

OFFICE FOR FINANCIAL MARKET INNOVATION  
PRINCIPALITY OF LIECHTENSTEIN

# Blockchain, Token Economy and Regulation

Lunch time talk - EFTA Court

June 19th 2019

Dr. Thomas Dünser





# Personal Background

- 2019-...: Director of the Office for Financial Market Innovation
- Project Leader of «Blockchain-Act»
- 2013-2019: Senior Advisor to the Prime Minister of Liechtenstein
- Before: Private Sector (Banking, Industry, Consulting)
- MSc. and PhD in Engineering (ETH Zurich)



# Office for Financial Market Innovation

- Dynamical technological developments vs. statical, backward looking regulation
- Since 2013: Innovation Framework ([www.impuls-liechtenstein.li](http://www.impuls-liechtenstein.li))  
=> ability of government and authorities to cope with private sector innovation
  - Regulatory Lab (Financial Market Authority FMA)
  - Bottom Up innovation process for the business framework
- Role of SFI (Office for Financial Market Innovation)
  - to foster the innovation framework
  - first point of contact for innovative companies
  - development of the business framework (Financial Market)

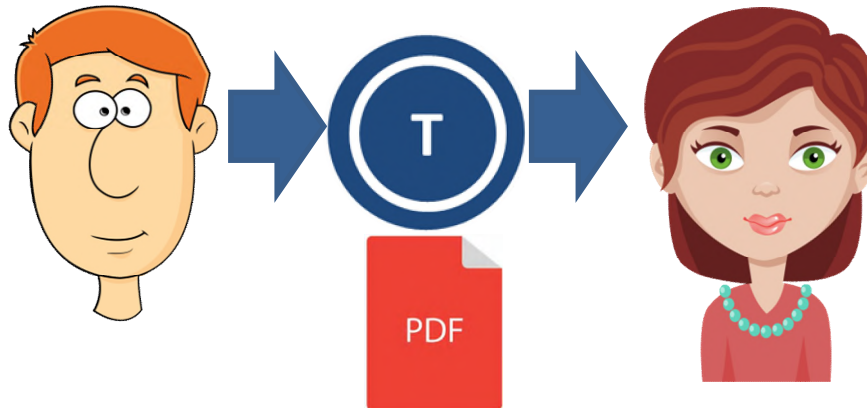


# Use of Blockchain?

- digital information is easily copied



- Blockchain makes possible that digital information belongs to one person and may be transferred from one person to another



- Blockchain makes the «digital original document» possible



# Distributed Ledger Technology (Blockchain)

- A transaction ledger that is secured by
  - Distribution on many computers (decentralized)
  - Cryptography
  - Verification Algorithms
- DLT allows to
  - secure digital information
  - link digital information to an address
  - securely transfer digital information to another address

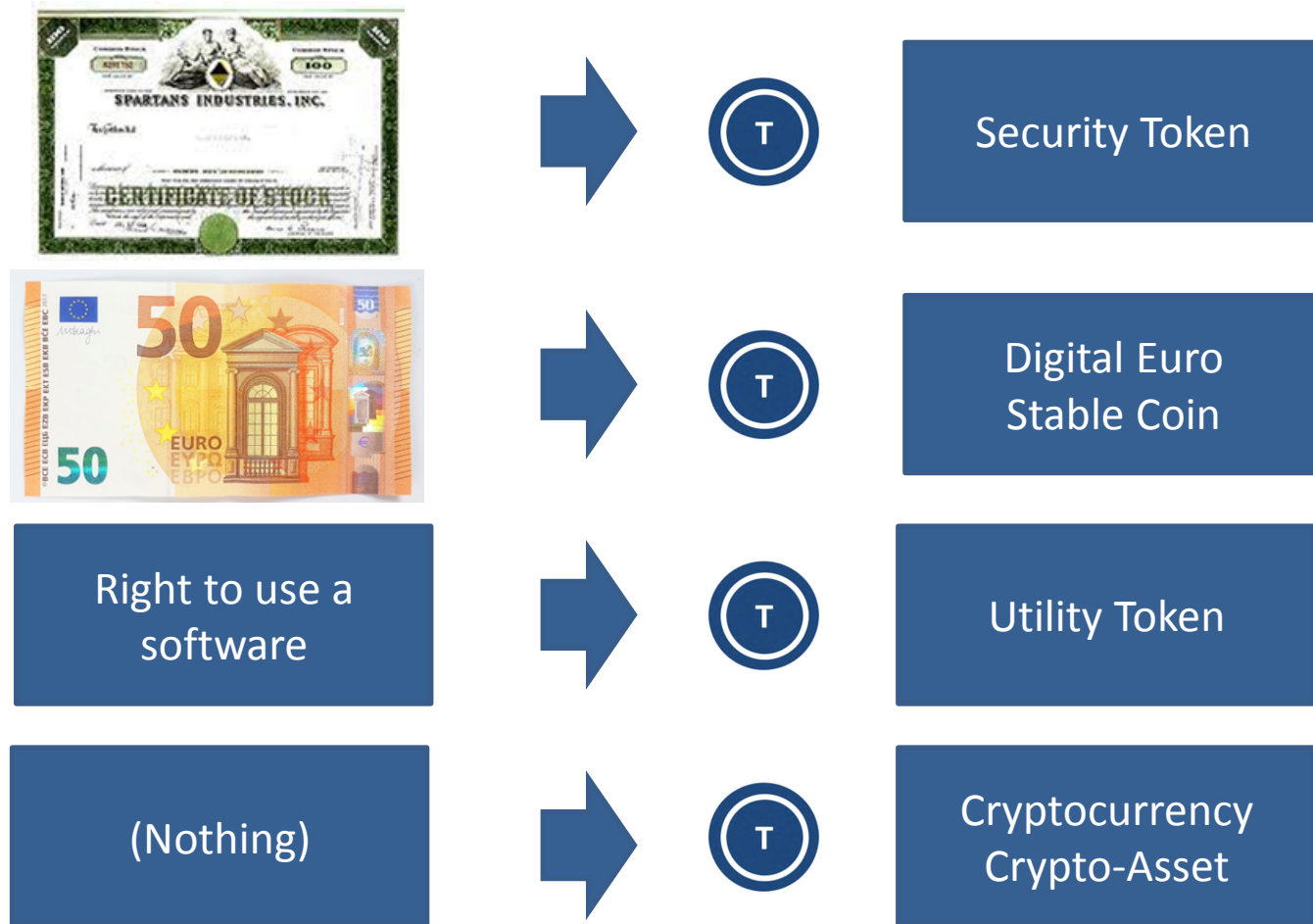


# Distributed Ledger Technology (Blockchain)

- Key Aspects
  - Integrity and trustworthiness without intermediary
  - direct and fast transactions
  - low transaction costs
  - some Blockchains have a high energy consumption
  - some Blockchains have low transaction capacity
- Example of Blockchains:
  - Bitcoin, Ethereum, Ripple, Monero, Hyperledger, aeternity



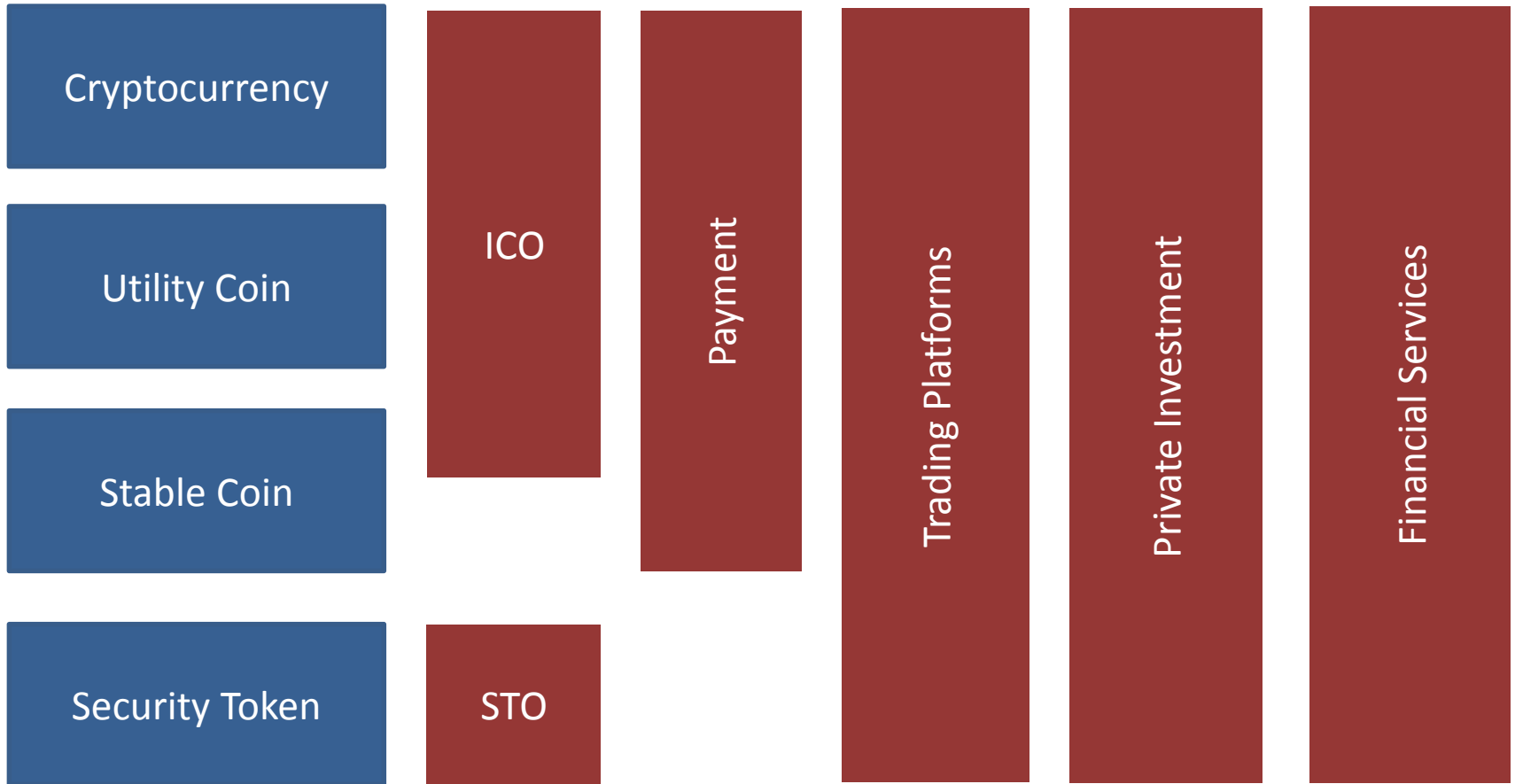
# Current Use of «Token»



**Token = functional, not technical**



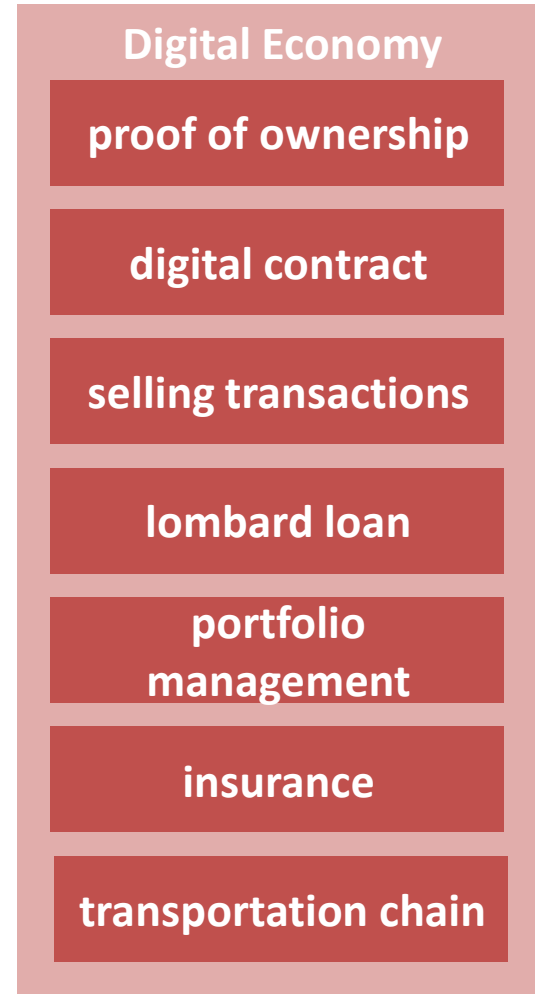
# Current Applications of Token







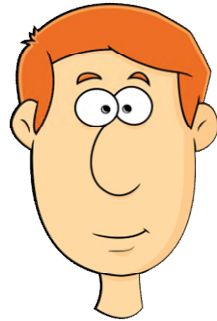
# Use Case: Tokenization of physical items





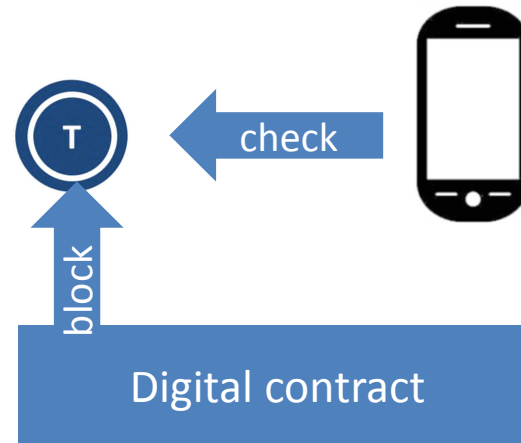
# How does it work?

## «Pledge Right Contract»



Token with:

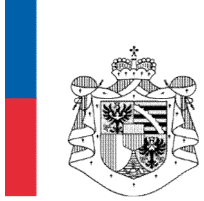
- Ownership rights
- Proof of ownership
- Proof of origin
- Proof of value



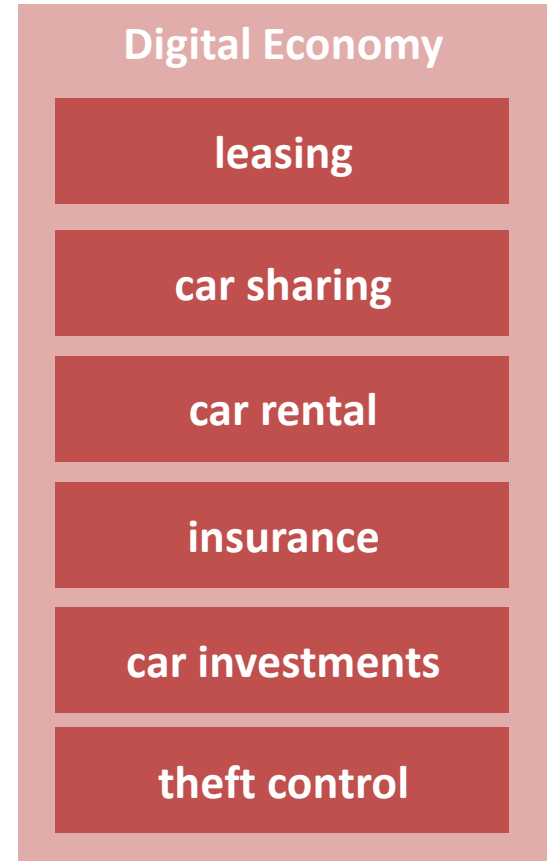


# Use Case: Real Estate



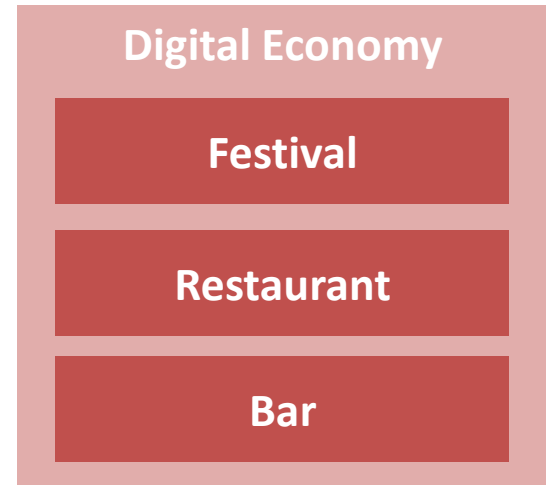


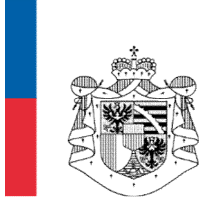
# Use Case: Car



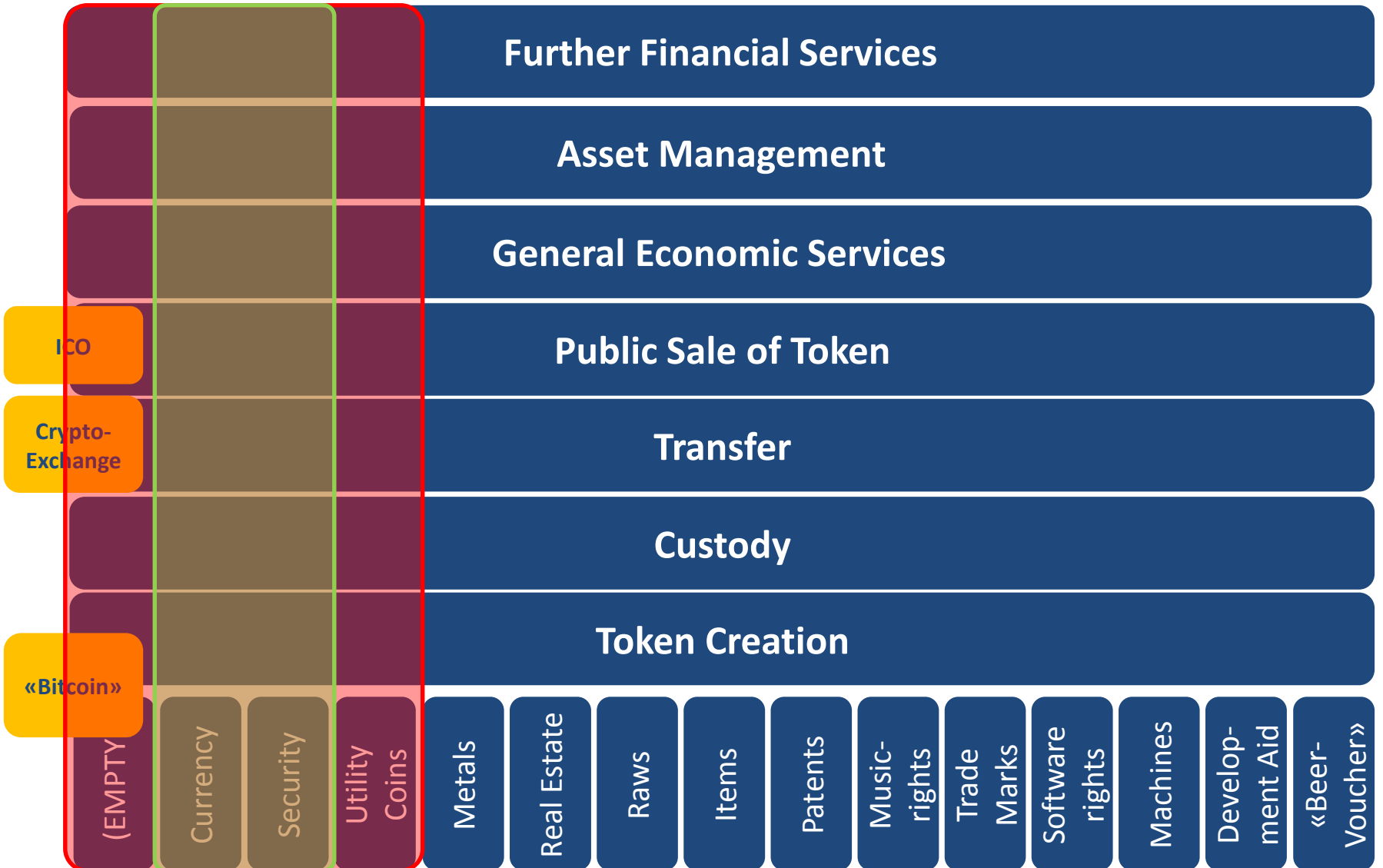


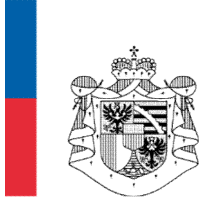
# Use Case: Digital Beer Voucher





# Functional Overview over Token Economy





# Application of the Liechtenstein Blockchain-Act

Further Financial Services

Asset Management

General Economic Services

Public Sale of Token

Transfer

Custody

Liechtenstein Blockchain-Act

Token Creation

(EMPTY)

Currency

Security

Utility  
Coins

Metals

Real Estate

Raws

Items

Patents

Music-  
rights

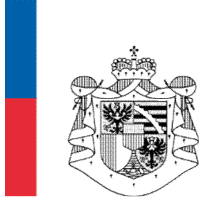
Trade  
Marks

Software  
rights

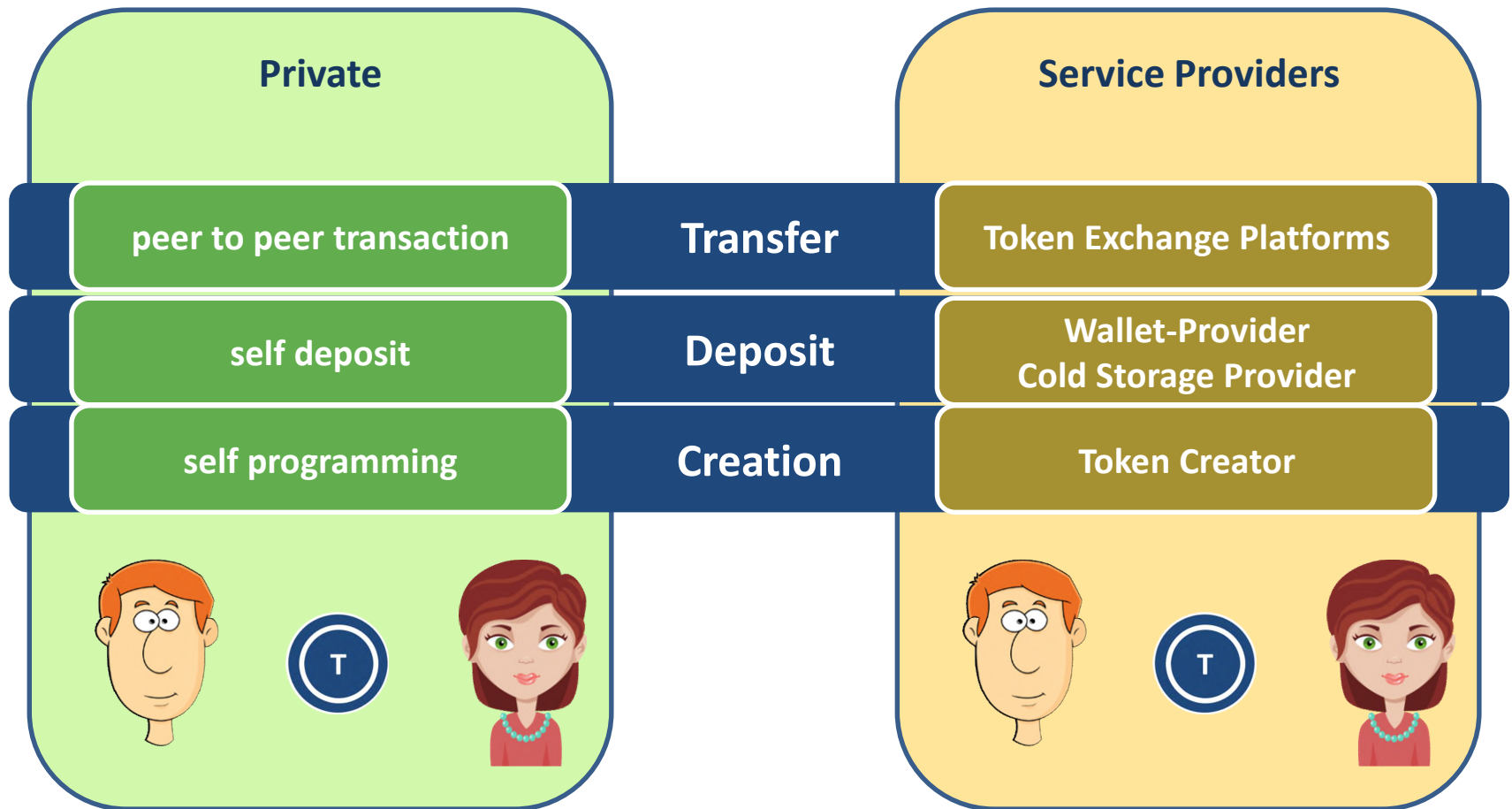
Machines

Develop-  
ment Aid

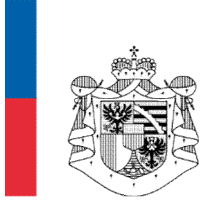
«Beer-  
Voucher»



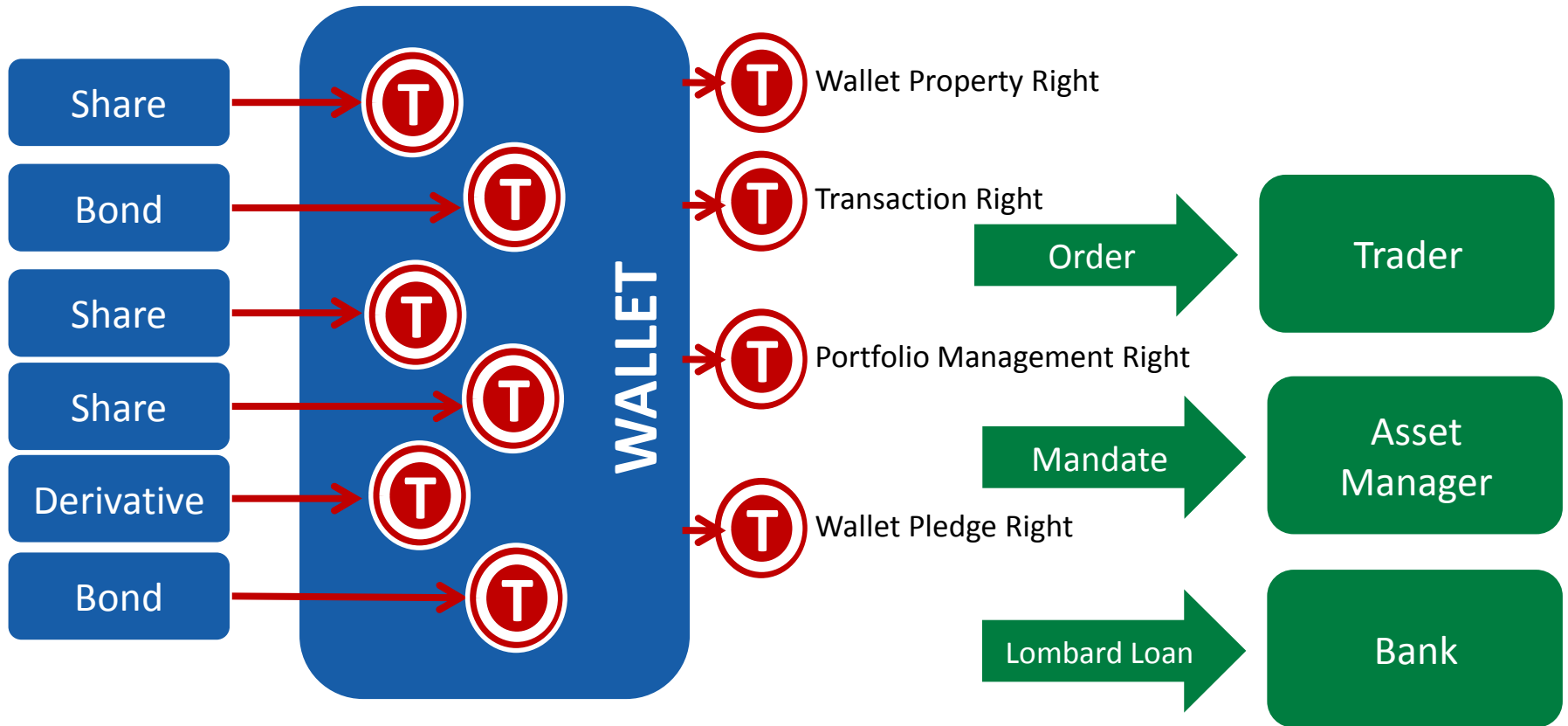
# Role of Service Providers





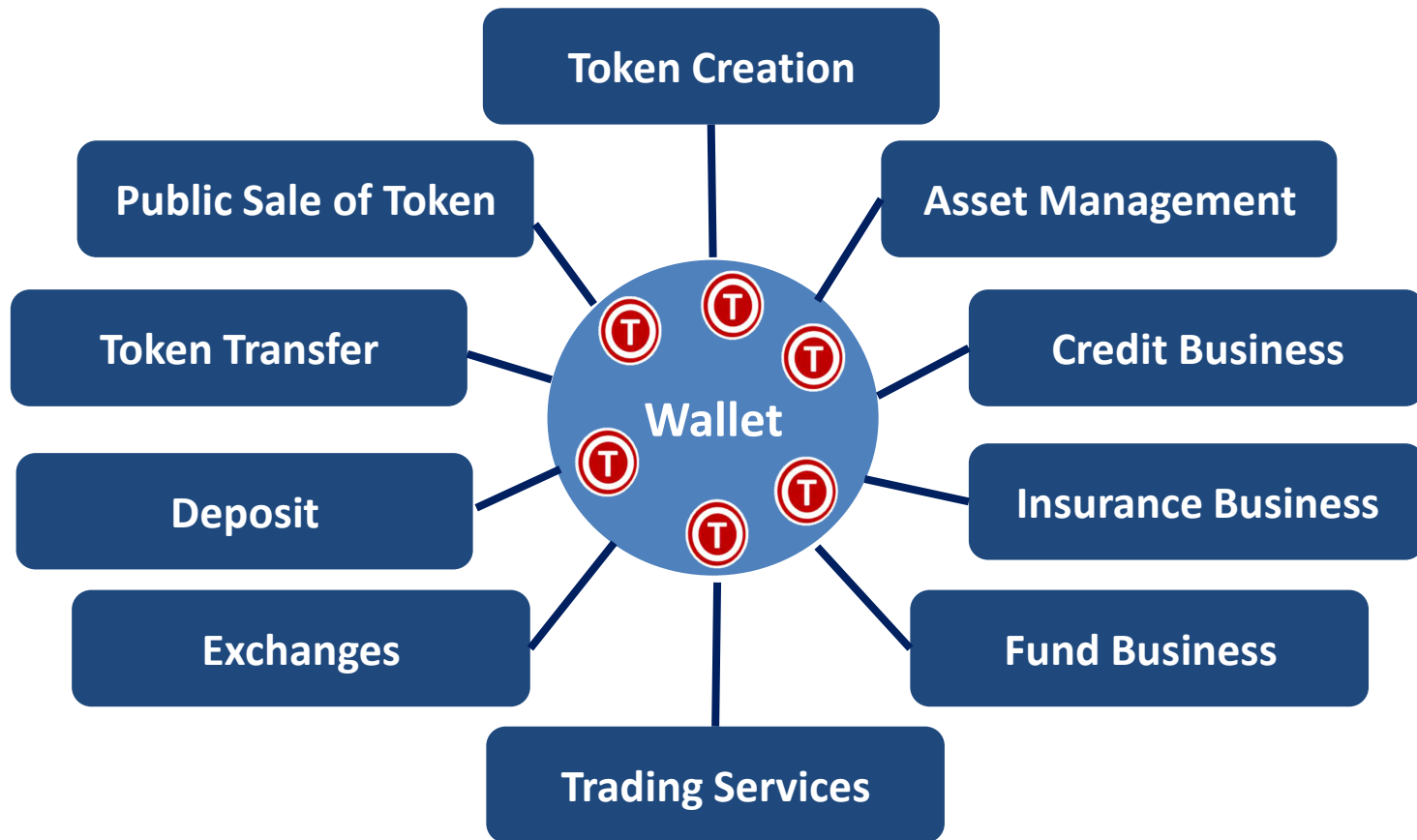


# Role of financial services



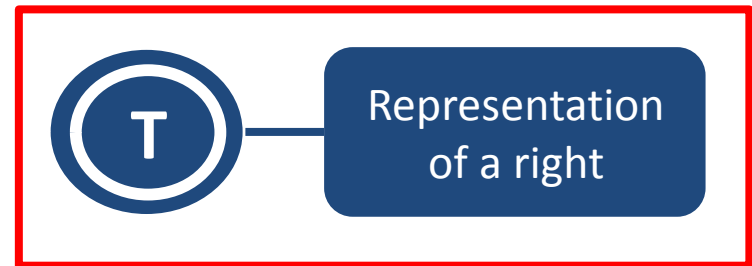
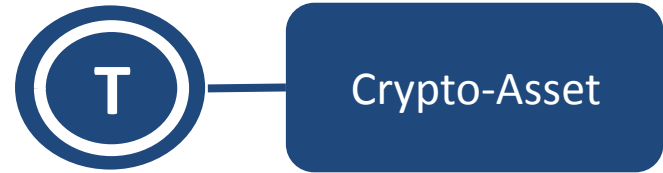
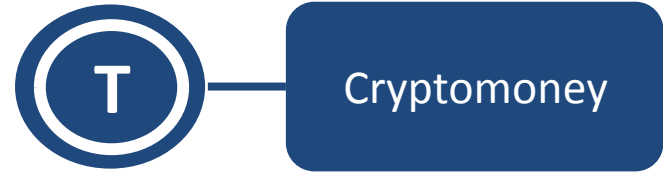


# Role of financial service providers: fragmentation of the value chain



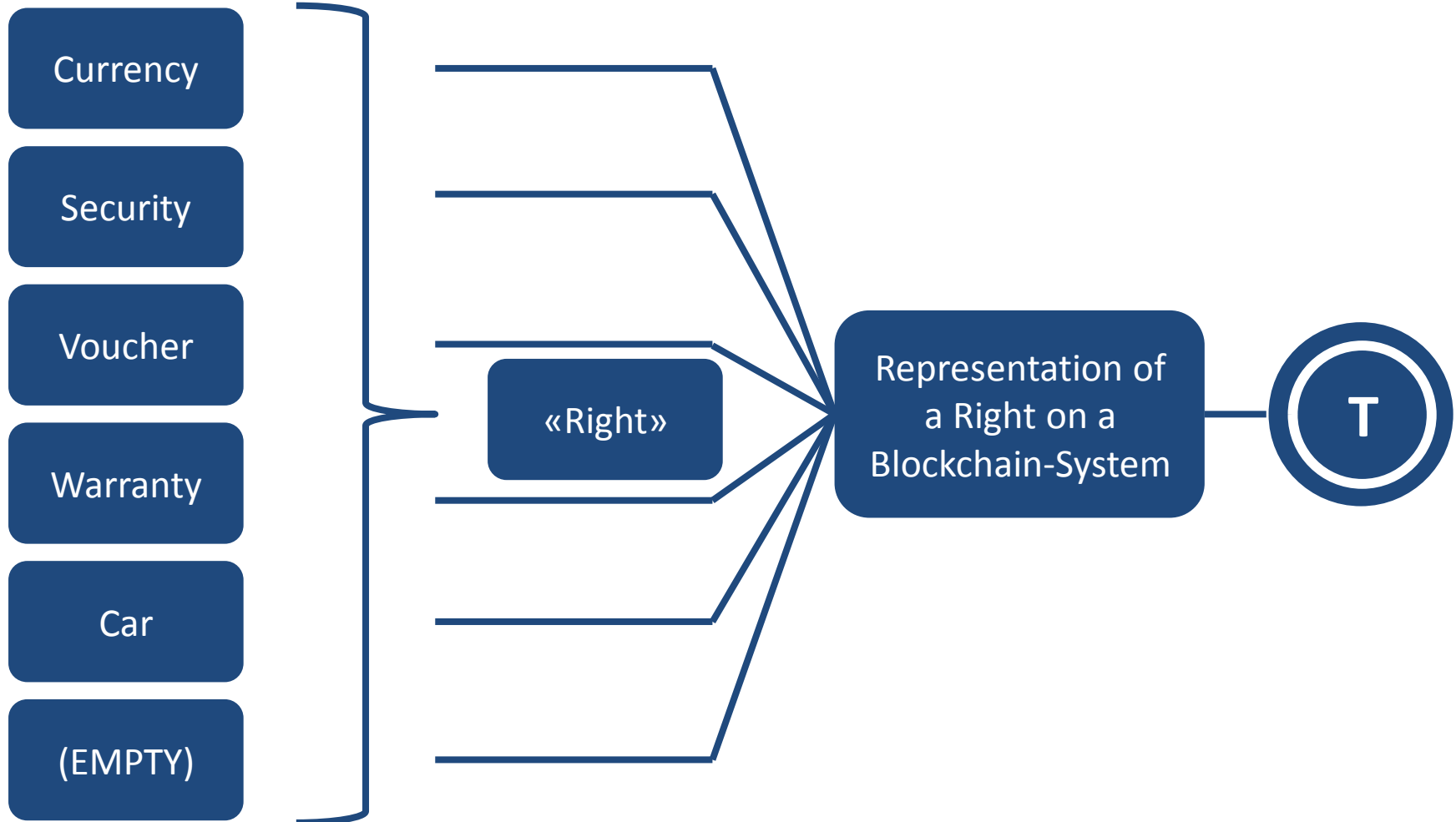


# Legal classification of Token





# «Token Container Model»





# Legal perspective on Token

- from a technical perspective, a Token is only digital information («1001100111»)
- character of an item (transferable, ownership...)
- not a physical item (FL - Property law (Sachenrecht) is not appropriate)

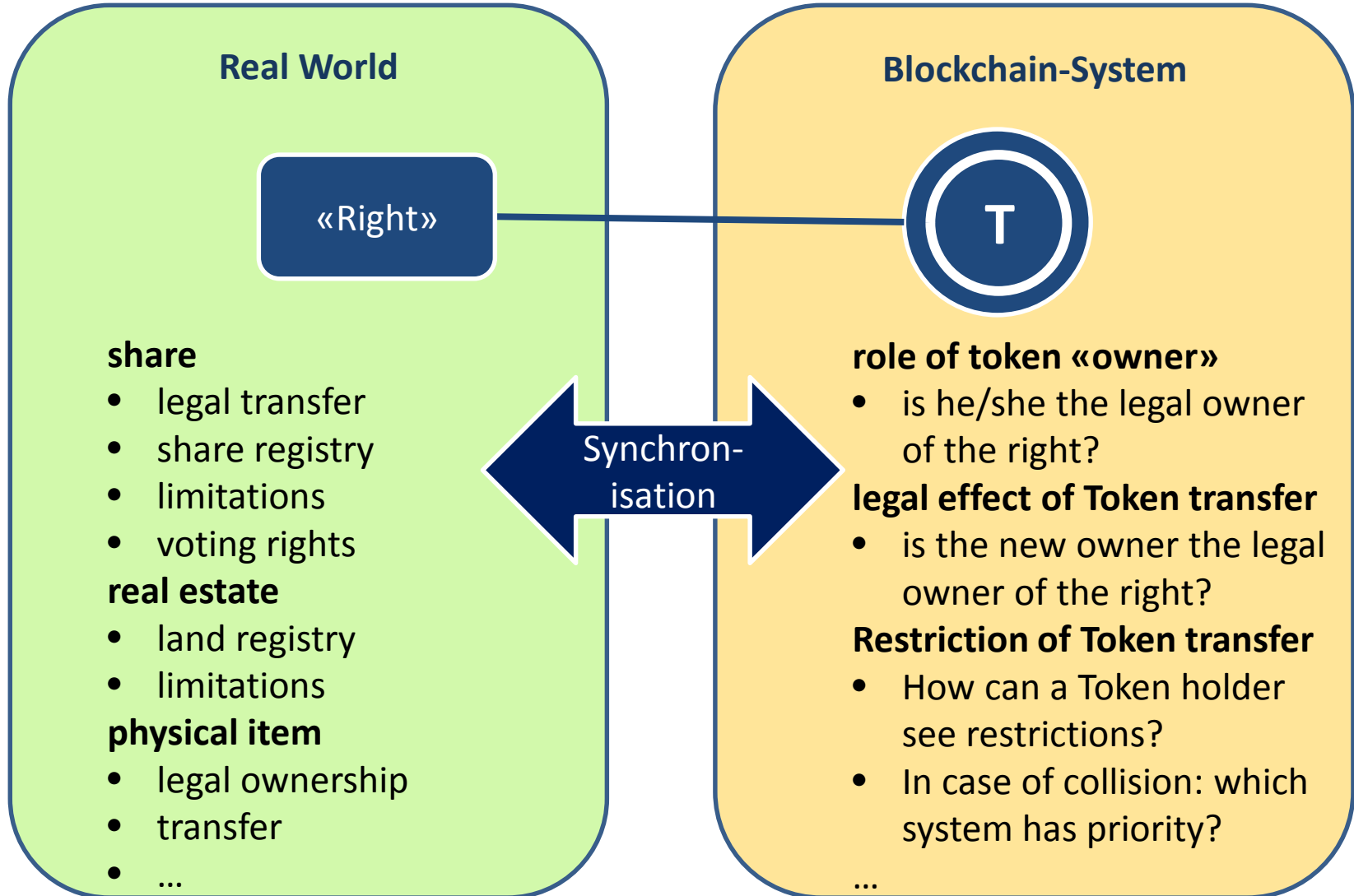
**=> Token is introduced as a new legal element in Liechtenstein legal framework**

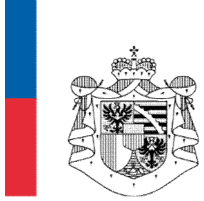
“Token”: a piece of information on a TT System which:

1. can represent claims or rights of memberships against a person, rights to property, or other absolute or relative rights; and
2. is assigned to one or more TT Identifiers;



# Token and «real world»





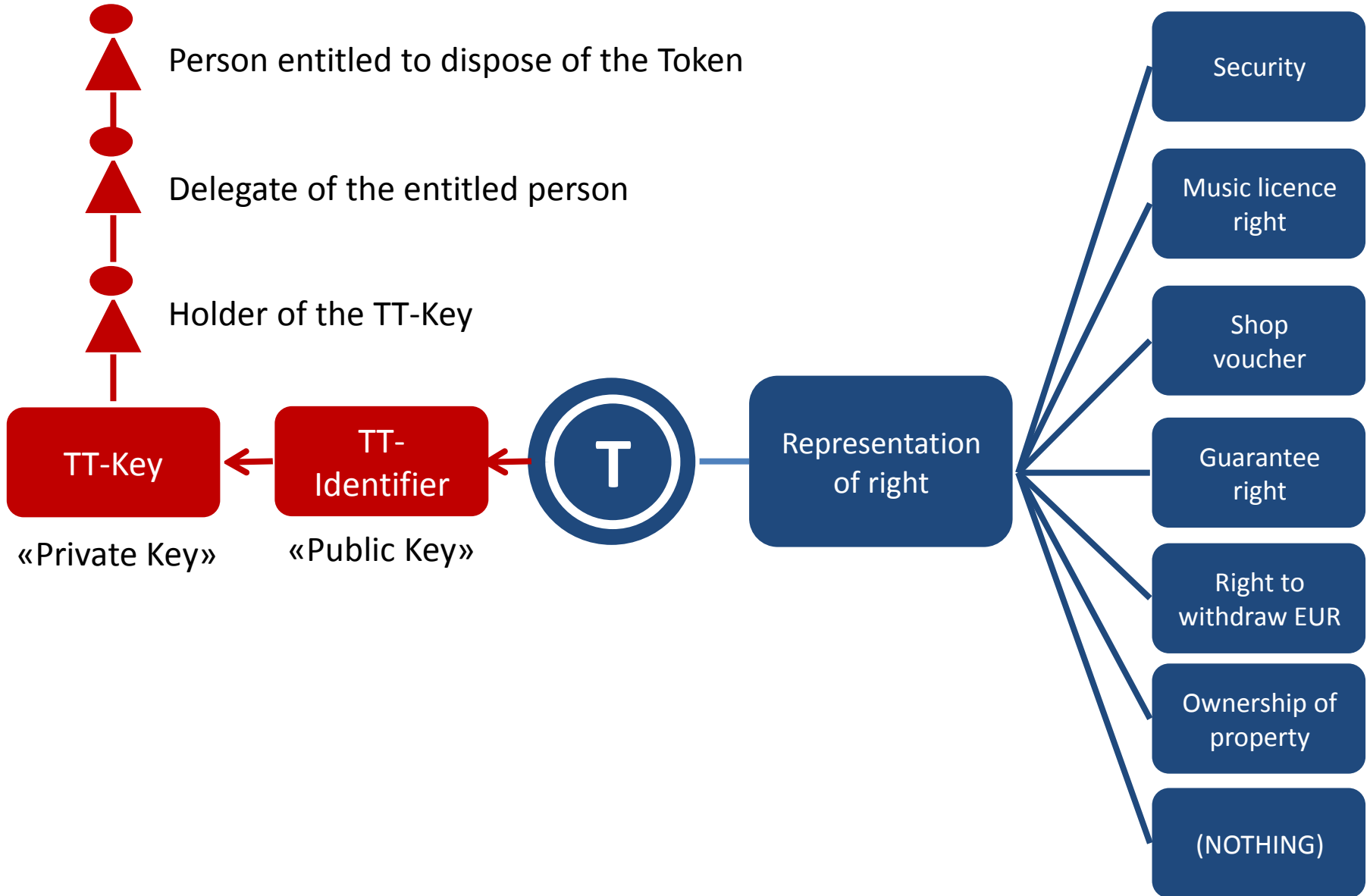
# Fundamental questions about Token



- Can a Token be owned?
- Can a Token be «stolen»?
- Can a Token be transferred to a delegate? What are the legal implications?
- Can a Token be pledged?
- Legal protection of a Token «buyer» (good faith)
- Is it possible to cancel a Token?
- etc.



# Legal Model «Disposal of Token»







# Token- and TT-Service Provider Act: Civil basis

- Art. 5: Power of Disposal and Right of Disposal
- Art. 6: Disposal over Tokens
- Art. 7: Effects of Disposal
- Art. 8: Legitimacy and exemption
- Art. 9: Acquisition in Good Faith
- Art. 10: Cancellation of Tokens



## Extract: Article 5

### Article 5

#### *Power of Disposal and Right of Disposal*

- 1) The TT key holder has the power of disposal over the Token.
- 2) It is further assumed that the person possessing the power of Token disposal also has the right to dispose of the Token. For every previous holder of the power of disposal, it is presumed that he was the person possessing the right of disposal at the time of his ownership.
- 3) If someone is the holder of a power of disposal without wanting to be the person possessing the right of disposal, he can rely on the person from whom he received the Token in good faith is the person possessing the right of disposal.



# Extract: Article 6

## Article 6

### *Disposal over Tokens*

1) Disposal is:

- a) the transfer of the right of disposal over the Token; or
- b) the justification of a securities or a right of usufruct to a Token.

2) Disposal over a Token requires that:

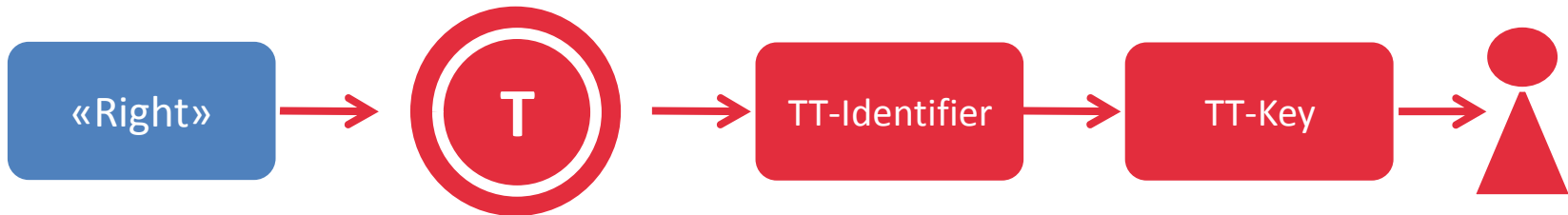
- a) the transfer of the Token is concluded in line with the regulations of the TT System where a restricted in rem right to a Token can also be ordered without transfer, if this is apparent to third parties and clearly establishes the time of ordering;
- b) the transferring party and the receiving party unanimously declare to transfer the right of disposal over the Token, or that they want to justify a restricted in rem right;
- c) the transferring party is the person possessing the right of disposal pursuant to article 5; article 9 remains unaffected.

3) If a Token is disposed of without reason or a subsequent reason fails to exist, the revocation shall be accomplished in accordance with the provisions of the Enrichment Law (sections 1431 et seq. ABGB).

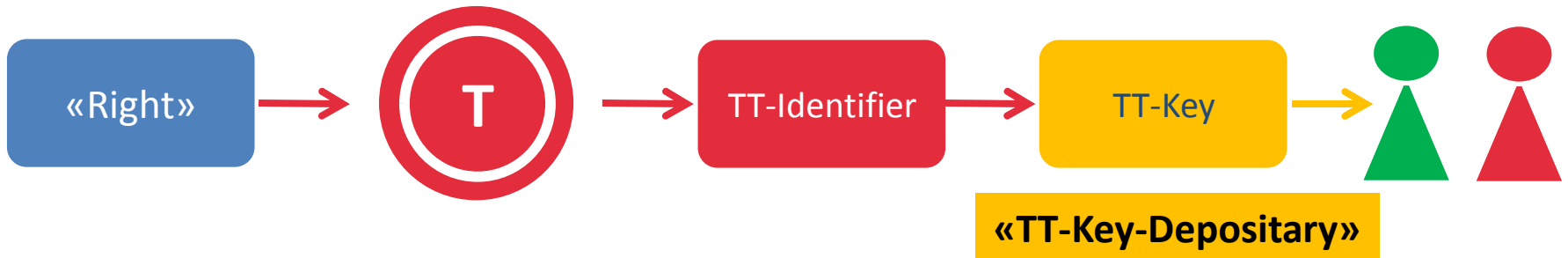


# Delegation: Role of Service Providers

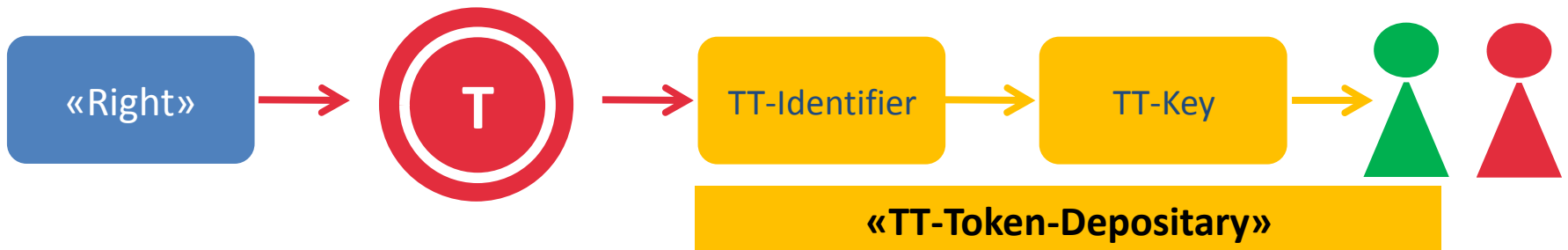
**Model 1:** Deposit directly by the Person entitled to dispose of the Token



**Model 2:** Deposit of Private Keys by Professional Service Provider



**Model 3:** Deposit of Tokens by Professional Service Provider





# Legal questions relating to delegation

- Case of Bankruptcy: What happens with Tokens and TT-Keys held for a client? Are they part of the delegate's own assets?
- What happens in case the delegate uses the Token in another way than agreed? (Misuse of the power of disposal)
- What legal proceedings are open to the entitled person?
- The delegate has the full power of disposal!

## **Token and TT-Service Provider Act:**

- Regulation of Token- and TT-Key Depositary
- Duty to clear separation of clients and own assets
- Legal clarifications about the roles («right to dispose» and «power of disposal»)



# Tokenization of physical items



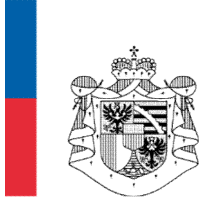
- Authenticity?
- Value?
- Origin (Criminal background)?



**EUR 800 Mio.**

## Token Economy

- Is he really the owner?
- Is the painting really available?
- does the token really represents the property right?
- Is the Token well programmed?
- Am I really the legal owner of the painting after having bought the Token?



# Tokenization of physical items

## Physical Validator

- Interface between «real» world and blockchain
- Ensures that the asset really is available

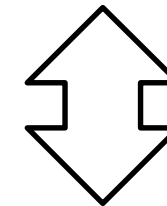


Safe



## Token Generator

- Technical Correctness
- Representation of right



## Token

- Proof of Authenticity
- Proof of Origin
- Estimation of Value



# Overview over the «Blockchain-Act»

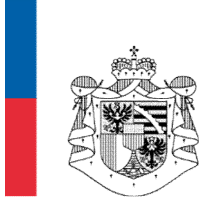
Civil law basis Token	<ul style="list-style-type: none"><li>• Legal definitions</li><li>• Power of disposal and right to dispose of a Token</li><li>• legal consequences of a Token transaction</li><li>• collision principles</li></ul>
Supervision of Service Providers	<ul style="list-style-type: none"><li>• Requirements to important service providers</li><li>• Registration</li><li>• Supervision</li></ul>
Basic information sheets	<ul style="list-style-type: none"><li>• Duty of publication of a basic information sheet</li><li>• Content</li><li>• Exemptions</li></ul>
uncertificated rights	<ul style="list-style-type: none"><li>• Dematerialized security</li><li>• digital security process</li><li>• Registry on Blockchain</li></ul>
AML...	<ul style="list-style-type: none"><li>• AML Duties</li><li>• Compliance with newest FATF-Standards / 5. EU-AML Directive</li></ul>





# Status and Outlook

- Token und TT Service Provider Act TVTG
  - First Reading of the Act by the Parliament has taken place in June 2019
  - Second Reading is planned in October 2019
  - Entry into force is planned on: Dec. 2019 / Jan. 2020
- Important Milestone
  - Legal Certainty for Token Economy
  - Guidelines for business activity
  - first step in a major development (digitalization)
- Ability to innovate will be crucial also for states
- Know-how about digitalization / technology in all state functions will be important



**Thank you for your attention**