

# Impact assessment and Sustainability Plan

Decentralised Citizens Engagement Technologies  
Specific Targeted Research Project Collective Awareness Platforms



Creative Commons  
Attribution-NonCommercial-  
ShareAlike 4.0 International  
License



FP7 – CAPS  
Project no. 610349  
D-CENT  
Decentralised Citizens  
ENgagement Technologies

Lead beneficiary: Nesta

Impact and sustainability model (D1.3)  
Planning for the next period (D7.5)

May 2016  
Version number: 1

Authors:  
Francesca Bria  
Stefano Lucarelli

Editors and reviewers:  
Orpa Haque  
Natalie Eskinazi



Nesta...



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.

The content of this report reflects only the author's view and that the Commission is not responsible for any use that may be made of the information it contains.



Project no. 610349

D-CENT

## Decentralised Citizens Engagement Technologies

Specific Targeted Research Project

Collective Awareness Platforms

# Impact and sustainability model (D1.3) and planning for the next period (D7.5)

Version Number: I

Lead beneficiary: Nesta

Due Date: 31 May 2016

Author(s): Francesca Bria, Stefano Lucarelli

Editors and reviewers: Orpa Haque, Natalie Eskinazi

Dissemination level:		
<b>PU</b>	Public	<b>X</b>
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

**Approved by: Francesca Bria**

**Date: 31 May 2016**

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

# Contents

1. Executive Summary .....	3
2. D-CENT Impact Assessment Report .....	4
2.1 Overall Impact .....	4
2.2 Technological output.....	6
2.3 Scientific output.....	9
2.4 Social Impact.....	10
2.5 Impact on Community building and empowerment .....	11
2.6 Economic impact.....	13
2.7 Impact on ICT-driven innovation .....	16
2.8 Political impact.....	17
2.9 Effectiveness of the project.....	19
3. Sustainability Plan: Planning beyond the end of the project .....	20
3.1 Tools Page and Website.....	20
3.2 Democracy Tools.....	25
3.2.1 Objective8, Stonecutter & Mooncake.....	25
Sustainability Plan .....	25
Current Pilots .....	25
Future Development.....	26
Maintenance of Repositories .....	26
3.2.2 Freecoin .....	26
Sustainability Plan .....	26
Future Development.....	26
Maintenance of Repositories .....	27
3.2.3 Helsinki Decisions.....	27
Sustainability Plan .....	27
Current Pilots .....	28
Future Development.....	28
Maintenance of Repositories .....	29
3.2.4 Decidem.Barcelona.....	29
Sustainability Plan .....	29
Future Development.....	29
Maintenance of Repositories .....	29
3.2.5 Your Priorities .....	29
Sustainability Plan .....	29
Future Development.....	30
Maintenance of Repositories .....	30
4. Future Research Roadmap: Open Research Tools to investigate future of decentralised technology..	31
5. D-CENT Tool Box: Making it easy for all organisations to deploy DCENT Tools.....	40

# 1. Executive Summary

The D-CENT Consortium has considered the exit strategy of the project from the outset – sustainability is built into the project. The sustainability strategy is directly linked to WP6 dissemination, to build on the strong links formed between the Consortium, and ensure the project is sustainable beyond the end of the EU project. This Deliverable provides the basis for a sustainability plan that goes beyond the project duration, integrating new metrics and socio-economic models. We have purposefully chosen to work with existing movements for change that have been piloted the D-CENT tools – we therefore believe chances for sustainability are improved from the outset of the project.

This deliverable will contain a set of metrics and indicators to assess community impact and community resilience as an outcome of the use and growth of the D-CENT platform. This deliverable will also contain the exploitation strategy and long-term sustainability models for citizens' awareness platforms, including a D-CENT ToolBox to make it easy for all organisations to deploy the tools; and Open Research Tools to investigate future research avenues on distributed technologies for democracy. The relationship between digital tools and platforms, and social and political impacts is central to the project and is closely linked to the end impacts of citizen's engagement, community wellbeing and resilience. Our hypothesis is that participant groups who actively use online platforms experience an increase in offline social capital, increasing civic and political participation. D-CENT is a very high impact project that has engaged thousands of citizens across Europe in new democratic experiments, resulting in increased social change.

Nesta has built on its considerable experience of measuring the impact of innovation programmes, as well as advanced understanding of research methods and approaches. In addition, Nesta has closely collaborated with the horizontal CAPS project IA4SI (Impact Assessment for Social Innovation) that created a standard methodology and Assessment Toolkit (<http://ia4si.eu/sat>) for all CAS projects. We employed a mix of conventional online metrics (e.g. web analytics, user engagement, bounce rate, average pages per visit, number of shares), qualitative metrics based on the action research in the communities of interest, focused interviews, and emergent indicators that try to grasp community wellbeing, resilience and happiness. We have been monitoring online engagement throughout the project, analysing the impact that this has upon offline levels of social capital. We have been monitoring of the way in which grassroots movements engaged in the D-CENT pilots and experiments dynamically grow and can sustain over time through the smart use of collective platforms for sustainability. The social impact assessment is also synchronised with the work done in WP3 and WP2, which provide the socio-economic framework and analytical framework as a basis on which to construct novel indicators (concepts such as self-governance of the commons and complementary currencies will inform the analysis). The specific methodology adopted for the assessment is described here: <http://ia4si.eu/approach>.

This work has improved the understanding of how networks of social and collective action can increase and decrease in intensity of activity and resulting impact/behaviour change over time. It has also identified the specific role the design of the platform plays in generating social impact, new sustainable socio-economic models and metrics.

## 2. D-CENT Impact Assessment Report

### 2.1 Overall Impact

#### Main problem/s the project will address/contribute to solve

The main issue addressed by D-CENT is democratic participation of citizens. The project provides civic society with open-source privacy aware tools in order to improve citizens' engagement in the democratic process. It aims to provide privacy aware and open source tools to communities enabling them to share data, collaborate, and organize their activities to promote direct democracy and economic empowerment. Besides the network democracy platform, the project explores how communities might manage trust, reputation and common goods with blockchain-based tools.

#### Consortium

The project consortium is composed of 11 partners: 6 of them are educational, non-profit, and research institutions, 3 are SMEs, 1 is a large enterprise.

#### Previous engagement in European Funded Projects

The project coordinator has participated in previous EU projects, including that of EU projects in the ICT sector.

The project coordinator has already worked with two of its current D-CENT partners.

#### Relationships with other projects

D-CENT collaborates with IA4SI, CAPS2020, P2P value, DSI, and Empatia towards the end of the project that aims to build on DCENT open budgeting solutions. Furthermore a new CAPS project is building on DCENT Freecoin blockchain tool for complementary currencies.

#### Stakeholders

The table below identifies the main stakeholders of the project, organised in four categories: Research, Business, Civil Society and Policy Making.

##### RESEARCH

- ✓ Universities
- ✓ Research centres
- ✓ Academic researchers
- ✓ Independent researchers
- ✓ Graduate students
- ✓ Other EU projects

##### CIVIL SOCIETY

- ✓ NGO, Associations and charities

##### BUSINESS

- ✓ ICT SMEs
- ✓ Cooperatives and social entrepreneurs

##### POLICY MAKING

- ✓ Local policy makers, governmental

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>✓ Activist and social movements</li> <li>✓ Bloggers or content producers</li> <li>✓ Citizens at large</li> <li>✓ Other civic society organisation</li> </ul> | <ul style="list-style-type: none"> <li>bodies and officials</li> <li>✓ National policy-makers, governmental bodies and officials</li> <li>✓ EU policy-makers, governmental bodies and officials</li> <li>✓ Global policy-makers, governmental bodies and officials</li> <li>✓ Interest groups</li> </ul> |
|---|--|

## Users

The users' typologies addressed by the D-CENT project are:

- ✓ Social innovation organisations and networks
- ✓ Social movements and activists
- ✓ Software developers
- ✓ Citizens

## Activities developed by the users

The project selected two users' activities among the ones identified within the SAT:

- ✓ Sharing ideas/information exchange
- ✓ Debating

These activities reflect the main goals of the project, which revolve around enhanced opportunities for users and citizens for debates and confrontation through new channels, made available by new technologies.

## Impact prioritization

The assessment uses eight synthetic indices: 4 of them are related to specific areas of impact and related sub categories and are illustrated in the figure below. The vertical indices are: Social impact, Economic impact, Environmental impact and Political impact. Each vertical index is built up from sub-indices each corresponding to a specific category. For example the synthetic index Social impact is composed of 6 indices, one for each subcategory such as Impact on "Community building and empowerment", "Impact on information", "Impact on way of thinking and behaviours", etc.

The figure below shows in bold the areas of impact that have been selected as significant by the project. In the next paragraphs we will describe the actual results obtained in the different areas of impact.

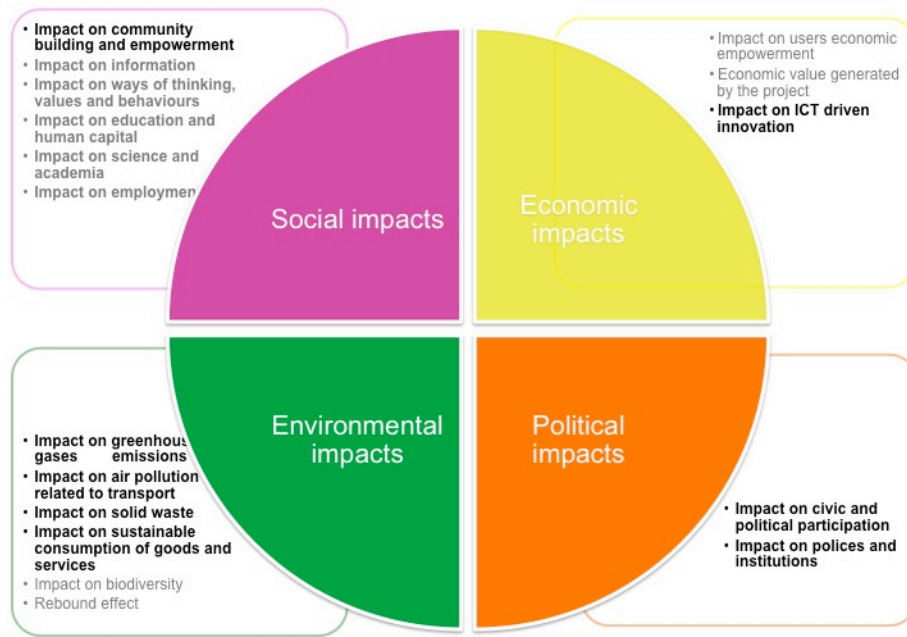


Figure 1 D-CENT areas of impact

## 2.2 Technological output

D-CENT's main technological outputs are implemented as a modular federated platform across 3 communities in 3 countries (Podemos, Barcelona en comú, and Ahora Madrid, Spain; Citizen Foundation, Better Reykjavik, Iceland; and Open ministry, Finland), through an on-going and iterative process. The platform, based on a federated, open standards, privacy-aware architecture, aims to allow people discussing and sharing content, engaging in mass scale deliberation, experiencing collaborative policymaking, and voting. Some of the D-CENT tools have been developed in a radically new way and with an integrated federated architectures such as objective8, Stonecutter, Mooncake, Freecoin and Helsinki decisions. Other tools are based on existing codebases, such as Your Priorities and Agora voting that have been upgraded and tested during the DCENT pilots, and finally some new tools were built as outcome of the DCENT project and lean workshops in collaboration with other organisations such as Consul that was built by Labodemo and the cities of Barcelona and Madrid and was tested and analysed by DCENT. Here is the list of all the technological outputs developed:

- **Secure notifications engine:** <https://mooncake.dcentproject.eu/sign-in>. A tool called Mooncake that securely notifies an organisation's members of events and activity in its D-CENT ecosystem.
- **Common open authentication:** <https://sso.dcentproject.eu>: An open authentication and identity management tool called Stonecutter, which provides a single sign on for using the D-CENT tools and applications.



- **Collaborative policy-making:** <https://objective8.dcentproject.eu>. A policy-drafting tool that allows organisations to work with their members to produce transparent and crowd-sourced policies. The platform allows a wider community to shape and inform the policy drafts, thus creating a more transparent and open method of producing policy documents than the traditional method.
- **Madrid citizens initiatives:** <https://decide.madrid.es>. An open consultation and direct democracy platform launched by the Ahora Madrid coalition after the recent municipal elections which enables citizens to propose, debate, prioritise and implement policy for the city
- **Barcelona collective deliberation:** <https://decidim.barcelona>. A participation platform for citizens to engage with the City of Barcelona. The aim of the tool is to build a democratic, open and transparent city by enhancing citizen participation in the definition and development of policies.
- **Barcelona, open policy making tool:** <http://preprograma.barcelonaencomu.cat>: Citizens debated and voted policy programme before the Barcelona municipal elections that led to the victory of the Barcelona en comú coalition
- **Helsinki citizens notifications,** <http://decisions.okf.fi>: A notification service that lets citizens sign up to receive information on municipal decisions of interest to them. Currently in use in Helsinki, it also offers citizens the opportunity to participate in decisions that involve their municipality, and crowdsources content that can then be used in the decision-making process
- **Electronic voting:** <https://agoravoting.com>. An open source online voting tool that allows democratic decision-making in groups of all kinds. Organisations can use the software to carry out secure, flexible and transparent elections.
- **Citizen priorities:** <http://www.your-priorities-preview.org>. A participation platform that enables citizens to propose, discuss and prioritise issues to be addressed in their city. Currently used in 40 projects across the world, including in the Icelandic capital Reykjavik, it allows large groups to speak with one voice and organise with ideas via a unique debate and prioritisation system that maximises consensus.

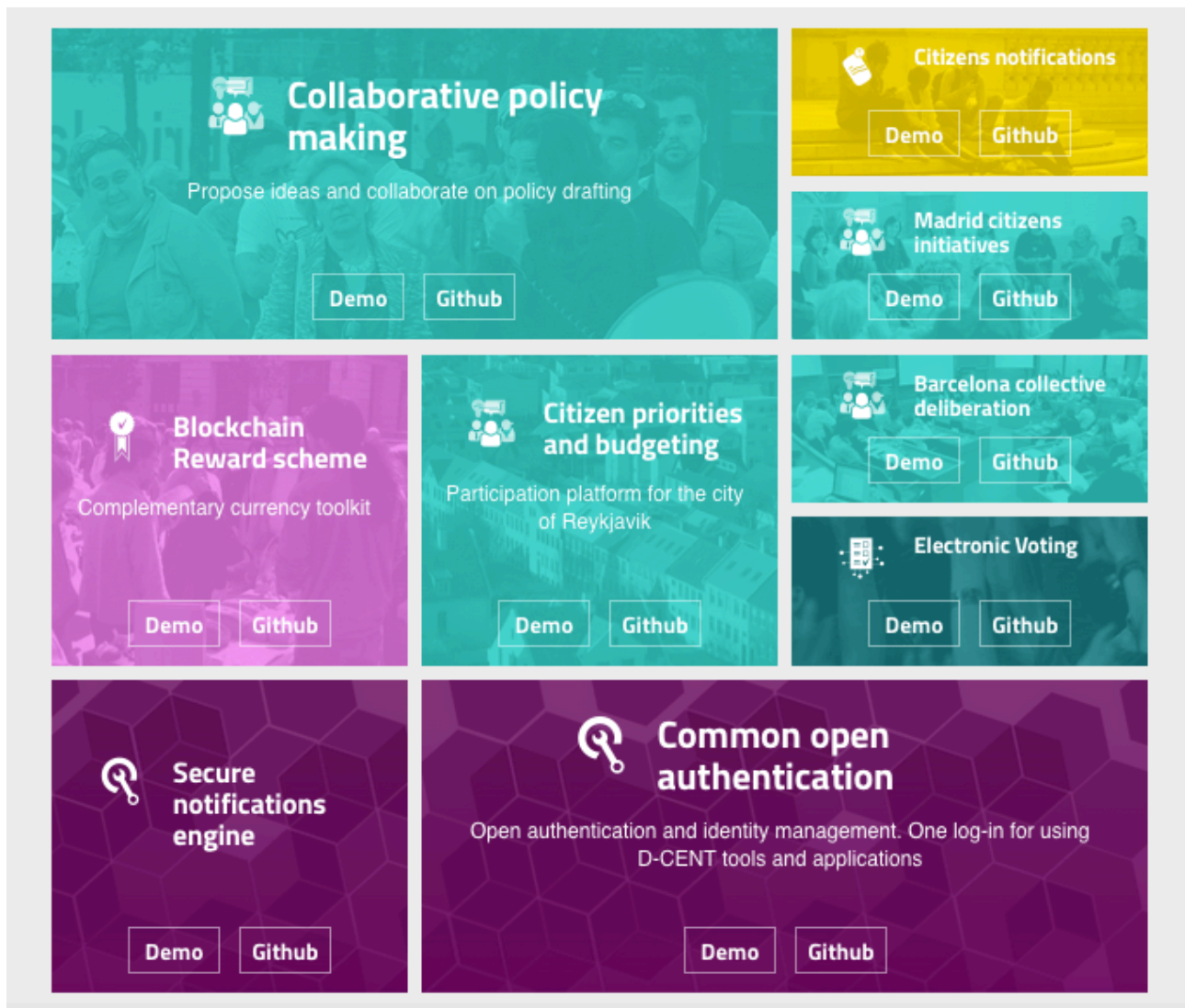


Figure 2 D-Cent website - access page for all the tools <http://tools.dcentproject.eu>

## 2.3 Scientific output

The project produced over 20 peer reviewed and over 20 non peer reviewed articles, mainly dealing with the following subjects: collective intelligence, cognitive capitalism, data analysis, identity systems, open specifications, digital currency, management of the commons, methodology and technical design of the D-CENT tools. You can find a detailed list of Research output here (updated dynamically throughout the project):

[https://docs.google.com/spreadsheets/d/1j2htamaySM\\_fcTCgp\\_4jN38H3FTt9aV3neq0ie9VXs/edit#gid=286190383](https://docs.google.com/spreadsheets/d/1j2htamaySM_fcTCgp_4jN38H3FTt9aV3neq0ie9VXs/edit#gid=286190383)

Amongst many research achievements, it is worth mentioning that during the project period, Prof. Stefano Lucarelli at University of Bergamo has been the supervisor of two master theses generated as part of the D-CENT project: (1) Master Thesis, MAFIB, University of Bergamo **“Digital social currencies for European communities – the case of D-CENT research project”**, *Duc Vu Trung*; (2) Master Thesis, DUECI, University of Bergamo, **“Money between tradition and digitalised society. Three researches on field”** *Toti Cristina*.

D-CENT also implemented 10 pilots dedicated to several of its technological outputs (i.e. Lean UX workshops with communities, DCENT DemocracyOS tests in Barcelona and Helsinki, Blockchain technology integration Freecoin, Ahora Madrid and Decidim democracy tool; Your Priorities in Iceland, Helsinki open-decision - making data pilot. All D-CENT tools deployed can be found here: <http://tools.dcentproject.eu> and in the D-CENT ToolBox: <http://tools.dcentproject.eu/pdfs/D-Cent-final-spreads.pdf>).

### ANALYSIS OF THE PROJECT IMPACTS BY AREA

As illustrated in the previous section, D-CENT selected all four areas of impact for its self-assessment. In the economic and social impact areas it selected however only few dimensions.

The project achieved very good results in the economic areas, positive results in the social and political ones, while its performance on the environmental impact is lower.

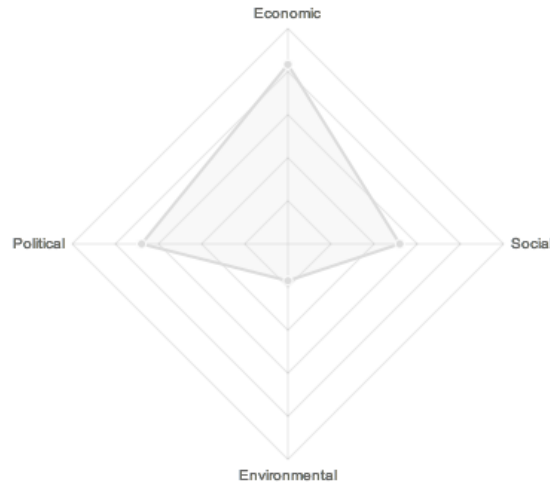


Figure 3 D-CENT impact on the different areas of assessment

## 2.4 Social Impact

D-CENT overall score about social impact was aligned to the CAPS average, with a result of 518:

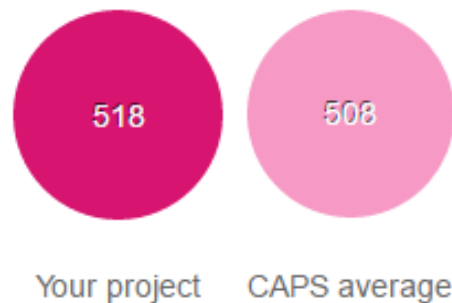


Figure 4 D-CENT social impact

The project selected only one area of social impact: “Community Building and Empowerment” because this is the most relevant for the project and the one more aligned with its goal. This selection, even if understandable, makes the comparison with the average value obtained by others CAPS not really relevant as most of the other projects selected more dimensions. Considering the whole range of activities and pilots implemented by the D-CENT project, for further assessments it is recommended to explore other dimensions for its impacts, in particular impact on Information and Ways of Thinking, Values and Behaviours and Impact of Science and Academia.



### Social impact

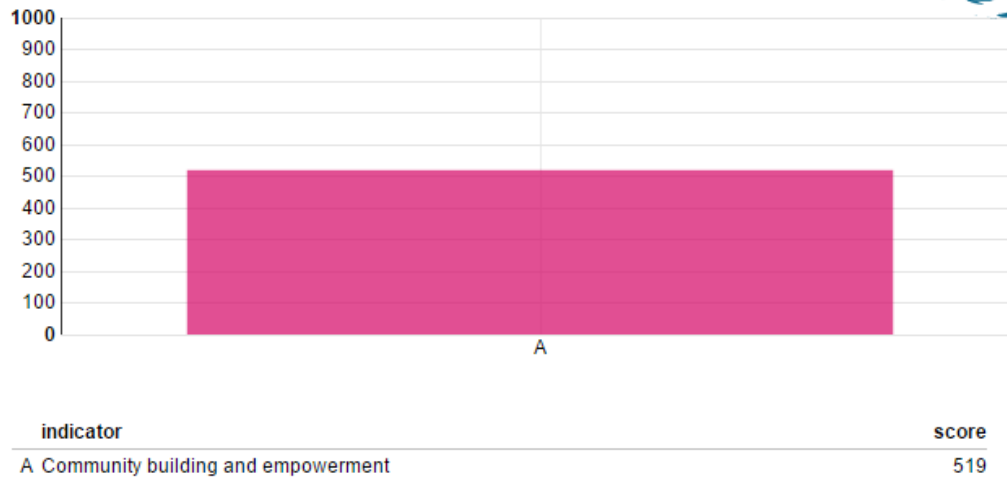


Figure 5 D-Cent social impact by dimensions

## 2.5 Impact on Community building and empowerment

The project impact on community building and empowerment is high compared to the average (519 upon 458). This is mainly due because of D-CENT capacity to address already existing communities' needs and to enhance tools, which are relevant for their self-organisation and empowerment.

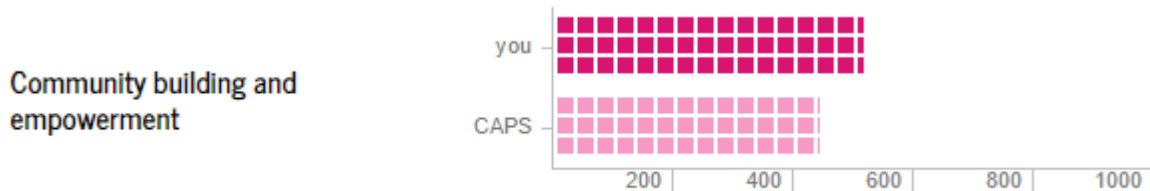


Figure 6 D-CENT score – Community building and empowerment

As anticipated, D-CENT developed an open, modular and decentralized platform directly engaging final users, to build privacy-aware applications for direct democracy and economic empowerment. The platform supports communities to share information, collaborate and organise their operations, allowing large-scale partnerships.

There are many previous online platforms or online communities on which the project built, in concrete, one in each of the countries where the pilots took place. As such, the project can count of a large base of users. More specifically:

- Barcelona en comú, Podemos, and Ahora Madrid new citizen-led movements in Spain;
- Better Reykjavik, and Better Iceland participation democracy platforms developed by the Citizen Foundation in Iceland;
- Open ministry Crowdsourced law-making site linked to the Parliament in Finland working closely with the City of Helsinki.

The platform makes available to its users different features that enable their identification, their recognition when online and the mapping of their relationships with other users. The platform also allows, as said, the sharing of ideas, conversations, debates, collective deliberation, online voting, and it has a reputation mechanism. It also offers to the users ways to effectively manage their data and privacy.

The project has a positive influence on the trust among platform users and local communities' members, and it helps tackling the issue of power asymmetries. It does not focus on people belonging to categories at risk of social exclusion and does not extensively contribute to make local communities more inclusive (3 on the Likert scale), but it strongly fosters the creation and enlargement of local communities/groups and provides to local communities/groups instruments for better organising themselves (6 in the Likert scale).

Among CAPS, D-CENT collaborates with CAP2020 for dissemination through its website and sessions at its conferences, with P2P Value through joint meetings on distributed networks (moreover one D-CENT consortium member is in P2P advisory group) and with IA4SI about impact assessment.

To develop its platform and pilots, the project established 6 collaboration with Social Innovation initiatives outside the CAPS domain: Barcelona en comú and Ahora Madrid (thousands of user involved); Pilot Helsinki open-decision making API for Open Ministry campaigns (hundreds of users involved); Your priority/Better Reykjavik (8000 users involved); and the platform first prototype was developed in collaboration with Democracy OS (over 3000 users involved)

The project developed three activities to bring together innovative public administrations, foundations, social investors and social finance intermediaries with social innovation initiatives, civil society and the third sector which were moderately successful (3 on a 1 to 6 Likert scale).

D-CENT does not collect many statistics concerning its platform's users, mainly because of the federated and privacy aware nature of the platform itself. This means that no data were available at the time of the self-assessment about users gender or age, groups created within the platform, interaction dynamics and average time spent on the platform by users (but the project declares that the time spent on the platform by users has increased since the start of the activities)<sup>1</sup>.

---

<sup>1</sup> Some non- aggregated data are available at <http://dcentproject.eu/wp-content/uploads/2015/10/D2.3-results-of-the-data-analyses1.pdf> and more are going to be added to the project next report.

## 2. 6 Economic impact

As for the previous dimension, D-CENT selected only one dimension of economic impact: “impact on ICT driven innovation. The result achieved is very positive per se (833) as it is close to the benchmark of 1000, but the comparison with the average value (784) is less meaningful as most of the other CAPS selected more than one economic dimension.

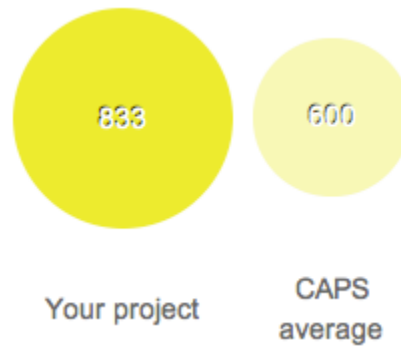


Figure 7 D-CENT economic impa

### **The indicators to measure the possible success of digital social currencies in the D-CENT project**

As we stress in D4.4 (p. 41) Freecoin’s social impact involves ways in which people relate to one another by means of Freecoin tools, organize to meet their needs, and generally cope as members of community, as well as changes to the norms, values, and beliefs of individuals that guide and rationalize the political process of deliberation. More generally, it is possible to define impact indicators by comparing D-CENT pilot outcomes to the success of best practices emerged from the work of researchers and practitioners of complementary currency systems:

Indicator #1. Increased volume of currency in a local area.

Indicator #5. Counter-cyclical economic tendency.

Freecoin tools should increase the *volume of transactions in a local area* to mobilize these resources. The *velocity of money in circulation* may increase. Higher velocity means the same quantity of money is used for a greater number of transactions and is related to the demand for money. It is measured as the ratio of GDP to the given stock of money. Impact indicators can be adjusted to the measurements needs of each pilot during prototyping in WP5. When complementary currencies are applied in the pilots, it is expected that the velocity of complementary currency would be high to boost the economics of cities. As we explained in D5.5, Freecoin has been implemented under different circumstances, just by three pilots: Your Priorities in Reykjavik, Eurocat in Barcelona and Helsinki Urban Cooperative Farm in Helsinki. However the timing of implementation is not sufficient in order to connect meaningful data about the velocity of money in circulation and its impact on local economy.

Indicator #2. Increased employment opportunities. Freecoin tools should give their participants a safe way of trying out their new employment choices, by improving the *local rate of employment*. The data showed below are the percentages of unemployment for the period 2001-2014 in Helsinki, Reykjavik, Barcelona and Milan.

	<b>Helsinki, Finland</b>	<b>Reykjavik, Iceland</b>	<b>Milan, Italy</b>	<b>Barcelona, Spain</b>
<b>2001</b>	7.3	1.5	N/A	9
<b>2002</b>	7.4	2.7	2.3	10.8
<b>2003</b>	7.5	4.4	2.0	10.9
<b>2004</b>	8	4.3	4.7	10.4
<b>2005</b>	7.8	3.6	4.2	6.9
<b>2006</b>	7.2	1.7	3.9	6.5
<b>2007</b>	6.1	1.2	3.8	6.5
<b>2008</b>	5.2	0.8	3.8	8.6
<b>2009</b>	6.4	7.3	5.6	16.2
<b>2010</b>	7.4	10.2	5.8	17.7
<b>2011</b>	6.8	9.1	5.9	19.1
<b>2012</b>	N/A	7.8	7.7	22.5



<b>2013</b>	N/A	5.8	7.7	23.1
<b>2014</b>	7.4	5.2	8.4	20
<b>2015</b>	8.1	5.0	8.0	18.2
<b>Source</b>	Helsinki Region Statistics	Reykjavik Yearbook	knoema.com (2001-2003) ISTAT (2004- 2015)	idescat.cat

We cannot affirm that the decrease of unemployment rate from 2013 to 2015 that characterizes Reykjavik and Barcelona case studies may be a consequence of Freecoin impact. However we have to stress that in the cities in which the implementation of Freecoin is stronger, we have also a positive trend in employment.

Indicator #3. Increased importance of traditionally undervalued activities.

Indicator #4. Increased strengthening of social relationships.

Both the indicators presuppose to study the complementary effects between D-CENT democracy platforms and Freecoin tool-kit. Indeed a big part of the organizations that have been involved in the use of open, modular and decentralized platform are potential users of Freecoin. It is true especially in the cases of Reykjavik and Barcelona. This kind of analysis will be possible only in future time when the data related to the number of individual citizens that actively participate to decision making process and the engagement of citizens with local democracy, associations and organizations and the data related to the number of citizens that will actually enter in Freecoin circuit will be available.

## 2.7 Impact on ICT-driven innovation

As mentioned above, on “ICT driven innovation” D-CENT has achieved a very positive score of 833 on a benchmark of 1000 and on a CAPS average of 784, hence it is above the average.

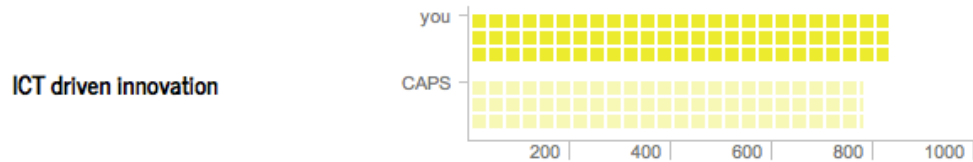


Figure 8 D-CENT impact on ICT driven innovation

The positive result of D-CENT in terms of impact on ICT driven innovation is related to the capability of the project to produce an impact mainly on product and on organisational innovation.

In terms of impact on product innovation, D-CENT increases the efficiency of pre-existing technologies. In fact, on one hand the project develops tools from scratch, but on the other hand it builds on existing tools and is working to produce an upgrade of Agora Voting (online secure voting system) and an upgrade of Your Priorities (e-democracy tool).

By taking into account the different outputs developed by D-CENT it is possible to see that the project produced:

- Technical improvements that are new for the firms involved in D-CENT such as the work done on Democracy OS, Citizen Foundation, and ThoughtWorks.
- Technical improvements by upgrading Agora Voting system and “Your priorities” tool
- Adjustment to a new market of existing product, such as Freecoin and Secure notification system
- Substantial technical innovation to “Better neighbourhood”, “Objective8” tools and decide Madrid

It is also interesting to note that out of 9 outputs listed by the project, 3 of them have a technological readiness level of 9 (the maximum score). Hence, these three outputs are actual systems proven through successful mission operations and ready for end users usage.

The D-CENT project has also a considerable impact on process innovation. Indeed, the tools being produced by D-CENT provide methods for all members of a community to deliberate and potentially disagree in instances where a traditional top-down hierarchical structure would be employed.

With reference to the impact on user driven and open innovation, D-CENT has achieved a relevant result in comparison with the CAPS average. Indeed, the project adopts a Lean UX methodology and user centred methods, development progresses through on-going iteration and testing with user groups. Furthermore, D-CENT defines the use cases in terms of community requirements and non-functional technical features through engaging users in lean inception workshops and iterative testing in an attempt

to increase the adoption and promotion of new solutions. Inception workshops also took place in each of the pilot locations with the D-CENT developers and members of the community groups.

D-CENT has declared that all results from the research will be fully available in open formats and open standards and will allow other open source developers to integrate their solutions and build on top of D-CENT. The project uses open standards for the development of its technologies and has 10 developers that contribute to make available the outputs of the project as open source. The use of open source, the dedicated page for developers in the D-CENT webpage and the direct link to the code through Github are all important elements of a sustainability strategy based on the engagement of the OSS community.

## 2.8 Political impact

D-CENT achieved one of the best score in the area of political impact, far higher than the average (677 upon 397) and consistent with its main goal: to improve citizens' participation into the democratic processes, the nature of which is rather political. This is due to the fact that the main goal and result of the project was institutional and political in its nature, as demonstrated by the fact that the project involved grassroots movements (Barcelona en comú and Ahora Madrid) that managed to grow to the point the point of governing two big European cities, Barcelona and Madrid.

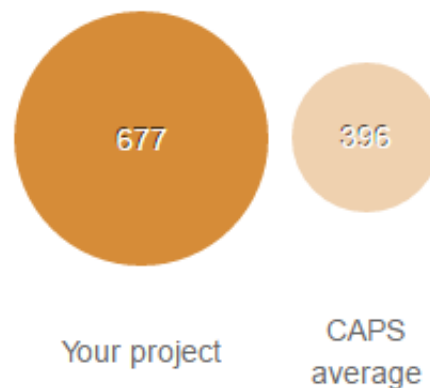


Figure 9 D-CENT vs CAPS overall political score

The project's impacts are particularly significant for the Civic and political participation dimension, where D-CENT achieved the highest score (756) because of the strong focus put by the project on citizens and users' involvement into public life and choices. The result obtained on Policies and institution is still good but less relevant.

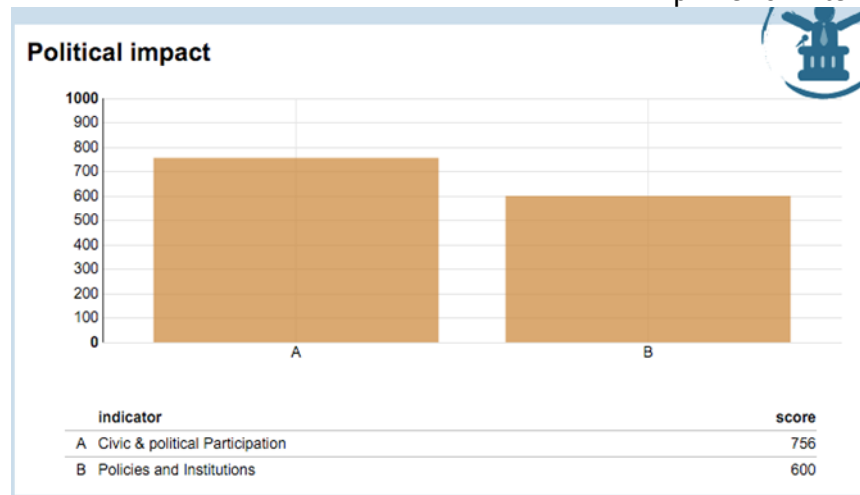


Figure 10 D-CENT score by areas of impact

**CIVIC AND POLITICAL PARTICIPATION**

As anticipated, D-CENT’s efforts and impacts within this domain are highly relevant and the project attributed the maximum value on the Likert scale to most of the indicators contributing to the assessment, namely the increase of the time spent by users in getting informed about local, national and international political issues and in persuading friends, relatives or fellow workers about social/political issues; an increase in the number of bottom-up/grassroots actions and an increase in citizens’ participation to national and local election and in other forms of political idea manifestations (i.e. campaigns, boycotts, manifestations).

All the tools developed by the project aim to offer new channels for civic and political participation, but they are not specifically targeting groups at risk of social exclusion and/or discrimination. In this respect, future activities could address this issue since one of the main risks of technology-enabled participatory tools is that of facilitating the participation of social groups that are already empowered, hence widening the gap with categories at risks of social exclusion.

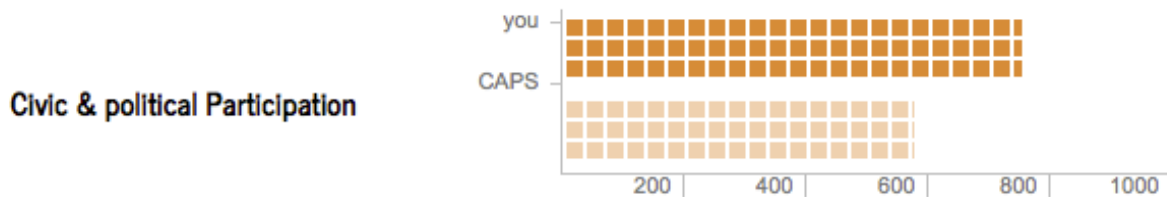


Figure 11 D-CENT score – Civic and political participation

**POLICIES AND INSTITUTIONS**

The project’s effort for increasing the overall participation of citizens to the civil and political life of the community included working with Cities across Europe, having an impact on their policies regarding democratic participation, citizen engagement, transparency, and economic inclusion. D-CENT achieved an impact on real policies and its coordinator also engaged authorities at the national level, including the UK Government and the UK Digital Commission in the Parliament. The project acted both bottom-up

(with citizens and movements) and top down with Cities and Governments. Furthermore decision makers, policy officials and European MEPs are present in the project Advisory Board.

These activities significantly contributed to influence positively the transparency of institutions and democratic processes (5 on the Likert scale). Moreover, the project highly strengthens the capability of citizens and civic society organisations of influencing policies and government (6 on the Likert scale) thanks to the tool developed as per the output section.

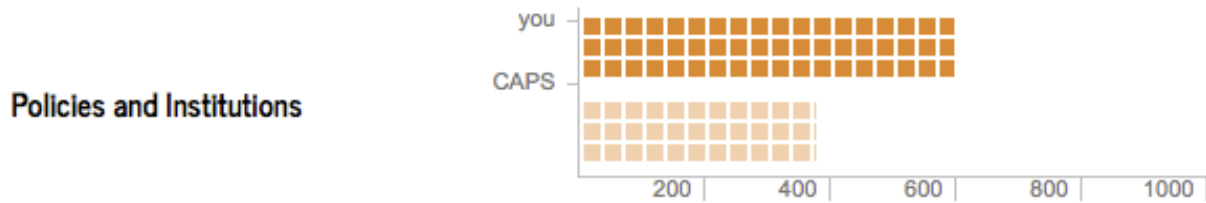


Figure 12 D-CENT score – Policies and Institutions

## 2.9 Effectiveness of the project

D-cent has demonstrated a very good score on effectiveness, which is 743, compared to the average score of CAPS which is 508. The tools that D-CENT has elaborated permitted citizens to influence institutions/governments transparency, to influence parties/democratic processes. Despite the fact that D-cent has demonstrated a good result on Efficiency with a score of 506 which is higher than average of 482 and they obtained a benchmark in three areas, this result can be taken in account as D-cent did not provide enough data in Efficiency section (less than 50% of responses)

## 3. Sustainability Plan: Planning beyond the end of the project

The sustainability plan for the D-CENT tools is outlined below.

### 3.1 Tools Page and Website

Towards the end of the project the goal is to simplify the project website ([dcentproject.eu](http://dcentproject.eu)) and make it more aligned with the tools page ([tools.dcentproject.eu](http://tools.dcentproject.eu)). The idea is to keep both websites online after the project ends; but have them visibly linked and support each other.

[dcentproject.eu](http://dcentproject.eu) will focus on the research deliverables, publications, results and background story. There will be a visible banner linking to the tools page. A publishable summary will be produced for the final event in Madrid, and this will provide content for communicating the results. Once the project end, the project website will stay online but very static.

[tools.dcentproject.eu](http://tools.dcentproject.eu) will focus on how a community/town hall/political organisation can start using D-CENT. It should also have clear message to developers: guidelines/demos, how they can contribute.

Upcoming changes to the project website

- The visual design of [dcentproject.eu](http://dcentproject.eu) will be more aligned with [tools.dcentproject.eu](http://tools.dcentproject.eu). See layouts attached later in this document.
- Navigation will be simplified and the amount of subpages reduced.
- The project deliverables will be made more accessible by adding categories which help people to navigate and search. The categories will place the deliverables under the following themes: collective intelligence, democracy, complementary currency, standards. The deliverables will be listed with image, title, date, and download link.
- We will address the feedback given by the reviewers: label each deliverable with CC licence to facilitate their diffusion; remove EC disclaimer from deliverables already approved by the EC.
- Resources page will have new and simpler navigation, subpages will be removed.
- The showcase video about D-CENT will be visibly placed on top of the frontpage and into the Resources page.
- The events will be removed from the frontpage after our final event in Madrid, but kept in the website as archive. The blog section will be renamed as “Articles” and after project end “Article archive”, to give people possibility to utilize the stories when searching more information

- A number of publications have already been produced and published in the website, together with the deliverables: Design of Social Digital Currency, Research on digital identity ecosystems, Managing the commons in the knowledge economy, When a movement becomes a party, Collective intelligence framework in networked social movements, Internet as common or capture of collective intelligence

New videos explaining the D-CENT pilots, results, tools and work with complementary currencies have been published in Vimeo:

- Interview with Francesca Bria @Netfutures: <https://vimeo.com/164540722>
- Interview with Francesca Bria, Nesta: <https://vimeo.com/165345391>
- Interview with Natalie Eskinazi, ThoughtWorks: <https://vimeo.com/165341512>
- Interview with Denis “Jaromil” Roio, Dyne.org: <https://vimeo.com/165348947>
- Interview with Robert Bjarnason, Citizens Foundation: <https://vimeo.com/165258166>

<https://vimeo.com/165258166>

Instead of press releases, D-CENT has utilized blog posts to communicate its results, and shared these in social media. A couple of examples:

- Better Reykjavik shines in an independent audit <http://dcentproject.eu/2016/04/better-reykjavik-shines-in-an-independent-audit/>
- Netfutures 2016: Interview with Francesca Bria <http://dcentproject.eu/2016/05/net-futures-2016-interview-with-francesca-bria/>
- D-CENT Freecoin nominated for ISOC Internet Awards 2016 <http://dcentproject.eu/2015/12/d-cent-freecoin-nominated-for-isoc-internet-awards-2016/>
- D-CENT Showcase and Opportunities for UK Digital Democracy <http://dcentproject.eu/2015/12/d-cent-showcase-and-opportunities-for-uk-digital-democracy-2/>  
<http://dcentproject.eu/2015/12/d-cent-showcase-and-opportunities-for-uk-digital-democracy-2/>

To communicate its results, D-CENT has produced a publishable summary which has been updated several times during the course of the project. The last one was printed and published for ICT 2015 conference in Lisbon:

For ICT 2015 conference: [http://dcentproject.eu/wp-content/uploads/2016/04/D-CENT\\_PUBLISHABLE-SUMMARY-04-2016\\_A5.pdf](http://dcentproject.eu/wp-content/uploads/2016/04/D-CENT_PUBLISHABLE-SUMMARY-04-2016_A5.pdf)

[http://dcentproject.eu/wp-content/uploads/2016/04/D-CENT\\_PUBLISHABLE-SUMMARY-04-2016\\_A5.pdf](http://dcentproject.eu/wp-content/uploads/2016/04/D-CENT_PUBLISHABLE-SUMMARY-04-2016_A5.pdf)

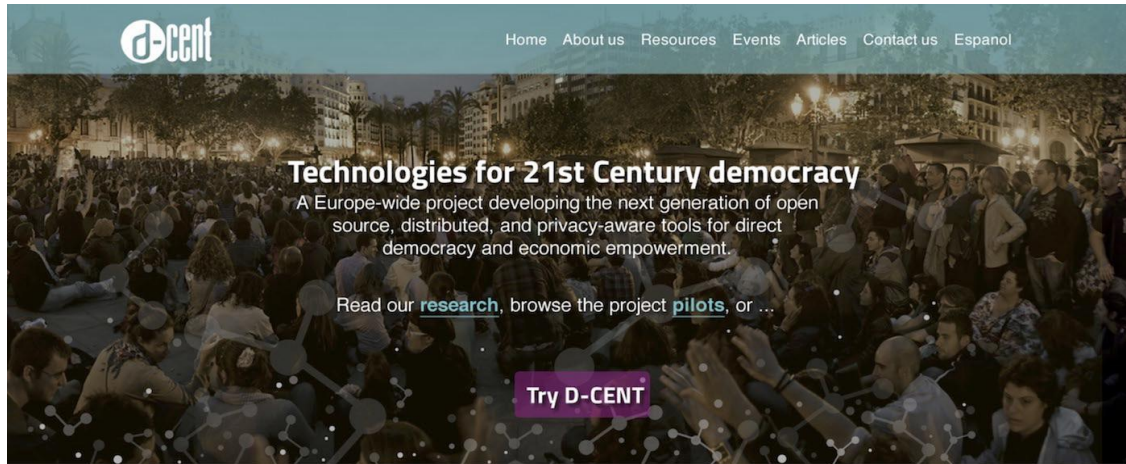
The final publishable summary will be more focused on results, and published for the final event in Madrid on the 23-28 May.

For the ICT 2015 conference in Lisbon, D-CENT produced a video for the booth in the exhibition area, as well as 2 posters: one describing the pilots ([http://dcentproject.eu/wp-content/uploads/2015/11/FinalD-CENT\\_pilots\\_A2poster\\_web.jpg](http://dcentproject.eu/wp-content/uploads/2015/11/FinalD-CENT_pilots_A2poster_web.jpg)), and the other D-CENT tools

([http://dcentproject.eu/wp-content/uploads/2015/11/FinalD-CENT\\_ToolsAI\\_web.jpg](http://dcentproject.eu/wp-content/uploads/2015/11/FinalD-CENT_ToolsAI_web.jpg)). Both posters are available at the project website under resources.

New layout for the project website

a) Frontpage



### Why D-CENT

Open authentication and distributed identity management to grow an open source eco-system of citizen engagement tools

Own your data to say no to surveillance and give back citizens control and ownership of data

Open source and open standards to build and grow knowledge commons

Blockchain trust to let people run reward schemes that are transparent and auditable

### What is D-CENT



[More videos](#)



## D-CENT Research

Discover and read our research reports conducted by project partners about the theoretical background, social and political processes as well as technical standards for the ethical development and deployment of technologies for democracy.



[Read more](#)

## Testimonials



**Net Futures 2016: Francesca Bria**  
6th May 2016



**Interview: Róbert Bjarnason**  
6th May 2016

b) Resources page



# Resources

## Research

Some sentence about collective intelligence research within the D-CENT project.

**Collective intelligence**

Some sentence about democracy research within the D-CENT project.

**Democracy**

**Collective Intelligence framework**  
7th September 2015  
UOC  
[View / Download](#)

**When a movement becomes a party**  
1st of October 2015  
UOC and Eurecat  
[View / Download](#)

**From citizen data to wisdom of the Crowd**  
7th September 2015  
UOC  
[View / Download](#)

**When a movement becomes a party**  
1st of October 2015  
UOC and Eurecat  
[View / Download](#)

Show all

Some sentence about complementary currency research within the D-CENT project.

**Complementary currency**

Some sentence about standards and technical specifications within the D-CENT project.

**Standards**

**Design of Social Digital Currency**  
10th October 2015  
Dyne  
[View / Download](#)

**Internet as common or capture of collective intelligence**  
6th of August 2015  
NESTA  
[View / Download](#)

**Managing the commons in the knowledge economy**  
9th October 2015  
CNRS  
[View / Download](#)

**Identity Ecosystem**  
9th of October 2015  
NESTA  
[View / Download](#)

Show all

## 3.2 Democracy Tools

### 3.2.1 Objective8, Stonecutter & Mooncake

#### Sustainability Plan

One of the key things we have worked on recently is making the tools easier to deploy. Making the deployment process more accessible is important so that anyone who wants to adopt the tools can do so quickly and painlessly.

#### Current Pilots

##### New Garden Cities Alliance

This is a deployment of Objective8 and Stonecutter. This project is being run by Philip Ross, whose goal is to define a garden city by combining a set of vision statements together. He started off with his Toolkit for Defining a Garden City <http://homepage.ntlworld.com/rosspe/NGCA-002.xml> and is now focusing on promoting the D-Cent instances for his project. The project is hosted here: <https://gardencityconsultation.org.uk/>

##### West Midlands People's Plan

This is a deployment of Objective8 and Stonecutter. This project is being run by Liam Byrne MP and will be hosted at <https://wmidspeoplesplan.co.uk>.

2.5 million people live in the West Midlands Metro Area. It's the biggest urban conurbation outside London. Candidates for the region's first Mayor will be selected between May-August 2016, leading to elections held in May 2017. In this context, there is a major opportunity for a manifesto platform to increase the breadth and depth of democratic participation. Success will have implications far beyond the election itself – it will pave the way for the platform to become part of the institutional design of the future office of the Mayor, increasing transparency, feedback and collaboration between citizens and government. This project's purpose is to test D-CENT in the UK, deploying the platform to help the public and party members in the West Midlands Metro Area to collaboratively write their manifesto for the new Metro Mayor. They aim to run the project between May and August resulting in a final report and lessons learned, including for use in two future initiatives: a constituency initiative on UK values and an issue-based initiative striving to reclaim the internet. They may wish to use data collected in order to enable campaign communications – helping to foster the participation and engagement needed to convert aspirations into action.

#### Outputs:

1. A manifesto setting out the vision, priorities and policy agenda of the people of the West Midlands metro area.
2. A deliberation platform to facilitate the delivery of 1.

3. An on and offline engagement campaign to foster democratic participation in the development of I.
4. A final report, including proposals to translate a platform for a manifesto into a platform for government.

### **Alphabet Soup**

The LGBT+ group in ThoughtWorks are using Objective8 and Stonecutter to collaboratively update their policy based on the results of the Stonewall Index.

### **Future Development**

All the tools are Open Sourced and can be developed by people external to the project. We have been working on improving our READMEs so that developers can easily run their code locally and contribute to the code. We have added a number of issues to the GitHub repositories to encourage developers to get involved and to help drive future contributions.

### **Maintenance of Repositories**

Dyne.org will be maintaining the repositories as a community effort.

### **3.2.2 Freecoin**

#### **Sustainability Plan**

Dyne.org is a community organization. Following up the interaction had, the organization intends to further maintain and develop Freecoin and keep it at a central position of its software portfolio of software for community empowerment.

Dyne.org uses adoption on its own community as an ongoing and mutually reinforcing process for its products, refinements come with use, experimentation, adoption. We have developed a narrative in which one can design and continuously beta-test Freecoin modules for time and money management purposes in the organization itself. By creating a small economy among developers it will be possible to continuously confront the algorithm with group decisions.

In 2016 the software was mentioned in the Internet Innovation Award by ISOC NL.

Soon Freecoin will face new testbeds in the welfare sector within the works of the PIE News project (GA 687922).

#### **Future Development**

A first and immediate area of development for Freecoin is in the context of the PIE News Project. PIE News is a CAPS apt to address the needs of the poor by the design and implementation of a collective awareness platform for storytelling, reputation management, and social currencies in order to instigate a process of bottom up welfare while giving to policymakers an arena in which to identify the needs of the poor and propose better welfare tools to propose to the public affected by poverty, low or unstable sources of income and under or unemployment contexts.

A second area of further development for Freecoin is in the domain of network and energy management. Indeed, the communication and energy infrastructures overlap onto some very critical sectors of these domains. True, internet routers have to be supplied by electrical power and energy meters have to be monitored and data analyzed and exchanged. In the context of distributed energy storage, Freecoin can be used to manage the pulse of renewable energy production and value exchange in the context of a prosumer community, i.e. a community of producers and consumers of energy. With distributed ledgers and crypto-currencies, they can envision the possibility to exchange energy locally and sell surplus to the main grid while registering the property of their grid on a tailor made crypto-equity service.

### Maintenance of Repositories

Repositories will be maintained by Dyne.org and other open source developers, firstly within the PIE News CAPS Project.

### 3.2.3 Helsinki Decisions

#### Sustainability Plan

The Six City Strategy project will provide a platform for future pilots in Finland over the coming years. The D-CENT prototyping has been well-timed as the Six City Strategy (<http://6aika.fi/in-english/>) is gearing up to expand the lessons learned to the other big cities in Finland. The Six City Strategy is an Open and Smart Services strategy for sustainable urban development carried out by the six largest cities in Finland: Helsinki, Espoo, Vantaa, Tampere, Turku and Oulu. The strategy will be carried out between 2014 and 2020 and is funded by the EU with up to 80 million euros.

The collaboration with the national parliament which started during and as a part of the D-CENT project will continue in 2016 and 2017 as the technical provider of the upcoming open data APIs for the parliament can leverage use cases from the D-CENT project when designing and implementing the new API. The national decisions data schema will hopefully be compatible with the decisions data API now expanding to the six biggest cities. International cooperation for standardising decision data is also potentially starting as a spin off from the work done in D-CENT.

Helsinki City is already leveraging the work done in D-CENT in its internal development projects and roadmap. For example, the open source Open City App - a native mobile app for Helsinki and any other interested City - has adopted the philosophies and technical solutions delivered in the D-CENT project. The Activity Streams concept will allow people to be notified via the mobile app when there are decisions, events, reservations, news and other activities related to the city and their active citizenship.

Open Knowledge Finland is starting up the OK Labs Helsinki community and the D-CENT decisions code base is the first project to be supported by this community. The OK Labs and Code for All networks are also an efficient means of reaching developers in other cities across Europe.

### Current Pilots

The current decision tool, <http://decisions.okf.fi/>, will continue to be maintained and developed further. The HELKA neighbourhood activist groups, Open Ministry, the open democracy communities in the Finnish cities, and the international networks like OK Labs and Code for All will all continue to be informed about the developments.

The currency pilots will be continued and expanded after the project ends. Open Ministry, Open Knowledge Finland and the local Transparency International chapter will continue to support the pilots and software, with the github repositories maintained by Open Knowledge Finland.

### Future Development

The tool will be launched into public beta on May 25th. Open Knowledge Labs Helsinki, Forum Virium Helsinki and the 6AIKA project are arranging a joint event for local and national government representatives and developers to raise awareness on the D-CENT tools and especially the decision API's and tools such as the one developed in the D-CENT project. During the D-CENT project the five next biggest cities in Finland have decided to implement a similar API. The APIs are expected to be launched during 2017.

The Finnish Parliament is expected to also launch a decisions API with a similar schema during 2017. As a part of the dissemination efforts of the D-CENT project a session co-hosted a session with the Parliament in March 2016. D-CENT has helped align the simultaneous processes starting to take place in different levels of the government and ensure that developers get access to APIs that allow them to create services that inform and empower citizens better than the current systems.

The City of Helsinki, Forum Virium Helsinki and Open Knowledge Finland will continue their work together with the 6AIKA project (that helps spread the lessons learned and tools to other big cities) to develop the tools, engage and activate developers.

The City of Helsinki is increasing its efforts to develop tools that leverage the software and research findings of the D-CENT project. Most notably, the city council has decided that the whole citizen participation model of the city will be redesigned in the collaborative co-design effort during the second half of 2016. Contact between city representatives and D-CENT tool developers and partners in e.g. Reykjavik, Barcelona and Madrid help the City of Helsinki cherry pick the best tools for citizen empowerment. For example, a hearing about the Better Reykjavik platform and its lessons learned will

be held in mid-June in Helsinki. The City Of Helsinki is also hosting a hackathon in the City Hall in October where the decisions on API and D-CENT tool will be promoted.

### **Maintenance of Repositories**

There will be no discontinuities in the support and software repositories maintenance as Open Knowledge is hosting the services on its servers and maintaining the Github repositories. (<https://github.com/okffi/decisions>).

### **3.2.4 Decidem.Barcelona**

#### **Sustainability Plan**

We have deployed a unique login system where final users accept an identity/profile which allows them to participate in further participatory processes. We also give users the option to receive alerts and information when subsequent participatory processes start. At the same time, the city council has committed to invest in the development of the platform.

#### **Future Development**

The tool is still under development, and the City Council is committed to promote Decidem.Barcelona as the main participatory platform for the city.

### **Maintenance of Repositories**

The platform is built on free software, and all the code is published on the Github repository of the Barcelona City Council, where a community of developers will be able to maintain and fix bugs for the platform. At the same time, there is institutional support that guarantees the economical sustainability of the platform in the mid-term.

### **3.2.5 Your Priorities**

#### **Sustainability Plan**

Many pilots are running and we have a brand new version of the software ready that is built using state of the art “app” technology. We use Facebook, Twitter and Github to promote the tools to developers and speak at many conferences over the year.

### **Future Development**

Your Priorities is in active development for the foreseeable future. It won the Innovation prize from EU's CHEST Call 3 for Active Citizen Notifications library for Your Priorities and other citizen participation applications: <http://www.chest-project.eu/>

Active Citizen is an open source project that is a new library that Your Priorities uses that will simplify citizens participation by bringing Artificial Intelligence algorithms and Virtual Reality to citizens for democratic and civic purposes. With Active Citizen we are confronting the trend of decreasing formal political participation with new communications tools that will empower citizens to work together towards their common goals and increase the quality of their cooperation and debate.

Partner in grant winning project: DEEP-YOU project funded by ERASMUS+: Citizens Foundation receives 30.000 EUR to create a dashboard, based on Your Priorities, for monitoring social media regarding the subject of Youth Mobility.

### **Maintenance of Repositories**

Repositories will be maintained by the Citizens Foundation and other open source developers

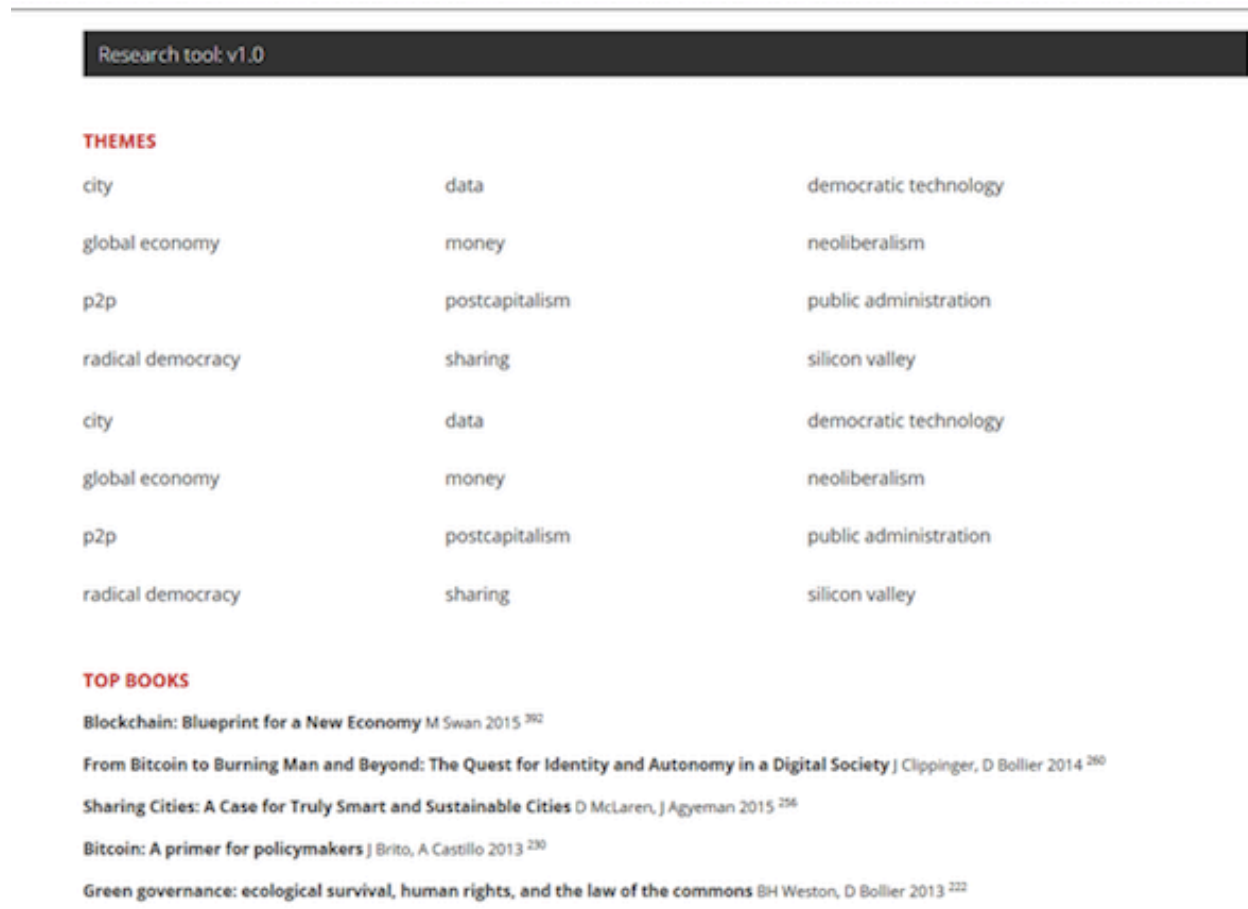


# 4. Future Research Roadmap: Open Research Tools to investigate future of decentralised technology

D-CENT has also developed an open research tool in order to investigate future research areas for investigation and implementation that would strengthen the sustainability of the project. The research tools can be accessed here: <http://dcentresearch.site>

The data-gathering processed involved developing a vocabulary of Key People, Institutions, Technologies and concepts around 12 main themes: City, data, democratic technology, global economy, money, neoliberalism, p2p, postcapitalism, public administration, radical democracy, sharing, silicon valley. **(Screenshot: 01\_homepage.png)**

## Screenshot 01: main screen



## TOP ARTICLES

[HTML] **Global Research** <sup>133</sup>

[PDF] **D1. 2 Communities' Requirements and Social Design** <sup>80</sup>

[K] **The coming digital anarchy** <sup>74</sup>

**Social movements as constituent power: The Italian struggle for the commons** <sup>67</sup>

**Blockchain Technology and Decentralized Governance: Is the State Still Necessary?** <sup>64</sup>

**Decentralized blockchain technology and the rise of lex cryptographia** <sup>58</sup>

**The digital citizen: the many-headed e-monster** <sup>50</sup>

**The Real World of the Decentralized Autonomous Society** <sup>48</sup>

**Free labor: Producing culture for the digital economy** <sup>46</sup>

**Digital campaigning and the growing anti-elitism: the Pirates and Beppe Grillo** <sup>46</sup>

**A Layered Architecture to Model Digital Citizenship Rights and Opportunities** <sup>45</sup>

**From hegemony to affinity: The political logic of the newest social movements** <sup>44</sup>

Within each theme, we analyzed the number of a) publications and b) citations for articles and books on each of the key concepts, technologies, people and institutions.

The key topics were organized from most relevant to least relevant by theme by number of publications, allowing the generation of their relative weight within a theme.

For example, within "Democratic technology" theme, publications on "Personal data" amounted to 3856 results, "Open standards" - 3195 results, while publications on "mesh networking" generated 1595 results, and "computing as a utility"- 937 results (<http://107.170.4.52/taxonomy/term/106596>). Screenshot: **03d\_theme-democratic-technology.png**

## Screenshot 03: theme page (Radical democracy)

Research tool: v1.0

HOME • RADICAL DEMOCRACY

## Radical Democracy

TOP CONCEPTS	TOP INSTITUTIONS	TOP PERSONS
social movements <sup>5717</sup>	Podemos <sup>3597</sup>	Edward Snowden <sup>3389</sup>
participation <sup>4546</sup>	occupy wall street <sup>3098</sup>	Jacques Ranciere <sup>2243</sup>
public sphere <sup>4181</sup>	indignados <sup>2975</sup>	Archon Fung <sup>2197</sup>
the common <sup>4100</sup>	zapatistas <sup>2650</sup>	Ernesto Laclau <sup>2130</sup>
self-management <sup>3861</sup>	MSS <sup>2427</sup>	Toni Negri <sup>1740</sup>
the commons <sup>3765</sup>	pirate party <sup>1870</sup>	Peter Malir <sup>1456</sup>
decentralization <sup>3704</sup>	Five Star movement <sup>1186</sup>	Stefano Rodota <sup>1184</sup>
participatory democracy <sup>3663</sup>	world social forum <sup>858</sup>	Istvan Meszaros <sup>200</sup>
empty space <sup>3455</sup>	blockupy <sup>351</sup>	Paulo Freire <sup>0</sup>
direct democracy <sup>3331</sup>		
popular sovereignty <sup>2852</sup>		
participatory planning <sup>2622</sup>		

This allowed the production of an overview of the most influential concepts and topics around each theme hub. In addition, within each theme the system generates a ranking of the most highly cited books and articles, aggregating data across topics. The articles and books that comprise the most influential works on subtopics were aggregated into a list of books and articles by theme. For example, the **Radical democracy** theme (Screenshot: **03a\_theme-radical-democracy.png**) has a list of top books and articles that come from subthemes including:

# Direct Democracy

## TOP CONCEPTS

- direct democracy <sup>3490</sup>
- social movements <sup>40</sup>
- sharing economy <sup>40</sup>
- social media <sup>23</sup>
- private key <sup>16</sup>
- public sector <sup>15</sup>
- right to privacy <sup>14</sup>
- seigniorage <sup>12</sup>
- self-management <sup>12</sup>
- right to water <sup>12</sup>

## TOP INSTITUTIONS

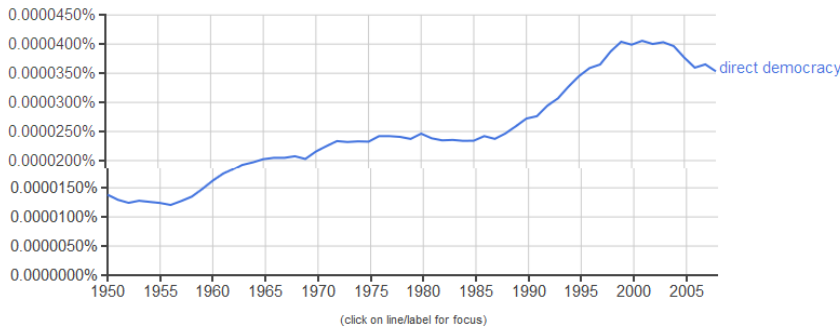
- silicon valley <sup>25</sup>
- mont pelerin society <sup>24</sup>
- pirate party <sup>24</sup>
- 4chan <sup>20</sup>
- Anonymous <sup>20</sup>
- uber <sup>20</sup>
- indignados <sup>18</sup>
- occupy wall street <sup>17</sup>
- zapatistas <sup>16</sup>
- indymedia <sup>15</sup>

## TOP PERSONS

- Manuel Castells <sup>40</sup>
- Giovanni Arrighi <sup>20</sup>
- Toni Negri <sup>20</sup>
- Ernesto Laclau <sup>20</sup>
- Randy Martin <sup>18</sup>
- Juliet Schor <sup>18</sup>
- George Ritzer <sup>17</sup>
- Archon Fung <sup>17</sup>
- Beth Noveck <sup>17</sup>
- David Chaum <sup>16</sup>

## TOP TECHNOLOGIES

- ripple <sup>20</sup>
- Bitcoin <sup>20</sup>
- folding@home <sup>20</sup>
- peer-to-peer <sup>20</sup>
- silk road <sup>20</sup>
- arduino <sup>19</sup>
- Ethereum <sup>16</sup>
- Blockchain <sup>14</sup>
- m-pesa <sup>12</sup>
- namecoin <sup>5</sup>



Research tool: v1.0

[HOME](#) » [DEMOCRATIC TECHNOLOGY](#)

# Democratic Technology

## TOP CONCEPTS

hackers <sup>4324</sup>**personal data** <sup>3856</sup>open innovation <sup>3354</sup>open standards <sup>3195</sup>peer production <sup>3099</sup>smart grid <sup>2975</sup>private key <sup>2723</sup>public key cryptography <sup>2292</sup>data ownership <sup>2251</sup>mesh networking <sup>1595</sup>

## TOP INSTITUTIONS

Anonymous <sup>4326</sup>indymedia <sup>2459</sup>4chan <sup>1855</sup>fablab <sup>1523</sup>wikileaks <sup>1120</sup>makers movement <sup>187</sup>

## TOP TECHNOLOGIES

arduino <sup>2964</sup>

Similarly, top books for "Data" theme come from the following subthemes (Screenshot: **03c\_theme-data.png**):

**Screenshot 03: theme page**

Research tool: v1.0

HOME > DATA

## Data

TOP CONCEPTS	TOP INSTITUTIONS	TOP PERSONS
open data <sup>3535</sup>	Axiom <sup>1500</sup>	Sandy Pentland <sup>1214</sup>
identity management <sup>3121</sup>	reputation.com <sup>963</sup>	Deborah Lupton <sup>669</sup>
digital identity <sup>2736</sup>	FIDO Alliance <sup>415</sup>	Detlev Zwick <sup>100</sup>
data brokers <sup>1770</sup>		
ownership of data <sup>1712</sup>		
federated identity <sup>1497</sup>		
data store <sup>94</sup>		
data portability <sup>56</sup>		

### TOP BOOKS

**From Bitcoin to Burning Man and Beyond: The Quest for Identity and Autonomy in a Digital Society** by J Clippinger, D Bollier - 2014 <sup>146</sup>

**Blockchain: Blueprint for a New Economy** by M Swan - 2015 <sup>29</sup>

**Urban interaction design: Towards city making** by M Brynskov, JC Carvajal Berm?dez, M Fern?ndez? - 2014 <sup>27</sup>

**Democracy and media decadence** by J Keane - 2013 <sup>24</sup>

**Collective intelligence: creating a prosperous world at peace** by H Masum, Y Benkler - 2008 <sup>22</sup>

### TOP ARTICLES

**Privacy-enhancing identity management** by M Hansen, P Berlich, J Camenisch, S Clau - 2004 - Elsevier <sup>104</sup>

**Twenty Legal Considerations for Clouds of Things** by WK Hon, C Millard, J Singh - 2016 - papers.ssrn.com <sup>72</sup>

**Chain Of A Lifetime: How Blockchain Technology Might Transform Personal Insur** by C von Gunten, M Mainelli - 2014 - cryptolibrary.org <sup>64</sup>

**A Technology and Process Analysis for Contemporary Identity Management Frameworks** by A Ng, P Watters, S Chen - 2014 - books.google.com <sup>63</sup>

**On the features and challenges of security and privacy in distributed internet of things** by R Roman, J Zhou, J Lopez - 2013 - Elsevier <sup>60</sup>

**Enigma: Decentralized Computation Platform with Guaranteed Privacy** by G Zyskind, O Nathan, A Pentland - 2015 - arxiv.org <sup>60</sup>

<sup>[PDF]</sup> **Federated identity management for research collaborations** by D Broeder, R Wartel, B Jones, P Kershaw, D Kelsey? - 2012 - cds.cern.ch <sup>55</sup>

Each book and article was analyzed and recorded according to the source (online library or publisher), year of publication, allowing the metadata to be searchable as well (screenshot: **05-article-page.PNG**)

Google n-gram showing the occurrences of each concept in scientific publications over time was generated, allowing insight into development of particular methodologies and approaches between in available scientific corpus of data 1950 and 2008 (screenshot: **04\_sub-theme-direct-democracy.png**).

## Screenshot 05: article detail page

---

Research tool: v1.0

HOME > OPEN DATA > PUBLIC KEY CRYPTOGRAPHY

## Electronic Document Management System With The Use Of Signature Technique Capable Of Masking

---

**Cited by:**  
16

**Year:**  
2003

**Categories:**  
[open data](#)  
[public key cryptography](#)

**Authors:**  
[S Hane](#)  
[T Fujishiro](#)  
[T Kaji](#)  
[Y Kumagai](#)

**Library:**  
[Google Patents](#)

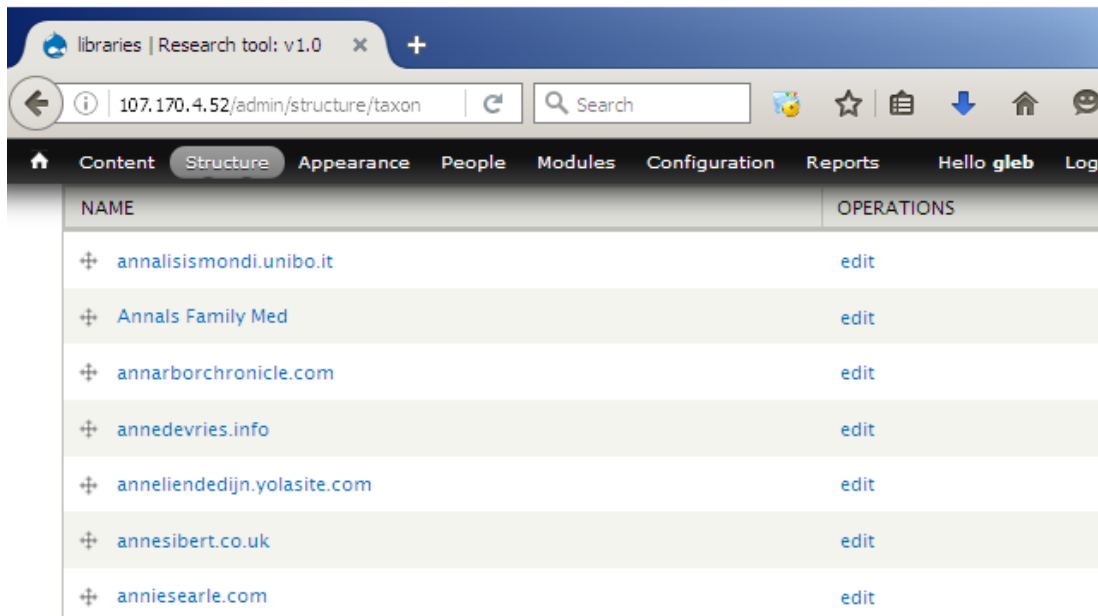
**Source:**  
[US Patent App. 10](#)

The methodology combines topical focus with general overview and allows the analysis of interrelation and correlation between subthemes, with additional drill-down capabilities and filters in the back-end by author, magazine, time of publication and publisher/magazine name:

## Screenshot 06: Magazines/other sources (4000+)

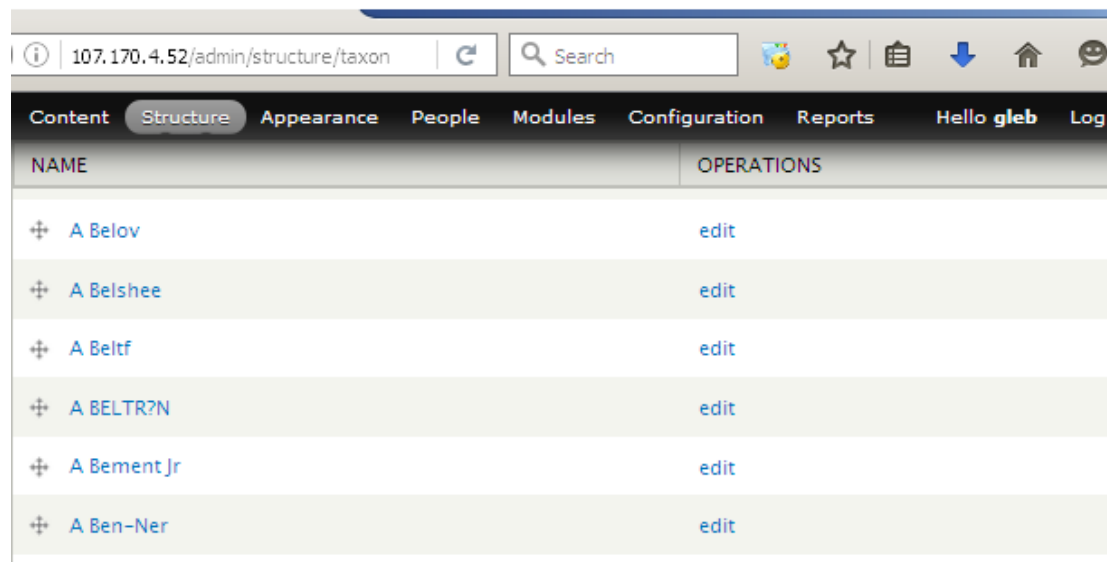


## Screenshot 07: online libraries and repositories





## Screenshot 08: list of authors with links to works



NAME	OPERATIONS
+ A Belov	<a href="#">edit</a>
+ A Belshee	<a href="#">edit</a>
+ A Beltf	<a href="#">edit</a>
+ A BELTR?N	<a href="#">edit</a>
+ A Bement Jr	<a href="#">edit</a>
+ A Ben-Ner	<a href="#">edit</a>

The 12 main themes and 275 subthemes that were analyzed allowed the generation of the list of top books and articles overall - as shown in the screenshot of the main screen(homepage): **01\_homepage.png** and **02\_homepage-continued-TOP-2000-books.png**

Research tool: v1.0

[HOME](#)

**Blockchain: Blueprint for a New Economy** M Swan 2015 <sup>392</sup>

**From Bitcoin to Burning Man and Beyond: The Quest for Identity and Autonomy in a Digital Society** J Clippinger, D Bollier 2014 <sup>260</sup>

**Sharing Cities: A Case for Truly Smart and Sustainable Cities** D McLaren, J Agyeman 2015 <sup>256</sup>

**Bitcoin: A primer for policymakers** J Brito, A Castillo 2013 <sup>230</sup>

**Green governance: ecological survival, human rights, and the law of the commons** BH Weston, D Bollier 2013 <sup>222</sup>

**Network society and future scenarios for a collaborative economy** V Kostakis, M Bauwens 2014 <sup>208</sup>

**The open book of social innovation** R Murray, J Caulier-Grice, G Mulgan 2010 <sup>120</sup>

**Internet of things: converging technologies for smart environments and integrated ecosystems** O Vermezan, P Friess 2013 <sup>112</sup>

**Building a Sustainable and Desirable Economy-in-Society-in-Nature: Report to the United Nations for the 2012 Rio+ 20 Conference**  
R Costanza, G Alperovitz, H DALY, J Farley, C Franco... 2013 <sup>110</sup>

# 5. D-CENT Tool Box: Making it easy for all organisations to deploy DCENT Tools

As part of the sustainability strategy, to amplify the impact and outreach of the project, Nesta has developed a D-CENT Toolbox that showcases in an easy to access format all the different D-CENT tools, their main features, the main problems they solve and how they can be deployed. The ToolBox has been distributed at the final D-CENT event in Madrid and is a very useful instrument to promote the main outcomes of the project and to show interested organisations how they can use and deploy DCENT democracy tools as part of a distributed, open standards-based, and privacy-aware ecosystem. The ToolBox can be downloaded here: <http://dcentproject.eu/wp-content/uploads/2016/06/D-Cent-toolsbox-final-spreads-1.pdf>

**Own your data to say no to surveillance and give control and ownership of data back to citizens.**

**Open source and open standards to build and grow knowledge commons.**

### Why you should use D-CENT

We have developed a federated architecture based on open standards, open APIs and a shared identity system to allow for the growth of an ecosystem of modular, interoperable and decentralised tools.

**Open authentication and disrupted identity management to grow an open source ecosystem of citizen engagement tools.**

**Blockchain trust to let people run reward schemes that are transparent and auditable.**

## Tool table of contents

- 08. Citizen notifications
- 12. Collaborative policy making
- 20. Electronic voting
- 22. Blockchain reward scheme
- 24. Setting up your D-CENT ecosystem



The D-CENT tools enable citizens to keep informed and participate in issues that matter to them.



**We have designed the tools with these principles in mind:**

- A set of standalone interoperable tools which deliver democratic capabilities for communities.
- Easy to deploy and maintain, allowing communities to own their servers and data.
- Communities are free to use as many or as few of the tools as they need.
- Web-based integration across the tools to allow members of communities to use them easily.
- Web based integration built on open standards to allow for integration with existing and future tools.



You can find out more at [sso.dcentproject.eu](http://sso.dcentproject.eu)

Or find it on GitHub at [github.com/d-cent/stonecutter](https://github.com/d-cent/stonecutter)

**WHY THE D-CENT ECOSYSTEM?**

D-CENT has brought together the largest European community of open-source democracy tool developers, hackers, grassroots citizen movements and policymakers.

We aim to create a uniquely European open and decentralised approach, aimed at empowering ordinary citizens to take action for the common good. This would be an alternative to closed and centralised internet platforms whose business models rely on aggregating users' information and monetising the identity and social data of their users.

We value privacy and security, and our tools are built on open-source code and open standards. D-CENT federates these tools, but they can be combined in many ways to support specific democratic processes. The D-CENT tools build on open standards for a distributed identity management system that gives people control over their own social data.

**STONECUTTER**

The foundation for the D-CENT system is Stonecutter, a privacy-aware open authentication and identity management tool that provides a single sign on for using the D-CENT tools and applications. This system is designed to be straight-forward for community groups to set-up and host, allowing users to authorise access to their data for use in various applications from an easy-to-use dashboard, without resorting to centralised platforms.

**WHAT DOES IT DO?**

The tool provides federated and privacy-aware user management for organisations. It can be used to provide users with a single account to access multiple websites in their community. This allows users to sign in to different applications using just one password.

Stonecutter is open source and self-hosted, so any organisation can use it to manage the user base of their applications. It also provides users with a clear understanding of what information they are sharing with the websites they're connecting to.

**TECHNICAL SPECS**

Stonecutter was built in Clojure, a JVM-based language. Client-side code is written in ClojureScript and the CSS files are written in Sass. It uses a MongoDB database to store the user data.

**THE TOOL IN ACTION**

Stonecutter is currently being used by the following groups

- A British political party, to allow everyone to contribute to their campaign, including those who do not have a Facebook or Twitter account or who do not wish to link their social and political profiles.
- New Garden Cities Project, to allow those who do not have social media accounts to engage with the project.
- Internally at ThoughtWorks, to ensure that only trusted users have access to sensitive discussions.

