

Blockchain-based Real Estate (RE) Market: One Method for Applying Blockchain Technology in Commercial Real Estate Market

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July 14, 2019

Outline

- Introduction
- State of the Art, Literature Review, and Opportunities
- Theory Development
- Discussion

Research Interest

- To present a model to benefit all parties involved in the Commercial RE (CRE) and be secure against the prevalent problems in the RE industries.

Introduction

- REs Markets
 - Professionally managed global RE market at 8.5 trillion USD in 2017 according to MSCI.
- RE Market Drawbacks
 - Inefficient, complex, costly, black box, institutionalized, few innovations, and so forth
- Blockchain Technology



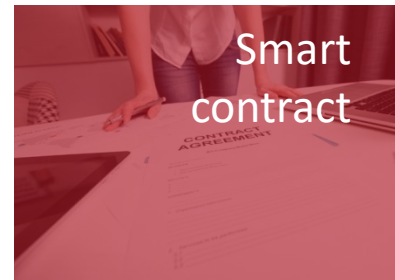
Blockchain features for trade ...

Append-only distributed system of record shared across business network

Shared ledger



Smart contract



Business terms embedded in transaction database & executed with transactions

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable

Privacy



Consensus



All parties agree to network verified transaction

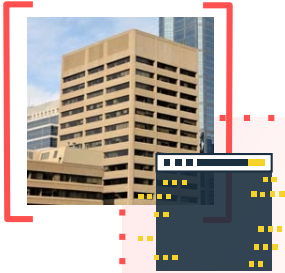
... Broader participation, lower cost, increased efficiency



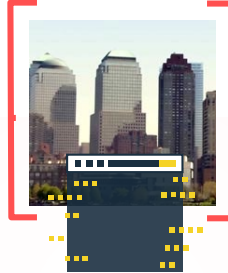
What

Solution ...

Counter-party records



Party A's records



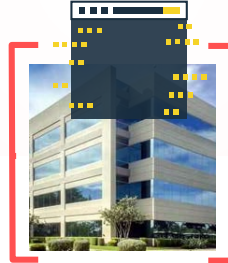
Bank records



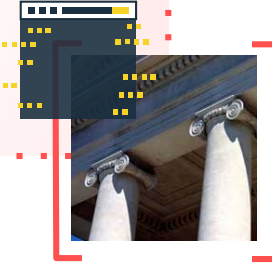
Party C's records



Party B's records

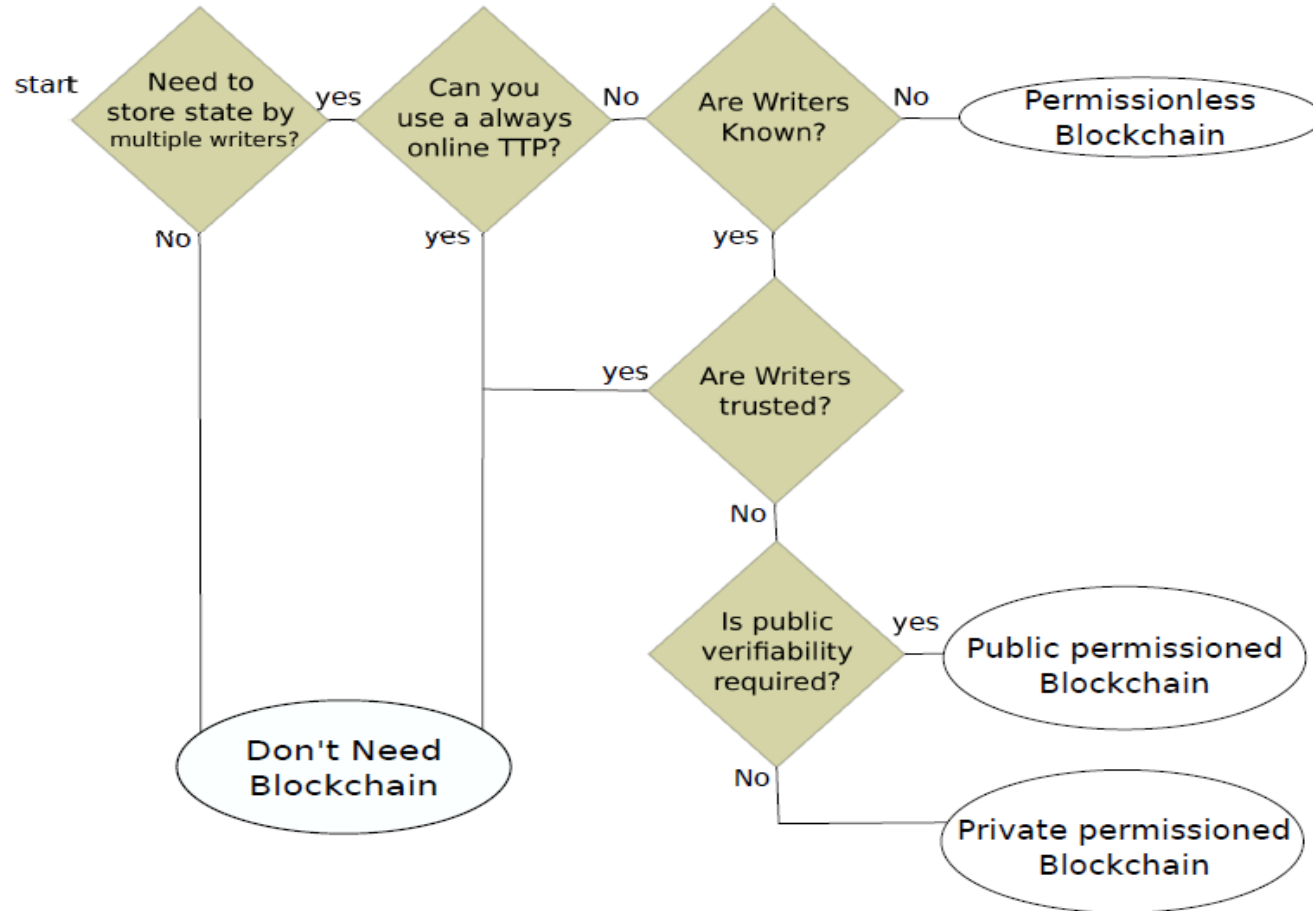


Auditor records

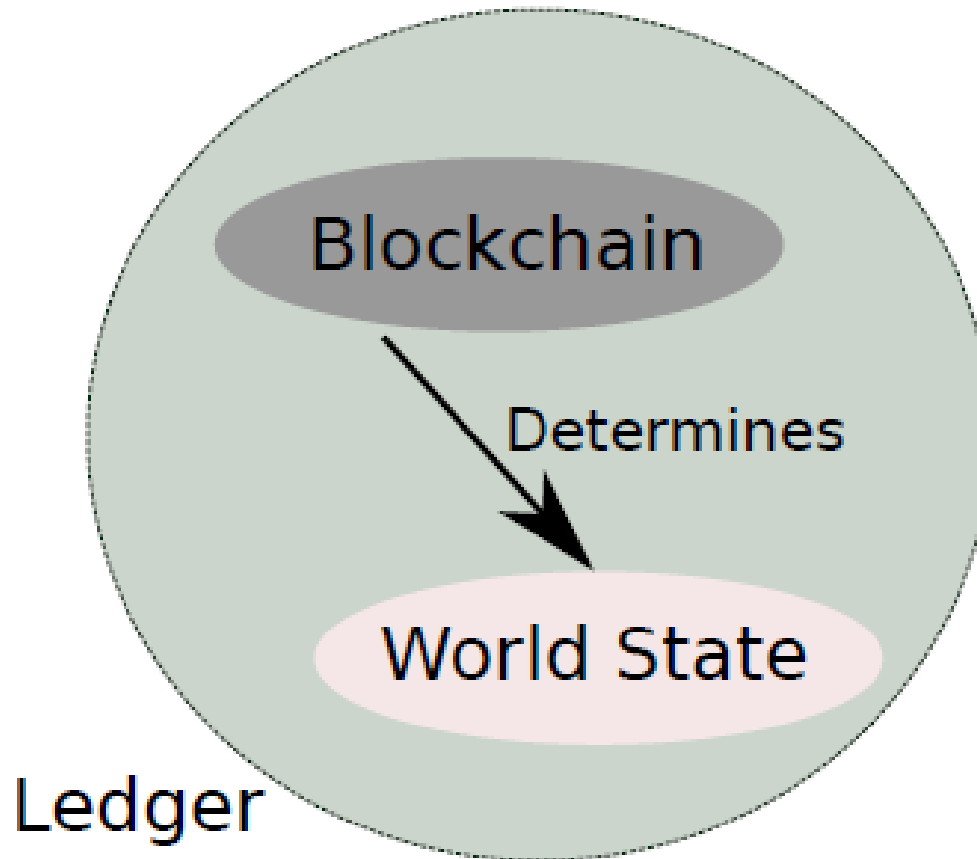


... Consensus, provenance, immutability, finality

The Needs for Using Blockchain

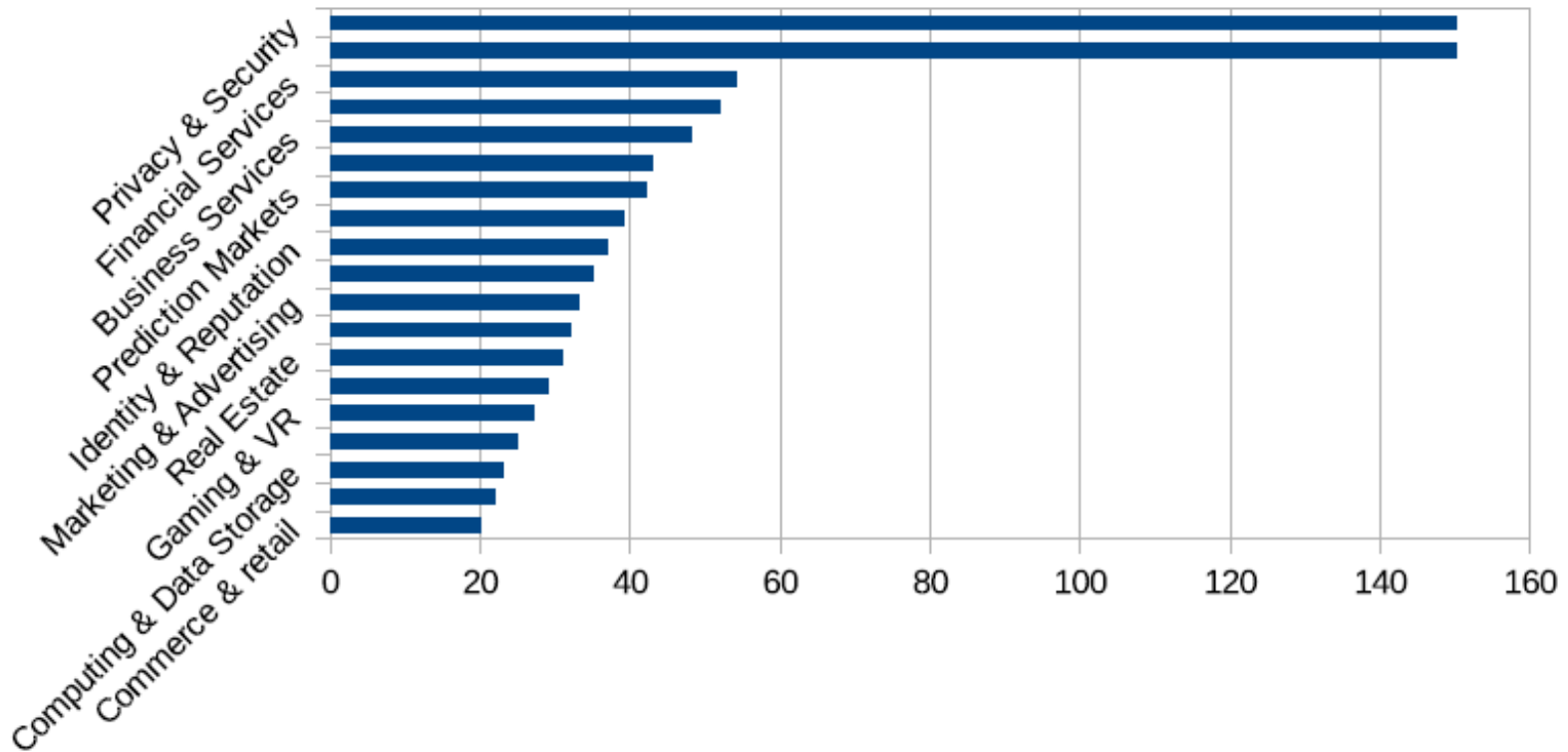


Ledger and Its Subsections



Funds for ICO Hard Caps for Different Industries

Funds(Million dolloars) for implementation of projects from particular industries



State of the Art, Literature Review, and Opportunities

- Tokenization
- Transparency and Trust
- P2P Transactions
- Cost Reduction
- Smart Contracts
- Integrity and Security
- Property Title

RE Liquidity Problems

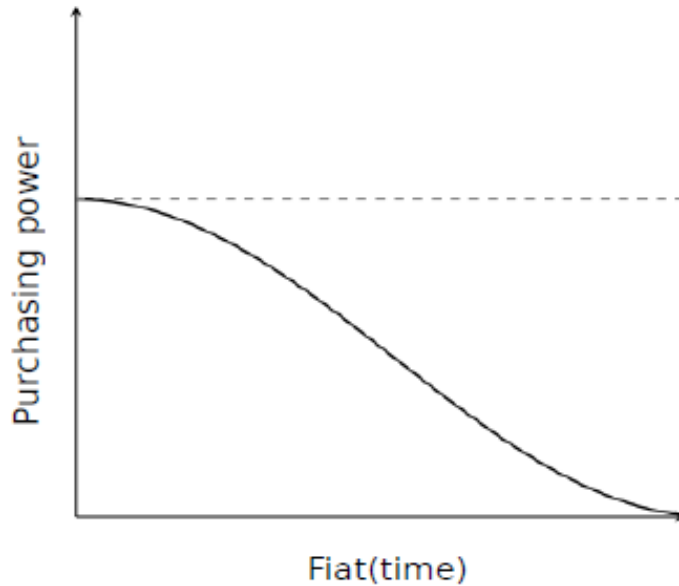
- Issues of paramount importance
 - being resistant to devaluation of investments (inflation and deflation),
 - having a stable price, and
 - gaining interests and revenue

Blockchain Actors Dynamics

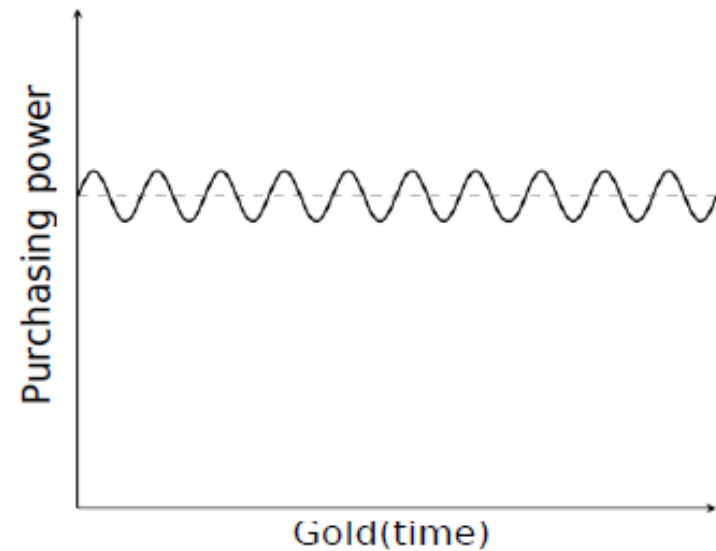
- Game theory: Games and economic behavior (Neumann, 1944; Nash, 1950)
 - a major influence on the development of several branches of economics (industrial organization, international trade, etc.)
 - provides a formal language for the representation and analysis of interactive situations like market, where several entities—called players—take actions that intend to affect each other [34].
- Players of interest
 - The blockchain-based RE system vs. RE Market

Theory Development

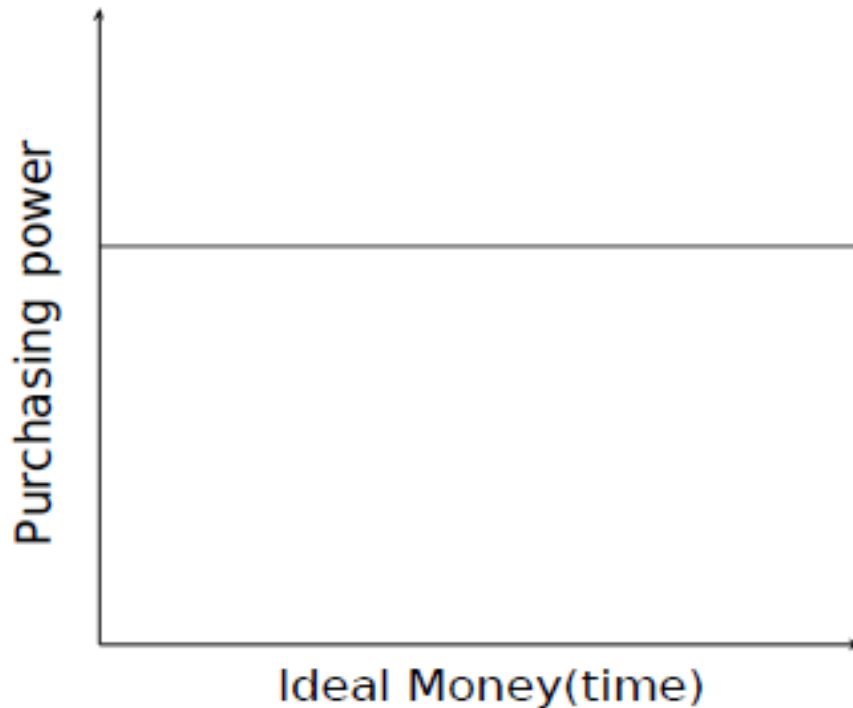
Shortcoming of fiat currency in long term



Shortcoming of Gold currency in near term



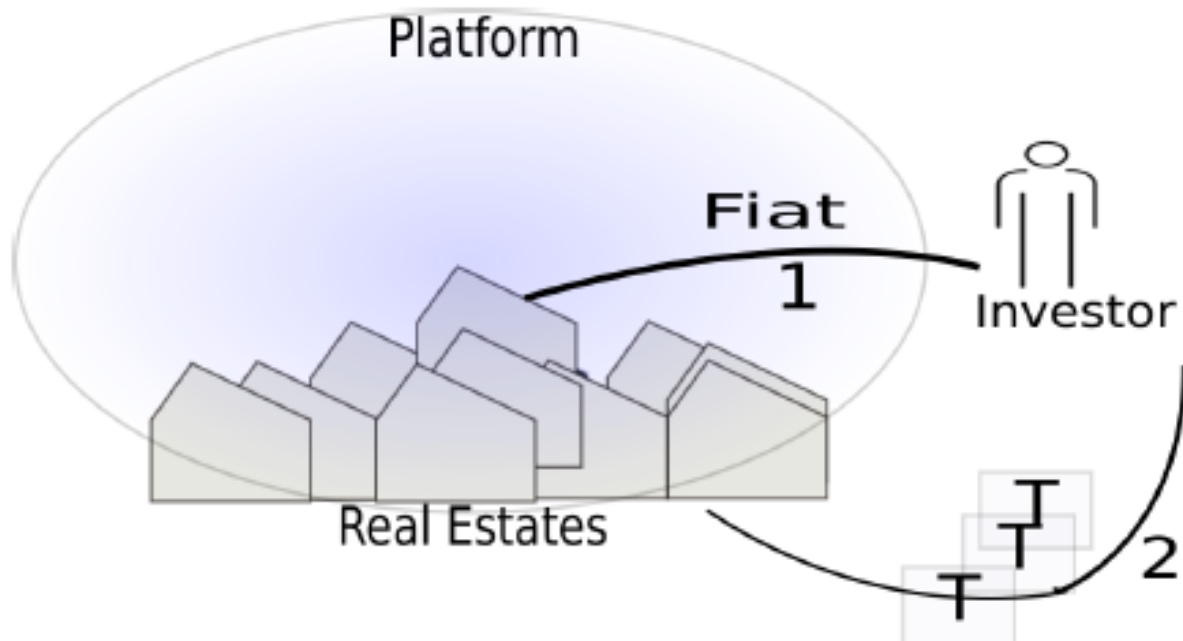
The Ideal Token(money) as a Store of value



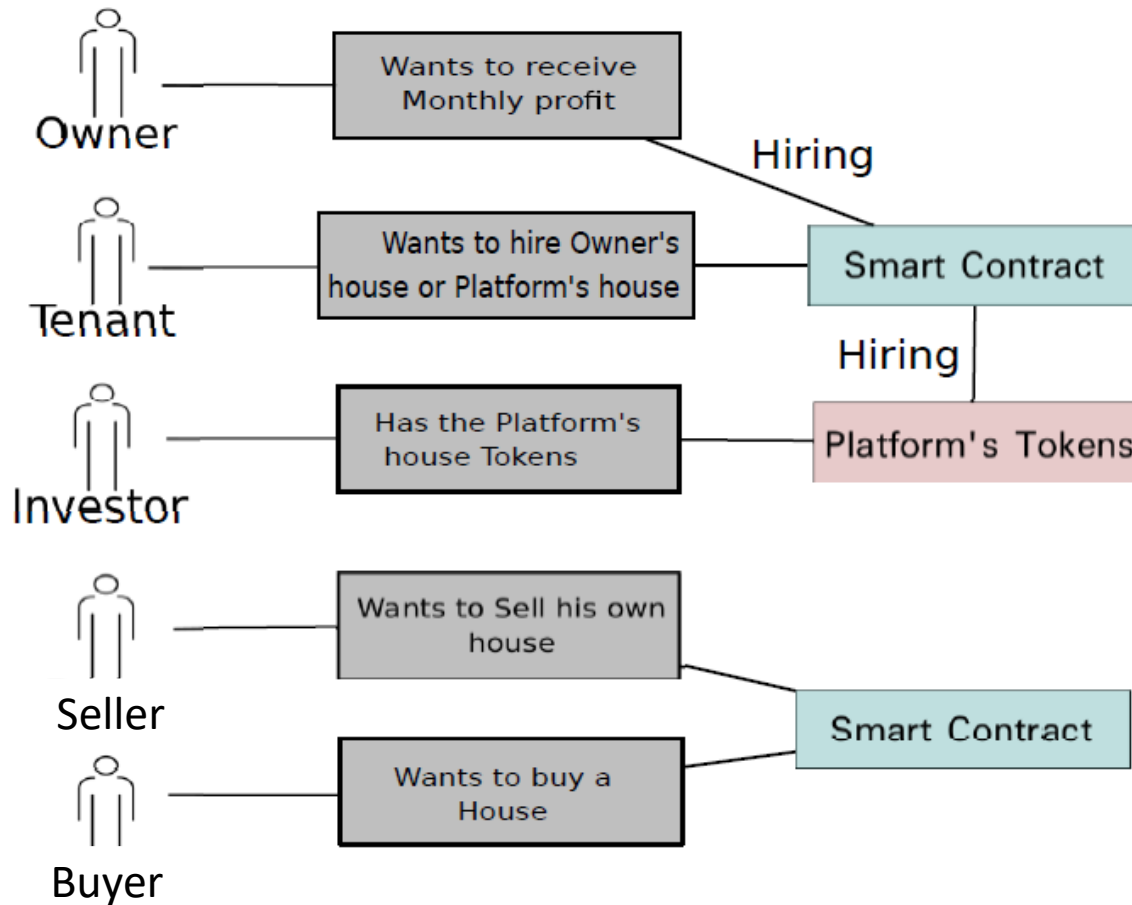
Main Characteristics of Token T

- Backed by Real Assets
- Functions of Money
 - Storing Value
 - Unit of Accounting
 - Medium of Exchange

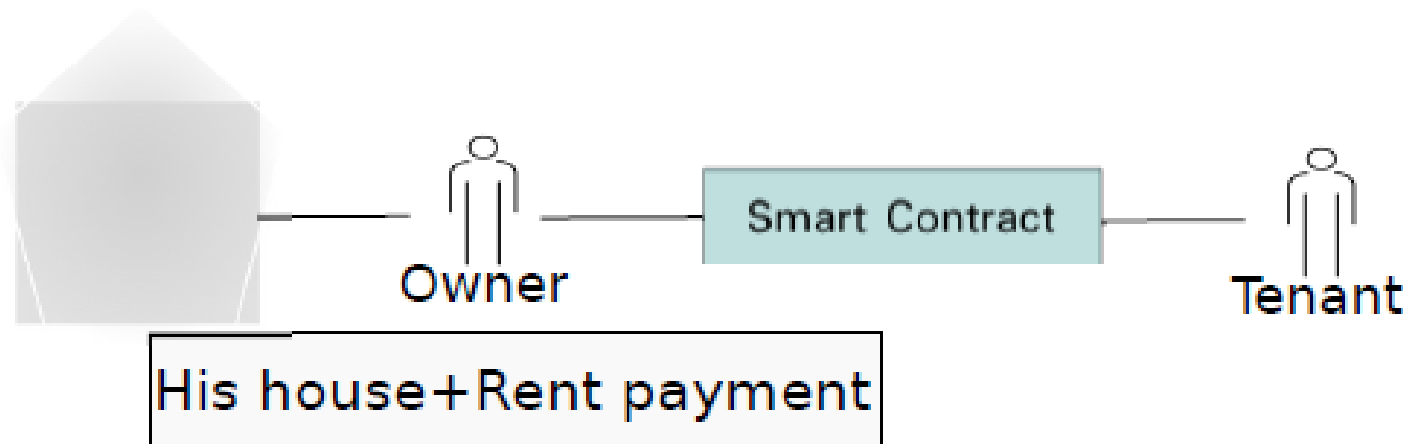
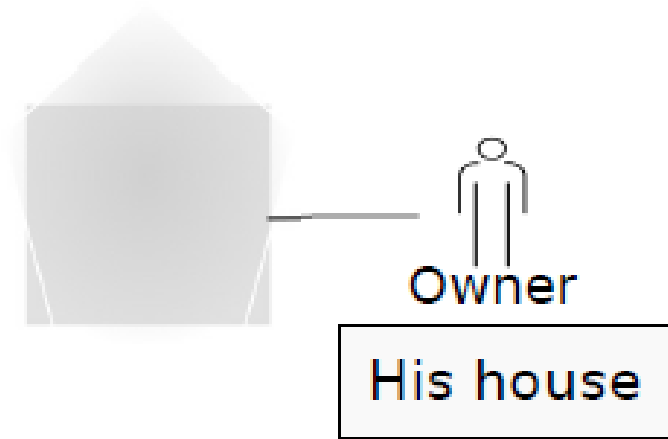
Scheme of Platform



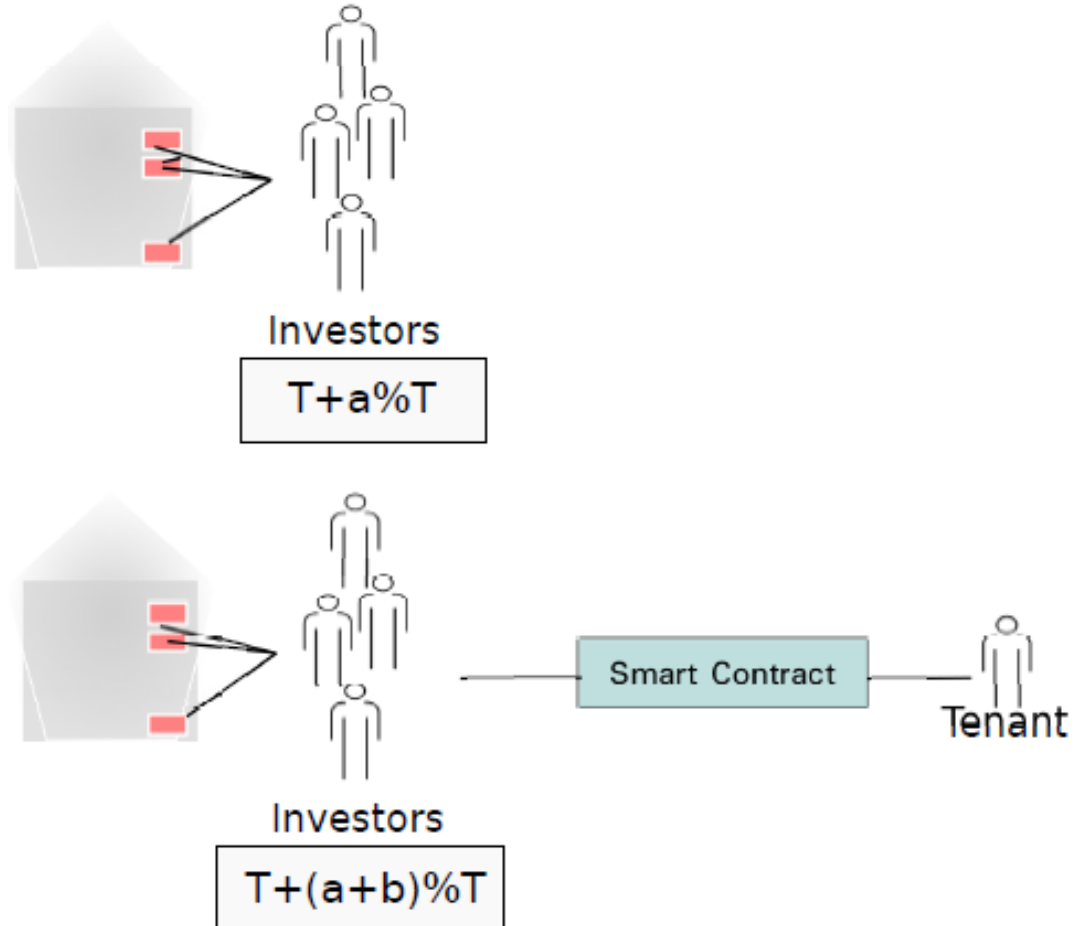
The RE Entities



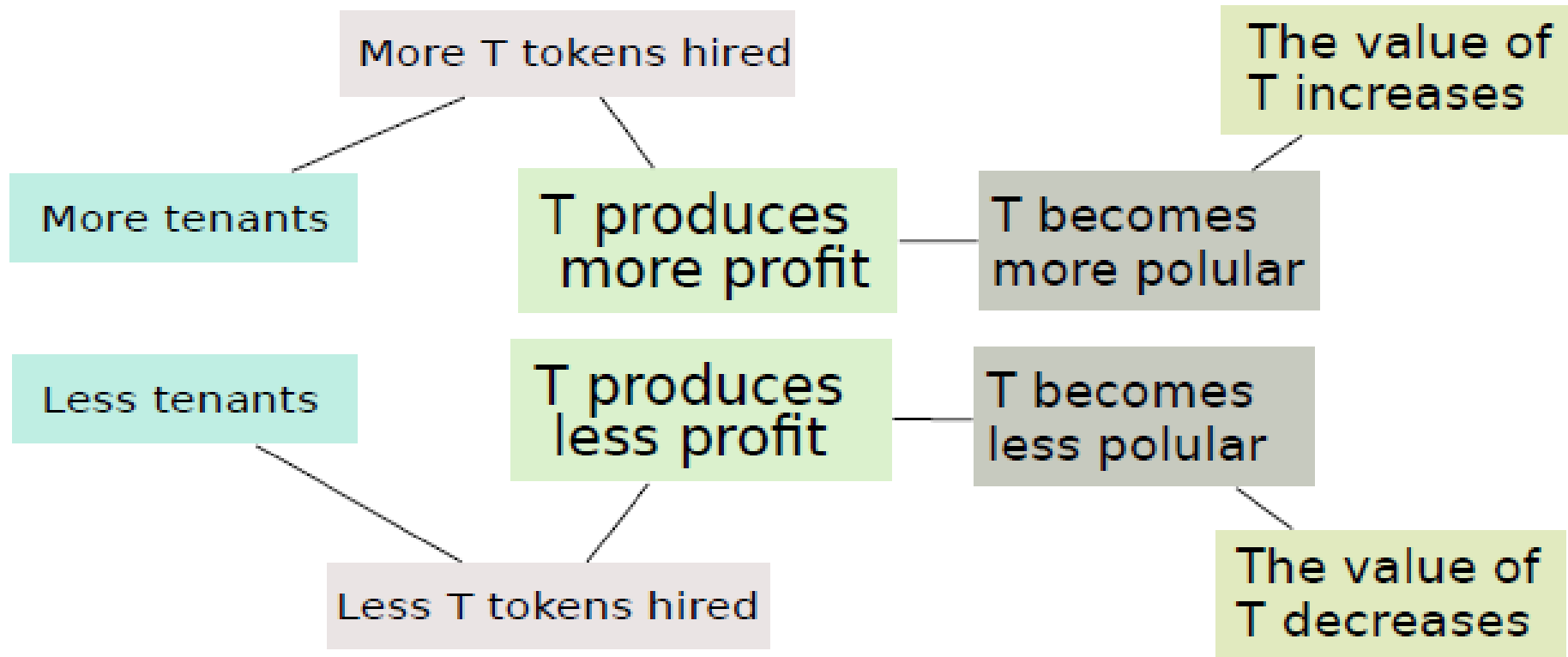
Owner-Tenant Connection I



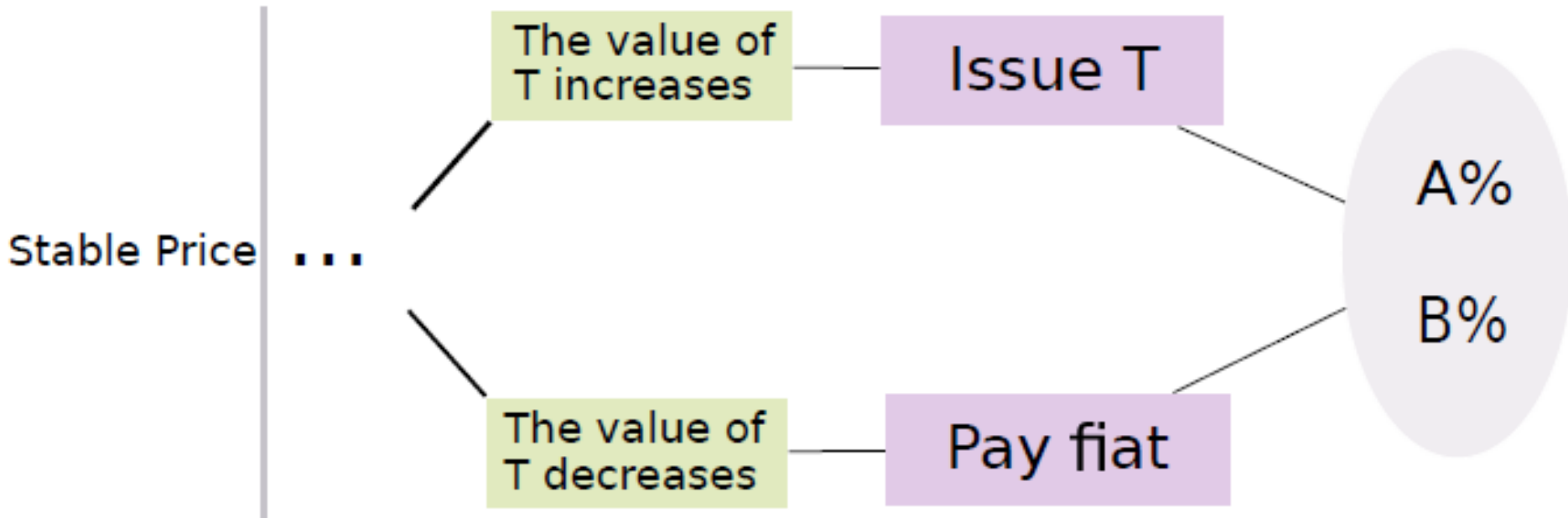
Owner-Tenant Connection II



How T Tokens' Price are Affected, from Left to Right



Distribution of rent profit



Discussion

- Facilities and Innovation
- Representation and Discussion
- Implementation

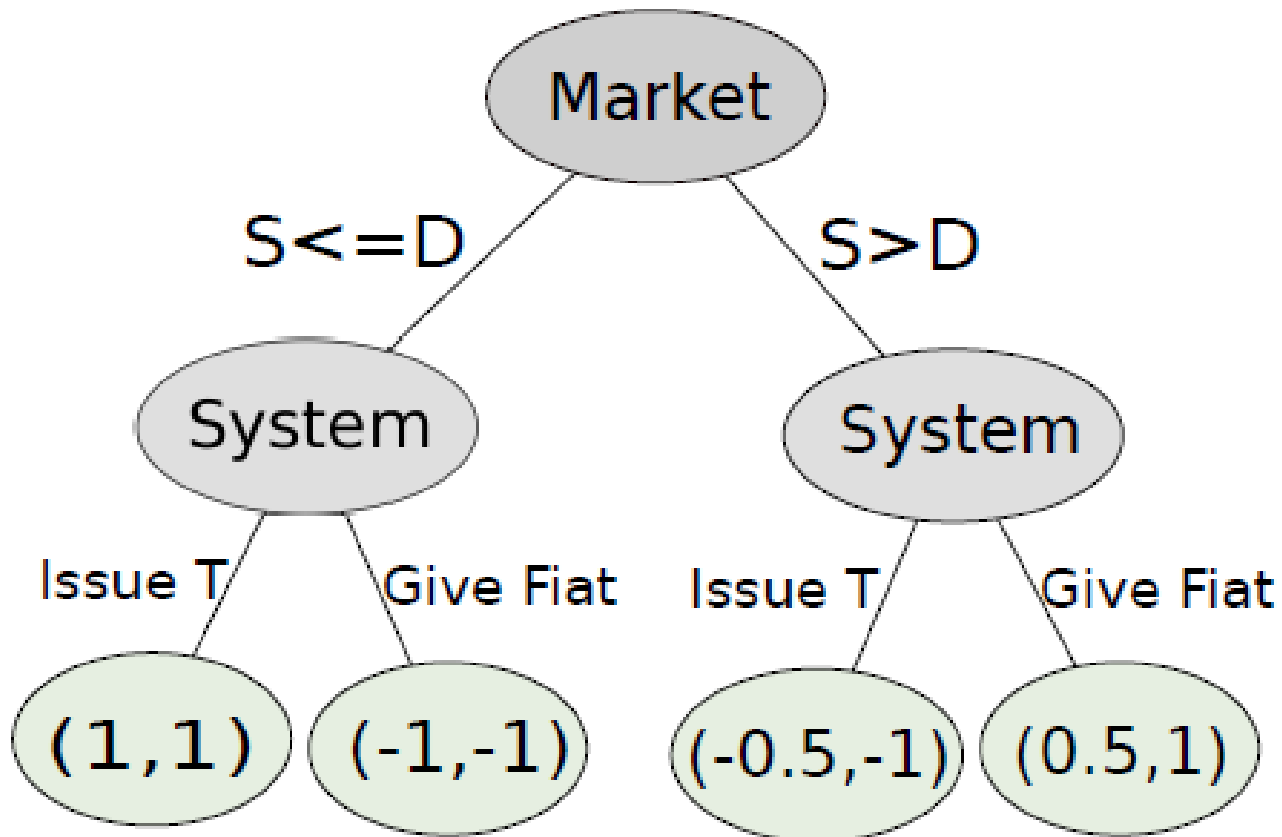
Payoff Scheme in a Game between Market and System

Market

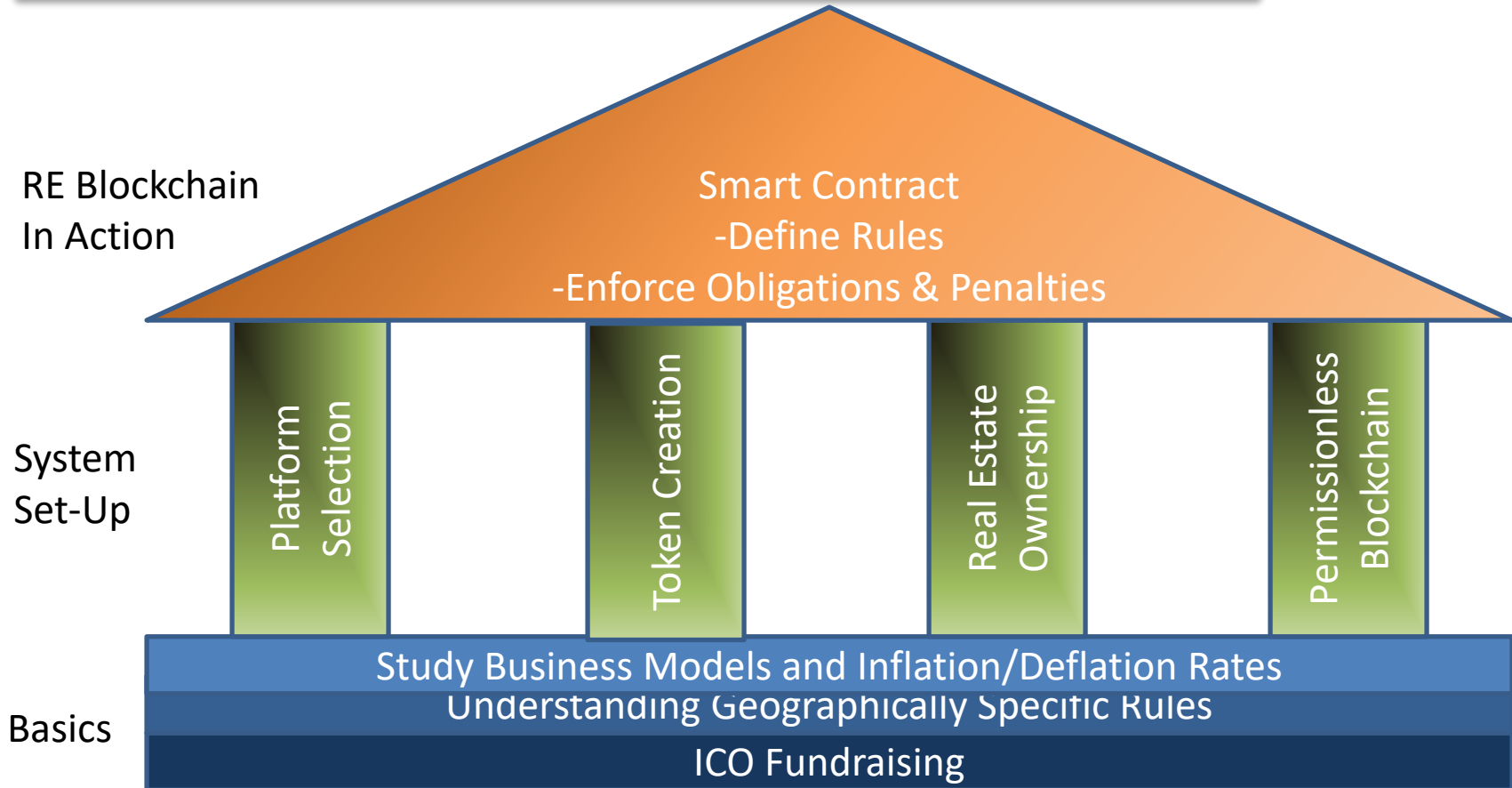
		Market	
		Supply > Demand	Supply <= Demand
System	Issue T	(-1, -1)	(1, 1)
	Give Fiat	(.5, 1)	(-.5, -1)

Nash equilibrium says that there are two mutual good solutions in this game: (1,1) and (0.5,1), while (1,1) is a preference.

Game tree of the game between market and system



Implementation



Implementations

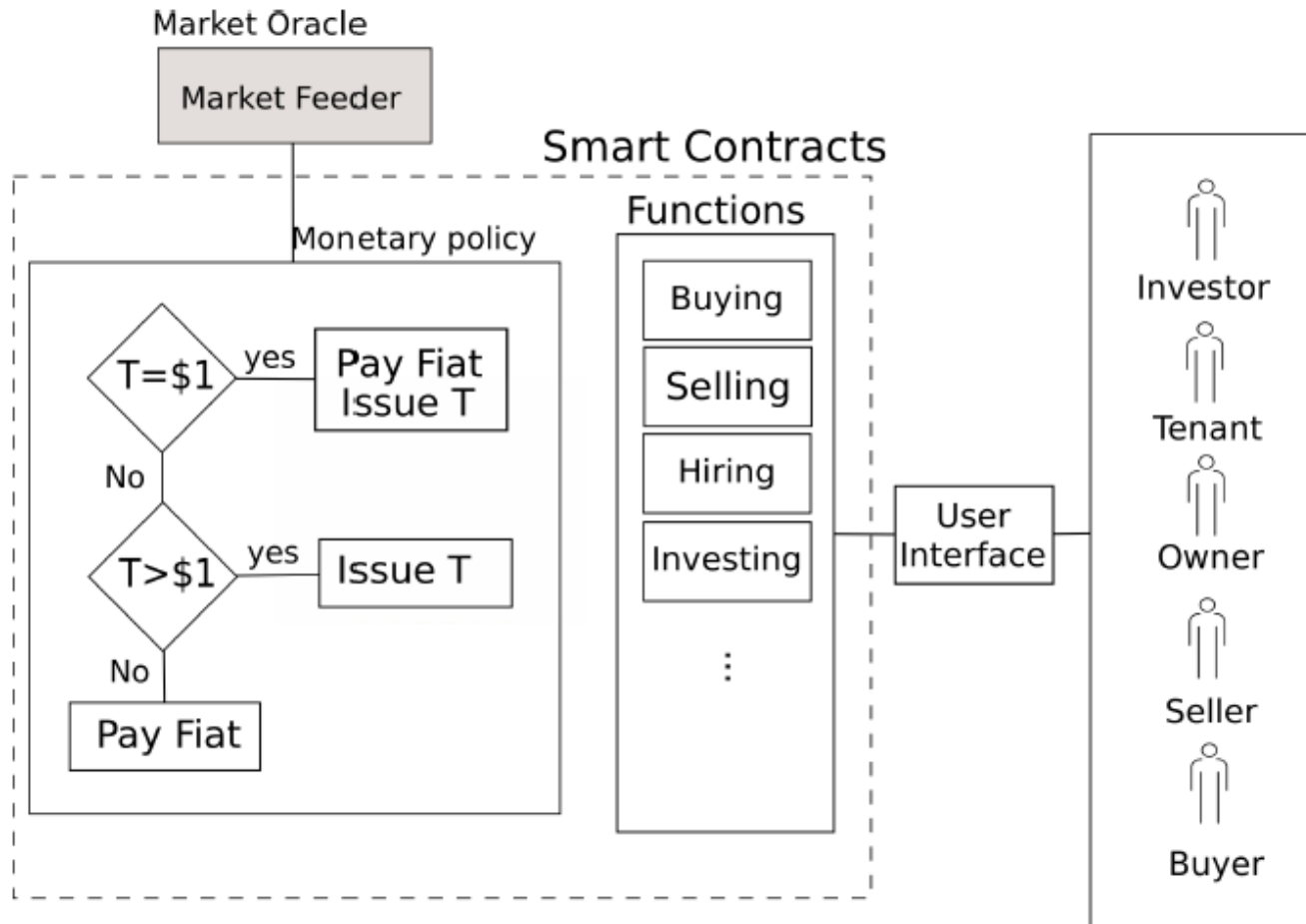
Fundamental Considerations

- Understand geographically distinct rules
- Inflation and revenue patterns (i.e. a% and b%)

- System Set-Up
 - Select/develop a network platform (e.g. Ethereum)
 - Create token
 - ICO Fundraising
 - Permissionless blockchain setting

- Smart contracts
 - define the rules of an agreement,
 - automatically enforce those obligations
 - Enforce the agreed upon penalties for failure to perform obligations.

RE BC Architecture and External Touch Points



*Thank
You*

Any questions?