(template)

Excellence

{>> Ina suggested having a short page for motivation even though it does not appear in the Template <<}

Motivation

In a world that requires urgent solutions to systemic problems, we must enable the processes that can lead to the emergence and development of collective intelligence and action.

Such processes require deep cooperation. They touch on both society and technology. Indeed, social and technological infrastructures are so intertwined, that one can no longer survive without the other. Technology is a "milieu", a living environment that surrounds our real-life interactions, rather than an external "technique" that we can opt in or out of.

Currently, social and technological infrastructures mirror one another in a way that constrains our capacity for action. Both have been shaped by what Jeremy Rifkin[^Jeremy Rifkin] calls the second industrial revolution, which required very strong centralising forces to deploy the big infrastructure projects of the 20th century. The 3rd industrial revolution on the other hand is built on peer to peer networks of agile organisations that can co-operate dynamically and fluidly. This requires re-enforcing the autonomy and intelligence of individual actors, so that they can work together just in time.

To do this we will work with communities that are structurally confronted with this problem and have become aware of the need for such an architecture.
These communities will help define, develop, improve and extend the initial implementation of the Secure Social Web based on Linked Data and other standards emerging at the W3C. This Social Web will allow each organisation and individual to control their data, which we prefer to think of semantically as graphs of relations, that can placed on the server of their choice. They will interact with the Social Web through web applications that can crawl this linked data jumping from organisation to organisation seamlessly. So instead of social network silos which fragment user's data across inumerable sites that don't work together, favoring the emergence of monopolies, we will build upon open standards implemented in existing open source projects to create a peer to peer network that looks like the following:

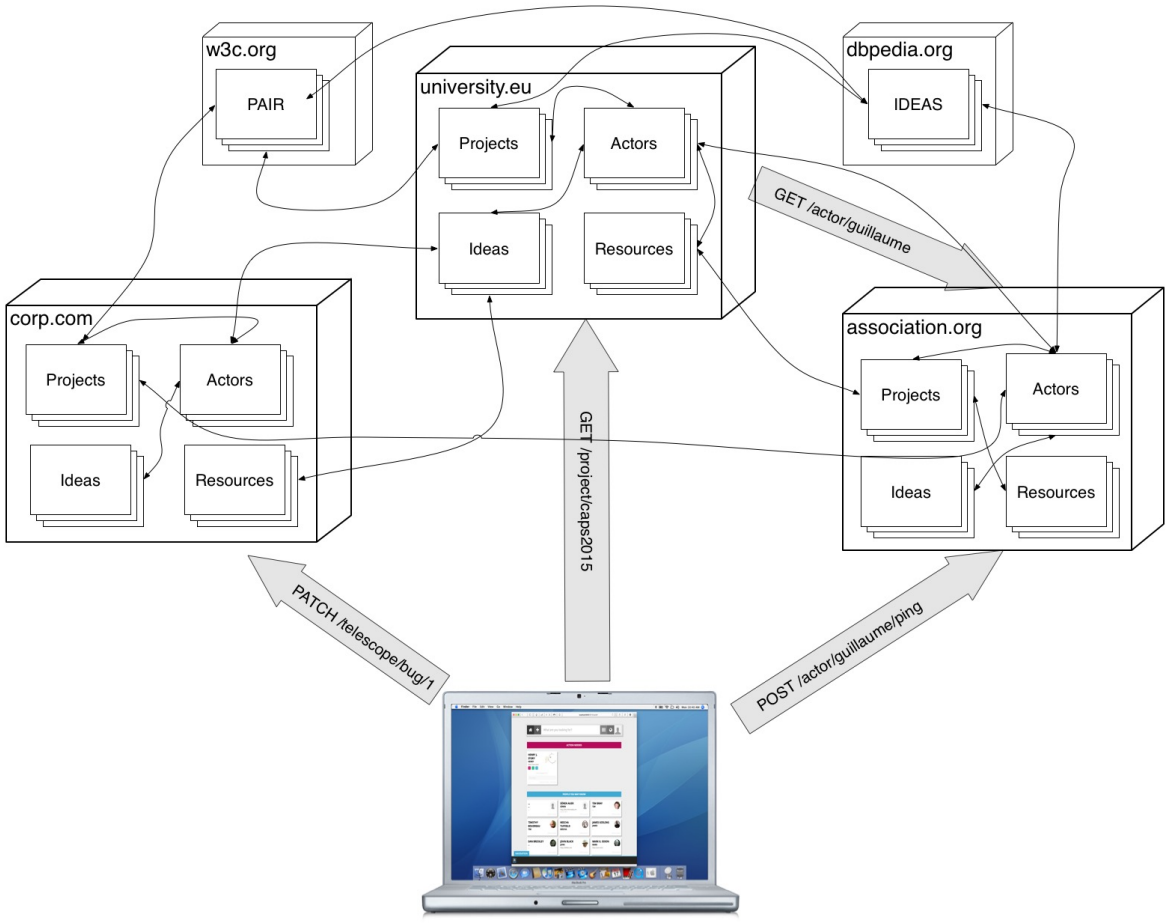


Figure {++ ++} :The Social

In this figure we can see how each organisation can publish relations describing the Projects, Actors, Ideas and Resources (PAIRs) which constitute their actions and link those to other PAIRs in different organisations they are co-operating with.
Web Applications that are able to read and write these relations then display these in an intuitive way, building on the knowledge gained by popular Web 2.0 Apps, to allow humans to naturally interact with partners of diverse kinds.

By a process of spiral improvements, starting with simple and widely needed applications and then growing the network of users, by listening attentively to their feedback, we hope to launch a movement which leads to a growing number of other implementations of the architecture. Together these bring further growth that will accompany and foster the restructuring of society towards a dynamic and flourishing peer to peer economy.

[^Jeremy Rifkin]: “The Third Industrial Revolution” and “The Zero Marginal Cost Society”

{>> template <<}

1.1 Objectives

Social innovation processes require deep cooperation. They touch on both society and technology. Social and technological infrastructures are so intertwined that the first can no longer survive

without the other anymore ("technology is society made durable" says Bruno Latour). Technology is now a "milieu", a living environment that surrounds and extend our real-life interactions, rather than anything external that we might opt in or out of in a whim. Thus, social innovation requires enabling a large number of small actors to co-operate as efficiently as large organisations, but much more flexibly, by linking actors, making it easy for them to collaborate on projects, share resources and discover new concepts and ideas to perceive or operate on new realities.

It is necessary to overcome fragmentation of communities due to linguistic incomprehension, be it at the technical layer with ever growing incompatible data formats, or at the human layer through natural language barriers, by building on agreements at the ontological layer in a global web space based on Universal Resource Identifiers (URIs). At the same time, all actors must be able to retain their autonomy whilst working with others. To do so, technical systems should not hinder awareness of the subjectivity of information by allowing users to always question where it came from and in case of a clash to potentially re-adjust the system through discussion of a controversy.

Architectural elements that require centralisation shall thus be replaced by ones that are designed for a web-based peer to peer architecture (found in LDP for Linked Data Platform, which became a W3C recommendation in the first quarter of 2015 and plays a key role in enabling the read/write web that Tim Berners Lee has aimed for since its inception) which best meets the structure of human social interaction and is better supported by the underlying organisation of the Internet. To increase the security of the social web, without losing in flexibility, means securing the edges of the system, which in a topological networked world means securing every single server, and so every actor or organisation.

The Co-Os project aims to align infrastructural topologies (web and social structures) with social ones, so that distributed networks, bottom-up governance modes, cooperation practices and collective decision-making can be best served by the infrastructure that supports them. We are focused on the deep infrastructural layers that underlie such dynamics, enabling self-organised, collaborative and efficient practices to emerge. This explains that in what follows, instead of "data", we prefer the term "relations" (short for graphs of relations), as we wish to allow relations between hypothetical, imaginary or fictional entities too, which can influence reality just as much as "real" entities, as anyone reading a good fiction such as Dostoyevsky's Crime and Punishment will be able to attest.

After a review of the main challenges we are facing (First part), we develop the 3 main objectives of the consortium: Collaboratively building a new architecture for the web (Objective 1) & new social structures (Objective 2). We combine these technological and social innovations to serve grassroots projects and communities (Objective 3).

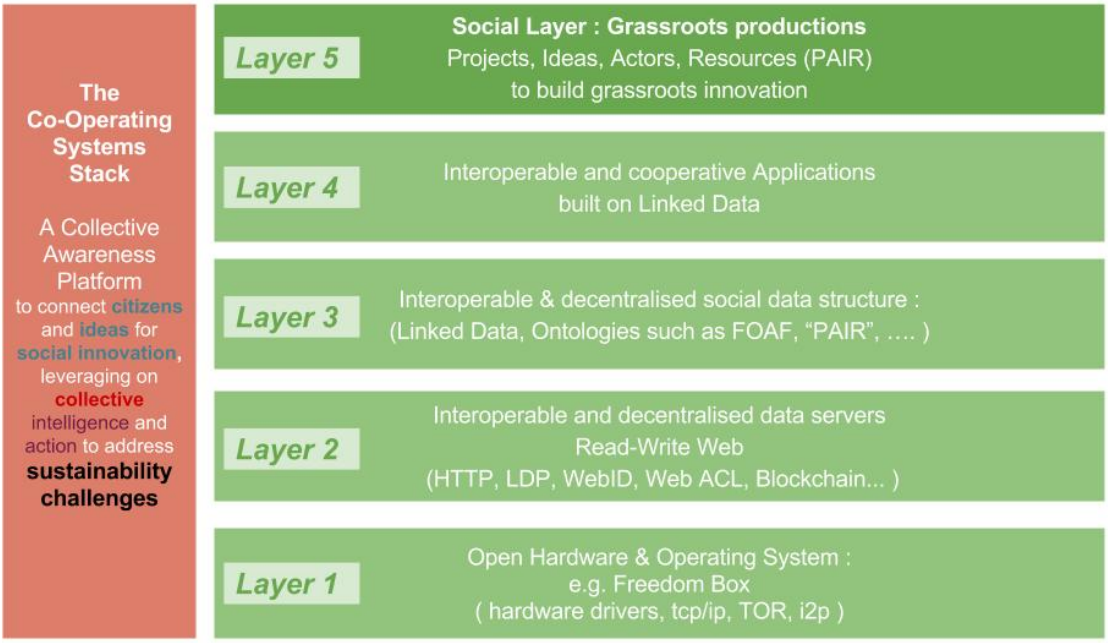


Figure 1: How social and technological structures can be transformed

The {== Name of the consortium ==} project aims to align infrastructural topologies (web and social structures) with intentions, so that distributed networks, bottom-up governance modes, cooperation practices and collective decision-making can be best served by the infrastructure that supports them.
We are focused on the deep infrastructural layers that underlie such dynamics, enabling self-organised, collaborative & efficient practices to emerge:

After a review of the main challenges we are facing (First part), we develop the 3 main objectives of the consortium : Collaboratively building a new architecture for the web (Objective 1) & new social structures (Objective 2). We combine these technological and social innovations to serve grassroots projects and communities (Objective 3).

1.1.1 : Challenges

{>> Ideally insert a paragraph here shortly summarizing all following subheadlines. <<}

1.1.1.1 : At a technical level Current social networks, due to their centralised architecture, have been able to evolve very quickly and gain huge adoption whilst creating the problems described below.

1—Online privacy, security & trust *Cause:* Social networks centralise all their user data into one platform. *Effect:* Data ownership issues lead to mistrust and fear to engage. The social network operator can see all the data and, in order to share it, has to own it too. *Need:* Distributed identity, authentication, reputation, trust and search mechanisms allowing each actor to keep ownership of the data and to share it with flexible access control rules to any other actor or group of actors in the world.

2—Fragmentation *Cause:* Each social network operates as a silo, specialising in specific data types. *Effect:* Data, interaction, identity, profiles and virtual meeting spaces are fragmented with strong problems in terms of efficiency. As people need to work with different actors, each using a preferred silo network, each actor's data becomes fragmented over different networks. Each user also needs to register on each application, to have many passwords, to fragment its identity, to duplicate its data, therefore loosing information, efficiency and time. *Need:* Data and identities should easily be linked across the web.

3—Lack of interoperability *Cause:* Databases don't use standards for structuring data. The lack of interoperability between databases and applications prevent any mutualised development of applications and services. *Effect:* Each web project develops one application with one database leading to strong inefficiencies. *Need:* Using the LDP protocol and standard ontologies will generate interoperability and, therefore, communication, collaboration and true mutualisation.

4—Lack of semantics *Cause:* Globally, in the current web, machines understand strings and syntax but not semantics of data. They cannot reason on data. *Effect:* The lack of semantics prevents us from using the potential of machines. *Need:* Use semantic standard technologies in order to allow the development of artificial intelligence.

5—Suboptimal technologies for the development of web applications *Cause:* To develop web applications we both need to develop a client and a server. *Effect:* The cost for building web applications includes the development of both. *Need:* Using LDP enables generalized, accessible components, dividing the needed time for developing web applications upon many stakeholders.

6—Economics *Cause:* Centralised platforms usually use users' data as a way to earn money. *Effect:* Value is captured by very few actors whereas it's created by the crowd. *Need:* Enable people to take back data ownership and the attached value.

1.1.1.2 : Challenges at a social level Co-Os aims to contribute to build social structures adapted to the third industrial revolution that will replace the second industrial revolution ones, built on centralised silos. During the second industrial revolution [1], in order to achieve scalability, collective intelligence and actions were usually consolidated into large centralised organisations that tried to control all aspects of the problem using centralised governance mechanisms and developing centralised projects.
As the world keeps getting more complex and as we reach problems that mostly cross organisational and disciplinary boundaries, this organisational architecture is no longer tenable. Instead we are moving to a dynamic where Actors that come up with Ideas often need to develop projects that span organisations, relying on resources that can be dispersed among multiple players and disciplines, and that can only work coherently when thinking of them as cross-organisational. This leads to an architecture we can think of as a world of autonomous yet linked Projects, Actors, Ideas and Resources, which we call the PAIR à PAIR ontology.

"Organisational silos" prevent collaborative and bottom-up dynamics « Silos » are not an invention of modernity. Indeed, for a very long time «silos» have been structuring societies. Such is our hypothesis. Examples of silos include nations, religions, cultures, currencies, ideologies, which all define boundaries between an « inside » and an « outside ». While it is easy to communicate and collaborate when one is inside, it becomes much more difficult as soon as one is outside. Organizations are also silos within organizations, Projects, Actors, Ideas, and Resources are usually enshrined. These organisational silos foster collaborative dynamics only from the inside. In a globalized world where they face many challenges and where they are no longer the only provider of innovation, new dynamics, outside silos, must be cultivated.
Cause: Organisational silos generate fragmentation & duplication of Projects, Actors, Ideas and Resources. Effect: it is difficult to gain access to other initiatives and collaborate with them. Need: Adapted social structures and for collaborative dynamics.

Examples

- **EGPC : Etats généraux du pouvoir citoyen**

Virtual Assembly collaborated for 2 years with a meta network called "Etats généraux du pouvoir citoyen" which brought together 50 organisations of the french civil society : Colibris, Labo de l'ESS, ATTAC etc. Each one of these organisations have many topic interests (subclass of Ideas). Some are specific to one organisation, but the majority is common to many of them, for example:

- Labo de l'ESS : Social innovation, alter economy, local development etc.
- Colibris : Spirituality, degrowth, social innovation, alter economy, local development etc.
- ATTAC : Alter economy, social innovation, alternative currencies, basic income etc.

In this example :

- Spirituality, degrowth, alternative currencies, basic income are specific to one of these organisations
- Social innovation and alter economy are a common topic interest for all organisations.
- Local development is a common topic interest for Labo de l'ESS and ATTAC.

In this example, spirituality, degrowth, alternative currencies, basic income are specific to one of these organisations. Despite addressing shared issues, these organisations nevertheless have some difficulties to set up collaborative dynamics. These difficulties are due to unfit social structures, which are centralised around organisations instead of topics of interests.

- **Web applications**

An increasing number of actors are developing an increasing number of web applications (Projects). These applications address a limited number of needs and require similar developments. When it comes to closed projects (not open-source ones), for every one of them, a huge amount of work is accomplished without collaboration between actors which, therefore, don't mutualize their resources. This competitive dynamic causes huge inefficiency by fragmenting and duplicating the tasks needed to address targeted needs. Open-source projects enable cross organizational and collaborative dynamics, but they concern essentially digital projects. We need to generalize such approaches and dynamics in the other fields of society.

1.1.2 : Vision and objectives of Co-Operating systems

Objective 1 : Contribute to transform the web in a distributed digital network (Layers 2, 3 & 4) (WP2 - Co-Operating Systems platform : (WP-2 : LDP + LOD + Web ID + WebACL) :

The social web is a W3C project gathering many actors at an international level, that involves Tim Berners Lee (inventor of the web) and the distributed information group at MIT with an objective: build a new architecture for the web, faithful to its origins, by (re)decentralising it radically. Co-Os wishes to tap into the work accomplished around this project by involving actors from the social innovation sphere so as to build a distributed digital network using W3C standards and semantic web technologies to empower sharing and collaborations on the first and biggest digital/social network: the web.

- Co-operate with agents and things on a global scale without running into unwanted boundaries (between systems / platforms / servers / databases).
- Allow people and organization to be autonomous (fix their own boundaries) and regain full control of their data: being able / sovereign to host, manage and share it thanks to P2P architectures, distributed authentication and access control by giving read-write access to those we want).
- Regain control on algorithms: being able to use and configure them and introduce subjectivity in our user experiences.
- End fragmentation & duplication of information: being able to create secure profiles directly on the web, beyond silos (Google, Facebook, Apple, Amazon, LinkedIn, etc.).
- Build user-centric architectures: reversing the relation between users & service providers like in the VRM approaches.
- Reduce intermediaries (Systematic Man-in-the-Middle).
- Increase our connectivity through linked data technologies: allowing machines to "understand" relations and reason on them.

Objective 2 : Contribute to transform social structures using peer to peer approaches (Layers 5) (WP3 : Linked Data ; WP7 - Dissemination)

Inspired by the complex systems theory, the PAIR to PAIR model is based on a combinatorial approach between Projects, Actors, Ideas and Resources. We aim to build a distributed social network using the PAIR to PAIR model to overcome fragmentation of communities due to missing interoperability and communication, be it on the technical side with ever growing incompatible data formats, or on the human side through organisational silos.

- Build a common representation of innovative social structures to foster better interoperability / communication between actors and between parts of society.
- Facilitate trans-organisational and trans-disciplinary cooperation (collective intelligence and action).
- Facilitate sharing resources beyond organizations.
- Allow Projects, Actors, Ideas & Resources (PAIRs) to be autonomous and yet connected.

Objective 3 : Connect both technological & social innovations to serve grassroots projects and communities (Layers 2, 3, 4 & 5) (WP1 Project Management ; WP2 - Requirements; WP3 co-operating systems ; WP4 Linked Data ; WP5 Application ; WP7 Dissemination)

Be able to create PAIRs directly on the social web. Build distributed, self-organized & collaborative social networks of autonomous PAIRs yet connected through semantic web technologies. Allow trans-platforms, trans-disciplines, trans-organisations systems of PAIRs. « Harness the collaborative power of ICT networks » to foster the development of a global transition network. By building P2P architectures for both web & society, we wish to reinforce one another recursively. Distributed Social Networking is the core of the project, which builds on the architecture of the Web and the Linked Data movement, by adding Web IDentity and authentication, to enable a global web of trust with the following objectives:

- Enable trans-cooperation: the combination of co-operating systems stack (Interoperable technologies) & PAIR to PAIR model (interoperable datas) will allow servers, platforms, applications, datas and communities to communicate / collaborate directly on the (social) web.
- Empower collaborative dynamics at a micro level to enable "stigmergic" governance (cooperation without coordination, self-organised and collaborative dynamics), within projects or organisations.
- Empower collaborative dynamics at a macro level. To enable a large number of smaller actors to co-operate as efficiently as large organisations, but much more flexibly.
- Empower collective intelligence: Propose idea-centric architecture instead of platform- or community-centrics ones.
- Empower collective action: making it easy for people & organizations to collaborate on projects. To do this we will work with communities that are structurally confronted with this problem and have become aware of the need to find a common architecture. These communities will help define, develop, improve and extend the initial implementation of the secure social web based on Linked Data and other standards emerging at the W3C.

Open hardware : Middle term objective… Network of distributed servers in collaboration with FreedomBox & Project Danube, which will allow sovereignty and privacy for network experience and the Internet of Things.

In the past, the FreedomBox has mostly been based on devices that are not considered open hardware, such as the Globalscale Dreamplug, Raspberry Pi,
or Cubietruck. However, FreedomBox potentially supports a wide variety of devices, and moving toward open hardware is a key objective and
actually already possible today. For example, open hardware that can be used for FreedomBox includes the Beaglebone Black and OLinuXino devices.
In the course of this CAPS proposal, efforts will be made to use such open hardware devices.

Crowdsourcing : Empowered by the techno-social architecture we propose.

Crowdfunding : One of our short-term projects : Crowdfunding platform based on LDP protocol allowing distributed crowdfunding in social and epistemic communities, without platforms.

User-driven, involving existing communities of people, and possibly addressing a combination of sustainability areas. 4 years of R&D with transdisciplinary team in collaboration with many communities involved in transition movement

Multidisciplinarity {>> more short information about groups needed below <<}

Wimmics (INRIA)

Wimmics has a built a strong mulidisciplinary team of experts putting together some of the best researches in reasoning and Linked Data working with User Interface Designers {>> thats the wrong word <<}, and tying this in with work in the new discipline of Philosophy of the Web.

University Siegen, WiNeMe/ITsec

Siegen specialises in the interaction between society and technology, with specialists with different scientific focus. The research groups
have been working in areas from CSCW, emergency services, social networks, secure production among others.

{>> jmore information about other groups needed below <<}

Assemblée Virtuelle

{>> Why do you mention here how many people you are? <<}

Collective with expertise in : Mathematics, physics, biology, hardware, software, data, economy, equity, prospective, politics, philosophy, local development, international development, sociology, psychology etc.
University Siegen WiNeMe has Psychologists, Sociologists etc.
among its staff.

Size

{>> Given their piloting nature, proposals are expected to be rather compact and small, even though projects including technology development and/or integration may require larger investments. <<}

Our proposal is mainly based on the development of the distributed techno social platform which is composed of Co-operating systems and PAIR-to-PAIR (layers 2 and 3) by working to fill the co-operationg needs of all the organisations implicated in this project.
{>> see

- the template
- the CAPS call
- The CAPS call is described in this which is the work programme
- the work program is stated in the Digital Agenda for Europe 2020
- the CAPS call itself
  <<}

1.2 Relation to Work Programme

The complex challenges posed by the multiple crises (environmental, social, economical) that we currently pass through, call for radical changes on our technology, its politics and its culture. The grassroots communities involved in this project are striving in genuine innovation, but unable to promote a peer learning and critique culture, as well as a cumulative learning on experiences conducted in the past or elsewhere. Fundamental knowledge resides in local and grassroots communities that needs to be shared in respect of its initiators. In this context interoperability resides in the possibility of exchanging information and knowledges respecting each community habits and formats.

Many of these non-technical grassroots communities, which gather around concepts such as degrowth, transition towns, food sovereignty, collaborative and solidarity economy do have platforms for sharing, collaborating and communicating. But they are atomised because of a lack of interoperability and common description of their knowledge (lacking the vocabularies or "ontologies" to do so). As a consequence, members of one community are often unable to share non-public data with people from other communities that they would actually like to, because either they share interests or they met together at some point in their lives.

The platform to be piloted by the communities in this project provides a valuable tool in linking data and people. It will be able to link projects, actors, resources, ideas and build bridges where no bridges were possible before. It will be able to combine expert and lay knowledge of academics, politicians and practitioners across disciplines and scales. This will expectedly lead to the emergence of substantial knowledge and innovation, mostly resulting from the new linkages established between the already existing communities' knowledge and experiences.

Indeed this process of empowering community participation is tackling very urgent issues often addressed under the umbrella of care, developing specific technological platforms empowers the associated communities, valorises their actions and therefore makes for an augmented agency and equity.

Through our approach of having a strong application development and deployment process anchored in community-based model of continuous integration and delivery, we expect to harness the dissemination potential of our consortium communities networks. In this context, the pilot platform being proposed with this project goes way beyond the simple development of a technological platform.

Privacy concerns and the idea of a Secure Distributed Social Web have been concerns of the consortium members and technological communities years before the Snowden revelations of mass surveillance and mass spying. Nevertheless, continuous reflection on the technological choices and development of the platform are essential. The diversity of partners and communities in the consortium is again a key feature in assuring the establishment of an ethic and praxis which is supportive of EU citizens legitimate concerns on privacy and data security.

The Digital Agenda presented by the European Commission forms one of the seven pillars of the Europe 2020 Strategy which sets objectives for the growth of the European Union by 2020. It comprise seven other pillars, including the following two which are especially relevant for this project:

- Pillar II: **Interoperability & Standards**

As its name indicates, Pillar II puts a great emphasis on interoperability between devices and applications so as to allow them to work throughout the world. The Internet is said to be the prime example of interoperability (just as the Web, we might add), one which should be emulated. Similarly, Co-Os aims to break silos both between social institutions and technological applications, and takes the Internet as a model. But we are also aware that both the Internet and the Web currently suffer from a dynamics of centralization that runs against the promotion of interoperability and standards. That is why this pillar is best served by the current effort by standard bodies such as the W3C to re-decentralize the Web, turning it into a giant read-write social network instead of scattered applications with undesirable consequances (fragmentation of identity, loss of control over data, loss of efficiency due to arbitrary boundaries between very similar applications, use of different formats, etc.).
Co-Os strongly resonates with the following four actions which constitute part of Pillar II:

- Action 21: Propose legislation on ICT interoperability
- Action 22: Promote standard-setting rules
- Action 23: Provide guidance on ICT standardisation and public procurement
- Action 24: Adopt a European Interoperability Strategy and Framework
- Pillar III: **Trust & Security analysis and data**

According to Pillar III, only few European web users feel completely safe making online transactions. Many threats harm the developement of the online economy. As a consequence, the Digital Agenda, has been including reinforced rules on personal data protection. Co-Os would represent a major step towards ensuring that such protection is available on the widest scale as it become part of the very fabric of the Web, in a standard way.
{>> template <<}

1.3 Concept and Approach

{++ Add a paragraph about the contents of the subheadlines, introducing the problematic why to write about Concept and Approach. ++}

1.3.1 : Fostering the development of new social structures through peer to peer approaches (Layer 5)

The top layer, the social layer consisting of Actors that are confronted with real world problems that they need to solve, leading them to come up with Ideas, which leads to Projects that require Resources to accomplish. These 4 elements we call PAIRs. The aim is to foster the development of peer to peer / distributed social networks through a combinatorial approach between Projects, Actors, Ideas and Resources (PAIRs).

The PAIR to PAIR model allows such dynamics changing fundamentally the social structures on which are based our societies. Leaving from fragmented and competitive structures to distributed and collaborative ones.

1.3.2.1 Simplexity, interoperability and "trans-" properties PAIR to PAIR is a "simplex" model as it's both simple and complex. It is based on 4 concepts only, but can expressvery complex interactions, everything potentially falls under the categories Project, Actor, Idea or Resource. What matters is not the "thing" itself but the role it has in relation to the others "things". As a consequence many different communities, involved in many various fields, from housing to transportation, education to energy or health, can use the same model in order to work together. As such PAIR to PAIR model brings interoperability and collaborative opportunities between communities, enabling transdisciplinary & cross-organisational approaches.

1.3.2.2 : PAIR to PAIR model to foster collaborative dynamics. We explain below some interactions and services that can be fostered through the PAIR to PAIR model.

With some abbreviations : x : "Several" ; P (upper case) : "Project" ; A : "Actor" ; I : "Idea" ; R : "Resource" ; PAIR : "Project, actor, Idea and Eesource" ; p (lower case) : Sub-project

- **Collective Action (xA -> P) : x Actors around a Project.**
  Organisations use to enshrine their projects. In the PAIR to PAIR approach, projects can be autonomous. Around a project, an ecosystem of actors can be federated.
- **Mutualisation (xA -> xR -> P) : x Actors mutualising their Resources around a project**
  Each actor has Ressources. They bring these resources to their projects. In the PAIR to PAIR approach, they bring these resources to collaborative projects. Around a Project, an ecosystem of actors mutualise their resources.
- **Collective Intelligence (xA -> xI -> P) : x Actors sharing their Ideas around a project**
  Each actor has Ideas. They use to bring these Ideas to their projects. In the PAIR to PAIR approach, they bring these Ideas to collaborative projects. Around a Project, an ecosystem of actors share their Ideas to develop a Web of Trust.
- **Collaborative dynamics (P <- xPAIR) : A project with its ecosystem of Projects, Actors, Ideas and Resources.**
  A project has an ecosystem of Projects, Actors, Ideas and Resources. The PAIR to PAIR model is fractal. It can be used at a macro level and/or at a micro level.
- **Task manager (P -> xp) : A Project (P) can be defined as a system of sub-projects (p) :**
  For example : Build collaboratively the vision ; Develop a web application ; build communication tools ; Find financial resources. Around Project, an ecosystem of sub-projects needs to be achieved.
- **Collaborative task manager (p <- xA) : An ecosystem of actors around each sub-project.**
  Around the project "Build collaboratively the vision", the actors who are interested in can work together. Around the project "Develop a web application", the actors who are interested in, and have ressources/skills in Web development, can work together.

- **Collaborative management (p <- xPAIR) : An ecosystem of PAIRs around each sub-project**
  A sub-project as "Find financial resources" has its own ecosystem of Projects, Actors, Ideas and Resources. Each one of them can be brought by different actors of the ecosystem.

- **Task manager (P <- xp <- xPAIR) A sub-project can have its own ecosystem of PAIRs**
  For example : The sub-project "Develop a web application" has its own ecosystem of Projects ("develop the backend", "develop the user interfaces", "develop the database"), Actors (Henry, Inria/Fabien, Inria/Alain, Sylvain, etc.), Ideas (how we could do things, how we could use a given framework, etc.) and Resources (wikis, frameworks, libraries, servers etc.).

These are only some of the relations allowed by the PAIR to PAIR model.

Examples

OuiShare More than an organization, OuiShare represents an epistemic community federating people interested in "collaborative economy". OuiShare brings together many actors, ideas, projects and resources from all over the world around a signgle goal: collaborating to foster innovations and generate value. This approach is self-reinforcing in the sense that it enables collaborations across different Actors, allowing them to share and put together their Resources in order to develop new Ideas and Projects related to the collaborative economy.

Ways of transition Ways of transition is a project conceived by the Virtual Assembly community. Virtual Assembly could have considered Ways of trnasition as its own project but this would have led to many issues:

1- We are already focused on another big project and cannot disperse our energy.
2- We don't have the required skills and experience for such a project.
3- Some other organisations are working on similar projects.

Virtual Assembly decided to treat Ways of Transition as an autonomous project and to invite those who would like want to collaborate to its development thus federating their PAIRs.

{>> Examples below still need PAIRfication <<}

GROWL GROWL is an EU funded strategic partnership dedicated to adult education, designed to //// a network of trainers for degrowth, in order to respond to the multi-dimensional crises (economic, social, ecological, human) that currently confront Europe. Academics, grassroots practitioners and activists, among others, come together offline and online from a pluralistic background and bring diverse skills to foster knowledge exchange, to raise awareness and advance knowledge to support a major transition towards a more sustainable and fulfilling society.

Expertise from the partner institutions is brought together with the growing community of trainers and learners on degrowth. The latter constitute a *de facto* online community of practice dedicated to economy and sustainability. Based on the logic of commons-based peer production, the participants (Actors) can share the experiences generated through their Projects (on research, education,

etc.), contribute to the production of educational Resources or share infrastructure-related Resources, as well as discuss new Ideas in the form of thematic modules and training methodologies.

Group-Assembly Process (GAP) The basic idea of the Group Assembly Process is that people with some experience – be it practical or theoretical – in the field of degrowth gather in working groups to map and collectively decide on proposals for addressing the societal challenges associated with the economic limits to growth. The participants have several sessions, switching between plenary and small groups, to identify commonalities and differences. The preparation and debates may start ahead of the event itself, online, among participants registered to the events, and be fueled by the exchange of short "stirring papers". Proposals (Ideas) are mapped by the different groups (both offline and online) to support the bridging, engagement and alignment of Actors and their Resources in collective Projects.

GAP configures an experiment of new forms of collective thinking and consensus formation. It has been recurrently used at the international degrowth conferences and other events in the degrowth community, scaling up to 600 participants in a single GAP event.

1.3.2 : Contribute to make the entire web become one open and distributed social network

Layers 4, 3, 2 & 1

Distributed digital network using Linked Data are the most promising way to resolve the problems we face when we navigate on the Internet. We call this perspective the "Secure Social Web". The "Co-operating systems" stack is a way to build it concretely with the feedback gatehred from grassroots users who experiment the limits of the current centralised system on a daily basis.

- **Note bene**

Every web platforms or applications are a combination of 4 components : hardware (Layer 1), a backend (the server - Layer 2) a database (layer 3) and a frontend (user interfaces - Layer 4).

Below is an explanation of how a new architecture for web platforms and applications can be fostered using W3C standards at layers 2, 3 and 4, and how the whole stack fits together.

Layer 4 : The User Interface Layer Human actors who interact with machine-readable data need to do this via beautifully written user interfaces equivalent or better in quality than those that have been developed in the most successfull applications on the web currently, such as GMail, Facebook, Trello, etc. Actually, these Web Applications are built on a very simple pattern:

1. A client requests a web page from a server (e.g. http://gmail.com/)
2. This page returns HTML with a lot of JavaScript
3. The JavaScript fetches a lot of data on the server in the JSON format
4. This JSON format is used in order to build up the interface and fetch more data in JSON format

One main difference with our proposed approach to building a user interface is that instead of fetching simple JSON, our clients will be fetching JSON-LD, a variant of JSON that has an interpretation in RDF.

This means that data can be then represented as a graph of relations, with those relations identified by URIs, and the subjects and objects too when it makes sense. As a result, the JavaScript client can now fetch data from any server (usually by going through a proxy to overcome current HTTP limitiations on what JavaScript clients can do) and store it in a local graph store. This graph store can then be used to build dynamically interactive applications that can give different views on the world, by merging different graphs as requested by user interactions.

RDF is designed to make merging information extreemly easy, which is key to allowing the client to fetch graphs from one part of the web and merge then to graphs taken from another part of the web. This may of course lead to contradictions, as people don't always agree on everything! One person may describe some particular object as being at some location, and another may describe the same object as being at another location. The user interface could notice such a contradiction and if important to the task, give the user a number of options to correct it.

For example:

- the user could decide which was correct, and try to send a message to the owner of the erroneous graph to ask her to update the information.
- or the user could ignore the contradiction as it does not affect her work, removing a mininal part of the graphs leading to the contradiction from the union of both graphs.
- or the user could try to patch the ontology which states that one object can not be in two places simultaneously

The user interface designed for a distributed Social Web needs to take this potential for contradictions in the graphs of relations into account and allow users to find outat any time *where* a relation was expressed, *by whome* and *when* it was found.

This new type of interface that allows us to explore possible interpretations of graphs will, as it spreads, bring everybody into contact with the always present subjectivity of information. As such, we hope to move definitively away from the piramidal society where one authority is deemed to possess the ultimate truth to one in which everybody understands in their daily experience that they only have partial and provisional knowledge of the world.

LDP W3C protocol allows distributed interactions between autonomous servers at layer 2. At layer 3, Linked data and ontologies (agreements on a common data format and structure) allows communication between applications situated at layer 4.
The combination of the technologies used at layers 2, 3 and 4 enables a distributed, secure and social web, wherein an ecosystem of interoperable web platforms and applications can communicate and cooperate. Enabling what we can call a "platform cooperativism".

Layer 3: The Linked Data Layer In order to interconnect PAIRs on the web we need a way to write relations that can cross organisational boundaries.
Hence we need the equivalent of hypertext for data, allowing each website to publish information about the Actors that comprise it, the projects that they are working on, the Ideas they have

come up with and the Resources that they have at their disposal so as to link those with PAIRs published by other organisations.

This hyper-data - also known as Linked (Open) Data - has been developed at the World Wide Web Consortium in a co-operative way by institutions and individuals world wide, under the general heading of the Semantic Web.

The core of the Semantic Web is the Resource Description Framework (RDF), which is very simply a formal way to represent relations between entities identifued by URIs in the form of graphs. Traditional Relational stores such as spreadsheets, or relational databases such as MySql or Oracle, tend to make very heavy use of identifiers that are local to the store itself.
For example, most Tables in databases will number their employes with numbers starting from 1 for the Founder, incrementing the number for each successive employee, so that a table will contain data like the following:

ID	Name	Birth date
1	Andy Bechtolsheim	30/09/1955
2	Bill Joy	08/09/1954

These tablular data represent 4 relations in the real world which can be represented like this:

```
<1> -- Name --> "Andy Bechtolsheim"
<1> -- Birth date --> "30/09/1955"
<2> -- Name --> "Bill Joy"
<2> -- Birth date --> "08/09/1954"
```

But that the numeral “1” names Bill Joy is only true in *this particular* table. And indeed in the same company in another table the numeral “1” can name another completely different entity - including sometimes the number 1 itself.

What RDF does is just to make the naming of entities and relations explicit by using the core concept of the Web: the Universal Resource Identifier (URI) of which URLs are a subcategory of derefereceable URIs, meaning that those will give access to online content about the entity identified by the URI, mainly through the HTTP protocol. The meaning of such an identifier can simply be found by a quick lookup on the web, this interaction providing content about the entity identified. These entities can of cours be real-world ones like TIm Berners-Lee in the example below:

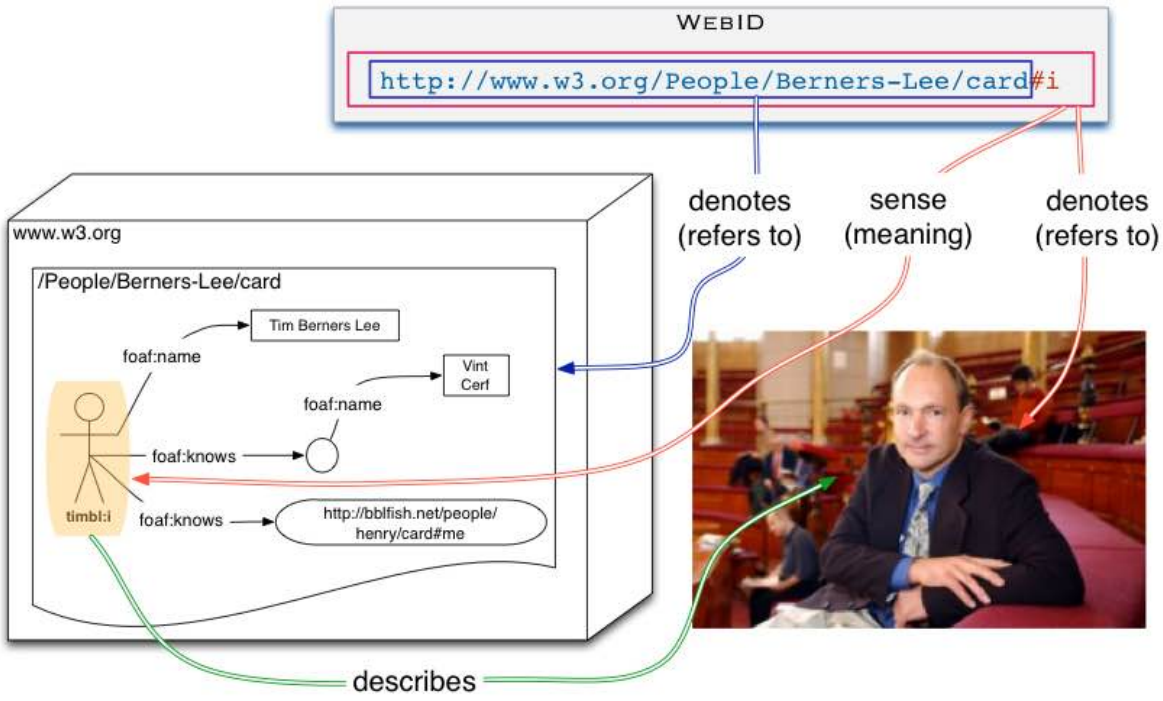


Figure # : Tim Berners Lee's WebID

In words: the URL "http://www.w3.org/People/Berners-Lee/card#i" refers to Tim Berners Lee, the man, director of the W3C, because the document http://www.w3.org/People/Berners-Lee/card describes http://www.w3.org/People/Berners-Lee/card#i as the person whose name is "Tim Berners Lee" and who knows a person named "Vint Cerf" (usually such documents contain more identifying information than this, of course, such as links to photos, titles, e-mail addresses, etc.).

The same technique allows the creation of self describing names (URIs are names), ie, Internet words that point to their definitions in a global information space. So even though the above URL of Tim Berners Lee is not one any human would want to read or write, it creates a global identifier for him that software agents can easily process.

With this he can then describe himself and his relation to other people.
For example he can write the following two relations:

```
<http://www.w3.org/People/Berners-Lee/card#i> <http://xmlns.com/foaf/0.1/name> "Tim Berners
<http://www.w3.org/People/Berners-Lee/card#i> <http://xmlns.com/foaf/0.1/knows> <http://bb
```

and publish it in on the W3C server, thereby linking himself to someone else by the foaf:knows relation to someone else via a URI whose meaning is defined on another server, located potentially in another country and run by a different organisation.

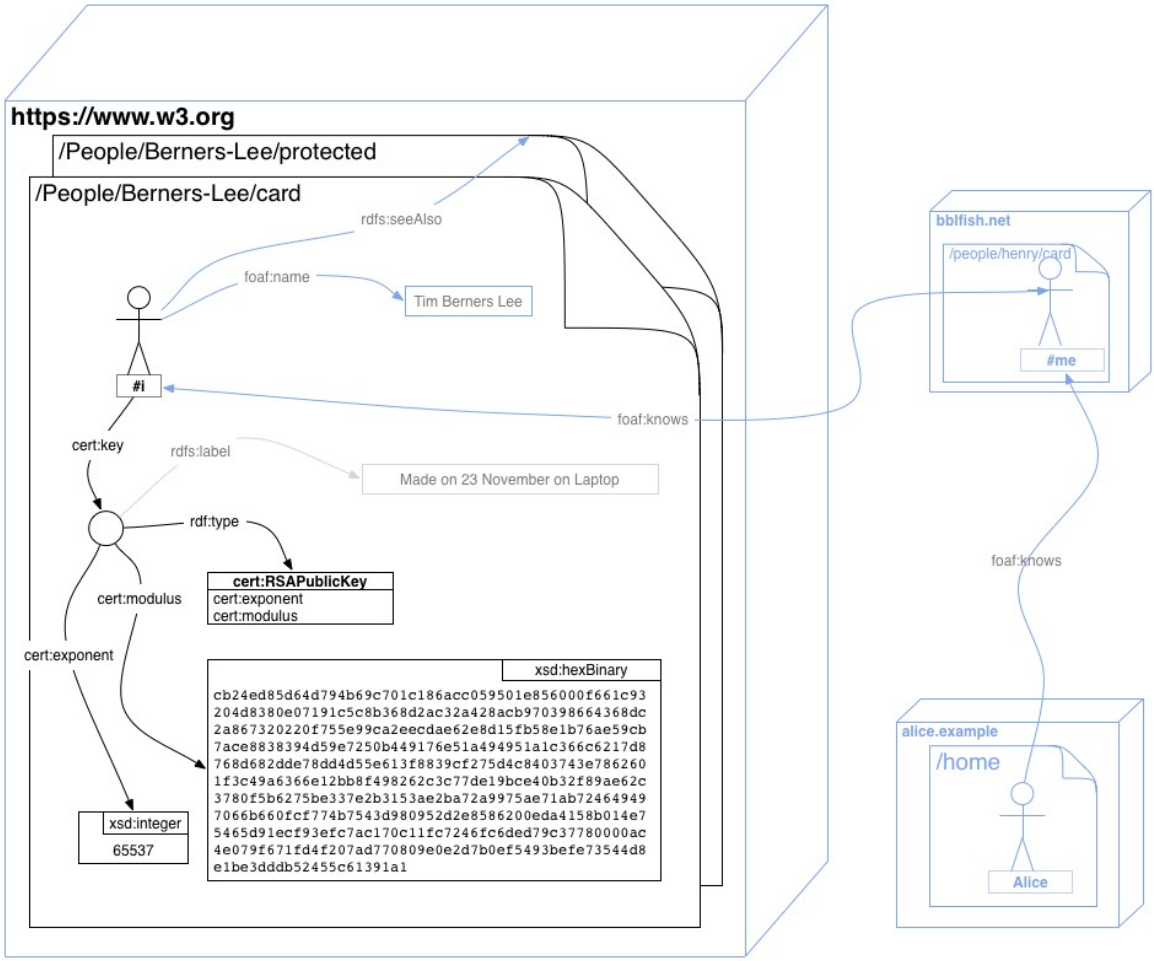


Figure # : Tim Berners Lee's Publication

With this short introduction it should be clear that building a distributed Social Web using Linked Data is now relatively easy. Indeed the exponential growth of the Linked Open Data Cloud is an existential proof of the feasability of a much more widely deployed approach.

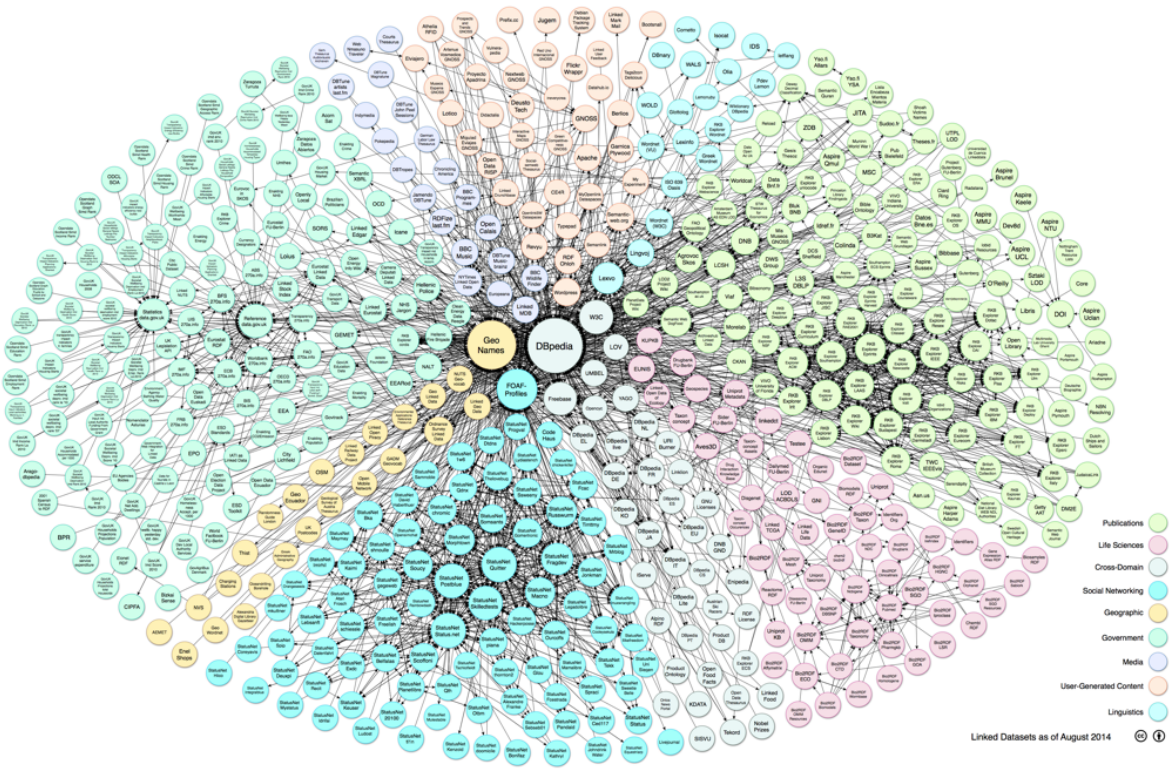


Figure: Linked Open Data Cloud datasets on `datahub.io`

Further Linked Data Examples:

- New York Times - Linked Open Data
- BBC - Connecting together the BBC's Online Content, Ontologies
- Linked Data related CAPS projects
  - d-cent project - decentralised social networking platform for large-scale collaboration and decision-making in the context of direct democracy and economic empowerment.
  - Digital Social Innovation - a network of organisations that use the Internet for the social good
- a selection of EU funded projects by FP7, H2020 and other programmes:
  - ALIGNED - Software and Data Engineering
  - CODE - Comercially Empowered Linked Open Data Ecosystems in Research
  - DaPaaS - A data-and-platform-as-a-service approach to efficient open data publication and consumption
  - DOPA - source and data platform for economic and financial information in Europe
  - EUCASES - Linking Legal Open Data in Europe
  - EUCLID - EdUcational Curriculum for the usage of Linked Data
  - Europeana - Linked Open Data
  - FREME - open framework of e-services for multilingual and semantic enrichment of digital content
  - GeoKnow - Geospatial Data and the Semantic Web

  - LinkedUp - Linking Web Data for Education
  - OpenCube - Publishing and Enriching Linked Open Statistical Data for the Development of Data Analytics and Enhanced Visualization Services
  - PRELIDA - Preserving Linked Data
- Meta Projects
  - LOD cloud diagram - The Linking Open Data cloud diagram
  - LOD2 - Creating Knowledge out of Interlinked Data
  - OpenAIRE - central Horizon 2020 Linked Open Data repository
  - Planet Data - a European network of excellence on large-scale data management

Layer 2: The Data Server Layer The core technologies and standards are the same as in the Linked Open Data Cloud which is still growing exponentially. It has been widely adopted by the BBC for instance to help enrich their content on their website. This provides a remarkable example in publishing and linking public data best practices.

However, implementations of distributed social networking based on Linked Data standards require other features, which the Linked Open Data Cloud cannot provide:

- publishing confidential data
- allowing much deeper interactions between agents and things (*writing* relations as much as reading them) - this has been now standarised by the Linked Data Platform Working Group at the W3C
- good user interfaces to intermediate between humans and this new form of writing (the point being to write data or relations instead of traditional text).

In order to publish confidential data, or to limit who can edit a document on the Internet, three things are needed:

- Global Identity for the Web: this is provided by WebID - Identity and Discovery as shown above for Tim Berners Lee.
- Efficient Global Distributed Authentication: a number of protocols such as OpenID, OAuth exist but these can be complemented by the very efficient WebID over TLS protocol that transforms client side authentication built into the `https` protocol and available in all browsers
- A way for web applications to know when data is in fact publishable or not to their user so that they can give the option to edit the data or not.

A number of us have adopted a very simple publishing pattern named Web Access Control to enable this.

These problems have been all worked on over the past 6 years by the WebID Incubator Group at the W3C, with numerous implementations in many programming languages.
As a result of this work we have a few implementations of a simple extension of HTTP that allows each resource to describe what Actor or group of Actors can have access to a resource. This will make it possible to move from a medieval fortress metaphor of **fire walls**, to protect companies, to a much more flexible resource-centric ability to set access controls per individual content.

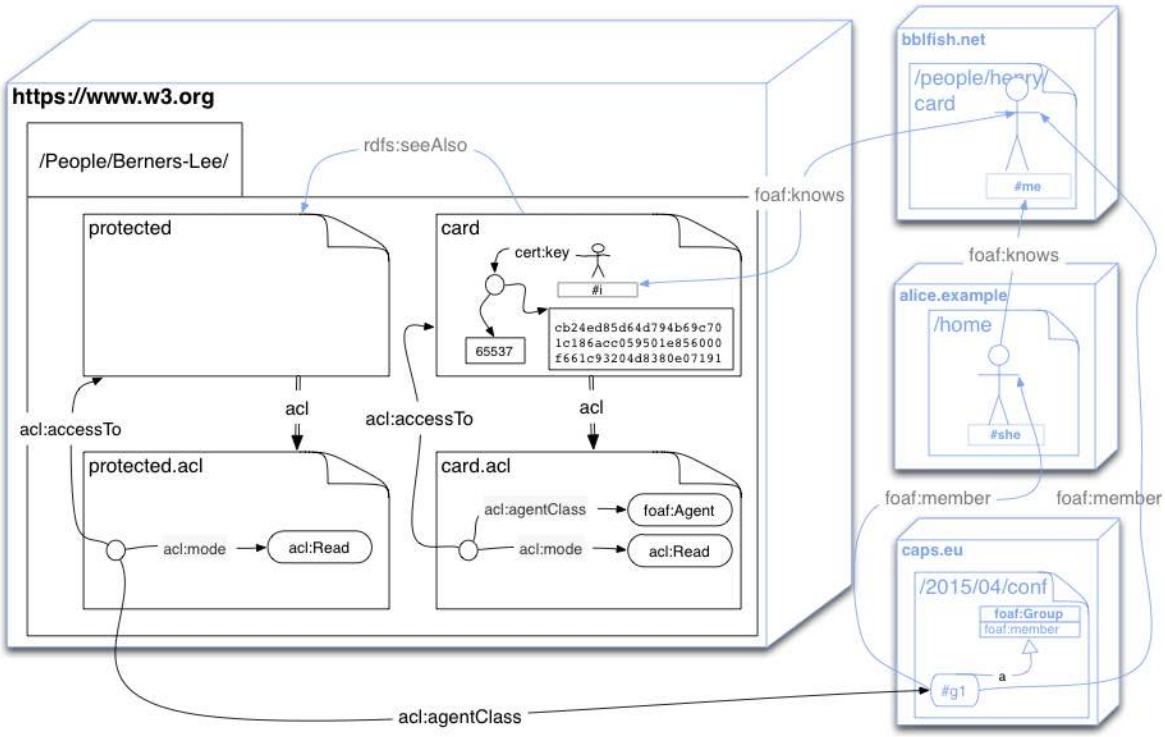


Figure # : Web Access Control

As seen in this diagram each resource contains a linked in the HTTP headers (represented by the thick double arrows) to an Access Control document describing who can have access in what modes (read and/or write) to the original resource.
This allows the enhanced Web Server that understands such rules to enable very simple but very flexible access control to resources.
For example a web server can limit access in read mode to groups such as friends of friends of a user.
It can also limit access in read/write mode to a group determined by another organisation.

In the above diagram Tim Beners Lee's profile `card` is determined by the linked `card.acl` resoure to be publicly accessible. On the other hand, the protected resource `protected` is determined by the linked acl to be readable only to a group determined to have attended a CAPS meeting and located on the `https://caps.eu/` server. This server uses the identity provided by those attending the meeting which is located on their home server or company. The advantage of this procedure that if one of them chooses to change information, like their e-mail address, or if they lose their public key, they can easily edit the profile document on their own server and thereby regain access to all the protected resource they previously had access to.
This reveals just the tip of the iceberg of what is possible.

Open Hardware & Operating System (Layer 1) The ideals and objectives of this proposal must be built into all layers of the system architecture. On the lowest level - hardware
and operating system - this means using open source hardware and software. The advantages of "open source" are well known: It allows
anyone to inspect and review the system, to find bugs, to uncover hidden (possibly malicious) functionality, and to improve a system.

On the hardware level, the web platform may be deployed in various ways. For example, traditional rented servers, data centers, or cloud
services may be used to deploy the software. In order to support the vision of a fully distributed social network, ideally "personal
servers" such as the FreedomBox should be used. The goal of the FreedomBox is to create a personal server that is a easy to deploy and
use as possible. It contains various functionality for a more private and decentralized Internet. A Linked Data Server will be available
on the FreedomBox, in order to allow anyone to become a part of the Distributed Social Network based on Linked Data. This enables a true
network of distributed servers on all layers.

The FreedomBox is based on the popular Linux Debian distribution, which has a strong reputation for online freedom and supporting open source
software. Debian packages for a Linked Data Server will be created and maintained as needed.

The underlying hardware of the FreedomBox allows many choices. Open source hardware such as Beaglebone Black and OLinuXino devices are preferred,
in order to enjoy the benefits of "open source" at all layers of the architecture.

1.3.3 Connect both technological & social innovations to serve grassroots projects and communities (Layers 2, 3, 4 & 5)

{++ Summary of below ++}

1.3.3.1 : Challenges {++ Summary of below ++}

Co-Operating system technological stack Technological innovation is not useful if it doesn't adress ecological, philosophical, spiritual, social or economical issues. Furthermore, technological innovation can't be largely adopted if it doesn't adress real-world needs. The specificity of the technological innovation we are developping is that it adress many problems which everybody who uses Internet is facing. However, we will spread it much more widely if we manage to adress specific needs of existing communities.

PAIR to PAIR model A model for social innovation such as PAIR to PAIR needs to be empowered by tailored digital technology if we want to fully increase its potential. As we mentioned in the introduction, "in a world that requires urgent solutions to systemic problems, we must create the processes that could cause the emergence and development of collective intelligence and action. Such processes require deep cooperations. They touch on both society and technology. Indeed, social and technological infrastructures are intertwined. One cannot use one without the other anymore."

Grassroot projects and communities We believe future is already there, as a potential, as a virtuality, through the exponential growth of Actors, Ideas, Projects and Resources working together in order to disclose more sustanaible and peaceful ways of life, at both micro & macro

levels. Organisation is missing. As Edgar Morin (main founder of the complex system theory) said :
The choice […] is in mourning or in looking for a method that can articulate what is separate and connect what is disjointed. […] Today, our historical need is to find a method that detects […] links, articulations, solidarities, implications, intrications, interdependencies, complexities." (Edgar Morin, La Méthode, Tome 1, La nature de la nature (1977)). The transition movement needs strong methods and tools to scale-up and build a global bottom-up movement to transform our societies.

1.3.3.2 : Building complex social systems with linked data technologies Complex approaches and linked data technologies have a common root. Etymologically, complexity means "which is woven together" ; Linked datas technologies enable weaving social innovations networks of Projects, Actors, Ideas and Resources involved in transition dynamic together, in a distributed way.

How can we do that :
As shown in the ["Figure 1"], each layer interacts with the one beneath it. Below is an explanation of how the whole stack fits together.

PAIR to PAIR model is a social innovation at layer 5. It can be autonomous. If we want to use it to build a distributed, self-organised and collaborative digital/social network of PAIRs, we need to :

- Build a PAIR to PAIR ontology at layer 3, using linked datas standard formats and existing ontologies,
- Format and structure datas according to the PAIR to PAIR approach. This will enable communities communicate and collaborate through a common language.
- Propose to programmers communities to developp applications (layer 4) through this data format and structure.
- Invite programmers communities to use LDP protocol at layer 2 (data server layer) to build distributed, secure, semantic and social network applications at layer 4.

Such process is already moving forward. With two main consequences :

- Development of an ecosystem of interoperable and co-operating systems.
- Development of a distributed, self-organised and collaborative ecosystem of PAIRs, enabling easyand fluid cooperations beyond organisational silos and digital ones.

Positioning

{>>

- Describe the positioning of the project e.g. where it is situated in the spectrum from 'idea to application', or from 'lab to market'. Refer to Technology Readiness Levels where relevant. (See General Annex G of the work programme);
  <<}

Lab to Market

Linked Research

{>>

- Describe any national or international research and innovation activities which will be linked with the project, especially where the outputs from these will feed into the project;
<<}

The current proposal builds on some very solid foundations that fall under the Semantic Web projects at the W3C. The success of the Linked Open Data projects a large number of which have been sponsored by the European Union, has brought a lot of knowledge which we will be able to make good use of. By using the recently released Linked Data Platform which forms the basis for a read-write-web, and by complementing that with WebID based Authentiction and Authorization we are at the bleeding edge of the standardisation process at the W3C. We are also contributing to the Social Web WG and will be able to use the work done here to tap into the standards being developed there where relevant.

In the manner in which we are assembling the backend and frontend platform, we are working along the same lines as Tim Berner's Lee's Distributed Information Group at MIT, and we have been working closely with him and members of that group, using some of their client side RDF libraries such as rdflib.js for example. But we are going further here by using the Scala programming language developed by Martin Odersky at EPFL in Switzerland, that is coming up with some of the best libraries for writing Scalable code. One of their recent research projects has lead to Scala-JS, an addon to the compiler allowing Scala code to be compiled to JavaScript that will reduce the duplication and errors in our code base. This open source project has been immensely successful, being adopted in Silicon valley by such behemoths as Twitter, LinkedIn and many others.

Approach and Methodology

{>>

- Describe and explain the overall approach and methodology, distinguishing, as appropriate, activities indicated in the relevant section of the work programme, e.g. for research, demonstration, piloting, first market replication, etc;
<<}

Our aim of creating a global social Web platform, with no central point of control, which everyone can implement and participate in, sets a number of very strong architectural constraints which guide the appraoch and methodology that we use.

It requires us to look technologically at platforms that can scale globally and that are peer to peer. The web though not always considered this way, is architecturally designed for peer to peer communication: each computer in the network acts as a peer that can communicate with every other computer on the network.

It requires us to build on completely patent free open standards since otherwise we would be building a control point into the system which would then certainly be abused. In order to increase

trust to the maximum, the code that we build has to be open source, and inspectable by everyone. This should also allow the growth of the communication platform as others will be able to take us in example and emulate it.

The social transformation that we hope to create starts then right at the standardisation and coding layer, where we have been working with distributed communities, building on software libraries built by others, and allowing us to go much further than we could have done in a traditionally hierarchically organised system. Where open source is traditionally religious about openess, we are building a system that will allow privacy and confidentiality. This is essential if we wish to allow forms of life to emerge that may develop new concepts which would otherwise be misunderstood in the wider world. The semantic web decontextualises information to the maximum, but even when that is done, context always remains: be it that someone is speaking from within a fantasy context, is making a joke or just wishes to share something with a few friends.

Because the project is so big in scope it has to work from a bottom up approach starting with very simple applications that carefully fit the distributed architecture, testing them out through actual use, and then, when these are deemed good enough, adding the next layer of applications. HAving a simple a simple applications allows one to recognise problems early on, and to confront them while they remain tractable. But these distributed problems can only be discovered in a distributed context, which is why we are assembling a large number of non-centralised communities that need to work in a flexible context, and that therefore feel the pain of the current state of the art. By deploying our servers across a number of such communities we will be able to have a very good handle on what needs to be done.

Gender and Diversity

The complex challenges posed by the multiple crises (environmental, social, economical) that we currently pass through, call for radical changes on our technology, its politics and its culture. The grassroots communities involved in this project are striving in genuine innovation, but unable to promote a peer learning and critique culture, as well as a cumulative learning on experiences conducted in the past or elsewhere. An important knowledge resides in local and grassroots communities which needs to be shared in respect of its initiators. In this context interoperability resides in the possibility of exchanging information and knowledge respecting each community habits and format.

Many of these non-technical grassroots communities, which gather around concepts such as degrowth, transition towns, food sovereignty, collaborative and solidarity economy do have platforms for sharing, collaborating and communicating. But they are atomised because of lack of interoperability and common ontologies. As a consequence, members of one community are often unable to share non-public data with people from other communities that they would actually like to, because either they share interests, or they met together at some point in life.
Their direct participation allows to immediately tackle critical issues such as the gender gap in the technological scene.

By leveraging on effective knowledge from communities including the long history of women communities, the project addresses crucial issues of gender diversity and finds appropriate tools to resolve them.

The platform to be piloted by the communities in this project provides a valuable tool in linking data and people. It will be able to link projects, actors, resources and ideas and to build bridges

where no bridges were possible before. It will be able to combine expert and lay knowledge of academics, politicians and practitioners across disciplines and scales. This will expectedly lead to the emergence of substantial knowledge and innovation, mostly resulting from the new linkages established between the already existing communities knowledge and experiences.
Indeed this process of empowering community participation is tackling very urgent issues often addressed under the umbrella of care, developing specific technological platforms, allows means to the associated communities, valorises their actions and therefore makes for an augmented agency and equity.

{== template ==}

1.4 Ambition

{>>

- Describe the advance your proposal would provide beyond the state-of-the-art, and the extent the proposed work is ambitious. Your answer could refer to the ground-breaking nature of the objectives, concepts involved, issues and problems to be addressed, and approaches and methods to be used.
- Describe the innovation potential which the proposal represents. Where relevant, refer to products and services already available on the market. Please refer to the results of any patent search carried out.
  <<}

Building a Secure Distributed Social Web has been a concern of the consortium members years before the Snowden revelations of mass surveillance and mass spying. The development of WebId and the read-write-web concept based on the Linked Data Protocol (LDP) are only the most recent results of this work. The architecture of the web was successful because it was based on distributed principles, allowing millions of new sites to appear in uncoordinated ways, and yet allowing each of them to connect up after the fact. This enabled exponential growth, and catapulted humanity out of the centralised television age of passive information consumption into one of information abundance. The growth of applications for blogging and social interaction made it easy for individuals to contribute and share information in the world wide web. But a number of technical, social and business obstacles remained that stalled the continuous growth of the global information sphere. Instead of an intervowen network connecting distributed individuals, huge centralised social network spaces emerged at the end of the first decade of the new millenium.

By building on various standards and technological leaps of the past 20 years, we aim to turn back the tide on this process and go further, by enabling much deeper co-operation between actors than is possible within the current architecture of the web. We aim to create a web of data and applications linking all the actors of civil society, thereby enabling and speeding up what Jeremy Rifkin named the Third Industrial Revolution - the revolution that will enable small companies, associations, educational institutions to organise dynamically and efficiently without losing their autonomy or control over their data. {>> Co-operations par PAIR <<} By creating an interorganisational web we hope to create a space where organisations can link outwards to other organisations much more strongly, thereby making them more aware of externalities and transitioning society into an ecologically aware space.

Much of this was the aim of what is now known as the Web 2.0. But by failing to build on a distributed data architecture, the current systems have led to a fragmentation of data and user identities across silos, making co-operative work much more difficult than it should be whenever tools that go beyond the needs of the lowest common denominator are required. The use case of OuiShare that we described in section {>> xxx <<} is a case in point: as a light-weight organisation that cannot require uniformity of tools from their partners spread across Europe, they have diagnosed that they need around 60 tools that fall in 13 categories, each tool storing data in a silo. Our work on creating standardised, distributed interfaces and a plugin architecture should make it possible to build applications that can use data wherever it is, and allow the data to be linked in such a way that each partner in a project can contribute to the area it understands best.

We aim to test deployments of this platform on small personal servers such as the Freedom Box which could then be the hub of the intelligent house of the future. By tying the Internet of Things (IoT) into the Web of Things, devices will be able to write data to the Freedom Box. This data could then be published to other agents with access control restrictions using the Linked Data Platform. This would allow different devices in the house to use information generated by other devices, in a privacy-friendly IoT world.
We then plan to present this system to hacker communities familiar with the web of things to let them develop further applications.
Further potential use cases would be to enable cryptographic house door keys, allowing people away on travel to give access to friends who could use their own crypto key to open the door. This would be one other way to enhance the sharing economy towards which we are moving.

The feasibility of our approach will be tested by developing and deploying applications for and with grassroots communities that strive to improve participation and development in ecological, social and technical fields.

1.4.1 : Pushing state-of-the-art business

{++ Add a paragraph here subsuming all the paragraphs below in this level. ++}

Centralised business structures are in parallel with centralised web infrastructures. With Linked Data a whole new dimension of facilitating innovative trade and business practises is opening up to decentralise business from one peer to the other, especially when it comes to the small players who don´t have the necessary skills and financial means to access the market place in a free market like competitive way. Here we will be aiming to evaluate, research and build a common business ground for not only facilitating trade between the different market players, but also to offer an experimental testbed for alternative currencies, payment systems, barter exchange and other collaborative economy needs that we have already identified as business necessities within the various local, regional and global grassroots communities.

A Linked Data accounting research As an example for this research are, we will be using the idea of Sir Tim Berners-Lee running all his accounting in Linked Data. Different accounts, be it in book keeping terms or in other ways of payment accounts can have one unique identifier as is explained in the technical section of the proposal. By giving web access to such data, financial authorities and business partners within distribution chains would have direct access to the information that matters to the mutual business. To address policy making in this context,

in the dissemination process reports will be created with which suggestions on the use of Linked Data can be put forward to the according authorities.

Collaborative Business Model Developement In our dissemination Work Package we are planning to integrate a creative collaboration process between the {++ Industry Partners ++} and the {++ Community Partners ++} in exchanging knowledge and expertise to develop sustainable business models for local communities with eco solutions, non profit eco businesses and other small entities like local farmers or private tourism (e.g. accomodation) services lack the know-how to make the first steps towards eco-friendly business models. The Copenhagen Business School with a European Co-Business Network will provide the necessary skills to find business solutions charities and non profit organisations who are looking for new ways to generate money for their projects without having to transform themselves into corporate identities. Policy making in this case will be addressed by promoting business forms like the CIC (Company Interest Company) in the UK to be considered for european wide adoption into existing economic and business regulations.

Social Layer {++
We could consider we don't invent anything… Collaboration mechanisms exist for billions of years …
++}

What brings the PAIR to PAIR model, is:

Social Layer

The PAIR to PAIR model, described in Section xxx, provides :

- An easy and fluid formalisation of collaborative dynamics processes.
- An interoperable structure allowing for transdisciplinary & cross-fields approaches.
- A conceptualization of social structures and organisational silos, inspired by our understanding and experience of the web.
- An operationalisation of complex systems theories and the principles of evolution dynamics.
- An adaptation of peer to peer approaches to the social field.
- A connection with strong and adapted technologies.

1.4.2 : Innovation potential

As many others, we have a dream. Our dream is that the PAIR to PAIR approach help us move towards much more distributed, self-organised, collaborative, flexible, democratic, efficient, and fair social structures and dynamics. Our dream is that this approach help the transition movement to organize better and therefore scale up to become a global massive ecosystem of small autonomous-yet-linked PAIRs which follow stigmergic dynamics and build new models of society.

{>> Other things that go beyond the state of the art:

- Add subjective user interfaces – http://blog.sindice.com/2009/07/22/sigma-live-views-on-the-web-of-da
  https://blogs.oracle.com/bblfish/entry/beatnik_change_your_mind
  <<}
  {>>
- template
- the short work program
- the CAPS call itself
  <<}

2 Impact

2.1 Expected Impact

From autonomous and grassroots political movements, to transition initiatives or the broad range of "nowtopias" (Carlsson and Manning, 2010), learning and innovation seems to be taking place at a pace never seen before. However, such projects are often too loose and disperse to be able to significantly develop learning processes and promote civic engagement in complex political issues. Open access and open knowledge creation communities can provide a strong potential in bridging and removing the gap between the different forms of "expertise" that are transversal in the discourses and practices of these communities (Baptista, 2014).

The expected impact of the proposal is to start a process which as it grows makes it easier and easier to bridge organisations and individuals, allowing them to co-operate in a just in time manner. That is it should allow actors to network, share resources, easily work together on projects that span organisations, and as a result of that come up with new ideas that may spur new projects between yet other individuals and organisations. It should be easy for new actors to participate in any manner at any time in any project to which they can gain access, and it should spur interaction across nations and across language barriers. As a result innovative ideas that may not have been able to grow for lack of resources internal to an organisation may find a new life between organisations, creating a structure to deal with externalities. It should do this without organisations needing to give up their culture, but rather by creating a new trans-organisational culture. The bigger the web of relations becomes the stronger the network of co-operating systems will become, leading hopefully a bottom up knitting together of European cultures, that allows local differences to flourish and enrich the collective being, whilst allowing them to work together more effectively.

The difficulty of launching this type of endeavor is one of bootstrapping the system. Since the value of a network is a function of its size, the initial launching phase can be very difficult, as the value of joining can only be seen by those who believe above all else in the values of open systems. Extending the development patterns of open-source projects to non-technical communities and knowledge production processes (as argued e.g. by Awazu & Desouza, 2004) can be useful for this purpose. Most frequent contributors are elite users with "adequate knowledge and training that allows them to be tolerable of nonuser-friendly systems and works-in- progress. End-users who want easy-to-use in-terfaces without bugs, open-source participants will tolerate lower levels of ease-of-use facilities for higher-performing tools". Being able to engage these "elite users" in the pilot platform development from the beginning on, is therefore an essential mileston for maximising

the impact.

As such, the consortia for this project has been crafted so that existing communities and their "bootstrapping" online networking initiatives provide the background and pioneer user base for the further development of the pilot. Current knowledge and dissemination platforms on degrowth and transition already benefit from the engagement of a large number of activist researchers that form part of these movements.. The CAPS funding will further catalyse the meeting of grassroots communities and networks from very diverse domains across Europe ande spark a network effect with which it can then gain momentum and unfold itself. The work at the W3C Social Web Working Group is developing at just the right time to enable what is learnt in this project to feed back directly into the standards body, so as to allow the impact to be amplified yet further.

At an innovation level

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

That's exactly what we are doing. Our project aims to make possible bottom-up, open and distributed dynamics exploting networks effects enabled by the development of co-operating systems, at both technical and social levels. Proofs of concept are done, technologies are ready. For the details, cf Part 1 of the application form.

Now the demonstration of the effectiveness of such approaches only require resources.

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

We adress this requirement building a new architecture for the web which enables the development of networks of distributed open hardware (Layer 1) on which can be plugged distributed open software (Layer 2 and 4) and distributed open data (Layer 3). Using the co-operating systems stack which is built on W3C Linked Datas Standards.

This technological innovation empowers a new promising model of participatory innpovation that we call "PAIR to PAIR model".

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

The technologies we are building are :

- Interoperable : Through W3C standards and the ontologies we are using
- Fractal : Through The factal nature of semantic web technlogies and the fractal nature of the PAIR to PAIR model.
- Transferable and replicable : Through the open source nature of the project.

- Scalable : Though the interoperability, the fractal nature and the transferable & replicable properties of the innovations we are developping.

As a consequence, the technologies we are building should enable a strong network effect perspectives using distribued, bottom-up and viral dynamics.

- **Effective involvement of citizens and relevant (and new) actors, as well as establishment of durable interdisciplinary collaborations in concrete application areas related to sustainability. Qualitative and quantitative indicators should be made available.**

The consortium and its supporting partners already involve existing communities federating hundreds of thousands of citizens. These communities are working in many fields of society : Science, Economics, Politics, Transition, Internet and Communication technologies, Social activism, Ecology, territorial dynamics (…).
We collaborate with them, bringing their experiences and feedbacks into our reflexions for developing the project.

We will make it easy to join by creating a very simple cloud service where people can buy their own domain name and place their information until satisfied at which point they will be able to remove their information at any time and
host it themselves.

Building technologies which enable cross organizational and interdisciplinary interactions, we will foster "trans-" dynamics which are at the core of our project.

These cross-organizational and interdisciplinary interactions will empower Ways of Transition, the main use case of the consortium wich aims to foster transition dynamics.

Key performance indicators will be proposed for every workpackage including the "Project management" which will evaluate the process at a meta level.

- **Definition of new concepts and models for the development of digital social platforms, as well as their applicability to societal challenges and deeper understanding of social innovation processes.**

The combination of Co-Operating systems and PAIR-to-PAIR model can be associated to such expected innovation, associating new concepts and models for the development of digital social platforms, to adress societal challenges thanks to a deep understanding of social innovation processes.

At a scientific level:

- **Bridging complex systems theory and semantic web technologies.**
  The core hypothesis which originated our project is that semantic web technologies and complex system theory are based on a similar conceptualization though different perspectives : Semantic web as a technology. Complex systems as a theory. The theory can become reality

through the technology.
System, organisation, multiple and circular causality, récursivity, positive or negative feedback, emergence, self-organisation, generativity, noosphere, hologrammatic principle, homo complexus, stigmergy, dialogy (…) are constitutive of the complex system theory. They can become reality through semantic web technologies.

- **Technological aspects :**
  We create and develop technologies which have been validated in lab. Proofs of concept are done. Now we expect to use them in an operational environment : We will experiment in operational environment, 10 years of validated researches and prototypes : Web ID, Web Access Control, INRIA researches (…)

- **Social & philosophical aspects**
  The social aspects of the project result from the conjonction of a theorethical approach and an emprical one that reinforced themselves recursively during 3 years. We are collaborating with IRI and PLAST consortium members to determine which patterns underlie the PAIR to PAIR model.

- **At a societal/social innovation level :**

Operationalising the complex systems theories and methods through the experimentation in relevant environment of the PAIR to PAIR model combined with distributed and semantic technologies. The aim is to contribute to the transformation of social structures towards some ones which could be adapted to the third industrial revolution. With a big interest from a sociological point of view.

{>> Please be specific, and provide only information that applies to the proposal and its objectives. Wherever possible, use quantified indicators and targets.
Describe how your project will contribute to:
o the expected impacts set out in the work programme, under the relevant topic;
o improving innovation capacity and the integration of new knowledge (strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets;
o any other environmental and socially important impacts (if not already covered above).
Describe any barriers/obstacles, and any framework conditions (such as regulation and standards), that may determine whether and to what extent the expected impacts will be achieved. (This should not include any risk factors concerning implementation, as covered in section 3.2.)
<<}

2.2 Measures to Maximise Impact

a) Dissemination and exploitation of results

Plan for the dissemination and exploitation of the project results**

How the proposed measures will help to achieve the expected impacts of the project.**
By providing disruptive and adapted technologies to many events, such as the World Social Forum

or those which will happen during the COP, by empowering communities all over Europe such as Ecolise, Ouishare or Petits Débrouillards, by enabling distributed and collaborative dynamics for projects such as ways of transition, we should foster the development of a massive distributed digital / social network of Projects, Actors, Ideas and Resources, involving and reinforcing transition dynamics, at an continental level. It's a bit ambitious but reasonable regarding the properties of the technologies we are using.

Data For the whole details, Cf 1.3 : Concept and Approach - technical part

- Types, standards :

Higher quality level according to the following classification

- Exploitation :

Ownership and diffusion of datas are transfered to their producers. We'll use those which are shared with us through appropriated accesss control.

- Strategy for the knowledge management

For the whole details, CF WP6 - Dissemination

We will make it easy to join by creating a very simple cloud service where
people can buy their own domain name and place their information until satisfied
at which point they will be able to remove their information at any time and
host it themselves.<<<}

b) Communication Activities

{>>> [Todo] Regular workshops with developers across europe to increase the pool
of contributors to the open source project

Others?<<<}

References

Awazu, Yukika, and Kevin C. Desouza. 2004. "Open Knowledge Management: Lessons from the Open Source Revolution." Journal of the American Society for Information Science and Technology 55 (11): 1016–1019. doi:10.1002/asi.20050.

Baptista, Gualter. 2014. "Learning and building knowledge for degrowth: communities of practice and peer production across scales and beyond roles". Fourth International Conference on Degrowth for Ecological Sustainability and Social Equity, Leipzig.

Carlsson, Chris, and Francesca Manning. 2010. "Nowtopia: Strategic Exodus?" Antipode 42 (4): 924–953. doi:10.1111/j.1467-8330.2010.00782.x.

3.1 Work Plan

{== see template ==}

By the start of the project the minimal technical *co-operating systems* platform should be ready and in use among developers for use as a vanilla distributed social network, with as basic appication a simple blogging tool enhanced with distributed access control, commenting, uploading of images and videos.

The project can then start with deriving co-operation needs of selected communities and to design applications to facilitate transparency, eas-of-use and interaction.
Community members are crucial to this process and are included in focus groups and prototype development workshops according to their technical expertise and needs.

It should then be possible very quickly to start deploying this minimal system to core members and soon thereafter to carefully chosen community members, who would then be able to start giving feedback on additional features they would like to see.
From then on a spiral dynamic can be put in place whereby feedback from the communities, can be turned into user stories and requirement analysis can then categorise requirements in user interface design, ontologies and coding.
These can then be assessed and prioritised so that the development team can then build the needed tools, and implement the features to satisfy the user stories.

Every 4 months at least a new release should be then deployable, that the communities can then start using.
New meetups can then be organised to disseminate the platform, and evalution of the whole process can be made, so as to help set new priorities, set up new processes, or even adapt the whole structure of the project itself.

Work Packages

Work Package	co-**operator** `I`	***co-operator*** `II`
WP1 Project Management	MIX (*Alexandre Monnin*)	CBS (*Ina Lauth*)
WP2 Requirements	USI (*Johanna Meurer*)	RPS (*Andrea Vetter*)
WP3 CoOPS Platform	HJS (*Henry Story*)	
WP4 Linked Data	MIX	HJS (*Henry Story*)
WP5 Application	USI (*Lars Fisker*)	
WP6 Deployment	ECO (*Jon Richter*)	SAR (*Vasilis Chrysos*)
WP7 Dissemination	CBS (*Ina Lauth*)	AV (*{++ ++}*)

{== see template ==}

1. Management/co-ordination

Work package number	1
Start Date	T+0
Duration	36 MMs
Work package title	Management / co-ordination

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	**MIX**	OUI	HJS	FLAT	FB	SAR	ECO	USI	RPS	AV	CBS
Person/month	1	0	0	2	0	1.5	5	6.5	5	0.5	0

{== todo table ==}

Objectives Make sure the meetups are organised regularly, that the requirement analysis are on track, that the technical development is advancing correctly, that bugs and issues are being addressed, and that the tools are available to allow intelligent evoluations to be made.
Report to the EU.

Description of work

Deliverables - Overview {>> brief description and month of delivery (in project month) <<}

Deliverable | Description | MoD
———-|———-|———-
D1.1 | {== ==} | {== M ==}
D1.2 | {== ==} | {== M ==}
D1.3 | {== ==} | {== M ==}
D1.4 | {== ==} | {== M ==}
D1.5 | {== ==} | {== M ==}

Work Package 2. Identification of the use context and requirement analysis

Work package number	2
Start Date	T+0
Total MMs	21.5
Work package title	Identification of the Use package

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	MIX	OUI	HJS	FLAT	FB	SAR	ECO	**USI**	RPS	AV	CBS
Person/month	1	0	0	2	0	1.5	5	6.5	5	0.5	0

Siegen

Objectives

- Ethnography on cooperation practices between end user communities and ICT professionals
- Identifying structural challenges of the cooperation process and identifying user scenarios

- Definition of a set of end-user requirements for

1. functionalities needed by the end-users (expressed or latent needs) and the desired interfaces,
2. the mobile devices, and
3. the content for CAPS

- Definition of an ethical roadmap to be able to deploy the CAPS solution according to ethical issues of identity, security and privacy

Description of Work The platform provides an integrated solution for building up cooperation between projects, by engaging different actors and communities to better share resources and spread and work on ideas. WP2 is relevant for the definition of functional requirements by considering end-users' needs, demands, concerns and constraints. It should provide best-practices and procedures that inform and guide development, application building, deployment and dissemination and keep them synchronized with real community requirements and use cases.

Consultations, participation and engagement of the different involved and nested communities will be conducted. The consortium will attempt to understand and intake the complex and diverse sets of requirements from these communities to shape the development, application design, deployment and dissemination process. The analysis extends beyond the pure technological aspect and looks towards establishing bridges with ethics, philosophy and sustainability concerns. State-of-the-art academic research, combined with community research methods, will provide the theoretical and empirical background for the development of a community requirements assessment (CRA) framework.

This working package has been shaped to intertwin strongly with deployment tasks on WP6. In this context, incoming requirements at deployments will be continuously integrated as requirements by WP2. The CRA framework will enable the teams involved in the deployments to quickly organise these into community stories and modules able to be deployed at future iterations.

T 2.1 Identification of End-Users (M1-M3) This first survey into the participating communities will establish a set of primary users to participate in focus groups and workshops for the initial ethnography. This list must not be conclusive as a defining attribute of grassroot-communities should be low-barrier entrace into the projects, but guarantee a set of persons that are committed to be active part of the development teams (as testers and/or community organisers).

time: 8MM

T 2.3 Identification of use cases (M8-M9) {>> needs work <<}
Based on the results of the pre-study, [stakeholders] will develop the future use cases in community cooperation and will check their pertinence with the end-users in focus groups and individual interviews.

Subsequent to the end-user participatory design sessions the participants will perform on a second technical requirements analysis phase and a feasibility assessment by bringing in designers' knowledge of technological possibilities to enable and foster innovative future use cases within a technology map.

time: 6MM

T2.4 Ethical roadmap (M4-M12; M24; M32-M34) Generation of guidelines and literature on philosophy and ethics of co-operating systems representing the views of the different involved communities and cultures, as well as academic researchers in the field. The focus lies in identity, security and privacy. Use of the Compass for Convivial Technologies (CCT) as graphical tool to make visible the impact of technical solutions on quality of human relations, accesibility, adaptability, bio-interaction, ressource needs and work efficiency. The CCT can be used by different participants as a tool to strengthen communication over values at different moments of the project.

time: 8MM

T 2.6 co-Design Workshops (M16-M24) During repeated workshops the project uses participatory design methods to develop a design concept for CoOP applications.

time: 8MM

Deliverables {>> brief description and month of delivery (in project month) <<}

D2.1

D2.2

D2.3

D2.4

D2.5

D2.6

D2.7 Deliverable | Description | MoD
————-|————————————————————|————-
D2.1 | Selected end-users | {== M3 ==}
D2.2 | Report on the end-users' context and community life | {== M6 ==}
D2.3 | Use cases and community stories knowledge bank | {== M13 ==}
D2.4 | Ethics Manual | {== M12 ==}
D2.5 | Report on Cooperation Culture in Communities | M9
D2.6 | Community Requirements Assessment Framework Whitepaper | M12
D2.7 | Academic journal special issue on IT and grassroots cooperation and innovation on sustainability issues | (M24)
{== see template ==}

3. co-operating systems platform

Work package number	3
Start Date	T+0
Total MMs	73
Work package title	co-operating systems platform

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	**MIX**	OUI	**HJS**	FLAT	FB	SAR	ECO	USI	RPS	AV	CBS
Person/month	48	0	20	0	0	0	0	5	0	0	0

Objectives The co-operating systems platform covers the backend libraries and frontend libraries needed to develop UI elements. Because both are written in Scala this means that much code on the backend can be re-used in the frontend (using Scala-JS compiler) thereby reducing the amount of duplicate work to the absolute minimum, reducing bugs, and strengthening the platform on the whole.

It also covers research into security development of a full client plugin system, to allow many different organisations to develop new user interfaces without having to wait on the technical team.

The platform tightly integrates different scenarios of the co-operating systems cloud as specified in **WP6**.

From the feedback from the requirements analysis new features will appear.

- Start Date: at start of CAPS project
- Participants
- Inria
- Siegen
- co-operating.systems (open source project)

Description of Work

T3.1 Scala-JS local graph storage Develop Local Graph storage to allow web browsers to cache remote graphs, to enable fast application startup times, offline work, and remote synchronisation of local work on reconnection. Due to device constraints, local graph storage must be efficient, garbage collect work within local client space limitiations, it must be easy to keep meta data about remote resource state, …

Partner: Inria, co-op, USI
Deliverables: D3.1

T3.2 Scala non-blocking inferencing engine In real world applications speed of response is more important than completeness of results. An efficient inferencing system that can work in the browser and on the server asynchronously and with streaming partial inference results is more important than complete results: responsivity primes completeness and even precision.

This task requires finding the appropriate abstractions to build such an inferencing engine in Scala that works with the other components used in the Platform such as actor frameworks, etc.. It should work on the server and on the client, and should be developed in 6 month stages improving at every iteration.

Research into stream based reasoners should be considered.

Partner: Inria, co-op
Deliverables: D3.2

T3.3 Scala-JS Client Component Framework development Design and build a Linked Data based Client Scals-JS based component framework with an intuitive JavaScript interface to enable a large community of developers to work each on their preferred user interface for certain type of data, and have this component be able to work together seamlessly with others.

The user interface framework needs to decide what component should should display certain relation patterns depending on the user context. This requires working with the user interface teams and the developers of components.

This work has to be done iteratively starting with something simple so that intial applications can be built to test the backend, and get quick feedback. Simultaneously research of existing successful component frameworks such as those used by Eclipse or Netbeans should be used as inspiration where it makes sense.

The Component Framework should also enable UI gestures to allow users to easily be able to find the provenance of relations, reject sets of relations, edit them, discuss them, etc… This is part of what we called bringing out the subjective aspect of data.

Partner: Inria, co-op, USI
Deliverables: D3.3

T3.4 Server At the start of the project we wills start with a working LDP Server with WebID authentication and Web Access Control, and a number of other features.
There will need to be constant improvement to the platform as feedback from deployment comes back, to improve responsiveness, and new features that will come back from requirements analysis such as versioning, querying, deployment on larger servers, or smaller ones….

Features that may be developed depending on time

- Integration with legacy access control systems such as OAuth and OpenID
- Access Delegation
- Memory tuning mechanism: eg low memory usage for personal devices such as the FreedomBox
- Content versioning for resources served or cached
- Queries for local resources and remote resources
- Linked Data based Notification Service, so that remote agents can be notified of certain types of changes
- plugin architecture to allow new features to be added to the server

Partner: Inria, co-op, USI
Deliverables: D3.4

T3.5 Standardisation Each of the other tasks here described may end up being standardised by groups such as the W3C Social Web WG, the WebID Community Group, the LDP Working Group, the WebApp Security Working Group, the various IETF Working Group such as TLS, HTTP, etc…

The features we are developing can benefit by work going on in these groups. This will also help wider adoption. This requires mailing list interaction, writing proposals, answering questions, providing feedback and attending face to face meetings.

This project also builds on many other open source libraries that often require feedback, bug reporting, and discussions. This interaction takes time, but is a lot less expensive than having to build the full stack of software.

Partner: Inria, co-op, USI
Deliverables: D3.5

T3.6 Security and Authentication (M6-M30) Security analysis and design of authentication schemes for implementation of servers and applications. The task is to derive security requirements from the user analysis (WP2), develop concepts that can be embedded in the server and framework components and further consult during the development process. The task will produce a security assessment of the different components and provide guidelines for secure application development on the framework.

Partner: USI, co-op
Deliverables: D3.6, D3.7

T3.7 Distributed exploratory search engine (M1-M24) People wil only be able to work together through a web-based P2P architecture if they have the means to discover ideas, actors and resources without necessarily knowing what to expect beforehand. The emphasis on sharing data no longer controlled and indexed by centralized organisations means that unlike focused on traditional search engines like Google that satify very precise queries, interactions accross institutions, disciplines, platforms and more generally, silos, require a differnet approach, one that broadens the scope of what is being sought for rather than narrow it.

Building upon existing applications like the Discovery Hub an exploratory search engine developped by Wimmics as a Web application to provide a distributed version of this tool that will constitute a central functionality of the Co-Os system. Much of the remainbing work consists in determining how doscovery (of ideas, networks, etc.) is manageable in a distributed P2P environement.

Partner: Inria
Deliverables: D3.8

Deliverables

D3.1 Scala-JS local graph storage

- M0: A very simple in memory storage will be available to start with to enable prototyping of User Interfaces and work on APIs.

- M6: 3 month's work with most widely deployed storage mechanism in browser
- M12, M18, M24, M30, M36: 1 month improvement over 2.5 years. 5 months work

Time: 9MMs starting with a very simple framework and using experience of developing applications to constantly improve the libraries

D3.2 Scala non-blocking inferencing engine

- M12: minimal RDFS inferencing and owl:sameAs (6 MMs)
- M24: more advanced inferencing (6 MMs)

Time: 12MMs

D3.3 Scala-JS Client Component Framework development (including good coding patterns for Subjective UI)

- M0: very simple Linked Data table lookup, to allow protototyping
- M3: research of similar systemes such as Eclipse or Netbeans, and proposal (3 MMs)
- M6: initial implementation that can get the basic system working (3 MMs)
- M12, M18, M24, M30: improvements after feedback and usage (2MM*4=8MM)
- M36: documentation and report

Time: 12MMs

D3.4 Server The server will be under near constant improvement over the whole duration of the project, as new features get added, with deliverables every 6 Months M3, M9, M15, M21, M27

Each release will have to pass the tests to be continuously integrated into the co operating systems cloud.

Time: 36MMs

D3.5 Standardisation Since standardisation efforts speeds cannot be determined in advance.There can only be a final report at the end of the project

- 1 day per week: 8MMs
  {>> add: Documentation: 10 % of time of technical WP <<}

Time: 8MM

D3.6 Security Development Guidelines (M18) {>> how many man months? will try 5MMs ? <<}

D3.7 Security Assessment of Concept and Implementation {>> how many man months? 5MMs ? <<}

D3.8 Distributed exploratory search engine (M1-M24)

- Post-doc on adapting exploratory search engines to a distributed environment (M1-M24)
- Integrate functionalities from Discovery Hub into Co-Os (MM12-M18)

Time 42 MMs

Deliverable | Description | MoD
————-|————————————————-|————
D3.1 | Scala-JS local graph storage | M0, M6, M12, M18, M24, M30, M36
D3.2 | Non Blocking Inferencing | M12, M24
D3.3 | Client Component Framework | M0, M3, M6, M12, M18, M24, M30, M36
D3.4 | Server | M3, M9, M15, M21, M27, M36
D3.5 | Standardisation reports | M36
D3.6 | Secure Development Guidelines | M18
D3.7 | Security Assessment Concept & Implementation | M30
D3.8 | Distributed exploratory search engine | M24, M36
{>>see template <<}

4. Linked Data

Work package number	4
Start Time	T+5
Total MMs	10MMs
Work package title	Dissemination and Exploitation

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	**MIX**	OUI	**HJS**	FLAT	FB	SAR	ECO	USI	RPS	AV	CBS
Person/month	0	0	2	0	0	0	2	0	3	3	0

Objectives Linked Data forms the glue that helps link all the communities together. It is therefore important that as far as possible they agree on which ontologies to use, and that these be well designed, logically consistent and useable efficiently in a linked data context, which requires robots to follow links around the web.

Each user interface component to be developed will be reading and writing relations. This requires working with the User Interface WP, and the Requirement Analysis work package.

As far as possible existing well known ontologies should be used, but inevitably new elements will turn up that have not yet been standardised. Ontologies need to be tested with data built from the scenarios or extracted from existing databases, to proove that combined with they do not lead to contradictions when graphs are merged.

Description of work The process will be aproximately as follows. For each application to be built as determined by the Requirements Analysis project:

1. find existing data that has been used from similar siloed applications to use as a testbed
2. search ontologies that are widely deployed and tested that allow the same information to be expressed
3. development of new ontologies when relations are missing
4. transform existing siloed data into a Linked Data using the chosen ontologies
5. deploy test data on a number of LDP servers to test distributed usage and link
6. develop test suites to test the distributed data

- for consistency
- for its ability to suite the task needed for the application

1. Publish new ontologies on the web so that they can be easily referenced

Task 4.1 Development of a Linked Data Test Bed To enable the development of new ontologies to happen as quickly and as reliably as possible an automated ontology test bed will be developed, that can follow links, deal with access control restrictions, test to coherence of data as far as mechanically possible, and verify the implementability of user stories.

Time: 3 MMs

Task 4.2 Task driven Ontology R&D (M1-M3) For each Application that needs to be built find and develop the set of ontologies needed for the application. Deploy some example data in a distributed linked data scenario. Write tests to verify the coherence of the ontology with the instance relations. The way it is deployed should be informed by the ability of client application stubs to find the data needed to quickly and to perform certain very simple but key tasks.

Ontologies that are developed should as far as possible be shared with other communities that can provide a constrictive criticsm and increase adoption. This will involve finding the relevant existing standarisation bodies and and try to get them to adopt the work done here.

Translations of ontologies can be used for initial automatic translations in user interfaces, will help adoption of ontologies, and discover hidden linguistic complexities across Europe.

Time: 13MMs : 1 Month per component

Task 4.5 Usage Rights Ontology Implement Useage Rights descriptions basing ourselves on the work by Oshani Seneviratne at MIT, in her PhD Thesis Augmenting the Web with Accountability. Starting from a simple rights ontology building off the work on Creative Commons, work on simple restrictions ontology that are easily understandable by humans and for which simple rules can be built, and simple humanly understandable User Interface Components can be designed. This will require

1. Work with Legal Departments, Legal communities on an ontology (6MMs - CBS)
2. specialised but simple access control reasoning on the server (3MMs - co-op)
3. User Interfaces on the client (3MMs Siegen)

Deliverables - Overview

D4.1 Linked Data Test Bed Month of Delivery: M6

A primitive Test Bed can be built very quickly, but it should have been tested enough by the 6th month to be stable enough for the rest of the project, with minor improvements from there on. This should be published as packages on a public repository such as maven on ivy, with documentation on the *co-operating systems* web site.

D4.2 Im- and Exporters for existing data Month of Delivery: M6 M12 M18 M24

A framework of importers (**T4.2**) for existing data should be chosen by the sixth month, with tooling to make it easy to fit into the rest of the project. Even though such tooling can be improved constantly. Published on public repository, with documentation on the *co-operating systems* web site.

A collection of exporters (**T4.3**) will be included to ease the transition from non-semantic web services to the LDP stack.

The deliverable should be stable enough to be used in production sites and easy enough to allow also unexperienced site builders to implement it on their sites.

D4.3 Ontology Publication Month of Delivery: (Quarterly cycles) M3 M6 M9 M12 M15 M18 M21 M24 M27 M30 M33 M36

The initial UI interfaces components will be very generic and so based on well known Ontologies. Their mode of use still has to be documented to help the Application development teams.

Once the user stories from the communities come back from the Requirements Analysis [WP2] specific ontologies can be selected or developed. New ontologies have to be published on the Web using the Linked Data pattern (ie publish the ontologies at their name space).

D4.4 Usage Rights Report with Ontology and Implementation After iterative feedback cycles over the first year, by testing the ontology with implementations on the server and user interface components, an ontology and report should be published around M18. Time needs to be taken here because some of the legal work may take a lot of time.

Deliverable | Description | MoD
————-|————————|————-
D4.1 | Linked Data Test Bed | M6
D4.2 | Im- and Exporters for existing data | M6,M12,M18,M24
D4.3 | Ontology publication | M3, M6 …
D4.4 | Usage Rights report | M18

5. Contents & Application Design

Work package number | 5
————————|—

Start Date | T+3
Total MMs | 45
Work package title | Contents & Service Infrastructure

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	MIX	OUI	HJS	FLAT	FB	SAR	ECO	**USI**	RPS	AV	CBS
Person/month	6	0	2	3	0	1	0	22	0	11	0

Objectives Users are rarely won by technically complex frameworks and API-design but by the applications that provide functionality. Within this WP the project will develop demonstrators of applications to support co-operation needs as researched in the ethnographic studies of WP 2.

- Development and implementation of *inter-organisational* cooperation support demonstrators, that use linked-data and distributed authentication methods using the framework developed in WP 3.
- Support PAIR á PAIR (Projects, Actors, Ideas, Resources) with practise and application design based on ontologies and vocabularies that are developed in WP 4.
- Requirement and design studies produced in WP 2 provide the foundation of the pilot applications developed in this WP. The pilots developed will be fed back to the communities to research their impact into the practise and cooperation culture within communities and regions (As part of WP 7).
- Continuous update of the service infrastructure and all contents (based on end-users feed-back during the pilot and living lab phase).
- Development of socio-technical accompanying measures, tools and services (usability and accessibility).
- All activities in WP5 will be based on a living lab-setting with a continues involvement of different end-user communities. These research activities are coordinated in WP 2 Requirements and WP 6 Deployment.

The idea of Living Labs is central for the continuous update of the service. This allows examining the use of the service portfolio prototypes in their actual use contexts during a long period of time. USI in Germany will lead the field tests in three different countries. The management of data security from a user-centred perspective will be a central concern. The close contact to the users over the long period allows getting profound insides about the required contents and services. The data material will be based on ethnographic methods like semi-standardised interviews, participatory design workshops, participant observation, questionnaires, or cultural probes as well as automatic bug reporting. The collected material will be analysed; occurred problems will be solved in update packs which will be delivered

to the testers' systems regularly. End-users will be asked to report on their experiences and the results will be summarized in the final user evaluation report.

Further the continuous update of the services is based on appraisal of the end-user organizations and their feedback of the service contents. Thus, interviews and user-workshops are planed with all partners.

Description of Work

Task 5.1 Initial Design of Core Components (M3-M9) The co-operating systems platform comes with some basic functionality that is standardised by LDP, the WebID and Web Access Control Mechanisms, and work in the Social Web Working Group. This requires some user interface design and components to make it easily useable by the community. These initial components include:

- Profile Viewer and Editor, enabling the creation of WebIDs, WebID certificates, …
- Friend of a Friend browser (Linked Social Network), editor enabling the creation of arbitrary groups.
- Web Access Control viewer and editor to make it easy to assign rights to users and groups
- LDP content browser, to navigate through collections and see their content
- Simple content editors such as a blog engine, with commenting system with restricted commenting based on rules such as friends of friends

This should allow initial distributed usage patterns that can inform further application design.

Deliverables: D5.1

Task 5.2 Application Logic Design (M6-M24) Based on the requirements analysis in WP2 this task derives primary functions and rules for cooperation applications in local and regional communities as well as for inter-organisational cooperation of actors in shared projects. This needs to take into account the new aspects related to Linked Data apps, such as the importance of users being able to find the provencance of relations since anyone can say anything about anything. (see Concept and Approach Layer 4)

Deliverables: D5.2

Task 5.3 User Interface Models (M3-M36) Iteratively design mockups and functional models of user interface components for community support. The results of this tasks are fed back for evaluation into WP2 and finally deployed in WP6. {>> how to the partners interfaces <<} {>> F-lat provides… <<} {>> Sarantaporo.gr creates <<} This task supplements the participatory interface design studies in T2.6 by transfer to functional UI demonstrators.

Deliverables: D5.3

Task 5.4 Application implementation (M3-M30) The project will provide a working implementation, based on the framework provided in WP3 (Platform), to support the cooperation needs for internal use and external selected local communities. Based on the requirements derived in WP2 this task is to implement user interfaces from Task 5.1, Task 5.3 and application logic (Task 5.2)

Deliverables: D5.4

Task 5.5 Development of socio-technical accompanying measures, tools, and services (M12-M30) Specific measures, tools and services will be developed in order to lower the access threshold of the developed contents and technologies for users and stakeholders. The overall goal is to help provide feedback that can guide re-evaluation of the work done (WP8)

Deliverables: D.5.4

Task 5.6 Translation of Component (M6-M36) For each component translation to all the languages of the consoritum members. This can be bootstrapped by ontology translation, using relations on concepts and predicates such as `rdfs:label`.

Deliverables: D5.5

Deliverables

D5.1 Initial Design of Core Components Deliver designs of core components iteratively with deliverables every two months at least, so that they can be implemented and results of this implementation fed back to the design and other parts of the consortium.

D5.2 Application Logic Design

D5.3 User Interface

D5.4 Applications

D5.5 Feedback Tooling

D5.6 Translation The WP will deliver two results in each task, one mockup or preliminary concept for review r implementation to support an iterative process of development.

Deliverable | Description | MoD
————-|————————————-|——-
D5.1 | Initial Design | M5,M7,M9
D5.2 | Application Logic Design (T5.2) | M12, M24
D5.3 | User Interface Models (T5.2) | M18,M36

D5.4 | Demonstrator Implementation | M18,M30
D5.5 | Translation | M30,M36

{== see template ==}

6. Deployment

Work package number	6
Duration	M1-M30 (30 months)
Work package title	Deployment

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	MIX	OUI	HJS	FLAT	FB	**SAR**	**ECO**	USI	RPS	AV	CBS
Person/month	0	1	0	1	3	7	18	1	1	1	0

Objectives This Work Package continuously delivers the software and data produce from **WP3** (Servers), **WP4** (Ontology Tests) and **WP5** (Clients) activities to end user communities. In terms of the *CoOpS Layers for Decentralisation* (**WP3**) it serves as the physical and virtual infrastructure layer one and two, namely hardware and software servers.
Additionally it provides the necessary data center resources for project related use.

Description of Work Within the Deployment Work Package a *co-Operating Systems cloud* will be formed to support continuous delivery of any software outcomes of this project. Additional deployment scenarios will be covered in cooperation with the participating communities.

T6.1 Continuous deployment of the co-Operating Systems cloud

Time: M0-M30

- LDP Servers

- Streaming Inference Engine
- Continuous Integration (Developers) + Delivery (Communities) Infrastructure
- LD Testbed
- Changing Connectivity
- one-click solution

To allow people to easily join the project one or more cloud service should be set up that allows people to buy their domain name, and start playing with features, in such a way that they can at any moment move their data to their own servers without loss of functionality. This should provide a very good test bed to find out how the service is running, and track improvements. This requires having a system administrator to run the machine in the cloud, and also tuning the server for scalability.

For example, user-friendly functionality will be provided that allows users to register a domain name and associate it

Release management, and cloud service deployment across europe

Partner: ECO
Effort: 12 PMs
Deliverables: D6.1 co-operating systems clouds

T6.2 CONFINE deployment of the co-Operating Systems cloud stack

Time: M16-M22

CONFINE > End of 2017

One of the major issues when dealing with decentralized approaches in community networks is the connectivity resilience and in some cases better quality of service. Moreover what is keeping back interesting development is the upload bandwidth. Currently the commercial packages offered tend to have large download, but rather small upload bandwidth. This leads to less user participation and converts the Internet to an one way medium. This is not the case with Community Networks, where the bandwidth is symmetrical, allowing for everyone to deploy services on a personal server, without being forced to host the data to an on-line provider.

Concerning the deployment of the cloud infrastructure in the CONFINE involved Community Networks three paths of choice will be considered:

1. Using images developed in the CONFINE umbrella
   A good example is the Clommunity. The Clommunity project is a project under the umbrella of the CONFINE infrastructure and has already developed a firmware/VM that can accommodate cloud services. Although it has no support for windows VMs, OpenVZ machines can be installed and managed from an open source console.

1. Virtual machines on the base system
   Another choice is to install virtual machines on the base system of the readily available microservers under the existing hypervisor (Clommunity and CONFINE images run also as nested platforms).

1. New hypervisor with new Cloud Platform
   Moving away from this, a new hypervisor and a new management system could be deployed, should the needs change without disrupting the existing testbed's operation.

This platform can be used to deploy the developed software and integrate back to the whole project delivering very interesting quantitative and qualitative results from the vast user base of community networks which employs diverse access methods over wireless and wired links.

Partner: SAR
Effort: 3 PMs
Deliverables: D6.1 co-operating systems clouds

T6.3 Deployment consultation

Time: M7

Partner: SAR, ECO
Effort: 2 PMs
Deliverables: D2.2 Real World Deployments

T6.4 FreedomBox deplyoment

Time: M13-M18

This will require working distribution for small devices such as the Freedom Box which require very much attention to memory usage and cpu cycles. Work will be performed to integrate the LDP Server with the Freedom Box software stack. with a Freedom Box. We can customize and produce Freedom Boxes as required at different stages by members of the consortium.

packaging

The server will need to be deployed on many different spaces that need to be able to update easily so that the initial mistakes made in the platform can easily be pushed.

Partner: FB, SAR
Effort: 6 PMs
Deliverables: D6.2 Real World Deployments

T6.5 OuiShare deployment consultation

Time: M

Test drive

Partners: OUI, ECO
Effort: 2 PMs
Deliverables: D6.2 Real World Deployments

T6.6 Living Labs deployment consultation

Time: M

Partner: ECO, USI
Effort: 2 PMs
Deliverables: D6.2 Real World Deployments

T6.7 F-lat deployment consultation

Time: M

This can happen through a follow up preceding workshops the quantified me project will take place in different women community center willing to promote knowledge of technological practices and their association to health and self help practices.

Partner: FLAT, ECO
Effort: 2 PMs
Deliverables: D6.2 Real World Deployments

T6.8 Assemblée Virtuelle deployment consultation

Time: M

Partner: AV, ECO
Effort: 2 PMs
Deliverables: D6.2 Real World Deployments

T6.9 RIPESS deployment consultation

Time: M

Partner: RPS, ECO
Effort: 2 PMs
Deliverables: D6.2 Real World Deployments

Deliverable	Description	MoD
D6.1	co-operating systems clouds	M0-30, M16-M22
D6.2	Real World Deployments	M7,

Deliverables - Overview

WP7: Dissemination and Exploitation

Work package number	7
Duration	{== (M1-M30 months) ==} months
Total MMs	54.5
Work package title	Dissemination and Expoloitation

Participant	1	2	3	4	5	7	8	9	10	11	12
Short name	MIX	OUI	HJS	FLAT	FB	SAR	ECO	USI	RPS	**AV**	**CBS**
Person/month	5	6	6	1	2	6	3	9,5	5	5	6

(CBS, AV) Even though dissemination practises include mostly business activities, we will concentrate to a great extend on the communities throughout most of the dissemination tasks, how the dissemination and exploitation of our pilot platform will be conceived with the communities at its core of the project. Through the community partners, a direct linkage to large multiplying and disseminating opportunities is available. Such opportunities will be used to both reach new users in various interest groups and stabilise the networks of our comminity partners in this project.
Open Source projects require require different business model approaches, which we are going to address in one specific dissemination task, where we create business models for the very co-operating system project as a whole, as well as support in building business models for the test users of our platform.

Global objectives

- Ensure impact and outreach of the project CAPS in academia, the industry, targeted end-user organizations, and the general public.
- Plan, coordinate, and implement dissemination and exploitation activities.
- Develop a business model that can be implemented in Europe and worldwide to commercially exploit the CAPS system.

Addressing specific needs, each application will bring its own user communities.

In our mind, this “platforms cooperativism” enables a “communities cooperativism” in following a non-linear dynamic :

The more the ecosystem will promote applications, the more it will be valuable, following a similar dynamic to gravitational ones like the network effect. (Bigger the mass is, stronger is its attraction)

Platforms cooperativism is the key for bottom-up, distributed and scalable dynamics. Commonly agreed Semantic Web protocols of the W3C (World Wide Web Consortium) allow such a perspective through the interoperability they bring into the system.

We will essentially focus on actors providing missing dimensions, useful expertise and complementary approaches into the ecosystem of Web Platform Cooperation.

Task 7.1 Dissemination planning (M1-30) The major goal of the dissemination process is to raise awareness on data privacy issues and to focus on available infrastructures and technological solutions. The idea is to explain the basic concept of our digital ecosysystem being similr to our natural bodies immunesystem. In order to defend our body from the outside one can not risk to have one strong defense in one location of the system but to cover every single cell, like every single resource should be having it´s own security layer. If one resource gets attacked from the outside, the system can stay stable and is not jeopardised by one missing piece.

To achieve a coherent dissemination process around all sectors, we will identify the categories of the whole industry, how we can make sure to address all areas with a one general dissemination campaign and make sure that all interest groups are covered and included. The aim here is to get an overview on how, who, where and with wat means to target the user and interest groups who will be willing to adopt, take interest and support our project.

7.1.1 Dissemination activities

- Print material
- User Manual for Compatibility and Interoperability [Project Report]
- Appearance on existing social networks
- Documentation, wiki
- website & newsletters
- Other dissemination materials

7.1.2 Dissemination categories

- ICT industry & developers
- Business industry
- social communities and organisations
- Academia and Institutes
- Horizon 2020 and EU environment

Task 7.2 : Events & Communities (M1-M30)

Consortial Meetups, conferences and Expert talks The event management planning phase an event calendar for the consortium has to be identified with all the seminars, conferences important to the project. This will include special events for the technical staff of the workpackages, the community staff and events to e joined by all members, like the consortial meetups and conferences and events organised by individual consortial partners. A few examples of events would be the CAPS2020 official meetings, expert talks and conferences like Scala.io and Scala Exchange, as well as events organised by our consortial partners like the Ouishare Fest e.g.

Workshops & Hackathons Along the events a big focus will be on organising workshops, hackathons and community VoCamps (week event with many events). For the first two types we are planning to organise one hackathon and one workshop in each consortium country once/twice each year where new ideas valuable to the project can emerge and potential adopters identified. These events can happen close to other events in the event calender to combine different groups in one place. Incubators and Accelerators will also be actively included in the organisation, hosting and participation of such events. As we are dealing with cutting edge technologies, a very important activity is to inform and educate the public in how to make use of the technology and foremost how to implement it. Merging workshops with other workshops from WP2 will be planned in this section.
In the final stage a major closing co-operating systems conference will be held.

Regional community hubs The aim of the regional community hubs is to establish regional and local information and promotion centres, offering a physical space for the surrounding ecosystem to get back to for feedback and occasional seminars, workshops, discussion panels and similar gatherings in order to strengthen our ties with the communities. In the regional community hubs activity we can benifit from many Ouishare connectors all over Europe to host such venues for a reogionally distributed dissemination of our project content. Additionally the consortium partners like RIPESS, F-lat, AV and Sarantaporo in connection with the european funded CONFINE project can disseminate into communities throughout the wider hubs of the CONFINE partner countries. Empowering events -many events use to be organised by the civil society and changemakers, as a way to communicate, network, collaborate … Very often, they lack of digital tools which could empower their dynamics… Instead of creating events, we will empower those who are organized by the communities and our networks with several objectives : Help them bootstrap, organize, document and foster long-term dynamics.

Task 7.3 Business Exploitation and Open Source (M3-M30)

Formation of a CIC (Community Interest Company) Since the co-operating systems project is an open source project, our plan is to transform the CAPS project with it´s partners into a british CIC (Community Interest Company) where the participants will directly become directors and members of the company. Herefore we can benefit from our advisory board member Simon Phipps, who has been a leading expert in open source publishing within the ICT industry. Furthermore this activity will cover not just the sustainiability question of the co-operating system project and the Horizon2020 program, which in this case will simply continue to exist in a business form between a limited company and a charity organisation after CAPS project comes to its end, but also major questions and issues on intelectual property will be addressed and solved.

In addition to the procedure of creating the co-operating business model, we will be preparing a recommodation report for policiy makers to adopt such or similar business models in other european countries, how small communities and non profit organisations can use this alternative to generate necessary funding in order to sustain their ecological, societal and innovation ideas.

The open source code will be available for anybody who is interested in using the linked data solution for distributed social networking. As we will be providing the necessary documentation and manuals, developers themselves will be able to program their own platforms given the infrastructure outlined in the co-operating systems project. As for the API´s, developers can freely develop further applications to meet their own or other interest groups needs and use cases, where finally each peer who is building on such a technological solution will be enabled to merge in to one globally distributed social network.

Having the Copenhagen Business School and the solitary economists from RIPESS on our consortium, we will furthermore assist in researching business models for the smaller grassroots communities, giving them an opportunity to participate with their innovative ideas in the market place and mobilise necessary resources to sustain their ecological and social projects.

Linked Data Business resarch After having identified major needs from the interest groups, we will also be cunducting research on how linked data can be used in various economic fields, such as accounting, value exchange, alternative currencies and payment or barter systems for which research reports will be written. The implementation and deployment process will show to what extend certain aspects can be integrated in the project management use case of the platform.
PAIRing the group-assembly process and other grassroots management and deliberation methodologies, the Group Assembly Process (GAP), a methodology broadly disseminated in medium to large size degrowth events will be adapted to better fit the PAIR to PAIR model. The purpose is to have a synchronisation of the Linked Data platform with the projects and ideas proposed, actors involved and resources available or to allocate.

Task 7.3 Evaluation (MM 7,5) Interactive platforms like co-operating systems require more than just traditional evaluation and usability methods. Given that fact that a prototype with the most basic communication functions is going to be implemented at an early stage of the project, the evaluators will be faced with constant (instant) feedback for which, beside the traditional "Usability heuristics" methodology layed out by Neilsen (Neilsen, 1994), an agile approach is necessary to ensue that the content is overall percievable, operable and understandable. Whether the results present the promised features of the platform will be verified in rather short intervals, stressing out once more the importance of agile evaluation methods. (consulting Henry and technical partners for advice) The combination of the two will allow a coherent assessment before, during and after each implementation phase.

A great deal of the information to be used in the evaluation process will be imported from tasks listed in the requirements analysis WP and will merge into dissemination and evaluation reports.

Preparing the Evaluation process The preparation stage of the evaluation process will start at the beginning of the CAPS project by quantifying the number of potential user groups who will be particapating in the user testing of the platform, after the first implemantation of the initial version has been installed. (e.g. address book, blog). As the users are quantified, both their

technichal skills and technical equipment will be assesed, which are the first steps in ensuring the usability of the final product. The technichal hardware has to meet certain criteria that will be made available in form of checklist during that same period.

Where necessary, guidelines, ISO standards and suggestions for human ability aspects (e.g. blind or otherwise disabled people) will be take into account. However those should be kept on a minimal level of consideration as the verification and comparison proccess for this matter a rather time consuming.

Automatically generated data through queries (SPARQL) Certain data, like for example different metadata, can be generated by direct access to the users data through the very mechanism of Web Access Control. The users will be advised to allow the consortium access through the Web Access Control rules that they themselves will define for specific parts of their data, hence deciding and being in control of what they make available for research and evaluation purposes.

Direct Questioning Regular questionaires (e-questiaonairs, interviews) with two groups of users a) all current users of the testbed platform and b) key users identified in the first stages of the overall evaluation process.

Community and Use case oriented evaluation Since the communities and local users have their individual tasks, issues, goals and ideas within their networks, the heads of these communities will also conduct case oriented data gathering on a regular base (6 months e.g.), in order to get information on whether and how the process of raising collective awareness throughout the community is progressing and to what extend the ideas of one community/network have reached other users within the network of co-operating systems. Participants are also adding to the design process by explaining their individual community needs. The users are enabled to publish their data openly to the whole co-operating system network by allowing the whole networkk access to various information and documents, sharing them with new potential contacts, friends and collaboratiors. Through the cross-network interactions of the actors we will be able to have a clear picture and a tool of quantifying to what amount the peer to peer sharing of massively distributed small data is stimulating collaboration.

Freedom Box Not every test user is expected to install a personal "freedom box" server, which means that at the beginning most users will be hosting their data in the co-operating systems cloud or on third party servers of their choice. For those who are willing to take the cost of time and money to install a "freedom box" in their home, a special questionaire will be created to get as much, mostly technical, feedback as possible. It is very important and crucial to lower the technical requirements of the user in order to be able to administer the "freedom box" and therefore private data themselves.

Random feedback Beside direct questioning of the users and automatically generbated data we will encourage the users to send us bug reports, suggestions, ideas and any kind of advice that might be helpful to improve the platform ever more. The decisions and changes based on this sort of feedback will be influencing and transforming the initial version almost daily.

Task 7.5 Standardisation (M1-M30) Each of the other tasks here described may end up being standardised by groups such as the W3C Social Web WG, the WebID Community Group, the LDP Working Group, the WebApp Security Working Group, the various IETF Working Group such as TLS, HTTP, etc…

The features we are developing can benefit by work going on in these groups. This will also help wider adoption andrequires mailing list interaction, writing proposals, answering questions, providing feedback and attending face to face meetings.

This project also builds on many other open source libraries that often require feedback, bug reporting, and discussions. Even though this interaction takes time, it is a lot less expensive than having to build the full stack of software.

Deliverables - Overview Deliverable | Description | MoD
————-|————————————————————|————-
D7.1 | Dissemination Portfolio/Reports & Map of Adopters | {== M6,M12,M18,M24,30 ==}
D7.2 | Events calendar & Community Reports/Hub Road Map | {== M6,M12,M18,24,30 ==}
D7.3 | Company Formation (CIC) & Business Research Report | {== M3,M30 ==}
D7.4 | Evaluation Plan & Evaluation Reports | {== M6 - M30 ==}
D7.5 | Standardisation reports | {== M30 ==}
template

3.2 Management Structure

3.2.1 Detailed Management Structure and procedures

In order to accomplish the objectives of chapter 1 in a multidisciplinary environment, a reasonable project management structure is needed. It shall ensure effectiveness, decisiveness, flexibility and the quality of work. The latter is to allow that all work is carried out in a timely way, using state e-of-the-art technologies, and that the work is based on strongs scientific principles. Successful project management relies on cooperation and communication between everyone involved. As Co-Operating Systems is an international project, the project management will work hard at developing a good working relationship with all the participating members.
The project management structure of Co-Operating Systems is designed in such ways that the practical use of research and development is fostered and the participants' interests are reflected. The overall responsibility for the project lies with the General Assembly (GA) as shown in Fig. 2-1 – Co-Operating Systems Project Management Structure, below.

Co-Operating Systems advisory board will serve to advise the Project.

The Project Coordinator interfaces with the EU and is responsible for the overall project management. The Day-to-Day Project Management ensures the continuity of the Project and is the central contact point for all project partners. On the work package level the work package leaders are responsible for the proper execution of all activities belonging to the work package.

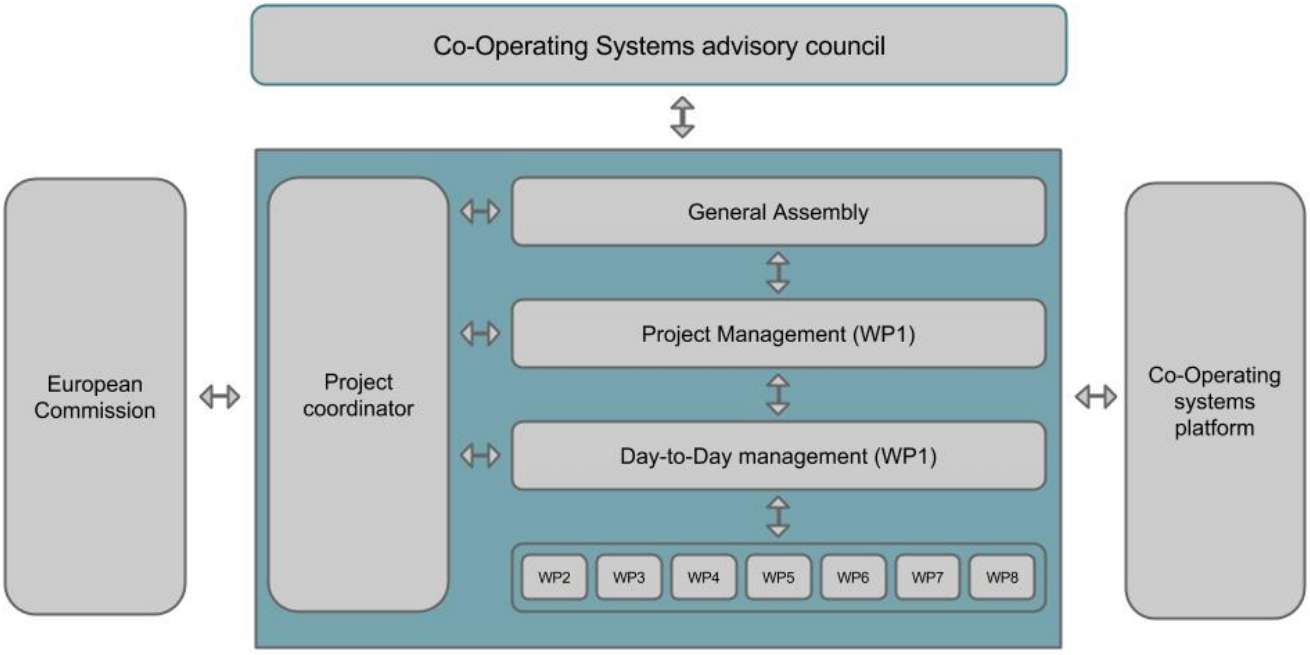


Fig. 2-1 – Co-Operating Systems Project Management Structure

General Assembly (GA) As stated above, the decision making body within Co-Operating Systems is the General Assembly (GA). It holds the final responsibility for the Project and is chaired by the Project Coordinator. One representative from each consortium partner plus additionally invited members from the consortium form the GA. Additional members are chosen according to their activities in the Project and have decision making authority within their own organisation. Each partner's representative is communicated to the Project Coordinator of the Project at least one week before the first consortium meeting.

In detail, the specific responsibilities of the GA are :

The GA oversees the overall project achievements and compares target and actual results. If necessary, it takes appropriate actions to re-adjust progress of the Project. This includes decisions on changes of the Project's scope in case any findings of the research performed should give cause for such a change.

The overall quality of the deliverables in relation to the detailed implementation plan is monitored by the GA. It may take appropriate actions to make necessary adjustments. This includes the adjustment of detailed implementation plans, internal financial adjustments and the replacement of a consortium partner.

The GA starts the selection procedure of new project partners, in case this action becomes necessary.
The GA meets regularly to take part in ordinary project meetings, taking place at intervals of nine months and/or when a major milestone is reached. Meetings of the GA typically refer to the following items on the agenda : review of deliverables, overall progress report, financial and administrative issues as well as a detailed implementation plan for the next phase. If special circumstances apply, the GA may get together for extraordinary project meetings. Such exceptions

can include disputes between project partners, the handling of urgent situations such as unexpected research results or the selection of new project partners.
Extraordinary project meetings will be announced by the Project Coordinator, possibly upon request of one or more project partners.

It is expected that most decisions are made unanimously. Decisions considered critical to the Project are being held vote on : In this case a decision is made by an open ballot with one vote per project partner in the GA. The decision is to be based on the option that received a majority of votes. Voting is also possible by telephone or by email, if a member of the GA is not able to physically attend the meeting. If the vote is on the replacement of a project partner, the partner in question is not allowed to cast a ballot.

Project Coordinator The Project Coordinator (PC), INRIA, WIMMICS unit., coordinates the GA. It is responsible for the project coordination, including the overall financial, administrative, contractual and technical project management.
Furthermore, the PC interfaces with the European Commission, being the single point of contact between the European Commission and the Consortium.

Development Coordination To address the complexity that such a platform development project brings, a development coordination (DC) described here is further supplemented by the Day-to-Day Development Management described under 2.1.1.5 below.

The specification process envisaged will involve iterative cycles amongst team members, from requirements to evaluation. Because the team is distributed, our process emphasizes asynchronous collaboration, punctuated by quarterly team gatherings for high-level milestones setting.

We will make extensive use of the PAIR to PAIR model, which allows efficient cross organizational collaborations (Explained at point 2.1.1.8 below). A first version of the PAIR to PAIR project management will be developed and shaped to the consortia own dynamics and constraints during the first year (see WP 1).

- I. Gathering Requirements (WP 2) – Working with Communities (including universities) to determine their needs, write up user stories that would help them co-operate with others, and work with engineering and UI teams to organise them into modules.
- II. Development (WP 3, 4, 5) - The modules will then be organised into a dependency tree to work out which are more basic than others, and then define acceptance criteria for design, UI, ontology and engineering teams.
- III. Deployment (WP6) and dissemination (WP7)
  The large portfolio of events of the consortia communities will be explored with workshops and hackathons to allow people to easily join the project at different levels.
- IV. Evaluation (WP 8) - The evaluation of the process and its outputs will be conceived with the communities as an iterative process. It will provide feedbacks which will nurture the requirements analysis

Some key benefits to the approach outlined above :

- 1. Developers and managers have highly frequent interactions despite only highly infrequent meetings.

- 1. Value propositions never get lost in overly technical specifications. Through the "User Story" mechanism, managers specify in increments what the community most needs, and developers respond rapidly and incrementally. If the prioritized needs are miscommunicated, it will never take more than one deployment cycle (usually one week) for the misunderstanding to be revealed.

- 1. Timeline estimations are fully automated, because future progress is based on past performance (story difficulty points x time taken to complete prior stories with equivalent points)

- 1. Efficiency : PAIR to PAIR project manager interface has been developed to improve such cross organizational processes.

Day-to-Day Project Management The Day-to-Day-Project Management is assigned to WP1. It is carried out by Inria, Wimmics Unit. A dedicated Project Manager with broad experience in project management will carry out the daily management activities :

Progress management and control of objectives:
The task comprises the control of deliverables versus the objectives, assuring the project deliverables contain the proper information to contribute to the overall project objectives.

Internal Communication/ Knowledge Management
At the consortium level, a framework for the adequate internal communication and the management of knowledge is set up and maintained by the Project Manager. A functional project web site is installed that contains a database with an open area (accessible for all internet users) and a private area, which can only be accessed by the project partners.

Work Package Teams (WPT) The work packages of Co-Operating Systems are executed by teams composed of varying competencies and performance records. The purpose is to enable them to overcome the difficulties posed by an highly complex environment as that of this multiverse consortia. The whole team is called on to estimate the efforts and plan the work to be done at the next iteration (at the workpackage planning meetings). Each member of the WPT can assign itself to the stories defined to be dealt with at the iteration. They become then responsible for monitoring the progress of its story.
Each WPT has a work package coordinator (WPC), which is responsible together with the PC for the coordination and monitoring of the progress of the work package, in order to ensure that its results can be integrated in the succeeding work packages or tasks. The main responsibilities of WPCs are:

- Outlining the structure of the deliverables and templates
- Coordinating the systematisation and prioritisation of stories and tasks in cooperation with the PC
- Ensuring the completion of the deliverables and the peer reviews
- Submiting deliverables to the European Commission via the PC
- Facilitating communication between partners
- Just-in-time coordination and monitoring of the progress of stories and tasks within the iterations

- Providing updated information on indicators of performance for the WPT at the end of each iteration
- Notifying the PC and GA in case of any foreseen delays and risks

Furthermore, to keep a tight control over the planned tasks on the project, task leaders (TL) will be assigned to each. The main responsibilities of TLs are:

- Preparation of the task milestones and stories together with the WPC
- Continuous monitoring and reporting on the progress of the task to the WPC
- Calling for task working sessions or convergences when needed
- Accomplishment of deliverables and the peer reviews
- Notification of the WPC in case of delays any foreseen delays and risks

PAIR to PAIR project manager as an innovative management tool. The consortium is bringing together some PAIRs :

- Actors : European commission, Project coordinator, WP coordinators, task leaders, technical partners, grassroots partners, both technical and grassroots supporting partners, and individuals being part of one them
- Projects : The consortium's project as a whole, the work packages (seen as sub-projects), the tasks (seen as sub-projects of work packages).
- Resources : The financial ones, the skills and expertises which are part of the consortium, the documentation resources, those which are needed, those which we aim to produce as outputs of the project (Deliverables).
- Ideas : Hypothesis, innovative concepts, suggestions, requirements, feedbacks of the core members or the communities …

We will represent the PAIRs of the consortium through a semantic graph datavizualisation as a way to allow real time exploration of the process. This approach will bring holoptism (whole view. Etymologically : Holos - Whole and Optism - View) into the system.

Each node of the graph will have a (wiki / blog / task manager / calendar) space with a Web Id authentication and will be able to configure read / write accesses through LDP and Web ACL.

Using our own approach and tools will allow us to betatest and contribute to their evolutions.

Quality and Risk Management The Quality Management is conducted through the assignment of peer reviewers to deliverables elaborated by the work package leader. The responsibilities concerning ongoing Quality Management can be summarized as follows:

- Elaboration, implementation and supervision of a Quality Management System (QMS) (strategy, procedures and methods)
- Organization and coordination of peer reviews of deliverables
  The risk management consists of the evaluation of risks concerning the achievement of project goals and the design of relevant contingency plans. A risk strategy is set up that will be conducted in a quarterly risk identification and assessment (i.e. delays, loss of key partners etc.). Close collaboration between the PC and the WPC is envisaged.

The main tasks are :

- Design and implementation of an efficient risk management system (including risk management organisation, risk categories, risk indicators)
- Set up and control of a consistent counter measure system
- Advising and informing the GA on risks such as delays or insufficient fulfilment of tasks
- Preparation of Risk Management reports for the project activity reports.

Conflict Resolution In the case of any conflict, maximum effort will be spent to resolve the situation with informal discussion to find a solution. In an extreme case of no agreements, the project co-ordinator will organise a conflict resolution meeting within 30 days following the reception of a written request transmitted by any co-Operating Systems partner. Attempts at arbitration will be performed in increasing order of authority :

- Within the team of each work package under the management of the WP Leader
- Within the GA under the management of the PC
- Within the GA enlarged with the board of advisors
- Within the GA and the board of advisors enlarged with the EC responsible

In case of necessity, a meeting will be held with all representatives of the level authorised. The quorum requested for arranging a meeting and making decisions is defined according to the conflict's nature and the number of organisations involved. In case of failure a meeting at the upper level will be arranged. If it becomes necessary to involve the European Commission, a formal request for a meeting will be submitted by mail. The request will include potential solutions and requests an answer within a stated time.

Project Communication All official communication to the European Commission is carried out through the PC. The Project Coordinator is authorised by the project partners to negotiate with the Commission on behalf of the consortium as a whole. Internal communication between the project partners takes place through the following channels:

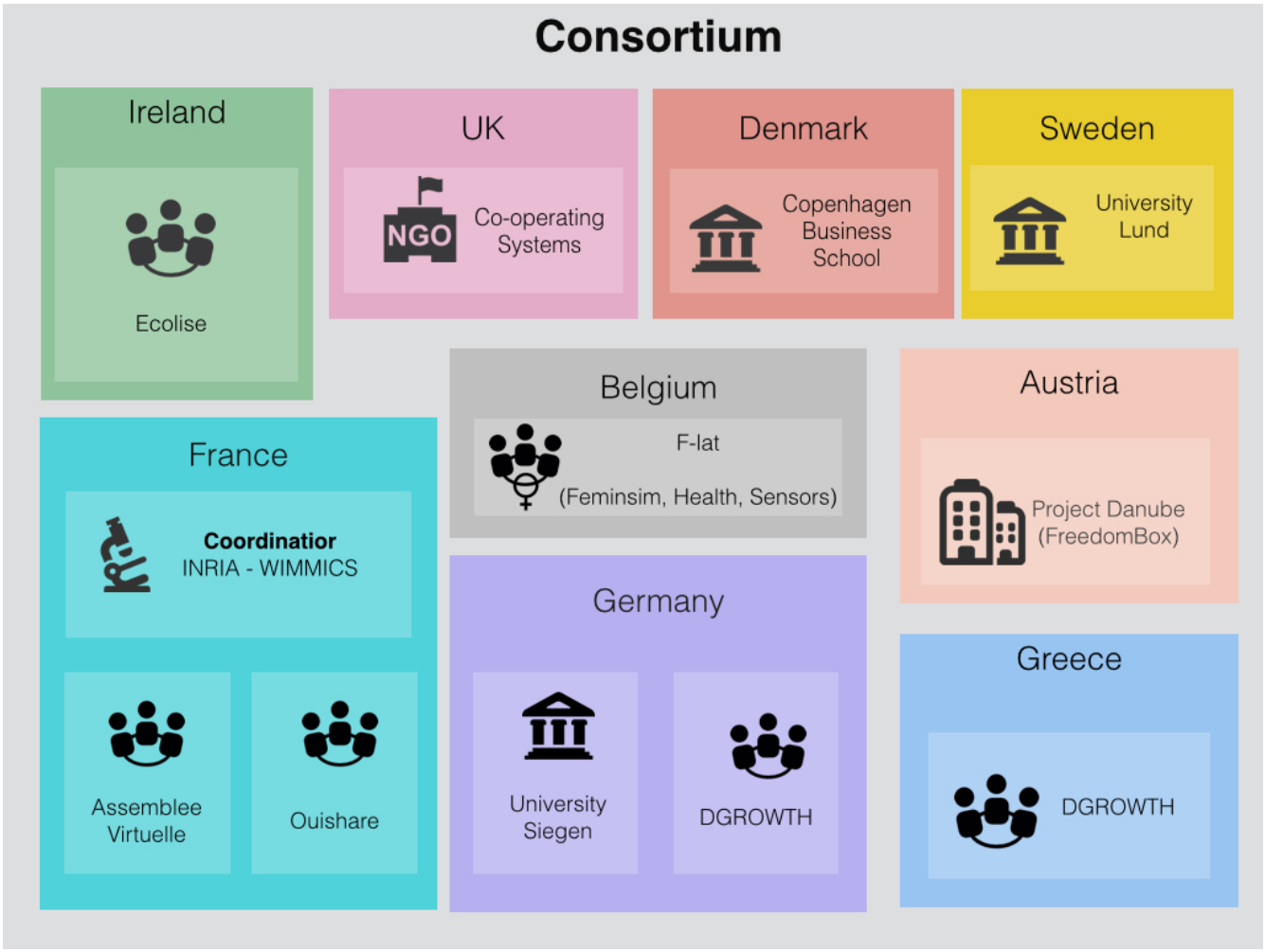
- Physical communication
  Virtual presence or face-to-face meetings in form of workshops or smaller meetings take place at every stage and level in the execution phase of Co-Operating Systems. Besides the project-related purpose and the professional aim of these meetings, they shall strengthen the cooperation between the project partners in a professional and partner-like manner. This must obviously play a major role at the beginning of the Project, and Inria, Wimmics Unit will organize an in-person kick-off meeting.
- Digital communication
  Co-Operating systems pursues an electronic management of the Project. It will be based on the PAIR to PAIR project manager as explained above (2.1.1.7)
  Co-Operating systems will use Web 2.0 opportunities to disseminate project updates and results, for example through the maintenance of a facebook page and a twitter account.

Board of advisors The board of advisors will be composed of experts (technical and social innovation), and communities members. It will help us processing the project.

Admission of new partners It is not planned to call upon additional project partners within Co-Operating execution phase. However, should one of the partners be unable to fulfil his obligations as assigned in the Consortium Agreement, he might need to be replaced. New partners can only be selected and admitted upon approval by the EC.

2.1.2 Consortium Agreement

template



3.3 Consortium Whole

The consortium tries to maintain a balance between a development team building the co-operating system and
the communities using the platform, with a layer that intermediates between both of them.
Of course every member of the consortium forms a community and so is expected to use the platform and to feed the experience of that use back into the development track.

Some users though are further away from the technology, such as Ecolise, and there more careful work by the team at the University in Siegen will help understand what unexpressed needs they in fact have.
Some users are closer to the development team such as some hacker spaces that are expected to reveal at some point enthusiastic amateurs that can themselves take part in the development.
The aim of the project is to create tools that will allow the Universities, the communities, and the developers to work better amongst themselves and with one another. Furthermore, the various communities themselves can raise their individual awarness ideas in terms of ecological and sustainability issues to the more technical entities collective of the consortium, who in contrast might not be aware of certain challenges addressed by the communities and this way showing a grassroots example within the very consortium. On the other hand, awareness is also being raised about the importance of privacy and secure communication techniques from the technical partners towards the non-technical communities.
The International and Transnational makeup of some organisations such as OuiShare and Ecolise should help provide a testbed to show that the platform is ready to be deployed accross Europe and across the world.
The University of Lund's expertise in Social Innovation should help bring out use cases that can have the best social impact.

Below we have a short description for what each member of the consortium brings to the project.

Ecobytes

- agile project management experience, esp. in community oriented development with mixed (technical, non-technical) teams; can help to setup procedures for continous improvement of collaboration processes across the project stack
- Drupal expertise and optimised self-hosted Drupal service based on BOA
- the TransforMap.co mapping project and communities, with over 50 organisations and communities involved
- the allmende.io and Ecobytes federated servers and services infrastructure
- the co-munity.net social collaboration platform with around 5000 users from organisations and communities on degrowth, community-supported agriculture, transition towns, food sovereignty
- the plantei.eu seed database and exchange platform
- articulation with the community-supported agriculture networks in Germany, Poland, Belgium and the international network Urgenci
- collaboration and possibility of joint development with the IT teams of Transition Netzwerk (Germany-Austria-Switzerland), Transition Network (int.), Global Ecovillages Network (int), Solidarische Landwirtschaft network (Germany)
- integration of the degrowth communities at different levels - academics, activists and practicioners (nowtopias)
- the GROWL network for trainers and commons-based peer production on degrowth, an EU ERASMUS+ funded adult education partnership with 9 partners in 8 countries and nearly 500 participants
- the follow-up RELAIS consortia
- the degrowth portal (degrowth.de/degrowth.info)

- research and publication of scientific literature on degrowth and technology (e.g. by organising special isssue on high impact journal)
- co-organizing strong integration of CoOS developments with the bi-yearly international conferences of degrowth (over 3500 participants in Leipzig 2014; next in Budapest September 2016; then possibly Greece, 2018)

OuiShare

{>> Fill in <<}

Assemblée Virtuelle

- Community of fifty active contributors, aged 21 to 84 years, belonging to a variety of disciplines: mathematics, physics, computer science, philosophy, sociology, prospective, political science, communication, media, design, collaborative, social and circular economy, social activism, transition movement.
- 3 years of research and development through trans-disciplinary approaches and collective intelligence on digital social transformation issues.
- Conceptualizing PAIR PAIR model, in relation to the complex systems theory and peer to peer approaches.
- Conceptualization of the potential synergies between the PAIR PAIR model and semantic web technologies
- Building an ecosystem of digital social projects around Linked Data and PAIR to PAIR : Pixel Humain, Unisson, Rhizi, Dialoguea, Hypostasis, Open Funding, PressForMore, ChezNous, Practishare, Sensorica / Open Value Network, Call For Team, Outil réseaux
- Building strong links with French civil society: Les petits débrouillards, Collectif de la transition citoyenne, Etats Généraux du Pouvoir Citoyen, Entreprendre Vert, Colibris, Démocratie ouverte …
- Places: Chateau Millemont (Yvelines-France), Fil Rouge (Paris-France), Ferme de l'Utopie (Alsace-France), ChezNous (Auvergne-France), Fort de la Galline (Languedoc-France)
- Ways of transition: Conceptualization of the project and federation of an ecosystem of major players.
- Distributed project management expertise

Wimmics

{>> Fill in <<}

Siegen

{>> Fill in <<}

Lund

{>> Fill in <<}

co-operating systems

Open source project at read-write-web which can be moved to the co-operating-systems github repository.
This has been working for three years on various iterations of the server code, and the client code.

{–

Communities The main communities we are working with are deeply involved in Sustainability and Social Innovation projects.

OuiShare OuiShare as a network of projects developing the sharing economy, is a light weight organisation, with members across Europe and the World.
As a result OuiShare has to work with a large number of organisations which it cannot dictate any technological choices to.
After 3 years of existence OuiShare did a survey of all the tools it needed and as of the time of writing had a list of 55 tools most of them saving their data in silos, be they open or closed, and with very little compatibility between the tools.

F/Lat Quantified me - health data F/lat (Free libre arts and technology) is a Brussels based ASBL largely federating actors involved in the development of creative open source project.
F/lat is concerned with social distribution of technological processes and its intervention in co-operation concerns its inmplemention in issues concerning uses of self tracking devices as a comunitary tool driving on the history of self help feminist networks.
F/lat has already a activity on those issues by Hosting wikimedia edit-hatons on art and feminism issues and pursues with the project Quantified me as a driving force to explore user benefits in distributed platforms for social exchanges on every tracking and sensor informations.
F/lat has a long experience in the development of community and technological based projects, it is actively linked to the belgian hackerspace and free software community, it conceives its technological processes as a condition for social and community hubs through endeavors as horizontal learning Relearn (http://http://relearn.be/) is in its forth years of experience, and active link to community platforms such as GASAP (http://www.gasap.be) or Domaine Public Public Domain Belgium hosting solutions: (http://domainepublic.net)

Relation to IoT and to health, as a way to change behavior.

Hackspaces Hackspaces, Makerspaces and FabLabs are places that provide a room for individuals to collectively create and play with technical artefacts.
They are usually organised by a local group and support various activities from computer programming, hardware design to the creationg of physical items and art. Often these places also harbour a room for

activists interested in privacy protection, open source and open design. Hackspaces are usually well connected in informal ways, by organising conferences and workshops.

The **Project** is connected to these communities through members of
University Siegen that participate in -spaces throughout Germany.

Urban Gardening Communities A growing community of local initiatives occupy {==Brachland==} within many cities around the world to grow food or cultivate plants. Forms of organisation range from loose guerilla-style actions up to stable gardening groups that enjoy communal support. Established, stable groups are very rarely inter-regionally connected, the usual co-operation happens through the common public webpages of these groups.

Contacts Ecolise, USiegn {>>Whom to mention here?<<}

{>> Others <<}

3.4 Resources to be Committed

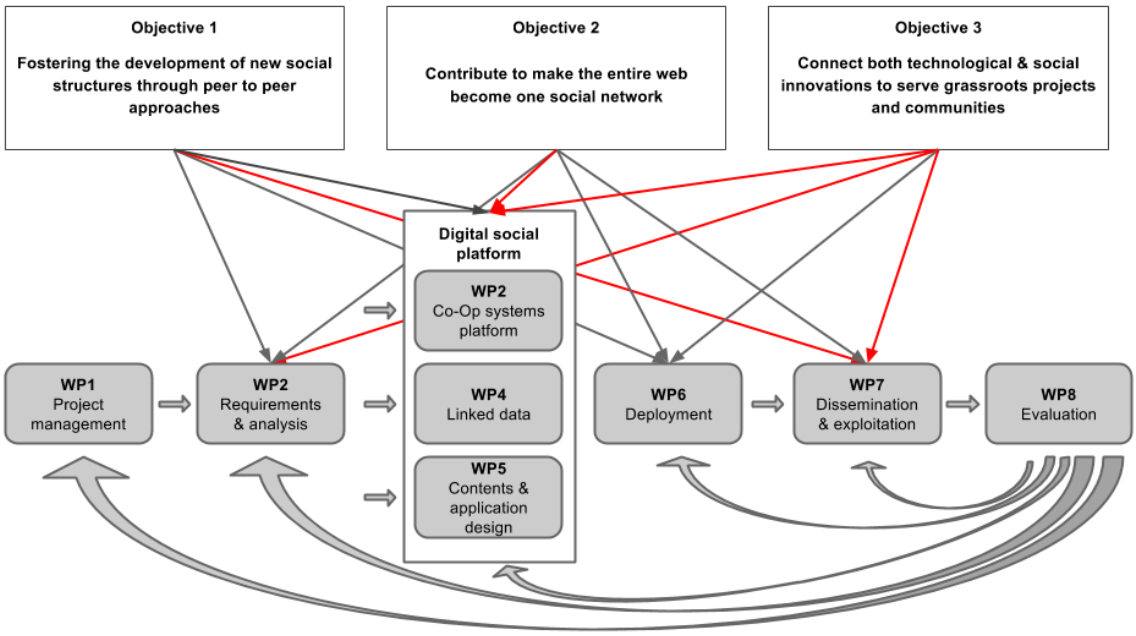
template

The project {++ co-Operating Systems ++} is based on the combination of technological and social innovation. It requires the development of a new software and social architecture, based on the logic of peer to peer which communities will adopt and reinject in the project.

The consortium aims to equip communities to strengthen their action and organization capabilities. Our Work Programme includes 8 work packages that will structure this perspective:

- WP 1 : Project Management
- WP 2 : Requirements
- WP 3 : co-Operating Systems Platform
- WP 4 : Linked Data
- WP 5 : Application
- WP 6 : Deployment
- WP 7 : Dissemination and Exploitation

The figure below shows how the different work packages fit together.



{== Slide 2 of : https://docs.google.com/presentation/d/1irOHceM2kPzHsmMZroPE9x5rRsAG_zXDx-2R4vv6f-U/edit#slide=id.g9807c0a1c_0_0 ==}

The three objectives are addressed by the combination of all work packages.

Objective 1 : Fostering the development of new social structures through peer to peer approaches :

- It is mainly addressed in the work package 7 “Dissemination and exploitation” through the fieldwork we will do in direct contact with the communities.
- The development of “PAIR 2 PAIR” method can not be done without taking into account the real problems and needs of the communities, which implies that we build this social innovation with the communities themselves. That will be done through the Work Package 2, “Requirement Analysis and Identification of User Scenarios / Use Cases / User Studies”.
- In addition, the PAIR 2 PAIR method will be largely “augmented” by the use of digital technologies (WP 3, 4, 5 and 6)

Objective 2 : Contribute to make the entire web become one open and secure social network

- It is mainly addressed in the work package 3 “Co-Operating systems Platform”, as well as in the work package 3 “Linked Data”.

1. In WP3 will be developed the software architecture (frontend and backend).
2. In WP4 will be developed the data architecture.
3. The combination of work in the context of these two work packages will lay the technological foundations of a social distributed web based on W3C Linked Data open standards.

- The implementation of this new technology will need to be deployed (WP6) and be disseminated (WP7).
- In addition, we will need to co-develop it with developer communities so that they can share with us both (and among themselves) their experience and needs (WP2).

Objective 3 : Connect both technological & social innovations to serve grassroots projects and communities

- It is addressed by:

1. Work Package 2, "Requirements", that will allow sourcing of communities needs and develop the platform accordingly.
2. The work package 3, "Co-Operating systems platform", through which will be developed the P2P dimension of the project.
3. Work Package 4, "Linked data", through which the organizational "PAIR 2 PAIR" will be implemented in a data structure (ontology) which itself will be implemented in a data format (RDF - Linked data) .
4. The Work Package 5, "Contents and design application", that will develop beautiful interfaces tailored to users requirements
5. Work Package 6, "Deployment", will deploy the platform.
6. Work Package 7, "Dissemination and Exploitation", which will make avalaible the whole stack for communities and their projects.

Project Management

Work package 1 "Project Management" will coordinate the consortium and its project so that its objectives are achieved on time in accordance with the commitments made in this proposal.

Evaluation

{== Improve me! A rewrite is neccessary due to WP changes. ==}

Work package 8 "Evaluation" was designed to allow an evaluation of the project as a whole, using relevant indicators to take account of all the externalities, whether economic, social or environmental.
It was also designed to allow an iterative, agile process. This dimension is fundamental to the success of IT projects, particularly when they are complex. Therefore, in addition to the overall project evaluation, we will proceed with an ongoing evaluation of the work done in each work package:

- WP2: Analysis of user requirements gathering process and improvement in the light of communities feedbacks.
- WP 3, 4, 5 and 6: Analysis of the development process and their milestones and improved in light of feedback from betatesters.

- WP 7: Process analysis, dissemination strategy and improvement over the communities feedbaks.

INRIA

template

USI

Description (of USI/WiNeMe)

The research groups Information Systems and New Media (WiNeMe)[^1] and IT-Security (Sec)[^2] provide a very interesting combination of research and expertise, combining information security and user-centric application design. The groups contribute to the research fields of Human Computer Interaction, Computer Supported Cooperative Work, Ubiquitous Computing, Software Engineering, Security and Privacy.

The research groups are actively supporting and researching on local grassroots communities, especially the hacker and maker communities.

CV

Prof. Dr. Volker Wulf

Volker Wulf is a professor in Information Systems and the director of the Media Research Institute at the University of Siegen. At Fraunhofer FIT, he heads the research group User-centred Software-Engineering (USE). He is also a founding member of the International Institute for Socio-Informatics (IISI), Bonn.

After studying computer science and business administration at the RWTH Aachen and the University of Paris VI., he got a Ph.D. at the University of Dortmund and a habilitation degree at the University of Hamburg, Germany. In 2001, he worked as a research fellow at the Massachusetts Institute of Technology (MIT), Cambridge, MA. In 2006/07 Wulf spent a sabbatical as a Fulbright Scholar at the University of Michigan, Ann Arbor, and at Stanford University, Palo Alto.

His research interests lie primarily in the area of Computer Supported Cooperative Work, Knowledge Management, Computer Supported Cooperative Learning, Entertainment Computing, Human Computer Interaction, Participatory Design, and Organizational Computing.

He published more than 170 papers. He edited 10 books among which „Expertise Sharing: Beyond Knowledge Management“ and „Social Capital and Information Technology“ both with MIT Press Cambridge MA and „End User Development“ with Springer Dordrecht are probably best known. As a conference co-chair he hosted the Seventh European Conference on Computer Supported Cooperative Work (ECSCW 2001) in Bonn and Communities & Technologies (C&T 2003) in Amsterdam.

Dr. Lars Fischer

Lars Fischer currently is interim professor and senior researcher with the research group IT-Security at the University of Siegen. His work is focussed on distributed (spatial) systems, privacy and identity.

After studying computer science at the University Bremen he followed Prof. Dr. Eckert to work on his Phd in Darmstadt. At the Technische University there he worked on privacy measures and vehicular networks. After a brief period in the industry as Security Consultant, he joined the University of Siegen. After participating in projects on social networks and secure value-chains, he took the chance to establish his own lectures and research topics by temporary professorship.

His research covers different aspects of distributed systems and location-based services, working on authentication, co-presence, and privacy, he is extending his fields by adapting to user-centric research. He has extended and developed lectures on advanced computer security, online social networks and location-based computing.

Johanna Meurer

{>> TODO <<}

References

Publications

- Jan Hess; David Randall; Volkmar Pipek; Volker Wulf: Involving Users in the Wild - Participatory Product Development in and with Online Communities, in: International Journal on Human-Computer Studies (IJHCS), Vol. 71, 2013, in press
- Mark Ackerman; Juri Dachtera; Volkmar Pipek; Volker Wulf: Sharing Knowledge and Expertise: The CSCW View of Knowledge Management, in: Computer Supported Cooperative Work: The Journal of Collaborative Computing (JCSCW), Vol. 22, Issue 4-6, 2013, 531 - 573
- Lars Fischer and Julia Dauwe Design and Implementation of Co-Presence Transportation for Physical Objects in MOBILITY 2014, The Fourth International Conference on Mobile Services, Resources, and Users (2014)

- Doğan Kesdoğan , Lars Fischer , Marcel Heupel , Rafael Gimenez , Simon Scerri , Fabian Hermann and Mohamed Bourimi: “Context-aware, Trust-based Access Control for the digital.me userware” in Proceedings of: New Technologies, Mobility and Security (NTMS), 2012 5th IFIP International Conference on (2012)
- {>>TODO: Publication Johanna Meurer<<}

Projects

Infrastructure Required

- Living Lab Extension (Gardening Community)
- Solar powered Sensors (for activity observation/added value services)

Third Parties Involved

Template

Does the participant plan to subcontract certain tasks	n
Does the participant envisage that part of its work is performed by linked third parties?	n
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	y
The project will engage in workshops with users to design and develop applications. Voluntary participants will not receive payment and may not incur costs as mentioned by Article 12 in the General Model Grant Agreement.

template

Assemblée Virtuelle

Virtual Assembly is a non profit organisation created in France in 2011, gathering today more than 40 people involved on a voluntary basis, and corresponding with various national and international networks. Its objective is to enhance the impact of any community (starting with the ones working on a societal transition), by allowing them to foster their interaction with their ecosystem.

To do this, Virtual Assembly offers a innovative binocular vision that combines technical and social aspects :

- The social vision describes the world through 4 basic elements : Projects, Actors, Ideas and Ressources (P.A.I.R.) : once described and shared, all these elements can be linked without frontiers, resulting in a powerful improvement of all the possible interactions, without compromizing their autonomy (i.e. faculty to choose its dependencies).
- The technical vision describes the world through an open-source distributed+decentralized network based on semantic technologies : by decorrelating data from servers and applications, and allowing each individual to share them consciously, the fragmented numeric world mutates into a native collaborative network system…

The main tasks of the Virtual Assembly are related to this binocular vision :

1. Raise awareness and federate various actors of the transition world : collaborations, (co-)organisation of events, …
2. Develop/supply tools and methods to its ecosystem of projects to implement a common backbone : ontologies, Co-Operating systems platform, …
3. Integrate, Test and deploy : help with technical, logistical and financial aspects to accelarate partnering technical and social projects
4. Lay the foundation of larger ambitions (research and training center, virtual currency, crowd-funding platform, …)

CV & profiles of the persons involved in the consortium

- Guillaume Rouyer : Political Scientist and "philosopher" (PHD student), he (1) initiated the Virtual Assembly's project 3 ago, (2) co-initiated the "Millemont Insititute for Wisdom and Action", (3) proposed and engaged "ways of transition" in a cross organizational dynamic. For 10 years, he creates new ideas and projects towards collective awareness for sustainaibility and social innovation.

- Martin Pruvost-Beaurain : Mathematician, web architect and philosopher, he advices corporations' DSIs on digital issues and related strategies. He is specialised in distributed decision systems and semantic web web technologies.

- Jean-Marc Vanel : Data scientist, ontologist, he works with corporation on semantic informations systems using linked datas.
- Sylvain Le Bon : Programmer, specialized in LDP, Semantic web technologies, Scala, Python, and distributed architectures. Funder of Open Initiatives which aims to advice open-source projects.
- Gilberte Caron : Psycho-scoiologist, Virtual Assembly's president, co founder of Cobusiness, owner of the fil rouge co-working space.
- Gaëlle Giffard : Social activist, she worked for 10 years with social entreprenors, she is in charge of public relations with collectivities, NGO's and foundations.

5 publications

- Social Web : 30 seconds video explaining the problem of Silos …
- PAIRspectives : for a global distributed network of Projects, Actors, Ideas, and Resources
- Platform cooperativism : From fragmentation datas & services to user-centric architectures
- Ways of transition : Nodes and links to foster transition dynamics in the territories …
- Semantic Web and Complex system theory : When technology empower our minds

5 activities

- Weave the Web We Want : One week hackathon Mozilla on linked datas and distributed

social networks at Mozilla foundation (Paris)
- Semantic Camp : One day workshop on semantic web technologies at Fil Rouge (Paris)
- Intervention au Ministère de la culture : Les enjeux du web sémantique
- Open Chateau : 3 days at Millemont Castle to build synergies between actors and projects of the transition movement.

- World Social Forum : Which digital tools for the World Social Forum

Infrastructures

- Fil Rouge co-working space : 200m2 in the center of Paris, dedicated to semantic web technologies for social and ecological innovation
- Chateau de Millemont : 600 hectares, 6000m2, 40km far from Paris. We collaborate to the development of a "Hub for Transition".

template

OuiShare

Short name: Ouishare
Website: http://ouishare.net

Profile

OuiShare is a Paris-based non-profit organisation gathering a global community of 2000 members facilitated by a team of 80 connectors. It is a "think and do-tank" with the mission to build and nurture a collaborative society by connecting people, organisations and ideas around fairness, openness and trust.

Its main productions are:

- conferences and workshops : from small local gatherings to the yearly Ouishare Fest, the largest event in Europe on the collaborative economy. Globally, Ouishare organizes more than 150 events per year.
- knowledge : both writing original content and curating external contributions on the online Ouishare magazine, TV channel and podcast radio. Ouishare also collaborates on third party studies & publications.
- collaborative research : building and managing a network of academic researchers on the collaborative economy; taking part in national and European research programs.
- professional training, mentoring and consulting
- incubating projects : Ouishare Labs (IT), Ouishare Awards (social innovation), Sharitories (linking the collaborative economy to local territories) Transformap (mapping of the collaborative economy), Ouikit (shared equipment for sustainable events)…

Transversally to all these activities, the community is organised around topics of expertise: collaborative consumption, business models, open source production, peer-to-peer finance, participative governance, transport, energy, health, food, distributed internet infrastructures…

Relevant expertise and experience. Main role in project.

List of involved staff (including CV or description of the profile, including gender)

Auli Kutt, female, is Ouishare Labs connector. On one hand she is responsible for Ouishare web systems and collaboration tools, giving tech support to end users and maximising the efficiency of using different tools and networks within the community. On the other hand she's managing the web-software-focused OuiShare Labs subcommunity, with the mission to bring more visibility to open source web tools in competition with proprietary software, and identify ways to turn community's user experience into meaningful feedback to open source tool creators.

David Canat, male, is a full-time research connector for Ouishare. His mission is to promote transdisciplinary collaborative research on the collaborative economy, as well as facilitating dialogue between the research community, practitioners (fields of study) and governments (research users). David's contribution to the project will be to link it to other related research initiatives funded under the current CAPS call. Particular opportunities might arise with projects where Ouishare is also a partner (if funded), but not exclusively.

Relevant publications (up to 5) and/or services or other achievements relevant to the call

Ouishare has organised more than 200 events across Europe, half of which in collaboration with city and local administrations.

The reach of its online publications and forums is: 24.000 followers on its main facebook page, 8.000 aggregated members on its facebook groups, 20.000 followers on twitter, 60.000 monthly unique visitors on its magazine, 9.000 subscribers to its newsletters.

Relevant previous projects or activities (up to 5) connected to the subject of the proposal

Organisation of the OuiShare Fest in 2013 & 2014:

- Decentralized Networks for Communities panel

Organisation of the OuiShare Labs Camp as a side event to OuiShare Fest in 2013, 2014, 2015:

- recurrent themes: decentralized networks, linked data, semantic web

Legal entity and main tasks

Sarantaporo.gr is a Non Profit Association, founded in 2013, to promote sustainable development in the remote, isolated, mountainous region of Elassona municipality, in northern Greece. The municipality has more than 50 villages, scattered around a mountainous relief, just opposite of the Olympus mountain. Being remote and sparsely populated, the villages, due to the lack of the relative infrastructure, do not enjoy the modern communication opportunities available in urban centers as the Telecommunication Companies (TelCos) don't see profit in investing to the relevant infrastructure. As a result many of these villages lack Internet connectivity.

To aleviate this shortcoming the Sarantaporo.gr Non Profit Association designed and deployed wireless community networks in 15 villages in its area, starting from 2010 until present, and which are currectly interconnected under the same backbone network [1] along with other community netw rks in Greece and Europe. This infrastructure, offered as a 'commons', is openly accessible by all and currently serving approximately 4.500 people. It is supported by the Sarantaporo.gr Non Profit Association in collaboration with local support groups of 4-5 people in 12 villages, totalling almost 60 people who wish to be actively involved on a voluntary basis.

The main tasks of the Sarantaporo.gr Non Profit Association are:

1. To create, maintain, operate and develop the Sarantaporo.gr Community Network (CN), safeguarding its "infrastructure as a commons" character. The access to the CN is open to everyone and everyone is welcomed to participate.
2. To connect and collaborate with other community networks (wired or wireless), aiming to promote the widespread use of this technology for the benefit of the local communities.
3. To be involved in and facilitate scientific research on the technologies that enable the Information Society.
4. To be involved in and facilitate research concerning scientific approaches around society, ecology and sustainable development.
5. To defend and build awareness around digital rights and digital freedoms.
6. To promote citizen access to information, knowledge and culture on a basis of equal rights, using ICT.
7. To contribute to the bridging of the digital divide between urban and rural areas
8. To promote and build awareness around common infrastructure and open source technologies

The Sarantaporo.gr Non Profit Association has an organic relation with the local communities of the region, as well as with other open source and wireless communities around Greece (e.g. AWMN, Hackerspace.gr, CommonsFest etc) and with Academia (Technological Institute of Thessaly, University of Thessaly) and Local Administration. As such it can contribute to the project's tasks by bringing together local end-users of the services, academia, public administration, developers and people from commons oriented communities to describe and document their needs, in terms of communication tools, to test and provide feedback for the deployed services and to give insight for possible new ways of interaction.

Group members' profiles

The Sarantaporo.gr Non Profit Association's members that will be involved in the current project have various educational and professional backgrounds. Many have an engineering background in the fields of electronics and computer control, telecommunications, electric engineering, production and management engineering, survey engineering and environmental engineering. Most of the members hold a MSc in fields, such as business administration, project management, marketing, executive development, environmental sciences. Thus, the large professional background of the "Sarantaporo.gr Non Profit Association" shall contribute and benefit to the successful completion of the project.

George Klissiaris, (male) the original initiator of "Sarantaporo.gr" association's set-up and the establishment of the networks in the area. He is a successful marketing specialist in a large trust of Greek companies, with industrial production engineering background. Information technologies are his great passion and a field for volunteering work for common public benefit. He is currently in charge of the technical support for operation and maintenance of "Sarantaporo.gr WiFi Networks". He is responsible for the general coordination of tasks within the nonprofit association. He is also the representative of "Sarantaporo.gr" in this proposal.

Vaitsis Achilleas (male) engineering degree in Planning and Regional Development. He has research experience in rural space development. His role in the team is the operations management and the outreach and contact with local citizens of the rural areas concerning the deployment and expansion of the Community Network and of the services that are offered. He is one of the hands-on persons for the actual deployment of the CN nodes and the contact person of the group with the locals.

Fotis Klissiaris, (male) a Radio Networks and Telecoms Engineer possessing also MBA, with more than 15 years of experience in wireless networks planning, implementation and optimization in Greece and Belgium. He is a founding member of "Sarantaporo.gr Non Profit Association", contributing to the planning, implementation, growing and maintenance of the wireless networks in the area, supporting and participating in its various cultural and educational activities, while also impersonating a communication link towards local communities, press and authorities.

Rossie Simeonova, (female) associate at the Sarantaporo.gr NPO. She is an Environmental Engineer, working on developing and designing integrated waste management project in different European countries. She is interested in building sustainable communities not only in environmental, but also in socioeconomic terms. Her role in the NPO is the search for funding opportunities, proposal writing, participation in the organization, implementation and coordination of actions.

Vassilis Chryssos, (male) MSc in Production Engineering & Management and MSc Quality Control & Environmental Management, has a rich experience in Project Management and Community Building. For the past 5 years he has been working with free/open source software and open technologies as a consultant and as community building officer in collaboration with NGOs such as Medicines Sans Frontieres and Greek Free/Open Source Society (GFOSS). He has been volunteering in social and development aid groups since 2000, as a project manager and environmental expert. He has organized and participated as instructor in many training workshops in computer usage skills building. Currently a member of the organizing committee of the 3rd Commons Fest that is taking place during May 2015 in Greece.

Joseph Bonicioli, (male) MSc in IT For Manufacture, BEng in Electronics and Computer Con-

trol, is deeply involved in community networks, is a founding member of "Sarantaporo.gr Non Profit Association" and has served as the President of the AWMN (Athens Wireless Metropolitan Network) Association Board for 6 years. He is also representing AWMN and is a founding member of the Open Spectrum Alliance. He has worked in the IT sector as an IT Manager for more than ten years whilst he has also been involved in the area of automotive, manufacturing, telecoms, electronics and runs his own personal company. For the last three and a half years he has been managing the participation of AWMN Association in the European FP7 Research project CONFINE which has successfully built a wireless community based testbed across many european countries.

Antonios Broumas (male) is a technology lawyer, a social researcher and a militant in movements, that promote social autonomy and the commons. He has studied law at the University of Athens and holds postgraduate degrees in philosophy of law and IT & e-Comms law. His main areas of interest, research and writing focus on the interaction between law, technology and society. Antonis has published, among others, a contributing chapter in the 2013 Routledge Handbook of Media Law and Policy under the title "Governing Media through Technology: The Empowerment Perspective". He is currently working on his PhD at the University of Westminster regarding the interaction of intellectual commons with the law.

Evangelia Gkountroumpi, (female) one of the founding members of Sarantaporo.gr. She has studied History & Archaeology and holds a M.Sc. degree in Project Management. Her interests include volunteering work, networks, policies for local authorities and promoting participatory procedures for citizens. She has done administration and coordination work for EU programs in universities and is currently working in Operational Planning and Goal Setting for the Municipality of Larissa and managing EU programs.

Relevant services

Relevant services that have been deployed on the infrastructure include:

- Voice over IP (VoIP) telephony: many villages' inhabitants are not permanent. They visit their village regularly during holidays and / or weekends. For these people it is not efficient to pay for village landline throughout the year. Thus a VoIP service is valuable in the sense that it offers the possibility for cost-efficient connectivity.
- Streaming WebCam: live streaming is important for the local permanent and visiting residents. The permanent residents use it to live stream their fests to their migrant relatives, while the visiting residents use it to monitor their property.

Relevant previous activities

Sarantaporo.gr Non Profit Association has been participating in the European FP7 FIRE CONFINE Project (Community Networks Testbed for the Future Internet) [2] since February 2014, after being selected among many other proposals during the second open call for proposals. The role of the association in the project is to expand the testbed with additional nodes, offering cultural, socio-economic, geographical and topographical diversity to the initial testbed.

Moreover, Sarantaporo.gr Non Profit Association recently partnered with the Pulmonary Clinic of the Thessaly University to construct and deploy a digital questionnaire concerning the identification of possible symptoms of Chronic Obstructive Pulmonary Disease in the local population. By using the CN infrastructure it is possible to easily reach out to many locals without the need to travel around all these villages. This is the second questionnaire following on a successful previous collaboration with the Department of Physiology of the same University, which run a questionnaire to explore the sleeping quality of the local inhabitants (identification of apnea symptoms).

Publications:

- Emmanouil Dimogerontakis, Carlos Ray Moreno, Vasilis Chrysos, Pau Escrich, Victor Oncins, and Leandro Navarro, "Community Networks as critical infrastructure: Socio-technical issues," in Unpublished article, Nice, 2015.
- B. Braem, R. Baig Viñas, A. L. Kaplan, A. Neumann, I. Vilata i Balaguer, B. Tatum, M. Matson, C. Blondia, C. Barz, H. Rogge, F. Freitag, L. Navarro, J. Bonicioli, S. Papathanasiou, and P. Escrich, "A case for research with and on community networks," ACM SIGCOMM Computer Communication Review, vol. 43, no. 3, p. 68, Jul. 2013.
- Voutsas N, Vaitsis A, Gourgoulianis K, Klissiaris G, Lafioniatis N, Zarogiannis S, "Web-based questionnaires: Connecting a tertiary care hospital to remote areas giving the opportunity of awareness and smoking cessation", to be presented in May 15-17 2015 at the 21st Scientific Congress of Hellenic Medical Students & 9th International Forum of Medical Students and Junior Doctors in Athens Greece, in May 15-17 2015.

Relevant infrastructure

The infrastructure that has been deployed over the past five years is comprised by:

- 20 backbone nodes [1] that interconnect the 14 villages' mesh networks, the Technical Institute of Thessaly (Larisa TEI) and other community networks in Greece and Europe (See community-lab.net and Confine partners). This infrastructure has the potential to further expand in the area covering all the 60+ villages of the Elassona municipality and offering connectivity and digital services to the locals.
- 18 microservers currently installed and running within the Confine Project community-lab testbed [3] and that could also host other online services running over the backbone
- 160 wireless access points, which offer open access to people in the villages - See for example the map with the local access mesh network of the village Sarantaporo. In the same webpage you will find links to the other 14 villages. [4]

It should be emphasized that by participating to the CONFINE project and being part of the testbed that has been deployed, the Sarantaporo.gr CN is connected to four community networks across Europe:

- the Athens Wireless Metropolitan Network [5], comprising over 12.000 nodes, running over 750 services
- the Guifi.net [6] of Cataluna, Spain, comprising over 27.000 active nodes

- the Ninux [7], with over 330 nodes across Italy, and
- the Austrian Funkfeuer [8], with over 400 nodes

All the services that will be deployed in the Sarantaporo.gr CN will be readily available for all these CNs to test and use, offering a first class opportunity for dissemination of the project's outcomes in many communities across Europe. In other words, the proposed project will offer the potential to utilize an infrastructure that has been put in place via European funding, adding value to it, thus contributing to its sustainability.

Referred Links

- [1] http://wind.sarantaporo.gr/?page=nodes&session_lang=english
- [2] https://confine-project.eu/
- [3] http://community-lab.net/
- [4] http://www.sarantaporo.gr/node/98
- [5] http://www.awmn.net/
- [6] https://guifi.net/
- [7] http://wiki.ninux.org/
- [8] http://www.funkfeuer.at/

F-Lat

{>>This is a draft<<}

template

Description (of F-lat)

The legal entity would be F-lat (Free Libre Arts and Technologies) an asbl dealing with collective appropriation of caption devices in situ interventions and collective environments.
F/Lat is an open plateform dedicated to the research and transmission in creation using open-source technologies, We are based in Brussels where we maintain studios open to research practice exchange and teaching in that field. F/Lat is grounded in a network of similar structures devoted to research and exchange in open learning for a large variety of publics. F-lat is a new structure directly issued from the activities that toke place in Constant Variable during the past 3 years.

CV

Dr. Natacha Roussel

EDUCATION
2014
« Mobilis in mobile, from intimacy to collectivity, perception and participation in mobile technology » PHD art and Science, Paris 1, La sorbonne, (Fr) director Olga Kisseleva
2004
« One's Walk an interactive textile environment » grad-cert Design Concordia University (Montréal, Qc)

P R E S E N T A T I O N S A N D C O N F E R E N C E S
2014
Libre graphic research Meeting Leipzig Dynamic storytelling in a mesh network april 2014
Quantified-me, a critical view on bodily connections, Interferences, De Binnenpret Amsterdam, august 2014
FIELDS, National museum of Latvia, RixC art center Riga, Latvia may 2014
2013
Pixelache festival Bricolabs reassemble, Interac wearing.
2012
Artists in Industry, international design conference, Bucharest Romania – Open Source Collaboration.An identity for the Collective based on a Pragmatic System of Production. nov 2012
Open World Forum IOT as an open experimentation plateform, Coucil panel May2012

E X H I B I T I O N S

2014 «Quantify me » Gender changing, Constant VZW Beurswoburg, Brussels.
« Walker » FIELDS, exhibition organised by RIX-C arts center in the context of RIGA capital of culture, National Latvian Museum of Fine Arts may-august 2014
« Variable end of house show », De Kriekelaar Brussels, organised by Constant Vzw June July 2014
2013
« Interac Wearing », Pixelache Helsinki, May 2013
« Ruelles », Pianofabriek, Bruxelles- mai to july 2013
« Walker » Pure data patching Circle Constant VZW nov 2013

References

Natacha Roussel has been active in the field in the past 15 years and has presented art and research projects internationally. Her work has been recognised by a number of prices and bursaries.
As a researcher and artist she has worked the past ten years on issues related to participation in the
context of mobile and sensing devices. From measuring one's environment to one's health I have questioned the social aspects of those physical and narrative interfaces that go from body extension, communicant textile to distributed networks.
Recently I have developed a strong theoritical framework for my research on sensitive aspects of interaction by pursuing a practice based PHD I started at Planetary Collegium/I-Dat (UK), then

pusued at CERAP Paris1U under direction of Olga Kisseleva.
Living since 2011 in Bruxelles I am involved in several collective projects, in particular free libre and open source communities I am actively participating to Constant VZW Variable.
Previously in 2003 I co-fonded Experientiæ Electricæ, that has been suported by CIAM (Hexagram) primed at digifest (Toronto) then internationally presented : (SAT (qc), Centre d'art d'Enghien (fr), Lighthouse (uk) Futur en Seine Galerie Vanessa Quang, Ars Longa (fr), Laboral (es),
universal expo Bejing (chn) etc.)

Publications

« Almost Perfect: Self Quantification and the feminist theory of health studies » Procedings Design, Social Media and Technology to Foster Civic Self-Organisation, UHasselt inplanning platform, (Hasselt) 2015
« Personal quantification a technological society endeavour », procedings Interference .io, self supported conference involving aiming to structure a transversal ethical concern in the hackers community.
« Electronic textiles L'exacerbation de la limite corporelle par le vêtement ». Studio XX DPI, numero24, (Montreal) 2013
« Mobilis pour une cartographie distribuée et relative » Proceedings of Hyperurbain Technologies de l'Information et de la Communication en milieu Urbain Quel impact sur la société, Europia (Paris) 2012
« Mobilis in mobile participation and perceptual exchanges » ProcedingsCousciousness reframed IX, New realities, Being syncretic, Springer (Wien) 2010

Projects

Walker, art and open source experimentation networked opensource pedometer based on Xbee network, Arduino minibee board, portable on a raspberry pi, allowing participants to trigger group interaction and text to speach processes within the group.
Walker has been presented in major international exhibitions including Fields, In Riga,(2014) Daemons and shell scripts in MUCA Anwerp.(2015) Interac Wearing, Electronic textile participative proposition based on a series of 10 costumes sonifying the rythm of walk according to the group interaction. Interac Wearing has been recognised as a meaningfull experimentation tool and presented during Futur en Seine (Paris 2009) supported by FING, and presented in major festivals, (mal au pixel-Helsinky ;Imal-Bruxelles ; Bain Numériques-Enghien les bains)

Infrastructure Required

This work is based on the use of fitbit devices by active participants.
I am currently organising workshops supported by in situ local structures in Brussels (Sophia a major feminist structure and Constant main structure for free art and technology), in Paris (Visage du Monde , Makery), in Linz (Stadtwerkstatt) Barcelona (Hangar) to gather an active community.
The project is supported by major feminist networks and raises interest from most structures.

Third Parties Involved

|n|

Template

Does the participant plan to subcontract certain tasks	n
Does the participant envisage that part of its work is performed by linked third parties?	n
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	n
{>> Describe and Justify Participatory Design and Hackspace Workshops <<}

Project Danube

template

Description

Project Danube is a small enterprise which for several years has worked on innovative, cutting-edge software and hardware related to online identity and personal data. We have worked on technologies such as OpenID, SAML, RDF, XDI, OAuth, InfoCards, OStatus, FreedomBox, and many others that have the potential to re-imagine how identity and communication online should be structured. Project Danube also has a strong social/political component, we have published several papers and videos that discuss topics around online privacy, decentralization, communication, and individual empowerment. We have a strong network with both activists and technologists around the world working on improving the Internet. We have deep expertise in all the specific technologies that will be used in this CAPS proposal.

CV

Markus Sabadello

male, born 20th April 1979, Vienna, Austria

EDUCATION
2006 - M.Sc. in Computer Science at Vienna University of Technology, Austria
2012 - M.A. in Peace and Conflict Studies at European Peace University, Austria

PROFESSIONAL ACTIVITIES
2014 - Founder, FreedomBox - Danube Edition
2013 - Lead Developer and Founding Partner, Respect Network
2012 - Founder and Lead Developer, XDI2 project
2010 - Co-Chair, OASIS XDI Technical Committee

2010 - Development Consultant, Human Dynamics Group, MIT Media Lab
2009 - Research Chair, Personal Data Ecosystem Consortium
2007 - Lead Developer, Azigo and Eclipse Higgins project

Publications / Products / Achievements

- FreedomBox - Danube Edition:
  http://projectdanube.org/freedombox/
- XDI2 server and library for distributed semantic graphs:
  http://xdi2.org/
- Personal Data in Decentralized Architectures, Personal Data Journal, April 2012:
  http://projectdanube.org/wp-content/uploads/2014/05/PDEC-Decentralized-Architectures.pdf
- Video about Centralization vs. Decentralization
  http://projectdanube.org/videos/video-network-structures/
- Video about FreedomBox at the Internet Archive:
  https://www.youtube.com/watch?v=-YgOYjOGZuQ

Previous Projects / Activities

- Starting in 2010, Project Danube participated in the then emerging "Federated Social Web" effort which grew out of the Diaspora decentralized social network. We participated in the FSW summits in Portland and Berlin and built a server implementation that is interoperable with Diaspora via the OStatus protocol.
- Since 2011, we have presented and promoted the FreedomBox project at >30 events worldwide,
  both from a political and technological perspective, and we have actively contributed to its development.
- In 2014, we participated in a four-city "world launch tour" of Respect Network, which aims to be a global, distributed ecosystem for trusted personal information exchange. This network
  exists between both individuals and organizations, and uses semantic graph technology similar to
  the one that will be used in this CAPS proposal.
- Project Danube was involved with the early planning stages of MyDex, a UK-based service that
  enables individuals to exchange personal data in a trusted, secure way.
- Project Danube was a key contributor to the Eclipse Higgins project, which is a software framework for building a global identity system, including support for protocols such as OpenID

and SAML. The core data model of Eclipse Higgins is based on the RDF semantic web technology,
which is also going to be used in this CAPS proposal.

Infrastructure

We have existing technical plans and infrastructure for FreedomBox personal server devices that we can produce and customize in flexible ways and at any required capacity. We have processes for integrating other technologies with the FreedomBox. We have servers for
building and testing software images, as well as for providing backend services to support the FreedomBox personal server devices. See http://debian-dev.freedombox.at:8080/

Third Parties Involved

|n|

Template

Does the participant plan to subcontract certain tasks	n
Does the participant envisage that part of its work is performed by linked third parties?	n
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	n

Ecobytes

Description and tasks

Ecobytes is a technical collective which has the long term vision of supplying Internet hosting on servers built from the least environmentally harmful parts and powered entirely by renewable energy, while providing a high-level of security that citizens and organisations demand.
We also envision to become a resource for knowledge about environmentally sound and socially just computing.
We provide hosting based on solidarity economy principles.

In our personal work we combine this common passion for sustainability and information technology by assisting various groups and individuals with their day to day computer work, especially regarding Internet related activities. Although only constituted as an NGO in December 2013, the Ecobytes collective has been operating as an informal group since June 2006. In all its activities, Ecobytes is engaged in supporting Free/Libre and Open Source Software (FLOSS) principles, which is why all servers are running exclusively GNU/Linux based operating systems. Developed software is always contributed back to the community by using FLOSS licenses.

The collective further encourages its users and everyone else to migrate to FLOSS, for example by organising training events, providing consulting and helping with installation of FLOSS to

individuals and organisations. Currently Ecobytes' physical infrastructure includes four high-performance servers in German data centers. Over 100 users - activists, artists, individuals and small businesses - are currently being hosted by Ecobytes.

Profiles

Gualter Barbas Baptista

Dr. Gualter Barbas Baptista holds a degree in Environmental Engineering and a doctoral degree in Environmental Sciences, specialized in Ecological Economics and Political Ecology. He is actively engaged in civil society movements around environmental, climate justice, food and economics discourses since more than 15 years.

As the Director of Ecobytes he works as (agile) project and events manager for several non-profit organisations in the fields of transition and degrowth. Currently he is working as the international coordinator of the EU education project "GROWL - Learning More, Growing Less" (http://co-munity.net/growl). He teaches at the University of Kassel on "The Limits of Growth: Perspectives for Agriculture" and is a member of the Editorial board of the journal "Ecología Política" (http://ecologiapolitica.info).

Other ongoing projects:

- co-munity.net (Drupal architect and lead development)
- plantei.eu (project management)
- TransforMap.co (process maintainer)
- Transition Town Witzenhausen (project and "community organiser" for the hacker-, maker- and co-working space and citizens' participation initiatives)

Some recent and past projects worth mentioning:

- Fourth International Conference on Degrowth for Ecological Sustainability and Social Equity (core organiser, IT coordinator) [2013-14]
- UnvergEssbar Konferenz (project management and fundraising) [2013]
- Beyond Our Backyards (international coordination and fundraising) [2011-13]

Jon Richter

I am working in the context of the TransforMap programme, formerly known as MMM, which aims at visualizing alternative economies and social innovation, based on OpenStreetMap and Linked Data.
Our work is especially relevant, as we are a community of communities (Solidary Economy, Commons, collaborative economy, commons-based peer production, welfare economy, etc.) that does not have any legal status. Yet, our aim is compellingly complex.

My personal involvement into the process touches questions of communication + mapping infrastructure, community building, organization of events, communication and exchange, information

architecture as well as a counseling role to transform our data modeling process from OpenStreetMap to Linked Data.

I am working for civil society initiatives since 2009, primarily the id22: Institute for Creative Sustainability from Berlin, the critical urbanist's collective quatorze from Paris and only recently in an advisory role for the young urbanist's network stadt:gestalten and Technical University's Project Seminar "Soziale Initiativen 2.0", both from Berlin again. By touching the circles of MMM, I have been involved with many other organizations, like OuiShare, Edgeryders, Ecobytes, Degrowth and the Anstiftung & Ertomis foundation. Non-institutional work included urban appropriations like Spreeacker or Funkhaus Grünau next to critical mapping with orangotango and Georilla plus the media arts collective circus homo novus.

Find out more about me on my personal home page http://jonrichter.de

Current positions:

- Technical Director, TransforMap (2014-)
- DevOps Engineer, Ecobytes (2014-)
- Collaboration Advisor, id22: (2009-) + quatorze (2011-)
- Frontend Developer, racken GmbH (2011-)
- ICT Administrator, PPM GmbH (2010-)

Former assignments:

- Spatial Data Warehousing & Synchronization, anstiftung & ertomis foundation (2014)
- drupal Product Manager, Wohnportal Berlin (2010-2014)
- online & print cartography of Community Gardens in Berlin (2012-2013)

Publications, Products and Services

- Baptista, G. Barbas: "Learning and building knowledge for degrowth: communities of practice and peer production across scales and beyond roles", in: Fourth International Conference on Degrowth for Ecological Sustainability and Social Equity, Leipzig, 2014.
- Richter, J.: "Open Data und Selbstorganisation", in: FOSSGIS 2014 Tagungsband, Berlin, 2014.
- Richter, J.: "Public Space Invaders: a collaborative research on collective urbanism", in: International Geography Congress, Cologne, 2012.
- co-munity.net, several organisations and networks, 5000 users
- allmende.io, communication infrastructure for the Commons
- Development and Operation of the online social network of the 4th International Conference on Degrowth
- Development and Operation of the TransforMap infrastructure
- Membership based and community supported web hosting for individuals, communities, non-profits and start-ups

Projects

- TransforMap
- RELAIS (Erasmus+ Strategic Partnership for Adult Education)
- plantei.eu - Seed exchange platform

Infrastructure

- Root servers
  template

Henry Joseph Story

Henry Story, British, of English Father and Austrian mother, living currently in France, has been researching the applications of Linked Data to the Social Web since 2004 where he worked at Sun Microsystems as Social Web Architect.

He contributed to a number of web standards such as the Atom Syntax RFC4287 and Atom Protocol RFC5023 while at Sun, where he also later originated the WebID over TLS protocol for global identity and distributed authentication, which was formalised at the W3C in the WebID XG of which he is the chair. This produced a number of specifications which are at core of the CoOp project. He has been an active member of the W3C Linked Data Platform Working Group where he produced an Open Source Scala Implementation of the Platform enhanced with WebID and Web Access Control, and which is the basis of the CoOp project. This platform builds on the banana-rdf Scala and Scala-JS RDF library which enables the same code to be used on the server and on the client, thereby greatly reducing development costs, and enabling maximum programmatic flexibilty: it allows one for example to switch one's whole program with a few lines of code between well known RDF libraries such as Apache's Jena RDF framework or the Sesame library .

Henry Story has a BA in Philosophy from Kings College London and an MSc in Computing from Imperial College London. He worked at AltaVista from 1995 to 2001 when it was the major search engine, where he developed the BabelFish machine translation service. At Sun Microsystems he held a blog on the semantic web which fed his presentations on the Philosophy of the Web conferences, where he developed the relations between analytic philosophy and the semantic web and the political issues of trust related to centralistion. He has experience as a co-founder of a startup.

Academic Publications

- Henry Story; Bruno Harbulot, Ian Jacobi, Mike Jones: "Foaf+SSL: RESTful Authentication for the Social Web", 2009 European Semantic Web Conference
- Sebastian Tramp; Henry Story; Andrei Vlad Sambra; Philipp Frischmuth; Michael Martin; Sören Auer: "Extending the WebID Protocol with Access Delegation". Proceedings of the Third International Workshop on Consuming Linked Data (COLD2012)
- Henry Story; Andrei Sambra; Sebastian Tramp: "Friending on the Social Web"

Presentations

- May 2008: "Building a Web3.0 Address Book" at the 2008 JavaOne conference in San Francisco
- May 2009: "Open Distributed Social Networks" interview by Prof William Dutton at the Oxford Internet Institute
- October 2010: "Philosophy and the Social Web" talk at the first Philosophy of the Web conference at Université Paris I
- April 2012: "WebID and Commerce" presentation at the European eID Conference
- August 2013: "The Secure Social Web" at the OHM hacker conference in Holland organised with the CCC
- Mai 2014: "Les enjeux économiques et politiques du Web après-Snowden, quelles solutions alternatives pour rétablir la confiance ? at the French Ministry of Culture as part of the session on"Les enjeux du Web 3.0 dans le secteur culturel – Rétablir la confiance dans le Web"
- December 2014: "Building a Secure Distributed Social Web with Scala and Scala-JS" at the Scala eXchange conference in London

Ethics and Security

Ethics

As the project itself is explicitly working towards improving inclusion of all individuals in participatory projects. The concept of distributed, interconnected data makes it possible to increase the freedom of choice of individual users and a more competitive market on identity services, applications and data services. The objectives of the project thus directly work towards methods that help to implement the guidelines given by the EU Universal Service Directive 2009/136/EC.

{>> Answer additional info for research involving human participants <<}

The research involves human participants as volunteers in the design of software and cooperation systems. The participants will be made aware of this research, its objectives, and results, which is a crucial part of participatory design.

{>> Answer additionally physical interventions? <<}

The participants will be subject to physical (as well as digital) modifications of the places where they engage with their community activities. They will be offered tools that they can partake in freely. All intervention will be introduced to the participants beforehand and the participants will be informed about risks.

{>> Personal Data Collection (tracking and observation of participants)<<}

In few cases the limited collection of positional data and interaction/comunication data might be collected during assembly of key-users, workshops and focus groups. Consent of participants will be ensured a priori.

{>> Dual Use <<}
{>> Malevolent/Criminal/Terrorist Use<<}

Similar to most other communication technology, the developed cooperation platform might be used for a wide range of purposes. Cooperation is a very fundamental topic for operations of any group of individuals. This means that any group, involving military, criminal, terrorist or otherwise may use the tools developed in the project.

Security

The project will NOT be involved in activities or produce results that raise security issues.

The project will NOT use or produce EU-classified information, neither background nor results.