Decentralized Finance (DeFi) Primer

Presentation by **PwC Emerging Technology**
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Use This Primer for:

Leadership & Client team education

Educational resource to help consultants understand the basics of DeFi and its main technical challenges.

Vendor analysis framework

A framework to understand the positioning of different DeFi companies and what parts of the ecosystem they service.

Proposal/sales support

Slide resources that can be used for individual topics or whole sections in support of client projects and proposals.

Technical architecture

Technical guidelines for defining the detailed solutions that will make up the project roadmap of an engagement effort.

What is DeFi (Decentralized Finance)?

Decentralized Finance (DeFi) is the ecosystem of open source financial applications built using decentralized, public blockchain networks. It is largely considered consumer-centric in that it can reduce third party/bank fees and foreign exchange exposure, provide near-instant liquidity in global transactions, flexibility in the movement of assets, and provide cryptographic certainty of events, among other use cases. It has several primary characteristics which are defined below.

Autonomous	Transparent	Decentralized	Composable	Availability
Programmed logic • No human intervention • Automatic smart contract execution	**Borderless** • Global networks • Open source code • Public ledgers • Pseudo-anonymity	**Peer Managed** • Sufficient node separation • No central decision-makers • Personal control	**Innovation** • Open code development • Possible interoperoperability between protocols • Modularity	**Market Access** • Available 24/7 • Large community support • Instantaneous transactions

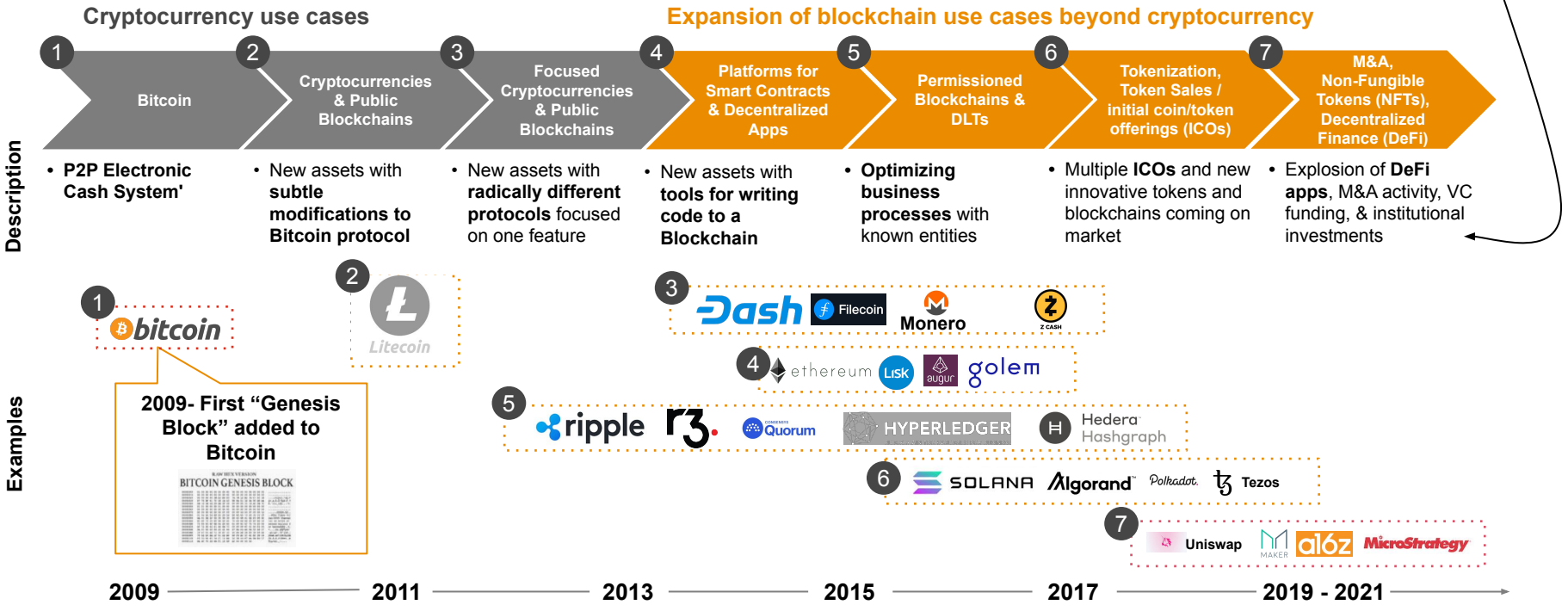
Key Terms and concepts

Key Terms / Topics	What to consider
Blockchain Distributed ledgers that serve as the settlement layer for transactions	**Users can interact with each other directly** on a blockchain in a decentralized manner, using pseudo anonymous identities.
Digital Assets Tokens representing value that can be traded or transferred within a blockchain network	**Digital assets are can be optimized for specific performance** requirements such as speed, security, or composability
Wallets Software interfaces for users to manage digital assets	In a DeFi environment, **wallets are often individually-controlled**, meaning that users control access to their currency, not banks
Smart Contracts Software code that carries out, controls, and documents relevant events and actions according to terms & rules	Smart contracts **can be developed and subsequently audited by anyone**, increasing security and transparency
DApps (Decentralized Applications) Software applications built out of smart contracts that integrate with Global User Interfaces (GUIs) using apps or traditional web	**DApps can integrate with each other**, sometimes across different blockchain platforms.
Decentralized Autonomous Organizations (DAO) Entities who define and enforce rules across smart contracts in a network	**DeFi organizations are governed by automated blockchain protocols**, generally with reduced human intervention. Note that many apps and organization start out centralized, and move to decentralized.
Stablecoins Digital assets that derive value from a fiat currency or other stable asset; ease of access can serve as an “on ramp” for entry into cryptocurrency transactions	**Stable coins can be held in wallets or used for loans** when a user doesn’t want to transact at a given time.
Oracles Data feeds that export information from the blockchain (ex. current stock or fiat currency price)	**Oracles can also by physical internet of things (IoT) devices** which provide real-time data to the blockchain

How has the blockchain evolved?

The term DeFi originated in 2018 and activity first gained mainstream use in 2020.

Evolution of Blockchain Use Cases since 2009



DeFi Market (August 2021)

Increasing FinTech investments

- Payment Platforms and PoS raised $14.3B in Q1 2021
- Digital assets locked in **DeFi apps totaled more than $50B in 2021** via networks and exchanges, digital securities, crypto storage and payments, and blockchain platforms
- Largest investments through Q1 of 2021 have been in **flexible lending** and **consumer credit** categories.

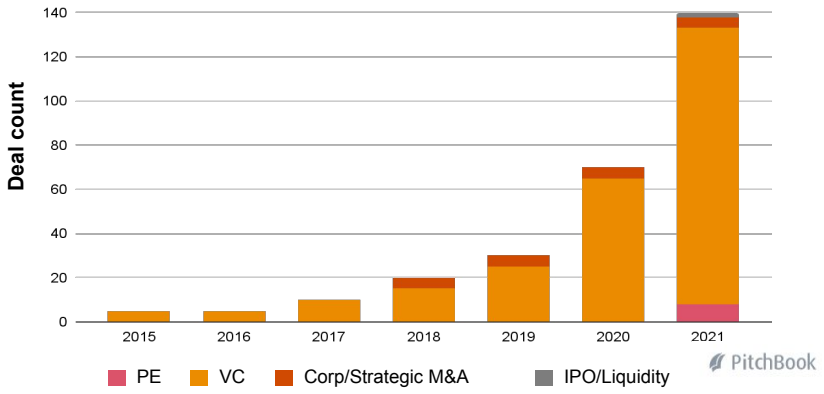
New markets and services

- Digital currencies to limit tax & foreign exchange exposure (can be fully crypto or pegged to fiat currency)
- Banks can make more on lending, even with 0% pandemic rates (NASDAQ)
- DeFi is empowering emerging markets with lending and credit options for the underbanked (Medium)
- Insurance tokens and audits for blockchain networks (Forbes)

VC Deals

- **Grab** - 9,826m raised to date, wallets & super apps (SE Asia based)
- **Klarna** - 3,203m raised to date, leader in consumer finance and credit
- **Stripe** - 600m - reaching 95B valuation
- **Checkout.com** - 450m by Tiger Global Management
- **BlockFi** - 350m, a 6.1x step up in valuation

DeFi Investments over time



Source: PitchBook Data

DeFi Use Cases

Stablecoins

Digital assets whose values are pegged to a fiat currency, a basket of fiat currencies, or other stable-value assets. USDC and Tether are the largest.

MAKER

DAI

Gemini dollar®

USD Coin

AUGMINT

Decentralized exchanges

Allow users to trade one digital asset for another, DeFi exchanges avoid taking custody of user assets.

UNISWAP

dYdX

Sushi

Kyber Swap

Lending & Borrowing

Allow users to loan their cryptocurrency to other individuals and acquire interest on the loans.

Compound

dYdX

AAVE

MAKER

Derivatives

DeFi derivatives connect buyers and sellers directly without the need for an intermediary.

SYNTHETIX

UMA

swap.rate beta

Insurance

DeFi insurance provides protection against smart contract risk.

Nexus Mutual

opium.finance

COVER

UNSLASHED

Asset Management

Allows users to pool underlying investments through smart contracts which serves as a diversified portfolio of digital assets.

Set

ZERION

DeFi Saver

dHEDGE

Opportunities in DeFi

There are palpable changes in the financial industry that are changing the way businesses process, store, and communicate data. DeFi represents an **opportunity** to innovate across all use cases.

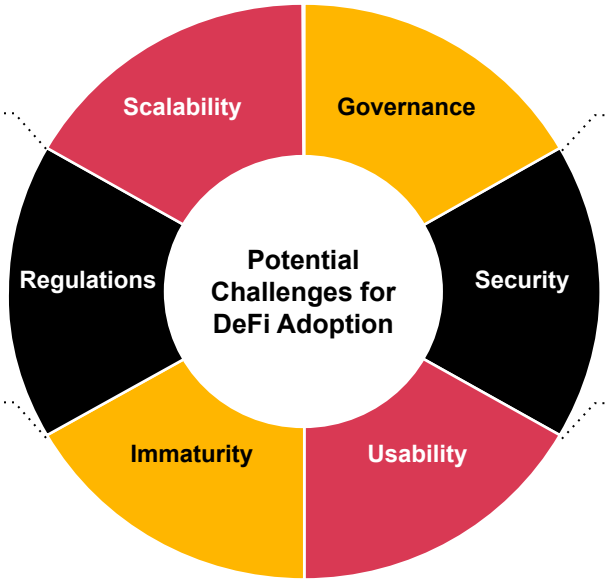
Shifts in the current environment...	**...and challenges in the current landscape**	**...present opportunities to utilize the benefits of DeFi technology**
Larger number of people need to transact across borders	Incumbent financial institutions can be slower and more expensive	Reduced friction and transaction costs for transacting financial assets
Data privacy and control is becoming increasingly important	How financial institutions function and store data is often a black box	Increased auditability transparency through open-source protocol
Users across the world require instantaneous access to information	Financial institutions only operate and provide support during business hours	Improved market access through global, 24/7 availability of services
Open source projects such as Linux are gaining popularity and efficacy	Organizations must compete with open-source project development	DeFi allows for permissionless innovation and collaboration
Consumers demand more accountability for financial decision-makers	The decision making process can be subjective and subject to human flaws	DeFi allows for automated, transparent organizational governance

Potential Challenges for DeFi Adoption

Technical Capacity
- Scalability, throughput, and transaction fees remain limiting factors, especially as they relate to environmental concerns
- Interoperability across blockchains and with traditional financial services

Regulatory Questions
- Lack of regulatory certainty in many countries around blockchain technology
- Enforcement of decentralized technology is difficult across borders
- Unclear accounting and tax implications

Efficacy
- Live protocols only recently introduced
- “Honeypot” for successfully hacking a blockchain protocol is not yet as large as traditional financial institutions - and as such, crypto has not yet been fully “stress-tested”
- Best practices still in development



Governance
- Governance decisions made by small, inexperienced teams
- Completed automated governance must account for all possible events
- Lack of accountability with anonymous developers

Security Risk
- Ransomware attacks often paid through cryptocurrency
- Many large-scale attacks on vulnerable blockchain protocols
- Decentralization increases number of attack vectors

User Preferences
- Privacy may be reduced in opposition to user requirements
- Limited usability and intuitive user interface reduces mainstream adoption

Impact on PwC and its Clients

Challenges

Competition

Incumbent institutions will face new forms of competition

Regulatory Consequences

Clients who work contribute to the DeFi space may be subject to regulatory scrutiny or taxation

New Risks

DeFi will inherently cause an increase in various risks that come with new technology, potentially requiring an increased focus on risk management and cyber security.

Opportunities

Early Mover Advantage

DeFi provides new revenue-generating opportunities, especially as new participants are now often first movers

Emphasis on Trust

As DeFi and related technology evolves, the participants will be hyper-focused on developing trust in the ecosystem - right in alignment with PwCs capabilities

Upskilling Required

To avoid being blindsided by new technology, clients and PwC personnel will have to be upskilled on relevant topics for their role

Thank you.