Blockchain and its Applications

JOSEPH TOH
CEO Digital Billions

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Digital Billions is a next generation Blockchain technology company that helps corporations rocket ahead, innovate and be competitive in the Creative Economy.  

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¹Range of economic activities which are concerned with the generation or exploitation of knowledge and information.
BLOCKCHAIN EXPERTS: First Blockchain Book on Nxt and publisher and distributor for Asia
Digital Billions Award Wining Business Solutions

- **DeBuNe**: Decentralized Business Network
- **OnCorps (Partner)**: Big Data/Artificial Intelligence Adaptive Decision Science
- **Zero Square**: Blockchain Crypto Currency Business System (Retail, F&B, Hotels etc.)
- **GDX Wallet**: Gold/Multi Asset Blockchain Exchange using both FIAT and Crypto-currency
- **OTDocs**: Trade Finance on the Blockchain
- **MagniSign**: Hardware Digital Signature for Blockchain
- **NeoSperience Engage (Partner)**: Discover how to engage with customers where and when it matters most
- **Notifile**: Secure Document Management Platform on the Blockchain
- **SpotByte**: Data Drive Digital Marketing
- **Barefoot Multimedia**: Omni Channel Media
- **Rubix**: Big Data based Business Intelligence Platform
- **IP**: Patent Pending for Multi-Voucher/Points, Loyalty Rewards Exchange on Blockchain
Experienced Team

JOSEPH TOH - Chief Executive Officer
20+ years’ experience. Global Block Chain Institute Representative
Started many award winning businesses in software, internet companies, ex-Accenture and Credit Suisse’s Strategy & Innovation across Asia Pacific, extensive international network & experience with Fortune 500 companies.

BRYAN GLANCEY - Chief Security Officer
Cyber Security and Digital leader with over 20+ years of experience in the Global InfoSec. One of few people in the world who holds a Red Team Secret Ops Certification with National Security Agency (NSA), intelligence organization of the US government and holds DOD Secret Clearance.

DAVID NILSSON – Technology Director
17+ years of experience in all aspects of software development, architecting solutions for fast moving startups and large corporates as well as coaching and mentoring agile teams.

LAURENCE SMITH - Chief Talent & Learning Officer
26+ Developing leaders with a ‘digital mindset’. Rapidly develop solutions with design thinking, experimentation, lean-startup & agile methodology. Award Winning Digital Transformation Leader

ERIC LI – Managing Director – China
20+ years of combined experience in solution development, blockchain integration, Ui/Ux, experienced consultant.

ROBERTO CAPODIECI - Chief Technology Officer
20+ years of experience in IT, with lasting security and innovation partnership at government level, expert in emerging technologies, blockchain consultant with an extensive international experience, member of the Nxt.org foundation.

JIMMY MOORE – Award Winning Data Scientist
Expert in data analysis/machine learning and building cool technology, with vast experience of machine learning algorithms and techniques along with multivariate statistical and data mining experience.

CONSTANCE CHANG - Big Data/AI Expert
Experienced leader in the field of Big Data and Analytics. Ex-IBM, Cloudera with over 16 years of experience across sales, data business intelligence, products, compliance and operations risk.

JOACHIM BACKER – Development Director
A business and technology delivery from ideation, initiation to a successful realization. Proven success through some major business and technology transformations for some of the biggest companies in Sweden since 1997.

JEAN-DANIEL GAUTHIER - Chief Creative Officer
Gaming Expert, 15+ years of experience in IT, benefits from a holistic background in business analysis and technical writing, award winning startup founder, published IT oriented writer.
### Technology Trends In 2017 & Beyond

<table>
<thead>
<tr>
<th>Technology</th>
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<tbody>
<tr>
<td><strong>Autonomous and near-autonomous vehicles</strong>&lt;br&gt; Vehicles that can navigate and operate with reduced or no human intervention</td>
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<tr>
<td><strong>Next-generation genomics</strong>&lt;br&gt; Fast, low-cost gene sequencing, advanced big data analytics, and synthetic biology (“writing” DNA)</td>
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<td><strong>Energy storage</strong>&lt;br&gt; Devices or systems that store energy for later use, including batteries</td>
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<tr>
<td><strong>3D printing</strong>&lt;br&gt; Additive manufacturing techniques to create objects by printing layers of material based on digital models</td>
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<tr>
<td><strong>Advanced materials</strong>&lt;br&gt; Materials designed to have superior characteristics (e.g., strength, weight, conductivity) or functionality</td>
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<tr>
<td><strong>Advanced oil and gas exploration and recovery</strong>&lt;br&gt; Exploration and recovery techniques that make extraction of unconventional oil and gas economical</td>
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<tr>
<td><strong>Renewable energy</strong>&lt;br&gt; Generation of electricity from renewable sources with reduced harmful climate impact</td>
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<tr>
<td><strong>Mobile Internet</strong>&lt;br&gt; Increasingly inexpensive and capable mobile computing devices and Internet connectivity</td>
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<tr>
<td><strong>Automation of knowledge work</strong>&lt;br&gt; Intelligent software systems that can perform knowledge work tasks involving unstructured commands and subtle judgments</td>
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<td><strong>The Internet of Things</strong>&lt;br&gt; Networks of low-cost sensors and actuators for data collection, monitoring, decision making, and process optimization</td>
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<tr>
<td><strong>Cloud technology</strong>&lt;br&gt; Use of computer hardware and software resources delivered over a network or the Internet, often as a service</td>
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<tr>
<td><strong>Advanced robotics</strong>&lt;br&gt; Increasingly capable robots with enhanced senses, dexterity, and intelligence used to automate tasks or augment humans</td>
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**Source:** McKinsey Global Institute Analysis
Blockchain - Blockchain Technology Market is est. USD 2.3B by 2021 (Compound Annual Growth Rate (CAGR) of 61.5 %)

Blockchain Technology Market is estimated to USD 2.3 Billion by 2021\(^1\)

Class leading differentiating Technology is an import part of any platform or business however it is not the core part which allows market adoption at speed, a company to grow and be profitable.

Digital Billions is an award winning global provider of blockchain business solutions spanning across over 6 countries with plans to more than double participation in 2017.

\(^1\)Source: http://www.the-blockchain.com/2016/10/11/blockchain-market-worth-2-3-billion-usd-2021/
Blockchain Evolution

Blockchain 0.1
- Electronic Currency
- Database
- Cryptography
- P2P Network

Blockchain 1.0
- Proof of Work
- Merkle Hashing
- Blockchain Data
- Distributed Ledger

Blockchain 2.0
- Smart Contract
- Virtual Machine
- Decentralization

Source: http://digitalbillions.com/
## Differences Between Public and Private

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th>Private</th>
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</thead>
<tbody>
<tr>
<td><strong>Access</strong></td>
<td>Open read/write access to database</td>
<td>Permissioned read and/or write access to database</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>Slower</td>
<td>Faster</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Proof-of-Work/Proof-of-Stake</td>
<td>Pre-approved participants</td>
</tr>
<tr>
<td><strong>Identity</strong></td>
<td>Anonymous/pseudonymous</td>
<td>Known identities</td>
</tr>
<tr>
<td><strong>Asset</strong></td>
<td>Native assets</td>
<td>Any asset</td>
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Blockchain use cases across Industry are board

<table>
<thead>
<tr>
<th>Financial Institutions</th>
<th>Corporates</th>
<th>Governments</th>
<th>Cross-industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>International payments</td>
<td>Supply chain management</td>
<td>Record management</td>
<td>Financial management &amp; accounting</td>
</tr>
<tr>
<td>Capital markets</td>
<td>Healthcare</td>
<td>Identity management</td>
<td>Shareholders’ voting</td>
</tr>
<tr>
<td>Trade finance</td>
<td>Real estate</td>
<td>Voting</td>
<td>Record management</td>
</tr>
<tr>
<td>Regulatory compliance &amp; audit</td>
<td>Media</td>
<td>Taxes</td>
<td>Cybersecurity</td>
</tr>
<tr>
<td>Anti-money laundering &amp; know your customer</td>
<td>Energy</td>
<td>Government &amp; non-profit transparency</td>
<td>Big data</td>
</tr>
<tr>
<td>Insurance</td>
<td>Legislation, compliance &amp; regulatory oversight</td>
<td>Data storage</td>
<td>Internet of Things</td>
</tr>
<tr>
<td>Peer-to-peer transactions</td>
<td></td>
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Blockchain use case a deeper look

**Markets**
- Currency
- Payments & Remittance
- Banking & Finance
- Clearing & Settlement
- Insurance
- FinTech
- Trading & Derivatives
- QA & Internal Audit
- Crowdfunding

**Government & Legal**
- Transnational orgs
- Personalized governance services
- Voting, propositions
- P2P bonds
- Tele-attorney services
- IP registration and exchange
- Tax receipts
- Notary service and document registry

**IOT**
- Agricultural & drone sensor networks
- Smarthome networks
- Integrated smartcity, connected car, smarthome sensors
- Self-driving car
- Personalized robots, robotic companions
- Personalized drones
- Digital assistants

**Health**
- Universal EMR
- Health databanks
- QS Data Commons
- Big health data stream analytics
- Digital health wallet
- Smart property
- HealthToken
- Personal development contracts

**Science, Art, AI**
- Community supercomputing
- Crowd analysis
- P2P resourcenets
- Film, dataviz
- AI: blockchain advocates, friendly AI, blockchain learners, digital mindfile services

**Cryptolledger**
- Permanent record
- Public records repository
- Notarization time-stamping hashes
- Universal format
- Accessibility

**Communication (messaging)**
- Large-scale coordination
- Entity ingress/egress
- Transaction security

**Universal format**
- Large-scale multi-data stream integration
- Privacy and security
- Real-time accessibility

**Large-scale infrastructural element for coordination**
- Checks-and-balances system for 'good-player' access
Securities and Capital Markets Use Cases

**Pre-trade**
- Transparency and verification of holdings
- Reduced credit exposures
- Mutualisation of static data
- Simpler KYC/KYCC\(^1\) via look through to holdings

**Trade**
- Secure, real-time transaction matching, and immediate irrevocable settlement
- Automatic DVP on a cash ledger
- Automatic reporting & more transparent supervision for market authorities
- Higher AML\(^2\) standards

**Post-trade**
- No central clearing for real-time cash transactions
- Reduced margin/collateral requirements
- Faster novation and efficient post-trade processing
- Fungible use of assets on blockchains as collateral
- Auto-execution of smart contracts

**Custody & securities servicing**
- Primary issuance directly onto a blockchain
- Automation and de-duplication of servicing processes
- Richer central datasets with flat accounting hierarchies
- Common reference data
- Fund subscriptions/redemptions processed automatically on the blockchain
- Simplification of fund servicing, accounting, allocations and administration

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DvP: Delivery-versus-payment
Example of benefits in securities/capital markets
Future of Blockchain

Future of blockchain

- Dark age
- New era

Ages of block-chain

- Bitcoin age
- Momentum and hype building
- Exploration of use cases
- Expansion of proofs-of-concept
- Commercial deployment at scale

Block-chain solutions & Criteria for survival

- Only Bitcoin based solutions
- 3 initial hurdles
  - View on potential benefits ($ of use cases)
  - Relevance to, and severity of current pain points and proof that Blockchain is the best solution
  - Critical number of players willing to move

- 3 main hurdles
  - Establishment of legal / regulatory framework
  - Viability of business cases (incl. justifying costs of implementation incl. integration)
  - Agreement on key standards and active collaboration across all required players


Source: Blockchain Technology in the Insurance Sector, McKinsey & Company, 2017
Magnisign (Hardware Security)

**World first hack proof Digital Signature device** – Uses Air Gap Technology and Sound Wave based data transmission.

**The Future** – It will replace every card in your wallet right now, including your ID card.

**Portable and Safe** – Keeps all your digital identity safe. Viruses or intruders can’t get in.

**Encryption and decryption** – Stored Documents and Communications are completely secure.

**Everyday Use** – Validate, pay, sign digital document, log into website.
Open Trade Docs - Trade Finance on Blockchain

**Blockchain Based** – Award winning world’s first blockchain trade finance platform with DPD™ (Digital-Paper-Digital) Technology that allows integration of existing (SWIFT) and new digital processes allowing fast adoption and efficiency.

**Secure** – Mitigating fraud and strong data resiliency.

**Accessibility and Participation** – Works both private and private modes allowing rapid adoption in any industry or organization.

**Scalable and Modular** – Wide range of modular tools to manage and audit trade, supply chain process pipelines and documents. Current Modules include:

- Web 3.0 enabled, DTM - Document Tracking Management
- LMM - Lifecycle Message Management
- Letter of Credit Digital Ledger, Bill of Lading Tracking Management
NotiFile – Secure Document Management Platform on the Blockchain


Redundancies – No need for document repositories... say goodbye to sharepoint

No uploads - Securely track, approve, annotates documents and versions without having to upload them to a server

Highly Customizable – by user, document, bundling

Both Public and Private deployments available
Zero Square POS – Intelligent POS on the Blockchain

**Point Of Sale System on Blockchain** – Financial services organisations can offer this platform to merchants, removing the need for expensive acquire or traditional payments companies.

**Multi-Crypto Currency Enabled** – Compatible with blockchain, either by accepting multiple crypto currencies. Even saving the reports and outputs to a blockchain, or both.

**Integration-ready Point Of Sales** – Connection between any multiple of outlets, of any type, with any crypto currency.

**Compatibility** – Transaction records compatible with DeBuNe and Open Trade Docs solutions for end-to-end coverage of the supply chain and maximal fraud prevention.
Blockchain Architecture Framework