Blockchain in the food chain

Is blockchain a game changer in Agrifood?

© Deloitte 2016
What is blockchain?

“You should be taking this technology as seriously as you should have been taking the development of the Internet in the early 1990s.”

– Blythe Masters, Ex-Head of Global Commodities, JP Morgan Chase
Blockchain is hot, but why?

Gartner Hype Cycle

Blockchain technology

Bitcoin

Technology Trigger  Peak of Inflated Expectations  Trough of Disillusionment  Slope of Enlightenment  Plateau of Productivity

Visibility

Maturity
The ecosystem is growing rapidly

1bn+
in venture capital has been invested in more than 120 Blockchain start-ups over last 2-3 years

800+
There currently are more than 800 companies in the Blockchain ecosystem

10%+
of Global GDP will be stored on Blockchain platforms by 2025, expects the World Economic Forum

How we exchange information

Traditional

Internet
How we exchange value

Traditional

Bitcoin
Bitcoin created a distributed p2p payment network – **real time, 24/7, guaranteed**

Using shared, transparent ledger that no individual controls – **the blockchain**
But there’s more!

Programmable / conditional payments:
Crowdfunding
Escrow
Time locked
Multi signature...
And we don’t need to stop at money

**Blockchains are distributed, shared ledgers for**
- Assets
- Contracts
- Identity attributes
- ...anything that requires trust!
Traditionally, electronic transactions require Trusted Third Party Banks, Governments, Notaries, Accountants. Blockchain can remove the middleman.
Where to use blockchain?

“The blockchain protocol threatens to disintermediate almost every process in financial services.”
– World Economic Forum
Transparency
<table>
<thead>
<tr>
<th>Stock</th>
<th>Price</th>
<th>Change</th>
<th>Shares</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPN/PNC</td>
<td>4.44</td>
<td>-0.45</td>
<td>24,300</td>
<td>5,600</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.13</td>
<td>+2.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.9</td>
<td>+8.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>71.5</td>
<td>+0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>431,522,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Permanent trusted record
Robust:
No single-point-of-failure
No borders
Blockchain challenges

“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.”

– Bill Gates
No clear regulation
Not designed for high speed or large storage
User Experience
Miljoenenroof snuikt techhype

Blockchain technologie moet digitale transacties veiliger maken. Toch wist een hacker joen dollar te stelen via een veelbelovende aanbieder. Het vertouwen in de blockchain

Hoe werkt de blockchain?

Digitale valuta

AMSTERDAM De internetsector is geschokt door de diefstal van 50 miljoen dollar bij The DOA, een online-investe-
ingsfonds zonder personeel, managers of directie. The DOA maakt gebruik van een technologie die de block-
chain heet. De roof legt een bom onder een van de grootste techhypes van dit moment.

De bekendste toepassing van block-
chain is de bitcoin, de virtuele munt die transacties mogelijk maakt die niet zijn te traceren of te vervalsen. Grote edriven zoals Microsoft bieden al blockchaindiensten aan, banken als BN Amro experimenteren ermee om de zien of er hun transacties mee kunnen versnellen.

De diefstal trof vrijdag Ethereum, de meest veelbelovende uitvoering van de blockchain. Een onbekende hacker viste de 50 miljoen aan ether, het virtuele betaalmiddel op Ethereum, weg te zetten naar een schaduwfonds. Alle

Betalen met bitcoin (de valuta van blockchain) in principe mogelijk. Het is een account anoniem waarbij je een toegewezen digitale sleutel krijgt en een reeks lettres. Die code kun je mee naar bed en je stuurde elkaar een betaling aan. Daarna is het nodig om een base te downloaden en alle transacties te opbouwen.
Blockchain applications in Agrifood
1. Tracking (certified) food using blockchain

- Multi-party
- Transparency
- Trusted records
- Cross border

Requires:
- Tamper-proof packages
- Registration at all steps along the chain
- Open blockchain available to consumers

Cf. tracking valuables (Everledger)
2. Crowdfunding livestock

- Multi-party
- Decentralization
- Trusted ownership records

Requires:
- Smart contracts
- APIs to payment systems (bank)
- Open blockchain available to consumers

Cf. blockchain based real estate investment (Blandlord)
3. **Farmland registry on blockchain**

- Transparency
- Trusted permanent records
- Robust

For countries without trusted land registry
Allows investment on very local level

Requires
- Open blockchain available to farmers / land owners
- Buy-in from governments

Cf. land registry (Honduras and others)
Europe’s Largest Blockchain Hackathon

In February 2017 we’re organizing the national blockchain hackathon in The Netherlands together with DutchChain.

Deep dive training sessions

We offer in depth trainings on the fundamentals of Bitcoin and blockchain technology, explaining the history, cryptography, (business) functionality and future perspectives. Including practical demo’s and workshops to start thinking about use cases in your industry.

Reports and eminence

Blockchain – Enigma, Paradox, Opportunity

Blockchain – Out of the blocks: From hype to prototype 2016

Blockchain – Disrupting the Financial Services Industry?

Would you like to know more?
Our NL Blockchain Team

Jacob Boersma
Manager Deloitte NL blockchain team
JBoersma@Deloitte.nl
+31 (0) 6 82 0123 99
@jacobboers

Frank van de Ven
Product design

Jeroen Bulters
Development & advisory

Floris van Lieshout
Blockchain advisory

Jasper van Gelder
Blockchain development

Anna Klapwijk
Product design – thesis student
Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see www.deloitte.nl/about for a more detailed description of DTTL and its member firms.

Deloitte provides audit, consulting, financial advisory, risk management, tax and related services to public and private clients spanning multiple industries. Deloitte serves four out of five Fortune Global 500® companies through a globally connected network of member firms in more than 150 countries bringing world-class capabilities, insights, and high-quality service to address clients' most complex business challenges. To learn more about how Deloitte's approximately 225,000 professionals make an impact that matters, please connect with us on Facebook, LinkedIn, or Twitter.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the "Deloitte Network") is, by means of this communication, rendering professional advice or services. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.