

*“All people everywhere should  
have access to free  
electricity”*

– Nikola Tesla



Tesla Tower

A photograph of a house with solar panels installed on the roof. The panels are dark blue with a grid pattern. A large white text overlay reads '\$Free.99'. The house has a white exterior wall and a window with green shutters. A green metal post with a hanging lantern is visible on the right side of the image.

**\$Free.99**

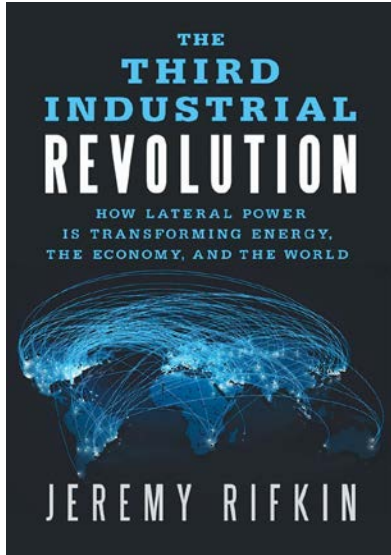
# peer 2 peer transactions



- ✓ *Money over IP*
- ✓ Energy
- ✓ Data



# Pivotal economic shifts through new “energy-communication-matrix”



## Decentralization

Internet of Things

Internet of Value

Solar

Storage

Sharing Economy

Crowdfunding

Tokenization

High-performance

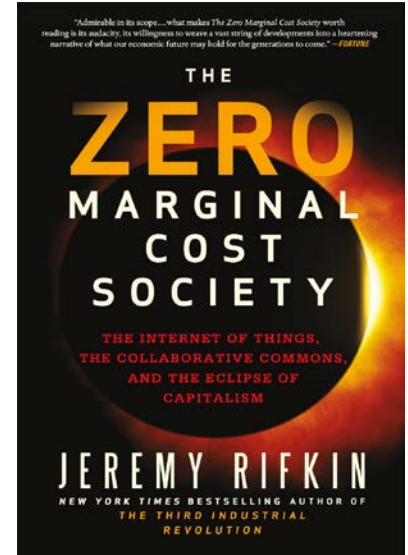
Cryptoeconomics

embedded computing

Decentralized accounting & payment

Machine learning

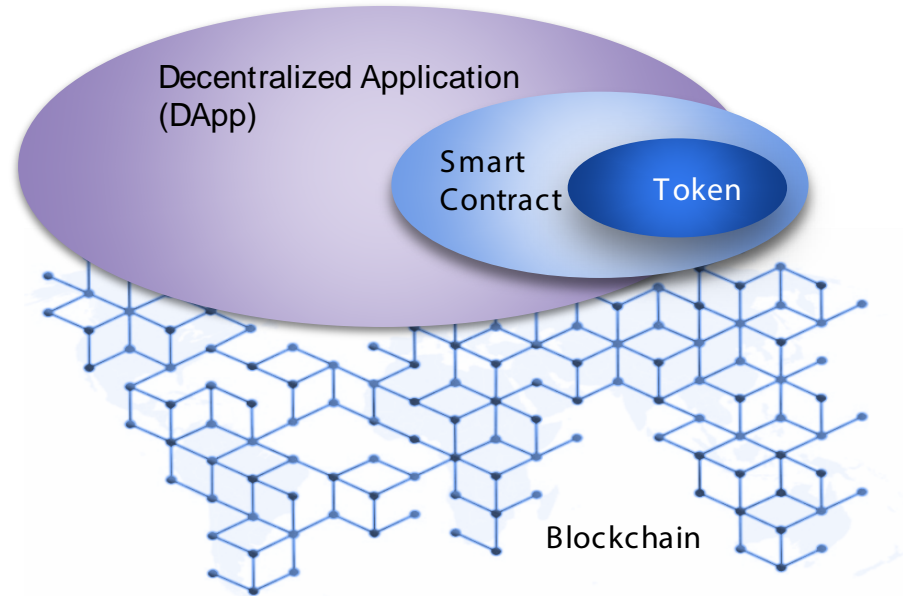
Wireless communications



Also a valuable framework for understanding the current techno-economic, socio-institutional paradigm shifts:  
[Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages, 2002 by Carlota Perez](#)

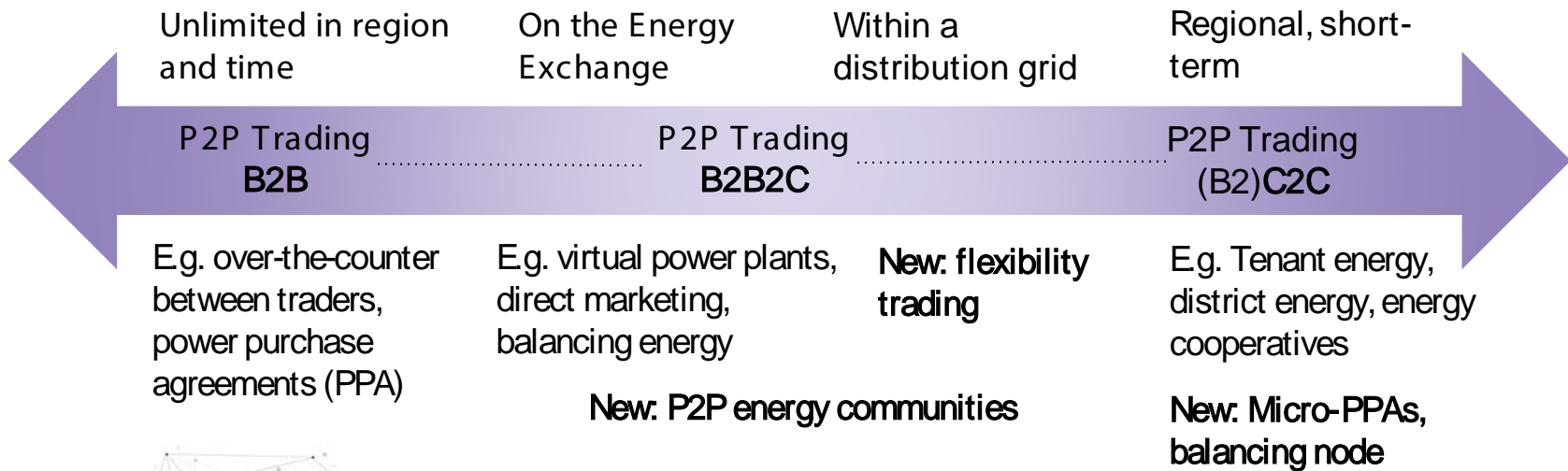
# Blockchain Technology - “Internet of Value”

- ⦿ Tokens represent digital(ized) **value**
- ⦿ Smart contracts encode **terms** of computerized value **exchange**
- ⦿ Blockchain is a global distributed database capable of securely storing **state** of value exchange
  - Data integrity
  - Immutability
  - Reliability
- ⦿ DApp is the **web front end** to smart contracts running on a blockchain
  - User interface, off-chain application interfaces
  - Client-side application logic



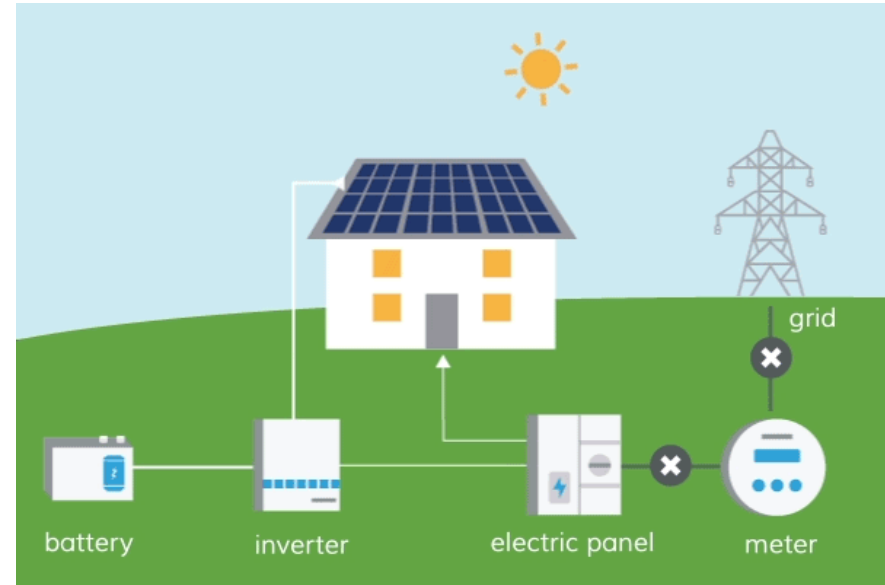


# Scenario: P2P Energy Trading



# Scenario: Energy Tokens

- Type of renewable energy conversion and feed-in
  - Solar, heat, wind, hydro
  - Eg. SolarCoin
  
- Type of renewable energy usage
  - Store, shift, save, share or gift
  - Eg. NRGCoin
  
- Type of grid (not) used
  - Distribution, transmission





# Scenario: New Business Models

- Zero-marginal cost electricity meets
- Zero-marginal cost transactions

Advertisement



Energy data for marketing and advertising

Multifamily Zero Energy Communities In New Arizona Real Estate Fund



Real estate

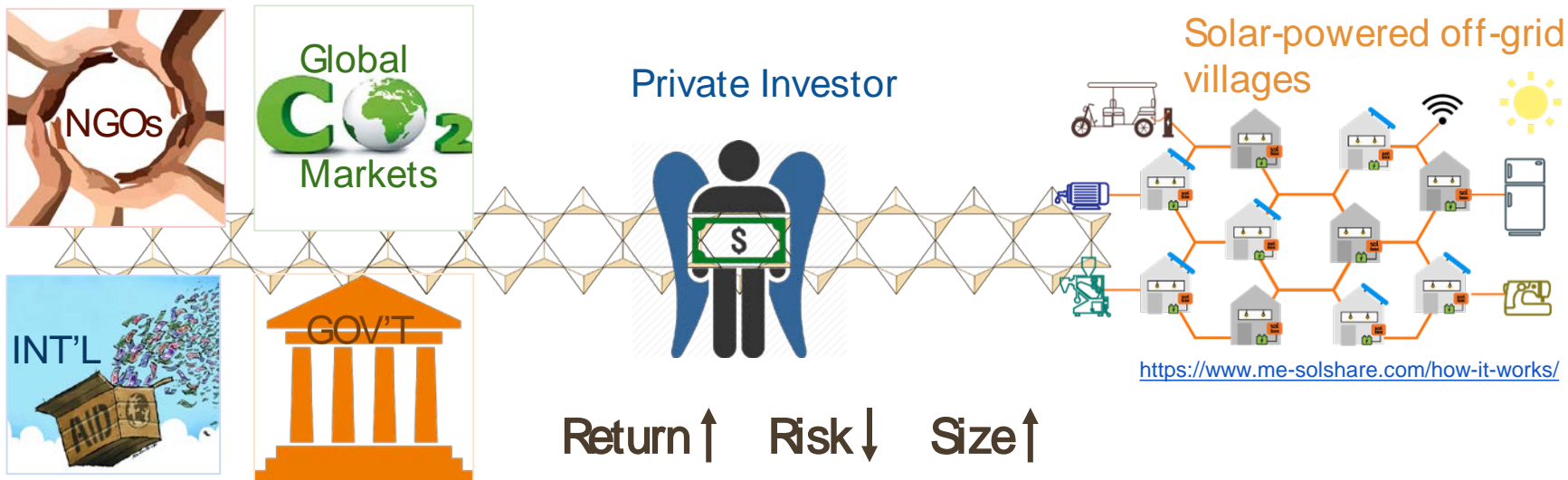


Electric Equipment





# Scenario: Energy Smart Securities



Return ↑ Risk ↓ Size ↑

- + Transparency
- + Impact

- + Subsidies, Carbon market gains
- + Positive income dynamic of prosumers
- + Blockchain-based financial infrastructure
- + Global bundles of solar villages



# Summary: Uses of Blockchain Tech in Energy

- Tokens for

- Smart Securitization: transparency
- Customer engagement: rewards, discounts, cross-selling

- Smart contracts\* for

- Contract management: data-driven analysis of complex terms and incentive structures
- Automated exchange of value, inherent accounting, instant settlement

- DApps for

- Decentralized marketplaces
  - Supply side: Virtual power plants, Micro-PPAs, OTCs
  - Demand side: Demand response, energy efficiency
  - “Over-the-top” services

2018

2019

2020