



CASCADE- Collective awareness at scale for a social, sustainable and democratic finance

Work programme objective addressed:

ICT - 10 a) Collective awareness pilots for bottom-up participatory innovation paradigms

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1 Excellence

1.1 Objectives

As a result of the recent financial crises, public awareness around value creation, economic productivity and the role of finance systems has risen enormously. However, despite the wide condemnation of banks' speculative risk-taking in the past - unrelated to the real economy - the value of socially innovative activities is still often judged by their financial returns alone, which makes it difficult for the people behind these innovations to raise the necessary investment capital, attract sufficient collaborators and subsequently scale an innovation's sphere of influence and impact. For example, a recent survey of Irish social enterprises revealed that a majority (77%) of social ventures had plans to grow but were hampered by a 'lack of appropriate finance', while 68% reported a 'lack of personnel with needed skills' and a lack of 'government support' (PWC, 2013). Hence, foundations, cooperatives and grassroots organisations have started to use alternative sources of social finance, including peer to peer [p2p] funding, community shares and fundamentally different banks guided by ethical and democratic principles. Collective awareness is a critical component of these initiatives, which aim to redesign finance to address today's societal challenges.

CASCADE, an acronym standing for 'collective awareness at scale for a social, sustainable and democratic finance' applies the idea of 'Collective Awareness Platforms for Sustainability and Social Innovation' (CAPS) to an area where civic participation is often non-existent or very low, the management of financial intermediaries (Costa & Kahn, 2003). In CASCADE we argue that the quality and heterogeneity of community involvement is an important driver for increasing the quality, outreach and impact of social finance. The origin of CAPS, described by Sestini (2012), was based on a study done by the Oxford Internet Institute that investigated the interrelations between technological, social and economical aspects of the internet (Ian Brown, 2010). The study highlighted the desirability as well as the difficulty of achieving a scenario in which the future Internet empowers rather than controls citizens. Due to the nature of money, the financial sector was an early adopter of ICT and is now heavily digitalized, with complex financial networks and relations spanning the globe, thereby distancing people rather than empowering them in the management of their finances.

CASCADE aims to use ICT-based structures and tools to give people a more central role in financial decisions, empowering them to influence future economical developments. CASCADE's focus is on improving the economic sustainability of social innovations

- (a) by increasing communities' potential for democratic governance at a large scale and
- (b) by promoting communities' contributions to the commons, thereby supporting an alternative economy based on the sharing of benefits and open use policies.

More specifically, CASCADE has the following objectives

- Objective 1:** Scaling democratic participation in grassroots organisations, cooperatives and ethical banks through tools and methods for collective deliberation and decision making (ideation spaces, idea filtering tools, narrative summaries, visualisations, personalized recommendations etc).
- Objective 2:** Meeting the digital needs of social organisations by connecting them to open source communities and developing collaborative funding mechanisms in the long run. In the short term, hackathons and on-site workshops (matching people and needs) are used to bring the worlds of social innovators and developers closer together.
- Objective 3:** Increasing the availability of digital common goods - be they data, knowledge or software - through digital engagement tools that make better use of the existing 'real world' networks already supporting social organisations and cooperatives.
- Objective 4:** Supporting the transfer of successful, crowdfunded projects to more long-term, democratic investments. Going from crowdfunding to funding through social shares, p2p lending or credit often requires insight into whether the idea is likely to scale or whether existing followers would support this step. Social media analysis and open data from past crowdfunding events will be used to inform different options for transitioning to a different funding model.

- Objective 5:** Creating massively open online courses [MOOCs] to support the creation of economic knowledge, including topics such as 'sustainable consumption patterns', 'alternative finance' and 'welfare oriented banking'. Large-scale democratic processes work better with informed large crowds.
- Objective 6:** Improving the transparency and acceptance of social finance by measuring its social return. Relevant indicators need to be promoted and negotiated with a wide-range of stakeholders (e.g. different cooperatives, ethical banks, potential investors from the general public).
- Objective 7:** Informing policy making at a European level, by exchanging experiences with different social finance instruments and related open data.

It's not only scarcity of credit, however, that prevents social innovation communities from having the impact they could have. Related issues are (a) the ability to enact democratic participation and decision-making under the conditions of a growing membership; (b) taking full advantage of the demographic and geographic diversity of communities using Internet technologies; (c) finding human expertise and technical tools they can afford with a social profit mindset; (d) being transparent about their processes and (e) demonstrating impact to their contributors in order to show how their support makes a difference.

CASCADE will combine recent developments in the cooperative movement, social finance, collective intelligence tools and the creation of digital commons in order to foster a more inclusive and fairer environment for social innovators. An environment where social innovations can scale as needed, strengthening the social fabric of society.

The challenge of exploring Internet technologies' potential for solving such a bundle of issues is to integrate non-technology elements (e.g. democratic governance principles, social credit management) with the technologies we can already build (e.g. collective intelligence networks, open data repositories). What is often missing are real communities, whose existing (challenging) problems put technologies to a test and where success is measured by how well these problems are getting solved.

Social innovations are increasingly systemic, i.e. "benefits can be realized only in conjunction with related, complementary innovation" (Chesbrough & Teece, 1996). The CASCADE consortium includes four **social finance intermediaries, an ethical bank and Italy's largest network of cooperatives**, a setting that helps us to research effects on a systemic level.

- A. **Microgenius** enables social enterprises to raise finance through community shares online. The platform has supported 17 organizations and has more than 5000 registered users. Microgenius is part of Cooperatives UK, the umbrella organization for over 6000 cooperatives.
- B. **Goteo** is Spain's largest crowdfunding platform, decidedly supporting the creation of commons. To date, Goteo has helped secure finance pledges for 573 projects. The top 10 projects have an average of 689 supporters and the average funding per project is €6255. In order to be accepted on Goteo, projects need to contribute some of their results to the common good (e.g. open data, open designs etc). 25% of donors reject material rewards in exchange for their donations.
- C. **Management cooperative 'Bank for the common good'** will be Austria's first social bank. Some 150 volunteers with diverse backgrounds, ranging from core banking to public campaigning, support the initiative. The distinguishing feature of the 'Bank for the common good' is the commitment to utilize consensus oriented, democratic decision making processes even if their membership goes into the tenth of thousands.
- D. **Terzo Valore** is a peer2peer financing platform, facilitating donations or loans from peers. So far, 60 projects have been funded, mainly in social and health care (58%) at a total value of € 13.5 million, resulting in € 1 million saved interest rates for funded projects. The platform is backed by 'Banca Prossima'. Italy's specialised bank for the third sector. Terzo Valore is Europe's first P2P finance platform with a bank guarantee, reducing the risk in P2P lending.

The communities that are part of these platforms value the democratic control, solidarity and responsibility, and primacy of social objectives over capital. They will act as pilots for the participatory development and testing of tools and methods coming out of our research.

Finally, social finance and social innovation relies on people challenging their notions of the worlds of finance and innovation as unchangeable and outside the influence of civic action. What is needed is **collective awareness of the opportunities social finance opens up** for one-off or continued socially innovative actions. CASCADE aims to generate positive feedback loops in the sense that increased awareness facilitates different forms of engagement on social finance intermediary platforms (e.g. providing ideas, volunteering, crowdfunding etc.). The work, which would not happen in the same way without social finance, then produces a beneficial social or environmental impact. Communicating that impact back to the individuals who made social finance possible in the first place brings collective awareness full circle. In fact, CASCADE aims to help create a social finance ecology, where specific ICT innovations can be researched not only through their direct implications for the communities using them, but also through their importance for related activities (e.g. democratic governance of cooperatives will influence their ability to obtain credit or grow their membership).

In order to create a realistic approximation for testing digital social innovation in alternative finance, CASCADE includes the stakeholders needed for systemic innovations:

- i. End-users as contributors and investors, i.e. people who support projects and organisations on the four social finance platforms involved;
- ii. End-users as beneficiaries, i.e. people and organisations presenting their ideas and plans on the four social finance platforms involved, as well as people organised in social cooperatives such as the Italian association for cooperatives CGM or UK Cooperatives
- iii. Open technologies developers such as TES (Open Banking Project)
- iv. Open source developer communities such as CivicCRM (associated with the Microgenius platform)
- v. Domain experts such as the Institute for Social Banking, ensuring that social innovation can be brought to and disseminated in existing institutions
- vi. New banks in the making (e.g. Austria's Bank for the Common Good) and existing banks specialising in support social businesses (e.g. Banca Prossima)

1.2 Relation to the work programm

This proposal addresses Call ICT 10 – 2015, part a) on '*Collective awareness pilots for bottom-up participatory innovation paradigms*'. Innovations are needed to achieve the ambitious Europe 2020 targets of smart, sustainable and inclusive growth, e.g. increasing employment to 75% of the 20-64 year-olds, reducing early school drop-out rates below 10%, providing third level education to 40% of 30-34-year-olds) and decreasing poverty (at least 20 million fewer people in or at risk of poverty and social exclusion). Yet, due to the recent financial crisis, most democracies failed to raise living standards or reduce poverty and inequality¹. Substantial cuts in public spending require complementary, alternative ways of funding the social sector and other organisations pursuing political or environmental innovations.

CASCADE's focus is on collective intelligence and the production of digital commons in the area of alternative and social finance.

Specific challenges of the call (ICT 10.a)	CASCADE response
Projects should raise collective and individual awareness about the multiple sustainability threats at a social, environmental and political levels	CASCADE raises awareness (WP 2 and 4) about social innovations crucial dependence of the availability of adequate financing possibilities in order to grow and be sustainable. The project includes financial intermediaries and large networks of cooperatives in the social sector, renewable energy as well as civil society organisations, supporting social, environmental as well as political initiatives .
Projects should use collective intelligence for better informed decision-making processes and empower citizens, through participation, harnessing 'network	CASCADE empowers citizens in a variety of ways, as social finance instruments are complemented and enhanced with: participatory and democratic decision-making (see deliberation and consensus making activities in WP 2 and 3)

¹ Society at a Glance 2014: OECD Social Indicators, OECD Publishing. http://dx.doi.org/10.1787/soc_glance-2014-en

effects' and knowledge co-creation.	collective impact evaluations of funded projects through a mobile interface (WP 4) Moreover, the project also improves sense making at a very large scale through supervised AI mechanisms, so that large amounts of contributions can also be effectively processed at a human level (WP 2).
These pilots should be grounded on recent developments in open data, open source.	CASCADE is committed to using and further developing open source (e.g. Goteo as crowdfunding platform). Open Banking is dedicated to financial transparency and is also open source.
Scalable experiments and prototypes are expected to gain evidence and better understanding on the processes about collective awareness.	WP 2, 3 and 4 are going to systematically research issues around participation inequality in collective intelligence processes and the 'winner takes all' dynamics related to online attention .
Crowdsourcing/crowdfunding solutions and new mechanisms for social innovation should be pioneered.	A requirements gathering process will connect the cooperative movement with Open Source Communities such as CivicCRM (an open source Customer Relationship Management system). Different forms of incentives and engagement strategies will be researched (WP 2 and 3).
Expected return goes beyond GDP measures and traditional success indicators	Indicators will be developed for various fields, e.g. measuring projects contribution to the common good (ex-ante) as well as social returns (ex-post) (WP 5). Other indicators will measure participation in deliberation processes as part of social analytics (WP 3).
Pilots should be user-driven, involving existing communities of people, local communities, grassroots activists, hackers, social entrepreneurs, students, citizens, creative industries and civil society organisations	CASCADE will use a strongly participatory development process (WP 2), where agile teams - including developers and tool 'owners' - determine scope and priorities of the features to be developed.

1.3 Concept and approach

1.3.1 Core concepts and relevance of the challenge

Many social innovations have their origins in the late 18th century, before the beginnings of the welfare state. Physicians offered free health services, women's clubs offered free meals and volunteer groups organised social work and education in growing urban slums (Tyack, 1992). With the growth of industrialised society, finding a more sustainable foundation for these services to society's most marginalised groups was an urgent need that led to the cooperative movement - enterprises owned and controlled by their members - which is seen as a "much more democratic, fair, humane and also a more efficient structure into the long-term than investor-driven capitalist enterprises" (Bateman, 2013).

CASCADE taps into the existing **networks of social activists** (e.g. projects on the crowdfunding platform Goteo) as well as existing **communities of cooperatives** and their traditional values of democracy and solidarity (e.g. group of Italian cooperatives CGM, cooperatives UK, management cooperative of an Austrian social bank).

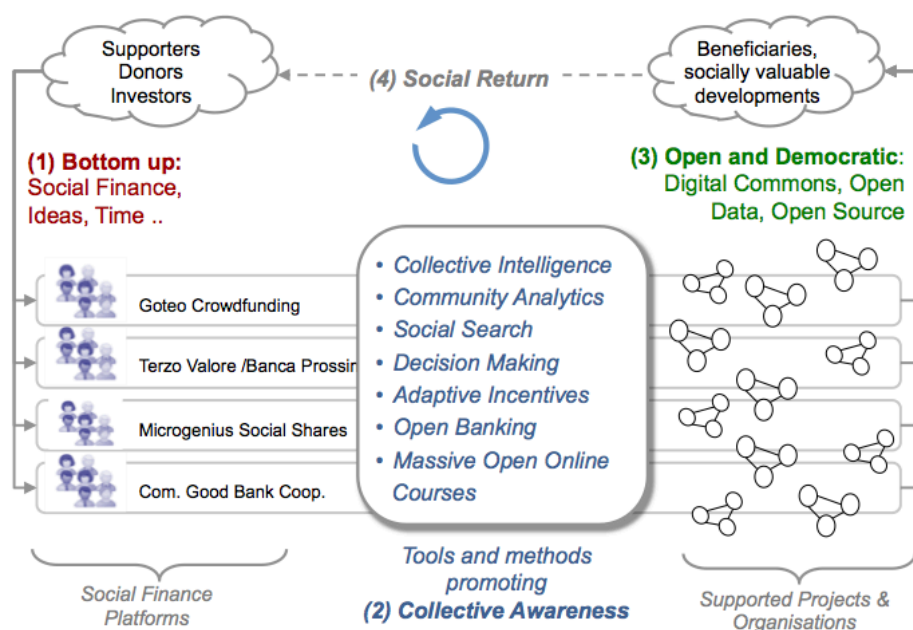


Figure 1: The four core-elements of the CASCADE ecology

Figure 1 represents the interplay between the four core elements of the CASCADE ecology. First, supporters of or investors in social ventures approach one of the four social finance platforms in the consortium (Connection 1). At present, this is still very much a national phenomenon, as different national regulations for finance intermediaries make European wide operations a complex undertaking. In the past, many socially financed projects relied primarily on their local support communities. With the introduction of online platforms, however, we can see an increasing geographic diversification of funders, investors and beneficiaries. As social finance platforms grow in subscribers, funders and projects funded, their need for collective awareness / collective intelligence tools increases (Connection 2). Section 1.3.2 offers a detailed overview of all four platforms and their specific platforms. What CASCADE aims to do - hence the reference to an ecology - is to establish self-sustaining, generative systems. Or put differently, successful social finance examples should generate favorable conditions for subsequent social finance requests. This can be achieved by opening up our data, learning and tools - in short, contributing them to the digital commons (Connection 3). Later in this section, the Open Banking Project will be presented as an example of how social organizations can make anonymized transaction data available to the general public or their supporters for commenting and also as a sign of transparency in an otherwise rather guarded financial sector. Eventually, the impact of CASCADE's digital social innovations is evaluated (Connection 4), not in a top down fashion but by entering a dialogue between individual funders / investors, the social finance intermediaries and the general public most directly benefitting from the financed initiative.

(1) Bottom up governance of Social Finance

In recent years, social finance has captured the attention of leaders in finance, philanthropy, business, and government seeking innovative ways to address some of society's most pressing issues. Social finance is critical to an alternative economy and to sustaining community activism. Unlike mainstream financing, social finance can include extended payback periods, moderate interest rates and provides for many unsecured projects the only chance to get funding at all.

Crowdfunding and crowdsourcing is already an established component in many European countries for developing social enterprises and other initiatives which would not attract funding from mainstream financial institutions. In the UK alone the alternative finance market has doubled between 2013 and 2014, reaching GBP 1.74 billion (Peter Baeck, Liam Collins, & Bryan Zhang, 2014). Crowdfunding can take on different formats such

as donations, reward-based funding, peer-to-peer lending, equity-based funding and funding through community shares (which is the focus of the third pilot).

Community shares are used to support a social or environmental cause, with the option of getting directly involved with running the project. Two statistics might highlight the underlying priorities: only 24% of community share holders (n=380) stated that a finance return was important or very important, 90% said that 'feeling their money made a difference' was an important factor and 33% offered to volunteer directly with the community project (Peter Baeck et al., 2014).

Ethical Banks are a small subsector of alternative financial service providers. Characterized by a strong non-monetary values base and a desire to contribute to the common good and the sustainable development of a larger group of stakeholders beyond their immediate customers and owners, they also take into account the social, ethical and/or environmental aspects and consequences of their activities, explicitly excluding projects from "unsustainable/unethical" sectors. Mostly – though not exclusively – in the form of cooperatives (with one vote per member), they are carried by an engaged ownership base, with no dependencies on either dominant interest groups and/or short-term oriented financial markets. Despite the latest financial crisis, most social banks – whilst growing organically already for many years - grew rapidly over the past 6-7 years, some between 20 and 30% per annum, in terms of new clients, deposits, and co-workers (Weber & Remer, 2011).

(2) Social Innovation Promoting Collective Awareness

Social innovations are new ideas (products, services and models) that simultaneously meet social needs and create new kinds of social relationships and collaboration patterns. They are innovations that are not only good for society but also enhance *society's capacity to act* (Bureau of European Policy Advisers, 2011). Unlike changes which are introduced in a top-down fashion, social innovations need to be initiated, adopted and utilized by the individuals, social groups and organisations concerned in order to resolve societal challenges at a large scale. **Collective awareness** is a major factor in materialising social innovation. Social finance is far from mainstream, despite its potential contribution to an alternative, more sustainable economy (Bateman, 2013). Some early social innovations gained momentum through society's growing awareness of inequalities and the advent of new technologies. One of the more prominent examples is the world's first distance education university, the Open University UK, "*founded on the belief that communications technology could bring high quality degree-level learning to people who had not had the opportunity to attend traditional campus universities*"². Digitally supported social finance, however, is still in its infancy.

(3) Open and democratic processes providing digital commons

Democratised processes are also revitalising our thinking around commons - one of the oldest forms of organising resources. The 'sharing economy' or 'micro tasking' are novel formats of income for people who wouldn't have an independent way of living otherwise.

Benkler (2006) distinguishes commons along two dimensions: (a) whether they are *open* to all or just a defined group, e.g. air versus water resources and (b) whether they are *regulated* or not, where rules can take very different forms, e.g. social-conventional or limited property regimes. The Internet is one of the best examples of a common good, yet the on-going debate about whether or not network neutrality should be preserved also demonstrates that there is a tendency to commercialise commons (Wu, 2004). CASCADE aims for an increase in digital commons, be it open data, open knowledge or open source software as it creates the underlying infrastructure for social finance to grow and increase its impact.

A digital commons example: The Open Banking Project (TESOBE, UK)

The Open Bank Project - OBP - (a partner in the CASCADE consortium) is intended to cause a paradigm shift in the banking world with regard to publicly accessible data. In order to reach its objectives, OBP is built upon a

² <http://www.open.ac.uk/about/main/strategy/ou-story>

diverse and innovative set of components that leverage Open Source technologies, Open Data, Web 2.0 approaches and the financial institution's legacy systems.

The OBP API will open up a whole new market and set the pace for the next generation of banking software. Providing that financial data becomes available at large scale, a completely new range of use cases will become possible thanks to the OBP: a European SME that develops a French mobile application accessing a bank account in Italy; an English web application aggregating data from different power companies and display them to the public in graphical manner; a research institute making use of the newly available data to sharpen data analysis methods, particularly fraud detection; a university granting its shareholders access to its bank account, and so on.

By providing a standardized, easy to use and open source API, OPB intends to mimic the success of Web 2.0 and mobile technologies (e.g. 70,000 third party applications registered on Twitter only 6 months after its launch). OBP leverages huge bank-related data silos by making this data available and easily reusable in order to add value to it. In fact, Open Banking can: (a) Open new markets for developers to create innovative bank-related applications upon the OBP API, (b) Enable a rich ecosystem of international, multi-lingual financial applications that will easily implement richer features: data charting, key economic indicators, social commenting, aggregated data, (c) Encourage Open Source solutions, and (d) Stimulate innovation among commercial ventures, open source community and individual developers.

By opening up financial data to the public, OBP can provide greater choices and options regarding financial disclosure and privacy controls, especially for publicly funded projects and organisations, thus raising the bar of financial transparency. With more transparency, citizens will be able to monitor funded projects, strengthen the accountability and transparency of organisations, and contribute to restoring the trust in the financial system. Various banks are already trialling the Open Banking API (e.g. Germany's first social bank GLS)³.

(4) Impact measurement: social returns

In recent years, leaders in finance, philanthropy, business, and government seeking innovative ways to address pressing societal challenges have begun to realize the need to measure the impact of social ventures as well as the investment into those ventures.

Social ventures are economic operators whose main objective is to have a social impact rather than make a profit for its owners or shareholders. It is important to not only recognise the quantitative and purely economic impacts of social enterprises, but also to recognise, measure and underline that the core of social business is represented by the social value and social impacts it produces. Social value is in fact one of the key measures of the success of social economy enterprises, together with other undoubtedly positive results such as financial turnover, number of employees, economic growth or innovativeness (WG, 2014).

1.3.2 Overview of pilot sites

CASCADE harvests the network effects among groups sharing similar values in terms of alternative and social finance instruments, and aims to support the democratic governance of their collaborative efforts (i.e. peer production). Benkler et al.(2013) calls peer production "the most significant organisational innovation that has emerged from Internet-mediated social practice ..." However, in order to take full advantage of peer production and the associated collective intelligence, digital social innovations are paramount to support the future viability and growth of communities working for the common good.

The following figure shows CASCADE pilot sites mapped against two dimensions '*collective intelligence support for multiple or single organisations*' and '*production of digital commons*', including open data, open knowledge and open software:

³ <https://api.openbankproject.com/connectors-status/>

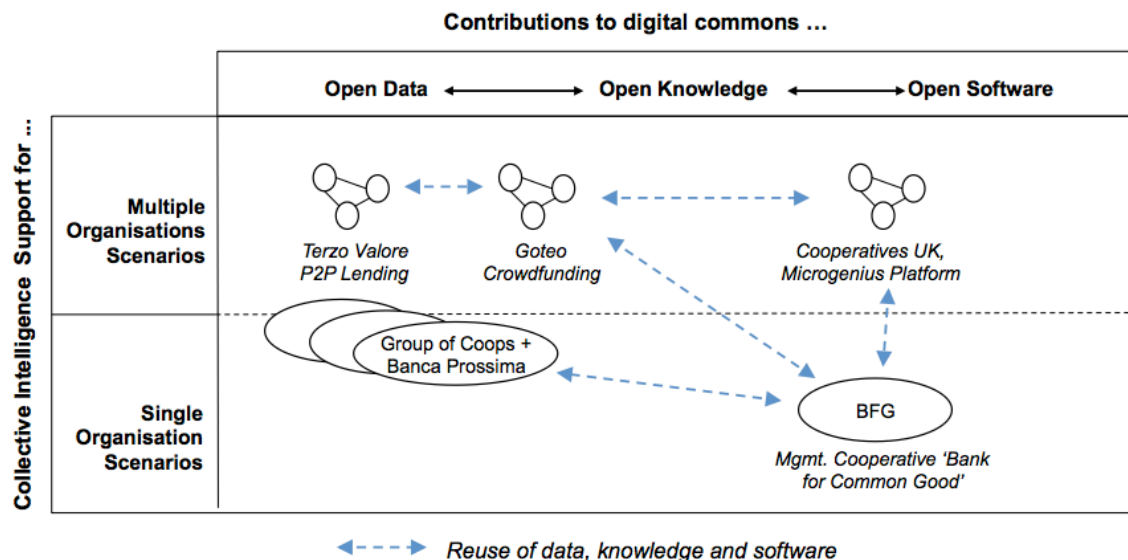


Figure 2: CASCADE pilot sites and their use of collective intelligence support and digital commons

The 1st pilot site for developing collective intelligence support for a single organisation will be the management cooperative for the '**Bank for the Common Good**' (AT). The tools for idea gathering and consensus making developed in the context of this pilot will be added to the stack of software relevant for many other democratically governed organisations such as cooperatives in the UK, represented by the CASCADE partner 'Cooperatives UK', also the maintaining organisation for Microgenius.

Microgenius (2nd pilot site) goes a step further, using collective intelligence support tools to deliberate and agree on their shared software needs. Experiences from that process has the potential to be a huge benefit for other networks of social organisations that want to pool their resources in order to produce software tools which meet their specific needs.

Goteo, the Spanish crowdfunding platform, is the 3rd pilot site. It intends to use collective intelligence tools to support organisations in their plans to switch to a different source of finance (e.g. social shares or ethical credits). Collective intelligence will play an important part in interpreting the open data generated by projects seeking funding as well as the crowdfunding platform itself. In this case, open data will be made available through an API and will be reusable by collective intelligence tools or open source software developers (e.g. visualising a time series of donations depending on social media activities).

The 4th pilot site is the Italian **Group of Cooperatives CGM**, which will use the collective intelligence of their thousands of members to develop a set of social impact indicators, suitable to capture the value created by social cooperatives. This group will then be joined by an ethical bank (Banca Prossima), which already facilitates crowdfunding and peer2peer lending but would like to improve their ex-ante and ex-post management of social finance.

The dotted arrows in the figure above indicate possibilities of reusing CASCADE's research outcomes. Here the CASCADE project anticipates that the crowdfunding and impact evaluation experiences of Banca Prossima could be reused by the emerging 'Bank for the Common Good' , and that the consensus making tools used by the management cooperative 'Bank for the Common Good' could be shared with the cooperatives in the UK.

Eight challenges have been identified by interviewing the pilot sites during the proposal preparation phase.

Challenge 1: Scaling democratic participation

Challenge 2: Connecting the cooperative and the open source movement

Challenge 3: Co-creation and awareness of digital commons

Challenge 4: Transferring successful ideas to a more long-term, democratic investment

Challenge 5: Monitor and improve Open Data about crowdfunding through an enhanced API

Challenge 6: Online support for consensus-oriented, large-scale decision making

Challenge 7: Promoting economics knowledge to support an informed citizenry

Challenge 8: Achieving a multi-stakeholder agreement on social value measurements

Each pilot site description includes the current services offered by the sites, an example of past initiatives and the challenges where the use of collective intelligence or the production of digital commons can make a difference.

Pilot Site Microgenius (UK) - <http://www.microgenius.org.uk>

Scaling the good co-operative: from small, localised communities to large dispersed interest communities

The Internet has removed geography as a barrier to communication between communities united by a cause. Social movements are no longer restricted to single areas or even single countries, as the recent Occupy protests demonstrated. Furthermore, the Internet facilitates more sophisticated interactions which would otherwise require a physical interaction or the transaction of physical artefacts such as purchase of goods, exchange of funds, and investment of finance.

Microgenius is an online service which helps societies sell community shares, relieving the administrative burden of a share offer from organisations. Since 2009, over 250 social enterprises have launched community share offers, raising over £50m from over 50,000 members. The average share issue raise is £250,000 with an average of 250 members, while 60% of share offers are over £100k, this is normally a society of at least 100 members. Through the use of tools like Microgenius, societies have been able to increase their membership base, and the finance raised, beyond what might have been possible in addressing only the local community through offline methods. A side effect of this has been that a society's membership base is **more geographically dispersed** across the country.

This effect is most apparent in the community renewable energy sector, which is the largest part of community shares investment in 2014 in the UK. Community renewable energy schemes are capital intensive, requiring hundreds of thousands of pounds to finance the equipment and land for electricity generation. Therefore the community of supporters of renewable energy needs to be wider than the geographic community where the scheme (e.g. wind turbine, hydro plant, solar farm) is built. Supporters of 'green' or renewable energy are a community based around a common interest and cause, and seek to tackle a problem (global warming) which does not discriminate between geographies. Renewable energy societies are able to appeal to this wider interest-based community to raise the large sums of money needed for the project. As such the membership of many community renewable energy societies is dispersed across the UK.

Example: Sunart Community Hydro

Sunart Community Renewables Limited, a **community benefit society**, recently raised **£750,000 from the sale of community shares** to build a hydroelectric power plant near the Scottish village of Sunart. Figure 1



illustrates the location of the village (yellow star) and the addresses of a sample of investors who used Microgenius to purchase shares (red markers). The figure demonstrates a concentration of investors near the village, and more widely across Scotland (geographic communities). However, there is a significant number of investors in the rest of the UK which represents the wider renewable energy community.

Sunart Community Hydro will **produce 100kw of green energy each year**, reducing the UK's reliance on fossil fuels and reducing CO2 emissions, a social benefit for everyone. Furthermore, as a community benefit society, **an estimated £15,000 a year will be donated by the enterprise to the local charity** Sunart Community Company. The charity will deliver a range of benefits to the community (health, transport, recreation, heritage) as outlined by their community development plan⁴.

⁴ <http://www.sunartcommunitycompany.org.uk/Sunart%20Community%20Planning%20Appraisal%20-%20Summary.pdf>

Challenge 1: Scaling democratic participation

The trend towards a more geographically dispersed membership base of co-operative and community benefit societies is undermining the democratic principles under which the cooperative movement operates. While the internet and web technologies have made significant advances in improving the communication and other more sophisticated activities between geographically dispersed individuals, the **progress towards a means of online democratic participation remains limited**.

A key principle of the co-operative movement is *democratic member control*⁵. In co-operative and community benefit societies this control is exercised through voting on resolutions raised by its members, and appointing directors to conduct the affairs of the society. Resolutions can be raised and directors elected at a society's annual general meeting (AGM). Furthermore, a society's rules will stipulate the level of attendance required to achieve quorum. Holding an AGM is not a unique activity to societies, and is practised by other corporate forms and organisations. However, the principle of one member one vote adds impetus to achieving quorum in the annual general meetings of co-operative and community benefit societies. The financial and temporal cost of travelling significant distances is a barrier to participation for many members. This barrier is exacerbated by the marginal profits under which many social enterprises operate which do not provide capacity for the expenses of participation to be claimed.

The risks are twofold:

- **The social enterprise fails and the promised social value is lost.** The social enterprise stagnates, unable to make decisions, and unable to capitalise on the cognitive resources of its membership. Directors, most often receiving no remuneration for their role, may become overworked and exhausted as the pool of willing volunteers for the director role dwindles.
- **The society becomes undemocratic and member participation is limited or lost.** The society is controlled by a minority of members, while the remainder become disengaged. The society could lose the support among its interest community. Members could cash in shares and create liquidity problems for the enterprise.

Research and actions envisioned

The problem is an issue of scaling the democratic principles in organisations (societies/cooperatives) which have historically relied on physical/offline participation of its members. However, these organisations are now recruiting members through digital/online mechanisms. Research is required on how digital democratic participation allows cooperatives to continue to adhere to core principles and social enterprises can continue to deliver social value.

Challenge 2: Connecting the cooperative and the open source movement

Open Source Software [OSS] powers some of the most fundamental parts of the web (e.g. OpenSSL, Web-servers etc.) and is used and invested in by some of the 21st Century's technology heavy weights such as Google and Twitter. Most recently the public sector has embraced open source software, with the UK government's ICT strategy mandating that "where appropriate, government will procure open source solutions"⁶. Furthermore, governments are not just procuring OSS, they are contributing to it⁷.

The third sector (voluntary organisations/charities/social enterprise) was an early adopter of open source software, embracing the cost efficiencies of OSS solutions over proprietary alternatives. However, for the most part the third sector is a consumer of OSS and not a producer or consumer-producer in the same way that the commercial sector is and the public sector is becoming.

The problem

Large parts of the third sector are unable to address their digital needs because of a lack of skills and resources. Small and start-up social enterprises are facing **the dichotomy of the financial pressure to move towards more**

⁵ <http://ica.coop/en/whats-co-op/co-operative-identity-values-principles>

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85968/uk-government-government-ict-strategy_0.pdf

⁷ <https://github.com/alphagov>

efficient digital delivery and functioning of their organisations, but neither the finances nor the people to deliver it.

This dichotomy is particularly acute among small co-operatives and community benefit societies because they have niche requirements which are particular to their corporate form and memberships, which would normally be fulfilled by proprietary software in the commercial sector. Some examples include - among others - (a) a list of members, their details, and their shareholdings, (b) holding annual general meetings – proposing and voting on resolutions, meeting quorum, voting in directors, (c) Membership management –communications, event management, and volunteer management.

Many societies rely on volunteers to administer themselves, with directors receiving no remuneration for their role. As such, functions which could be completed more easily and requiring less time to administer would reduce the burden on volunteers. As described in the first challenge, society memberships are becoming more geographically dispersed. Using digital ways to interact with a society's membership can help overcome this physical barrier to participation and improve engagement between the society and its members.

The solution / research required

We propose an open innovation platform which will bring together the open source community and social sector communities / cooperatives. This platform will crowd source the digital needs of the communities and allow the communities to co-design the solutions.

In particular the platform will place emphasis on synergies coming out of merging the knowledge of OSS communities and experienced problem owners from social organisations. The research will consider how to animate and mobilise the open source community when the overlap with the 'interest' community is minimal i.e. where there are few people who both possess the development skills required and have the need to solve the problem. Central to the genesis of the OSS community has been the philosophy of 'scratching one's own itch', where an individual has spearheaded the development of software to solve their own problem but then open sourced the solution so that it may sustain itself beyond its initial application. We shall review the OSS landscape to identify solutions which require only incremental changes to meet the needs of our pilot community, and that have an existing community of developers and evangelists to animate.

However the argument about 'kudos' as a reward for working on projects that solved a problem for many thousands of users is becoming less viable, since there are opportunities for developers to gain kudos on much larger projects e.g. Mozilla Foundation, which impact more people and have more prestige. More and more, cash rewards (bounties) are offered to push open source development forward. Often these bounties do not cover the full commercial cost of development, but are enough for developers who already have an interest in the community to commit their time to it. For example, the TV set-top-box community around Boxee would set bounties for the OSS community to develop patches or codecs for their OS and hardware⁸.

We would envision that beside some projects that can be run by volunteers, cooperative communities coming together on the platform could not just pool their knowledge but also pool their funds. None of them have the funds to develop something by themselves, but between them they could crowdfund enough money to implement the 'bounty' approach. For CASCADE, we would use the deliberation platform to first gauge the need of a particular problem, then ask the OSS community to quote for the delivery of it. A crowdfunding platform such as Goteo could then help to crowdfund donations, enabling the contribution of the solution to the digital commons. We envisage this will involve an appraisal of popular OSS projects such as Wordpress, Drupal, Joomla and CiviCRM where functionality can be added through the use of plugins and extensions. Finally, in the spirit of the OSS movement we shall reuse existing software platforms and frameworks wherever possible.

Pilot Site Goteo (Spain) - <http://www.goteo.org/>

Goteo is more than a platform for crowdfunding (monetary contributions). It serves as a focal point for distributed collaboration by people who may have physical resources, expertise, infrastructure tools or personal time to contribute to a particular project. Goteo has become a network of local, independent and

⁸ <http://archive.linuxgizmos.com/building-the-ultimate-open-set-top-box/>

interconnected communities throughout Spain, and more and more, across European networks such as the [Networked Programme of the European Cultural Foundation](#) or the [Europeana eCreative project](#).

The people who belong to the Goteo network tend to play several different roles at various times. They may introduce a new project that needs support, contribute funds to help launch a project, or collaborate on it so that it can grow. Goteo is a tool designed to support the logic of sharing, collaborating and generation of social impact. It was launched at the end of 2011 as the first crowdfunding platform expressly for open and commons-oriented projects.

On a larger scale Goteo aims to go beyond financial support through a standard of collective financing that produces digital and non-digital commons, which in turn creates an infrastructure enabling an alternative economy. To achieve that grander objective of a widespread and rich infrastructure, communities on Goteo need digital engagement tools to better use the creativity and social connections of their supporters.

Challenge 3: Co-creation and awareness of digital commons

We propose to have:

- **Co-creation workshops and campaigns:** In order to increase awareness and crowdsource support in identifying and growing Goteo's community contribution to digital commons, we need to have co-creation workshops to design and develop solutions that can facilitate the co-production of digital commons during and after the crowdfunding campaign. Goteo was developed in a similar fashion, involving the open source community Platoniq, the Goteo.org platform was built by and for the community.
- **Digital commons workshop:** We also see a need to train organizations and people from social and solidarity economy on how to produce digital commons through open knowledge and open data.

As results of these workshops, we should obtain the definition of the basic criteria and requirements to build up **digital engagement tools** to be used as part or in parallel to Goteo.org where our community gets engaged in the co-production of digital commons during (crowdsourcing of support) and after the crowdfunding campaign (collective returns).

Challenge 4: Transferring successful ideas to a more long-term, democratic investment

GOTEO is also looking into the further development and sustainability of initiatives they have funded. Hence the challenge is to scale and transfer successful ideas from a specific local context to wider contexts and for different purposes. This scenario would also include additional services to the existing value proposition of the funded initiative.

For this to happen, engagement channels and financial tools to promote scalability and sustainability are needed, allowing distribution and more long-term and democratic investment. The latter could be achieved through social shares or social credit. Hence, if supporters stay with the initiative, adapting to a new financing context, the initiative can plan for more long-term activities. Moreover, the transition can benefit from the historical performance of the funded initiative, estimating their potential for scaling.

Crowdfunded projects can become economically sustainable

- by offering their products through a webshop,
- by being connected to existing platforms like Microgenius (further finance through social share offerings) or
- by a credit from an ethical bank such as Banca Prossima.

The Goteo platform could support this process by providing open data needed to evaluate or decide what would be the best next step for the crowdfunded project. Open data could include data on non monetary contributions, digital commons production and data from the supporters, so we can identify if the community around the project should be to be part of the decision making process, take on ownership, what is the social impact of the project, etc. - all data provided through the Goteo API⁹.

⁹ <http://api.goteo.org/v1/api/spec.html#!/spec>

Challenge 5: Monitor and improve Open Data about crowdfunding through an enhanced API

We need to get better data about both the crowdsourcing and collective returns dimensions of crowdfunding Goteo, so there will be a need to further develop the Goteo API and define new datasets to be provided based on novel features within Goteo.org. For instance: improved data on the non-monetary module of crowdfunding campaigns in Goteo. Goteo also identified a need to create or integrate a digital engagement mechanism to involve Goteo's community in the evaluation and creation of digital commons of the projects they support.

Goteo.org plans to foster a development model based on API visualizations provided to meet crowdfunding needs of other entities and projects across Europe. This has a double benefit: no need to modify the core code of Goteo tools and creation of data to be openly released when needed. That could work as inspiration for other tools involved in the CACADE proposal, like Microgenius, Bank for Common Good or Terzo Valore (Banca Prossima's p2p lending platform).

Owner cooperative 'Bank for the Common Good' (Austria) - <http://www.mitgruenden.at/>

The Bank for the Common Good (Bank für Gemeinwohl, BfG) will be Austria's first alternative ethical bank. BfG will once again make money work in the public interest and concern itself only with the real operations of a bank: deposit of money, payment of transactions and loans for investments. Central to the bank's concept is to be in the public interest. Any decision, for example the bank's procedures of testing creditworthiness, will be preceded by a public interest test: a common good test. This would lead to the exclusion of speculative banking products, i.e. financial businesses without a real economic background. At the core of BfG's self-understanding are democratic structures based on systemic consensus-oriented decision-making.

The cooperative, being the prospective owner of the bank, has already started to provide trainings and educational courses around topics such as 'banking for the common good', 'social investments' or 'economics beyond the logic of competition'.

Challenge 6: Online support for consensus-oriented, large-scale decision making

As a bank that serves the common good, BfG needs to establish a democratic discourse about its goals and means. On a larger scale the cooperative as the owner of the prospective Bank for Common Good (BfG) aims for active participation of its members in decision-making processes leading to consensus oriented solutions.

The underlying idea for consensus oriented solutions is, that using the wisdom of the crowd the solution, that triggers the least collective resistance has the widest possible acceptance. If many are needed to implement and contribute, this is a critical success factor. And as the cooperative aims for several ten thousand members, there is a need for a well-designed and transparent participation, discussion and decision making process. Due to the big number of possible participants this process will have to be digitally supported. Challenge 6 is similar to challenge 1 and will reuse developments in that area. Nonetheless, it's considered a challenge in its own right as the focus is on consensus building.

Challenge 7: Promoting economic knowledge to support an informed citizenry

The aim is to provide knowledge about money, banking and financial practices promoting the common good in order to create awareness on the role of interests, redistribution of resources and democratization of economic decisions. In the context of an online survey done by BfG (internal source), 253 newsletter subscribers indicated the following educational needs "public welfare oriented banking" (75%), "Finance and its alternatives" (74%), "Democratisation, redistribution and regionalism" (72%) and "sustainable consumption and lifestyle" (55%). Offering this knowledge in an engaging and interactive way to a potentially large group of people will be a challenge. Recent developments - methodological as well as technological - in the area of Massive Open Online Course delivery will be used to approach this task (Daniel, 2012).

National Cooperative Group CGM (Italy) - <http://www.cgm.coop>

The National Cooperative Group CGM is a nation-wide network made up of local (provincial or metropolitan) cooperative networks. CGM represents a national network whose membership is composed of 77 consortia

which gather more than a thousand social cooperatives. CGM's network provides social, sanitary and work integration services. Within CGM's network there are more than 48,000 workers, 4,300 of whom are disadvantaged workers and 4,200 are volunteers. It represents the largest Italian network of social enterprises. CGM Coop's overall objective is to promote communities' welfare by providing quality services at an affordable price. CGM works at a national level, as general contractor and promoter of territorial development activities by means of specific projects. CGM Coop stands for a sense of mutual solidarity and supports citizens in forming associations to bring their social engagement to the next level, this includes professional contract negotiations with public authorities to open up financial support as necessary.

Challenge 8: Achieving a multi-stakeholder agreement on social value measurements

Social economy organizations and cooperatives are economic operators whose main objective is to have a social impact rather than make a profit for their owners or shareholders: it is indeed important to recognize the quantitative and purely economic impacts of social enterprises, but also to recognize, measure and underline that the core of social business is represented by the social value and social impacts it produces. Social value is in fact one of the key measures of the success of social economy enterprises, together with other undoubtedly positive results such as financial turnover, number of employees, economic growth or innovativeness.

The challenge is to provide the basic information necessary to be able to communicate with funders, investors and commissioners. Increasingly general statements of the social value are not adequate and investors want to have information on how much value will be created. **This also avoids misunderstandings between what social economy organisations and investors may mean when they talk about social value.** Especially in respect of commissioners, measuring social value allows an organization to consider which components of that value either are or could be relevant. Measurements will have various facets, as they are need on some aggregated level (describing the social economy as a whole) and on sector specific levels (acknowledging the difference between areas such as social services and renewable energies).

1.3.3 CASCADE Approach: Agile and participatory software development for social innovation

CASCADE will adopt an agile development method, which is considered adaptive rather than predictive. There are several advantages for adopting an agile methodology throughout the CASCADE project, since it is aligned with the underlying philosophy of open, participatory and iterative development. Next we shortly describe the advantages and drawbacks of each approach and the proposed Scrum approach to be followed. Scrum enables the adoption of sprint iterations of 1 to 4 weeks duration. This enables flexibility for stakeholders from the different communities involved even if their availability is not very high. On the other hand, CASCADE will experiment working in an agile fashion in a distributed team environment making use of online tools to setup the different planning and review meetings.

There are two broad themes that emerge in traditional systems development, around which the problems are centered:

- *The development life cycle and its processes:* The way processes are understood and designed and managed (as though they are well defined, predictable, repeatable processes) is highly process-centric. It uses hard-systems thinking, engineering-based in its approach. The focus is on achieving stability.
- *The management style:* The way people are organized, managed, and controlled is through "high command and control," a formalized and standardized approach with limited customer interaction.

Agile methods address the inherent problems of traditional systems development using two scientific concepts: One method is using "empirical process control." One can also say that this is based on "soft-systems thinking." The other method is seeing the systems development as "complex adaptive systems" and designing team structures and methods around that.

In order to get the necessary flexibility and speed, the Agile projects self-organize themselves into small teams, with a "servant leader" who facilitates the team's processes and goals. The teams are made up of people with diverse sets of skills who often take on different responsibilities as situations arise. The teams directly interact with customers to set goals and plan and implement them. The entire team goes through repeated cycles of thought-action-reflection, with the primary goal being learning and adapting, enabling them to respond quickly

to emergent situations. The team produces only the most necessary documentation needed to communicate between the different stakeholders.

1.3.4 Related research and innovation activities

The European Commission has for some time promoted the notion of “**Collective Awareness Platforms for Sustainability and Social Innovation**” (CAPS), i.e. “ICT systems leveraging the emerging network effect by combining open online social media, distributed knowledge creation and data from real environments (Internet of Things), in order to create new forms of social innovation”. The promise of CAPS rests on the distributed situational awareness enabled by such platforms, which – as a number of real-world examples have shown – can have tangible impacts, for instance in empowering (and motivating) citizens to make informed decisions and consumer choices, in real time, fostering collective behavioural changes towards improved social sustainability and more direct democratic participation.¹⁰

Collective Awareness is defined by the EC as comprising:

- Gathering of big data about what's going on and other people's actions: (a) From humans as well as from sensors; (b) Made available to all citizens as open data; (c) Enriched and interrelated with other sources of information/statistics/simulations.
- Providing an extended awareness of the social world, the environment and the consequences of our actions, thereby changing our behaviours towards ways which are more sustainable socially as well as environmentally.

The CASCADE consortium includes three partner from two previous CAPS projects 'Cap4Access' and 'Catalyst'. However, research contributed by other members of the consortium further adds to the rich foundation for interdisciplinary research: for instance, the exploration of digital media's impact on political knowledge formation by the Oxford Internet Institute (FWA) or DIESIS' work on social innovation incubators (BENISI).

Cap4Access (EU FP7 2014 - 2016) - The project develops and pilot-test methods and tools for collectively gathering and sharing spatial information relevant to accessibility, with the aim to foster awareness of barriers for individuals with limited mobility and to encourage actions for removing such barriers. The project develops a range of tools and methods for i) documentation, annotation and discussion of locations/places and routes/streets within the built environment according to their accessibility/suitability for individuals with limited physical mobility, ii) visualising the data in ways which are intuitive and highly attractive for a wide range of target users, iii) route planning and navigation for people with limited mobility, and iv) creating awareness and preparing effective measures at local level for eliminating barriers for people with limited mobility. *CASCADE will build upon experiences made with participatory design and development involving a wide range of stakeholders. Moreover, CASCADE will - like Cap4access contribute to open data repositories and open source development.*

CATALYST (EU FP7 2013-2016, catalyst-fp7.eu) - Collective Applied Intelligence and Analytics for Social Innovation: Open Tools Validated in Large-Scale Communities - In this project the OU is developing and testing innovative online deliberation tools to support public deliberation in social innovation organizations, in order to facilitate collective ideation, creativity and citizen engagement in collective decision-making processes. *CASCADE will build on various Catalyst's technologies such as DebateHub.net and the Cldashboard.net in order to provide easy userinterface for online deliberation and compelling visualisations for deliberatin analytics. CASCADE will improve existing CATALYST technologies by building new tools for consensus-driven decision making.*

RRI-Tools (EU FP7) - This project develops and uses a Training and Dissemination Toolkit on Responsible Research and Innovation (RRI). It is addressed to and designed by all stakeholders across the Research and Innovation (RI) chain of value, including Researchers, Civil Society, Industry and Education but will specially focus on Policy Makers in order to impact significantly in the future governance of RRI. *ZSI is part of this project promoting an understanding of open science, where deliberation and reflection are coupled with action (science with society). CASCADE can re-use RRI Tools in its efforts to drive interdisciplinary research towards empowered citizens, asking for the necessary changes in regulations and policies to increase the impact of social finance.*

¹⁰ <http://ec.europa.eu/digital-agenda/en/collective-awareness-platforms>

Political knowledge and the Web (FWA) - Information is key for citizens to play their role in the democratic systems. Citizens need information to define their preferences and evaluate the activity of governments and parliaments. Importantly, they need information to cast informed votes. Building on these premises, a large body of literature has studied the impact of information on citizens. However current knowledge is based upon research that does not adequately capture the role of the Internet. Given the large impact of digital media, this represents a substantial gap. The widespread diffusion of information technologies has dramatically transformed the way citizens access, consume and exchange information. In what ways different representations of information will influence the shaping of opinions or agreement between members of a larger crowd is a fundamental question in CASCADE, here the expertise of OII and its FWA project will be a key asset.

Urban Data2Decide (Joint Programming Initiative) - Urban decision makers are nowadays faced with both unprecedented challenges as well as new opportunities as the environment around them grows ever more complex. Out of the readily available “sea of information”, unfortunately, some sources potentially important to decision-making have so far remained largely untapped. The UrbanData2Decide project therefore aims to extract and process information from two rich sources, namely public social media and open data libraries. This information, combined with advice from expert panels, will support a holistic, sustainable and well-founded decision-making process which takes into account the views and perspectives of all relevant stakeholders. *ZSI is working at the interface of open data and human experts. A similar balancing between automation of data analysis and possible interventions by humans will also be a critical task in CASCADE.*

BENISI (FP7 “Coordination and support actions” - <http://www.benisi.eu>, Building a European Network of Incubators for Social innovation, 2013-2016) - The BENISI project seeks to build a Europe-wide network of networks of incubators for social innovation. This network identifies 300 social innovations that have high potential for scaling successfully, and ensure the delivery of necessary support services to those social innovations.

1.3.5 Technical approach

Our approach will realize the following simple but powerful process for helping large communities deliberate effectively about the kinds of complex topics that appear in such important contexts as social finance decision-making:

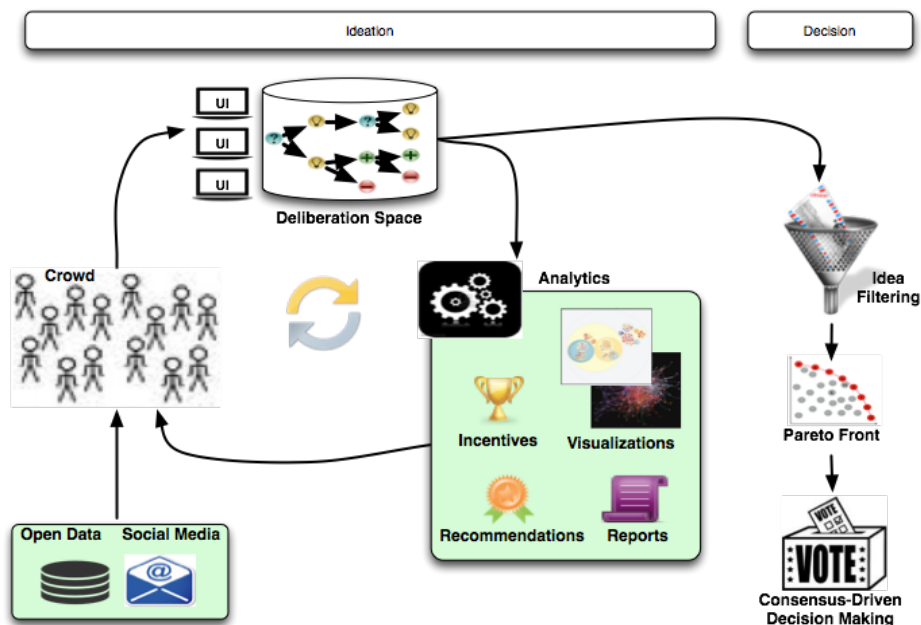


Figure 3: System architecture for CASCADE system

This process consists of an *ideation* component (where the crowd works together to identify and evaluate the space of possible solutions for the problem at hand) as well as a *decision* component (where the crowd comes to consensus concerning which of these candidate solutions should be implemented). This will work as follows:

Crowd members will have user interfaces that enable them contribute content to a deliberation space, as well as to view and rate the content that others have contributed. The deliberation space will be a distinctive environment in which the crowd's contributions are framed as deliberation "maps" i.e. tree structures made up of interleaved issues, ideas and arguments. The user interfaces will include entry-level tools for novice users, for greater accessibility, as well as more powerful interfaces for people who have become experienced with the approach and wish to contribute more deeply. These user interfaces will make it easy to integrate content from open data and social media sources into the deliberation space.

Analytics algorithms will *summarize* the community's activity in the deliberation maps in order to help crowd members assess what needs to be done and thereby direct their efforts so that they can converge more quickly on good decisions. These summaries will take several forms:

- *visualizations*, based on sophisticated metrics analysis, that help managers assess the deliberation processes' overall health. The metrics will build upon our team's expertise in data mining, social network analysis, sentiment analysis and opinion mining, but will produce more powerful metrics than have been possible before by virtue of applying them to semi-formalized deliberation map structures, rather than just the "bags of words" available from existing deliberation platforms.
- *recommendations* that point contributors to the parts of the deliberation map that they can best learn from or contribute most to. This will build upon our team's expertise in graph query, social search, and optimization techniques.
- *narratives* that present coherent summaries of the content on a given topic (e.g. what are the best-supported ideas for addressing issue X; what are the key divisions underlying a controversial issue?). This will build upon our team's previous work on applying rhetorical structure theory to summarizing deliberation maps.

The analytics will also help managers frame *adaptive incentives* (such as badges and other virtual currencies) that incentivize crowd members to focus on the areas in the discussion that need the most attention.

This cycle of analytics-guided ideation can continue for as long as desired. When the ideation phase is judged to be sufficiently mature, *idea filtering algorithms* help the crowd identify the most promising (i.e. pareto-optimal) ideas from the deliberation, and the final idea selections are made by the participants using *consensus-driven decision-making* processes designed to work effectively for large crowds facing complex decisions with many alternatives solutions.

A unique feature of our project is that it will be unified by a focus on *deliberation metrics*. Members of our project team (Klein, 2012) have developed a "normative" deliberation model which identifies the key steps in deliberations, as well as the goals that these steps would ideally achieve. We have found that, when we use deliberation maps to mediate crowd activity, it is very often possible to define automatically-calculated metrics that can measure how well these goals are being achieved. For example:

Goal	Metric
full coverage of idea space for an issue	calculate breadth and depth statistics for deliberation map branch for that issue
comprehensive evaluation of ideas for an issue	measure whether all ideas for an issue have received arguments from the authors who have shown interested (by contributing, viewing, rating posts) in that issue branch.
well-grounded evaluation of ideas	measure whether users viewed the underlying arguments, and whether their idea evaluations are consistent with their evaluations for the underlying arguments

Calculating such metrics would be impossible, given current natural language technology, with conventional deliberation systems.

1.4 Ambition

The deliberation metrics introduced in the previous section will serve for the scaffolding for all our project's development and evaluation activities:

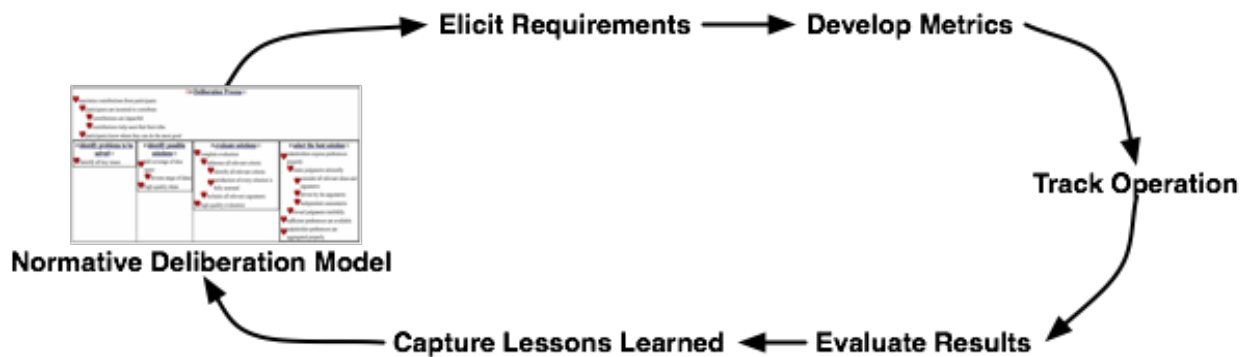


Figure 4: Goal-driven development process for CASCADE project

We can use the normative model, and associated metrics, to:

1. *elicit requirements* (by asking customers to identify which of the normative process goals are important to them)
2. *develop* the metrics needed to measure goal satisfaction
3. *track* how well the deliberation goals are being achieved during system operation, and use that to drive incentives and other interventions
4. *evaluate* the results of the deliberation engagement, once completed, and
5. *capture lessons learned* by extending the normative model to capture which goals were actually important, as well as which metrics and interventions helped measure and achieve them

The ability to found our project on measurable metrics will allow us, we believe, to explore the space of deliberation designs more effectively and thereby create better systems.

Hence CASCADE will make important advances for the key components of the technical architecture shown above including:

- the deliberation space
- visualizations
- recommendations
- narrative reports
- adaptive incentives
- idea filtering
- consensus-driven decision making

We describe the state of the art for each technology component, as well as how we will transcend their current limitations, in the sections below.

1.4.1 The Deliberation Space

State of the Art

The role of a deliberation space is to allow communities to identify and evaluate possible solutions for a problem of shared concern (Walton and Krabbe, 1995). A wide range of social computing technologies have emerged to address this challenge in the past few decades, including email, chat, web forums, solution competitions such as Innocentive.com, open innovation systems such as ideastorm.com, and group decision support systems. Experience with such systems has shown that they can foster, by virtue of reducing the cost of participation, remarkably powerful emergent phenomena that include:

- *Massive volunteer contributions*: crowds can contribute large volumes of ideas for problems they care about. In the six-day IBM "Innovation Jam" in 2006, for example, over 150,000 participants from 104 countries identified 46,000 product ideas for the company (Bjelland and Wood, 2008). Dell's ongoing Ideastorm website (Di Gangi and Wasko, 2009) has received, to date, over 20,000 suggestions for improved Dell products and services. In the early weeks of his first term, President Obama asked citizens to submit questions on his web site change.gov, and promised to answer the top five questions in each category in a major press conference (Phillips). Over 70,000 questions were submitted. Google's 10 to the 100th project, finally, received over 150,000 suggestions on how to channel Google's charitable contributions (Buskirk, 2010).
- *The long tail*: crowds can generate a much *greater diversity* of ideas, including potentially groundbreaking "out of the box" contributions, than we could easily access otherwise (Tapscott and Williams, 2006). One study found, for example, that 30 percent of the challenges that confounded researchers in corporate R&D organizations were solved by outside crowd members, often ones that did not have "expert" credentials in the problem domain (Lakhani and Jeppesen, 2007). The larger the crowd, the greater the probability of encountering truly superior out of the box solutions.
- *Many eyes*: social computing efforts can produce remarkably *high-quality* results by virtue of the fact that there are multiple independent verifications - many eyes continuously checking the shared content for errors and correcting them (Raymond, 1999).

On the other hand, these approaches also face serious challenges that can deeply undercut the value of the deliberation engagements (Klein and Convertino, 2015). These challenges include:

- *Low signal-to-noise ratios*. Existing collective deliberation tools tend to generate idea corpuses that are highly redundant, and of highly variable quality (Westerski et al., 2013). Previous research suggests that only about 10-30% of the ideas from collective deliberation engagements are considered, by the customers, as being of high quality (Blohm et al., 2011a).
- *Insular ideation*. Ideas in collective deliberation engagements are typically generated quickly by single individuals without reference to other submitted ideas (Bjelland and Wood, 2008). It seems clear, however, that the customers of collective deliberation engagements would be better served by a smaller number of more deeply considered ideas that have benefited from critiques and refinements by multiple contributors (Blohm et al., 2011a).
- *Balkanization*: Users of existing tools often self-assemble into groups that share the same opinions – there is remarkably little cross-referencing, for example, between liberal and conservative blogs and forums – so they tend to see only a subset of the issues, ideas, and arguments potentially relevant to a problem. This tends to lead people to take on more extreme, but not more broadly informed, versions of the opinions they already had.
- *Non-comprehensive coverage*: Current tools have no inherent mechanism for ensuring that the ideas submitted comprehensively cover the most critical facets of the problem at hand, so the coverage is hit-or-miss and may not align with the customer's needs.
- *Dysfunctional argumentation*: Existing tools do not inherently encourage or enforce any standards concerning what constitutes valid argumentation, so postings are often bias- rather than evidence- or logic-based. Participants often rate ideas with respect to their own, rather than the customer's criteria (Jouret, 2009), and no support is provided to help raters correct and build upon each other's facts and reasoning.
- *Opaque Processes*: Existing tools make it very difficult for interested parties - for example, the managers or customers of a collective deliberation engagement - to get a sense of the "health" of a deliberation, e.g. where the content is mature and ready to harvest, which topics need more attention, when dysfunctional behaviors such as groupthink or balkanization are taking place and need to be addressed.

Because of all these issues, the content generated by existing collective deliberation tools is typically very sub-optimal from both a depth and breadth perspective, and enormous effort is typically required to "harvest" the

corpus created by such tools to identify the most useful content. Nearly 100 IBM senior executives, for example, spent weeks sifting through the tens of thousands of postings generated by their Innovation Jam (Bjelland and Wood, 2008). Google had to recruit 3000 Google employees to filter the unexpected deluge of ideas for the 10 to the 100th project, a process that put them nine months behind schedule. The change.gov website, finally, had to be shut down prematurely because the huge volume of contributions overwhelmed the staff's ability to meaningfully process it.

Beyond the State of the Art

This project will transcend the state of the art in deliberation systems by creating a *large-scale deliberation mapping* system, a simple but powerful social computing approach developed by members of the project team (Klein and Iandoli, 2008) (De Liddo et al., 2012). In this concept, the crowd's contributions are captured as topically-organized tree structures made up of *issues* (questions to be answered), *ideas* (possible answers for a question), and *arguments* (statements that support or detract from an idea or argument) that define a space of possible solutions to a given problem:

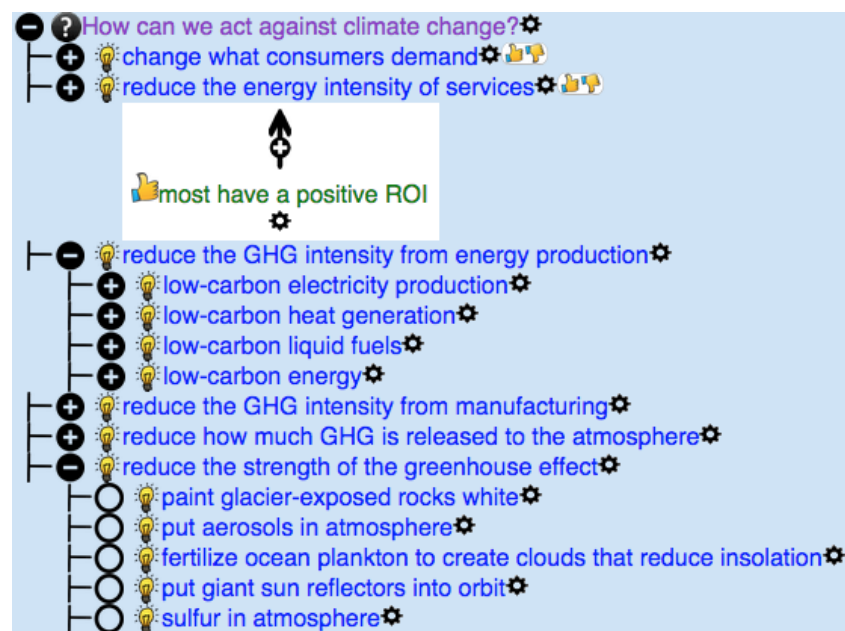


Figure 5: Example of a Deliberation Map

Such tools have many advantages. Every unique point appears just once, radically increasing the signal-to-noise ratio, and all posts must appear under the posts they logically refer to, so all content on a given question is co-located in the tree, making it easy to find what has and has not been said on any topic, fostering more systematic and complete coverage, and counteracting balkanization by putting all competing ideas and arguments right next to each other. Careful critical thinking is encouraged, because users are implicitly encouraged to express the evidence and logic in favor of the options they prefer (Carr, 2003), and the community can rate each element of their arguments piece-by-piece. Users, finally, can collaboratively refine proposed solutions. One user can, for example, propose an idea, a second raise an issue concerning how some aspect of that idea can be implemented, and a third propose possible resolutions for that issue. The value of an argument map can extend far beyond the deliberation it was initially generated for, because it represents an entire *design space* of possible solutions that can be readily harvested, refined and re-combined by other communities facing similar problems (Bernstein et al., 2003).

1.4.2 Visualizations

The State of the Art

As noted above, conventional social media suffer from the problem of “opaqueness”, in the sense that it is very difficult to get a sense of the “health” of a deliberation. While there has been substantial effort devoted to defining manually-coded, post-hoc metrics for on-line deliberations (Stromer-Galley, 2007), only rudimentary real-time metrics have emerged to date. The core reason for this is that, in current deliberation tools, the

content takes the form of unstructured natural language text, limiting metrics algorithms to the analysis of word frequency statistics, which is a poor proxy for the kind of semantic understanding that would be necessary to adequately assess deliberation quality.

Beyond the State of the Art

One critical advantage of using deliberation maps is that they enable, by virtue of their semi-formal semantics, far *more powerful visualizations* than is possible with conventional systems (Klein, 2012), giving deliberation managers unprecedented abilities to assess the progress of a deliberation and detect crowd behavior patterns they may wish to intervene in. Such visualizations, built by applying such techniques as social network analysis, dimensionality reduction, sentiment analysis and opinion mining to deliberation maps, can help organizations measure:

- *maturity*: the maturity of a deliberation on a topic can be estimated easily, in deliberation maps, by gathering statistics on the *topology* of the branch (e.g. in terms of breadth and depth of issues, ideas and arguments) for that topic
- *balkanization*: this phenomenon, which occurs when the crowd self-assembles into cliques that ignore or reflexively down-rate competing ideas, can be detected by applying social network analysis augmented with information about the semantic content (e.g. agreement, refinement, disagreement) of the links between participants.
- *non-grounded evaluations*: this occurs when users rate posts without accounting for relevant arguments. This can be detected by observing whether users read, and how they rate, the arguments underneath a given deliberation map post.
- *groupthink*: groupthink occurs when a crowd converges prematurely on a given (often the first) solution idea, without giving adequate attention to competing ideas. This can be detected at how quickly the Gini coefficient (which measures inequality) increases for the ideas addressing an issue in the deliberation map.
- *hot topics*: this can be detected by looking for deliberation map branches with a high level of activity plus significant divergence in which ideas the crowd members prefer
- *resistance*: the level of resistance by a crowd to a proposed course of action can be assessed by sentiment analysis and opinion mining - e.g. by identifying new requests, demands, and complaints in the relevant parts of the deliberation map

Using conventional deliberation systems, assessing metrics of this sophistication would be prohibitively difficult, especially for large deliberations.

1.4.3 Recommendations

State of the Art

In deliberations with many contributors and complex topics, it becomes very difficult for users to find what is needed and how they can contribute, since the content may be scattered over a potentially very large corpus, without reliable ways to quickly find what's there as well as what is missing. Existing techniques to address this need have poor accuracy (i.e. generating many spurious suggestions as well as missing many valid ones) because of the rudimentary state of current natural language understanding technology. The result is that much of the potential collective intelligence of the crowd is wasted because the members are not able to reliably address their skills *where they can do the most good*.

Beyond the State of the Art

The role of the CASCADE recommendation system is to address this important need. We will create novel sophisticated algorithms that provide unprecedented accuracy in linking users to the parts of deliberations where they can contribute most productively. The algorithms will use information about user activity and the deliberation map, including metrics from the CASCADE visualization component, to build a model of the users' interests and expertise as well as of the maps' strengths and gaps. A matchmaking procedure will then help users find relevant content. It will, for example, be able to:

- notify *contributors* about new content they may want to review, such as a new argument disagreeing with a point they made, a new alternative to an idea they proposed, or a new post that drew attention from someone with similar interests.
- notify *managers* about potential problem areas, such as an issue where balkanization appears, where groupthink appears to be in play, or where users are getting disengaged.
- notify *customers* about which parts of the deliberation map appear to be mature and thus ready to transition to a decision process to select which idea(s) to implement.

The CASCADE recommender system will transcend the state of the art by applying our project team's relevant expertise (in such areas as graph query languages, optimization, data mining, and social search) to the greater semantic expressiveness available in deliberation maps. Graph query languages (Klein and Bernstein, 2004) will enable us to look for patterns in a map (e.g. "find all the issues with a high average importance rating that are more than two days old and have two or fewer ideas attached to them"). Social search techniques (Mansilla, 2013) will help identify users who have the expertise to fill in gaps in the deliberation, bolstered by the more accurate user models we can derive from observing user actions in deliberation maps. We can apply dimensionality reduction and clustering techniques - both from data mining - to user activity and ratings data in order to connect people with content that was liked, or at least interesting, by people like them. Optimization techniques such as genetic algorithms, finally, can be used to guide users towards rating and mutating and combining the existing ideas which appear likely to lead to even better ideas for the community to consider.

1.4.4 Incentives

State of the Art

A critical challenge for collective deliberation systems is designing appropriate incentive mechanisms to boost the knowledge exploration and exploitation processes.

According to (Fiske, 1992), there are four essential styles of human relationships which determine the way people behave with others: communal sharing (CS), authority ranking (AR), equality matching (EM) and market pricing (MP). In the CS group, the relationships consist of people who contribute because they belong to a group. Aspects such as altruism belong to his category. In the AR, a hierarchy exists and people in positions under others carry out the requests made by those in higher positions. In the EM, the relationships are based on reciprocity. In an EM relationship, the contributions are due an expectation of reciprocity, reward, or association. In MP, the contribution is evaluated financially. Contributors expect a tangible reward and providing knowledge has a cost.

Incentive systems have been traditionally implemented in online environments through game mechanics to drive community engagement with points and recognition and advanced gamification using missions, badges and rewards. Market-based institutions offer promising alternative to this approach. While virtual currencies are being used in many online applications such as Facebook (i.e. Facebook credits) and Amazon (i.e. Amazon coins), their use to promote knowledge exchange in collaborative tools is still unexplored and opens the door to many models in which employees receive tangible rewards in addition to just online social recognition.

Beyond the State of the Art

We will explore a mix of these different incentive schemes, with a particular focus on the use of virtual currencies. These currencies could, for example, be exchanged for tangible rewards, in contrast to the common approaches based on badges and reputation levels. This approach is novel and needs to be deeply tested not only regarding acceptance but also with regard to the tangible rewards provided (e.g. products/services provided by the organization vs external product or services) and budget availability to implement such scheme. Virtual currencies can also be used by those who earned them to incentivise the involvement of specialists in their own current or future projects. We will also explore the novel and promising idea of using the powerful analytics available for deliberation maps to enable *adaptive* incentives that move the crowd to focus on the deliberation topics that currently need the most attention.

1.4.5 Reports

State of the Art

Ideally, a deliberation system will make it easy for interested parties to ask overview questions about the emerging content, such as: “what are the issues that divide people most deeply?”, or “what are the best-supported ideas for this issue, and why?”. Conventional deliberation systems (such as web forums) produce voluminous, disorganized, and highly redundant content, making it extremely difficult for participants to get such overviews. There has been substantial work on developing computer tools to parse natural language text according to topic boundaries, and to classify the resulting text “chunks” according to topic and type (Feng et al., 2006) (Ding et al., 2008). This work can help (albeit with relatively poor accuracy) find the texts that refer to a given topic. It does not, however, enable *composing* information from multiple sources into coherent responses for questions, nor does it go beyond content summarization to also answer questions that require meta-data (e.g. concerning who has been contributing what, and how this has changed with time).

Beyond the State of the Art

Deliberation maps can, potentially, do much to help us meet these challenges, because they organize content systematically according to topical scheme. Our project will build upon previous work by members of the project team (Garcia and Klein, 2015) to create a “narrative generation” capability that realizes this promise. We will, in particular, develop a suite of algorithms that gather the data (including map contents, participation activity and deliberation metrics) needed to answer different prototypical overview questions about deliberations, and will build upon rhetorical structure theory (Taboada and Mann, 2006) to algorithmically structure this data into clear natural language narrative responses. This will create an unprecedented capability for helping individuals understand and harvest the content generated by large-scale deliberations.

1.4.6 Idea Filtering

State of the Art

A critical challenge with crowd-based deliberation systems is that they tend to produce huge corpuses of ideas of widely varying quality. The role of Idea filtering is to eliminate, as much as possible, the “lose-lose” ideas (i.e. ideas that are not pareto-optimal) so the community has the best possible alternatives at hand when it makes it’s final decisions.

A range of techniques have emerged to address this important challenge. *Author-based* approaches filter out ideas based on *who* contributed them e.g. based on their previous behavior (Kittur et al., 2013) or on their responses to ‘gold questions’ that assess their competence (Oleson et al., 2011). This approach is limited, however, by the simple fact that good ideas often from unexpected sources (Lakhani and Jeppesen, 2007). *Content-based* filtering uses software *algorithms* to derive metrics for idea quality based on such features as word frequency statistics (Walter and Back, 2013) (Westerski et al., 2013). Such techniques are fundamentally limited by the fact that current natural language processing algorithms have only a shallow understanding of natural language, and thus can be easily fooled. In the Westerski work, for example, the automatically-generated idea quality metrics only achieved a correlation of 0.1 with the quality scores given by human experts.

For this reason, much attention has been given to *crowd-based filtering*, where human participants are asked to select the top ideas. Such filtering is potentially powerful for two reasons. One is that human crowd members can potentially understand ideas much more deeply than software. A second reason is because of the “wisdom of the crowds” phenomenon: large numbers of people, it has been shown time and again, can collectively make better judgments than the individuals that make them up, often exceeding the performance of experts (Surowiecki, 2005). The reason for this is that the errors made by different crowd members, under the correct conditions, are independent and therefore cancel each other out, while the shared “signal” is strengthened by aggregation over many contributions. Despite this promise, existing collective decision-making techniques tend to fail badly when faced with complex decisions involving large numbers of competing alternatives:

- *Voting* systems ask crowd members to vote for the ideas that they think merit adoption. Voting systems face well-known practical as well as theoretical limitations, especially when applied to large option sets (Arrow, 1963) (Kostakos, 2009).

- *Rating* systems (Salminen and Harmaakorpi, 2012) are also challenged by large idea sets. They tend to do a poor job of distinguishing between good and excellent ideas (Bao et al., 2011), and can lock into arbitrary rankings, if users see each other's ratings, due to positive feedback loops (Salganik et al., 2006).
- *Ranking* systems ask participants to provide *relative* rankings of idea pairs (Salganik and Levy., 2012) rather than rating ideas individually. Such systems can help alleviate rating lock, but the number of required comparisons increases exponentially with the number of ideas, creating severe scaling challenges.
- *Idea prediction markets* engage participants in buying and selling stocks representing ideas, knowing they will receive a payoff if they own stocks that are eventually selected as winners. Stock prices, in this context, represent the crowd's assessment of idea quality (Blohm et al., 2011b). Prediction markets face several serious limitations. They require traders to participate in cognitively difficult tasks (Blohm et al., 2011b) (Bothos et al., 2012), are prone to manipulation by traders (Hanson, 2004), scale poorly to large numbers of stocks, and often generate too little trading activity to get meaningful prices (Healy et al., 2010). Studies have, as a result, reported low correlations between prediction market share prices and rankings by human experts, e.g. 0.33 in (Blohm et al., 2011b) and 0.10, 0.39 and 0.46 in (Soukhoroukova et al., 2012).

Beyond the State of the Art

We will build upon the project team's previous work to develop innovative, highly capable crowd-based idea-filtering tools to help the crowd find highly promising candidate decisions from the large space of possible alternatives captured in the deliberation maps. The results of this initial filtering will then constitute the portfolio that the crowd selects from using consensus-driven decision making techniques. We will explore, in particular, an idea filtering technique called the "bag of lemons", a novel form of limited-budgeted multi-voting (Kessler, 1995) (Bao et al., 2011). Participants will be provided with a list of candidate ideas, given a limited number of tokens, and asked to allocate these tokens to ideas based on whether or not they believe the ideas represent highly promising solutions. The more confident they feel about a judgment, the more tokens they can allocate to that idea (within the limits of the overall budget). Ideas can then be filtered based on the number of votes each idea received. What makes the bag of lemons unique is that crowd members are asked to allocate tokens to the *worst* ideas (the "lemons"), rather than the best ones. Our initial empirical evaluations have shown that this kind of filtering is far quicker, as well as more accurate, than rating or traditional (pick the best idea) multi-voting (Klein and Garcia, 2014). The reasons for this are simple. First of all, limited-budget multi-voting allows users to use snap judgments to quickly hone in on the ideas that may merit tokens: they do not need to fully evaluate each idea. To identify the worst ideas, moreover, a participant need only find ideas that are clearly deficient with respect to *just one* important criterion. Picking the best ideas, by contrast, forces you to make judgments about all the criteria, including some you may not be well qualified to assess. The bag of lemons thus greatly reduces the cognitive complexity for participants, and allows a crowd to be highly accurate at filtering ideas in situations with multiple criteria, even if none of the crowd members are individually able to evaluate ideas with respect to all the criteria.

1.4.7 Consensus-Driven Decision Making

State of the Art

The previous steps in the CASCADE process help communities identify a selection of good (pareto-optimal) ideas. Since the stakeholders in the decision process will almost certainly have diverse preferences, however, this suite of candidate solutions will all inherently represent *tradeoffs*, each benefiting some people in some ways while negatively impacting other people in other ways. Finding ways to help communities make decisions in the face of these tradeoffs is the defining challenge for this element of the project.

Cooperatives are inherently democratic organisations, by philosophy and by design. In these contexts (as in many others) decision making must not only try to maximize social welfare (the summed utility of the stakeholders involved) but must also seek to avoid decisions that alienate portions of the community. Such alienation can undercut implementation of the decisions as well as the future cohesion of the community itself. In this context, therefore, fairness and legitimacy become paramount (Mascarenhas and Scarce, 2004).

Traditional decision-making techniques (such as simple voting) do not, however, account for the level of resistance to an idea or lead the community to find more consensual solutions, and thus are potentially prone to decisions that are ultimately unsustainable. Methods and tools for enabling effective, representative and consensus-driven decision making are still in their infancy.

Beyond the State of the Art

The CASCADE project will develop innovative and capable decision-making tools which will meet this challenge by using *human-based genetic algorithms* (HBGA) integrated with *incentive-compatible evaluation protocols*.

Genetic Algorithms (Holland, 1975) are a powerful technique for finding optimal solutions in complex problems with large solution spaces. In this approach, the best solutions in a population of solution candidates are selected, mutated, and recombined in order to produce the next generation of improved solutions. In *human-based genetic algorithms* (HBGA), human beings, instead of software, mutate and recombine and assess the fitness of candidate solutions (Defaweux et al., 2003) (di Fenizio and Anderson, 2011). HBGA represents a promising approach for helping communities reach consensus because it engages them in improving the candidate solutions, rather than simply giving them a fixed set of options to choose among (di Fenizio and Paterson, 2010). While software-based genetic algorithms typically involve require hundreds or thousands of generations to find pareto-optimal solutions, HBGA can avoid this by capitalizing on human beings' ability to mutate and recombine candidate solutions far more intelligently than software algorithms (which typically use random mutations to generate new candidates).

A key challenge with the HBGA approach, however, is *strategic preference revelation*. When self-interested agents (such as humans) engage in collective decision making, it is often tempting for them to tell strategic untruths about their preferences in order to manipulate the outcome in their favor. An agent, for example, may indicate that only the best (for them) solution in a population is acceptable, even though several would be. If all agents act this way, however, decision-making typically ends in lose-lose outcomes (Klein et al., 2003). Our project team will build upon our previous work on "incentive compatible" preference evaluation (Fujita et al., 2012) to address this problem. The idea is simple. All agents are given, at the beginning of the HBGA process, a fixed budget of tokens that they can assign to the candidate solutions they prefer most, as well as to the candidate solutions that they most strongly wish to avoid. The candidate solutions that minimize negative votes and garner more positive votes are selected to become the progenitors of the next generation. In each round, tokens are distributed from the agents who "won" the round (their preferred solutions were selected) to the agents who "lost" the round (their preferred solutions were not selected). Every agent thus has to balance it's desire to push it's favored candidates in one round against the possibility of reduced influence in the next. It has been shown analytically, in the economics literature, that this kind of approach (known as the "Clarke tax") makes it irrational for agents to tell strategic untruths, thereby alleviating the possibility of lose-lose outcomes (Sandholm, 1998).

1.4.8 Impact measurement combined with Open Data

State of the Art

Conceptually, the notion of impact is often linked to the Theory of Change framework (Anderson, 2004), which describes the casual linkages through which the activities carried out by an organization will lead to the ultimate outcomes. Here, impact is often determined as the portion of the total outcome that happened as a result of specified activities, above and beyond what would have happened anyway (Olsen and Galimidi, 2008). For this, the Impact Value Chain has become a popular starting point to define and measure social impact as it clearly gives a framework to collect information and set out the differences between inputs, outputs, outcome and social impacts.

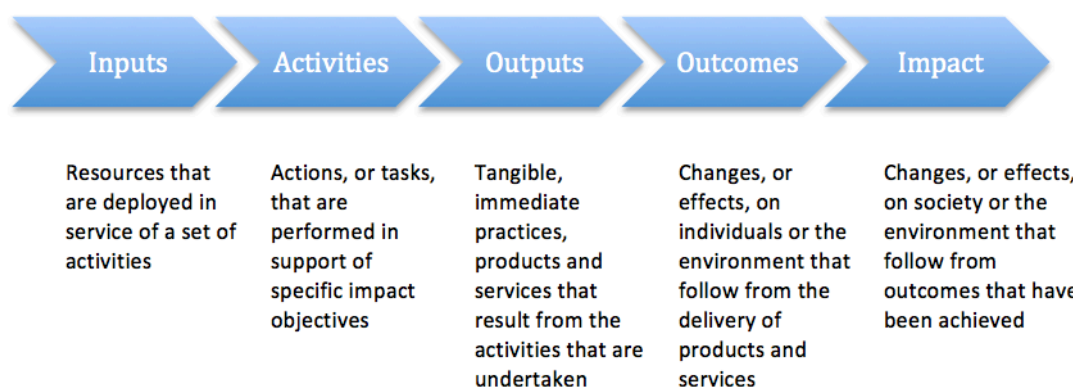


Figure 6: Impact Value Change (from: Social Impact Investment Taskforce, 2014: 6)

Despite the long established theoretical foundations regarding “impact” as such, there is no established practice of impact evaluation/measurement yet. Some organizations (e.g. international development organizations, large foundations, impact investors) have been engaged in measuring and quantifying impact for some time – though often focussing on their specific organizational contexts. Other organizations (e.g. ethical/social banks, small foundations, P2P platforms), at least until recently, have mainly relied on qualitative “story telling” approaches, merely describing funded projects without measuring the actual impact (Pedrini, Langella and Bramanti, 2014: 1)

As a consequence, today, there are numerous indicators and various guidelines and standards available¹¹, but there is little enabling infrastructure and standardization for the measurement process and limited convergence around a common set of impact measurement practices (Social Impact Investment Taskforce, 2014: 5). And, so far, no rigorous method for measuring the social impact of an ethical bank’s total activities has been developed (Pedrini, Langella and Bramanti, 2014: 20)

Beyond the State of the Art

To start with, impact measurement requires the tracking and processing of – additional – social and environmental information in an organizational setting where accounting and controlling more often than not are geared towards economic and financial data only.

Many of the relevant indicators used today are based on qualitative, more or less subjective information and perceptions, captured directly from stakeholders and beneficiaries affected by the changes. This, at least at times, is problematic because, to be useful, impact measurement requires a high quality of data, in terms of materiality, reliability, comparability, ‘additionality,’ and universality (Social Impact Investment Taskforce, 2014; 1). But, more generally, it is problematic in an organizational world used to the “objectivity” of finance.

With the current state of the art in impact measuring in mind, CASCADE aims for at least three interrelated contributions.

- First, it intends to develop outcome oriented impact measurement indicators and methodologies that are relevant, useful and feasible also for smaller organizations, with little slack resources but high innovation potential and (often) changing contextual settings and stakeholder communities.
- Second, providing the infrastructure and tools for large scale deliberations of many stakeholder groups, it aims for a strong focus on collaborative approaches for identifying, designing, implementing, and evaluating such impact measurement indicators and methodologies.
- Third, understanding the impact measurement process as a two-way route for the information of decisions and the improvement of the practice of all partners, it will put a strong emphasis on feeding back impact information downstream, from the investors to the ventures and their beneficiaries.

¹¹ Examples are: Acumen’s BACO Methodology; Gates, Hewlett & Rockefeller Foundation Impact Measurement Principles; The Social Return on Investment Methodology (SROI), The Global Reporting Initiative (GRI), The Global Impact Investing Network (GIIN) IRIS Metrics, the Sustainability Accounting Standards Board (SASB), and the EU Standard for Social Impact (informed by the European Venture Philanthropy Association, EVPA).

Technology readiness level of CASCADE tools

Function	TRL¹²
The Deliberation Space Large-scale argumentation platforms developed by the team partners have been applied to enable real-world deliberations (e.g. on electoral law reform by the Italian Democratic party) with hundreds of participants).	7
Visualizations Our project team has created some deliberation visualization techniques at TRL 9, but many important visualizations are at level 2 through 4 and will be developed by the CASCADE project.	4
Recommendations Our project team has developed recommendation algorithms, addressing different subsets of the full problem, that range from TRL 2 to TRL 6.	4
Incentives The project team has rolled-out a related incentives system at TRL 9, but the technology is less mature for the kind of problems that CASCADE aims to address.	5
Reports The concept of narrative-structured, metrics-driven reports has been carefully formulated by the project team, but the actual algorithm development will take place as part of CASCADE.	2
Idea Filtering Our idea filtering approach has been assessed successfully in a lab setting but not, to date, in larger-scale real-world applications.	4
Consensus-Driven Decision Making The human-based genetic algorithms and voting approaches we propose have been assessed, to date, only in lab settings.	4
Open Banking API Four major German Banks, including a social Bank (GLS) and Postbank Berlin, already adopted the Open Banking API ¹³ .	9

2 Impact

2.1 Expected impacts

The social economy (including social finance) today is characterized by one underlying principle: gathering resources (e.g. crowd contributions or credits below market rates) by offering a purpose that goes beyond monetary value. This purpose is offered by social organizations that meet social demands: access for all to some goods or services, work for disadvantaged people, etc.

For example, social banks, are characterized by strong non-monetary values and missions geared towards social and environmental objectives as well as by an unusual level of transparency. These banks exclusively support social ventures and initiatives in the real economy and civil society, where they show a high degree of embeddedness and reciprocity in the relations with their clients. Mostly cooperatives, they also have an

¹² http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

¹³ <https://api.openbankproject.com/connectors-status/>

engaged and loyal membership. Their resilience during the time of financial crisis and impressive growth rates of 10-20 % over the past years (GABV, 2014) provide evidence of the viability of their business models. Indeed representative studies show that the market potential for social banking is about 1/3 of the bankable population, in Germany alone ca. 16 Million potential customers (zeb, Alanus Hochschule & Puls Marktforschung 2012).

Alternative financial service providers, such as Internet-based P2P- or crowd-funding platforms, on the other hand, have a very different business model, with different opportunities and challenges. Bound neither by a physical legacy nor by strict banking regulations, they have lower fixed costs and legal restrictions compared to social banks. Essentially providing only a platform for investors/depositors and investees/lenders to meet, their income is fee- rather than interest-based. With the intermediary not bearing the economic risk in case of failure of funded projects, this allows for many small (also not-for-profit) projects, which would be not economical for regular banks to assess and fund, to nevertheless access credit. Since individual projects are presented to investors/lenders, the transparency of the financial transaction is high. In addition, the platform technology is easily scalable, as is their possible outreach. Accordingly, the past years have seen a stellar growth in the number of these intermediaries. For instance, crowdfunding.de, a German sector portal, lists around 150 crowd-funding platforms in Germany alone, most of which are less than three years old. A recent study by Cambridge University and E&Y (Wardrop et al., 2015), furthermore, shows that the European alternative finance market as a whole grew by 144% from 2013 to 2014.

The complexity of the area CASCADE will be operating in requires us to address identified challenges by combining actions that generate impacts on the level of innovations, research and societal / social innovation.

2.1.1 Impact at innovation level

1.) Demonstration of the effectiveness, compared to existing solutions, of new bottom-up, open and distributed approaches exploiting network effects.

Target: Increasing number of 'nodes' and their connectivity in the community networks around social finance (thereby improving the network's financing capacity)

Unmet demand for social and environmental services remains high and growing. A major reason for this is that social ventures still suffer from a significant funding gap. Today, the global social ecosystem (businesses and their financiers) looks sustainable, but it is small outside of microfinance. The issue is thus not whether it can survive – it can, as a niche – but whether it can grow significantly. For example, in Germany only 0.5% (or 300,000 people) of all people that could possibly have a bank account, decided for a social banks – which still remain unknown to a large part (ca. 85%) of the bankable population (zeb, Alanus, puls Marktforschung). Given the limited operations of social finance, growth is needed to match the financial needs of a growing social sector.

Action: The social economy and social finance face the same growth challenges as the economy at large. For instance, brick-and-mortar networks are likely to be too expensive in the digital age. This raises several issues: e.g., living with financial regulation and educating the client base. The latter is just one example of nonfinancial activity that social finance intermediaries will have to perform. Another is management; the social sector is on average weak on professionalism; CASCADE will promote open knowledge, open data (see next impact area) and implement areas for the creation of open source software. In general, social finance needs to be less like “finance”, and more like “social business” at a larger scale.

Indicators: Number of contributions on crowdfunding platforms (financially and in kind); People adopting social banking (>500); Number of organisations raising social shares (>50), Number of ethical credits facilitated by democratic processes (>50)

2.) Pioneering new promising models of participatory innovation based on open software, open data and open hardware.

Target (a): increase transparency of online, social finance operations

In Social Finance, the intermediaries' transparency is to be considered a prerequisite for building trustful long-term relationships with their stakeholders. As of today however, this transparency is limited, mainly taking the form of the intermediary publishing information on individual financed projects or investments made to assure depositors and investors that their funds are being put to use in accordance with their values and principles.

Action: CASCADE will extend transparency through (duly anonymized) data collected by intermediaries on the financial activities on their platforms, making them usable by the clients or third parties – in accordance with all regulations and clients' preferences. This is the idea behind a recent development referred to as "Open Banking" (OB), which will be explored further within CASCADE because of the promises it offers to the intermediaries' clients, the social ventures. OB can support ventures to manage their finances, including grouping/tracking of expenses or earmarking and distributing funds for certain projects. Ventures, such as charities, can use OB to publish (certain) transactions to (select) stakeholders (e.g. donors), possibly inviting them to comment or advise. The likely benefits of OB might be further enhanced by complementing financial transaction data with non-financial data such as social and/or environmental impact indicators - to inform and help evaluate decisions of all parties involved. Furthermore, third party institutions can also make use of the open data to develop new products and services (for example, offering a social stock picker).

Indicators: Number of organisations requesting open banking features (>10), Number of Banks offering open banking (>3), number of APIs developed, amount of data made available through those APIs

Target (b): increase efficiency of participatory decision-making in cooperatives, social ventures and non-profit organisations

Action: CASCADE will increase participation in large-scale crowdsourcing of strategic decisions (collective intelligence) around which directions the organisation should take, how to measure best whether the organisation is on the right track or not and what software support is needed and how to organise it.

Indicators: Number of decision processes executed; Number of decisions taken (>100); Average duration of engagement in the deliberation and decision-making process

3.) Capability to reach a critical mass and to transpose the proposed approach to other application areas related to sustainability.

Target: Strengthen democratic and social finance on the micro, meso and macro level.

Strengthened social embeddedness and economic performance will not only increase social finance's resilience but also serve as an incentive for other organizations – established or new – to pursue similar strategies, (more) oriented towards the common good, thus further increasing the diversity of the social finance sector.

Action: First, this involves contributing to a change of the economic paradigm and values system, whereby activities of ventures working for the common good and wellbeing of all are systematically informed and evaluated by a wider set of indicators (economic/financial as well as social and environmental), and a wider group of stakeholders. A strong *focus on social, environmental and political indicators* will demonstrate the interconnectedness of decisions related to the overall topic of increasing sustainability. The variety of organisations on CASCADE's pilot platforms (e.g. green energy cooperatives, cooperative banks, social care cooperatives, crowdfunders) will help to demonstrate transferability of our large-scale decision-making and deliberation tools to other areas.

Indicators: Number and variety of people testing and adopting CASCADE solutions (>1000); Number of multi-topic issues addressed and supported with evidence from the previous impact area;

4.) Effective involvement of citizens and relevant actors, as well as establishment of durable interdisciplinary collaborations in concrete application areas related to sustainability.

Target: Increase cross-sectoral collaboration around social finance

Actions: Apart from using collective intelligence tools for internal decisions, CASCADE also has instances where an agreement needs to be reached across multiple sectors. One example is the development and testing of

social impact indicators used by cooperatives to demonstrate the value they contribute to society and the use of the same indicators by financial intermediaries, evaluating organizations' eligibility for accessing a social finance platform. This presents the issue of distinguishing entities that are genuinely "profit with purpose", or "for-benefit", from entities masquerading as such: even nonprofits have been known to betray the public's trust despite non-distribution and asset lock. The issue is mainly one of reputation of both social business and social finance. Inevitably, protecting reputation will require some kind of measure, or at least tight definition, of social impact.

These deliberations will be accompanied by corresponding activities on a sector and EU level (e.g. standardization, regulation information campaigns, capacity building, etc.), including policy briefs and Massive Open Online Courses on increasing financial literacy. Ultimately, CASCADE thus will contribute not only to a stronger social economy but also to a more active and engaged civil society.

Indicators: Number of standard practices developed (>20); Number of people who contributed to defining these practices; Number of people providing feedback through the CASCADE mobile app (>1000); Number of people using CASCADE's educational online offerings (>500); Number of issues brought to a national or European level (>10). Most of these indicators carry a *qualitative dimension*, e.g. How robust are the practices over time as social finance and its environment is evolves? or How satisfied are people with the way their contributions to the collective deliberation process are considered?

2.1.2 Impact at scientific level

5.) Evidence based understanding of the techno-social issues related to key aspects of the networked society; this impact can be amplified by the public availability of (privacy respecting) data collected in field trials organised by the pilots

Target: Improve scientific understanding of digital ecosystems including participation tools and open data CASCADE is addressing at least two major questions in understanding techno-social issues around social finance: first, how do large-scale, online deliberations become not only large-scale but also inclusive?; and second, how can open data (and their possible summarizations or visualizations) move the social finance areas forward in unambiguous ways?

Actions: CASCADE will be experimenting with several high profile and engaging discussion topics, suggested on current decision-making needs of the four pilot communities (see section 1.3.3). Data from the pilots' platforms will be made (partially) available as open data. WP1 is going to guidelines to ensure that the various privacy rules are respected. We are not only publishing open data but also related methods and interim results in order to add transparency to our scientific reasoning.

Indicators: Number of conference or journal papers (>10); Number of methods and tools interpreting open data in ways accepted by multiple; Modules of open knowledge made available (>40).

2.1.3 Impact at societal and social innovation level

6.) Demonstrating how online collaborative concepts can offer solutions to societal and sustainability challenges, by making use of commons, collective problem solving, knowledge sharing and community-wide participation at local and global scale.

Target (a): Increase contributions to digital commons made by social finance intermediaries, cooperatives and projects funded by the crowd.

Action: CASCADE will develop and test tools and infrastructure that not only ease participation of members of social ventures but also of beneficiaries and others external stakeholders. As suggested by the CASCADE framework collective problem solving and availability of commons (e.g. shared data and software) is strongly related. For democratic and participatory engagement to make sense relevant, encompassing, accurate and comparable information as well as an ability to process this information on part of the recipients is needed. CASCADE pursues both directions, so that collective problem solving generates more open data and open data is more frequently used to inform collective problem solving.

Indicators: Increase of open data sets released by the CASCADE consortium; Number of times open data have been used for collective problem solving; Evaluation of the usefulness and relevance of open data integration (qual.)

Target (b): Increase collaboration between the open source software (OSS) and the cooperative movement

Action: Digital engagement will be structured through both *content* and *conversation* with work across multiple platforms (email, social, web). The discussion and notification email lists established in WP4 will act as a way to engage with interested parties from both coop and OSS communities on an ongoing basis, while website and social media engagement will be designed to both attract new people (outreach) as well as retain the interest and engagement of the existing community (retention).

Moreover, CASCADE will organize Hackathons (as described in WP4) in order to kickstart the engagement process with some compelling challenges around issues (previously deliberated by cooperatives) or open data sets coming out of target (a).

Indicators: Number of open source developers engaged (>50); Number of Open Source contributions (>20); Number of attendees above the set minimum of 10 participants per Hackathon.

7.) Achieving in the longer term active citizen participation in decision making, collective governance, new democracy models self-regulation, new business and economic models. Collective awareness research is expected to demonstrate scalability, reusability of results and general applicability of proposed solutions at local or regional level.

Target: Facilitate a large-scale (long term) basis for democratic citizen participation in social finance

Mainstream finance, over the past decades, thanks to deregulation and digitalization, having become increasingly self-referential and disconnect from the real - and even more so the social - economy and civil society. *Financialization* is now ubiquitous, but finance has become a “deceiver” rather than a “servant” (Dembinski, 2008), “accountable” only to the anonymous financial markets, but too big to fail, and to be controlled and guided by any democratic mechanisms. Hence, re-establishing a shared understanding of financial infrastructures as (quasi) commons, which should serve the common good and the (economic, social and environmental) wellbeing of all “commoners” whose existence and development depends on those common goods, and which, therefore, should also be governed jointly, or democratically, systematically taking into account the interests not only of the owners but also of a wider group of stakeholders.

Action: Citizen participation is already an explicit objective of our four pilot communities. However, their challenge is to scale citizen participation without jeopardizing the prevailing democratic organisation of the current process. Therefore the implication is that many cooperatives with an appealing mission grow over time, but then start losing members as their unique ability to involve current and prospective members gets lost. Hence, in CASCADE, methods and tools will be developed to support large crowds. To ensure that the more subjective factor of participation quality remains the primary focus, development happens iteratively, involving testing and frequent user feedback as part of the agile method applied. With regards to individuals and interested organisations, CASCADE will have citizen events and workshops to effectively publicize the democratic and commons oriented nature of its tools and methods (T6.4).

Indicators: Development of participants over time; Number of participants involved in the development process (>100); Number of features or improvements of existing software suggested; Number of participants in citizen events;

8.) Measurable improvement in cooperation among citizens, researchers, public authorities, private companies, non-profit, non-governmental and any other civil society organisation in the development of new sustainable and collaborative consumption patterns ... (i.e. financing patterns)

Target: Facilitate a high quality cooperation process and novel financing patterns.

Action: A primary means to raise awareness will be the use of data and suitable visualisations and summaries. Especially, if we have to assume high numbers and diversity of participants, we need solutions that can show

the 'state of discussion' quickly and correctly (see WP3). Additionally, opinion mining and recommendations, where someone would most likely find a topic matching his or her interests, will support collective problem solving.

Indicators: Some of the previous indicators (e.g. participants, topics discussed etc.) are again of relevance, as they describe the size of participation. In addition to these descriptive statistics, we also apply indicators measuring the (normatively set) quality of democratic processes (e.g. coverage of idea space, comprehensiveness of idea evaluation, informed argumentation, process legitimacy) - also see section 1.3.2

2.1.4 Barriers to achieving expected impact

CASCADE's objective to merge social innovation and social finance bears the potential for a number of systemic complications. Most of them are on a regulatory, policy and measurement level.

Delayed open banking regulation: Regulators are in the process of considering open banking as a means of fostering competition. In the UK, the Treasury has recently committed to provide an open API standard for banks and in the EU, Articles 58 and 59 of PSD2 indicate that regulated third parties will be allowed access to account¹⁴.

One-size-fits all regulation: Hopefully, the realization of the above-described benefits will increase the likelihood of future policies in favour of alternative financial service provider. Instead of pushing forward one-size-fits all regulation that is particularly obstructive to small, not-profit-maximizing organizations. Needed are regulations that create a more equal playing field, taking into account social finance providers' reduced risk profiles of and their contribution to both the resilience of the financial sector and to the common good.

Expensive digitisation of finance processes: Tightening regulation that hits small institutions focussing on core-banking activities disproportionately, and an industry-shaking trend towards digitalization that has been missed by almost all banks (Jorberg, 2015).

Continued niche status: Social banks only reach less than 1% of the bankable population in most countries, vastly unknown to around 85% (zeb, Alanus Hochschule & Puls Marktforschung 2012). Despite the theoretical potential of social finance to also serve the social economy, as of now, their practical relevance is marginal only, as is the utilization of their "inherent democratic potential" to extend the relations between investors/funders and investees/funded beyond money.

Increasing heterogeneity of stakeholders: Social finance intermediaries have to professionalize to keep up with regulatory and new customers' demands; they have to develop innovative products and services that add value to their customers but are not dependent on interest margins, and not in contradiction to their very own values and principles; and they have to achieve all this balancing in the interest of a growing and ever more heterogeneous group of stakeholders (Remer, 2011).

2.2 Measures to maximise impact

2.2.1 Dissemination

The main focus of CASCADE will be on developing, testing, and evaluating functioning prototype tools and structures. Initially, this will mainly involve working with specific use-cases. But, eventually, the tools and structures should also be scalable and transferable to other users, so that the design of the prototypes should accommodate the requirements and possibilities of a larger user group. This calls for dissemination and feedback-gathering activities as well as an encompassing communication strategy early on in the CASCADE project.

For this purpose, it is envisioned to use a variety of channels, such as

1. a project website (with regular project progress reports /newsletters to continuously inform interested parties and invite them to comment),

¹⁴ http://www.europeanpaymentscouncil.eu/index.cfm/newsletter/article/?articles_uuid=42210000-5056-B741-DB0CD1AA4E9F34EA

2. presentations on academic and practitioner conferences,
3. publications in academic and practitioner journals,
4. targeted workshops with representatives of both the associations/communities of the financial intermediaries and the use cases involved in CASCADE as well as their ultimate beneficiaries.

Some relevant user associations from the financial sector have already confirmed their interest in and support for CASCADE, e.g. FEBEA and Inaise. Other associations, such as from the cooperative sector, the social economy, and the civil society, will be contacted shortly

Dissemination Strategy

Engaging associations/communities will be important not only to gather input and feedback during the design and development process but also to disseminate insights as well as practical tools and structures once developed both “downwards” to their members and “upwards” to the industry, regulatory and political bodies they are engaged with. The CASCADE dissemination strategy consists of three pillars interacting with each other: “Print”, “Online” and “Meet & Network”. The dissemination workpackage will initialise a broad portfolio of activities.

Print: Apart from designing a central project flyer, the consortium plans to develop flyers for the specific pilot communities to promote the support infrastructures for social finance and digital commons within their environments individually. Moreover, CASCADE plans 2 policy briefings per year to engage national and European regulators.

Online: The core element of the online dissemination is CASCADE's interactive online presence. Apart from “classic” elements such as “News”, “Downloads” and “Events”, it is planned to integrate networking elements and completely new features derived from the applied technologies in CASCADE (e.g. featuring the most active deliberations in the past or showcasing the diversity of possible digital commons. Moreover, demonstrations of selected elements of the CASCADE approach will be available online.

Meet & Network: Besides the networking element of the online platform there the projects seeks opportunities for physical meetings along workshops and conferences. Relevant conferences are for example:

- API Strategy Days Europe <http://apistrat.com/>
- Open Knowledge Festival <http://2014.okfestival.org/>
- International Anti-Corruption Conference - <http://16iacc.org/>
- European Data Forum 2015 <http://2015.data-forum.eu/>
- International Conference of Social and Solidarity Finance <http://www.inaise.org/?q=en/node/2155>
- European Business Ethics Network Annual Conference <http://www.eben-net.org/>
- International Social Innovation Research Conference <http://www.isircconference2015.com/>
- CSCW: ACM Conference on Computer Supported Cooperative Work and Social Computing <http://www.wikicfp.com/cfp/servlet/event.showcfp?eventid=43104>
- GDN: The Group Decision and Negotiation International Conference <http://gdn2015.sgh.waw.pl/index.php?id=>
- The European Conference on Computer-Supported Cooperative Work <http://www.ecscw.org/>

Data management Plan

This describes CASCADE's data management and sharing plan, which will be overseen by our partner OII.

Data Sources

The main type of data which will be used in the project is trace data coming from the websites of our partner organisations, which record the dynamics of social finance initiatives. For example, we will be able to record the amount of donations received by a given initiative, and how these evolve over time. These data will emerge partly from collection through the APIs of the services involved, and partly through access to server logs.

Data Collection: Methodology, Quality Assurance and Storage Format

The majority of our data already exists either on the servers of the partner organisations involved, or on the internet, hence collection mostly implies simply taking the time to download it. The OII will take a lead role in

conducting this download. Data will be stored in open formats which facilitate their re-use. User data will be stored in plain text CSV format (though see note on ethics and privacy below). This is a convenient plain text format for storing large amounts of complex data which can easily be read in by any computer programming language.

Data Storage, Preservation and Archiving

All data will be stored on both OII departmental servers (as well as being shared with other partner universities as required). These servers are regularly backed up off site, meaning that data will be preserved even in the case of a failure in the main server. These data are only accessible on site or through a secure connection meaning that high security will be guaranteed.

Data Sharing and Ownership

Data will continue to be owned by the partner organisations involved, however they will agree to release suitably anonymized versions of the data for use during the project.

Ethical Considerations

Much of the information which will be collected from the servers is potentially personal in nature, and will need to be treated with care to prevent potential breaches privacy. We will never store personally identifying information (such as names and addresses), while geographical information we do store will be sufficiently coarse grained to mean that it cannot be used to identify any one individual. Datasets we do release will contain only this coarse grained information. We will, finally, obtain approval from Oxford's Central University Research Ethics Committee, which adheres to the ESRC's Framework for Research Ethics, before commencing.

Management of Intellectual property

Detailed rules for handling of results, IPR and exploitation issues will be determined before the start of the project and reflected in the Consortium Agreement. Decisive for, not only an effective exploitation, but also a successful cooperation between project partners is mutual trust and candor among all consortium members. Nevertheless there is also a need for explicit legal conditions about the management of intellectual property. Therefore the Consortium will, additional to the Grant Agreement, define those conditions within a Consortium Agreement that deals with the following issues:

- Confidentiality among institutions during the project and towards external institutions,
- Use of foreground, which comprises the actual tangible and intangible results of the project,
- Use of background for achieving the project's goals, which comprises all assets which are brought in by the projects partner (the background which is necessary to carry out the foreground research should be provided on a royalty-free base),
- Future ownership of CASCADE outputs taking into account the work and transfer of knowledge brought by each institution to produce the result.

The CA also covers fully rights and responsibilities of participants in respect of the confidentiality of any private information disclosed by the partners during the project, as well as the publication and communication of information during the project. In the spirit of an Open Source project, aiming to facilitate easy adoption by for-profit as well as non-profit organisations, the permissive Apache License will be strongly encouraged. Contributors to the project will sign a 'contributors license agreement' (CLA) to assure that all project code is legally and clearly open source with copyright assigned to the CASCADE. The project coordinator will be responsible to carry out the IPR management (WP6).

2.2.2 Exploitation of results

For a sustainable adoption of project results by social finance intermediaries and the organisations they serve, activities for exploitation and dissemination are essential. Therefore the CASCADE consortium follows a comprehensive and well-defined dissemination and exploitation strategy (WP6), focussing on the strengths of the project structure which are the extensive networks of cooperatives and social finance platforms.

Furthermore, CASCADE's strong preference for open software, open knowledge and open data will enable uptake beyond the current networks already represented in the consortium, this has been communicated in support letters (included in part B of this proposal) - and discussed in more detail in the following section on

communication activities, where a core objective is ensuring the sustainability of CASCADE research output through ongoing communication with additional networks, which can then adopt some or parts of the CASCADE eco-system for their own purposes.

Innovative breaks are hard to predict. In general, CASCADE will push “social” towards standard banking, and “large-scale democratic governance” to standard corporations, so the challenge is to differentiate. Our tools are a realistic option to make this difference. Several consortium partners have already communicated their intention to sustain / exploit CASCADE in their own networks. For example, Microgenius as a digital platform aims to support 25 large cooperatives per year, however their outreach potential includes all of Cooperative UK's 6,000 co-ops. Furthermore, with multi-lingual support the tools reach could extend to co-operatives across Europe. Additionally, Microgenius can present CASCADE tools to new members joining their platform, thereby furthering adoption.

2.2.3 Communication activities

"In networks, we find self-reinforcing virtuous circles. Each additional member increases the network's value, which in turn attracts more members, which in turn increases value, and so on, in a spiral of benefits." Kevin Kelly (1997) in 'New rules for the new economy'

The building of successful networks should aim to create ‘virtuous circles’. This is also the objective of CASCADE's communication activities. The approach works through an ongoing cycle of identification, outreach, engagement and retention across a project lifespan where all activities are mutually reinforcing, and helping to build the core community. As this grows the ability to launch and promote activities successfully increases proportionally.

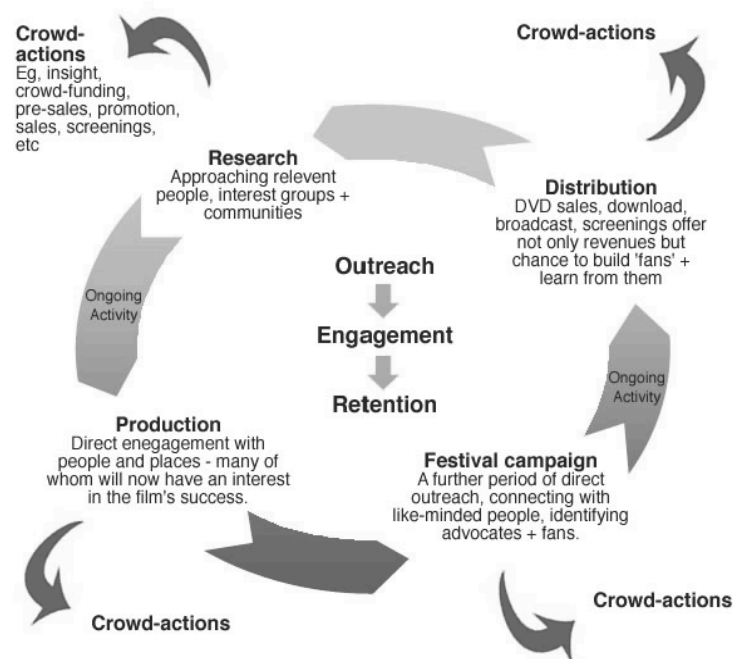


Figure 7: Self-reinforcing virtuous circles (based on Kelly 1997)

Our communication activities will be organized around:

- **identification and outreach:** finding and connecting with the core user community(ies)
- **engagement:** conversations and interactive activities within that community
- **retention,** methods to keep this networked community engaged together

Regarding the identification of potential partners for our communication and networking activities, we could already obtain 17 letters representing networks in the area of 'Digital Commons & Social Innovation', 'Social Economy' and 'Social Finance':

Networking interests	Quality and size of the network
<i>Digital Social Innovation & Digital Commons Networks</i>	
CiviCRM.org - Supporting the development of digital commons, specifically targeting the needs of their coop members	Open source constituency relationship management system used by 9,500 organisations worldwide
Open Data Institute (UK) - supporting activities in the area of open data (specifically open banking data), improving knowledge around social finance and the common good	The ODI has over 100 Corporate Members engaged in demonstrating the value of open data. Over 20 ODI Nodes forming the emerging franchise network operate across 15 countries. This year the ODI trained over 700 people, including our first cohort of trainers, reached over 500,000 people and held over 80 events.
MySociety.org (UK) - promoting alternative sources of finance for civic enterprises, democratic governance and open source contributions to the common good	mySociety is a civic technology organisation based in the UK but active all over the world.
The Young Foundation (UK) - promoting CASCADE results for a more sustainable and democratic finance	Young Foundation is a non-profit organisation that specializes in social innovation to tackle structural inequality
BankTrack (NL) - monitoring private banks and their involvement in projects that are a risk to the environment, society or human rights	Banktrack is a global network of non-governmental organizations cooperating in the field of private banks and sustainability.
<i>Social economy networks</i>	
Networks of social enterprises of Altromercato (IT) - Promoting democratic decision making	130 Cooperatives; 300 shops - working with 150 organisations made up of ten thousands of artisans and farmers in 50 countries
Economy for the common good (GER) - Promoting democratic decision making and fairer sources of finance	Their network includes 8,157 supporters, 2007 businesses and associations, 6 regions and 62 politicians
Cooperatives Europe (BE) - Support social and sustainable finance	83 member organisations from 33 European countries. Its members represent 123 million individual member cooperators owning 160.000 cooperative enterprises.
Austrian association of social enterprises (AT) - Promoting democratic decision making and fairer sources of finance	200 social business working in the field of active labour market policy
<i>Social finance networks</i>	
CGM Finance s.c.s. - Democratic governance and social finance for cooperatives	410 members among cooperatives, foundations and associations
OPES IMPACT FUND http://www.opesfund.eu Supporting impact investment	Located in Italy and active in areas of India, East Africa and Europe

INAISE International Association of Investors in the Social Economy (FR) - promoting knowledge from the field of social economy financing	40 member organisations
FEBEA - European Federation of Ethical and Alternative Banks and Financiers (BE) - promoting social financial instruments	26 members based across 14 European countries
Banca Etica (IT) - Cooperative Bank, create a coalition of major Italian social organizations, where savers, driven by the desire of a more transparent and responsible management of financial resources, could meet socio-economic initiatives	Established: 1999 (Italy's first social Bank) Location: Padua (Italy) with 17 branches and 25 "ambulant" bankers across Italy
GLS Bank (GER) - transparency is one of their main objectives	GLS is a social-ecological bank. Members: ~ 37.000; Clients: ~ 25.000 projects and businesses and ~ 190.000 private clients
TISE Grupa Banku Credit Cooperatif (PL)	Cooperative bank located in Poland since 22 years; granted 740 loans (34 mio. Euro)
Cassa Padana (IT) - promoting sustainable growth in the local communities where they operate	Founded 110 years ago, has 65 branches today; active in 9 regions of northern Italy

3 Implementation

3.1 Overall strategy of the workplan

CASCADE's mission is to develop tools and methods that facilitate democratic decision-making at a larger scale, which in turn is supported by open data, open knowledge and open software. The work plan reflects our *agile development* process, highly iterative, leading to incremental changes - not only with regards to the software, but also concerning our understanding of the problem- and solution spaces. The latter enables **user-centric design** driving the adoption and acceptance of CASCADE tools by our pilot communities.

A complete overview of relationships between CASCADE workpackages is provided in Figure 8. Reading the figure from top to bottom, a flow of activities is visible starting with the conceptual work in WP1 feeding into the two development WPs 3 and 4, respectively 'collective deliberation' and 'collective action'.

Facilitating the cycle of prototype driven, participatory development are two work packages: WP 2 (community engagement) and WP5 (social impact evaluation). Whereas WP2 includes the testing and improvement of collective intelligence tools - their fitness for purpose - WP5 aims to extend the evaluation beyond the project's outcomes and looks into impacts: the effects of democratic decision making on the development of an organisation's member base, or on organisations capability to add to the availability of digital commons (see section 2 for 'expected impacts').

3.1.2 Description of Work Packages

Work package number	1	Start date or starting event:					1	
Work package title	Conceptual and methodological framework							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	5	5	0	0,5	0	0	3	0,5
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	1,5	1	1,5	1,5	1			

Objectives
WP 1 provides the conceptual foundation for CASCADE concerning existing frameworks, relevant stakeholders and terminologies that will need clarification if applied to a European level. The purpose of this workpackage is not only to capture the current state of the art in supporting alternative social finance, but also to critically review current assumptions on what motivates social investment and donations and how existing platforms capitalise on these assumptions. For benchmarking purposes, comparably large online sites around peer production (wikipedia and open source software communities, such as CivicCRM) will be analysed in terms of participation patterns and developments over time. WP 1 will also define the methodology, to be use in subsequent WPs to ensure the participatory and bottom up nature of gathering needs and ideas for solving them among the communities of our pilot sites. Hence the workpackage has three main objectives: • clarifying concepts, their boundaries and possible applications to CASCADE; • capturing the state of the art of ICT support for social finance platforms; • mapping relevant stakeholders, as social finance increasingly requires the involvement of traditional finance institutions, civic organisations creating the demand as well as regulators defining the necessary conditions for long term investments in developing social finance and work towards its greater impact.

Description of work
<i>T1.1: Critical review of alternative, social finance concepts and contextual analysis of their implementation (M1 – M5)</i> <i>(Lead: ZSI; Participants: ZSI, ISB, GOTEO, CUK, CGM, TERZO)</i> This task will summarize core concepts of social finance and related works on motivation and crowd engagement. National difference within the consortium will be highlighted following a PESL structure (considering political, economic, social and legal aspects). The economic discussion will include the creation of commons and their contributions to an alternative economy, the social dimension will cover the benefit of democratic decision making in social organisations the political dimension will include an analysis of the support social finance gets from policy makers. <i>T1.2: Privacy and ethics consideration (M1-M5)</i> <i>(Lead: ZSI; Participants: ZSI, BFG, OII)</i> Concepts such as big data, introducing data analytics and information gathering at large scale and opening up

information resources requires a high level of care in order to respect the privacy of individuals and their rights. A number of EU directives need to be considered (including regulations on data protection, data retention and privacy). The project will adapt Nissenbaum's (2004) contextual integrity framework, which suggests that privacy needs to be tied to a context specific way, so that information gathering and dissemination is appropriate to the context and governing norms of distribution within it.

T1.3: Stakeholder analysis and engagement plan (M1-M4)

(Lead: ISB; Participants: ISB, DIESIS, GOTEQ, BFG, CUK, CGM, TERZO)

This task will unravel the notion of end-user, coming up with a typology of the various actors involved. This is needed as social finance intermediaries connect a wide range of 'contributors' and 'funding requesters'. The engagement plan will also make a clear distinction between different modes of engagement, varying from citizens as sensors (e.g. providing feedback on crowdfunded projects through a mobile app) to citizens as co-developers (e.g. in joint teams of open-source developers and members of social cooperatives). An initial plan for end-user engagement will support development activities in WP3 and 4, in their effort to ensure collaboration with the pilot sites

This task will also help to circumvent the problem of self-selected end-users usually being above-average users. While this can be an advantage for early iterations of designing and testing the tools, it's insufficient to prepare for a broad uptake. To ensure user friendliness on a wide level, a diverse group of end-users will be scouted in collaboration with the pilot sites. We will make an effort to involve a representative sample of the potential user community in terms of general familiarity with ICT, educational background, age and gender.

T1.4: Benchmarking of Large Scale online communities (M3-M19)

(Lead: OII; Participants: OII, UDG, GOTEQ, CUK, CGM)

This task would involve the exploration of existing, anonymised observational data from projects such as Wikipedia or mySociety and data from partners who are already running community funding and social finance initiatives. We will look at the existing patterns of distribution of both participation and effort within these communities on the basis of anonymised trace data taken from their servers. This preliminary analysis will help inform the design in work packages 3 and 4, as well as already providing novel perspectives on some of our key evaluation questions in WP5.

Deliverables

D1.1 Conceptual and methodological framework (M5)

D1.2 Privacy guidelines, including a data management plan (M5)

D1.3 Stakeholder engagement plan (M4)

D1.4 Benchmarking report (M19)

Work package number	2	Start date or starting event:					1	
Work package title	Community engagement and participatory tool development							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	9	6	3	6	3	0	2	1
Participant number	9	10	11	12	13			

Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	7	12	5	6	2			

Objectives

WP2 is at the heart of participatory tool development, exploring the potential impact of CASCADE tools and methods as well as managing the pilot sites which are the final beneficiaries. The efforts of pilot management have been bundled in this WP in order to facilitate the experiential flow for end-users involved in the project and the implementation of CASCADE's user-centred design philosophy.

The workpackage is organised around three objectives:

- 1) During the first stage of the project, results of WP2 are collected in a repository of use case and persona (i.e. user typology) descriptions.
- 2) Critical milestone around pilot-testing of tools will be achieved in collaboration with grassroots organisations seeking crowdfunding, networks of cooperatives and also the local communities benefitting from the funded projects and cooperatives' operations.
- 3) With one team being their main contact and organising the necessary events, feedback-loops and experiments needed to iteratively improve project results. The partners managing sites will also publish their ongoing experience with collective intelligence tools with the support of WP6 coordinating CASCADE's dissemination.

Eventually this workpackage will tell whether the tools and methods provide the expected support to the social ventures funded and their respective social finance intermediaries.

Description of work

T2.1: Collaborative development of use cases based on Prototypes (M1-M12)

(Lead: BFG; Participants: BFG, ZSI, OII, UZH, GOTEO, CUK, CGM)

Use cases are an important component of participatory and user-centred design. Use cases will reflect typical situations when collective intelligence tools are used (e.g. preparing large community meetings with a fixed deadline vs. long-term deliberations where the result has to satisfy a number of criteria). The goal is to develop tools and interfaces that correspond to the needs and possibilities of real users. However, limitations can emerge from unjustified assumptions of users understanding of the technology or their access to the necessary devices. By operating with prototypes in real environments, usability issues or hardware limitations on site are recognised in an early stage and can be taken care of.

T2.2 Design and preparation of goal driven tests (M13-M19)

(Lead: ZSI; Participants: OII, OU, UDG, UZH)

Based on T2.2, the test of collective intelligence tools will be planned in accordance to the specific goals as outlined in the use cases. For this a test protocol including social and technical variables is developed and agreed with participants of the monitored deliberation sessions.

Preparation of test will also include 'seeding' the deliberation map with initial content (including key issues based on input from the crowd and case-specific domain experts) and train moderators for all four pilot communities.

T2.3: User involvement at pilot site: UK-Cooperatives (M3-M35)

(Lead: CUK; Participants: ZSI)

Based on the analysis in WP1 (stakeholder, contextual factors and the sites's engagement plan). The management of the pilot site refers to the long-term support of potential end-user communities. This includes

- supporting the identification of users in T1.1;

- supporting the development of use cases in T2.2;
- trainings (in collaboration with T2.7);
- knowledge management regarding efficient community engagement and learning;
- supporting awareness raising campaigns on an ongoing basis:

CUK's focus will be on Challenges 1 and 2 in Section 1.3:

- a. the use of *collective intelligence* for determining adequate software tools balancing their sometimes unique needs, the available open source solutions and the possibility to pool resources for bounty-based open source production.
- b. depending on the previous point CUK will engage with OSS communities in order to develop a more long-term partnership.

This task has a self-referential aspect as the collective intelligence tool itself could potentially benefit from being enhanced by the open source community.

T2.4: User involvement at pilot site: Owner Cooperative Bank for Common Good in Austria (M3-M35)
(Lead: BFG; Participants: ZSI)

Taking advantage from the UK experience, the Austrian pilot site needs to engage in the same set of high level activities. Though it can be expected that use cases will be different, as each pilot makes its specific contribution to the larger landscape of community-based social finance.

T2.5: User involvement at pilot site: CGM-Coop (M3-M35)
(Lead: CGM; Participants: ZSI, TERZO)

The Italian Pilot site will start together with the Austrian pilot. Pilot management imply the same tasks as under T2.4. The initial focus of this pilot is on using collective intelligence for collaboratively developing a set of social impact indicators, that is acceptable to the thousands of cooperatives in their network and can be used by banks and other finance providers (e.g. crowdfunding platforms).

T2.6 User involvement at pilot site: Goteo Crowdfunding (M3-M35)
(Lead: GOTE0; Participants: ZSI)

Collective intelligence will start last in the Spanish pilot, as the objective here is the deliberation of democratic governance models for digital commons. However, the creation of these digital commons is first to be encouraged, once a larger group of commons producers is engaged (see WP 4), the issue of governance needs to be addressed.

T2.7 Evaluation and Analysis of tests (M18-M36)
(Lead: ZSI; Participants: OII, OU, UZH)

After observing online deliberations in at least three pilot sites. Data will be aggregated and evaluated including quantitative and qualitative approaches. The results will then be discussed with the participants.

T2.8 CASCADE Academy (M13-M30)
(Lead: BFG; Participants: ZSI, ISB, DIESIS, GOTE0, TERZO)

Increasing knowledge about social finance will be an activity closely related to the deliberation process. Questions emerging from the deliberation process will be transformed into Massive Open Online Learning Opportunities (MOLOs). This task aims for enhancing mutual knowledge and awareness, for all parties to better understand and appreciate their respective contexts, objectives, working methods, needs, strengths and challenges etc. The task will support capacity building, on both individual and organizational level. A supporting element of the CASCADE Academy will be experiential learning episodes, for instance, mutual site visits, exchange programs, secondments, shadowing and/or joint projects.

T2.9 Environment for Massive Open Online Learning Opportunities (M11-M16)
(Lead: UDG; Participants: UDG)

Massive Open Online Learning Environments is a relatively recent trend, receiving intense media attention in

2011, when 160,000 people signed up for an artificial intelligence offered by Sebastian Thrun from Stanford. This task will cover the set up and maintenance of a MOOC like open source platform such as EdX (<http://www.edx.org>).

Deliverables

D2.1 Collection of use cases (M12)

D2.2 Aggregated report on engaging the CASCADE pilot sites (M16, M35)

D2.3 Report on testing prototypes (M23, M36)

D2.4 Report on the CASCADE Academy (including the Learning environment) (M30)

Work package number	3	Start date or starting event:					1	
Work package title	Collective deliberation and decision making tools							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	0	0	32	25,5	25	0	0	0
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	0	0	0	0	0			

Objectives

To provide collective deliberation and collective decision making tools for large scale communities. These tools will enlarge democratic participation, promote fairer and consensus based decision making, and enhance the community's capacity to integrate a plurality of ideas. This will include:

- tools to allow crowds to collectively deliberate on complex problems by helping them produce innovative, compact, well-organized, collectively built and comprehensive collections of high-quality ideas about how to solve the problem,
- tools to identify the best (near-pareto-optimal) ideas from these collections
- tools for consensus building oriented decision making which allow to converge - in a fair, inclusive way that maximizes social welfare - upon which idea(s) to implement.

Description of work

Task 3.1. Define detailed system integration architecture (M1-M2)

(Lead: UDG; Participants: OU, UZH)

This task will define the main functional components, as well as the interchange language and interface definitions they use to communicate. A key part of this task will involve defining the schema for representing the deliberation map contents, crowd activity data, and the provenance of the map contents that come from external sources (social media and open data sources).

Task 3.2. Develop Deliberation Space User Interfaces (M1-M20)

(Lead: OU; Participants: UZH)

This task will design and develop the user interfaces for the online deliberation space. We plan to develop several styles of interface, so we can reach across the digital divide to novices that are not “digital natives”, as well as to more sophisticated users. These interfaces will build upon partners’ previous work on developing the OU DebateHub as well as the UZH/MIT Deliberatorium systems, and will be extended by engaging open source/freelance software developers in creating customized deliberation space interfaces for particular customers in our project. The CASCADE use case partners will be engaged, by community workshops and other means, in defining key system requirements as well as refining the user interfaces that result. We’ll use a fast prototype agile methodology to enable continuous cycles of fast prototype release and user feedback from use case partners. This work will also include developing software linkages that allow users to easily integrate relevant input from open data and social media sources in the posts in a deliberation map.

Task 3.3. Develop deliberation visualizations (M5-M31)

(Lead: UZH; Participants: OU, UDG)

This task will design and implement deliberation metrics, as well as associated easy-to-understand visualizations, to help deliberation managers understand the health of deliberations as well as what areas might need interventions. We will identify potential metrics using a systematic approach, developed by a member of the project team, known as process-commitment-violation analysis. We will implement selected metrics building upon our project teams’ previous work on deliberation metrics, social network analysis, data mining, community analytics, sentiment analysis, and opinion mining. We will evolve the sentiment analysis technology from CIP-ICT-PSP iSAC6+ project (UDG) towards the development of automatic mechanisms to build domain-specific semantic networks that capture domain knowledge. Semantic networks will be built from the analysis of related content and documents (either from the community or related sources) in combination with the entity relationships provided by open databases like DBpedia and Freebase. This approach provides a scalable mechanism to extend the semantic networks construction for any domain while increases the efficiency of the semantic analysis and reasoning with respect to ontologies.

We will engage the project’s use case partners in evaluating the usability and usefulness of our visualizations over multiple cycles of development. This will take the form of a virtual workshop involving the various CASCADE community partners. This work will build upon OU’s previous work on developing the cidashboard.net (FP7 CATALYST project).

Task 3.4. Develop recommendation system (M1-M31)

(Lead: UZH; Participants: OU, UDG)

This task will develop a configurable *recommendation* mechanism that helps users identify which parts of the deliberation they can learn from, or contribute to, the most. This will build upon previous work in social search by the project team members in the FP7 CATALYST and FP7 DURAFIL (Innovative Digital Preservation using Social Search in Agent Environments) projects, as well as on our expertise in such areas as graph-based semantic query languages and optimization.

Task 3.5. Develop adaptive incentives algorithms (M5-M31)

(Lead: UDG; Participant: OU, UZH)

This task entails the design of appropriate incentive mechanisms to boost the knowledge exploration and exploitation processes within the deliberation and decision making platform. A virtual currency will be introduced that can be exchanged for tangible rewards or benefits and eventually used for internal promotion within the organisation. Users will obtain reward points that can be exchanged to access to prime services and added value alternative to be defined according to the available budget and type of rewards to be provided. The task involves the definition of the rewarding services and the criterias to establish the rewards as well as the design and development of the reward system. In collaboration with OU, UDG will explore specific rewarding mechanisms for people that supports with their actions to reach consensus in the large-scale deliberation environment and will take advantage of the investigation held within the H2020-MSCA-RISE VIRCOIN2SME (Social, complementary or community virtual currencies transfer of knowledge to SME: a new era for competitiveness and entrepreneurship).

Task 3.6. Develop narrative generation algorithms (UZH) (M11-M31)

(Lead: UZH; Participant: UZH)

This task will build upon previous work by members of the project team to design, implement and document algorithms that allow users to easily summarise and share with others the outcomes, key findings and analytics of the deliberation process. This will include building a taxonomy of prototypical deliberation questions, implementing a suite of query patterns that gather the data (map posts and relevant meta-data) needed to answer these question, and developing algorithms that use ideas from rhetorical structure theory to structure this data into clear narrative form.

Task 3.7. Develop idea filtering algorithms (M5-M31)

(Lead: UZH; Participant: OU)

This task will design and develop novel idea filtering approaches for collective decision making. This will build upon UZH's previous work on developing the "bag of lemons" method, which has demonstrated substantially higher accuracy and lower user time demands than such competing approaches as conventional multi-voting and rating.

Task 3.8. Develop consensus-driven decision making mechanisms (M5-M31)

(Lead: OU; Participants: UZH)

This task will develop human based genetic algorithms, integrated with innovative voting approaches that help avoid lose-lose outcomes and incorporate this developments into the collective deliberation system (developed in T3.2). The task will start with a community workshop with the CASCADE partners directly involved in tackling challenges 1 and 6, which will be used to define key users' needs and system requirements for the consensus-driven decision making process. Results of this workshop will then inform technology design and implementation. We'll use a fast prototype agile methodology and therefore we'll continuously carry on cycles of fast prototype release and users feedback. This will require a constant involvement of the community partners in the development phase.

Deliverables

We will create a first prototype system (initial deliberation space user interface plus basic recommendations) by M4, with subsequent more sophisticated versions of the system rolled-out in M10, M20, and M31.

D3.1. Systems integration architecture description: will report on the higher-level requirements for system integration and provide high-level architecture specifications (M2).

D3.2. Deliberation space user interfaces for novice and experts: reports on the design and development of the deliberation tools and will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination (M4, M10, M20)

D3.3. Visualisations: reports on the design and development of visualizations to make analytics more accessible to end-users. This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M10, M20, M31)

D3.4. Recommendations: reports on the design and development of the deliberation recommendations algorithms. This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M4, M10, M20, M31)

D3.5. Adaptive incentives algorithms: reports on the design and development of reward mechanisms, criteria and services. This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M10, M20, M31)

D3.6. Narrative generation algorithms: reports on the design and development of narrative generation algorithms to produce customisable reporting of the deliberation process. This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M20, M31)

D3.7. Crowd-based idea filtering: reports on the design and development of crowd-based idea filtering tool.

This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M10, M20, M31)

D3.8. Consensus-driven decision-making: reports on the design and development of a consensus-driven decision making tool. This will consist of demonstrable software features, documented by demonstration screencasts for both end-users and wider dissemination. (M10, M20, M31)

Work package number	4	Start date or starting event:					1	
Work package title	Collective action for digital commons							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	0	0	0	0	0	17	3	0
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	12	2,5	9,5	1,5	2,5			

Objectives

WP 4 looks at digital commons in forms of software, knowledge, and data. It is also about encouraging projects which are funded through social finance to contribute to the common goods. Common goods are broadly understood as what is available to all for free, which is not to say that creating and maintaining the commons bears no costs. Hence objectives of WP4 are:

- exploring and learning from already existing digital commons and their impacts
- research and test methods of engaging and incentivizing volunteers to donate their time or money to commons
- creating a motivating environment for commons production (incl. coordination mechanisms of open methods, open tools and open data)

The four pilot sites will focus on a specific commons and promote their leanings and tools with the other pilots and their related networks in a second phase. The starting pilots are (a) Microgenius and Open University UK: Requirements and **open source software**, (b) Goteo and University Girona: Creation of **open knowledge** and best practices and (c) Banca Prossima, Bank for Common Good, Institute for Social Banking and Tesobe: The creation of **open banking data**.

The benefits of testing various engagement methods and related outcomes in form of digital commons, is that communities learn collectively and avoid re-inventing the wheel or repeating known errors.

Description of work

Task 4.1. Identifying cross-pilot opportunities for commons production (M1-M5)
(Lead: GOTEO; Participant: TESOB, ISB, CUK)

The task establishes a repository for both email / telephone contacts and social media contacts. This should include both interested parties, active contributors and 'ambassadors' - who are key players with a strong circle of influence through social media and in their peer-network. In the beginning, a simple email discussion can

serve as the crossover space for Coops and open source development.

In order to increase awareness and crowdsourcing support for digital commons, co-creation workshop will help to design and develop the solutions to be provided by and for our community. This will include different stages of the financing process (e.g. preparation of a crowdfunding campaign, running the crowdfunding campaign etc.)

Task 4.2. Develop a set of engagement tools to encourage commons production (M4-M18)
Task Leader (GOTEO); Participants (TESOBE, ISB, CUK, CGM, TERZO)

In Social Finance, the intermediaries' transparency is to be considered a prerequisite for building trustful long-term relationships with their stakeholders. As of today though, this transparency is limited though, mainly taking the form of the intermediary publishing individual loans/investments made - to assure depositors/investors that their funds are being put to use in accordance with their values and principles.

But transparency could extend further, for instance, also including the (big) data intermediaries collect on (the financial transactions of) their clients, eventually making those data accessible and usable by the clients and/or third parties – in accordance with all regulations and clients' preferences. This is the idea behind a recent development referred to as "Open Banking" (OB). The likely benefits of OB might be further enhanced by complementing financial transaction data with non-financial data such as social and/or environmental impact indicators - to inform and help evaluate decisions of all parties involved. In this context it is planned to develop and test prototype applications in collaboration with at least one (Banca Prossima) or more financial intermediaries participating in CASCADE.

Envisioned engagement tools will be built around existing open source software

- A web-store as a trigger to create Open Data and Open Tool, supporting the community of social entrepreneurs in their efforts to expand online;
- A best practice, online collection of commons contributions enriched with a narrative of impact and links to the concrete cases;
- Financial and platform transparency through APIs.

Digital engagement will be structured through both content and conversation with work across multiple platforms (email, social, web).

Task 4.3. Develop a process, supported by a set of open data, facilitating the transition from crowdfunding to other, more long-term formats of social finance (M16-M30)
(Lead: GOTEO; Participants: TESOBE, BFG, TERZO)

This task will include strategy-forming workshops, involving the relevant stakeholders and most importantly projects with an interest in their future social finance options. The task comprises two steps: first, a review of available and possibly useful data from crowdfunding platforms as well as their organisations and second, a set of workshops to discuss benefits and remaining problems, given the different expertises required to define such a cross-sectoral process.

Task 4.4. Facilitating joint communities between grassroots organisations, cooperatives and OSS communities (M16-M30)
(Lead: CUK; Participant: TESOBE, GOTEO, BFG)

Physical engagement will be a key method to bring together two communities who rarely interact: the cooperative sector and the open source community. Events at all four pilot sites are to support better interaction and increase overall engagement. A 'Collaborative Convening' (CollabCon) to initiate and trigger meaningful conversations between different sectors and stakeholders. The 'collaborative convening' and 'Agenda Hack' are methodologies developed by Allan Gunn of Aspiration Tech in San Francisco - which works to link non-profits with technology (<https://aspirationtech.org>) - using a variety of workshop techniques that help a diverse mixture of people from academic and tech-savvy to volunteer and tech-averse to form both an understanding of problems and explore solutions together. Events include trainings for organizations and people from the social and solidarity economy and finance contexts on how to produce digital commons through open knowledge.

Task 4.5. Develop a mobile App to provide feedback on crowdfunded projects or on initiatives that have benefited from other forms of social finance (M11-M19)
(Lead: TESOBÉ; Participants: GOTEÓ)

Easy and flexible means to provide feedback are critical to monitor and evaluate the impact of social finance. This evaluation data is also part of the digital commons ecology. Design suggestions will come from tasks T2.2 as well as T4.3. The underlying research interest will be the question of whether financial transparency increases the appeal of crowdfunding sites and social ventures and if so, in what ways can this transparency be leveraged to further support the production of other commons (e.g. visualisations of open data, aggregated across sectors, etc).

Task 4.6. Organising hackathons for pilot sites (M18-M29)
(Lead: TESOBÉ; Participants: ISB, GOTEÓ, BFG, CUK, CGM, TERZO)

‘Hackdays’ are organised around the possibilities offered by open data whereas ‘bugathons’ are to test software and services directly with end-users with developers on hand to solve problems. This task include advertising, organising and catering for the event. Hackathons are a proven way to engage with the developer community and stimulate innovative thinking. Organisations engaging in a hackathon

- Access innovative ideas and Identify new areas of development
- Identify new products/services to incorporate in existing or new tools
- Foster collaboration internally and seek potential employees
- Gain media attention and establish thought leadership

A hackathon will help co-create part of the CASCADE project by engaging with the end-users and the developer community.

Deliverables

D4.1 Overview report on digital commons and their potential for the various pilot site conditions (M18)

D4.2 Report on engagement tools, including demonstrations of use and the way the transition of crowdfunded projects can be supported (M30)

D4.3 Report on ‘Bridging Events’ based on ‘collaborative convening’ and ‘agenda hacks’ (M30)

D4.4 Release of mobile evaluation tool (including a brief report about the tool) (M19)

D4.5 Report and public campaign around hackathon events (M21, M23, M27, M29)

Work package number	5	Start date or starting event:					11	
Work package title	Impact assessment of technology supported social finance							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	0	2	0	0	0	0	7	7,5
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	3,5	3	0	5	5			

Objectives
Many social finance intermediaries apply routinely, ex-ante - negative and positive criteria for their decisions to projects before they get accepted on their donation / lending or investment platform. The argument is made, that this already indicates the positive impact of their activities. If not clear about the values they offer, social finance intermediaries might get trapped in the middle, especially since crowdfunding platforms (cf. Kickstarter.com) and mainstream banks are increasingly offering sustainable products too. This workpackage will • explore and test alternative impact indicators that combine socio-economic growth, sustainable welfare, ecological footprint, subjective well-being. organisational dimensions etc.; • develop an associated process that supports feasible ways of collecting all or parts of these indicators (in collaboration with WP2); • develop an assessment toolkit for social finance providers and organisations using social finance.

Description of work
<i>Task 5.1. Identify CASCADE impact dimensions and relevant stakeholders (M11-M18)</i> (Lead: ISB; Participants: DIESIS, GOTEQ, BFG, CGM, TERZO) In practice, the specific type, area and definition of impact can and does vary widely, with the venture's and/or investor's type and objectives. For instance, impact can refer to economic, social and/or environmental issues concerning the organization overall or in parts, clients, groups within the local community or the whole country. Unfortunately, outcomes are not as easily quantified as outputs. They are messy results of numerous variables, only a few of which are likely to be directly influenced by financing alone. This clearly calls for collaboration between multiple parties, and for the participation of many stakeholders, including the ultimate beneficiaries, already early on in the design and implementation stages (not only in the data gathering stages) of an impact measurement process. This task will have two versions (a) based on existing frameworks and (b) a final framework fine-tuned by the experience with our pilot sites. <i>Task 5.2. Develop internal indicators and ways to measure them effectively (M13-M20)</i> (Lead: DIESIS; Participants: ISB, GOTEQ, BFG, CGM, TERZO) This task's focus is on the internal / organisational context of organisations involved in social finance; their democratic governance, their human capital development, their regard for equal opportunities etc. <i>Task 5.3. Develop external indicators and ways to measure them effectively (M13-M21)</i> <i>Task Leader (DIESIS); Participants (ISB, GOTEQ, BFG, CGM, TERZO)</i> Ex-post impact assessment of funded projects / initiatives should not be limited to transparency regarding the use of entrusted funds so that interested stakeholder can inform their own assessment. Projects social, environmental or political impact needs to be captured to understand the overarching value, social finance can have for society. These impacts are closely related to the production of digital commons considered in WP4. <i>Task 5.4. Testing the indicators across time and organisations (M21-M32)</i> (Lead: ISB; Participants: OII, DIESIS, GOTEQ, BFG, CGM, TERZO) Whilst there is general agreement that impact measurement has to be oriented towards the specific organization and context, there is also agreement that some common framework would be important, for instance, to compare and benchmark the impact measured across time and/or organizations. In this context, it is also important to emphasize that impact measurement makes only real sense if understood not as an end, but as a means to improve practice of all parties involved. As such, feeding back the information gathered from the ventures and their beneficiaries in a format that also helps them to develop further seems

obvious, but is not in the focus of many impact measurement programs to date.

Deliverables

D5.1 The CASCADE assessment framework, including internal and external impact indicators (M21)

D5.2 Case studies in using the CASCADE assessment framework (M32)

Work package number	6	Start date or starting event:					1	
Work package title	Dissemination, exploitation and policy recommendations							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	4	2	1	3	1	2	2	6
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	1	3,5	1	2,5	1,5			

Objectives

The aim of WP6 is to coordinate and drive dissemination activities across the whole project. This WP will focus on the dissemination of results of the project and the promotion of CASCADE solutions with the stakeholder groups interested in social finance.

The workpackage will focus on the dissemination of the results of the work undertaken by all the WPs as widely as possible, informing the social finance network. Therefore a range of communication methods, including websites, conferences, workshops, and media publicity will be used.

Dissemination will constantly be a cross-cutting aspect of CASCADE, since one of CASCADE's objectives is to raise awareness on social, ethical and democratic finance among all societal actors.

Thus the following are the core objectives:

- General dissemination of the results of the CASCADE project
- Exploitation and sustainability planning and
- Growth and sustainability model

Partners being involved in the project have wide networking contacts as well as know-how and experience in dissemination and awareness raising activities in the field of social, ethical and democratic finance. The participation of social banks, crowd funding organisations, and ethical banks and their European wide associations and networks ensure that the project will be widely disseminated among European countries.

Description of work

T6.1: Communication and dissemination (M3-M9)

(Lead: DIESIS; Participants: ZSI, OII, OU, UDG, UZH, ISB, GOTEO, CUK,)

A thorough and well-structured communication and dissemination strategy will be developed. The main

objective of this dissemination strategy will be to raise awareness on social financing across Europe and different target groups. The plan will cover the communication goals addressed to all relevant target audiences using both non-media, such as workshops, events, congresses, etc. and media like TV, internet, video, booklets, etc. means of communication.

The dissemination plan will also help to increase the participation, feedback and the knowledge for the project and its benefits and therefore the quality of services provided. The website developed will proactively offer the option to get in contact and exchange.

The consortium will create promotional material such as leaflets, flyers, brochures, videos, press releases, newsletters, etc. and distribute them widely at all key events and congresses and within the partners' networks. This means in relation with the scientific dissemination of the results, this will be achieved via: (a) Using paper publications at workshops, conferences and in journals, (b) Organisation of workshops and conferences and (c) Cooperation with other EU-projects and national projects.

T.6.2: Creating the projects online presence (M1-M6)

(Lead: ZSI; Participants: ZSI)

ZSI will develop an interactive web platform that will meet the social and technical needs of its guests and users. To ensure a wide usage of the portal, different working domains will be supplied: An external area for publicly available content and an internal workspace as a platform for communication and exchange between specific groups of users. To supply flexible and user-oriented content inquiring a flexible tagging system, full-text search and a flexible widget system including a dynamic event calendar, a tag cloud, lists like recently added/changes or updated content (e.g. latest news, events, ...), etc. will be available.

T.6.3: Citizen Events and Workshops (M15-M32)

(Lead: BFG; Participants: TESOB, CGM)

The project will actively contribute to an exchange between social innovators and social finance systems/providers to improve the chances to get European socially relevant innovations financed. To reach this goal the CASCADE project will organise workshops in all participating countries inviting relevant stakeholder groups to identify different needs, chances and also obstacles. The results will contribute to the development of the CASCADE platform and have influence on the technology enabling large scale participation in financing systems.

T.6.4: Developing exploitation strategies (M15-M32)

(Lead: UDG; Participants: TESOB, BFG, CUK, CGM, TERZO)

CASCADE is tapping into existing networks of people and organisations. Hence exploitation plans for the future need to be brought into alignment with already existing strategies of the groups and organisations. The goal is to identify and explore multiple market opportunities during the project lifetime and pave the way for further cooperation after the project completion. Therefore a good exploitation strategy should lead to effective valorisation of the project results and is directly linked with its clear positioning in the market.

T.6.5: Deriving policy recommendations (M7-M34)

(Lead: DIESIS; Participants: OII, ISB, BFG, TERZO)

The CASCADE policy recommendations will take the form of policy briefs addressed to policy-makers at national and European level. Policy briefs are conceived as two- to four-page documents presenting a convincing story advocating specific lessons (policy principles, delivery mechanisms or activities) learnt during Cascade. They aim to stimulate and underpin policy debate on the issues that emerged as relevant in terms of policy during the project. We foresee 2 policy briefs per year including topics such as 'Social Impact Indicators', 'Finance for SE', 'Harmonisation' and 'Local community participation'.

Deliverables

D6.1 Communication and dissemination plans (M9)

D6.2 Online presence (regularly updated) (M4)

D6.3 Report on Citizen Events (M32)

D6.4 Exploitation strategies per pilot site (M32)

D6.5 Six policy recommendations (M11, M23, M34)

Work package number	7	Start date or starting event:					1	
Work package title	Project Management							
Activity type ^[1]	RES							
Participant number	1	2	3	4	5	6	7	8
Participant short name	ZSI	OII	OU	UDG	UZH	TES	ISB	DIESIS
Person-months per participant	21	0	0	0	0	0	0	0
Participant number	9	10	11	12	13			
Participant short name	GOTEO	BFG	CUK	CGM	TERZO			
Person-months per participant	0	0	0	0	0			

Objectives

This WP is designed to ensure the achievement of the project objectives within the time schedule and the budget constraints, by planning, organising, and controlling the integrated effort of the consortium. It is also responsible for IPR related issues and will perform a continuous project quality control and risk management. This is a continuous task throughout the project and will terminate with the submission of the final reports. The main objectives of WP8 are the following:

- To ensure the proper implementation of the Consortium Agreement,
- To set up internal communications and meetings,
- To coordinate team development,
- To control the project plan in terms of scope, schedule, cost, quality, staffing and communications,
- To perform quality assurance and quality control and provide quality guidelines,
- To review and analyse risks, and coordinates appropriate contingency plans,
- To ensure project activities adhere to the relevant ethics and data protection regulations.

Description of work

ZSI will develop detailed explanations on the management structure, decision-making strategy, communication instruments, quality assurance, methods for monitoring and reporting progress and management of knowledge and intellectual property (based on the agreed management structure and procedures).

T7.1: Administrative and financial management (M1-M36)
(Lead: ZSI)

Comprising every issue regarding every mandatory fulfilment for the project to suit the EC requirements, and any other issue that provides support to the easy follow up and control of the project and information interchange among partners.

The project's progress will be controlled by ensuring administrative and contractual relationships both within the consortium and with the European Commission, as well as verifying progress of work and production of

deliverables according to the project time schedule. The administrative and financial management of the project involves the maintenance of contact with the Project Officer, formulating propositions for possible modifications of the work plan, supervising contacts with all external organisations, delivering all types of reports and deliverables, monitoring project cash-flow and managing conflicts by application of the foreseen procedures.

T7.2: Knowledge Management (M1-M36)

(Lead: ZSI)

The project manager will co-ordinate and monitor the work that has to be accomplished in order to meet the project's overall and specific WP objectives and to ensure quality of final results. All content either produced within the project (deliverables, reports, meeting minutes etc.) or supportive material (background material, state-of-the-art material, survey conducted etc.) will be organised and stored in the shared workspace by all project partners. Relevant material will be made available to the wider public on the project's webpage. The coordinator will be in close contact with the WP leaders for coordinating the scientific and technical development of the project. This task includes the management of the dependencies amongst various tasks as well as the coordination of the technical progress of the project.

T7.3: IPR Management and ethical issues (M1-M36)

(Lead: ZSI)

Taking care of intellectual property rights issues such as the concluding of a consortium agreement that will be signed by all partners and that defines the use of knowledge arising from the project as well as access rights and other legal agreements amongst the partners, especially with regard to the rights and duties of the entrants in the competition with regard to use and display of the source materials, publishing PR and other materials and transferring rights to other parties for press distribution and promotion materials. Another important aspect of this task is dealing with ethical issues in a proper manner. Ethical guidelines will be provided for the consortium in WP1 to ensure the appropriate treatment of data protection and privacy issues regarding the participants. This task is responsible to monitor the implementation of the ethical guidelines (e.g. informed consent, etc.) at all phases of the project.

T7.4: Project Quality Assurance and Risk Management (M1-M36)

(Lead: ZSI)

This task is to ensure that the project is complying with the overall project objectives at high quality; it shall identify any risks and come up with according contingency plans. A peer review process will be introduced and managed for all project deliverables.

T7.5: Proactive cross-network communication with other projects and the EC (M4-M36)

(Lead: ZSI)

An important management task, closely connected to WP6 is establishing collaboration with other projects and networks for increasing the impact of the project. The coordinator will act as focal point for external communication and requests from the consortium partners as well as from external parties or stakeholders.

Deliverables

D7.1 Project Handbook including knowledge management (M36)

D7.2 First report on project management (M12)

D7.3 Second report on project management (M24)

D7.4 Third report on project management (M36)

Table 3.1b: List of Work Packages

Work package No	Work package title	Lead partic no.	Lead partic. short name	Person-months	Start month	End month
1	Conceptual and methodological framework	1	ZSI	20.5	1	19
2	Community engagement and participatory tool development	11	BFG	62	1	36
3	Collective deliberation and decision making tools	5	UZH	82.5	1	31
4	Collective action for digital commons	9	GOTEO	48	1	30
5	Impact assessment of technology supported social finance	7	ISB	33	11	32
6	Dissemination, exploitation and policy recommendation	8	DIESIS	30.5	1	36
7	Project management	1	ZSI	21	1	36
			Total Month	297.5		

Table 3.1c: List of Deliverables

Del. No.	Deliverable name	WP no.	Nature ¹⁵	Dissemination level ¹⁶	Delivery date
D1.1	Conceptual and methodological framework	1	R	PU	M5
D1.2	Privacy guidelines	1	R	PU	M5
D1.3	Stakeholder engagement plan	1	R	PU	M4
D1.4	Benchmarking report	1	R	PU	M19
D2.1	Collection of use cases	2	R	PU	M12
D2.2	Aggregated report on engaging the CASCADE pilot sites	2	R	PU	M16, M35
D2.3	Report on testing prototypes	2	R	PU	M23, M36
D2.4	Report on the CASCADE Academy (including the Learning environment)	2	R	PU	M30
D3.1	Systems integration architecture description: will report on the higher-level requirements for system integration and provide high-level architecture specifications.	3	R	PU	M2
D3.2	Deliberation space user interfaces for novice and	3	R	PU	M4, M10, M20

¹⁵ R=report; O=other; D=dissemination

¹⁶ **PU** = Public; **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)

	experts: reports on the design and development of the deliberation tools				
D3.3	Visualisations: reports on the design and development of visualizations to make analytics more accessible to end-users.	3	R	PU	M10, M20, M31
D3.4	Recommendations: reports on the design and development of the deliberation recommendations algorithms.	3	R	PU	M4, M10, M20, M31
D3.5	Adaptive incentives algorithms: reports on the design and development of reward mechanisms, criteria and services.	3	R	PU	M10, M20, M31
D3.6	Narrative generation algorithms: reports on the design and development of narrative generation algorithms to produce customisable reporting of the deliberation process.	3	R	PU	M20, M31
D3.7	Crowd-based idea filtering: reports on the design and development of crowd-based idea filtering tool.	3	R	PU	M10, M20, M31
D3.8	Consensus-driven decision-making: reports on the design and development of a consensus-driven decision making tool.	3	R	PU	M10, M20, M31
D4.1	Overview report on digital commons and their potential according to the various pilot site conditions.	4	R	PU	M18
D4.2	Report on engagement tools, including demonstrations of use and the way the transition of crowdfunded projects can be supported.	4	R	PU	M30
D4.3	Report on 'Bridging Events' based on 'collaborative convening' and 'agenda hacks'	4	R	PU	M30
D4.4	Release of mobile evaluation tool (including a brief report about the tool)	4	R	PU	M19
D4.5	Report and public campaign around hackathon events	4	R	PU	M21, M23, M27, M29
D5.1	The CASCADE assessment framework, including internal and external impact indicators	5	R	PU	M21
D5.2	Case studies in using the CASCADE assessment framework	5	R	PU	M32
D6.1	Communication and dissemination plans	6	R	PU	M9
D6.2	Online presence (regularly updated)	6	R	PU	M4
D6.3	Report on Citizen Events	6	R	PU	M32
D6.4	Exploitation strategies per pilot site	6	R	PU	M32
D6.5	Six policy recommendations	6	R	PU	M11, M23, M34
D7.1	Project Handbook including knowledge management	7	R	PU	M36
D7.2	First report on project management	7	R	PU	M12
D7.3	Second report on project management	7	R	PU	M24
D7.4	Third report on project management	7	R	PU	M36

CASCADE has five milestones (MS) marking important achievements, often linked to initiating new phases and serving as control points, where the use of resources needs to be monitored and any deviations from the original planning need to be analysed and remedied if necessary.

- The first Millstone is in Month 5, marking the successful start of the project. The conceptual foundation has been provided and first prototypes are in place.

- Further Milestones are in months 10, 20 and 31, representing major release points for the diverse prototypes being developed in WP3 (in collaboration with the pilot communities in WP2).
- On top of the on-going refinement of core deliberation tools, CASCADE adds tools and methods for the production of commons and structures for a refined impact measurement (Milestone 4).
- The last Milestone 5 (month 36), marks the completion of all deliverables, including sustainability and exploitation plans.

Table 3.2a: List of Milestones

Mile-stone number	Milestone name	Work package(s) involved	Expected date (project month)	Means of verification
1	Conceptual foundation, first prototype of deliberation space	WP1, WP3, WP7	5	Deliverables D1.1 and D3.2 Consortium agreement document signed by all partners; Successful project kick-off
2	Stakeholder engagement started, visualisations and adaptive incentives added to the system	WP1, WP2, WP3	10	Engagement plan completed (D1.3) Visualisations and incentive mechanisms are being used
3	Methods for commons production, Open source community engagement Second release of prototypes	WP2, WP3, WP4	20	APIs in use, Open data provided, Open source development started Elaborated prototypes, ready for usability analysis
4	Impact assessment and Campaigning Third release of prototypes	WP3, WP4, WP5, WP6	31	Impact indicators established and agreed Refined prototypes, ready for evaluation and validation
5	Successful project completion	WP1-7	36	Submission of all project deliverables Successful implementation of CASCADE tools and methods at all 4 pilot sites, impact indicators achieved

3.2 Management structure and procedures

CASCADE's organisational structure is informed by the successful structure applied in previous research projects with several improvements targeted to the needs of this large integrated project and based on accumulated experience of the project coordinator.

To ensure CASCADE responsibilities and transparent communication flows, the following management structure will be implemented and agreed on in the consortium agreement.

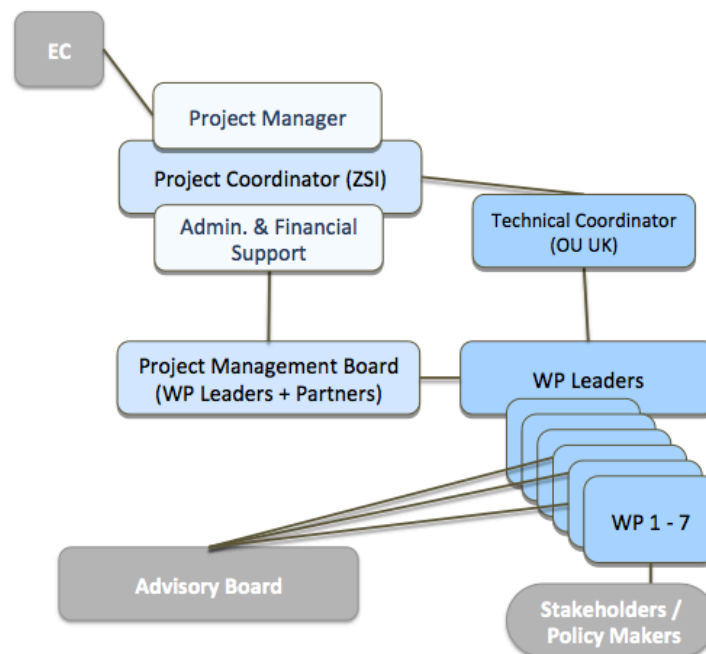


Figure 9: CASCADE Management Structure

3.2.1 Consortium structure and key management roles

The *Coordinator* will be responsible for the overall line of actions and the day-to-day management carried out by the project. A financial manager as well as an administrative employee of ZSI supports the coordinator. Each work package has been appointed a Work Package Leader, who is responsible for the progress within the work package. The WP Leader has contact with the coordinator on a regular basis during the virtual monthly meetings, in order to ensure the monitoring of the project, but shall also get in direct contact by mail or phone.

At least once a year a General Assembly (GA), requiring the participation of at least one representative per consortium partner will take place. General Assembly is obligatory for the Project Management, which consists of all WP leaders and one representative for each partners. The goal of the GA is to ensure the smooth running of the project, the integration of each work package and the enabling of the work in progress by setting the next tasks for the consortium members. The responsibilities of the various parties are described in more detail below:

Project Coordinator

The coordinator has the following responsibilities, aimed to ensure the overall management and communication between the various stakeholders:

- Supervising cooperation and progress in each WP's
- Timely transmission of reports, deliverables, cost statements, etc. to the European Commission and the external reviewers (if asked), including financial administration
- Distribution of any documents/information among the Parties and Boards
- Support of WP Dissemination in external affairs and presentation of the project (incl. PR)
- Overall follow-up, day to day management and conflict mediation,
- Checking the progress of the works and compiling reports
- Co-ordinating the preparation of reports (technical, financial, etc.),
- Preparation of EB meetings,
- Cross-network communication and all external communication.
- Advising partners on the financial and management issues in the project

CASCADE requires a range of qualifications in the pursuit of its goals. Thus, responsibilities are separated into main coordination, financial/administrative support, and steering the implementation of the competition. By this, we ensure the highest quality management standard, working for the project most efficiently and

effectively. Dr. Christian Voigt has been appointed as overall coordinator by the consortium, because of his experience in various FP7 and H2020 Projects, for instance the Network of Excellence 'Stellar', the support actions (TEL-Map, ERINA+) and an ongoing CAPS project (Cap4access). His main focus of research is on social innovations and ways to support them through novel ICT solutions.

In order to insure a smooth communication flow between the very different stakeholders involved in the CASCADE project, an dedicated position is foreseen to specifically take care of a smooth communication and follow up. Maria Schrammel will act as communication manager for the stakeholders, in specific the communication between researchers and the diverse financial intermediaries and cooperatives. Also, Johannes Simon will support the project in technical questions as well as the day-to-day business. He has an in-depth knowledge of major TEL tools. As technical/administrative manager, he supports the coordinator in all tasks and ensures the timely provision of the reports of each project partner as required by the EU. He also plays an important role in supporting the coordinator in the preparation of the various reports required by the EC. Wolfgang Michalek will act as the financial coordinator and will accomplish following tasks:

- Implement internal financial checks,
- Implement accounting procedures according to standards of the European Commission
- Implement effective accounting and monitoring of partner cost statements.

Project Management Board (PMB): The project will be managed through the Project Management Board. It provides the overall direction for the project, both strategic and operational. The PMB maintains the project directions and obtains advice from the Work Package Leaders, to ensure that the project meets its stated and implied goals. The PMB ultimately supervises all project management processes, including initiation, planning, execution, control, and closure of project phases. Within this framework, the Work Package Leaders coordinate the detailed planning, execution and control of the technical tasks to meet the project's scientific and technical objectives relevant to their work packages. The PMB is chaired by the Project Coordinator and composed of one delegate (the Partner Leader) from each Partner. Each Partner shall have one vote and shall identify their delegate with the right to vote to the project coordinator. The PMB shall not deliberate and decide validly unless a majority of 75% of its members are present or represented. The PMB meets at least twice a year, either physically or virtually and on specific request of one of the work package leaders or a project partner.

Only the PMB has the authority to

- Accept or reject changes to the work plan, thus it takes all decisions regarding the Grant Agreement and amendments to the Consortium Agreement,
- Sends proposals to the EC,
- Make changes in the Project Management structure.

In the case of a vote, each party shall have one vote. Decisions are reached by a majority of two thirds of the voters present or represented at a meeting. In the case a party cannot agree with a decision taken by the PMB, he/she can veto and resubmit an action to the PMB. In this case, a 75 % majority of all partners present or represented in the PMB is needed for a final decision.

Work package Leaders (WPL): For CASCADE the work packages have been condensed to eight. Each work package will be coordinated by a Work Package Leader, to ensure the performance and progress of the work package regarding the overall work plan and provision of the work in progress. The WPL will be in charge of the coordination of the different tasks and involved partners, as well as the gathering of material from all partners required to produce the reports according to the deliverable list and the work plan. WPLs have been appointed according to their specialisation, scientific expertise, and management skills. The WPL are in regular contact with the coordinator to inform him about the ongoing and planned WP activities, and recent and future WP results and achievements.

The responsibilities of the Work Package Leader are:

- Distributing and coordinating the different tasks among all participating consortium members,
- Monitoring the progress of the WP according to time and budget allocations, ensuring that the WP fulfils the objectives listed as milestones and deliverables, alerting the coordinator in case of delay or default,
- Delivering quarterly management reports to the coordinator for internal use,

- Participating in the monthly CASCADE's meetings for keeping the consortium up to date and aligning activities.

General Assembly: A face to face general assembly comprising all project consortium partners will take place at least once a year, to coordinate overall project work. Within the project, the general assembly will function as highest authority, as last resort of all relevant project decisions.

Each month, a virtual obligatory meeting will take place via a virtual conferencing software system. These meetings ensure the internal communication among partners, allow the WP Leaders to coordinate the various tasks, and report the progress of work to the team members. All meetings shall be recorded and be made accessible to all partners, to view at a later time. An e-mail, summarising the discussion and necessary actions for the next month, will be sent by the coordinator immediately after each virtual meeting.

3.2.2 Management procedures and tools

The following procedures and tools will be used in order to ensure an efficient management and communication throughout the whole Project organisation.

Ensuring communication flow

An active communication strategy will be implemented to establish a strong project identity in order to obtain maximum transparency for all partners involved, and to increase synergy in cooperation. WP meetings will be arranged by the WPL, possibly in the context of workshops or conferences.

Daily communication among the WPs, the partners, etc. will be established mainly through

- e-mails and mailing lists,
- a project space for internal exchange of documents as well as offline communication,
- for face-to-face communication (WP meetings and monthly consortium meetings),
- VOIP (e.g. Skype or SIP) or phone,
- WebDAV for storing all documents (deliverables, contract, etc.)

The communication strategy also aims to effectively communicate with parties outside the consortium, such as other European project consortia or potential users. The coordinator acts as the main interface for any such communication, in close collaboration with the dissemination WP and strategy. However, all partners are involved in such dissemination activities (cf. WP 6) to address their contacts and networks for the purpose of promoting the project and widening the user community of CASCADE.

Quality Assurance

Quality assurance will closely follow the performance indicators with their associated measures and the respective methods, tools and procedures for collecting and analysing the required data. These indicators will be extracted from the project programme, discussed during the kick-off meeting and established in the first management report. The project coordinator will perform continuous monitoring and trigger quality assurance project reviews during the general assemblies. As far as documentation is concerned, the high quality of deliverables, public reports, and presentations is ensured through cross reading (reviewing) among the consortium, including the coordinator. The reviewer will give feedback to the author(s); the author(s) will implement the recommendations within two weeks. After this, the coordinator sends the reports to the EC or publishes the document, as appropriate. As far as events, public appearances and displays (such as web site, press releases and PR materials) are concerned, every production will be quality controlled by an internally appointed Quality Control Manager.

3.2.3 Conflict resolution procedures

All CASCADE partners are aware of their duties and commitments towards the project. Still, in case of a conflict within a team that cannot be resolved by the team leader (i.e. conflicts within a WP), the conflict will be resolved by the coordinator. Conflicts that cannot be settled amicably by the project management board shall be resolved by vote accepted by 2/3 of all partners. This means that conflicts within work packages that cannot be resolved by the respective leaders, the leader shall turn to the coordinator to eventually involve them for the resolution if necessary.

Detailed provisions will be made in the consortium agreement before the signatures between the EC and the project coordinator will start the project.

Risk management

The project management and assessment approaches proposed for CASCADE provide mechanisms to identify and resolve potential risks. The methodology to be followed for risk management consists of four subsequent steps:

- Risk identification – areas of potential risk are identified and classified.
- Risk quantification – the probability of events is determined and the consequences associated with their occurrence are examined.
- Risk response – methods are produced to reduce or control the risk, e.g. switch to alternative technologies.
- Risk control and report – lessons learnt are documented.

Risks with medium or high probability and severe impact will be handled with particular caution during the project. At this point, it is expected that the project will safely realise its expected results. This is also supported by the preliminary risk analysis (see Section 1). Normal project risks will be managed via “good practice” project management and will rely on the experience from the successful research projects that the partners have been performing. The close supervision and tight control both by the project management and by the various Boards shall ensure that results are available in time and with adequate quality. WP1 includes a task especially dedicated to quality control (as described above) and is also responsible for close monitoring of the progress and risk identification.

Risk identification will also be collaboratively encouraged as part of reflective sessions and the project management survey to ensure early communication and profound understanding of risks. The project management will promote an open communication culture to openly discuss any issues arising.

3.2.4 Risks and contingency plans

We have identified two types of risk: managerial and operational. The table below specifies these risks, their probability and impact as well as mitigating actions built into the project.

Table 3.2b: Critical risks for implementation

Description of risk	WPs involved	Risk-mitigation measures
Managerial risks		
Deliverables not finalised in time because of disagreement about purpose and scope	WP7	The DOW provides a clear guidance. Moreover, workpackage descriptions are derived from identified needs and challenges, so that interpretations can be aligned. In case disagreements persist, a conflict resolution process is in place.
Key people leaving the project	WP7	WP7 provides knowledge management structures to enable the replacing expert to smoothly integrate in the project. Alternatively, a reallocation of responsibilities is considered.
Resources don't match the needs of the task.	WP7	Work plan revisions, including possible shifts between workpackages
Operational risks		
Inability to test ICT prototypes on the side of financial service partners due to (changing) national regulations.	WP2, WP4	If necessary identify replacement partner/s from the many other organisations that have already expressed interest in the project or alternatively
Problems acquiring use case	WP2	End user groups have already been identified and

requirements.		contacted. Continuous feedback between the relevant partners will reduce this risk
Data Protection issues	WP1 - WP6	The informant consent of end users is required before running any test

3.3 Consortium as a whole

The CASCADE consortium presents a truly cross-disciplinary research team and a strong representation of the targeted sector, social finance intermediaries. Consortium partners come from 7 countries, where they all have extended networks and beyond, which will further support our approach.



With four strong development partners (OUUK, UDG, UZH and TESOBÉ) CASCADE has a sound basis for the major development works it is proposing. The reach and networking capacity of our financial intermediary partners has already been described in section 1.3.2.

Skills and Expertise of partners

	ZSI	OII	OU UK	UDG	UZH	TESOBÉ	ISB	DIESIS	GOTEÓ	BFG	CUK	CGM	TERZOS
Social Innovation	✓		✓			✓	✓	✓	✓	✓		✓	✓
Crowdfunding,			✓				✓		✓	✓	✓		✓
Open Data	✓	✓		✓					✓				
Open Source		✓	✓	✓	✓	✓					✓		
Visualisations	✓	✓	✓		✓								
E-deliberation			✓		✓								
Big data				✓	✓								
Social Media	✓	✓		✓	✓			✓	✓				
Collective intelligence		✓	✓	✓	✓								
Impact Identification	✓	✓						✓		✓	✓	✓	
Cooperative Movement							✓	✓		✓	✓	✓	✓

Consent finding	✓		✓							✓			
Social Banking							✓			✓			✓
Learning Design	✓						✓		✓	✓		✓	
MOOCs	✓			✓									

The role of the Advisory Board in CASCADE is to advise and challenge the partnership on the strategy, methodology and best practice for each step of the programme. In particular, the Advisory Board advises the Project General Assembly with regard to key scientific, technical, social and economic directions and supports the project with regards to the exploitation of results. It also helps in monitoring and evaluating the activity progress and outcomes. The Advisory Board is composed by representatives of Social Economy, Cooperatives, Finance Community as well as representatives from majors European and National networks.

Table 1: Advisory board

Name	Organisational Affiliation
M.McAndrew UK	Community Manager of CiviCRM . He has worked with non profits and open source technology since 2003.
Michel Bauwens	Faircoop project / Michel Bauwens is a Belgian Peer-to-Peer theorist and an active writer, researcher. He is the director and founder of P2P Foundation, a global organisation of researchers working in collaboration in the exploration of peer production, governance, and property.
John Restakis / UK	p2p foudation / He was past Executive Director of the BC Co-operative Association in Vancouver. His professional background includes community organising, adult and popular education, and co-op development.
David Bollier / USA	Cofounder of Commons Strategies Group / He has spent the past ten years exploring the commons as a new paradigm of economics, politics and culture.
Pat Conaty / UK	Fellow of new economics foundation and a reasearch associate of Co-operatives UK .
Filipo Addarii / UK	Young Foundation / Director of International Strategy and Head of EuropeLab at the Young Foundation. He is also part of the European Commission Expert Group on an Integrated Concept for Strategic Foresight, and a member of the European Commission's Strategic Policy Forum on Digital Entrepreneurship.
Alison Powell / UK	London School of Economics / Expert on 'openness' within new media. She studies open-source cultures including community wireless networks, free software advocates and people interested in open sourcing knowledge.
Leonardo Becchetti / Italy	President of the supervising committee of Banca Popolare Etica / Coordinator of impact studies on the effect of development projects in LDCs: refinancing of microfinance institutions, impact of fair trade affiliations on agriculture producers in Kenya, ...

3.4 Resources to be committed

The total financial contribution requested from the European Commission is **2,002,779 €**. The overall budget of the CASCADE project is **2,502,446 €**. Our Swizz partner (University of Zurich) will participate as a third country entity. In case CASCADE is positively evaluated, the difference between the EC's contribution and the project's overall budget will be requested from the Swiss government according to the process set up by the State Secretariat for Education, Research and Innovation (SERI)¹⁷.

The total effort dedicated to the project is equal to **297,5 person-month**. The **personnel costs** have been estimated according to the real needs of each WP and applying an average person-month rate for each institution according to their internal accounting system and considering the specific persons and their costs being directly involved in the project. The figures have been approved by the individual accounting departments of the partner organisations.

As indicated in the work plan the participatory design and evaluation workshops are central to the project as they should guarantee that the solutions designed and developed in CASCADE really cater for the specific needs of the financial intermediaries and the people they support. Thus it is important that development as well as design and evaluation partners participate in these workshops. Only Banca Prossima has a minor travel budget, since this partner will specifically concentrate on the innovative service development around Open Banking and Impact Assessment in WP5.

Table 3.4a: Summary of staff effort

Partic. No	Partic. short name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total person-months
1	ZSI	5	9	0	0	0	4	21	39
2	OII	5	6	0	0	2	2	0	15
3	OU	0	3	32	0	0	1	0	36
4	UDG	0,5	6	25,5	0	0	3	0	35
5	UZH	0	3	25	0	0	1	0	29
6	TESOBE	0	0	0	17	0	2	0	19
7	ISB	3	2	0	3	7	2	0	17
8	DIESIS	0,5	1	0	0	7,5	6	0	15
9	GOTEO	1,5	7	0	12	3,5	1	0	25
10	BFG	1	12	0	2,5	3	3,5	0	22
11	CUK	1,5	5	0	9,5	0	1	0	17
12	CGM	1,5	6	0	1,5	5	2,5	0	16,5
13	TERZO	1	2	0	2,5	5	1,5	0	12
Total PMs		20,5	62	82,5	48	33	30,5	21	297,5

The **travel budget** is based on the following estimations:

Per Partner over 3 years			
Amount	Type of Travel	Cost per travel	Total
6	General Assembly	€ 900	€ 5.400
3	Participatory Workshop	€ 900	€ 2.700
3	Evaluation Workshop	€ 900	€ 2.700
3	Review meetings	€ 900	€ 2.700
TOTAL			€ 13.500

¹⁷ <http://www.sbf.admin.ch/h2020/02457/index.html?lang=en>

Partner organisations (ZSI, ISB, CUK, CGM) involved in the organisation of Hackathons at their pilot sites receive an extra budget of **3.200€** covering 2 day room hire (1400€), catering for at least 10 people (1600€) and Videography (200€).

Most partners bring their existing equipment to the consortium, so that 2 Laptops amount to a total of **4,000€ for Equipment**. Other costs exceed the 15% limit in the case of two partners, TESOBÉ (UK) and CGM (IT). Their expenses are explained in the table below.

Table 3.4b Other costs justification

TESOBÉ (UK)	Cost (€)	Justification
Travel	17,100 €	TESOBÉ has already organised 10 successful Hackathons around Europe. They will be the responsible partner for the preparation and moderation of the Hackathons at four pilot sites. For this, they have been allocated budget for 4 more travels on top of the calculated 15 travels per partner.
Total	17,100 €	
CGM (IT)	Cost (€)	Justification
Travel	13,500 €	CGM will be responsible for developing impact indicators across multiple sectors, giving reasons to the 15 travels for this partner.
Hackathon Support	3,200 €	CGM is also responsible for the local preparation of the Italian Hackathon, adding the costs for a Hackathon as previously specified.
Total	16,700 €	

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