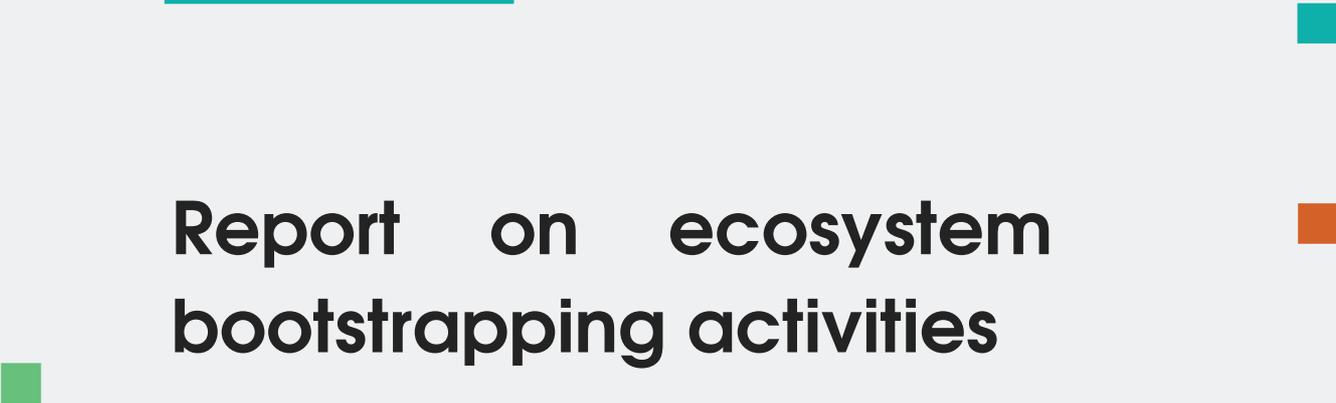
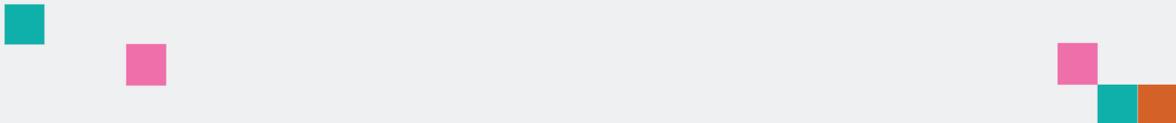




decode



Report on ecosystem bootstrapping activities



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Project no. 732546

DECODE

DEcentralised Citizens Owned Data Ecosystem

D6.6 Report on ecosystem bootstrapping activities

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Lead beneficiary: Dyne

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Approved by: Francesca Bria, Chief Technology and Digital Innovation Officer, Barcelona City Council (IMI)

Date: 31/12/2017

This report is currently awaiting approval from the EC and cannot be not considered to be a final version.

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1. Introduction

In *Key Elements and Enablers for Developing an Internet of Things (IoT) Ecosystem*, Omar Valdez-de-Leon concludes that ecosystems will ultimately be the competitive unit in the digital transition. Building an IoT ecosystem, according to him “is a complex undertaking that requires many interconnected factors to be balanced. The challenge for organisations is to establish a digital ecosystem strategy that is holistic, considering all the elements described above and adopt an ecosystem mindset that moves away from vertical value chains with one set of customers at the end of it.”ⁱ

The first half of the first year in WP6 was spent working out the rationale of co-creation in a project that puts real communities and citizens at the center, with a long-term vision of projected agency.. Co-creation takes into account the slow speed and messiness of actual situations. This is evident in building the pilots, where co-creation and co-designed methodologies are applied in the framework of lean and agile development, as described in D 1.1..

The co-creation methodologies proposed might be relevant also to build an ecosystem of end-users and communities who can become DECODE champions from a rationale of creating collective awareness, and educating about today’s digital citizenship.

This document outlines the steps and the process that will lead to an actionable outcome during the duration of the project and after the project has finished. DECODE is building an ecosystem through its technical development and outreach, its pilots and user groups, the thought leadership of its members and the effect on other projects in the cities it is working in. All these activities are being reported on in dedicated deliverables.

The purpose of this document is to give insight into the feasibility of technical solutions driven not by commercial partners but by institutions and actors that operate on city, national and EU level. This feasibility requires hegemony of social, philosophical, and economic drivers in favor of the most characteristic aspects of the technical solutions provided. This hegemony (*a structured convergence of opinions*) is often layered in the sense that it fails to address the granularity that is intended, Instead it follows the characteristics but fails to implement them at the intended level.

This document is also a commentary about the feasibility of technologies to be adopted and scale from the ground-up, independently of major corporations. In a general and in popular imagination there is no real alternative to today’s real world situations; FB, Google, Amazon have won the ‘winner takes all’ paradigm and seem to be eternal.

Apart from the fact that it is not welcome nor productive, there are too many dependencies to real world discrimination and dependency in the current governments to fully back nationalization of all data assets or run a Chinese form of platform politics that integrates Industrial Internet as sharing Clouds across value chains but aligning that with the Shanghai Honesty app pulling data from over 300 databases scoring citizens on trust and thus credit rates.

In between the commercial agency of the US data lakes with their surveillance capitalism business model¹ and the fully integrated top down and Government controlled Chinese approach, Europe should find *a new balance with new leading actors* in between centralization and decentralization, anonymity, citizens rights, and accountability and public investments in innovative digital infrastructures and SMEs.

So how can this aspiration to scale differently become actionable from a DECODE perspective?

The key lies in seeing DECODE as a building block in a larger and bold political vision that Europe should develop about its digital future. This vision is currently being shaped in programmes such as CAPS (Collective awareness platforms); Digital Social Innovation (<https://digitalsocial.eu>) linked to the broader social innovation strategy of the EU led by DG Research; the Blockchain for social good Prize (https://ec.europa.eu/research/eic/index.cfm?pg=prizes_blockchains); STARTS (<https://ec.europa.eu/digital-single-market/en/ict-art-starts-platform>), and the NGI (Next Generation Internet Framework, ngi.eu) in which dyne.org and Nesta are both leading actors in two of the four running CSAs (until Spring 2019).

In particular, the Next Generation Internet is the new umbrella framework that curates the conversation about what it means to be human in a fully digital and digitized world. It brings together AI, Robotics, 5G, Big Data, and IoT on the one hand and human interaction on the other including business models, legibility, security, privacy and trust. It sets the scopes for billions of investment decisions that can be shaped by the values of projects like DECODE.

It is clear that If the European Union wants to survive and more actually lead in the 21st century, through the AI and Industry 4.0 transformation, it has to secure its own data. It can thus create its own search engines, taxi services, hotel services, energy grids etc. In a connected world security becomes a process. As a concept itself it needs to be distributed over the person, the objects affiliated with that person and the immediate surroundings. So any party aiming to do 'security' must have some agency on all these levels. As a 500 million zone it has all the capabilities for scaling horizontally as well as vertically. It could also experiment the model from the ground up starting with a

¹<http://www.shoshnazuboff.com/new/recent-publications-and-interviews/big-other-surveillance-capitalism-and-the-prospects-of-an-information-civilization/>

*network of cities (like Barcelona and Amsterdam are doing in DECODE), and then export this model abroad to Latin America, Africa, Russia, and why not, also China (already working on a similar 'China OS')."*²

In this vision DECODE is the enabler of data sovereignty (see the diagram in section 3) bridging the ownership of data citizens produce from their *bodies*; wearables (health), *homes*; smart home appliances (neighborhood), *mobility*; connected cars and smart public transport, and *public identity*, citizenship in the smart city, with the legitimate questions and scenarios that service providers (from doctors to governance structures) can ask.

The DECODE HUB is setting the idiosyncratic rules that can be different for each person (expose me fully, gradually or hide me) that determines what answers will be given to those questions, and what entitlements to data citizens should have.

It thus becomes a building block and a basic digital service much like the Estonian e-card. In year 3 a business model should be developed alongside a roadmap for the exploitation of the DECODE HUB.

² As outlined in Wanted: a pragmatic cybernetics and a new elite. A new form of politics in context of the technological changes of Internet of Things, Van Kranenburg. ANALYSES POLICY REVIEWS OPINIONS VOLUME 2 (2016) ISSUE 1 EUROPEAN CYBERSECURITY JOURNAL
https://www.theinternetofthings.eu/sites/default/files/docs/ECJ_Extract_Volume_2_Issue_1_2016_Rob%20van%20Kranenburg%20%281%29.pdf

2. DECODE Ecosystem mapping

DECODE is an ambitious and experimental project that aims to target and engage a variety of audiences and stakeholders.

These all are characterized by certain qualities. In our current (Reference) Models and (Reference) Architectures we build from and with these actors as entities in mind. The data flow of IoT will engender new entities consisting of different qualities taken from the former three groups. The project will undertake a variety of activities to promote its results to the group of stakeholders, which will use the results of DECODE to develop and provide advanced decentralised applications

We identify here the main actors:

1. **Citizens and local communities in Barcelona and Amsterdam (and beyond):** Citizens and local communities such as Metadecidim Barcelona community; Makersense/smart citizens groups; Fairbnb and [Gebiedonline in Amsterdam; Barcola and Ouishare, and FabLab/Makerspaces in Barcelona are key communities that the project started to engage](#) in order to analyse socio-technical needs and integrate feedback coming from end-users in the pilots development. The project also engages general audience and citizens in large-scale events, as done during the kickoff meeting or during the Maker Faire and the Smart City Expo.
2. **Open source developers; blockchain enthusiasts, hackers and makers:** The communities of open source developers and web entrepreneurs are another key project stakeholder. In the next year the project will outline a developers engagement calendar with developers' days; hackathons & open challenges that will be led by IMI, Arduino, Dyne, ThoughtWorks and Waag Society. The open challenges offers opportunities for developers to continuously help improve the work of the consortium and find practical applications for the developed framework in their own context. The hackathons help spread the word among the target group and offer a space for knowledge exchange, inspiration and networking.
3. **Industry/startups/SMEs:** Startups, SMEs and bigger companies will be involved in the project projects in the second phase of ecosystems building, so that DECODE can represent a new decentralized protocol and data architecture on top of which new talent can build data-driven privacy-enhancing applications. The interaction with the industry is happening through fixed events run by DECODE, such as the participation to the Smart City Expo; The Mobile World Congress/4Y4N (<https://www.4yfn.com>), one of the biggest startup platforms in Europe, and the relationship with industry in the two cities where pilots take place. In particular, standardization activities include relationship with main industrial bodies that are looking to standardize

blockchain and distributed ledgers (e.g. Bitcoin; Ethereum; Hyperledger; W3C-Blockchain Community Group; OASIS-ISITC Europe; ITU; ISO/TC 307 ...)

4. **Academic and Research communities:** DECODE is a very ambitious and experimental project that has a strong research & innovation component. In particular, experimental research is happening regarding distributed data architectures that are privacy enhancing and scalable; and on alternative economic models for data platforms that are based on the common good and wealth redistribution. This involves multidisciplinary fields of research including privacy and security; economics of platforms; blockchains; new collective rights to data and so on. DECODE will thus be actively disseminating the results at multidisciplinary level: technical, legal, economic and social. In June/September 2018 the project will be holding a Symposium on distributed architectures and data sovereignty, and a summer school in collaboration with the Privacy Enhancing Technologies Symposium (<https://petsymposium.org>) organized in Barcelona July 24-27. The project will also be disseminating key material in other academic conferences targeting a variety of audiences with different levels of expertise in the area and raise awareness in this broad audience.

5. **Cities, public bodies, policymakers:** The project is strongly engaging with city governments through our pilots cities Barcelona and Amsterdam, but also with European and national level legislators. Partner cities (Barcelona and Amsterdam) are disseminating DECODE through their international networks such as EURO CITIES, The Open and Agile Smart Cities network, and the European Innovation Partnership on Smart Cities and Communities (EIP-SCC). An official presentation of DECODE and the presence at BCN City Council booth happened during the Smart City Expo in November 14-16 2017, where over 700 global cities participated. The project has also engaged EU policy makers and plans to do more during 2018, targeting legislators; policy-makers; decision-makers at EU level to put at the center of Europe's digital Agenda data sovereignty and decentralized technologies.

3. Ecosystem input from Meetings in Brussels and Barcelona

After analyzing the stakeholders it was decided to start focusing on building strategic advice arguments and methodology to Cities (starting from Barcelona and Amsterdam that are implementing DECODE pilots and integrating its principle in their responsible data strategy); EU policy makers; companies in Industry 4.0 and SME clusters and alliances to foster the DECODE ecosystem.

In year 2 we will focus on high-level topics that can inform EU research & innovation and digital policy. One example is the Next Generation Internet, NGI topics for 2019 and beyond and the drivers that put these topics into a policy context beyond immediate action.

The scope for the activities in year 2 are outlined in a Roadmap in Section 4. Year 3 activities will be decided at the end of year 2, to be fully agile. These will lead to an outcome: a strategic consultancy roadmap, consisting of short (one day), mid (three days) or long (in-house) methodology that should lead to implementation of the DECODE philosophy and/or enablers at various levels of decision-making.

Workshop with policy makers in Brussels

Europe's Digital Transition cannot be facilitated from a technology-push Agenda, starting from IT, as a technical driver fully tuned to optimization of a restricted set of resources (shareholders) and a notion of efficiency that does not take fully into account the real cost of production, distribution, welfare and the social economy, citizens needs and their digital rights.

Optimizing resources in the scale and scope of society as a whole, Society 4.0, requires a vision that is a mix of philosophical and ethical drivers combined with pragmatic philosophies of action that present strong economic, political, and legal actions. That vision needs to have a clear roadmap for how it views innovation.

The need for an aligned vision became very clear in a seminar co-organised by DECODE together with the IoT Council³, attended by 30 high level policy people, in Brussels on Nov 22 2017, to discuss the following question: "where is the vital public agency on identity and/with/through blockchain?"⁴

³ <https://ec.europa.eu/futurium/en/next-generation-internet/ngi-move-salon-informal-seminar-blockchain-and-public-agency>

⁴ Gérald Santucci was co-moderator, together with Cecilia Bonefeld-Dahl, Director-General of DIGITALEUROPE, and Rob van Kranenburg, founder of Internet of Things Council (the world's largest IoT community network) and Ecosystem Manager for EU-funded projects DECODE, as Rapporteur.

In his report about the meeting, *Blockchained Melody*, November 23, 2017, Gerald Santucci, writes: “My instinct is to say that the current climate is not something new or original. We are on the crest of a wave of disruptive change. In fact everything is changing: technologies, supply chains, logistics, climate, media, delivery channels, social expectations, etc. Our very understanding of everything is changing. This always happened in the past, but what is new is perhaps the feeling of “accelerating change” and the associated feeling that our societies are unable to take ownership of change and to feel in control. Current frictions within societies (e.g., the calls from some populations in favour of self-determination in Catalonia, Scotland, Lombardia, and more in Europe) reflect a desire of a better equilibrium between historical and cultural traditions and invention of the future and, more fundamentally, a search for a meaning.”

The entire report of the meeting can be found here: <https://www.theinternetofthings.eu/gérald-santucci-blockchained-melody>

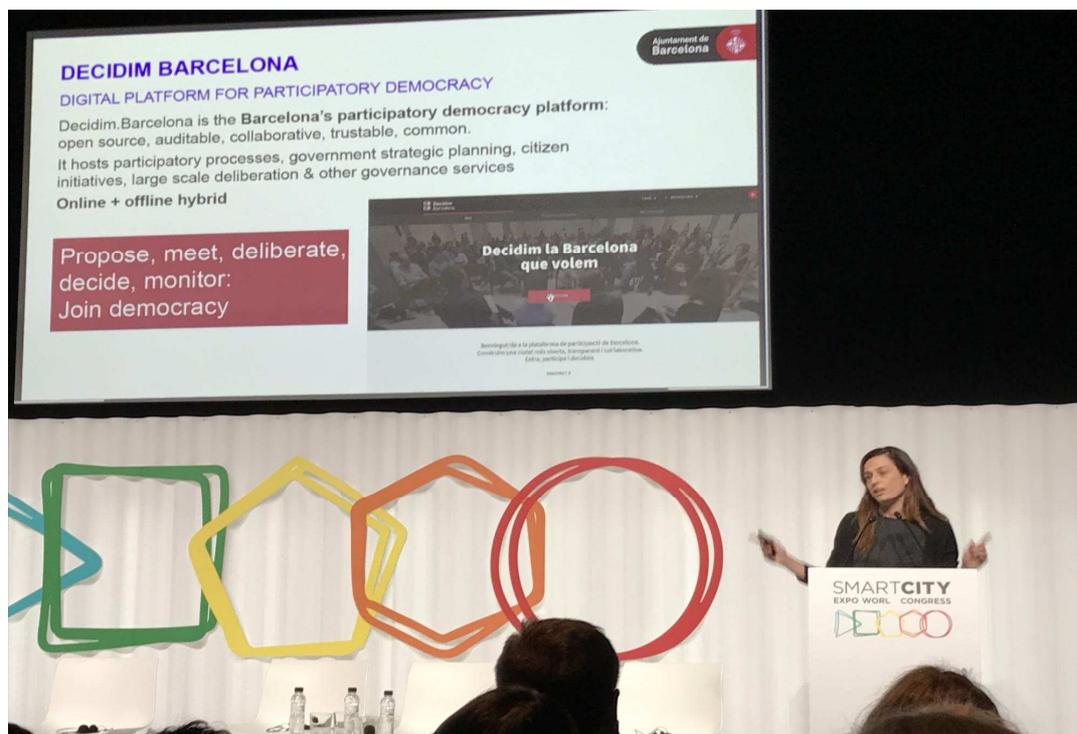


Presentations of Elena ALAMPI (Policy Officer, eGovernment and Trust Unit, European Commission's DG CONNECT), Denis "Jaromil" ROIO (well-known artist, theorist and hacker, programmer of the dyne.org network), Susana NASCIMENTO (Policy Analyst, Foresight, Behavioural Insights and Design for Policy / EU Policy Lab, European Commission's Joint Research Centre), Dominik SCHIENER (co-founder of IOTA Foundation), Marloes POMP (project leader of about 35 blockchain projects within the Dutch Government), and Fabrizio SESTINI (Senior Expert in Digital Social Innovation, Next-Generation Internet Unit, European Commission's DG CONNECT), the seminar inspired an open discussion atmosphere where different opinions were expressed. Among participants were Eva A. KAILI, Member of the European Parliament, Chair STOA Scientific Foresight Unit) and Nicole MUESSIGMANN (Programme Officer, Next-Generation Internet Unit, European Commission's DG CONNECT). Rob van Kranenburg and the DECODE project (<https://www.decodeproject.eu>) will report later on the content and conclusions of the seminar.

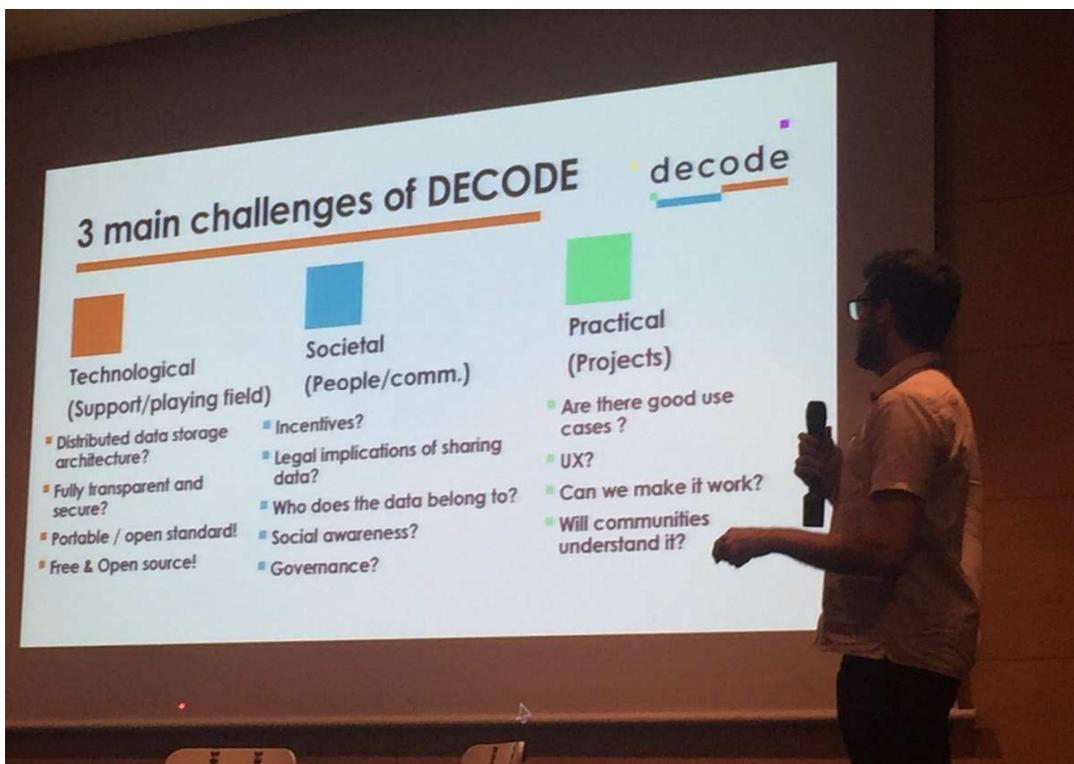
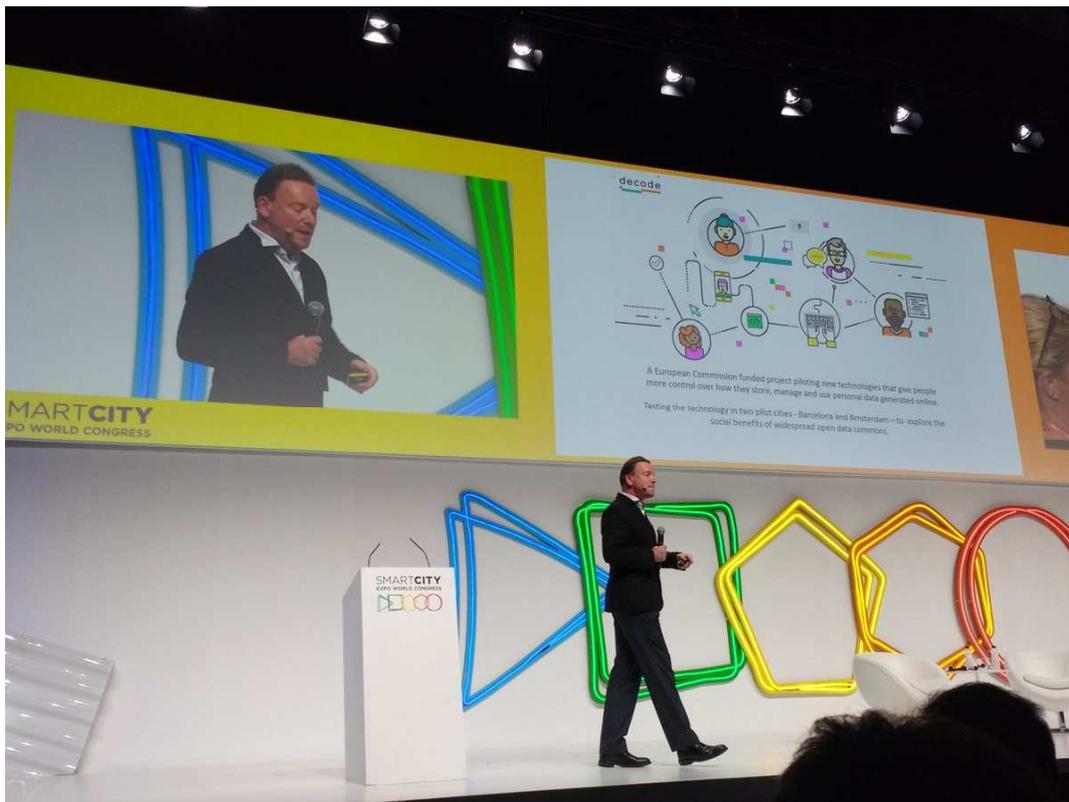
Engaging Cities around City Data Commons: DECODE Presentation during the Smart City Expo

DECODE was presented at Smart City Expo⁵ (November 15) in four different sessions and panels by Francesca Bria (Project Coordinator), Oleguer Sagarra (DECODE pilots coordinator), by ThoughtWorks (DECODE technical lead), and by Geoff Mulgan (CEO Nesta.).

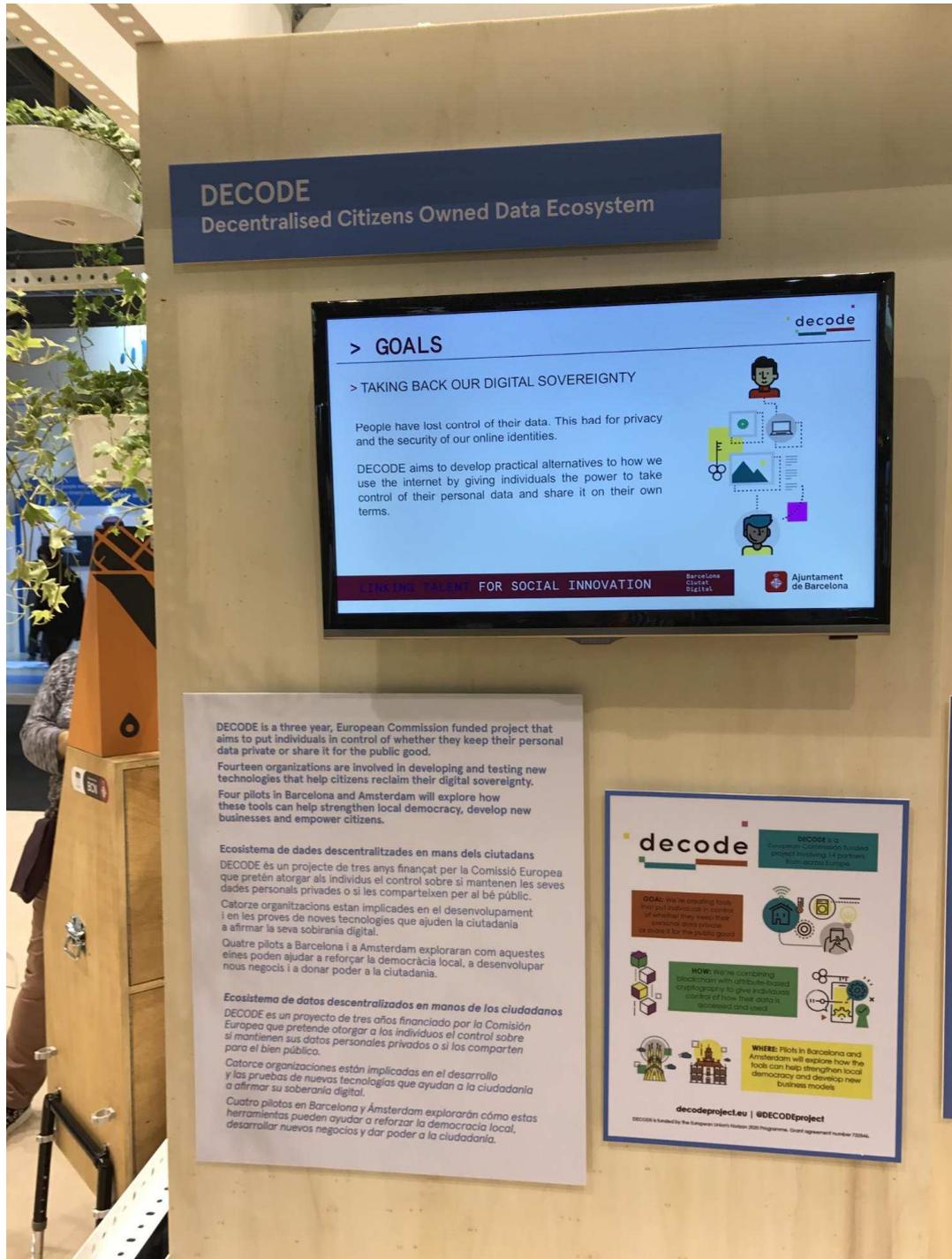
The presentations and panels had the objectives to engage cities and to show the crucial role cities can have to be the custodians of new digital rights of citizens, in particular in relation of the need to establish data sovereignty and citizens control over their personal data.



⁵ <https://www.4yfn.com/event/scewc-17/programme/>



DECODE was also presented at the BCN City Council booth that was visited by thousands of people for three days:



From the presentations and the debate in Brussels and Barcelona three main topics for further investigation and ecosystem building in year 2 came forward:

Awareness and education, narrative drivers for stories, examples to create immediate action

Explaining the current drivers of the Digital Transition to a disenfranchised audience is difficult even if the effects are visible and present in everyday life: fake news, depression among youngsters, addiction to social media, and on a more economic scale, fear of job loss because of robotic automation, lack of agency on a political level (fining innovative companies or legally trying to regulate data protection, (GDPR). We lack positive stories and examples. We also miss out on formats that reach young audiences like Instagram and youtube.

Conceptual building blocks from Hannah Arendt⁶: Plurality and ‘natality’

We acknowledge the fact that before we can offer tools of decentralized data management from the point of view of the ‘citizen’, that citizens first need to free themselves into the level of *primary agency*, *to frame subjectivity*.

- Which stakeholders are involved concretely in the concept and implementation of data sovereignty – as some argue data is the new oil – what is the process of granting data ownership?
- Why are citizens unable to see themselves and their networked identities as central to organizing building-blocks around that level of agency, but keep outsourcing this level of agency to another state building scenario?

We want to investigate the productivity of the term used by Hannah Arendt: *natality*. To her this refers to being grounded in a situation while looking at what can constitute new beginnings from any situation and devoting more energy to these than to trying to preserve the rituals and ceremonies that led to being able to conceive the situation as a situation (a given) in the first place.

From privacy to privacies

The general feeling is that the GDPR⁷ might be a starting-point, but is looking at privacy in a too static way. In a fully connected environment of potential added value to citizens the new term ‘privacies’ was very well received. *Privacies* can be described as dynamic levels of accountability, levels that can beset according to predefined rules and are in control of the end-user. Such concepts are more easily hard-codable and reflect the new given: privacy in a hybrid world is a *process* distributed over the

⁶ Johanna "Hannah" Arendt[8] (/ˈɛərənt/ or /ˈɑːrənt/; German: [ˈaːrənt];[9] 14 October 1906 – 4 December 1975) was a German-born, American political theorist. Her eighteen books and numerous articles, on topics ranging from totalitarianism to epistemology, had a lasting influence on political philosophy.[7] Arendt is widely considered one of the most important political philosophers of the twentieth century.[7][10] https://en.wikipedia.org/wiki/Hannah_Arendt

⁷ <https://www.eugdpr.org>

environment (smart), a citizen (grown up in the digital), and the objects themselves (dynamic and learning environments themselves).

4. Setting up of DECODE AG and Blockchain Working Group

Given the large impact potential of the DECODE project, strong involvement of a large number of stakeholders in different phases of the project is required, from the initial requirement phase over the specification phase to the field trials and exploitation phase.

The **DECODE Advisory Group** will be chaired by Project Coordinator Francesca Bria, and will kickoff in January 2018 during the second DECODE GA. The role of the 18 high-level distinguished experts from relevant domains that agreed to be part of the Group will be to comment on, and challenge the research findings throughout the project and advise on the final report including policy recommendations for the Commission on how to protect citizens' digital sovereignty and their privacy, and how to use distributed architectures and distributed ledgers for this purpose, feeding into other Horizon 2020 initiatives.

We are asking from AB members the following:

- Attending two meetings/workshops per year (one every 6 months, also online)
- Providing comments on key findings during the life of the project
- Attending our yearly Consortium General Assembly (also online)

The Advisory Group will also serve as **Blockchain Working Group (WP)** that is set-up to critically assess blockchain technology and its development in a scientifically grounded way, while also suggesting the way forward for Europe to develop open and distributed information architectures to counter the unaccountable data exploitation we are increasingly finding as a standard business model.

To do this the group brings together people from a diverse mix of backgrounds, also including economists, critical theorists, lawyers, digital rights activists and technologists. The outcomes of this work are not just crucial at the European level, but can set precedents at a global level too. The advisory group is composed as follows:

The DECODE Advisory Group (AG) and Blockchains Working Group (WG)

Florian Glatz	Blockchain lawyer
Soshana Zuboff	Professor of Business Administration at the Harvard Business School
Pierre Bellanger	Author
Elias Haase	B9Lab, founder
Evgeny Morozov	Writer, Author, historian of technology
Dan Hill	Associate Director at Arup / Visiting Professor at UCL Institute for Innovation and Public Purpose
Seda Gurses	Post-doctoral fellow at COSIC/ESAT, Department of Electrical Engineering, KU Leuven, Belgium
Caroline Nevejan	Chief Science Officer, Amsterdam City
Chelsea Barbaras	Head of Social Innovation - Digital Currency Initiative at MIT Media Lab
Renata Avila	Senior Advisor, World Wide Web Foundation
Rachel O'Dwyer	Research Fellow in CONNECT, Trinity College Dublin
Javier Ruiz	Head of Policy, Open Rights Group
Carmela Troncoso	Tenure Track Assistant Professor, EPFL Lausanne
Joris van Hoboken	Professor of Law, Vrije Universiteit Brussels (VUB)
Ola Bini	Security Expert
Andy Mueller-Maguhn	Founder datenreisen and CryptoPhone
Brhmie Balaram	Senior Researcher on sharing economy in <i>RSA's Economy, Enterprise and Manufacturing team</i>
Gavin Starks	Founder of ODI, UK

5. Year 2 Ecosystem management: main themes and actors

Awareness and education, narrative drivers for stories, examples to create immediate action

Stakeholder coordination: building alignment across different imaginaries.⁸

In the DECODE project that questions of data sovereignty, networked democracy and new forms of trust make us rethinking the notion of decentralization both at level of the citizens and collectives, and at the level of the nation state.

Furthermore, in current political turmoil and crisis of legitimacy of current political institutions, the very notions of autonomy, self-organization and agencies in everyday life are put into question. Citizens are often willing to break with power structures that have harnessed the decisions on infrastructure and social systems – the EU or the nation state – and instead reclaiming that agency on the level of the individual, the family, the street, the neighborhood (enhanced with a digital social media twin). It is a dangerous situation for social cohesion if individual and collective autonomies are not restored by

⁸ From a report on Nov 22 Meeting: “We are onto a new ontology that has to be made with the pro and the cons, the positive people on personal agency and the ones looking out for a more balanced and fair division of resources for everyone. In the room were investors, hackers, activists, policy makers, industry, sme, politicians; all citizens as well and all fully ‘solid’, meaning real. We are starting to develop a conversation and it will be messy :) But we all share an urgency. We know that in between the US data-lakes and Chinese Industrial Integration (latest IIoT plan calls for sharing clouds in value chains- we basically have our strong social welfare/democracy (yes we can debate its demise but the notion of the public is still there) stakeholder coordination, like we showed in the seminar. It is clear we want to build a strong productive balance between centralization on infrastructure and decentralization on data and services, between anonymity and accountability and between innovation on the one hand and incentivizing maintenance and repair (circular) on the other.

That is actually the driver for DECODE, to start developing and curating a conversation and create alignment on bringing more real time analytics and trust mechanisms from distributed ledger technology (DLT) into the heart of decision making itself: politics, creating a kind of Estonian model for Europe as a whole;; a 500 million zone with a federated set of EU platforms and Clouds and bringing back data and value by turning the current passport into a device that only talks to EU platforms and Clouds (and acts as an IoT controller at the same time).

devolving powers to citizens and enable them to exercise collective action and take back control over their lives.

Analyzing these processes is extremely important in the light of the current EU response and the populist trends in other countries that run counter to a next wave of EU integration. Indeed, DECODE’s response to this crisis of trust is to inject more participatory democracy and popular sovereignty in the system. This we believe is the best answer to the rise of populism in Europe.

This leads us to posit as the two main questions to address in the DECODE ecosystem:

- Who are the key players building new institutions and social arrangements and how do we ensure that the DECODE enablers are built into the Digital Transition?
- Which stakeholders are involved concretely in the concept and implementation of data sovereignty – as data is news oil – what is the process of granting data ownership?

Who is to host your data if your identity is not stable? Can we imagine a case in which all data hosted by citizens is only running on their own local devices and ‘switched on’ when requested by external services? This is one of the business rationale for the DECODE BOX.

Industry, Internet of Things (IoT), SMEs

A blogpost on the DECODE project and its relation to similar data hub projects like Solid⁹, will be written by dyne.org for some IT/IoT companies. In a recent email interview with the Siemens Chief Security Officer we highlighted Dowse¹⁰ that is one of the DECODE components: (see dowse.eu) “dowse.eu will bring transparency and enhance sharing of data, goods, resources, skills in a neighborhood. What do you think of this? He replied: “Sharing is of great importance in my view, be it the sharing of security intelligence, the know-how of the latest threats and vulnerabilities and how to deal with them or sharing source code, which can be made more secure through joint effort than by individual effort. The exchange of know-how and people can help to overcome a lot of threats that we are currently facing.”¹¹

⁹ <https://solid.mit.edu/> Solid is an exciting new project led by Prof. Tim Berners-Lee, inventor of the World Wide Web, taking place at MIT. The project aims to radically change the way Web applications work today, resulting in true data ownership as well as improved privacy.

¹⁰ DOWSE is open source and open hardware device that you can setup on a low cost computer board (as a raspberry-pi).

It is easy to set up dowse in your network, it configures in a breeze; dowse will speed the home network up, eliminating malware and unwanted advertising and hiding from the outside all your activity, including crucial metadata as DNS queries.

Moreover dowse allows you to be aware of all your devices behaviours and traffic requests.

All activities can be seen in a glimpse. Phones, tablets, computer applications or other electronic things “calling home”; fridge and shoes included will pop up on your DOWSE radar and you can decide to switch them off.

¹¹ Q&A WITH ROLF REINEMA, CHIEF INFORMATION SECURITY OFFICER AND CHIEF PRODUCT & SOLUTION SECURITY OFFICER, SIEMENS GLOBAL

<https://www.theinternetofthings.eu/qa-rolf-reinema-chief-information-security-officer-and-chief-product-solution-security-officer>

A strategy to engage startups and SME is very difficult unless there is a direct and immediate advantage. The first step is to bring one of the startup accelerators and incubators into the ecosystem. 4YFN is in the NGIO Move Consortium and DECODE started to interact with this ecosystem during big events as documented in previous paragraphs¹²

Getting coders and similar projects involved

From a developers point of view one of the main achievements of DECODE up to this point is the development of Devuan (DECODE OS in WP4). The importance of this work for the developers' community has been documented by the following authoritative sources:

<https://blog.ungleich.ch/en-us/cms/blog/2017/12/10/the-importance-of-devuan/>

<https://news.ycombinator.com/item?id=15891046>

<https://linux.slashdot.org/story/17/12/11/0049245/does-systemd-makes-linux-complex-error-prone-and-unstable>

This is a major achievement we will be building on to enhance our developers' community interaction.

An internal list¹³ has been started about connected projects. Digi.me received a lot of attention in 2017 due to a health data living labs experiment they are running with the Icelandic government. On Arxiv a survey of the performance of different blockchain consensus mechanisms is scoped with DECODE.¹⁴ *Blockchain in Education*¹⁵ introduces the fundamental principles of the Blockchain focusing on its potential for the education sector. It explains how this technology may both disrupt institutional norms and empower learners. This could be a good example for more output to a general public.

In Ezio Manzini's¹⁶ typology of citizen involvement we can discern three categories:

- ✓ **Vertical collaboration:** individual citizens collaborating with solution promoters. Example: Fix my street.

¹² DECODE was presented at Smart City Expo (Nov 15) in two panels by Oleguer Sagarra (pilots coordinator), Francesca Bria (Coordinator) and others.

¹³ https://docs.google.com/spreadsheets/d/1IX3pBo5rETVnfHbFypH7ruNs7_x74kV27AjhHnmBpqY/edit?usp=sharing

¹⁴ <https://arxiv.org/pdf/1711.03936.pdf>

¹⁵ <http://publications.jrc.ec.europa.eu/repository/handle/JRC108255>

¹⁶ Ezio Manzini is perhaps the world's leading expert on sustainable design, with a focus on scenario building toward solutions encompassing both environmental and social quality. At the Milan Polytechnic is Director of CIRIS (the Interdepartmental Centre for Research on Innovation for Sustainability), where he focuses on innovative processes in the system of production and consumption and, in particular, on the relationship between product strategies and environmental policies in the perspective of sustainable development. <http://www.sigeneration.ca/ezio-manzini/>

- ✓ **Vertical and horizontal collaboration:** individual citizens collaborating with solution promoters and then, collaborating among them in a p2p way. Example: Carpooling.
- ✓ **Horizontal collaboration:** p-2-p collaboration among citizens. Example: Circle of care and Collaborative housing."

Rich scenarios embed all three types of collaboration, and DECODE is able to facilitate these scenarios. A detailed engagement strategy with the developers' community that involve hackathons, challenges and engagement with citizens will be described in D6.5

Plurality and natality

Political implementation; building concepts that can drive concrete models of action from philosophical cornerstones: Can the notions natality and plurality help us understand the current situation in which citizens, instead of decentralizing to the level of their subjectivity, engage with a new level of state agency?

The main policy space for this discussion was the Onlife Manifesto related to RRI, Responsible Innovation. This strand seems to be cut off, alongside CAPS and moved into the new policy area Next Generation Internet. In DECODE we will thus align with CAPS and NGI and try to bridge as much as possible to the work that has already been done. The loudest and most actionable voice in that space was the German philosopher Hannah Arendt. Her notion of natality is scoped in new beginnings, favouring looking forward over looking back. Her notion of plurality embraces diversity as a given, and point of departure, not a position that needs to be obtained.

The *Onlife Manifesto* - a positive contribution to rethinking the philosophy on which policies are built in a hyperconnected world - attempts to describe, explain and give a policy framework to the *Digital Transition*, as pervasive digital presence in everyday and institutional practices. Our current ICT conceptual toolbox is no longer fitted to address new Internet of Things -related challenges: "We grasp reality through concepts. When reality changes too quickly and dramatically, as it is happening nowadays because of ICTs, we are conceptually wrong-footed." We are in a new *conceptual* space and should co-create notions of solidarity (economics), privacy (self), security (trust), assets (potentials), risks (resilience) and threats (competition), tailored to a reality of today.

Hannah Arendt recognizes that plurality can best be experienced *at city-level*. "The larger the population in any given body politic, the more likely it will be the social rather than the political that constitutes the public realm" (Arendt, 1959 p. 39). Can the notions natality and plurality help us understand the current situation in which citizens instead of decentralizing to the level of their subjectivity, engage with a new level of state agency?

From privacy to privacies

Strategic implementations: building implementation schemes for concrete domains in BAN, LAN, WAN, VWAN (wearables, home, car, city) based on new types of protocols and positioning DECODE as an umbrella for IOTA tangle, blockchain, hasdhgraph

In *Smart Decentralisation: Moving From The Cloud To The Fog*, Dominik Schiener, Co-Founder — IOTA Foundation, asks what the evolutionary transition towards smart decentralisation means for both the internet of things and our society: “With the introduction of blockchain, the internet of things will actually move away from the cloud and towards the fog – something that in turn could give rise to a fully autonomous machine economy, one that no longer needs the intervention of human managers.”

Can individuals build and maintain social networks through which they “negotiate” their identities and subjectivity that brings them together in a different way that bridges the current gap between authorities and end-users?

DECODE is positioned in between two main driving approaches; the US private data lake model tying in citizens through ‘free’ services and the Chinese public but restricted to government model of deep integration of data lake analytics into personal narratives and everyday lives. Europe should build its own model based on European values, citizen’s fundamental rights, data sovereignty and information self-determination. Europe should use the GDPR as competitive advantage and become the custodian of new citizens rights in the digital age, thus investing in decentralized, privacy-enhancing technologies and platforms where wealth is equally redistributed and where citizens are empowered through genuinely participatory democracy¹⁷. DECODE will be an important step towards these goals.

¹⁷ Managing the commons in the knowledge economy Decentralised Citizens ENgagement Technologies. D3.2 Carlo Vercellone, Francesca Bria, Eleonora Gentilucci, Giorgio Griziotti. The work leading to this publication has received funding from the European Union’s Seventh Framework Programme (FP7/2007- 2013) under grant agreement n° 610349. FP7 - CAPS Project no. 610349 D-CENT Decentralised Citizens ENgagement Technologies.

6. Roadmap and KPI for Y2

Y2 Ecosystem	Workshops	Policy Meetings	Product	Alliances
March 2018	DECODE BOX Pilots co-creation	Aligned with NGI, preferably combined with workshop	Work towards DECODE Wallet & BOX in Y3	Pilot communities in Adam and BCN
May 2018	DECODE DRIVERS	Aligned with NGI, preferably combined with workshop ¹⁸ and Data Justice 2018.	Input for NGI Initiative and NCP, National Contact Points	NGI Ecosystem
June 2018	DECODE MAKERS LIAISON Amsterdam and BCN	Cities rethinking Industry 4.0 Decentralized tech policy	Input for data management	Arduino/Makers/FabLab BCN/ Decentralized tech projects
September 2018	DECODE PRIVACIES	Summer School & Symposium	Input for data management of BOX & data commons smart rules	Privacy-enhancing Research Community; IoT ecosystem
November 2018	All 3 workshops combined to build roadmap	Aligned with NGI, DSI; Blockchain	Roadmap Y3 DECODE	Blockchain; Smart City Expo

¹⁸ Most likely with DOC Research Institute, Berlin. Draft 21.11.2017 Prepared by N. Konopaltsev **Research Proposal** New Technologies and Digital Economy: Tools for Fostering Development or Challenges for Global Insecurity

While rapid technological developments are on the way, it is important to design and research regulations that could build guiding trend lines for individuals and institutions in the hyper-connected world. It is crucial to have profound grounds, open access to information and strong moral values for preserving a solid identity in times when transformations are taking place. The influence and power of both massive technology and social media companies convergence with the authority of governments. The implications in this case could evoke threats to personal liberty and corporate/government accountability. There is a dangerous line, where too much control and elective technologies could become somewhat critical-like infrastructure to personal lives. Moreover it is important to ensure that jobs, in particular, are not deprived as a result of these emerging risks and opportunities. The research will tackle upon the question how to balance the development of new technologies and digital economy, and will debate ways to put them under supervision by publicity, society institutions and state authorities.

	for Y3	Prize		
Ongoing (WP5 & WP6 timeline)	Hackathons, Challenges & Meetups x pilots	Involvement of Cities & EU policy makers	DECODE pilots	4 DECODE Community
200 interested stakeholders	60	40		100
Continuous co-creation	Interested coders		Aligned projects	50

Conclusion

DECODE is an experimental and innovative project with the ambition to present a strong socio-economic impact since it provides concrete solutions for people and entrepreneurs to enjoy the benefits of the digital society without losing their right to data and privacy.

On a more technical level, the project will provide the foundation as well as methods for implementing a distributed architecture for data management, based on blockchain technology. As DECODE will be based on interoperable solutions built on open standards, open source, and open specifications, it will be straightforward for communities to customize its core features and build dynamic data-driven applications on top of the DECODE platform that are based on the common good. Additionally, developers will try to push the findings to be incorporated in existing standards at different levels.

There is only a small window of opportunity for commons based enablers for data sovereignty. Collective awareness, outreach and engagement is essential. To establish a blockchain/new protocols that give back control of the digital society to citizens. DECODE OS approach - is a well-documented system that can include his type of tangle solutions.

The blockchain solution Chainspace documented in D 1.4, describes one of the very first scalable and privacy-enhancing smart contract platforms. All other platforms (incl. Ethereum and Hyperledger) have not managed to conquer this problem. DECODE has the capacity to lead the pack in this aspect. The academic paper is being presented to the Network and Distributed Systems Symposium in Feb 2018.

Furthermore, The Devuan stakeholder process is very relevant in how to build alignment in a zone of conflicting interests, and how to engage a large community of open source developers.

These achievements and the future outcomes will be communicated strongly through a dynamic programme of meetups, hackathons, challenges and co-creation workshops that will attract the different audiences of the DECODE project: policy-makers, multidisciplinary researchers, technologists, entrepreneurs and industry. DECODE should be the most open host in order to create a thriving grassroots innovation ecosystem on top of a decentralized, privacy enhancing and rights respecting technological infrastructure.

This is about building a new movement that give back power and control over our digital society to people.