**S6 Smart Contract & DApps**

1. What are smart contracts? How do they compare to traditional contracts? What are tokens?
2. What are smart contract platforms, such as Ethereum? What generally distinguishes them from Bitcoin?
3. What are decentralized applications (DApps)? What had been the usages? Why haven’t any DApps yet received wide consumer adoption?

1. Smart contracts are “a set of promises, specified in digital forms, including protocol within which parties perform on promises”. (Nick, Szabo, 1996)

2. The smart contract platforms is a place where provides framework or infrastructure for building decentralized applications. Ethereum is the largest and most popular decentralized application platforms until now.

3. Dapps are application built on the decentralized blockchain. Until 2018, the usages of Dapps overall are low, especially for top ones, comparing with traditions applications, like facebook, wechat and etc.

Because its social acceptance is low, the transaction fees are high and the infrastructure needs to be upgraded.

**S7 Technical Challenges**

1. How critical are technical and commercial challenges scalability, efficiency(latency/delay), privacy, security, interoperability, of the current blockchain technology?

2. What are the possible tradeoffs of decentralization, scalability, security? What are the tradeoffs of consensus software updates, governance and so-called “hard fork”?

3. What might current work --- Layer 2 application, zero knowledge proofs and alternative consensus algorithm, --- do to address current commercial challenges?

1. bitcoin: 7-10 transaction per second, Ethereum 20 transaction per second, visa: 24,00 transactions per second,

All are solvable. Tradeoffs of privacy and security, such as Zcash; interoperability: side chain, like Cosmo;

**S10 Blockchain Economics**

1. How do decentralized blockchain application affect costs of verification and networking? How do blockchain application affect the market power?
2. What might economics and organization of the internet --- its protocol layers and applications --- future of blockchain technology?
3. What lessons should be drawn from crypto skeptics --- Krugman, Buffett, Gates, Stiglitz, Dimon, Roubini and others about economic potential for blockchain. What is an answer to oft stated query – what problem do cryptocurrencies solve?

Answers:

1. Decentralized blockchain application can lower costs of verification, which includes direct cost, privacy cost, censorship risks, costs of trust, settlement and finality costs, economic rents due to market power; lower cost to develop and operate the networking, especially providing an incentive system in terms of reward, affinity, and identity at time of starting and operating.
2. The layers of internet follow: ethernet, tcp/ip, http, ssl/tls. Maybe bitcoin could be the next layer.
3. To summarize the skeptics (minimalists): high mining and transaction fees, token lack of intrinsic value, volatility of token price and poor store of value, limited media of exchange and unit of account, not accepted for taxes or legal tender, if a private key is lost or stolen, it is gone forever. Buterin’s Trilemma: decentralization, security and scalability. No “killer app” or production use enterprise app yet. Scams, frauds and manipulation on crypto exchanges and with the ICOs. Illicit activities: tax avoidance, drug running and money laundering.

S11 Assessing use cases

1. What potential benefits, in terms of reducing costs of trust, are there when adopting blockchain technology applications? How might potential use cases be assessed for tradeoffs of decentralized or centralized applications.
2. What are the potential strategic benefits from blockchain applications? What are attributes of use cases and sectors that might best capture values from applications? How important are the best benefits of censorship resistance to this analysis?
3. How can you separate rigorous analysis from mere assertation and hype in the blockchain ecosystem?

Answers:

1. Dfas
2. There are three strategic benefits from blockchain applications: not to be disintermediator to generate value, just as CEX; short term of reducing cost before transformative business model; is three or five years scale to interoperation.

Based on record keeping and transaction provided by blockchain technology, there are 6 distinct categories of use cases: static/dynamic registry, identity, smart contracts, payment infrastructure, and others (financing for ICOs, etc.)