

Emerging industry standards in blockchain + DLT



BLOCKCHAIN FOR GOVERNANCE



DLTs for transparency in EU and beyond

Blockchain Networks
Agri-Trust – A Future of food we trust

Agriculture 4.0, regenerative/carbon tech and connected marketplace services.

Blockchain technology offers “increased value for partners cooperating in a decentral network, by providing data and process integrity, automation potential and enabling the transparent transfer of values and rights.”

Klein, S. (2018) A Use Case Identification Framework and Use Case Canvas for identifying and exploring relevant Blockchain opportunities. Proceedings of the 1st ERCIM Blockchain Workshop 2018, *Reports of the European Society for Socially Embedded Technologies*. ISSN 2510-2591. DOI: 10.18420/blockchain2018_02

Decentral Business Model Canvas

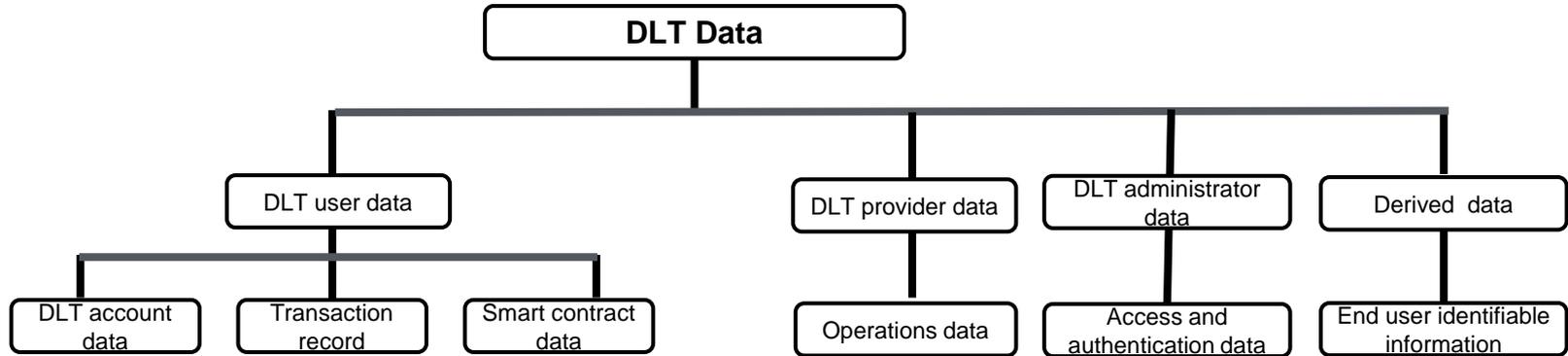
The Lean Canvas		Designed for:	Designed by:	Date:	Version:
		Startup Name	Name1, Name2, ...	DD/MM/YYYY	X.Y
Problem Top 3 problems <i>Multi-party</i>	Solution Top 3 features	Unique Value Prop. Single, clear and compelling message that states why you are different and worth buying	Unfair Advantage Can't be easily copied or bought	Customer Segments Target Customers <i>consortia building - governance</i>	
Existing Alternatives List how these problems are solved today. <i>In need of transformation</i>	Key Metrics Key activities you measure	High-Level Concept List your X for Y analogy (e.g. YouTube = Flickr for videos)	Channels Path to customers	Early Adopters List the characteristics of your ideal customers. <i>important validation</i>	
Cost Structure List your fixed and variable costs. Customer acquisition costs Distribution costs Hosting People Etc.		Revenue Streams List your sources of revenue. Revenue Model Life Time Value Revenue Gross Margin			

*Note: are customers also users?
Are they co-creators of value in the system eg prosumers?*

Identify stakeholder data Source: ISO TS23257:2021 Blockchain DLT reference architecture

Data flows are triggered by the data-related operations of stakeholders, between system components that belong to or are associated with them. Stakeholders achieve aims through role-based interactions with a system.

DLT data can usefully be classified according to its source. The sources in this approach align with six DLT roles identified as DLT administrators, users, providers, developers, governors and auditors. Among these, **administrators, users and providers** are typically the most relevant roles to business case analysis.



DLT stakeholder roles and stakeholder data 'drag n drop' tool

DLT data flow model

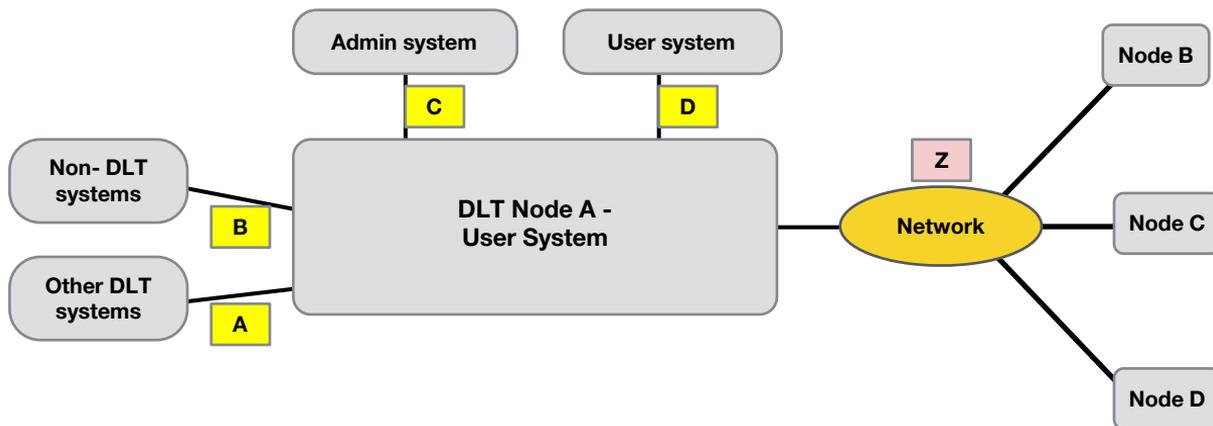
Analyse system-wide data flow

Identify which data flows are triggered by which data-related operations of stakeholders.

- i) Specify the role of each stakeholder in facilitating the data flow.
- ii) Identify the type of data flow (See categories A- Z below)
- iii) Identify the data location:- on or off-ledger.

Categories A-D-Z: 5 fundamental DLT data flows

- A:** between 2 separate DLT systems when they interoperate
- B:** between a DLT system and non-DLT systems connected to it
- C:** between administration applications and a DLT system
- D:** between user applications and a DLT system
- Z:** within and between the nodes of the DLT system



Data flow model

- System view reference architecture -

Blockchain and EU

Shaping Europe's digital future

DG Connect

EU/IE Regulatory context: gov.ie - [European Electronic Communications Code \(EECC\)](#)

*“New decentralised digital technologies offer individuals and companies an opportunity **to manage data flows and usage, based on individual choices and self-determination.**”*

*Such technologies make **‘dynamic data portability in real time’** possible, along with various **compensation models.**”*

Source: EU strategy for Data, 2020

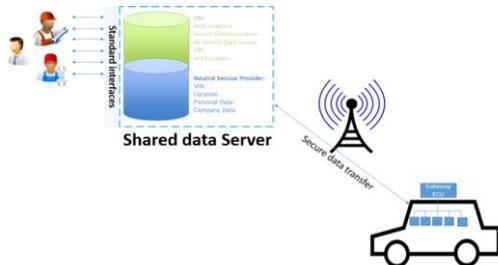
Shaping Europe's digital future DG Connect

EU Strategy for Data, 2020 Submissions

Summary report: public consultation on the European strategy for data 2020 Shaping Europe's digital future

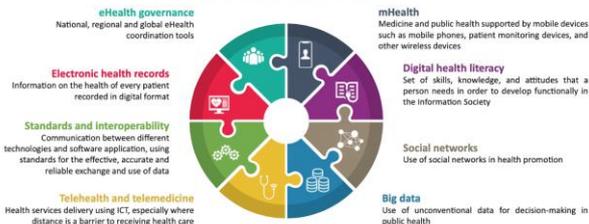
Shared data server solution

Some of the shortcomings of the Extended Vehicle proposal could be addressed by entrusting the running of the server to a neutral third party. In a transitional phase, vehicle data would still transit via a server. The server would be divided to ensure a differentiated access to two users: the vehicle manufacturer and a neutral server provider. The partition would allow vehicle manufacturers to access anonymous data and secure communication. The neutral service provider running the server would give access to vehicle data to various providers, based on informed driver consent.



Cross-sectoral governance framework for data access and use	<ol style="list-style-type: none"> Based on Governance and ethics for personal data flow. Deals with standards, APIs, consent, liability framework, business models... Creating open source building blocks. Aiming at a fair, sustainable, and prosperous digital society
Investments in data and strengthening Europe's capabilities and infrastructures	<ol style="list-style-type: none"> aNG is a PPP with partners including the European Commission Objective is to give the leading edge to Europe and the European Way... ... through a decentralized consent layer and the management of liabilities We are also exchanging with other initiatives like Gaia-X.
Empowering individuals, investing in skills and in SMEs	<ol style="list-style-type: none"> Dashboard enabling individuals to manage their rights in an easy way. Flows of data to be handled by independent Data Operators Open Source Building blocks create level-playing field for SMEs or smaller Local Authorities
Common European data spaces in strategic sectors and domains of public interest	<ol style="list-style-type: none"> Organized in hubs representing verticals and environments (such as cities) Ensuring cross sectoral interoperability Ultimately lead to a single European Data Space. Data space shall not store data, but consents, in a distributed manner

Digital Health Ecosystem



source: WHO*

The benefits of using synthetic data include:

- reducing legal constraints when using sensitive or any type of regulated data;
- tailoring the data needs to certain conditions impossible to achieve with authentic data; and
- generating datasets, which can be leveraged as a stand-in to validate mathematical models and, increasingly, to train machine learning models.

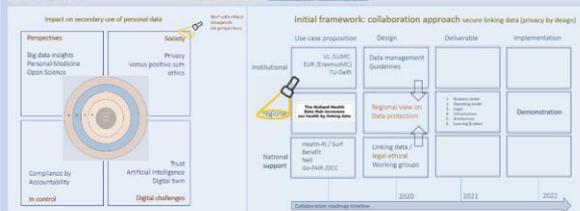
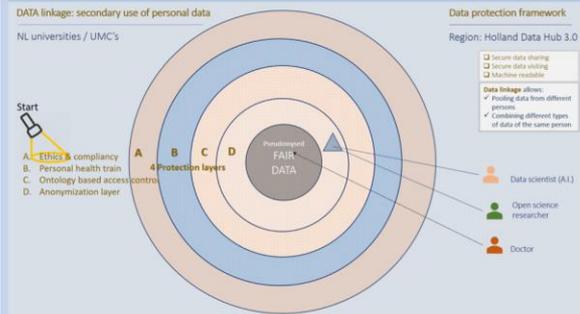
More particularly, the use of synthetic data in health care is particularly significant for *in silico* clinical trials, where the effect of a medical intervention is studied on a virtual patient population that closely and accurately reflects the population of interest.



Secure data linkage for the secondary use of personal data Privacy Framework for (regional) FAIR data Towards a richer dataset: supporting a learning health system

Perspectives like Open Science, Artificial intelligence and Personal Medicine can become data trusted if:

The GDPR / AVG is combined with an ethical view suitable for designing an institutional and regional IT design
Pseudomised and anonymised personal data will be protected with state of the art technology (MPC, DF)
An appointment system is in place (Personal Health Train concept)



Poster Health-RI conference 2020, Erik Flikkenschild (LUMC); Marion Domingus (EUR)
More info: e.flikkenschild@lumc.nl; marion.domingus@eur.nl

Five agri-food contexts where DLTs are already deployed (Source: ISO TR6039)

Context	Description
Corporate social responsibility schemes	Corporate brand values are enhanced by limiting impact and/or protecting endangered habitats - boglands, native woodlands, fresh watercourses e.g. JBS's (global beef producer) Green Platform initiative in the Amazon.
Traceability optimisation	Farm to fork transparency, swift product recall and enhanced consumer trust e.g. IBM Food Trust, Trace Alliance and GS1 /EVERYTHING pilot scheme
Food integrity assurance + fraud countermeasures	IGP, protected marine species and other high-value product category protection e.g. Consorzio Arancia Rossa, FishCoin, BeefLedger, TMail
Decentralised Finance (DeFi)	Peer to peer market place, transparent securitisation and crowd-funding. E.g. tokenising produce and on-farm assets in Argentina with Abakus Co., World Bank's sponsored Agri-Ledger Co. to deliver fair and timely payments to farmers in Haiti and Congo.
Industry/Agriculture 4.0/ Bioeconomy	Integrated approach to applying emerging technologies including Cloud (IoT, edge, fog and transparent computing) AI and DLT to accelerate, efficiency, sustainability and profitability. E.g. Breedr, Ripe.io, Origin Chain Networks

1.3.2.2. Verifiable Credentials ESSIF v2

[1.3.2.2. Verifiable Credentials ESSIF v2 - EBSI Documentation - CEF Digital](#)

[1.3.2.4. Trusted Registries ESSIF v2 - EBSI Documentation - CEF Digital](#)

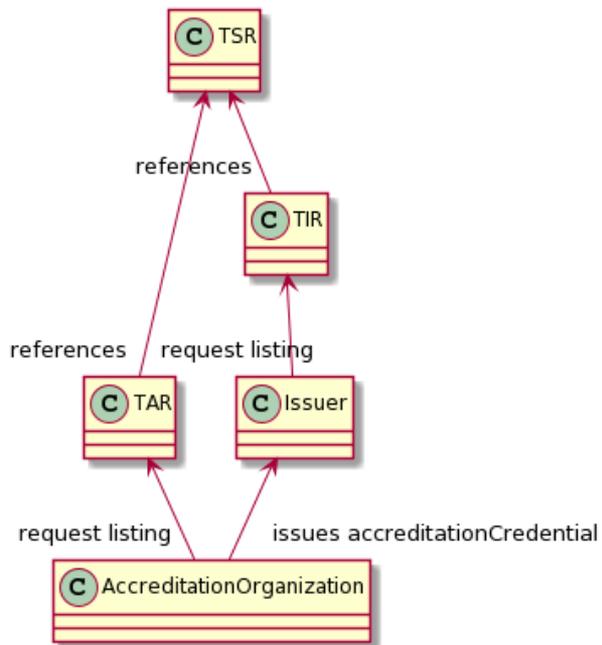


Fig. 1 relation between trusted registries

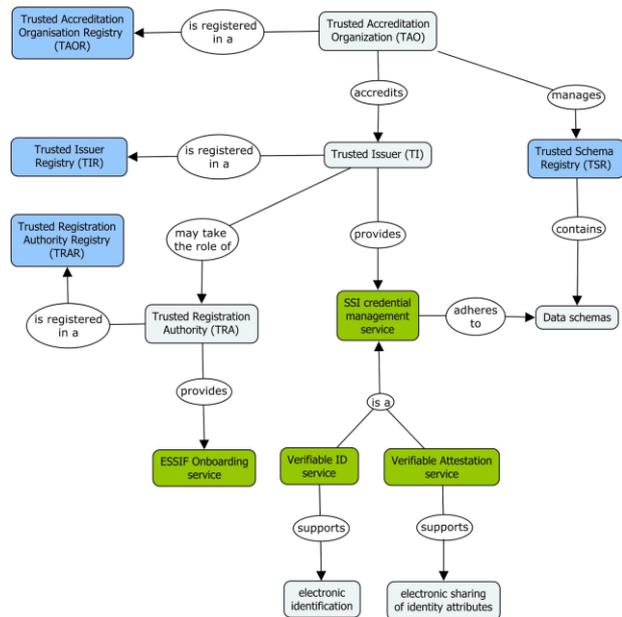


Fig. 2 High Level Overview of Services/Components

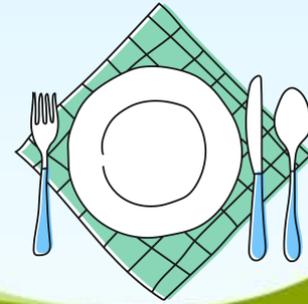
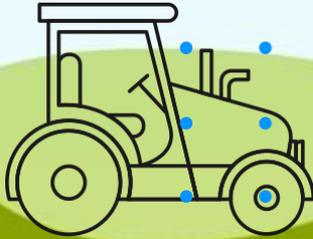
Problem

Gaps in the origin story of food

**Provenance +
farming practice**

**Freshness +
time to
market**

**End of life
waste mgt**



Co-creation of digital food provenance

Provenance + farming practice

	gCO2e/kg
Dairy	4.5g
Beef	20 g

80% accumulates over lifetime on farm

Freshness + time to market

gCO2e/kcal		Retail
5 kcal	+	up to 12%
14 kcal	+	up to 23%

10% transport 10% storage

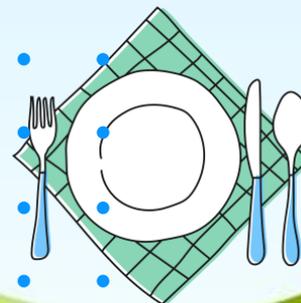
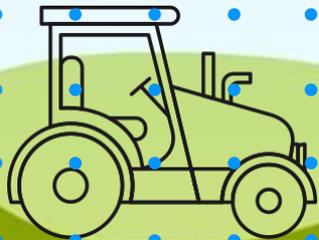
End of life waste mgt

Consumer	Waste
6%	18%
31%	56%

+18-56% loss due to waste

Carbon Footprint Analysis

GHG Protocol Scope 3: corporate value chain accounting.



Gaps in the origin story of food

Universal Farm Compliance App - on/off chain data flow analysis

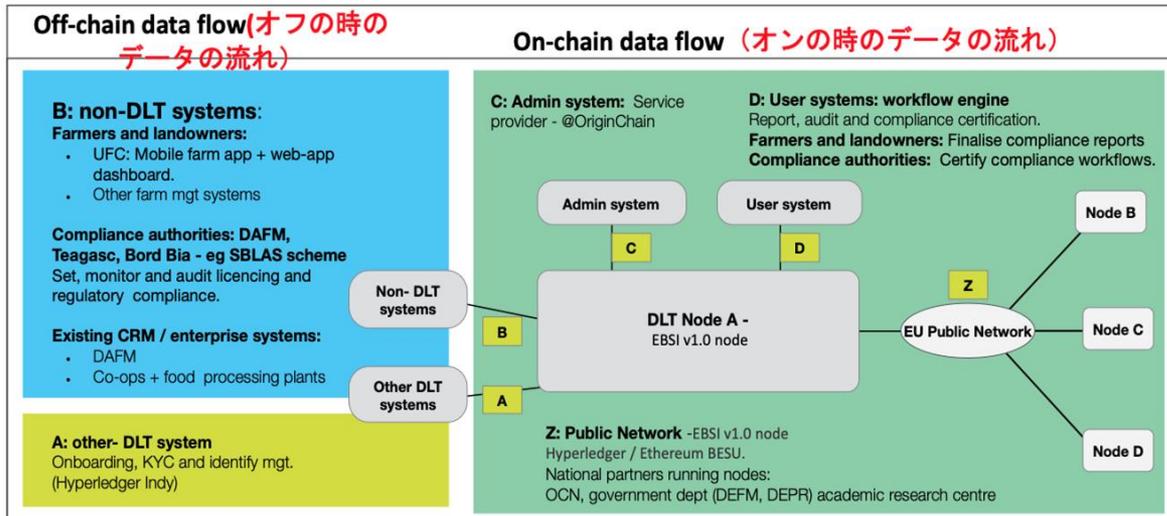
汎用農業規制アプリ

Data-related operations of stakeholders: Farmers, landowners, agri-food compliance authorities (Dept. of Agriculture, Teagasc, Bord Bia and others eg Organic Trust), co-ops and food processors and technology service provider (OriginChain).



ISOTR3242:2021 DLT use cases Universal Farm Compliance (IE)

Open source solutions to trade interoperability challenges in the single digital marketplace



CEN-CENELEC Standards+Innovation Awards 2020
 youtube.com





Actions:

Communications and networking:

e-zine, podcasts, workshops, hackathons, virtual and in-person events eg National Blockchain Week

Drafting documents and position papers:

National Blockchain Strategy

Legal views (Irish common law): smart legal contracts and their status in law and consequences of characterising cryptoassets as 'property' in law.

Cooperating with EU policy and research:

Data Strategy, AI Strategy, Chaise Project, StandICT/EUOS, (EBP-EBSI).

2021 Irish blockchain innovation ecosystem

Working groups:

Startups, Enterprise, Developers,
Education + skills, Legal + regul

YouTube

[Blockchain Ireland #Startups](#)



#01 NFTs: What are they and should I care?



Caomhán O'Meallain,
Partner @ Akasha
Innovation Hub,
IRELAND



Brian Elders, CEO @ SORS
Digital Assets; Partner @
Black Manta Capital,
IRELAND/HONG KONG



Paula Kilgariff, Retail +
Tech Lecturer @ TUD,
Account Dir. @ Altada
IRELAND



Moderator: Fiona Delaney
CEO @ Origin Chain Networks,
Chair: Blockchain Ireland
Startups Group



Dr. Trevor Clohessy, GMT,
Lecturer/Researcher: Blockchain
and Transformative Technologies



Sean Field, CEO @ ProHub4
DLT solutions to supply chain visibility,
security, data sharing and engagement.



Moderator: Fiona Delaney
CEO @ Origin Chain Networks,
Chair: Blockchain Ireland Startups Group

Decentralisation, innovation and the public sector



Introduced by Philip
McGrath, Innovation
DPER, IRELAND



Dr. Tudor Pitulac, Mgr
Research Projects
Division @ Open Sky
Data Systems, IRELAND



David Baines,
Innovation Specialist
@ Govt. of CANADA



Dr. Kosala Yapa,
Principal Investigator
@ DPER, Insight/NUIG
IRELAND



Moderator: Fiona Delaney
Chair Startups @
Blockchain Ireland



Jure Zih, Founder @ Clout Art
Project. A start-up veteran, early
mover in the NFT space and return
guest to Blockchain Ireland. Jure will
demo his simple and easy way to
tokenise social content. SLOVENIA



Eddy Trava, CEO @ Constium
Group (ADSE CON/OTCOB CINGF)
Regional Director Asia Pacific (OV
Labs). Investor and advisor to
early-stage blockchain technology
companies. HONG KONG



Shane Griffin is an award-
winning visual artist. His style
is evident in Wiz Khalifa's
'Millions' video.
NYC/IRELAND



Moderator: Fiona Delaney
CEO @ Origin Chain Networks,
Chair: Blockchain Ireland Startups Group

#02 NFTs: Minting unique tokens

Tokenisation - Fundraising for Start-ups



Shane Brett, Founder @
Gecko Governance, author
'Zero to \$10million'
IRELAND



Roderik van der Graaf
Founder @ Lemniscap
HONG KONG



Michael O'Sullivan,
Founder @ Blockchain
V-Heel Research
IRELAND



Host: Brian Elders
CEO @ SORS Digital
Assets; Partner @
Black Manta Capital
IRELAND

Trade Finance: Decentralised Funding



Brian Elders, CEO @ SORS
Digital Assets; Partner @



Alejandro Gutierrez
COO @ Defactor, Co-



Host: Fiona Delaney, CI
@ Origin Chain Networks

The trusted web - internet vs. the indivi



Barry O'Connor
Commercialisation
@ Tiki.com
IRELAND



Sebastian van der Lans
CEO @ Wordproof.com and
Chair @ The Trusted Web
NETHERLANDS



Dr. Grace Walsh
Technology Researcher
@ NUIG/NUI Maynooth
IRELAND



Fiona Delaney, Co-
Founder @ OCN,
Chair: Blockchain
Ireland @ Startups



Garry Connolly,
Co-founder @ Host
in Ireland



Dr Elizabeth Massey,
Director, Connected
Analytics @ The
Energy Authority,
Florida, USA



Paul O'Connor,
Entrepreneur +
Snr Property
Management



Dr Ružanna Chitcivan,
Assoc. Prof. Uni. of
Bristol, UK



Moderator: Dr Pádraig Lyons @
Director @
BlockEnergy

Smart Energy Data: Ownership, Access and Accuracy



Fiona Delaney, Co-
Founder @ OCN,
Chair: Blockchain
Ireland @ Startups



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Co-founder @ Host
in Ireland



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Dr Ružanna Chitcivan,
Assoc. Prof. Uni. of
Bristol, UK



Moderator: Dr Pádraig Lyons @
Director @
BlockEnergy

Smart Energy: P2P Energy Projects & Trials



Keynote: David Shipworth,
Prof. Energy and the Built
Environment at UCL,
UK



Dr Jemma Green,
Co-founder & Chairman,
Power Ledger, Perth,
AUSTRALIA



Brian O'Regan,
SIERRA Group Lead at
IERC, Tyndall National
Research Institute
IRELAND



Hazriil Izzan Bahari,
Dir. Digital Services @
Sustainable Energy
Development Authority,
Putrajaya, MALAYSIA



Moderator: Dr Pádraig Lyons @
Head of Group @
IERC, IRELAND

PhD (by Publication) Models of centralisation



Dr. Ashish Sai, PhD: Holistic
models of centralisation



Andy LeGear, CTO @



Dr. Trevor Clohessy @

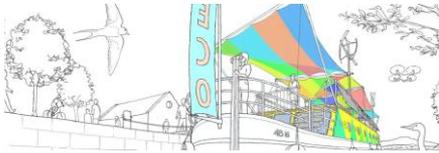
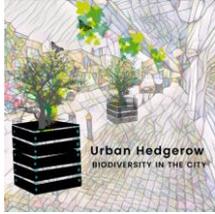
Blockchain Ireland

#StartupsLunchbox

Podcast events @1pm IST

[Bitesize conversations with DLT entrepreneurs and trailblazers from Ireland and overseas. Emerging trends, early adoption and advice on getting started]

[BCIRL #Startups YouTube Channel Link](#)



Thanks!



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