



2018

**Transactive  
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# Due Diligence of Blockchain-Based TE Solutions

*Session: The Power of Blockchain*

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## Blockchain's strong points for TE

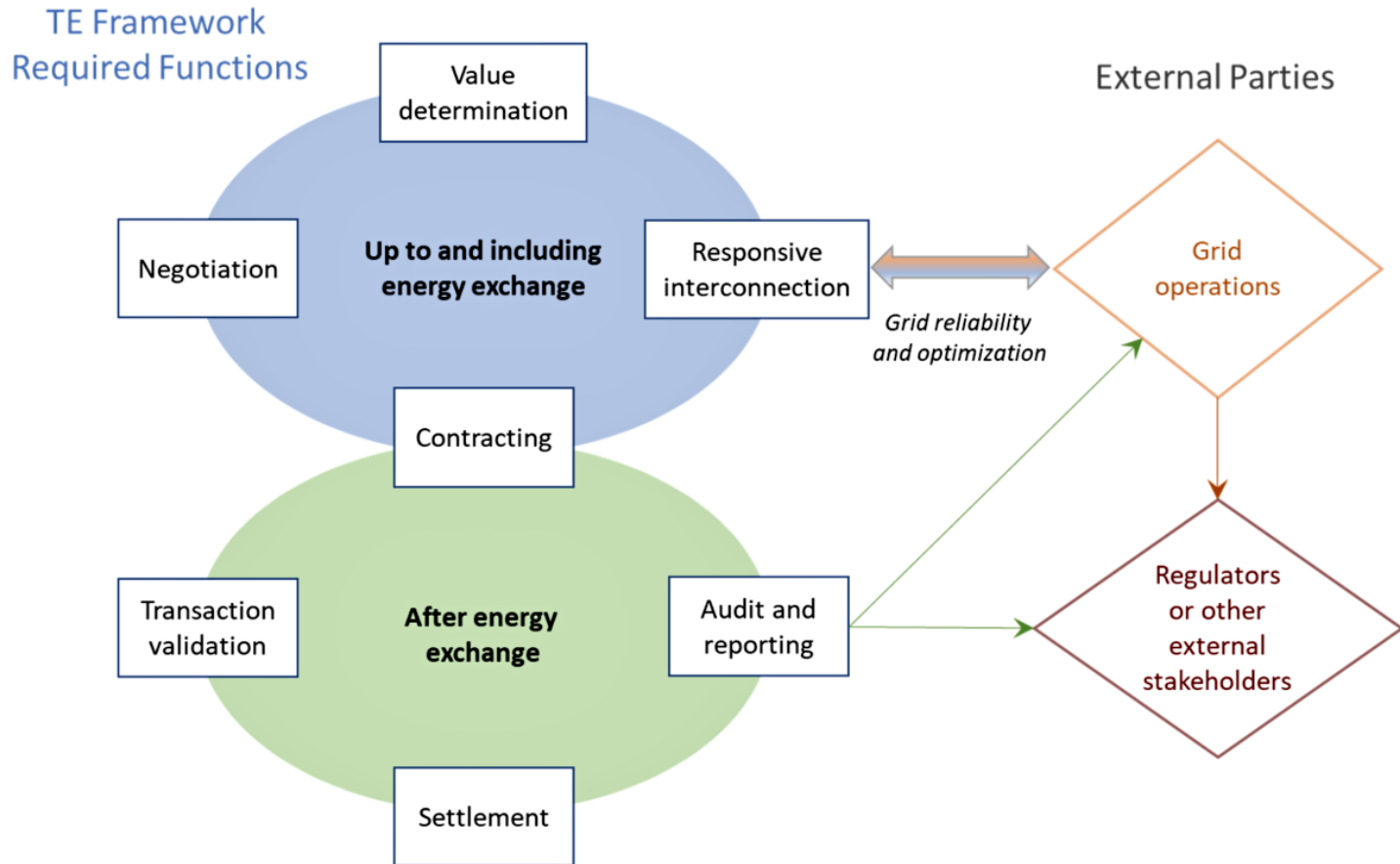
- Designed for use by many parties from different organizations
- Transaction-oriented
- Distributed nature provides robustness and resilience
- *Smart contracts* allow automation to be embedded within the ledger
- Tokens can be created and assigned exchangeable value
- Being developed in parallel for many functions relevant to TE (finance, billing, payment...)

### ***Provisional characteristics:***

- Can eliminate intermediate parties that create expense, inefficiency, or time delays ... depending on the type and degree of decentralization
- Strong transaction and information integrity, including data immutability ... when combined with appropriate shared-validation methods and governance schemes



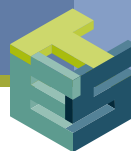
# Blockchain is rarely a *whole* solution





# Four-step due diligence process

1. Benefit fit
2. Compatibility check
3. Blockchain property verification
4. Vulnerability screening

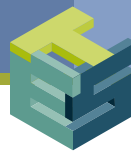


## Benefit fit

- Break down the application into constituent processes and/or functions
- Enumerate blockchain (BC) intrinsic strengths
- Find components of the application that overlap with strengths of blockchain
- Compare BC to existing technologies and solutions
- Identify where BC can improve on existing technologies

## Compatibility check

- Check the fit into system architecture
- Investigate the usage in practice
- If decentralization really what you want or need? What *type* of decentralization?
- Check for side effects
  - Rigid time structure of consensus
  - Data immutability headaches
  - Inadequacy of BC as a database
- Does the underlying BC system have transaction fees?



## Property check

- Enumerate the BC properties you are relying on
- Study the solution architecture
  - *BC properties are not universal – they are emergent characteristics of the architecture!*
- How will the system evolve over time as it gets implemented?
  - NB reduction in Bitcoin decentralization due to mining pools
  - What will be involved in making upgrades or other needed changes to the system over time?

## Vulnerability screening

- Identify the attack vectors and modes
  - IT compromise
  - Attacks from within
  - Malware and illegal behavior in the metadata
  - Smart contract issues
  - *Infrastructure connections and their unintended vulnerabilities*
- Evaluate the strength of the solution under both plausible and currently implausible circumstances