

DELIVERABLE 6.4

# DLT4EU

## FINAL REPORT

The DLT4EU Playbook: Designing, Implementing, and Assessing Impactful Programmes for Early-Stage Innovation with DLTs in the Public and Social Sectors



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DLT4EU Final Report  
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## EXECUTIVE SUMMARY

DLT4EU aims to stimulate the development of cutting-edge Distributed Ledger Technology (DLT) applications that address pressing social and environmental challenges and drive positive change for the public good. The programme has received funding from the European Commission under grant agreement no. LC-01349961.

The core objective of DLT4EU is to connect the expertise and resources of leading DLT entrepreneurs and developers with the real-world, unmet opportunities and challenges of public and social sector beneficiaries including: governmental, public, third sector, and civil society organisations. DLT4EU will also address the desire of the EU to build scalable, efficient, and high-impact ventures that support the development, expansion, and use of cutting-edge DLT applications for social and public good.

Consortium partners - Metabolic Institute (NL), Digital Catapult (UK), and Ideas for Change (ES) - will implement a European-wide incubation programme built upon the 'Virtual Field Lab' (VFL) concept of bringing together DLT developers alongside Challenge Owners, to create Proof-of-Concept prototypes. The selected candidates, referred to as the Venture Teams, develop their applications within a VFL – a virtual environment for DLT experimentation in response to an appropriate real world challenge. Each VFL has a 'Challenge Owner' who scopes, guides, and defines the problem, alongside a network of mentors and experts. These Challenge Owners are 13 public and social sector organisations.

The VFLs of DLT4EU will be developed in response to two overarching high-impact sectors:

1. **Circular Economy:** A new economic model that is regenerative and waste-free by design -one in which resources are fairly distributed without undermining the functioning of the biosphere or crossing any planetary boundaries.
2. **Digital Citizenship:** The application of digital technologies to better facilitate and engage citizens in public decision-making, service improvement, and social impact initiatives. This can be at a local, municipal, or national-level.

The curated acceleration programme, co-designed and delivered by the partner consortium, cross-cuts each VFL with a taught programme covering DLT technical

expertise, business model development, legal guidance and open source licensing, impact-driven investment, UX / UI design, and impact assessment.

Outcomes of the programme include:

- Eight Proof-of-Concepts in the form of functional prototypes that demonstrate the value and utility of DLTs in the public good sector. These Proof-of-Concepts (PoCs) are assessed by an independent Evaluation Jury, with three applications awarded follow-on funding.
- A vibrant and sustainable ecosystem of DLT for public and social good across the EU supported by an extended ecosystem comprising a multi-stakeholder group of developers, beneficiaries, advisors, and investors.

## SCOPE OF FINAL REPORT


To mark the end of the DLT4EU Programme, this report will answer the following key questions:


- Why are programmes like DLT4EU needed for experimentation with Distributed Ledger Technologies (DLTs) in the public and social sectors?
- What is the Virtual Field Lab (VFL) model and why is it important for early-stage innovation with DLTs in the public and social sectors?
- How can we progress the experimentation and adoption of DLTs in the public and social sectors?
- How can an impactful accelerator be designed, implemented, assessed, and scaled?


This report will seek to answer how to progress experimentation and adoption of DLTs in the public and social sectors, in the short-to-medium term. This report will also act as a 'playbook' for any organisation interested in developing their own acceleration programme using the Virtual Field Lab concept for emerging technologies. Finally, this report will provide insight and guidance for future participants of similar programmes, in particular Venture Teams, Challenge Owners, and the broader DLT ecosystem.


## KEY INSIGHTS IN THIS REPORT

Through the design, delivery, and assessment of the DLT4EU Programme, the following key insights were identified:


 Early-stage experimentation with new digital technologies **requires deep engagement** from relevant stakeholders as well as **innovation structures** that are **agile, human-centric**, and do not preference a technocratic approach

 An **ecosystem-based innovation model** is an effective approach to early-stage innovation with DLTs - this is because early experimentation with DLTs is a structured process that requires a diverse set of beneficiaries and stakeholders to be engaged throughout the innovation process, with an **'independent orchestrator'** curating a de-risked programme of learning, training, network access, and piloting


 **The Virtual Field Lab (VFL) concept and model**, including the programme, is a key cornerstone of an ecosystem-approach: the VFL model is an effective model to make sense of and experiment with new digital technologies, while lowering the pre-identified barriers to experimentation. Importantly, the VFL concept also helps to build **grassroots change** within organisations around DLT experimentation and use

 **Pan-European collaboration is key** to the experimentation and adoption of DLT applications. In particular, the European Commission has a critical role to play in laying the structural conditions for early-stage innovation and de-risking of these activities, via market-shaping, financing, and providing network access


 The **public and social sectors** have an **important and active role to play** in experimentation and adoption of emerging digital technologies more broadly, and much earlier in the innovation process than organisations may be used to

 It is key that the next iteration of DLT4EU moves away from the short-term accelerator model that mirrors the cyclical boom or bust of tech-driven solutions and towards a **long-term resilient innovation ecosystem**

 We imagine VFLs in every city in the EU that are incubating solutions to real-world challenges through placed-based prototyping. These VFLs are connected by a Pan-EU ecosystem of experts who can guide the development of meaningful DLT applications and transfer lessons learned by open sourcing successful solutions

 The following **conditions are important** for the continued successful experimentation and adoption of DLTs in the public and social sectors:

- **Frictionless, equity-free financing options** that are suitable in size and type for non-traditional business models
- **Open, de-risked innovation environments** for active collaboration, such as the VFL model
- A **structural approach to DLT education** and understanding in the public and social sectors that builds innovation capabilities within organisations

 And finally, while DLT4EU transitioned to a completely virtual programme due to the COVID-19 pandemic and generated positive impacts for participants, early-stage innovation still **requires in-person engagement**<sup>1</sup>

<sup>1</sup> See Putri, A., MacNeil, A., and Singh, A., 'D7.2 DLT4EU Proof-of-Concepts Assessment Reports', (February, 2021), and Putri, A., MacNeil, A., and Singh, A., 'D7.3 DLT4EU Final Programme Assessment, (May, 2021) for a complete impact assessment of DLT4EU.



# PART 1

# INTRODUCTION

## OBJECTIVES OF DLT4EU

DLT4EU's ambition is to stimulate the development of cutting-edge Distributed Ledger Technology (DLT)-based applications that address pressing social and environmental challenges and drive positive change for the public good. The Programme is part of the broader #DLT4Good initiative led by the European Commission's Joint Research Centre, who also supported DLT4EU as a key partner.<sup>2</sup>

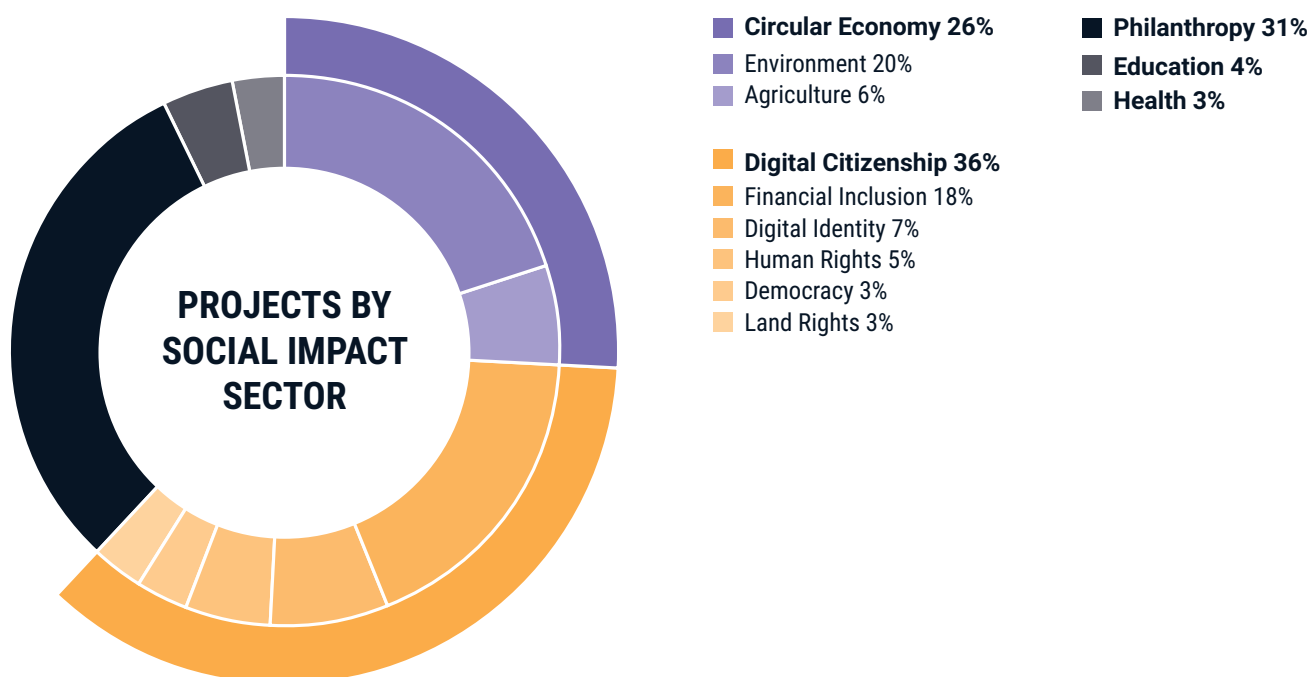
DLT4EU also aims to address the desire of the European Union to build scalable, efficient, and high-impact ventures that support the development, expansion, and use of cutting-edge DLT applications for social and public good. The expected project outcome is a vibrant and sustainable ecosystem of DLT for public and social good across the EU supported by an extended ecosystem comprising a multi-stakeholder group of developers, beneficiaries, advisors, and investors.

## THE CIRCULAR ECONOMY AND DIGITAL CITIZENSHIP

To ensure that the DLT4EU programme was aligned to the objectives of the accelerator to stimulate relevant, applicable experimentation, the accelerator focused on two overarching, high-impact sectors (Figure 1):

- 1. Circular Economy:** A new economic model that is regenerative and waste-free by design -one in which resources are fairly distributed without undermining the functioning of the biosphere or crossing any planetary boundaries.
- 2. Digital Citizenship:** Digital Citizenship can be broadly defined as the application of digital technologies to better facilitate and engage citizens in public decision-making, service improvement, and social impact initiatives. This can be at a local council / municipal, city or national-level.

Figure 1: Two High-Impact Sectors



<sup>2</sup>For more information on #DLT4Good please refer to the EU Policy Lab's overview website, [<https://blogs.ec.europa.eu/eupolicylab/portfolios/dlt4good/>], accessed 10 May 2021.



These sectors were selected based upon their criticality in forming the foundation for a socially-equitable and environmentally-responsible European economy.

The following criteria were used in the sectoral analyses and selection process (Table 1).

**Table 1: Sectoral Selection Criteria**

CRITERIA	DESCRIPTION
<b>Social and Public Good</b>	Chosen sectors must be from the social and/or public good space.
<b>Challenge Relevance</b>	The technological capabilities and opportunities of DLT must be applicable to the real-world challenges and needs of the chosen sectors. We aim to deliver tangible solutions to real and relevant challenges rather than quick fixes to virtual or irrelevant problems.
<b>European Commission Relevance</b>	Chosen sectors must be highly relevant to the high-opportunity areas identified by the European Commission and other leading initiatives in the field of Blockchain for Social and Public Good. Notably, those identified in the policy project #DLT4Good by the EC Joint Research Centre (JRC) in collaboration with DG CNECT of the EU, and its expert Advisory Board; the EU-funded projects DECODE and LEDGER; and the Blockchains for Social Good EIC Prize.
<b>Non-Profit Applicability</b>	Chosen sectors must demonstrate that the majority of actual and foreseeable DLT applications will support non-profit activities and organisations. Resilient business models for non-profit DLT applications must be feasible and demonstratable.
<b>Maturity and Scale</b>	Chosen sectors must demonstrate a level of maturity, and therefore readiness, for DLT applications. Maturity is assessed based upon the number of DLT initiatives within the sector. Chosen sectors must not demonstrate an already over-crowded field of late-majority users, but rather a robust network of early-adopters and early-majority-users with the potential for scale. <sup>3</sup>
<b>Impact</b>	Chosen sectors must demonstrate that existing and foreseeable DLT applications will be highly scalable, impactful and resilient.
<b>Timeliness</b>	Chosen sectors must demonstrate the timeliness of DLT applications in providing impact to relevant beneficiaries; ideally within 2-5 years of start up.
<b>Consortium Relevance</b>	Chosen sectors must be highly relevant to the expertise and networks of the consortium partners.

<sup>3</sup>Shamir-Inbal, T., Dayan, J., and Kali, Y., 'Assimilating Online Technologies into School Culture', *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 5, (2009).

## THE DLT4EU CONSORTIUM

The DLT4EU programme was led by a Consortium consisting of the Metabolic Institute (NL), Ideas for Change (ES), and the Digital Catapult (UK). The Consortium partners are leaders within the field of DLTs, social innovation, and venture development. To deliver the programme, the Consortium brought together a

strong, multidisciplinary team with proven expertise in the fields of blockchain and other DLTs, incubation and acceleration of emerging technology-based solutions, digital social innovation, and social impact investment from three strategic European geographies.

**Figure 2: The DLT4EU Consortium**



### Metabolic Institute

The Metabolic Institute is a think tank working at the intersection of academic research and real-world experimentation, building collective intelligence around pressing global challenges - connecting society, policy, industry, and academia with knowledge and tools to navigate towards a sustainable future. The Institute is part of the Metabolic ecosystem, which has capabilities in consulting on circular economy strategies, venture development under systemic entrepreneurship, and software development to produce the necessary tooling for both public and private organisations to manage their transition. As well as providing expertise on the Circular Economy, the Metabolic Institute was the Project Coordinator for DLT4EU, and lead of the accelerator, Evaluation of the Proofs-of-Concepts, the Programme and Proof-of-Concepts Impact Assessments, and for all Project Management.



### Ideas for Change

Ideas for Change is a strategy and research agency that works in the fields of digital social innovation, business and venture development, and co-creation. Through close collaboration, Ideas for Change has enabled partners and clients within the public sector (national governments, international policy groups, and NGOs), and civic sector (citizen-lead urban organisations, national societal campaigns, and international social innovation agencies) to transition towards business models that are more socially contributive and publicly accessible while sustaining competitiveness and a strong position in their markets. Additional to their expertise on Digital Citizenship, Ideas for Change led the Communication and Dissemination activities for DLT4EU, including the DLT4EU Final Event. Ideas for Change also hosted the last online bootcamp of the accelerator, which focused on storytelling and pitching skills.



### The Digital Catapult

The Digital Catapult is a leading agency for the early-adoption of advanced digital technologies, with strong relationships with leading edge startups and high-growth potential companies that shape the future of the EU digital economy. By acting as the interface between the public and private sectors - where real-world challenges can be identified and validated - and the DLT field - where DLT innovations can be developed and deployed - the Catapult ensures DLT innovations go beyond the hype and become robust products and services that meet the demands and needs of their beneficiaries. As well as their expertise in Distributed Ledger Technologies, the Digital Catapult led the initial design of the accelerator and ran the Open Call. The mid-term bootcamp was also hosted online by the Digital Catapult, which focused on DLT technical development.

## THE DLT4EU PROGRAMME

### Distributed Innovation

A key starting point in the design of DLT4EU was the belief that high-potential innovators located anywhere in Europe should be able to build a world-leading business without having to relocate. While most accelerators are located in one location, a single location can significantly drive up operational costs and represent a challenging cost-benefit for Venture Teams who are better suited to stay closer to their core development team and/or intended market.

DLT4EU therefore aimed to facilitate a distributed accelerator model wherein Consortium partners, accelerator participants, mentors, and the wider DLT4EU ecosystem connect online and offline. To do so, originally, the accelerator programme was to have three main nodes: Amsterdam, Barcelona, and London, to be each led by a Consortium Partner. The original structure of the accelerator was for each Partner to host a major bootcamp and external event in-person, at intervals across the accelerator. However, due to the ongoing COVID-19 pandemic, the DLT4EU Consortium agreed early-on to move the accelerator fully online.

### Challenge Areas and Challenge Owners

To ensure that the DLT applications developed within DLT4EU directly addressed common challenges felt by the public and social sectors across Europe, the end beneficiaries were established as a core role within the accelerator: the Challenge Owner.

Challenge Owners were cornerstone actors within the DLT4EU accelerator and played the important hybrid role of mentors, early-adopters, and market testers. Throughout the accelerator, each Challenge Owner acted as lead beneficiary of their respective Proof-of-Concept (PoC): providing the Venture Team close connectivity and insight into the real-world challenge and requirements the PoC needed to meet, and help direct the PoC's overall development.

Over the course of three months in advance of the launch of the accelerator in July 2020, the DLT4EU Consortium identified potential Challenge Owners and worked closely with them to scope a Challenge Area. Potential Challenge Areas were identified through the initial research the DLT4EU Consortium carried out on the two high-impact sectors of the Circular Economy and Digital Citizenship. In parallel, a shortlist of Challenge Owners was developed by drawing on the networks of each Consortium Partner to identify public and social sector organisations who presented challenges that could be solved by DLT applications.

Each Challenge Area set out a specific problem faced by the Challenge Owner(s) themselves, but were also common challenges to many public and social sector organisations across Europe. Additionally these Challenge Area statements set out a list of potential opportunities for DLT applications. This was to ensure that each VFL focused on relevant areas of experimentation in a semi-structured format. With the support of the DLT4EU Consortium, Challenge Owners identified, shaped, and set the Challenge Areas that Venture Teams worked to solve in their VFLs over the 6-month duration of the accelerator.

### The Virtual Field Lab (VFL)

The DLT4EU accelerator programme was built upon the 'Virtual Field Lab' (VFL) concept of bringing together DLT developers (Venture Teams) alongside Challenge Owners from the public sector, to create and trial Proof-of-Concept (PoC) prototypes in real-world scenarios over the course of a six-month accelerator.

Challenge Owners scoped, guided, and defined the Challenge Area that selected Venture Teams applied to solve. Venture Teams were sourced through an Open Call process wherein DLT developers were first evaluated by a Selection Committee and then shortlisted for final selection by the Challenge Owner.

Through the VFL model, Venture Teams and Challenge Owners collaborated closely on the co-development of their Proof-of-Concept, including a pilot phase where the Challenge Owner provided the real-world environment for testing and end users to provide feedback. The participants of each VFL structured their own sprint-based plan for the six-month accelerator, wherein participants could also use the three main bootcamps as key milestones for learning, technical development, presentation and feedback, and peer learning with other VFLs.

Importantly, the VFL provided a forum where public sector actors could contribute their expertise and insight directly to the DLT organisations - who rarely get hands-on, experienced input from public sector actors.

Together each VFL collaborated to progress the DLT Proofs-of-Concept from the entry requirement of Technology Readiness Level (TRL) 3-4 to achieve TRL5-6, and ultimately scale-up the resulting applications through real-world use beyond the programme itself.

## Curated Accelerator Programme

A curated accelerator programme was then provided for each VFL to benefit from specialist mentors and masterclasses on specific topic areas relevant to the PoC development - known as 'tracks'. The main tracks were:

- Public Sector Innovation
- Innovative Finance
- Open Source Licensing
- Value-Sensitive Design (UX / UI)
- The Pentagrowth Methodology
- Business Models and Strategy
- European Union and Public Funding
- EU Law and Regulation
- DLT Governance
- Storytelling and Pitching
- DLT Technical Development

The tracks were largely delivered as part of masterclasses held during the three bootcamps led by the DLT4EU Consortium - with on-demand masterclasses provided when emerging knowledge - or skill - needs were identified by the Consortium and VFLs. An important characteristic of the accelerator was that capacity building and knowledge transfer were foreseen as a continuous activity, rather than temporally limited towards the end of the project, as is usually the case.

## DLT4EU Timeline

The accelerator was launched in July by the Metabolic Institute, who hosted an intensive kick-off bootcamp for accelerator participants. In this bootcamp participants were onboarded to the accelerator programme and supported to concretise their application concept and development timeline. Virtual sprints were held where Venture Teams met Challenge Owners and mentors for strategy and feedback sessions. The Public (Online) Launch Event then took place to announce the programme and invite speakers to discuss the role of DLTs for public and social good.

The Digital Catapult then hosted an intensive intermediate bootcamp at the midway point (September 2020) where Venture Teams, Challenge Owners, and other stakeholders came together to expedite the progress of their concept. Participants presented the progress of their PoC to Mentors, Impact Investors, Secondary Beneficiaries, and Challenge Owners to receive feedback and guidance. The Venture Teams were expected to have made progress on product-market fit, UX/UI, and there were a number of dedicated trainings by leading experts on business model refinement, lean product development, and other techniques for rapid learning.

Finally, in November 2020, Ideas for Change hosted the last intensive bootcamp. The focus of this bootcamp was on developing the pitch to the Challenge Owners and Impact Investors. Training sessions were focused on public speaking, networking, elevator pitches, and other skills considered crucial for impact-driven financing. Participants were expected to have made significant progress in their PoC development. Mentorship was focused on network building, fundraising, and scaling strategies. After feedback from the Venture Teams and investors engaged in the programme, the original 'Investor Day' was redesigned into a series fundraising support sessions with an external expert for each Venture Team to co-develop a fundraising plan for the coming year.

Importantly, when participants were not engaged in bootcamp-based activities, the VFL provided the structure and touchpoints for Venture Teams and Challenge Owners to continue co-developing their Proof-of-Concept. The VFLs were encouraged to adopt agile and sprint-based work structures to facilitate this collaboration. Additionally, all VFLs were able to access subject matter expertise and mentoring from the DLT4EU ecosystem and on-demand masterclasses, organised to provide timely insight and feedback on PoC development.

## The Proof-of-Concept (PoC)

As a result of the programme, Venture Teams developed Proof-of-Concepts - in the form of functional prototypes - that demonstrate the value of DLTs in the public sector. The purpose of the Proof-of-Concept was to act as a showcase to broader beneficiaries, to increase engagement in the public and social sectors with this transformative technology, and to contribute to an EU-wide discourse regarding the application of DLT technology for public and social good across the EU. Importantly, a key requirement of entrance to the programme was for the DLT source code from each PoC to be released under an Open Source License of the Venture Teams' choosing.

At the end of the accelerator, all eight Proof-of-Concepts were assessed by an independent DLT4EU Evaluation Jury with three applications awarded follow-on funding. The purpose of this funding is to support the further development of the PoCs and increase the visibility of use case application. The Evaluation Jury consisted of five Jurors bringing expertise in public sector innovation, technical DLT development and application, impact-driven investment, and UX / UI design to assess each PoC submission.

Figure 3

# THE DLT4EU PROGRAMME TIMELINE

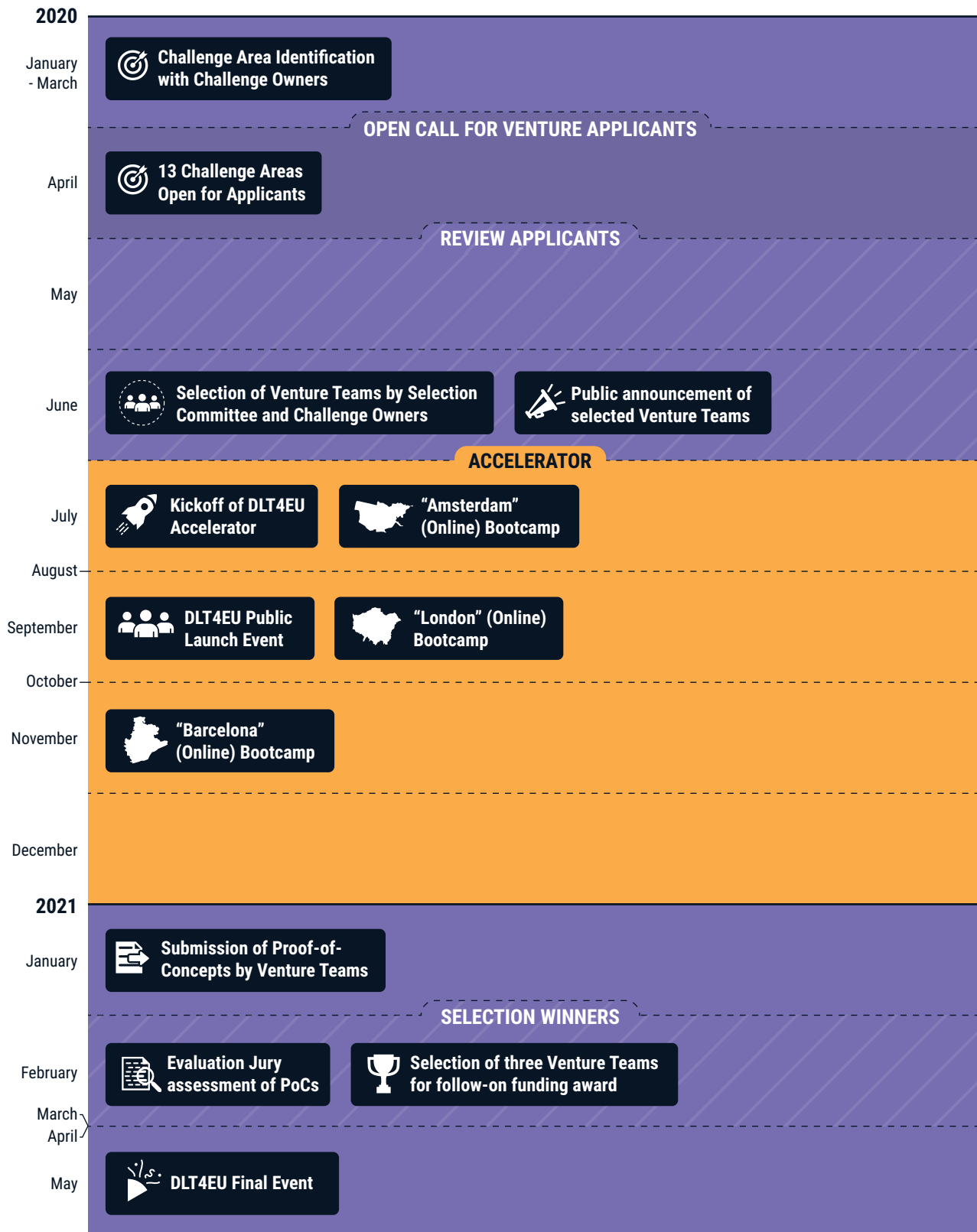


Figure 4: The DLT4EU Programme<sup>4</sup>

Accelerator sessions delivered in total



Open-sourced Proofs-of-Concepts delivered



Knowledge sharing activities delivered to policymakers and public sector supporters



of Venture Teams received follow-on funding for their Proofs-of-Concepts



## AMSTERDAM BOOTCAMP

July 2020



### Objectives

The main objective of the Amsterdam Bootcamp was to begin building the collaborative relationship between each Challenge Owner and their Venture Team within the Virtual Field Lab. This meant starting with a deep exploration of the Challenge Area, as well as providing each VFL with the necessary knowledge and tools needed for the six-month accelerator.

Having explored the initial Challenge Area definition and Proof-of-Concept scope, each VFL produced their first three-month sprint plan as part of this Bootcamp.

Additionally, participants were introduced to the Accelerator Core Team from the DLT4EU Consortium, as well as the community of mentors they could receive support from immediately after the Bootcamp.

### Sessions



DLTs for Public Good Masterclass with Jaya Brekke (University of Durham and European Commission Joint Research Centre Expert), Mara Balestrini (Ideas for Change), and Liz Corbin (Metabolic Institute)



DLTs for Public Good Masterclass - Challenge Owners with Jaya Brekke (University of Durham and European Commission Joint Research Centre Expert)



VFL Challenge Scoping - Working with the Public and Social Sectors by Marloes Pomp and Koen Hartog from the Dutch Blockchain Coalition



Pentagrowth Masterclass by Ideas for Change



DLT Value-Sensitive Design Masterclass by Martijn de Waal and Angella Mackey (Amsterdam University of Applied Sciences)



Legal and Regulation Masterclass by Primavera de Filippi (Berkman Klein Center for Internet & Society at Harvard University)



Innovative Finance Masterclass by Seadna Quigley (Metabolic) and Iulia Tudor (Digital Catapult)



Venture Building Masterclass by Chris Monaghan (Metabolic)



Challenge Refinement and Proof-of-Concept Scoping by DLT4EU Consortium



Masterclasses



Challenge Scoping



Demo Day



Sprint



Tech Sprint



Mentoring

<sup>4</sup> Putri. A., MacNeil. A., Singh. A., 'D7.3 DLT4EU Final Programme Assessment', (May, 2021).



## LONDON BOOTCAMP

September 2020



### Objectives

During this online Bootcamp, the main objective was for each Virtual Field Lab to present and receive feedback from experts on their Challenge Area scoping and Proof-of-Concept development so far. The improvement areas identified in the Demo Day were then sprinted on with the support of the community of mentors.

### Sessions



Demo Day with experts from impact-driven investment, product and service development, business models and strategy, and DLT technical development



Masterclass on DLT Governance Session with Lawrence Lundy-Bryan (Outlier Ventures) and Sue McClean (Baker McKenzie Law Firm)



Masterclass on Open Source Licensing and Business Models for Growing Your Community by Gilles Gravier (WIPRO) and Francesco Rampone (Italian Blockchain Association)



Sprint Retrospective by DLT4EU Consortium



Sprint Planning by DLT4EU Consortium



## BARCELONA BOOTCAMP

November 2020



### Objective

The main objective of the Barcelona Bootcamp was to help the Virtual Field Labs refine their Proof-of-Concept Submission in advance of the deadline of January 2021. Second, this Bootcamp was also focussed on supporting the Venture Teams on their fundraising strategies for the next phase of development.

### Sessions



Demo Day with expert panel from fields of storytelling, impact-driven investment, business models and strategy, product and service design



End Demo Day for Challenge Owners to provide specific feedback on the Proof-of-Concepts



Masterclass on Pitching and Storytelling by Hayley Bagnall (Altus Impact)



Masterclass on Public Funding and Investment co-led by Karel Vanderpoorten from DG GROW, João Farinha (advisor for the Secretary of State for Digital Transition of the Portuguese Government), and João Machado from Portugal Inovação Social



Masterclass on Writing Grant Applications by Theo Fellgett (Independent)



Masterclasses



Challenge Scoping



Demo Day



Sprint



Tech Sprint



Mentoring

## ADDITIONAL PROGRAMME SESSIONS

July - December 2020



### Objectives

As well as the three main Bootcamps, additional sessions were organised for the VFLs depending on emergent needs.

### Sessions



European Blockchain Infrastructure Services Presentation



One-on-one Fundraising Support with David Altabev, Urban Frontiers

- After identifying a common need for support on non-equity fundraising, additional sessions with an external expert were organised. In these sessions, each Venture Team has been supported to produce a year plan on different European and national-level funds to apply to, as well as receive feedback on past or current grant applications to help with success rate.



One-on-one Communications Support with Hayley Bagnall, Altus Impact

- From the Barcelona Bootcamp Masterclass, there was high demand from Venture Teams for further support on developing impact-first storytelling for the Proof-of-Concepts.

## MENTOR COMMUNITY FOR PROGRAMME

July - December 2020



### Objectives

Over the course of the six-month accelerator, all eight VFLs could benefit from monthly mentoring from a community of subject matter experts from the DLT4EU Ecosystem. This community was sourced from existing initiatives and networks from across Europe, and was a balance of thought leaders in the field, as well as practitioners with relevant experience.

### Sessions



Business Models and Strategy



Open Source Licensing and EU Regulation



Innovative Finance / Impact-driven investment



DLT Technical Support



Product and Service Design



Public Sector Innovation



Masterclasses



Challenge Scoping



Demo Day



Sprint



Tech Sprint



Mentoring



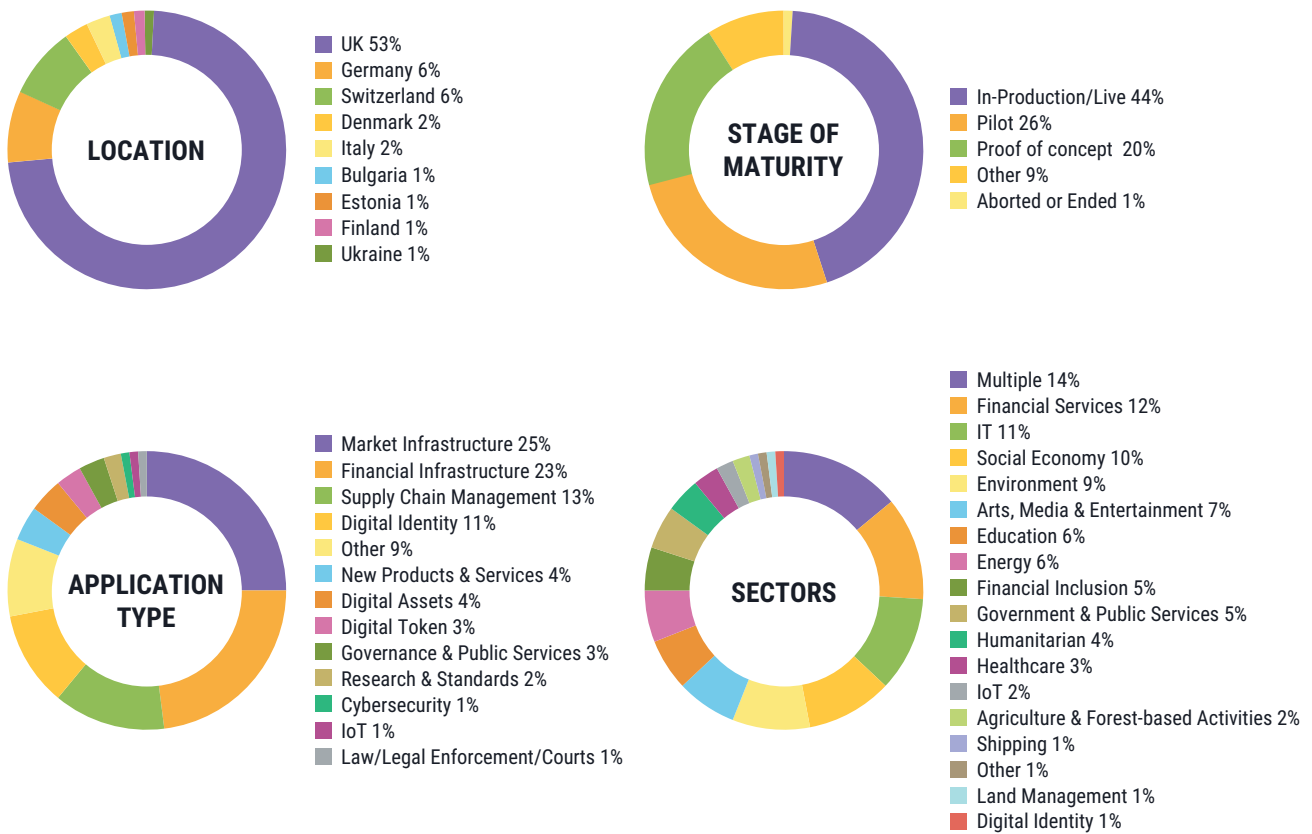
# WHAT IS THE ROLE OF PROGRAMMES LIKE DLT4EU IN EARLY-STAGE INNOVATION?

Currently, the visibility of DLT applications within the European public and social sectors is still emerging - previous research by DLT4EU found 179 organisations across Europe who are developing applications that would either directly or indirectly benefit public and social sector organisations.<sup>5</sup>

Most of these applications are being developed within the Financial Services (12%), Information Technology (11%),

and Social Economy (10%) sectors. Additionally, the most common types of applications are Market Infrastructure (25%), Financial Infrastructure (23%), Supply Chain Management (13%), and Digital Identity (11%). Importantly, this research found that many applications can be considered early-stage - either in Proof-of-Concept (20%), Pilot (26%), or Aborted / Ended (1%).<sup>6</sup>

Figure 5: The European Public Sector Landscape for DLTs



<sup>5</sup> Garcia. F., During. L., MacNeil. A., and Corbin. L., 'D1.2 DLT4EU Insights Report', (March, 2020), p11.

<sup>6</sup> Ibid.

## BARRIERS TO EXPERIMENTATION AND ADOPTION WITH DLTs

Distributed Ledger Technology is an enormously complicated area, not only technically, but in legal and regulatory terms. There are few organisations with the financial and technical resources, or the appetite, to take on these multiple risks simultaneously. These multifaceted risks are compounded by the fact that Distributed Ledger Technology is fundamentally about transforming networks rather than individual organisations or departments. For example, traditional procurement tends to address in-house transformation, and is not structured to address simultaneous transformation of groups.

We see the following barriers to more widespread adoption of these technologies for public and social good:

- The **perception of DLTs as an over-hyped and crypto-centric field**, preventing interest in early-stage experimentation and concern that the technology is being 'retrofitted' to use cases rather than used for genuine purposes
- **Scarcity of reliable and trusted public examples** of working Distributed Ledger Technology systems in the public and social sectors to demonstrate the possibility to improve the resilience of, and trust in, public procurement, supply chains, increase transparency around data access, and open new avenues for data sharing, collaborative working, and citizen-centric services
- **Lack of DLT expertise** within public and social sectors themselves, despite in general a growing number of higher-education institutions offering programmes in blockchain
- **Limited awareness of the financial benefits** of applying Distributed Ledger Technology among potential public sector adopters and SMEs who may wish to provide innovative products and services for a Distributed Ledger Technology-based ecosystem
- **Lack of clarity on regulations** surrounding the creation of token-based systems or digital currencies, which would enable developers and SMEs to reside and pay tax within the EU, rather than leaving to nations with defined regulations such as Gibraltar or Singapore

- A lack of clarity on how to reconcile European-wide regulation on data privacy (such as the General Data Protection Regulation) with DLT functionality, as well as wider **governance issues** around consensus-based mechanisms
- **Difficulty to access public institution investment** to bridge early-to-scale DLT solutions
- **Lack of low-risk guided settings** for public sector organisations to undertake exploration into these potentially transformative technologies
- And lastly, a **lack of clarity with citizen expectations** around public service provision and public sector use of DLT solutions<sup>7</sup>

## ECOSYSTEM-BASED INNOVATION

Given the diversity and complexity of barriers to early experimentation with DLTs in the public sector, **programmes - such as DLT4EU - that implement an ecosystem innovation model are increasingly important to directly tackling these barriers. The full potential of DLTs will not be realised unless public sector bodies become a pinnacle part of the process from the very beginning.** By doing so, these organisations can find the use cases and guide the development of the technology in ways that are the most relevant to public and social beneficiaries.

In DLT4EU, an ecosystem-based model meant establishing the Virtual Field Lab model, with the Challenge Owner acting as a key steward of the Challenge Area. The VFL importantly provided a forum where public sector actors could contribute their expertise and insight directly to the Venture Teams - who rarely get hands-on, experienced input from public sector actors.

Additionally, the programme actively curated and engaged a diverse set of stakeholders at key touchpoints in the innovation arch of each VFL. Key to this approach was to ensure a balance in the ecosystem between the theoretical and academic, versus entrepreneurial and practitioner expertise that the VFLs could draw on. As well as the expertise and guidance the Challenge Owners provided, DLT4EU sought to embed practitioners from relevant fields into each VFL (i.e. content area or organisational expertise). These practitioners must have had prior experience in relevant or complementary areas to provide grounded expertise to the VFLs.

<sup>7</sup> Ibid. pp.30-38.

# WHAT IS A VIRTUAL FIELD LAB AND WHY IS IT IMPORTANT?

## WHAT IS A VIRTUAL FIELD LAB?

A Virtual Field Lab is a virtual environment for experimentation curated to an appropriate real-world challenge. **The VFL is a key mechanism for early-stage experimentation and adoption of technical solutions**, especially where there are high barriers to participation by demand-side stakeholders - for example, due to a lack of experience in prototyping-based models.

The VFL concept was originally designed by the Consortium partner Digital Catapult and delivered as DLT Field Labs in a few key industry verticals in the United Kingdom prior to the beginning of the DLT4EU programme.<sup>8</sup> The VFL model has proven especially effective at bringing a diverse range of stakeholders together around a common challenge as well as ensuring strong alignment between these organisations for solution-adoption.<sup>9</sup>

For DLT4EU, the VFL concept was evolved to specifically solve key barriers to experimentation and live piloting of DLT applications within the public and social sectors. These changes included the addition of the 'VFL Coach' role and the six-month accelerator programme, as a supporting structure providing knowledge, training, mentoring, and interventions where needed by each VFL. Due to the COVID-19 pandemic, each VFL was fully virtual and a tech-stack of collaboration and communication tools were provided to all participants to successfully facilitate virtual collaboration.

Each VFL had a set of core components that anchor the focus and activities of the VFL, including:

- **High Impact Sectors:** Preliminary research identified **two high impact sectors** under which public and social challenges would fall. They were the Circular Economy and Digital Citizenship.<sup>10</sup>
- **Challenge Area:** The **Challenge Area was a problem statement** scoped prior to the programme launch by chosen Challenge Owners. Each Challenge Area was a specific problem faced by the Challenge Owner(s), but are also **common to many public and social sector organisations across Europe**. Each Challenge Area statement set out a list of potential opportunities for DLT applications. This was to ensure that each VFL focused on relevant areas of experimentation in a semi-structured format.
- **Challenge Owner:** **Challenge Owners were cornerstone actors within each VFL**, and played the important hybrid role of mentors, early-adopters, and market testers. With the support of the DLT4EU Consortium, **Challenge Owners identified, shaped, and set the Challenge Areas that Venture Teams worked to solve across the six-month accelerator**. Throughout the accelerator, each Challenge Owner acted as lead beneficiary of their respective Proof-of-Concept: providing the Venture Team with close connectivity and insight into the real-world challenge and needs the PoC was meant to meet, and helping to direct the PoC's overall development.
- **Venture Team:** **Venture Teams held a key producer role in DLT4EU** - collaborating with Challenge Owners to further scope, design, develop, and test a Proof-of-Concept that addressed the set Challenge Area. Venture Teams were responsible for leading the business and technical development of the PoC, and liaising with their Challenge Owner to organise sprint sessions, monthly calls, and key inputs. Venture Teams were also responsible for submitting their PoCs in January 2021, which were assessed by the external DLT4EU Evaluation Jury. Three Venture Teams were awarded follow-on funding based on the results of the independent evaluation.

<sup>8</sup> Ho. K., MacNeil. A., and Corbin. L., 'D1.1 DLT4EU Accelerator Report', (March, 2020), p.8.; See also The Weather Ledger, [<https://www.digicatapult.org.uk/for-large-businesses/collaborative-research-and-development/the-weather-ledger>], accessed 5 May 2021.

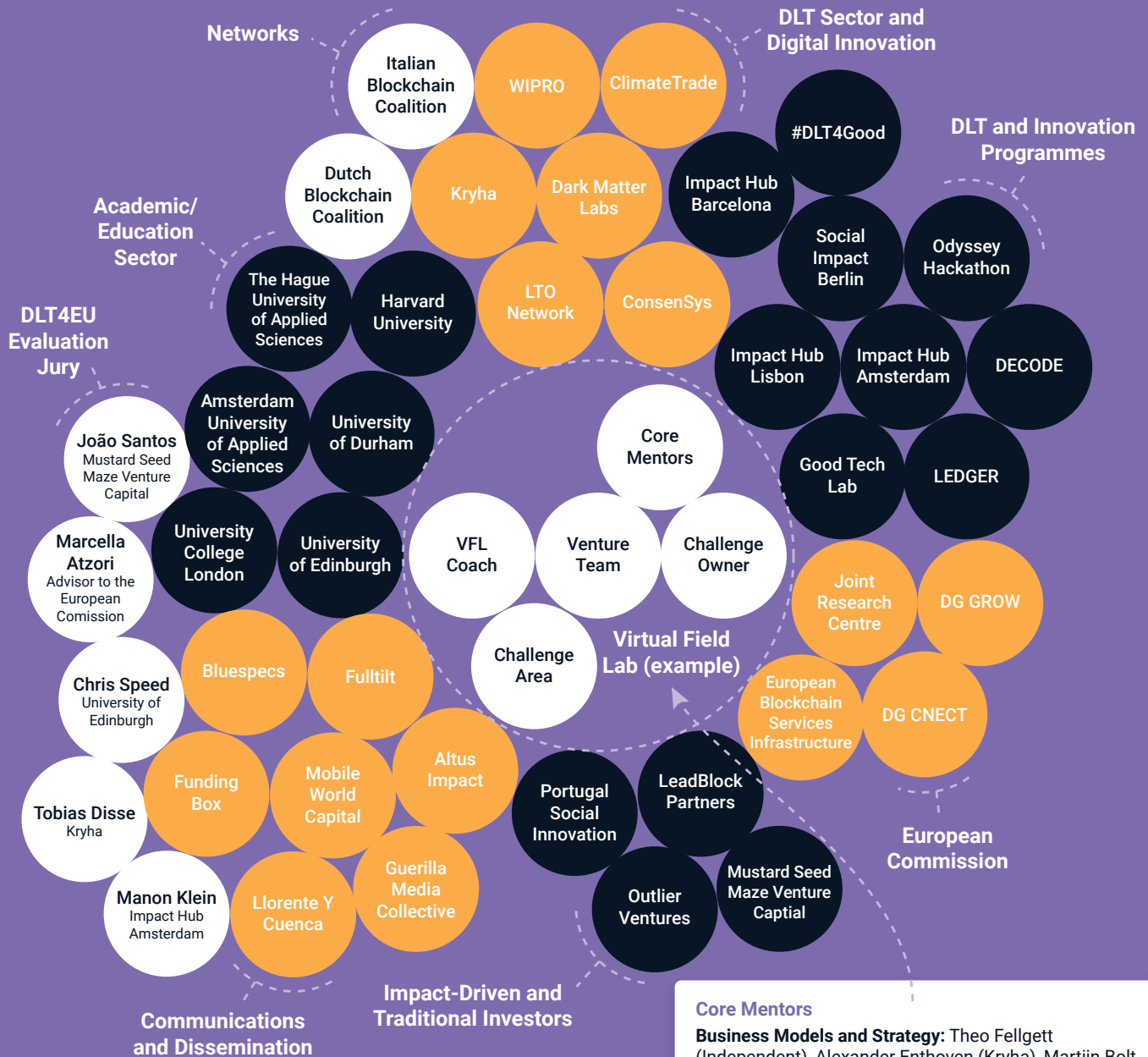
<sup>9</sup> Ibid.

<sup>10</sup> For further detail on these sectors, please refer to Ho. K., MacNeil. A., and Corbin. L., 'D1.1 DLT4EU Accelerator Report', (March, 2020).

- **VFL Coach:** VFL Coaches were a key addition to the VFL concept - the main purpose of this role was **to act as a steward of the VFL**, by ensuring a successful collaboration between Challenge Owners and Venture Teams. Tasks of this role included keeping the scope and planning on track, as well as pre-identifying and raising any risks or issues with the DLT4EU Programme Manager.
- **Mentors:** As external Subject Matter Experts, **mentors played a key role in advising the VFL on specific topic areas or issues** - for example, this included review of financing applications and how to overcome financial regulations specific to cryptocurrencies. Mentors either engaged with VFLs within the three bootcamps run across the accelerator, or as a core community of mentors who were available on a monthly basis. During the recruitment of mentors, emphasis was placed on not just subject matter expertise, but also their practical experience in relevant fields (i.e. digital entrepreneurship and public sector innovation). This was to ensure that VFLs were grounded in progressing the PoC development.
- **Proof-of-Concept Pilot:** As well as the production of a functional prototype (Proof-of-Concept), a key activity for each VFL was to **undertake a pilot with the Challenge Owner** and / or lead beneficiaries to receive feedback, help facilitate iteration of the PoC, and to help lower the barrier for Challenge Owners to use the DLT application.
- **Tech Stack:** In order to facilitate VFL collaboration activities, a core tech stack was provided to every participant, including Miro, Slack, and a Google Drive repository.
- **Feedback Mechanisms:** To deliver support that was adaptive to individual VFL needs, the DLT4EU consortium established a set of feedback mechanisms, including formal monthly progress reports as well as more informal check-ins with the DLT4EU Programme Manager and VFL Coach.

Figure 6

# THE DLT4EU ECOSYSTEM (CORE ORGANISATIONS)



## Summary<sup>11</sup>

- In total the DLT4EU ecosystem has engaged 178 individuals
- 3 subject matter experts supported each VFL on their Challenge Area
- 165 hours of expert mentoring
- 21 subject matter experts were consulted on Digital Citizenship and Circular Economy sectors
- 107 actors reached within the government and Non-Governmental Organisations (NGOs)
- 14 Sustainable Development Goals (SDGs) addressed by the Venture Teams

## Core Mentors

**Business Models and Strategy:** Theo Fellgett (Independent), Alexander Enthoven (Kryha), Martijn Bolt (Independent). **Open Source Licensing and EU Regulation:** Francesco Rampone (Italian Blockchain Association), Primavera de Filippi (Harvard University). **Innovative Finance / Impact-driven Investment:** Seadna Quigley (Metabolic), Iulia Tudor (Digital Catapult). **DLT Technical Support:** Hasichel Dabian (Kryha), Terry van Walen (Kryha), Robert Learney (Digital Catapult) Sarah Meiklejohn (University College London), Samer Hassian (Harvard University), Matt Dean (Digital Catapult). **Product and Service Design:** Martijn de Waal (Amsterdam University of Applied Sciences), Claire Whittaker (Digital Catapult), Luca Iadema (Digital Catapult), Elmer Zinkhann (Digital Catapult). **Public Sector Innovation:** David Altabev (Urban Frontiers), Jaya Brekke (University of Durham), Hayley Bagnall (Altus Impact)

<sup>11</sup> Putri. A., MacNeil. A., Singh. A., 'D7.3 DLT4EU Final Programme Assessment', (May, 2021).

Figure 7

# THE VIRTUAL FIELD LAB (VFL) MODEL

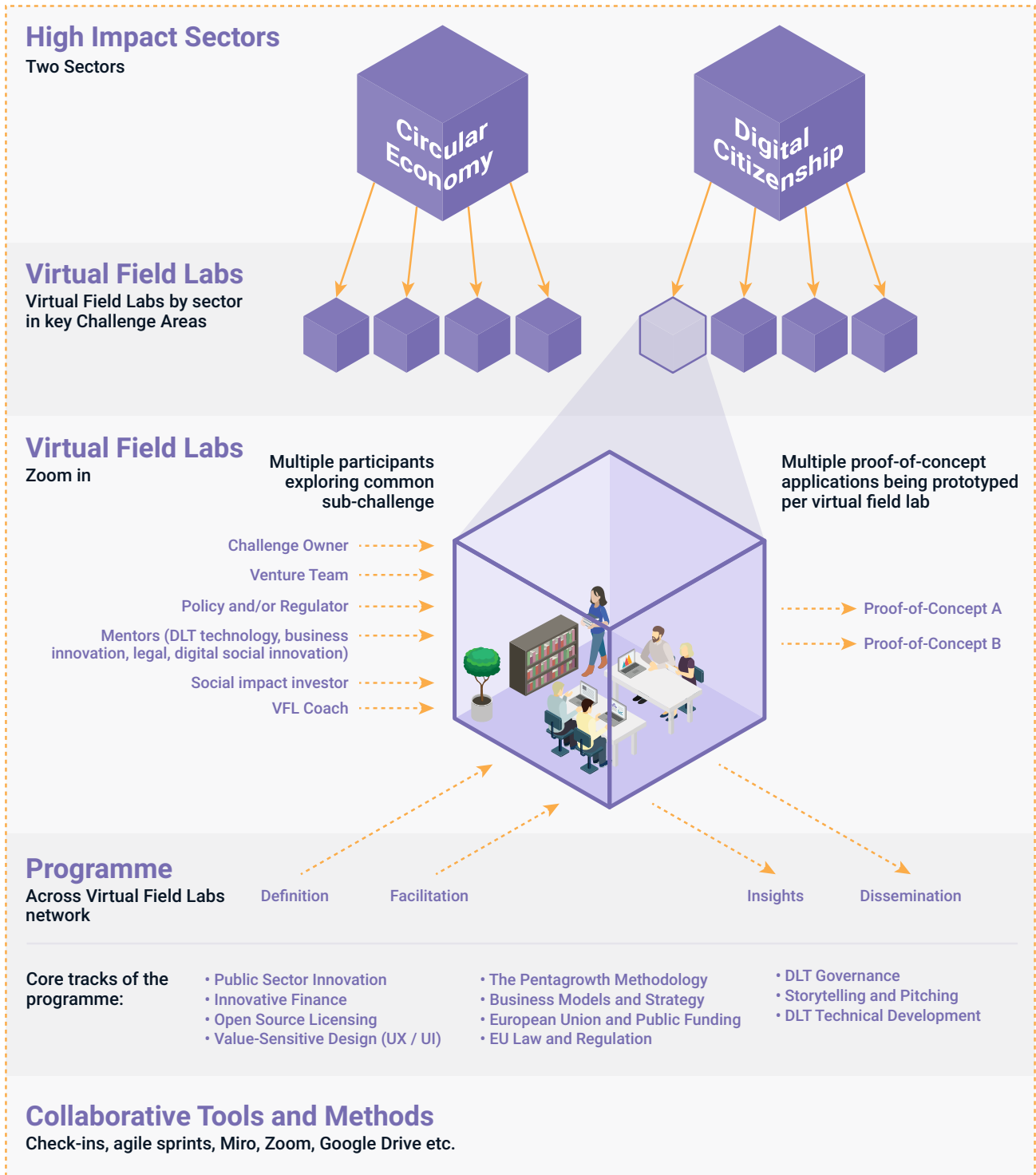


Figure 8

# THE EIGHT DLT4EU VIRTUAL FIELD LABS



## WHY IS THE VIRTUAL FIELD LAB CONCEPT IMPORTANT?

Through DLT4EU, the Virtual Field Lab has proven to be an important vehicle for early-stage innovation with many benefits.

First, the VFL **provides structure to projects where there is a strong need for multi-stakeholder engagement**. This is especially relevant for Distributed Ledger Technologies, where use cases often require (and solve for) coordination and participation by multiple organisations. For example, tracing the provenance of argan oil across the supply chain as demonstrated by the Track and Trace VFL between Convergence Tech, UNDP Alternative Finance Lab, and UNDP Morocco.

The second main benefit of the VFL concept is in how **the end beneficiary is engaged from the outset of the innovation process** through the provision of a virtual environment and operational structure that can adapt to multiple organisations. Current innovation models for the public and social sectors often emphasise the sectors either as customers of innovation, but only at the 'market-ready stage' through procurement mechanisms, or as providers of open data sets for Venture Teams to use in product and service development. Instead, the VFL model begins with a Challenge Area where there is high use case potential for a DLT solution, and requires both the Venture Team and Challenge Owner to participate in the innovation process together from the very start.

**A key component of the VFL is the piloting phase**, where the Challenge Owner takes the lead in providing the test environment and end users in a live scenario - whether that is an existing, local energy project in Lebanon or electronic waste disposal by a city council in Spain. This approach helps to prevent solutioning in a vacuum, and leads to a much earlier validation of use cases for the public and social sectors. Additionally, this approach increases the likelihood of a long-term engagement or partnership between the Venture Team and Challenge Owner as the adoption phase is extended.

**“Virtual Field Labs are an effective model to formalise people around a challenge which is valuable - [the VFL provides] an incentive to solve, but also an opportunity to solve something that hasn't had attention before.”**

— Erik Zvaigzne, VP Product Innovation, Convergence Tech <sup>12</sup>

<sup>12</sup> Zvaigzne. E. DLT4EU Research Interview. 19 January 2021.

Next, the VFL model enables Venture Teams to **proactively identify and address key barriers to adoption by working in-the-field with their end beneficiaries and users**. Venture Teams can learn directly from their end beneficiary of the reasons why adoption of a solution has not been successful to date - whether it relates to highly localised interpretations of GDPR, or is a lack of education and understanding about the governance required in adopting a new solution, or even due to a misunderstanding of the suitability and purpose of a DLT solution.

Additionally, through **drawing on the ecosystem** wrapped around the programme, the operational team was able to bring in subject matter experts and mentors to help tackle key, structural barriers to progress that are outside of the VFL's internal expertise. For example, in the case of Acren, national financial regulation in Germany was a barrier to developing their solution for UNDP Lebanon. Through the DLT4EU ecosystem, a subject matter expert was identified and brought in to advise on this structural challenge.

For both the Venture Team and Challenge Owner, **the VFL structure de-risks entering early-stage innovation in a collaboration**. For Venture Teams, this benefit came through being able to directly work with and learn from their end beneficiary much earlier than is often possible - the VFL model removes the burden of finding and engaging with a customer, which can be a time-consuming and expensive process for a younger organisation. For Challenge Owners, participation in a VFL can act as a **key learning experience** where their engagement is focused on critical moments in solution development. In early conversations with Challenge Owners, the low financial cost of participation in a VFL was also highly attractive - participants did not need to find new budget outside of their organisation's financial cycle to join DLT4EU.

Lastly, because the VFL sets a clear ambition - a Proof-of-Concept tested in a real-world situation - the **model is a concrete type of engagement** for participants. Additionally, the requirement to produce part or the whole of the DLT application under an Open Source License or approach, the VFL model opens up the outputs and results to more end beneficiaries to encourage interoperability and future collaboration.

Overall, the VFL model tested in DLT4EU demonstrated that the perception that public and social sector experimentation with DLTs is inherently too complex to be successful can be overturned with a **model that naturally fosters deep, de-risked collaboration**.



Table 2: The Benefits of the VFL model

THE MAIN BENEFITS OF THE VIRTUAL FIELD LAB (VFL) MODEL		
Participant(s)	Benefit Category	Description
Venture Teams	Market Access	<ul style="list-style-type: none"> <li>• Direct access to - and input from - end beneficiaries and users of DLTs with a potential for a 'first customer'</li> <li>• Supports earlier use case validation and development</li> </ul>
	Market Access	<ul style="list-style-type: none"> <li>• Direct access to ecosystem benefits - such as mentoring, knowledge sharing, peer learning, and investment</li> </ul>
	Knowledge & Capability Building	<ul style="list-style-type: none"> <li>• Builds knowledge and capability in public sector innovation</li> <li>• Encourages long-term relationships and engagement with end beneficiaries</li> </ul>
	Operations & Resources	<ul style="list-style-type: none"> <li>• Provides (some) financial and operational support to participate</li> </ul>
Challenge Owners	Innovation Model	<ul style="list-style-type: none"> <li>• Provides a de-risked innovation environment, where needed support and guidance is provided</li> <li>• Opportunity to apply lean and / or agile innovation processes</li> </ul>
	Market Access	<ul style="list-style-type: none"> <li>• Direct access to DLT providers without need for procurement</li> <li>• Direct access to wider ecosystem within DLTs for social good, but also the wider public sector innovation space</li> </ul>
	Knowledge & Capability Building	<ul style="list-style-type: none"> <li>• Direct, applied learning experiences of experimentation and adoption of DLT use cases with a challenge-specific focus</li> <li>• Facilitates learning on new collaboration-based models</li> <li>• Builds internal capabilities in leading innovation approach and focus</li> <li>• Encourages long-term relationships and engagement with DLT providers</li> </ul>
	Operations & Resources	<ul style="list-style-type: none"> <li>• Low financial cost to participation (as personnel time) which reduces risk of conflict with internal budget and procurement cycles</li> </ul>
DLT4EU Ecosystem	Innovation Model	<ul style="list-style-type: none"> <li>• Provides access to possible future partners, solution providers, and / or investment opportunities</li> </ul>
	Knowledge & Capability Building	<ul style="list-style-type: none"> <li>• Enables wider use case validation</li> <li>• Acts as a microcosm of challenges, barriers, and insights in the DLTs for public good field</li> </ul>
European Commission	Knowledge & Capability Building	<ul style="list-style-type: none"> <li>• Enables multi-sector and pan-European insights on the challenges, barriers, and pertinent use cases common to the European Union</li> </ul>

## HOW CAN WE PROGRESS THE EXPERIMENTATION AND ADOPTION OF DLTs IN THE PUBLIC AND SOCIAL SECTORS?

### Networked Innovation

Through the programme, we found that DLT4EU's ecosystem-based acceleration model was a key element for fostering this type of early-stage and collaborative experimentation. The Virtual Field Lab model, in particular, provided a unique virtual environment for DLT-based prototyping that **fostered deep collaboration between public actors and DLT developers**. By focusing each VFL around a real-world use case, Venture Teams were able to guide technical development in a focused way. The VFL **provided a forum where public sector actors, as Challenge Owners, could contribute their expertise and insight directly to the Venture Teams** - who rarely get hands-on, experienced input from public sector actors.

In addition to VFLs, the ecosystem - or community - curated around them was critical. This is because **creating DLTs for public good is not just a technical challenge - it is a highly complex space that requires a diverse set of experts and practitioners** from across impact-driven financing, UX / UI design, Open Source Licensing and business models, participatory governance, and impact assessment. By curating an ecosystem of experts around the VFLs we were able to foster an agile acceleration approach - getting practical expertise to the Venture Teams as and when needed. This drastically reduced barriers and uncertainties inherent within DLT development and enriched the innovation process.

It is for these reasons we are excited about replicating the DLT4EU model across broader experimentation and incubation programmes. For us it is key that the next iteration of the programme moves away from the short-term accelerator model that mirrors the cyclical boom and bust of technocratic development and **towards a long-term, resilient innovation ecosystem**.

In the future, **we imagine Virtual Field Labs in every city in the European Union** that are incubating solutions to real-world challenges through place-based prototyping. These VFLs would be connected by a pan-European ecosystem of experts who can guide the development of meaningful DLTs and transfer lessons learned by open sourcing successful solutions.

### Foundational Conditions

Through the programme experience we have identified **a set of foundational conditions** that need to either be put in place, or built on, to enable a move to a network model of VFLs. These conditions will help ensure that the experimentation and adoption of DLTs by the public and social sectors are grounded in true demand with impact at the core. A short-to-medium term (i.e. 1-5 years) scope has been focussed on to provide pragmatic recommendations, grounded in research carried out by the DLT4EU Consortium.

### The Role of the European Commission

**Pan-European collaboration is key** to the experimentation and adoption of DLT applications. In particular, the European Commission has a critical, continued role to play in laying the structural conditions for early-stage innovation and especially in the de-risking of these activities. This is especially important for ensuring clear and supported scaling routes for early-stage organisations through continued progress of initiatives such as the European Blockchain Services Infrastructure (EBSI) programme.

The key policy and regulatory levers that the European Commission could deploy in this role are those that can help support public and social sector demand for DLTs. For example, in acting as the overall curator of a network of VFLs where public and social sector organisations can engage in de-risked innovation and increasing the provision of non-equity funding for non-traditional business and organisational models.

### Challenge Owner Readiness Level

Through DLT4EU, it became clear that a key barrier to experimentation and adoption was the Challenge Owners' understanding of and readiness to use DLTs. **This readiness very much is an organisational ability to pragmatically engage in early-stage innovation**. As well as act as that first customer of use cases - to have the capacity to guide, direct, and ensure use case scope and development.

In the first few months of DLT4EU, for example, some Challenge Owners struggled to progress the scope of the use case with the Venture Teams, despite their high engagement and commitment to the challenge scoping and validation prior to the Open Call and launch of the accelerator. Often this was a lack of technical understanding of DLTs to be able to identify the value of specific use cases:

**“It [DLT] feels like it’s still such an uncertain blurry [...] area. And I talked to quite a few people during this accelerator to try and understand it better myself. And it still seems like it’s very new, almost a bit too new to have really clear and easy to understand use cases. And I think that’s what makes it difficult for the public sector to [adopt] it.”**

– Max Larcombe, Intrapreneur, City of Helsingborg<sup>13</sup>

Almost all of the Venture Teams felt this lack of certainty and understanding from Challenge Owners about DLTs, and proactively sought to help their VFL to understand how the technology can work, its uses, and benefits. And while the programme also provided the Challenges Owners with specific masterclasses on the potential role and value of DLTs to their organisations, and the current state of use cases in Europe, it is clear there is a need for structural education and capability building internally within the public and social sectors.

For future programmes like DLT4EU, this lesson also feeds directly into the showing the need for more in-depth challenge identification, scoping, and validation phases that are necessary to the successful curation of each VFL.

## Impact-driven Funding

The **need for timely access to non-equity financing** was highlighted by all participants of DLT4EU as a key barrier to the successful experimentation and adoption of DLTs in the public and social sectors.

Specifically, barriers to accessing this funding were presented in three main ways. The first was a **general information asymmetry** when identifying and applying to sources of non-equity funding - despite online resources such as Your Europe provided by the European Commission, and EuroAccess. When funding opportunities were identified by Venture Teams, in particular, there were still barriers to successfully securing the funding - including how time intensive submitting applications can be, as well as the experience

that it is hard to ‘decipher’ what the financing body is really looking for in the application. Additionally, this was also felt by Venture Teams who were interested in accessing more niche funding types - such as on a city-level - who struggled to access the knowledge needed to apply to these sources. Further, contracting expertise in fundraising and application writing can often be too expensive for less mature organisations focused on early-stage innovation.

Second, many Venture Teams have found the **amount of funding available for early-stage innovation with DLTs is too low** and that there is a general lack of funding options for amounts of €50,000-€90,000 which are needed for Proof-of-Concept development. Tied to this, is a belief that impact-driven innovation with DLTs is still perceived as too risky for private investment because of a misplaced view that public and social good solutions cannot be commercially viable.

And finally, linked to the above mismatch between need and availability of funding, there is a secondary **mismatch in the type of funding available and the type of business model and / or organisation in the DLTs for public and social good field**. Many of the business models of the Venture Teams are non-for-profit and cannot be invested in with traditional venture financing - such as the community-based models of the Venture Teams DisCO and eReuse.

For Challenge Owners, during the recruitment process into DLT4EU, it was important that participation in the VFL would not require funding or fees from the Challenge Owner (beyond personnel cost) as organisational budget cycles were out of sync or unavailable for this type of activity. Since the end of the programme, this remains a barrier to future involvement in the Challenge Owner in the further development of the Proof-of-Concept.

For future programmes, feedback from participants confirmed that **participatory funding** needs to be matched to the business and financial maturity of the Venture Teams - one Venture Team has suggested, for example, that a tiered funding approach could be applied where more financial support goes towards organisations who are less mature than other participants. Additionally, some Venture Teams highlighted that in-kind support could have been more valuable than a participation fund - for example, having access to designers to develop communications materials.

<sup>13</sup>Larcombe, M. DLT4EU Research Interview. 17 February 2021.



# PART 2

# THE DLT4EU PLAYBOOK

The following Playbook has been designed for anyone who would like to implement a similar innovation programme to DLT4EU - whether an incubator/accelerator programme linked to public or private capital financing, or a public or social sector organisation who would like to set up their own early-stage innovation structure. To this end, the Playbook provides an overview of each component of DLT4EU and the lessons learnt through this experience. Best practices and success stories are also provided to show how DLT4EU could be repeated.

Additionally, the Playbook provides insights for potential future participants of any VFL-based innovation programme, whether a Challenge Owner, Venture Team, VFL Coach or Mentor, as well as the broader ecosystem.

## SECTION 1: HOW TO DESIGN AN AGILE ACCELERATOR PROGRAMME

When designing the DLT4EU programme, an agile and human-centric approach proved critical to success. This meant, for example, embracing a higher degree of uncertainty with the exact design of the accelerator and allowing for emergent content and support areas that would only become clear when the VFLs were underway. Importantly, underpinning the success of this approach was the application of the ecosystem-model structure which facilitated the introduction and dissemination of subject matter expertise when needed.

Overall, DLT4EU aimed to facilitate a distributed accelerator model where in Consortium partners, accelerator participants, mentors and the wider DLT4EU ecosystem connect over the course of six-months.<sup>14</sup>

## Design Phase

There were five key components to the design of the accelerator that were iteratively undertaken.

### 1. Challenge Area Identification

Previous research by the DLT4EU Consortium established that the sectors of the Circular Economy and Digital Citizenship were of highest potential for the programme. A set of potential Challenge Areas were also identified per theme as part of this phase, for example, under the Digital Citizenship sector, a Challenge Area was identified on 'data sovereignty', which was then further scoped and refined with recruited Challenge Owners. Table 3 below provides a full overview of the original identified Challenge Areas under each high-impact sector.

<sup>14</sup>For a full overview of this Work Package, please refer to Ho. K., MacNeil. A., and Corbin. L., 'D1.1 DLT4EU Accelerator Report', (March, 2020).

Table 3: DLT4EU Challenge Areas

	CHALLENGE AREA	DESCRIPTION	USE CASES
Circular Economy	Pay-per-use	In pay-per-use models, users pay for the use of a product instead of possession. This product-to-service model creates incentives for products that last, stimulates value chains to work together, and places more responsibility on producers for the collection, processing, and reuse of products. Within the public and social sectors such interventions can greatly improve procurement and asset management processes.	<ul style="list-style-type: none"> <li>• Smart procurement and ownership transfer systems for public assets and services. Such automated, immutable systems can improve the efficiency of public procurement processes and reduce the overheads associated with the purchasing, exchanging and re-use of public assets between public organisations and public/private entities alike.</li> <li>• Peer-to-Peer (P2P) asset trading within communities and/or cooperatives, of both utilities - such as off-grid renewable energy markets - and private goods - including high-value goods such as cars. Facilitating civic exchange networks can help to reduce overall dependence on public services and utilities and thus improve the accessibility of such services to vulnerable and minority communities.</li> </ul>
	Supply Chain Transparency	Tracking the provenance of materials, components, and products throughout supply chains using DLTs will enable anyone along the way to account for their validity and circularity – from the moment they are first extracted or created, all the way through their many life cycles. Within public and social sectors such DLT interventions can support public certification and procurement processes to more effectively account for the environmental and social impacts of goods, services, and organizations alike.	<ul style="list-style-type: none"> <li>• Enabling public certification bodies to more efficiently and robustly verify the provenance of goods and processes of organisations within the multi-stakeholder nature of value chains. Beyond initial verification, DLTs can support the on-going compliance and accounting of certificates.</li> <li>• Ensuring transparency, compliance, and co-ordination within the end-to-end procurement lifecycle of products and services: from provenance (i.e. material and product passports) to end-of-life management (i.e. sustainable waste reuse and disposal).</li> </ul>
	Open Economies	A persistent reluctance to share information, deeply rooted in the global race to lower costs, coupled with information asymmetry, is contributing to a competitive and counterproductive mindset whereby valuable materials and resources are kept within siloed supply chains and ultimately relegated as waste far before they reach the end of their useful life. This economic model has resulted in the continual generation of waste and extraction of raw materials. DLTs can facilitate new open and symbiotic economic models between public organisations and public/private partnerships alike that lead to significant reductions in CO <sub>2</sub> emissions, effective resource reuse and recycling, and the creation of new circular economy jobs.	<ul style="list-style-type: none"> <li>• Facilitating the opening up of inventories, and enabling asset-sharing among public / private organisations via digital inventory management and smart contracts.</li> <li>• Enabling transparency and accountability within public service provision (i.e. food banks, healthcare) and charitable / international development activities that operate within volatile environments for vulnerable and minority communities</li> </ul>

	CHALLENGE AREA	DESCRIPTION	USE CASES
Digital Citizenship	Civic Engagement	The integrity of electoral processes is of increasing global concern even in stable democracies. Moreover, the ability to participate in democratic decision-making and consensus-forming processes can be very challenging for marginal and less-mobile communities within EU society. Additionally, public innovation projects can present the major risk of demotivating civic participation due to a lack of accessibility and accountability. Within public and social sectors such DLT interventions can support flexible civic-centered initiatives and decentralised platforms for the collaborative economy and as well as promote decentralised digital infrastructure that facilitates increased participation in complex, multi-actor decision-making and consensus forming.	<ul style="list-style-type: none"> <li>Facilitating secure and anonymous participation mechanisms for local service provision, public consultation processes, consensus-forming processes, elections, and direct democratic engagement in public life.</li> <li>Enabling reviewers, curators, and implementers of citizen-led initiatives to build trust and capacity over time, supporting individuals and groups to organise and verify public actions including curated crowdfunding for social movements and enable the secure and transparent funding of civic-led initiatives without third-party intermediaries.</li> </ul>
	Social Inclusion	Often identity is a key condition of democratic participation, public service provision, and governmental services. However, this disproportionately affects undocumented or peripheral communities, reinforcing their disconnect from societal and economic inclusion and preventing their transition into active civic participation. Within public and social sectors such DLT interventions can support digital identities that enable public sector bodies to safely and efficiently converge, pool, and share private data in response to grant / control access measures stipulated by individuals.	<ul style="list-style-type: none"> <li>Enabling transparency, accountability, and better supply of public and social provisions, such as charitable giving, so donations (i.e. financial, products, in-kind) are linked through the value chain to those who need them, and enable the building of trust between givers, charities, and receivers.</li> <li>Facilitating economic migration and mobility with pan-national education / professional training and certification. There is a need to track 'equivalence' and help people and companies assess quickly or approve that a worker or a student can access a role or position thanks to the training, or education received in their country of origin.</li> </ul>
	Data Sovereignty	Citizens are increasingly using devices to collect and share data both in proprietary and open platforms. Often, this data is an exchange for a 'free' service from a private provider, or locked within public and research institutions who are unable to open up the data for public good. Within public and social sectors such DLT interventions can support citizen data ownership and management, and the use of predictive data models for improvements in public service provision.	<ul style="list-style-type: none"> <li>Enabling citizens to first own, then grant, share, or license their data with organisations for public and / or citizen benefit - for example, with healthcare providers or insurers.</li> <li>Facilitating the licensing of open data from multiple data sources - citizen, public, and private - to improve public services, environmental issues, and public safety concerns (i.e. city infrastructure maintenance).</li> </ul>

## 2. Challenge Owner Recruitment

In advance of the kickoff of DLT4EU (prior to January 2020), the DLT4EU Consortium collectively secured a set of potential Challenge Owners from their networks with whom they could define and select Challenge Areas of greatest interest to ensure their active participation in the programme.

A second phase of recruitment was then undertaken to ensure good balance between thematic areas, geographical spread, and diversity in type of organisations from the public and social sectors. Critical to this process was ensuring that the role and responsibilities of the Challenge Owner were clear and could be committed to by each organisation.

A key part of this phase was to understand the Challenge Owner's level of experience with DLTs and early-stage innovation programmes in general. In some cases, DLT4EU would be the first external innovation activity the organisation had participated in. Understanding what objectives and outcomes the Challenge Owner wanted to achieve was also a key focus of this phase.

Table 4 below lists the Challenge Owners who were recruited by the DLT4EU Consortium to participate in DLT4EU, as well as the initial Challenge Areas they expressed interest in.

**Table 4: Recruited Challenge Owners**

CHALLENGE OWNER(S)	DESCRIPTION	CHALLENGE AREA(S)
City of Helsingborg Municipality	Hgb Works is the internal innovation department of the City of Helsingborg Municipality, tasked with solving fundamental city challenges. The Digital Development team focuses on the agile application of digital technologies to city services, experimenting with technologies such as Artificial Intelligence and Distributed Ledger Technologies to improve citizen experiences of their city.	Data Sovereignty
CTO City of Amsterdam	The Chief Technology Office of the City of Amsterdam is an internal innovation team who work across the City's departments, fostering innovation initiatives in areas such as e-health, the circular economy, smart mobility, and procurement.	Supply Chain Transparency
Digital Futures Society + Catalan branch of the Spanish Red Cross	Digital Future Society is a programme of the Spanish Ministry of Economy and Business in collaboration with Mobile World Capital Barcelona that seeks to build an inclusive, equitable, and sustainable future in the digital era. The programme engages policymakers, civic society organisations, academic experts and citizens to respond to the challenges of the digital age.  The Catalan branch of the Spanish Red Cross is a humanitarian institution, of a voluntary nature and of public interest, which carries out its activity under the protection of the Government of Spain. It is part of the International Red Cross and Red Crescent Movement, whose purpose is to alleviate human pain through immediate care according to each particular situation.	Social Inclusion & Data Sovereignty
Dark Matter Labs	Dark Matter Labs is a design and innovation lab focused on helping societies, communities, and nations develop the new systems required to respond to climate change. DML's projects apply research and prototyping techniques to identify and build the new models required to successfully adapt. Current projects include 'Alternative Camden' - a civic innovation initiative - and 'Civic Capital', focused on how to develop, store, and allocate value.	Open Economies
Sant Boi de Llobregat City Council	Sant Boi de Llobregat City Council provides all the public facilities and services that contribute to meet the needs of the community such as citizenship participation, self-organisation, local identity and representation, environmental sustainability, territory management, social cohesion, connectivity, communication and mobility infrastructures, energy and economic resources management.	Open Economies & Social Inclusion
UNDP Alternative Finance Lab	The Alternative Finance Lab (AltFin Lab) of the United Nations Development Programme (UNDP) is an internal innovation team focused on experimenting with new financial mechanisms and technologies to progress the Sustainable Development Goals (SDGs). AltFin Lab's portfolio includes successful pilots with Distributed Ledger Technologies such as CederCoin, TreeCoin, and The Other Way.	Supply Chain Transparency & Open Economies & Pay-per-use



CHALLENGE OWNER(S)	DESCRIPTION	CHALLENGE AREA(S)
Agency for Digital Italy	The Agenzia per l'Italia Digitale - Agency for Digital Italy (AGID) is the digital innovation agency of the Presidency of the Council of Ministers. The AGID is responsible for the digitalisation across both the different national government bodies as well as the use of digital technologies by the public. AGID collaborates with multiple local, national, and international bodies to promote digitalisation, including the European Blockchain Partnership on topics such as the European Blockchain Services Infrastructure.	Social Inclusion
Sharing Cities and the Greater London Authority	Sharing Cities is a major international smart cities project funded through the EU's Horizon 2020 programme (Grant 691895) to address some of the most pressing urban challenges facing today's cities through replicable solutions. Sharing Cities is formed of a group of 34 European partners from across the private, public and academic sectors, which is testing smart solutions in Lighthouse cities Lisbon, Milan, and London with the Greater London Authority.	Pay-per-use

### 3. Challenge Area Validation

Once a Challenge Owner had firmly committed to participate in the accelerator, an ideation session was hosted by the DLT4EU Consortium to further scope and refine the Challenge Area. Given the respective expertise of the partners, Ideas for Change led the ideation sessions with Challenge Owners for the Digital Citizenship sector, while the Metabolic Institute led the sessions under Circular Economy. During these sessions, the Digital Catapult contributed their expertise in DLT use case identification, to sense check the feasibility of the possible use case applications.

In some cases, multiple Challenge Areas were established for one Challenge Owner. A Challenge Area statement was co-written for each Challenge Owner that was then used in the Open Call to attract Venture Teams. During this validation process, some Challenge Owners brought in additional organisations as co-Challenge Owners. Table 5 below provides an overview of all the Challenge Areas that were advertised in the Open Call, which Venture Teams directly applied to.

**Table 5: Confirmed Challenge Areas and Challenge Owners**

CHALLENGE OWNER(S)	DESCRIPTION	CHALLENGE AREA(S)
Sant Boi de Llobregat City Council	<p>There is an urgent need to rethink the current electronic equipment consumption model. Most equipment ends its short life cycle as e-waste, and evolves into circular and collaborative electronic equipment consumption solutions, extending the life and the value of the equipment and providing social and circular economy improvements.</p> <p>DLTs can facilitate new open and symbiotic economic models between public organisations and public/private partnerships alike that lead to significant reductions in CO<sub>2</sub> emissions, effective resource reuse and recycling, and the creation of new circular economy jobs.</p>	Collaborative eWaste Management
CTO Amsterdam & WAAG Society	<p>The City of Amsterdam has adopted a new circular strategy with the vision to be a thriving, regenerative and inclusive city for all citizens, while respecting the planetary boundaries. A key area of focus for the city and its partners is to create a more circular, transparent and inclusive textiles sector for both citizens and businesses alike.</p> <p>As part of this, the City is exploring ways to extend producer responsibility, create higher levels of recycled content in products, and more dynamic methods for monitoring supply chains.</p>	Enabling a Citizen-Powered Circular Textiles Sector

CHALLENGE OWNER(S)	DESCRIPTION	CHALLENGE AREA(S)
UNDP AltFin Lab	<p>In pay-per-use models, users pay for the use of a product instead of possession. This product-to-service model creates incentives for products that last, stimulates value chains to work together, and places more responsibility on producers for the collection, processing, and reuse of products. Facilitating civic exchange networks can help to reduce overall dependence on public services and utilities and thus improve the accessibility of such services to vulnerable and minority communities.</p> <p>A key area of pay-per use models is the development of infrastructure that enables asset trading within communities and/or cooperatives, of utilities - such as off-grid renewable energy markets.</p>	Enabling Peer-to-Peer (P2P) Energy Solutions
Sharing Cities & Greater London Authority	<p>Vehicle sharing is an instrument which provides a local community with an alternative mobility service for their daily or occasional commuting, reducing the number of private vehicles in the city and improving the lives of its citizens. The electric mobility market is fairly new and has potential to develop in many different ways. But e-mobility isn't limited to traditional vehicles. Future bus services, cycle hire, scooters, and e-logistics will need to be integrated into a shared and interoperable infrastructure to deliver a seamless end-to-end solution for all citizens.</p>	Shared eMobility
Sharing Cities & Greater London Authority	<p>Cities account for more than 70% of global CO<sub>2</sub> emissions.<sup>15</sup> Without new ways of effectively integrating and optimising city-wide energy supplies from a broad and dynamic variety of sources, and ensuring automated bidirectional communications between sites of demand and supply, we will be unlikely to achieve our ambitious net zero targets.</p> <p>Smart digital infrastructure built on DLT to intrinsically link multiple distributed stakeholders may prove to be the most effective solution to enable a more circular energy economy. Machine learning and advanced algorithms could process data inputs in real time; improving decision making, reducing system inefficiencies, and delivering financial, social and environmental benefits.</p>	Sustainable Energy Management System
Sharing Cities & Greater London Authority	<p>To address citizen-centric problems around air quality, material consumption, transport, and energy usage, cities must change. This includes the development of new models to encourage positive, regenerative behaviours and improve sustainable smart city services.</p> <p>The Digital Social Market (DSM) is about changing the relationship between citizens and the cities in which they live, by providing new methods for citizen participation. Engaged citizens will feel more included in the city around them, and live in more sustainable and sociable ways, and the city will become more dynamic and responsive to the needs of its citizens.</p>	The Digital Social Market
City of Helsingborg Municipality	<p>Citizens are increasingly using devices to collect and share data both in proprietary and open platforms. Often, this data is an exchange for a 'free' service from a private provider, or locked within public and research institutions who are unable to open up the data for public good. Within public and social sectors, such DLT interventions can support citizen data ownership and management, and the use of predictive data models for improvements in public service provision.</p>	Enabling Data Sovereignty for all Citizens
UNDP AltFin Lab	<p>Public innovation projects often suffer from the major risk of demotivating civic participation. This can be due to a lack of accessibility and accountability for both citizens and participating organisations.</p> <p>A digital impact coin can serve as an economic incentive model mechanism, and thus encourage positive engagement for public benefits which encourages long-term relationships that can be extended across ecosystem members.</p>	Digital Impact Coins

<sup>15</sup> C40 Cities, 'A Global Opportunity for Cities to Lead', [https://www.c40.org/why\_cities], accessed 10 May 2021.

CHALLENGE OWNER(S)	DESCRIPTION	CHALLENGE AREA(S)
UNDP AltFin Lab	This challenge area aims to track the provenance of materials, components, and products throughout supply chains can enable anyone along the way to account for their validity and circularity – from the moment they are first extracted or created, all the way through their many life cycles.	Track and Trace: Supply Chain Transparency
Digital Futures Society + Catalan branch of the Spanish Red Cross	Allocating charitable aid can involve a complex task of ensuring all donations are recorded, verified, and justified to comply with regulation and guidance from local public administrations. Ensuring transparency and accountability is often time-consuming and the cost of a bespoke setup can reach up to 30% of a social and environmental project's budget.  Solutions using DLTs have the potential to enable greater access to funds by most vulnerable groups while incentivising greater accountability against impact metrics.	Charitable Aid Accountability for Humanitarian Agencies
Dark Matter Labs	Today, we are seeing a growing acknowledgement of the importance of trees to combat and mitigate the impacts of climate change. Trees can regenerate soil quality, reduce heat island effects, offer food and shading, support urban biodiversity, and mitigate energy usage. However, a series of structural problems inherent in our urban forestry management processes are working against the increasingly ambitious tree-planting targets that cities are announcing  The Trees as Infrastructure project aims to overcome the current barriers in urban forestry management and unlock the massive collective investment needed in trees as vital infrastructures for a resilient and thriving future.	Trees as Infrastructure
Dark Matter Labs	For our cities to become radically more sustainable and equitable, we need new investment and ownership models that redesign our regulatory systems, so they don't favour speculative financing and land trading.  Powered by digital distributed technologies, such a Smart Commons platform has the potential to flip traditional urban development and investment models on their head - giving communities a way of investing and owning the things that make neighbourhoods work, without the fear of being priced out by their desire to improve their community. The Smart Commons platform could involve local citizens from the start through local development groups or neighbourhood forums, so that rather than being steered by private developers and land speculators, its citizens set the terms for what happens to the places around them.	A Smart Commons Platform
Agency for Digital Italy (AGID)	Often identity is a key condition of democratic participation, public service provision, and governmental services. However, this disproportionately affects undocumented or peripheral communities, reinforcing their disconnect from societal and economic inclusion and preventing their transition into active civic participation.  Within public and social sectors such DLT interventions can support digital identities that enable public sector bodies to safely and efficiently converge, pool, and share private data in response to grant / control access measures stipulated by individuals. DLT interventions can further support public certification and procurement processes to more effectively account for the environmental and social impacts of goods, services, and organisations alike.	Enabling Better Digital Inclusion for Italy

#### 4. Accelerator Key Objectives Identification

As one of the key purposes of the DLT4EU accelerator was to progress adoption of DLTs in the public and social sectors, the DLT4EU Consortium began with research into the critical drivers and barriers affecting this behaviour.<sup>16</sup> From this research, the following key barriers to the experimentation and adoption of DLTs were identified:

- **Legal**
  - Reconciling the General Data Protection Regulation (GDPR) and DLTs
  - Regulatory processes (or uncertainty from lack thereof) elongating investment cycles
- **Political**
  - Governance uncertainty
  - Expectations around DLT from both citizens and the public sector
- **Technological**
  - Interoperability and intuitive user interfaces of solutions
  - Limited throughput (transaction rate)
  - Proof of personhood<sup>17</sup>

This research led to a set of objectives that the accelerator needed to provide to the participants:

- **Help DLT companies understand different applications** that are relevant in the public and social sector, by connecting them to public sector organisations with appropriate challenges to build real-world use cases
- Support DLT companies in building **sustainable business models**, including mentoring on value propositions, financial strategies, legal and compliance procedures, and ethical product development frameworks

- **Inform public sector organisations of the potential of DLT** in solving challenges related to the public good and how they can work with DLT Venture Teams to scope and address these challenges
- **De-risk the experimentation** and collaboration process for both public sector bodies and DLT companies
- Facilitate the **building of concrete, demonstrable use cases** for DLT applications in the public and social sector
- **Convene the European ecosystem** around DLT for public and social good and accelerate the adoption of the technology in the public sector<sup>18</sup>

#### 5. Accelerator Track Identification and Validation

From understanding the main objectives of the accelerator, the next step was to identify and validate the core 'tracks' of the accelerator around which resources and subject matter expertise would be organised for the VFLs.

During this process, the Accelerator Lead (Metabolic Institute) undertook an exercise which aimed to predict the expected development trajectories of the VFLs based on inputs from research on existing accelerator offerings, exploratory calls with potential Venture Teams, the Open Call requirements, and the Challenge Owners in the Challenge Area scoping phase. This exercise identified a set of core tracks that were expected to facilitate Virtual Field Lab progress. Table 6 below provides an overview and description of each core track identified.

<sup>16</sup> Garcia. F., During. L., MacNeil. A., and Corbin. L., 'D1.2 DLT4EU Insights Report', (March, 2020).

<sup>17</sup> Ibid.

<sup>18</sup> Ho. K., MacNeil. A., and Corbin. L., 'D1.1 DLT4EU Accelerator Report', (March, 2020). p.7.

Table 6: Core Tracks of DLT4EU

CORE TRACK	DESCRIPTION
Public Sector Innovation	This track provided insight and best practices from models of public sector innovation, including digital and civic innovation and related fields, such procurement and open data.
Innovative Finance	This track was focused on alternative forms of financing for social good, such as impact investment and venture philanthropy.
Open Source Licensing	This track supported the Venture Teams in understanding and developing Open Source approaches, including the business, technical, legal, and regulation aspects.
Value-Sensitive Design (UX/UI)	Developed by the Amsterdam University of Applied Science, Value-Sensitive Design positions researchers, designers, engineers, and policymakers to make insightful investigations into technological innovation in ways that foreground the well-being of human beings and the natural world. <sup>19</sup> This track focused on providing key insights on user-centric approach to venture and product development using the Value-Sensitive Design framework.
The Pentagrowth Methodology	Developed by Ideas for Change, the Pentagrowth methodology helps organisations design new business models with exponential growth potential by recombining the available assets and capacities with the free elements available in the ecosystem. The model is based on the five key dimensions for exponential growth identified after studying 50 organisations that have grown more than 50% in revenue and number of users for five consecutive years. <sup>20</sup>
Business Models and Strategy	This track supported the Venture Teams to define and develop their business model for their PoC, including issues of scalability.
European Union and Public Funding	This track explored the different public funding models and opportunities relevant to the Venture Teams - such as social innovation funds. This track also supported the Venture Teams on how to write non-equity funding applications.
EU Law and Regulation	This track provided legal guidance on relevant EU-wide legislation that can affect DLT applications, such as the General Data Protection Legislation. Additionally, this track provided the opportunity for the VFLs to learn about the most recent developments in the European Blockchain Services Infrastructure initiative.
DLT Governance	This track provided both organisational and legal guidance on the different governance models when adopting DLT solutions in public sector settings.
Storytelling and Pitching	Storytelling and pitching supported the Venture Teams with their storyline for their PoC, with a focus on impact and social good. The Venture Teams learnt how to use storytelling principles to create compelling stories and amplify their voices.
DLT Technical Development	This track supported the Venture Teams' DLT development on technical components and advised on development cycles. It provided continuous feedback from DLT4EU Consortium technical experts and mentors on sprint planning, feasibility, implementation, specifications scoping, product development.

<sup>19</sup> de Waal, M., 'Value Sensitive Design: Design dilemmas around Blockchain for Good', (2020)

<sup>20</sup> Creus, J., 'Pentagrowth Report: The five levers of accelerated growth', (2015).

Next, each Consortium Partner drafted a proposal for what each track would cover, the main objectives, resources needed, and suggested formats (i.e. workshops, one-on-one mentor sessions, etc.) through which the VFLs could engage with the track. These proposals were developed by the Consortium Partner who could bring their expertise to the design - for example, the Digital Catapult led on the DLT Technology track, the Metabolic Institute on the Circular Economy, and Ideas for Change on digital social innovation.<sup>21</sup>

Finally, the set of core tracks was validated through Consultation with external subject matter partners from existing accelerator programmes to ensure that the initial design met the needs and expectations of the VFLs. Potential Venture Team applicants were also asked for what they were looking for from an accelerator like DLT4EU - this feedback was folded into the initial accelerator design. Likewise, the same question was asked of recruited Challenge Owners as a key part of the process.

## Lessons Learnt

From undertaking this design process, the top lessons learnt by the DLT4EU Consortium were:

- An **agile and human-centric design approach** meant creating an adaptive programme for the emerging needs of the cohort, balanced with a core set of tracks that had been pre-identified through research and consultation
- While the Challenge Owners were engaged in the design phase of the programme, it quickly became clear that the **level of complexity of the various Challenge Areas was greater than first anticipated**, and the accelerator needed to adapt to this
- Unfortunately the **COVID-19 pandemic created an unprecedented strain** on the Challenge Owners in particular, who in some cases were on the response frontline. The accelerator design had to adapt to this challenge very early on, but demonstrated the effectiveness of taking an agile approach to begin with
- With challenge-led accelerators, there is a risk that the very structure of the programme inaccurately inflates the need for a technical solution, underlining how critical the **Challenge Area validation** phase was to the accelerator design

- It was important and powerful to design DLT4EU as a **collaborative accelerator** that built on prior and existing innovation programmes such as **LEDGER, Blockchain4EU, and the Odyssey Hackathon**, instead of competing for their participants

## Best Practices

For organisations wanting to adopt an agile and adaptive approach to accelerator design, we recommend the following three practices:

- **Adopting a track-based design** for the core subject matter areas and resources of the accelerator that enables flexibility in when, where, and how the cohort engages in key content and resources available
- The **development of foresight mechanisms** to preempt and pre-identify what the cohort needs from the programme. For example, early-on feedback from potential Venture Teams on the accelerator design proved critical to identifying what the accelerator would offer and achieve on a granular level
- Implementation of an **ecosystem-based model** which started with the core tracks, to identify the required subject matter expert community. Key to this ecosystem was to ensure a balance in the ecosystem between the theoretical and academic, versus entrepreneurial and practitioner expertise that the VFLs could draw on

## SECTION 2: HOW TO DESIGN AND RUN A SUCCESSFUL OPEN CALL

The starting point for the DLT4EU programme was to reach out to DLT innovators across Europe and invite them to apply to the DLT4EU Open Call. An open challenge was conducted to identify and select eight Venture Teams to participate in the accelerator programme. The Open Call targeted mainly developers, commercial and social entrepreneurs, start-ups, and companies with a vested interest in developing and/or scaling DLT-based applications that meet critical societal challenges.

It was decided by the Consortium that a Venture Outreach Plan should be established to ensure that the Open Call was successful in attracting high-quality venture team applicants. In order to attract this talent, an early-stage innovation pipeline was curated which encouraged pre-qualified applicants to apply to the programme.

<sup>21</sup> For a full list of the accelerator tracks, please refer to Ho. K., MacNeil. A., and Corbin. L., 'D1.1 DLT4EU Accelerator Report', (March, 2020) and MacNeil. A., Corbin. L., and Higuera. A., 'D3.3 DLT4EU Progress Report', (September, 2020).

## Development of the Open Call

The design of the Open Call was an iterative process, starting with ideation around the criteria that were used to assess applicants to the accelerator by the DLT4EU Consortium. The criteria used for the EIC Horizon Prize 'Blockchain For Social Good' was used as a starting point.<sup>22</sup> The draft Selection Criteria were then shared

for review with external experts Marcella Atzori, Italian Government Blockchain Strategy Lead, Indy Johar, Co-Founder Dark Matter Labs, Haischel Dabian, CTO Kryha, and Alexander Enthoven, Head of Business Development, Kryha.<sup>23</sup> Table 7 below provides an overview of the Selection Criteria used in the Open Call.

**Table 7: Open Call Selection Criteria**

DLT4EU SELECTION CRITERIA	
CRITERIA	DESCRIPTION
Usability and inclusiveness	Whether the proposed project can engage users, irrespective of their gender, background, financial capabilities or digital skills. This will include an assessment of both the existing / proposed user interface and the underlying principles of the project.
Technical feasibility	Technical maturity - are they ready to run? Have the applicants stated clearly enough their technical needs - what do they need to run, what don't they have, and is that easily accessible? What chain do they imagine to use? How will they gain access to it if need be? How easy is it to maintain the technology, what roadblocks do they foresee and how will they tackle them? Are the applicant's proposed solutions at least TRL4?
Commercial feasibility	How compelling and realistic is the potential business model proposed? Have the applicants received prior investment and / or target of impact investment?
Viability at scale	Potential cost-efficiency, potential scalability, security, and sustainability models. Is the resources vs deployment capacity ratio sensible? Can the technology / product be scaled up within reason without encountering critical barriers (regulation, costs, technical, geographical, etc)
Relevance to challenge	Do the applicants understand the challenge being faced by the challenge owner? Do the applicants strongly demonstrate their relevance to the challenge against several or all of the following key aspects: market, technology, target user, geography, context, timing / state of maturity, value alignment / aims and vision?
Team quality and capacity	Who's in the team? What are their different expertise areas? What is their availability / capacity during the time of the program? What is the gender breakdown? Do the applicants demonstrate a good enough expertise and complementarity in terms of backgrounds (technical, sales, stakeholders, previous experience working in the public and/or social sector)?
EU Added value	Clear added value of the demonstrated proposed project / technology / product implementation for European citizens, in terms of novelty, effectiveness in comparison to existing centralised solutions, and other societal, economic or environmental aspects.
Novelty and innovation	How new is this project compared to existing ones? Have the applicants shown that they have done a competitor analysis? Are the applicants able to identify competing existing offers/solutions? Are they also able to demonstrate how their application/approach is unique / different? Can the applicants explain novelty beyond just technical, and tell us how innovative their approach/project is socially, environmentally, economically, legally, ethically? Rate of adoption - how novel is the applicants' solution user engagement process? Do they know / can they inform on their rate of adoption? Does the data provided by applicants come from reliable sources and is verifiable?
Open Source	Do the applicants state clearly that they will release their solution developed for the project under an Open Source Licence? Can/have they included details about the type of license and any other additional conditions they want to bring up?

<sup>22</sup> EIC Horizon Prize, Blockchain for Social Good, [[https://ec.europa.eu/research/eic/index.cfm?pg=prizes\\_blockchains](https://ec.europa.eu/research/eic/index.cfm?pg=prizes_blockchains)], Accessed 20 November 2020

<sup>23</sup> Baisle. P. 'D2.2 DLT4EU Open Call Report', (March, 2020).

## Open Call Process

In practical terms, the Open Call consisted of two phases, carried out over 11 weeks in total:

### Phase one: Expression of Interest

#### Stage 1

*Three weeks*

- Potential Venture Teams submitted an 'expression of interest' on the DLT4EU website via an application form (Typeform). This was simple to complete and was derived from the questions used for the DLT For Good Survey<sup>24</sup> conducted by the EU Commission.

#### Stage 2

*One week*

- The DLT4EU Consortium and external Selection Committee reviewed initial applications and sent rejection emails to those applicants who were clearly out-of-scope.

### Phase two: Full application

#### Stage 1

*Two weeks*

- The phase two full application was sent to successful phase one applicants who were given two weeks to return the completed application. During this stage, Q&A webinars were held to support applicants in completing their application.

#### Stage 2

*Two weeks*

- The Selection Committee reviewed applications using Submittable and selected the top candidates to be shared with Challenge Owners.

#### Stage 3

*One week*

- Challenge Owners reviewed and selected the top applications they wanted to invite to final interview.

#### Stage 4

*One week*

- Challenge Owners conducted final interviews with the top applicants via teleconferencing and made a final selection.

#### Stage 5

*One week*

- Selected Venture Teams were informed and publicly announced.

The DLT4EU website had a comprehensive and detailed platform to support the Open Call and the assessment of applications. The website featured a number of Frequently Asked Questions (FAQs) that would be of interest to applicants. The platforms that were used to support the Open Call also meant that the data of applications could be stored centrally, making it easier to organise and keep secure.

## Venture Outreach Plan

To ensure that the Open Call was successful in attracting high quality applicants, a Venture Outreach Plan was developed. While the DLT4EU Consortium undertook key communication and dissemination activities to ensure a large reach for the Open Call, this process was supported by pre-qualifying applicants and inviting them to apply.

To do so, the Consortium identified potential applicants through an ecosystem mapping exercise to develop an applicant database. This mapping built on prior research the Consortium had conducted to identify the two high-impact sectors of the programme. Additionally, each Consortium partner also contributed applicants from their own networks and previous projects.

The Selection Criteria for the Open Call was used to validate whether the Consortium should undertake direct outreach or not. Outreach was mainly carried out through warm introductions from existing networks, as well as direct contact through LinkedIn and public email addresses from desk research. Often, this outreach led to short introduction calls to share information about the Open Call process, as well as validate the initial value proposition of the accelerator. This feedback was included in the iterative design process for the accelerator.

Additionally, the DLT4EU Consortium partnered with key ecosystem networks to advertise the Open Call to their community. For example, the Dutch Blockchain Coalition, Impact Hub Europe network, and the LEDGER Programme. Potential applicants also came through these partnerships.

<sup>24</sup> Scanning the European Ecosystem of Distributed Ledger Technologies (DLTs) for Social and Public Good - #DLT4Good, [<https://ec.europa.eu/eusurvey/runner/dlt4good-scanning>], accessed 26 April 2021.



Figure 10

# RESULTS OF THE OPEN CALL

## OPEN CALL STATISTICS



13 challenges were initially launched and published as part of the Open Call process



3,558 unique web visits



which is 30% of the overall web visits

We received



83 applications to phase one of the Open Call

## CHALLENGE APPLICATIONS



**Track and Trace: Supply Chain Transparency** by UNDP & AltFinLab  
19 applications

**A Smart Commons Platform: New investment models for community-led urban development** by Dark Matter Labs  
12 applications



**Collaborative E-waste management to reduce disposal and foster circular consumption** by the City of Sant Boi  
10 applications



**Enabling Data Sovereignty for all Citizens** by the City of Helsingborg Municipality  
15 applications



**Digital Impact Coins** by UNDP & AltFinLab  
9 applications



**Charitable Aid Accountability for Humanitarian Agencies** by Catalan Red Cross & DFS  
4 applications

**Enabling Better Digital Inclusion for Italy** by AGID  
4 applications

**The Digital Social Market - Engaging communities to encourage behaviour change** by Sharing Cities & GLA  
13 applications



**Enabling Peer-to-Peer (P2P) Energy Solutions** by UNDP & AltFinLab  
6 applications

**The Trees as Infrastructure Project** by Dark Matter Labs  
4 applications



**Sustainable Energy Management Systems (SEMS)** by Sharing Cities & GLA  
2 applications

**Enabling a Citizen-Powered Circular Textiles Sector** by the Amsterdam CTO  
1 application

**Shared E-Mobility** by Sharing Cities & GLA  
1 application



## Lessons Learnt

From undertaking this Open Call process, the top lessons learnt by the DLT4EU Consortium were:

- **Structure and transparency enabled a good user experience** for the applicants. Open Calls can cause frustration for non-selected organisations, and an unstructured process can also impact the quality of applications. By remaining transparent and clear about each stage of the process, the DLT4EU Consortium kept the momentum high, and got the best out of the applicants in the way they presented themselves and their potential for this opportunity. It also builds traction and better chances for another similar engagement to attract all these companies again. Trust and respect results from this process and it gives applicants insight into how the programme will be run
- Establishing a **venture scouting process proved invaluable** in attracting the highest calibre of teams to the Open Call and, in turn, to the accelerator itself. In terms of numbers, seven out of the eight teams who were accepted onto the programme were made aware of DLT4EU through the Consortium's efforts of venture scouting
- **Running an Open Call is not a passive process.** It is key to have a plan to reach and attract as many relevant candidates as possible. On the other hand, open calls are powerful tools to raise the profile of a programme, and its topics and objectives. In that spirit, we built a strategy to proactively build a list of companies and partners we wanted to be aware of to maximise the communications around the programme and ensure a good response to the call
- Providing a **detailed briefing** to applicants, the Selection Committee and Challenge Owners was key. We made sure that applicants were made aware of the Open Call process by explaining what the criteria for each phase was through webinars and Q&A. Digital Catapult also set up a dedicated email address so that any questions could be answered directly throughout the application process which proved to be a great resource for the applicants
- Unfortunately, not all of the Challenge Areas received applications. On reflection, having a **smaller, more focused challenge area set with more buy-in from Challenge Owners and Venture Teams proved the most effective**
- **Preparation time for the Challenge Owners needed to be much longer** so that they could align people and resources internally and measure the level of commitment required to make it a success. The time between the Open Call and the start of the

accelerator needs to be chosen carefully as the selection of Venture Teams by the Challenge Owners requires substantial facilitation and expectation setting. More preparation time would also help the Challenge Owners choose and define the right use case to provide the Venture Teams, with the support of the Consortium Partners who can feedback and advise thanks to their expertise, and knowledge of the Venture Teams

## Best Practices

For organisations wanting to run their own Open Call with a challenge-first approach, we recommend the following three practices:

- The **Venture Scouting** strategy was created with lead generation in mind, and in turn, had the target to increase the number of applications to the programme. The Consortium conducted a series of introduction calls to take the identified and/or validated leads through the programme objectives and to directly send them the application form for the Open Call. This proved to be a successful method of attracting talent to the programme
- The **Selection Criteria** proved to be very strong as it was built through expert review and input, whilst also taking into account the existing framework of the 'Blockchain for Social Good Prize'. This criteria also set the foundation for the Evaluation Criteria used at the end of the accelerator to assess each Proof-of-Concept developed in the programme<sup>25</sup>
- **Transparency of the key requirements** needed was critical. For example, by running webinars that covered what the Selection Committee would be looking for in a strong application and allow time for Q&A with the potential applicants. Be clear about hard requirements - for DLT4EU, this was commitment to plan for and / or produce the Proof-of-Concept under an Open Source License

## Success Story

Thanks to the Venture Outreach Plan, the proactive and efficient venture scouting led to the early identification and engagement of seven out of the eight final Venture Teams. Not only does it derisk the process by ensuring quantity of responses, but it also greatly improves the field of applications going forward.

Additionally, the Open Call helped to gain a snapshot of the DLT ecosystem that such an opportunity could attract across Europe. It helped enrich our view of DLT-based organisations that we now know would be interested in engaging in public sector collaborations and tech-for-good applications of their solutions.

<sup>25</sup> See MacNeil, A. 'D4.1 DLT4EU Evaluation Criteria', (January, 2021).

## SECTION 3: HOW TO IMPLEMENT A SUCCESSFUL VIRTUAL FIELD LAB (VFL)

Over the course of DLT4EU, it became clear that the successful curation and implementation of the Virtual Field Lab model was dependent on the facilitation of a deep understanding of the Challenge Area. This also included digging into the daily workings of the Challenge Owner organisation, as well as the vision of the Venture Team and what they wanted to achieve with a Proof-of-Concept.

A key part of this activity was to also translate the design of the accelerator programme and VFL concept into an effective and agile operational structure, ensuring the delivery of the eight Proof-of-Concepts to the required standards. In the COVID-19 context, this meant a special focus on ensuring the fully virtual facilitation of an effective collaborative relationship between all participants.

Figure 11: The Development of the eight DLT4EU VFLs <sup>26</sup>



<sup>26</sup> Putri, A., MacNeil, A., and Singh, A., ‘D7.2 DLT4EU Proof-of-Concepts Assessment Reports’, (February, 2021).



## ENABLING A CITIZEN-POWERED CIRCULAR TEXTILES SECTOR

### Venture Team

*DisCO*

- Lynn Foster
- Irene López de Vallejo
- Stacco Troncoso
- Sara Escribano
- Lisha Sterling
- Ann Marie Utratel

### Challenge Owner

*City of Amsterdam and WAAG*

- Juan Carlos Goilo
- Cecilia Raspanti

### VFL Coach

*DLT4EU Consortium*

- Liz Corbin (Metabolic Institute)

### Proof-of-Concept

User research identified three key friction points for the citizens of Amsterdam to participate in a circular textile system: first, that often the citizens do not know how to nor are incentivised to recycle their textile waste; secondly, existing textile recycling infrastructure in Amsterdam does not prioritize effective recovery and reuse; third that there is a lack of trust by citizens in the current

system. This PoC therefore focused on building out the citizen involvement and engagement feature for REFLOW OS, as part of the City's 'Citizen Involvement Campaign'. This feature "provides practical logistical help, rewards, and educational material to encourage citizens to recycle textiles more frequently and more correctly".



## ENABLING PEER-TO-PEER (P2P) ENERGY SOLUTIONS

### Venture Team

*Prosume*

- Mattia de Vecchi
- Alex D'Elia
- Pierluigi Maori
- Massimo Ferronato
- Alessia Borge
- Giovanni Quaglino
- Francesco Visconti

### Challenge Owner

*UNDP Alt FinLab and UNDP Serbia*

- Ana Seke
- Marina Petrovic
- Robert Pasicko

### VFL Coach

*DLT4EU Consortium*

- Pierre Baisle (Digital Catapult)

### Proof-of-Concept

Over the course of the DLT4EU accelerator, it became clear that due to the complexity of the local regulatory context, a pilot was no longer possible with UNDP Serbia until 2021. Instead, Prosume started to scope a pilot within an existing collaboration in Carloforte, Sardinia to develop their PoC. In this context, the challenge area evolved into a focus on facilitating local energy communities - 'prosumers'.

Prosume's Proof-of-Concept (under testing in Carloforte, Sardinia) enables - through a DLT-based wallet - a community of thirty 'prosumers' to monitor their energy generation, consumption, as well as exchange 'energy credits' among the community members. A key benefit for participants is a reduction in energy costs as sourcing becomes highly localised and administrative burdens are automated with the DLT solution.



## CHARITABLE AID ACCOUNTABILITY FOR HUMANITARIAN AGENCIES

### Venture Team

Alice

- Areti Kamyli
- Raphaël Mazet
- Jakub Wojciechowski
- Alex Suvorov

### Challenge Owner

Vodafone Foundation and Digital Future Society

- Albane Coeurquetin
- Marta Portalés
- Natalia Gozdur

### VFL Coach

DLT4EU Consortium

- Anna Higuera (Ideas for Change)

### Proof-of-Concept

Alice's Proof-of-Concept helps the Instant Network Schools's impact reporting by automating the analysis and visualisation of the organisation's data. To do so, Alice has developed a Machine-Learning (ML) solution that works within a decentralised data ecosystem. By applying machine learning algorithms, Alice is able to predict and provide the Challenge Owner with prescriptive analytics on their performance in each school, refugee camp, and by country. Importantly, the solution will ensure that beneficiaries receive help in a dignified way, by protecting their data privacy.

The successful implementation of Alice's solution could significantly create a positive social impact. The data insights that Alice provides creates a better understanding of the impact of charitable aid and therefore optimizes their humanitarian aid programme. For instance, by saving 30% of the project budget due to the bespoke cost of impact reporting, it enables the Vodafone Foundation to reallocate its funds for better and more efficient use by the beneficiaries. Furthermore, creating a trusted and decentralised data collaboration model will generate cross-programme learning.



## SHARED EMOBILITY

### Venture Team

*CiSe*

- Henk Kuipers
- Rob Guikers
- Marnix van den Bent
- Elisa Achterberg
- Werner Runge
- Cees van Ginneken
- Floris de Langen
- Roel van de Wal
- Bram van Hasselt
- Matteo Melli

### Challenge Owner

*Greater London Authority and London Legacy Development Cooperation*

- Nathan Pierce
- Sandy Tung
- Emma Frost
- Jim Wood
- Ben Edmonds

### VFL Coach

*DLT4EU Consortium*

- Robert Learney (Digital Catapult)
- Katy Ho (Digital Catapult)

### Proof-of-Concept

Throughout the DLT4EU programme, CiSe has collaborated with the London Legacy, managers of the Queen Elizabeth Olympic Park in East London, to explore opportunities offered by decentralisation. Initially, the Proof-of-Concept - an integrated payment and identification solution - was to be tested in the Olympic Park with the public bike rental scheme. However, the travel bans caused by the COVID-19 pandemic prevented an in-person pilot. Instead, CiSe found Mobeazy, a local Dutch mobility provider to collaborate with to progress the technical development of the PoC.

Overall, CiSe offers service providers a decentralised infrastructure for pay-per-use business models, and end users a privacy

preserving means of identification to access the service. This solution includes micropayments and instant payment splitting, automatic execution and enforcement of contracts, and GDPR compliance for eMobility providers.

CiSe identified a key user story to develop the PoC, where the user - Annais - needs an eScooter to go to a meeting. The CiSe solution enables Annais to find and register for the use of the scooter, and then verify her identity, and preload a digital wallet for payment. The wallet enables for micropayments based on usage. During the pilot testing, CiSe was able to test real transactions, where a live bank account was integrated with the digital wallet.



## ENABLING DATA SOVEREIGNTY FOR ALL CITIZENS

### Venture Team

*AID:Tech*

- Joseph Thompson
- Niall Dennehy
- Ben Cessa
- Shane Mulligan
- Hubert Szyperski

### Challenge Owner

*City of Helsingborg*

- Max Larcombe
- Anders Westerlund
- Armin Pendek
- Sebastian Thulin
- Teddy Andersson

### VFL Coach

*DLT4EU Consortium*

- Imogen Hyde (Digital Catapult)
- Dominyka Zemaityte (Digital Catapult)

### Proof-of-Concept

Initially, AID:Tech proposed a PoC that would empower users to decide what to do with their data including: who to share it with, complete control over access, potential to 'loan' their data, and use their Decentralised Digital Identity as a verified credential to access government and local services including welfare and healthcare.

This proposal was re-scoped with the City as an API solution for the already-existing local citizen application - Mitt Helsingborg - that could

be integrated with their digital wallet for citizen personal data - whether that is pension, financial, or health information. Together, AID:Tech and the City identified that "privacy, security and convenience" were the most important factors for end users of the application.

AID:Tech successfully built an API for the Mitt Helsingborg application, which enables simple, accessible, and personal interactions between the city and its inhabitants.



## TRACK AND TRACE: SUPPLY CHAIN TRANSPARENCY

### Venture Team

*Convergence Tech*

- Erik Zvaigzne
- Jim Whitestone
- Maryam Nizam
- Adam Lemmon

### Challenge Owner

*UNDP Alt FinLab and UNDP Morocco*

- Mahir Chekkoury
- Marina Petrovic
- Najoua Souidi
- Quang Anh Lee
- Mohar Ouhamd
- Amal Tobich
- Mustapha Boujrad

### VFL Coach

*DLT4EU Consortium*

- Alice MacNeil (Metabolic Institute)
- Aysha Putri (Metabolic Institute)

### Proof-of-Concept

Field research conducted with UNDP Morocco identified an opportunity to co-develop a DLT solution for the main producers of argan oil - local women's cooperatives - to help these organisations capture more value for their products. Additionally, Convergence Tech identified the opportunity to generate positive environmental impact by helping to facilitate the marketability for sustainable argan oil with already-existing ecolabel certification, which incentivise specific and tangible environmental health behaviours by individuals, organisations, and communities.

In the development of the Proof-of-Concept, Convergence Tech focused on shortening the supply chain for the main producers of argan oil - women's cooperatives - through a traceability solution. This platform is intended to help the

cooperatives better market their products directly to exporters and buyers, rather than the numerous local middlemen currently involved in the sale of argan oil.

To do so, the platform helps to track and verify certified products in real-time by creating a 'data passport' for each good. Better, more direct market access could also help women's cooperatives facilitate ecommerce sales and branding uplift through the verification of sustainable goods.

Additionally, by supporting the verification and marketing of ecolabel goods, the solution could help better incentivise the protection of the argan forests as sustainable products gain market value and competitiveness against existing products.





## DIGITAL IMPACT COINS

### Venture Team

*Acren (Social Impact Network)*

- Dr. Nikola Markovic
- Cedric Lehmann
- Felix Maduakor
- Tatiana Volpert
- Luz Paulina Ornelas Vázquez
- Daniel Pantjuskin-Moos

### Challenge Owner

*UNDP Alt Fin Lab and UNDP Lebanon*

- Rawad Rizk
- Marina Petrovic

### VFL Coach

*DLT4EU Consortium*

- Joe Lord (Digital Catapult)
- Ross Mcwhirter (Digital Catapult)

### Proof-of-Concept

Through DLT4EU, Acren developed the 'Social Impact Network' (SiNetwork), which aims to encourage individuals to purchase Social Impact Tokens. These coins are then used to invest in solar energy projects in developing countries.

The solution also provides a transparent impact measurement system, so investors can see and understand in real-time how their investment has made a difference. The platform increases access to and liquidity in social innovation projects that would otherwise be difficult to contribute to as an individual citizen.

Additionally, by driving new investment into local initiatives, the SiNetwork has the potential to facilitate spillover value for local communities and economies that have been previously locked out of traditional financing. The linkage of investment to verifiable output through connection to IoT devices on the Solar PVs also helps to show the local community how the initiative has benefited them.

## Lessons Learnt

Through implementing eight Virtual Field Labs over the course of six-months, the top lessons learnt by the DLT4EU Consortium were:

- The **VFL Coach was a cornerstone role** for the functioning of each VFL. This role was undertaken by a named person from one of the Consortium Partners and was heavily involved in establishing clear rules of collaboration and engagement within the VFL, common points of contact and communication, advising on subject matter areas, and mediation of emergent issues and risks. The journey of the VFL and development of the Proof-of-Concept became a process that the Consortium not only helped to facilitate, but was actively involved in
- Building on the above lesson, the VFL Coach's role was essential in facilitating a **positive and productive relationship** between the Challenge Owner and Venture Team. We found that it helped where the VFL Coach's organisation had worked with the Challenge Owner in previous projects, and thus had already established trust and rapport with the Challenge Owner
- The **ecosystem curated around the VFLs** was key to ensuring successful Proof-of-Concept development solving barriers to progress as early as possible. This ecosystem of mentors, subject matter experts, and advisors were also well positioned to provide feedback to the accelerator team to adapt the schedule or programme as needed
- While the VFL could adapt to the development of the Proof-of-Concept, it was equally important to have a **set of minimum viable structures and incentivisation mechanisms in place to ensure the functioning of the VFL** - for example, the provision of a tech stack that enabled online collaboration (i.e. Miro, Slack), a collaboration agreement that ensured ownership of Intellectual Property by the Venture Team, and regular check-ins with the DLT4EU Programme Manager to give feedback and identify VFL needs
- Additionally, while the VFL Coach was a positive and effective addition to the VFL concept, feedback showed that it became difficult for the VFL Coach to ensure that the scope of their role did not drift and that the individual did not become business critical or a single point of failure for the VFL. To solve this, **the scope, agency, and accountability** of different VFL members could have been better communicated and reinforced

## Best Practices

For organisations wanting to implement a Virtual Field Lab structure, we recommend the following three practices:

- Establish and empower the **VFL Coach as a core role** in a Virtual Field Lab to ensure collective progress and identification of risks, issues, and resource and support needs
- **Embed practitioners** from relevant fields into each VFL (i.e. content area or organisational expertise) as part of the ecosystem approach, additional to those involved in the accelerator programme. These practitioners must have prior experience in relevant or complementary areas to act as guides of the VFL
- Alongside the VFL Coach, **establish clear, easy feedback mechanisms** for VFL participants so the programme delivery can be adapted to their emergent needs. This can include a monthly report that can be filled out online by each VFL

## Success Story

Five out of the eight Venture Teams have confirmed that they will continue their Proof-of-Concept development with their respective Challenge Owners. This has been one of the biggest success outcomes of the DLT4EU accelerator. Below are the Venture Teams that will continue developing their Proof-of-Concepts:

- Acren will continue their Social Impact Network pilot with UNDP Lebanon, with a use case in local solar panel infrastructure
- Convergence Tech will continue their pilot with UNDP Morocco, focused on a track and trace platform for sustainable argan oil
- eReuse will continue their pilot with the City of Sant Boi, to help upcycle electronic devices for vulnerable families
- Prosume will start its engagement with UNDP Serbia in the second quarter of this year
- Alice will continue their impact reporting pilot with the Vodafone Foundation and Instant Schools Network

Additionally, depending on the COVID-19 situation, the CiSe team may also continue their eMobility pilot with the Greater London Authority and London Legacy Development Cooperation. DisCO likewise may also continue their pilot with the City of Amsterdam and WAAG Society.

## SECTION 4: HOW TO IMPLEMENT AN AGILE ACCELERATOR PROGRAMME

The second component of an agile VFL structure is an adaptive accelerator programme. As established in Section 1 on the design phase, a human-centred approach to implementation is key to ensuring a successful programme and its outcomes.

Through the curated accelerator programme, each VFL benefited from specialist expertise and resources relevant to the Proof-of-Concept development. An important characteristic of DLT4EU was the fact that capacity building and knowledge transfer were considered a continuous activity throughout the accelerator, rather than held at the end as a follow-on activity. This conscious decision is reflected in the agile approach to the accelerator programme, which adapted to the emergent learning needs of the Virtual Field Labs.

The key components of the curated programme were:



### Bootcamps

Three online bootcamps were hosted across the six-month accelerator, to provide specific content learning, sprint sessions for the VFL, and moments of feedback from the DLT4EU Ecosystem. Importantly, these bootcamps provided key milestone moments for the VFLs in their technical development and user testing - several 'demo days' were held for the Venture Teams in particular, where they could receive feedback on their progress from an external expert panel as well as the Challenge Owner



### Masterclasses

Delivered by leading experts in specific fields relevant to the VFLs, masterclasses were hosted at all three bootcamps, as well as on-demand when a common need for a specific learning objective became clear among the VFLs



### Sprints and Planning Support

A sprint-based approach was encouraged as much as possible to develop the PoCs within the VFLs. This was because it is a useful organisational structure well suited to the VFL concept. The accelerator team provided necessary sprint planning templates and facilitation at every bootcamp and as needed by the VFL



### Mentors

Along with the VFL Coaches, the core mentor community had the most contact and interaction time with the Venture Teams in particular. VFLs were able to book sessions with mentors during all three bootcamps as well as across the whole programme. Mentors were empowered to help problem solve and advise the VFLs on key topic areas, such as business strategy and sales, innovative finance, and legal and regulation

### Lessons Learnt

Through implementing the accelerator programme across the course of six-months, the top lessons learnt by the DLT4EU Consortium were:

- Engaging a **community of entrepreneurial practitioners** from the DLT ecosystem was critical. Venture Teams in particular responded positively to receiving mentorship from individuals and organisations who had gone through similar and relevant experiences. In these sessions, the emphasis was on grounded expertise, knowledge transfer, and network development
- It was critical to understand the different **day-to-day demands** of the Venture Teams and Challenge Owners in order to ensure that the collaboration within the VFL was successful and to ensure the accelerator could adapt to the VFL's needs where possible
- Both **formal and informal feedback mechanisms** to learn about what the VFL truly needed was critical. Often, the Venture Teams in particular struggled to identify what they really needed, and so it became critical for connections to mentors or resources to be made quickly and effectively. This matchmaking was a key role of the DLT4EU Programme Manager in the overall management of the accelerator
- The bootcamp structure was only successful when clear objectives were given for masterclasses and sprints, in addition to ensuring a high proportion of time for VFL-focused work. Additionally, given the variance in the business and technical maturity of the Venture Teams, a common bootcamp programme was not always the best approach - instead, **experimentation with different delivery structures was important**. For example, rather than a collective bootcamp where participation varied greatly on need, the operational team organised clusters of experts and content areas for each VFL that were consistent across the accelerator, with moments of peer learning and cross-VFL collaboration when needed

- It was important to have a **consistent set of core mentors covering the core tracks** (such as business models and strategy, UX/UI design, public sector innovation, technical development, and open source licensing and legal topics) and then enhance them with expertise delivered through specialist, on-demand masterclasses. The role of the VFL Coach is crucial in identifying the needs of the Venture Teams and matching them with relevant mentors

## Best Practices

For organisations wanting to implement an accelerator programme, we recommend the following three practices:

- Carry out an **ecosystem mapping** early in the programme to allow for sufficient embedding of knowledge and relationships. As part of this, it is key to identify the different roles of the ecosystem - for mentors, to advisors, to knowledge partners
- Give permission to be **adaptive and emergent**: not everything needs to be planned out and in-place in advance. Set lead times that are agile, but de-risk the delivery. A well-curated ecosystem will be able to respond to accelerator programme needs when they emerge
- **Recognise that not all participants will need everything on offer**, and conversely that the programme may not fulfil everyone's needs - it is more important to establish a core minimum viable programme and organise around emergent needs of the VFLs, rather than make the programme a set of stage-gated, mandatory hurdles for everyone to go through

## Success Stories

Being adaptive and agile in designing and implementing an accelerator programme helped the DLT4EU accelerator and participants to turn challenges into opportunities.

In an agile accelerator programme, participants are encouraged to be adaptive. This was experienced by the Venture Team Alice when they learned that building solutions and stories centred around impact is more powerful than building around the technology.

When Alice worked with their initial Challenge Owner, the regulatory restriction that obliged the organisation to collect paper receipts from stores directly to prove how the donations were spent disallowed the organisation to continue working with Alice. This led to this particular Challenge Owner to withdraw from participating in the DLT4EU programme altogether. The Challenge Owner's proponents who came on to the programme were greatly interested in the transformative potential of DLT, but faced internal resistance to changing a system that had worked for close to a century, as well as regulatory impositions of paper-based forms of reporting. This led Alice to switch its Challenge Owner to the Vodafone Foundation with a similar Challenge Area of improving impact traceability through DLT.

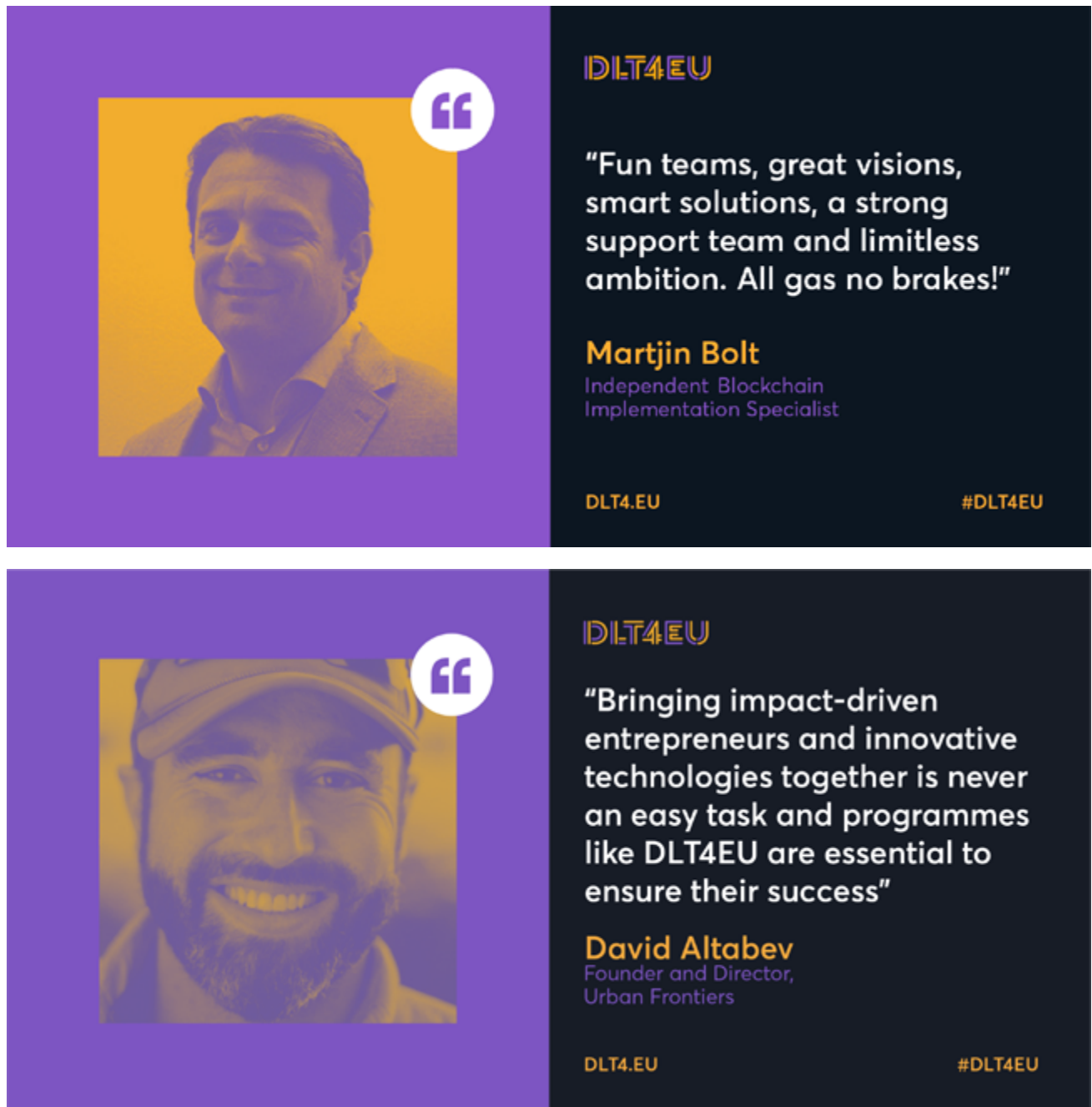
The reluctance from the previous Challenge Owner helped Alice to validate the fundamental rule that organisations need to find a technical fit that solves their issues and not let technology lead them. This learning experience was mentioned in a governmental funding application which Alice has since been granted.

## SECTION 5: HOW TO BUILD AN EFFECTIVE COMMUNICATIONS ECOSYSTEM

A keystone of a successful accelerator programme is a clear communication strategy and an appealing narrative. From the very beginning, the adopted strategy was attentive to the diversity of actors within the DLT ecosystem - from blockchain developers and venture teams, to public and social sector entities interested in adopting DLTs, policymakers, regulators, impact investors, and the media. Additionally, the programme's communications needed to reach stakeholders from the fields of the Circular Economy and Digital Citizenship, who were not necessarily engaged with or aware of the potential of DLTs.

To bring relevant news and insights to the DLT ecosystem, communication focused on communities, social language, and formats that did not necessarily preference technical complexities (Figure 12). Branding was developed to be attractive, eye-catching, and unexpected in a technical field. The design identity was created to help the audience to rapidly identify the key messages and insights of DLT4EU (Figure 13).

Figure 12: Communication Examples



The figure displays two communication examples for DLT4EU, each consisting of a testimonial card. Each card has a purple background on the left side containing a portrait of the speaker, a quote on a dark blue background on the right, and the DLT4EU logo and hashtag at the bottom.

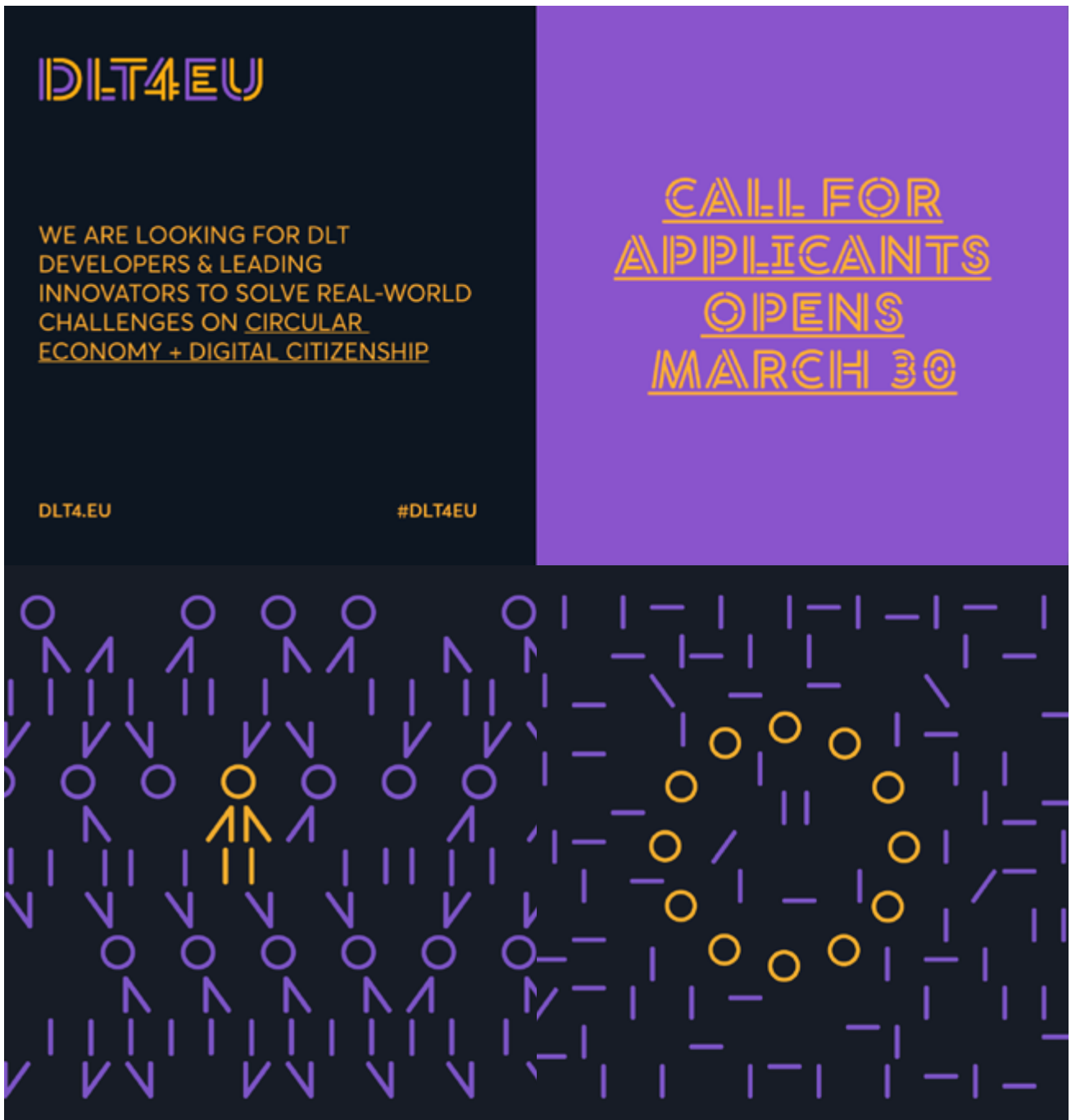
**Example 1:**

- DLT4EU**
- “Fun teams, great visions, smart solutions, a strong support team and limitless ambition. All gas no brakes!”
- Martjin Bolt**  
Independent Blockchain Implementation Specialist
- DLT4.EU #DLT4EU

**Example 2:**

- DLT4EU**
- “Bringing impact-driven entrepreneurs and innovative technologies together is never an easy task and programmes like DLT4EU are essential to ensure their success”
- David Altabev**  
Founder and Director, Urban Frontiers
- DLT4.EU #DLT4EU

Figure 13: The DLT4EU Design Identity



## Communication Strategy

The key activities that were undertaken to deliver the DLT4EU communication and dissemination strategy were to:

- Synthesise key insights and practices from other successful acceleration initiatives and adopt complementary tones, communication actions, and interaction activities
- Establish bidirectional collaboration agreements with partners and DLT projects, as well as with specialized media in the fields of technological innovation for the common and social good. This has allowed us to reach like-minded audiences and establish ourselves as an active part of the DLT and tech-for-good ecosystem
- Develop a specific plan to effectively communicate the DLT4EU Open Call, ensuring that the section of the website containing Open Call information establishes clear and simple guidelines on: the purpose of DLT4EU, the Challenge Areas, practical information for applicants, and the Selection Criteria
- Organise a Public Launch Event in close collaboration with the Digital Future Society (Mobile World Capital) - a host that has large, well-established and faithful audiences, and that develops projects and actions in areas related to the DLT4EU programme. This helped attract part of these audiences to follow and interact with the DLT4EU programme and our channels
- Rapid adaptation to the context of development of a full-online programme, prioritizing aspects such as the quality of visual materials and branding, or the use of professionalized technical supports to improve the attendee's experience of organised events and sessions (such as the Public Launch Event or Final Event)<sup>27</sup>

## Lessons Learnt

Through communicating the programme the top lessons learnt by the DLT4EU Consortium were:

- **Building and engaging an ecosystem is complex when exploring areas where there is not yet enough narrative developed.** This necessarily entails added work to unravel appropriate messages that appeal to the right audiences, as well as defining what are the key stories and channels for relevant topics
- An **initial protocol (onboarding toolkit) for collaboration** must be established in terms of communication with requirements and support strategies that

facilitate Venture Teams, and especially Challenge Owners to help in the dissemination of the programme. In the specific case of Challenge Owners, their communication and dissemination channels prioritize less experimental (and complicated) narratives and tend to have little space to explain testing actions for early-stage innovation solutions such as those developed by DLT4EU

- There is only **a niche audience that interacts organically with the DLT ecosystem** related to the public and social good. This makes it difficult to track and link, especially when the messages and actions need to be more openly focused on other audiences who are less technical or specialized
- The **COVID-19 pandemic had an effect on the quality and the vividness of the communication strategy.** It was very difficult to produce interesting materials such as lively pictures or videos from in-person events, and we had lots of online content and recordings instead. A dedicated extra effort to develop attractive branding materials helped. Additionally, audiences have been losing a lot of enthusiasm for online events over the lockdown months, making it difficult to achieve great outreach and engagement goals. Bringing on board a tech professional to deliver high quality online events helped
- Developing actions for early-stage innovations when those can only happen online requires appropriate **interaction strategies and tools** that ensure an open space for Challenge Owner and Venture Team collaboration. In this sense, facilitating internal online communication channels and the use of agile and open communication tools can help

## Best Practices

For organisations wanting to curate a specific ecosystem communication strategy, we recommend the following three practices:

- Being able to understand and communicate DLT to **a non-technical audience was key**, since the testing and success of these innovative solutions must appeal not only to the sector that develops them, but mainly to public and social sector organizations, with potential Challenge Owners that are often unfamiliar with the terminology
- The creation of an **innovative image and branding** that caught the attention of parties outside the usual environment. The DLT4EU branding and creativity made the programme attractive, even to external, non-technical audiences

<sup>27</sup> For the full communications strategy see Higuera, A., Balestrini, M., MacNeil, A., and Zemaityte, D., 'D6.1 DLT4EU Project Communication and Dissemination Plan', (January, 2020).

- Rethinking the way Venture Teams **communicate their impact**, evolving from a format based mainly on live pitching, to others that are more agile and engaging, such as video-snippets or edited video-pitch formats. These allow their interventions to be more readily publicised, and increases the visualisations and traction afterwards

## Success Story

- Collaboration with ProofingFuture generated 11 pieces of in-depth content, each specific about every solution inside the accelerator, and also about the different approaches and contributions to the companies in the DLT4EU Consortium. Those interviews provided us with quality content generated by an external provider, and visibility on other platforms (i.e. Medium)
- The traction of the Open Call on the dlt4.eu website: the entire section received more than 4,600 visits (38% of the total visits received on the site), not only during the period of the Open Call, but also throughout the rest of the programme timeline
- The rapid adaptation to an online format for events that were initially intended to be delivered face-to-face was aided by the technical support of a company specialised in ‘transcommunication.’ This allowed us to maintain high quality in our event delivery and continue offering Venture Teams, Challenge Owners, the Consortium and all of the different audiences the possibility of exchanging experiences, promoting the contribution of DLTs to the public and social sectors, and disseminating the achievements of each of the VFLs above and beyond what could be achieved through in-person delivery

## SECTION 6: HOW TO ENSURE AN IMPACTFUL PROGRAMME

A core objective of DLT4EU was to ensure an impact-first approach, namely through the co-creation and delivery of workable prototypes (Proof-of-Concepts), which were tested in real-world environments with the Challenge Owners. To ensure this approach, DLT4EU took a holistic approach to the design, delivery, and assessment of both the DLT4EU programme itself as well as the Proof-of-Concepts (PoCs) resulting from the VFLs.

## Designing for Impact

The DLT4EU programme sought to ensure that an impact-first approach was embedded into all activities - from the Selection Criteria of the Open Call, through to masterclasses and mentoring offered as part of the accelerator, to the Evaluation Criteria used to assess the Proof-of-Concept submissions by each Venture Team.

To measure the impact generated by each PoC and the programme as a whole, impact assessment was undertaken over the duration of the programme.<sup>28</sup> Additionally, collaborative research by NESTA has shown that most startups highly value an accelerator programme as a crucial contribution to their success - for example, 64% of respondents attributed participation in an accelerator as important to their success.<sup>29</sup> Undertaking an impact assessment as part of an accelerator, therefore, can not only support an impact-first approach, but also help future participants decide on which programmes could be most valuable for them. This also goes for potential Challenge Owners in the VFL model, who would like to understand and quantify potential impact-based outcomes of the approach.

The impact-first approach was enriched by an agile approach which recognised that there are a diverse set of factors that can come into play when ensuring impact. This meant that additional educational activities and support services were offered to the VFLs to support them in this journey. Additionally, this also required an update of the impact assessment framework to ensure that the most appropriate Key Performance Indicators were assessed and the correct data collected.

## Proof-of-Concept Scoping

From the first bootcamp, the VFLs were encouraged to start from a deep understanding of the Challenge Area and set clear objectives on what impact could be generated through their VFL. These targets could be aligned to the Sustainable Development Goals (SDGs) if appropriate. The VFLs were then taken through an iterative process of identifying relevant stakeholders and their values, the necessary resources (such as data) to carry out a pilot, and the perceived gaps and challenges each participant could foresee.

<sup>28</sup> See Coudard, A., MacNeil, A., and Corbin, L., ‘D7.1 DLT4EU Impact Assessment Framework’, (March, 2020).

<sup>29</sup> Bone, J., and Haley, C., ‘The impact of business accelerators and incubators in the UK’, NESTA, the UK Department of Business, Energy and Industrial Strategy, London School of Economics, The Open University and Beahurst, (2019).



These scoping sprints also acted as crucial moments of relationship-building and feedback between the Venture Team and Challenge Owner(s) to ensure clear expectations of the accelerator pilot were set for the next six-months. These sprints were facilitated by the VFL Coach, and were a key component of each of the three bootcamps hosted by the DLT4EU Consortium. The Challenge Refinement and Proof-of-Concept Scoping template can be found in the Appendices.

## The Venture-Level and Program-Level Impact Assessments

The 'DLT4EU Impact Compass' was developed to first assess the DLT4EU accelerator programme as a whole and, second, the individual Proof-of-Concepts that were developed throughout the accelerator programme by each Virtual Field Lab.<sup>30</sup>

The impact assessments covered four core 'Impact Areas' - Social, Environmental, Knowledge, and Economic. These four categories captured a holistic overview of the different types of impact possible through the DLT4EU programme:

- **Social** covered how the DLT solutions developed through the programme included civil society and increased access to public goods, public health, and basic services
- **Environmental** covered how the DLT solutions developed through the programme affected energy and material use, contributed to the protection of biodiversity, the management of common natural resources, and supported the monitoring and reduction of greenhouse gas emissions

- **Economic** regarded the extent to which the use of DLT created holistic value, met the defined needs of beneficiaries, and acquired validation and additional resources
- **Knowledge** focused on enabling new capabilities needed for public and private sector organisations to learn from these DLT pilots and the broader programme to adopt further strategic, policy, and innovation initiatives<sup>31</sup>

For the Venture-Level impact assessment, each Proof-of-Concept was assessed on an individual basis against a set of pre-defined Key Performance Indicators (KPIs) to produce an impact compass.<sup>32</sup> For example Figure 13 illustrates the impact result for all the Venture Teams, and Figure 14 illustrates the impact result for the Venture Team Alice.<sup>33</sup>

For the Programme-Level impact assessment, all activities of the accelerator were assessed against a set of pre-defined KPIs linked to overall objectives - such as 'To increase the capacity of EU social and public sectors to take up DLT-based solutions and to equip intermediaries to support them' and 'Develop highly scalable, impactful and resilient DLT applications that address the most pressing public, social and environmental challenges across the EU.'<sup>34</sup>

<sup>30</sup> See Coudard, A., MacNeil, A., and Corbin, L., 'D7.1 DLT4EU Impact Assessment Framework', (March, 2020).

<sup>31</sup> Ibid.

<sup>32</sup> See Putri, A., MacNeil, A., and Singh, A., 'D7.2 DLT4EU Proof-of-Concepts Assessment Reports', (February, 2021).

<sup>33</sup> Ibid.

<sup>34</sup> Putri, A., MacNeil, A., Singh, A., and Corbin, L., 'D7.3 DLT4EU Final Programme Assessment', (May, 2021).

Figure 14: DLT4EU Proof-of-Concept Impact Compass for all Venture Teams

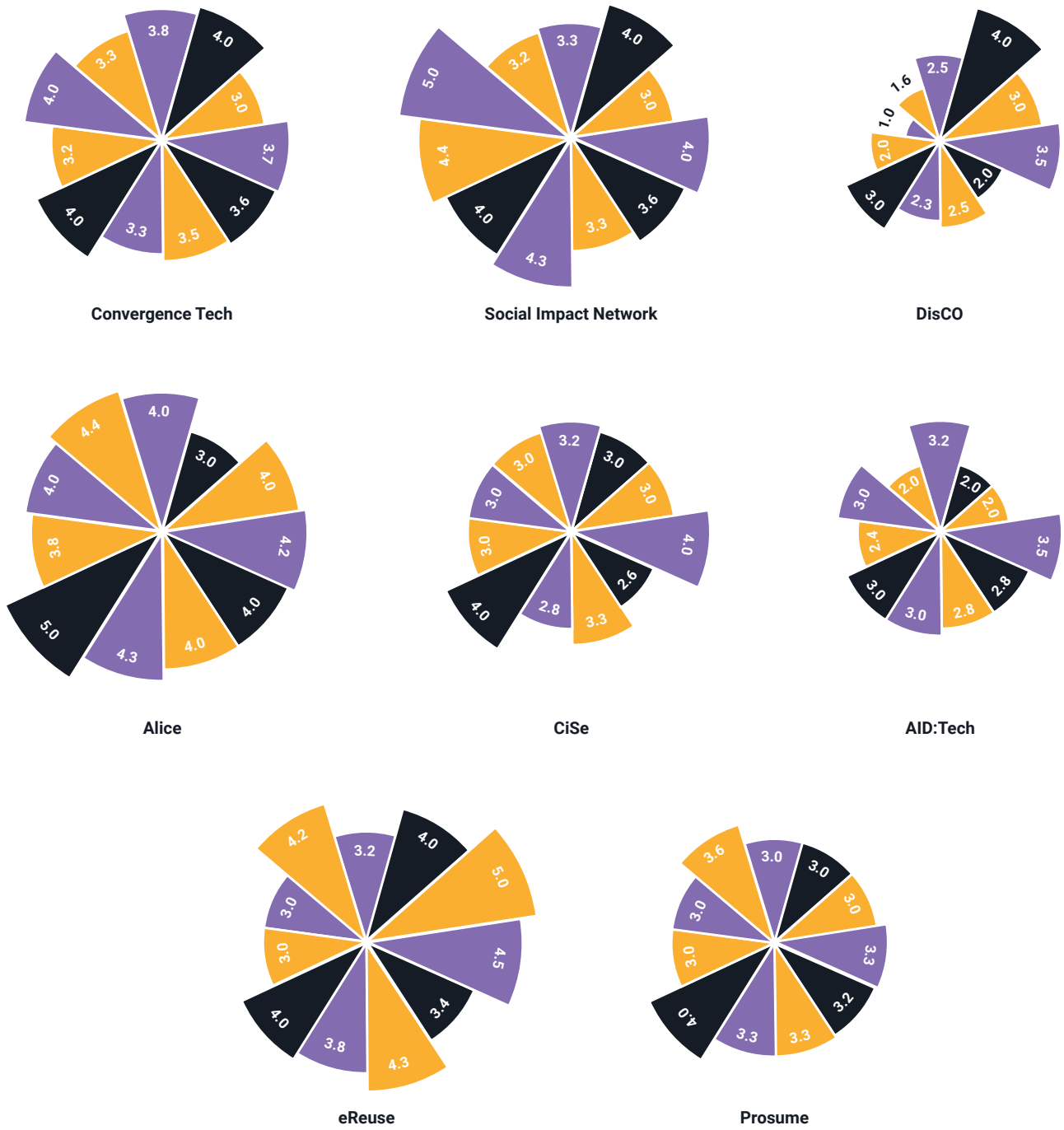
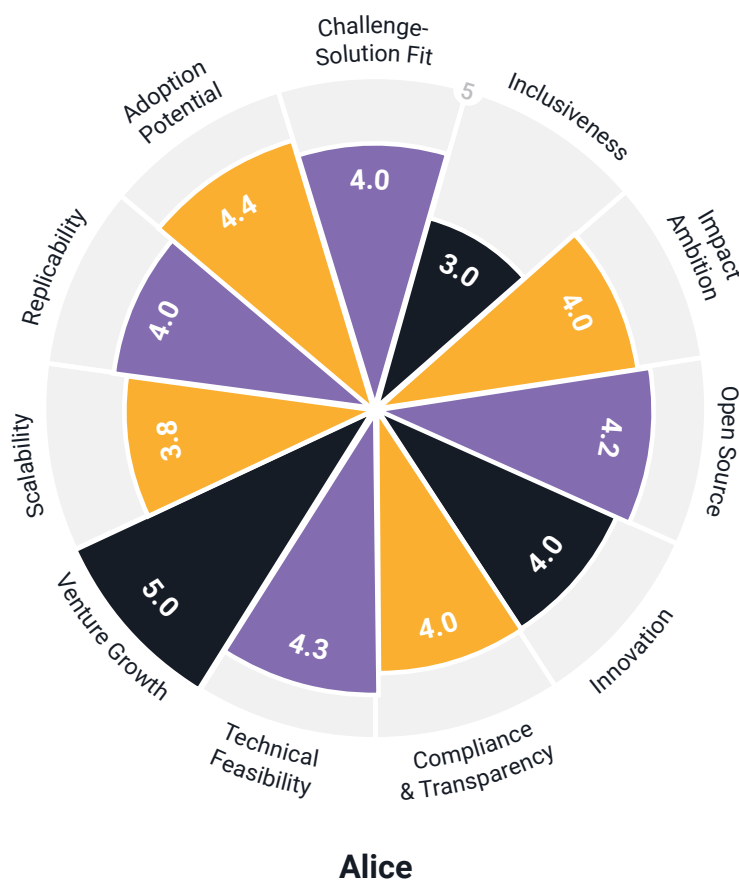


Figure 15: DLT4EU Proof-of-Concept Impact Compass for Alice



### The Proof-of-Concept Evaluation Criteria

For the assessment of the Proof-of-Concepts, seven different Evaluation Criteria were used by the Evaluation Jury to assess both the live pitch and submission documentation provided by each Venture Team. They were developed from the same categories used in the Open Call, but reoriented to the assessment of the Proof-of-Concept solutions.<sup>35</sup>

The Evaluation Criteria was designed to assess 'impact' in a holistic way - from explicit impact targets connected to Sustainable Development Goals (SDGs), to how the Proof-of-Concept created a positive and inclusive user experience. Importantly, the Criteria was shared with all participants in the programme well in advance of the assessment phase and used throughout masterclass and mentoring sessions.

The Evaluation Criteria used was:

**1. Challenge-Solution Fit:** The Venture Team has clearly demonstrated how their Proof-of-Concept (PoC)

solves the challenge area set by the Challenge Owner and / or key components of the challenge. Additionally, the Venture Team has clearly articulated the intended impact of their PoC by setting appropriate impact targets and / or use established frameworks such as the Sustainable Development Goals;

**2. Innovation:** The Proof of Concept is novel and unique thanks to the team's creativity in finding an original solution that meets the challenge requirements. The innovation extends beyond just the technical side, in the sense that its originality encompasses social, environmental, economical, legal, and ethical perspectives. The innovation may also be of benefit to a broader set of beneficiaries, including EU citizens

**3. Usability and Inclusiveness:** This assessment is of both the user interface and experience, and the underlying principles of the PoC. The PoC is of benefit to a broader set of beneficiaries than the Challenge Owner / intended end user of the PoC

**4. Commercial Feasibility and Scalability:** The Venture Team has developed a strategic roadmap for the

<sup>35</sup> For further detail, please refer to P. Baisle, 'D2.2 DLT4EU Open Call Report', published 31 March 2020.

market entry of the PoC. This roadmap can include market research, user research, engagement with investors / financing needs, and the business model. The roadmap addresses key barriers to market adoption (i.e. legal, regulatory, governance etc.) and their mitigation. The roadmap also considers the different routes to scaling their PoC

5. **Technical Feasibility:** The PoC has a high Technology Readiness Level (TRL) and progression rate
6. **Open Source:** The Venture Team has or will plan to release part or the entirety of the PoC under an open source license of their choice
7. **Compliance and Transparency:** The PoC complies with relevant data and privacy protection legislation, such as the General Data Protection Regulation (GDPR). The Venture Team has undertaken activities to ensure the end user understands the data and privacy implications of the PoC.<sup>36</sup>

## Lessons Learnt

Through delivering an impact-first programme and implementing the DLT4EU impact assessment frameworks, the top lessons learnt by the DLT4EU Consortium were:

- Throughout the impact assessment process, the research team found the time lag between assessing performance and capturing impact to be a challenge. One of the most difficult aspects was **forecasting the potential impact** that the Venture Teams would create as a result of their Proof-of-Concepts. The reason behind this was the difficulty to measure impact for Proof-of-Concepts that are in early stages of development. Forecasting impact at this point is difficult as there are multiple variables that could influence the result
- **A high-quality impact assessment is dependent on high-quality data.** Throughout the impact assessment process, the research team faced difficulties in collecting data from the Venture Teams. Although time-consuming, the research team has acknowledged that conducting research interviews with the Virtual Field Lab participants was more effective for collecting high-quality data than monitoring progress through monthly online surveys. This challenge has shown the importance of diversifying data collection methods
- When conducting the impact assessment, the research team learnt that **dynamic KPIs are more effective in measuring an innovation programme**

**where being agile and adaptive are important.** Being iterative throughout the impact assessment process has proven to be more effective in capturing impact as changes have occurred since the KPIs were developed. Instead of going through a linear process of analysis, being reflective and adaptive will yield higher impacts

## Best Practices

For organisations wanting to design impact into an innovation programme, we recommend the following three practices:

- **Adoption of dynamic KPIs:** Due to the emergent nature of 'impact' and the variance between the business and technical maturity of each VFL, the research team followed an iterative process of qualitative data analysis throughout the venture-level impact assessment. This meant incorporating key learnings during the accelerator delivery to update the KPIs - or add new ones - to ensure appropriate measurement
- **Effective communication:** The research team also found that building a good relationship with each VFL was important to create a successful and impactful programme. For example, for the impact assessments, research interviews proved a more insightful research method over the Monthly Venture Accelerator Plans that each VFL submitted
- **Serendipity is also ok:** Given the nature and focus of the DLT4EU programme, generating and measuring impact needs to be balanced with common sense too - leaving room for impact tracking that doesn't strictly fall into the set criteria can also provide positive evidence of success. This mindset also ensures that qualitative aspects of the evaluation are put in perspective alongside the quantitative data

## Success Story

Learning effective communication approaches and methods proved crucial for the Venture Teams to relate their visions and potential impacts of their Proof-of-Concepts. The 'Storytelling For Impact Masterclass,' led by Hayley Bagnall from Altus Impact taught the Venture Teams how to build connections with their audience and tell the story of their purposeful technology. Due to demand, this masterclass led to a follow-up session with Altus Impact at the end of the DLT4EU programme, where the Venture Teams focused on curating a communication strategy that amplified their voice.

<sup>36</sup> MacNeil, A., 'D4.1 DLT4EU Evaluation Criteria', (January, 2021).

**“What we did learn [is the importance of] getting to the more positive side of the story in our storytelling pitching, explaining our idea, and how to build a presentation that will help people become enthusiastic and [gain a] good understanding of what we want to reach.”**

– Henk Kuipers, CiSe.<sup>37</sup>

## SECTION 7: GOVERNANCE AND MANAGEMENT FOR CONSORTIA-BASED INNOVATION PROGRAMMES

When implementing an ecosystem-based approach to delivering an innovation programme, an effective governance and management approach is key - in DLT4EU this was a consortium structure. Throughout the programme, the DLT4EU Consortium acted as an ‘orchestrator’<sup>38</sup> of the ecosystem to deliver an agile, adaptive programme that met the needs of each Virtual Field Lab as well as relevant stakeholders engaged in the programme. Key operational tasks were strategic decision-making, progress reporting, risk management, and cascade funding.

### Lessons Learnt

Through DLT4EU, the top lessons learnt by the DLT4EU Consortium were:

- One of the key benefits of a consortium-based approach is that each partner can bring **specialist knowledge and expertise** to the accelerator programme, and importantly draw on their respective networks to facilitate the development of the ecosystem. While ensuring an effective and necessary programme, this approach also de-risked the delivery of the accelerator and eight VFLs as multiple sources of expertise and knowledge were brought to the participants

- It was important to establish an **operational plan for key components** of the accelerator programme that could be delivered by each Partner early in the design. This included key processes and lead times, such as organising mentors and co-creating masterclasses with external subject matter experts. This approach first meant a professional and consistent experience for participants, but importantly, also meant the outcomes of the programme were a shared responsibility and had a collectively agreed quality level
- The Consortium Partners were able to structure the **clear guidelines and expectations for the participants** of each Virtual Field Lab through a Collaboration Agreement that set clear expectations of the minimum expected commitment, Intellectual Property management, and confidentiality
- The **VFL Coach role acted as a key bridge** between the Virtual Field Lab and the wider DLT4EU ecosystem by drawing on partner networks in an organic way as key insights and needs emerged throughout the programme

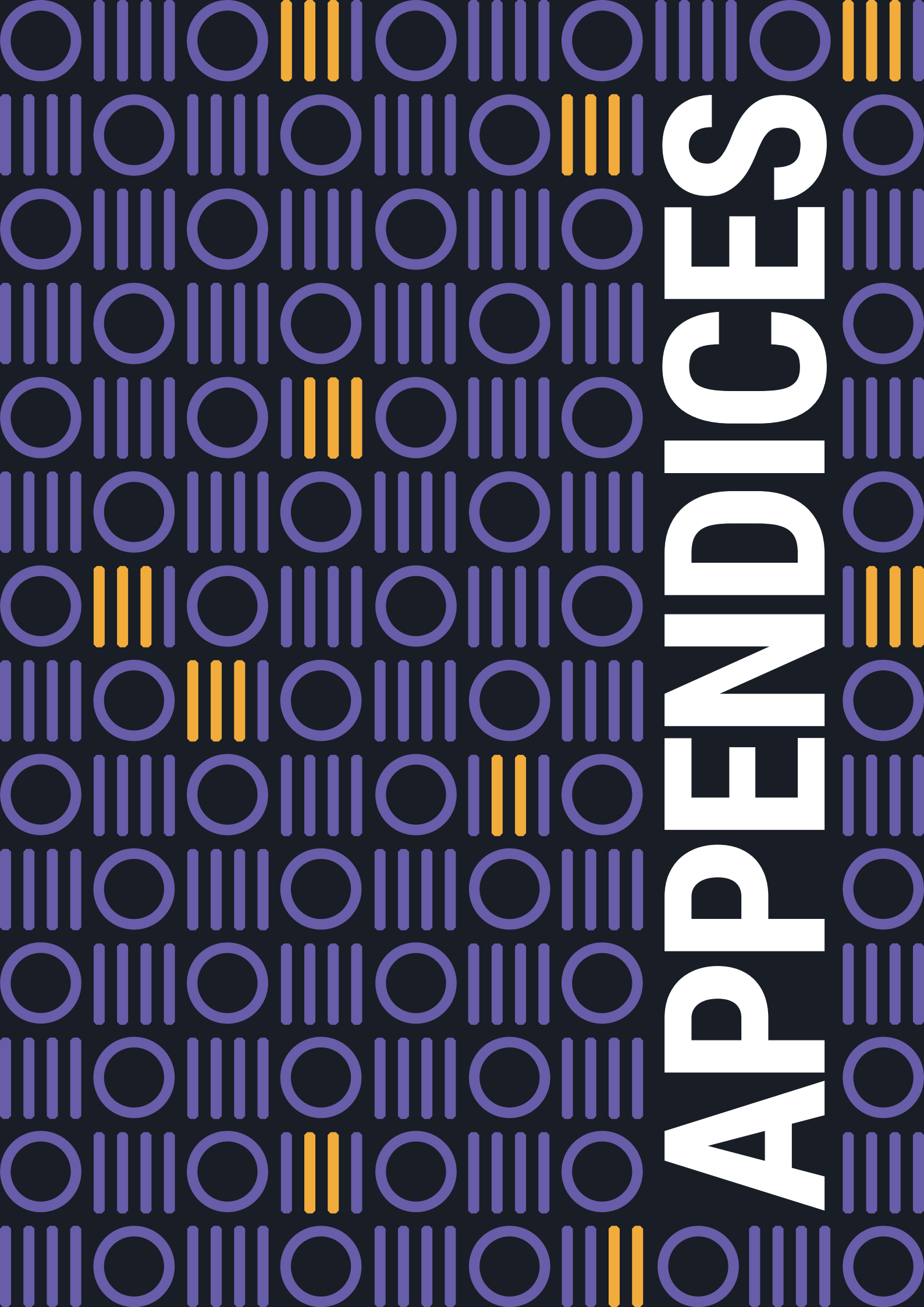
### Best Practices

For organisations wanting to implement an accelerator programme with a consortium-based model, we recommend the following three practices:

- Develop a **‘master playbook’** as a living document that contains all governance, operational, and performance information about the accelerator - the playbook can be picked up by anyone involved in the programme and helps de-risk dependencies within the programme operations and delivery
- **Maintain a living ecosystem map** which is updated as new stakeholders are engaged and brought into the ecosystem, and as new needs, barriers, and challenges are identified
- Identify and agree on the **main role and responsibilities** and the secondary, emergent roles for each consortium member (whether by theme, component, and / or activity). This is key to ensuring the VFLs gain the most valuable experience from the accelerator

<sup>37</sup> Kuipers, H. DLT4EU Research Interview. 29 January 2021.

<sup>38</sup> For research on the orchestrator role in innovation leadership and ecosystems please see Ivarsson, F., and Svahn, F., ‘Becoming a Digital Ecosystem Orchestrator - The Sydved Case’, (2020), Research Papers, 191, Adner, R., The Wide Lens: A New Strategy for Innovation, (2012), Penguin Group, and Visnjic Kastalli, I., and Neely, A., ‘Collaborate to Innovate: How Business Ecosystems Unleash Business Value’, Executive Briefing, Cambridge Service Alliance, [https://www.ifm.eng.cam.ac.uk/uploads/Resources/Collaborate\_to\_Innovate\_-\_ecosystems\_-\_final.pdf], accessed 26 April 2021.



# APPENDICES

# APPENDICES

## DLT GLOSSARY








Over the course of the DLT4EU accelerator, the following Glossary of terms was curated to support the education of participants in their experimentations with Distributed Ledger Technologies.

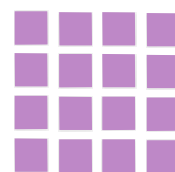
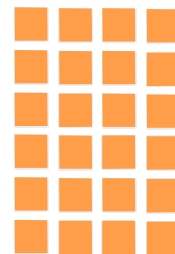
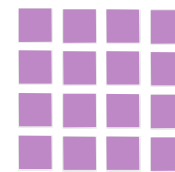
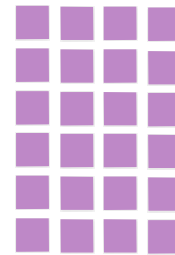
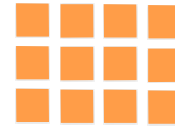
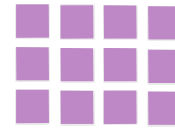
TERM	DEFINITION
<b>Distributed Ledger Technology (DLT)</b>	The technology enables a cryptographically secured 'database' to be distributed between and maintained in a consistent state by multiple distributed computers connected over a network (usually the Internet).
<b>Blockchain</b>	A subtype of DLT that consists of validated blocks of transactions linked into a time-sequenced chain.
<b>Social Good</b>	Social good is typically defined as an action that provides some sort of benefit to the general public. In this case, fresh water, education and healthcare are all good examples of social goods. However, new innovations have added new meaning to the term. Social good is now about global citizens uniting to unlock the potential of individuals, technology and collaboration to create positive societal impact.
<b>Public Good</b>	A commodity or service that is provided without profit to all members of a society, either by the government or by a private individual or organization.
<b>Circular economy</b>	The Circular Economy can be broadly defined as a new economic model for addressing human needs. An economy that fairly distributes resources without undermining the functioning of the biosphere or crossing any planetary boundaries.
<b>Digital citizenship</b>	Digital Citizenship can be broadly defined as the application of digital technologies to better facilitate and engage citizens in public decision-making, service improvement, and social impact initiatives. This can be at a local / council, municipal, city or national-level.
<b>Distributed Ledger</b>	A distributed ledger is a type of database that is shared, replicated, and synchronized among the members of a decentralized network. The distributed ledger records the transactions, such as the exchange of assets or data, among the participants in the network.
<b>Open Source</b>	Code is published publicly, with clear stipulation of license. Open source is important in DLT for security -> the code is auditable; for transparency -> the way the system works is fully transparent; for re-usability (forking) -> so that if anyone wants to develop the project in a different direction, they can.
<b>Decentralisation</b>	In blockchain, decentralization refers to the transfer of control and decision-making from a centralized entity (individual, organization, or group thereof) to a distributed network. Decentralized networks strive to reduce the level of trust that participants must place in one another, and deter their ability to exert authority or control over one another in ways that degrade the functionality of the network.
<b>Permissioned</b>	DLTs that have a closed number of nodes and require permission to join.
<b>Smart contracts</b>	Pieces of code representing 'agreements' held across the DLT that execute when certain criteria are met.
<b>Hyperledger</b>	An <b>open-source collaborative effort</b> created by the Linux Foundation to advance cross-industry blockchain technologies. This houses multiple Distributed Ledger projects, including Fabric, Iroha, and Sawtooth Lake.
<b>Permissionless</b>	DLTs that are open for anyone to contribute to as a node.
<b>Finality</b>	How long before consensus in the network is final
<b>Hashing</b>	Algorithms whereby any amount of data is "hashed" to produce a fix length output that is unique to that data. Used to prove whether data has been tampered with, and is also an important part of cryptographic keys and consensus protocols. See SHA-256
<b>Consensus protocol</b>	The method through which the network agrees on what gets added to, and which version of the ledger is correct. See "proof-of-work", "proof-of-stake", RAFT...
<b>Self-sovereign identity</b>	Self-sovereign identity (SSI) is a term used to describe the digital movement that recognizes an individual should own and control their identity without the intervening administrative authorities. SSI allows people to interact in the digital world with the same freedom and capacity for trust as they do in the offline world.
<b>Proof-of-work</b>	Consensus protocol where consensus is arrived at through an ongoing competition between "miners" to find the right hash output for blocks of data in the network.

<b>Byzantine Fault Tolerance</b>	How many nodes in the network need to collude in order to manipulate the ledger and attack the network.
<b>dApps</b>	Applications run on DLT.
<b>Blocks</b>	Packages of data recorded on the Blockchain. An example of a mined Bitcoin Block can be seen <a href="#">here</a> . As you can see, this provides a lot of important information about the Block, including its <b>Hash</b> , the <b>Hash</b> of the previous block the <b>Nonce</b> , <b>Timestamp</b> , the <b>Difficulty</b> and the <b>Block Reward</b> .
<b>Hash</b>	An identifier for input data which does not disclose information about the data. In essence, a hash function takes input data and returns a fixed length value which acts as a 'digital fingerprint' for the input data. The hash will always be the same for the same input data. Modifying the input data even by a tiny amount will change the Hash in an unpredictable manner.
<b>Keys</b>	Public Key cryptography uses <b>Public</b> and <b>Private</b> keys to encrypt and decrypt data. In the context of Cryptocurrencies and more specifically Bitcoin, a Private Key is a secret number that relates to a user's Bitcoin address. The Private Key enables a user to spend Bitcoins as it generates a Digital Signature, mathematically confirming the user has the right to issue each transaction they send out. The bitcoins are sent to another user's Public Key address and becomes their property, because their Private Key cannot be calculated from their Public Key.
<b>Decentralised Autonomous Organisations (DAO)</b>	A fully automated business entity that operates without human involvement, The 'organisation' acts in accordance with its rules which have to be transformed into software code. Smart Contracts are programmed to carry out certain activities on behalf of the DAO. <i>The best known DAO is the DAO which was built on Ethereum and intended as a new form of venture capital fund, but failed after a vulnerability in the DAO's code led to the equivalent of \$70 million being siphoned from the fund.</i>
<b>Digital Tokens</b>	Digital tokens which enable the token holder to acquire goods or services from the token issuer (i.e. performs as virtual currency)
<b>Consensus</b>	Agreement between nodes in DLT that the current state of the shared ledger is mathematically valid
<b>Digital Signature</b>	A digital code that is created and validated by public key encryption, proving that only the holder of the <b>Private Key</b> could have generated the signature. This can be attached to a document sent electronically to identify the sender of the document, without revealing the sender's Private Key.
<b>ERC20 Standard</b>	A specific set of functions which developers must use in their Ethereum Tokens to make them compliant with a widely established set of protocols and tools
<b>Ethereum</b>	An open-source, public, blockchain-based distributed computing platform released on July 30th 2015 by Vitalik Buterin featuring Smart Contract functionality that allows developers to build and deploy dApps
<b>Node</b>	Any computer that connects to the DLT network. Nodes first connect to the network and obtain an up-to-date copy of the Ledger. Each node is responsible for receiving, validating, and relaying transactions and blocks to its peers. This security model ensures permanent availability of data across the network, and rejection of invalid transactions
<b>Quantum Computing</b>	Quantum computing is seen as a possible threat to the security of Blockchain systems because quantum computers are expected to be able to hack public key encryption systems that make Blockchain (as well as many other parts of cyberspace) secure



# CHALLENGE REFINEMENT AND PROOF-OF-CONCEPT SCOPING TEMPLATE

CHALLENGE REFINEMENT & PoC SCOPING			
<p>Describe the main challenge / objective / goal of your VFL </p>	<p><b>CHALLENGE:</b> What is the topic of the challenge? Why has that topic been chosen? What makes your challenge distinctive?</p>		
<p>What goals and objectives do you have for the PoC? What impact are you trying to achieve? </p>	<p><b>SUCCESS &amp; IMPACT:</b> What do you hope to achieve? What are the core objectives / goals for your VFL in regards to this challenge? How will you quantify and measure impact?</p>		
<p>Proof of Concept: Describe what PoC you will create in order to respond to your challenge, include your targeted user, the core value add of the PoC to your targeted user, what main functionalities and/or services the PoC will provide and an explanation of how it resolves the challenge identified above. </p>	<p><b>PROOF OF CONCEPT</b></p>		
<p>Pilot: Explain how your PoC will be tested in the real world. Describe what environment you will create to test your PoC, who will be involved, when it will occur, and how you will evaluate the results. </p>	<p><b>PILOT</b></p>		
<p>Data: Explain what data you need to run your pilot. Where will you get this data. From and who needs to be involved? </p>	<table border="1"> <tr> <td> <p><b>DATA:</b> What information / data do you need for your PoC and your pilot?</p> </td> <td> <p><b>DATA:</b> What information / data should the prototype provide its users?</p> </td> </tr> </table>	<p><b>DATA:</b> What information / data do you need for your PoC and your pilot?</p>	<p><b>DATA:</b> What information / data should the prototype provide its users?</p>
<p><b>DATA:</b> What information / data do you need for your PoC and your pilot?</p>	<p><b>DATA:</b> What information / data should the prototype provide its users?</p>		
<p>Resources: What resources / expertise do you need for the PoC to be successful? What resources / expertise do you already have that you can bring into this project? Revert back to your Partgrowth side deck if needed. </p>	<table border="1"> <tr> <td> <p><b>RESOURCES:</b> What resources, assets, expertise, and data do you already have that you can bring to this project?</p> </td> <td> <p><b>RESOURCES:</b> What resources, assets, expertise, and data do you not already have that you will need for this project? How will you source them?</p> </td> </tr> </table>	<p><b>RESOURCES:</b> What resources, assets, expertise, and data do you already have that you can bring to this project?</p>	<p><b>RESOURCES:</b> What resources, assets, expertise, and data do you not already have that you will need for this project? How will you source them?</p>
<p><b>RESOURCES:</b> What resources, assets, expertise, and data do you already have that you can bring to this project?</p>	<p><b>RESOURCES:</b> What resources, assets, expertise, and data do you not already have that you will need for this project? How will you source them?</p>		
<p>Gaps &amp; Barriers: What is still unclear with regard to the challenge? What are the known / objectives that you have to deal with in this challenge? </p>	<p><b>GAPS &amp; BARRIERS:</b> What is still unclear with regard to the challenge? What are the issues / obstacles that you have to deal with in this challenge?</p>		

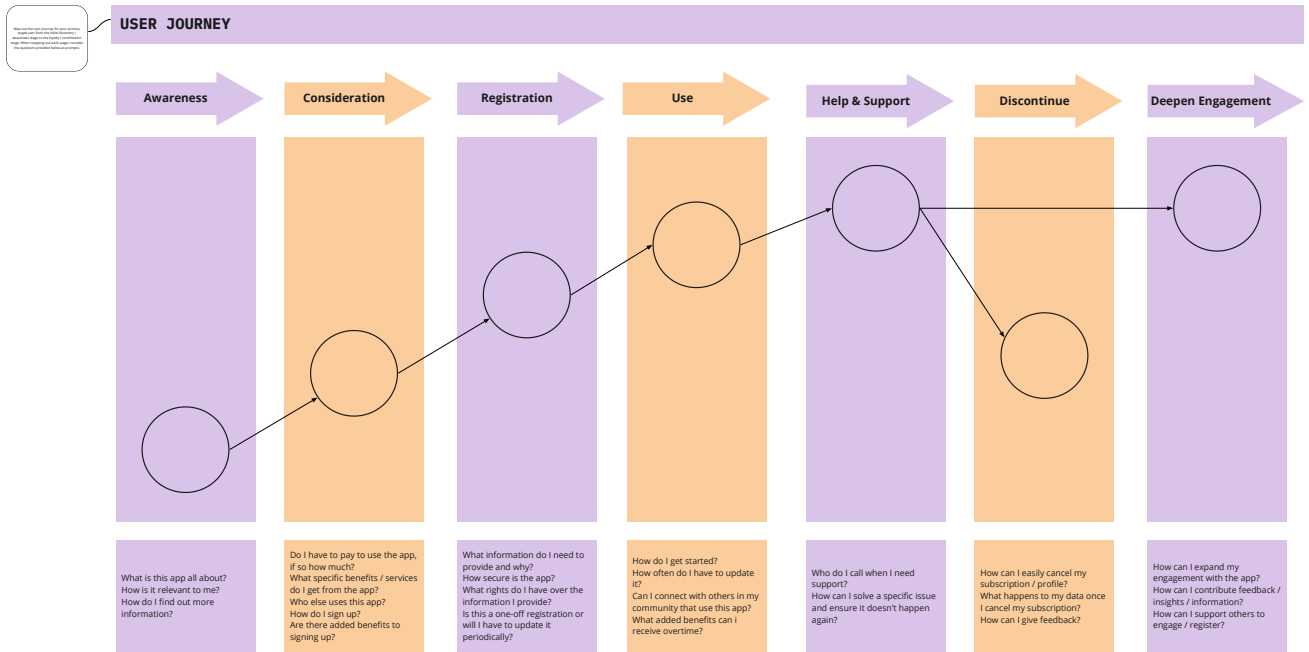


# STAKEHOLDER VALUE TEMPLATE

STAKEHOLDERS AND VALUE						
		Role: What is the role of this stakeholder?	Value: What value will this stakeholder get from using the PoC?	Touchpoints: When will the stakeholder engage with the PoC?	Accessibility: What unique accessibility needs does the stakeholder have?	Contribution: How will the stakeholder contribute to the PoC? (Data, etc.)
Stakeholder 1: Target User						
Stakeholder 2: TBD						
Stakeholder 3: TBD						
Stakeholder 4: TBD						
Stakeholder 5: TBD						
Stakeholder 6: TBD						

Who are the direct and indirect contributors of your PoC? Consider them in terms of people (e.g. business owner, clients, users) who share a personal or professional interest with what they will be using and participating with. How would the prototype benefit and reach people they will have access to? \*

# USER EXPERIENCE TEMPLATE



## DLTS FOR PUBLIC GOOD MASTERCLASS TEMPLATE

**DEFINITIONS Instructions:**

Review the definitions included in the center of this board. Reflect upon the definitions - consider how your's or your organisation's definition of these terms is similar or different. Include these similarities and differences in the post its here.

For this exercise, choose one set of colored posits to provide your answers. Replace 'Participant #' with your name.

As a group, take turns to discuss what you've written on your post its.

**DEFINITIONS:** Do the definitions for **Digital Citizenship** and **Circular Economy** provided today resonate with you and your organization? How do you and/or your organization define these terms?

**Circular Economy Definition**

**Digital Citizenship Definition**

Participant 1



Participant 2



Participant 3



Participant 3



















**BARRIERS & OPPORTUNITIES Instructions:**

Review the barrier and opportunities slides included in the center of this board. Reflect upon them and consider which resonate with your challenge / VFL. Indicate which are most relevant to your challenge and why using the post-its here.

For this exercise, choose one set of colored posts to provide your answers. Replace "Participant #" with your name.

As a group, take turns to discuss what you've written on your post-its.

**BARRIERS & OPPORTUNITIES:** Which barriers and opportunities presented today resonate the most with you in relation to your challenge and/or VFL, and why?

	Opportunities	Barriers
Participant 1	 	 
Participant 2	 	 
Participant 3	 	 
Participant 3	 	 

**USE CASES Instructions:**

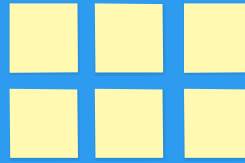
Review the use cases slides included in the center of this board. Reflect upon them and consider which use cases are most relevant to your challenge / VFL. Indicate which are most relevant and why using the post its here.

For this exercise, choose one set of colored posts to provide your answers. Replace 'Participant #' with your name.

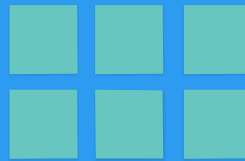
As a group, take turns to discuss what you've written on your post its.

**USE CASES:** Which use cases presented today resonate the most with you in relation to your challenge and/or VFL, and why?

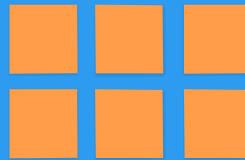
Participant 1



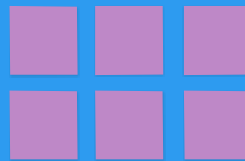
Participant 2



Participant 3

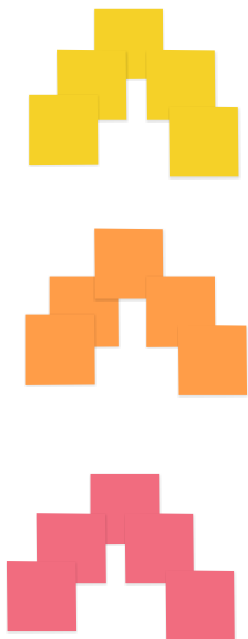


Participant 3



# INNOVATIVE FINANCE CANVAS TEMPLATE

## Innovative Finance Canvas - VFL Hgb Works Helsingborg and AID:Tech



<p><b>PROBLEM-SOLUTION FIT</b></p> <p>1-2 sentences on the problem(s) you are trying to solve</p> <p>How does your solution address the problem?</p>	<p><b>IMPACT POTENTIAL</b></p> <p>What is the impact you expect to make?</p> <p>How will you measure the impact?</p>	<p><b>TEAM</b></p> <p>Who is part of the co-founding team and what makes them great to build and scale this product?</p>	<p><b>MARKET SIZE</b></p> <p>Who are you selling to?</p>
<p><b>WHY NOW</b></p> <p>Why is now the best time to start your company?</p>	<p><b>UNIQUE VALUE PROPOSITION / MAIN DIFFERENTIATOR</b></p> <p>What's your unfair advantage?</p> <p>What's your defensibility - what other can't easily replicate?</p>	<p><b>TOP COMPETITORS</b></p> <p>Who are they?</p> <p>How are you better/different?</p>	<p><b>GO TO MARKET STRATEGY</b></p> <p>How are you planning to reach your customers?</p> <p>Customer acquisition channels?</p>
<p><b>INVESTOR PROPOSITION</b></p> <p>Product launch Monthly Revenues Growth</p> <p>What is your exit strategy?</p>		<p><b>FUNDRAISING STRATEGY</b></p> <p>How much are you raising and what will that help achieve?</p> <p>What types of funding will you raise?</p>	

## FOR MORE INFORMATION

For more information on each of the Virtual Field Labs, the accelerator programme, the DLT4EU ecosystem, and materials such as reports and videos, please refer to the DLT4EU website at <https://www.dlt4.eu>

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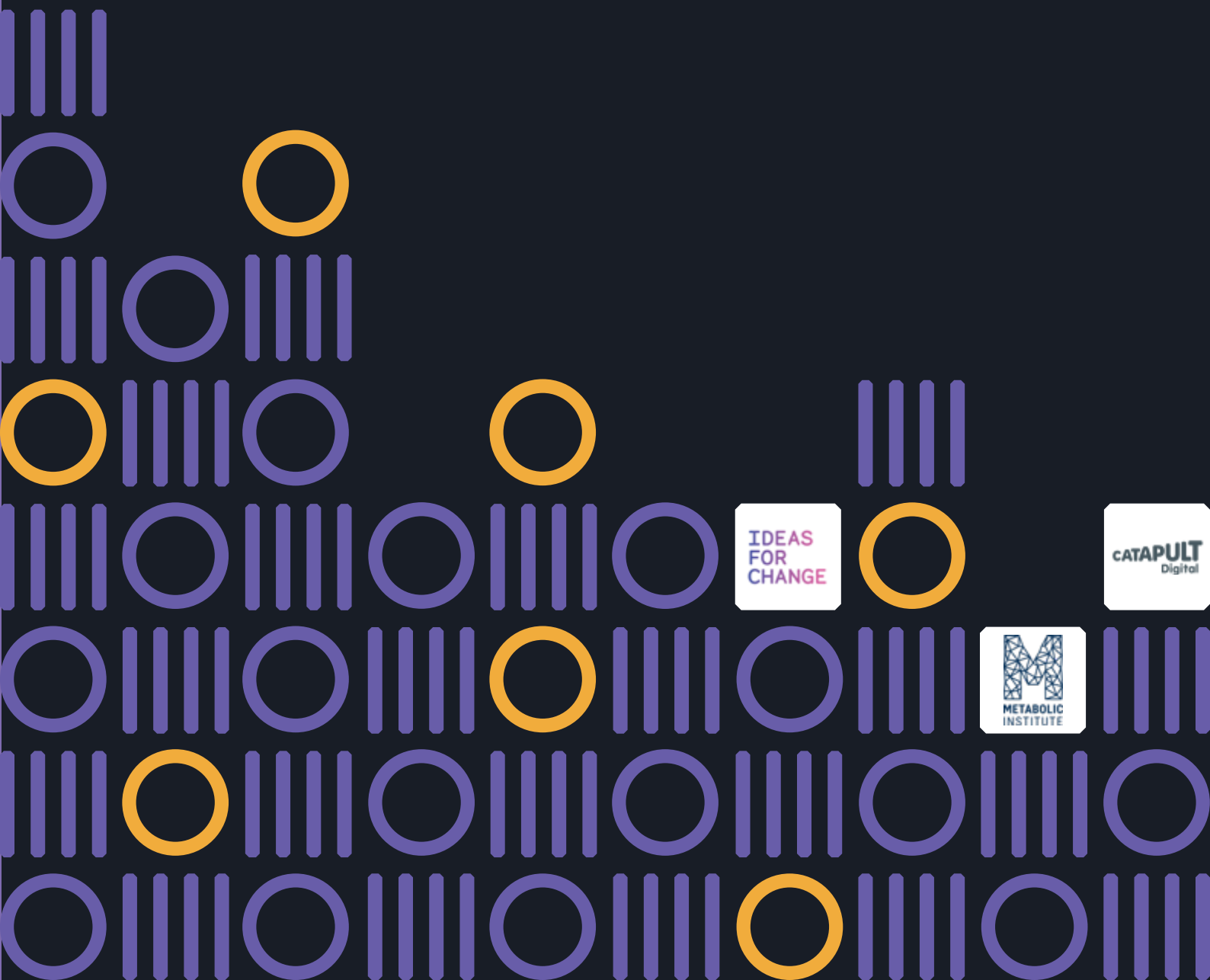
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