BLOCKCHAIN IN ACCOUNTING EDUCATION

Dr. Elizabeth Morton

Distinguished Prof. Jason Potts

RMIT Blockchain Innovation Hub (BIH)

RMIT University acknowledges the people of the Woi wurrung and Boon wurrung language groups of the eastern Kulin Nation on whose unceded lands we conduct the business of the University. RMIT University respectfully acknowledges their Ancestors and Elders, past and present. RMIT also acknowledges the Traditional Custodians and their Ancestors of the lands and waters across Australia where we conduct our business.

AGENDA:

1. Overview of blockchain technology
2. Embedding blockchain in tax education
3. Embedding blockchain in accounting & auditing

Blockchain = the technology behind cryptocurrency

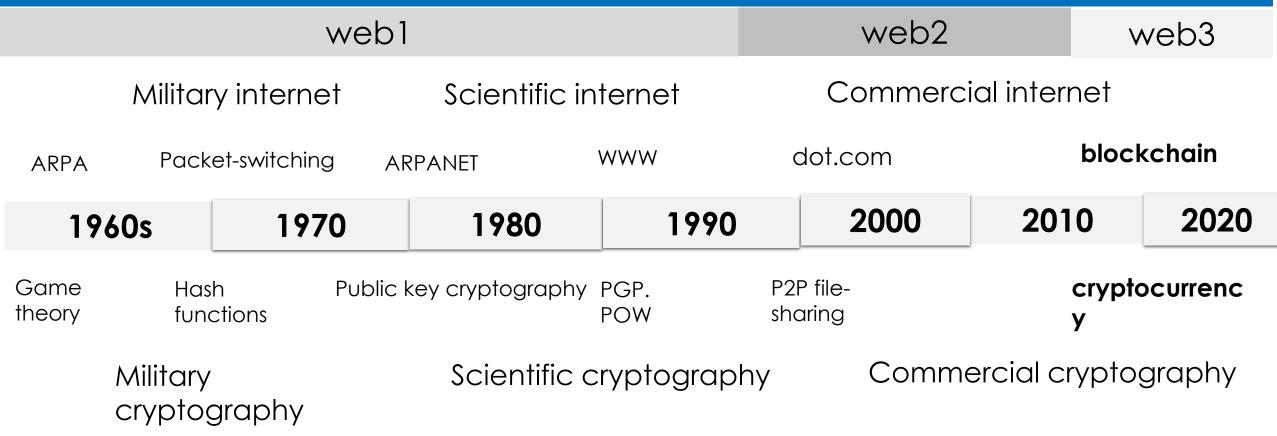Blockchain = annoying thing I don't understand

Blockchain = administrative economic infrastructure

Blockchain = true beginning of the digital economy

Blockchain = A new architecture of trust

Blockchain = the evolution of the internet

INTERNET

web1	web2	web3

Military internet   Scientific internet   Commercial internet

ARPA   Packet-switching   ARPANET   WWW   dot.com   **blockchain**

1960s	**1970**	**1980**	**1990**	**2000**	**2010**	**2020**

Game theory   Hash functions   Public key cryptography   PGP. POW   P2P file-sharing   **cryptocurrency**

Military cryptography   Scientific cryptography   Commercial cryptography

CRYPTOGRAPHY

Simple definition of a blockchain =

Bitcoin blockchain solved the **double spending problem** by combining five technologies

version	02000000
previous block hash (reversed)	17975b97c18ed1f7e255adf297599b55 330edab87803c8170100000000000000
Merkle root (reversed)	8a97295a2747b4f1a0b3948df3990344 c0e19fa6b2b92b3a19c8e6badc141787
timestamp	358b0553
bits	535f0119
nonce	48750833

1. Append-only databases
2. Public key cryptography
3. P2P networking
4. Game theoretic incentives
5. Consensus algorithms

2020s = from industrial to digital economy

1. Data as the new economic resource

2. Web3 = new digital economic infrastructure

blockchain = true beginning of the <u>digital economy</u>

Industrial age		First digital age		Second digital age
	→	Economic changes driven by cheap computation and near costless communication	→	Economic changes driven by digital economic infrastructure, structured around the 'digital economy stack'

We are here

Industrial economy

The digital economy stack
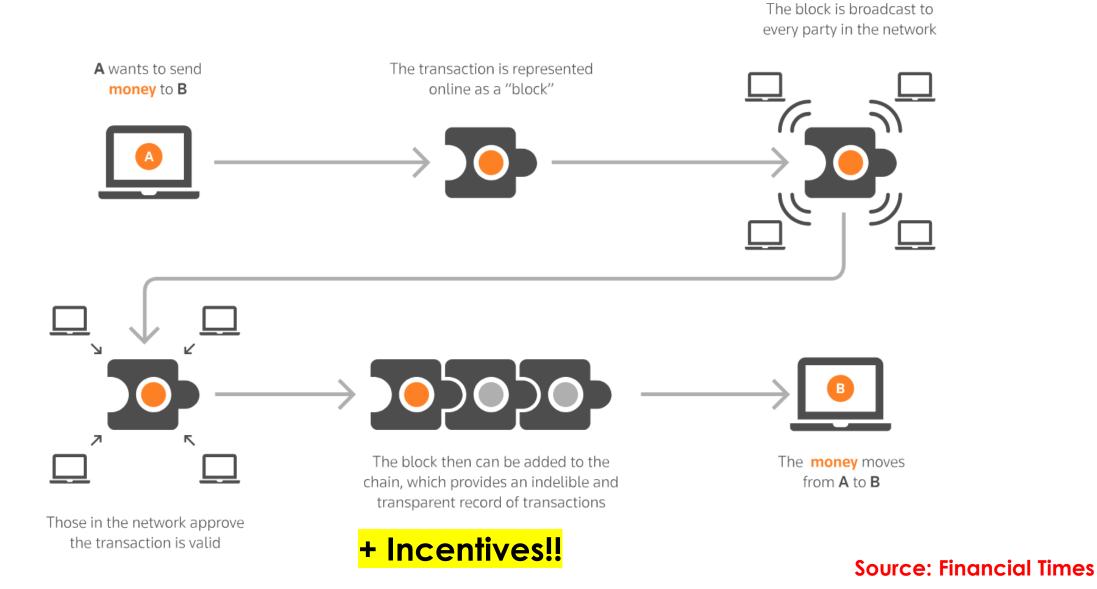
What is blockchain?

The technology that makes possible cryptocurrencies, such as bitcoin

What is a blockchain?

A wants to send **money** to **B**

The transaction is represented online as a "block"

The block is broadcast to every party in the network

Those in the network approve the transaction is valid

The block then can be added to the chain, which provides an indelible and transparent record of transactions

The **money** moves from **A** to **B**

+ Incentives!!

What is a cryptocurrency?

A private money – for metaverse, digital economy

A savings technology (digital gold)

Web3 = internet of value

- **<u>Social consensus</u> about <u>truth</u> underpins the economy**

- We need to agree about <u>facts</u> for economic activity to occur

- This is what <u>ledgers</u> do. They are an <u>institutional technology</u>

- Blockchain = better <u>Ledger</u> technology

- How better? Distributed. Using the internet. And math.

Web 1 – Early Internet

Military & scientific use for decentralized communication

nuclear strike proof coms, email, www, browsers

Web 2 – Commercial internet

Use **companies** for **economic infrastructure**
    Search – Google
    Social media – Facebook
    Marketplaces – Amazon, Netflix, Airbnb, Uber
No internet native money, identity, contracts, law, … **Government** provides this

Web3 - Digital economic infrastructure

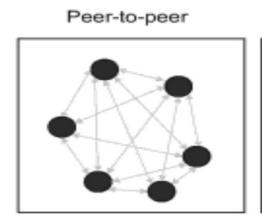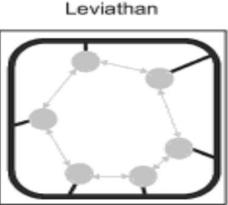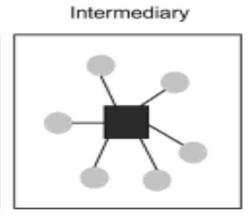|	
digital money	cryptocurrency
digital assets	tokens
digital identity and registries	DID, blockchain
digital credentials	tokens
digital contracts	smart contracts
digital intellectual property	NFTs
digital services	Dapps
decentralized markets	DEXs
digital organizations	DAOs
digital finance	DEFI
digital governance	tokens

The Problem of Trust

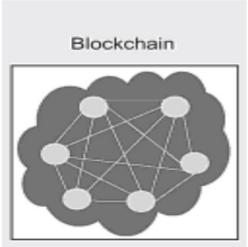innovation in ledger technology has real world consequences:

- A ledger relies on trust.
- Trust is very, very expensive – about 30% of the economy

current institutions & business practices economise on trust to facilitate transactions
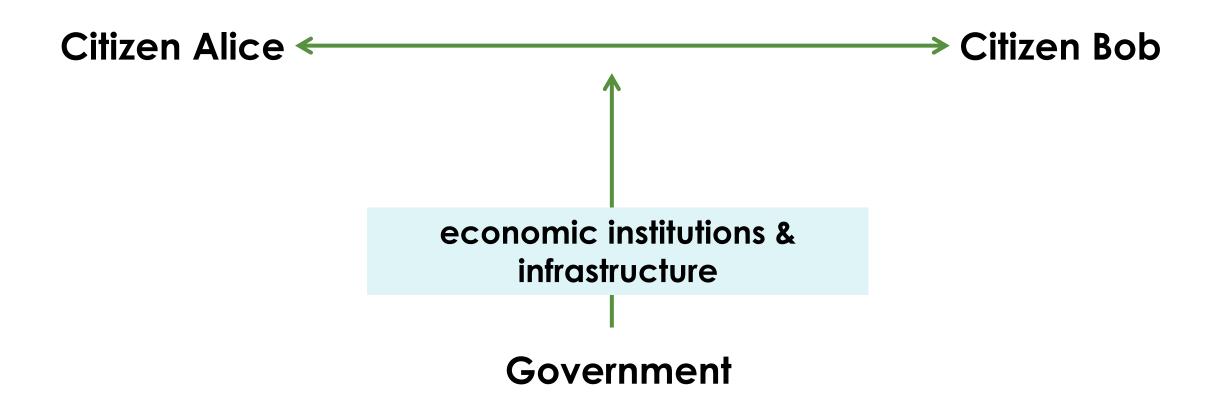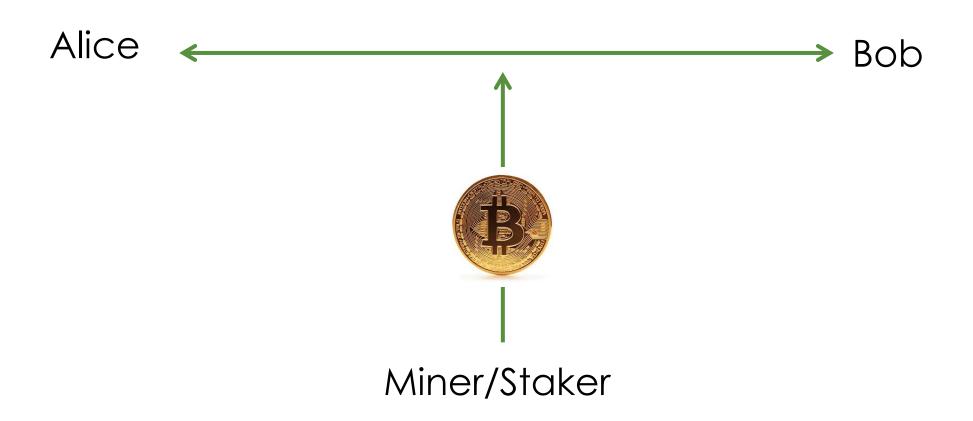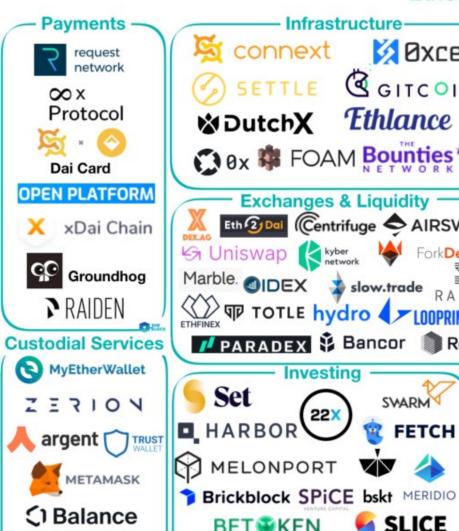
Government manufactures trust

Citizen Alice ← → Citizen Bob

↑

economic institutions & infrastructure

Government

Blockchain industrialises trust

Alice ←————————————————→ Bob

Miner/Staker

Decentralised Finance

Ethereum's DeFi

THE BLOCK

Payments
- request network
- 0x Protocol
- Dai Card
- OPEN PLATFORM
- xDai Chain
- Groundhog
- RAIDEN

Custodial Services
- MyEtherWallet
- ZERION
- argent / TRUST WALLET
- METAMASK
- Balance
- MyCrypto

Infrastructure
- connext
- 0xcert
- SETTLE
- GITCOIN
- DutchX
- Ethlance
- 0x
- FOAM
- THE BOUNTIES NETWORK

Exchanges & Liquidity
- DEX.AG
- Eth2Dai
- Centrifuge
- AIRSWAP
- Uniswap
- kyber network
- ForkDelta
- Marble.
- IDEX
- slow.trade
- RADAR
- ETHFINEX
- TOTLE
- hydro
- LOOPRING
- PARADEX
- Bancor
- Ren

Investing
- Set
- 22X
- SWARM
- HARBOR
- FETCH
- MELONPORT
- MERIDIO
- Brickblock
- SPiCE VENTURE CAPITAL
- bskt
- BETOKEN
- SLICE
- SCIENCE BLOCKCHAIN
- MATTEREUM

KYC & Identity
- SELFKEY
- JOLOCOM
- sovrin
- uport
- civic
- Bloom

Derivatives
- MARKETPROTOCOL
- expo
- UMA
- veil
- LENDROID
- δY/δX
- DAXIA
- bZx
- VARIABL

Marketplaces
- Rare Bits
- district0x
- ORIGIN
- OpenSea

Prediction Markets
- Guesser
- augur
- Bodhi
- STOX
- veil
- GNOSIS

Stablecoins
- SYNTHETIX
- digix
- DAI
- USD Coin
- GEMINI dollar
- StableUnit
- AUGMINT
- PAXOS STANDARD
- TrueUSD
- CARBON
- Reserve
- Terra
- Ampleforth

Insurance
- ETHERISC
- Nexus Mutual
- iXledger
- VouchForMe
- ai gang

Credit & Lending
- LENDROID
- Lendoit
- CRED
- Compound
- Ripio Credit Network
- celsius
- Dharma
- MAKER
- nuo
- ETHLend
- InstaDApp
- Marble.
- SALT
- BLOQBOARD
- COLENDI

Non Fungible Token

Quantum | Monegraph | ETHERIA | Etheria | Curio.Cards | CryptoPunks | MoonCatRescue | DADA | OpenSea | Nifty Gateway | Rarible

Namecoin
2013 — 2014

Ethereum
2016 — 2017 — 2018 — 2019 — 2020 — 2021

Decentraland | DZIPS (IKB) | CryptoCats | Ether Rock | SuperRare | Foundation.app | Beeple $69.3m NFT sale

Bitcoin 2.X (Colored Bitcoin) | Thing (Token) | OLGA | NILICoin

CryptoKitties

Bitcoin / Counterparty
2012 — 2013 — 2014 — 2015 — 2016 — 2017

Flow
2020 — 2021

Counterparty | Spells of Genesis (FDCARD) | Force of Will | Rare Pepes | Age of Chains | Memorychain

Flow | NBA Top Shot

@harrybtc
harrybtc.eth

NFTs are:
- **NOT just bragging rights**
- **NOT just jpegs**

NFTs ARE:
- **Giving form to the full dynamics of the creative economy**
- **Clubs/access rights into subcultures/elite groups**
- **Crypto primitives for construction of the metaverse**
- **A new form of property rights**
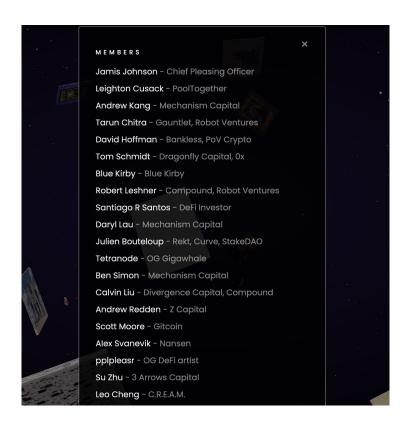
+ also:
- **legal and tax confusion**
- **concerns about carbon footprint**

Decentralised Autonomous Organisation

NFT investment DAOs

◦ **Decentralised Autonomous Organisation (DAO) = A group of people coordinating via rules enforced through smart contracts.**

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Tax curriculum for business students

CPA/CAANZ Learning Outcomes

LO 1 Identify the **sources of taxation law** and the framework in which taxation is administered

LO 2 Identify various types of taxation including **income tax**, consumption taxes, **goods and services tax**, **taxes on capital** and **fringe benefit/benefits tax**

LO 3 Identify and apply the fundamentals of **calculating** the **taxable income** and **tax payable** for **individuals** and **business entities**

LO 4 Analyse the taxation issues associated with straight forward **international transactions**

(note also TPB accreditation requirements, FASEA for financial planning)

**Bridging and Experiencing the
Uncertainty, greyness, complexity in Law → Practice → Client**

Understanding your client Client/practitioner relationship (TASA Code), recording keeping and substantiation

Buying and selling cryptocurrencies Ordinary income or statutory income (e.g. CGT regime)? = Property? Crypto → Crypto? Lost crypto?

Getting paid in crypto (and by DAOs?) wages and FBT

Hard forks / Chain Splits cost base of new and old

Airdrops and Staking Assessable income + CGT asset acquisition – ATO interpretation

Hobby or Business? Crypto artists, gamers and traders. Crypto = trading stock?

DeFi Beyond buying and selling, more complex arrangements (derivatives). Collateralised holdings in for example 'Maker vaults'

Tax Reform Bragg Report on reforming CGT regime

Taxation

Well established principles of tax law are now back in the spotlight.

Blockchain offers both fascinating opportunities to **delve into interpretations of tax law** whilst enabling **robust, real-world practical** scenarios to work through for taxpayer outcomes.

Code Item 1/4
1. Act honestly and with integrity
4. Act lawfully in your clients best interest
- They may not like what you have to say – just because it is not being converted into fiat currency, does not mean it is not a taxable event as the law stands
- It is quite likely, if capital, the exemptions may not apply
- Do you need to stop engaging with a client?

Code Item 7/8
7. Ensure tax agent services are provided competently
8. Maintain knowledge and skills relevant to the services you provide
- Accountability as a tax agent
- Do you adequately understand the blockchain related activities being undertaken by the client?
- Consider the level of sophistication in activities
- Should you accept / are you ready to accept engagements?

Ethics as a Foundation

Competent practitioners as reflected in TASA 2009 Code of Conduct

Code Item 9/10
9. Take reasonable care to ascertain your client's state of affairs
10. Tax reasonable care to ensure the tax laws are applied correctly

- Professional skill/judgement
- CGT calculators may be a good start, but may be insufficient – depends on complexity, facts and circumstances.
- ATO Guidance is limited, prefill report limited
- There is significant uncertainty in tax law application
- Ask questions!

Code Item 12
12. Advise your clients of their rights and obligations

- Are they clear on their obligation to provide accurate and complete information: Wallets? Activities?

Ethics as a Foundation

Competent practitioners as reflected in TASA 2009 Code of Conduct

The ATO produced a number of Tax Determinations in 2014 and continues to update its [website](#) on the treatment of various crypto activities.

The Tax Determinations can be summarised as follows:

TD 2014/25 Income tax: is bitcoin **a 'foreign currency'** for the purposes of Division 775 of the Income Tax Assessment Act 1997?

TD 2014/26 Income tax: is bitcoin **a 'CGT asset'** for the purposes of subsection 108-5(1) of the Income Tax Assessment Act 1997?

TD 2014/27 Income tax: is bitcoin **trading stock** for the purposes of subsection 70-10(1) of the Income Tax Assessment Act 1997?

TD 2014/28 Fringe benefits tax: is the provision of bitcoin by an employer to an employee in respect of their employment a **property fringe benefit** for the purposes of subsection 136(1) of the Fringe Benefits Tax Assessment Act 1986?

These <u>do not</u> capture the vast activities going on in this space nor is there necessarily agreement over the ATO's interpretations

Taxation

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Characterisation within the CGT Regime

- Categorisation as….?

  … Each with 'special rules'

- Understanding where CGT fits with respect to Taxable Income

- Competency of practitioner not only for navigating law but understanding technology

- Ability to communicate with and educating clients

[Image here]

Crypto Tax calculators

https://cryptotaxcalculator.io/au/

https://koinly.io/au/

Crypto Tax Calculator 3 Step process

Professional or Hobby artists – extension to NFT

- Exploring nuances / complexities of tax law for new kinds of activities

- Categorisation as business or hobby?

- Understanding what activities are being carried out (on chain and off chain) and what constitutes trading stock

- Cost and valuation

- Manufacture v. purchased

[Image here]

Airdrops

Deposited into a wallet address, generally for free, whether announced or unannounced.

- Often a marketing technique by the 'droppers' to:
  - Create awareness
  - Reward users
  - Balance ownership
  - Attract investment
  - Learn about the community
- Sometimes require holders to act:
  - Hold particular levels of tokens to be eligible
  - Undertake a particular task, e.g. post to social media.

What does the Commissioner say? Two things happen:

1. Derivation of ordinary income (MV)
2. Acquisition of a CGT asset (MV)

[Image here]

Source: https://airdrops.io/

Source: Morton and Curran (2021)

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FIFO LIFO or Parcel Basis?

Key points:

○ Can the crypto be individually distinguished?

    – Matter of fact acquisition and cost base

    – However, is it practical?

○ Otherwise?

    – Trading: FIFO (LIFO is not permitted)

    – Investing: FIFO/LIFO or parcel selection (any)

                                                        [Image here]

○ It appears Commissioner accepts FIFO (investing, trading) or parcel selection if the assets can be identified (investing) of crypto (PBR 5010050043171, PBR 1051545007826)

○ If Held as an Investment: TD 33 – although its focus is on shares, it is clear that it applies to other assets

Source: Morton and Curran

○ If Held for Trading: TR 96/4, IT 2350

Chain splits, forks alternative versions of history

A. The creation of a new, parallel and independent blockchain: same history, different future.

- Why?
    - Scaling issues: BTC → Bitcoin Cash (BCH)
    - Speed/supply/etc: Bitcoin Cash (BCH) → LiteCoin (LTC)
    - A joke: LiteCoin (LTC) → Dogecoin (DOGE)
    - Reversal of hack: Ethereum Classic (ETC) → Ethereum (ETH)

[Image here]

B. Accidental, temporary through consensus mechanism

C. Upgrade to rules, majority of nodes and miners agree to revision, generally planned

Chain splits – Commissioner's interpretation

[Image here]

If Held as an Investment

- No derivation of income at time of chain split
- Capital gain at time of disposal
- "New cryptocurrency" cost base is zero

If Held in Business

- Treated as trading stock if held for sale or exchange
- Brought to account at the end of the income year

*"Working out which cryptocurrency is the new asset received as a result of a chain split requires **examination of the rights and relationships existing in each cryptocurrency you hold following the chain split**.*

If one of the cryptocurrencies you hold as a result of the chain split has the same rights and relationships as the original cryptocurrency you held, then it will be a continuation of the original asset. The other cryptocurrency you hold as a result of the chain split will be a new asset.

***Where none of the cryptocurrencies** you hold following the chain split has the same rights and relationships as the original cryptocurrency you held, **then the original asset may no longer exist. CGT event C2** will happen for the original asset. In that case, **each of the cryptocurrencies you hold as a result of the chain split will be acquired at the time of the chain split with a cost base of zero.**"* - *ATO*

Tax Reform

The final report of the 'Australia as a Technology and Financial Centre' committee details 12 recommendations covering a range of regulatory issues, such as taxation, decentralised autonomous organisations and debanking.

The committee recommends that the Capital Gains Tax (CGT) regime be amended so that digital asset transactions only create a CGT event when they genuinely result in a clearly definable capital gain or loss.

- ◦ Why do we (or do we not) need tax reform?
- ◦ What does a 'good' (or 'bad') tax system look like?
- ◦ Why is CGT 'bad' for crypto activity? Is it bad?
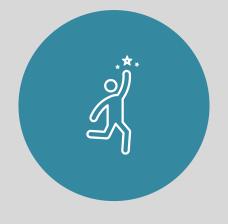- ◦ What do we (not) know about the tax reform that may follow this recommendation?

[Image here]

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2. Embedding blockchain in tax education
3. **Embedding blockchain in accounting & auditing**

Transacting in Blockchain
Understanding blockchains
Blockchain ledgers v. double entry bookkeeping
Creating wallets, transacting on 'Testnets'
Smart contracts and Oracles
Middleware

Assets on Blockchain
Cryptocurrencies (e.g. BTC), stable coins, central-bank digital currencies, non-fungible tokens (NFTs)
Examining standards: Cash equivalents? Inventory? Intangibles?

Entity structures
Companies, partnerships, trusts ... and Decentralised autonomous organisations (DAOs)?

Social and environmental reporting, ethics
Bitcoin and energy usage
Anonymity
Black economy, anti-money laundering and counter terror financing (AML/CTF)
Miner extractable value (MEV)
Code of Law → Law of code

Introductory Accounting

Example Resources:
- Bragg Report
- COALA and the COALA DAO Model Law
- Wyoming LLC
- FutureLearn/RMIT DeFi course
- Ellie Rennie on Climate Change and the legitimacy of Bitcoin
- FAT-F for AML/CTF

Assets on blockchain
Stable coins as cash equivalents? (IAS7)
Valuation

Financial instruments and Liabilities
Decentralised Finance (DeFi), e.g. Maker, reinventing financing
Liquidity pools, yield farming, interest bearing securities, bonds, flash loans,
DeFi derivatives
Exploring through 'TestNet' (requires introductory first)

Accounting for employee benefits
DAOs as 'employers'?
Paying wages through crypto

Events occurring after the end of the reporting period
Decentralised Finance (DeFi) risks
- Market, technology, cybersecurity, institutional

Segment reporting
DAOs as segments?

Financial Accounting & Reporting

Example Resources:

- FutureLearn/RMIT DeFi course

- Filip Hampl and Lucie Gyönyörová (2021)

- DeFi lending & Borrowing Explained

- Garanina, Ranta and Dumay (2021)

Changing skill sets for auditors

Near real-time audit, continuous audit potential

Immutable audit trails
Un-editable transactions ledgers, encrypted and secure storage of supporting documentation

Oracles as sources of 'truth'
External data sources that can trigger smart contract executions

Blockchain ledgers and sufficient appropriate audit evidence

How to audit with blockchain?
Automating data extraction, preparation activities whilst auditor focuses on riskier / complex / nuanced transactions – those with judgement, estimations, valuations

What is being audited?
Auditing smart contracts (i.e. with automation, internal controls and integrity of code execution), digital twins

Who do you audit? Auditing DAOs?

Auditing

Example Resources:

- Blockchain's potential impact on audit and assurance

- AICPA.ORG

- Audit trail and Xero

- Coin telegraph

- Schmitz and Leoni

DAOs as business structures
As cost centres
Allowing automated governance
Treasury management

Smart contracts and oracles as information sources
Automation of supplier / contracts / payments
Immutability of records
Authenticity and transparency of records across value chain

Asset management
Digital Twins
Supply chain provenance (authenticity, quality, tracking)
Registries

Embedding control processes

Management tools for planning, performance and incentives
Smart contracts
Oracles
Non-fungible tokens (NFTs) for badging / recognition

Management Accounting

Example Resources:

- IBM Success Stories

- BDO - Asset Management

- Deloitte on investment management firms

- Reinventing Charities

- Securing your blockchain solution

- How to Keep Your Job

- CIMA

THANK YOU!

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