - parity
  - CONSENSYS
  - Hyperledger
  - Chain
- Closed-source (proprietary)
  - AION
  - SETL.io
  - Digital Asset Holdings
  - Hedera Hashgraph

**Network usage**
- Exchanges
  - Binance
  - Coinbase
  - ICE
- Stablecoin issuers
  - tether
  - Gemini
  - USD Coin
  - Binance Stable (BUSD)
- Tokenisation platforms
  - CoinList
  - Polymath
  - Dapper Labs

**Platform operation and maintenance**
- Derivatives
  - Custodial services
  - Investment funds
  - Other

**Codebase framework**
- Open-source
  - Bitcoin
  - Ethereum
  - Hyperledger
  - Chain
- Closed-source (proprietary)
  - AION
  - SETL.io
  - Digital Asset Holdings
  - Hedera Hashgraph

5 – Global Ecosystem and Trends within DLT
Conceptualising cryptoasset ecosystem actors
Intermediated cryptoasset activities often resemble traditional financial activities

**Traditional activity type:**
Activity unspecific to cryptoassets: can also be found in other industries

**New activity type:**
Activity specifically enabled by the cryptoassets and Blockchain properties: no direct resemblance to traditional activities in other industries.

**Mixed activity type:**
Activity sharing characteristics of both traditional and new activities.

<table>
<thead>
<tr>
<th>Main Activity Type</th>
<th>Description</th>
<th>Activity Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Token Creation and Distribution</td>
<td>Entities involved in the creation and initial distribution of (a) cryptoassets and blockchain-based tokens, and/or (b) financial instruments that derive their value from an underlying cryptoasset.</td>
<td>• Token creation, distribution, and related services&lt;br&gt;• Derivatives issuance: futures, swaps&lt;br&gt;• Underwriting services</td>
</tr>
<tr>
<td>Storage</td>
<td>Software program handling key management.</td>
<td>• Custodial wallet services&lt;br&gt;• Non-custodial wallet services</td>
</tr>
<tr>
<td>Exchange</td>
<td>On-off ramps for buying and selling tokens.</td>
<td>• Centralised exchange services (order-book, trading platforms, brokerage services, ATMs, etc.)&lt;br&gt;• P2P exchange services&lt;br&gt;• Decentralised exchange services</td>
</tr>
<tr>
<td>Payments</td>
<td>Gateways facilitating the use of tokens for payments.</td>
<td>• Consumer payments (merchant processing, spending)&lt;br&gt;• Cross-border payments (remittances, B2B)&lt;br&gt;• Bill payment services&lt;br&gt;• Other (micropayments, M2M, etc.)</td>
</tr>
</tbody>
</table>
The cryptoasset industry spans the entire globe

Note: this map is based on operational HQ data from 561 companies active in at least one of the four major cryptoasset industry segments. Colours represent the total number of identified entities from each country; stripes indicate when a country is also covered by our study sample.
Usage (1): Estimated number of user accounts at service providers

Lower-bound Estimate of Total Cryptoasset Users

- 2016 YE: 45 (Total accounts), 5 (Total ID-verified users)
- 2017 YE: 85 (Total accounts), 18 (Total ID-verified users)
- 2018 Q1-Q3: 139 (Total accounts), 35 (Total ID-verified users)

CCAF (2019) 2nd Global Enterprise Blockchain Benchmarking Study
Usage (2): Types of users

Share of User Types

Multi-segment
- Individuals: 26%
- Business clients: 58%

Exchange-only
- Individuals: 32%
- Business clients: 46%

Storage-only
- Individuals: 11%
- Business clients: 70%

Payment-only
- Individuals: 16%
- Business clients: 78%
The enterprise Blockchain ecosystem is maturing

• Hundreds of live enterprise Blockchain networks are being used in production environments

• The majority of the networks covered in our study entered in production over the course of 2018 and early 2019
Lifecycle of an enterprise DLT project

**Initial exploration**
Conducting research and starting experimentation with blockchain protocols

**Proof of concept (PoC)**
Testing feasibility and assumption(s) regarding the use of blockchain technology for a particular use case

**Pilot/Trial**
Advanced testing in a production-like environment

**In production**
Full deployment of a blockchain network in a production environment

TOTAL RANGE (months) 3 - 29

MEDIAN TIMELINE (months) 18

Page 36
How do these enterprise DLT networks come to life?

- **Founder-led**: 71%
  A single entity, often with a dominant market position, takes the lead in setting up an initiative.

- **Consortium-led**: 22%
  A collection of entities cooperate to jointly set up an initiative.

- **Government-led**: 6%
  A government-related institution brings together a set of entities to launch an initiative.

- **Other**: 1%
  Unclear which party initiated the project.
The finance & insurance sector dominates DLT activity.
The majority of live networks are designed for shared use b/w partners

**Shared use**
The network is jointly used by separate, non-affiliated entities

**Internal use**
The network is used internally within a company conglomerate where participants can be separate subsidiaries or departments

**Unclear**
The participation model is not explicitly disclosed

**NETWORK USAGE**

- **Partners**: 57%
- **Competitors**: 19%
- **Other**: 24%

CCAF (2019) 2nd Global Enterprise Blockchain Benchmarking Study
Enhanced ecosystem reconciliation provides multiple benefits

- **Cost reduction**: Improved reconciliation efforts lead to efficiency gains that translate into lower operational costs (72%)

- **Incremental revenue generation**: New services and business models emerge as a result of having access to a single shared source of records (6%)

- **New market models**: A shared (industry) utility enables the development of entirely new market types and models that did not previously exist (8%)

- **Hybrid**: A combination of cost reduction and revenue generation objectives (14%)
Enterprise DLT strategies are focused mainly on revenue generation

**Key drivers of enterprise blockchain strategy**

*Share of network operators and participants*

- Delivering new revenue-generating products & services: 69%
- Improving efficiencies across organisation boundaries: 62%
- Increasing transparency: 62%
- Potential cost savings: 55%
- Improving efficiencies within organisation boundaries: 26%
- Fear of losing competitive advantage: 14%
- Enabling trading of illiquid assets through tokenisation: 10%
- Reducing moral hazards: 5%
- Other: 10%

**Enterprise blockchain project initiation**

*Share of network operators and participants*

- Corporate innovation unit: 61%
- C-level executives: 46%
- Department / Cost centre level: 20%
- Employee focus group: 12%
- Vendor-initiated: 10%
- Other: 10%
Increased convergence between private and public DLTs

**Use of public and permissionless blockchains**

*Share of network operators and participants*

- Currently used in a production environment: 29%
- Currently tested: 22%
- Currently investigated: 32%
- No ongoing investigation: 2%
- Prefer not to answer: 0%

CCAF (2019) 2nd Global Enterprise Blockchain Benchmarking Study
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3rd October 2019
Why tokenize assets?
Reason 1: Security issuance w/o DLT
How tokenization could affect the primary market

Simplified illustration of process

1Note: Might act as Payment Agent
Reason 1: Security issuance with DLT

How tokenization could affect the primary market

Simplified illustration of process

Issuer / Corporate

Digital asset

Cash on ledger

Service providers

Future Role
- Financial and legal advisory
- Structuring, placement, underwriting

Distributed Ledger Technology (“Blockchain”)

Smart contracts

Tokenization Atomic swap (DVP)

Digital asset

Infrastructure provider

Investor

Cash on ledger

Future Role
- Key Pair storage (wallets)
- Platform for digital assets
- Digital asset registry
Reason 2: Security Trading w/o DLT
How tokenization could affect the secondary market

Seller → Broker → Exchange → Broker → Buyer

Custodian → Dematerialised note → Custodian

Fiat currency → Reconciliation → Central Securities Depository → Reconciliation

Fiat currency

Simplified illustration of process

Note: The term Blockchain is used here synonymously with DLT
Reason 2: Security Trading with DLT
How tokenization could affect the secondary market

Simplified illustration of process

Seller → Market place → Buyer

Cash on ledger → Distributed Ledger Technology ("Blockchain") → Cash on ledger

Digital asset → Service providers

Future Role
- Transparent market data, best execution, liquidity
- Consolidation of trades with DLT

Service providers

Smart contracts

Atomic swap (DVP)

Future Role
- Key Pair storage (wallets)
- Digital asset registrar

Infrastructure Provider
## Heat Map – Digital Asset Value Chain

**Potential impact of digital assets on existing stakeholders**

<table>
<thead>
<tr>
<th>Role</th>
<th>Impact of Digital Assets on Role of Stakeholder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issuer</strong></td>
<td></td>
</tr>
<tr>
<td>Issuer</td>
<td></td>
</tr>
<tr>
<td>Investment bank</td>
<td></td>
</tr>
<tr>
<td>CSD</td>
<td></td>
</tr>
<tr>
<td><strong>Registrar</strong></td>
<td></td>
</tr>
<tr>
<td>Payment agent</td>
<td></td>
</tr>
<tr>
<td>Regulator</td>
<td></td>
</tr>
<tr>
<td><strong>Traders</strong></td>
<td></td>
</tr>
<tr>
<td>Exchange</td>
<td></td>
</tr>
<tr>
<td>Broker</td>
<td></td>
</tr>
<tr>
<td><strong>Settlement</strong></td>
<td></td>
</tr>
<tr>
<td>CCP</td>
<td></td>
</tr>
<tr>
<td>Settlement agent</td>
<td></td>
</tr>
<tr>
<td>Custodian</td>
<td></td>
</tr>
<tr>
<td>CSD</td>
<td></td>
</tr>
<tr>
<td><strong>Investors</strong></td>
<td></td>
</tr>
<tr>
<td>Investor</td>
<td></td>
</tr>
</tbody>
</table>

**Improved**
- Tokenization of security through smart contracts
- Allocation and payment (DvP) through atomic swaps
- Direct issuance of digital assets on the primary market
- Listing of digital asset and on-chain trading
- Market making and price discovery
- Consolidation of trades with DLT (off-chain trading)

**Challenged**
- Storage of private keys
- Monitoring of security registry
Securitization (tokenization) of assets

DLT will lead to decreased transaction costs, improved fungibility and fractionalisation of ownership.

Minimum capitalization to be efficient

1 pixel art
1 sqmm real estate

Fractional shares

Capitalization of object/asset

Illiquid asset (Art, IP)
Real estate fund
Shares
The asset universe - bankable and non-bankable assets

Tokenization creates new asset classes and revolutionizes existing ones

Bankable assets

- Stocks, profit participation certificates, currencies, bonds
- Can be directly created on the Blockchain
- Not necessarily backed by real assets
- Issuers must be trusted that value is behind the asset

Non-bankable assets

- Any kind of real assets (real estate, art, patents, certificates, coupons, cars)
- Ownership can be fractionalized and fungibility of asset is created
- Trust issuer that (tangible) asset exists in described conditions
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3rd October 2019
Overlap of mandates and regulatory perimeters

On average, three distinct authorities have issued cryptoasset-related statements per jurisdiction

<table>
<thead>
<tr>
<th>Level</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supranational</strong></td>
<td>EU, UAE</td>
</tr>
<tr>
<td><strong>Intergovernmental</strong></td>
<td>FATF</td>
</tr>
<tr>
<td><strong>Judiciary</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Legislature</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Executive</strong></td>
<td>Government department</td>
</tr>
<tr>
<td></td>
<td>Ministries</td>
</tr>
<tr>
<td></td>
<td>Independent regulatory authority</td>
</tr>
<tr>
<td></td>
<td>Central bank</td>
</tr>
<tr>
<td></td>
<td>AML regulator</td>
</tr>
</tbody>
</table>
Timeline of first official statements by authorities

- Central Bank: 40%
- Financial Supervisory Body: 8%
- Government Department: 8%
- Tax Administration: 17%
- Legislature: 17%
- AML Regulator: 5%
- Several: 5%

Yearly Breakdown:
- 2011: 1
- 2012: 1
- 2013: 30
- 2014: 5
- 2015: 2
- 2016: 2
- 2017: 1

CCAF (2019) Global Cryptoasset Regulatory Landscape Study
Timeline of first guidance issuance: security or not?
Regulatory responses can be grouped into four categories:

**Existing regulation**
Application of existing laws or regulations to cryptoasset activities

**Retrofitted regulation**
Amendment of existing laws or regulations to include one or more cryptoasset activities

**Bespoke regulatory regime**
A distinct regulatory framework applied to a set of activities, of which cryptoasset activities are but one aspect

**Bespoke regulation**
New law or regulation enacted or issued specifically to regulate cryptoasset activities
‘Retrofitting’ prevails when level of cryptoasset activity is high

![Chart showing the share of jurisdictions with different levels of cryptoasset activity](chart)

- **High activity level**: 10% prohibited, 14% bespoke regulation, 5% bespoke regulatory regime, 47% retrofitted regulation, 24% other existing regulations or unregulated.
- **Low activity level**: 16% prohibited, 6% bespoke regulation, 5% bespoke regulatory regime, 26% retrofitted regulation, 47% other existing regulations or unregulated.

CCAF (2019) Global Cryptoasset Regulatory Landscape Study
ICOs and exchanges are the main focus of regulatory attention.

CCAF (2019) Global Cryptoasset Regulatory Landscape Study
Not all regulators make the same distinctions between activities.

Security vs. "non-security"  
- 82% No distinction
- 18% Distinction

Custodial vs. non-custodial wallet services  
- 45% Distinction
- 27% No distinction
- 28% Unclear

Cryptocurrency vs. fiat currency trading pairs  
- 55% Crypto <-> Fiat and Crypto <-> Crypto
- 36% Crypto <-> Fiat
- 9% Unspecified
## Thailand’s regulatory approach to cryptoassets

<table>
<thead>
<tr>
<th>Relevant regulation</th>
<th>Emergency Decree on Digital Asset Businesses B.E. 2561</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of regulatory response</td>
<td>Bespoke regulation</td>
</tr>
<tr>
<td>Responsible regulatory authorities</td>
<td>Securities and Exchange Commission (SEC)</td>
</tr>
<tr>
<td>Regulated activities</td>
<td>Token portal service provider, exchange, broker, dealer</td>
</tr>
<tr>
<td>Distinction b/w security and non-security tokens</td>
<td>Yes</td>
</tr>
<tr>
<td>Distinction b/w custodian and non-custodian</td>
<td>Yes</td>
</tr>
<tr>
<td>Supported assets</td>
<td>Both cryptoassets and fiat currencies</td>
</tr>
</tbody>
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Roadmap of the Liechtenstein Token Act

- **Start of the workgroup** (2016)
- **Build up Knowledge**
  - **Idea Token Container Model** (2017)
- **First public announcement** (2018/03)
- **Government publishes consultation report** (2018/08)
- **Public consultation**
- **Implementing findings from Public Consultation** (2018/11)
- **First reading in parliament** (2019/06/06)
- **Parliament**
- **Second reading in parliament** (2019/10)
- **TVTG in force?** (2019/?)

Now
The Liechtenstein approach

Build up knowledge
(DLT, Blockchain, AI,...)

Is regulation needed?

Framework compatible?

Token container model
Dedicated Blockchain regulation in Liechtenstein
Leading jurisdiction for Blockchain regulation

- Dedicated Blockchain regulation
- 58 Pages Law, 51 Articles, Full report 384 pages
- Amendments of:
  - Due Diligence Act (SPG)
  - Financial Market Supervision Act (FMAG)
  - Corporate Law (PGR)
  - Trade Law (GewG)
- Download available in English:
  - https://nlaw.li/tvtgen
Token Container Model

Container with specific functions

```
contract MyToken {
    // This creates an array with all balances */
    mapping (address => uint256) public balances;
    // Initializes contract with initial supply tokens to the creator of the contract */
    function MyToken() {
        uint256 initialSupply;
        balanceOf[msg.sender] = initialSupply; // Give the creator all initial tokens
    }
    // Send coins */
    function transfer(address _to, uint256 _value) {
        require(balanceOf[msg.sender] >= _value); // Check if the sender has enough
        require(balanceOf[_to] + _value >= balanceOf[_to]); // Check for overflows
        balanceOf[msg.sender] -= _value; // Subtract from the sender
        balanceOf[_to] += _value; // Add the same to the recipient
    }
}
```

TT-System
(Transport, storage, smart contracts,...)
Digital assets are considered highly relevant for organisations in Thailand, with significant future potential to disrupt existing business models. However, there still is uncertainty about their applications and in particular Distributed Ledger Technology (DLT).¹

The global digital asset ecosystem is maturing. In hundreds of projects, mainly in the financial industry, DLT is used in production environments.

The emergence of digital assets and DLT challenges existing roles within capital markets, but also opens up unparalleled opportunities for existing and new players. There is great potential, but roles have to evolve.

A comprehensive regulatory approach, together with first productive DLT solutions, will be key for the future evolution of the digital asset ecosystem in Thailand. However, first steps can be undertaken within current regulation.

Sourced from conducted stakeholder survey (n = 22)
Agenda

1 - Introduction
2 – SET Digital Asset Platform
3 – Introduction to DLT
4 – Business Applications of DLT
5 – Global Ecosystem and Trends
6 – Deep Dive: Tokenization of Assets
7 – Regulatory Landscape
8 - Conclusion
9 – Q & A

3rd October 2019