

Risks to Digitalising our Food System

Three areas for regulation

Britt Kritzler Digital Transformation Consultant britt.kritzler@gmail.com +44 (0)78111 70873 Global B2B IOT set to generate ~\$300bn in 2020, farming most radically changed by technology



Vast range of IOT devices and applications

Sources: Bain Insights: Choosing The Right Platform For The Internet Of Things, Cisco Visual Networking Index: Forecast and Methodology, 2016–2021; ZDNet, The five industries leading the IOT revolution; Agfunder News: Report: Smart Farming Can Make Food Supply Uncertainty and Volatility a Thing of the Past



Supply Chain Applications

Protocols & Cyberthreats

IOT & Blockchain applications stand to resolve a range of food system inefficiencies





Supply Chain Applications

Smart Agriculture has matured into encompassing the entire supply chain



ROI models extend beyond food system – new technologies empower collaborations

Project: Unilever, Sainsbury's and the UK Department for International Trade (DFIT)

Food system	Smallho farm	old tea ers	Tea product (Unilever	tion)	Retail (Sainsbury's)	\rangle	
	 Standardi records of sustainabi informatio 	sed lity on	 Smart contract enforcement of supplier select 	t • of ion	Traceability & repeat purchase	Sustainable farming practices	
Sustainability finance	Smallho farm	old tea ers	UK DFIT		CSR Lenders/banks		
	 Standardizer records of sustainable information 	sed lity on	 Provenance o sustainably produced tea imports 	f	Preferential financing terms		
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Introduction & Blo	ockchain S	upply Chain	Applications	Protoco	ls & Cyberthreats	Closing	Thoug

hts

Not all business problems require a Blockchain solution

Assurance	Sector	Agency	Technology	Country	Blockchain
Food safety & hygiene	Gastronomy	Food Standards Agency	ClickIT	UK	No
Food safety & hygiene	Production (eggs)	World Health Organisation	IBM	US	Yes
Food fraud	Production (beef)	Queensland University	Food Agility CRC	Australia	Yes



Supply Chain Applications

Protocols & Cyberthreats

Blockchain makes data collected on IOT devices available to all (authorised) parties, in real-time & continually – no middleman





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Supply Chain Applications

Protocols & Cyberthreats

Mobile operators chose not to invest in IOT, leading to various long-range low-bandwidth protocols – two dominant



Source: IHS Markit Technology "Can Low-Power Wide-Area (LPWA) IoT Networks Capitalize on 5G Confusion?"

Smart Agriculture IOT protocols focus on delivering occasional bursts of small data packages over long distances; Low-Power Wide-Area (LPWA)



Two-thirds of IoT networks globally run LoRa & Sigfox; unlicensed technologies



Supply Chain Application

Protocols & Cyberthreats

Varying risks at every level of interconnectivity

IOT hardware/software

- Low-power wide-area networks (LPWAN) not regulated
- Emergence of different (licensed) protocols
- "Winner takes all" principle

² IOT integrated solutions

- Engineering/machinery partnerships
- Strategic data connectivity deals
- Own protocols for data exchange

IOT infrastructures

- Attacks on Domain Name Servers (DNS) common
- Public key infrastructure (PKI) in Smart Agriculture not regulated
- Human attack vector

Relative high costs

Lack of systems interoperability

Hacks compromise data integrity



Introduction & Blockchain

Supply Chain Applications

Protocols & Cyberthreats

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Closing Thoughts

Interconnectivity



- 1. Smart Agriculture has evolved, Blockchain tested on entire value chain issues
- 2. Blockchain generates security protocols that are impenetrable
- 3. Regulators have been late to legislating LOWAN data exchange protocols
- 4. Increasing amounts of sensitive data are digitally shared
- 5. Data management regulation to ensure User benefits and systems security





Thank you!

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