Blockchain: The New Line of Defense
Who Am I

Your Presenter & Advisory in This Domain

- Cybersecurity Solutions Architect for Enterprise & National Level Projects for Kaspersky Lab Middle East, Turkey & Africa, Engaged with big and national organizations (like CERTs) to build their Cybersecurity competencies on a national and wide-scale level..

- Independent Expert for the Cryptocurrency & ICO related business issue since 2017, including & not limited to: Blockchain Projects Analyst, Independent ICO Expert, Advisor - Strategy and Growth, ICO Strategy Advisor & Consultant, Expert (analyze, review & rate ICO's),

- Member in many of Blockchain specialized organizations like:
  - Associate Member: Government Blockchain Association
  - Blockchain Technical Advisory Board Member: GSDC - Global Skill Development Council
  - ICO Expert & Advisor: Coin Governance System
  - ICO Advisor & Projects Analyst: ICObench
INDUSTRY 5.0 – Mass Customization of Customer Experience through Blockchain

1st
Mechanization, water power, steam power

2nd
Mass production, assembly line, electricity

3rd
Computer and automation

4th
Cyber Physical Systems

5th
Mass customization & cyber physical cognitive systems

IoT
Smart Devices
Robotics
VR
AI
Blockchain
The Future of Business

- The Changing Notion of Work
- Decline in Fertility Rates
- Technological Unemployment
- Urbanization
- Aging Population
- Increased Lifespans
- Five generations of workers
- Ownership to access
- Fall in Working Age Population
- Power to the Individual
- Radial life dynamics
- The Automation
- Artificial Super Intelligence
- Human 3.0
- Human-Machine Convergence
- Demography 2.0
- Work 3.0
- Health 2.0
- Decentralisation of Everything
- Empowerment Economy
- Logistics Internet
- Transport 3.0
- Institution 2.0
- Artificial General Intelligence
- Circular Economy
- Money 2.0
- Maker Economy
- Energy Internet
- Healthy Life Extension
- Autonomous Vehicles
- Cyberwar
- Automation of Everything
- Sharing (Access) Economy
- Smart Generation Education
- Connected Healthcare
- Climate Change
- Energy Demand
- Reverse Brain Drain
- Global Inequality
- Connected Car
- Smart Cities
- Smart Homes
- Artificial Narrow Intelligence
- Future Scenarios
- Emerging and Future Accelerators
- Innovation Accelerators
- Science and Technology Foundation

Source: Frank Diana, Tata Consultancy Services
Top 5 Trends shown in 2018

1. Big Data – Big Changes
2. AI Hype will begin the fade
3. 5G (revolution) is coming
4. Blockchain to unlock its full potential
5. Edge Computing making its way
Main Drivers for Digital Transformation?

Blockchain
A decentralized Ledger of all transactions in a network aimed to increase security, reduce cost, decrease transaction time & increase transparency all while eliminating the need for a trusted third party

The Internet of Things
Allows different devices to send and receive data enabling better connectivity, & data processing & Analytics

Artificial Intelligence
Intelligence exhibited by machine that mimic cognitive functions to perceive its environments and take actions to maximize a certain goal

Robotics Process Automations
Allows for deployment of a Digital Workforce by creating virtual human being to manipulate existing software applications

Cloud Technology
Cloud Technologies are providing greater flexibility for the workforce, improved productivity, border insight, & higher efficacy at lower costs as compared to on-promises solutions
So What is Blockchain?
Three Innovations Laid the Groundwork for Blockchain’s Invention

1. **Peer-to-peer network**
   - In a peer-to-peer model, every peer in the network is a server and client, both supplying and consuming resources.
   - Enables the facilitation of a currency without a central, privileged third party.

2. **Public key cryptography**
   - Allows for individual ownership and exchange of tokens among users.

3. **Proof-of-work**
   - Proof-of-work is a piece of code appended to data that validates that data’s authenticity and controls when it can be written into the system.
   - Prevents double spend by ensuring data is recorded chronologically.
## Blockchain myths & facts

**Blockchain is Not Bitcoin**

- **Bitcoin is a type of cryptocurrency** that uses blockchain cryptography technology to securely record monetary transactions.
- **Blockchain properties provide the underlying technology** that has enabled bitcoin and other cryptocurrencies to rise in popularity.

**Blockchain is Not an Enterprise Database**

- **Vast amounts of information** that require absolute privacy within a single organization is meant to be stored in an accessible location for viewing / querying (i.e. an enterprise database).
- **Instead blockchain is designed to record specific transactions and data events** that are meant to be shared across a network of parties with a need for transparency and collaboration.

**Blockchain Security Does Not Mean Inherent Data Privacy**

- While the identity of the submitter is captured through private-public digital keys and therefore as anonymous as one desires, Blockchain's secure characteristic is related to the fact that the information contained in the block is interrelated to all other blocks in the chain.
- **This interrelated feature means** that tampering with a block's content requires altering each block onward.

**Blockchain is Not Always Public**

- **A public blockchain** is available for anyone to add to, and participate in the consensus process which is to determine which data blocks are valid and should be added to the chain.
- **A private blockchain** contains permissions stipulating the ability to view data, add to the chain, and participate in the consensus process.
### What is Blockchain?

#### Near real time
The blockchain enables the near real time settlement of recorded transactions, removing friction and reducing risk, but also limiting ability to charge back or cancel transactions.

#### Trustless environment
Blockchain technology is based on cryptographic proof, allowing any two parties to transact directly with each other without the need for a trusted third-party.

#### Distributed ledger
The peer-to-peer distributed network records a public history of transactions. The blockchain is distributed and highly available. The blockchain retains a secure source of proof that the transaction occurred.

#### Irreversibility
The blockchain contains a certain and verifiable record of every single transaction ever made. This mitigates the risk of double-spending, fraud, abuse, and manipulation of transactions.

#### Censorship resistant
The crypto-economics built into the blockchain model provide incentives for the participants to continue validating blocks, reducing the possibility of external influencers to modify previously recorded transaction records.
Main Blockchain features

- Validation by consensus
- Chain grouping
- Immutability
- Information distributed and replicated
- Unforgeable
- Traceability

Types:
- Private
- Public
- Permissioned
Reasons of selecting Blockchain for your business

- **REDUCES COST**: by eliminating manual processes (e.g., reconciliation between multiple isolated ledgers, administrative processes, etc.)
- **INCREASED SPEED**: of transaction and settlements through immediate distribution
- **INCREASED SECURITY**: through use of cryptography
- **REDUCED FRAUD**: by time-stamping entries and sharing a common, immutable ledger across the network
- **REDUCED RISK**: of single points of failure & attack through distributed network nodes
Non-financial uses of distributed ledgers

- **Smart Contracts**: A smart contract is a protocol specially created to program agreements between two or more parties without relaying on intermediaries but granting its correct execution.

- **Healthcare**: Sharing of patients’ encrypted information through blockchain containing Data Privacy regulation.

- **Insurance**: Settlement between insurance companies, IoT and Digital Identity to reduce insurance costs, Smart Contracts applied to this field.

- **Financial Services**: Securitization, Tokenization of assets, Cheaper settlements, Traceability of transactions, Transparency.

- **Compliance**: Blockchain could save billions improving compliance procedures, and removing duplicities between entities, Digital Identity could be linked to AML/KYC, Data Privacy or FATCA policies.

- **Internet of Things**: Fractional Ownership, Property Registration, Inclusion of objects into the payment channels, Blockchain enables contracts peer-to-peer.

- **Digital Identity**: ID could be used for compliance matters, Digital Identity as the key of Internet of things, Blockchain enables secure voting systems.

- **Registry**: Blockchain enables timestamp and proof-of-existence and notarization of every transaction.
What does Blockchain mean for IT & CyberSecurity?
Database Security
The 7 Biggest Problems in Data Storage

1. Infrastructure
2. Cost
3. Security
4. Corruption
5. Scale
6. UI and accessibility
7. Compatibility
How Data be added or updated in Blockchain?

1. Participant in the network requests a transaction.
2. The request is broadcasted to other computers (nodes) in the network.
3. The nodes validate the request conform to the pre-agreed rules.
4. New block is added to the network's blockchain which is permanent.
5. Once verified, it is combined with other transactions to produce a new block of data.
4 reasons blockchain technology is exciting for Data storage

1. The potential cost savings
2. A harder-to-hack system
3. Automation through smart contracts
4. No point of failure
Hashing
Securing Data with Hashing

Hello, how are you?

Hello, how are you doing?
Merkle Trees
Cyber Security
3 Reasons Blockchain Is Exciting for Cybersecurity

1. Blockchain can help prevent access fraud

2. Blockchain can help deter certain cyberattacks

3. Blockchain can make it harder to tamper with data
Blockchain Security Layers

- Governance: Is decision-making well defined and representative of the stakeholders?
- Network: Is the risk of a 51% attack well mitigated?
- Distributed Organizations: Are sound operational practices at the base of the implementation?
- Programming: Are contracts performing with intended accuracy?
- Accounts: Are user accounts secure?
- Transactions: Are transactions validated with certainty?
5 Blockchain Security Risks and How to Reduce Them?
That’s What Make Blockchain Important in each business?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td>Shared Ledger</td>
<td>single source of truth</td>
</tr>
<tr>
<td>Secure</td>
<td>tamper proof (extra security)</td>
</tr>
<tr>
<td>Permissioned</td>
<td>Participants Identity</td>
</tr>
<tr>
<td>Private</td>
<td>un-linkable identity</td>
</tr>
<tr>
<td>Audit-able</td>
<td>prove identity &amp; ownership</td>
</tr>
<tr>
<td>Consensus</td>
<td>Modular protocol</td>
</tr>
<tr>
<td>Smart Contracts</td>
<td>business logic</td>
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<tr>
<td>Digital assets</td>
<td>Record depository</td>
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<tr>
<td>Confidential</td>
<td>permission control</td>
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<tr>
<td>Viable</td>
<td>100+ year architecture</td>
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THANK YOU