Blockchain for the Energy Sector

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Presented by Dan Giurescu, CEO Terrahub Technologies

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TerraHub

- Education

- Consulting

- Labs for experimenting

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TerraHub Education

Over 1600 professionals

Post Secondary

University of Calgary - Haskayne and ICD
University of Texas
University of Houston
Executive Masterclasses in Calgary and Houston
Bow Valley College
University of Lethbridge

Professional Associations

Supply Chain Association
Petroleum Accountants Association (PASC, PJVA, CPA)
IEEE and SPE
CAPL, CAPLA (Petroleum Landmen)

Custom Sessions

Monthly CIO and CEO Roundtables

TerraHub Consulting

Proprietary Methodology: "Hype to Happening"

How to Buy Blockchain Products

How to Spot Internal Opportunities

Financial Services

Healthcare

Oil and Gas enterprise

Transportation

Agriculture

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TerraHub Projects and Product Development

Past and Present

Peloton Landview - TitleChain

Credential Wallet

Drone Technology - IoT / ML / Blockchain - NASA

Oil and Gas Accounts Payable

Oil and Gas Land

Supply Chain in Agriculture

Virtual Humans

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Blockchain is Happening

Peloton LandView Title Chain
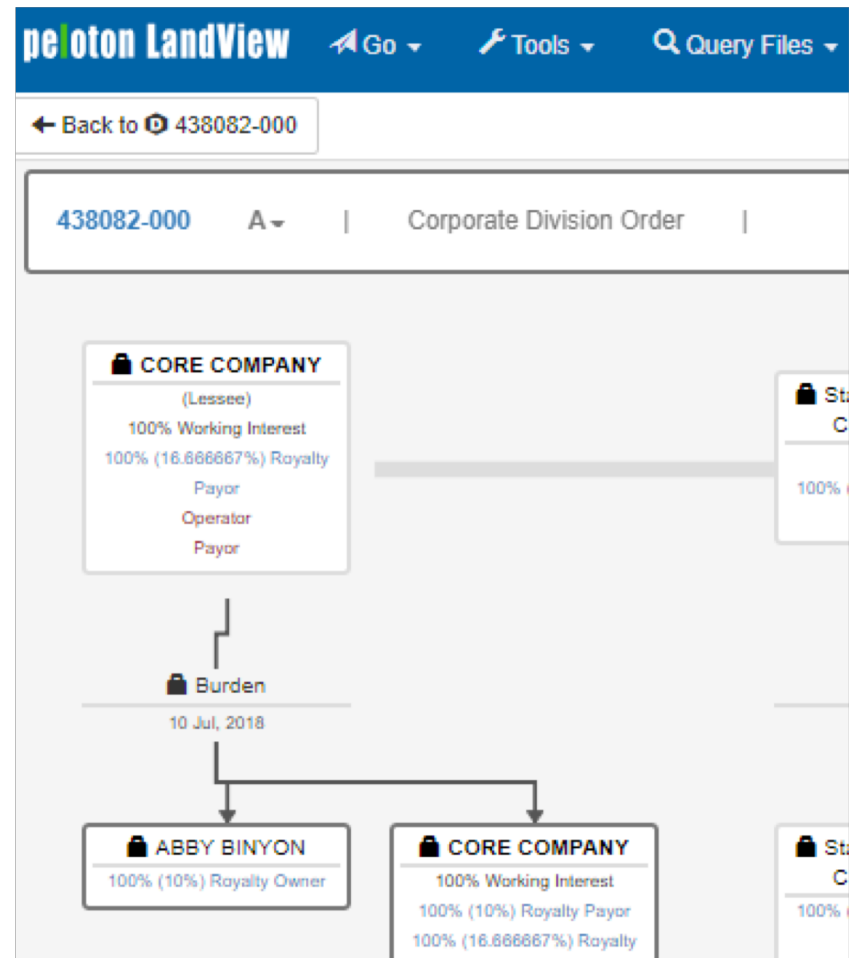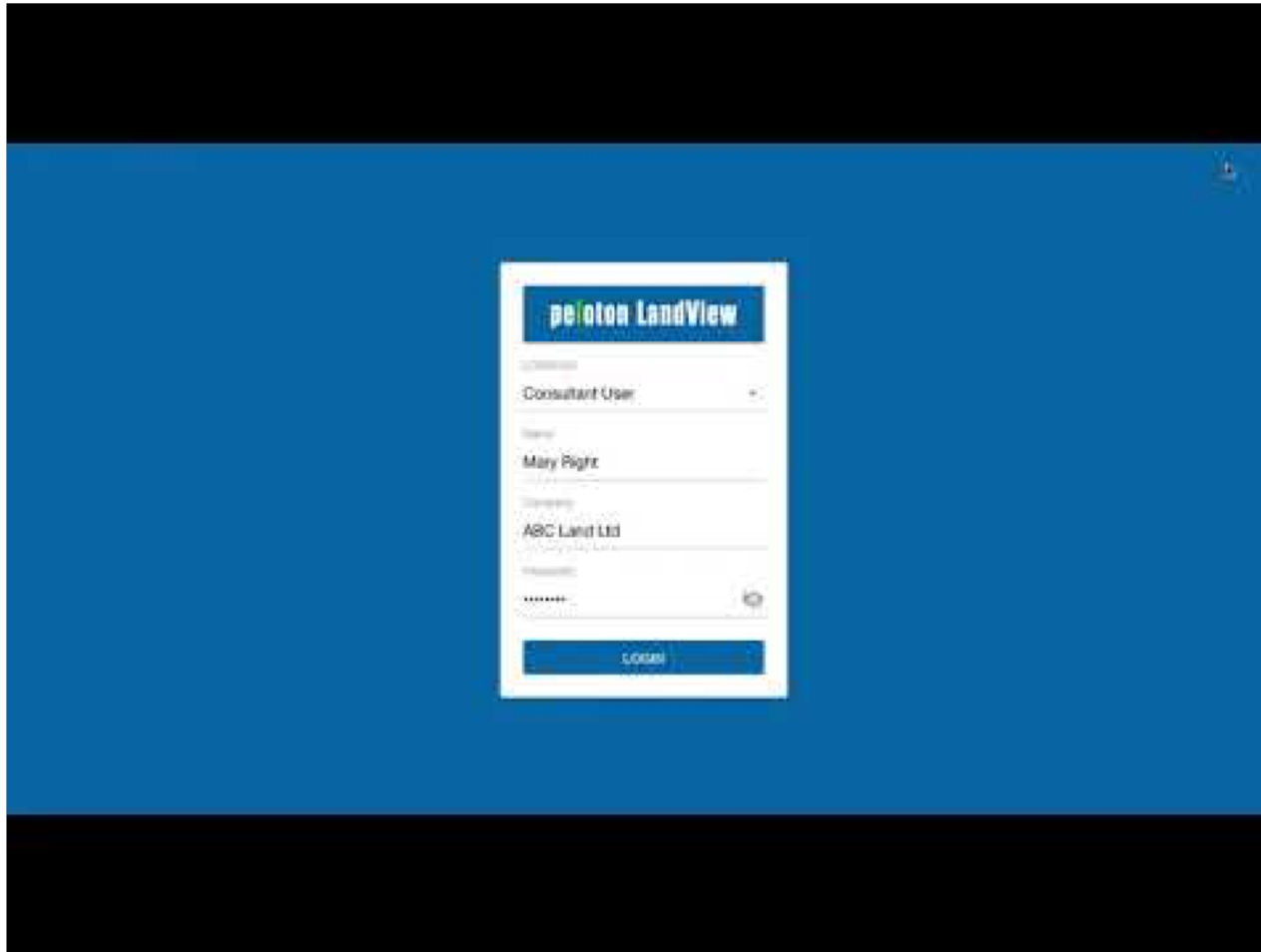
What is Blockchain

An online repository of WHO owns WHAT and WHEN

Driven by rules (smart contracts)

Blockchain History: A technology two decades in the making

1990 — **2000** — **2015** — **2017**

Foundations

1991 append-only, cryptographically secured logs
1994 smart contracts
1998 BitGold

First Blockchain

2009 Bitcoin for money transfer
Very restrictive

Public Blockchain

Ethereum - First Public blockchain for business

Private Blockchain

Hyperledger Foundation - First Private blockchain for business
Ethereum Enterprise Alliance

Blockchain is an EVOLUTION of data
storage and communication technologies
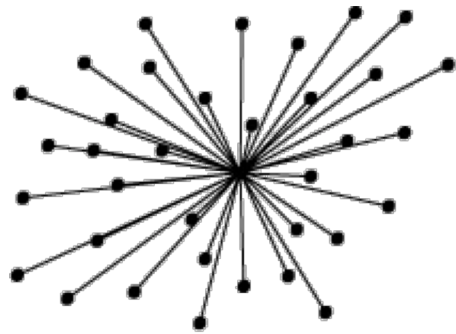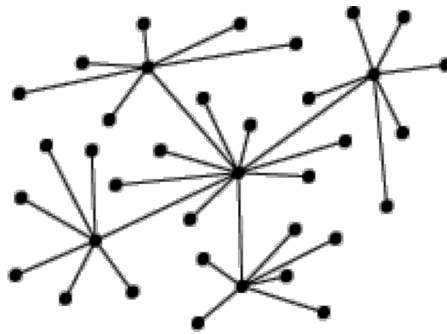
centralised   decentralised   distributed
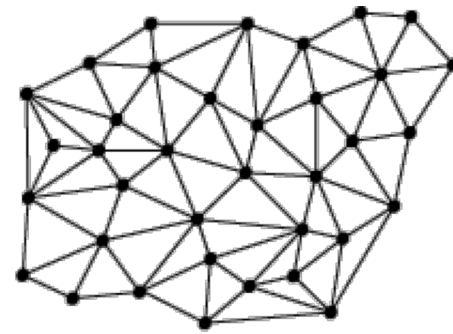
Public Blockchain

A public blockchain network has the following properties:

- Shared, unified data structure
- Anyone can join
- EVERYONE has the same level of access and permissions - homogenous network
- Data in the network is confirmed as valid by random nodes (through mining)
- Examples Bitcoin, Ethereum

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Private Blockchain

A private blockchain network has the following properties:

- Access and permissions CONTROLLED
- Example: Title Chain by Peloton

Cryptocurrency

15B to 500B to 200B

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ICOs

Utility Tokens

Security Tokens

The Howey Test

Smart Contracts

A smart contract can be read by all, computed by all, with the results in consensus.

A properly designed smart contract can serve as the trusted third party in financial transactions: its code is public and immutable.

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BLOCKCHAIN PROJECT ECOSYSTEM

CURRENCIES

BASE LAYER PROTOCOLS
Bitcoin, decred, nem, Waves, 0xEUR, SONM, Aragon, NXT Generation of Cryptocurrency, litecoin

PAYMENTS
Stellar, ripple, metal, Interledger, R, Cardano Foundation

PRIVACY
Verge, DASH, Monero, ae, Smart Cash, Zcash, CoinJoin

DEVELOPER TOOLS

SMART CONTRACTS
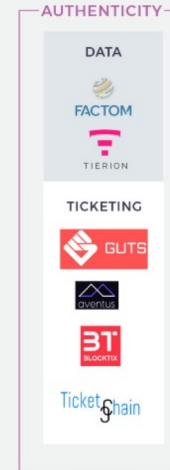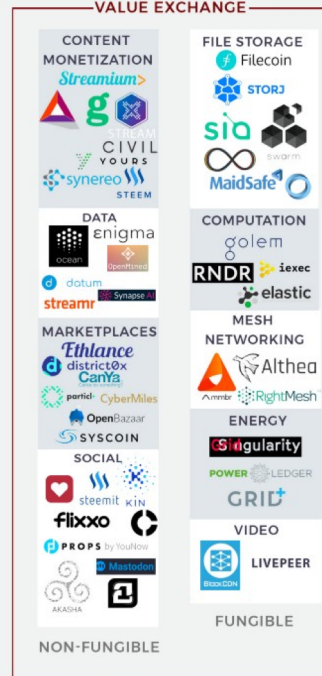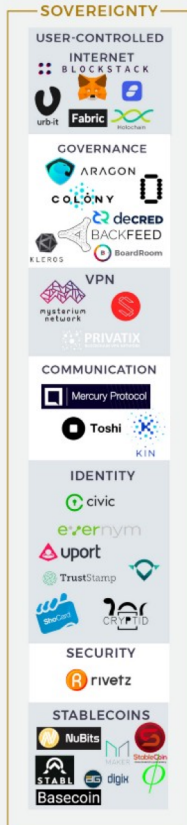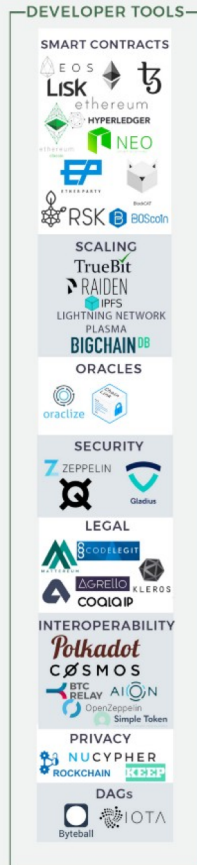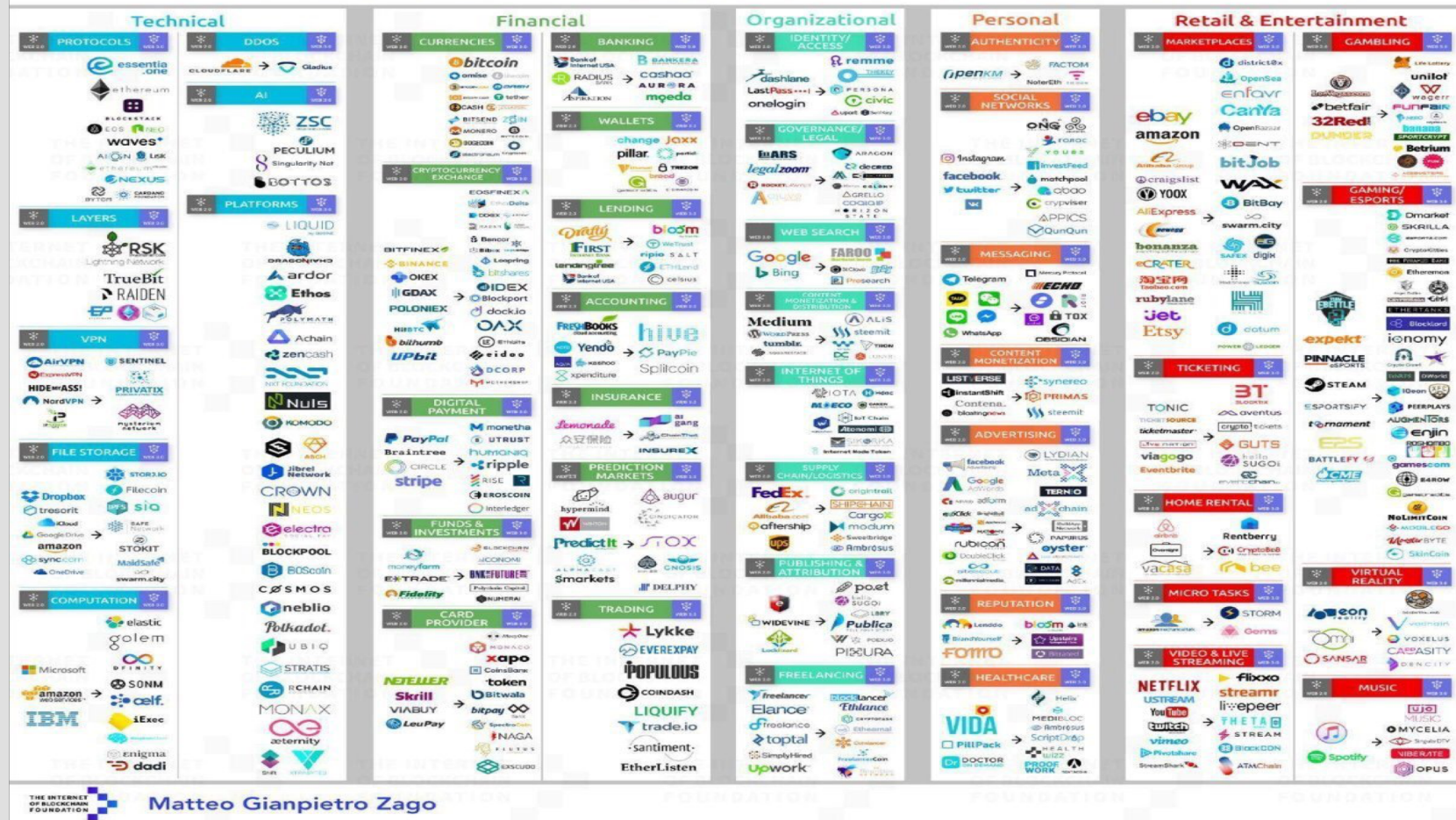EOS, Lisk, ethereum, tezos, HYPERLEDGER, NEO, aeternity, ETHERPARTY, RSK, BlockOF, RSK, BiOScoin

SCALING
TrueBit, RAIDEN, IPFS, LIGHTNING NETWORK, PLASMA, BIGCHAIN DB

ORACLES
oraclize

SECURITY
ZEPPELIN, Gladius

LEGAL
CODELEGIT, MATTEREUM, AGRELLO, KLEROS, COALA IP

INTEROPERABILITY
Polkadot, COSMOS, BTC RELAY, AION, OpenZeppelin, Simple Token

PRIVACY
NUCYPHER, ROCKCHAIN, KEEP

DAGs
Byteball, IOTA

SOVEREIGNTY

USER-CONTROLLED
INTERNET, BLOCKSTACK, urb-it, Fabric, Holochain

GOVERNANCE
ARAGON, COLONY, decred, BACKFEED, KLEROS, BoardRoom

VPN
mysterium network, PRIVATIX

COMMUNICATION
Mercury Protocol, Toshi, KIN

IDENTITY
civic, evernym, uport, TrustStamp, SelfKey, CRYPTID

SECURITY
rivetz

STABLECOINS
NuBits, StableCoin, STABL, digix, Basecoin

FINTECH

TRADING/DEX
0x, Bancor, omise, δY/δX, AIRSWAP, Counterparty, bitShares, raidEX, EverMarkets, kyber network, EtherDelta

INSURANCE
INSUREX, ai gang, ChainThat, ETHERISC

LENDING
SALT, MICRO MONEY, ripio, dharma, WeTrust, ETHLend

FUNDS/INVESTMENT MANAGEMENT
NUMERAI, ICONOMI, BLOCKCHAIN CAPITAL

VALUE EXCHANGE

CONTENT MONETIZATION
Streamium, g, CIVIL, YOURS, STEEM, synereo, STEEM

DATA
enigma, ocean, OpenMined, datum, Synapse AI, streamr

MARKETPLACES
Ethlance, district0x, CanYa, particl, CyberMiles, OpenBazaar, SYSCOIN

SOCIAL
steemit, KIN, Flixxo, PROPS by YouNow, Mastodon, AKASHA

NON-FUNGIBLE

FILE STORAGE
Filecoin, STORJ, sia, swarm, MaidSafe

COMPUTATION
golem, RNDR, iexec, elastic

MESH NETWORKING
Althea, Ammbr, RightMesh

ENERGY
Singularity, POWER LEDGER, GRID+

VIDEO
BlockCDN, LIVEPEER

FUNGIBLE

SHARED DATA

INTERNET OF THINGS
FOAM, IOTA, OAKEN INNOVATIONS, SIKORKA

SUPPLY CHAIN/LOGISTICS
T-MINING, Walton, Kouvola.innovation, Sweetbridge, MONAX, origintrail

ATTRIBUTION
UJO, po.et, JAAK, MYCELIA, POEX.IO

REPUTATION
ink, CHLU, Bloom, monetha

CONTENT CURATION
userfeeds, CURATION MARKETS

AUTHENTICITY

DATA
FACTOM, TIERION

TICKETING
GUTS, aventus, BLOCKTIX, TicketChain

OTHER

PREDICTION MARKETS
GNOSIS, augur, stox

VIRTUAL REALITY
Decentraland

STAKING POOLS
1protocol, ROCKETPOOL

GAMBLING
FUNFAIR, EDGELESS, ETHEROII

GAMING/ESPORTS
CIRST BLOOD, ENJIN COIN, BISON, Dmarket, SKRILLA, unikoin, BITQUEST, DREAM TEAM

compound

@JOSH_NUSSBAUM

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WEB 3.0: THE INTERNET OF BLOCKCHAINS

Matteo Gianpietro Zago

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WEB 2.0 APPS ⟶ WEB 3.0 DAPPS

BROWSER — Brave

STORAGE — Storj, IPFS

VIDEO AND AUDIO CALLS — Experty

OPERATING SYSTEM — Essentia.one, EOS

SOCIAL NETWORK — Steemit, Akasha

MESSAGING — Status

REMOTE JOB — Ethlance

MGZ

medium.com/@matteozago

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Market Breakdown

Cryptocurrency Exchanges and Trading	Payment Services
Customer Identity and Security	Business to Business

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Blockchain Opportunities outside Oil and Gas

2.4T
Agriculture

Cultivation and breeding of animals and plants to provide food, fiber, medicine and other products to sustain and enhance life.

- Food safety
- Farm to Fork
- New business models
- On demand supply to avoid food spoilage

18T
Trade Finance

Trade transaction requires a seller of goods and services as well as a buyer. Trade finance signifies financing for trade.

- Visibility into supply chain
- Fiance inventory
- Finance contracts
- Reduce risk

14T
Smart Cities

Municipalities using information and communication technologies.

- Smart Contracts: increase operational efficiency
- Transparency: Information to public
- Accessibility: Improve citizen welfare.

3.7T
Fraud

Internet fraud can occur even if partly based on the use of internet services and is mostly or completely based on the use of the internet.

- Identity Management
- Information encryption
- Cybersecurity
- Append-only information
- Transaction transparency
- Certification wallet

4.7T
FinTech

Financial technology that supports the financial services sector.

- KYC
- Payments
- Settlements
- Syndicated Loans

Source IBM 2018

Credential Wallet: Education and Credential Verification

INDIVIDUAL

Identity, Post Secondary Degree, Professional Credential request added to Blockchain

HIRING MANAGER

Accept candidate, uses smart contract to notify HR all terms are met; uses Edu-Wallet for ongoing verification of credentials

EDUCATION INSTITUTION

Registrar's office: confirms name, graduation date, degree/certificate added to Blockchain

HR

Confirms credentials and matches to job requirements; uses smart contract to generate offer

01

02

03

04

Emerging Projects in Blockchain

Here in Calgary

Peloton Software - Title Chain

ReWatt Power - Independent Energy Generators

Tiktiks Ticket Reselling

ATB Financial Oil Settlements

Hut 8 Crypto Mining

TerraHub Wallet

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Federal and Global Regulations Impacts

SOX Compliance -eg. Fintech
SSAE18

API (American Petroleum Institute)

GDPR

ISO - International Organization for Standards

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New Jobs

Smart Contract Auditor

Digital Ethicist

Mining Engineer

Cryptocurrency Day Trader

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What a typical Blockchain project should look like

Week1

Week 2

Month 1

Month 3

Education / Discovery

What are the main pain points where a private Blockchain solution can be applied with rapid prototyping

Rapid Prototyping 2wk

Based on desired solution rapid prototyping begins with appropriate engagement from chosen business units

Go / No-Go

Go / No-Go decision made to develop further to Proof of Concept based on set criterias in Week 2

PoC Rolled Out

Rolling out of a parallel process for that business to trial the PoC and identify new business opportunities

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Leap of Trust

First Online Credit Card Transaction

First Uber Ride

First Blockchain Proof of Concept

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"Going from Hype to Happening" with TerraHub

- Education

- 2 Week Prototyping

- Labs for experimenting

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